

Operating Manual

Automatic Filtration Unit

AFU 3



Manufacturer Analytik Jena GmbH+Co. KG
Konrad-Zuse-Str.1
07745 Jena · Germany
Phone + 49 3641 / 77 70
Fax + 49 3641 / 77 92 79
Email info@analytik-jena.com

Service Analytik Jena GmbH+Co. KG
Konrad-Zuse-Str. 1
07745 Jena · Germany
Phone + 49 3641 / 77-7407 (Hotline)
Email service@analytik-jena.com

General information <http://www.analytik-jena.com>

Copyrights and
Trademarks Microsoft and Windows are registered trademarks of Microsoft Corp.
The identification with ® or TM is omitted in this manual.

Documentation number 11-889.695

Edition C (07/2023)

Implementation of the
Technical Documentation Analytik Jena GmbH+Co. KG

© Copyright 2023, Analytik Jena GmbH+Co. KG

Table of Contents

1	Basic Information	3
1.1	Notes for User Manual.....	3
1.2	Application.....	3
1.3	Intended Use	3
1.4	Guarantee and Liability.....	4
1.5	Scope of Delivery	5
2	Technical Data	7
3	Safety Instructions	9
3.1	Standards and Guidelines	9
3.2	Signs and Key Words Used.....	9
3.3	Technical Standards.....	10
3.4	Operating Personnel Requirements.....	11
3.5	Safety Instructions for Transportation and Installation	12
3.6	Operation Safety Instructions.....	13
3.6.1	General	13
3.6.2	Safety Instructions for the Prevention of Explosions and Fire	13
3.6.3	Electrical Safety Instructions.....	14
3.6.4	Handling Auxiliary and Process Materials.....	14
3.6.5	Safety Instructions for Repair and Maintenance	15
3.6.6	Emergency Procedures	15
4	Technical Description	17
4.1	System Design	17
4.2	Procedure.....	18
5	Transportation and Storage.....	19
5.1	Transportation	19
5.1.1	Preparing Sample Preparation for Transportation.....	19
5.1.2	Instructions relating to transport.....	19
5.1.3	Moving the Sample Preparation in the laboratory	20
5.2	Storage.....	20
5.3	Restarting after Transport or Storage	21
5.3.1	Assembling the Sample Preparation after Transport or Storage	21

6	Initial Start-up.....	23
6.1	Installation Site Requirements	23
6.1.1	Installation conditions	23
6.1.2	Space requirements	23
6.1.3	Power supply	23
6.2	Unpacking and Installing the Sample Preparation.....	24
7	Operation.....	25
8	Trouble Shooting	27
8.1	Device Errors and Analytical Problems	27
9	Maintenance and Care.....	29
9.1	Maintenance Schedule	29
9.2	Consumables/ Spare Parts.....	30
10	Disposal.....	31
10.1	Waste Water.....	31
10.2	Sample Preparation.....	31

1 Basic Information

1.1 Notes for User Manual

The sample preparation system AFU 3 has been designed for use by qualified specialists in compliance with this User Manual.

The User Manual contains information on the design and functions of the sample preparation and provides the information required by personnel familiar with AOX determination to handle the device safely.

The User Manual also provides recommendations on maintenance of, and care for the device as well as possible causes of malfunctions, if any, and their correction.

Document structure

Operating instructions to be performed in sequence are numbered in chronological order. They are grouped together in operational units and accompanied by the corresponding results.

Listings without a sequential order are presented as bullet points and items in sub lists are preceded by dashes.

Safety precautions are shown with pictograms and key words. They provide information about the type, source and consequences of the hazard, and safety precautions. The meanings of the pictograms and key words are explained in the "Safety Instructions" chapter.

1.2 Application

The Automatic Filtration Unit AFU 3 is most suitable for processing AOX samples by the batch method as an alternative to the classical membrane filtration and can also be used for AOX sample preparation according to column method. It can simultaneously process up to 3 samples of up to 180 ml volume.

1.3 Intended Use

The AFU 3 sample preparation may only be used for the procedures described in this user manual for sample accumulation. Any use going beyond that shall be regarded as improper use! The user will be solely responsible for all damage caused by such use.

