

SampleMail[•]

User Guide



think forward

NMR Spectroscopy



This Manual was written by

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1 General information

1.1 Intended use of the unit

SampleMail is a transport device that has been developed to transport NMR samples from a location that can be reached without aids, and is easily accessible to the operating personnel to the NMR measurement in the magnetic centre of the cryostat and back again.

As in the use of the well-known and tested BST system, the transportation of NMR samples must thereby only take place within sample glasses, together with the respectively designated spinners or shuttles.

1.2 Technical requirements / Data / Characteristics

1.2.1 Electrical characteristics

Requirement on the SampleMail input:

Operating voltage:	24	VDC
Current consumption:	0.7	A

Requirements on the electrical supply:

Mains frequency:	50 / 60	Hz
Mains voltage:	100 - 240	VAC

1.2.2 Pneumatic characteristics

Gas pressure:	$\geq 5; \leq 7$	bar
Gas consumption (lift):	$\geq 100\text{l/min}$ at 1 bar (ambient pressure)	

1.2.3 Thermal characteristics

Ambient temperature:	$\geq 5; \leq 35$	°C
Relative air humidity:	Max. 80% up to 31°C and linear reduction down to 50% at 40°C	

1.2.4 Weight and geometrical dimensions

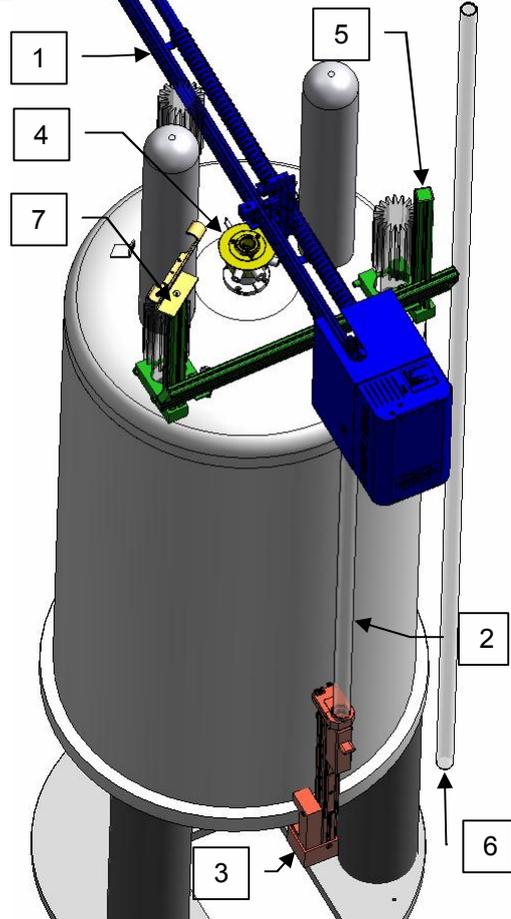
* Weight:	11.35	kg
Dimensions: (height x width x length)	290 x 190 x 1290	mm

*The weight data only relates to the main assemblies *without* accessories
(See Fig. 1.3-1: Overview of assemblies, Item No. 1 to Item No. 5)

**The dimensional data only relates to the main assembly „Linear Axis Unit“,
as the height can vary depending on the cryostat model.
(See Fig. 1.3-1: Overview of assemblies, Item No. 1)

1.3 Content of the delivery

1.3.1 Components



The diagram shows a cross-section of a cylindrical assembly. A blue linear axis unit (1) is mounted on a green linear axis mounting unit (5) on the N₂ nozzle side. A yellow linear axis mounting unit (4) is on the BST side. A red hand slider unit (3) is attached to the blue unit. A long transport tube (2) is shown extending from the top. A holder for Cryofit applications (7) is at the bottom. A long transport tube (6) is also shown extending from the bottom.

List of Assemblies			
Item No.	Quantity	Description	P/N
1	1	Linear Axis Unit	Z116747
2	1	Transport Tube	Z116796
3	1	Hand Slider Unit	Z116632
4	1	Linear Axis Mounting Unit BST Side	Z116603
5	1	Linear Axis Mounting Unit N ₂ Nozzle Side	Z116611
6*	1	Long Transport Tube	Z117094
7**	1	Holder for Cryofit Applications	Z116586

* Only for Magnets >700 MHz enclosed in the part package

** Option for Cryofit unit (Cryofit-Holder is not enclosed in the standard part package)

Fig. 1.3-1: Overview of assemblies

1.3.2 Accessories

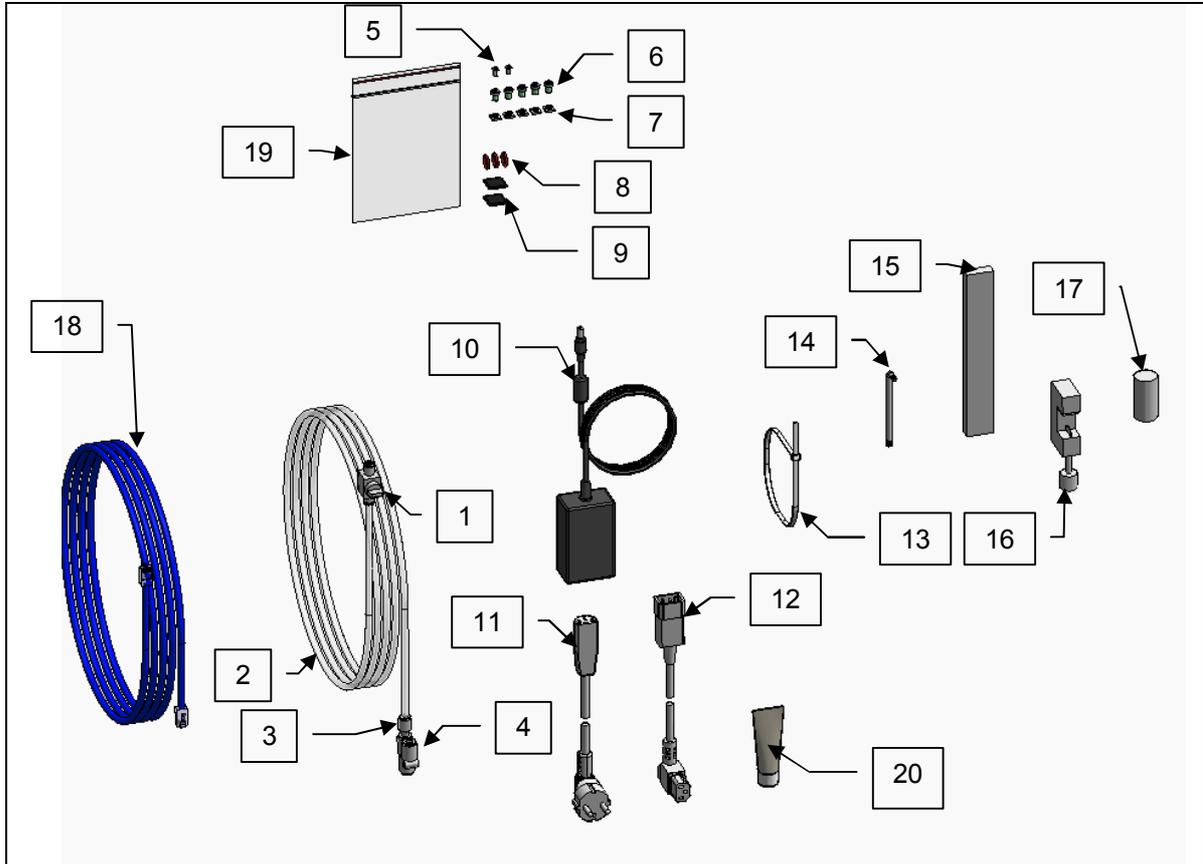


Fig. 1.3-2: Overview of accessories

List of accessories							
Item No.	Quantity	Description	P/N	Item No.	Quantity	Description	P/N
1	1	Finger Valve	Kit 1801239	12	1	Cable IEC320	81053
2	1	Hose Transparent L=12m	Kit 1801239	13	18	Cable Strap	3630
3	1	Connector 8/6 mm	Kit 1801239	14	1	Torx Key Nr. 25	1801325
4	1	Y-Connector 8/8 mm	Kit 1801239	15	1	Bubble Level	1801323
5	2	Screw M3x8 ISO 7380	49292	16	1	Tube Cutter	1801322
6	5	Screw M5x8 ISO 14580	1801228	17	1	Tube Cutting Bolt	Z116797
7	5	Slot Nut M5	1801227	18	1	Cable RJ45 blue L=10m	85998
8	3	O-Seal	1801211	19	1	VPM PE Bag 115X155	21232
9	2	Profile Cap 20x20	1801226	20	1	Festo Grease LUB-KC1	1803238
10	1	Power Supply	1801324	21	1	SampleMail User Guide	Z31931
11	1	Cable Schuko	20315	22	1	SampleMail Installation Guide	Z31930

1.4 Unit connections

1.4.1 Outputs

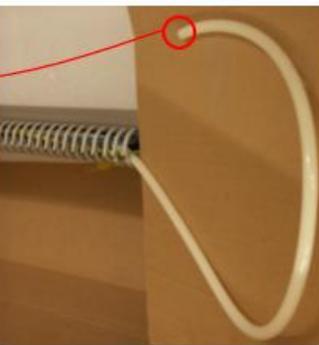
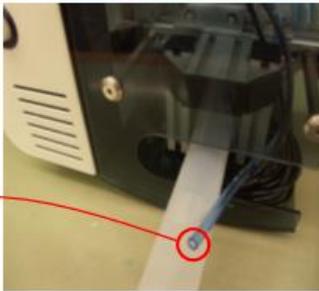
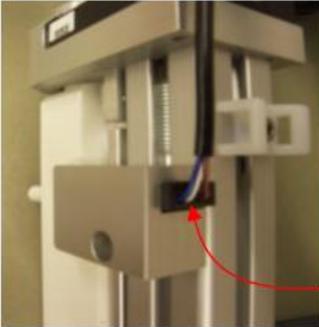
Connection point	Output connections of the SampleMail	Purpose
 <p>Hose white $\varnothing 8$ in white-marked slot of BST</p>		Pressurized gas supply BST-Lift
 <p>Hose blue $\varnothing 6$ in slot of hand slider</p>		Pressurized gas supply SampleMail - Lift
 <p>Electrical plug in socket contact of fork light beam switch GL3</p>		Detection of hand slider position SampleMail
 <p>Electrical plug in socket contact of fork light beam switch DL3</p>		Detection of spinner / shuttle SampleMail

Fig. 1.4-1: Overview of the output connections

1.4.2 Inputs

Input connections of SampleMail	Connecting elements SampleMail <-> Peripherals	Connection points on peripherals	Purpose
 Socket female	 Power supply 24VDC, ≥1A		Electrical energy supply for SampleMail
 Socket RJ45 female	 RJ45 cable KAT5e blue, L=10m	 RJ45 cable in socket connection TTY1 (ELCB / BSMS / console)	Data communication / control signals
 Hose blue ø8 with coupling element ø8	 Use white hose ø8 from hose bundle from BST (not included in the SampleMail package)	 Hose white ø8 in "Lift" slot, console gas flow ≥100l/min at 1bar (ambient pressure)	Gas supply to SampleMail and BST lift
 Hose transparent ø6	 Hose transparent ø6, L=12 m; first end with Y-connector ø8 and 1x reduction ø8/ø6, second end with manual shut-off valve ø8	 Y-plug connector ø8 with reduction ø8/ø6 is mounted in the Lift air line ø8 (blue) in the console after the pressure reduction valve 5bar ≥ P ≤ 7bar	Gas supply to SampleMail switching cylinders

Fig. 1.4-2: Input connections

1.4.3 Installation instructions

The unit will normally be installed and put into operation by a service specialist from BRUKER following the instructions in the „SampleMail Installation Guide“ manual P/N Z31930.

If the unit is put into service by a non-authorized person – or without the supervision of an authorized person, BRUKER will accept no liability for any damage to fittings, property or persons. The determination of persons authorized to carry out the installation and commissioning may only be carried out by BRUKER.

