Köttermann
Systemlabor

we care
about your safety

User Handbook

English

Contents

Preface

When you opted for Systemlabor from Köttermann, you made a decision for a high quality, durable and safe laboratory.

In order to maintain the high standard of safety offered by your laboratory it is necessary to treat all the components correctly.

Therefore we would strongly recommend that you read the information contained in this user handbook thoroughly. This should enable you to use Systemlabor in the recommended way and absolutely safely.

You must ensure that everyone who works in your Systemlabor or who cleans it, has read and fully absorbed the information contained in this handbook.

Please keep a copy of this user handbook in your laboratory, where it can be easily accessed.

You can order more CDs at www.koettermann.com.

Welcome to Köttermann

Contents

1 Köttermann Systemlabor

Health and Safety

Laboratory furnishings play an important role in preventative health and safety measures in the laboratory. Safety relevant construction components of Köttermann Systemlabor – for example fume cupboards and cabinets for hazardous substances - offer innovative technical details of high quality and therefore reduce potential dangers for everyone in the laboratory.

Process support

Köttermann Systemlabor offers a functional, well designed and ergonomically thought through unit. Everything is designed to make working in the laboratory easier, more efficient and as safe as possible.

Every detail has been thought through

Due to their completely modular construction, all elements of our Köttermann Systemlabor – cabinets, tables, fume cupboards, media – are easily combinable with each other and can be exchanged or retrofitted very easily.

2 About this user handbook

2.1 Validity

This user handbook contains all necessary information with respect to operation, use and maintenance of the individual Köttermann Systemlabor in its standard version. It is possible that designs, which are specific to a certain customer or country, differ from the standard model. All related information is contained in the project documentation.

Some components, i.e. high purity gas fittings or fume cupboard controls, are supplied with separate user handbooks, which are referred to in this document.

2.2 Using this user handbook

This user handbook constitutes part of your Köttermann Systemlabor. Köttermann does not accept any liability or guarantee relating to any direct or indirect damages, which have been caused by any non-compliance with the information contained in this user handbook.

- ▶ Please read this user handbook before using the laboratory.
- ▶ Please retain this user handbook for the entire lifespan of your Köttermann Systemlabor.
- ▶ Please make sure that this user handbook is always available to all operators and maintenance staff.
- ▶ Please hand this user handbook over to any and all subsequent owners or users of your Köttermann Systemlabor.

2.3 Structure of this user handbook

This user handbook is mainly structured around the different product groups within the Köttermann Systemlabor:

- Laboratory Furniture
- Service Supply
- Safety
- Fume Cupboards

At the end of this user handbook, you will find additional information with respect to cleaning and maintenance, durability tables as well as contact details.

Each area contains a detailed index page.

2.4 Symbols used in this handbook

2.4.1 Warnings

There are warning notes within this user handbook , which are designed to warn you in order to prevent possible injury or damage. Please follow any advice, which is marked with the safety sign.

Warnings are structured in the following way:

 **WARNING WORD**
Type and source of danger Possible consequences ▶ Measures to avoid the dangerous element

Danger levels within warning notices

Warning word	Danger level
 **DANGER**	Imminent Danger. Ignoring this notice might result in death or serious injury.
 **WARNING**	Potential Danger. Ignoring this notice might result in serious injury.
 **CAUTION**	Dangerous Situation. Ignoring this notice might result in minor injury.
CAUTION	Dangerous Situation. Ignoring this notice might result in damage.

2.4.2 Notes

 **INFORMATION**
We have marked any reference to further information or tips and hints as above, to ease the navigation through this user handbook.

 **NOTICE**
We have marked any reference to laws and standards with this symbol.

2.4.3 Requirement to act

All demands to act in a certain sequence are numbered.

A single action is marked like this:

▶ Action required.

