



# COAXIAL SURFACE THERMOCOUPLE PROBES

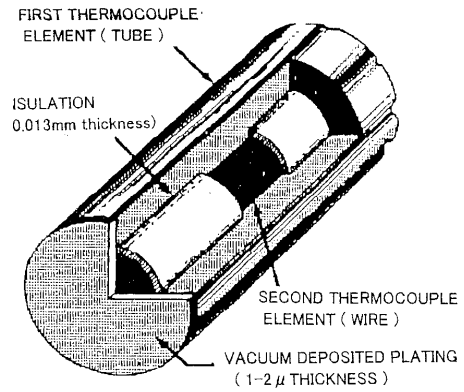
MEDTHERM

0.013mm

( 1,700 )

1,500

1- 2μ



0.38mm

MEDTHERM Corp. 1970

μ Sec

1941

P. Hackenarrn

Midwest Research Institute (MRI, 1953)

D Bendersky

C. E. Møller (1954- 1966, MRI)

Møller

1966

Møtech Co.

Mø Re Inc.

Heat Technology Laboratory

1970

MEDTHERM Corp.

MEDTHERM Co- Ax

μ

MEDTHERM Co- Ax

1- 2μ

1- 2μ

Hbl e"

"Blind

1950

Time Sampled  
ns

Rate

MEDTHERM

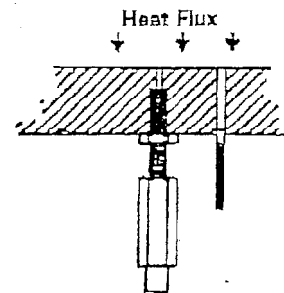
同軸熱電対のエレメント概要

| ISA Calibration Code | Outer Tube           | Center Wire | Recommended Temperature Range |
|----------------------|----------------------|-------------|-------------------------------|
| T                    | Copper               | Constantan  | -270 to +400°C (1000°C**)     |
| J                    | Iron                 | Constantan  | 210 to +1200°C                |
| E                    | Chromel P*           | Constantan  | -270 to +1000°C               |
| K                    | Chromel P*           | Alumel*     | -270 to +1372°C               |
| S                    | Platinum-10% Rhodium | Platinum    | +200 to +1700°C (1768°C**)    |
|                      | * HASKINS Mfg. Co.   |             | ** Short Duration             |

MEDTHERM

このように装着されたセンサーは、プローブ自身の表面温度を正確に指示します。この指示温度が、妨害のない壁面の表面温度に近似するためには、壁面材料の $\sqrt{k\rho c}$  (或いは $K/\sqrt{a}$ ) 値に出来る限り近い、プローブ材料の温度伝導率 $\alpha$ 、熱伝導率 $K$ の値の選択が必要です。また、プローブ径は壁の厚みに対して極力小さい事が大切です。100°Cに於ける近似値は下記の通り。

| Material                 | k<br>Btu/ft hr °F | $\alpha$<br>ft <sup>2</sup> /hr | $\sqrt{k\rho c}$<br>Btu/ft <sup>2</sup> $\sqrt{\text{sec}}^{\circ}\text{F}$ |
|--------------------------|-------------------|---------------------------------|---|
| Copper                   | 219               | 4.3                             | 1.76  |
| Aluminum                 | 119               | 3.3                             | 1.09  |
| Platinum                 | 42                | 0.98                            | 0.69  |
| Iron                     | 33                | 0.63                            | 0.69  |
| Carbon Steel (C1020)     | 27                | 0.53                            | 0.62  |
| Alumel                   | 17                | 0.26                            | 0.56  |
| Type 410 Stainless Steel | 14                | 0.27                            | 0.45  |
| Constantan               | 13                | 0.23                            | 0.45  |
| Chromel P                | 11                | 0.19                            | 0.42  |
| Type 302 Stainless Steel | 9.4               | 0.16                            | 0.39  |



Two Typical Model TCS Coaxial Probes Mounted Flush in a Metal Wall Surface

Facing Surface

"Slivered"

"Slivered"

"Continued"

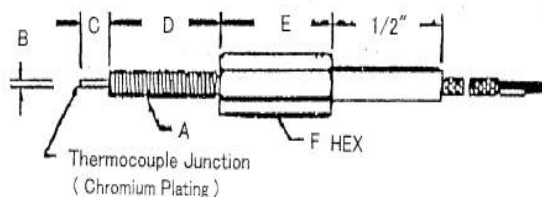
$\mu S$

ISA Standard Limits of Error



| Model No. | A         | B                  | C                   | D                   | E ( )              | F (Hex)  | (C+D+E)           |
|-----------|-----------|--------------------|---------------------|---------------------|--------------------|----------|-------------------|
| TCS-101   | #2-56UNC  | 0.061"<br>(1.55mm) | 0.062"<br>(1.575mm) | 0.125"<br>(3.175mm) | 0.25"<br>(6.35mm)  | 1/4 Hex  | 0.44"<br>(11.2mm) |
| TCS-102   | #3-56UNF  | 0.031"<br>(0.79mm) | 0.125"<br>(3.175mm) | 0.50"<br>(12.7mm)   | 0.50"<br>(12.7mm)  | 3/16 Hex | 1.12"<br>(28.5mm) |
| TCS-103   | 1/4-28UNF | 0.061"<br>(1.55mm) | 0.250"<br>(6.35mm)  | 1.50"<br>(38.1mm)   | 0.75"<br>(19.05mm) | 3/8 Hex  | 2.50"<br>(63.5mm) |
| TCS-104   | #4-48UNC  | 0.031"<br>(0.79mm) | 1.00"<br>(25.4mm)   | 0.50"<br>(12.7mm)   | 0.50"<br>(12.7mm)  | 1/4 Hex  | 2.0"<br>(50.8mm)  |

30AVG 12 (30.5cm)



Model No.

ISA

- "M

TCS-103

Model TCS-103-J

0.061" dia.

- "S"

NGO

**MEDTHERM**



取扱店:



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