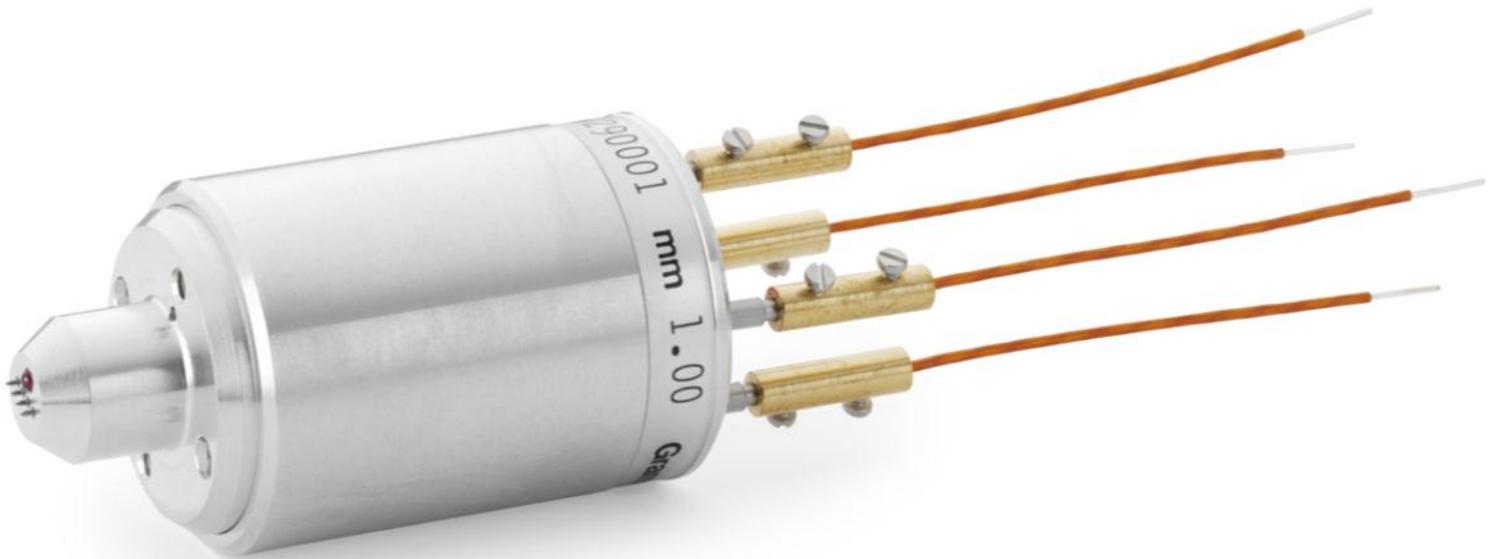


JANDEL ENGINEERING LTD.

Hi-Vac Cylindrical Four Point Probe Head



The JANDEL ENGINEERING Cylindrical four point probe is available in a special **Hi-Vac** version for use in a vacuum environment. The **Hi-Vac** version of the Jandel cylindrical probe head has been successfully used in vacuum that was at 1×10^{-10} m bar. The application was described in the "Journal of Physics: Condens. Matter 3 (1991) S291-S296". It is basically the Jandel Cylindrical probe with certain modifications viz:

The probe head is supplied with all of the usual components except the insulating nosepiece pad is ruby, the tension adjusting screw is PTFE, and isolated terminal pins extend through the top of the probe instead of being soldered internally into brass pins. Only a tiny amount of soldering is done internally where the phosphor bronze ligaments connect into brass pins. The connection of the ligaments to the needles is done with crimps, removing the need for brazing or soldering.

Four 24" single conductor vacuum compatible leads are connected to isolated pins using brass connectors and stainless screws as shown in the image above. Alternately, the customer can supply the lead wire of their choice. Non-anodized aluminum alloy is used for the body, nose-piece, and top, instead of the usual anodized material.

Materials used are:

- 6262 Al alloy
- Virgin PTFE
- Tungsten carbide needles
- Steel piano wire springs
- Ansthenitic stainless steel screws
- Ruby (single crystal alumina) jewel guides
- Hypodermic needle tubing about dia. 1.5 mm
- Phospohor bronze connecting ligaments (to enable the needle connections to flex)
- No blind holes

The characteristics for the probe need to be defined, i.e., spring load, needle tip radii, spacing, and whether a linear or square probe pattern is preferred. It has a 1" diameter body and is 1.9" high (25.4mm x 48.5mm high). The probe weighs 40g. Close spacing probes of 0.635mm or 0.5mm are not available in the Hi-Vac probe. Minimum probe tip spacing is 1.0mm up to a maximum of 1.59mm.

