

Safety

Hazards

- Magnetic fields are present inside the box. Do not use ferromagnetic tools close to the magnet. This may pose a risk to pacemakers.
- Radio frequency fields are present inside the box when the instrument is in use.
- Insert only standard NMR tubes in the bore of the magnet. Do not insert anything else.
- Mains voltages inside. Do not remove covers - there are no user serviceable parts. Connect only to a mains power supply that is earthed.
- Mains cord supplied is UL listed. Do not replace this mains connection cable with one of a lower rating than that supplied. Magritek will supply a replacement cable if required.
- If harmful or corrosive substances are in the sample tubes, they should be handled with great care, and a stopper should be used to seal the sample tube. Eye and skin protection should also be worn.

Standard operating procedures

Find out here how to:

- Prepare and load a sample (page 15)
- Run a protocol (page 19)
- Monitor the system using the LED lights (page 20)
- Clean the system (page 24)
- Prepare a Shim sample (page 26)

Prepare and load a sample

Preparing and loading a sample takes four steps:

1. Put sample in tube (page 15)
2. Put tube in tube holder (page 16)
3. Check sample level (page 16)
4. Put tube and holder into Spinsolve (page 19)

1. Put sample in tube

Put the samples in a standard 5 mm diameter NMR sample tube at least 7 inches long.

The fill height must be at least 30 mm from the bottom of the tube. This is about 0.5 mL in volume.

To gauge the correct amount of sample, use the supplied sample depth gauge or a ruler (see step 3).

Samples must be solutions or pure liquids.




You may use deuterated as well as non-deuterated solvents or liquids.

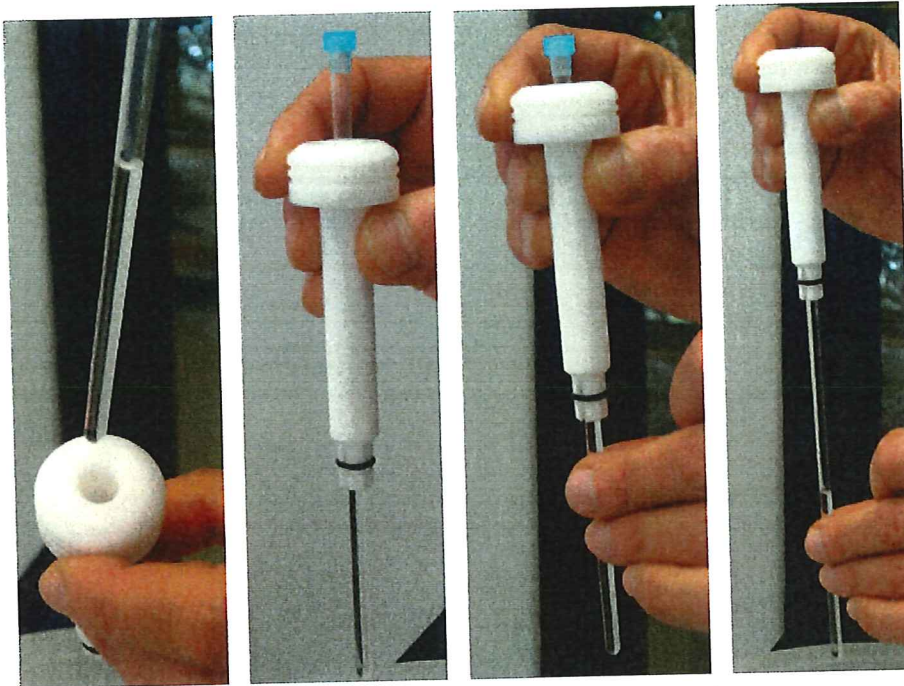
Note that non-deuterated solvents will give large solvent peaks, and this may obscure some solute peaks in the spectrum.

2. Put tube in tube holder

Insert the sample tube into the top of the sample holder and push it all the way down.

