



Bruker BioSpin

SampleJet •

Installation Guide

Version 4.0

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Safety

1

Warnings and Notes in this Manual

1.1

There are two types of information notices used in this manual. These notices highlight important information or warn the user of a potentially dangerous situation. The following notices will have the same level of importance throughout this manual.



Note: Indicates important information or helpful hints



WARNING: Indicates the possibility of severe personal injury, loss of life or equipment damage if the instructions are not followed.

Potentially Hazardous Areas

1.2

The symbols shown below indicate a potentially hazardous area and strong LASER (ISO 3864;DIN 40008).

Warning hazardous area



The symbol is placed on the following areas of the SAMPLEJET:

1. On the front cover, just right of the door (side that is away from the magnet).

2. On the rear side left and right (side that is over the magnet). Warning: Keep cover closed unless manual action has to be done.

Warning LASER hazard



The symbol is placed on the following area of the SAMPLEJET:

1. On the „SAMPLEJET BST ADAPTER UNIVERSAL“ on top of the magnet. Do not remove any parts until the SAMPLEJET is turned off.



If one of these symbols is missing, please contact BRUKER BIOSPIN for a replacement!

Disclaimer

1.3

- The unit should only be used for its intended purpose as described in this manual.
- Use of the unit for any purpose other than that for which it is intended is done so at the users own risk and invalidates any and all manufacturers warranties.
- Service or maintenance work on the unit must be carried out by qualified personnel.
- Only those persons trained in the operation of the SAMPLEJET should operate the unit.
- Read this manual before operating the unit. Pay particular attention to any safety related information.



BRUKER BIOSPIN is not responsible or liable for any injury or damage that occurs as a consequence of non-approved manipulations of the SAMPLEJET.

Emergency Stop

1.4

The red emergency button on top of the SAMPLEJET is used to disconnect the power supply to all the drives. This will immediately stop any movement of the carousel and the gripper. To turn off the power completely use the switch on the back side of the SAMPLEJET POWER SUPPLY.

Site Considerations

1.5

The SAMPLEJET should be setup in a standard laboratory environment. Maximum room temperature should not exceed the range from 17-25°C. For more information refer to the Avance spectrometer manual on site planning available from BRUKER BIOSPIN.

Before Mounting the SampleJet

1.6

- Make sure the magnet is firmly secured to its base in order to prevent the instrumentation from tipping over.
- Please check if this magnet needs a „sample changer foot“ to extend the magnet base to get the desired stability. This is the case for some 300 and 400 MHz magnets. Contact BRUKER BIOSPIN if in doubt.

While Mounting the SampleJet

1.7

- Lifting the SAMPLEJET up to the magnet requires at least two people (ca. 40 kg). Do not try to do it on your own. You may get hurt.
- Beware of the strong magnetic field while working around the magnet. Keep all metal objects, such as tools, screws, or any metallic parts away from the magnet. Remove any mechanical watches or metallic objects while working around the magnet.
- Do not turn the SAMPLEJET on during installation.

During Operation

1.8

- Use only new sample tubes in the specified diameter range or otherwise the caps may fall off while the system is running.
- Avoid putting hands or objects in the path of the gripperarm or tray when the SAMPLEJET is running, as this may cause personal injury or damage to the equipment. Therefore it is recommended to keep the doors on the front and back side closed during normal operation.
- Be aware that the SAMPLEJET's horizontal and vertical axes, the tray or the gripper may start a movement unexpectedly.
- Glass tubes may contain hazardous substances. If a glass tube breaks, refer to the corresponding precautions and cleaning/disinfection instructions. Only trained personnel should be allowed to operate the SAMPLEJET. Staff training

is the responsibility of the owner of the system, BRUKER BIOSPIN will not be responsible for damage resulting from improper training.

- The use of nitrogen as an operating resource instead of compressed air may lead to an oxygen deficiency in the laboratory, e.g. through a technical defect (burst in pneumatic hose). It is highly recommended that oxygen warning device(s) be installed in the laboratory.
- Always have the covers closed while working with the system.

Installation Procedure

2

Steps to an Operating SampleJet

2.1

This Manual describes the hardware installation of the SAMPLEJET only. All the topics depending on the firmware version are described in the „Users Manual“.

Table 2.1. Where are the information

Installation depends on	Is described in manual
Hardware	„Installation Guide“ Z31750 (this manual)
Firmware	„Users Manual“ Z31749 (included in the Firmware)

In this „Installation Guide“ Z31750

- Mounting instructions
Describes how to screw a SAMPLEJET on a Magnet.
- Cooling Installation (option)
Guide to install a cooling on a SAMPLEJET.
- Light and Door Switches Kit (upgrade older systems)

In the „Users Manual“ Z31749

- Initial Configuration
Setup of software like TopSpin or IconNMR
- Calibration
The SAMPLEJET has to be calibrated before the first use.
- User Settings
Configuration of the Settings.

The „Users Manual“ is included in the SAMPLEJET's firmware as a „pdf“ file and can be downloaded from the SAMPLEJET. Two preconditions have to be met before this manual can be downloaded.

- The SAMPLEJET has to be on electrical power.
- The SAMPLEJET has to be connected to the spectrometer computer via the ethernet cable

On the spectrometer computer you can connect to the SAMPLEJET homepage with a internet browser. To access the SAMPLEJET just enter „http://149.236.99.55“ in a web browser window.

Once the webinterface is accesable, the manual is found in the menu „Documentation“ in „Download Manual“.

Mounting Instructions

3

Caution

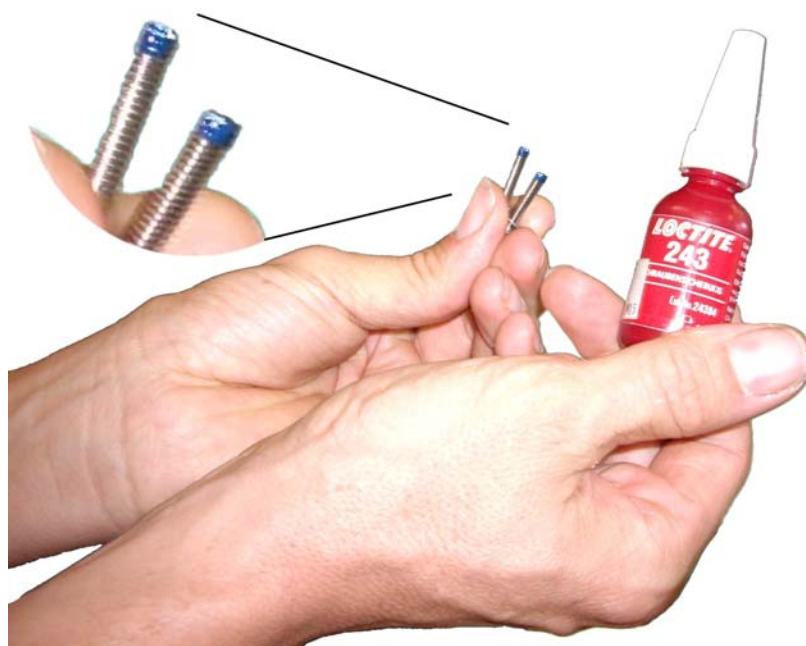
3.1

Before mounting the SAMPLEJET, it is important to make sure that the magnet is firmly anchored to its base in order to prevent the magnet from tipping over. Switch off the dampers of the magnet if existing. Make sure that the shim system is firmly tightened, in order to prevent it from shifting.



All fixed screws have to be secured with LOCTITE. Otherwise the vibrations of the drives may loosen the screws!

But do not use LOCTITE on perspex and the whole cover.



Mounting Instructions



Every SAMPLEJET is delivered with a TOOL KIT containing LOCTITE.
Additional LOCTITE 243 Art. Nr. 45872 is available at BRUKER BIOSPIN.



Use the delivered screws for the shim systems which have the appropriate length and material.

Prevent screws and tools from falling into the BST by closing the top of it with the black protection lid.

The SAMPLEJET must be supplied by minimum 5.5 bar and maximum 7 bar. An airflow of 100l/min is needed to guarantee a proper behavior of the lift.

The SAMPLEJET POWER SUPPLY is running from 110 to 240 volts at a frequency of 50 to 60 hertz.

Required Tools and Consumables for the Installation

3.2

The SAMPLEJET comes with a TOOL KIT (Z107443) which contains all the special tools and consumables. An installation needs some additional standard tools which are listed below. All dimensions of the tools are metric system. Every time a tool is used it is marked in this manual by the „-->“ sign.

Table 3.1. Required tools

Position	Tool	Remark
1	Screwdriver 2	
2	Screwdriver 4	
3	Crosstip screwdriver 0	
4	Crosstip screwdriver 2	
5	Allen key 2.5	Comes with the TOOL KIT
6	Angled allen key 3	
7	Angled allen key 4	
8	Angled allen key 5	
9	Angled allen key 6	Only used with a samplechanger foot
10	Flat spanner 5	Only when removing the carousel
11	Flat spanner 7	Comes with the TOOL KIT
12	Flat spanner 13	
13	Flat spanner 16	
14	2 Flat spanner 17	
15	Water level	Comes with the TOOL KIT
16	Cutter	
17	Metric Scale	
18	2 Ladders	

Table 3.2. Required consumables

Position	Consumable	Remark
1	Some medium size cable ties	
2	Loctite 243	Comes whit the TOOL KIT
3	Cleaning utilities	sometimes used
4	Rubbing alcohol	sometimes used

Installing the Samplechanger Foot

3.3

On some small and tall magnets (300 & 400 MHz), an additional samplechanger foot has to be used in order to get desired stability.



If you are not sure, if this additional samplechanger foot is required, please get in touch with the local BRUKER BIOSPIN dealer.

Figure 3.1. Samplechanger foot



1. Switch on dampers if available.
2. Attach the samplechanger foot and secure the 4 screws with Loctite.
--> Angled allen key 6
3. Check that the supporting leg does not touch the ground, to prevent picking up vibrations from the ground.
4. Switch off dampers and make sure the magnet is firmly anchored to its base

Installations on the Magnet

3.4

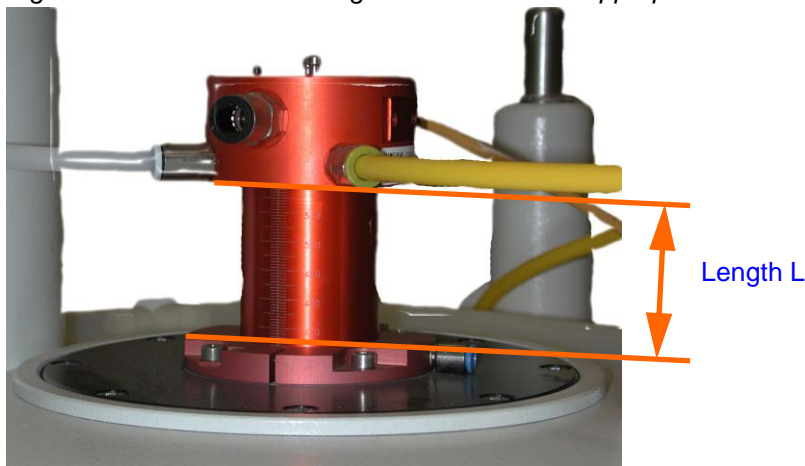
Determine which Parts to Use

3.4.1

The SAMPLEJET has always to be on the same height in relation to the BST shim upper part. Since the height of the BST shim upper part is different for every magnet, the height of the SAMPLEJET MAG MOUNTING has to be adjusted.

As shown in the picture, measure the length L between the top side of the flange and the lower side of the shim upper part.

Figure 3.2. Measure the height of the BST shim upper part tube



Depending on the length L, select the appropriate parts in the table below.

Table 3.3. Matrix which parts to use

length L [mm]	length L [inch]	Thread low	Thread high	Distance tube
				
		Z73988 / Z73989	Z73990 / Z73991	Z105622
0 - 55	0 - 2 ³ / ₁₆ "	X		X
55 - 120	2 ³ / ₁₆ " - 4 ³ / ₄ "		X	X
120 - 157	4 ³ / ₄ " - 6 ³ / ₁₆ "	X		
157 - 217	6 ³ / ₁₆ " - 8 ¹ / ₂ "		X	

Mounting Instructions

Depending on the type of BST flange, different parts have to be used. Measure the height H and the diameter D to determine the proper mounting from the tables below.

Figure 3.3. Diameter of the BST flange

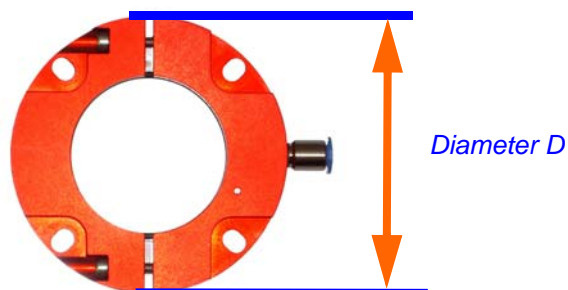


Table 3.4. The SAMPLEJET SPREAD RING





		First hardware version	Second hardware version
diameter D [mm]	diameter D [inch]	 <p>Spread Ring</p>	   <p>Mounting Inserts</p>
85	3 ¹¹ / ₃₂ "	Use the spread ring.	Use the blue insert.
89	3 ¹ / ₂ "	You cannot install the SampleJet with this hardware.	Use the green insert.
90	3 ¹⁷ / ₃₂ "	Do not use the spread ring.	Use the black insert.

