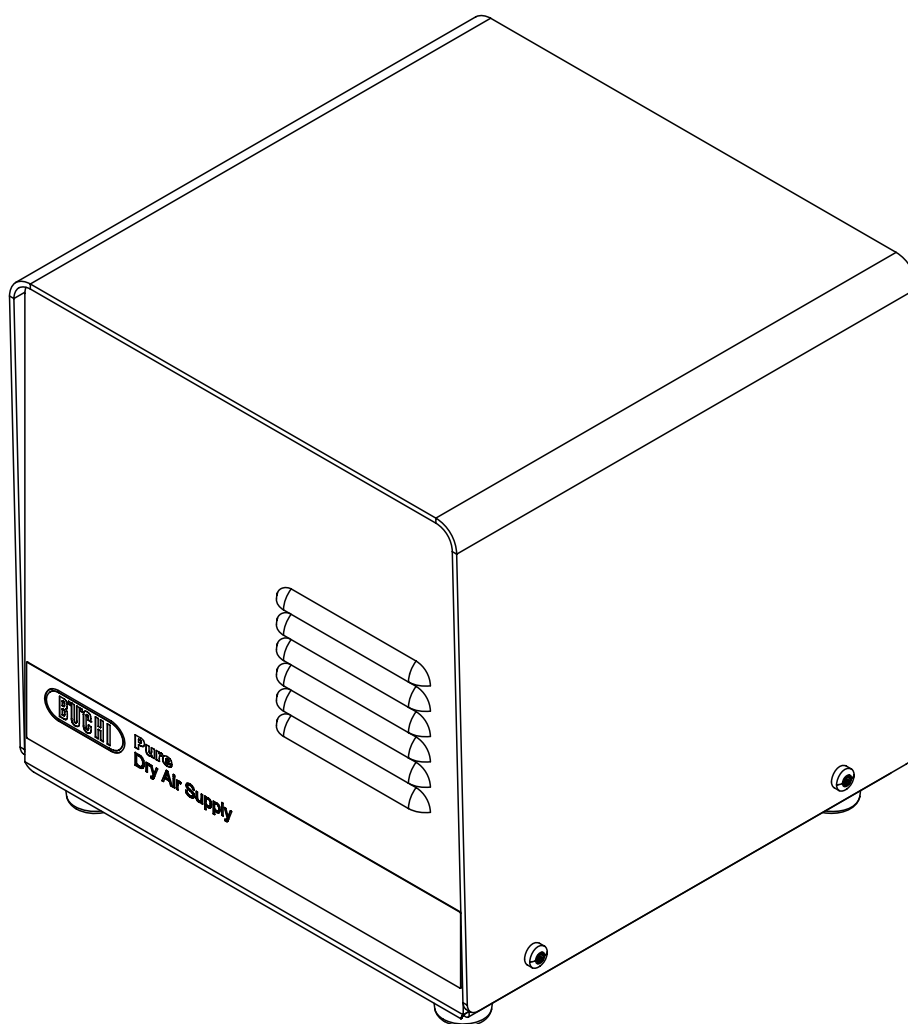




# Pure DAS / Dry Air Supply Operation Manual



## **Imprint**

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# 1 About this document

This operation manual is applicable for all variants of the instrument.

Read this operation manual before operating the instrument and follow the instructions to ensure safe and trouble-free operation.

Keep this operation manual for later use and pass it on to any subsequent user or owner.

BÜCHI Labortechnik AG accepts no liability for damage, faults and malfunctions resulting from not following this operation manual.

If you have any questions after reading this operation manual:

► Contact BÜCHI Labortechnik AG Customer Service.

<https://www.buchi.com/contact>

## 1.1 Warning notices in this document




Warning notices warn you of dangers that can occur when handling the device. There are four danger levels, each identifiable by the signal word used.

Signal word	Meaning
DANGER	Indicates a danger with a high level of risk which could result in death or serious injury if not prevented.
WARNING	Indicates a danger with a medium level of risk which could result in death or serious injury if not prevented.
CAUTION	Indicates a danger with a low level of risk which could result in minor or medium-severity injury if not prevented.
NOTICE	Indicates a danger that could result in damage to property.