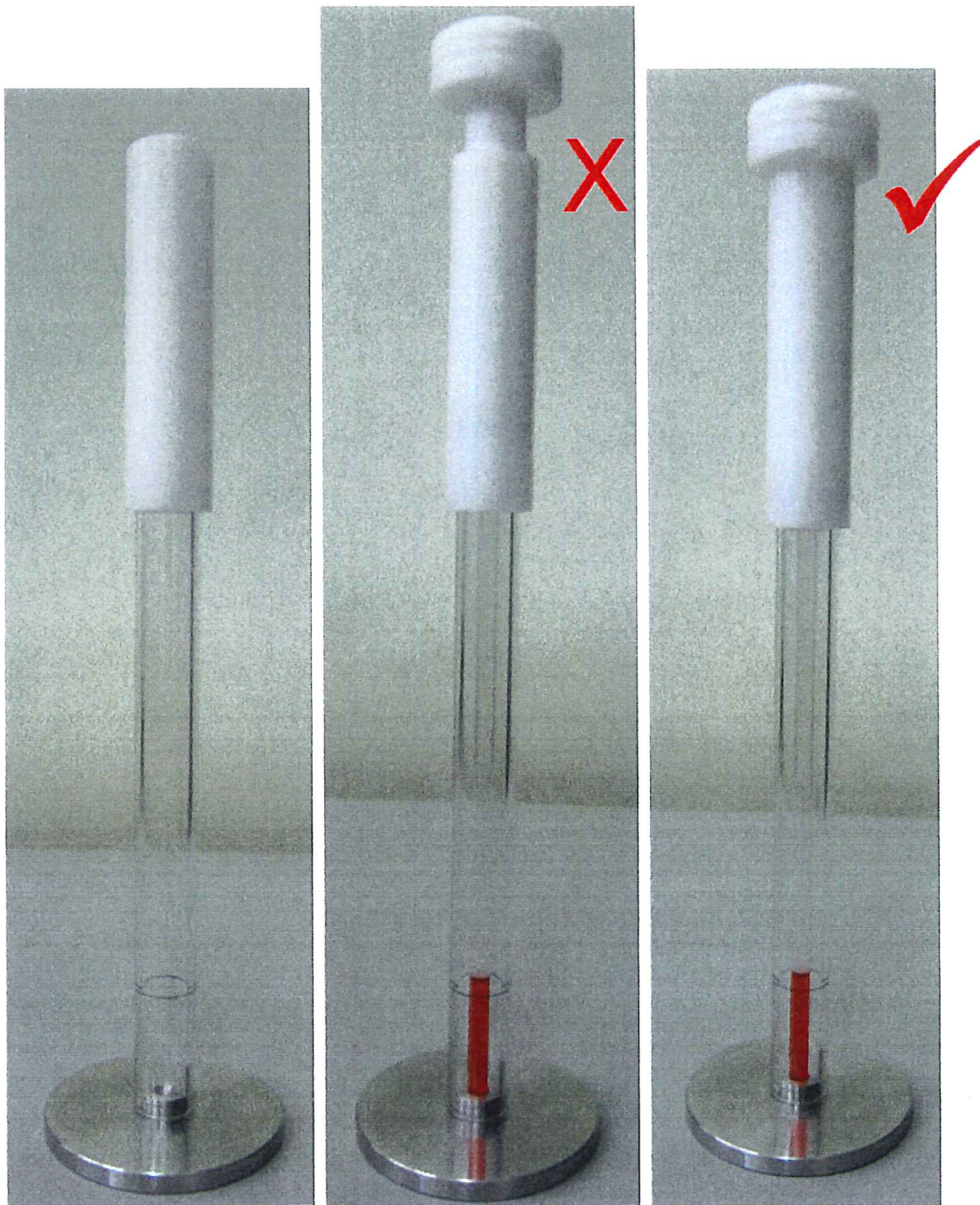
You may have to pull it from the bottom. Be careful not to pull too far: the cap can come off inside the holder.