Figure 3.4. Dimensions of the BST flange

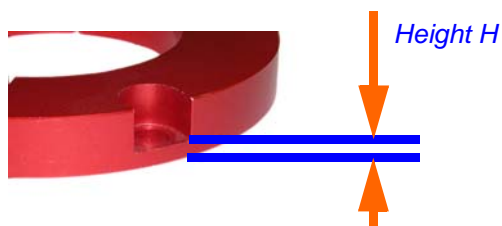



Table 3.5. The SAMPLEJET SPACE WASHER

SAMPLEJET SPACE WASHER		
height H [mm]	height H [inch]	
≤ 3	$\leq \frac{1}{8}$ "	Use the 2 space washers.
> 3	$< \frac{1}{8}$ "	Don't use the washers.

1. Remove the two screws with rounded heads on top of the BST if present.
--> Screwdriver 2

Figure 3.5. The two screws with rounded heads



2. Make sure all the screws on top of the BST are not higher than the BST itself.
--> Screwdriver 2 and 4
3. Place the protection lid on top of the BST.
4. Remove the connected air tubes and the spinning rate detection cable.
5. Remove the existing air inlets, by screwing them out and replace them with the angled ones, which are shipped with the SAMPLEJET. Use the colored rings from the removed legris with the new legris by pressing them on it.
--> Flat spanner 13 and 16

Figure 3.6. Exchanging Legris



The BST flange must not be removed completely to install the SAMPLEJET MAG MOUNTING parts. Therefore the shim stack has not to be readjusted.

Skip the parts of the following list which are not necessary. To find out which parts to use check the chapter ***"Determine which Parts to Use" on page 17.***

- Attach the black SAMPLEJET SPREAD RING, regarding the proper gap orientation to the flange. This is important to a BST ring with gap's to exhaust the BST cooling air.

Figure 3.7. SAMPLEJET SPREAD RING



- Place the 2 special flattened SAMPLEJET SPACE WASHERS into the BST ring if needed. Align it so that it will fit into the countersink, the flat side on the outside.

Figure 3.8. SAMPLEJET SPACE WASHER



Mounting of the SampleJet Mag Mounting

3.4.4



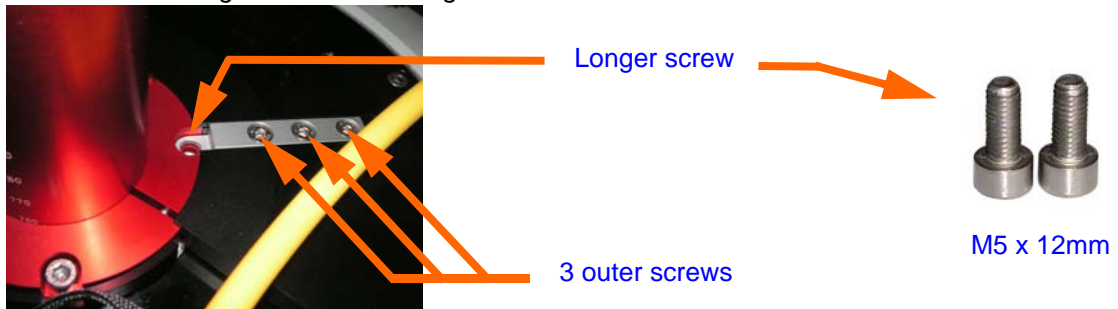
Tighten the 6 screws described in point 8), 10) and 11) all together. Otherwise you will have problems introducing the screws in point 11).

- Attach the SAMPLEJET TENSION RING. Make certain that the outer screws are aligned to the front of the magnet, ensuring access to it. **Slightly** tighten the SAMPLEJET TENSION RING with the delivered longer screws to the flange.
--> Angled allen key 4

- Firmly tighten the three outer screws if it's not done already.
--> Angled allen key 4

Mounting Instructions

Figure 3.9. Mounting the SAMPLEJET TENSION RING

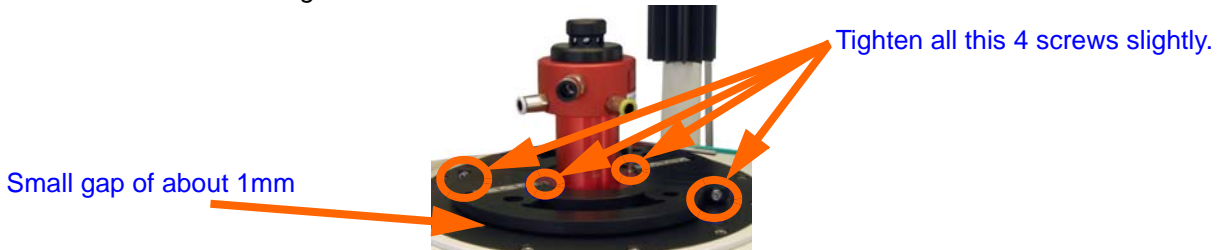


10. Tighten the 2 screws from the side slightly. Make sure that the resulting gaps on each side are symmetrical.
--> Angled allen key 3



Be informed of the fact that there will be a gap of about 1mm between the top flange of the magnet and the SAMPLEJET TENSION RING.

Figure 3.10. SAMPLEJET TENSION RING



11. Mount the SAMPLEJET THREADED ROD and the USC ADJUSTABLE SLEEVE on the SAMPLEJET TENSION RING definite by firmly tighten the 4 screws and the 4 screws from the **Figure 3.10.** above.
--> Angled allen keys 3,4,5

Figure 3.11. The complete thread



Install the SampleJet Distance Tube**3.4.5**

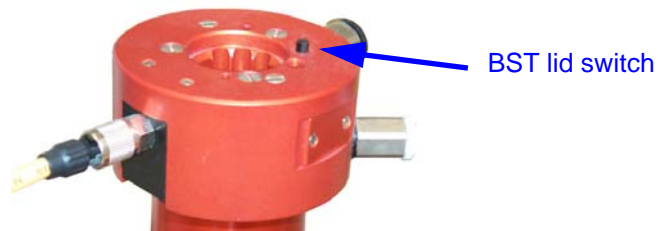
Skip this chapter if the SAMPLEJET DISTANCE TUBE is not necessary on this system. Check the result from "**Determine which Parts to Use**" on page 17.

Figure 3.12. SAMPLEJET DISTANCE TUBE



12. Use the right-angled plug from the cable Z105098 to connect to the BST shimupperpart.
13. Remove all of the 4 screws which are closing the air bypass on the bottom of the SAMPLEJET DISTANCE TUBE.
--> Angled allen key 4
14. Mount the SAMPLEJET DISTANCE TUBE with 2 screws on the BST shimupperpart. The BST lid switch goes into a bore in the bottom of the DISTANCE TUBE. Check if the tube stands flat on the BST.
--> Angled allen key 2.5

Figure 3.13. Don't cover the BST lid switch



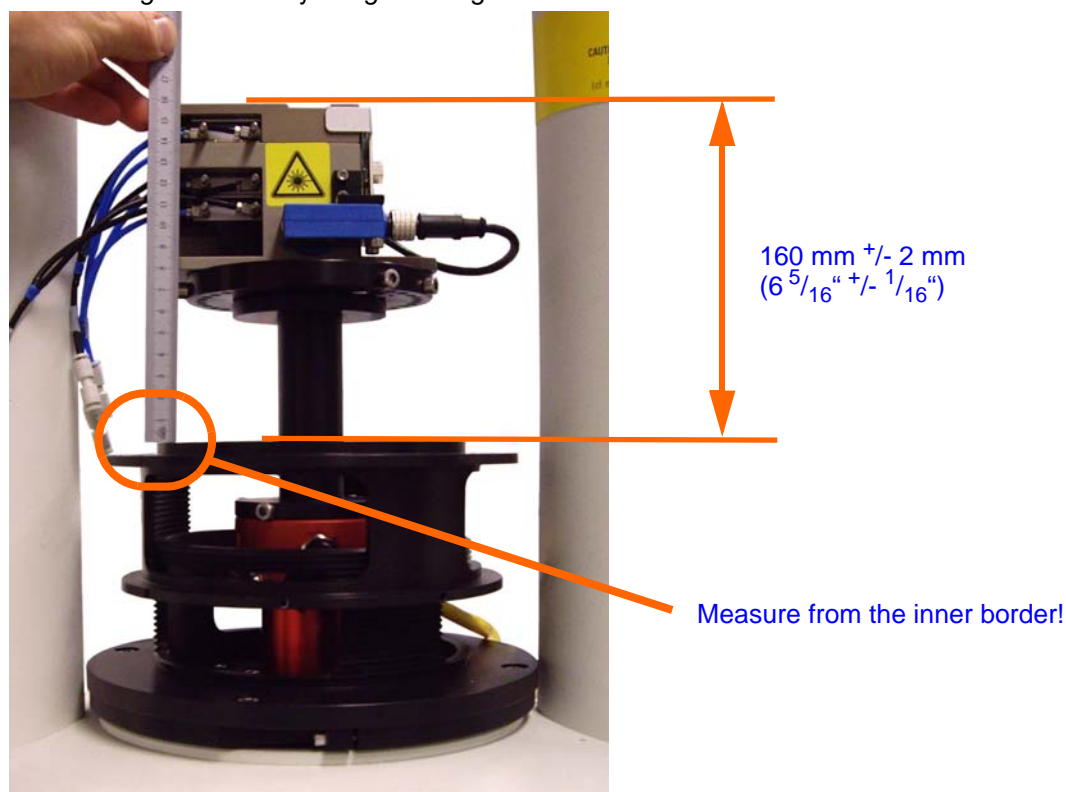
15. Close the tube's opening with the protection lid. This is a precaution.

16. Place the SAMPLEJET BST ADAPTER UNIVERSAL together with its flange on top without screwing it.
17. Adjust the SAMPLEJET ADJUSTABLE SLEEVE until the height to the SAMPLEJET BST ADAPTER UNIVERSAL measures approximate 160 mm \pm 2 mm.
Hint: one full rotation is about 3 mm ($\frac{1}{8}$ ").



Given by the material of the SAMPLEJET ADJUSTABLE SLEEVE the adjusting may produce noise, smoke and smelliness.

Figure 3.14. Adjusting the Height



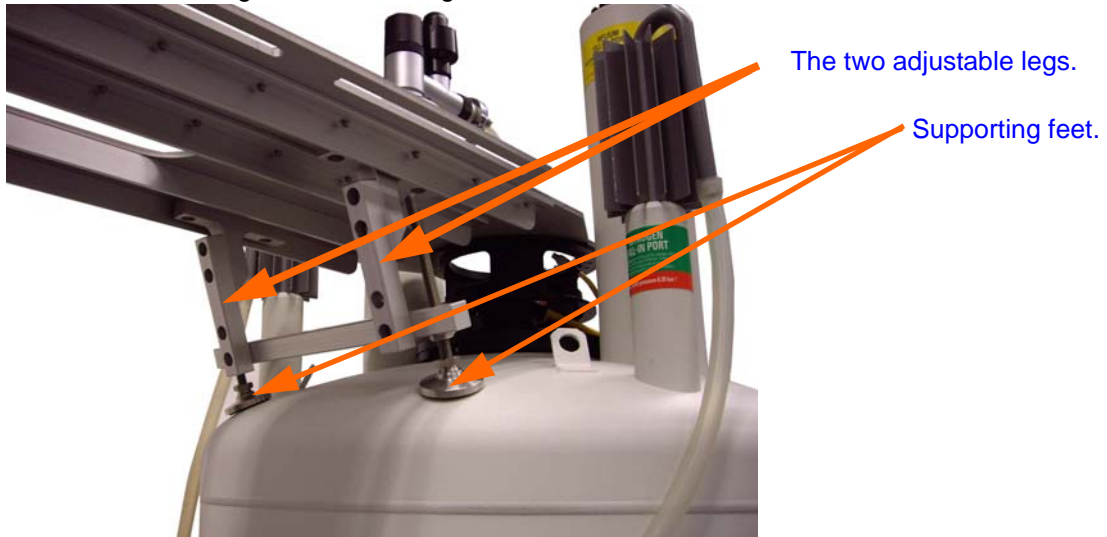
18. Remove the BST UNIVERSAL ADAPTER.

Mount the SampleJet Mounting Universal**3.4.7**

19. Adjust the position of the supporting feet to fit to the diameter of the given magnet. Use the outer most position possible. Depending on the magnet design you have to adjust the legs of the SAMPLEJET MAG MOUNTING.