2 Operating instructions

2.1 Sample Mail in the Normal mode (Automatic inject inactive)

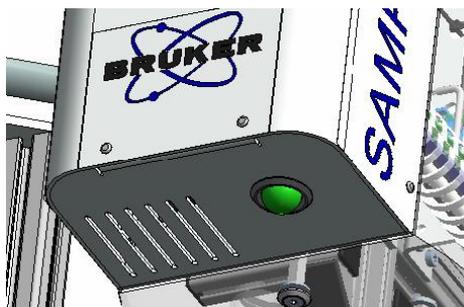
Automatic inject inactive means that the Sample Mail is being controlled from the Soft-Panel or the external keyboard. If the Automatic inject is activated, the sample transportation will be immediately triggered by the manual closing of the loading compartment.

2.1.1 Switching the Sample Mail active

It must first be ensured that the Sample Mail is active. Please refer to Chapter 2.8 for this.

2.1.2 Introducing the sample into the loading compartment

1) Status check



Before carrying out any manipulation, look up to the Sample Mail housing and check that the control lamp is lit up green. This means that there are no more samples in the magnet and that the system is ready to accept a new sample.



Overview of the SampleMail

- (1) Transport tube
- (2) Housing with status lamp
- (3) Transport rail
- (4) BST upper part, inlet opening

2) Open the loading compartment



Take hold of the slider and pull it down to the stop.

(3) Insert the sample



Feed in the sample



Check the seat

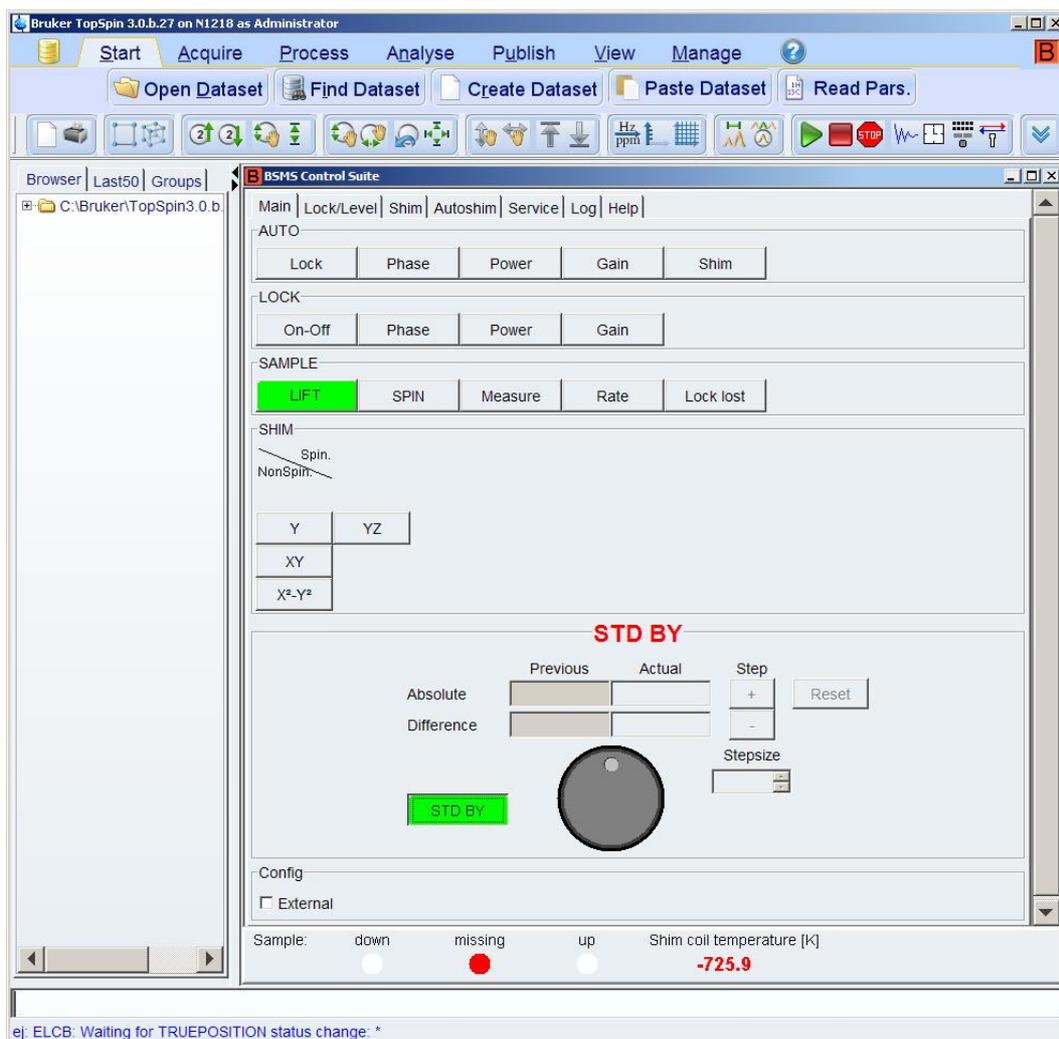
(4) Close the loading compartment



Push the slider right up to the stop.

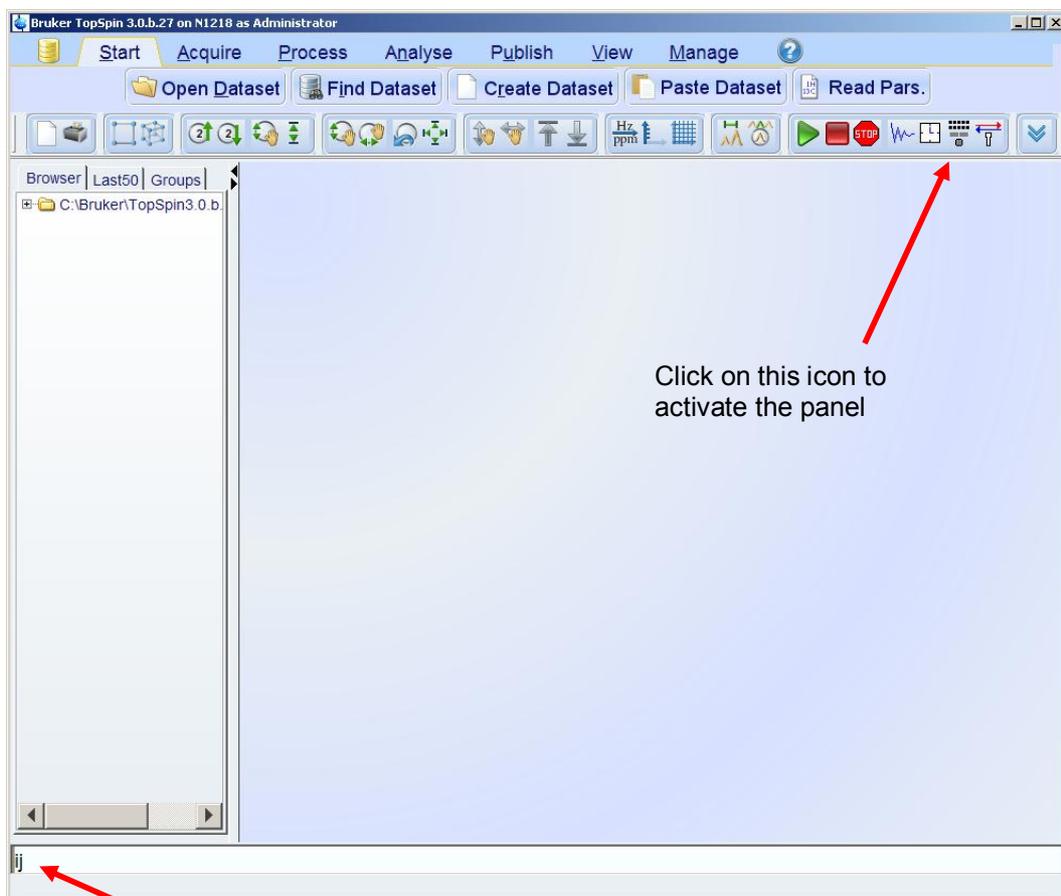
2.1.3 Starting the sample transport

Automatic inject inactive (control of the sample transport via TopSpin or keyboard)

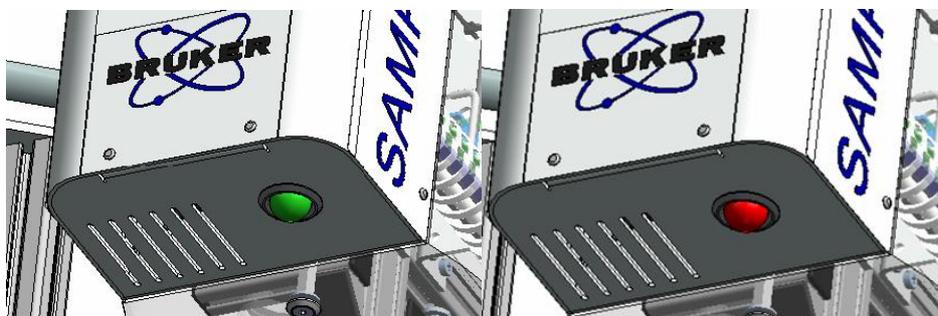


Press the <LIFT> button to trigger the transport, operation from the panel

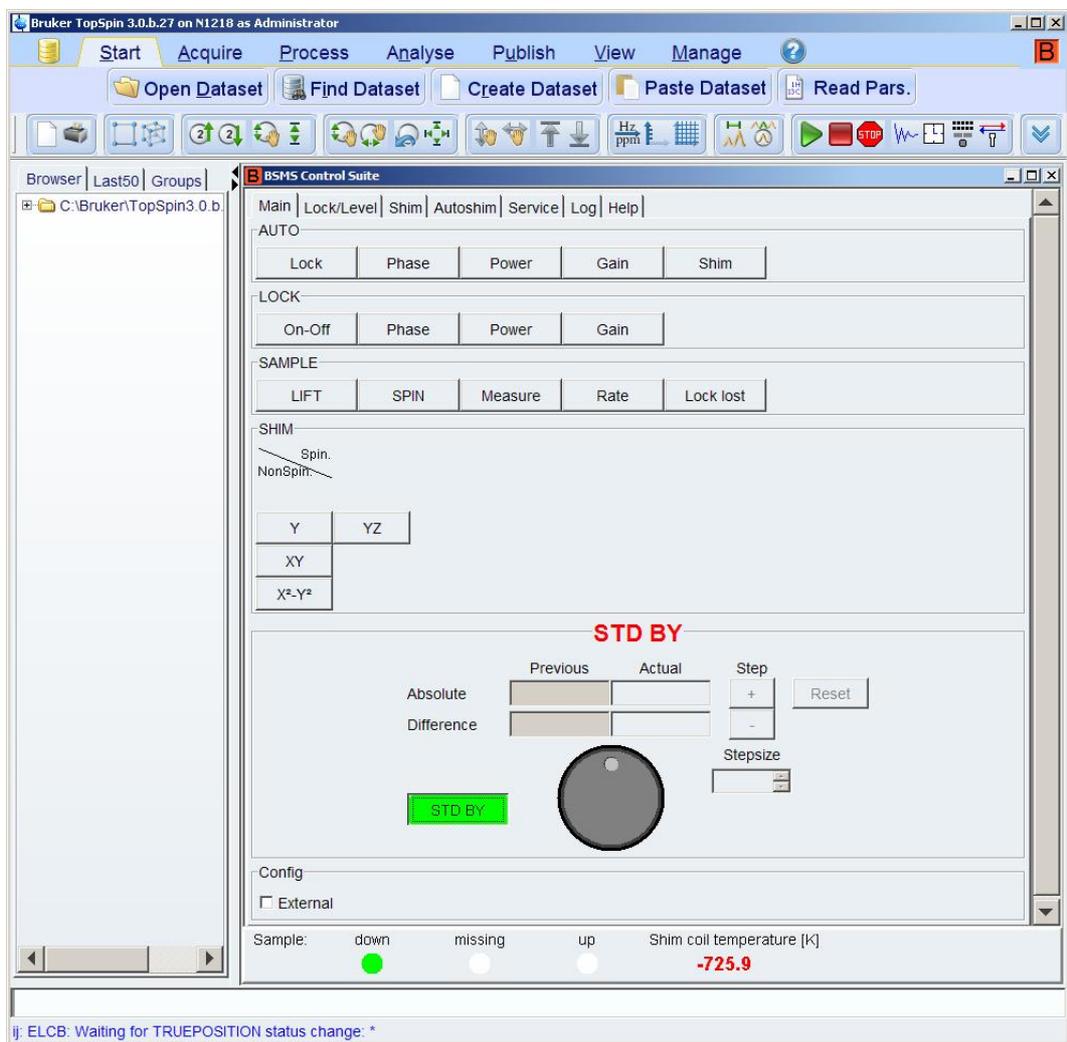
Automatic inject inactive (control of sample transport via TopSpin or keyboard)



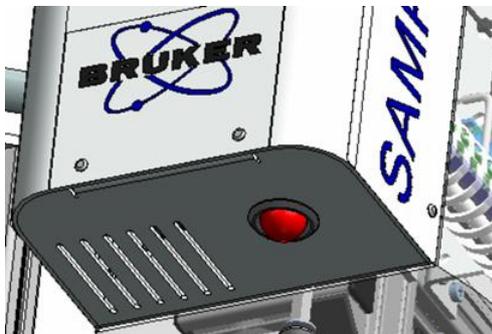
Enter → Return into the command line <ij> (inject), and the sample transport will be triggered. Operation without the panel.