## 1.2 Symbols

The following symbols are displayed in this operation manual or on the device:

### 1.2.1 Warning symbols

Symbol	Meaning
	General warning
	Dangerous electrical voltage
	Device damage

### 1.2.2 Mark-ups and symbols



#### NOTE

This symbol draws attention to useful and important information.

☑ This character draws attention to a requirement that must be met before the instructions below are carried out.

► This character indicates an instruction that must be carried out by the user.

⇒ This character indicates the result of a correctly carried out instruction.

<b>Mark-up</b>	<b>Explanation</b>
<i>Window</i>	Software Windows are marked-up like this.
<i>Tab</i>	Tabs are marked-up like this.
<i>Dialog</i>	Dialogs are marked-up like this.
<i>[Button]</i>	Buttons are marked-up like this.
<i>[Field names]</i>	Field names are marked-up like this.
<i>[Menu / Menu item]</i>	Menus or menu items are marked-up like this.
<b>Status</b>	Status is marked-up like this.
<b>Signal</b>	Signals are marked-up like this.

### 1.3 Connected devices

In addition to these operating instructions, you should also follow the instructions and specifications in the documentation for the connected devices.

### 1.4 Trademarks

Product names and registered or unregistered trademarks that are used in this document are used only for identification and remain the property of the owner in each case.

## 2 Safety

### 2.1 Proper use

The instrument is designed and built for laboratories.

The instrument can be used for the following tasks:

- Supply dry, clean air to BUCHI instruments

### 2.2 Use other than intended

Use of any kind other than that described in Chapter 2.1 "Proper use", page 7 and any application that does not comply with the technical specifications ( See Chapter 3.4 "Technical data", page 11) constitutes use other than that intended.

In particular, the following applications are not permissible:

- Use of the instrument in rooms which require ex-protected instruments.
- Use the instrument as air supply for non-BUCHI instruments.

### 2.3 Staff qualification

Unqualified persons are unable to identify risks and are therefore exposed to greater dangers.

The device may only be operated by suitably qualified laboratory staff.

These operating instructions are aimed at the following target groups:

#### Users

Users are persons that meet the following criteria:

- They have been instructed in the use of the device.
- They are familiar with the contents of these operating instructions and the applicable safety regulations and apply them.
- They are able on the basis of their training or professional experience to assess the risks associated with the use of the device.

#### Operator

The operator (generally the laboratory manager) is responsible for the following aspects:

- The device must be correctly installed, commissioned, operated and serviced.
- Only suitably qualified staff may be assigned the task of performing the operations described in these operating instructions.
- The staff must comply with the local applicable requirements and regulations for safe and hazard-conscious working practices.
- Safety-related incidents that occur while using the device should be reported to the manufacturer (quality@buchicom).

#### BUCHI service technicians

Service technicians authorized by BUCHI have attended special training courses and are authorized by BÜCHI Labortechnik AG to carry out special servicing and repair measures.

