REOTEMP

INSTRUMENTS

THERMOCOUPLES & RTD's

THE WILLIAMS - CARVER COMPANY, INC.
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RTDTC.0906

"Service Inspired, Quality Driven"

Table of Contents - Thermocouples & RTD's

ISO 9001 REGISTERED

Established in 1965 and located in San Diego, California, REO*TEMP* Instrument Corporation is recognized as a leading manufacturer of RTD's and Thermocouples. REO*TEMP* also provides a wide variety of temperature and pressure instrumentation to a variety of process markets worldwide. We are recognized for outstanding quality, superior delivery, exceptional customer service, and innovative engineering services. REO*TEMP* is an ISO 9001 certified manufacturer.

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Head Assemblies - (Head & Connection)
Thermocouples & RTD's

REOTEMP INSTRUMENTS

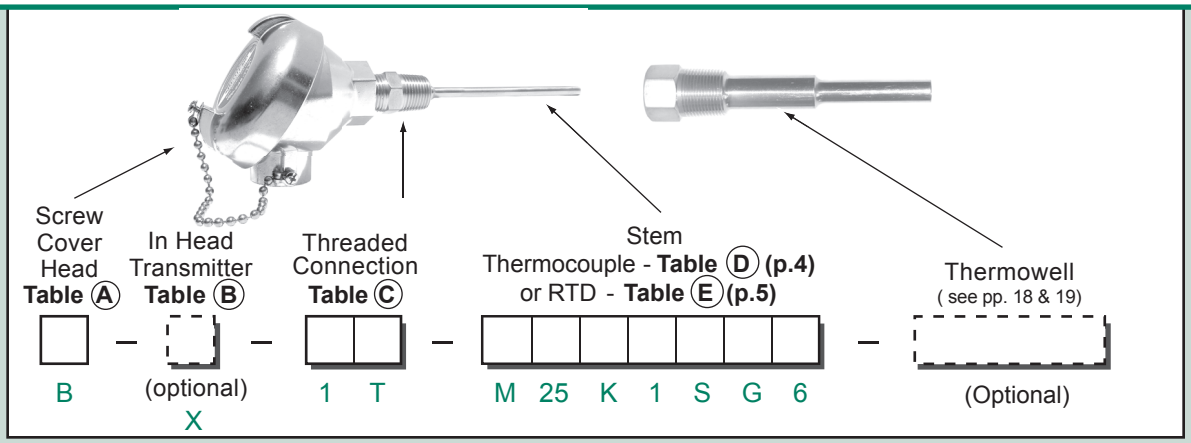


Table A - Connection Heads

TYPE B

Universal Cast Aluminum

TYPE A

Universal Cast Iron

TYPE G

316SS

TYPE H

Aluminum Flip-Top

TYPE I

Epoxy Coated Aluminum

TYPE W

(use with digital display)
Aluminum, Window

TYPE E

Explosion Proof, Aluminum

TYPE T

ATEX Explosion Proof, Aluminum

TYPE J

Explosion Proof 316SS

TYPE Z

(use with digital display)
Explosion Proof, Window

TYPE S

Poly Plastic (white)

TYPE C

Poly Plastic (Black)

Table B - Transmitters - (optional)

In Head Standard	In Head with Digital Display (with window head Z)
X = 4-20mA 2-wire trans. **R** = 4-20mA 2-wire Hart trans.	**B** = 4-20mA 2-wire trans. **A** = 4-20mA 2-wire Hart trans.
	(with window head W) **T** = 4-20mA 2-wire trans. **H** = 4-20mA 2-wire Hart trans.

Table C - Threaded Connections

Use spring loaded connection with thermowells. Use welded connection when stem goes directly into the process medium.

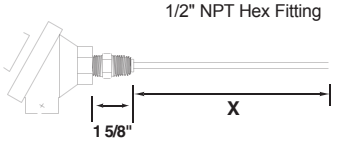
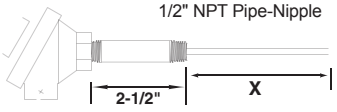
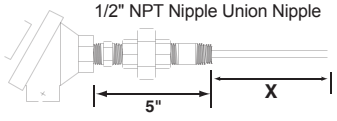
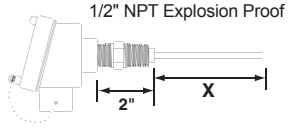
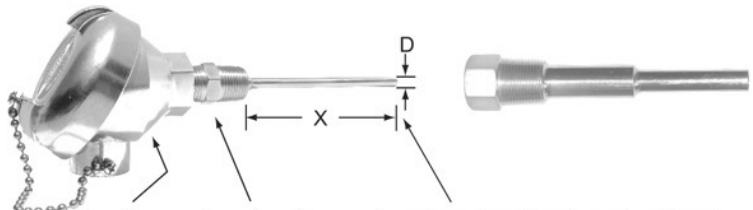
	Spring Loaded		Welded
	Standard 316SS Fittings	Steel Fittings	Standard 316SS Fittings
1/2" NPT Hex Fitting 	1T	---	1F
1/2" NPT Pipe-Nipple 	2T	2L	---
1/2" NPT Nipple Union Nipple 	4T	4L	4F
1/2" NPT Explosion Proof Hex 	7T	---	---

Table D - Stems

Thermocouples see p.4
RTD's see p.5

Head Assemblies - (TC Stem)
Thermocouples



B	—	1	T	—	M	25	K	1	S	G	6

Head - **Table Ⓐ** (p.3)

Connection - **Table Ⓒ** (p.3)

Thermocouple Stem - **Table Ⓓ** (below)

How to Order

1. Head - Table Ⓐ (p.3)
2. Transmitter (option) - Table Ⓑ (p.3)
3. Connection - Table Ⓒ (p.3)
4. Stem - Table Ⓓ →

TABLE Ⓓ Thermocouple Stems

STEP 1
Metal Sheathed Thermocouple Assembly - Insert "M"

STEP 2 - Sheath Diameter (D)
Insert 2 digit number designated below

06 = .062in. (1/16")	**12** = .125in. (1/8")	**18** = .188in (3/16")	**25** = .250in. (1/4")	**37** = .375in. (3/8")	**50** = .500in. (1/2")

STEP 3 - ANSI Type Thermocouple
Insert designation below.

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

STEP 4 - Type of Sheath Material
Insert single-digit number designated below.

1 = 316 SS
3 = 304 SS
2 = 310 SS
5 = Inconel 600

STEP 5 - Number of Element

S = Single element assembly
D = Dual element assembly

STEP 6 - Type of Junction

Elements: **G** = Grounded **E** = Exposed
U = Ungrounded **UU** = Ungrounded, Uncommon

STEP 7 - Probe Length (X) in inches
Stem length measured from bottom of threads to stem tip.

