

NMR Probes

- Installation & Operation of 0.7/1.3/1.9 mm SB/WB Probes for Automated Insert & Eject Functionality

User Manual

Version 001



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1 Description

All WB & certain SB probes for small diameter rotors built from 2019 onward provide the new insert & eject functionality. This feature provides access to easy sample changes without removing the probe from the magnet system using a docking port on the bottom of the probe.

The following description is intended to describe the installation procedure (probe + MAS 3 unit) and the general operation.

Hardware prerequisites for optimum workflow integration:

- MAS 3 unit
- MAS 3 firmware version > "mas3_20191111_1111.bin"
- 1.9/1.3/0.7 mm probes equipped with the new docking port
- TopSpin version >3.6 or >4.0.5
- Compatible tubing set with additional Venturi connection (H152590)

2 Probe Installation

In general probe installations for these kinds of probes follow the same basics as any other solid-state probe.

For probes providing insert & eject the following connections must be made:

- The probe connection Venturi pressure must be connected to the Option connector of the MAS 3 unit.



This only works if the firmware version of the MAS 3 unit is "**mas3_20191111_1111.bin**" or higher, available on the FTP server, or included in TopSpin 4.0.8 or TopSpin 3.6.3. For older MAS systems the connection must be done using the "**frame cooling**" and the operation is only manual.

- The probe connection "Insert" must be connected to the corresponding port on the MAS 3 unit.
- The probe connection "Eject" must be connected to the corresponding port on the MAS 3 unit.

To be able to operate the probes a MAS 3 firmware needs to be installed which is newer than November 2019. This firmware can be found at the <ftp.bruker.ch> firmware server. With the latest TopSpin versions (>4.0.8, December 2019), the MAS 3 firmware will be upgraded automatically.

If these prerequisites are fulfilled, the probe can be operated fully automated using the MASDISPLAY user interface in TopSpin.



Customized rotation profiles may not work combined with these new Venturi probes, since the additional vacuum is not generated correctly.

3 Additional Notes

The probes can still be used if an older firmware is used, in these cases the “Venturi pressure” must be connected to the “Frame Cooling” and the pressure settings have to be controlled manually by the user in the TopSpin MASDISPLAY software (by default a pressure of 3000 mbar has to be used).

The pressure needs to be enabled BEFORE a sample insertion and must be disabled BEFORE an eject procedure.

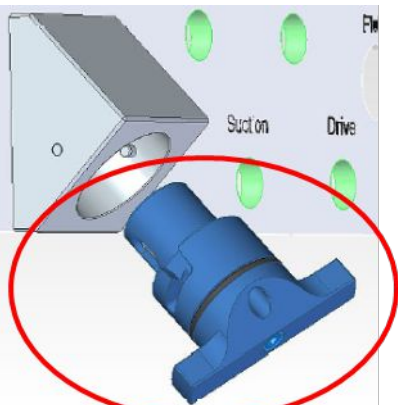

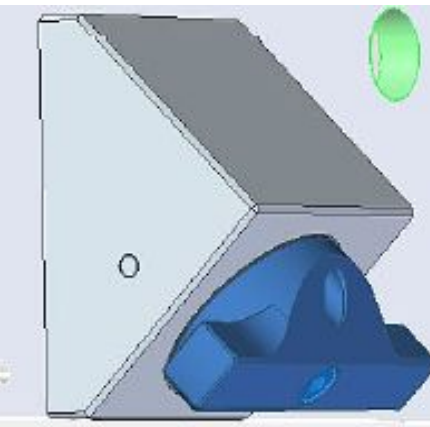
This manual operation is also needed if the MAS unit does not support the regulated option valve as mentioned above (e.g. MAS 2).



When the latest firmware is installed, the MAS 3 unit will select the correct Venturi system and rotation profiles automatically. If the Venturi probe is changed back to a non-Venturi version the corresponding system and rotation profiles need to be selected manually on the MAS 3 Webpage.

For further information please contact: solids@bruker.com

4 Probe Operation

		
<p>Figure 1: Docking port at probe attached to the foot case. Please make sure that the container is attached correctly with the small vent screw downwards.</p>	<p>Figure 2: Rotor in docking port; rotor top cap is facing towards probe base</p>	<p>Figure 3: Remounted and locked docking port</p>

Sample loading with recent MAS 3 support (option valve fully supported):

- Remove the docking port of the probe (blue part, figure 1).
- Insert the rotor with top cap down into the blue container (figure 2).
- Remount the container to the probe and lock it (figure 3).
- Start the MASDISPLAY in TopSpin and press **Insert**.
- Set the MAS rate according to your needs and start the rotation by pushing the **Go** button.

Sample eject with recent MAS 3 support (option valve fully supported):

- Push the **Stop** button in the MASDISPLAY.
- Push the **Eject** button and wait for the eject procedure to finish.
- Remove the docking port (figure 1).
- Remove the rotor with the corresponding tools.
- A) Remount and lock the docking port (figure 3).
- B) Insert a new rotor as described above and remount and lock the docking port.
- If a new rotor was inserted push **Insert** and **Go** buttons.

Sample loading with *older* MAS (option valve NOT supported):

- Remove the docking port of the probe (blue part, figure 1).
- Insert the rotor with top cap down into the blue container (figure 2).
- Remount the container to the probe and lock it (figure 3).
- Start the MASDISPLAY in TopSpin.
- Enable “Frame Cooling” with 3000 mbar and push **Insert**.
- Set the MAS rate and start the rotation by pushing the **Go** button.

Sample eject with *older* MAS (option valve NOT supported):

- Push the **Stop** button in the MASDISPLAY.
- Disable Frame Cooling.
- Push the **Eject** button and wait for the eject procedure to finish.
- Remove the docking port (figure 1).
- Remove the rotor with the corresponding tools.
- A) Remount and lock the rotor docking port (figure 3).
- B) Insert a new rotor as described above and remount and lock the docking port.



5 Contact

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