3 Safety in the laboratory

3.1 Guidelines, regulations and legislation

You must comply with all regional and national regulations and safety guidelines. Please read the appropriate guidelines, regulations and laws, which have to be observed when working in laboratories. In Germany, the following are of particular importance:

- Guidelines for laboratories issued by occupational associations. (BGR 120)
- Technical regulations for hazardous substances (TRGS 526)
- Regulations for accident prevention
  - General regulations (BGV A1)
  - Health regulation (BGV C8)
  - Handling of carcinogenic substances (VBG 113)
- Law for hazardous substances
- Work place legislation
- Safety at work legislation
- Bio-material guidelines
- Radiation protection legislation
- Regulations for genetic technology
- Legislation for flammable fluids (VbF), especially technical regulations with respect to flammable fluids (TRbF 20 appendix L)
- Waste legislation
- Leaflet "irritants, corrosive substances" ZH 1/229

3.2 Intended use

- The Köttermann Systemlabor must be used and operated only in accordance with this user handbook. Any variation, for example falling below or exceeding any threshold values or the disabling of safety devices is a violation of the intended use.
- It is, however, possible that your region has different legislation with respect to the use of your Köttermann Systemlabor, which differs from the use as described in this handbook.

3.3 Obligations of the owner

- Ensure that all employees are suitably qualified and trained.
- Ensure that this user handbook is always available and that the employees adhere to the guidelines contained in this handbook.
- Provide the stipulated safety equipment for the employees.
- Ensure that the employees are fully aware of measures to be undertaken in case of emergencies.
- Ensure that all warning notices on laboratory equipment are always easy to read, visible and that they are clean.
- Ensure that all equipment used in the laboratory is tested and in a safe condition.
- Ensure that all safety equipment in the laboratory is in usable and in perfect condition.
- Ensure that Systemlabor‘s components are not altered in any way. Any alteration will render any guarantees and certifications null and void.
- Annual safety checks and maintenance on components relating to safety features, for example fume cupboards and safety cabinets, must be carried out by Köttermann or an authorised Köttermann partner. Otherwise all guarantees are rendered null and void.
- Repairs to your Köttermann Systemlabor can only be carried out by specialised firms, which have Köttermann‘s expressed authorisation to do so.
- Ensure that only original parts from the manufacturer are used for repairs or replacements.

3.4 Obligations of staff

- Only qualified and trained employees may work in a Köttermann Systemlabor.
- All persons working in a Köttermann Systemlabor must have read and absorbed this user handbook and the operational handbook issued by the owner, before they may use the laboratory.
- Staff must wear the prescribed protection equipment, i.e. protective glasses, gloves etc.
- Always comply with the safety instructions contained in this user handbook.
- Staff must be trained to respond appropriately in an emergency.

4 Installation

- Köttermann Systemlabor can only be installed by specialised companies, which have been expressly authorised by Köttermann to do so.
- Installation by non-authorised staff will automatically render all guarantees as null and void.

5 Safety tests and maintenance

- Some parts of the laboratory are subject to mandatory maintenance schedules, these are, for example, fume cupboards and cabinets for the storage of hazardous substances. Regular maintenance is a crucial part of a legally required health and safety regime at work. Only regular maintenance can ensure that the equipment retains its protective functions.
- The annual safety test must be conducted by Köttermann or by an authorised Köttermann partner. Any violation of this rule renders all guarantees null and void.

Laboratory Furniture

Contents

1 General Safety Instructions

- Please comply with the applicable regulations relating to the storage of hazardous substances.
- Only store flammable or corrosive substances in specially designed cabinets, never in "normal" furniture.
- Always consider the load capacities of tables, drawers and shelving - see chapter 3 of this section.
- Ensure that all worktops and other surfaces have the necessary chemical resistance for the materials used and tests carried out; see chapter "Cleaning and maintenance" in section "Additional Information".
- You must secure furniture on castors by applying the brakes. Only release the brakes to transport the furniture.

2 Safe operation

§ NOTICE

Please obtain information relating to the legal requirements in your country. Permitted use of products may vary from the stipulations in this user handbook.

2.1 Movable container, tables with castors

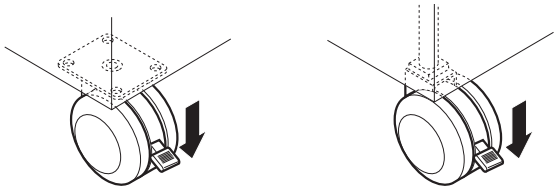
Both front castors of movable containers and tables on castors are fitted with brakes.