M							

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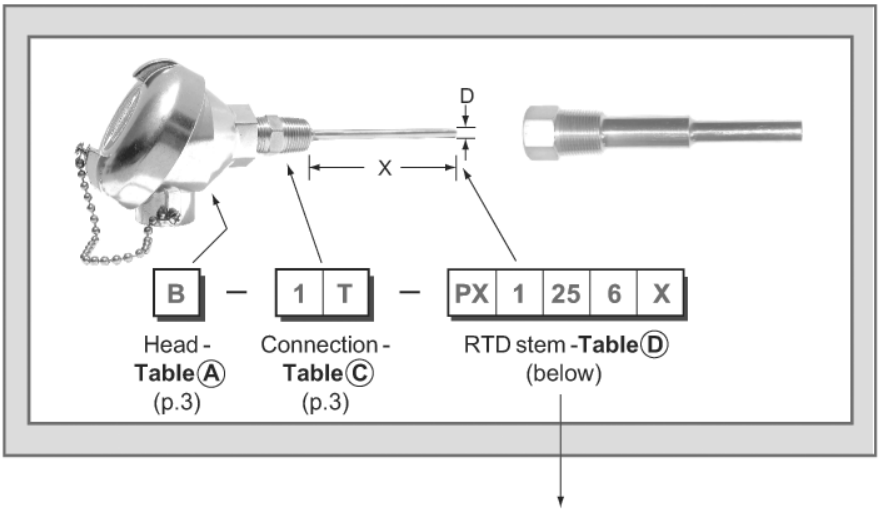
RTD's (Resistance Temperature Detectors)



How to Order

1. Head - Table Ⓐ (p.3)
2. Transmitter (option) - Table Ⓑ (p.3)
3. Connection - Table Ⓒ (p.3)
4. Stem - Table Ⓓ

TABLE Ⓓ RTD Stems

STEP 1 - RTD Sensor

Insert sensor code below.	Code	Material/Class	Ω@ 0°C	Acc
(Std) Din B Pt 100	*PX(std)	**Pt/385/B**	**100**	**0.12%**
Pt 100 with Other Accuracies	*PC	Pt/385/ A1	100Ω	0.1%
	PD	Pt/385/ A3	100Ω	.03%
	*PA	Pt/385/Cl A	100Ω	0.06%
	*PE	Pt/385/A5	100Ω	0.01%
Other RTD's	PK	Pt/385/B	1000Ω	0.12%
	PM	Pt/385/B	500Ω	0.12%
	*PY	Pt/392	100Ω	0.1%
	NI	Nickel/6725	120Ω	0.5%
	CU	Copper/421	10Ω (@25°C)	0.5%

STEP 2 - Temperature Range

Insert single-digit number designated below
1 Std. range -60°F / 600°F
2 Extended range -328°F / 1100°F (Only available on sensors with asterisk *)

STEP 3 - Sheath Diameter

Insert two-digit number designated below
25 = .250 dia. **12** = .125 dia. **18** = .188 dia. **37** = .375 dia.

STEP 4 - Determine the required length "X" in inches

Stem length measured from bottom of threads to stem tip.

STEP 5 - Number of Leads/RTD's

Single RTD	Leads/RTD	Duplex RTD
X	3-wire	XX
Y	4-wire	YY

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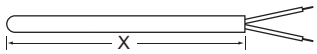
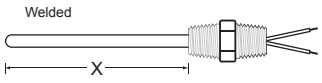
Stem Only Assemblies
Thermocouples & RTD's

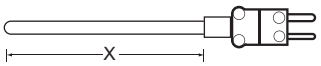
Table Ⓐ RTD & TC Styles



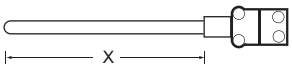
A = Plain stem (choose this for all lead assemblies) — **A**



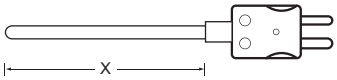
B = Welded SS bushing — **B**



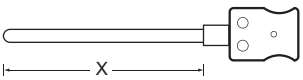
C = Male mini plug — **C**



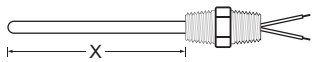
D = Female mini jack — **D**



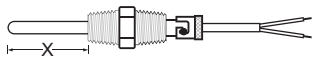
F = Male standard plug — **F**



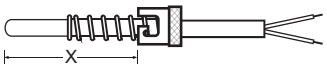
G = Female standard jack — **G**



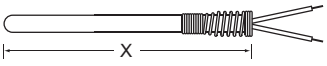
H = Spring loaded bushing — **H**



P = 1/2" NPT Nipple w/ Bayonet — **P**

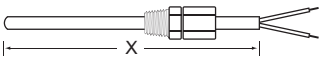


R = Bayo Cap w/ spring — **R**

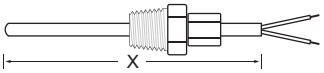


S = Load Spring only — **S**

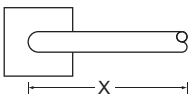
Table Ⓐ-2 Stem Options Styles



T = 1/4" NPT Compression fitting, loose on stem — **T**



U = 1/2" NPT Compression fitting, loose on stem — **U**



W = Weld Pad — **W**

RTD

STEP 1 - RTD Style
Choose RTD Style from Table Ⓐ

(Optional) STEP 2 - Stem Options
Choose Stem Options from Table Ⓐ-2

STEP 3 - RTD Sensor

Insert sensor code below.	Code	Material/Class	Ω@ 0°C	Acc
(Std) Din B Pt 100	***PX**(std)	**Pt/385/B**	**100**	**0.12%**
Pt 100 with Other Accuracies	***PC**	Pt/385/ A1	100Ω	0.1%
	PD	Pt/385/ A3	100Ω	.03%
	***PA**	Pt/385/Cl A	100Ω	0.06%
	***PE**	Pt/385/A5	100Ω	0.01%
Other RTD's	**PK**	Pt/385/B	1000Ω	0.12%
	PM	Pt/385/B	500Ω	0.12%
	***PY**	Pt/392	100Ω	0.1%
	NI	Nickel/6725	120Ω	0.5%
	CU	Copper/421	10Ω (@25°C)	0.5%

STEP 4 - Temperature Range
Insert single-digit number designated below
1 Std. range -60°F / 600°F
2 Extended range -328°F / 1100°F (Only available on sensors with asterisk *)

STEP 5 - Sheath Diameter
Insert two-digit number designated below
25 = .250 dia. **12** = .125 dia. **18** = .188 dia. **37** = .375 dia.

STEP 6 - Probe Length (X)
See "X" dimensions in table Ⓐ

STEP 7 - Number of Leads/RTD's

Single RTD	Leads/RTD	Duplex RTD
X	3-wire	**XX**
Y	4-wire	**YY**

STEP 8 - Lead Wire
If leadwire, add lead wire part # (see p. 7)
Ex. LR2P36T1S

THERMOCOUPLES

STEP 1 - Style
Choose Thermocouple style from table Ⓐ

(Optional) STEP 2 - Stem Options
Choose Stem Options from Table Ⓐ-2

STEP 3
Metal Sheathed thermocouple Assembly - insert "M"

STEP 4 - Sheath Diameter
Insert 2 digit number designated below
06 = .062in. **12** = .125in. **18** = .188in **25** = .250 in. **37** = .375in. **50** = .500in.