## 2.4 Location of warning signs on the product

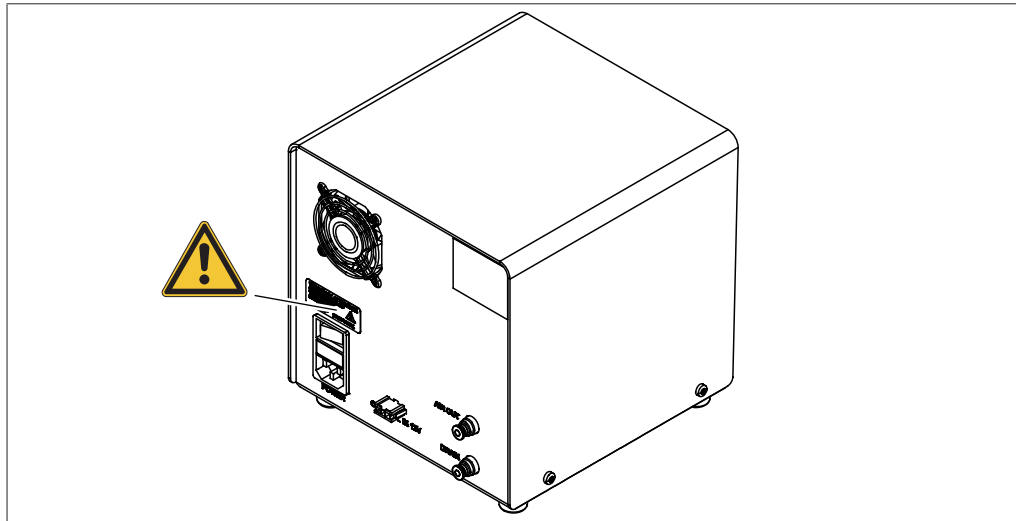


Fig. 1: Location of the warning signs



General warning

## 2.5 Residual risks

The device has been developed and manufactured using the latest technological advances. Nevertheless, risks to persons, property or the environment can arise if the device is used incorrectly.

Appropriate warnings in this manual serve to alert the user to these residual dangers.

### 2.5.1 Faults during operation

If a device is damaged, sharp edges, moving parts or exposed electrical wires can cause injuries.

- ▶ Regularly check device for visible damage.
- ▶ If faults occur, switch off the device immediately, unplug the power cord and inform the operator.
- ▶ Do not continue to use devices that are damaged.

## 2.6 Personal protective equipment

Depending on the application, hazards due to heat and/or corrosive chemicals may arise.

- ▶ Always wear appropriate personal protective equipment such as safety goggles, protective clothing and gloves.
- ▶ Make sure that the personal protective equipment meets the requirements of the safety data sheets for all chemicals used.

## 2.7 Modifications

Unauthorized modifications may impair safety and lead to accidents.

- ▶ Use only genuine BÜCHI accessories, spare parts and consumables.
- ▶ Technical modifications to the device or accessories should only be carried out with the prior written approval of BÜCHI Labortechnik AG and only by authorized BÜCHI technicians.

BÜCHI accepts no liability whatsoever for damage arising as a result of unauthorized modifications.



### 3 Product description

#### 3.1 Description of function

The Dry Air Supply supplies particle free dry air for BUCHI instruments.

