

Please note that the following information is provided for the guidance of users only; it is for the purposes of education and training and any data presented demonstrates typical performance. All Waters instruments will be installed and tested in accordance with Waters Standard Performance Tests. In presenting these data no agreement is inferred by Waters to perform any additional non-standard performance tests during the installation.

## HINTS & TIPS

### Guidance for UniSpray users

#### [Guidance for using UniSpray with MS]

The following information will help with the set-up of UniSpray with an MS system. The hints and tips in this document are not specific to any particular MS configuration and should be used in conjunction with the MassLynx based "on-line help" (where available) and "User guide" for the instrument of interest. UniSpray MassLynx integration is being phased in.

#### 1. [Introduction]

The UniSpray source is based on the Xevo universal source housing but has a new probe design and a built in removable Impactor pin built into the housing as shown in figure 1. The source can be used with Acquity UPLC and Acquity UPC<sup>2</sup>. It is also available in a LockSpray version.

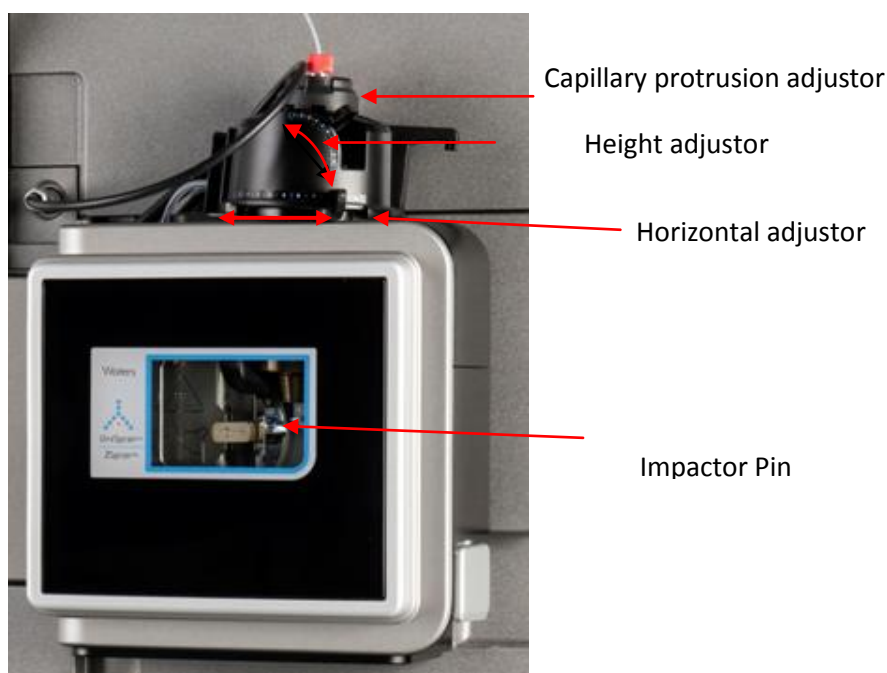


Figure 1. Shrike source enclosure

## 2. [Ease of Use - Tuning]

1. Allow around 30 minutes for the source to warm up before starting to tune.
2. The height of the probe and the movement from left to right is by the use of the levers shown in figure 1.

The horizontal adjustment has the most significant impact on signal intensity during tuning. A small change in position can have large impact on signal intensity. This adjustment is sensitive to the smallest change in position.

3. The source is controlled in MassLynx 4.2 as any other optional source. It is labelled UniSpray and US +/- in the source selection dropdowns on the tune page and Intellistart tune pages. (Where software support has not been enacted UniSpray can be run as ESI mode including Vion in UNIFI.)

The voltage on the pin is called the Impactor Voltage (ESI voltage when not software implemented) and should be set to 1kV as a starting point but this is to be optimised. The typical range is 0.5kV to 3kV. Signal will be observed with the voltage set to zero but this should increase when voltage is applied.

In negative ion mode a discharge between the end of the probe and Impactor pin may be observed particularly at high water concentrations. The Impactor voltage should be reduced or the probe raised.