STEP 5 - ANSI Type Thermocouple
Insert designation below. **K** = Chromel Alumel **T** = Copper Constantan
J = Iron Constantan **E** = Chromel Constantan

STEP 6 - Type of Sheath Material
Insert single-digit number designated below
1 = 316 SS **3** = 304 SS
2 = 310 SS **5** = Inconel 600

STEP 7 - Number of Element
S = Single element assembly **D** = Dual element assembly

STEP 8 - Type of Junction
Elements: **G** = Grounded **E** = Exposed
U = Ungrounded **UU** = Ungrounded, Uncommon

STEP 9 - Probe Length (X)
See "X" dimensions in table Ⓐ

STEP 10 - Lead Wire
If leadwire, leadwire part # (see p.7) Ex. LJ2P36F1F

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Lead Wire Configuration
Thermocouples & RTD's

REOTEMP INSTRUMENTS

Plain Leadwires (These are supplied without a transition)

For Plain Wire Leads, specify **L __ (length in inches)** example: "**L6**"
This applies to:
1) RTD's, std. temp. only, any length leads.
2) Thermocouples, leads up to 6". ***Specify all other leadwires below***

Plain Lead P/N examples:
RTD Example: APX125116X-**L36** (36" lead)
TC Example: M25K1ASG6-**L6** (6" lead)

Other Leadwires (These require a transition)

Table Ⓐ **Transitions**

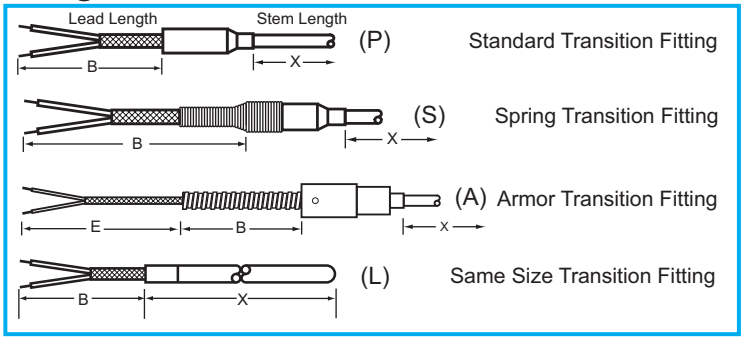
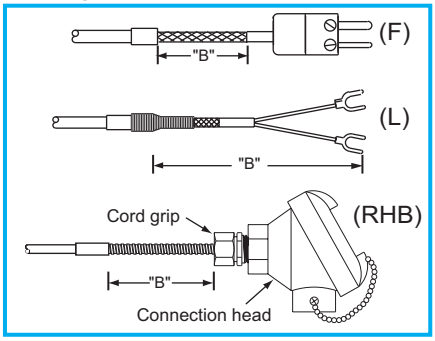


Table Ⓑ **Terminations**



Example: APX125116X - **L6LJ2P36F1F**

T/C or RTD stem Part # see p.6

1	2	3	4	5	6	7	8	9
L	J	2	P	36	F1	F		

1. Lead Wire "L"

2. Type of Wire
RTD = **R**
TC,Type J = **J**
TC,Type K = **K**
TC,Type E = **E**
TC,Type T = **T**

3. Number of Leads
Single T/C (or RTD 2-wire) = **2**
RTD, 3-wire = **3**
RTD, 4 wires total = **4**
(or RTD Duplex 2-wire)
(or T/C Duplex)
RTD, Duplex 3-wire = **6**
(or triplex T/C)
RTD, Duplex 4-wire = **8**

4. Transition Type (Table Ⓐ)
Std, Plain = **P**
Std, with spring = **S**
Armor = **A**
Same size = **L**

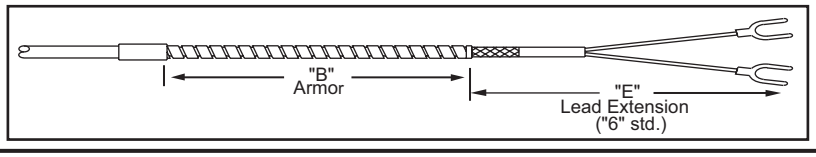
5. Lead Length or Armor Length
Insert "B" Length, Inches
eg. 10ft = 120

6. Insulation/Conductor
F1= Fiberglass, solid
F2= Fiberglass, stranded
T1= Teflon, solid (T.C standard)
T2= Teflon, stranded (RTD std.)
P1= PVC, solid
P2= PVC, stranded

7. Wire Termination (Table Ⓑ)
P= Plain leads- not stripped
S= Stripped leads
L= Spade lugs
T= Terminal pins
F= Std. Male plug
C= Mini Male Plug
R= Cord grip 1/2" NPT
RH__*= Cord grip with connection head
(*Specify head code from table Ⓐ, p.3
e.g. RHB)
For mating connection - add MC= (i.e.,C-MC, F-MC)

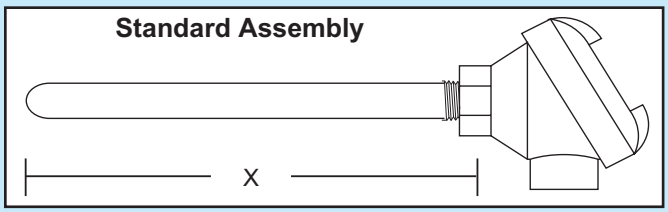
8. Wire Protection (optional)
A= SS armor
P= PVC coated ss armor
T= Teflon coated ss armor
O= SS overbraid
(omit if no armor)

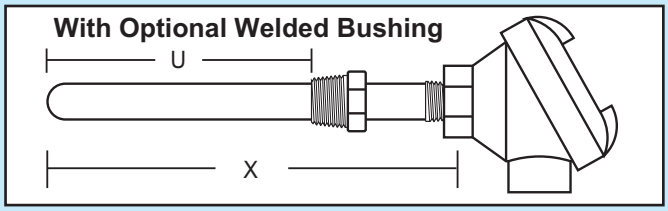
9. Wire Extension
"E" Length
Wire Extension
beyond armor inches
(omit if no armor)



REOTEMP INSTRUMENTS

Metal Tube Assemblies
Thermocouples





Metal Tube Assembly — MTA — (1) A (2) KK (3) 20R (4) C5 (5) 12 (6)

1. Head Type \ Connection

- **A** = Cast Iron
- **B** = Cast Aluminum

2. Sensor Type

Single	Dual
K	KK
J	JJ
N	NN

3. Wire Gauge / Insulator

AWG
20
14
8
R = round
C = oval

4. Tube Material / Size

Material
S = 316SS
F = 304SS
C = Carbon Steel
I = Inconel 600
Pipe Size
2 = 1/4"
5 = 1/2"
7 = 3/4"
1 =1"

5. Tube Length (X)

- **12** = 12"
- **18** = 18"
- **24** = 24"
- **30** = 30"
- **36** = 36"
- Other - Specify

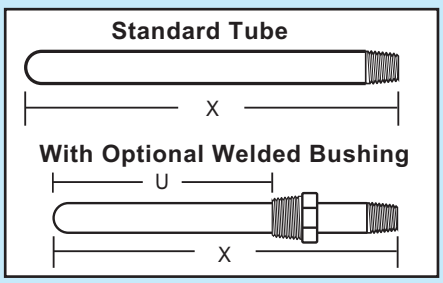
6. Options

Process Connection

- **W** = Welded Bushing (Specify NPT & insertion length "U")
- **N** = Union Nipple (Specify Extension length)
- **F** = Malleable Iron flange

Metal Protection Tube Only

MTO — Tube Material / Size: C5 — Tube Length (X): 12 — Options



Tube Material

- **S** = 316SS
- **F** = 304SS
- **C** = Carbon Steel
- **I** = Inconel 600

Pipe Size

- **2** = 1/4"
- **5** = 1/2"
- **7** = 3/4"
- **1** =1"

Tube Length (X)

- **12** = 12"
- **18** = 18"
- **24** = 24"
- **30** = 30"
- **36** = 36"
- Other - Specify