#### 3.2 Configuration

##### 3.2.1 Front view

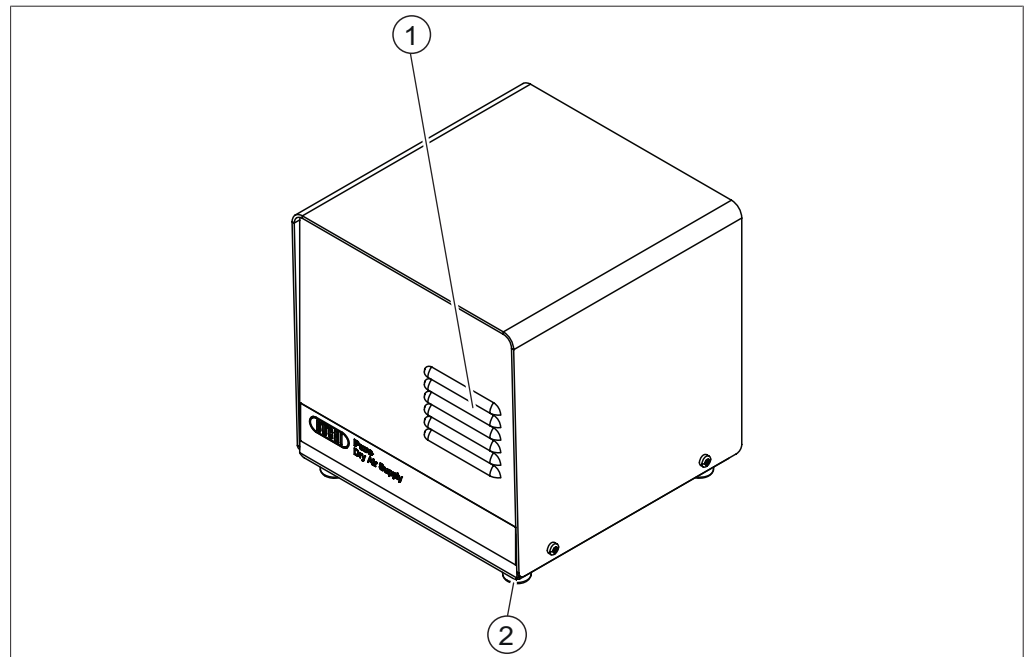


Fig. 2: Front view

1 Ventilation inlet

2 Basis

### 3.2.2 Rear view

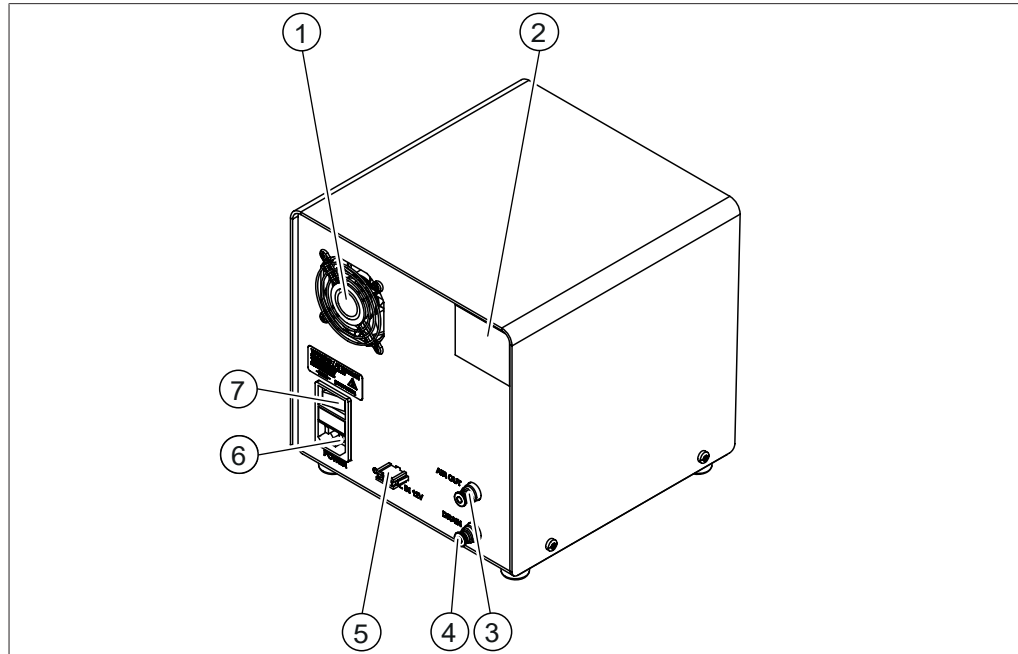


Fig. 3: Rear view

- |                        |                           |
|------------------------|---------------------------|
| 1 Fan                  | 2 Type plate              |
| 3 Outlet               | 4 Drain                   |
| 5 Enable signal in     | 6 Power supply connection |
| 7 On/Off master switch |                           |

### 3.2.3 Type plate

The type plate identifies the instrument. The type plate is located at the rear side of the instrument. See Chapter 3.2.3 "Type plate", page 10

