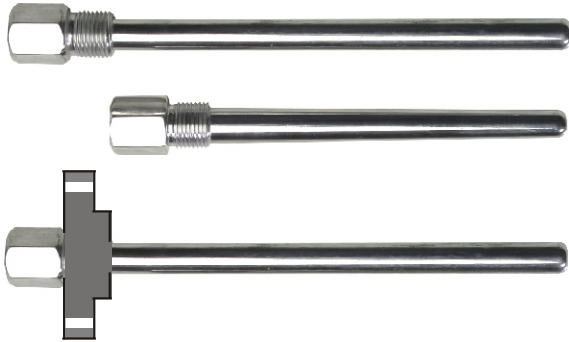




## THERMOWELLS

### INTRODUCTION

In process control systems normally metal sheaths are frequently used to protect temperature sensors.



Although sheath materials have excellent pressure and temperature ratings a Thermowell is generally used in high pressure and high temperature applications.

A Thermowell is a tube designed to enclose a

temperature sensing device and protect it from harmful effects of the environment. It may provide for attachment to a connection head but it is not primarily designed for pressure tight attachment to a vessel. A bushing or flange may be provided for the attachment of a thermowell to a vessel. Replacement / Interchangeability of sensors without hampering a continuous process is possible with the help of thermowells.

ESD manufactures various types of Thermowells like straight type, taper type and flange type to suit various applications in process industry. These thermowells can be used as protective sheaths for Platinum Resistance Bulbs or Thermocouples.

The above three main types can be sub divided into :

- (a) Bar Stock : Thermowell machined from a single piece of material.
- (b) Fabricated : A Thermowell wherein the across flat nut, pipe and end bush or cap are machined separately, welded together and finished.

### SPECIFICATIONS

Type	<ul style="list-style-type: none"> <li>■ Straight type threaded</li> <li>■ Tapered type threaded</li> <li>■ Flange type</li> </ul>
Construction	<ul style="list-style-type: none"> <li>■ Bar Stock</li> <li>■ Fabricated</li> </ul>
Material	<ul style="list-style-type: none"> <li>■ S.S. 304     ■ S.S. 316</li> <li>■ Inconel     ■ Mild Steel</li> </ul>
Pressure	<ul style="list-style-type: none"> <li>■ 5 kg / cm<sup>2</sup> for fabricated</li> <li>■ 15 kg / cm<sup>2</sup> for barstock</li> </ul>
Diameter	<ul style="list-style-type: none"> <li>■ 10 to 25 mm</li> </ul>
Length	<ul style="list-style-type: none"> <li>■ 60 to 1000 mm</li> </ul>
Mounting	<ul style="list-style-type: none"> <li>■ Flange as per ISA table</li> <li>■ 1/2, 3/4, 1 BSP / NPT m / f</li> </ul>
Drawing	<ul style="list-style-type: none"> <li>■ This being application specific product detailed drawing will be preferable</li> </ul>

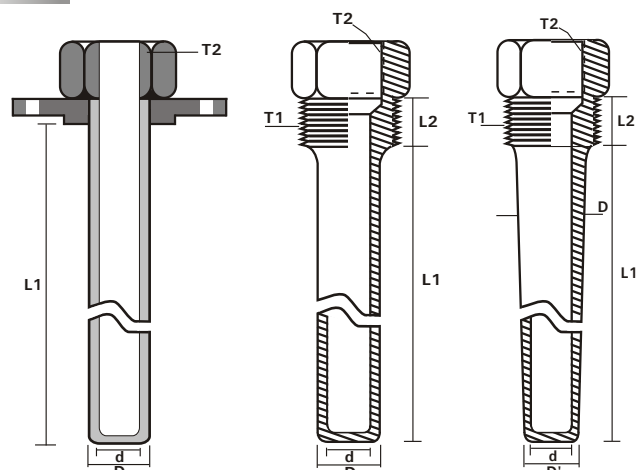
### FEATURES

- Wide dimensional choice
- Good finish
- Branded and type tested material
- Threading standards
- Interchangeability
- Exstock

### CONSIDERATIONS

- Select barstock or fabricated thermowell construction depending on the pressure.
- Select the material depending upon the application media.
- Type of thermowell and its dimensions depends on the the media temperature, its velocity, maximum allowable time lag and space availability at the installation location.
- Selection of uniform bore and mounting threads permits easy interchangeability of sensor.
- Appropriate conducting media should be selected between sensor and thermowell to reduce time lag.

