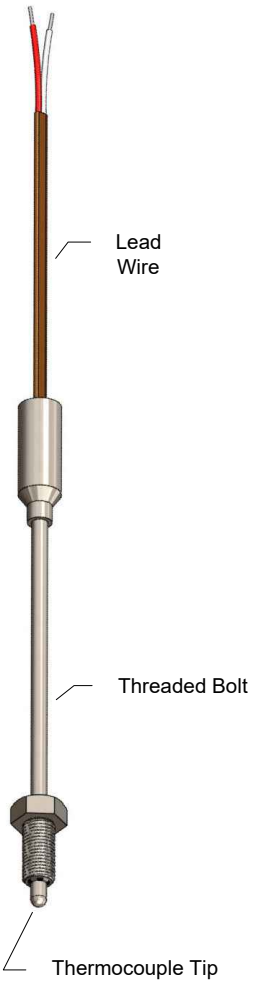
TC22- Nozzle Melt Thermocouple with Lead Wire

TEMPERATURE SENSOR

TC22- A Nozzle Melt thermocouple is a specialized temperature sensor that incorporates a thermocouple probe within a bolt , enabling precise temperature measurement of molten plastic in injection molding and extrusion process. This design allows for secure installation onto equipment, ensuring direct contact with the molten plastic in injection molding and plastic extruder. This construction is most widely used in plastic molding machines, plastic extrusion machines and other extrusion process where temperature monitoring is critical.

Key Feature:

- Thermocouple sensor integrated with bolt for easy, direct and secure mounting.
- Ensures accurate temperature measurement of metal surfaces with direct contact.
- Available in Type J, K to match specific temperature requirements.
- Welded or Brazed tip for high pressure application.
- Quickly detects temperature changes for effective monitoring and ensure fast response time.
- Available with different wire lengths and insulation types for various environments.
- Suitable for temperature measurement of high vibration applications
- Available in IEC 60584 & ANSI MC 96.1 standard tolerances

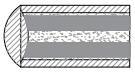


Thermocouple Junction options for TC22

Ungrounded Junction: Junction is similar to grounded junction except wire are fuse welded, which is then insulated with Mgo powder and formed cap by welding without incorporating thermocouple wires. Thus, the junction is called the ungrounded junction.

Key Benefits :

· Wires are protected from any mechanical damage
· Offers rugged construction, the same as the grounded junction.
· Strain due to differential expansion between wire and sheath is minimized with insulated wires.



Grounded Junction: In grounded junction thermocouple wires and sheath of the mineral insulated cable is welded together to form a junction. Thermocouple wires and sheath becomes an integral part of the junction. Thus, the wire is grounded to the sheath.

Key Benefits:

- Slower response than Exposed junction, but offers rugged construction.
- Can hold higher pressure than exposed junction and Ungrounded junction.

Suggested Maximum Temperature Limit As per ASTM E608/608M

Thermocouple Type	°C (F)	°C (F)	°C (F)	°C (F)	°C (F)	°C (F)
OD	1/25"	1/16"	1/8"	3/16"	1/4"	3/8"
T	260(500)	260(500)	315(600)	370 (700)	370 (700)	370 (700)
J	260 (500)	440(825)	520 (970)	620(1150)	720 (1330)	720 (1330)
K	700(1290)	920 (1690)	1070 (1960)	1150 (2100)	1150 (2100)	1150 (2100)
E	300(570)	510(950)	650 (1200)	730 (1350)	820(1510)	820(1510)

The suggested maximum temperature limit is based on information available in the ASTM standard and test performed in our facility. The maximum temperature limit may change based on the type of process and material/ liquid it is going to be used in. These limits apply to protected thermocouples.

Response Time

Thermocouple OD	Junction		
	Exposed	Grounded	Ungrounded
1/25"	0.005	0.1	0.3
1/16"	0.02	0.2	0.5
1/8"	0.03	0.7	1.3
3/16"	0.07	1.1	2.2
1/4"	0.1	2.2	4.5
3/8"	0.9	2.7	7.5

Response time is measured in liquid by inserting thermocouple into the temperature-controlled circulating bath. Time taken to reach 63.2% of a step temperature change is noted as the response time of thermocouple. For a fast response, the exposed tip is recommended, but the exposed junction is not as rugged as ungrounded and grounded junctions for industrial use.