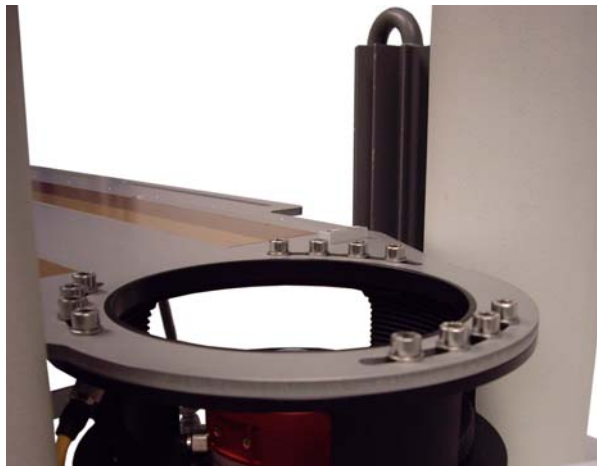
--> Angled allen key 5

Figure 3.15. The legs of the SAMPLEJET MOUNTING UNIVERSAL



20. Mount the base plate to the positioning ring with 12 screws.
--> Angled allen key 5

Figure 3.16. Mounting SAMPLEJET MOUNTING UNIVERSAL



21. Check the level of the magnet. A level can be found in the SAMPLEJET TOOL KIT.
22. Turn the two supporting feet until the base plate is leveled relative to the magnet.
23. Lock the nuts to fix the feet.
--> Flat spanner 17

24. Mount the SAMPELJET CONNECTION FLANGE to the BST or the SAMPLEJET DISTANCE TUBE. If a SAMPLEJET DISTANCE TUBE is used, check if the flange stands flat on the BST and don't cover the BST lid switch **"Don't cover the BST lid switch" on page 23.**

--> Angled allen key 2.5

Figure 3.17. SAMPELJET CONNECTION FLANGE SMALL

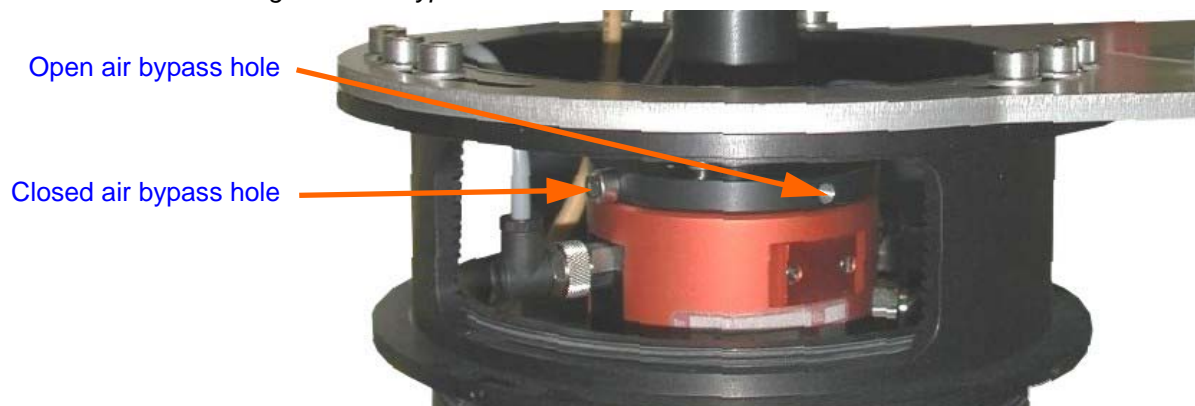


25. If a SAMPLEJET DISTANCE TUBE is used, then the 4 air bypasses in the flange must be closed with the enclosed screws. If the SAMPLEJET DISTANCE TUBE is not used, then open the bypasses on the flange by removing the 4 screws. In either case, the bypasses just above the BST are open.

Place the screws on unused positions on the SAMPELJET CONNECTION FLANGE.

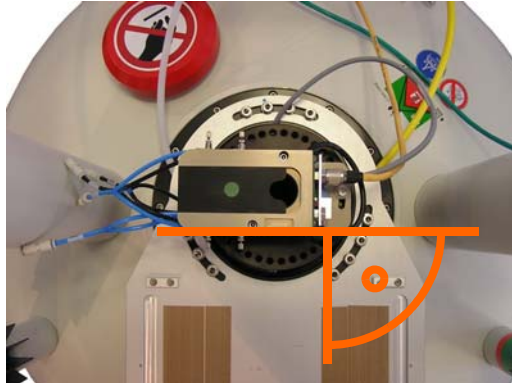
--> Angled allen key 4

Figure 3.18. Bypass holes



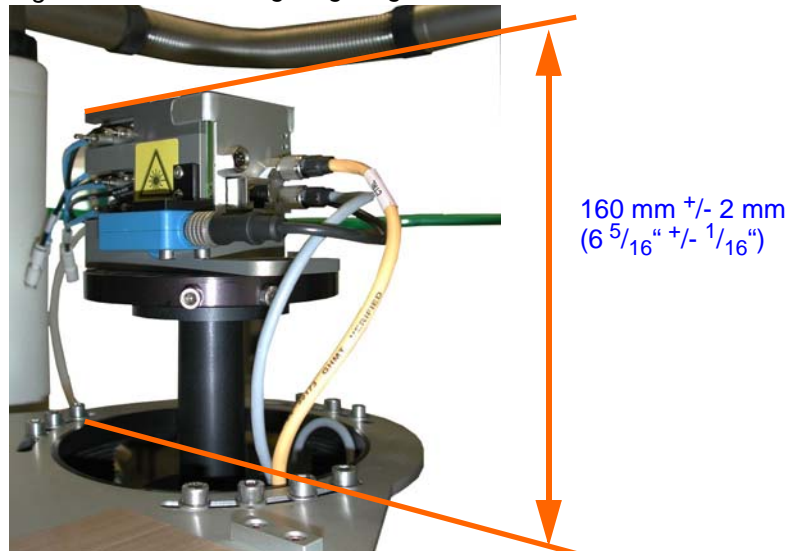
26. Mount the SAMPLEJET BST ADAPTER UNIVERSAL onto the flange and line it up, so that it's long side is perpendicular to the line of the two helium towers of the magnet. The connectors on the BST ADAPTER UNIVERSAL have to be on the right side.

Top view of the SAMPLEJET BST ADAPTER UNIVERSAL



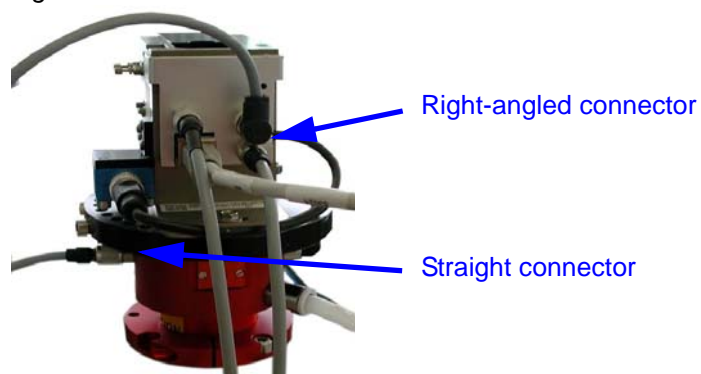
27. Check again the height of the BST UNIVERSAL ADAPTER.

Figure 3.19. Measuring height again



28. If no SAMPLEJET DISTANCE TUBE is used then use the right-angled connector from the cable Z105098 to connect to the BST ADAPTER. See **Figure 3.20.**

Figure 3.20. SAMPLEJET BST ADAPTER UNIVERSAL cabling





*The SAMPLEJET weighs about 40 kg, this is why this step needs at least two people.
For safety reasons, two stable ladders are recommended to stand on, while lifting the system up.*

29. Remove the transport lock of the SAMPLEJET GRIPPER ARM and the SAMPLEJET CAROUSEL.
30. Arrange the cables in order to prevent stepping over it while carrying the system.
31. For safety, two ladders are recommended in front of the magnet. Check that they are stable enough to carry the additional weight of the SAMPLEJET.

Figure 3.21. Lifting the SAMPLEJET onto the magnet



32. Lift the SAMPLEJET onto the SAMPLEJET MAG MOUNTING platform.
33. **Always** attach all 4 screws! (The original screws have a length shorter than 11mm, to prevent the screws from digging into the turntable.)

Figure 3.22. Fixing the SAMPLEJET on the platform



34. Move the SAMPLEJET towards the BST until the limit is reached. Fasten the 4 screws. The SAMPLEJET is now mechanically mounted.



Clean the area around the SAMPLEJET CAROUSEL. Swarf can damage the teeth of the SAMPLEJET CAROUSEL drive.

Connecting the SampleJet BST Adapter**3.6.2**

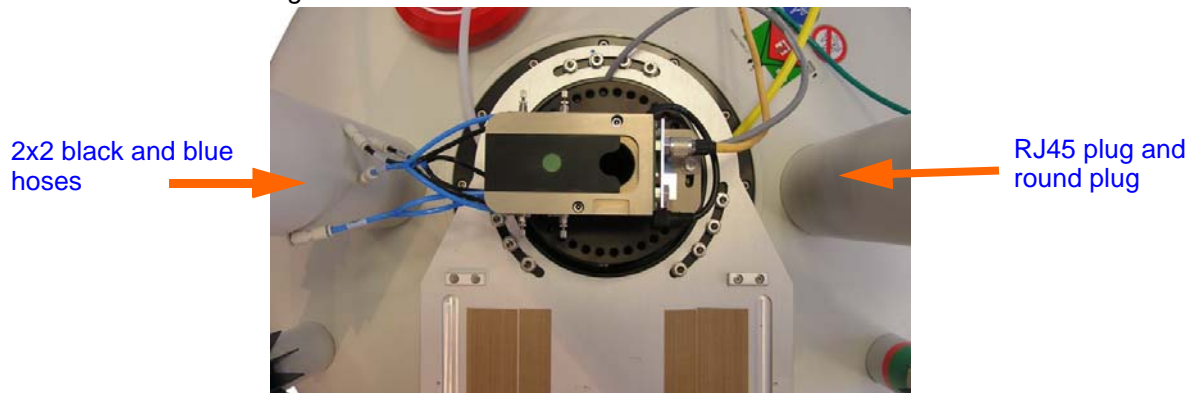
The necessary cables and hoses to connect the SAMPLEJET to the SAMPLEJET BST ADAPTER are already mounted on the SAMPLEJET side.



Use the openings on the SAMPLEJET THREADED ROD and SAMPLEJET ADJUSTABLE SLEEVE to lead through the cables and hoses. Otherwise the SAMPLEJET COVER can't be closed correctly.

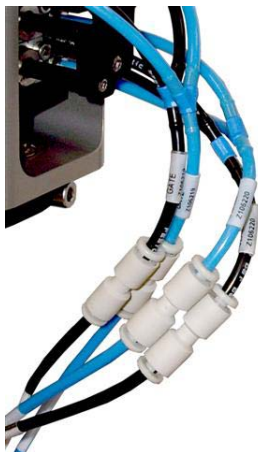
35. Layout the black cable loom under the SAMPLEJET to the SAMPLEJET BST ADAPTER.
36. Connect the RJ45 plug to the SAMPLEJET BST ADAPTER.
37. Connect the round plug from the BSMS which leads usually to the BST upper part, to any free plug on the SAMPLEJET BST ADAPTER.
38. Join the 2x2 black/blue hoses together. Use the labels on it to figure out the alignment.

Figure 3.24. Cables to connect



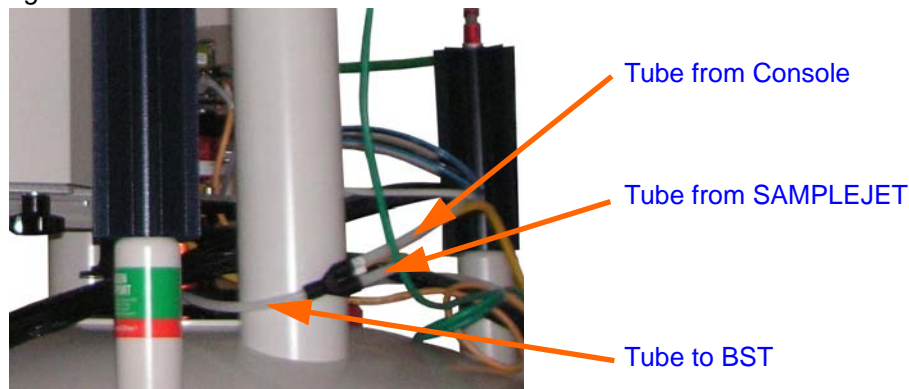
Mounting Instructions

Figure 3.25. The labels of the hoses



39. Connect the air tubes to the BST. Insert a **Y** or **T** legris to the white air tube for lift function. Put the tubes to BST from underneath through the opening and connect them.

Figure 3.26. Lift tube connections



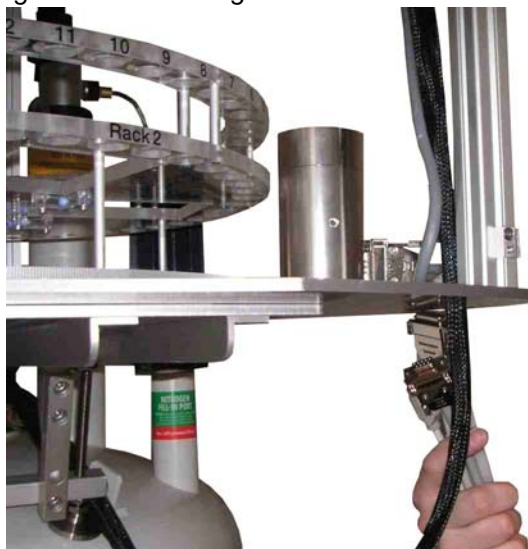
Connecting the SAMPLEJET to the Console

3.6.3

The necessary cables and hoses to connect the SAMPLEJET to the Console are part of the SAMPLEJET BASIC KIT.