Process Connection

- **W** = Welded Bushing (Specify NPT & insertion length "U")
- **N** = Union Nipple (Specify Extension length)
- **F** = Malleable Iron flange

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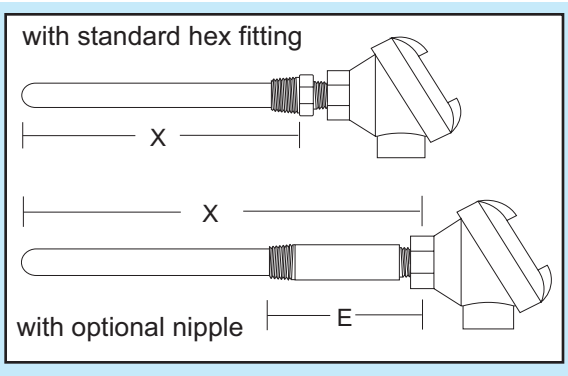
Ceramic Tube Assemblies
Thermocouples

REOTEMP INSTRUMENTS



Ceramic Tube Thermocouple Assemblies

- For High temperature process heating applications
- Alumina (max 3400 °F) or Mullite (max 2700 °F)
- Base metal or Noble metal thermocouples
- Applications: Kilns, Furnaces, Gas Heaters, Incinerators, Heat Treating, Smelting, Foundry

Complete Assemblies (Tube, Element, Head)

Ceramic Tube Assemblies	Head Type Connection	Sensor Type	Wire Gauge	Tube Material/ Length	Tube OD/Hex Fitting Process NPT	Options
CTA	A	KK	20	M18	B	

Head Type Connection
- A = Cast Iron
- B = Cast Aluminum

Sensor Type

Single	Dual
Base Metal	
K	KK
J	JJ
E	EE
T	TT
M	MM
Noble Metal	
R	RR
S	SS
B	BB

Wire Gauge

WG
Base
20
14
8
Noble
24
26

Tube Material/ Length

Material
- A = Alumina (to 3400F)
- M = Mullite (to 2700F)

Length (x)
- 12 = 12 Inches
- 18 = 18 Inches
- 24 = 24 Inches
- 30 = 30 Inches
- 36 = 36 Inches
- *other - specify*

Tube OD/Hex Fitting Process NPT
- A = 3/8"OD x 1/2"NPT
- B = 11/16"OD x 3/4"NPT
- C = 1"OD x 1 1/4"NPT
- D = 11/16" OD x 1" NPT
- E = 11/16" OD x 1 1/4" NPT

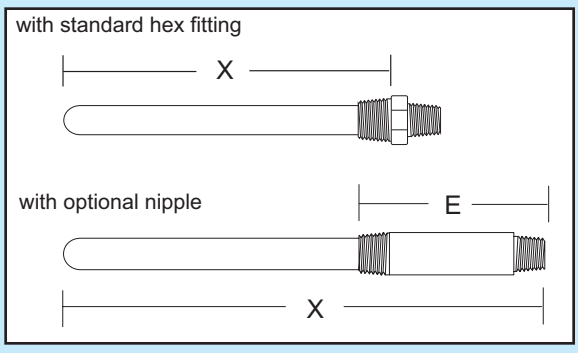
Options

Process Connection (Std. = Steel Hex Ftg.)
- N __= Pipe Nipple (specify length "E")
- F = Malleable Iron Flange
- S = Stainless Fitting

Hot Junction Styles (Std. = plain)
- T = Twisted
- I = Insulated

Insulator Styles (Std. = round ceramic)
- C = Oval Ceramic
- Q = Other (specify)

Noble Metal (platinum) thermocouples are widely relied upon for their accuracy, durability and reliability in very high temperature (up to 3100°F) applications in both laboratory and industry.



Ceramic Tubes Only (No Element or Head)

Replacement Elements see p.10

Ceramic Tube-Tube Only	Tube Material Length	Tube OD/Hex Fitting Process NPT	Options
CTO	M18	B	

Tube Material Length

Material
- A = Alumina
- M = Mullite

Length (x)
- 12 = 12 Inches
- 18 = 18 Inches
- 24 = 24 Inches
- 30 = 30 Inches
- 36 = 36 Inches
- *other - specify*

Tube OD/Hex Fitting Process NPT
- A = 3/8"OD x 1/2"NPT
- B = 11/16"OD x 3/4"NPT
- C = 1"OD x 1 1/4"NPT
- D = 11/16" OD x 1" NPT
- E = 11/16" OD x 1 1/4" NPT

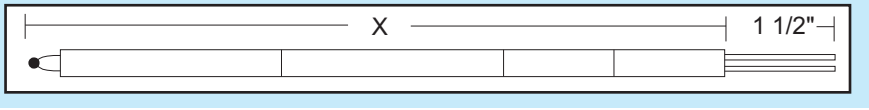
Options

Process Connection (Std. = Steel Hex Ftg.)
- N __= Pipe Nipple (specify length "E")
- F = Malleable Iron Flange
- S = Stainless Fitting

REOTEMP INSTRUMENTS Replacement Elements
Thermocouples

For Use in REO*TEMP* Protection Tubes, or in other manufacturers' protection tubes.

Base Metal Thermocouples



Element — Type — Wire Gauge — Insulator — Length (x) — Hot Junction Style — Lead Length

RE

Type

single	duplex
K	KK
J	JJ
E	EE
T	TT
M	MM
N	NN

Wire Gauge

20 AWG
18
14
11
8

Insulator

B = Bare (no insulator

C = Oval Ceramic

Wire gauge	Dimensions
8	.500 x .286
11	.375 x .218
14, 18	.313 x .288

R = Round Ceramic

Wire gauge	OD Single	OD Duplex
8, 11	.465	.500
14, 18	.250	.320
20	.150	.188

Length (x)

12 = 12"
18 = 18"
24 = 24"

Other, specify

Hot Junction Style

P = Plain

I = Insulated

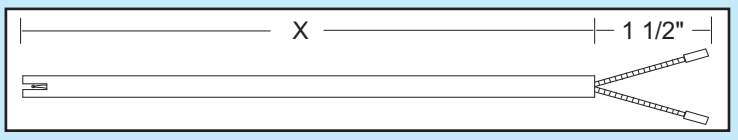
T = Twisted

Lead Length

1.5 = 1.5" (std.)

4 = 4" etc.

Noble Metal Thermocouples



Element — 1 — 2 — 3 — 4 — 5 — 6

RE — **R** | **24** | **R** | **12** | **R** | **F1.5**

1. Type

R = Pt - PT/13% Rh
S = Pt - Pt/10%Rh
B = Pt/6%Rh - Pt/30%Rh
RR = Duplex R
SS = Duplex S
BB = Duplex B

2. Wire Gauge

24 AWG
26

3. Insulator

R = Round Alumina (std.) (.188" o.d.)

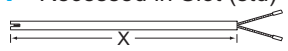
B = Bare (no insulator)

4. Length (x)

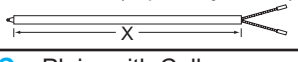
12 = 12"
18 = 18"
24 = 24"
Other, specify

5. Hot Junction Style

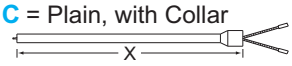
R = Recessed in Slot (std)



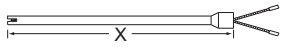
P = Plain (exposed junction)



C = Plain, with Collar



D = Recessed, with Collar



6. Leads

F1.5 = 1.5" Long with fish spine insulators and copper crimp (std)
F4 = 4"
etc.