4. The height and lateral position of the probe tip relative to the Impactor pin should be optimised while introducing the analyte into the mobile phase using combined mode on the instrument fluidics. The optimum height is approximately 2-3mm above the Impactor pin with the spray hitting just to the right of centre of the Impactor pin (figure 2).

Note. The optimum lateral position changes slightly depending on the polarity of the compound under investigation.

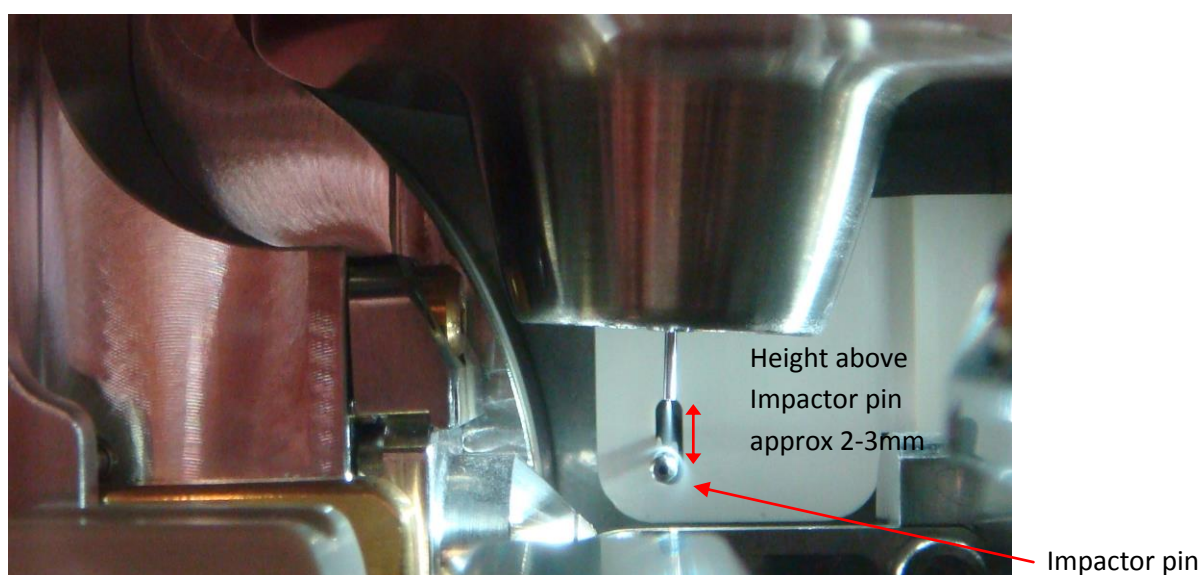


Figure 2. Position of probe tip relative to the impactor pin.

5. The capillary position within the nebuliser tube should be optimised to give a tight columnated spray which should also give the best sensitivity. This tends to be with the capillary level with the end of the nebuliser tube or just pulled back inside.
6. When introducing high aqueous concentration mobile phases liquid droplets will pool on the Impactor pin – this is normal and will not affect the analysis.
7. The source has been used to run dirty samples, including >1000 injections of protein precipitated plasma and even though the Impactor pin appears to be dirty the sensitivity is not significantly compromised (figure 3).

