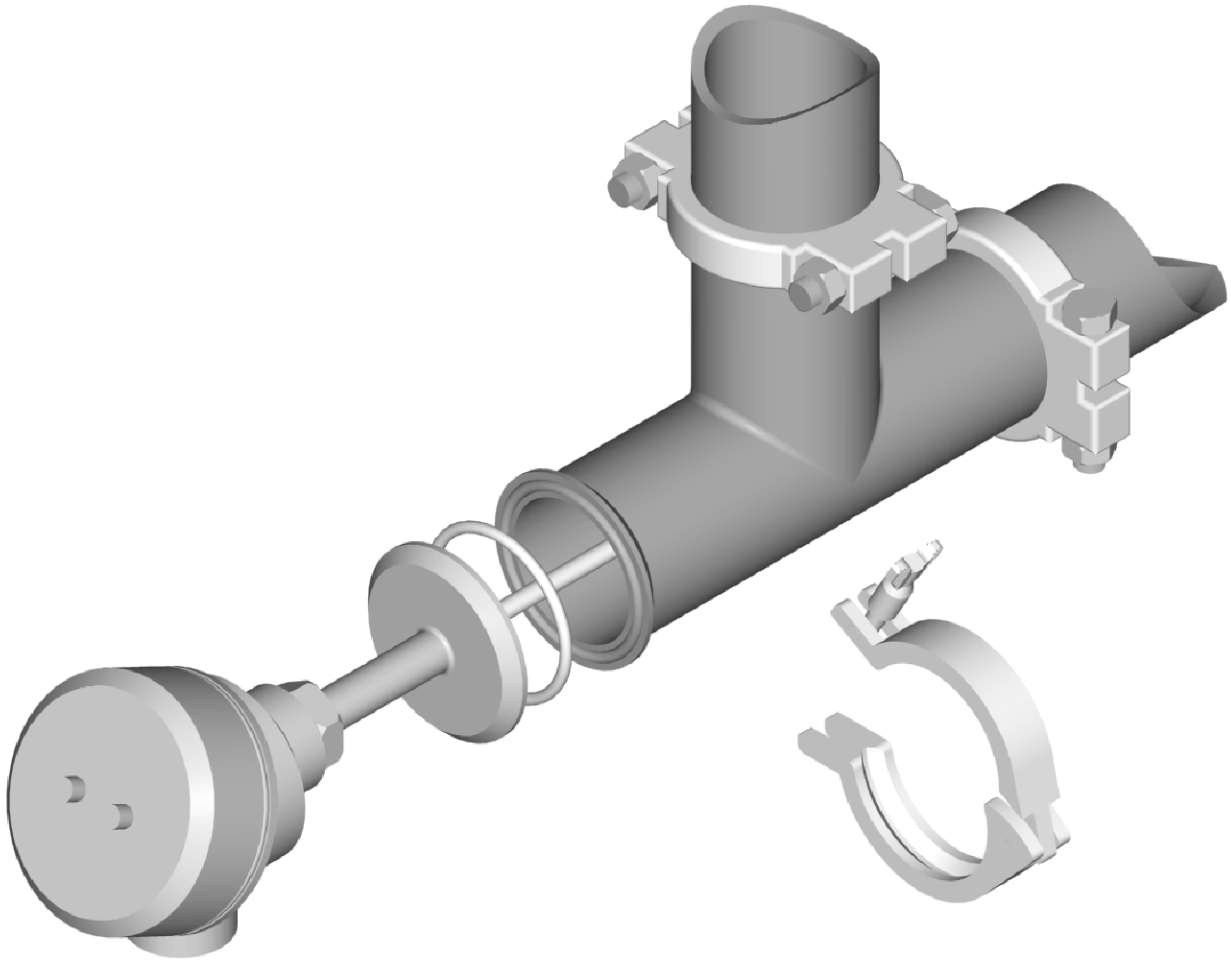
THERMO ELECTRIC

PHARMACEUTICAL & BIOTECH APPLICATIONS

Section CEPC



For over sixty five years, Thermo Electric has been providing quality temperature sensors known for their dependability and accuracy. We also offer a wide range of proven temperature instruments for sanitary applications in the **Pharmaceutical, Biotechnology, Food and Life Science Industries.**

Thermo Electric is an ISO 9001 approved facility. Our sensors and assemblies are manufactured and controlled to meet all current industry standards. By utilizing our International manufacturing capabilities, state of the art metrology labs, knowledgeable engineering staff, and proven QA/QC department, Thermo Electric assures that your product is designed and manufactured to the highest possible quality standards available.

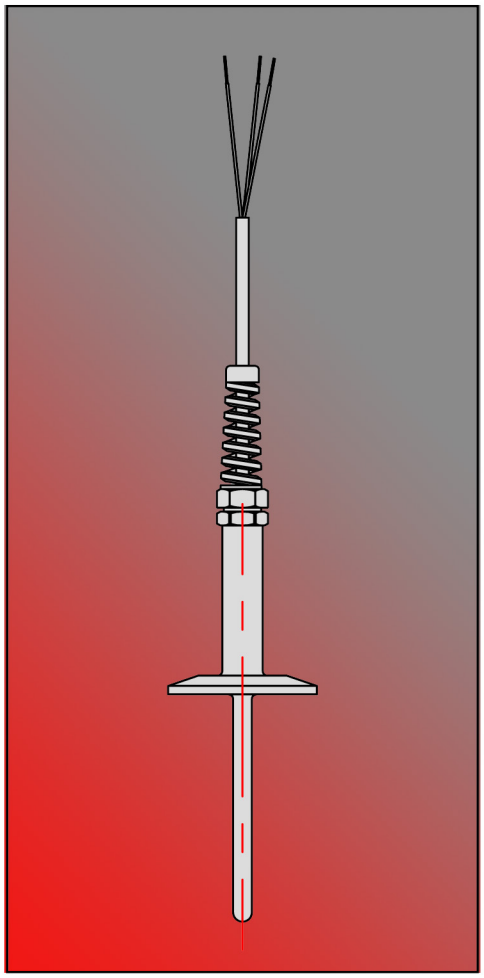
CEPC Thermocouples and RTD's
Thermo Electric offers a complete line of direct immersion and indirect mount thermocouples and RTD's with any calibration and configuration. All of our CEPC sensors conform to the 3-A Sanitary Standards commonly used in pasteurization and sterilization systems. We offer RA finishes (No.4) and Electropolish as required. Assemblies may be designed for CIP (Clean In Place) requirements and utilize sanitary cap manufactured by Tri-Clover, Cherry-Burrell, Alfa-Laval or Alloy Products Corporation.

Custom Design
Thermo Electric has a long history of creating custom design solutions for unique applications. All of our standard sanitary sensors are made to order so that unique components such as special fittings, connectors, materials and sizes can be incorporated into the design of the assembly.

Certification and Documentation
We offer a complete line of certification and documentation for surface finishes, calibration services and material traceability as well as any customer-specific requirements of testing documentation or tagging and labeling.

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S

RTD'S and Thermocouples with Teflon Lead Wire
RTD'S and Thermocouples with Connection Heads
RTD'S and Thermocouples with Reduce Tip Thermowells

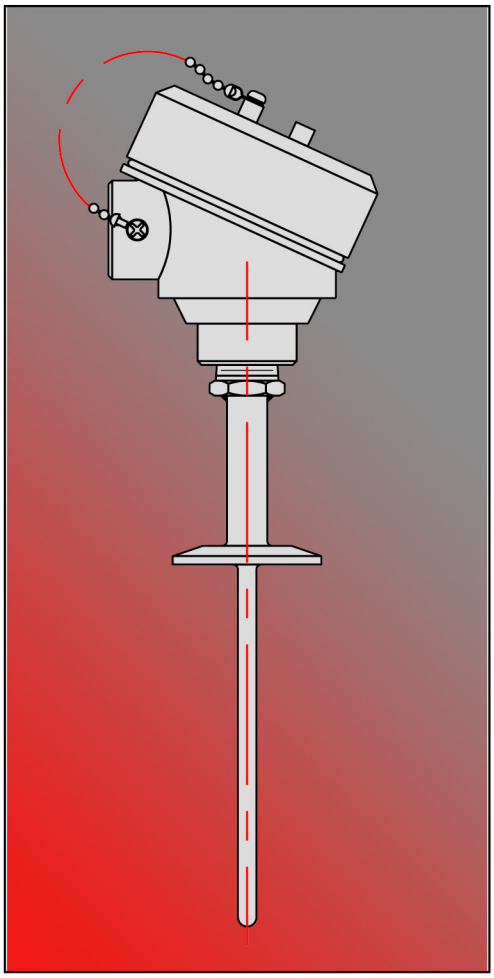


CEPC RTD's and Thermocouples with Teflon Lead Wire

Process Connection - CIP caps or bevel seats
Calibration - 100 OHM platinum RTD or any Base Metal Thermocouple
Probe Diameter - .25"
Lead Wire - Teflon
Instrument Connection - quick-coupling connector, XLR connector or bare ends

One of the more commonly used types in the sanitary industry this probe can be supplied in any immersion length and a number of different mating connections. The element conductors terminate inside an epoxy sealed transition housing to TEFLON insulated and jacketed stranded lead wires. The nylon cord grip provides additional strain relief.

RTD's with Cap
See Document TE-CO010109-CEPC-010
RTD's with Bevel Seat
See Document TE-CO010109-CEPC-050
Thermocouples with Cap
See Document TE-CO010109-CEPC-120
Thermocouples with Bevel Seat
See Document TE-CO010109-CEPC-160

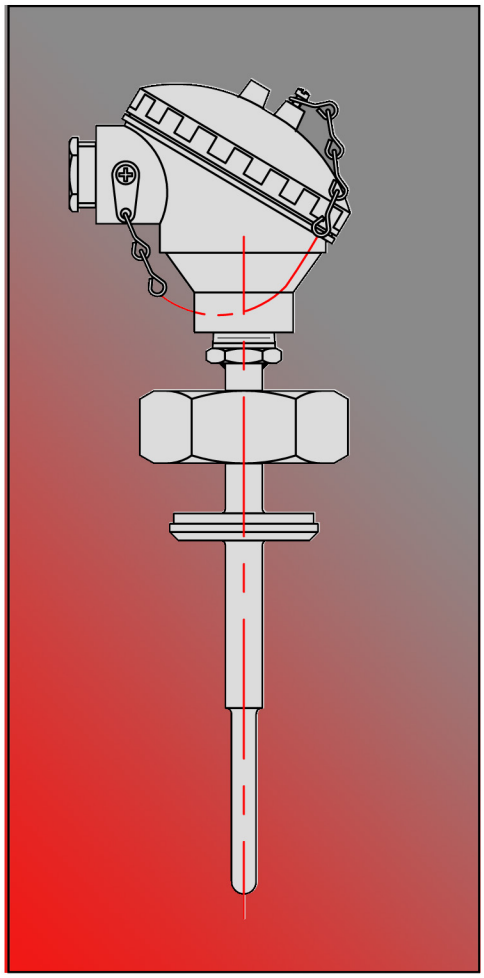


CEPC RTD's and Thermocouples with Connection Head

Process Connection - CIP caps or bevel seats
Calibration - 100 OHM platinum RTD or any Base Metal Thermocouple
Probe Diameter - .25"
Connection Head - White Polypropylene, Aluminum, or Stainless Steel

Termination to an FDA approved polypropylene, NEMA-4 aluminum or NEMA-4X stainless steel connection head this construction provides for additional protection in a more industrial environment. Heads are equipped with a screw cover cap with captive stainless steel chain to prevent loss. Brass terminal posts on a ceramic base provides simple wiring to the control panel via the conduit opening

RTD's with Cap
See Document TE-CO010109-CEPC-020
RTD's with Bevel Seat
See Document TE-CO010109-CEPC-060
Thermocouples with Cap
See Document TE-CO010109-CEPC-130
Thermocouples with Bevel Seat
See Document TE-CO010109-CEPC-170



CEPC RTD's and Thermocouples with Connection Head & Thermowell

Process Connection - CIP caps or bevel seats
Calibration - 100 OHM platinum RTD or any Base Metal Thermocouple
Probe Diameter - .25"
Well - Reduce Tip
Connection Head - White Polypropylene, Aluminum, or Stainless Steel

Complete with connection head, sensor and reduce tip type well for faster response time this type of construction provides additional protection in a more industrial location. The sensor is terminated with a DIN style spring loaded integral terminal block allowing convenient removal for inspection or replacement.

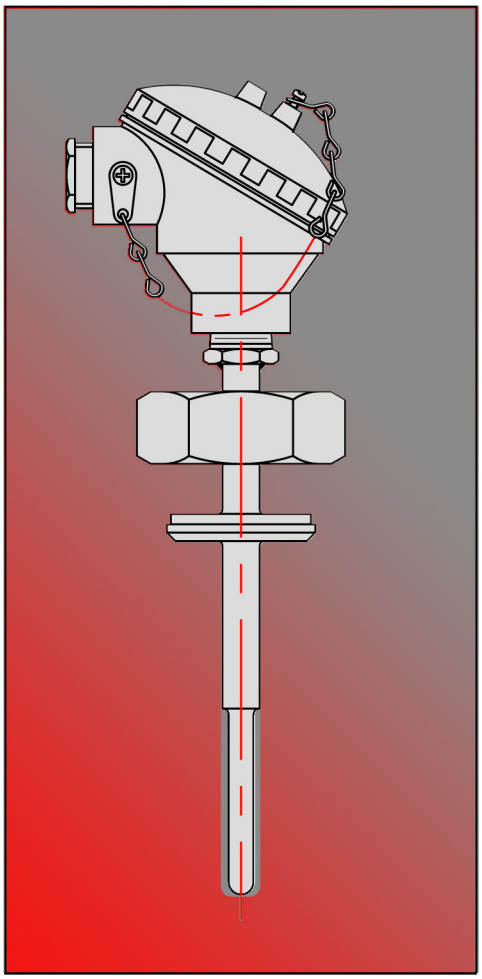
RTD's with Cap
See Document TE-CO010109-CEPC-030
RTD's with Bevel Seat
See Document TE-CO010109-CEPC-070
Thermocouples with Cap
See Document TE-CO010109-CEPC-140
Thermocouples with Bevel Seat
See Document TE-CO010109-CEPC-180

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S

RTD'S and Thermocouples with Straight Shank Wells

Building Management Systems Replacement RTD's and Thermocouples

L.I.S.T II Linear Integrated Sensor Transmitter with CIP and Lead Wire

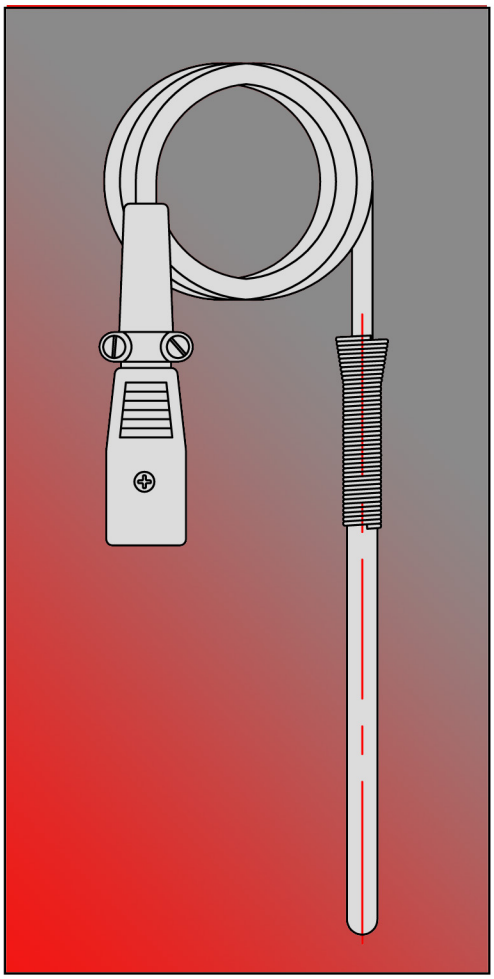


CEPC RTD's and Thermocouples with Connection Head & Thermowell

Process Connection - CIP caps or bevel seats
Calibration - 100 OHM platinum RTD or any base metal thermocouple
Probe Diameter - .25"
Well - Straight Shank
Connection Head - White Polypropylene, Aluminum, or Stainless Steel

Complete with connection head, sensor and well this type of construction provides additional protection in a more industrial location. The sensor is terminated with DIN style spring loaded integral terminal block for convenient removal for inspection or replacement.