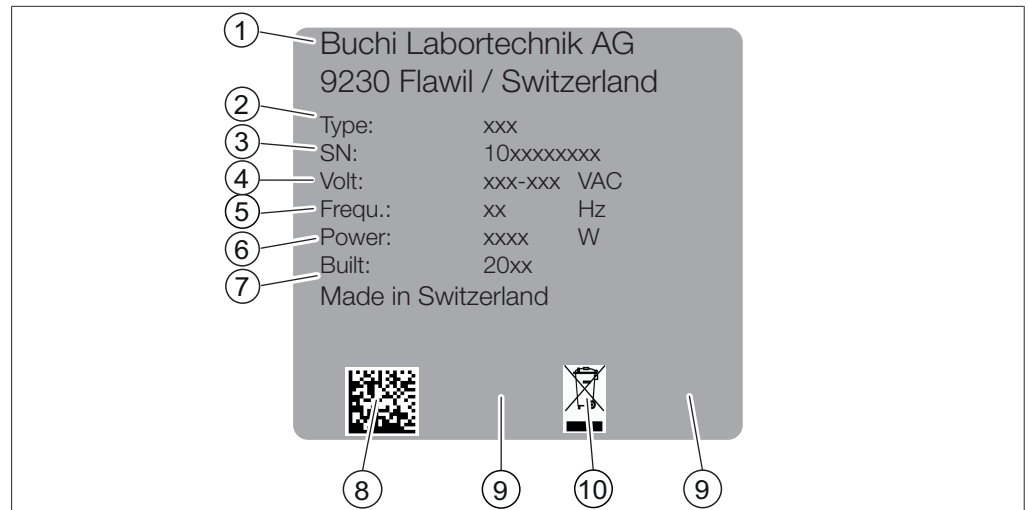


Fig. 4: Type Plate

- |   |                          |    |   |
|---|--------------------------|----|---|
| 1 | Company name and address | 2  | Instrument name                                   |
| 3 | Serial number            | 4  | Input voltage range                               |
| 5 | Frequency                | 6  | Power consumption maximum                         |
| 7 | Year of manufacture      | 8  | Product code                                      |
| 9 | Approvals                | 10 | Symbol for "Do not dispose of as household waste" |

### 3.3 Scope of delivery



#### NOTE

The scope of delivery depends of the configuration of the purchase order.

Accessories are delivered as per the purchase order, order confirmation, and delivery note.

### 3.4 Technical data

#### 3.4.1 Pure DAS / Dry Air Supply

Specification	Value
Power consumption	100 W
Connection voltage	100 - 240 VAC $\pm$ 10 %
Fuse	1.6 AT
Frequency	50 / 60 Hz
Overvoltage category	II
Dimension (W x D x H)	204 x 210 x 210 mm
Weight	4.8 kg
EMC Class	B
Control voltage	12 VDC
Output at atm. pressure	15 L/min
Max. operating pressure	7 bar

**3.4.2 Ambient conditions**

For indoor use only.

Max. altitude above sea level	2000 m
Ambient temperature	5–30 °C (25 °C) No maximum performance above 25 °C
Maximum relative humidity	80 % for temperatures up to 30 °C
Storage temperature	max. 45 °C

**3.4.3 Materials**

Component	Materials of construction
Housing	Aluminum 5052 with powder coating
Base	Polypropylene and Satopren RMS 42
Screws	Stainless steel
Protection shield	Thermocarbonband ROM12
Connecting pieces	Nickel-plated brass, POM, NBR, stainless steel
Entry module	Thermoplastic

## 4 Transport and storage

### 4.1 Transport



#### NOTICE

##### **Risk of breakage due to incorrect transportation**

- ▶ Make sure that all parts of the device are safely packed in such a way as to prevent breakage, ideally in the original box.
- ▶ Avoid sharp movements during transit.

- ▶ After transportation, check the device for damage.
- ▶ Damage that has occurred in transit should be reported to the carrier.
- ▶ Keep packing for future transportation.

### 4.2 Storage

- ▶ Make sure that the ambient conditions are complied with (see Chapter 3.4 "Technical data", page 11).
- ▶ Wherever possible, store the device in its original packaging.
- ▶ After storage, check the device, all seals and tubing for damage and replace if necessary.

### 4.3 Lifting the instrument



#### NOTICE

##### **Dragging the instrument can damage the feet of the instrument.**

- ▶ Lift the instrument when positioning or re-locating.

## 5 Installation

### 5.1 Before installation



#### NOTICE

##### **Instrument damage due to switching it on too early.**

Switching on the instrument too early after transportation can cause damage.

- Climatize the instrument after transportation.

### 5.2 Installation site

The installation site must meet the following requirements:

- Firm, nonslip and level surface
- Take into account the maximum product dimensions and weight.
- Do not expose the instrument to any external thermal loads, such as direct solar radiation.
- Clearance on the front and on the back of the instrument must be at least 200 mm.
- Make sure there is free flow of air to the front of the unit and to the cooling fan at the back panel.
- Do not place loose papers or cloths below or to the sides of the instrument, as these could impede the air circulation if drawn in.
- Do not place next to vibration sensitive instruments.
- Place instrument on the basis.
- Make sure that cables / tubes are safely routed.



#### NOTE

Make sure that the power supply can be disconnected at any time in an emergency.

### 5.3 Establishing electrical connections



#### NOTE

Observe the legal requirements when connecting the instrument to the power supply.

- Use additional electrical safety features (e.g., residual-current circuit breakers) to comply with local laws and regulations.