 The correct position should measure 145 mm from the base of the plastic holder to the base of the sample tube.



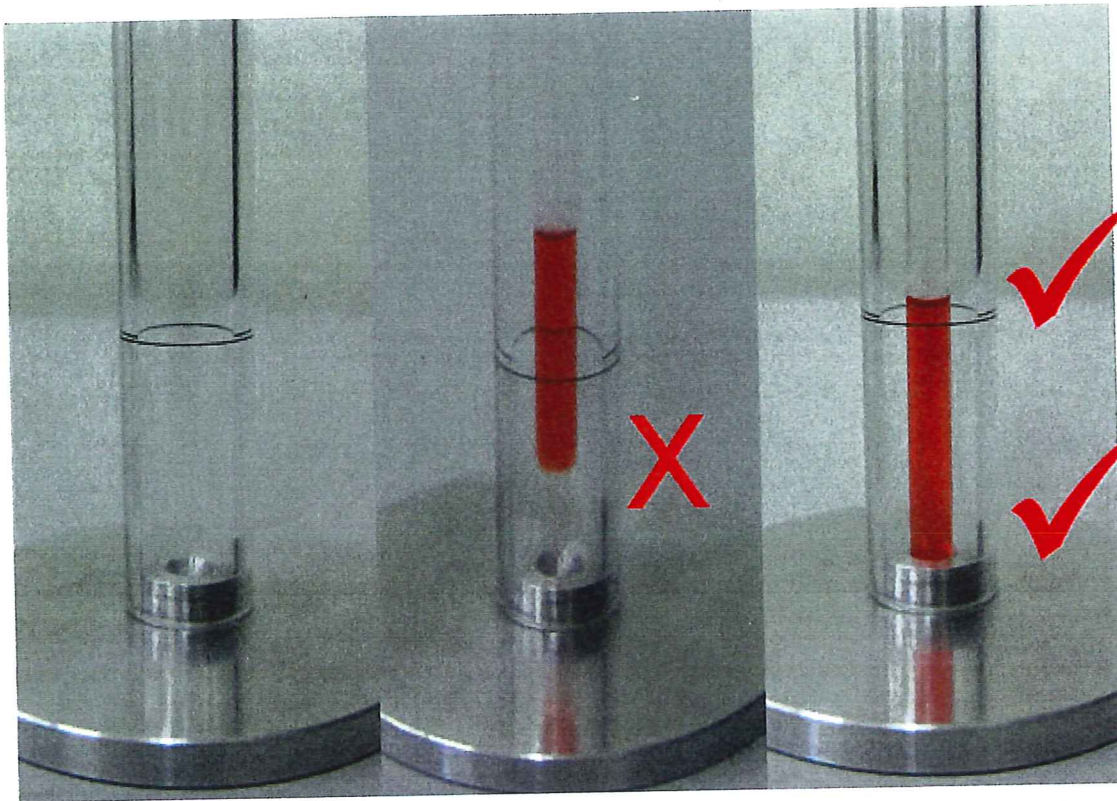
3. Check sample level

Put the sample tube and holder into the supplied Spinsolve sample depth gauge.



Left: empty sample depth gauge. Middle: holder too high in gauge. Right: sample holder correct.

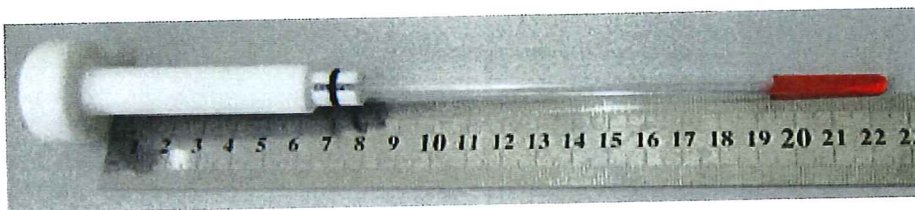
1. Press the sample holder down firmly to ensure it sits on top of the sample gauge (see image, right, above).
2. Put the bottom of the sample tube into the rounded base of the gauge.
3. Ensure the top of the sample liquid is above the black marker line on the gauge (see images below).



