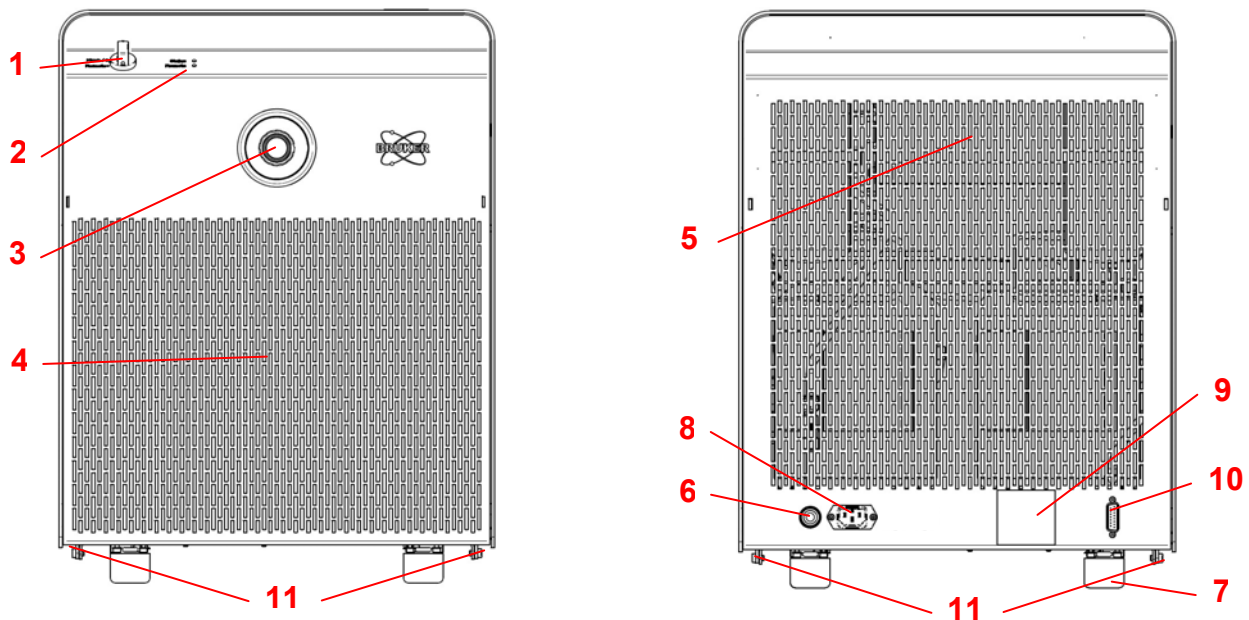


BCU II

Quick Start Guide

i Please read the following Information, regulations and restrictions carefully in order to achieve optimal performance and maximum lifetime of the BCU II.

Overview:



- | | | |
|--------------------------------|--------------------------------|---------------------------|
| (1) Rotary switch | (5) Air outlet grid | (9) Label (Voltage) |
| (2) LEDs (2x) | (6) VT gas IN Ø8mm (max. 6bar) | (10) D-Sub 15 socket |
| (3) Transfer line – VT gas OUT | (7) Wheels with bracket | (11) Hexagon sockets (4x) |
| (4) Air inlet grid | (8) Power socket | |

Preparation:

Before installing, prepare the BCU II as follows:

1. Unscrew and remove the for butterfly nuts (12) (transport lock) at the bottom of the BCU II housing.
2. Unscrew and remove the white protective cover (13) at the end of the transfer line before pressurizing the BCU II with VT gas (max. 6bar).

NOTICE

Instability and poor damping of the BCU II:

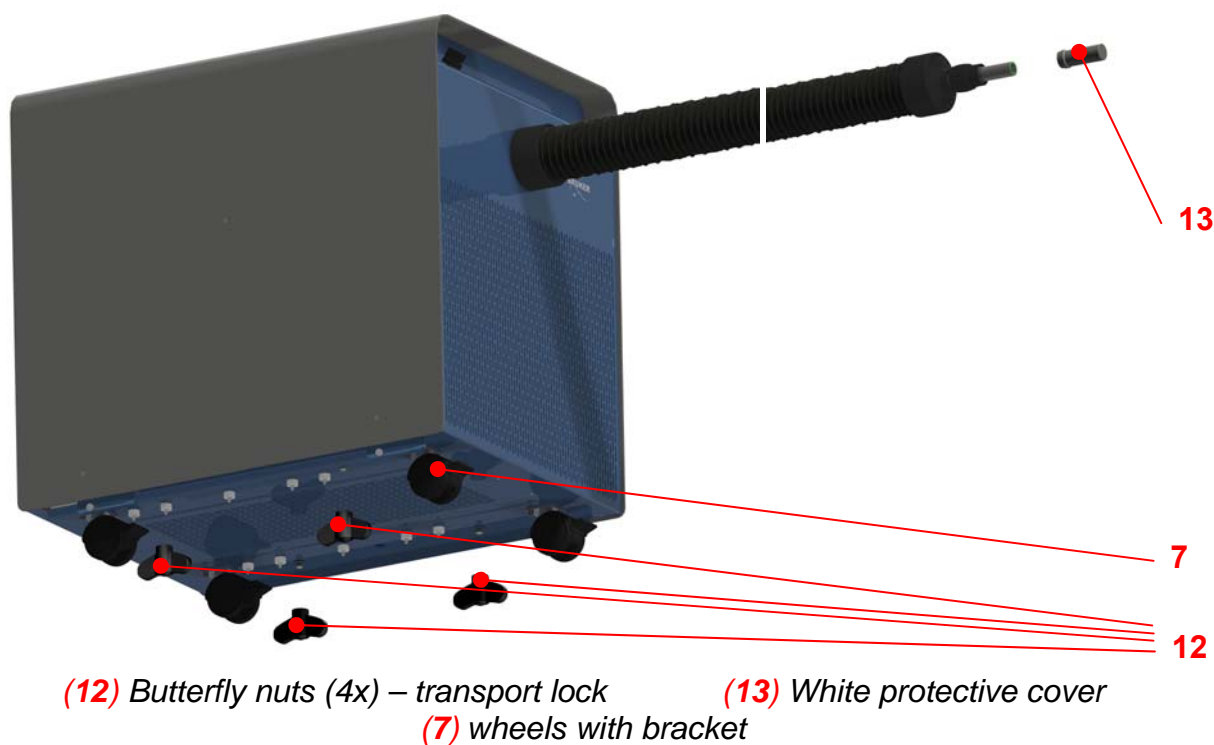
- Unscrew and remove the four butterfly nuts (12) (transport lock) at the bottom of the BCU II housing

⚠ CAUTION



White protective cover at the end of the transfer line shoots away:

- Unscrew and remove the white protective cover (13) at the end of the transfer line before pressurizing the BCU II with VT gas (max. 6bar)



3. Magnetic stray field of the NMR magnet:

Ascend™ (all frequencies) and all other magnets ≤ 700MHz: Place the BCU II **outside** the **5 Gauss** line and **not less** than 1m from the axis of the magnet.

Magnets ≥ 750MHz: Place the BCU II **outside** the **50 Gauss** line and **not less** than 2.7m from the axis of the magnet.

⚠ WARNING

The BCU II is magnetic and presents a potential hazard in the vicinity of a magnet (e.g. magnetic stray field of the NMR magnet):

- **Ascend™ (all frequencies) and all other magnets $\leq 700\text{MHz}$:** Place the BCU II **outside** the **5 Gauss** line and **not less** than 1m from the axis of the magnet.
- **Magnets $\geq 750\text{MHz}$:** Place the BCU II **outside** the **50 Gauss** line and **not less** than 2.7m from the axis of the magnet.



4. Install the SUPPORT CLAMP (21) (Z53660) to the magnet flange.
5. Assemble and install the transfer line support BSCU SUPPORT CPL. (22) (Z119100).

NOTICE

Overheating of the BCU II:

- Do not cover (partially or fully) the air inlet and/or outlet grid. Minimal clearance to a wall: 30cm

Installation:

1. Plug in the communication cable from the BSVT into the D-Sub 15 socket (10) of the BCU II. **Note:** If you operate the BCU II with a BVT, two cables are included (BSCU CABLE RETROFIT SHORT (18) (Z118349) & BSCU CABLE RETROFIT LONG (19) (Z118350)).
2. Connect and screw the transfer line to the NMR probe and align and level the transfer line using the SUPPORT CLAMP (21) and the SUPPORT CPL. (22). **Note:** For NMR probes with a VT gas coupler as indicated in Fig. 1 use the provided adapter Z121532 (see Fig. 2). For a CryoProbe order the adapter BSCU-ADAPTER CRYOPROBE KPL. (Z119688) shown in Fig. 3.



