

# DynaMic Extractions®



## SPECTRUM SERIES

### Flying Lead Installation Guide

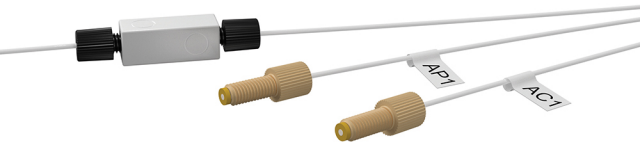


## SPECTRUM SERIES

# Flying Lead Installation Guide

## Index

Equipment .....	3
Removing old flying leads .....	6
Fitting new flying leads .....	11
Appendix 1 - How to fit gripper ferrules .....	26
Appendix 2 - How to fit superflangelss ferrules .....	29



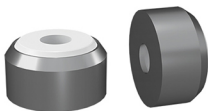
# Equipment

In order to change the flying leads in a Spectrum you will need an essentials flying lead kit, available from Dynamic Extractions.

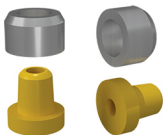
The essentials flying lead kit contains four lengths of flying lead tubing, 8 gripper ferrules, 8 superflangeless ferrules, a flying lead application tool, a 50ml tube of grease and a 10ml syringe.



Flying Lead Tubing x 4



Gripper Ferrules x 8



Superflangeless Ferrules x 8



Flying Lead Application Tool

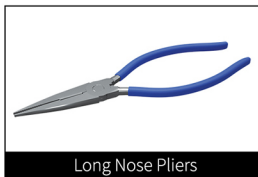
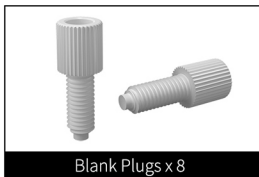
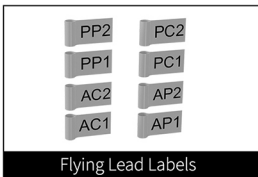


50ml Tube of Silicon Grease

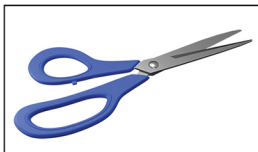


10ml Syringe

You will need 8 gripper nuts, 8 superflangeless nuts, 2 x standard unions, a set of flying lead labels, a pair of long nose pliers and a 3mm Allen key, all of which should have been supplied with the Spectrum when it was delivered.



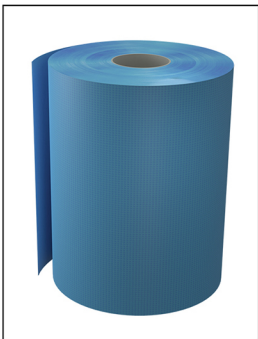
Additional tools you will need to change the flying leads are a pair of scissors and a back pressure regulator. You will also need a supply of absorbent tissue and a hard cutting surface or block.



Pair of Scissors



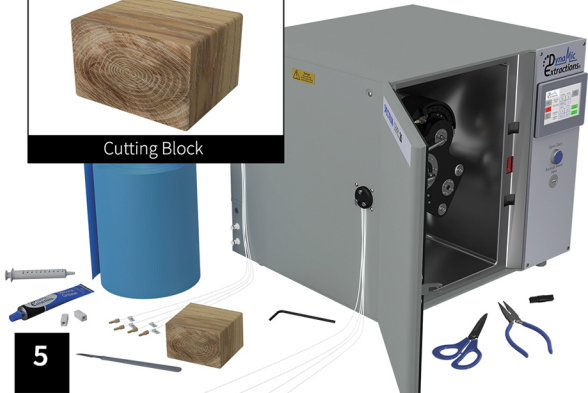
Back Pressure Regulator



Absorbent Tissue



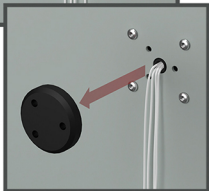
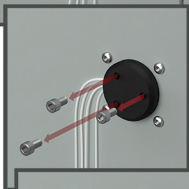
Cutting Block



# Removing the old leads



The first step is to remove the two external flying lead clamps, using a 3mm Allen Key.

