

To Tune the LC/MSD

What is Tuning?

When the LC/MSD is used as a detector for the LC, a mass spectrum is associated with each data point in the LC chromatogram. To obtain high quality, accurate mass spectra, the LC/MSD must be optimized to:

- Maximize sensitivity
- Maintain acceptable resolution
- Ensure accurate mass assignment

Tuning is the process of adjusting LC/MSD parameters to achieve these goals. After the LC/MSD parameters have been optimized, they must be saved in a tune file (.tun). This tune file is then specified in the method that is used to acquire data for your samples.

Frequent tuning, automated or manual, is not required. Once tuned, the LC/MSD is very stable. Tuning should generally not be needed more often than monthly, or at most weekly.

Wait at least 4 hours after pumpdown before tuning or operating your LC/MSD. It takes the analyzer at least 4 hours to reach thermal equilibrium. Tune files created or data acquired before the LC/MSD is at thermal equilibrium may have incorrect mass assignments and other inaccuracies.

Using Autotune

Use autotune for automated adjustment of the LC/MSD performance.

- 1 From the MSD Tune view, select **Tune / Autotune** or click the **Autotune** icon.
- 2 Review the tune report which is printed automatically when tuning is completed.

Using Check Tune

Check Tune lets you quickly determine whether the LC/MSD is correctly tuned without performing a complete autotune. It performs a single profile scan of the tune masses and compares the peak widths and mass axes with target values.

- 1 Select **Tune / Check Tune**.
- 2 Review the Check Tune report. If any values are outside of acceptable ranges, Check Tune will suggest adjustments.

Using Manual Tune

Use Manual Tune when you want to:

- Achieve maximum sensitivity by sacrificing some resolution
- Tune specifically for the very low end (<150 amu) of the mass range
- Tune with a compound other than the standard calibrants

Manual tuning involves 4 steps:

- 1 Optimizing ion transmission through the source ion optics (fragmentor, skimmer(s), lens 1, lens 2, octopole peak and octopole knee).
- 2 Setting the desired mass resolution (adjusting width gain and width offset).
- 3 Calibrating the mass axis (adjusting mass gain and mass offset).
- 4 Adjusting the signal strength (setting iris and adjusting the multiplier gain).

Note that fragmentor and gain are method parameters. The fragmentor affects ion transmission and fragmentation. For more information, see the online help.