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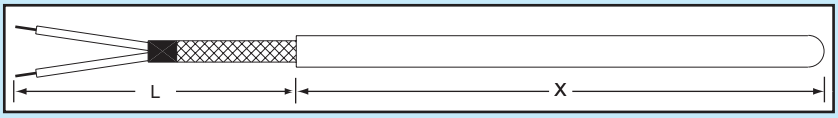
Cut-to-Length Sensors
Thermocouples & RTD's

REOTEMP INSTRUMENTS



- For on-the-spot replacements
- Order your max length and keep on shelf
- Simply cut shorter for your other lengths
- Use standard tube cutter. Minimum length 3".
- Spring loaded bushing kits, heads, terminal blocks available (see p. 19)

THERMOCOUPLES

Std Element: 18" long, 1/4" dia., 304 S.S., single, grounded. 900°F max fiberglass wire, 400°F max teflon wire.

Sensor Type	TC Type	Grounded	Element Length (X) in Inches	Alloy	Lead Length (L)	Options
T3	J	G	18	F	L6	(T1)

T3 = Thermocouple

TC Type
- Single (std): J, K, E, T
- Duplex: JJ, KK, EE, TT

Grounded
- G = Grounded
- U = Ungrounded

Element Length (X) in Inches
- 18 = 18" (std.)
- 24 = 24"
- 36 = 36"

Alloy
- F = 304SS (std.)
- S = 316SS

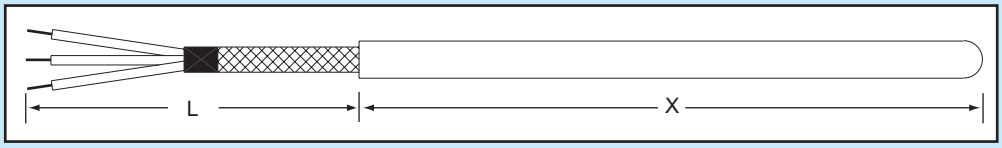
Lead Length (L)
- L6 = 6" (std.)
- L12 = 12"

Options

Wire/Insulation (if not std. solid fiberglass)
- F2 = Stranded, Fiberglass
- T1 = Solid, Teflon
- T2 = Stranded, Teflon

Stem Dia. (if not std. 1/4")
- D18 = .188" (3/16")
- D37 = .375" (3/8")

Wire Gauge (if not 20 AWG)
- G4 = 24 gauge



RTD's

Std Element: 18" long, 1/4" dia., 316 S.S., single, 3-wire RTD. 400°F max.

Sensor Type	# Sensors	# Wires per Sensor	Length in Inches (X)	Alloy	Lead Length (L)	Options
R3	S	3	18	S	L6	D18

R3 = RTD (type B)

 # Sensors
- S = Single
- D = Dual

 # Wires per Sensor
- 3 = 3-Wire (std)
- 4 = 4-wire (N/C)

Length in Inches (X)
- 18 = 18" (std.)
- 24 = 24"
- 36 = 36"

Alloy
- S = 316SS (std.)
- F = 304SS

Lead Length (L)
- L6 = 6" (std.)
- L12 = 12"

Options

Stem Dia. (if not std. 1/4")
- D18 = .188" (3/16")
- D37 = .375 (3/8")

Wire Gauge (if not 24 AWG)
- G0 = 20 gauge
- G2 = 22 gauge

REOTEMP INSTRUMENTS

Plastic Industry
Thermocouples & RTD's

Plastics Sensor

1	2	3	4	5	6	7
P —	AB	JS	G	1	12	S	B4

1. Type

Adjustable Bayonet
- AB = Adj. Bayonet on Armor
- SB = Adj. Bayonet on Spring

Fixed Bayonet
- FB = Fixed Bayonet

Compression Ftg/ Armor
- C8 = 1/8 NPT
- CP = Plain, no fitting

Direct Connect/ no Armor
- FBD = Fixed Bayonet/ no Armor
- C8D = with 1/8 NPT
- CPD = Plain

2. Sensor Type

Thermocouples Single Sensor
- JS = J single sensor
- KS = K single
- ES = E single
- TS = T single

Duplex Sensor
- JD = J dual sensor
- KD = K dual sensor
- TD = T dual sensor
- ED = E dual sensor

RTD's (100 ohm/.00385)
- RS = RTD 3-wire single
- RD = RTD 3-wire dual

3. Sensor Grounding

Thermocouples
- G = Grounded
- U = Ungrounded

RTD's
- RTD - leave blank

7. (optional) Bend Angle (fixed only)
- B4 = 45 deg. Bend
- B9 = 90 deg. Bend

6. Terminations
- S = Stripped leads
- L = Spade lugs
- F = Std. Male Plug
- G = Std. Female Jack
- C = Mini Male Plug
- D = Mini Female Plug
- B = BX connector with Spade lugs.

5. "B" Length in inches
- 12 = 12"
- 24 = 24"

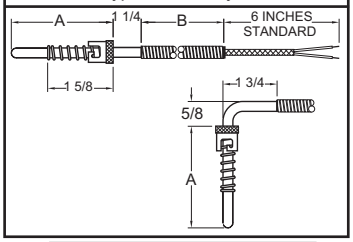
(insert any length)
Leave blank if none.

4. Probe Length "A" (fixed only)
- 1.0 = 1"
- 1.2 = 1 1/4"
- 1.5 = 1 1/2"
- 1.7 = 1 3/4"
- 2.0 = 2"
- 2.5 = 2 1/2"
- 2.7 = 2 3/4"

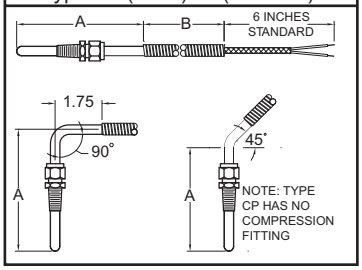
(insert any length)
Enter "NA" for styles AB, SB

General Specs: **Stems: 304SS, 3/16" dia. (.188)**
Wire: Stranded, w/fiberglass insulation

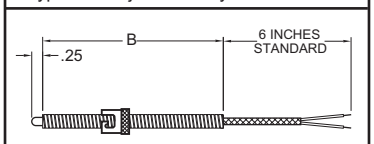
Type FB - Fix Bayonet



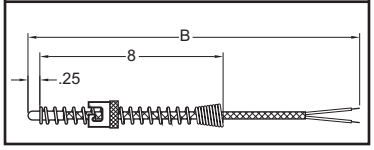
Type CP (Plain) C8 (1/8 NPT)



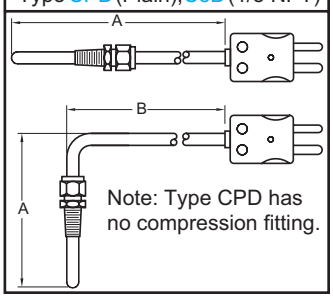
Type AB - Adjustable Bayonet on Armor



Type SB - Adjustable Bayonet on Spring

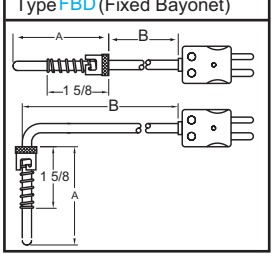


Type CPD (Plain), C8D (1/8 NPT)

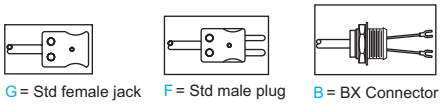


Note: Type CPD has no compression fitting.

