

Removing the cold probe from the 800

The directions below are for removing the probe while cold. The procedure is similar for when the probe is already warm. If the probe will be removed from underneath the probe (as when it is being crated) the probe removal stand can be skipped and the connections to the cryobay must be removed prior to taking the probe out of the magnet.

1. Removing connections to the probe
 - a. Unlock and eject the sample
 - b. Adjust the FTS temperature to 20 degrees
 - c. Go to the "Spin and Temp" panel and turn the VT off or turn off the VT power button on the back of the console
 - d. Remove the front cover from the pneumatics router and turn on the probe purge to 5 lpm.
 - i. The probe purge line is the soft rubber hose under the magnet
 - e. Disconnect the VT controller cable and the VT air supply line to the probe
 - i. You may want to turn the VT air flow to 7 lpm to reduce the hissing noise from the air
 - f. Disconnect the six RF cables from the probe body
 - g. Disconnect the VT / tuning body from the probe and place in a safe location
 - h. Disconnect the PFG cable.
 - i. If the probe is cold do not disconnect the communication cable from the probe, just the gradient cable. If the probe is already warm then the communication cable can be disconnected.
2. Remove the probe
 - a. **NOTE:** If the probe is warm and will be placed in its crate follow the directions below except you can skip using the probe stand. Also, first remove all connections to the cryobay (helium transfer line, vacuum line, air line, and communication lines). The helium will need to be vented first to allow the coupling to turn. Use the cryobay software to set the probe up for removal.
 - b. **NOTE:** If not using the probe removal stand always be very careful to handle the probe from underneath the body, never support the probe from the tube portion or sidearm.

- c. Clear all the cables from underneath the probe to make room for the probe removal stand
 - d. Carefully take the top off the pier and remove the pier so the cables hang unsupported
 - e. From the pneumatics router turn on the regulator, labeled auxiliary, slightly. Adjust until the flow rate of the air is similar to a 7 lpm VT airflow. Note that the auxiliary air is sent to a hard plastic air tube located under the magnet, but don't confuse with the soft rubber hose used for the probe purge.
 - f. Remove the clamp that supports the helium transfer line and vacuum line to the magnet. Be careful, as the probe will shift slightly when the clamp is removed.
 - g. Align the probe removal stand underneath the probe. Remove the two clamp plates if they are attached.
 - h. Connect the auxiliary airline to the fitting on the probe removal stand underneath where the probe body will sit.
 - i. Make a note about the probe spacing. The spacing to note is the distance from the probe body to the black plate and should be close to the size of the taped spacing tool underneath the magnet.
 - j. Loosen the probe by turning the copper dial to the left until the probe has dropped several millimeters
 - k. Push the probe upwards and spin the black plate to release the three pins that hold the probe to the magnet.
 - l. Softly lower the probe to the probe stand making final adjustments of the stand as it lowers. The weight of the probe should always be supported from the probe body and not the stem.
 - m. Place the two cap plates onto the probe removal stand to support the cables.
 - n. Move to the side of the probe removal stand with the two handles and carefully lower the probe straight down (DO NOT ALLOW THE PROBE REMOVAL STAND TO SLIDE) until it gets to the bottom. Once at the bottom lock it in the bottom position with the suitcase lock device on the probe removal stand.
 - o. Slide the probe stand carefully over to the side.
3. Put RT probe in magnet

- a. Connect the VT gas line. Rubber adapters are stored in the RT probe box.
 - b. Connect the gradient cable and the probe purge air.
 - c. On the magnet leg move the RCVR, CONTROL, Probe XMTR, and XMTR cables from the 1H pre-amp driver to the 1H pre-amp. Repeat the same procedure for 13C.
 - d. Disconnect the four cold probe RF cables from channel 1 and 2 directional couplers, from the channel 3 RF filter, and the extension on the lock channel and set aside
 - e. Locate the 3 thick RF cables which are stored by the FTS and ladder and connect them to channel 1, 2, and 3 directional coupler / RF filter.
 - f. Connect the RF cables for 1H, 13C, 15N, and lock to the probe body.
 - g. Connect the VT controller cable.
4. Make some software adjustments
 - a. From vnmrj press the reset VT button from the spin and temp panel
 - b. Adjust the VT flow rate to 12 lpm (16 lpm for the cold probe).
 - c. Adjust the FTS temperature and sample temperature to your desired value.
 - d. Type warmprobe from the command line.
 - e. Load in probe file appropriate for the RT probe or load in ghn_co and set the following values. pw=7.5, tpwr=56, pwClvl=60, pwC=12.3, pwNlvl=58, pwN=31 and turn off BioPack Power limits. Afterwards update probefile with those parameters.
 5. Put in lineshape sample and shim
 - a. **Note that the upper barrel regulator may need to be adjusted to provide proper lift for the sample.**
 - b. Shim z1 and z2 very briefly and create a PFG-H2 shimmap and gradient autoshim on Z.
 - c. Shim X1 and Y1 and then gradient autoshim on Z
 - d. From a different job then you are using for gradient autoshimming type the macro "shim_param". This will setup a 1D with parameters ready to collect a 1D spectrum of the lineshape sample. After collecting the spectra process with FT (not WFT), phase, expand to see the signal on the left,

place a line near the peak, and type “res” in the command line.

- e. Shim higher order shims while occasionally gradient autoshimming on Z until lineshape specs are met. Should be able to get 0.6 / 2.5 / 4.0 from the res command for the lineshape sample.