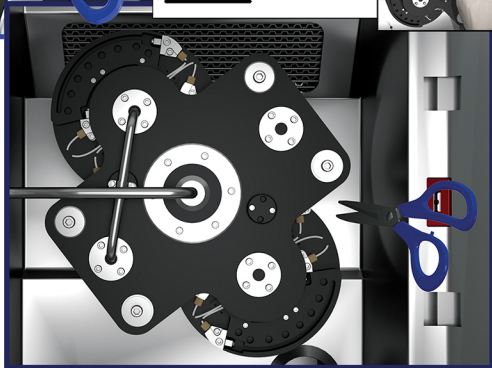


Using a pair of scissors,  
cut the flying leads  
close to the bobbin nuts

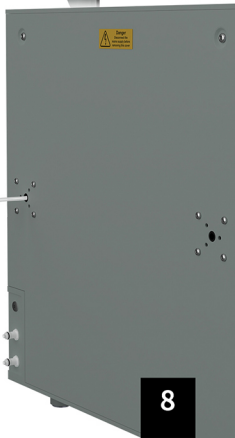
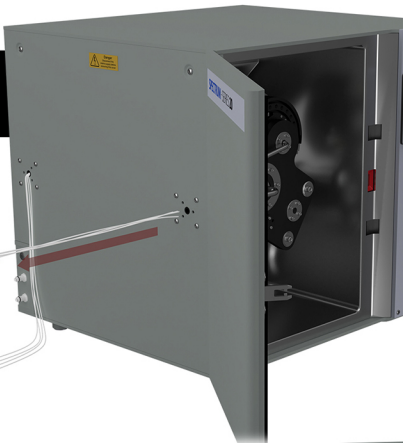
Carefully rotate the bobbins  
by hand to access all of the  
flying leads



Take care not to trap  
your fingers while  
rotating the bobbins  
by hand

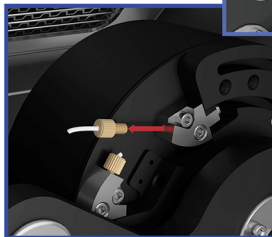
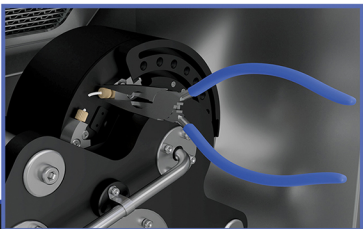


Pull all four flying leads  
through the instrument  
from the outside

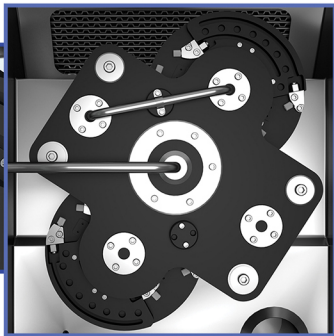




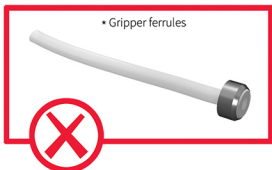
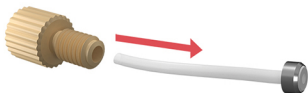
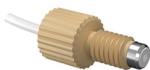
Remove the gripper fittings from the bobbins (you may need to use the long nose pliers to loosen the gripper fittings).



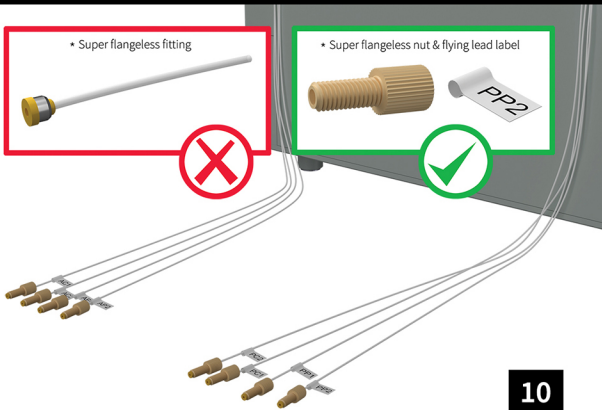
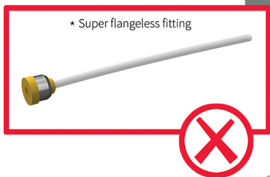
Replace the gripper fittings with blanks to prevent the contents of the bobbins siphoning out.



The gripper ferrules can be discarded, but the gripper nuts must be kept for fitting the new set of flying leads.

