Thomas RECORDING GmbH

*„We have the solution!“*

# Thomas Electrode

## Data Sheet

**Type II:** for use with other Microdrive systems

**Technical data:**

| | |
|---|---|
| **Core conductor material:** | platinum (95%) , tungsten (5%) |
| **Insulation material:** | quartz glass |
| **Tip shape:** | (A) pulled & ground, Impedance 1-10MΩ |
| | (D) only ground, Impedance 0.5-0.8MΩ |
| **Connectors:** | Gold plated Amphenol sockets (female, 4021EFL) |
| | Gold plated Amphenol pin (male, 535EFL) |
| | Samtec socket (4060EFL) |
| | without connector (open end) |
| | Other connectors on request! |

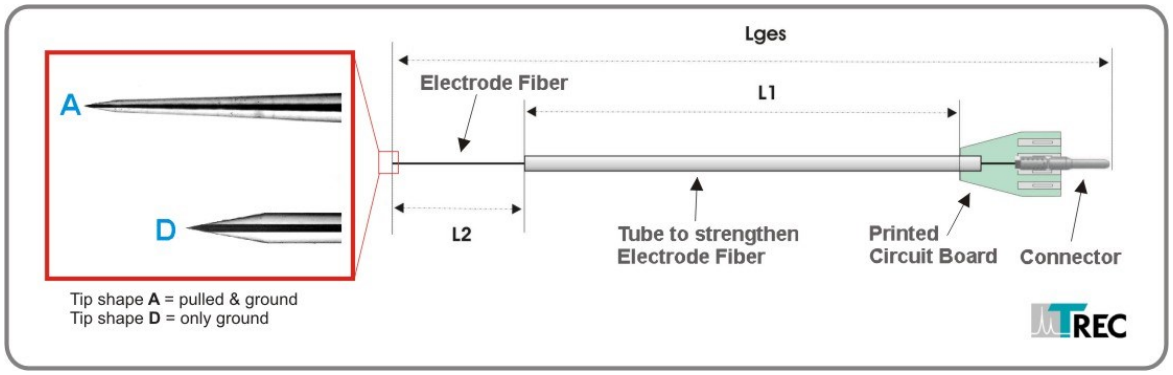


**Figure 1:** Thomas electrode for other manipulator systems

**Dimensions:** **L1** = Tube length / **L2** = tetrode fiber protrusion

**Tube type:** **a)** Metal tube, D=305µm (30gauge) / **b)** Metal tube, D=254µm
**c)** Glass pipette, D=1.0mm / 1.5mm / 2.0mm
**d)** Silica Tube D=170µm / 370µm

**Article numbers:** AN000060 (Electrode for other applications)

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# Mechanical fiber stability

The mechanical stability of Thomas fibers electrodes is high. For fiber electrodes with 100µm outer diameter and 60mN axial force (which is approximately required to penetrate a dura mater) the buckling length of the fiber is app. 10mm. The higher the axial force the smaller is the buckling length. For example at 200 mN axial foce the buckling length of a 100µm fiber is app. 6mm (for details see [1]). The max. fiber protrusion in a Thomas tetrode is therefore L2=5-10mm. Normal dura penetrations in small animals should be possible without any further guidance of the tetrode fiber.

For penetrating tough structures like the intact dura mater of a primate or for deep brain recording applications in primates we recommend the use of sharpened guide tube.

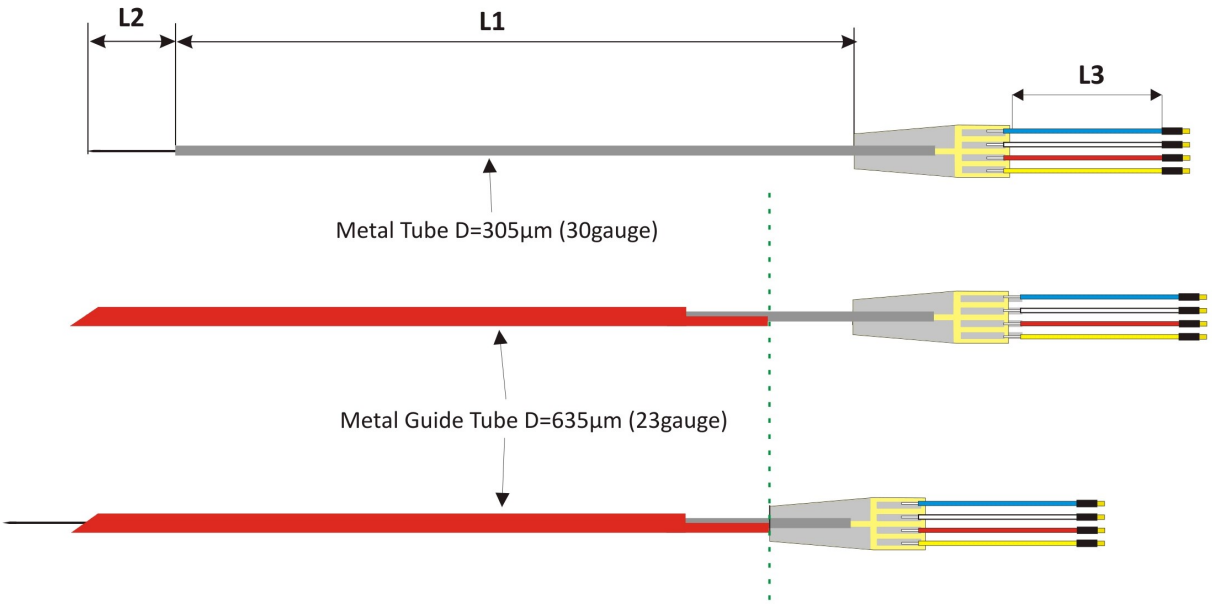


**Figure 2:** This drawing shows the Thomas tetrode for other manipulators. For penetration of tough structures or for deep brain recordings in larger animals the use of a sharpened guide tube is recommended. The guide tube has a shoe shaped end so that tetrode tip insertion is easily possible. For Thomas electrodes we recommend the same procedure!

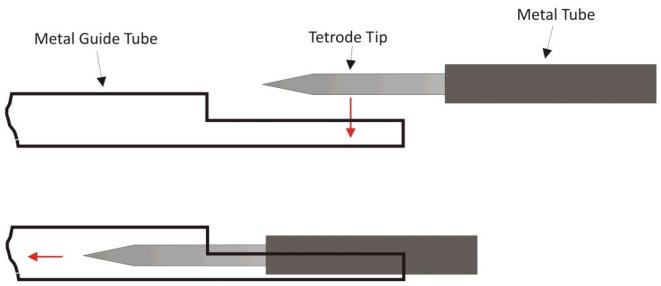


**Figure 3:** This drawing shows the shoe shaped end of the guide tube and how a Thomas tetrode tip is introduced in this guide tube without damaging the electrode or tetrode tip.

[1] Reitboeck HJ. Fiber microelectrodes for electrophysiological recordings. *J Neurosci Methods* 1983; **8**: 249-262

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If you have questions, please do not hesitate to contact:

**info@ThomasRECORDING.com**

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