Direct Connection (no armor)
Type FBD (Fixed Bayonet)



Terminations:



G = Std female jack F = Std male plug B = BX Connector

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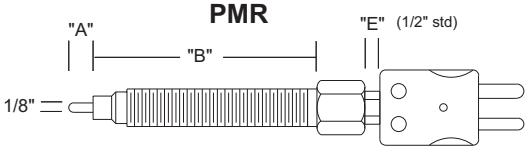
Melt Bolt Thermocouples

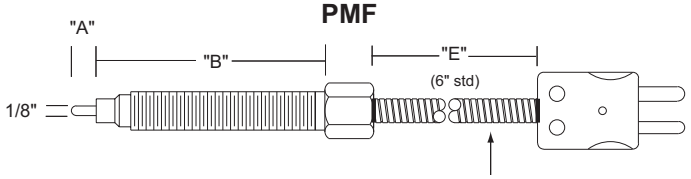
REOTEMP INSTRUMENTS

- Extruder Heads
- Die Adapters
- Tip goes directly into plastic melt

PMR



PMF



1	2	3	4	5	6
PMF	JG	4	03	6	F

1. Style

PMF = Flexible style

PMR = Rigid style

2. TC Type

Grounded
JG = Type J
KG = Type K
EG = Type E
TG = Type T
Ungrounded
JU = Type J
KU = Type K
EU = Type E
TU = Type T

3. Tip Length (A)

4 = 1/4" (std.)
8 = 1/8"
F = flush
2 = 1/2"
3 = 3/4"
1 = 1"

4. Bolt Length (B)

03 = 3"
04 = 4"
06 = 6"
08 = 8"
12 = 12"

5. (E) Dim

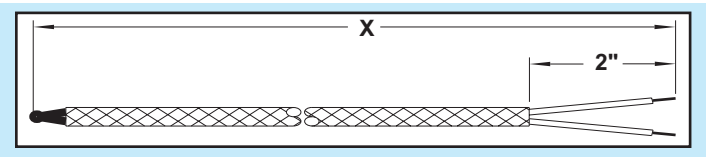
For Flex Style (F)
6 = 6" (std.)
12 = 12"
specify other
For Rigid Style (R)
2 = 1/2" (std.)
specify other

6. Termination

For Rigid Type
F =Std. size Male Plug (std.)
G =Std size Female Jack
For Flex type
F =Std. size Male Plug (std.)
G =Std size Female Jack
C = Male Mini Plug
D = Female Mini Jack

REOTEMP INSTRUMENTS

Plain Wire - with Beaded Junction Thermocouples



Wire Thermocouple

1	2	3	4	5	6
W — K	60	F1	20	S	

1. Thermocouple Type

Standard Wire	Special limits of error
J	JS
K	KS
T	
E	

2. Wire Length "L"

Insert length in inches

3. Insulation Type (inner/outer)

Code	Insulation	Max Temp
Solid Wire		
F1	fiberglass	900ºF
T1	Teflon	400ºF
Stranded Wire (J, K only)		
F2	fiberglass	900ºF
T2	Teflon	400ºF

4. Wire gauge

20 = 20 gauge
24 = 24 gauge

5. Wire Termination

S = Stripped Leads
C = Mini Male Plug
F = Std. Male Plug
L = Spade Lugs
T = Terminal Pins

6. Options

Wire Protection
A = S.S. Armor P = PVC coated S.S. Armor T = Teflon coated S.S. Armor O = S.S. Overbraid (omit if no armor)
Tip
W ( )= Washer welded to tip for surface mount with screw. Put screw size in parenthesis. Ex: W (1/4")

Bulk Wire For Thermocouples

Thermocouple Type	Wire Gauge	Insulation Type	Options
K	20	F1	P

Std Calibration Wire
J
K
T
E

Std Calibration Wire
20 = 20 gauge
24 = 24 gauge

Std Calibration Wire

Code	Insulation	Max Temp
Solid Wire		
F1	= fiberglass	900ºF
T1	= Teflon	400ºF
Stranded Wire (types J, K only)		
F2	= fiberglass	900ºF
T2	= Teflon	400ºF

Std Calibration Wire
P = Special Limits of error

Extension Wire
JX TX
KX EX

Extension Wire
16 = 16 gauge
20 = 20 gauge

Extension Wire

P1	= PVC, solid	221ºF

Note: Consult factory for other options or wire types

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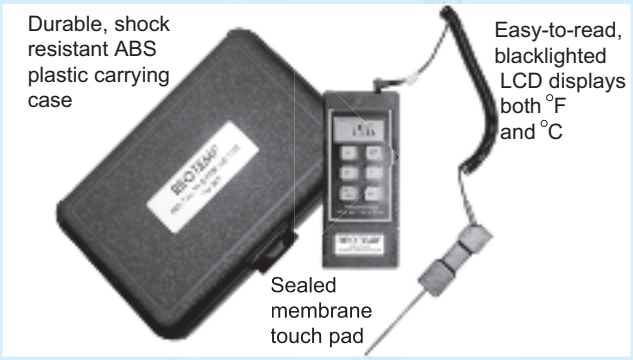
Digital Thermometers
Hand-Held Thermometers

REOTEMP INSTRUMENTS

Thermistor Sensor



Features
- All Solid State
- High Accuracy
- Detachable Probes
- Wide Temperature Ranges

Model TM99A
(with disposable battery)

Model TC100A
(with rechargeable battery)

Thermcouples Sensor

Model HI 9063
Water Resistant Min - Max, °F/ °C

Model 701K - Pocket Size
Magnet on back - stick it anywhere
in Stock in °F; Also available °C.

Features
- All Solid State
- High Stability
- Cold Junction Compensation
- Wide Temperature Ranges

Specifications	TM99A TC100A	HI 9063	701KF
Range & Resolution	-40°F to +300°F (-40°C to +150°C) 0.1°F or °C Resolution	C/LO Mode: -50 to 150ºC with 0.1ºC Resolution C/HI Mode: -50 to 950ºC with 1ºC Resolution F/LO Mode: -58 to 302ºF with 0.1 Resolution F/HI Mode: -58 to 1742ºF with 1ºF Resolution	-50 to 1,000ºF with 1ºF Resolution
Accuracy	Greater of ±0.3° F, or ±0.5% of reading	±0.3% Full Scale / ±3ºC (hi), ±0.6ºC (lo)	±0.25% (±1 Digit)
Ambient Range	0 to 150° F max, RH -90%, noncondensing	-10 to 50ºC (14 to 122 F) RH 100%	32 to 104ºF
Display	Backlighted, 4" LCD		
Probe	#1075 10K Thermistor, detachable	Type K thermocouple (optional)	Type K Thermocouple (Optional)
Power	**TM99A** - 9V alkaline battery (provided) **TC100A** - 9V NiCad battery with 110V charger	4 - 1.5V AAA batteries	1 - 9V battery
Size	9 1/2" x 6 1/2" x 2 1/2" (case closed)	7.7" x 3.1" x 2.4" (196 x 80 x 60mm)	3.1" x 2.4" x 1.1" (80 x 60 x 33.5mm)

How to Order

1. Specify Model #
2. Specify Probe.

Model # 701K ——— Probe SPK1

Hand-Held Thermometer Models

Thermistor Models	
TM99A TC100A	Disposable Battery Rechargable Battery
"K" Thermocouple Models	
701K HI9063	Compact Full Functioned

Probes for Models:
TM99A and **TC100A**
10K Thermistor Probes
All but 2010 and 7041 have 3" handle and 48" coiled lead.