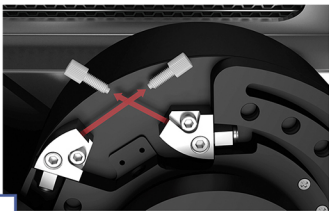
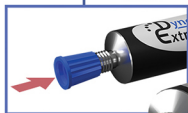


The same is true of the super flangeless fittings on the external ends of the flying leads, keep the nuts but discard the ferrules. Also keep the flying lead labels.

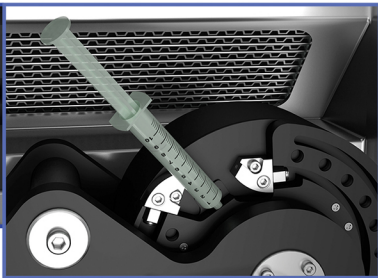


# Fitting new flying leads

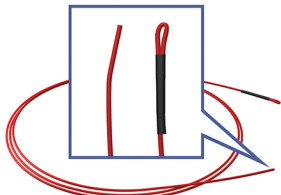
The next step will be to remove two of the blank plugs that were inserted when the old flying leads were removed.



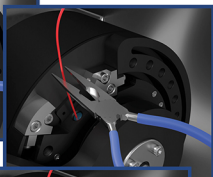
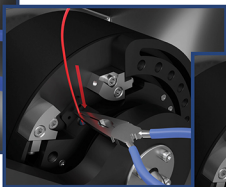
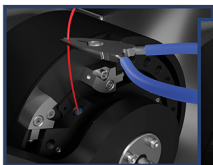
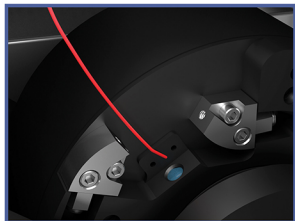
Fill the 10ml syringe with silicone grease and apply approximately 1ml into the hole in the bobbin.



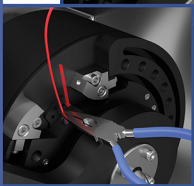
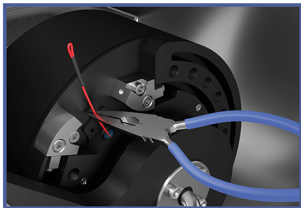
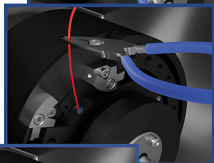
Take the flying lead insertion tool and bend the end slightly, insert it into the hole, feeding through until it emerges from the side of the instrument.

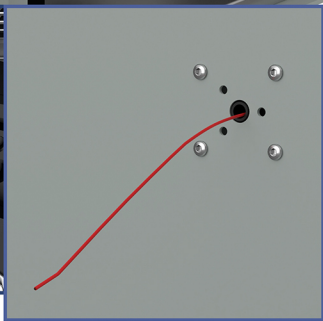
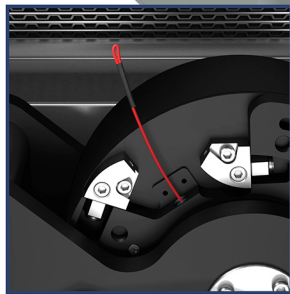
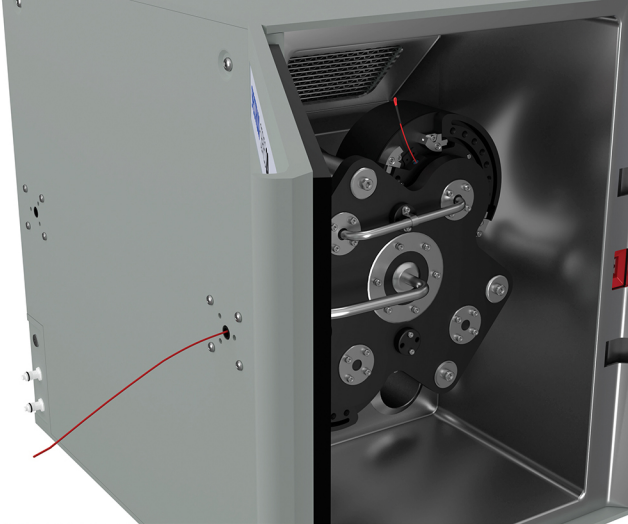


\* Flying Lead Insertion Tool



If it experiences some resistance, it may be necessary to force it through using a pair of pliers.