RTD's with Cap
See Document TE-CO010109-CEPC-040
RTD's with Bevel Seat
See Document TE-CO010109-CEPC-080
Thermocouples with Cap
See Document TE-CO010109-CEPC150
Thermocouples with Bevel Seat
See Document TE-CO010109-CEPC-190

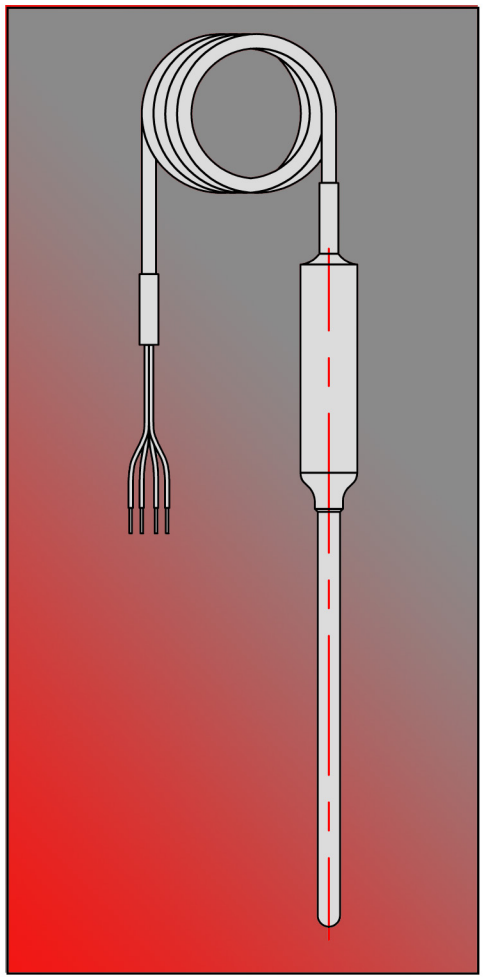


Building Management System Replacement RTD's and Thermocouples

Process Connection - Direct Immersion
Calibration - 100 OHM platinum RTD or any Base Metal Thermocouple
Probe Diameter - .125",.187" or .25"
Lead Wire - Teflon

Ideal for monitoring cooling and heating systems in buildings. These easy to install probes can be fabricated to any desired immersion and lead length. Optional bell spring provides strain relief when pulling wires through conduit. Leads are terminated to skin ends or a choice of connectors.

RTD's
See Document TE-CO010109-CEPC-090
Thermocouples
See Document TE-CO010109-CEPC-200



L.I.S.T II Linear Integrated Sensor Transmitter with Teflon Lead Wire FIELD PROGRAMMABLE

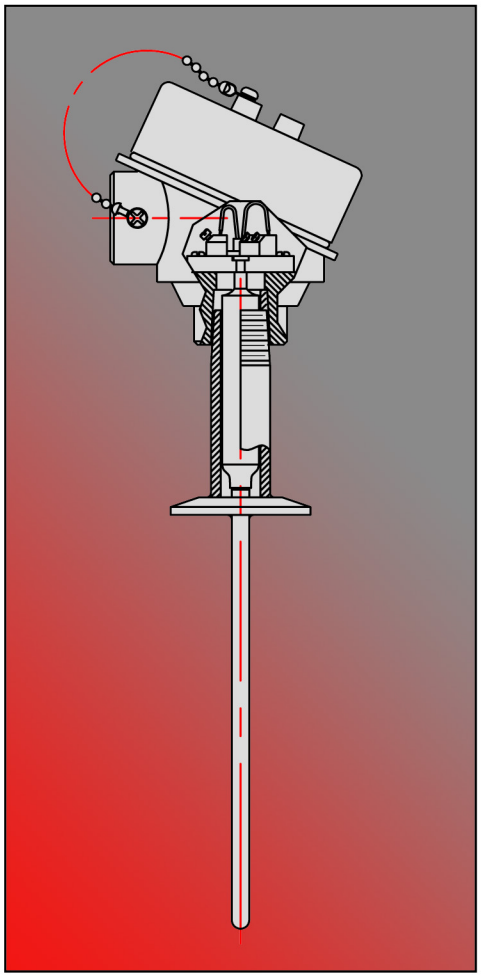
Process Connection - Direct Immersion
Calibration - 100 OHM platinum RTD, with 4 To 20mA Output
Probe Diameter - .187" or .25"
Lead Wire - Teflon

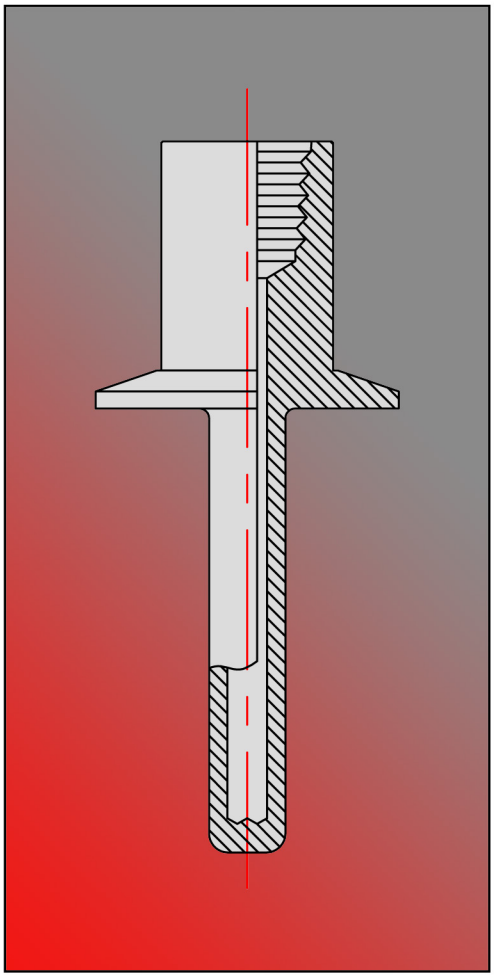
The L.I.S.T II transmitter combines the stability and accuracy of an RTD with the benefits of an integral 4 to 20 mA signal condition device. This device can be installed directly into the process or existing thermowell and secured with standard compression fittings. Completely self contained the lead wire can be ordered in any length to provide output signal and voltage power source from the control panel.

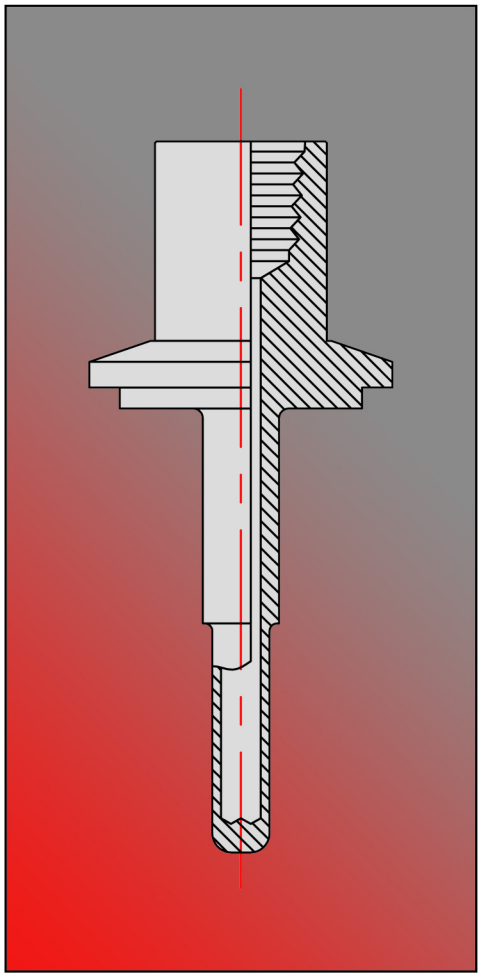
See Document TE-CO010109-CEPC-090

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S

L.I.S.T II Linear Integrated Sensor Transmitter with CIP and Connection Head
CIP Thermowells with 16AMP Clamp Connection
CIP Thermowells with 16AI-141 & 16AQ-14 Clamp Connection







L.I.S.T II Linear Integrated Sensor Transmitter with CIP and Connection Head FIELD PROGRAMMABLE

Process Connection - CIP Tri-Clamp Cap
Calibration - 100 OHM platinum RTD, with 4 To 20mA Output
Probe Diameter - .187" or .25"
Connection Head - White Polypropylene, Aluminum, or Stainless Steel

The L.I.S.T II transmitter combines the stability and accuracy of an RTD with the benefits of an integral 4 to 20 mA signal condition device. Termination to an FDA approved polypropylene, NEMA-4 aluminum or NEMA-4X stainless steel connection head this construction provides for additional protection in a more industrial environment The transmitter is safely contained in the nipple housing. Heads are equipped with a screw cover cap with captive stainless steel chain to prevent loss. Terminal block provides wiring for output signal and voltage power source.

See Document TE-CO010109-CEPC-110

CIP Thermowells 16AMP Clamp Connection

Process Connection - 16AMP Clamp
Size - 1/2" to 3"
Material - 316/316 Low Carbon Stainless Steel
Profile - Straight or Step Down

Bored through solid bar stock well connects to matching line size with clamp for a clean-in-place seal. The 1/2"NPT threaded opening allows for insertion of element with mating compression fitting or nipple extension. The step down tip allows for faster sensor response time.

See Document TE-CO010109-CEPC-210

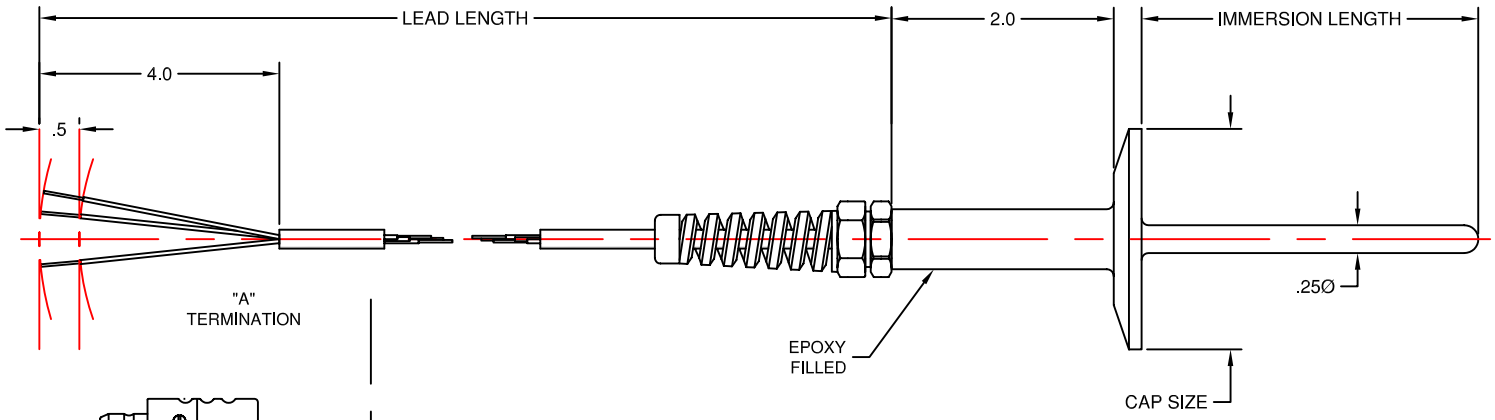
CIP Thermowells 16A1-141 & 16AQ-14 Clamp Connection

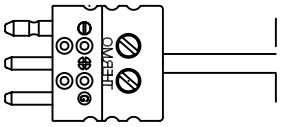
Process Connection - 16A1-141 & 16AQ-14 Clamp
Size - 1/2" to 3"
Material - 316/316 Low Carbon Stainless Steel
Profile - Straight or Step Down

Bored through solid bar stock well connects to matching line size with clamp for a clean-in-place seal. The 1/2"NPT threaded opening allows for insertion of element with mating compression fitting or nipple extension. The step down tip allows for faster sensor response time.

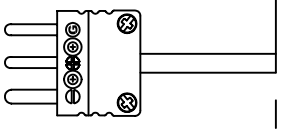
See Document TE-CO010109-CEPC-220

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S

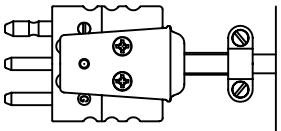




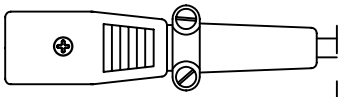
"T"
TERMINATION



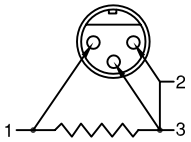
"H3"
TERMINATION



"T3"
TERMINATION



"XLR"
TERMINATION



WIRING DIAGRAM
FOR "XLR" TERMINATION
Mates with ITT Cannon®
XLR-3-11C Receptacle

D — CEPCCP — 5L — TRI-.75 — 2.5 — 36 — XLR — CLA

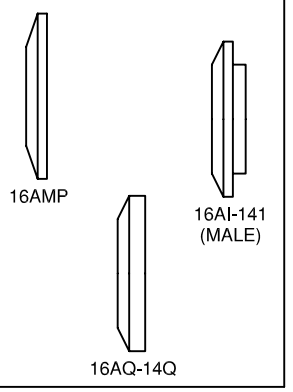
CODE	ACCURACY (ASTM E1137)
	CLASS B (LEAVE BLANK)
CLA	CLASS A

CODE	TERMINATION
A	BARE ENDS
T	THREE PIN PLUG
H3	MINIATURE THREE PIN PLUG
T3	DUPLEX THREE PIN PLUG
XLR	AUDIO "XLR" PLUG (SINGLE ONLY)

CODE	LEAD LENGTH
	(IN INCHES)

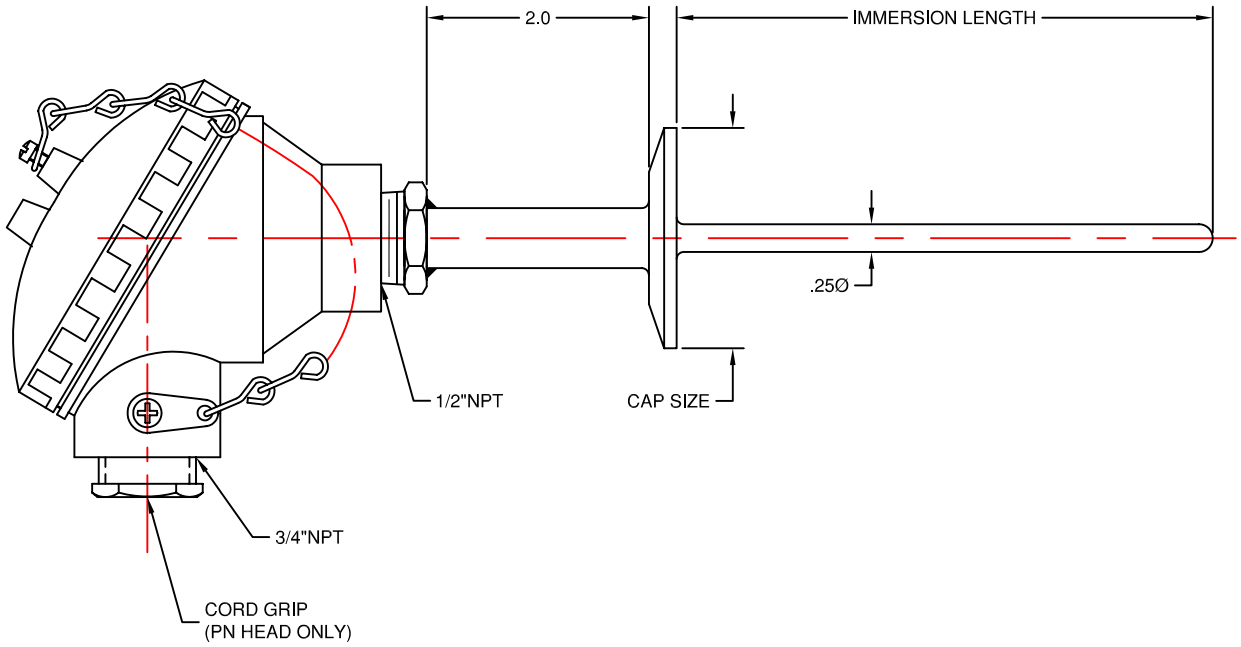
CODE	IMMERSION LENGTH
	(IN INCHES)

CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	



CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.
- Strain Relief Cord Grip: Nylon
- Lead Wire:
  - Conductor Size: 24 Gauge Stranded
  - Conductor Material: Nickel Clad Copper
  - Insulation: Teflon(FEP), Red/Red/White
  - Jacket: Teflon(FEP), White
- Pin Connectors
  - Body Material: Glass Filled Thermoplastic
  - Polarized Pins
  - Spring Loaded Inserts
  - Maximum Temperature Limit: 390°F (200°C)
- XLR Connectors
  - Shell Material: Aluminum Alloy
  - Contact Material: Copper Alloy
  - Type: Audio, keyed
  - Maximum Temperature Limit: 257°F (125°C)



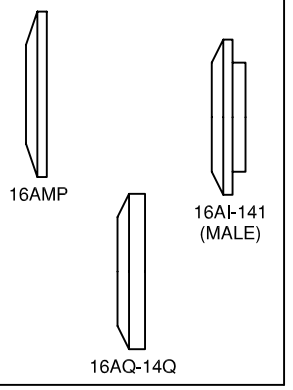
D — CEPCCP — HD — TRI-.75 — PN — 3.5 — CLA

CODE	ACCURACY
	ASTM E1137 CLASS B (LEAVE BLANK)
CLA	ASTM E1137 CLASS A

CODE	IMMERSION LENGTH
	(IN INCHES)

CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

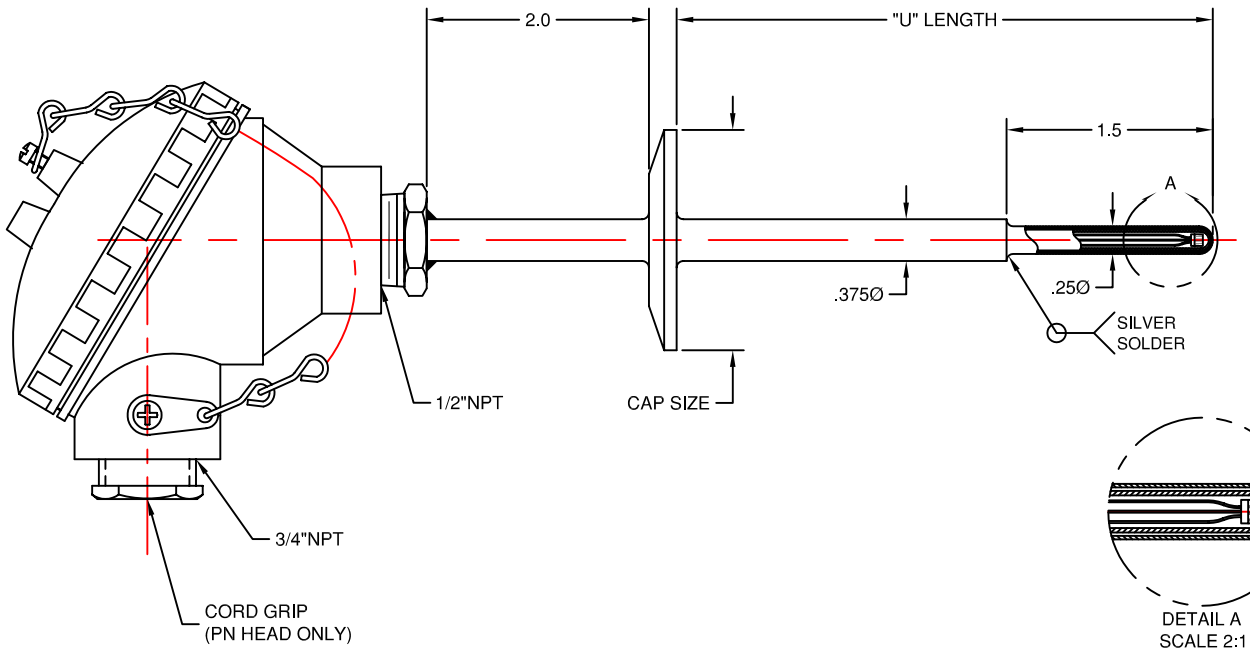
CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	

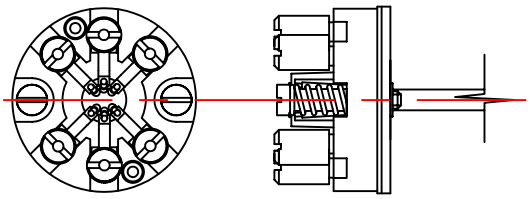


CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.

RTD Element
- Type: Platinum, 3-Wire
- Resistance @ 0° C: 100 OHMS
- Temperature Coefficient to Resistance: .00385
- Termination: Terminal Block





TERMINAL BLOCK

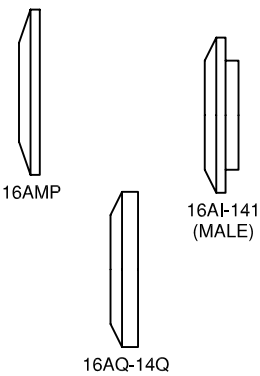
D — CEPCCP — RW — TRI-.75 — PN — 3.5 — CLA

CODE	ACCURACY
	ASTM E1137 CLASS B (LEAVE BLANK)
CLA	ASTM E1137 CLASS A

CODE	"U" LENGTH (2" MIN.)
	(IN INCHES)

CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

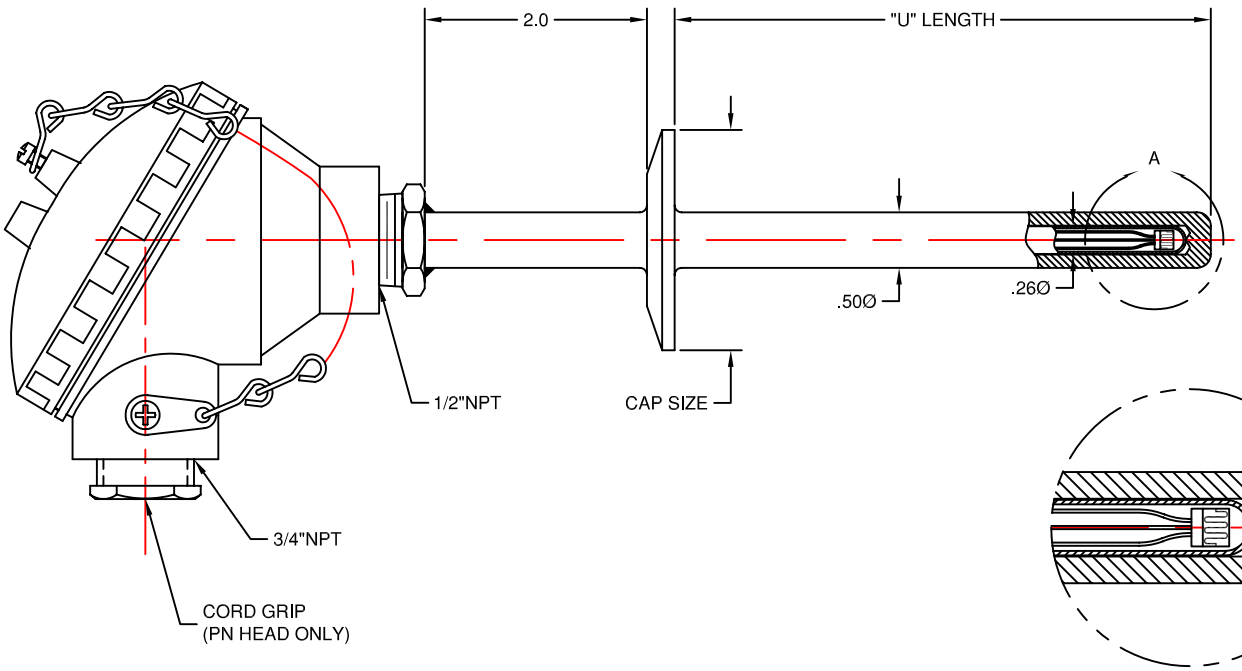
CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	

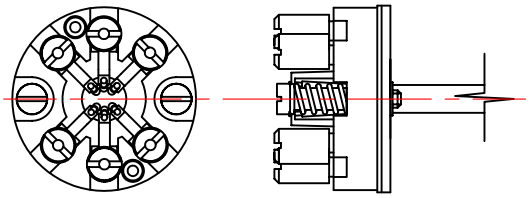


CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.

RTD Element (Removable)
- Type: Platinum, 3-Wire
- Resistance @ 0° C: 100 OHMS
- Temperature Coefficient to Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 3/16"
- Termination: Spring Loaded DIN Style Block





TERMINAL BLOCK

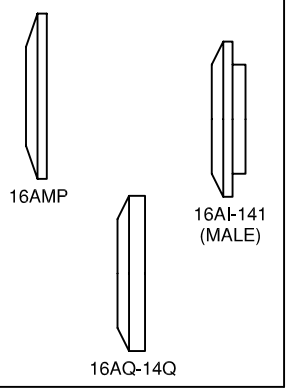
D	—	CEPCCP	—	SW	—	TRI-.75	—	PN	—	3.5	—	CLA

CODE	ACCURACY
	ASTM E1137 CLASS B (LEAVE BLANK)
CLA	ASTM E1137 CLASS A

CODE	"U" LENGTH
	(IN INCHES)

CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

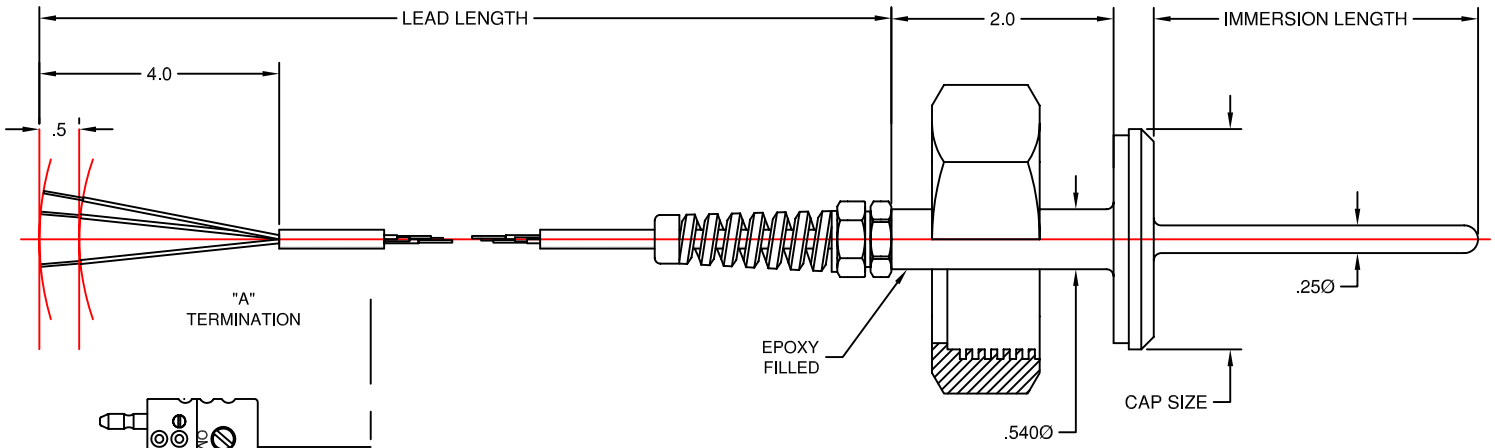
CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	

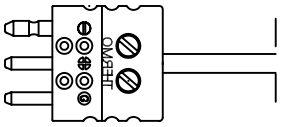


CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

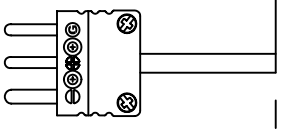
SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.

RTD Element (Removable)
- Type: Platinum, 3-Wire
- Resistance @ 0° C: 100 OHMS
- Temperature Coefficient to Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 1/4"
- Termination: Spring Loaded DIN Style Block

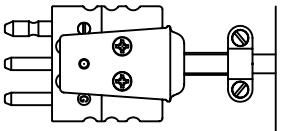




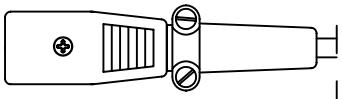
"T"
TERMINATION



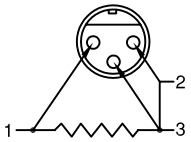
"H3"
TERMINATION



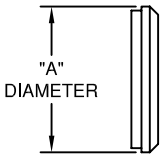
"T3"
TERMINATION

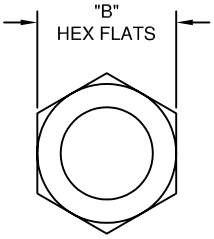


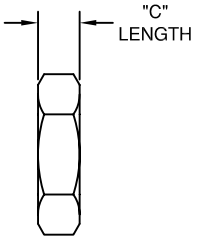
"XLR"
TERMINATION



WIRING DIAGRAM
FOR "XLR" TERMINATION
Mates with ITT Cannon®
XLR-3-11C Receptacle







D — CEPCBS — 5L — BSF-.75 — 2.5 — 36 — XLR — CLA

CODE	ACCURACY (ASTM E1137)
	CLASS B (LEAVE BLANK)
CLA	CLASS A

CODE	TERMINATION
A	BARE ENDS
T	THREE PIN PLUG
H3	MINIATURE THREE PIN PLUG
T3	DUPLEX THREE PIN PLUG
XLR	AUDIO "XLR" PLUG (SINGLE ONLY)

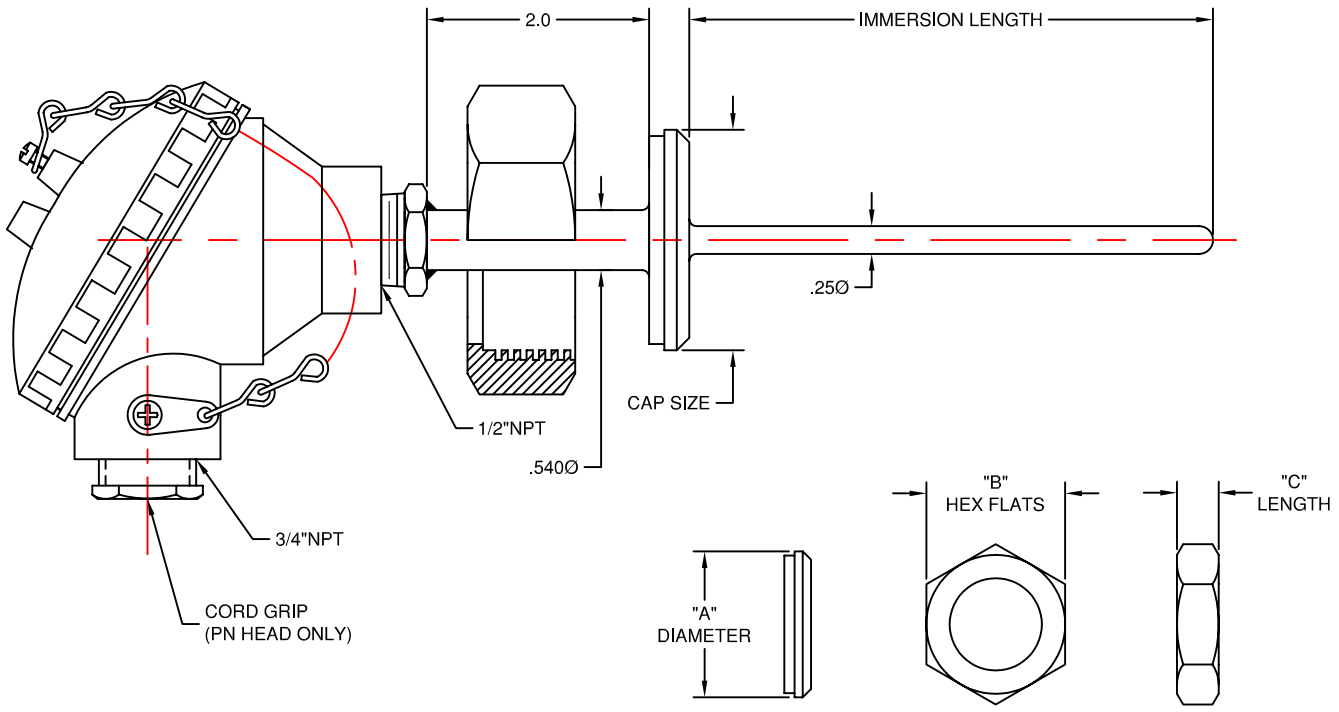
CODE	LEAD LENGTH
	(IN INCHES)