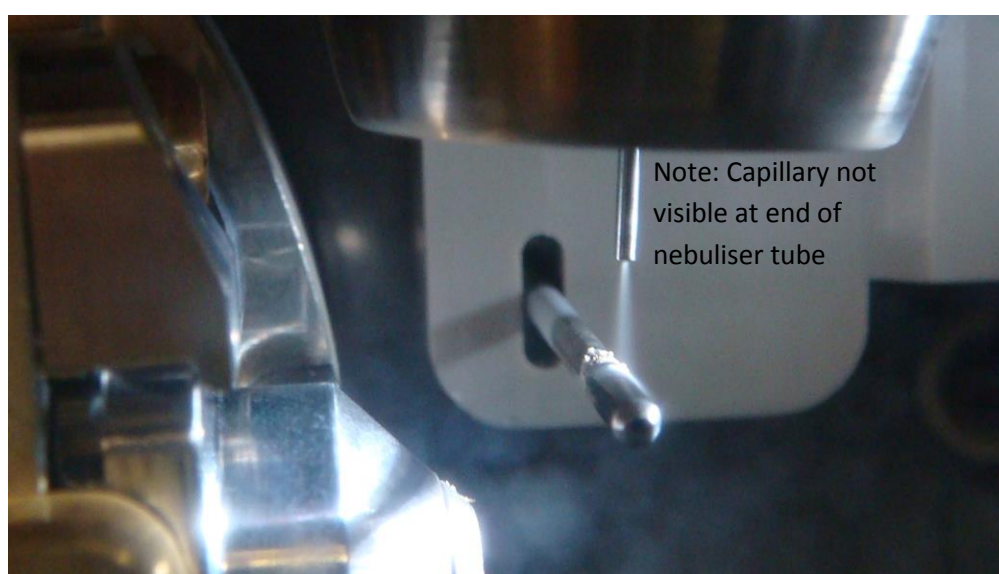


Figure 3. Impactor pin showing build up of contamination

8. The source has been designed for coupling to LC but can be used in infusion mode however please note that flow rates of  $\geq 50 \mu\text{L}/\text{min}$  will be required to give a stable signal.

### 3. [Maintenance]

1. The target pin will need to be cleaned regularly. If the source has to be retuned after a previous analysis then the pin should be cleaned as the spray will be spraying on to a dirty surface and will not be ionising efficiently. The Impactor pin can be removed by the removal of a PEEK retaining screw as shown in figure 4.