Safe operation of the AFU 3 is ensured only when it is used properly according to the instructions given in this User Manual.

The proper use also includes compliance with the installation requirements specified by Analytik Jena. These can be obtained from the customer service address stated in this manual.

1.4 Guarantee and Liability

The length of the warranty and the liability correspond to the statutory provisions and the rulings in the general terms of business of Analytik Jena.

Deviations from the proper use described in this User Manual will result in restricted warranty and liability in case of damage. Damage to wearing parts and broken glass are not covered by warranty.

Guarantee and liability claims for personal injury and material damage are excluded if they can be attributed to one or more of the following causes:

- improper use of the sample preparation
- improper commissioning, operation or maintenance of the sample preparation
- modifications to the device without prior consultation with Analytik Jena
- unauthorized tampering with the device
- use of the device with defective safety devices, in particular with improperly attached safety and protective devices
- insufficient attention to parts of the device that are subject to wear
- use of spare parts, wearing parts or consumables that are not from the original manufacturer
- inadequate or improper repairs
- defects resulting from failure to comply with this User Manual

1.5 Scope of Delivery



IMPORTANT

The scope of delivery is listed in the below-mentioned table. This list is not exhaustive. Subject to change.

While checking the delivered components always notice the actual packing list for the scope of delivery.

Basic device and accessories:

Designation	Basic device	batch method	column method
Basic device, completely assembled with power supply unit	x		
3 sample containers 180 ml with column upper part and column bottom part	x		
Waste tube	x		
Filling device for activated carbon	x		
Activated carbon for AOX analysis (batch method), 1 packet of 10 g		x	
Activated carbon for AOX analysis (column method), 1 packet of 10 g			x
Ceramic wool for AOX analysis		x	x
Filling-rack for quartz containers		x	x
Quartz container, 18 x 8, thin walled with frit (set a 20)		x	
Quartz container, 18 x 8, thick walled (set a 20)			x
6 pcs. column center/bottom part with flat seal			x

2 Technical Data

General characteristics	
Designation/Type	AFU 3
Dimensions of basic device (W x H x D)	approx. (300 x 800 x 300) mm
weight	approx. 8,5 kg
Process data	
number of samples AOX	3
sample vessel volume	180 ml
Electrical characteristics	
connection	external 12 VDC power supply
typical average power consumption	500 mA
Interference suppression (electromagnetic compatibility)	in accordance with specifications of EN 55022 class A and BMPT (German Ministry of Post and Telecommunications) order 243/1991
Environment conditions	
Storage temperature range	(5 - 55) °C
Operational temperature range	(10 - 40) °C
Operational air humidity	max. 90 % at +30 °C
Storage air humidity range	(10 - 30) % (user dessicant)
Air pressure range	(0,7 - 1,06) bar

3 Safety Instructions

For your own safety and for accident-free and safe operation of the AFU 3 sample preparation, read this whole chapter carefully before starting operation.

Abide by all safety precautions that are given in this User Manual.

3.1 Standards and Guidelines

The sample preparation has been built in accordance with the currently valid standards of the technology and the recognized safety regulations.

The fundamental safety and occupational safety requirements of applicable laws, standards, and guidelines have been taken into account in the sample preparation design. The safety of the sample preparation is confirmed by the CE mark and the declaration of conformity.

All statements regarding safety refer to the current valid regulations of the European Union. In other countries, the applicable laws and national regulations must be complied with.

In addition to the safety instructions given in this User Manual and the local safety regulations applicable to the operation of the sample preparation, the generally valid accident prevention, occupational safety and environment protection regulations must be taken into account and complied with.

Hints on potential dangers do not replace occupational safety regulations that have to be complied with.

3.2 Signs and Key Words Used

The following symbols and key words are used in the User Manual to indicate hazards and instructions. The safety instructions always appear before an action.



WARNING

Indicates a potentially dangerous situation. Failure to avert this dangerous situation may result in death or severe (crippling) injuries.



CAUTION

Indicates a potentially dangerous situation. Failure to avert this situation may result in light or minor injuries and property damage.