CODE	IMMERSION LENGTH
	(IN INCHES)

CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"

CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.
- Strain Relief Cord Grip: Nylon
- Lead Wire:
  - Conductor Size: 24 Gauge Stranded
  - Conductor Material: Nickel Clad Copper
  - Insulation: Teflon(FEP), Red/Red/White
  - Jacket: Teflon(FEP), White
- Pin Connectors
  - Body Material: Glass Filled Thermoplastic
  - Polarized Pins
  - Spring Loaded Inserts
  - Maximum Temperature Limit: 390°F (200°C)
- XLR Connectors
  - Shell Material: Aluminum Alloy
  - Contact Material: Copper Alloy
  - Type: Audio, keyed
  - Maximum Temperature Limit: 257°F (125°C)



D — CEPCBS — HD — BSF-1.5 — PN — 3.5 — CLA

CODE	ACCURACY
	ASTM E1137 CLASS B (LEAVE BLANK)
CLA	ASTM E1137 CLASS A

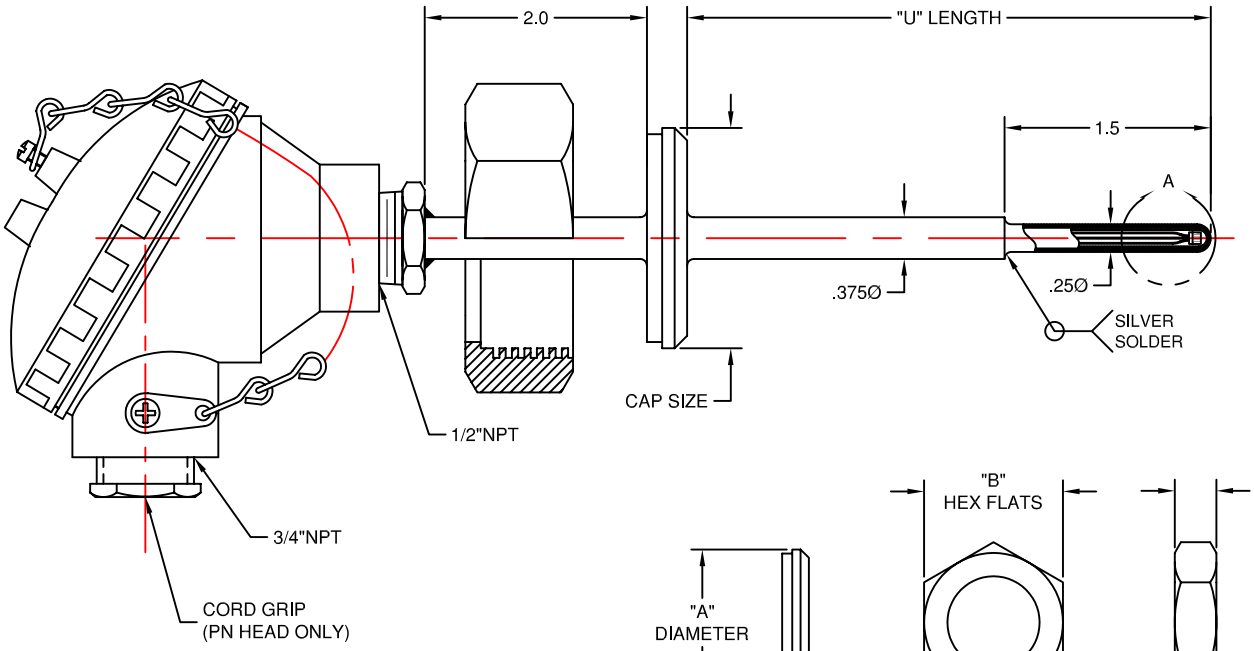
CODE	IMMERSION LENGTH
	(IN INCHES)

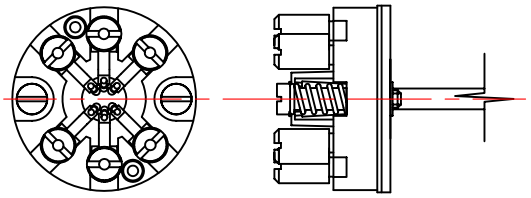
CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"

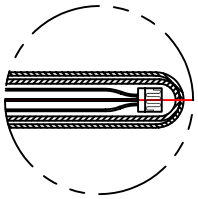
CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

SPECIFICATIONS
Material: 316/316L Stainless Steel
Finish: #4, Ra of 32 µin Max.
Cap Compliance: 3-A Sanitary Standard
Temperature Range: -58 to +500° F.
RTD Element
Type: Platinum, 3-Wire
Resistance @ 0° C: 100 OHMS
Temperature Coefficient to Resistance: .00385
Termination: Terminal Block





TERMINAL BLOCK



DETAIL A
SCALE 2:1

D — CEPCBS — RW — BSF-1.5 — PN — 3.5 — CLA

CODE	ACCURACY
	ASTM E1137 CLASS B (LEAVE BLANK)
CLA	ASTM E1137 CLASS A

CODE	"U" LENGTH (2" MIN.)
	(IN INCHES)

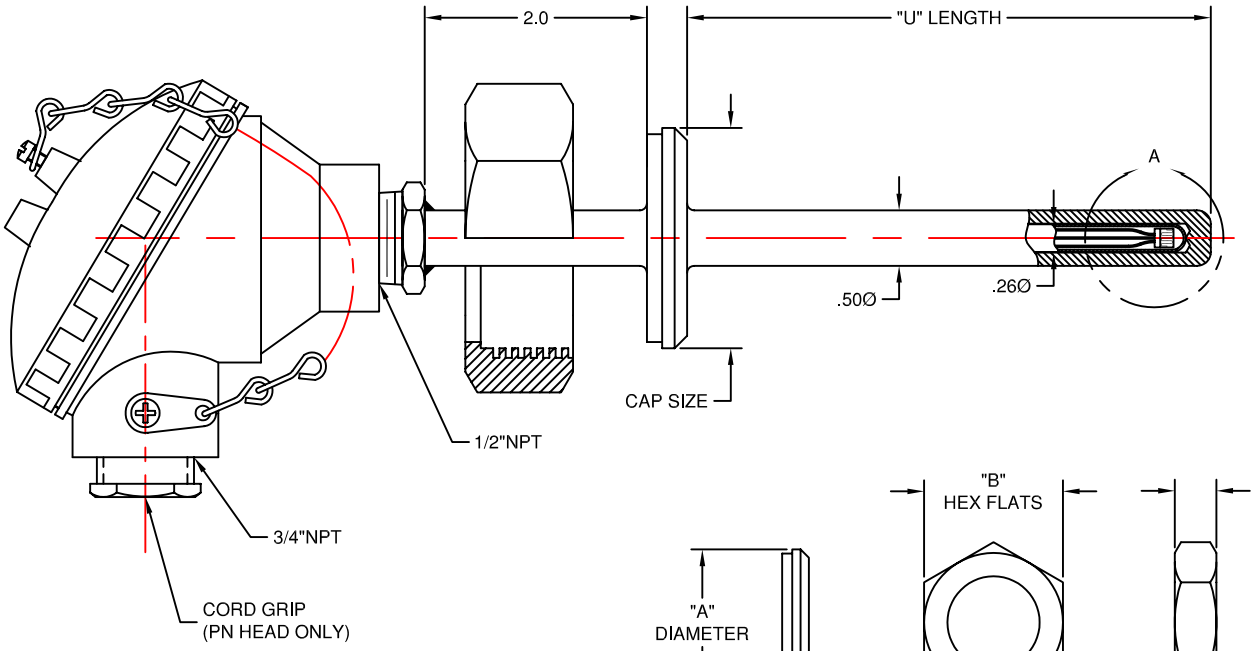
CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

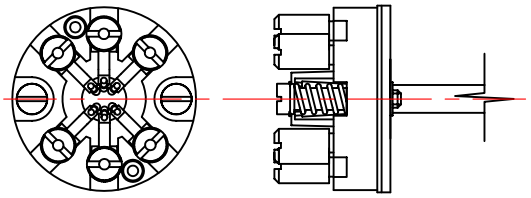
CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"

CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

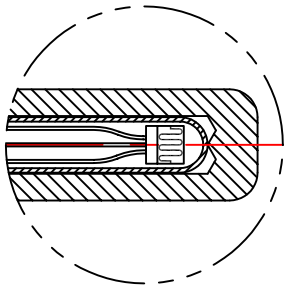
SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.

RTD Element
- Type: Platinum, 3-Wire
- Resistance @ 0° C: 100 OHMS
- Temperature Coefficient to Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 3/16"
- Termination: Spring Loaded DIN Style Block





TERMINAL BLOCK



DETAIL A
SCALE 2:1

D — CEPCBS — SW — BSF-2 — PN — 3.5 — CLA

CODE	ACCURACY
	ASTM E1137 CLASS B (LEAVE BLANK)
CLA	ASTM E1137 CLASS A

CODE	"U" LENGTH
	(IN INCHES)

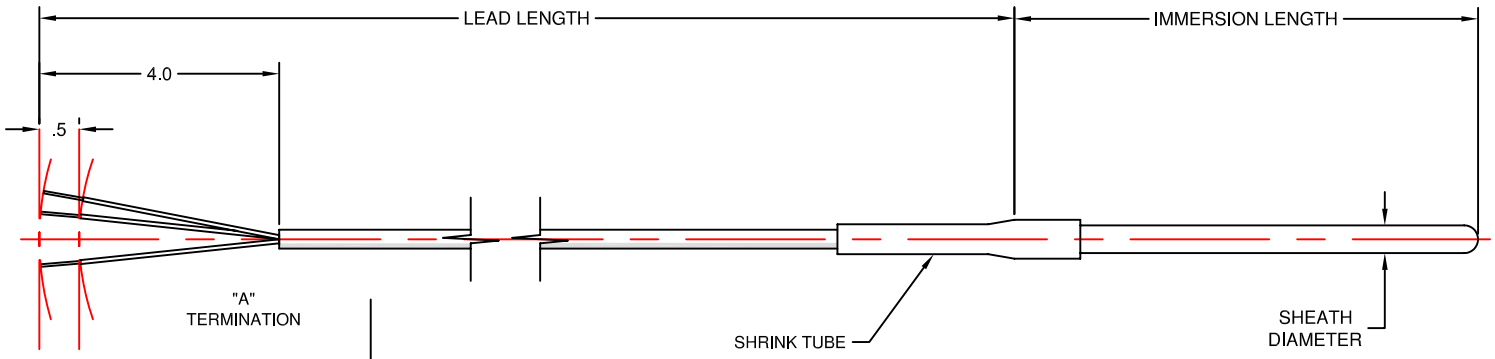
CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

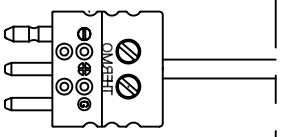
CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"

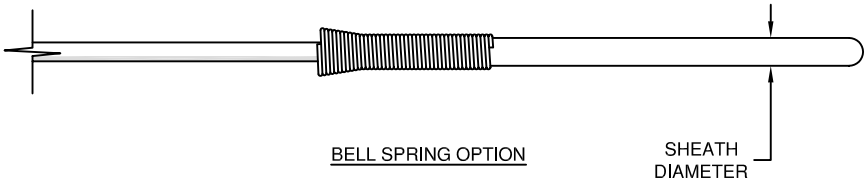
CODE	STRUCTURE
	SINGLE, 3 WIRE, PLATINUM, 100 OHMS @ 0° C., .00385 TCR (LEAVE BLANK)
D	DUPLEX, 3 WIRE (6 TOTAL), PLATINUM, 100 OHMS @ 0° C., .00385 TCR

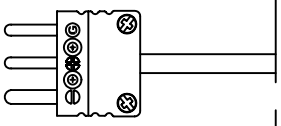
SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.

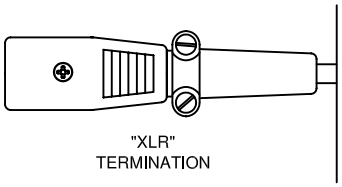
RTD Element (Removable)
- Type: Platinum, 3-Wire
- Resistance @ 0° C: 100 OHMS
- Temperature Coefficient to Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 1/4"
- Termination: Spring Loaded DIN Style Block

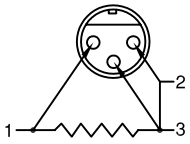












WIRING DIAGRAM
FOR "XLR" TERMINATION
Mates with ITT Cannon®
XLR-3-11C Receptacle

SPECIFICATIONS
- Sheath Material: 316/316L Stainless Steel
- Sheath Finish: #4, Ra of 32 min Max.
- Temperature Range: -58 to +500° F.
- RTD Type
  - Structure: Single, 3 Wire
  - Material: Platinum
  - Resistance at 0° C.: 100 OHMS
  - Temperature Coefficient of Resistance(TCR): .00385
- Lead Wire:
  - Conductor Size: 24 Gauge Stranded
  - Conductor Material: Nickel Clad Copper
  - Insulation: Teflon(FEP), Red/Red/White
  - Jacket: Teflon(FEP), White
- Pin Connectors
  - Body Material: Glass Filled Thermoplastic
  - Polarized Pins
  - Spring Loaded Inserts
  - Single Captive Cover Screw
  - Maximum Temperature Limit: 390°F (200°C)
- XLR Connectors
  - Shell Material: Aluminum Alloy
  - Contact Material: Copper Alloy
  - Type: Audio, keyed
  - Maximum Temperature Limit: 257°F (125°C)