During the transport, the lamp on the Sample housing will alternately blink red/green.

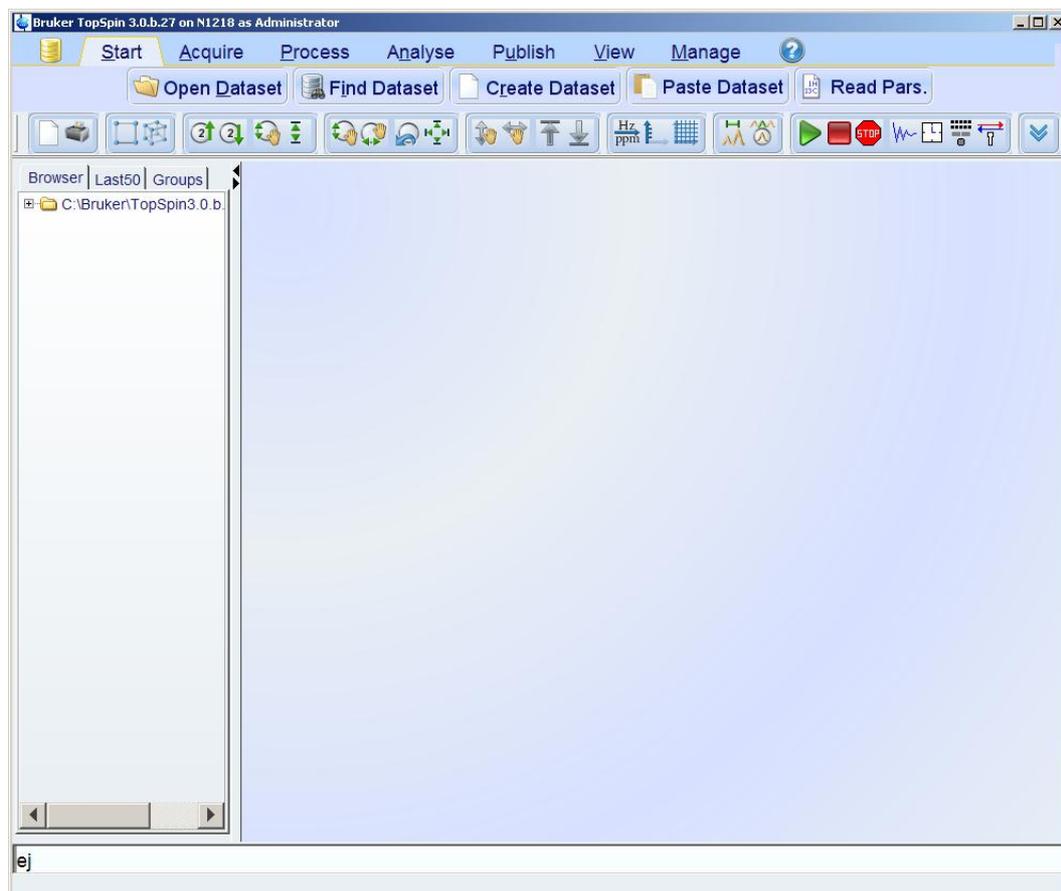


Once the sample has reached the magnet centre, this will be indicated by the green <down> lamp.

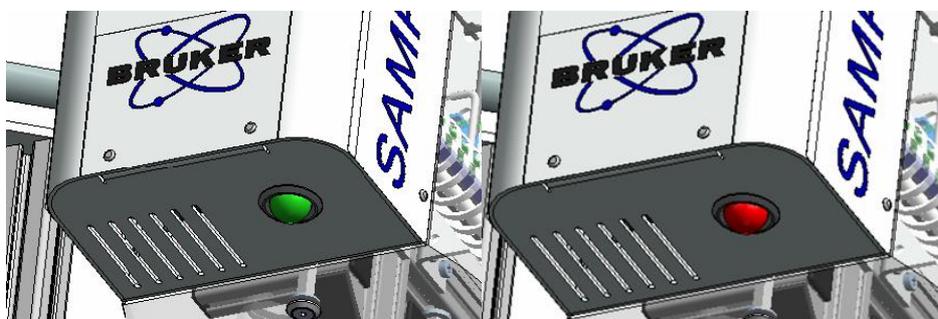


At the same time, the status display on the sample housing will go to red. The NMR experiment can now be carried out.

2.1.4 Ejecting the sample

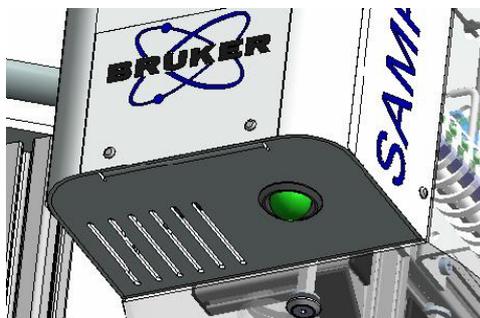


Trigger the return transport of the sample by entering <ej> (eject) into the command line in TopSpin. As an alternative, the procedure can also be triggered from the panel (or from an external keyboard) by pressing the LIFT button.



During the transport, the status display will alternately blink red/green.

(1) Removing the sample from the loading compartment

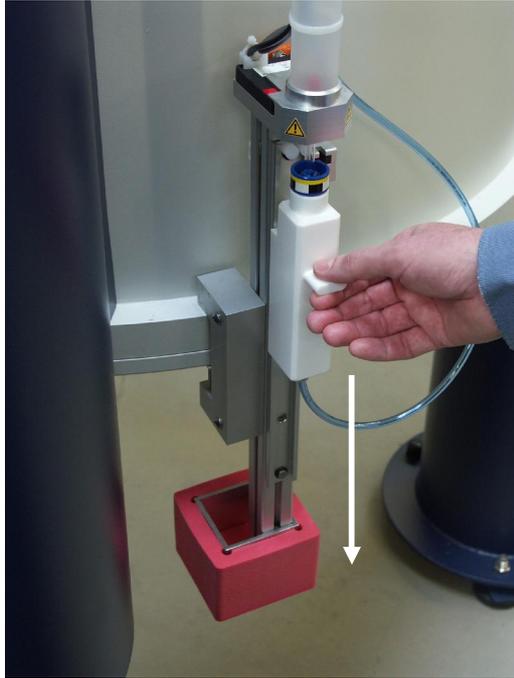


The sample travels back into the loading compartment, and the status control lamp then switches to green again. The sample can now be removed.

(2) Opening the loading compartment and removing the sample



As soon as the sample has arrived in the loading compartment (arrow), open the latter downwards.



Opening the loading compartment



Removing the sample



Removing the sample



If the compartment is not to be reloaded for a further experiment, it is important that the slider should be left open.

2.2 Sample Mail in the Normal mode (Automatic inject active)

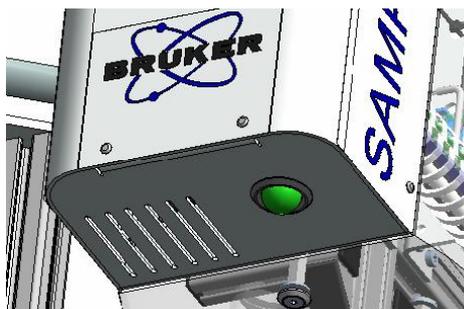
If the Sample Mail is set to Automatic inject active, the Soft Panel or keyboard does not have to be used to inject the Sample. The transport will be triggered by the closing movement of the loading compartment.

2.2.1 Switching the Sample Mail active

It must first be ensured that the Sample Mail is active. Please refer to Chapter 2.8 for this.

2.2.2 Introducing the sample into the loading compartment

1) Status check



Before any manipulation is done, look up to the Sample Mail housing and check that the control lamp is lit up green. This means that there are no more samples in the magnet and that the system is ready to accept a new sample.

2) Open the loading compartment



Take hold of the slider and pull it down to the stop.

(3) Insert the sample



Feed in the sample



Check the seat

(4) Close the loading compartment

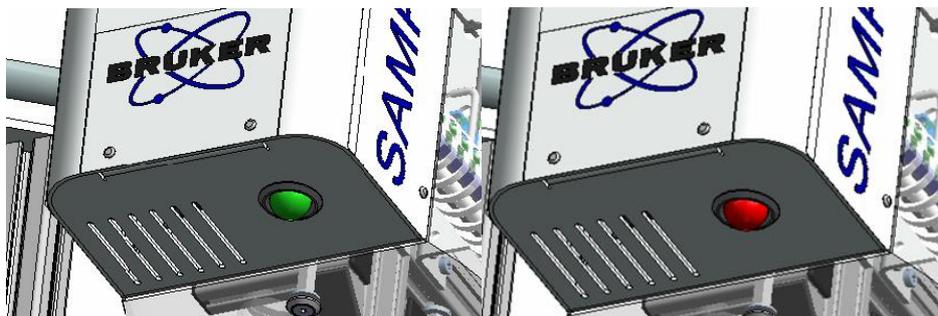


Push the slider right up to the stop, and the transport will now be triggered.

2.2.3 Starting the sample transport

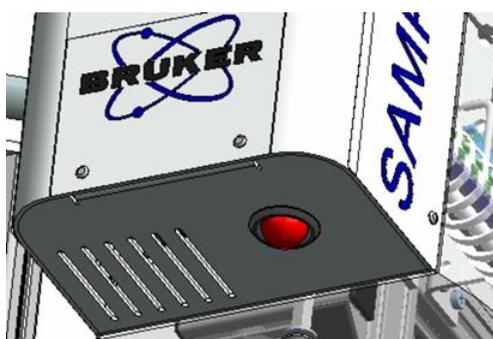
Automatic inject active

The sample transport will be triggered by the closing of the transport compartment.



During the transport, the lamp on the sample housing will alternately blink red/green.

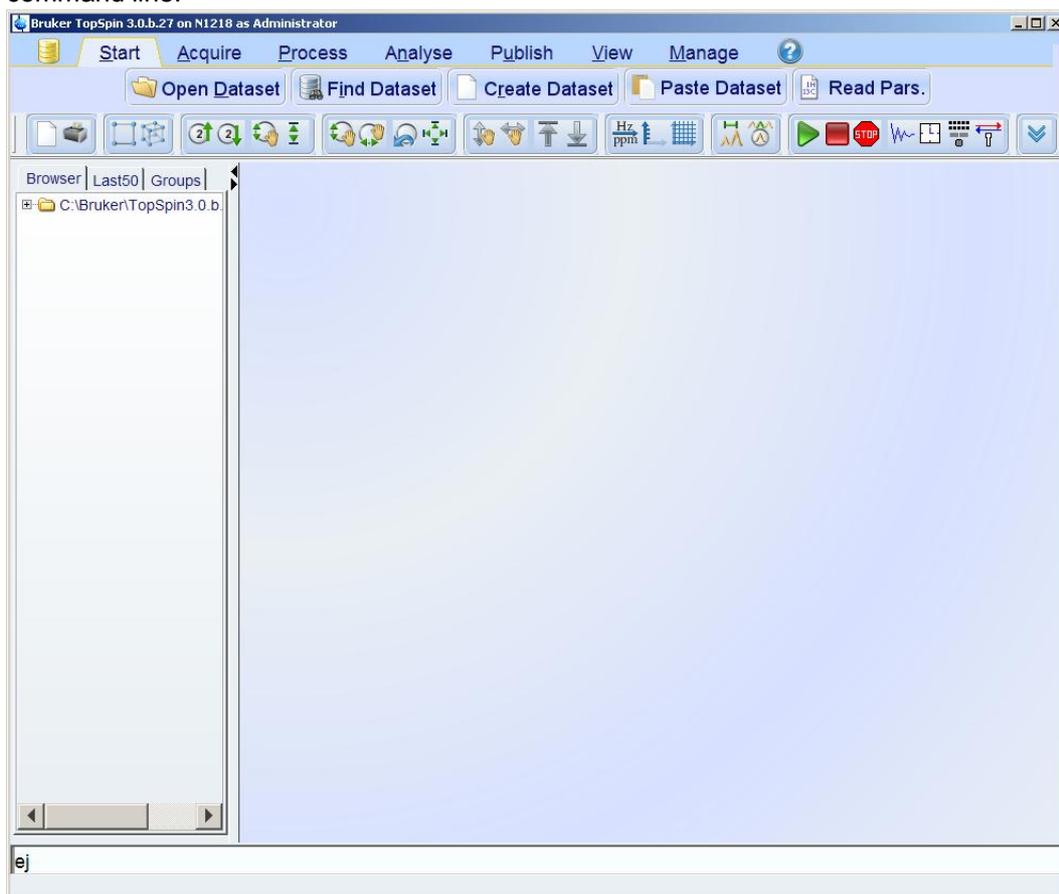
Once the sample has reached the magnet centre, this will be indicated by the green <down> lamp.