NOTICE

Indicates a potentially dangerous situation. Failure to avert this situation may result in damage to the product or anything nearby.



IMPORTANT

Indicates tips for users and other especially useful information on how to act in dangerous or harmful situations.



ENVIRONMENT PROTECTION

Designates tips and information for the user that are helpful for the proper handling and disposal of the materials and substances used.

3.3 Technical Standards

The sample preparation complies with the currently valid technical design and construction regulations. Unauthorized modifications or changes especially those that affect the safety of personnel and the environment are absolutely prohibited.

The following must be observed:

- Any manipulation of safety devices is prohibited!
In the event of an accident, manipulations of safety devices will be regarded as intentional!
- The operator is obliged to operate the sample preparation only in an absolutely safe condition. The technical state of the sample preparation must at all times fulfil the relevant legal requirements and regulations.
- Check the sample preparation for damage and ensure that it is in good working order each time before starting operation.
- Operating personnel must inform the owner immediately of any changes in the sample preparation that affect safety.
- The device components may only be connected to supply lines that have been provided and designed for them.
- All safety equipment and locking systems must be easily accessible and tested regularly for correct functioning.

3.4 Operating Personnel Requirements

The AFU 3 may only be operated by qualified personnel trained in handling the device. The training also includes familiarization with the contents of this User Manual and with user manuals of other system components and additional devices.

The sample preparation can become dangerous when used by untrained personnel, improperly or for other than its intended purpose.

Everyone who is authorized to operate the sample preparation must therefore have read and understood this user manual and, if applicable, the user manuals of any supplementary devices before they start working with these devices. This also applies when the person in question has already worked with or been trained to operate a similar sample preparation.

The owner is recommended to obtain confirmation in writing from the operating personnel concerned that they have read the contents of the instruction manual. In the end, the owner of the sample preparation or qualified personnel authorized by the owner will be responsible for accident-free operation of the sample preparation.

In addition to the working safety instructions given in this User Manual, the generally applicable safety and accident prevention regulations of the country of use must be observed and complied with. The owner has to ascertain the current status of these regulations.

The User Manual must be available to the operating and maintenance personnel at all times!

The following must be observed:

- The sample preparation may only be brought into operation, operated and maintained by trained personnel briefed on safety techniques.
- Minors or persons under the influence of alcohol, drugs or medicines must not be allowed to operate or maintain the sample preparation.
- It must be ensured that only appointed personnel work with the sample preparation.
- The operating personnel must be familiar with dangers posed by test fluids. They must wear appropriate personal protection equipment.
- Before breaks and after finishing work, wash the skin and take measures to protect the skin.
- Eating, drinking, smoking and naked lights are forbidden in the area where the sample preparation is installed.

3.5 Safety Instructions for Transportation and Installation

The AFU 3 is installed exclusively by the Analytik Jena Service Department or by their authorized and trained specialists.

Unauthorized assembly or installation work is forbidden. Considerable danger can arise through faulty installation.

The following must be observed:

- ❑ Parts that are not properly protected can cause injury! The device components should be protected during transportation according to the instructions in the User Manual.
- ❑ Always transport the sample preparation in its original packing! Ensure that all transportation securing devices are attached and that the sample preparation is completely empty.
- ❑ In order to prevent harm to health, the following must be observed when moving (lifting and carrying) the sample preparation in the laboratory:
 - As the sample preparation does not have any carrying handles, both people have to grasp the stand of the device firmly with both hands and lift it simultaneously.
 - The recommendations and legally stipulated limits for lifting and carrying loads without mechanical assistance must be observed and not exceeded.

3.6 Operation Safety Instructions

3.6.1 General

Sample preparation operators must convince themselves each time before starting up the sample preparation that it and its safety devices are in good working order. This is particularly important after any modification or expansion and after every repair to the sample preparation.