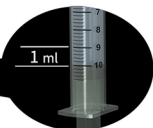
Take the flying lead and fit a gripper (see fitting gripper fittings appendix 1) onto one end, then insert it through the small hole at the end of the guide and pull until it is halfway, a bend in the flying lead shows the mid point.



Then fit a gripper to the other end (see fitting gripper fittings appendix 1).



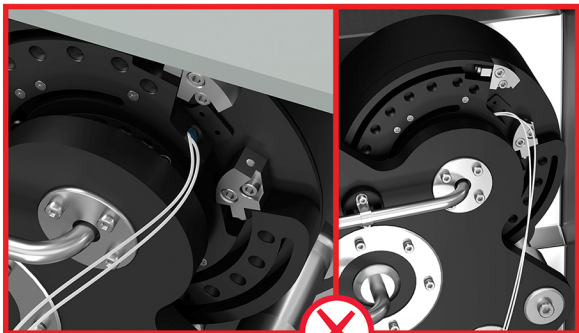
Now apply 1ml of silicone grease to the hole in the bobbin and slowly begin to pull the flying lead through the instrument.



Add 1ml amounts of silicone grease every 60cm or so of flying lead pulled through.

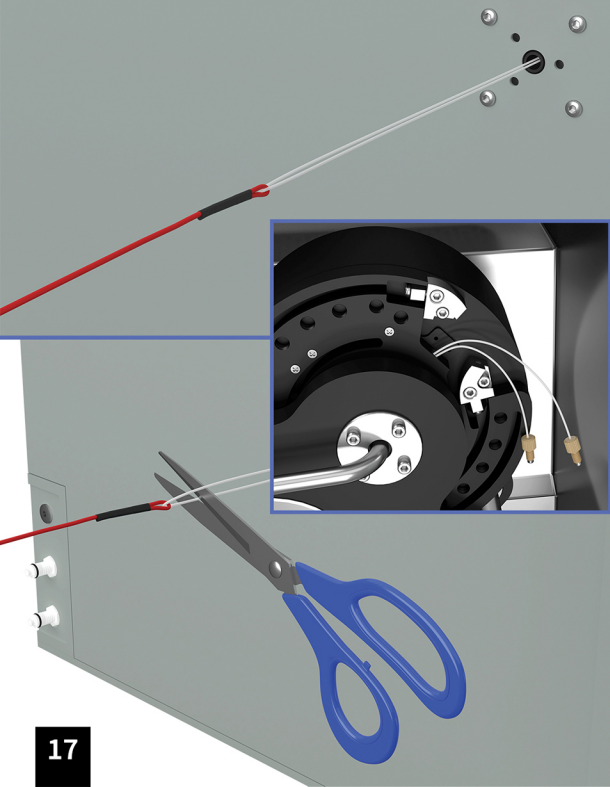


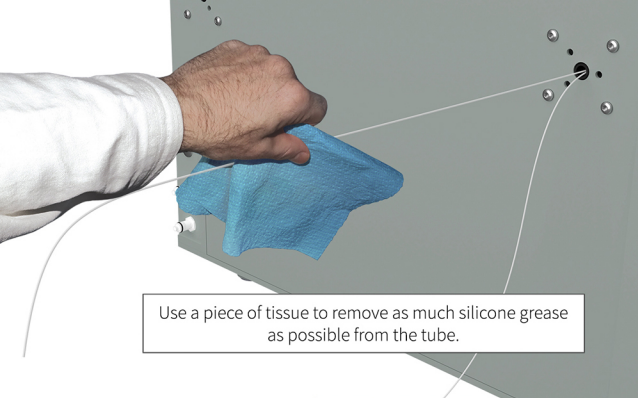
It is important that the flying leads enter the bobbin perpendicularly to avoid being scraped as they enter the bobbin.





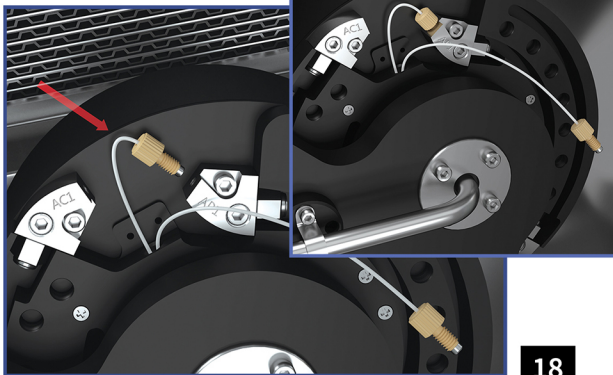
Once the flying lead has emerged from the side of the instrument, cut the flying lead and remove the flying lead guide.