CEPCDM — 14 — 4 — 36 — XLR — CLA — BS

CODE	OPTION (1/4" DIA. ONLY)
BS	BELL SPRING OPTION

CODE	ACCURACY (ASTM E1137)
	CLASS B (LEAVE BLANK)
CLA	CLASS A

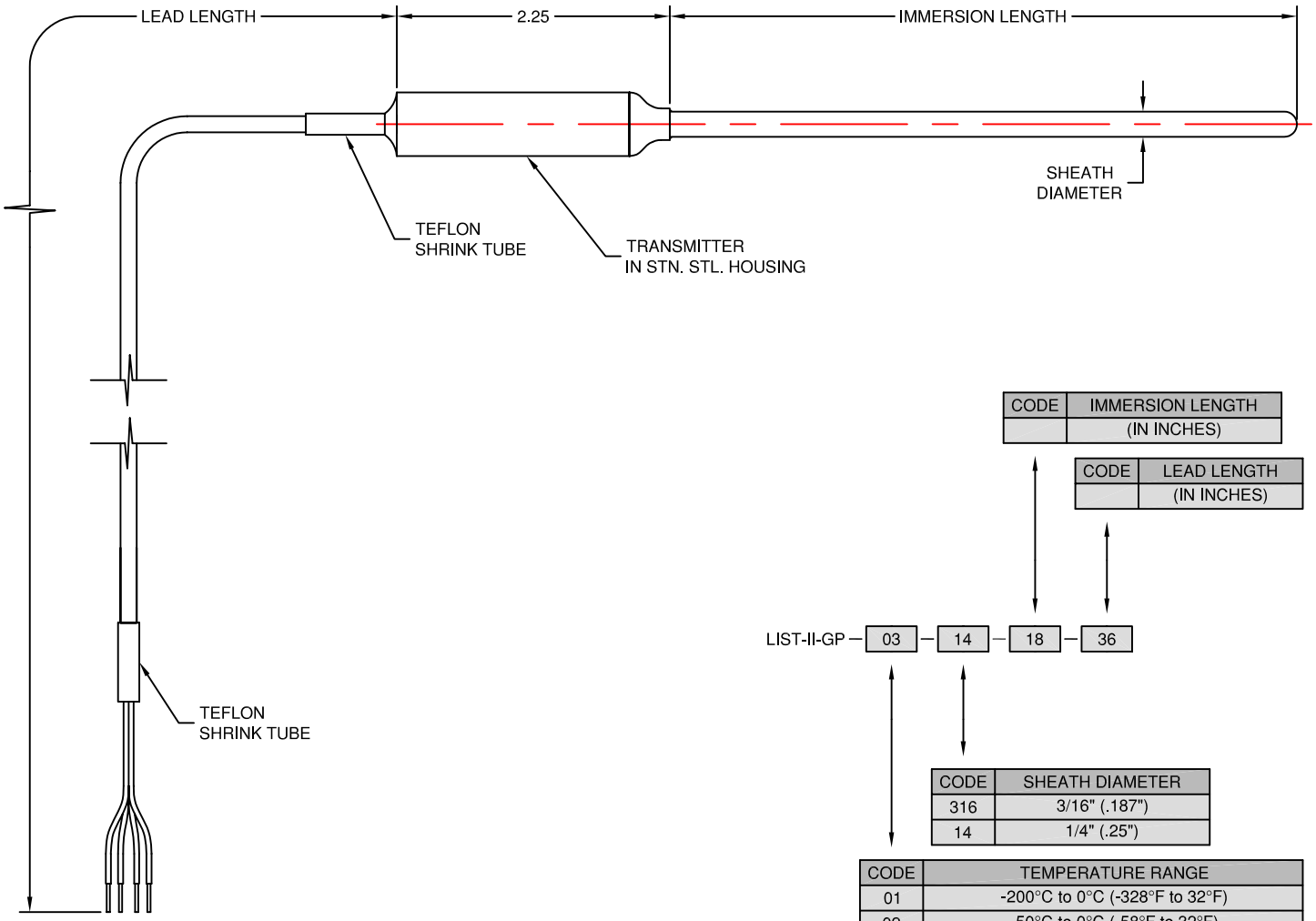
CODE	TERMINATION
A	BARE ENDS
T	THREE PIN PLUG
H3	MINIATURE THREE PIN PLUG
XLR	AUDIO "XLR" PLUG

CODE	LEAD LENGTH (IN INCHES)

CODE	IMMERSION LENGTH (IN INCHES)

CODE	SHEATH DIAMETER
18	1/8" (.125")
316	3/16" (.187")
14	1/4" (.25")

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S



CODE	IMMERSION LENGTH (IN INCHES)

CODE	LEAD LENGTH (IN INCHES)

LIST-II-GP — 03 — 14 — 18 — 36

CODE	SHEATH DIAMETER
316	3/16" (.187")
14	1/4" (.25")

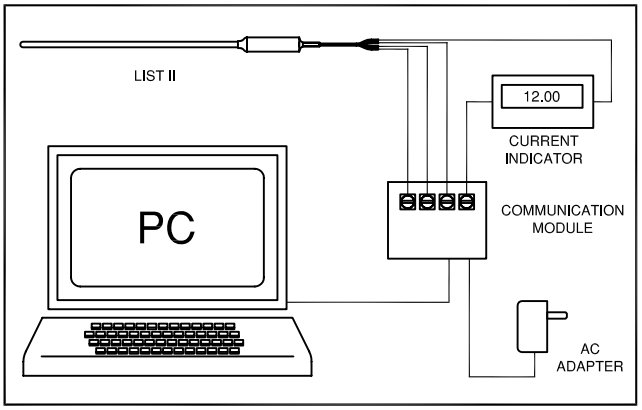
CODE	TEMPERATURE RANGE
01	-200°C to 0°C (-328°F to 32°F)
02	-50°C to 0°C (-58°F to 32°F)
03	-50°C to 50°C (-55°F to 122°F)
04	0°C to 50°C (-32°F to 122°F)
05	0°C to 100°C (-32°F to 212°F)
06	0°C to 150°C (-32°F to 302°F)
07	0°C to 200°C (-32°F to 392°F)
00	NO RANGE (FOR FIELD PROGRAMMING)

SPECIFICATIONS

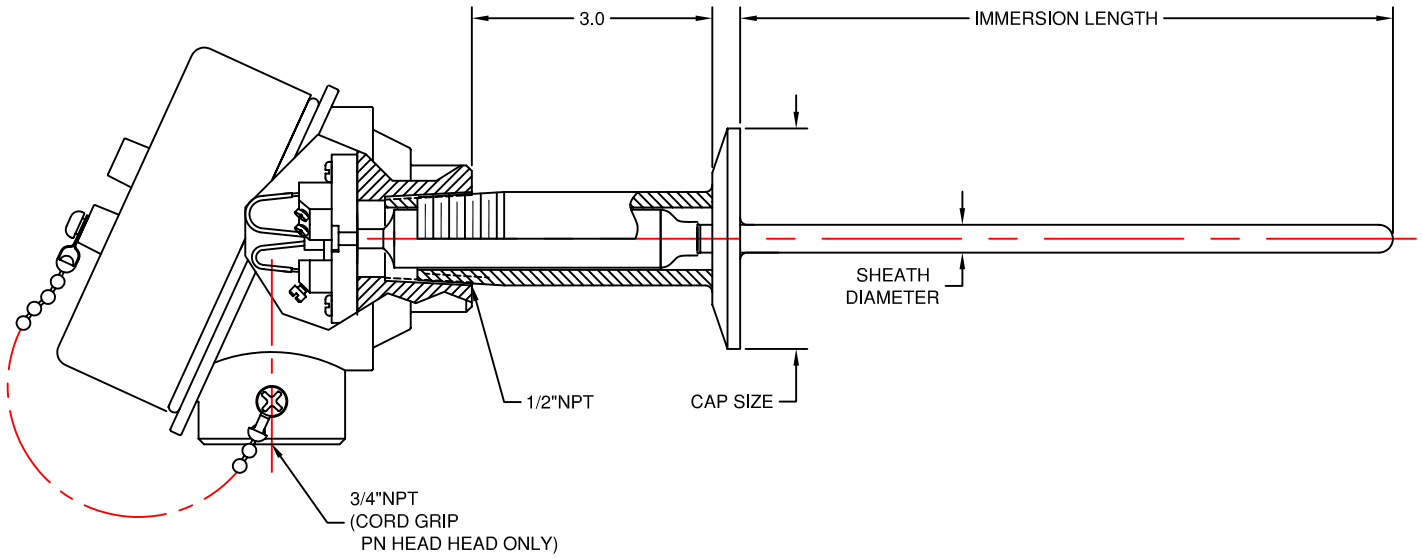
RTD Type
- Structure: Single
- Material: Platinum
- Resistance at 0° C.: 100 OHMS
- Temperature Coefficient of Resistance(TCR): .00385
- Sheath Material: 316 Stainless Steel
- Temperature Range: -58 to +500° F.

Lead Wire:
- Conductor Size: 24 Gauge Stranded
- Conductor Material: Copper
- Insulation: Teflon(FEP)
- Jacket: Teflon(FEP)

Transmitter
- Output: 4 to 20 mA, Linear to Temperature Range
- Accuracy: 0.25°C + 0.42% of Temperature Reading or Better
- Power Supply: 9-48VDC Polarity Protected
- Maximum Loop Resistance: (Vsupply - 7) x 40 OHM's
- Supply Voltage Effect: ≤±0.02% FS/°C
- Temperature Effects: ≤±0.01% FS/°C
- Ambient Operating Temperature: -40°C to 80°C (-40°F to 176°F)
- Maximum Loop Current: 24mA
- Response Time (10% to 90%): 3 Seconds
- Long Term Stability (Transmitter under Power): ≤0.1% FS after 5,000 Hrs. at 400°C

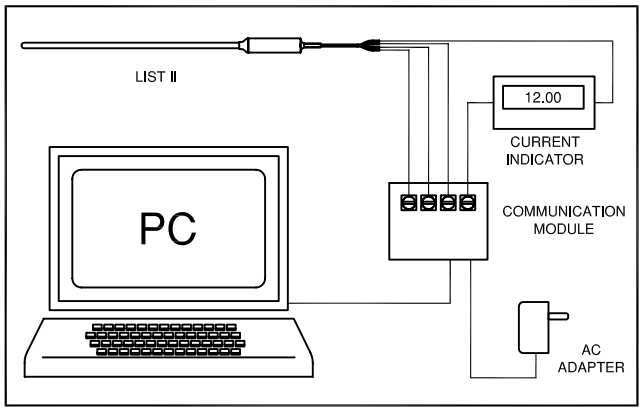


OPTIONAL LIST-II-CAL FIELD PROGRAMMABLE CONFIGURATION KIT



SPECIFICATIONS
RTD Type
- Structure: Single
- Material: Platinum
- Resistance at 0° C.: 100 OHMS
- Temperature Coefficient of Resistance(TCR): .00385
- Sheath Material: 316 Stainless Steel
- Temperature Range: -58 to +500° F.

Cap Material: 316/316L Stn. Stl.
Cap Compliance: 3-A Sanitary Standard
Finish: #4, Ra of 32 µin Max.
Nipple Extension Material: 316 Stn. Stl.
Transmitter
- Output: 4 to 20 mA, Linear to Temperature Range
- Accuracy: 0.25°C + 0.42% of Temperature Reading or Better
- Power Supply: 9-48VDC Polarity Protected
- Maximum Loop Resistance: (Vsupply - 7) x 40 OHM's
- Supply Voltage Effect: ≤ ±0.02% FS/°C
- Temperature Effects: ≤ ±0.01% FS/°C
- Ambient Operating Temperature: -40°C to 80°C (-40°F to 176°F)
- Maximum Loop Current: 24mA
- Response Time (10% to 90%): 3 Seconds
- Long Term Stability (Transmitter under Power): ≤0.1% FS after 5,000 Hrs. at 400°C



OPTIONAL LIST-II-CAL FIELD PROGRAMMABLE
CONFIGURATION KIT

CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

CODE	IMMERSION LENGTH (IN INCHES)

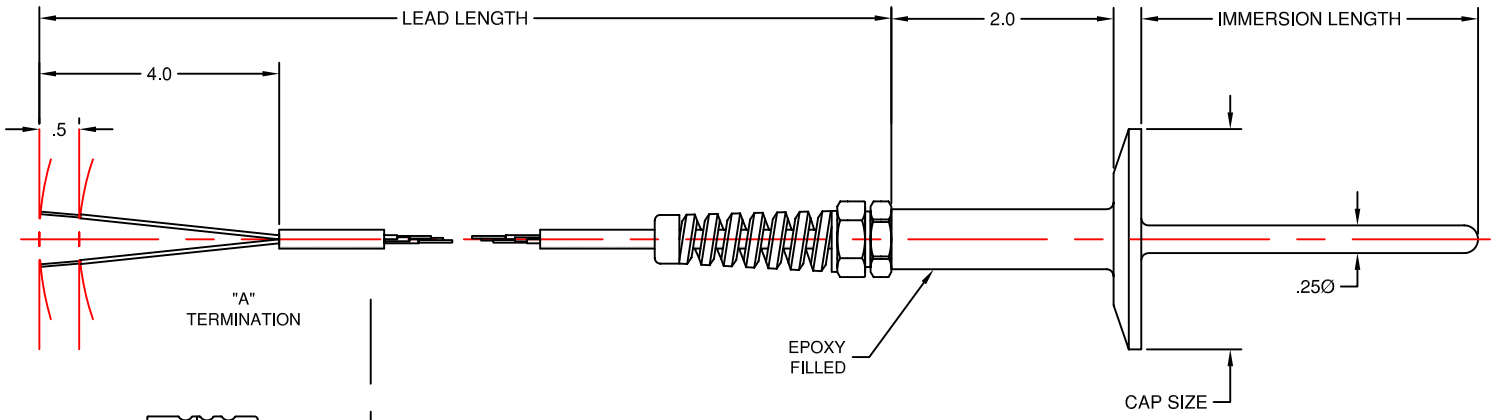
CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	

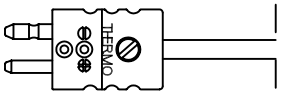
LIST-II-SF — 03 — 14 — TRI-1.5 — 12 — AN

CODE	SHEATH DIAMETER
316	3/16" (.187")
14	1/4" (.25")

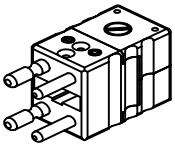
CODE	TEMPERATURE RANGE
01	-200°C to 0°C (-328°F to 32°F)
02	-50°C to 0°C (-58°F to 32°F)
03	-50°C to 50°C (-55°F to 122°F)
04	0°C to 50°C (-32°F to 122°F)
05	0°C to 100°C (-32°F to 212°F)
06	0°C to 150°C (-32°F to 302°F)
07	0°C to 200°C (-32°F to 392°F)
00	NO RANGE (FOR FIELD PROGRAMMING)

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S

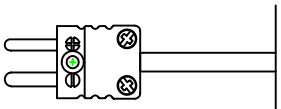




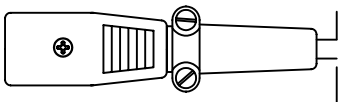
"L"
TERMINATION



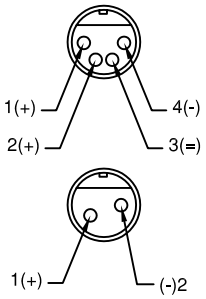
"C"
TERMINATION



"H"
TERMINATION



"XLR"
TERMINATION



WIRING DIAGRAM
FOR "XLR" TERMINATION
Mates with ITT Cannon®
XLR-2-11C Receptacle for Single
or XLR-4-11C for Duplex

CEPCCP—5L— TRI-.75 — 2.5 — 36 — JJ — G — A

CODE	TERMINATION
A	BARE ENDS
L	STANDARD SIZE PLUG
C	STANDARD SIZE DUPLEX PLUG
H	MINIATURE 2 PIN PLUG
XLR	AUDIO "XLR" PLUG

CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

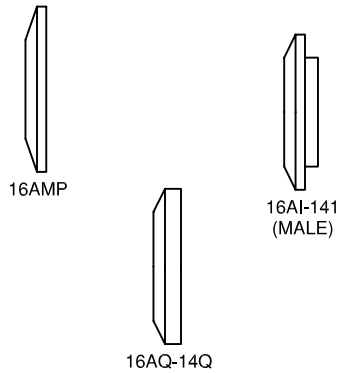
CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

CODE	LEAD LENGTH (IN INCHES)

CODE	IMMERSION LENGTH (IN INCHES)

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.
- Strain Relief Cord Grip: Nylon
- Lead Wire:
  - Conductor Size: 20 Gauge Stranded
  - Conductor Material: Matching TC Alloy
  - Insulation & Jacket Material: Teflon(FEP)
- Pin Connectors
  - Body Material: Glass Filled Thermoplastic
  - Pin Material: Matching TC Alloy
  - Polarized Pins
  - Spring Loaded Inserts
  - Maximum Temperature Limit: 390°F (200°C)
- XLR Connectors
  - Shell Material: Aluminum Alloy
  - Contact Material: Copper Alloy
  - Type: Audio, keyed
  - Maximum Temperature Limit: 257°F (125°C)

CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	



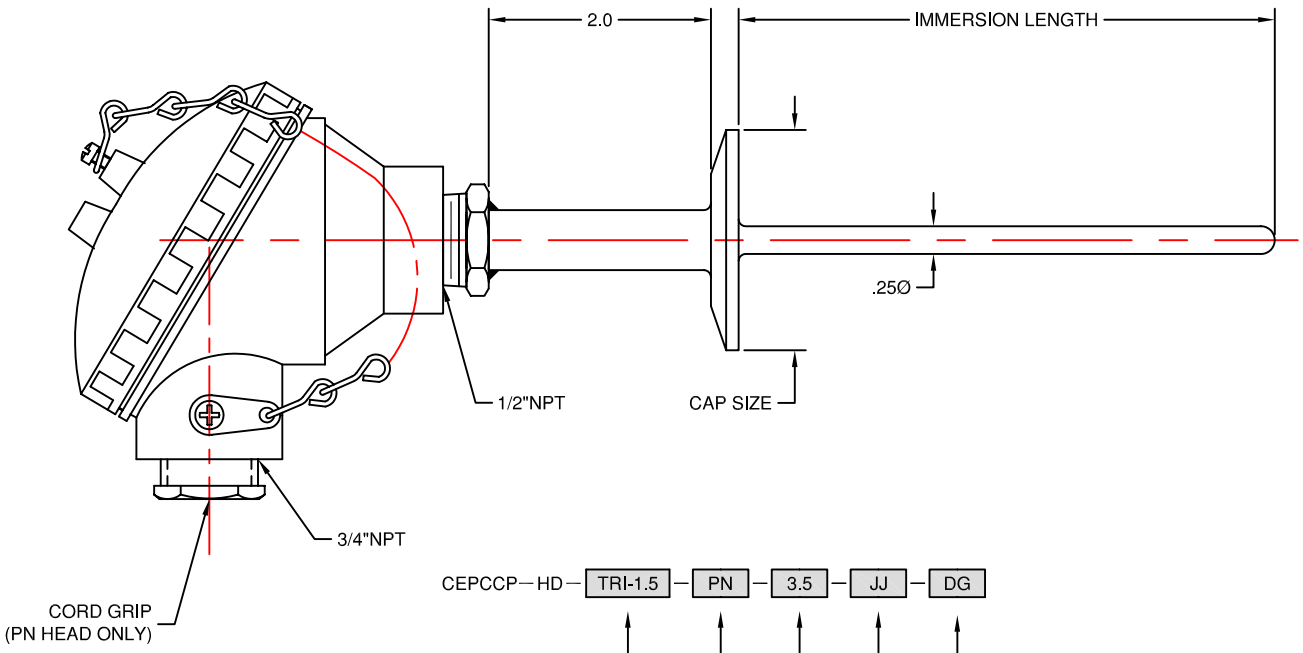
THERMO ELECTRIC

TEMPERATURE MEASUREMENT DESIGNER'S GUIDE
WWW.THERMO-ELECTRIC-DIRECT.COM

SECTION CEPC

CIP THERMOCOUPLES with
TEFLON(FEP) LEAD WIRE
SINGLE & DUPLEX CONSTRUCTION

Doc. No.: TE-CO010109-CEPC-120



CEPCCP — HD — [TRI-1.5] — [PN] — [3.5] — [JJ] — [DG]

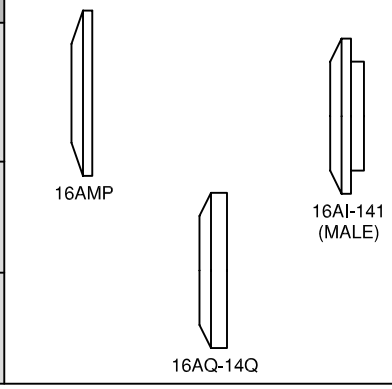
CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

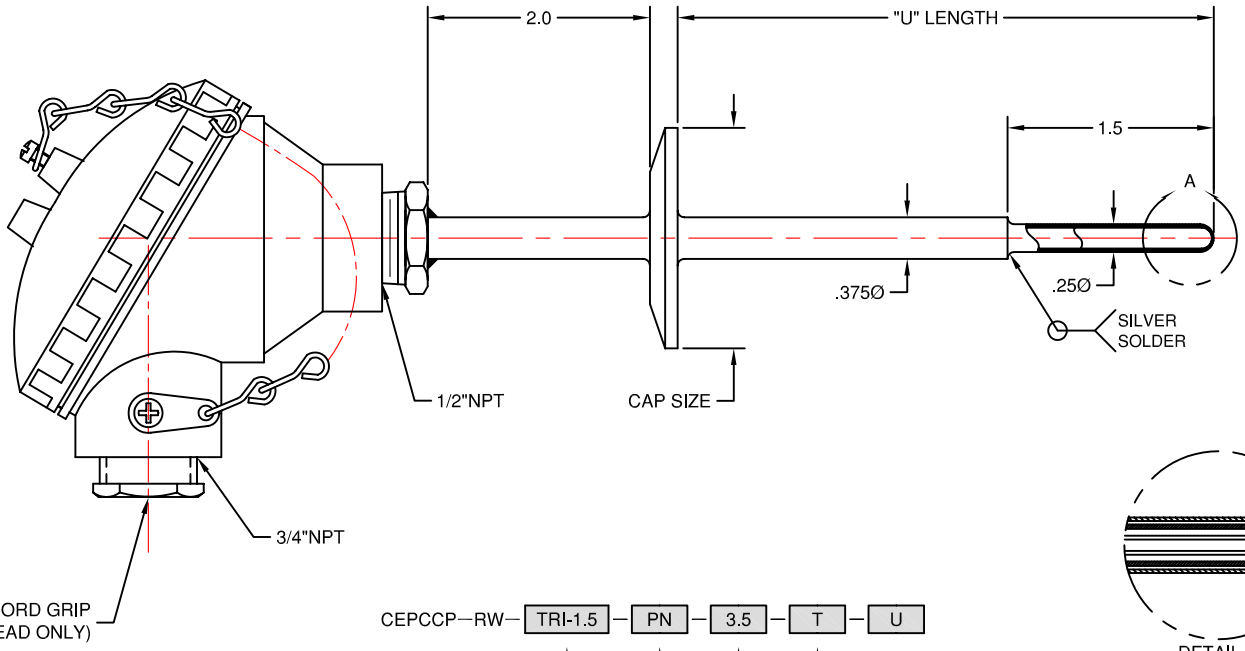
CODE	IMMERSION LENGTH
	(IN INCHES)

CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

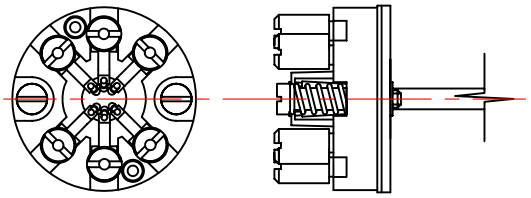
CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	



SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Thermocouple Element
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 1/4"
- Insulation: Hard Packed MgO
- Tolerance: Standard or Special to ANSI MC96.1-1982 & ASTM E230-1993
- Termination: Terminal Block



CEPCCP—RW— TRI-1.5 — PN — 3.5 — T — U



TERMINAL BLOCK

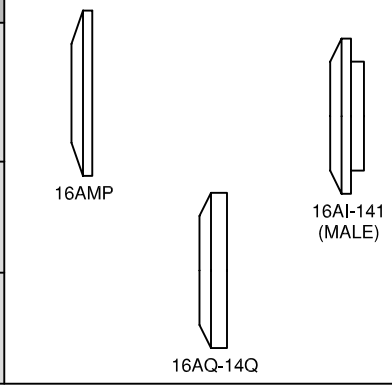
CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

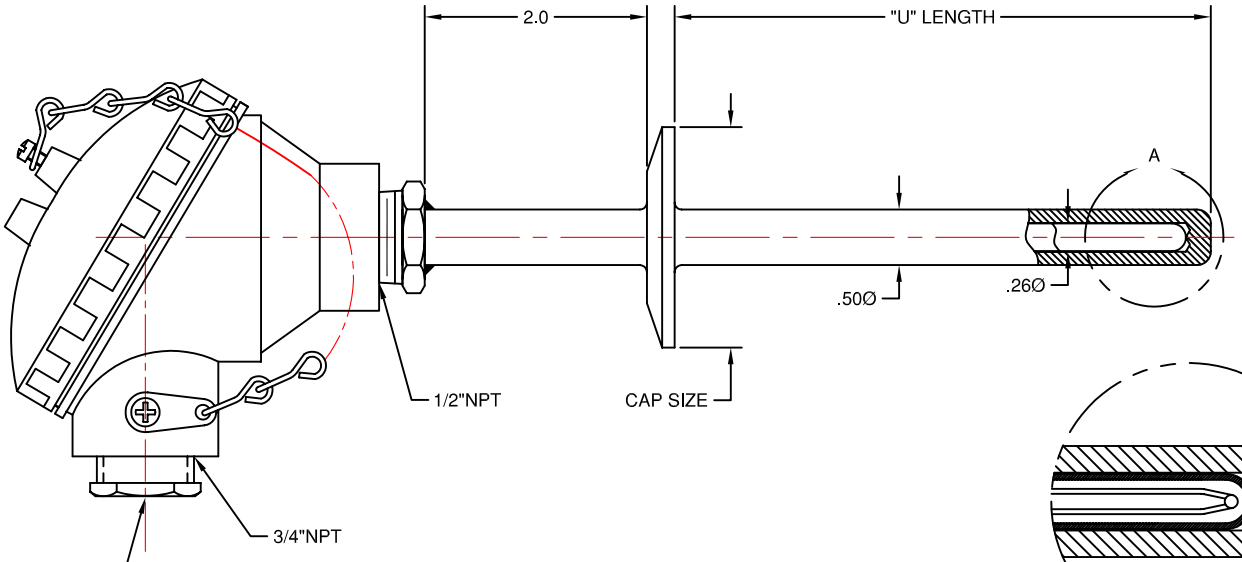
CODE	IMMERSION LENGTH
	(IN INCHES)

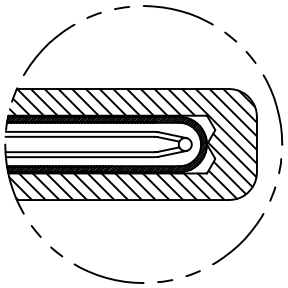
CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	

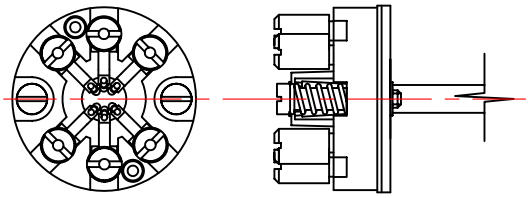


SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Thermocouple Element (Removable)
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 3/16"
- Insulation: Hard Packed MgO
- Tolerance: Standard or Special to ANSI MC96.1-1982 & ASTM E230-1993
- Termination: Spring Loaded DIN Style Block





CEPCCP — SW — [TRI-1.5] — [PN] — [3.5] — [JJ] — [DG]



TERMINAL BLOCK

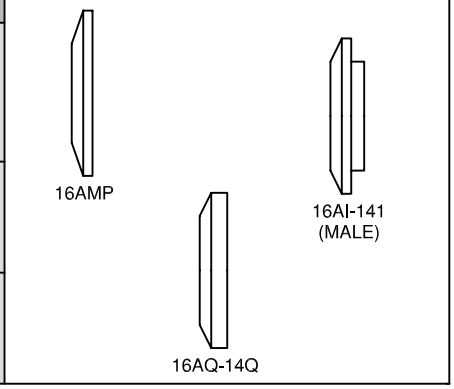
CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

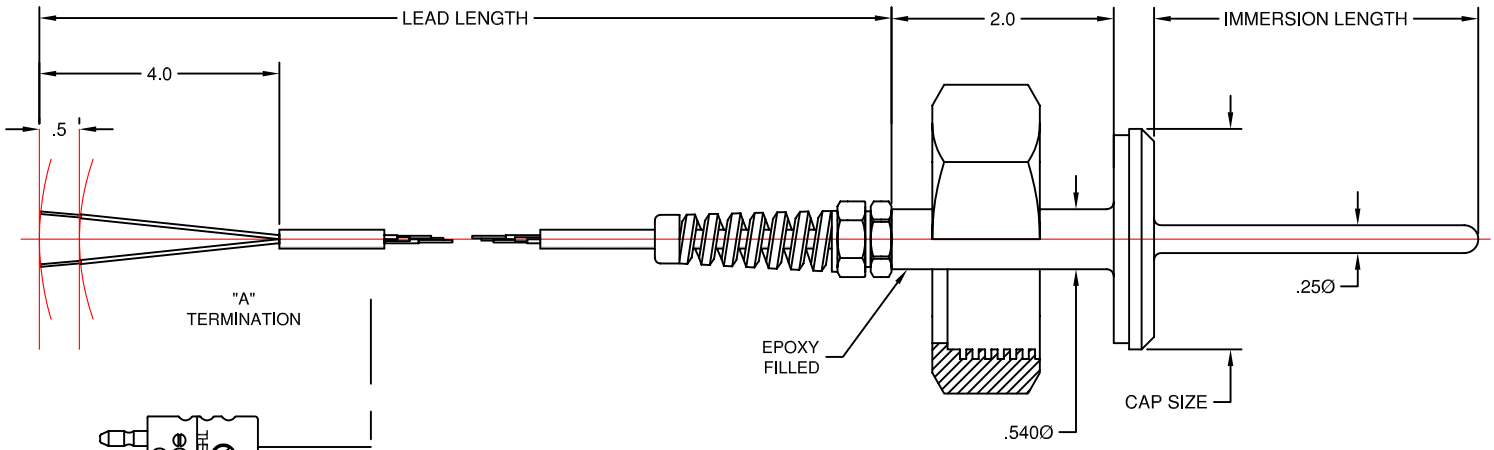
CODE	IMMERSION LENGTH
	(IN INCHES)

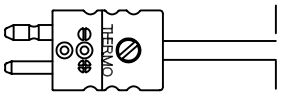
CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

CODE	PROCESS CONNECTION		
	TYPE	SIZE	STYLE
TRI-.75	16AMP	1/2 - 3/4"	TRI-CLAMP® S-LINE® JENSEN®
TRI-1.5	16AMP	1 - 1 1/2"	
TRI-2	16AMP	2"	
TRI-2.5	16AMP	2 1/2"	
TRI-3	16AMP	3"	
ILN-1.5	16AI-141	1 - 1 1/2"	I-LINE® E-LINE®
ILN-2	16AI-141	2"	
ILN-2.5	16AI-141	2 1/2"	
ILN-3	16AI-141	3"	
QLN-1.5	16AQ-14	1 - 1 1/2"	Q-LINE®
QLN-2	16AQ-14	2"	
QLN-2.5	16AQ-14	2 1/2"	
QLN-3	16AQ-14	3"	

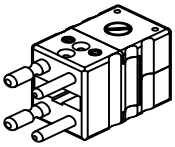


SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Thermocouple Element (Removable)
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 1/4"
- Insulation: Hard Packed MgO
- Tolerance: Standard or Special to ANSI MC96.1-1982 & ASTM E230-1993
- Termination: Spring Loaded DIN Style Block