Left: empty gauge; Middle: sample holder in gauge but not in rounded base; Right: gauge with sample holder in rounded base and liquid above marker.

💡 If you do not have a sample depth gauge, measure the sample level with a ruler. It must be at least 30 mm from the bottom of the tube.

Minimum required depth of liquid in tube: 30 mm



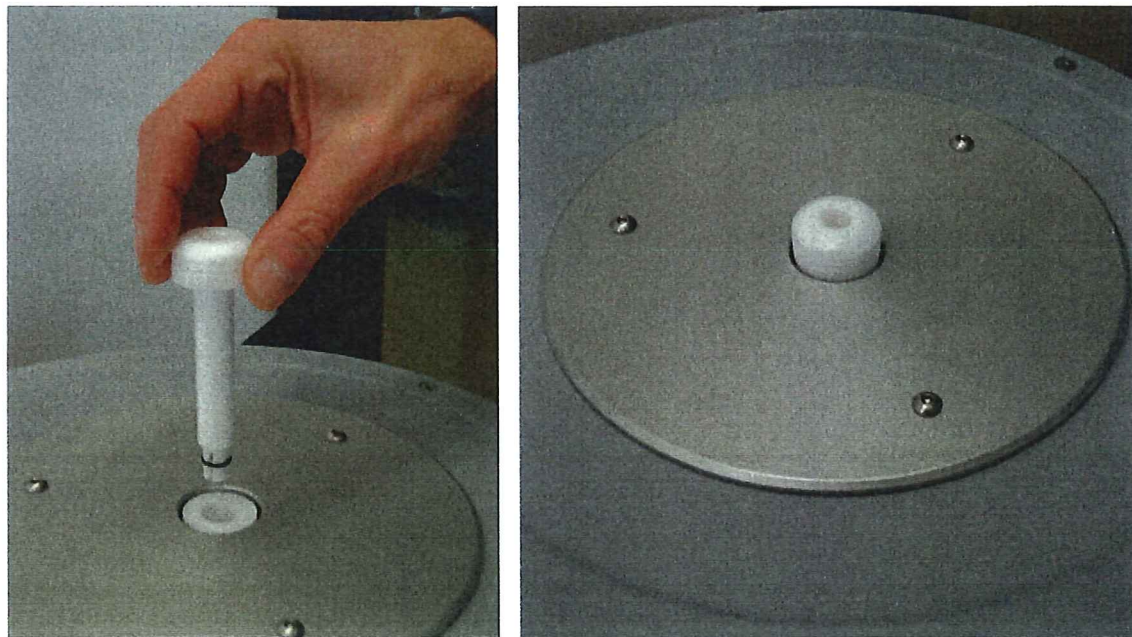
Length of tube required to base of holder: 145 mm

4. Put tube and holder into Spinsolve

Put the sample holder and tube into the sample bore of the Spinsolve.

Let the sample holder drop straight down in the centre of the bore. If it does not drop down completely by itself you can push it gently.

Note: Pushing on an angle will break the tube.



 Do not break the sample tube. Take care when pushing it into the bore.

Run a protocol

A protocol describes an experiment or set of experiments run with specific parameters and processing options.

The protocols are represented by buttons at the top of the screen.

To run a protocol:

1. If this is the first protocol of the day: Run a Checkshim (page 191)
2. Prepare and load a sample (page 15).
3. Select a protocol at the top of the screen.
4. Select protocol settings, as required.