### TYPE



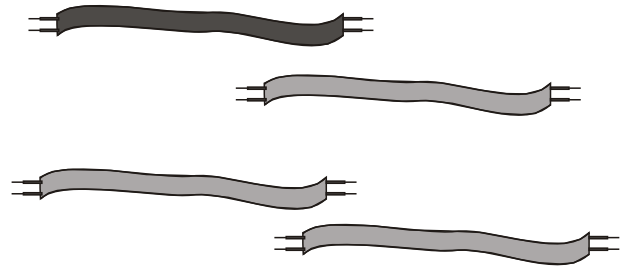
## COMPENSATING CABLES

### INTRODUCTION

It is the cable made from alloys having emf characteristics equivalent to thermocouples. As the characteristics is similar to thermocouple conductor this eliminates the effect of Junction which is either thermocouple head or junction box. This cable is used to connect mV signal from thermocouple to instrument. Composition of alloy is matched to suit different types of thermocouples. These are available in different insulation grades like PVC / PVC, Teflon Teflon, Asbestos / Asbestos to suit different environmental conditions of installation. Temperature range for these compensating cables is 100 C max. They are available in 2 core as well as multicore.

### SPECIFICATIONS

Type	<input type="checkbox"/> Cr Al <input type="checkbox"/> Fe Ko <input type="checkbox"/> Pt Pt 13 % Rh
Conductor dia.	<input type="checkbox"/> 3 / 22 SWG std. (other on demand)
Insulation	<input type="checkbox"/> PVC PVC <input type="checkbox"/> Fibreglass / Fibreglass <input type="checkbox"/> Fibreglass / Fibreglass MB <input type="checkbox"/> Teflon / Teflon <input type="checkbox"/> Teflon / Teflon MB
Length	<input type="checkbox"/> 100 mtr. or in multiples thereof
No of cores	<input type="checkbox"/> 2 core or multicore
Temp. range	<input type="checkbox"/> 100 °C max
Accuracy	<input type="checkbox"/> As per thermocouple upto 100 °C
Ambient temp.	<input type="checkbox"/> 55 °C
Colour code	<input type="checkbox"/> Fe Ko - Black <input type="checkbox"/> Cr Al - Red <input type="checkbox"/> Pt Pt Rh - Green



### FEATURES

- Uniform diameter
- No joints
- 

### TIPS ABOUT COMPENSATING CABLES

To get the best performance, accuracy and stability following tips will be useful.

- ✓ Use same type of compensating cable without joint
- ✓ Select proper sheathing material as per application and environment.
- ✓ Isolate sensor cables from power cables
- ✓ Avoid exposure of thermocouple head to temperatures greater than 90°C.
- ✓ Avoid excessive ambient temperature and corrosive gases in surroundings .

### EXTENSION CABLE FOR PT 100



3 core copper cable 1 mm<sup>2</sup> of different insulation material like PVC / PVC , teflon / teflon, teflon / teflon M B, shielded PVC / PVC are available as extension cables for Pt 100 sensors.

### CONNECTORS

#### Male female connector -

Different types of male female connectors are available for immersion length adjustment of sensor.



Material	<input type="checkbox"/> SS 304	<input type="checkbox"/> SS 316
Size (inch)	<input type="checkbox"/> 1/4	<input type="checkbox"/> 1/2
	<input type="checkbox"/> 3/4	<input type="checkbox"/> 1

BSP and NTP threads.

#### Aluminium Flange -



For immersion length adjustment aluminium flanges are available for holding the sensor pipe.

Hole diameter (mm)	<input type="checkbox"/> 5	<input type="checkbox"/> 6
	<input type="checkbox"/> 8	<input type="checkbox"/> 10
	<input type="checkbox"/> 12	<input type="checkbox"/> 19

### ADDITIONAL CHOICE

- ✓ Platinum Resistance Bulbs
- ✓ Thermocouples
- ✓ Multispot Temp. Sensors



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