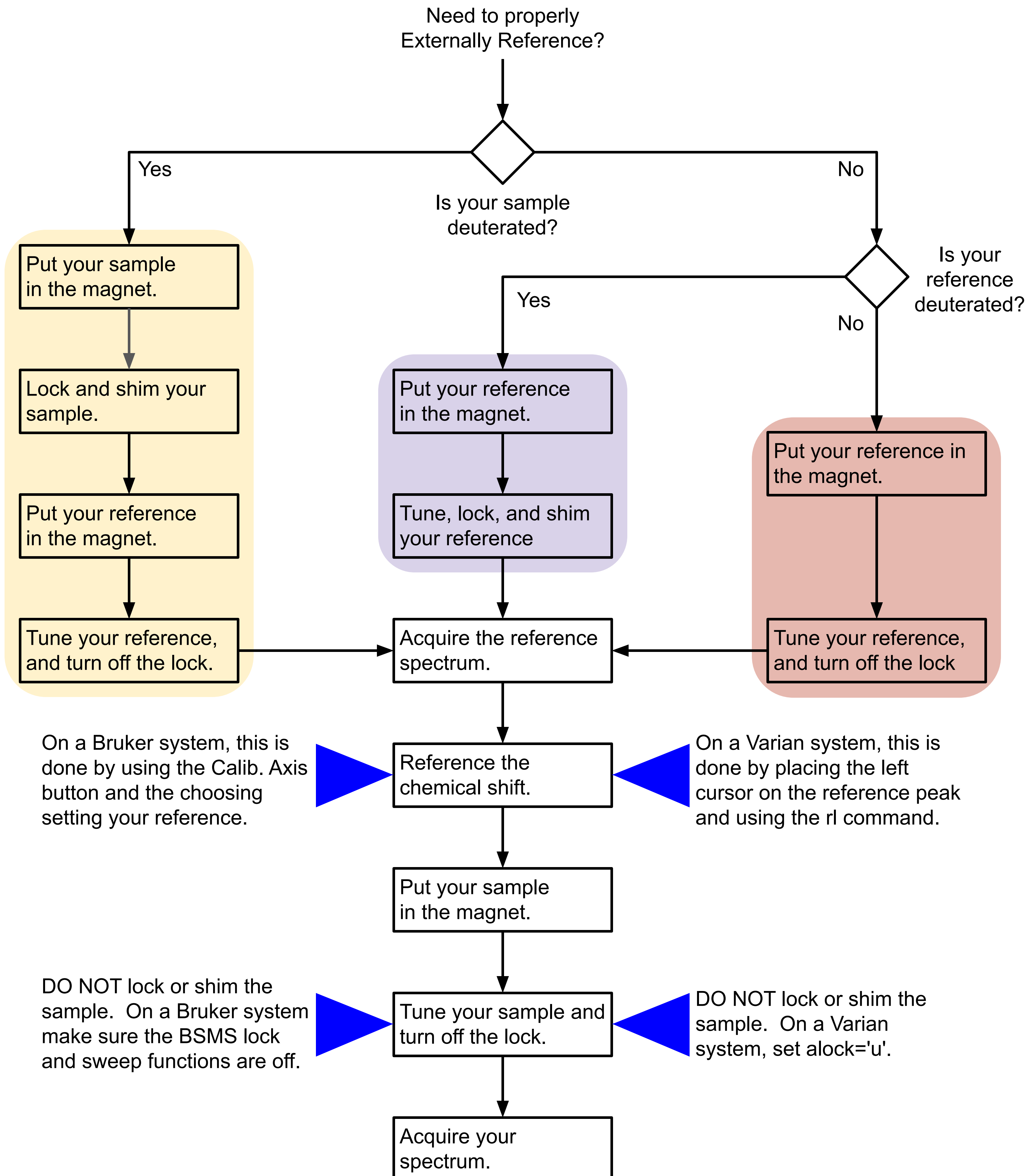


External Referencing

External referencing is the process of calibrating a sample's chemical shifts relative to a resonance that is not present in the spectrum of the sample, but is present in a separate (reference) sample's spectrum. There are coaxial NMR tubes and inserts that can facilitate this process; but, often, these are not practical as the reference signal poorly scales with the sample signal. Instead it is common for the reference to be acquired separately, the calibration done, and then the sample acquired immediately thereafter.



Other Notes

- The most common mistake is re-locking the sample after the reference has been set. Doing this completely vitiates the reference.
- The final spectrum is run un-locked, so it must be acquired within a timeframe where the magnet does not drift appreciably.
- On an automated system, both the reference and the sample must be locked. You may still refine your chemical shift by taking the two spectra back-to-back and using the offset from the reference on the sample.