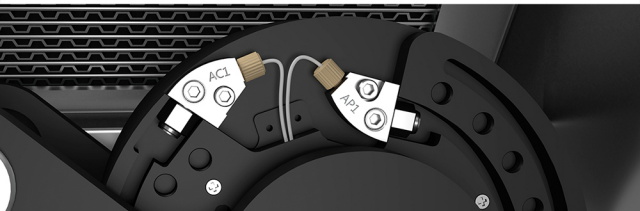


Use a piece of tissue to remove as much silicone grease as possible from the tube.

Fit one of the gripper nuts onto the bobbin fitting.



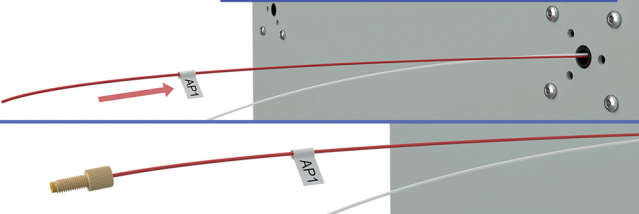
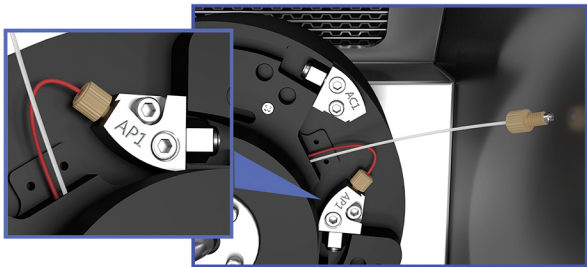
Each flying lead should have a 3 digit code, indicating which column, bobbin and orientation the flying lead is connected to, for example AC1 or AP1!



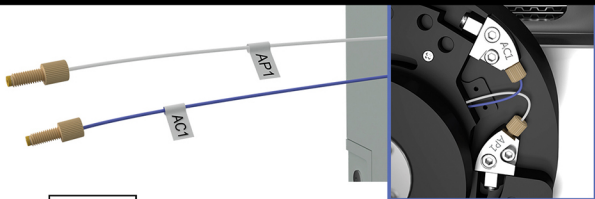
To identify which flying lead relates to the corresponding bobbin, gently tug one of the leads near the bobbin nut and feel for movement at the exit port on the outside of the instrument.



Add the flying lead label that matches the port on the bobbin fitting and then fit the super flangeless nut to this lead (see appendix 2).

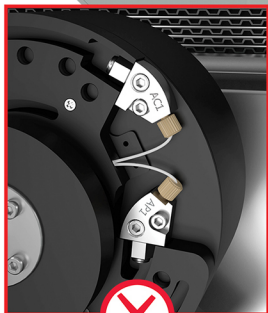
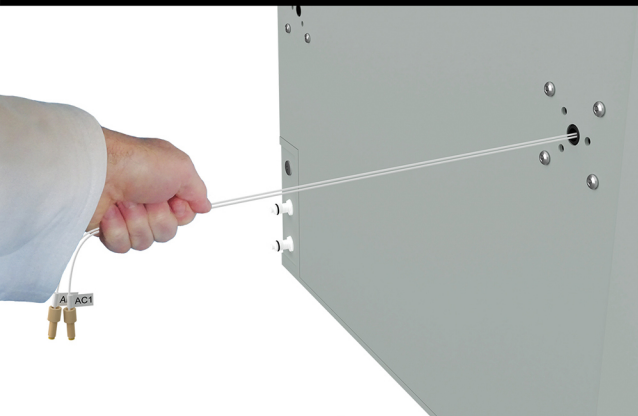


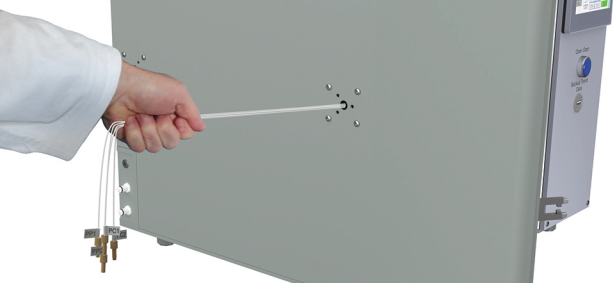
Do the same for the other flying lead.