40. Open the back cover of the Spectrometer Console.
41. Place the SAMPLEJET POWER SUPPLY between the BSMS and AQS rack and switch it off.
42. Use a free power cord to connect it to the main power.
43. Install the Ethernet Switch if no switch is already installed.
44. Lay out the long, black cable loom from the magnet to the console, so it is parallel to other cables going on top of the magnet. Use the side where the hoses and cables have the same length to direct to the magnet.
45. Insert the cable into the opening in front of the SAMPLEJET.

Figure 3.27. Inserting the cable into the SAMPLEJET



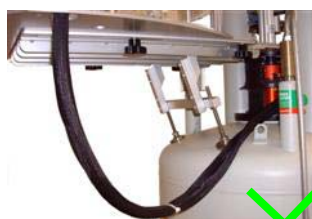
46. Connect the plugs into the corresponding connectors on the SAMPLEJET CONTROL BOX.



Please read the labels on the SAMPLEJET CONTROL BOX carefully, because some plugs fit into several connectors.

47. Use lacing cord to attach the cable loom to the magnet and in the SAMPLEJET.
48. To allow further access to the BST, the frame of the SAMPLEJET can slide away from the magnet on the base plate. For this reason the cable should not be mounted too tight.

Figure 3.28. Correct installation of the cables



49. Insert the lacing cord cable into the console similar to the BSMS cable.
50. Connect the ETH_HOST plug into any port on the ethernet switch.

Mounting Instructions

Figure 3.29. Ethernet switch



51. Place the SMAPLEJET POWER SUPPLY inside the console if there is some free space. The power switch on the back side should be accessible.



Do not obstruct neither the air circulation of the console nor the fan on top of the SAMPLEJET POWER SUPPLY.

52. Clamp the POWER connector into the plugs on SAMPLEJET POWER SUPPLY and screw the grounding wire to the chassis as seen in [Figure 3.30](#).

Figure 3.30. SAMPLEJET POWER SUPPLY in the console



53. Connect the TTY_SPECT cable to any free connector on the tty panel of the AQS rack. Default is tty08.
54. Connect the GAS_IN hose to the console using a Y or T legris. The SAMPLEJET needs at least 5.5 bar, so it has to be connected before the pressure reduction unit in the console.
55. Close the back cover of the console.



Don't use LOCTITE for the cover.

56. Attach the side covers.
--> Angled allen key 2.5
57. Put the top cover onto the 4 posts.
58. Mount the front cover, but handle it with care. It is quite fragile. On some older system the screws can't be tightened to a dead stop.
--> Angled allen key 4
59. Hook in the rear cover over the back of the SAMPLEJET by the center of the magnet.

Mounting Instructions

Carousel 99/5 Installation (Option)

4

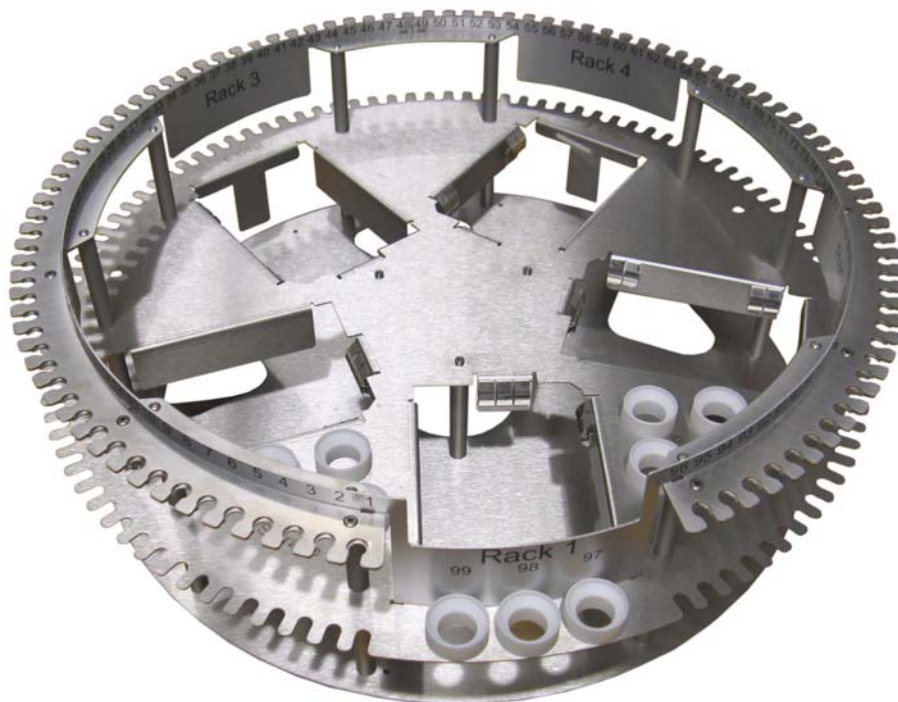
Introduction

4.1

This chapter describes how to install the CAROUSEL 99/5 on a SAMPLEJET equipped with an other carousel.

For additional information about the CAROUSEL 99/5 refer to the SAMPLEJET Users Manual (included in the SAMPLEJET firmware).

Figure 4.1. The carousel 99/5



Important Remarks

4.2

The new hardware needs to be set on the web interface and calibrated before it can be used. If you are operating or calibrating the system with a different hardware in the „System Configuration“ the gripper may be destroyed during calibration.



Before operating the SampleJet make sure the installed carousel is set in the „System Configuration“ list and calibrated with a firmware newer than 20080528.

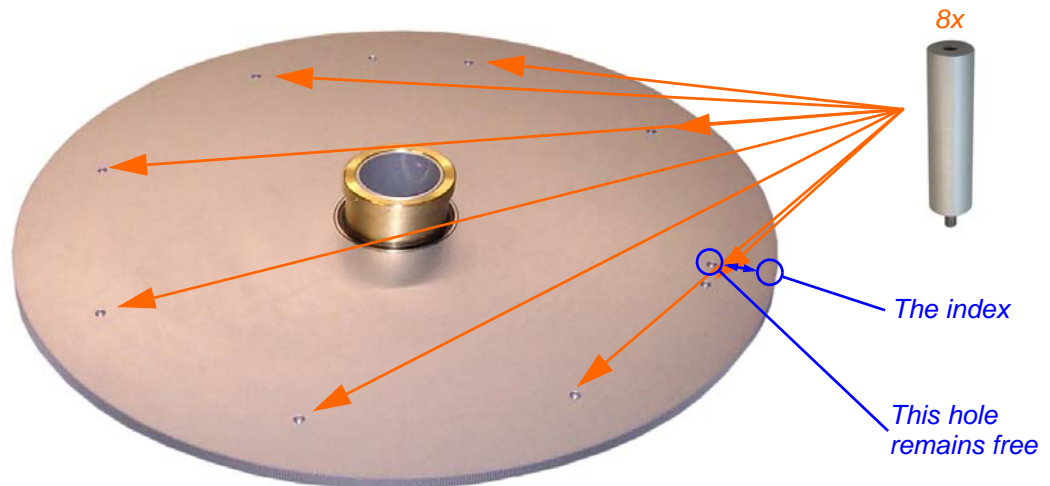
Remove an Existing Carousel and the Cover

4.3

1. First remove the cover on the right side.
--> Allen key 2.5
2. Then remove the existing carousel. Be very carefully with the aluminium spacer, the screws are thin and may break.
--> Allen key 2.5 and flat spanner 5 (do not try to remove it with a pliers!)

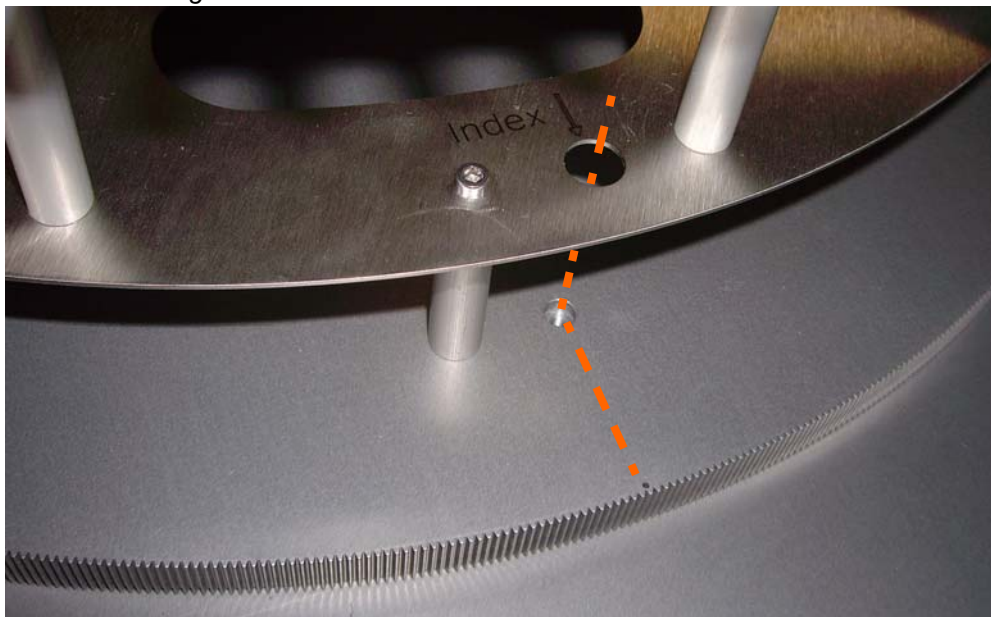
3. Place the 8 supports on the rotating table.
--> No tool needed

Figure 4.2. Place the supports



4. Place the carousel on the supports and turn it until the „index“ arrow is pointing to the index of the rotating table.
5. Screw the carousel to the supports.
--> Allen key 2.5

Figure 4.3. The orientation of the carousel



Cooling Installation (Option)

5

Introduction

5.1

If the SAMPLEJET was delivered without the cooling and should be upgraded, then read from the beginning. Otherwise start with the installation at **"Installation of the cooler" on page 46.**

The cooling option consists of an insulated carousel replacing the existing carousel a cooling unit and preheating unit.



For additional information about the cooling and the pre-heating refer to the SAMPLEJET Users Manual (included in the SAMPLEJET firmware).

Figure 5.1. The insulated carousel



Connect the nitrogen separator to compressed air when ever possible. This will guaranty a normal oxygen level in the lab. If the separator or the cooling is connected to nitrogen the room needs a proper ventilation and an alarm system indicating low oxygen concentration.



If the separator or the cooling is connected to nitrogen the concentration of oxygen in the air may drop to a critical value.

Cooled tubes may get wet from the ambient humidity. When ever installing a cooling make sure the samplejet is equipped with a SAMPLEJET preheating unit. Otherwise the wet tubes will bring water into your probe head and may destroy it or disturb the NMR measurement.



Never operate a cooled SAMPLEJET without a SAMPLEJET preheating unit.

The new hardware needs to be indicated on the web interface and calibrated before it can be used. If you are operating or calibrate the system with an other hardware in the „System Configuration“ the gripper may be destroyed during calibration.



Before operating the cooling make sure the carousel and the pre-heating are in the „System Configuration“ list and calibrated with a firmware newer then 2008/05/28.

