

Application note 09NL.AN03.V1

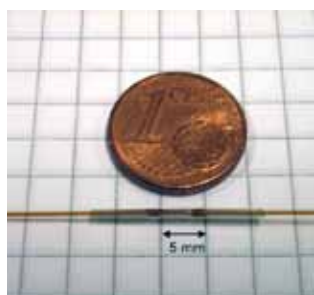
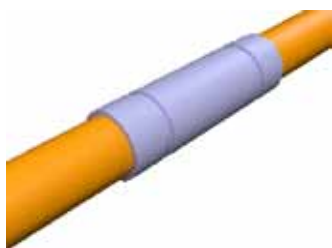
Establishing the optimal column connection, using the Meltfit One

Key words:

Meltfit, capillary column connection, solo tube

Summary:

This application note provides practical information to optimize Meltfit connections and to help solve inadequate connections.



The NLISIS Meltfit One has been developed as a simple, secure, swift and stable method for coupling capillary columns. The connection is established by warming the Meltfit Solo Tube and adding pressure at the same time, left and right of the centre. As a result, the small glass tube is gently fixated on to the columns as a 'second skin', leaving no room for dead volume or leaks.

NLISIS offers three types of Meltfit Solo Tubes.

All Meltfit Solo Tubes are 23 mm long and have an outside diameter of 1,1 mm.

The blue and red tubes are made of standard glass, containing lead. The yellow solo tubes are made of bismuth glass. The Meltfit solo tubes were developed, tested and produced within NLISIS Chromatography. All glass recipes are patented by Philips.

The glass is chemically deactivated, limiting interaction of the glass with it's environment to zero.

	Suitable column sizes	Maximum temperature	Cost per connection
Blue	0.53 to 0.1 mm ID	360 °C	€ 6,00
Red	0.53 to 0.1 mm ID	420 °C	€ 8,00
Yellow	0.25 to 0.1 mm ID	390 °C	€ 8,00



Recognizing the perfect connection

A perfect Meltfit connection has:

- 2 transparent insertions/dents/notches,
- the depth of the insertions is evenly positioned around the column,
- the gap between the column ends is not larger than 3 mm,
- the columns are aligned in a straight line,
- the column ends meet in the centre of the tube.

Optimizing the column connection

To achieve the best possible column connection we advise to do the following:

To eliminate any dirt stuck in the column ends we advise to remove the end of both columns before connecting them. The Meltfit is equipped with a helpful tool to cut the column (straight cut is not crucial).

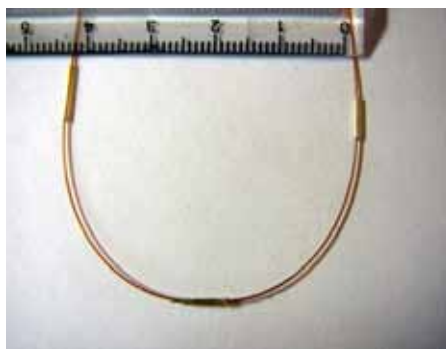
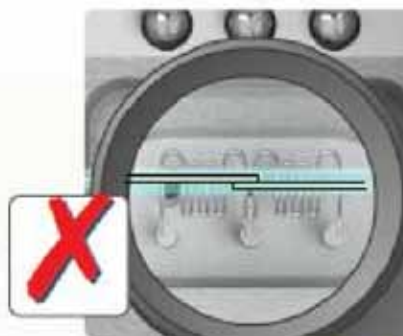
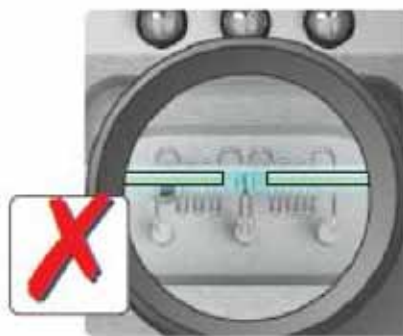
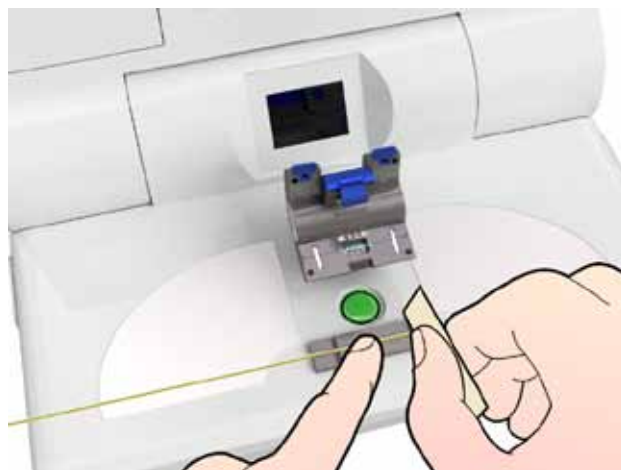
You can improve your connections further by cleaning the column ends with a acetone/methanol wipe. By doing so, the Meltfit glass tubes will even better melt to your column allowing absolutely no room for leakage whatsoever.

When positioning the column in the Meltfit solo tube the ends of the columns must be positioned in the middle of the Meltfit tube.

Make sure the columns don't touch in the middle of the tube but are separated 1 mm to allow flow from one to the other.

A light in the Meltfit tool marks the middle of the tube and can be used as a reference point.

The magnifying glass can help you to see the position of the tubes inside the Meltfit solo tube in the Meltfit tool.



Reducing stress on the connection

Although the Meltfit solo tube has a length of 23 mm, only 5 mm is used to establish the connection. When winding the column in a very small diameter, mechanical stress is put on the connection. To limit the stress, we advise to remove the ends of the tube. You can do this by carefully making a cut >3 mm away from the dent in the tube, using the ceramic cutter. Then gently break the ends off and slide them further on to the column, away from the Meltfit Solo Tube (see picture).