⚠ WARNING

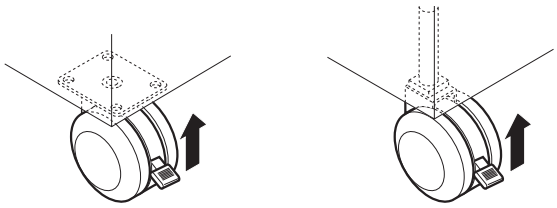
Danger of toppling

- ▶ Release the brakes of movable containers and/or tables with castors only when you wish to move the items, at all other times, the brakes need to be applied.
- ▶ Only pull out one drawer or pull-out at any given time.
- ▶ Do not use drawers as steps.
- ▶ Do not transport heavy items using movable containers.
- ▶ Pay attention to the load capacity of drawers (see table in chapter 3). Transport heavy loads only using a heavy load table.

Apply brakes



Release brakes



2.2 Drawers and pull outs

WARNING

Danger of toppling

- Please pull out only one drawer or pull-out at a time.
- Please consider the load capacity of drawers and pull-outs, see table in chapter 3.

INFORMATION

Drawers with an extended load capacity of 70 kg are specially marked.

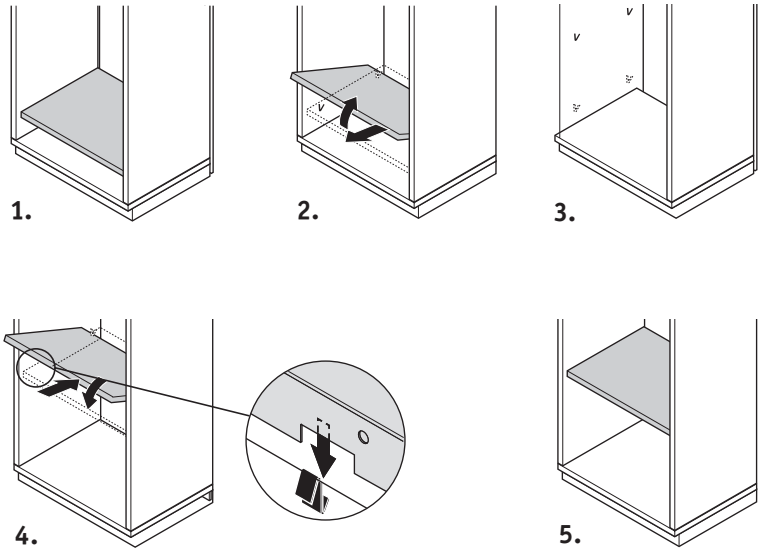
2.3 Shelving

Shelves are held by 4 Z-shaped bottom supports, which are hung into the pre-drilled slots in the cabinets side panels. Grooves in the shelves prevent accidental pulling of the shelf.

INFORMATION

If you wish to re-position shelves, please make sure that there are no containers on the shelf or that any container could be pushed over or damaged.

Re-position shelving



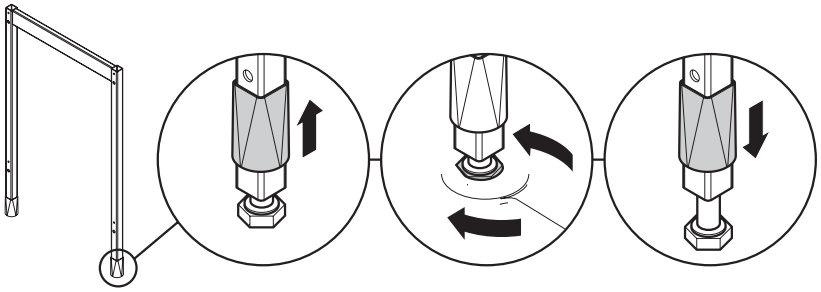
2.4 Height adjustment

2.4.1 Tables and frames

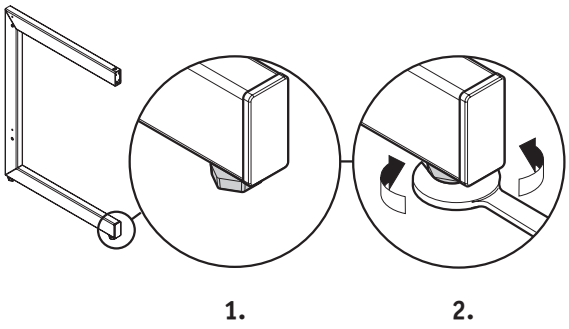
Fixed single tables as well as A- and C-frames have feet, which can be height adjusted. For fixed tables, the hand adjustment wheel is covered by a cap.

