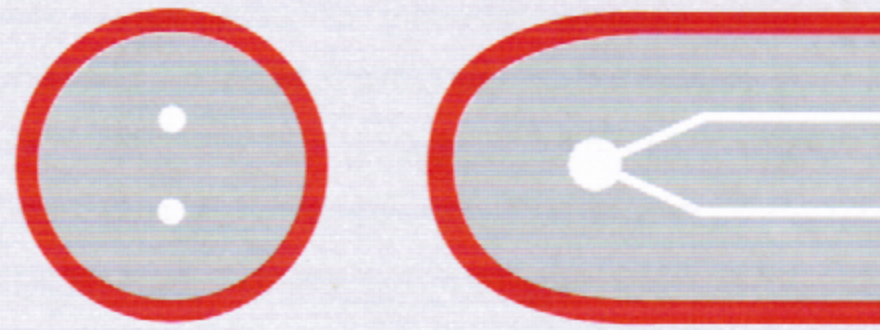


2.5 Hot junctions

The hot junction is the point where the two cores are joined. This therefore is the sensing part and can take a number of different forms.

The outer sheath is closed by welding and liquid Nitrogen tested.

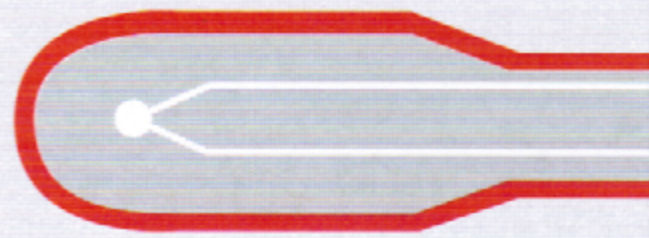
TI



Insulated hot junction version TI

This is the most popular type of hot junction. The thermocouple is welded with a tungsten electrode by the argon-arc-method. After filling the open end of the sheath with insulating powder the sheath is also argon-arc-welded. The hot junction is insulated from the sheath and is checked for short circuit.

TIL



TML



Laminated hot junction - version TIL or TML

After performing the hot junction type TI or TM, the end of the Chromel®-Alumel® thermocouple can be laminated so as to give it a thickness of about half of the initial diameter. This sensibly enlarges the width to about 1 1/2 times the initial diameter. The laminated part has a length of 5 to 50 mm. The TIL hot junctions can only be

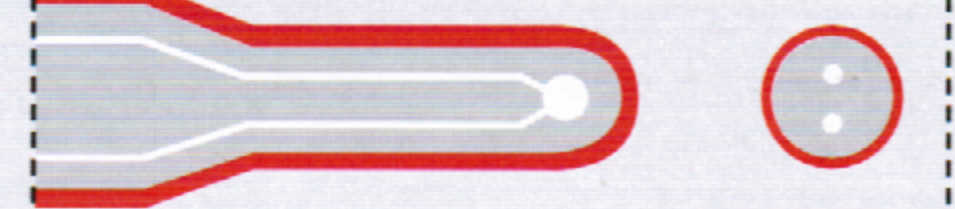
performed for thermocouples of 0.5 mm O.D. or greater.

Outer diameter reduced at hot junction - version TIS or TMS

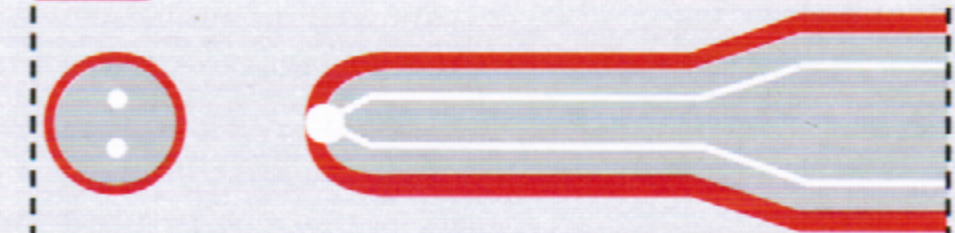
Insulated in version **TIS** or grounded in version **TMS**. Only for the Chromel®-Alumel® and Nicrosil®-Nisil® to obtain a fast response in the measuring of small objects or in places with limited access. The outer diameter of the thermocouple can be swaged down to a smaller diameter over a length of 50-150 mm. Such thermocouples have the advantage of fast

response, but remain easy to handle and to install.

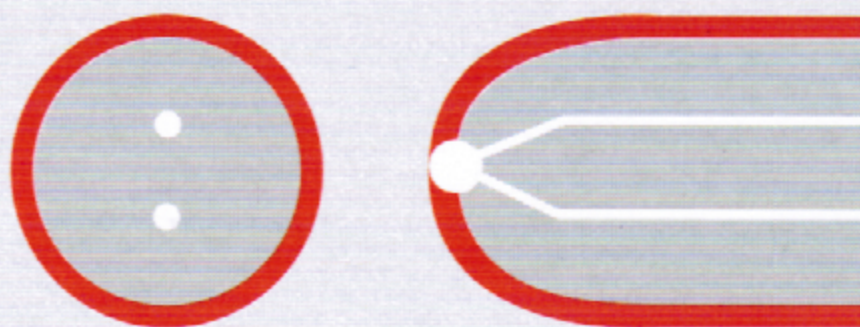
TIS



TMS



TM



Grounded hot junction version TM

In this version, the hot junction conductors are welded to the sheath to reduce the response-time by about 20%. This can also be achieved by choosing a smaller diameter with TI junction, or better the same diameter with a TIS junction which allows the advantages of insulated hot junctions to be kept.

This type of junction cannot be performed on the thermocouples of types J, L and E due to the difference of the melting temperatures of constantan and of stainless steel, the same is valid for the platinum/platinum.

THERMOCOAX hot junctions

- **TI** : insulated hot junction
- **TM** : grounded hot junction
- **TIS** : swaged insulated hot junction
- **TMS** : swaged grounded hot junction
- **TIL** : laminated insulated hot junction
- **TML** : laminated grounded hot junction