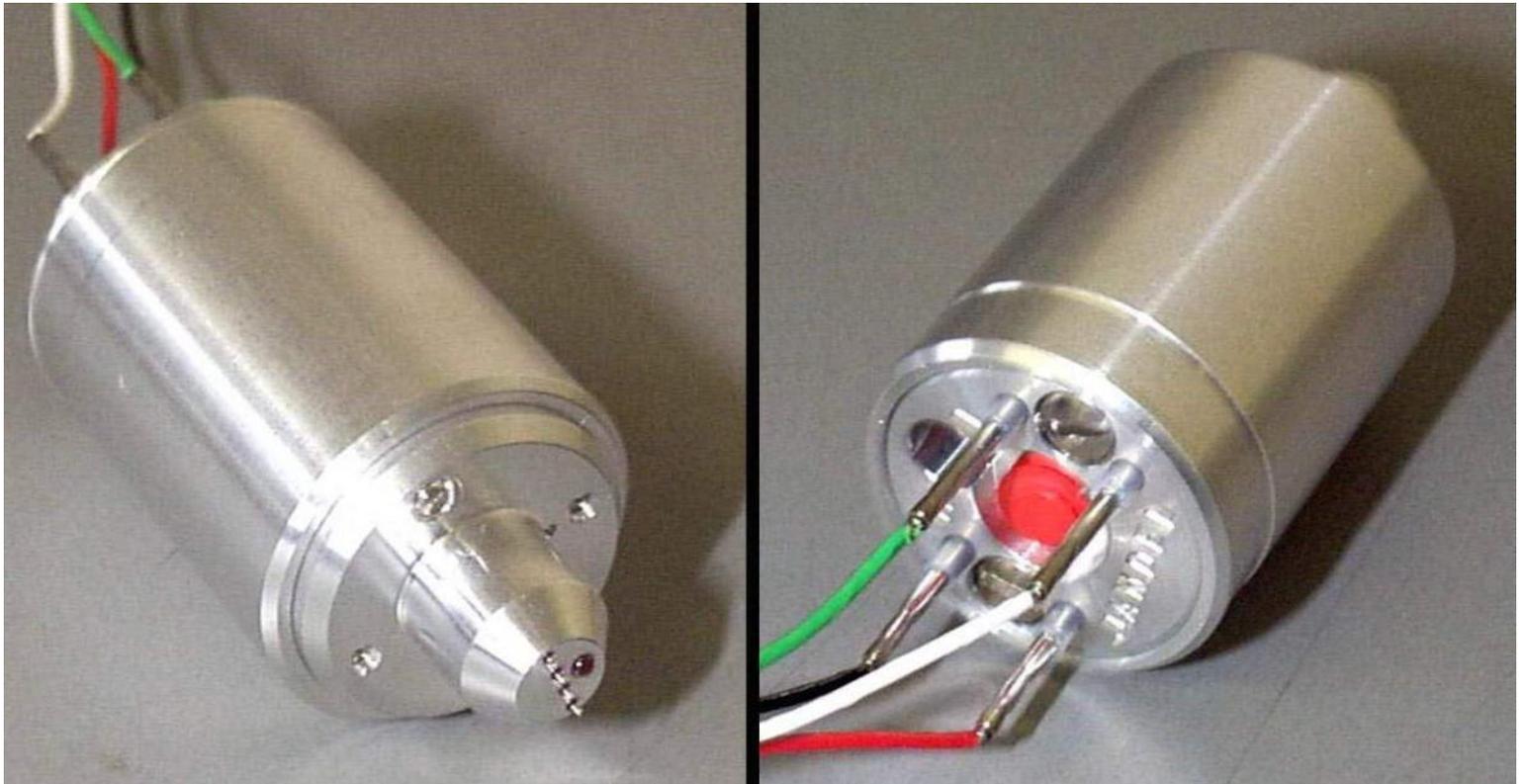
The probe is built to high standards of quality and tight tolerances as described in the document shown here, which applies to almost all models of Jandel four point probes:

http://www.four-point-probes.com/cylindrical_app_notes.pdf

Specifications for radii, spacing, and planarity are verified by video inspection system and/or interferometer. Loads are verified by electronic force gauge. Needles have upper and lower jeweled bearings.

The temperature rating of the **Hi-Vac** probe is for use at up to 120° C in an oven, however, upon request it can be built for use at up to 200° C at no additional charge.

Shown here is an earlier version in which the hypodermic tubing was extended through the top and crimped to the lead wires.



Probe tip spacing can be from 1.0mm up to 1.59mm, however, the Hi-Vac probe is not available with 0.5mm or 0.635mm tip spacing due to the great difficulty in building the probe with those spacings.