Fig. 1: VT gas coupler



Fig. 2: Adapter Z121532



Fig. 3: Adapter Z119688

Connect the VT gas:

1. Connect the VT gas line (Ø8mm) from the B(S)VT to the VT gas connection **(6)** of BCU II.



⚠ CAUTION

VT gas overpressure will damage the BCU II:

- Use VT gas with a pressure of max. 6bar

NOTICE

Freezing and clogging of the BCU II with VT gas:

- To prevent freezing and clogging of the BCU II use dry clean air or nitrogen VT gas at room temperature with a dew point below -80°C
- For the BCU II Bruker recommends the dryer **1808577**
- For all tubing (particularly after the gas dryer!) use only hoses from TPS (low water permeability)
- Install the gas dryer before the B(S)VT!

Connect the power:

1. Connect the power cord to the power socket **(8)** of the BCU II.
2. Plug the power cord into a power socket with the correct voltage.
3. Now, the BCU II is ready to use. Note: there is no main switch to power on the BCU II.



⚠ CAUTION

Wrong power supply voltage will damage the BCU II:

- Be sure that the voltage indicated on the label of the BCU II corresponds to the power supply voltage of the power socket

Rotary switch:

With the rotary switch **(1)** five operation modes are possible:

- **"Remote"**: The BCU II is controlled by the BVT or BSVT (**Note**: The cable from the D-Sub 15 socket **(10)** of the BCU II to the BVT or BSVT must be plugged in!).
- **"Flush / 0"**: This setting is used when VT gas at room temperature has to be fed to the NMR probe or the VT gas tubing of the BCU II has to be dried and purged (**Note**: Purge with dry clean air or nitrogen gas at room temperature with a dew point below -80°C). In this setting the compressor does not run! *
- **"1"**: In this mode, the VT gas is cooled only slightly with reference to room temperature T_{RT} ($T = T_{RT} - 10...20^{\circ}\text{C}$). *
- **"2"**: In this mode, the VT gas is cooled to about -40°C. *
- **"3"**: In this mode, the VT gas is cooled to the lowest specified temperature. *

*) **Note**: The BCU II is in a manual mode and cannot be controlled with the BVT or BSVT. In manual mode the BCU II can be operated without a communication cable to the B(S)VT.

Dust filter cleaning:

There is a dust filter inside the BCU II. For optimal performance and maximum lifetime of the BCU II it has to be cleaned every 6 months. For cleaning the filter first loosen (but do not unscrew completely) the four hexagon sockets (11) (see also the chapter “Overview”). Then push the housing cover (14) backwards as far at it will go (~30...40mm). Unlock the two fasteners (15) and remove the filter grid (16) with the dust filter (17). Then clean the dust filter (17) with a vacuum cleaner and reinstall the dust filter (17).