Remove a existing carousel and the cover

5.3

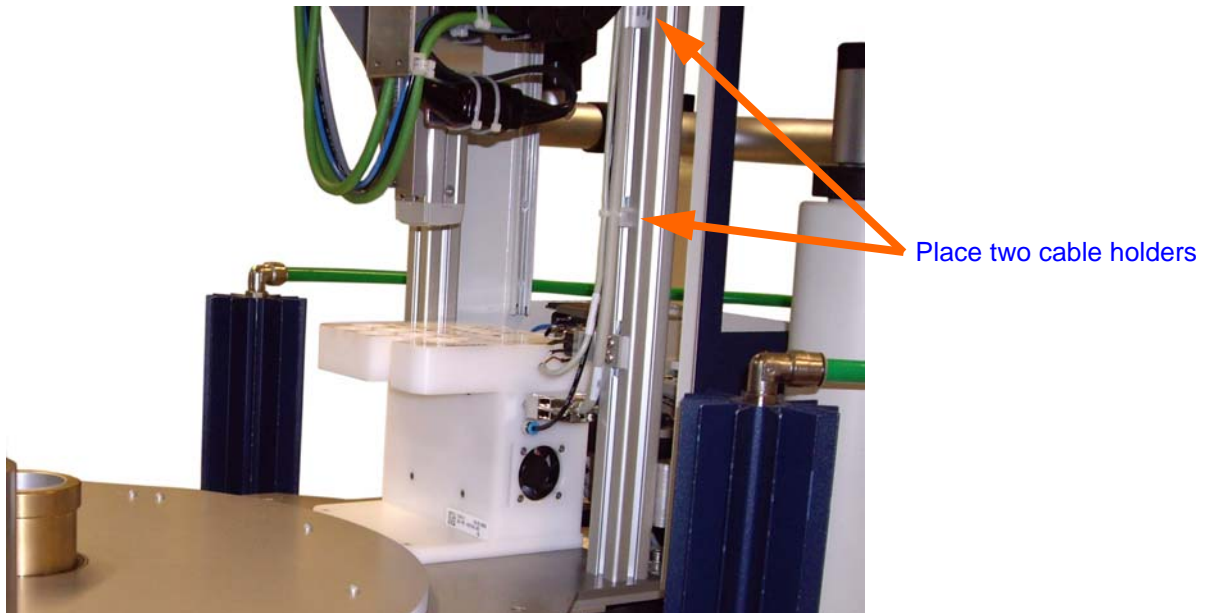
6. If the cooling is an upgrade you may first remove the cover on the right side.
--> Allen key 2.5
7. Then remove the existing carousel. Be careful with aluminium spacer, the screws are thin and may break.
--> Allen key 2.5 and flat spanner 5

Installing the pre-heating

5.4

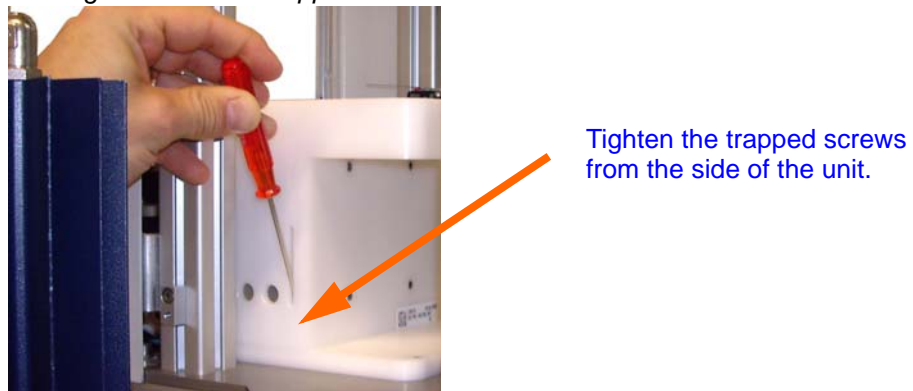
8. If not present (from the rear door switch option) put two holders on the rear right leg of the aluminium frame.
--> Allen key 2.5

Figure 5.2. The pre-heating unit



9. Screw the pre-heating unit to the base plate. 2 of the 4 screws are trapped inside the unit and can only be tightened with a ball head allen key. This tool can be found in the SAMPLEJET tool kit.
--> 2.5 ball head allen key

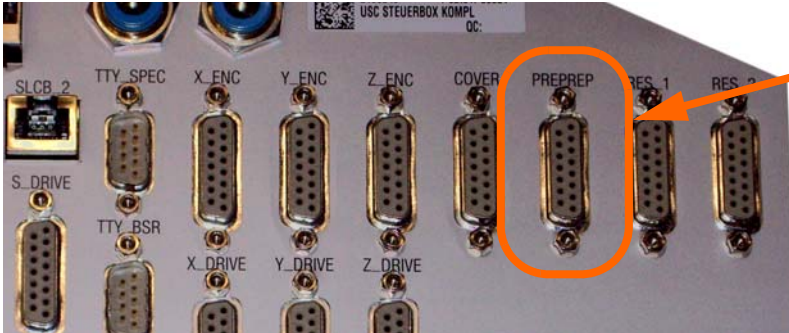
Figure 5.3. The trapped screws.



Cooling Installation (Option)

10. Connect the cable from the control box to the pre-heater unit.

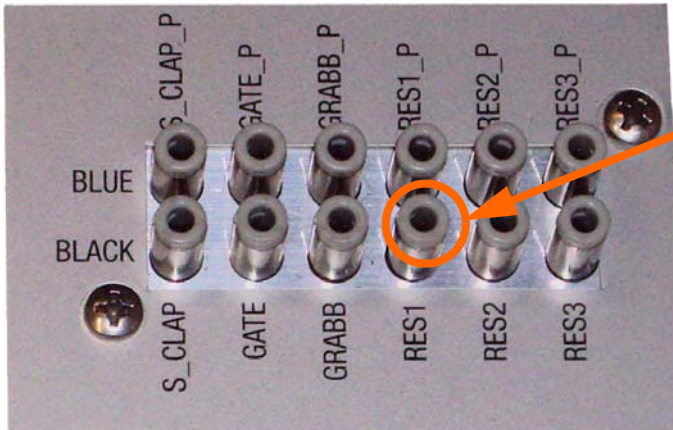
Figure 5.4. Pre-heater connector



The „PREPREP“ connector on the control box for the heating, the fan and the temperature sensor.

11. Connect the drying gas hose from the control box to the pre-heater.

Figure 5.5. Drying gas



Connector „RES1“ on the control box for the drying gas.

12. Fix the cables with some cable ties on the holders.



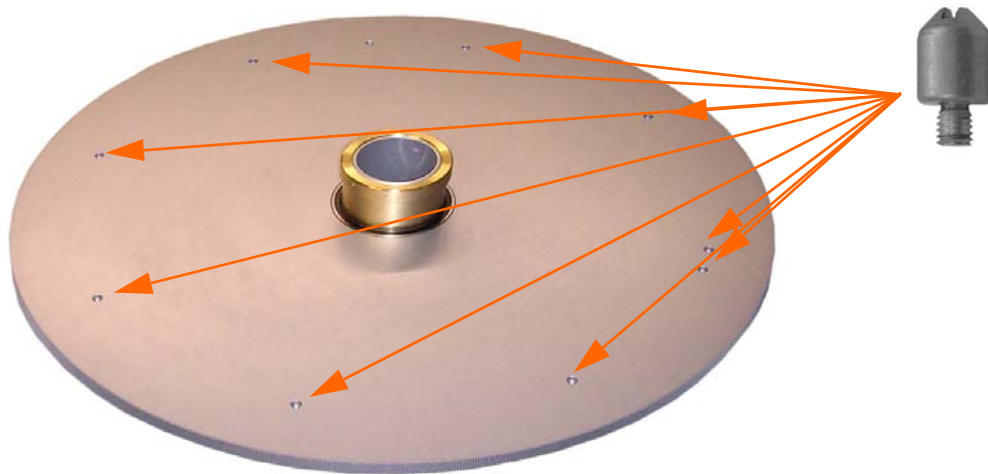
Make sure the hose and the cable are not moved the energy chain when it is moving.



The carousel lies on the rotating table but is not screwed to it.

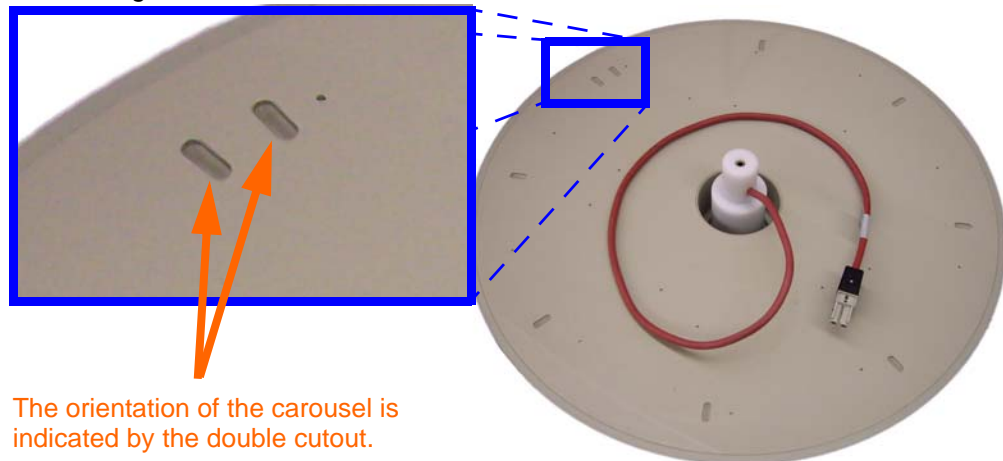
13. Place the 9 tappets on the rotating table.
--> Screwdriver 2

Figure 5.6. Place the tappets



14. Feed the cable through the hole in the center and place the carousel on the table. Take care of the proper orientation.

Figure 5.7. Bottom view of the carousel



The orientation of the carousel is indicated by the double cutout.

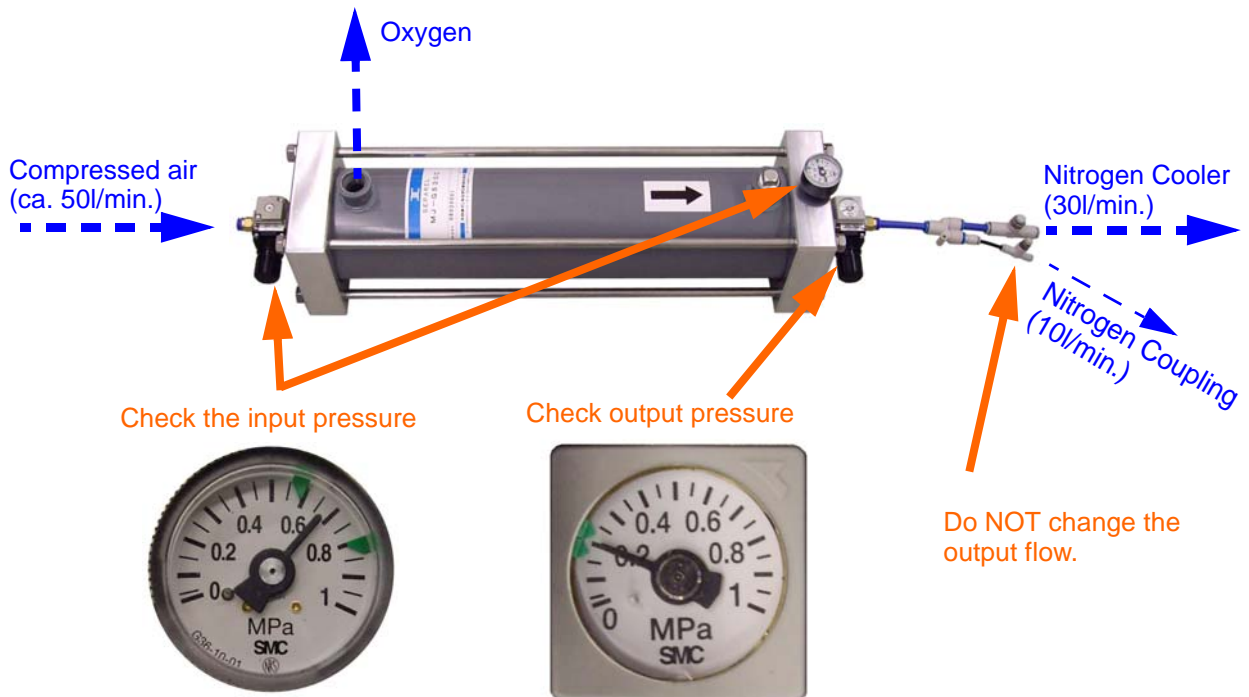


For the details on the BCU-05 refer to its manuals because the cooler is a BCU-05 in the stand alone configuration. Only the coupling is modified for the carousel.

Figure 5.8. The modified BCU-05 cooler

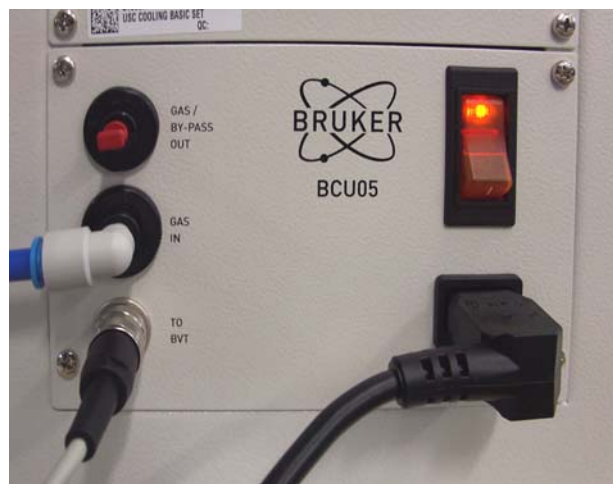


Figure 5.9. The gas supply through the separator



15. Connect the separator to the cooler the coupling and to the compressed air supply as shown on the pictures.
16. Check the input pressure. The higher the pressure the dryer the nitrogen at the output.

Figure 5.10. Connection on the cooler



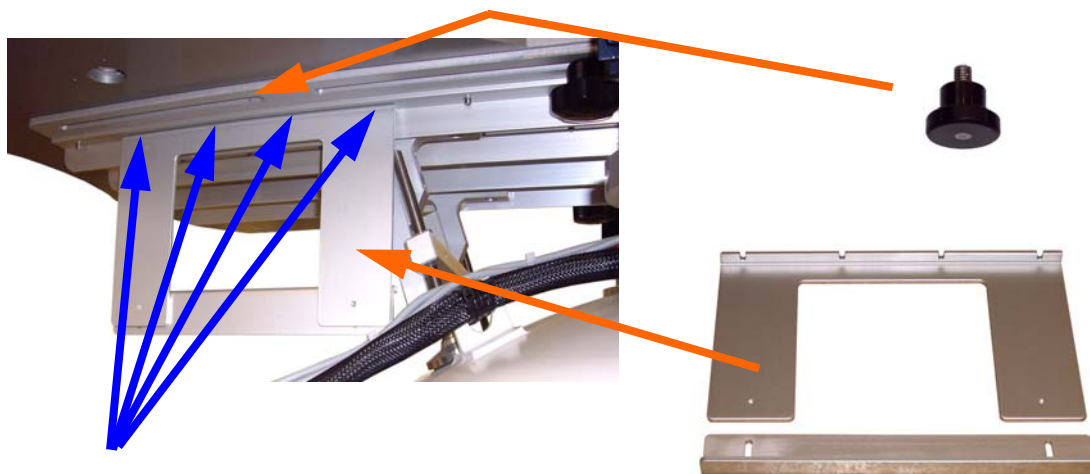
17. The bypass output of the BCU05 is not used and closed with the red 6mm plug.
18. Plug in the power cable. The unit is switched through the power supply.