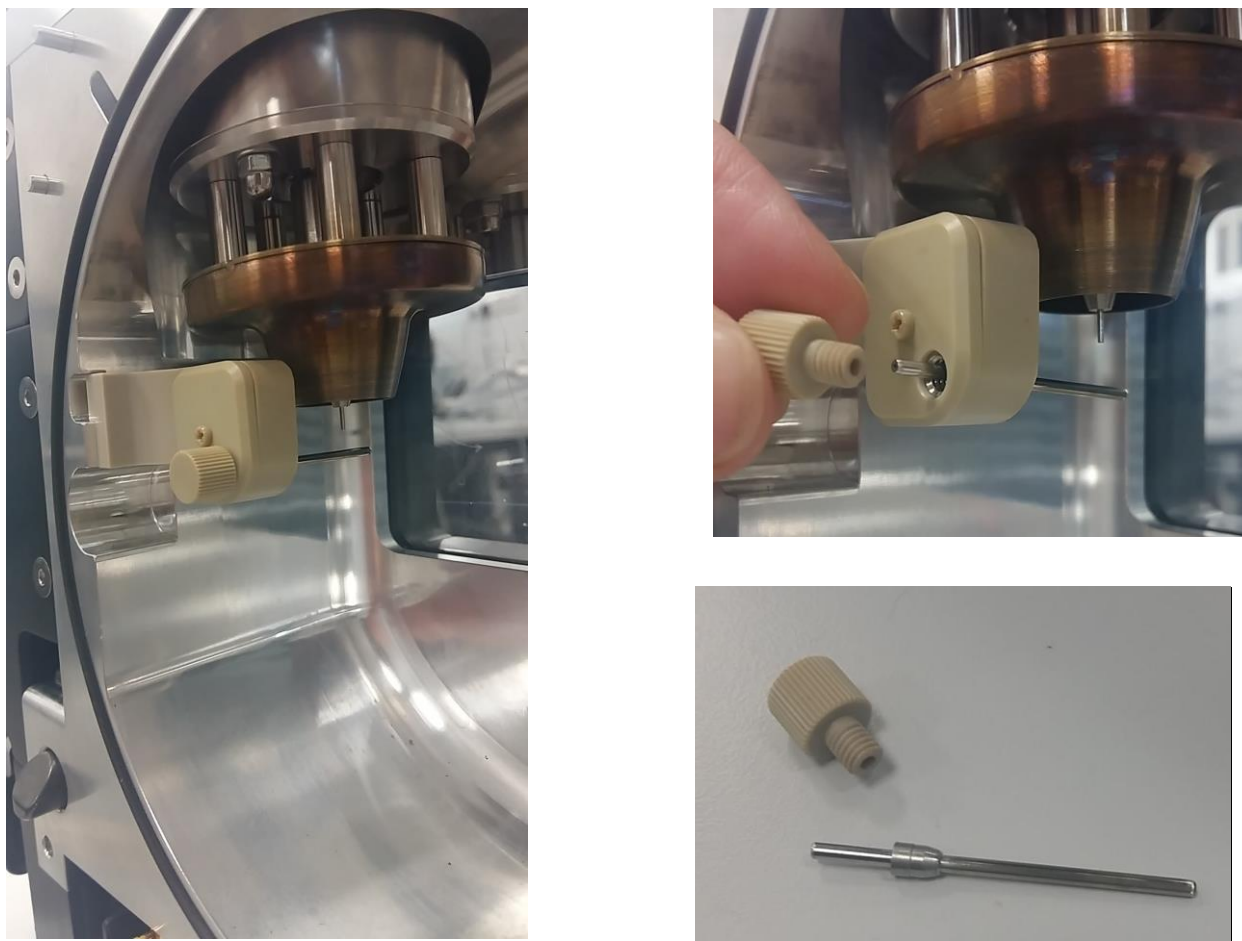


Figure 4. Impactor pin removal

2. Figure 5 shows the typical build up of contamination when analysing dirty samples. The white spot observed is where the spray impacts on the Impactor pin. After removal of gross contamination the burn on the Impactor pin should be removed using the yellow lapping paper supplied followed by ultrasonic cleaning.

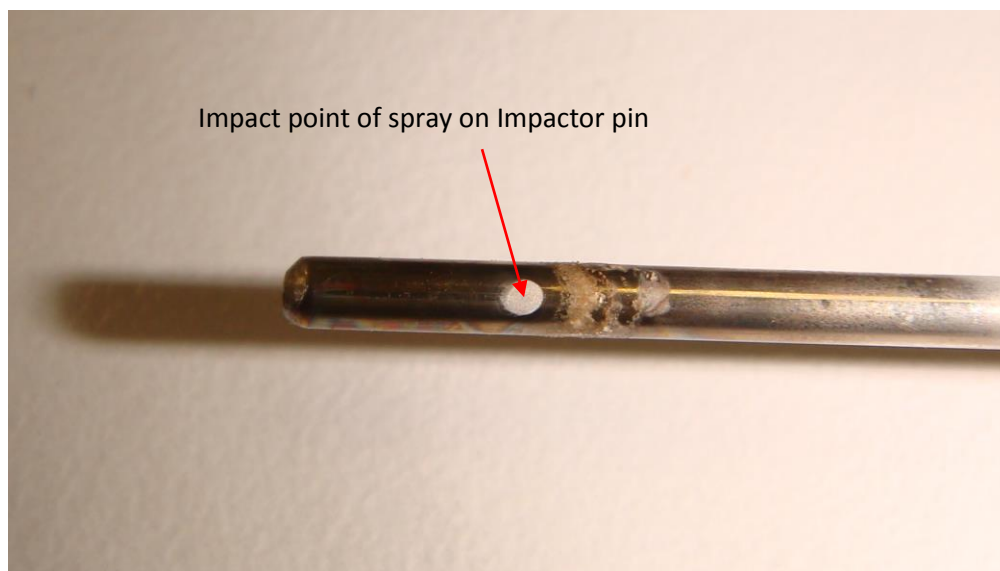


Figure5. Impactor pin after running dirty samples

3. The Probe assembly (capillary) is a consumable spare part and should be replaced if it becomes blocked or damaged.