Use a suitable spanner, to screw the adjustment wheel until you have reached the desired height.

Height adjustment for A- Frames

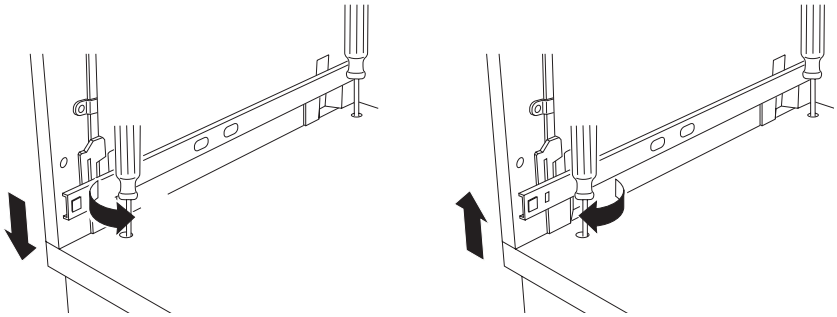


Height adjustment for C-Frames



2.4.2 Cabinets

Underbench and tall cabinets have openings in the plinth, through which you can make adjustments using an Allen key.



2.5 Working on balance benches

Balance benches allow low vibration weighing operations.

- Ensure prior to any weighing, that the weighing surface does not make contact with the frame.

  Any contact with the frame could lead to a situation where vibrations from the room could be transmitted to the weighing surface and distort the result.

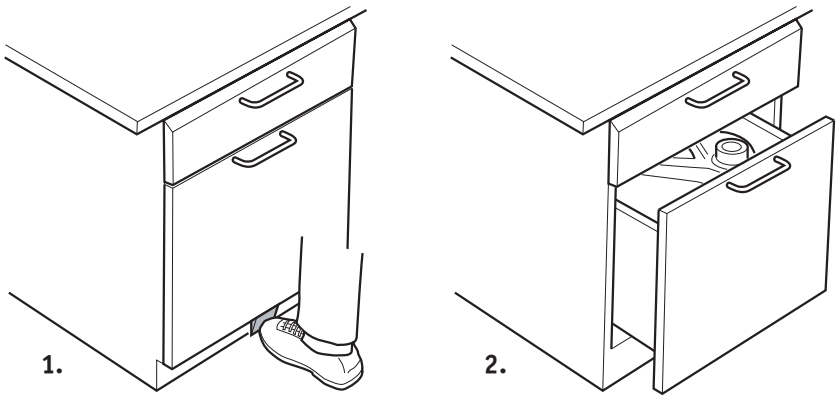
2.6 Waste collector

§ NOTICE

According to DIN 1946, part 7 "special extractions", it is necessary to conduct permanent and uninterrupted air extraction of waste collectors, which contain safety containers.

2.6.1 Opening with foot switch

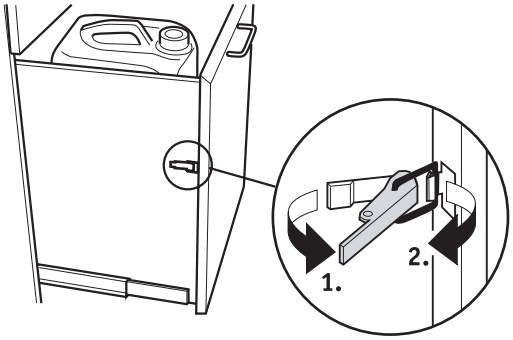
Some waste collectors have a drawer, which can be opened by hand or using a foot switch.