Temperature Accuracy As per ASTM E608/608M/ IEC 60584 & ANSI MC 96.1 standard tolerances

Type	Temperature	Standard Limit	Special Limit
T	-200 °C to 0 °C	± 1 °C or 1.5% Whichever is greater	N/A
	0 °C to 350 °C	± 1 °C or .75% Whichever is greater	± 0.5 °C or 0.4% Whichever is greater
J	0 °C to 750 °C	± 2.2 °C or .75% Whichever is greater	± 1.1 °C or 0.4% Whichever is greater
E	-200 °C to 0 °C	± 1.7 °C or 1.0% Whichever is greater	N/A
	0 °C to 900 °C	± 1.7 °C or .5% Whichever is greater	± 1 °C or 0.4% Whichever is greater
KORN	-200 °C to 0 °C	± 2.2 °C or 2.0 % Whichever is greater	N/A
	0 °C to 1250 °C	± 2.2 °C or .75% Whichever is greater	± 1.0 °C or 0.4% Whichever is greater

Notes:

-All the thermocouples are manufactured as ASTM E608/608M
-Calibration is available as per ASTM E220 on request

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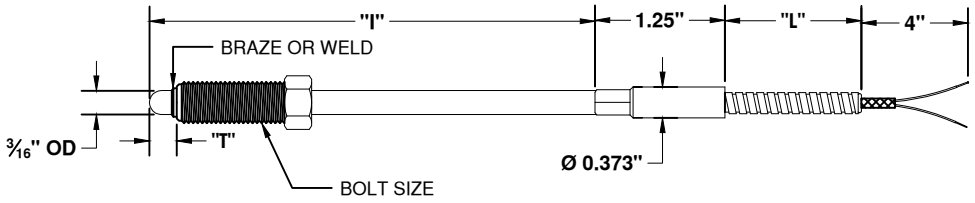
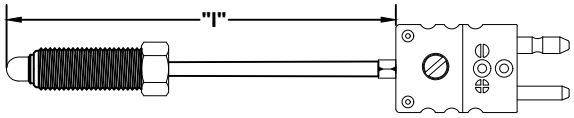
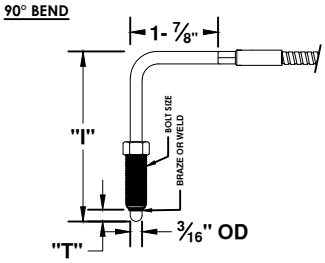
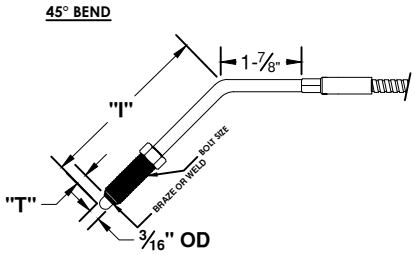
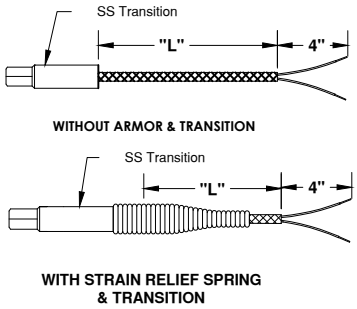


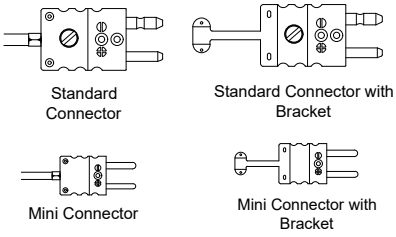








Termination Options-



Notes:
1. Standard Bolt Length 3.0"

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
TC22														

For Example- TC22-J-G-0-01-8-MGO-02-8i-48i-2Z-Z-0-0-0

1. THERMOCOUPLE TYPE	
CODE	
J	Iron(+) vs Constantan(-)
K	Chromel(+) vs Alumel(-)
Use "S" for Special limit of Error	

2. MEASURING JUNCTION	
CODE	
G	Simplex / Grounded Junction
UG	Simplex / Un- Grounded Junction

3. PROBE ANGLE	
CODE	
0	Straight
45	45° ANGLE
90	90° ANGLE

4. BOLT SIZE	
CODE	
01	3/8"-24 Thread
09	Specify if any other size

5. SHEATH MAT.	
CODE	
8	SS 316

6. PROBE CONSTRUCTION	
CODE	
MGO	Magnesium Oxide
TW	Tube and wire

7. TIP LENGTH (T)	
CODE	
01	1/8"
02	3/16"
04	1/4"

8. IMMERSION LENGTH (I)
Immersion length - use "I" for inches and "M" for millimetre

9. LEAD LENGTH (L)	
0	No lead wire required
Lead length - use "I" for inches and "M" for millimetre	

10. WIRE TYPE	
CODE	
0	When ordering with Connector
2	TEFLON (205° C)
6	TEFLON (260° C)
3	FIBRE GLASS (510° C)
NOTE:- Add "O" for no jacketing. Add "X" for SS braiding & "Z" for Armor	

11. CODES FOR TERMINATION	
CODE	
Z	Bare ends
STP	Standard Plug
MP	Miniature Plug
HTP	High Temperature Plug

12. CODES FOR TERMINATION (JACK)	
CODE	
0	Not required
STJ	Standard Jack
MJ	Miniature Jack
HTJ	High Temperature Jack

13. OPTIONAL ACCESSORY	
CODE	
0	Not required
02	Strain relief spring (Only for lead wire without Armour)

14. OPTIONAL ACCESSORY	
CODE	
0	Not required
WC	Wire clamp
BT	Silicon rubber boot for connector
Only choose when ordering with connector	