

## Fluoropolymer Tube Liners & Liner Tube Kits

**These instructions apply to the following Item Numbers:**

TL-5-7 Fluoropolymer NMR Tube Liner for 5mm use

TL-5-TUBEKIT Fluoropolymer Liner Tube Kit for 5mm spinners

TL-10-7 Fluoropolymer NMR Tube Liner for 10mm use

TL-10-TUBEKIT Fluoropolymer Liner Tube Kit for 10mm spinners

### Description:

The following detailed description references the 5mm assembly, but the 10mm assembly contains similar components and functions in like fashion when used with a standard 10mm spinner turbine and probe.

The Fluoropolymer NMR Tube Liner (Item Number TL-5-7) is a 4mm nominal O.D. tube, closed on one end to contain the sample, designed to be used with the Fluoropolymer Liner Tube Kit (Item Number TL-5-TUBEKIT). The Tube Kit contains a short length (4 inch, 102mm) of a 5mm O.D. open ended glass NMR tube and two fluoroelastomer o-rings.

The 5mm open ended glass tube fits into a standard 5mm spinner turbine, while the smaller Fluoropolymer NMR Tube Liner fits through the open ended glass tube and on into the 5mm probe. The open ended glass tube DOES NOT enter the active region of the probe. Only the fluoropolymer tube liner, consisting solely of carbon and fluorine, enters the probe, allowing acquisition of <sup>29</sup>Si and <sup>11</sup>B spectra without interference from the silicon and boron components contained within glass NMR tubes.

When inserted through the open ended glass tube, the fluoropolymer tube liner is held in position by the two o-rings, one located above and against the end of the glass tube and the other below and against the glass tube. The o-rings slip over and grip the liner tube firmly in position when they are pushed tightly against, but not over, the ends of the glass tube.

### Assembly:

**1.** Insert the open ended glass tube from the Fluoropolymer Liner Tube Kit into the matching size spinner turbine.

**2.** Push one of the o-rings over the top open end of the corresponding size Fluoropolymer NMR Tube Liner, and slide it down a short distance of about 5mm to 10mm.

**3.** Insert the Fluoropolymer NMR Tube Liner into and through the open ended glass tube, with the closed bottom end facing downwards in order to enter the probe, until the o-ring contacts the top end of the glass tube.