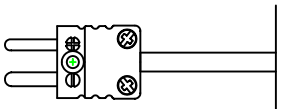




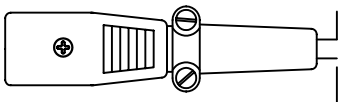
"L"
TERMINATION



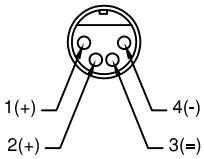
"C"
TERMINATION

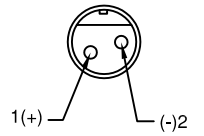


"H"
TERMINATION

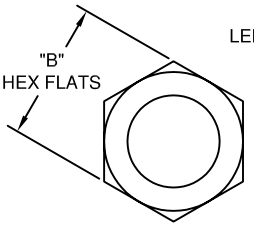


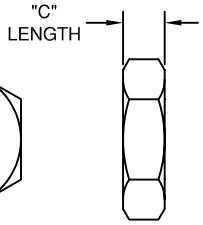
"XLR"
TERMINATION

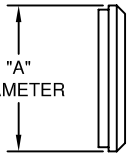




WIRING DIAGRAM
FOR "XLR" TERMINATION
Mates with ITT Cannon®
XLR-2-11C Receptacle for Single
or XLR-4-11C for Duplex







CEPCBS — 5L — BSF-1.5 — 2.5 — 36 — JJ — G — A

CODE	TERMINATION
A	BARE ENDS
L	STANDARD SIZE PLUG
C	STANDARD SIZE DUPLEX PLUG
H	MINIATURE 2 PIN PLUG
XLR	AUDIO XLR PLUG

CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

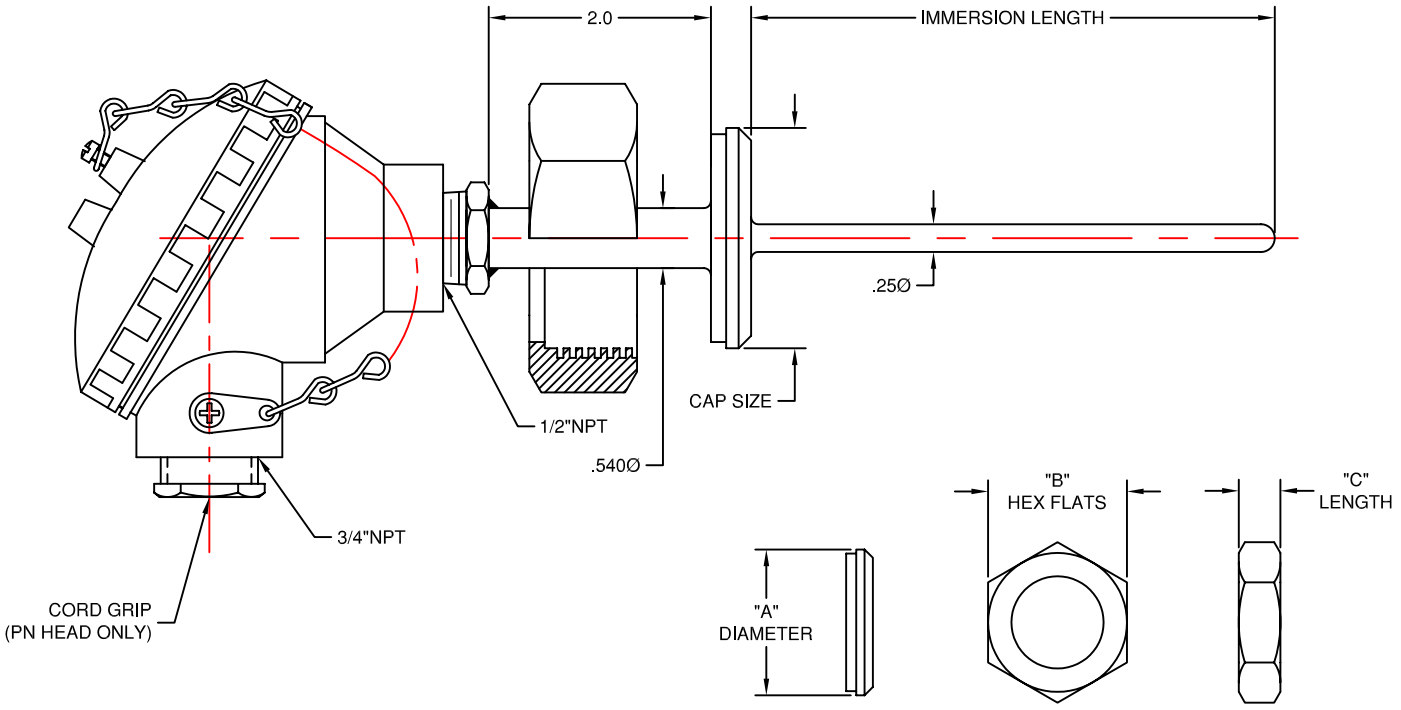
CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

CODE	LEAD LENGTH (IN INCHES)

CODE	IMMERSION LENGTH (IN INCHES)

CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Temperature Range: -58 to +500° F.
- Strain Relief Cord Grip: Nylon
- Lead Wire:
  - Conductor Size: 20 Gauge Stranded
  - Conductor Material: Matching TC Alloy
  - Insulation & Jacket Material: Teflon(FEP)
- Pin Connectors
  - Body Material: Glass Filled Thermoplastic
  - Pin Material: Matching TC Alloy
  - Polarized Pins
  - Spring Loaded Inserts
  - Maximum Temperature Limit: 390°F (200°C)
- XLR Connectors
  - Shell Material: Aluminum Alloy
  - Contact Material: Copper Alloy
  - Type: Audio, keyed
  - Maximum Temperature Limit: 257°F (125°C)



CEPCCP — HD — [BSF-1] — [PN] — [3] — [JJ] — [DG]

CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

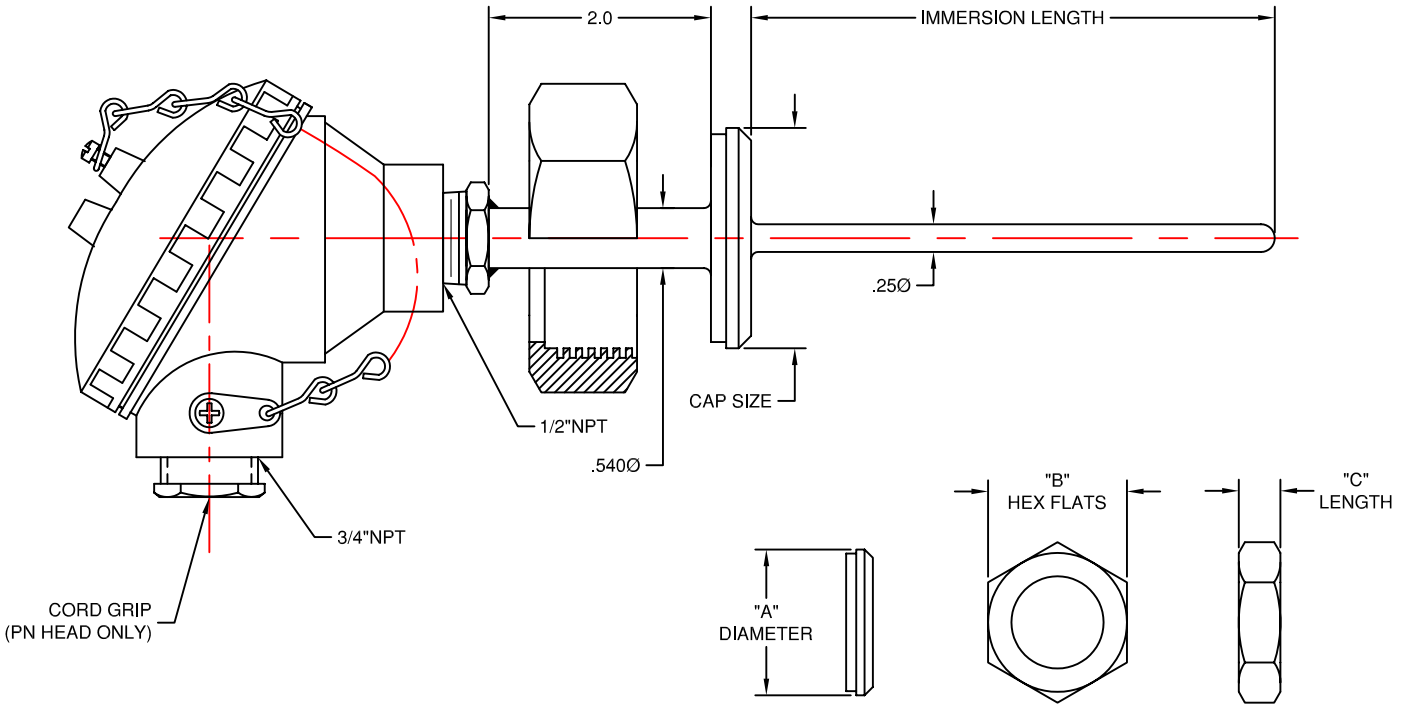
CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

CODE	IMMERSION LENGTH (IN INCHES)

CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Thermocouple Element
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 1/4"
- Insulation: Hard Packed MgO
- Tolerance: Standard or Special to ANSI MC96.1-1982 & ASTM E230-1993
- Termination: Terminal Block

CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"



CEPCCP — HD — [BSF-1] — [PN] — [3] — [JJ] — [DG]

CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

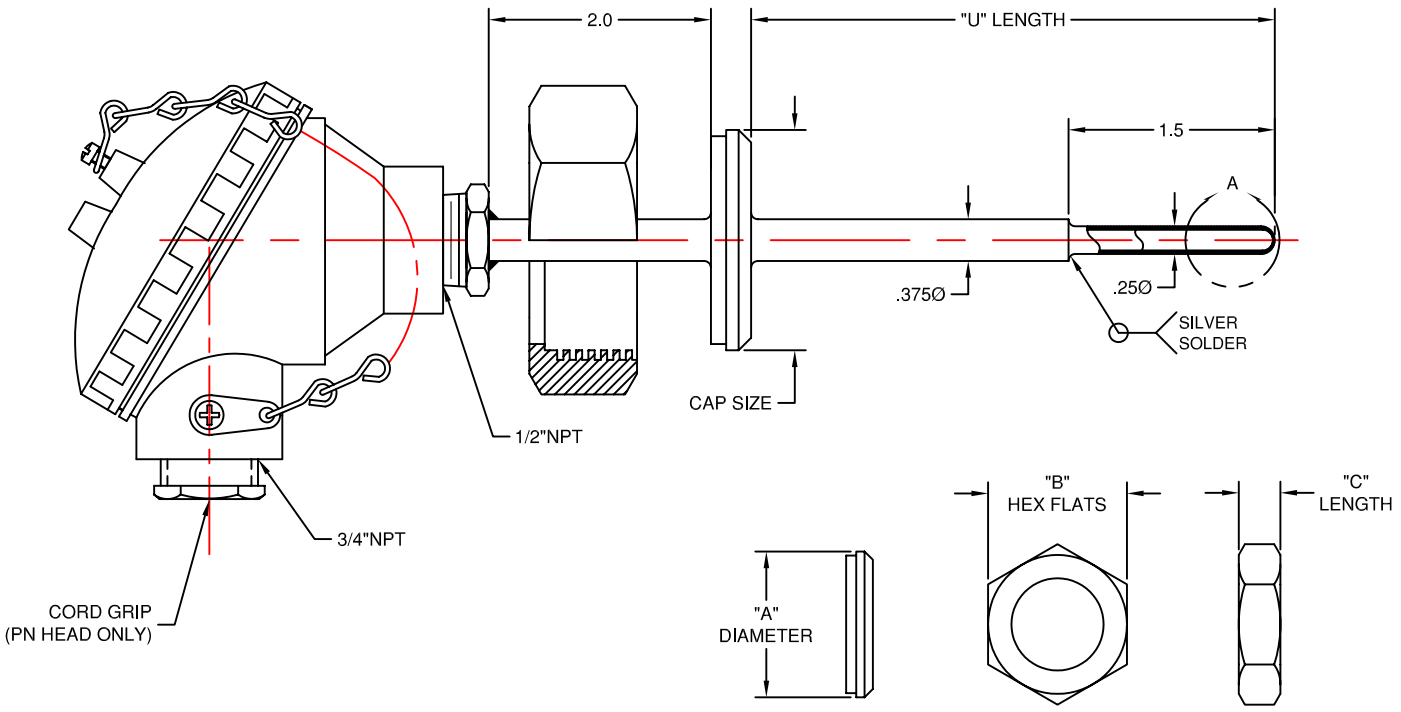
CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

CODE	IMMERSION LENGTH (IN INCHES)

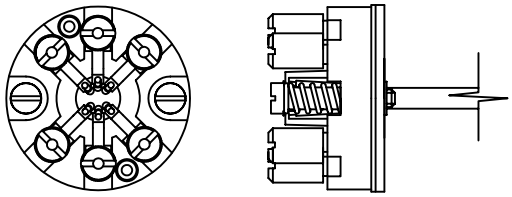
CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Thermocouple Element
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 1/4"
- Insulation: Hard Packed MgO
- Tolerance: Standard or Special to ANSI MC96.1-1982 & ASTM E230-1993
- Termination: Terminal Block

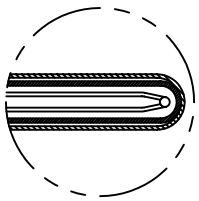
CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"



CEPCCP—RW— BSF-1 — PN — 3 — JJ — DG



TERMINAL BLOCK



DETAIL A
SCALE 2:1

CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

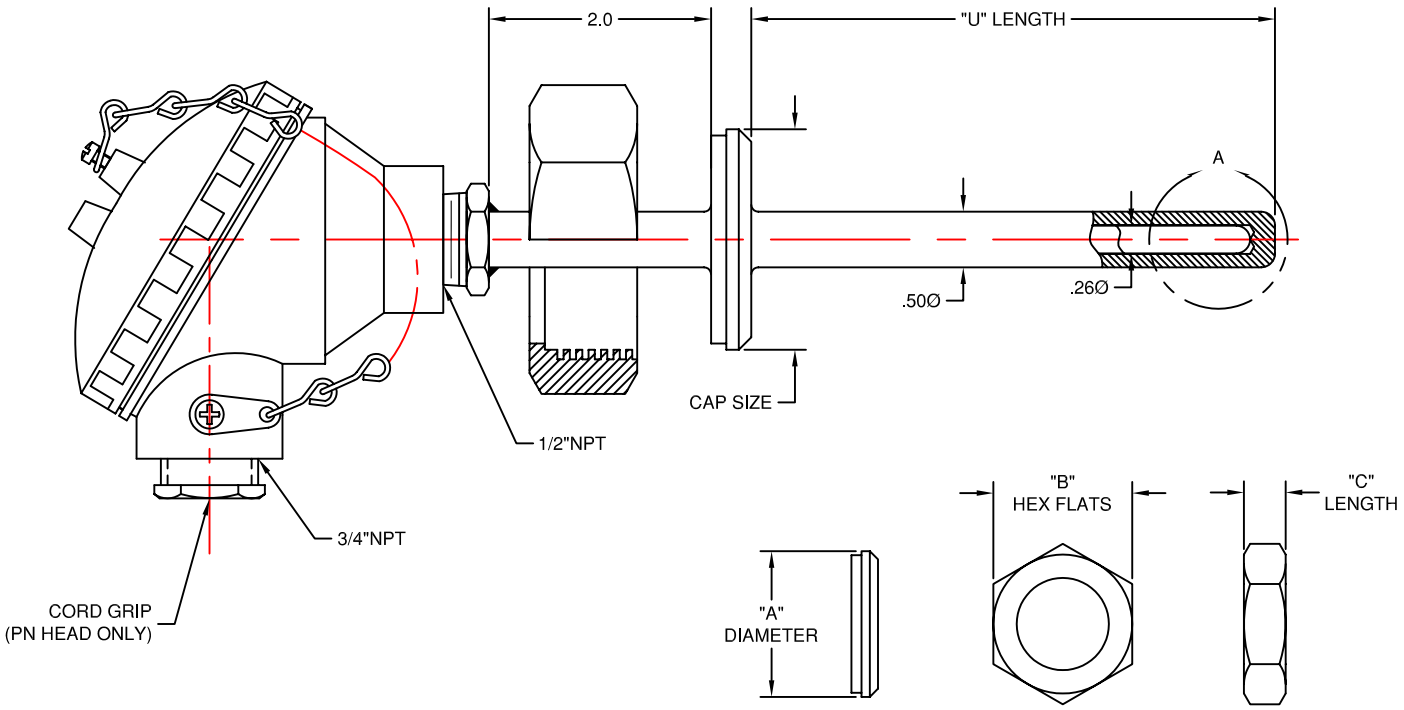
CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