It is essential that the flying leads are connected correctly, otherwise the instrument will not function properly.

The tubing can now be pulled through the instrument so that a finger can be inserted under the flying lead on the bobbin side.



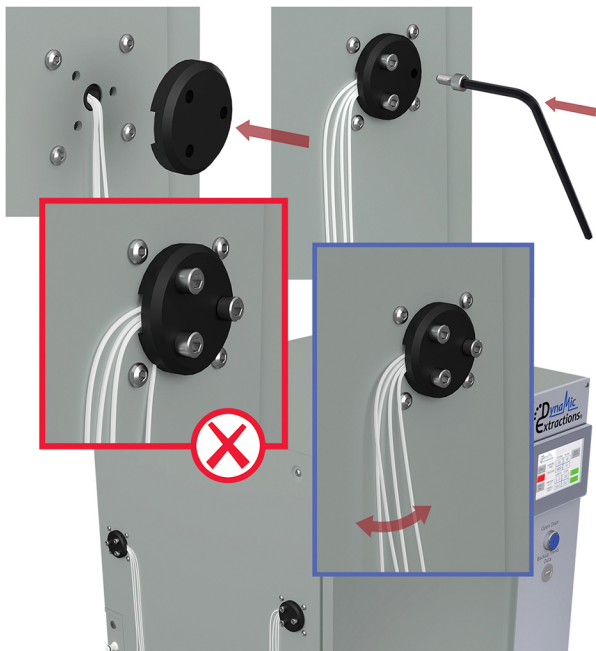


Repeat for other flying lead on the same bobbin.  
Then, holding all four flying leads at the side of the instrument, rotate the rotor clockwise, until the flying leads no longer twist in your hand.



Check that the flying lead connections to the bobbin haven't become too tight. If they have pull them back a little, so that you can get a finger underneath them.

Then replace the external flying lead clamp, making sure that the groove sits above the flying leads and that they are not being pinched.



With the clamp attached you should still be able to have a small amount of movement of the flying leads. Repeat for the second bobbin.

When all the flying leads have been replaced, turn the Spectrum on and rotate at 1600rpm for 15 minutes, then stop the rotation and check that the flying leads have not become too tight.



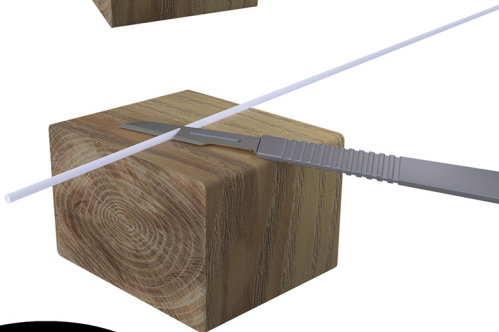
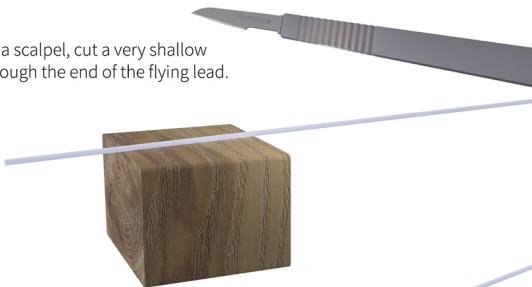




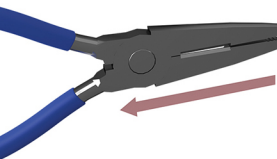
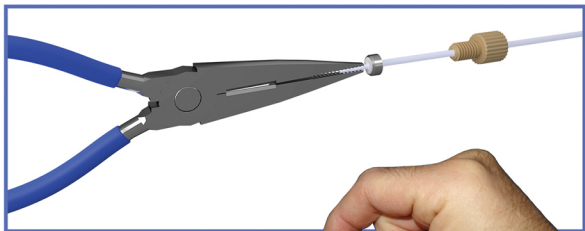
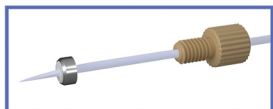
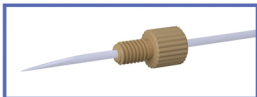
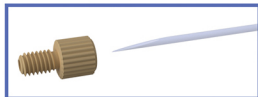
The Spectrum is now ready to use!