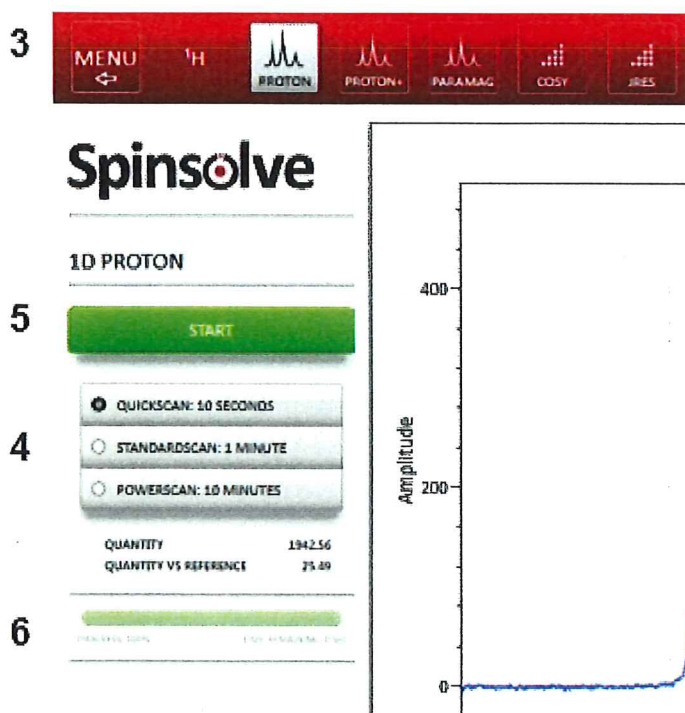
- For example:
 - Quicksan
 - Standardscan
 - Powerscan.

5. Press the green **Start** button.

6. Check progress of scan.

7. Monitor the system (page 20).

8. Access and read protocol results (page 48).



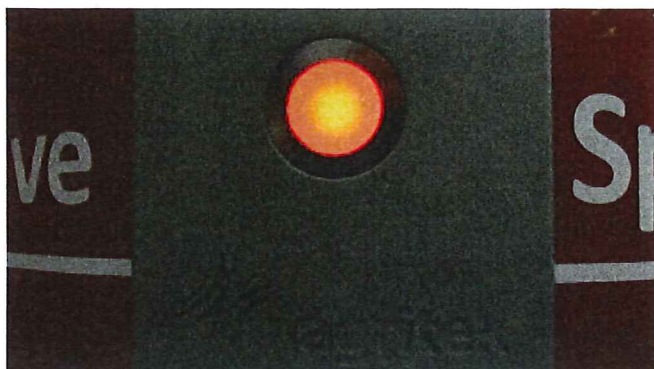
Monitor the system

Monitor the system using the status lights.

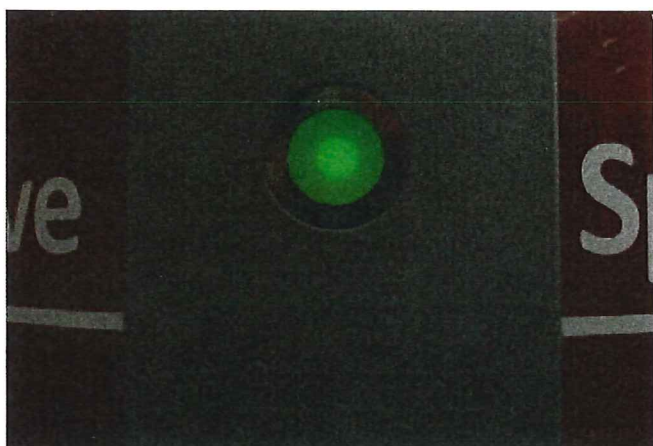
Temperature and system status

The temperature status indicator light on the front aluminium pillar is green under normal operation. This indicates that the magnet is close to its set temperature.


If it is still heating up, the light is amber.



 Do not use the spectrometer until the light is green.



If there is a faulty temperature sensor, the light is red.

 If the light is red, turn the spectrometer off, wait for five seconds and turn it on again. If this does not solve the issue, contact your Spinsolve distributor or Magritek Support.

Required magnet heating times in different scenarios

Good magnet temperature stability is required for optimal performance. If the magnet temperature is changing rapidly, the linewidth will be impaired and the system needs to be shimmed more often than normally.