The following must be observed:

- At the putting of the sample storage bins on its places pay attention, that no coarse particles are between the glass rim of the bin and the rest bridge. The big pressure during the tightening of the pressure cap might cause the cracking of the glass which can burst if there is overpressure!
- Don't lead oxygen into the pump box! The motor of the pump can explode in combination with oxygen in unfavourable case.
- During the work of the automatic filtering unit there is an overpressure from about 1 bar to the sample storage bins. **As a precaution the acrylic glass door must be closed!**
- The sample preparation may only be operated if all protective devices (e.g. guards, chemical collecting trays) are present, properly installed and fully functional.
- Check regularly that the protective and safety devices are in good working order. Any defects that occur must be rectified immediately.
- Protective or safety devices must never be removed, changed or disabled during operation.
- Ensure that the power switch on the left-hand side of the housing is easily accessible at all times during operation.
- Changes on the pressure system are not allowed.

3.6.2 Safety Instructions for the Prevention of Explosions and Fire

The sample preparation must not be used in areas where there is danger of explosion. Smoking and naked lights are forbidden in the analyzer operation area.

The operating personnel must know locations of fire extinguishing equipment in the sample preparation operation area.

3.6.3 Electrical Safety Instructions

Work on electric components of the sample preparation may only be carried out by an electrician in accordance with the applicable electrotechnical regulations.

The following must be observed:

- Expansion modules and system components must always be switched off before being electrically connected to or disconnected from the sample preparation.
- Before opening the sample preparation, switch off its power switch and unplug it from the mains!
- The electric components must be tested by an electrician on a regular basis. All defects such as loose connections, defective or damaged cables must be rectified immediately.
- Make sure that liquids not arrive at cable connections or inside the electrical device! Danger of electric shock!
- In the event that electric components of the sample preparation fail, turn off the power switch (on the left-hand side) immediately and unplug it from the mains.

3.6.4 Handling Auxiliary and Process Materials

The owner will be responsible for selecting the substances used in the process as well for their safe handling. This especially applies to radioactive, infectious, toxic, caustic, combustible, explosive or otherwise hazardous substances.

Hazardous substances must be handled in accordance with the locally valid safety instructions and installation site regulations.

The following general instructions do not replace specific local regulations or the regulations in the EU safety data sheets of the manufacturers of the auxiliary and process materials.

The following must be observed:

- Follow and abide by the applicable rules and instructions in the manufacturers' EU safety data sheets dealing with the storage, handling, use and disposal of all auxiliary and process materials used in connection with operating and maintaining the sample preparation.
- Never keep auxiliary and process materials in containers or vessels designed for foodstuffs. Always use containers approved for each corresponding material, and label them appropriately. Follow the instructions on the labels.
- Protective goggles and protective gloves must be worn when handling reagents. Always follow the instructions on the labels.
- The regulations and instructions in the safety data sheets for handling sodium nitrate solution must be followed without fail!
- Biological samples must be handled in accordance with local regulations for handling infectious materials.
- Be careful when handling glass parts. There is a risk of glass breaking and causing injury!

- Auxiliary and process materials and their containers must not be disposed of as domestic waste and must not be allowed to get into the sewerage system or the soil. These materials must be disposed of exactly in accordance with the applicable regulations in each case.
- Always ensure that there is sufficient ventilation in working areas.

3.6.5 Safety Instructions for Repair and Maintenance

The sample preparation must be maintained exclusively by the Customer Service Department of Analytik Jena or by specialists authorized and trained by them.

Unauthorized maintenance work can put the sample preparation out of adjustment or damage it. The operator may therefore only carry out the activities listed in the "Care and Maintenance" section.

The following must be observed:

- The outside of the sample preparation must not be cleaned until it has been switched off. It is cleaned with a lightly wetted non-dripping cloth.
- All maintenance and repair work on the sample preparation may only ever be carried out after it has been switched off (unless otherwise specified).
- Only original accessories and original spare parts of the Analytik Jena may be used. The instructions itemized in the "Care and Maintenance" section must be complied with.
- All protective devices must be properly re-installed immediately after completion of repair and maintenance work, and tested to ensure that they are in good working order.

3.6.6 Emergency Procedures

In hazardous situations or in the case of accidents, the sample preparation must be immediately switched off at the main switch and/or by pulling the power plug out of the power socket.