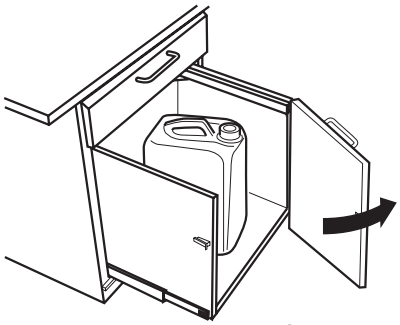


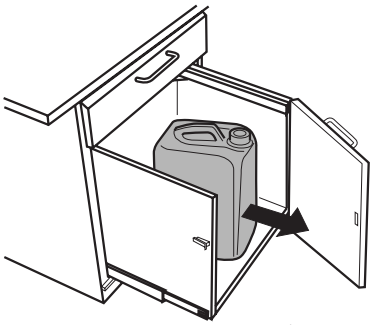
2.6.2 Removal of safety containers

Waste collectors, which are equipped to take safety containers, the front of the drawer can be opened as well.

This means that safety containers do not need to be lifted over the side panel of the waste collector unit.







2.6.3 Extractor connection

Extractor connections for waste collectors must comply with the following:

- 20 m^3/h exhaust air volume flow
- 5 Pa pressure drop

2.7 Cleaning and maintenance

Cleaning and maintenance of your Köttermann Systemlabor are described in the section "Additional Information", beginning on page 86.

3 Extract from technical data sheets

3.1 Load capacities

Cabinet load capacities

Component	Load capacity	
Floor	30 kg	
Shelf	30 kg	
Lid	30 kg	
Payload for each cabinet	80 kg 120 kg 180 kg	Wall and top mounted cabinets Underbench cabinet Tall cabinet

Drawer load capacities

Component	Load capacity	
Movable container	25 kg	
Equipment pull out	30 kg	
Full pull out	40 kg	
Heavy load drawer	70 kg	(marked within the cabinet)
Waste collector	70 kg	
Divider, tall cabinet	100 kg	

Table and frame load capacities

Component	Load capacity
Shelf	100 kg
Single table	Table top 250 kg
Heavy load table	400 kg
A- base frame	400 kg
C-base frame	350 kg, on castors 400 kg, fixed
Cantilever frame	300 kg

Drawer load capacity

Type	Max. load
Standard-drawer	max. 40 kg
Heavy load drawer	max. 70 kg
Waste collector	max. 70 kg
Roll container	max. 25 kg

Table design load capacity

Table design with worktop (wall and island tables)

- with underbench cabinet and plinth
- with C- base frames
- with A base Frames

have a minimum load capacity of 200 kg/m².

It is possible that the maximum load capacity can be higher, depending on frame type and table top material.

3.2 Possible height adjustments

Component	Height adjustment
Underbench cabinet	–5/+15 mm plinth –5/+20 mm continuous –5/+20 mm suspended in base frame
Tall cabinets	–5/+15 mm
Top mounted cabinets	Adjustment via tall cabinet
Wall mounted cabinets	Adjustment via cabinet supports
Single table, fixed	–5/+20 mm
Single table, mobile	none
Heavy load table	none
Balance bench	–5/+20 mm
A-base frame	–5/+20 mm
C-base frame	–5/+20 mm
Cantilever frame	none

4 Regular checks

INFORMATION

We would like to recommend regular maintenance of your Köttermann Systemlabor. With a maintenance contract, you can be sure that you comply will all mandatory safety regulations and maintenance intervals.
Please contact Köttermann's Headquarter or one of our distributors.

- ▶ You should check your laboratory furniture at least once a year.
- ▶ Inform customer service of any faults.