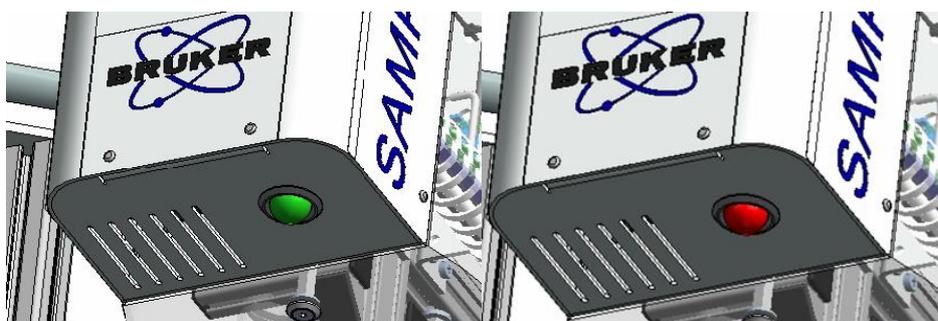
At the same time, the status display on the sample housing will go to red. The NMR experiment can now be carried out.

2.2.4 Ejecting the sample

Briefly opening the loading compartment and then closing it again triggers the return transport of the sample, or the command to do this can be entered into the TopSpin command line.

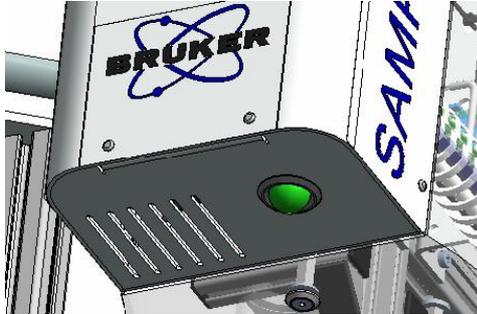


Trigger the return transport of the sample by entering <ej> (eject) into the command line in TopSpin, or use the Soft Panel or keyboard (Lift button)



During the transport, the status display will alternately blink red/green.

(1) Removing the sample from the loading compartment



The sample travels back into the loading compartment, and the status control lamp then switches to green again. The sample can now be removed.

(2) Opening the loading compartment and removing the sample



As soon as the sample can be seen to have arrived in the loading compartment (arrow), open the latter downwards.



Opening the loading compartment



Removing the sample



Removing the sample



If the compartment is not to be reloaded for a further experiment, it is important that the slider should be left open.

2.3 Manual mode, Sample Mail inactive (Emergency mode)

2.3.1 Switching the Sample Mail inactive

See Chapter 2.8.

2.3.2 Guiding the sample into the magnet

(1) Switching lift on

This takes place by entering the command <ej> (eject) into the TopSpin command line, or by using the Lift button on the Soft Panel or keyboard.

(2) Check of the air flow

Once the lift has been started, the airflow slowly increases, and this must be clearly audible.

(3) Insert the sample into the BST

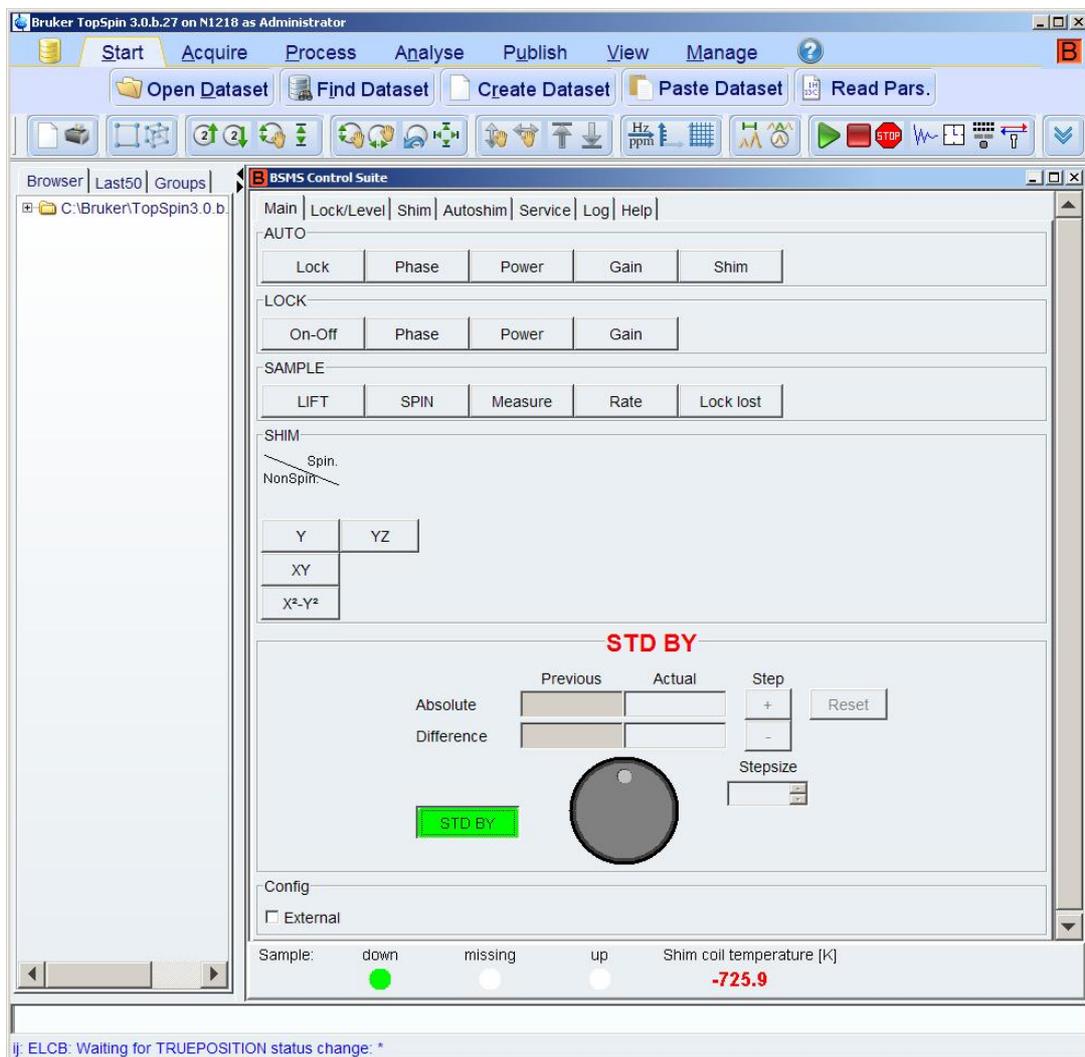




The spinner hovers on the airflow

(4) Lowering the sample

Switch off the lift. This can be done by entering the command <ij> (inject) into the TopSpin command line, or can take place using the Lift button on the Soft Panel or keyboard. Then wait until the control lamp "Sample down" lights up (Soft Panel or keyboard).



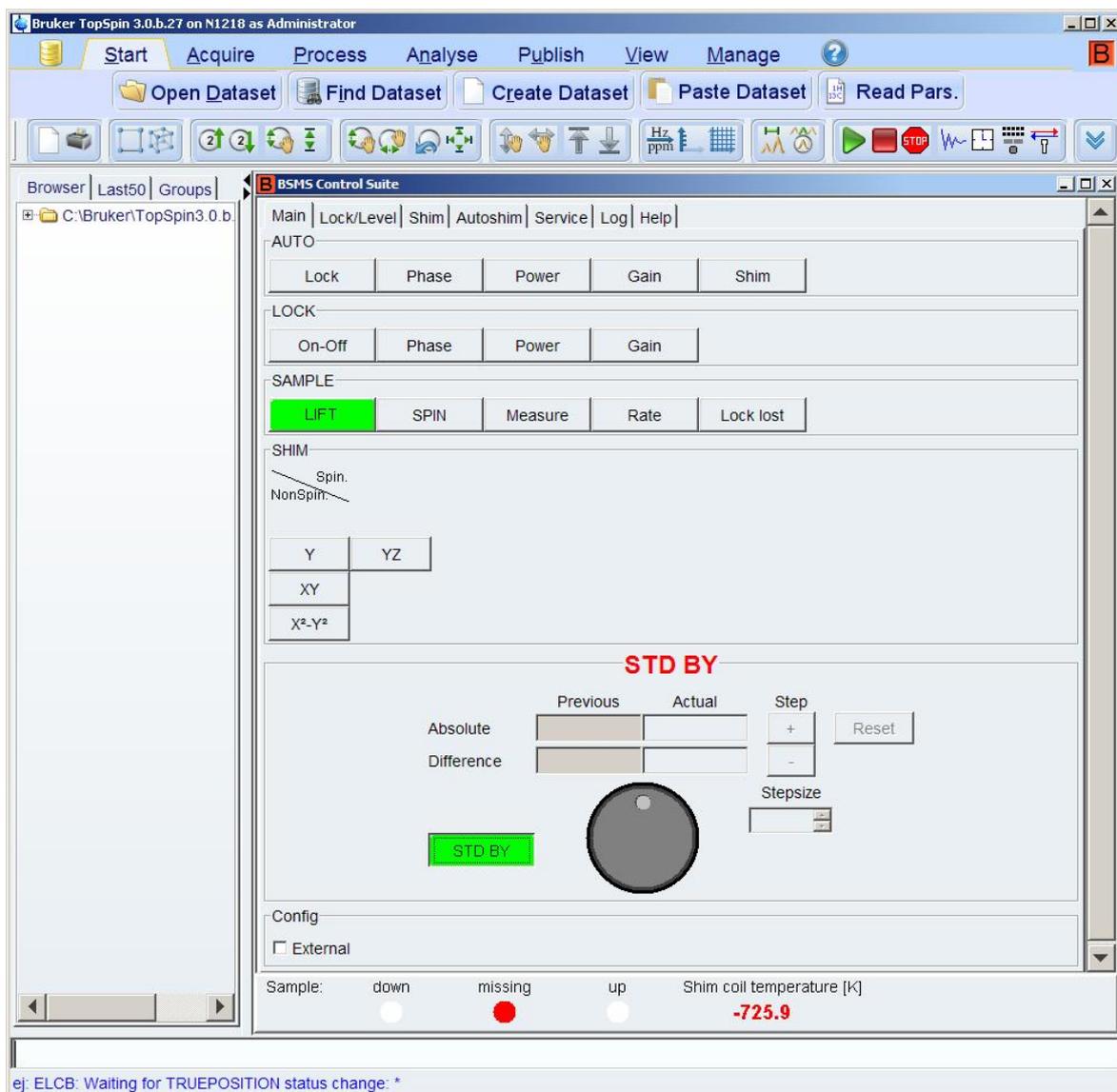
(5) Sample Down

The sample is now in the magnetic centre and the NMR measurement can be carried out. This status is indicated by "Sample down".

2.3.3 Ejecting the sample

(1) Ejecting the sample

This is carried out by entering the command <ej> (eject) into the TopSpin command line, or using the Lift button on the Soft Panel or keyboard. Wait until the sample appears at the top by the BST.



This can be seen on the panel by the "Sample missing" status.



The sample floats on the air flow and can now be removed.



Remove the sample.