As quick reactions can save lives in dangerous situations, the following must be ensured:

- All personnel must know where the safety equipment is, where the accident and danger alarms are and where first aid and rescue equipment can be found. The personnel must also know how to use all this emergency equipment.
- The user is responsible for training personnel in these areas.
- All first aid equipment (First Aid boxes, eye-wash flasks, stretchers, etc.) as well as fire-fighting equipment (fire extinguishers) must be kept close at hand and be easily accessible at all times. All equipment must be kept in good condition and regularly checked to ensure that this is so.

4 Technical Description

4.1 System Design

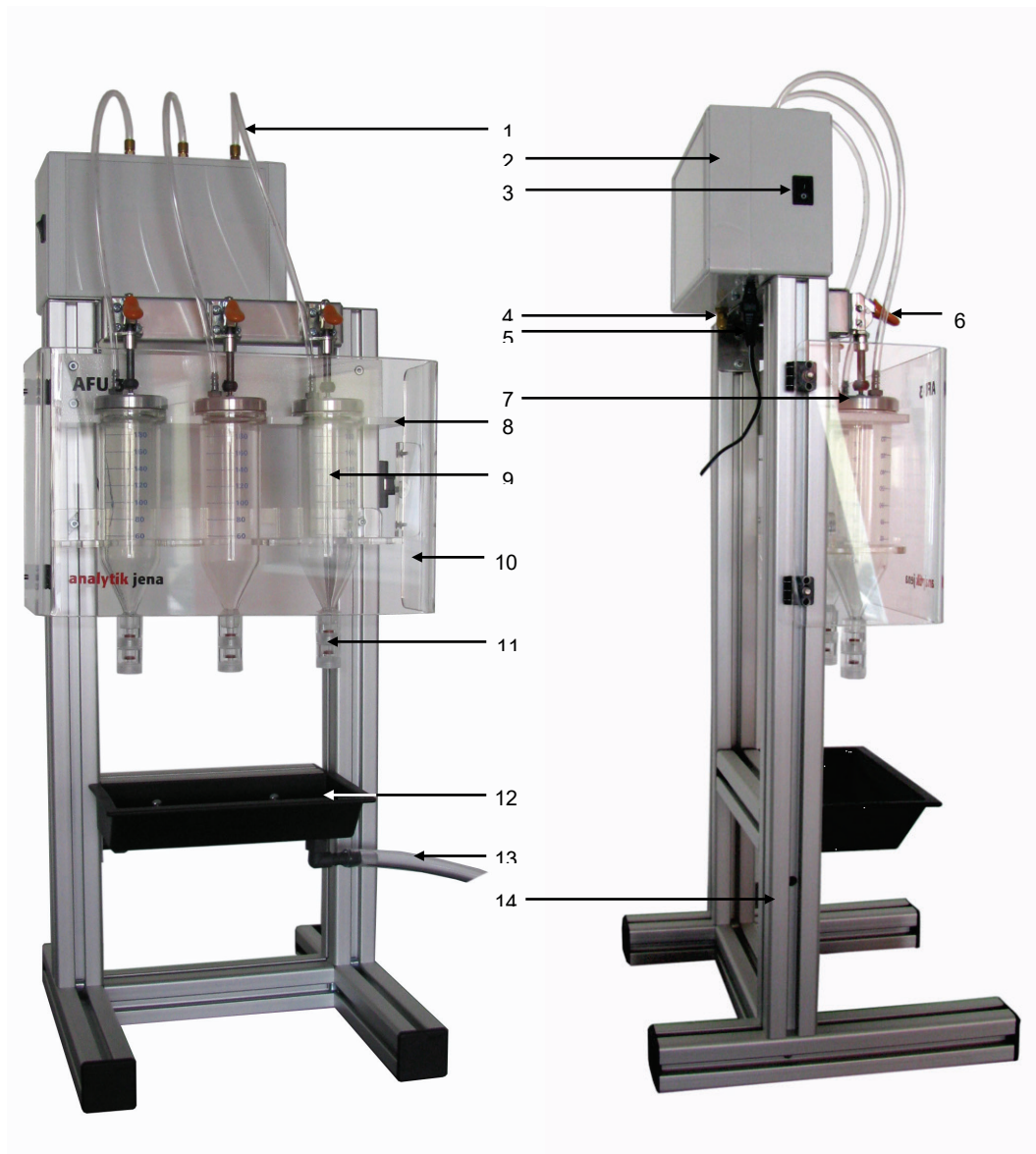


Fig. 1: Front view/Side view

- | | |
|---------------------------------------|--------------------------------------|
| 1 hoses between pump and pressure cap | 8 rack for sample vessels |
| 2 pump | 9 sample vessel |
| 3 mains switch on/off | 10 protection pane |
| 4 connection for inert gas | 11 column upper part and bottom part |
| 5 connection for power supply | 12 collecting basin |
| 6 toggle lever | 13 waste hose |
| 7 pressure cap for o-ring | 14 stand of the device |

Above to the left at the frame is a pump for the generation of the overpressure with a split to the three hose outlets. On the left hand side you can find the switch on and off button of the pump.

The connecting hoses lead to the respective pressure caps with washer, which presses gas tight onto the sample storage bins.

Under the three sample vessels is fixed a collecting basin with a drain. Put the delivered hose onto this drain (hose connection) and place it to a sink or a waste container.

An inert gas can be taken into the pump box as required. The hosefree connection at the bottom leads into the box room from which the pump takes the gas for the overpressure generation.



NOTICE

Don't put oxygen at this connection!

4.2 Procedure

Overpressure of 1 bar will be set up by the installed pressure pump.

The prepared sample solution will be pressed by means of this overpressure through the sample containers with ceramic wool. The activated carbon particles with the adsorbed halogens will be held up by the filter (ceramic mat).

Nitrate rinse solution washes inorganic halogenids out of the prepared sample containers.



NOTE

In the sample containers with frit should **not** be too much ceramic wool. Primarily the ceramic mat serves as protection for the fritted base and additionally as a filter.

5 Transportation and Storage

5.1 Transportation

5.1.1 Preparing Sample Preparation for Transportation