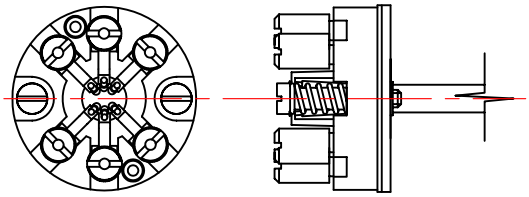
CODE	IMMERSION LENGTH
	(IN INCHES)

CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

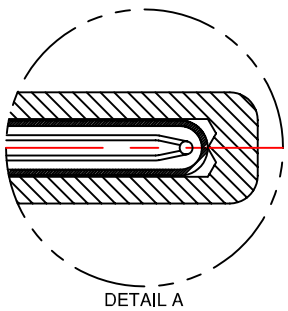
CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard
- Thermocouple Element (Removable)
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 3/16"
- Insulation: Hard Packed MgO
- Tolerance: Standard or Special to ANSI MC96.1-1982 & ASTM E230-1993
- Termination: Spring Loaded DIN Style Block





TERMINAL BLOCK



DETAIL A
SCALE 2:1

CEPCCP—SW— BSF-1 — PN — 3 — JJ — DG

CODE	MEASURING JUNCTION
G	SINGLE GROUNDED
U	SINGLE UNGROUNDED
DG	DUPLEX GROUNDED
DU	DUPLEX UNGROUNDED

CODE		CALIBRATION
STANDARD	SPECIAL	
J	JJ	IRON (+) vs CONSTANTAN (-)
K	KK	CHROMEL (+) vs ALUMEL (-)
T	TT	COPPER (+) vs CONSTANTAN (-)
E	EE	CHROMEL (+) vs CONSTANTAN (-)

CODE	IMMERSION LENGTH
	(IN INCHES)

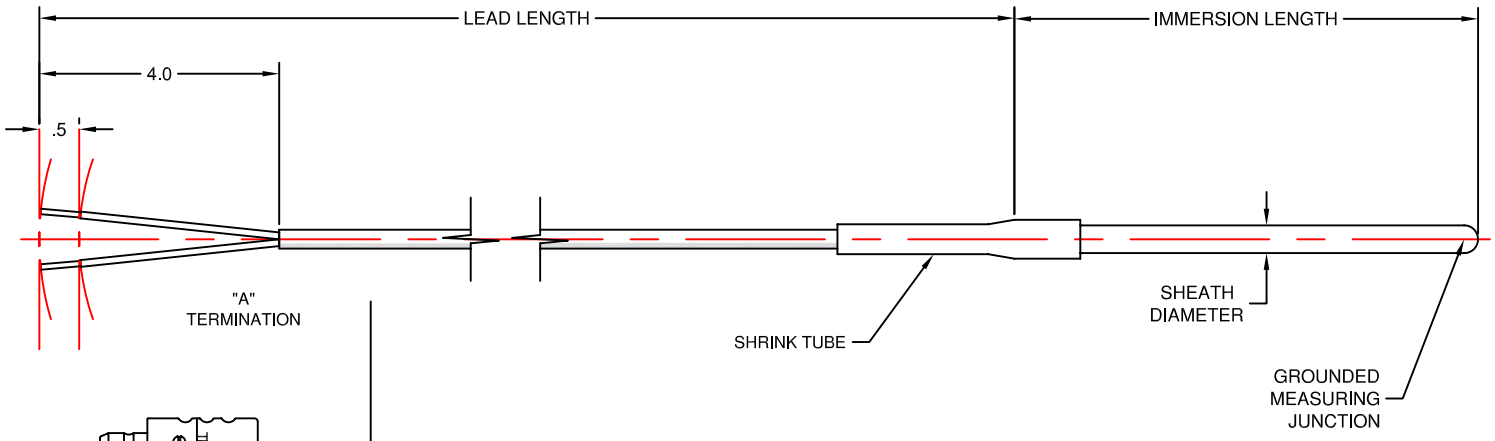
CODE	CONNECTION HEAD
PN	WHITE POLYPROPYLENE, FDA APPROVED
AN	ALUMINUM, WATERPROOF, NEMA-4
SN	316 STAINLESS STEEL, WATERPROOF, NEMA-4, -4X

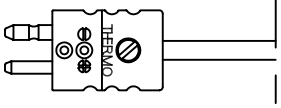
CODE	PROCESS CONNECTION			
	SIZE	"A" DIAMETER	"B" HEX FLATS	"C" LENGTH
BSF-1	1"	1.313"	1.813"	.906"
BSF-1.5	1.5"	1.844"	2.406"	.969"
BSF-2	2"	2.375"	3"	1.063"
BSF-2.5	2.5"	2.906"	3.594"	1.188"
BSF-3	3"	3.438"	4.188"	1.281"

SPECIFICATIONS
- Material: 316/316L Stainless Steel
- Finish: #4, Ra of 32 µin Max.
- Cap Compliance: 3-A Sanitary Standard

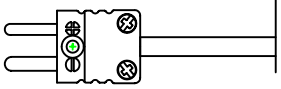
Thermocouple Element (Removable)
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: 1/4"
- Insulation: Hard Packed MgO
- Tolerance: Standard or Special to ANSI MC96.1-1982 & ASTM E230-1993
- Termination: Spring Loaded DIN Style Block

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S

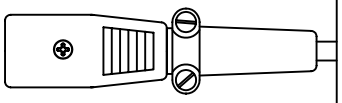




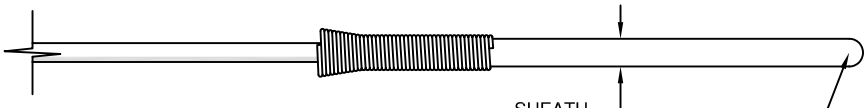
"L"
TERMINATION



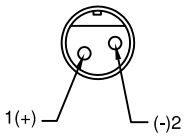
"H"
TERMINATION



"XLR"
TERMINATION



BELL SPRING OPTION



WIRING DIAGRAM
FOR "XLR" TERMINATION
Mates with ITT Cannon®
XLR-2-11C Receptacle

CEPCDM – J – 14 – 4 – 36 – XLR – BS

CODE	OPTION (1/4" DIA. ONLY)
BS	BELL SPRING OPTION

CODE	TERMINATION
A	BARE ENDS
L	STANDARD SIZE PLUG
H	MINIATURE 2 PIN PLUG
XLR	AUDIO "XLR" PLUG

CODE	LEAD LENGTH (IN INCHES)

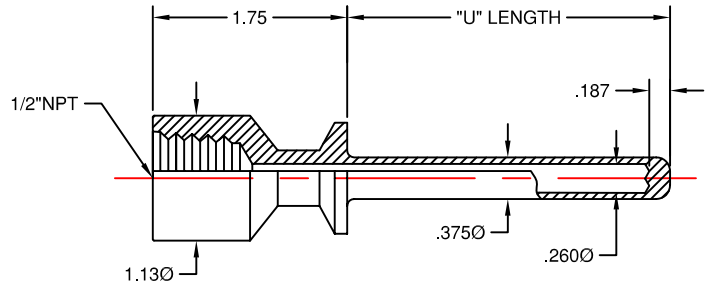
CODE	IMMERSION LENGTH (IN INCHES)

CODE	SHEATH DIAMETER
18	1/8" (.125")
316	3/16" (.187")
14	1/4" (.25")

CODE	THERMOCOUPLE CALIBRATION
J	IRON (+) vs CONSTANTAN (-)
K	CHROMEL (+) vs ALUMEL (-)
T	COPPER (+) vs CONSTANTAN (-)
E	CHROMEL (+) vs CONSTANTAN (-)

SPECIFICATIONS
- Sheath Material: 316/316L Stainless Steel
- Sheath Finish: #4, Ra of 32 µin Max.
- Temperature Range: -58 to +500° F.
- Lead Wire:
  - Conductor Size: 24 Gauge Stranded
  - Conductor Material: Matching TC Alloy
  - Insulation: Teflon(FEP)
  - Jacket: Teflon(FEP)
- Pin Connectors
  - Body Material: Glass Filled Thermoplastic
  - Pin Material: Matching TC Alloy
  - Polarized Pins
  - Spring Loaded Inserts
  - Single Captive Cover Screw
  - Maximum Temperature Limit: 390°F (200°C)
  - Maximum Wire Diameter: .079"
- XLR Connectors
  - Shell Material: Aluminum Alloy
  - Contact Material: Copper Alloy
  - Type: Audio, keyed
  - Maximum Temperature Limit: 257°F (125°C)

16AMP, STRAIGHT CONSTRUCTION



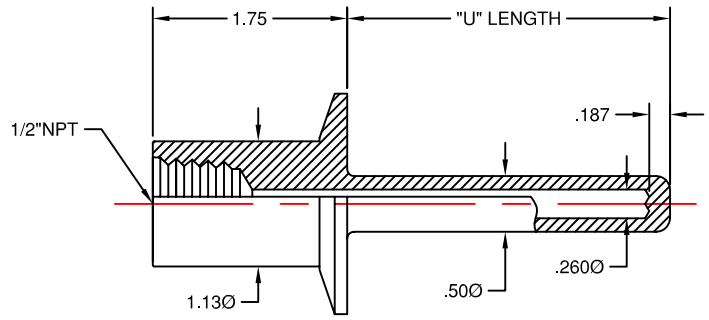
TYPE TRI-ST (1/2 and 3/4")
TRI-CLAMP®
S-LINE®
JENSEN®

SPECIFICATIONS
Material: 316/316L Stainless Steel
Finish: #4, Ra of 32 µin Max.
Cap Compliance: 3-A Sanitary Standard

CEPC — TRI — ST — 75 — 3.5

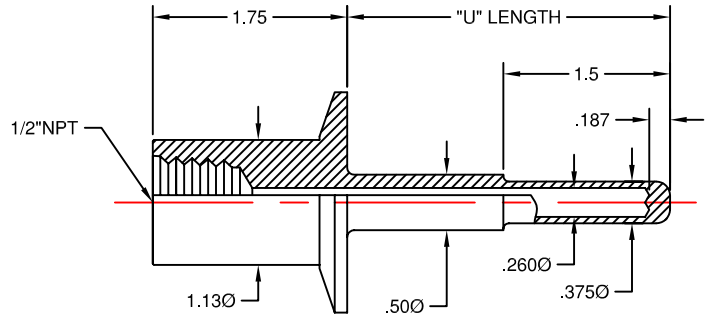
CODE	"U" LENGTH IN INCHES

CODE	CAP SIZE
75	1/2 - 3/4"
15	1 - 1 1/2"
20	2"
25	2 1/2"
30	3"



TYPE TRI-ST (1" thru 3")
TRI-CLAMP®
S-LINE®
JENSEN®

16AMP, STEP DOWN CONSTRUCTION



TYPE TRI-SD (1" thru 3")
TRI-CLAMP®
S-LINE®
JENSEN®

CEPC — TRI — SD — 75 — 3.5

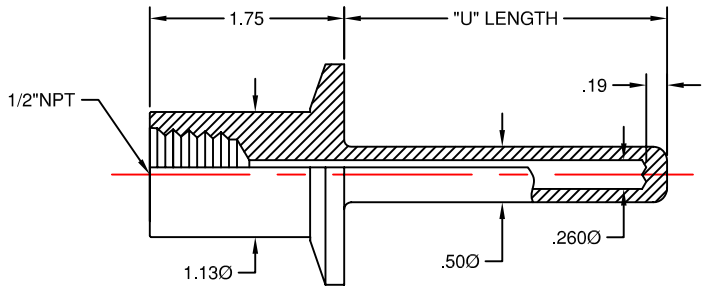
CODE	"U" LENGTH IN INCHES

CODE	CAP SIZE
15	1 - 1 1/2"
20	2"
25	2 1/2"
30	3"

PHARMACEUTICAL & BIOTECH THERMOCOUPLES & RTD'S

SPECIFICATIONS
Material: 316/316L Stainless Steel
Finish: #4, Ra of 32 µin Max.
Cap Compliance: 3-A Sanitary Standard

16AI-141, STRAIGHT CONSTRUCTION



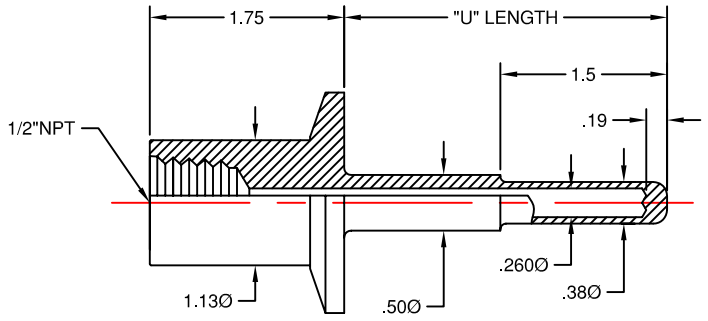
CEPC — ILN — ST — 75 — 3.5

TYPE ILN-ST
I-LINE®, E-LINE®

CODE	"U" LENGTH IN INCHES

CODE	CAP SIZE
15	1 - 1 1/2"
20	2"
25	2 1/2"
30	3"

16AI-141, STEP DOWN CONSTRUCTION



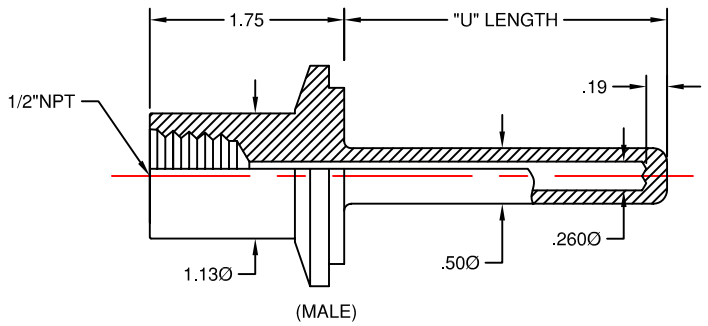
CEPC — ILN — SD — 75 — 3.5

TYPE ILN-SD
I-LINE®, E-LINE®

CODE	"U" LENGTH IN INCHES

CODE	CAP SIZE
15	1 - 1 1/2"
20	2"
25	2 1/2"
30	3"

16AQ-14, STRAIGHT CONSTRUCTION



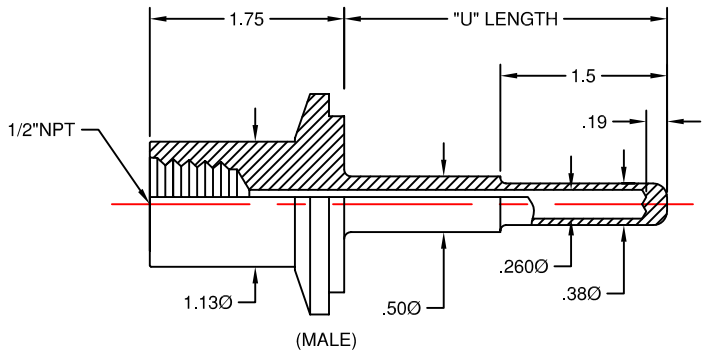
CEPC — QLN— ST — 75 — 3.5

TYPE QLN-ST
Q-LINE®

CODE	"U" LENGTH IN INCHES

CODE	CAP SIZE
15	1 - 1 1/2"
20	2"
25	2 1/2"
30	3"

16AQ-14, STEP DOWN CONSTRUCTION



CEPC — QLN— SD — 75 — 3.5

TYPE QLN-SD
Q-LINE®

CODE	"U" LENGTH IN INCHES

CODE	CAP SIZE
15	1 - 1 1/2"
20	2"
25	2 1/2"
30	3"

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