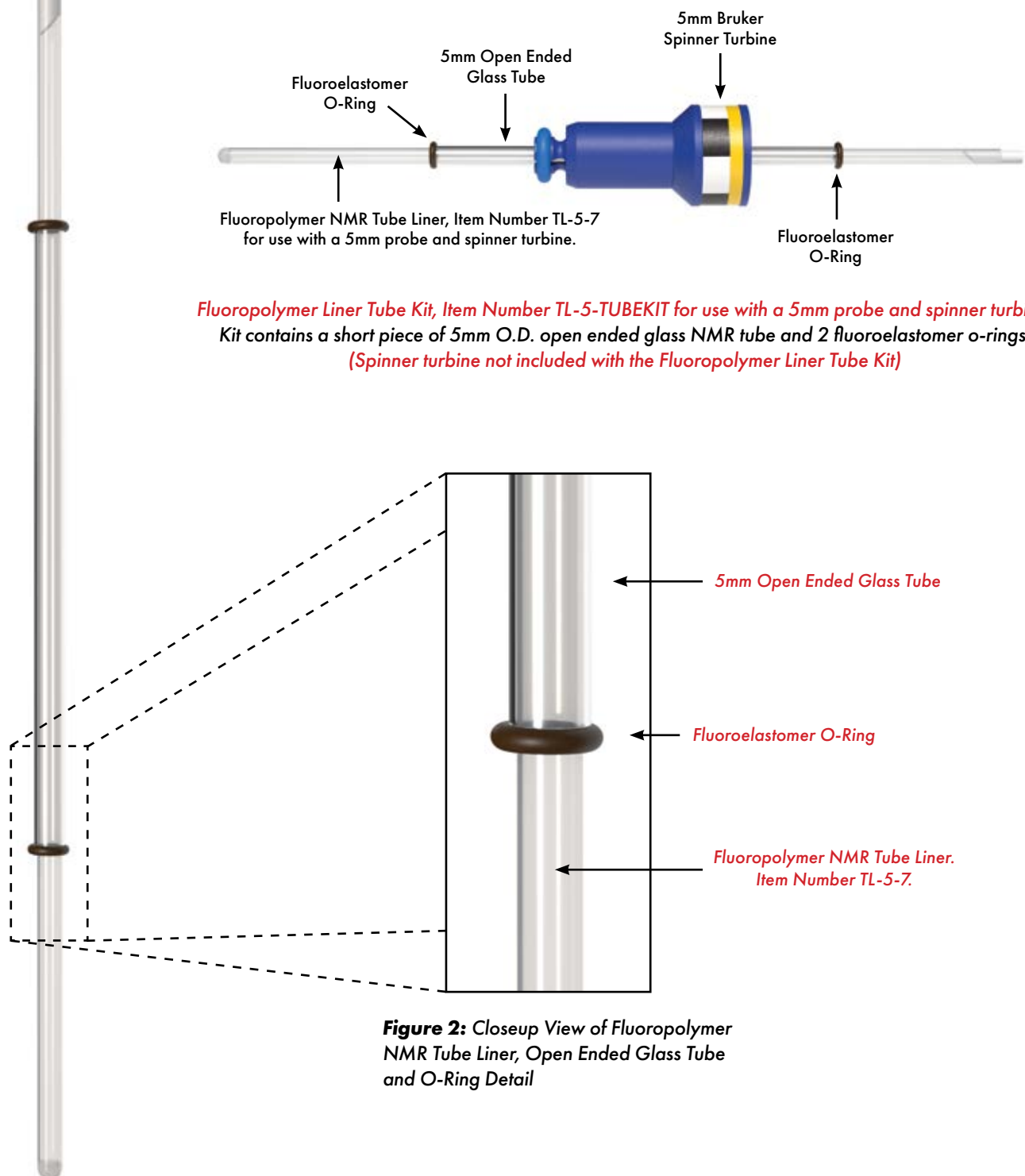
**4.** Push the remaining o-ring onto the bottom end of the Fluoropolymer NMR Tube Liner and slide it upwards until it contacts the bottom of the open ended glass tube.

**5.** The Fluoropolymer NMR Tube Liner can now be adjusted for proper insertion depth into the probe by sliding the glass tube within the spinner turbine and/or the Fluoropolymer NMR Tube Liner within the glass tube, repositioning the o-rings as necessary to maintain the proper height.

# TUBE LINERS & LINER TUBE KITS

## Full View of Complete Assembly in a 5mm Spinner Turbine

Fluoropolymer Liner Tube Kit, Item Number TL-5-TUBEKIT for use with a 5mm probe and spinner turbine.



**Figure 2:** Closeup View of Fluoropolymer NMR Tube Liner, Open Ended Glass Tube and O-Ring Detail

# TUBE LINERS & LINER TUBE KITS

## Fluoropolymer NMR Tube Liners

For NMR studies where chemical compounds such as hydrofluoric acid, ammonium bifluoride and concentrated hydroxide solutions are present. Our fluoropolymer tube liners have a thin-wall construction that minimizes filling-factor losses. Supplied with a PTFE plug closure.

Item No.	Tube Size	Volume at 50mm
TL-5-7	5mm	approx. 0.35ml
TL-10-7	10mm	approx. 2.00ml



## Fluoropolymer Liner Tube Kits for 29Si and 11B

For Silicon and Boron NMR, we recommend the use of either TL-5-TUBEKIT for 5mm probes or TL-10-TUBEKIT for 10mm probes. Kit is designed for either Varian, Bruker, or JEOL spinners as a holding device for the fluoropolymer liner. Probe only “sees” fluoropolymer, allowing for excellent 29Si and 11B spectra.

Item No.	Contents
TL-5-TUBEKIT	two o-rings & one 5mm open-end tube
TL-10-TUBEKIT	two o-rings & one 10mm open-end tube