19. Screw the transfer line support holder either to the right or the left side depending on free space around the magnet for the transfer line and the stand. Use the delivered longer screws.

--> Allen key 2.5

20. Replace the star handle with the slightly smaller one.

Figure 5.11. The transfer line support holder



Attache the holder with the 4 longer screws.

21. Place the transfer line stand and pre adjust it to the approximately height.

--> Allen key 3

Figure 5.12. The transfer line stand

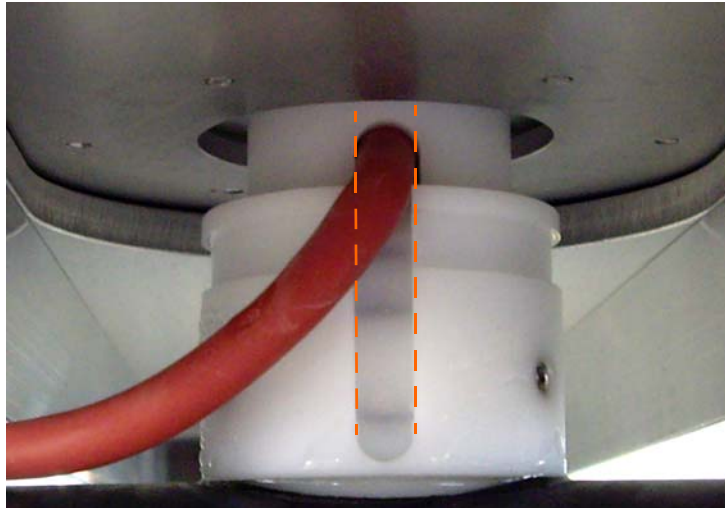


22. Hang the transfer line with the clamp to the stand.

--> Allen key 2.5

23. Feed in the transfer line in the support holder and turn the coupling until the cutouts overlay.

Figure 5.13. Orientation of the Coupling

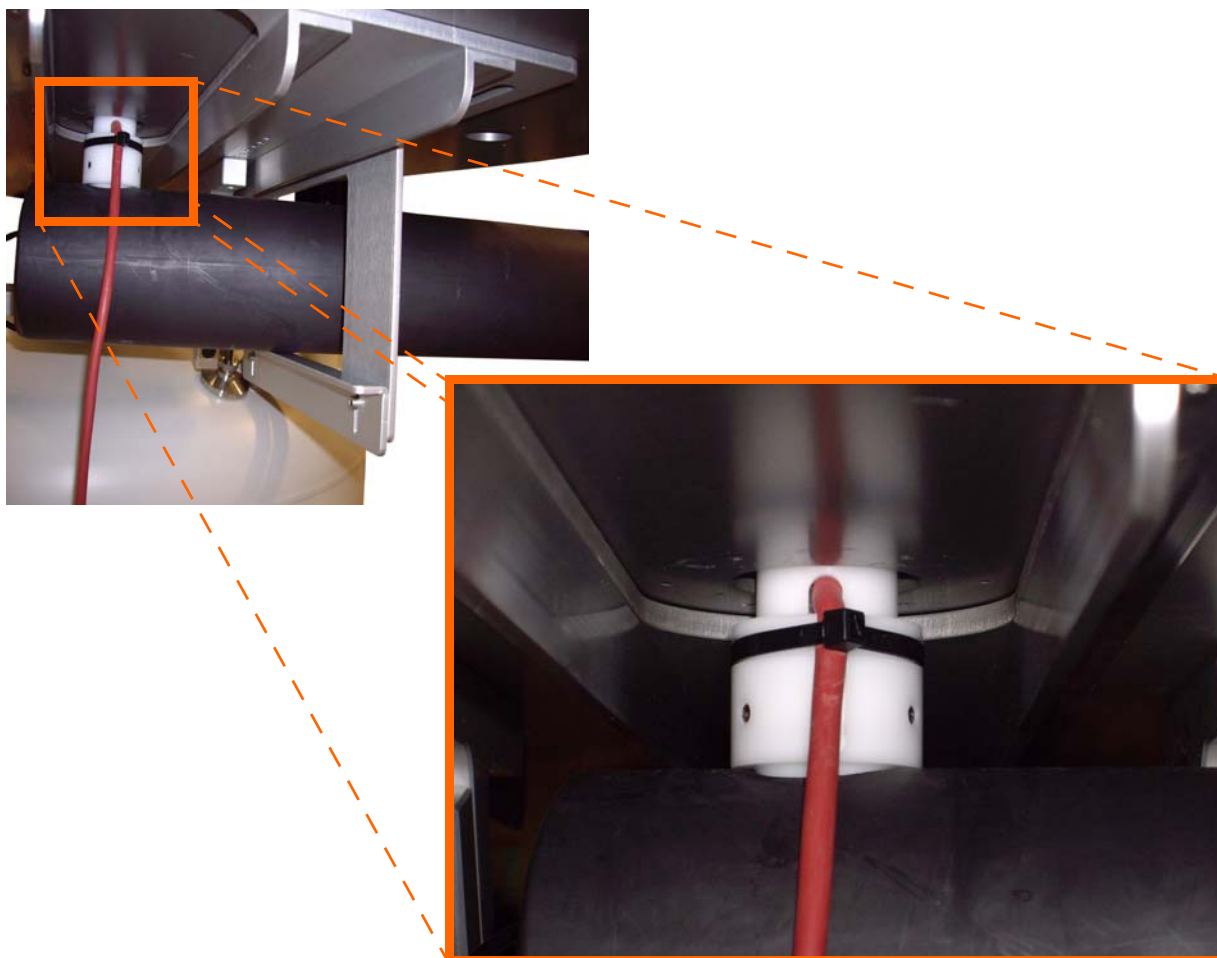


24. Smoothly tighten the 3 headless screws.
--> Allen key 2.5



Do not tighten the headless screws to much. The coupler will be deformed and can leak.

Figure 5.14. Connecting the Gas Coupler



25. Attach the red cable with a cable tie to the coupler.
26. Adjust position and height of the stand to minimize the force on the transfer-line.
--> Allen key 2.5 and 3

The power supply for the carousel

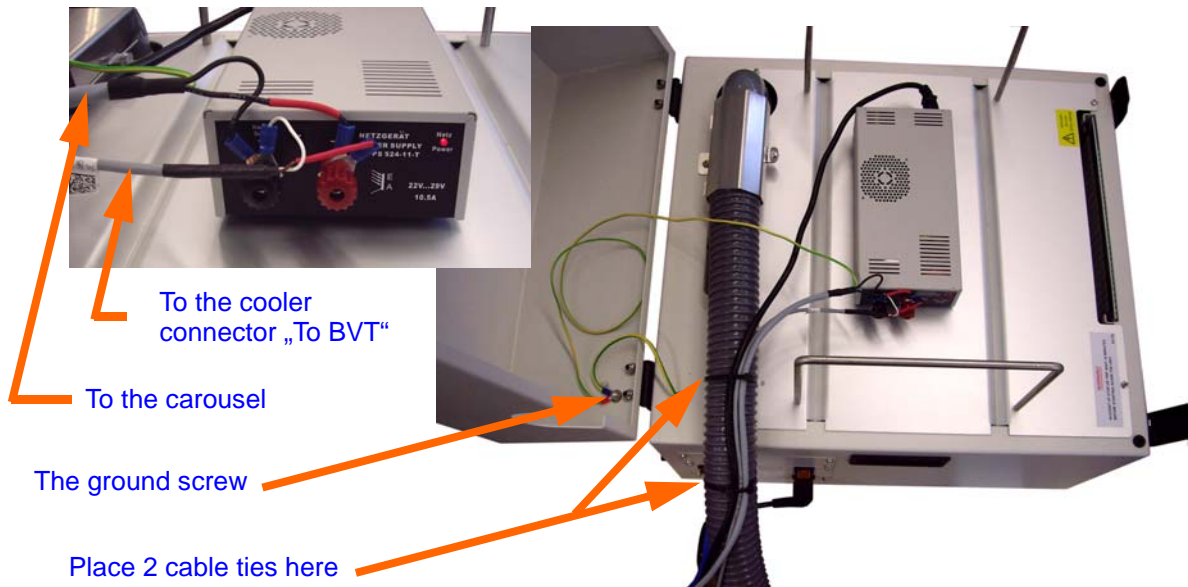
The power supply cable for the carousel is protected by the firmware from wrapping around the gas coupling. If the firmware should fail the connector will be pulled out and protects the cable.

Figure 5.15. The power supply and cables



27. Place the power supply into the cooler.

Figure 5.16. The Power Supply connected



28. Connect the 2 cables and the power plug to the power supply. The unit can be switched on at the end of the installation.



Pay special attention on the polarization on the power supply.

29. Connect the ground cables to the ground on the cover of the cooling.
--> Flat spanner 7

Cooling Installation (Option)

Figure 5.17. The pull-out power connector



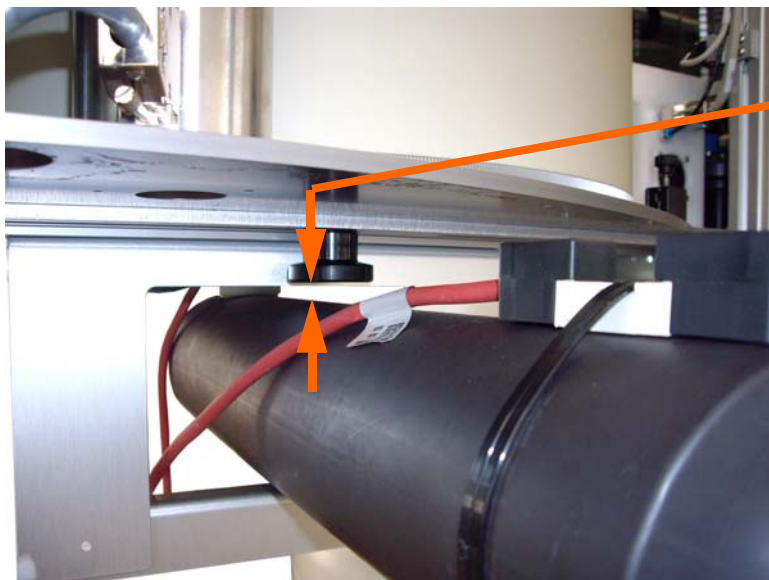
30. Connect the pull-out power connector and fix the supply side with two cable ties.

Figure 5.18. Fixing the pull-out power connector



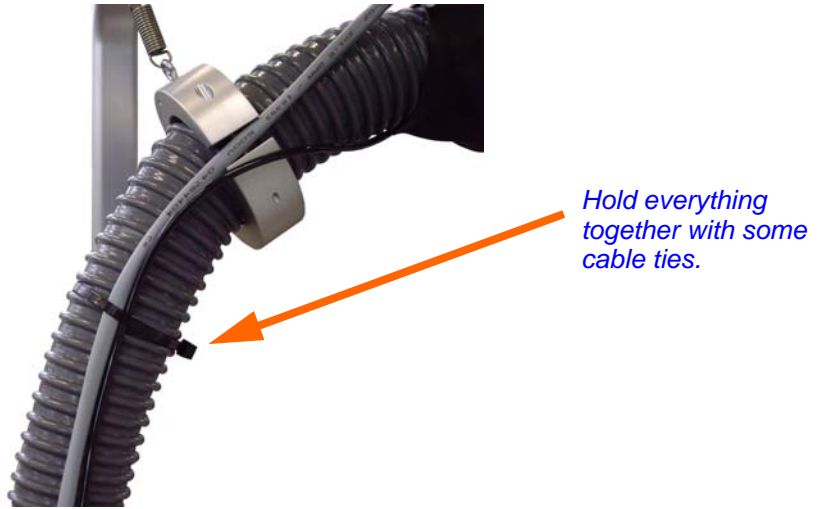
31. Check for free space between holder and transfer line for the power cable. Add the support holder if necessary.
--> Allen key 2.5

Figure 5.19. Free Space for the Power Cable



Space needed for the power cable.

Figure 5.20. Use some Cable Ties



32. Hold the cable, the hose and the transfer line together with some cable ties.



The new carousel needs to be indicated to the SAMPLEJET and calibrated before doing any tube transportation. This is described in the SAMPLEJET „Users manual“.