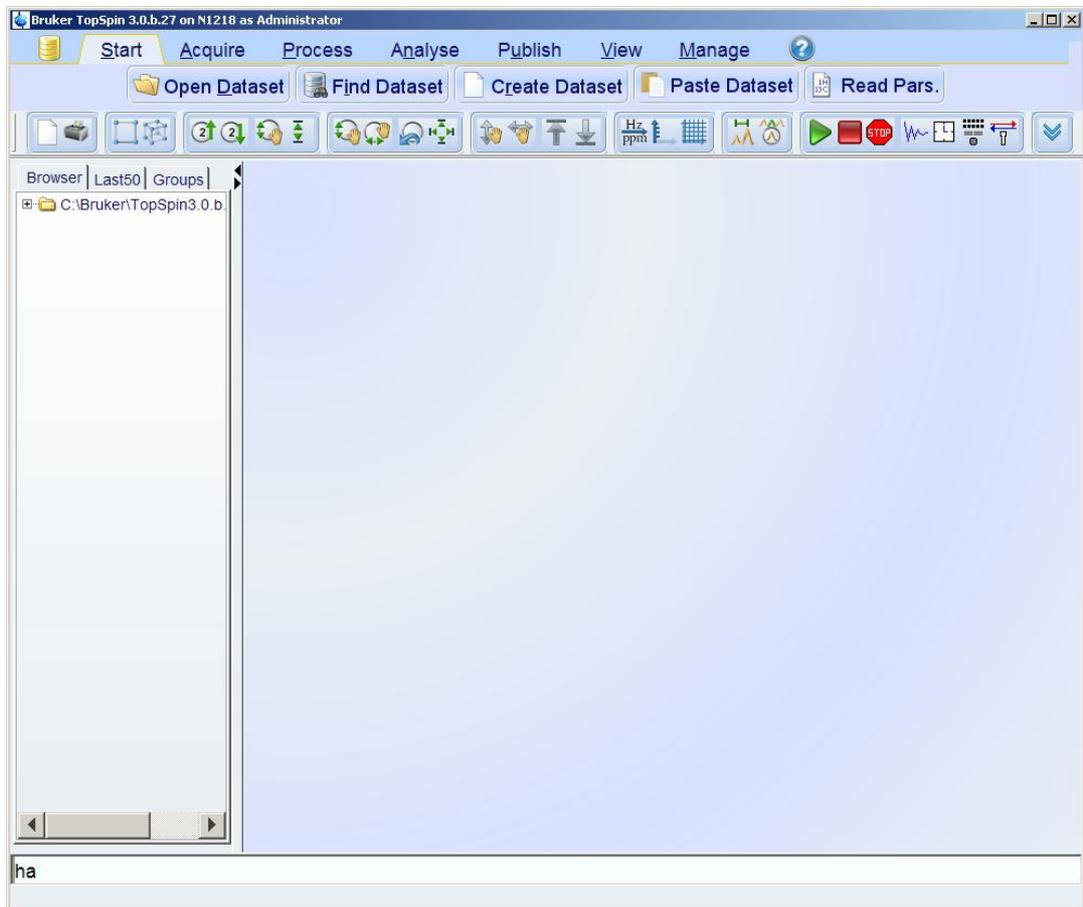
(2) Switching Liftoff

This is carried out by entering <ij> (inject) into the TopSpin command line, or by using LIFT button on the Soft Panel or keyboard.

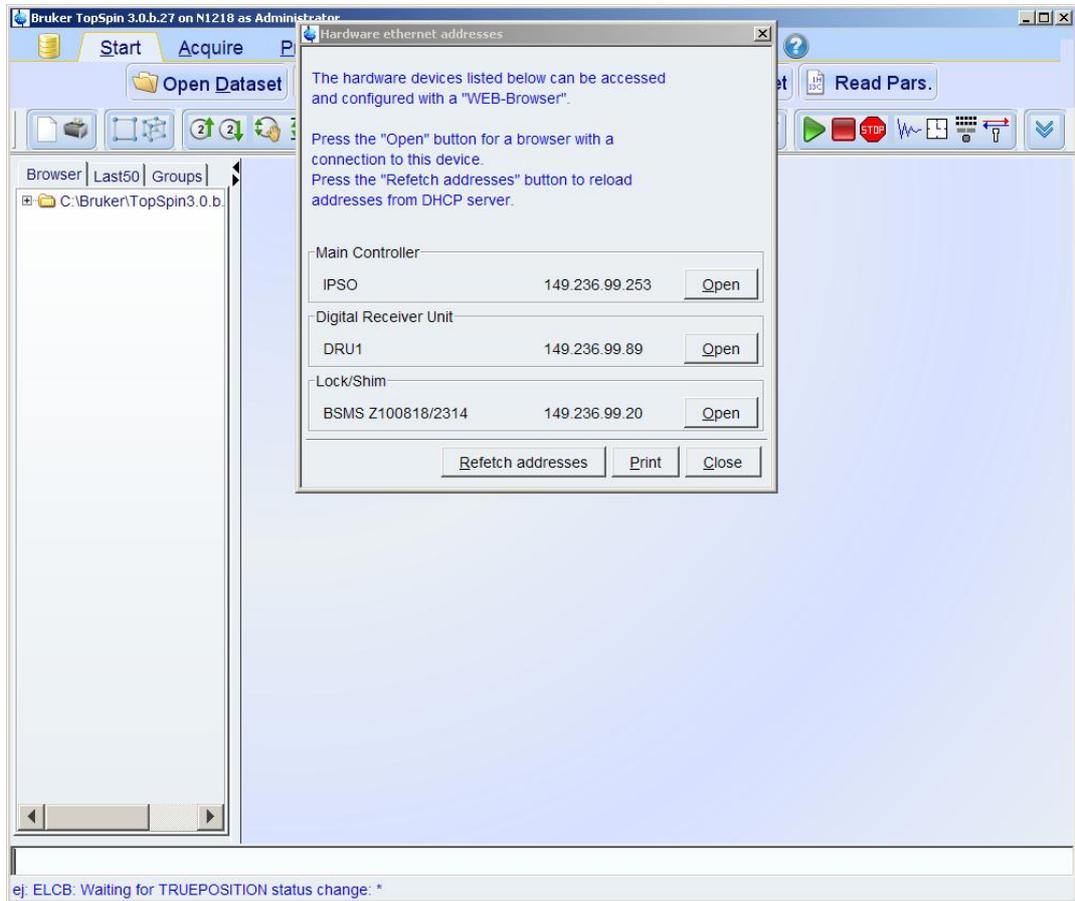
2.4 Enable/Disable Automatic Inject

When Automatic Inject is activated, SampleMail will automatically insert the Sample into the Magnet, once it is loaded into the loading compartment and the loading compartment is closed. (See Chapter 2.2)

Go into TopSpin and enter <ha> in the command line.

