The page numbers referenced in the remainder of this document are specific to the following guides:

- *OptiMS Waters MS Adapter for NanoLockSpray and NanoFlow Ion Sources Installation Guide*: RUO-IDV-08-3315-A
- *Neutral OptiMS Cartridge Instruction Guide*: RUO-IDV-05-2782-C
Before Installing the Cartridge

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⚠️ WARNING! Electrical Shock Hazard. Make sure that the ESI voltage is 0, the mass spectrometer is Idle, and the CESI 8000 Plus separation voltage is off before installing the adapter. 

Install the MS adapter on the mass spectrometer. Make sure that the MS adapter is located away from the ion source inlet.

Set the temperature of the mass spectrometer interface heater to between 50 °C and 100 °C.

Depending on the MS adapter in use:

- "Install the Adapter" in the OptiMS Bruker MS Adapter for Bruker Mass Spectrometers Installation Guide, pages 9 to 15.
- "Install the Adapter" and "Align the CESI 8000 Plus Module with the Mass Spectrometer" in the OptiMS Waters MS Adapter for NanoLockSpray and NanoFlow Ion Sources Installation Guide, pages 8 to 13.
## Install the Cartridge

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| Remove the cartridge from the box and then install it in the CESI 8000 Plus system.  
  - Remove the protective sleeve from the sprayer.  
  - Insert the sprayer housing in the MS adapter.  
  - Make sure that the sprayer tip is visible. | "OptiMS Cartridge Installation" in the CESI 8000 Plus High Performance Separation-ESI Module User Manual, pages 53 to 56.  
Refer to the installation instructions for the mass spectrometer in use:  
  - "Install the Adapter" in the OptiMS Bruker MS Adapter for Bruker Mass Spectrometers Installation Guide, pages 9 to 15.  
  - "Install the Adapter" and "Align the CESI 8000 Plus Module with the Mass Spectrometer" in the OptiMS Waters MS Adapter for NanoLockSpray and NanoFlow Ion Sources Installation Guide, pages 8 to 13. |

Using the Direct Control window, rinse the separation and conductive line capillaries by applying 100 psi to the double-deionized (DDI) water vials in the inlet and outlet buffer trays.  

**Note:** Make sure that water droplets are visible at the sprayer tip and the needle base. If no droplets are visible, the capillary might be clogged.  

**Condition the Cartridge and Tune the System**

*CAUTION: Potential System Damage. Do not move the sprayer tip too close to the ion source inlet. If the sprayer tip is too close to the inlet, then capillary rinse solution might be aspirated into the mass spectrometer.*

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<td>Remove the sprayer housing from the adapter, replace the protective sleeve, and then submerge the sprayer tip in a Falcon tube containing 5 mL to 10 mL of water.</td>
<td>&quot;Conditioning a New Cartridge&quot; in the <em>Neutral OptiMS Cartridge Instruction Guide</em>, pages 7 to 8.</td>
</tr>
<tr>
<td><strong>Note:</strong> Be sure to execute both methods, first the Neutral CESI Washing method, and then the CESI Electrical Conditioning method.</td>
<td>&quot;Initial Conditions&quot; in the <em>Neutral OptiMS Cartridge Instruction Guide</em>, pages 11 to 14.</td>
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<tr>
<td>Execute the Neutral CESI Washing method. Alternatively, leave the sprayer tip in the Falcon tube overnight.</td>
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<tr>
<td>When the method is done, carefully remove the protective sleeve. Using a lint-free wipe, gently wipe off any excess water from the outside of the sprayer tip housing.</td>
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<tr>
<td>Insert the sprayer housing in the MS adapter on the mass spectrometer and then turn it counterclockwise to lock it in place. Make sure that the MS adapter is away from the ion source inlet.</td>
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<td><strong>CAUTION: Potential System Damage. Be careful not to move the retractable tip protector while wiping. Small movements of the tip protector might expose the sprayer tip protector and cause it to break.</strong></td>
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<tr>
<td>Make sure that the ESI voltage on the mass spectrometer is 0 and then execute the Neutral CESI Electrical conditioning method. The voltage on the CESI 8000 Plus system is 0.</td>
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<td>When the method is done, move the sprayer tip 2 mm to 3 mm away from the ion source inlet. Fill the separation and conductive line capillaries with background electrolyte solution (BGE). Using the Direct Control window, ramp the voltage up to 30 kV over 1 min with 0.5 psi pressure on both capillaries, and then hold for 60 minutes.</td>
<td>&quot;Establishing a Stable Spray and Determining Optimum ESI Voltage&quot; in the <em>CESI 8000 Plus High Performance Separation-ESI Module User Manual</em>, pages 196 to 200. Appendix E, &quot;Fine Tuning Sprayer Tip Position&quot; in the <em>CESI 8000 Plus High Performance Separation-ESI Module User Manual</em>, pages 356 to 359.</td>
</tr>
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<td><strong>Note:</strong> The alignment of the emitter tip, the X,Y, and Z position of the emitter tip, and the ESI voltage are critical for stable electrospray. After the CESI 8000 Plus system voltage is reached, increase the ESI voltage on the mass spectrometer in 0.1 kV increments until electrospray ionization is detected. Adjust the position of the sprayer tip and the ESI voltage until the electrospray is stable and reliable. Record the values for the minimum voltage and the working voltage. Continue to apply the voltage and pressure on the CESI 8000 Plus system for 20 min. If the baseline fluctuation is greater than 40%, then repeat the procedure to optimize the sprayer tip position.</td>
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<tr>
<td>On the mass spectrometer, set the ESI voltage to 0. Using the Direct Control window, ramp the voltage down to 1 kV over at least 5 min.</td>
<td>Refer to Figure 9.21 in the <em>CESI 8000 Plus High Performance Separation-ESI Module User Manual</em>, page 210.</td>
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System Suitability Test