**NOTICE**

Unsuitable packaging material and as well as residues of test solutions and chemicals can damage individual components of the sample preparation.

Always transport the sample preparation in its original packing! Ensure that the sample preparation is completely empty and that all transportation securing devices are attached.

Prepare the analyzer for transport as follows:

1. Switch off the sample preparation at the mains switch.
2. Disconnect the power plug from the the power socket and remove the power supply.
3. Remove the sample vessels.
4. Empty the collecting basin completely and remove the waste hose from the collecting basin.
5. Pack the AFU 3 and the accessories carefully, taking extra care to ensure that the glass components are well protected.

5.1.2 Instructions relating to transport

Follow the safety instructions in section 3.6. Take great care when transporting the sample preparation to avoid damage from impacts, shocks and vibrations. Avoid sharp temperature changes during sample preparation transportation to prevent water condensate formation.

5.1.3 Moving the Sample Preparation in the laboratory



CAUTION

Accidentally dropping the sample preparation risks injury and damages the sample preparation.

Take great care when moving the sample preparation.

When moving the sample preparation in the laboratory, proceed as follows:

- Parts that are not properly protected can cause injury! Remove all loose parts before moving the sample preparation, in particular the sample vessels.
- Disconnect the power supply from the sample preparation.
- In order to prevent harm to health, the following must be observed when moving (lifting and carrying) the sample preparation in the laboratory:
 - As the sample preparation does not have any carrying handles, both people have to grasp the stand of the device firmly with both hands and lift it simultaneously.
- Follow the recommendations and do not exceed the legally stipulated limits for lifting and carrying loads without mechanical assistance.
- Follow the instructions in chapter 6.1 when setting up the sample preparation at its new location.

5.2 Storage



NOTICE

Environmental factors and water condensing may damage some components of the sample preparation!

The sample preparation may only be stored in air-conditioned premises. The atmosphere should be free of dust and corrosive vapours.

If the sample preparation is not set up immediately after delivery, or if it is not needed for a lengthy period, it must be properly repacked in its original packaging. Put a suitable desiccant inside the packing or the device to prevent damage by moisture.