The power supply must fulfil the following conditions:

1. Provide the mains voltage and frequency specified on the type plate of the instrument.
2. Be designed for the load imposed by the instruments connected.
3. Be equipped with suitable fuses and electrical safety features.
4. Be equipped with proper earthing.



## NOTICE

### Risk of property damage and diminished performance due to use of unsuitable power cables.

The power supply cables supplied with the product by BUCHI precisely match the requirements of the device. If other power cables that do not meet those requirements are used, the device may be damaged and/or its performance diminished.

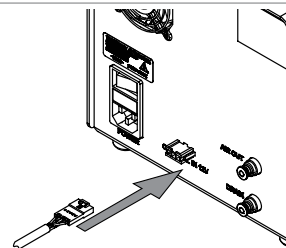
- ▶ Use only the power supply cables supplied with the product or ordered separately from BUCHI.
- ▶ If using any other power supply cables, make sure that they match the specifications on the type plate.

- ▶ Make sure that all connected devices are earthed.
- ▶ If an extension lead is required, make sure that it is earthed and has a suitable power rating.
- ▶ Make sure that the power plug is freely accessible at all times.
- ▶ Plug the power cable into the connection labelled **Power IN** on the back of the instrument.
- ▶ Plug the mains plug into the power socket.

## 5.4 Connecting the instrument with a Chromatography System

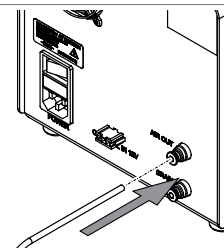
- ▶ Connect the signal cable from the chromatography system to the instrument.

Use the connection **CONTROL IN 12V**.



- ▶ Connect the tubing from the chromatography system to the instrument.

Use the connection **AIR OUT**.



## 5.5 Installing the drain tubing

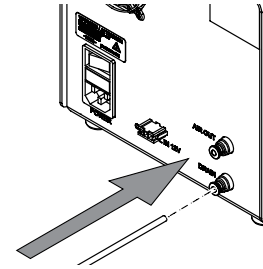


## NOTICE

### Placing the drain tube in an organic solvent waste container can damage the tube.

- ▶ Don not place the drain tube in an organic solvent waste container.

- ▶ Connect the tubing with the instrument.  
Use the connection **DRAIN**.
- ▶ Place the other end of the tubing in an aqueous waste container located lower than the instrument.





## 6 Operation

### 6.1 Starting the instrument

Precondition:

- ☑ All commissioning operations have been completed. See Chapter 5 "Installation", page 14
- ▶ Switch the **On/Off** master switch to On.
  - ⇒ The instrument is ready to use.
- ▶ All functions of the instrument are controlled by the Chromatography system software.

### 6.2 Shutting down the instrument

- ▶ Switch the **On/Off** master switch to Off.

## 7 Cleaning and servicing



### NOTE

Users may only carry out the servicing and cleaning operations described in this section.

Any servicing and repair work which involves opening up the casing may only be carried out by BUCHI service technicians.

- Use only genuine BUCHI consumables and spare parts in order to ensure correct operation of the device and preserve the warranty.

### 7.1 Regular maintenance work

Component	Action	Frequency
Casing	► Wipe down the casing with a damp cloth.	Weekly
	► If heavily soiled, use ethanol or a mild detergent.	
Warning symbols	► Check that the warning symbols on the instrument are legible.	Weekly
	► If they are dirty, clean them.	

## 8 Help with faults

### 8.1 Faults, possible causes and solutions

Malfunction	Possible cause	Solution
The system does not power up	Power is not being supplied to the system	<ul style="list-style-type: none"> <li>• Verify that the power cable is plugged into the Instrument related.</li> <li>• Verify that the connected instrument turned on.</li> </ul>
Inlet gas pressure out of range – LOW (During Software Starts)	No gas or low gas flow into the Flash system	<ul style="list-style-type: none"> <li>• Check the gas line connections between the Dry Air Supply and the connected instrument for leaks. Disconnect the tube, cut off a piece, insert the tube again.</li> <li>• Press the Reset button to clear the error message. Repeat one more time. The message will be cleared after the second time this button is pressed if the pressure value is within specification.</li> </ul>
Inlet gas pressure out of range- HIGH (During run)	Blockage in the nebulizer or gas line to the nebulizer	<ul style="list-style-type: none"> <li>• Check the nebulizer or tubing to the nebulizer for blockages.</li> <li>• Sonicate the nebulizer in a suitable solvent or replace nebulizer.</li> </ul>
Inlet gas pressure out of range- HIGH (During run)	Blockage in the nebulizer or gas line to the nebulizer	<ul style="list-style-type: none"> <li>▶ Check the nebulizer or tubing to the nebulizer for blockages.</li> <li>▶ Sonicate the nebulizer in a suitable solvent or replace nebulizer.</li> </ul>