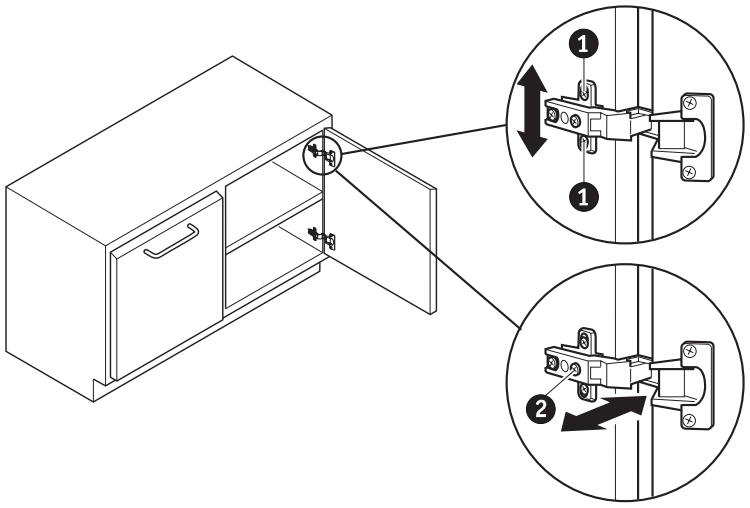
5 Troubleshooting

INFORMATION

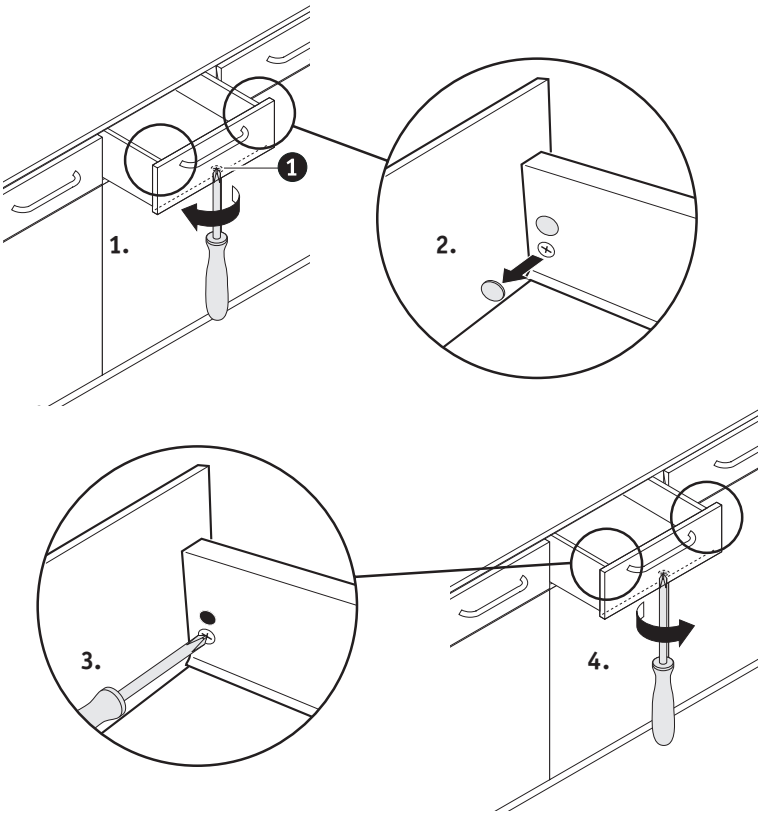
You can correct the following yourself.

Misaligned doors

Using a screwdriver, you can adjust badly hung doors by using the adjustment screws in the hinges.



Misaligned drawer fronts



INFORMATION

300 mm high drawers do not have the screw to be loosened ❶ on the underside, but on the inside of the drawer front.

INFORMATION

The following faults must be corrected by an expert, authorised by Köttermann to carry out such work.

- Damage to paintwork.
- Castors which are defective or cannot be locked.
- Table tops which are are not fixed properly and move.
- Hanging underbench cabinets wich are are not fixed properly and move.
- Shelving which is not fixed properly and moves.
- Defective locks.
- Several drawers of a lockable cabinet, positioned underneath each other can be opened at the same time.
- Drawers and/or pull outs are defective or do not move freely.
- Door and/or drawer fronts are misaligned and cannot be adjusted.
- Pull outs of waste collectors do not close or open on their own.
- Extraction of air in extraction waste collectors does not work.

Media Supply

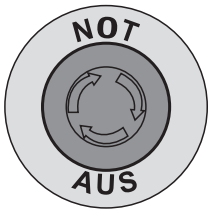
Contents

1 General safety information

- You must comply with all regional and national regulations and laws relating to the handling of the media you use.
- Please comply with the labelling guidelines for fittings according to DIN EN 13792.
- Fittings must be connected with the correct connectors.
- Pipes and hoses, which are located at the media outlets must be secured, so that they do not slip.

Emergency stop

Emergency stops are configured according to the individual requirements of your laboratory and the country you are operating in.



Please contact your laboratory manager for further information or obtain information from your laboratory operating manual, with respect to the following:

- which media and power circuits are shut down with the emergency stop switch,
- which further measures you must take in an emergency,
- what you should do, when the system comes back online, following an emergency stop.