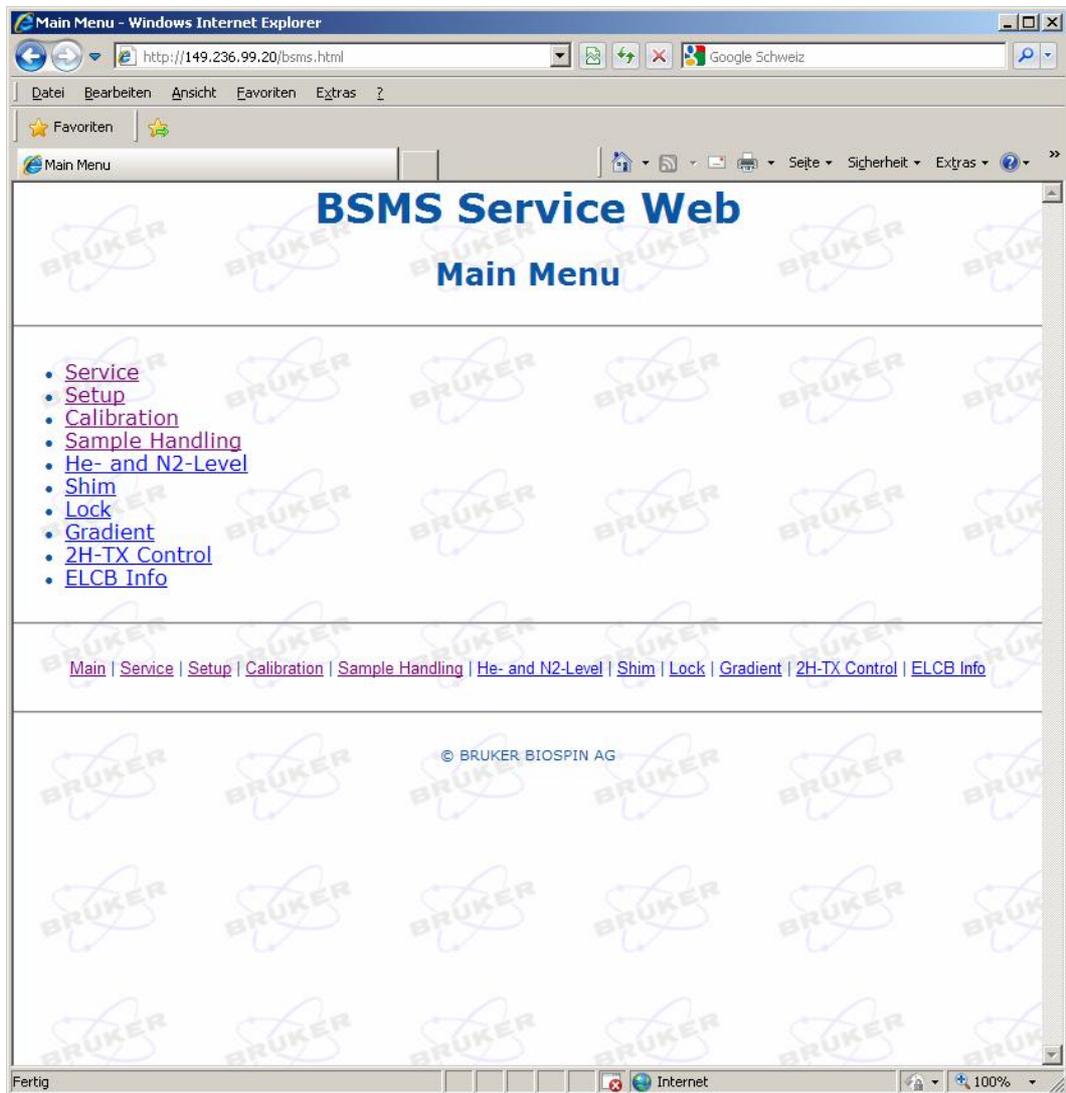


(3) Starting up the BSMS Service Web

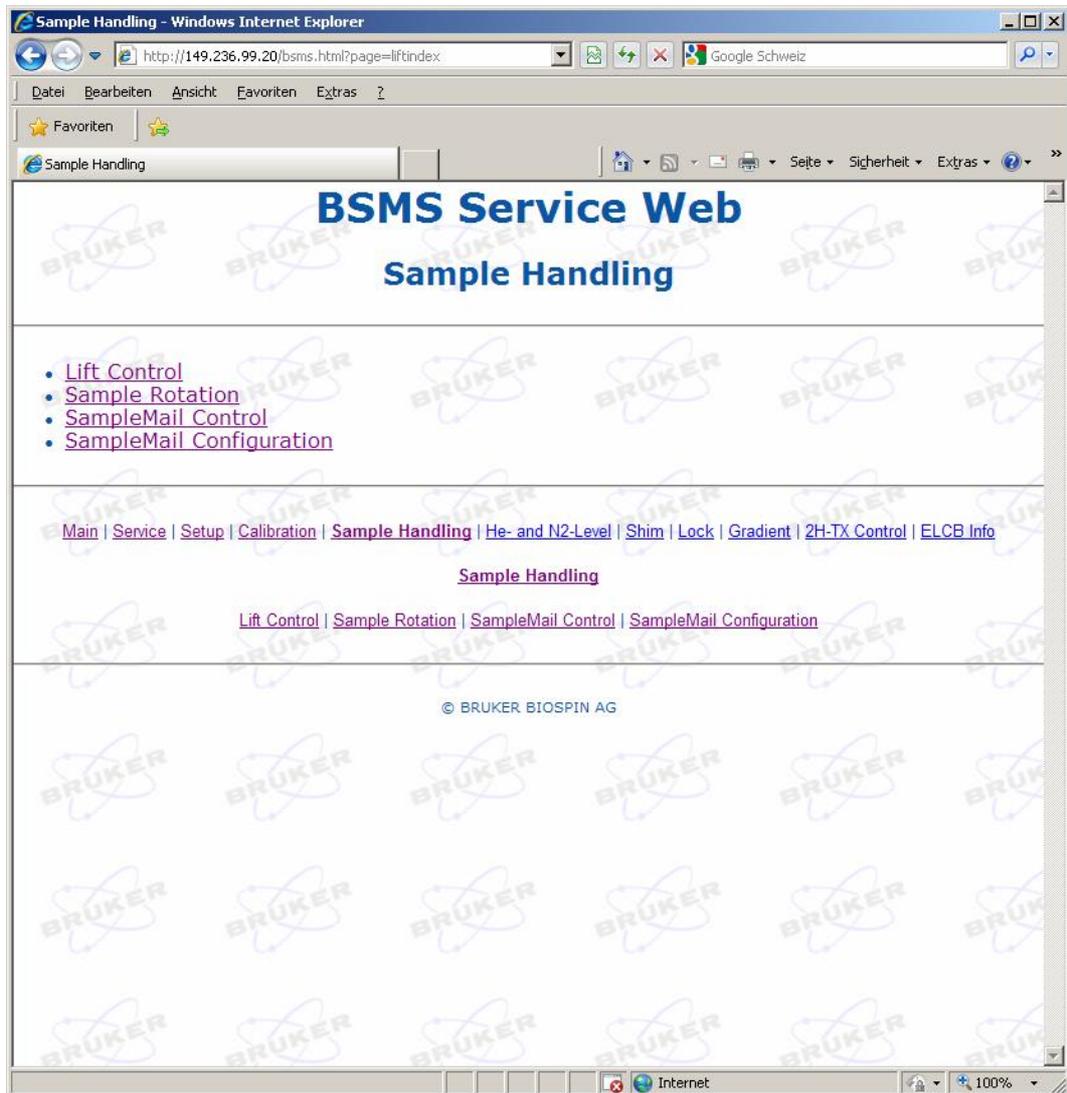


Click on <open> next to "Lock/Shim" in the menu.

(4) BSMS Service Web menu



Select the <Sample Handling> hyperlink.



Select the < SampleMail Control> hyperlink.

(5) Setting up the configuration

The screenshot shows the BSMS Service Web interface for SampleMail Control. The page is displayed in Internet Explorer. The main content area is divided into several sections:

- Commands:** A table with three rows. The first row has 'Lift' and buttons 'Lift ON' and 'Lift OFF', with a status of 'pending'. The second row has 'Lift Service Loop' and buttons 'Loop ON' and 'Loop OFF', with a status of 'Loop off'. The third row has 'Reset SampleMail' and a 'Reset' button, with a message: 'Please verify that there is no Shuttle stuck in a position where it can't be detected by the SampleMail.'
- Configuration:** A section with a dropdown menu for 'Lift Mode' (set to 'SampleMail: SPS on TTY1 1'), a checked checkbox for 'Auto "Lift off" on Slider close', and buttons for 'Set', 'Refresh', and 'Auto Refresh'. An arrow points to the checked checkbox.
- Status:** A table with five rows: 'FSM State' (insert sample into magnet), 'SPS State' (sample at BST), 'Sample Position' (Sample missing), 'SPS Software Version' (3), and 'Counter: Samples Changed' (62).

Check the box next to *Auto "Lift off" on Slider close* to enable the automatic inject.

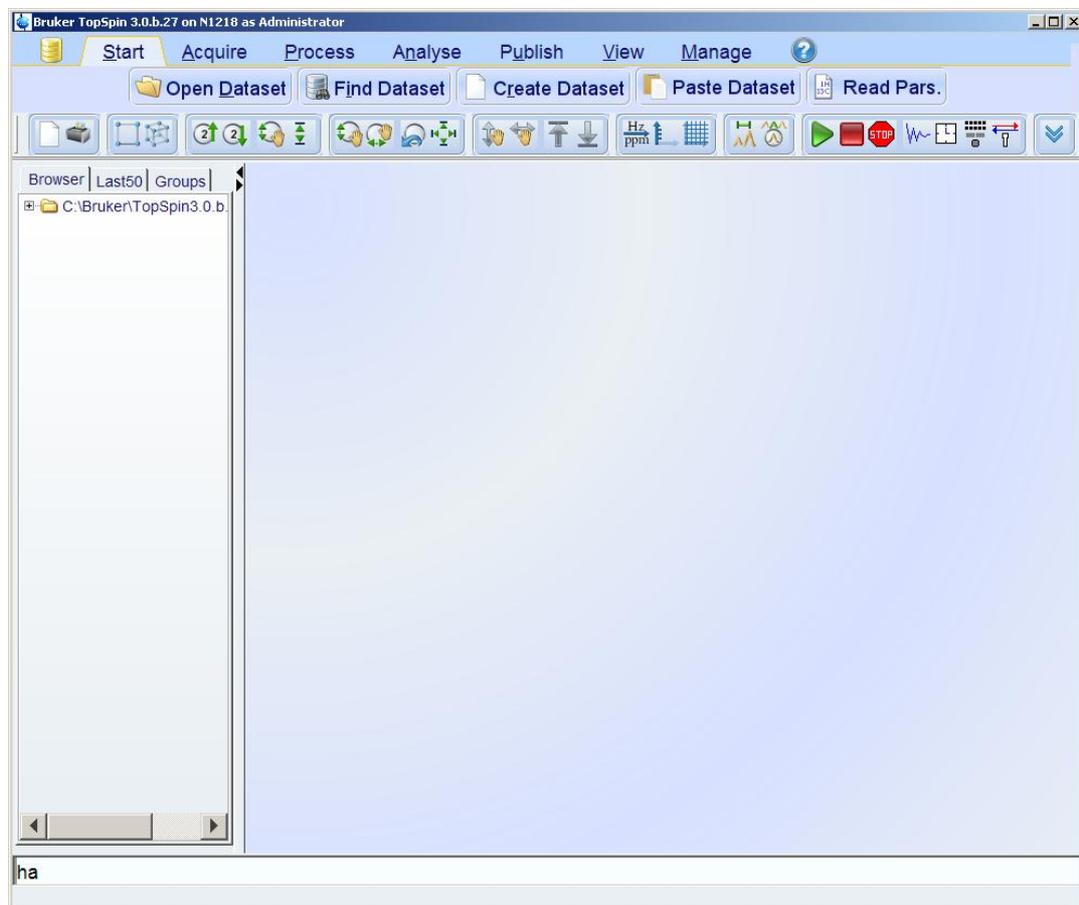
2.5 Switching between Sample Mail active/inactive

(1) Sample check

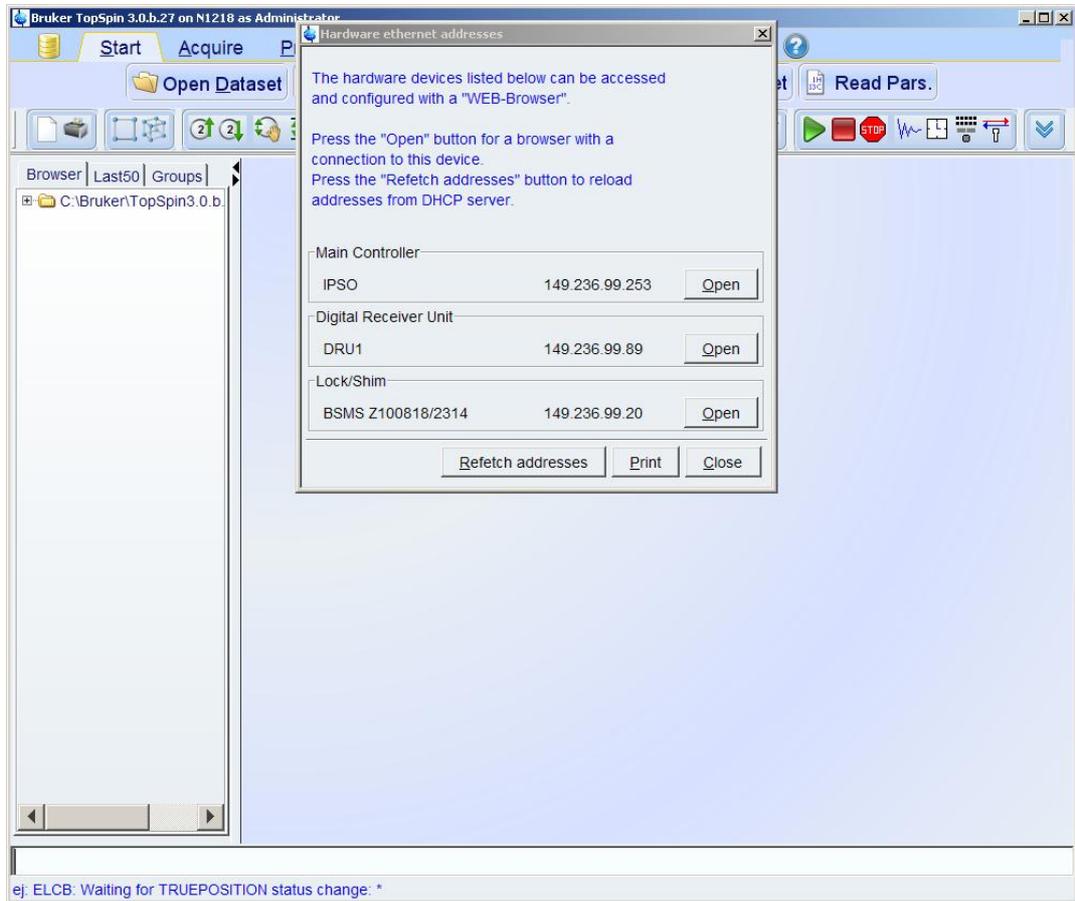
First check that there is no sample in the magnet centre (status lamp on the Soft Panel).

(2) Sample check

Go into TopSpin and enter <ha> in the command line.