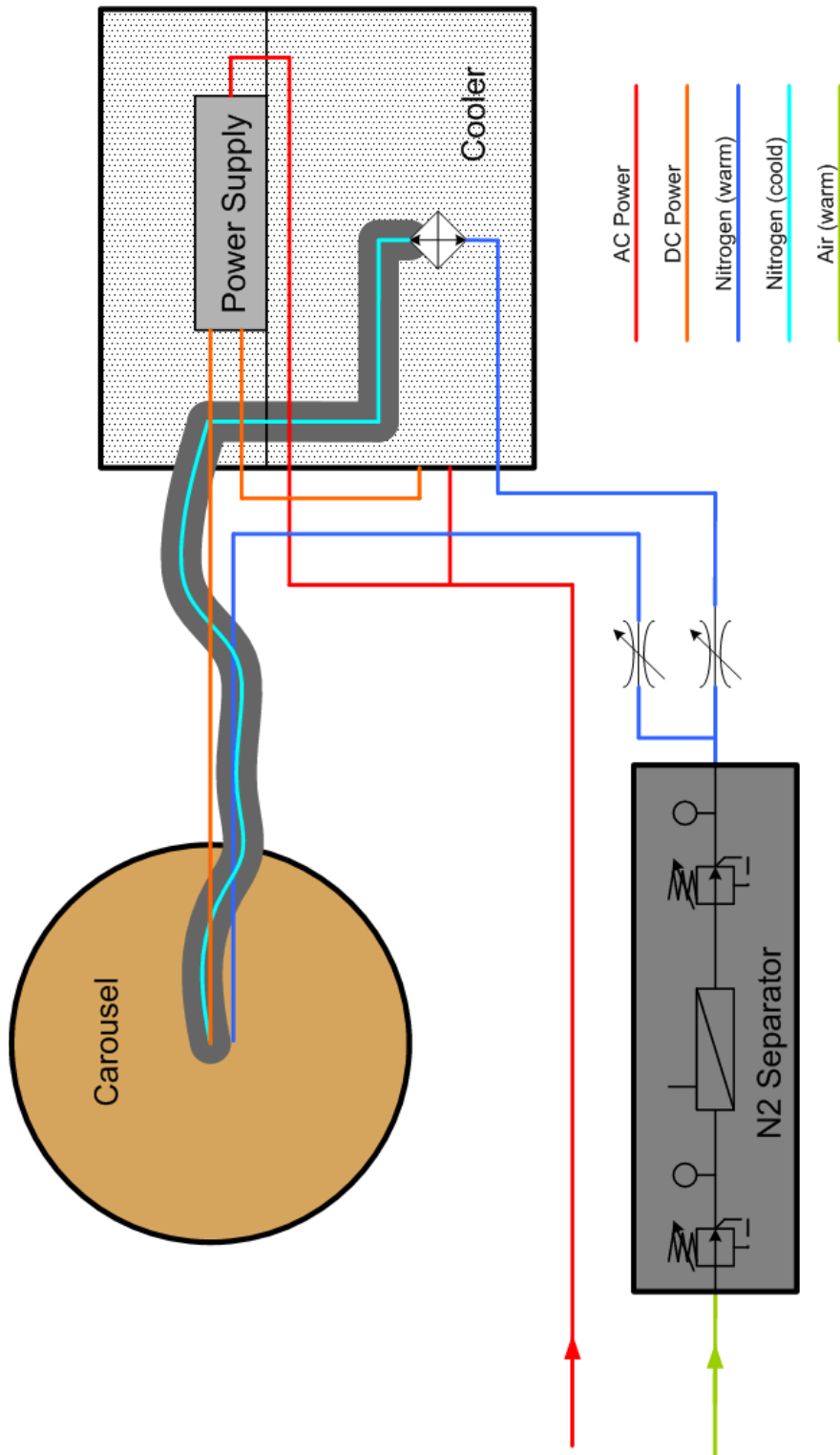
The cooler is switched with the power supply. For this the main switch on the cooler needs to be switched on.

33. Power up the cooling by switching on the power supply.
34. After approximately a half an hour the temperatures of all the 5 rack slots in the carousel should show the same stable temperature.



The temperature and their limitations are indicated in the SAMPLEJET „Users manual“.

Figure 5.21. Cooling Overview



Light and Door Switches Kit (Option)

6

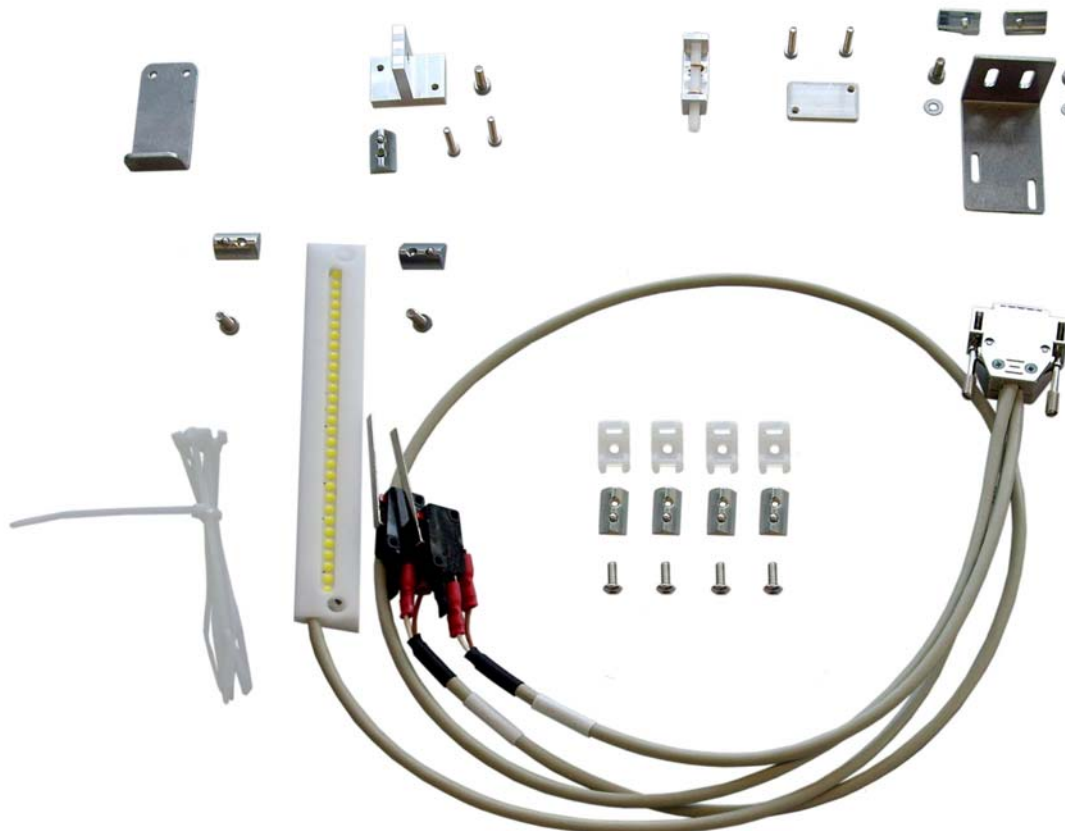
What is the *LIGHT AND DOOR SWITCHES KIT* for?

6.1

There are three advantages of this kit.

- The light illuminates the inside of the SAMPLEJET and makes it easier to exchange samples or racks.
- The light shows the state of the SAMPLEJET by blinking and flashing.
- The door switches are used to ensure the validity (with the VISION option) and the occupancy (depending on the „User Settings“) of a storage position.

Figure 6.1. The *LIGHT AND DOOR SWITCHES KIT*





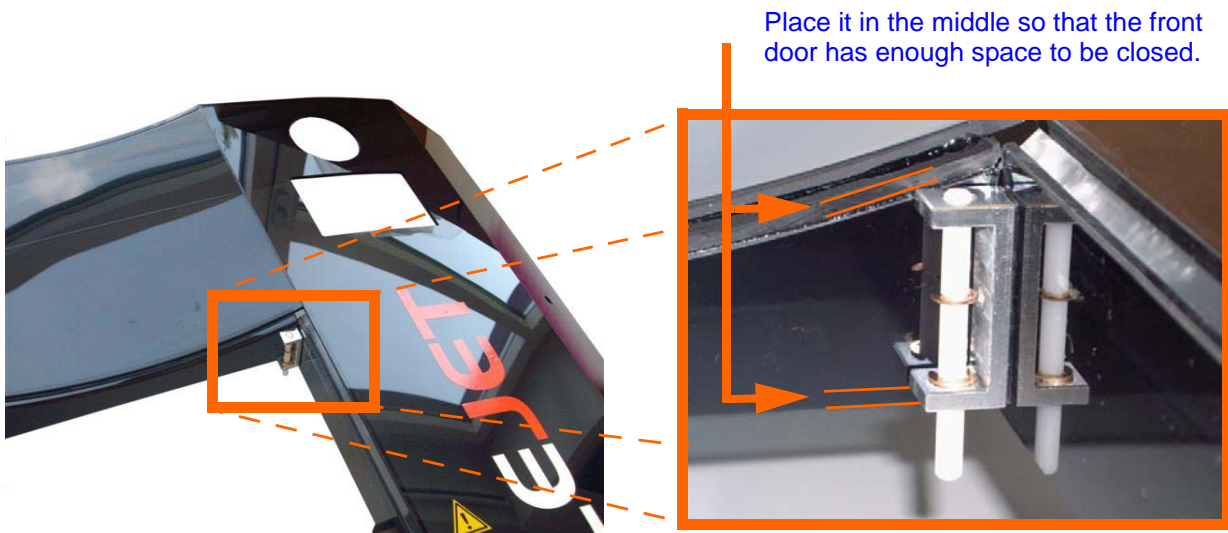
The LIGHT AND DOOR SWITCHES KIT will only work with a installed firmware „samplejet_5ryyyymmddd_i386.deb“ or newer.

If there is an older firmware installed, first check if your hardware is supported in the newest firmware release, before installing new firmware

How to Install the LIGHT AND DOOR SWITCHES

1. The SAMPLEJET has to be in idle state.
2. Remove the cover on the right side and the front cover if they are already mounted.
--> Angled allen key 2.5
3. Prepare the front cover by sticking on the little axis as show in the picture.

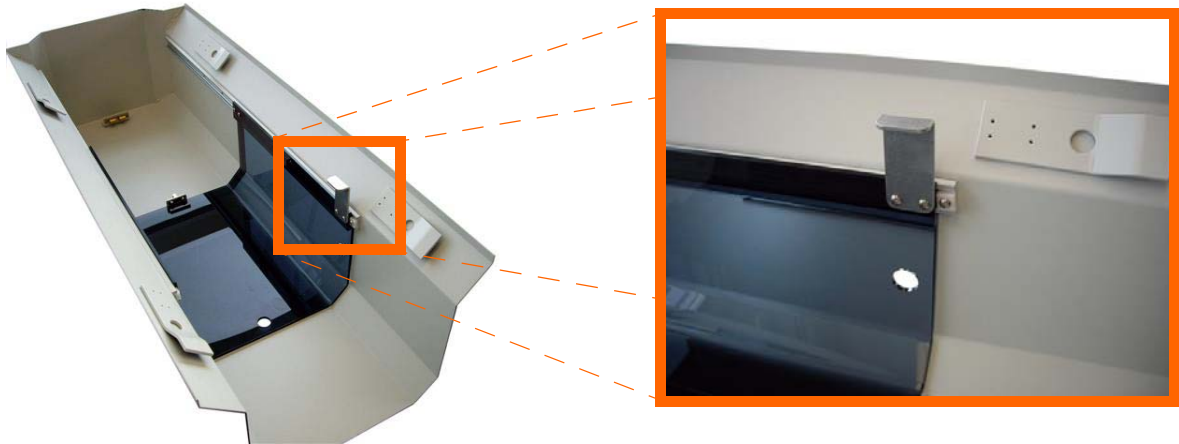
Figure 6.2. Stick on the axis on the front cover



4. Remove the back cover, if mounted, and mount the angle bracket with the existing screws as shown on the picture below.