Model	Description	Probe Dimensions
1075	S/S Immersion (comes standard)	.142" x 4"
1052	S/S Piercing Tip Probe	.041" x 2.8"
4040	Fast Surface Probe	
5005	Air Probe	.125" x 4"
2010	General Purpose Probe	.18" x 6"

Probes for Models: HI9063 and 701K
Thermocouple Probes (intermediate sizes, or industrial configurations available on application) Probes have 4" handle and min. 36" lead, except where noted.

Model	Description	Probe Dimensions
LPK5	Immersion/General Purpose	.156" x 5"
XPK2	Fast Responce (no handle)	1/16" x 12"
FRK4	Fast Response	1/16" x 4"
HPK2	Piercing Tip	.156" x 4"
REK1	Soft-wire Disposable (no handle)	exposed tip 48"
SPK1	Surface Temperature	
LPKA	Gas Temperature	
LPK12	Heavy Duty General Purpose	1/4" x 12"
MRK36, 48,60	Heavy Duty Penetration (pointed)	.40" x 36", 48" or 60"

Service Inspired, Quality Driven

REOTEMP INSTRUMENTS

CIP Sanitary RTD's
Thermocouples & RTD's

REO*TEMP*'s Sanitary RTD's are designed for temperature sensing in food, dairy, beverage and pharmaceutical applications where sensor corrosion and product contamination are critical factors.

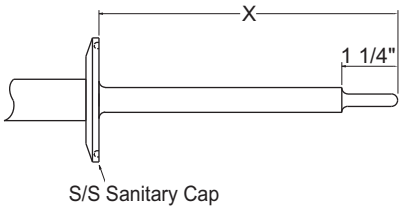
Features:

- Ideal for CIP (Clean-in-Place) or SIP
- All Wetted Parts Highly Polished to Exceed 3A Requirements
- Quick-Connect Tri-Clamp Design
- Fast Response Tip Available
- Variety of Stem and Termination Options

Table Ⓐ Stem Options

Standard 1/4" Dia. stem (Type A)

Reduced Tip Stem (Type B, C, E)



Mini-Stem (Type D)

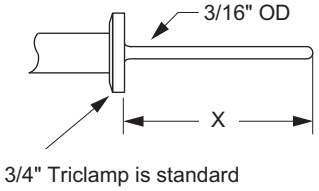
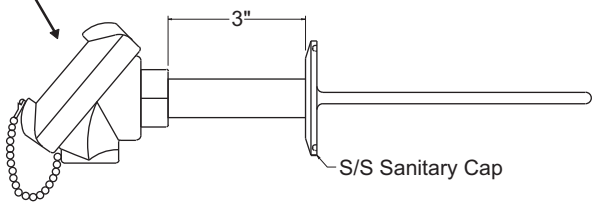


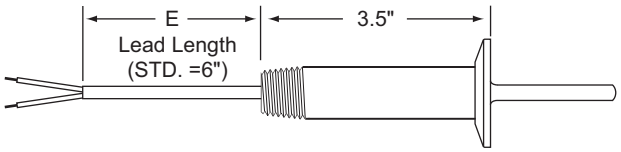
Table Ⓑ Termination Options

Type S = FDA Compliant White Polypropylene Screw Cover Head (standard)

Connection head-Type S, Y, or T



Type L (with Teflon Leads)



CIP Sanitary
Thermocouples & RTD's

REOTEMP INSTRUMENTS

How to Order

R — L3 — 030 — A — T 15 — L 12

Sensor Type

RTD - 100 ohm; .00385α; 3 wire

	Accuracy	# Elements
L3	= 0.10%	1
H3	= 0.01%	1
L6	= 0.10%	2
H6	= 0.01%	2

Maximum temperature: 400°F (204°C)

Thermocouples

JG	Type J	Grounded
JU		Ungrounded
KG	Type K	Grounded
KU		Ungrounded

Immersion Length (X)

Length		Length	
020	= 2"	060	= 6"
030	= 3"	090	= 9"
040	= 4"	120	= 12"

Long or intermediate lengths OK
Please specify length

Stem Style

(See table Ⓐ, p. 16)

Description	
A =	1/4" Diameter
B =	Reduced Tip (3/16" tip OD x 3/8" sheath OD)
C =	Reduced Tip (1/4" tip OD x 1/2" sheath OD)
D =	3/16" Diameter Tip (Single Element Only)
E =	Special HTST Fast Response Reduced Tip (3/16" tip OD x 3/8" sheath OD, response time 3 to 3.5 sec.) Available in H3 & H6 RTD Type Only.
F =	3/8" dia. stem

Sanitary Cap
Tri-Clamp Caps (Triclover 16 AMP Type)

Description	
T15 =	1.5" (Standard)
T20 =	2"
T30 =	3"
T75 =	3/4" Fractional (with "D" stem only)

Other Cap Styles Available - Please Specify

Termination

(See Termination table Ⓑ, p. 16)

Description	
S =	Std. White Polypropylene Connection Head (FDA Compliant)
T =	White Polypropylene Connection Head with 4-20mA Transmitter
Y =	White Epoxy Coated Aluminum Head
L =	1/2" NPT 316SS threads with "E" Teflon Leads (Specify Length, e.g. 12" = L12)

All wetted parts meet or exceed 3-A standards

Other Available Options:

- **Alternate Wire Termination**
- **Alternate Sanitary Cap Styles**
- **Digital Indicating Meters (Suitable for Washdown)**
- **Thermocouple Sensors (Sanitary & Industrial)**
- **RTD's/TC with CIP Sanitary Connected Wells**
- **Penetration Probes**
- **Chemical Resistant Thermocouples**
- **Stainless Steel Tags**

Other REO*TEMP* CIP Sanitary Products

Sanitary Pressure Gauges

Sanitary Thermowells

Sanitary Bimetal Thermometers

Sanitary Pressure Transmitters

Service Inspired, Quality Driven

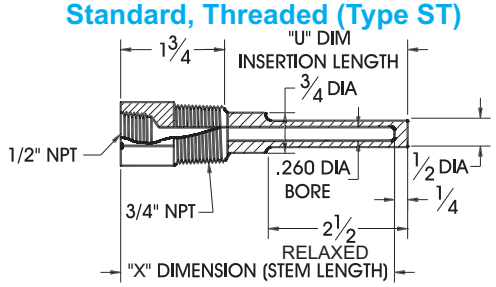
REOTEMP INSTRUMENTS

Thermowells
Thermocouples & RTD's

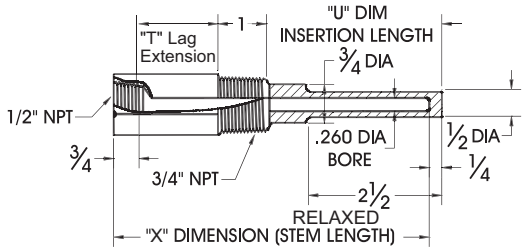
Thermowells are mated with spring loaded RTD's and Thermocouples.
Each stainless Thermowell is die stamped with the type of material from which it is made.