The following climate conditions are required in the room in which the analyzer is stored:

- temperature range: +5 °C to +55 °C
- max. air humidity: 10 % to 30 %
- air pressure: 0.7 bar to 1.06 bar

5.3 Restarting after Transport or Storage

5.3.1 Assembling the Sample Preparation after Transport or Storage

Follow the instructions in section 6.1 when setting up the sample preparation.

Assemble the sample preparation components as follows:

1. Take the basic device, accessories and any supplementary devices carefully out of their transport packaging. Take great care not to damage the transport packaging.
2. Put the sample preparation down carefully in its intended position.
3. Remove the adhesive tape.
4. Assemble the waste hose at the collecting basin.
5. Establish the electrical connection.



CAUTION

Always switch the AFU 3 system components off before connecting them to the electricity supply.

Before connecting the power cable, make sure that the sample preparation power switch is in the position "0"!



NOTICE

Individual sample preparation components may be damaged at the restart by condensed water and temperature differences.

Acclimatize the sample preparation for at least one hour after installation in the working area before restarting.

1. Connect the power supply into the power socket located on the bottom side of the pump box of the sample preparation.
2. Insert the power supply plug into an grounded socket.

6 Initial Start-up

6.1 Installation Site Requirements

6.1.1 Installation conditions

The following climatic conditions are required in the room in which the sample preparation is operated:

- Temperature range: +10 °C to +35 °C
- max. air humidity: 90 % at 30 °C
- air pressure: 0.7 bar to 1.06 bar

The laboratory atmosphere should be contain as little halogens and dust as possible, and be free of draughts, corrosive vapours and vibrations. Smoking must be prohibited in the sample preparation working room!

The following requirements apply to the sample preparation installation site:

- Do not place the sample preparation directly by a door or window.
- Do not install the sample preparation near electromagnetic interference sources.
- Keep the sample preparation out of direct sunlight and away from radiators; air-conditioning should be provided for the room if necessary.
- Maintain a safe distance of at least 5 cm to other devices or walls.

6.1.2 Space requirements

The space requirements include all test set-up components of the sample preparation.

6.1.3 Power supply



NOTICE

The sample preparation may only be connected to a properly grounded socket with a supply corresponding to the voltage stated on the type plate!

The AFU 3 is powered by a single phase alternating current power supply.

The laboratory electrical system must be installed according to the standard DIN VDE 0100. Electric current according to the IEC 38 standard must be available at the connection point.

6.2 Unpacking and Installing the Sample Preparation



IMPORTANT

The AFU 3 may be assembled, fitted and installed only by the Service Department of the Analytik Jena or specialists authorized and trained by Analytik Jena!

Any unauthorized manipulation of the sample preparation can endanger the user and the functional safety of the device, and also reduces the scope of warranty or completely invalidates it.



IMPORTANT

Keep the packaging in a safe place. Return transportation for service should be in the original package. Only in this case damage can be prevented during transport.

The AFU 3 must be unpacked and installed exclusively by the Customer Service Department of Analytik Jena or by specialists authorized and trained by them.

When unpacking the device, please check that the delivery is undamaged and complete as stated in the enclosed packing list.

The Service Department tests the sample preparation and documents the tests after installation.

7 Operation

Following steps are necessary for the sample preparation:

1. It is to check, whether the pump is connected with the power supply system (230 VAC) via the power supply (12 V). On the bottom of the pump box you can find the socket to the power supply.
2. A little ceramic wool will be pressed **strong** into the sample containers (18 x 8) with frit.
3. Now you can put the three prepared containers into the column holding device at the conical end of the three sample storage bins. For that you must screw off the lower column part and after laying into the container screw it on again.

Pay attention to the right position and to the intact seals before laying in into the containers in the column. If the seals are faulty, some sample can get between container and column and so contaminate the columns for the next measurements. Then less findings for this sample or extra findings for following measurements are probable.



IMPORTANT

It is also possible to prepare only one or two sample containers with the **AFU 3**. So that an overpressure in the bins can set up, all 3 sample storage bins must be installed and closed! It is advisable to lay in a container in the column.