# Appendix 1 - How to Fit Gripper Ferrules

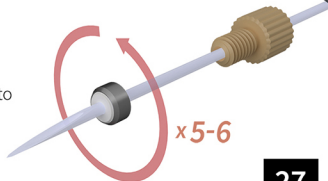
Using a scalpel, cut a very shallow angle through the end of the flying lead.

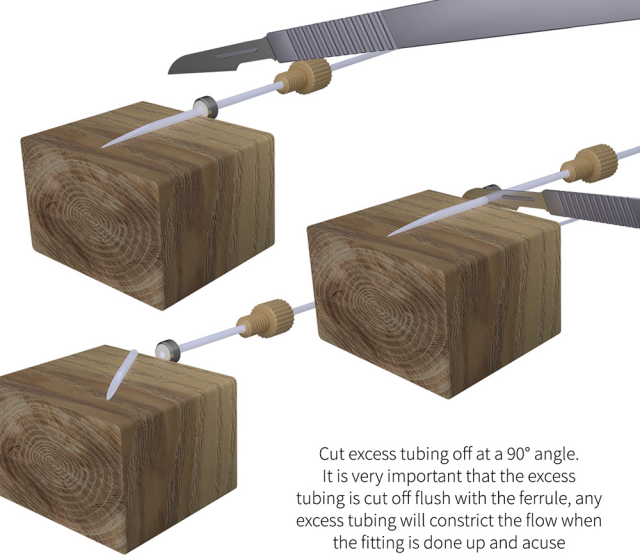


Fit the gripper nut and then fit the ferrule, PTFE facing out, pulling it onto the flying lead with a pair of short nose pliers.

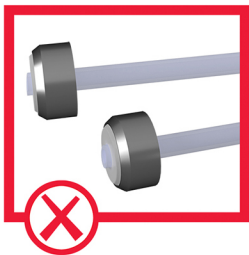
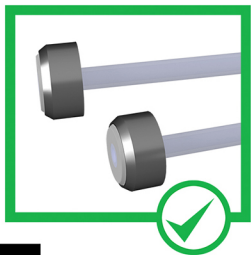


When the ferrule is on the flying lead rotate it in one direction about 5 or 6 times to insure it is properly seated.





Cut excess tubing off at a 90° angle. It is very important that the excess tubing is cut off flush with the ferrule, any excess tubing will constrict the flow when the fitting is done up and cause pressure problems.

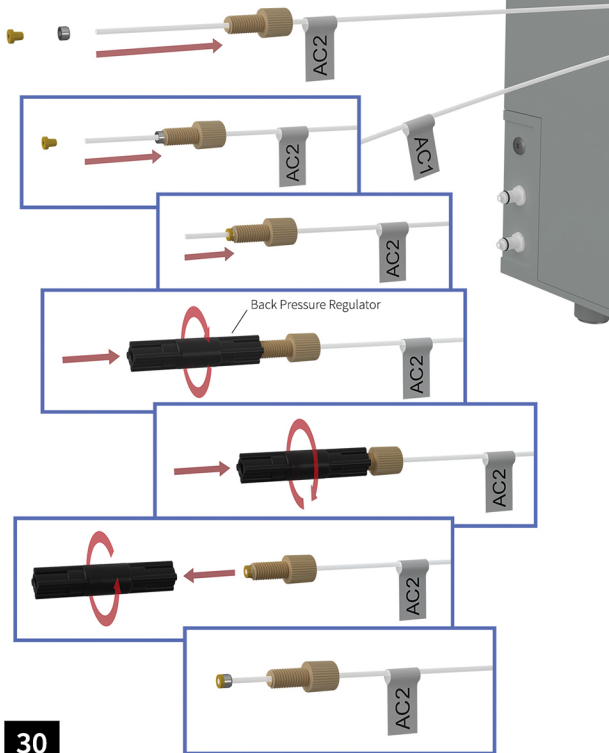


## Appendix 2 - How to Fit Superflangeless Ferrules

Using a good quality tubing cutter with a sharp blade, trim the end of the tubing. Fit the super flangeless nut, the stainless steel ring, flat side facing the nut and the ferrule.



Using a flat bottomed connector, such as a back-pressure regulator, screw in the super flangeless nut tight, undo the super flangeless fitting which should now be fitted correctly.



Dynamic Extractions recommend the use of super flangeless fittings on all external flying leads and gripper fittings on all internal flying leads.