### 8.2 Fuse Replacement



#### **DANGER**

#### **Risk of shock hazard**

A failure in carrying out this operation can result in death or serious injury.

- ▶ Only suitably qualified personnel should carry out this operation.
- ▶ Disconnect the power cord before replacing the fuse.

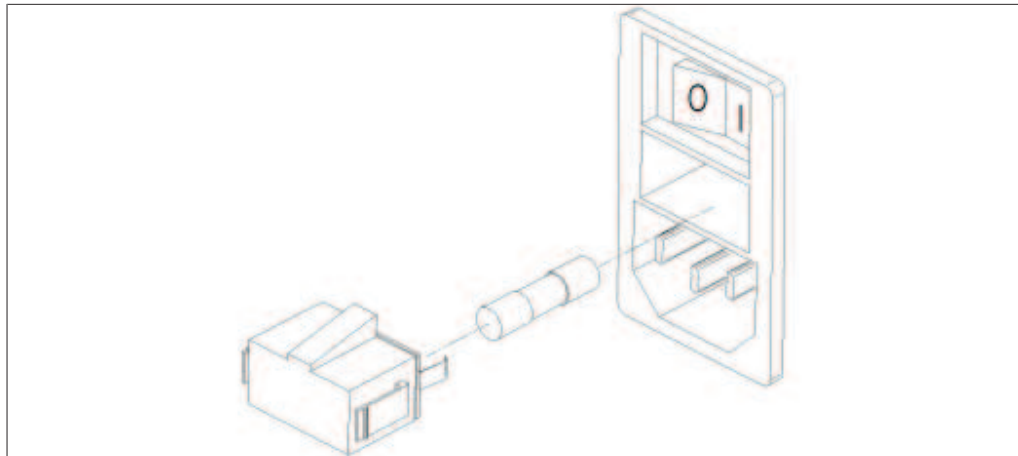


Fig. 5: Fuse Replacement

- ▶ Switch the On/Off master switch to Off.
- ▶ Unplug the power cord.
- ▶ Gently squeeze the side tabs of the fuse drawer and pull the fuse drawer straight out.
- ▶ Remove the blown fuse and replace with the new fuse.
- ▶ Make sure the replacement fuse is placed into the fuse slot on the right side of the fuse drawer.
- ▶ Replace the fuse drawer. Make sure the fuse inserts into the fuse slot on the right side of the fuse block. The correct slot has a metal contact inside the fuse block.

## **9 Taking out of service and disposal**

### **9.1 Taking out of service**

- ▶ Switch off the instrument and disconnect it from the mains power supply.
- ▶ Remove all tubing and communication cables from the device.

### **9.2 Disposal**

The operator is responsible for proper disposal of the instrument.

- ▶ When disposing of equipment observe the local regulations and statutory requirements regarding waste disposal.
- ▶ When disposing, observe the disposal regulations of the materials used. Materials used see Chapter 3.4 "Technical data", page 11

### **9.3 Returning the instrument**

Before returning the instrument, contact the BÜCHI Labortechnik AG Service Department.

<https://www.buchi.com/contact>

## 10 Appendix

### 10.1 Spare parts and accessories

Use only genuine BUCHI consumables and spare parts in order to ensure correct, safe and reliable operation of the system.



#### NOTE

Any modifications of spare parts or assemblies are only allowed with the prior written permission of BUCHI.

#### 10.1.1 Spare parts

	Order no.
Plastic tube blue	11066848
Plug-in connector	11066874
Cable Control Dry Air Supply	11068915
Fuse 1.6 AT L 5.0 x 20	002999
External power supply	11070060
Only for Encapsulator	



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