Types

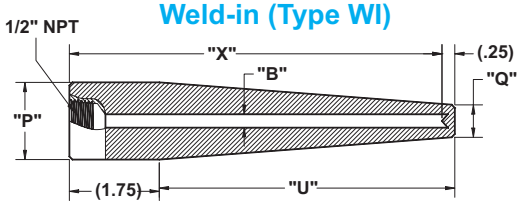
Standard, Threaded (Type ST)



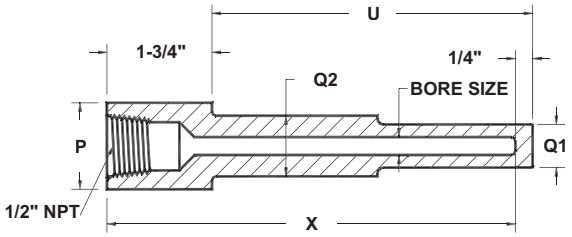
Lagging, Threaded (Type LG)



Weld-in (Type WI)



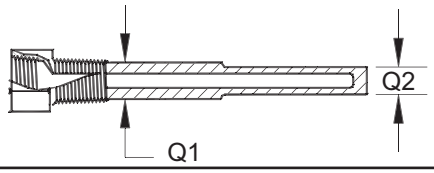
Socket-Weld (Type SW)



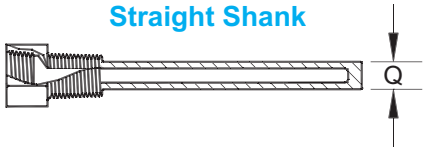
Note: For fixed thread-sensors (not spring-loaded), add 1/2" to "X" dim. of well.

SHANK STYLES

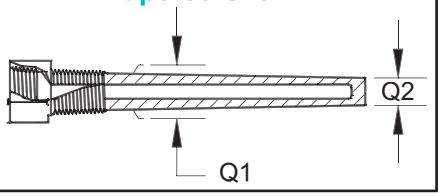
Standard Stepped Shank



Straight Shank



Tapered Shank



How To Order

ST	—	4	—	304	—		—		—	
						Options				

Type

- **ST** = Threaded
- **LG** = Threaded Lagging
- **SW** = Socket Weld
- **SWL** = Socket Weld w/ lag
- **WI** = Weld-in
- **WIL** = Weld-in w/lag

Stem Length "X"

- **2** = 2.5"
- **4** = 4"
- **6** = 6"
- **9** = 9"
- **12** = 12"
- **2.0** = 2"

Standard Dimensions

Stem "X" Dim.	Std. "U" Dim.	Lagging "U" Dim.	Overall Length
2 1/2"	1 5/8"	---	2 7/8"
4"	2 1/2"	---	4 1/4"
6"	4 1/2"	2 1/2"	6 1/4"
9"	7 1/2"	4 1/2"	9 1/4"
12"	10 1/2"	7 1/2"	12 1/4"

Material

- **304** = 304 SS
- **316** = 316SS/316L
- **B** = Brass
- **C** = Carbon Steel (1018)
- **G** = Hast B
- **H** = Hast C
- **M** = Monel/A400
- **T** = Titanium
- **Y** = Inconel
- **A** = Alloy 105 Carb. Stl.
- **2** = Alloy 20
- **5** = F5 Alloy
- **P** = PRFE Coated 316SS
- **N** = F22 Alloy

**For other Materials, use flanged well codes.

External Thread

For Threaded Wells

Blank for std. (3/4" NPT)
- " " = 3/4" NPT (std)
- **-1** = 1" NPT
- **H** = 1/2" NPT
- **4** = 1/4" NPT
- **44** = 1/4" ext. x 1/4" int. NPT
- **-2** = 1.5" NPT

For Socket Weld and Weld-in wells

Blank for std. (3/4" pipe)
- " " = 3/4" pipe nominal (1.050" OD)-std
- **P1** = 1" pipe nominal (1.315" OD)

Shank

Blank for std. (stepped)
- " " = Stepped (std.)
- **T** = Tapered
- **S** = Straight

Bore

Bore Diameter

Blank for std. (.260 Bore)
- " " = .260 (std.)
- **B3** = .385
- **B5** = .515

Ph (800) 648-7737 Fx (858) 784-0720 www.reotemp.com

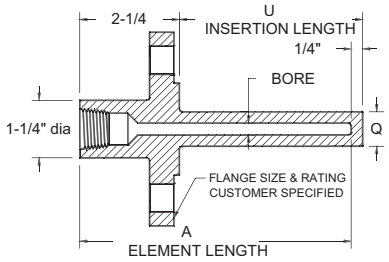
Thermowells
Flanged Types

REOTEMP INSTRUMENTS

How To Order

05	—	1	—	R	—	2	—	S	—	T	—	U020	—	L042

Flange Size	Flange Rating	Sealing Face	Bore Diameter	Material	Shank Style	"U" Dimensions	Overall Length
05 = 1/2" 10 = 1" 15 = 1.5" 20 = 2" 25 = 2.5" 30 = 3" 07 = 3/4"	1 = 150# 3 = 300# 6 = 600# 9 = 900 - 1500# 5 = 2500# V = VanStone	R = Raised Face F = Flat Face J = RTJ (Ring type joint) Q = Other (Specify)	2 = .260" (for 1/4" stem) 3 = .385" (for 3/8" stem) Q = Other (Specify)	S = 316SS F = 304SS C = Carbon Stl. D = Carp. 20 G = Hast B H = Hast C (276) L = F 11 Alloy M = Monel Y = Inconel (600) U = Tantalum Lined Z = Zirconium (316 flg) V = 317SS T = Titanium K = 316/ Stellite coating 2 = Alloy 20 5 = F5 Alloy N = F22 Alloy P = PTFE coated 316SS	T = Tapered S = Straight P = Stepped R = Tapered w/ support ring Q = Other	U020 = 2" U040 = 4" U070 = 7" U100 = 10" U130 = 13" U160 = 16" U220 = 22" U225 = 22.5" M250 = 250mm Note: std. overall length for a given "U" is on same line.	L042 = 4.25" L062 = 6.25" L092 = 9.25" L122 = 12.25" L152 = 15.25" L182 = 18.25" L242 = 24.25" L247 = 24.75" M307 = 307mm



Accessories
RTD's & Thermocouples

Terminal Blocks


2 pole **TCX001T2**


3 pole **TCX001T3**


4 pole **TCX001T4**


6 pole **TCX001T6**

Plugs & Jacks


Std. Male Plug
TCX_* PLUG


Std. Female Jack
TCX_* JACK

TCXSTDCLA = clamp set for std. plug/jack


Mini Male Plug
TCX_* PLUG MINI


Mini Female Jack
TCX_* JACK MINI

TCXMINCLA = clamp set for Mini plug/jack

* = Enter JKTE

Heads


TCX006_*

Spring Loaded Kit


TCXBSL22

* = Enter letter code from p. 3 table (A)

In-Head Transmitters


TCXT4 = 4-20mA transmitter

TCXT4-Q = 4-20mA Hart transmitter

TCXT4D = 4-20mA transmitter with digital display

TCXT4-DQ = 4-20mA Hart transmitter with digital display