4. The samples which were prepared according to the shaking method (ISO 9562) are filled into the sample storage bins and afterwards they are put on the accommodation shelf of the **AFU 3** (behind the safety pane).

Check the seal ring at the pressure cap for damages and for right position!



IMPORTANT

During the filling of the sample into the sample storage bin it is possible, that a little bit filtered liquid drops through – best you work above the collecting basin.

5. Now you push the pressure caps with the knee lever slowly below until touching.
6. Actuate the switch for working of the pump (left side at the pump box).
7. When the filtering of the sample is finished you switch off the pump. You release carefully (Caution: over pressure) the levers on the top of the sample storage bins.
8. Afterwards you give 25 ml nitrate rinse solution into each sample storage bin and press it in the same way through the containers like the sample before (paragraph 4 to 7). This washing process rinses the activated carbon from the inorganic halogenides. The measuring solution could be falsify after the combustion in the AOX-analyzer.



IMPORTANT

The nitrate rinse solution should be dosed in several little servings, so that the activated carbon which is deposited on the side of the bin is rinsed down.

9. After finishing the washing process switch off the pump; remove sample storage bins and take prepared sample containers out of the column.

The so was prepared sample can be burned in the furnace of the AOX-analyzer now.

8 Trouble Shooting

If the suggested solutions does not lead to success, then notify the Service Department of Analytik Jena.

8.1 Device Errors and Analytical Problems

Fault	
Cause	Remedy
– pugging due to oversized particles	– clean the sample storage bin with the column header
– pump does not work	<ul style="list-style-type: none"> – check the connection of the power supply – plug of the power supply is to deep in the socket at the pump box – control the the mains switch – call service
– activated carbon particles in the liquid waste of the collecting basin	<ul style="list-style-type: none"> – press strong a little ceramic wool into the sample containers – check sample container for damage and optionally replace
– false low reading	– sample particles and activated carbon are deposited on the side of the bin, they have to be carried over with nitrate rinse solution completely into the sample container.

9 Maintenance and Care

9.1 Maintenance Schedule

This instrument is maintenance-free to a certain extent, if used properly.

Before each sample preparation please check some component parts for safety of one's own and if necessary replace it:

- Washers and wheels must be clean, free of particles and must not be porous. If necessary remove the seals, clean them replace the defective ones. During the installation pay attention to the right position.
- Check the glass bins for drafts and crack; damaged glass parts must be replaced.
- Check the support of the sample storage bins on the rest bridge and if necessary clean them from mud particles.
- Replace the protection pane of acrylic glass in case of damage.

Sample Preparation	
Maintenance actions	Maintenance interval
device cleaning and care	every week
clean collecting tray/rack	every week and always at shutdown
cleaning sample storage bins	before each use

9.2 Consumables/ Spare Parts



IMPORTANT

Some spare parts and consumables are listed in the below-mentioned table. This list is not exhaustive. Subject to change.

Always notice the actual available price list on your order for spare parts respectively consumables.

Part No.	Description
402-889.640	Sample vessel with column header
402-889.661	Column center/bottom part
402-889.642	Flat seal
402-880.114	Filling device for activated carbon
402-810.025	IDC activated carbon for AOX analysis (batch method)
402-810.004	IDC activated carbon for AOX analysis (column method)
402-889.645	Quartz container, 18 x 8, thin walled
402-880.013	Quartz container, 18 x 8, thick walled
402-825.004	Ceramic wool for AOX analysis
402-880.019	Filling-rack for quartz containers

10 Disposal

10.1 Waste Water



ENVIRONMENTAL PROTECTION

The waste that is neutralized must be disposed of properly in accordance with the legal requirements.

Waste water is produced when AFU 3 sample preparation is conducted. Depending on the measurement mode, it will contain sodium nitrate and the sample.

The waste that is neutralized if necessary must be disposed of properly in accordance with the legal requirements.

10.2 Sample Preparation

When the service life of the device is over, dispose of the device with its electronic components as electronic scrap observing the relevant regulations.