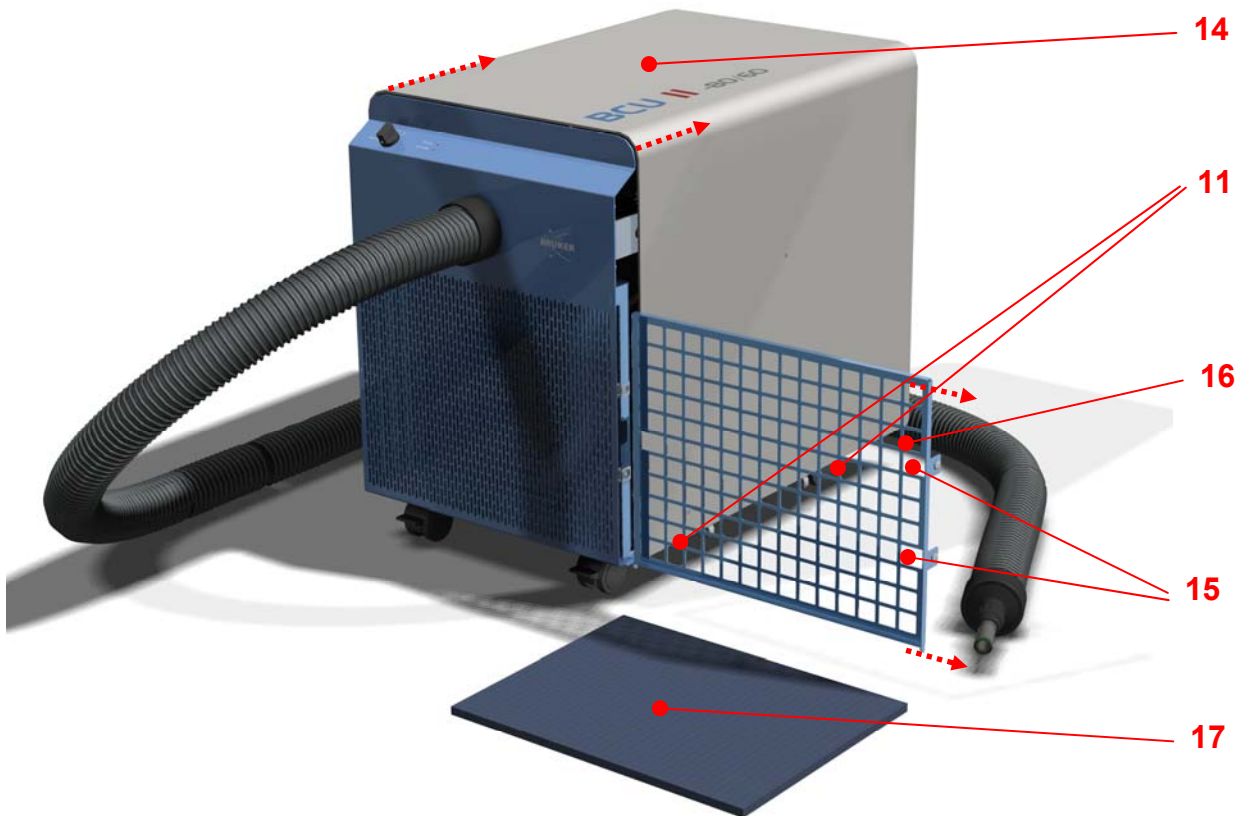


Fig. 4: Dust filter cleaning

“Status” and “Remote” LED:

The BCU II has two LEDs (2) (see also the chapter “Overview”): “Status” and “Remote” LED. The “Status” and the “Remote” LEDs indicate the following states of the BCU II:

Status:	Remote:
Green flashing: Cooling down	Green flashing: Connecting (B(S)VT
Green on: Ready, stable temperature	Green on: Connected to BVT or BSVT
Red flashing: WARNING, overheating *	Red flashing: Connection to BVT or BSVT failed
Red on: ERROR **	Off *** No communication with B(S)VT

*) e.g. blocked dust filter

**) Clean dust filter or call service

***) The communication cable between BCU II and B(S)VT is not connected

Packing list:

The following components are included in the package:

1. 1 x BCU II
2. 1 x Z118349, BSCU CABLE RETROFIT SHORT **(18)**
3. 1 x Z118350 BSCU CABLE RETROFIT LONG **(19)**
4. 1 x Z121532, probe adapter (with clamp) **(20)**
5. 1 x Z53660, SUPPORT CLAMP **(21)**
6. 1 x Z119100, BSCU SUPPORT CPL. **(22)**
7. 1 x power cord
8. 1 x O-ring 13x1,5mm Viton FPM75 GR (for coupler at the end of the transfer line)



(18)



(19)



(20)



(21)



(22)

Specifications:

Voltage:

Indicated on the label **(9)**:

220V - 240V ~ 50Hz

or

100V ~ 50Hz / 100V - 115V ~ 60Hz

Current:

8A@220 - 240V ~ 50Hz

or

13A@100V ~ 50Hz / 100V - 115V ~ 60Hz

Power:

800W / 1600VA

Min. temperature (end of transfer line):

-80°C@0 – 3600l/h & 17...25°C ambient temp.

Ambient operating temperature range:

min. 17°C; max. 32°C; 17...25°C specs fulfilled

Gas dew point:

< -80°C

Flow rate:

Up to 3600l/h

Cool down time:

~20min

Transfer line length:

3m, 5m or 8m

Dimensions (L x W x H):

580 x 420 x 570mm

Max. gas input pressure:

6bar

Weight:

~70kg

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©; Date: July 12, 2011

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