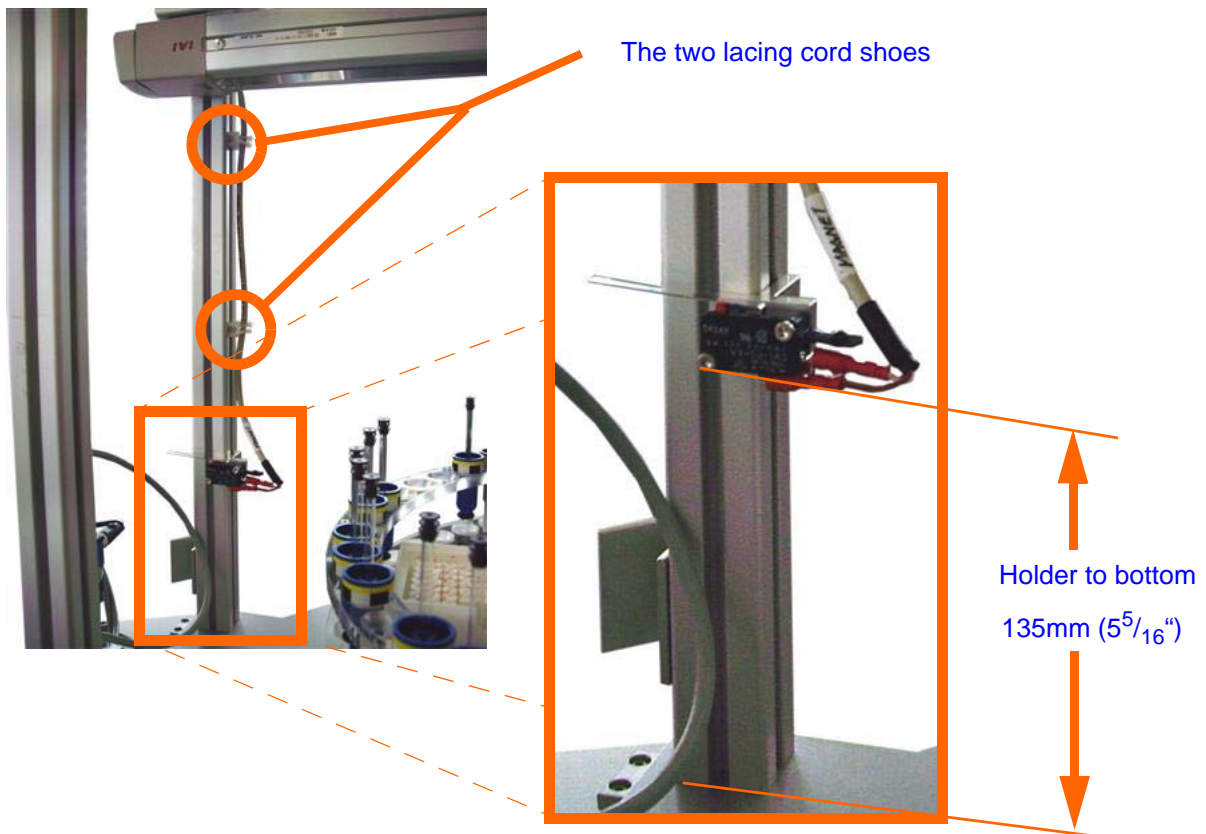
--> Angled allen key 2

Figure 6.3. The angle bracket on the back cover



5. Mount the holder for the back door switch with the label „Magnet“ (the one with the longer cable attached) and two lacing cord shoes on the frame. Take care of the right positioning of the switch.
--> Angled allen key 2.5

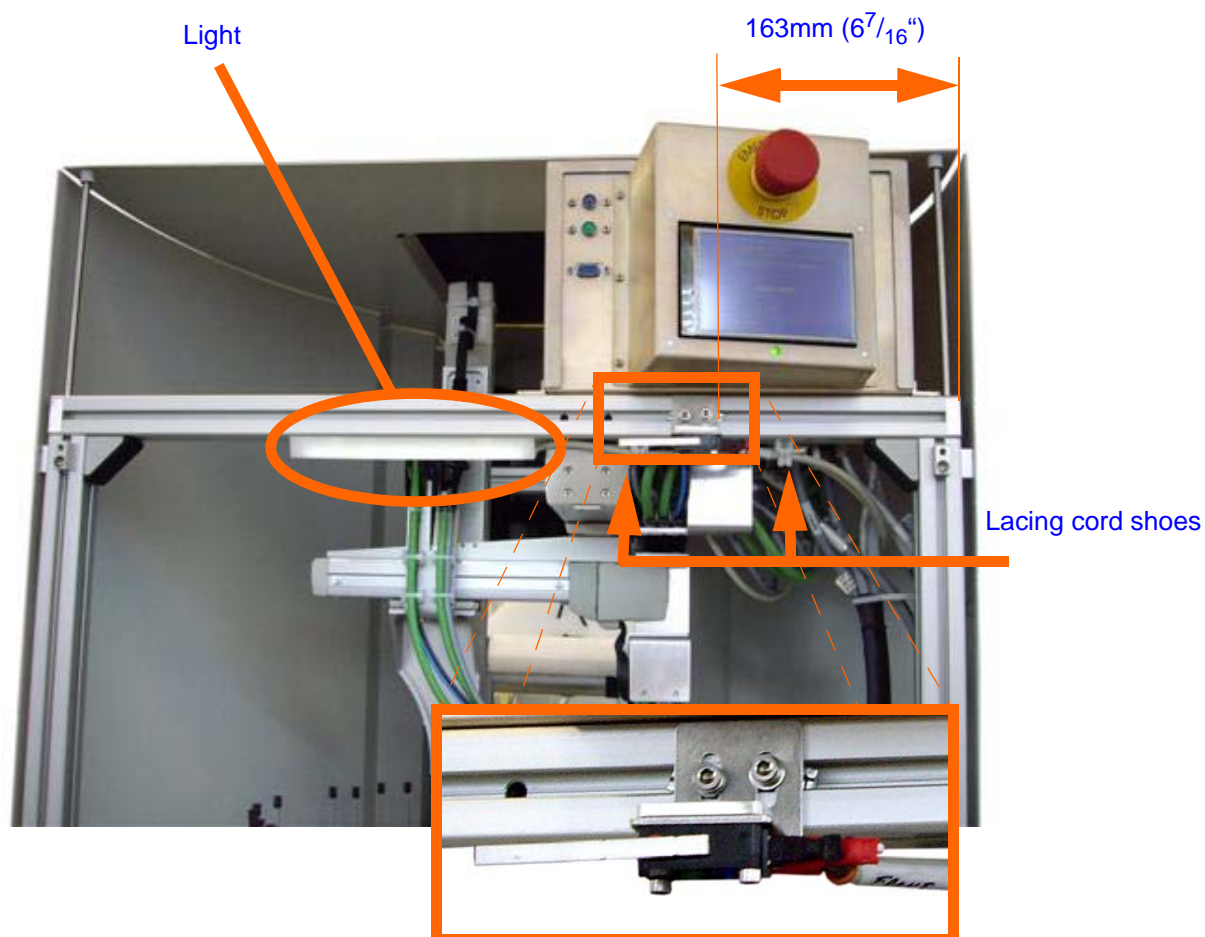
Figure 6.4. The switch on the magnet side



Light and Door Switches Kit (Option)

6. Mount the front switch, the LED light and the other two lacing cord shoes to the frame. Take care of the right positioning of the aluminium holder for the switch.
--> Angled allen key 2.5 and 3

Figure 6.5. The switch and light on the front



7. Connect the plug to the bottom of the control box on top of the SAMPLEJET (position COVER) .
--> Screw driver 2



There are several similar plugs! Use the „COVER“ to connect the LIGHT AND DOOR SWITCHES.

8. Check the proper function of the switches with the covers. A „click“ can be heard on the switching point. Otherwise you have to adjust the switches.

9. Fix all the cables with lacing cord.
10. Remount all of the covers.
--> Angled allen key 2.5
11. Login to the SAMPLEJET web page as „service“
12. On the page „System Configuration“ in the „Advanced Service“ menu select the „light and door switches kit“ and the right ECL.
13. Save the values and restart the application.



The software enables the functionality of this kit only if you insert the kit in the „System Configuration“ list, save the list and restart the application.

14. On the web page „User Settings“ in the „Basic Service“ menu different modes for the behavior of the switches and the light can be chosen.

Light and Door Switches Kit (Option)

Introduction

7.1

After the installation of the SAMPLEJET the customer has to learn some basic knowledge about the SAMPLEJET. All these important things and the often used procedures are listed below.



Procedures to be done by the customer are all described in the SAMPLEJET „User Manual“. In this chapter you will find only references to the „User Manual“.

Basic Operations

7.2

The user has to be informed about the basic operations:

- How to start the web interface and log in.
- How to access the menu on the display on the SAMPLEJET.
- How to handle an error.
- The function of the emergency button (it just switches the drives off, the power is still on!).
- The „busy“, „idle“ and „error“ state of the SAMPLEJET.
- How to change between the modes „manual“, „openshop“ and „rack“
- Knowing the function of the shuttles, special spinners and the tube caps.
- How to insert racks and openshop samples.
- How to run the SAMPLEJET from XwinNMR, TOPSPIN and IconNMR.

Don't do...

7.3

The following points are important.

- Never interrupt a „busy“ state.
- Never apply any forces to the drives.

Basic Service

7.4

These basics can be done by the customer.

- Calibrating the device.
- Replacing a gripper.
- Cleaning the SAMPLEJET.
- Storing the system data and the log files.
- Loading new Firmware.

After Sales Service

7.5

Inform the customer about how to get help and information.

1. Contact information of the local BRUKER BIOSPIN representative.
2. If this will not solve the problem refer to the „Contact“ chapter in every SAMPLEJET manual.

Acceptance Test

8

Introduction

8.1

This chapter describes the tests which are done at the customer site at the end of the installation. The test shows the customer the proper function of the SAMPLEJET.

- Webinterface
- Spinner Mode / Topspin or XwinNMR
- Shuttle Mode / IconNMR
- Emergency stop
- Automated change of operating modes
- Code reading (if a camera is installed)
- Pre-heating (if a pre-heating unit is installed)
- Remote control (if a remote control is installed)
- Light and door switches (installed on every newer system)

Webinterface

8.2

Try to access the SAMPLEJET web interface with a browser.

Spinner Mode / Topspin or XwinNMR

8.3

Use „SX“ command from Topspin or XwinNMR to insert a tube from the openshop ring. Then remove the tube with the „sx ej“ command.

Shuttle Mode / IconNMR

8.4

Set up jobs in IconNMR for tubes without a spinner. Take holder numbers higher than 120 and make sure you see at least one complete sample change cycle.

Emergency Stop

8.5

Test the emergency stop by typing in a „sx“ command in Topspin and stop the action by hitting the emergency stop. Restart the application by releasing the emergency button and do an error recovery to bring the system in the idle state again.

Automated change of operating modes

8.6

Perform a automated change from the „spinner“ mode to one of the „shuttle“ modes and back to the „spinner“ mode.

Code reading

8.6.1

Read at least one matrix code from a cap or shuttle. If the customer works with bar codes, then read a bar code in addition.

Pre-heating

8.7

The pre-heating dries the cold and therefore fogged sample tubes. Check if the drying gas flows by putting some short tubes in the heater and switch the heater on. The tubes are moving a little bit when there is a gas flow. Then check if a chosen target temperature can be reached.

Remote Control

8.7.1

Try to rotate the storage in both directions.

Light and Door Switches

8.7.2

Both switches, front and back door, have to be tested. If you open a door, the light should turn on.

Repair procedure

9

Information regarding repairs

9.1

If a SAMPLEJET ever has to be sent to BRUKER BIOSPIN for repairs or a BRUKER BIOSPIN engineer has to do any service work on the device please take note of the following.



*The customer has to accept and sign a photocopy of the "Safety and Repair Declaration *" form on page 68 or a newer version of the BRUKER form ZFQS0083, before any service work can be carried out on the SAMPLEJET.*

This safety and repair declaration is applicable for:

- NMR probes
- Shim systems
- Sample handling systems

Bruker's analytical instruments may be exposed to hazardous substances when used by customers. Whenever a customer returns a system or its components to Bruker, e.g. for repair, upgrade, loan returns, exchange, etc., **the customer accepts the following obligation:**

It is the explicit responsibility of the customer to make sure that the returned products are absolutely free of any hazardous substances. In case of omission to do so, Bruker will hold the customer liable for any resulting personal injuries and/or damages, caused to Bruker employees and/or to other persons exposed to the hazardous substances. The customer is liable for all damage caused to Bruker, e.g. with the cleaning up of hazardous substances, decontamination, security measures, etc. The customer is also liable for any other (direct and/or indirect) damages that may be caused to Bruker by the hazardous substances.

I ACCEPT THIS OBLIGATION

The completed and signed form has to be attached to the returned product. Otherwise, customer returns for the above mentioned products cannot be processed.

The safety & repair declaration form has to be signed by a Bruker service engineer if the system was never operated by the customer (e.g. prior to completion of the installation).

PRODUCT PART NO. : _____	SERIAL NO. : _____
FAULT DESCRIPTION : _____ (reason for return) _____	
DATE FAILURE OCCURED : _____	
SYSTEM ORDER NO. / DISPATCH NO. : _____	

The customer/signatory confirms that the returned product is absolutely free of any hazardous substances (e.g. toxic, corrosive, explosive, biologically dangerous or radioactive).

Signature: X _____	COMPANY/INSTITUTE : _____ NAME : _____ MAILING ADDRESS : _____ CITY/POSTAL CODE : _____ COUNTRY : _____ PHONE NO. : _____
Date: _____	

* (This form is a corrected copy of the original ZFQS0083 form, version 02)

Bruker Biospin Contact

10

General Questions

10.1

Submit your inquiries regarding SAMPLEJET sales and service to your local BRUKER BIOSPIN representative. Use the following address to acquire further information.

Contact for Sales Information

10.2

For further technical assistance, please do not hesitate to contact us directly at:

BRUKER BIOSPIN AG
SAMPLEJET Info
Industriestrasse 26
8117 Fällanden
Switzerland

Phone:[+41] 44 825 98 80

E-mail: samplejet-info@bruker.ch

Contact for Additional Technical Assistance

10.3

For further technical assistance, please do not hesitate to contact us directly at:

BRUKER BIOSPIN AG
SAMPLEJET Service
Industriestrasse 26
8117 Fällanden
Switzerland

Phone:[+41] 44 825 98 90

E-mail: samplejet-service@bruker.ch

FTP: <ftp://ftp.bruker.ch/pub/NMR/download/SampleJet/>

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