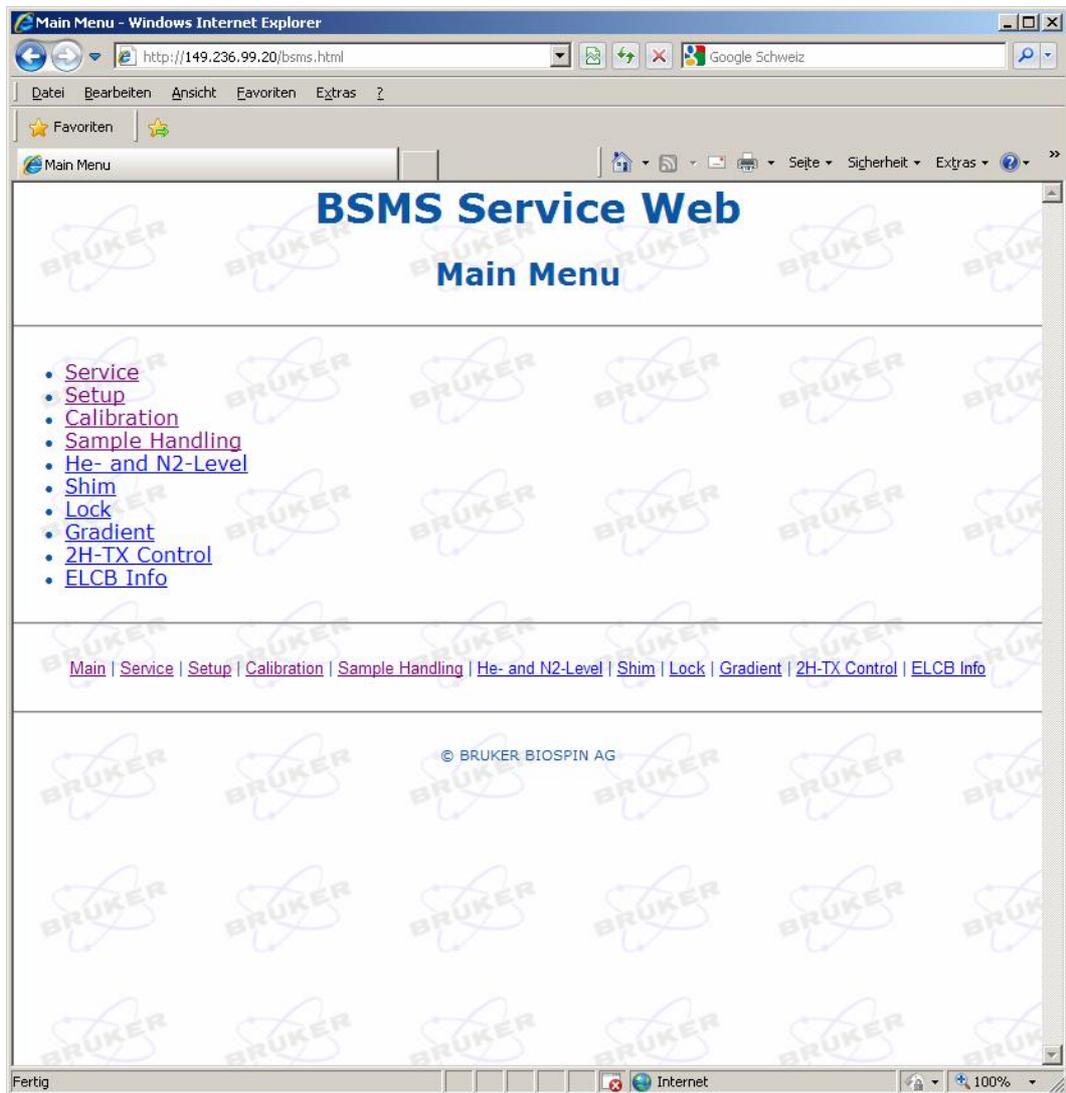


(3) Starting up the BSMS Service Web

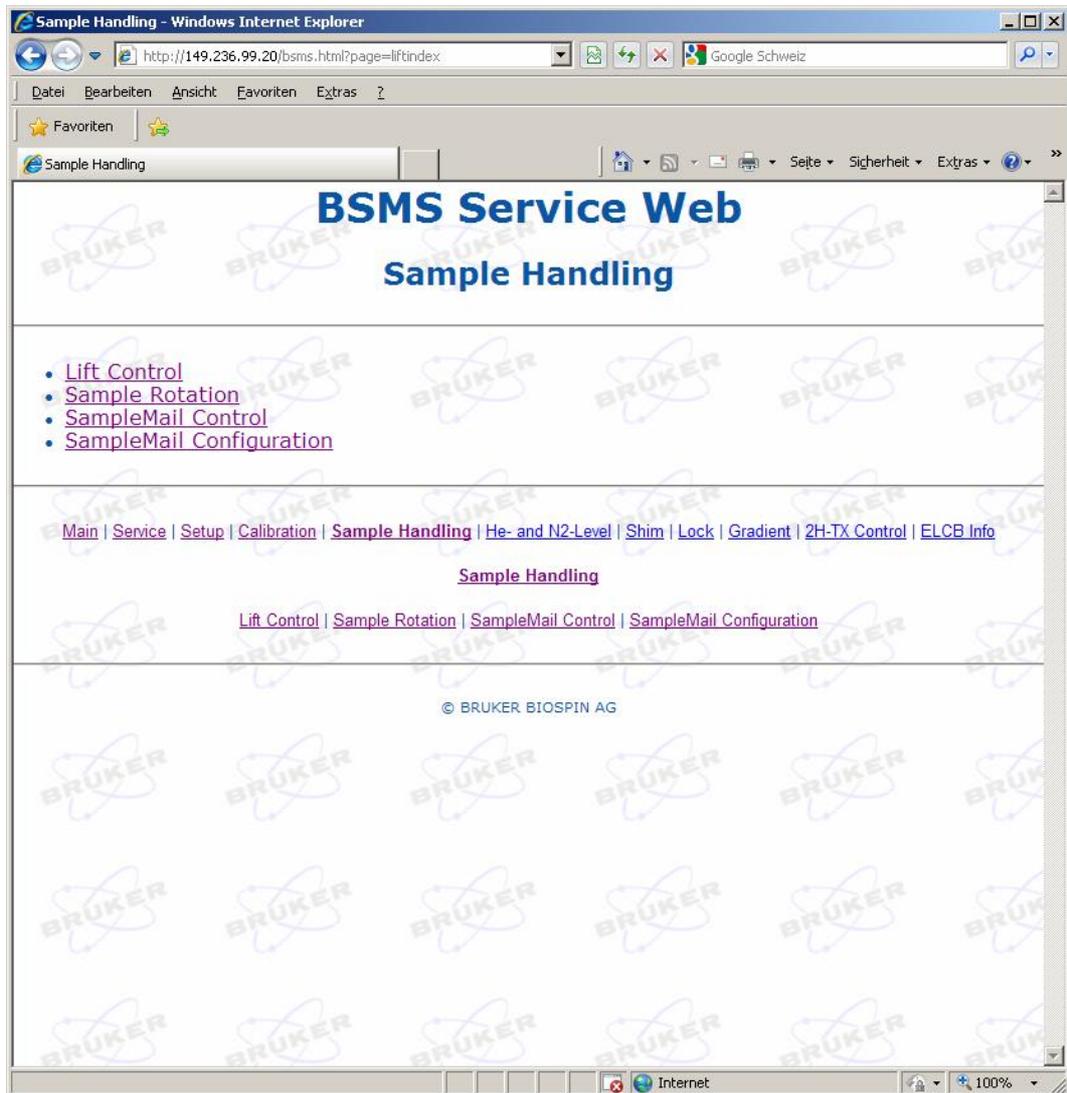


Click on <open> next to "Lock/Shim" in the menu.

(4) BSMS Service Web menu



Select the <Sample Handling> hyperlink.



Select the < [SampleMail Control](#) > hyperlink.

(5) Setting up the configuration

Commands

Lift	Lift ON Lift OFF	pending
Lift Service Loop	Loop ON Loop OFF	Loop off
Reset SampleMail	Reset Please verify that there is no Shuttle stuck in a position where it can't be detected by the SampleMail.	

Configuration

Lift Mode	SampleMail: SPS on TTY1 1)
Auto "Lift off" on Slider close	<input checked="" type="checkbox"/>
Set Refresh Auto Refresh	

Status

FSM State	insert sample into magnet
SPS State	sample at BST
Sample Position	Sample missing
SPS Software Version	3
Counter: Samples Changed	62

Select the "Lift Mode" as shown here, and then press the <Set> button and, after pressing <Refresh>, check whether the Lift Mode has been accepted as desired.

(6) Settings on the hardware

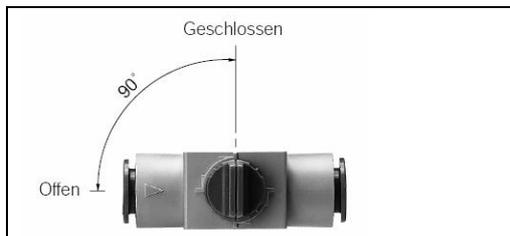


Fig. 2.5-1: Operating positions of the manual valve



Fig. 2.5-2 Power feed SampleMail off

Switch off the air supply to the Sample Mail (closed position), and the electricity supply should also be disconnected.

(7) Checking the position of the transport tube

The transport tube must not protrude above the BST, but must be pushed back into the Sample Mail housing by hand, as shown in the sequence of illustrations.





Push the guide tube away from the BST. Always hold the tube close to the linear guide.



In the direction of the SampleMail housing



Push the tube completely inwards into the housing

2.6 Procedure in case of faults and maintenance work



If manual work is to be carried out on the SampleMail in order to correct faults or for planned maintenance work, it is *essential* that all power must be removed from the SampleMail in order to minimise the risk of an accident. Please refer to Chapter 2.9.1 „Operating elements for the supply of energy“

2.7 Troubleshooting

Cause of the fault	Fault appears repeatedly	Fault correction
Sample jams mechanically	Check the adjustment with the adjustment ring	Readjust where necessary according to Installation Guide
	Check to O-ring	Replace the O-ring according to Chapter 3.2.1
	Check the lubrication of the linear axis	Renew the lubrication according to Chapter 3.2.2
	Look for general soiling	Clean as described in Chapter 0

2.8 Spinners that can be used



The models without the yellow reflector foil are crossed out and are not compatible with SampleMail.

All the other models shown here are approved for the use with SampleMail.

2.9 Description of the operating elements and their use in all operating modes

2.9.1 Operating elements for the supply of energy

The SampleMail must always be free of voltage and pressure when carrying out work as a result of incorrect functioning of the unit and for maintenance and cleaning work. This takes place as follows:

- 1). Close the manual shut-off valve [Fig. 2.9-2]
- 2). Unplug the 24 VDC mains plug [Fig. 2.9-4]



Warning:

The SampleMail is only completely disconnected from sources of energy by means of hardware if the *lift air hose* is also disconnected.

Explanation: If there is a sample in the BST or the SampleMail, this can still move in the vertical direction, but not in the horizontal direction, even after the closing of the manual shut-off valve [Fig. 2.9-2] and the unplugging of the 24 VDC mains plug [Fig. 2.9-4].

This is due to the fact that the lift air is controlled by a proportional valve in the BSMS / PNK. It is the same valve that is used in the BST mode without SampleMail.

If it is necessary to deactivate the lift air by hardware, the gas line must be interrupted by disconnecting a plugged connection.

The corresponding connectors can be seen in the third row of the table in "Fig. 1.4-2: Input connections".



Fig. 2.9-1 Manual shut-off valve
SampleMail on

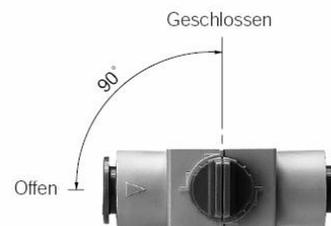


Fig. 2.9-2: Manual shut-off valve
SampleMail off



Fig. 2.9-3 Power feed, SampleMail on

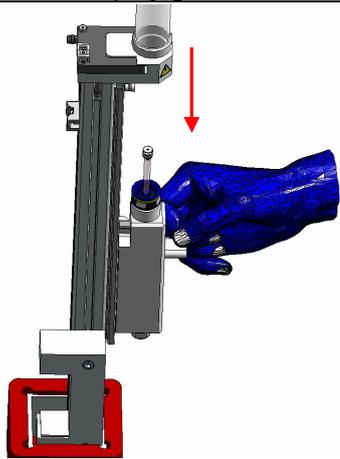
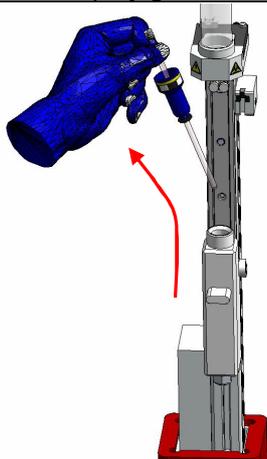


Fig. 2.9-4 Power feed, SampleMail off

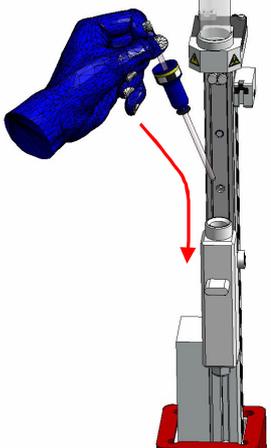
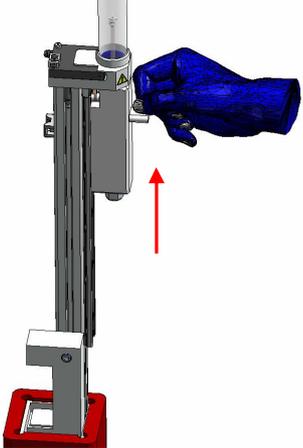
2.9.2 Operating element for the infeed and removal of NMR samples

2.9.2.1 Removal of samples (eject)

Sample being measured	Eject sample	Sample ready for removal
	 + 	
Status display red	Status display blinks red / green (blinking red = operational fault)	Status display green
	Photo of keyboard button / PC button	
Hand slider position is closed, no sample in the hand slider receptacle	Type "ej" in the TopSpin command line	Hand slider position is closed, with the sample in the hand slider receptacle

Open the hand slider	Remove the sample
	
Status display green	Status display green
	
<i>Carefully</i> push the hand slider to the lower guide stop (do not allow to fall!)	When removing the sample, ensure that the sample glass does not collide with the hand slider unit (danger of breakage!)