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<td>Use the instructions in the guide to prepare the reagents and samples for the Protein Test Mix.</td>
<td>&quot;Solutions and Buffers&quot; in the <em>Neutral OptiMS Cartridge Instruction Guide</em>, pages 8 to 11.</td>
</tr>
<tr>
<td>Perform the system suitability test using the Protein Test Mix.</td>
<td>&quot;Run the Protein Test Mix and Evaluate the Results&quot; in the <em>Neutral OptiMS Cartridge Instruction Guide</em>, pages 22 to 23.</td>
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<td>Make sure that the test results meet the specifications.</td>
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<tr>
<td>If the specifications are not met, make sure that the reagents and samples were prepared correctly and then repeat the test. If the test fails again, then contact SCIEX Technical Support at sciex.com/request-support.</td>
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<tr>
<td>If peptide mass mapping experiments are planned, then perform the system suitability test using the beta-galactosidase digest. Use the instructions in the guide to prepare the reagents and samples for the beta-galactosidase digest. Make sure that the test results meet the specifications. If the specifications are not met, make sure that the reagents and samples were prepared correctly and then repeat the test. If the test fails again, then contact SCIEX Technical Support at sciex.com/request-support.</td>
<td>&quot;Solutions and Buffers&quot; in the <em>Neutral OptiMS Cartridge Instruction Guide</em>, pages 8 to 11.</td>
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</table>

Prepare and Run the Samples

**CAUTION:** Potential System Damage. Do not expose the separation capillary to solutions with pH higher than 9. The capillary is stable in the pH range from 2 to 9. Exposure to solutions with a pH less than 2 and greater than 9 might degrade the neutral coating, resulting in poor separation and limited run life.
Clean the samples by dialysis or buffer exchange. The presence of surfactants and chaotropic agents such as SDS, urea, and guanidine hydrochloride might result in irreproducible migration times and clog the separation capillary.

**Note:** If organic solvents such as methanol or isopropyl alcohol are needed in the background electrolyte solution (BGE), do not add more than 20% organic to the BGE.

Select the Methods

**CAUTION:** Potential System Damage. After using the CESI 8000 Plus system, always ramp the voltage down to 1 kV over at least 5 min after a method has been run or when using the Direct Control window. A separation current above 5 μA might cause permanent damage to the separation capillary coating, resulting in poor separation or a shorter capillary lifetime.

Store the Cartridge

Execute the Neutral CESI Rest method.

When the method is done, remove the sprayer from the MS adapter, replace the protective sleeve, and then remove the cartridge from the CESI 8000 Plus system.

Put the sprayer tip in a 2 mL Eppendorf tube containing DDI water and cover loosely with Parafilm.

Put the cartridge in the box and then store it at 2 °C to 8 °C.
Neutral OptiMS Cartridge Quick Start Guide

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