2.9.2.2 Infeed of samples (inject)

Feed in the sample	Close the hand slider	Start the lift
		
<p>Status display green</p>	<p>Status display green</p>	<p>Status display blinking red / green (blinking red = operational fault)</p>
		
<p>When feeding in the sample, ensure that that the sample glass does not collide with the hand slider unit (danger of breakage!)</p>	<p><i>Carefully</i> push the hand slider to the upper guide stop (do not impact the stop with force!)</p>	<p>There are two operating modes: It can be selected whether the lift should be started simply by the closing of the hand slider or through typing "ij" in the TopSpin command line.</p>

2.10 Explanation of the safety-related symbols on the unit

2.10.1 Warning of hazard areas



The operator himself must ensure that all the necessary safety precautions are taken for every NMR experiment in which substances are used that could represent a chemical and radioactive hazard or that are easily flammable.

In the case of the unit becoming contaminated with hazardous substances, the operator must deal with this individually. Depending on the circumstances, this could lead to consequential damage to persons and machine components.

As it is not possible for BRUKER to draw up decontamination rules for all hazardous substances - and their combinations – that the operator could use in NMR experiments, we simply refer you to a standard cleaning procedure (see Chapter 3.1). This cleaning procedure is intended to protect the machine components and the health of the operating personnel.

If a different cleaning procedure is preferred, the operator must obtain information from BRUKER about possible consequent damage to the components of the unit.

In the case of manual interventions that are not foreseen in normal operation according to the operating instructions (see Chapter 2 „Operating instructions“), it must be ensured in advance that the SampleMail

- 1). is free from voltage (see Fig. 2.9-4)
- 2). cannot be affected by any pressurised gas (see Chapter 2.9.1 “Operating elements for the supply of energy“)

2.10.2 Warning of biological hazard



The SampleMail itself generates no direct biological hazard.

Real danger can arise, however from substances whose hazardous biological content could endanger the operating personnel or other living beings through damage to its protective enclosure (for example, the breakage of a sealed sample glass).

As is the case for the manual handling of biologically dangerous substances, no 100% guarantee against damage to the protective enclosure of these substances can be provided for their automatic handling.

The operator himself must ensure that that all the necessary safety precautions are taken for every NMR experiment in which biologically hazardous substances are used.

In the case of the unit becoming contaminated with biologically hazardous substances, the operator must deal with this individually. Depending on the circumstances, this could lead to consequential damage to persons and machine components.

As it is not possible for BRUKER to draw up decontamination rules for all biologically hazardous materials that could be used in NMR experiments, , wird auf

we simply refer you to a standard cleaning procedure (see Chapter 3.1). This cleaning procedure is intended to protect the machine components and the health of the operating personnel.

If a different cleaning procedure is preferred, the operator must obtain information from BRUKER about possible consequent damage to the components of the unit.

In the case of manual interventions that are not foreseen in normal operation according to the operating instructions (see Chapter 2 „Operating instructions“), it must be ensured in advance that the SampleMail

- 1). is free from voltage (see Fig. 2.9-4)
- 2). cannot be affected by any pressurised gas (see Chapter 2.9.1 “Operating elements for the supply of energy“)

2.11 Procurement of consumables and operating material

In order to guarantee trouble-free operation, only original sample tubes from BRUKER should be used with a maximum length of 8“.

Only use original SB spinners / SB shuttles from BRUKER with *yellow reflector foil* that are compatible with SampleMail (see Chapter 2.8)

3 Maintenance

! In all the activities described in Chapter 3, it must *first* be ensured that the SampleMail has no electricity and is free from pressure. Please refer to Chapter 2.9.1 “Operating elements for the supply of energy“

3.1 Instructions for cleaning and decontamination

During the development of the SampleMail, great value was placed on the greatest possible use of chemical resistant materials.

However, components such as optical sensors, for example, should not come into contact with aggressive materials such as acetone.

For the removal of soiling of any kind, we generally recommend the use of alcohol as a cleaning agent. Most soiling can thereby be removed using lint-free cloths.

If other cleaning agents are required, please check with BRUKER first.

3.1.1 Cleaning optical sensors

Special care is recommended when cleaning *optical sensors*:

In the case of soiling and the subsequent incorrect functioning of the unit, the lenses of *optical sensors* should first only be cleaned with a dry, lint-free cloth. If this does correct the malfunction, the lenses can be gently rubbed with a lint-free cloth lightly impregnated with water.

In order to ensure that there are no negative effects on the geometrically accurate alignment of the sensors, cleaning work should only be carried out with an absolutely minimal use of force.

3.1.2 Cleaning of actuators

Special care is called for when carrying out cleaning work on the *linear axis unit* (Fig. 3.1-1: Linear axis unit):

If the lubricant film is damaged, it must be immediately relubricated (see also Chapter 3.2.2: Lubricating the liner axis unit)



Do not use the TRANSFER SLIDER TUBE to manually pull or push the TRANSFER SLIDER

TRANSFER SLIDER TUBE and the transfer slider bearings are not designed to withstand the large torques occurring on such an operation.

- Push or pull at the transfer slider bearing only.

3.1.3 Decontamination

In the case of accidents involving hazardous materials, BRUKER is not able to prescribe any all-encompassing and binding instructions for effective decontamination procedures. The operator himself is obliged to take all the necessary protective measures to protect his staff and the unit components from damage. In this respect, please refer to Chapter 2.10 (Explanation of the safety-related symbols on the unit)

3.2 Preventative maintenance requirements

3.2.1 Changing the O-ring on the TRANSFER SLIDER TUBE

The O-ring (P/N 1801211) must be preventatively replaced *every 6 months*. This is done by hand, and no tools are necessary for this. Please refer to Fig. 3.2-1: O-ring maintenance

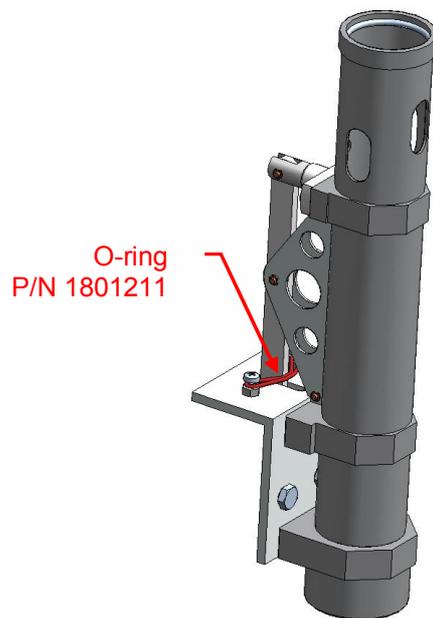


Fig. 3.2-1: O-ring maintenance

3.2.2 Lubricating the liner axis unit

Wherever possible, maintenance-free actuators (pneumatic cylinders and valves) have been used in the SampleMail. Nevertheless, the linear axis unit has a *sealing lip* and a *swallowtail guide* that must both be re-lubricated every 3 years or after 30,000 sample changes, whichever occurs first. (See Fig. 3.2-2: Lubrication points on the linear axis unit).

If the carriage moves irregularly on the linear axis or if audible vibrations occur, lubrication should be carried out immediately, regardless of the prescribed lubrication interval.



Only the special grease delivered with the unit should be used for this lubrication!!! (See Fig. 3.2-3: Special grease.)

➤ Other lubricants could cause damage to the linear axis unit!

In doing this, a thin film of lubricant must be applied to the surfaces shown in Fig. 3.2-4, over the complete stroke length of the linear axis unit carriage. This is best carried out by hand, or using a soft, lint-free tool.

When moving the linear axis unit, please note:



➤ Push or pull on the transfer slider bearing only.

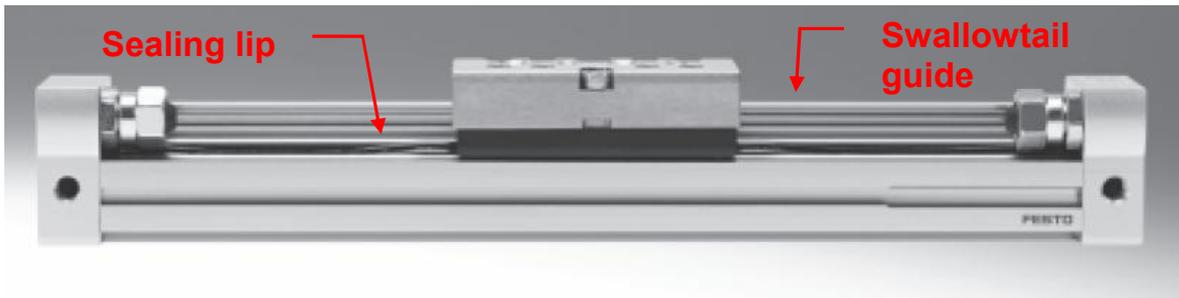


Fig. 3.2-2: Lubrication points on the linear axis unit



Fig. 3.2-3: Special grease

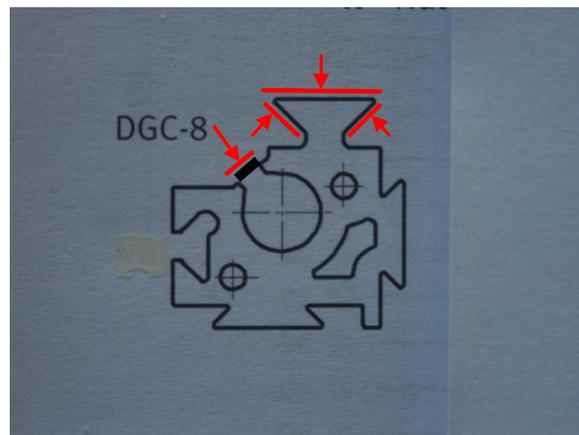


Fig. 3.2-4: Surfaces to be lubricated

4 Appendix

		CB TEST CERTIFICATE		Ref. Certificate No. CH-5428
IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME				
Issued by:	Electrosuisse			
Product:	Sample Transporter			
Applicant:	Brüker BioSpin AG	Analytik und Medizintechnik Industriestrasse 26 CH-8117 Fällanden	Switzerland	
Manufacturer:	Brüker BioSpin AG	Analytik und Medizintechnik Industriestrasse 26 CH-8117 Fällanden	Switzerland	
Factory:	Brüker BioSpin AG	Analytik und Medizintechnik Industriestrasse 26 CH-8117 Fällanden	Switzerland	
Rating and principal characteristics:	24VDC, 0.7A Class III, IP20			
Trade mark (if any):	Brüker BioSpin			
Model/Type reference:	SampleMail			
Additional information:	---			
Sample of product tested to be in conformity with IEC:	61010-1(ed.2) 61010-2-081(ed.1);am1	National differences: EU Group Differences; EU Special National Conditions; EU A-Deviations; CA; US		
Test Report Ref. No.:	08-EL-0111.01 + .02			
This CB Test Certificate is issued by the National Certification Body:				
Electrosuisse Luppenstrasse 1, CH-8320 Fehraltorf				
Signed by:	Martin Plüss			
Date of issue:	2009-09-29	page 1 of 1		



EMC

CERTIFICATE NUMBER

CH-5429

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE)

CB EMC TEST CERTIFICATE

Issued by: Electrosuisse

Product: Sample Transporter

Applicant: Bruker BioSpin AG Analytik und Medizintechnik Switzerland
 Industriestrasse 26
 CH-8117 Fällanden

Manufacturer: Bruker BioSpin AG Analytik und Medizintechnik Switzerland
 Industriestrasse 26
 CH-8117 Fällanden

Factory: Bruker BioSpin AG Analytik und Medizintechnik Switzerland
 Industriestrasse 26
 CH-8117 Fällanden

Rating and principal characteristics: 24VDC, 0.7A
 Class III, IP20

Trade mark (if any): Bruker BioSpin

Model/Type reference: SampleMail

Additional information: Additional standard tested: FCC CFR47 part 15, Release 08-10-07, Class B

Sample of the product was tested and found to be in conformity with IEC: 61000-3-2(ed.3);am1;am2 Comments:
 61000-3-3(ed.2) —
 61000-6-2(ed.2)
 61000-6-3(ed.2)
 61326-1(ed.1)

As shown in the Test Report Ref. No. which forms a part of this certificate: 08-EL-0111.10

This CB Test Certificate is issued by the National Certification Body:

Electrosuisse
Luppenstrasse 1,
CH-8320 Fehraltorf

electrosuisse >>>

Signed by: Martin Plüss
Date of issue: 2009-09-29

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