2 Safe operation

NOTICE

Please obtain information relating to special legislation in your country. Permitted uses of some products might vary from uses stated here.

2.1 Fittings

DANGER

Danger of explosion, poison

- ▶ Please keep all taps turned off when they are not in use.
- ▶ When using special fittings, please comply with the separate operating manual issued by the manufacturer.

2.1.1 Labelling

Tap handles and outlets are labelled in accordance with DIN EN 13792.

The labelling on fittings uses three colour-coded rings.

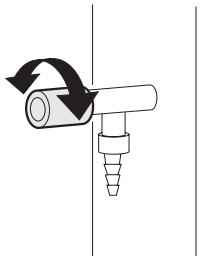
Ring	Content	Example
Exterior	If applicable media name in country specific language	Operating water, warm; nitrogen, ...
Middle	International short code	WNH, N_2, ...
Internal	Logo Köttermann Systemlabor	

Colour coding of the outer ring

Colour	Medium
Green	Water
Yellow	Flammable and gaseous hydrocarbons
Red	Other flammable gases and gas mixtures
Blue	Non-flammable gases, incl. oxidising gases
Black	Poisonous gases
Grey	Vacuum
White	Others

2.1.2 Operation

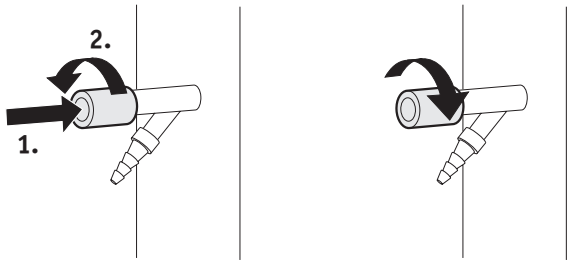
Open/close taps (water / technical gases / low vacuum / poly propylene fittings)



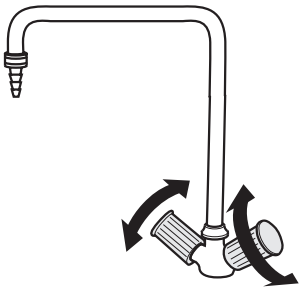
INFORMATION

- Please pay attention to the labelling on fittings.
- Connect all fittings with suitable connectors.
- Secure pipes/hoses on media outlets against movement.
- Water taps with safeguarding A1 pipe interrupter according to DIN 1988 at the outlet must be operated without back pressure.
- Fine regulation of technical gases is possible only to a limited degree.
- With poly propylene fittings, the tap is opened/closed completely when the stop point is reached.
  When turning further, there will be a slight clicking noise.

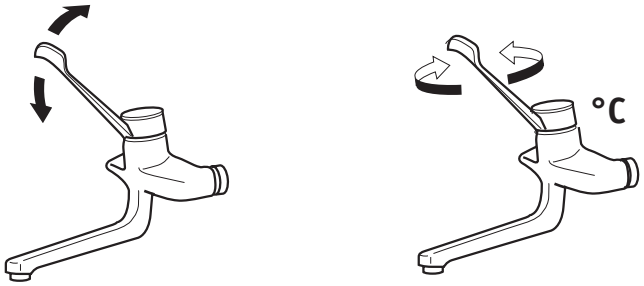
Open/close combustion gas tap



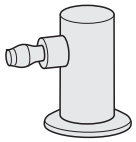
Open/close mixer water tap with individual fittings



Open/close mixer water taps with levers and temperature adjustment



Cooling water return



INFORMATION

The return valve is integrated into the tap fitting.

Optoelectronics and sensor controlled fittings

- See separate instructions

Fittings for high purity gases

- See separate instructions
- For gases up to purity class 6.0

2.2 Plug sockets

2.2.1 Mains plug sockets

DANGER

Electric shock may cause death.

- ▶ Do not exceed the maximum power load.
- ▶ Do not use extension leads with additional plug sockets.
- ▶ Only qualified electricians may replace faulty leads.

2.2.2 Plug sockets for special supply

Plug sockets for special supply, i.e. data-networks can be labelled with coloured socket frames.

INFORMATION

If you require any assistance, please contact Köttermann's Headquarter or one of our distributors.

2.3 Electric supplies

DANGER

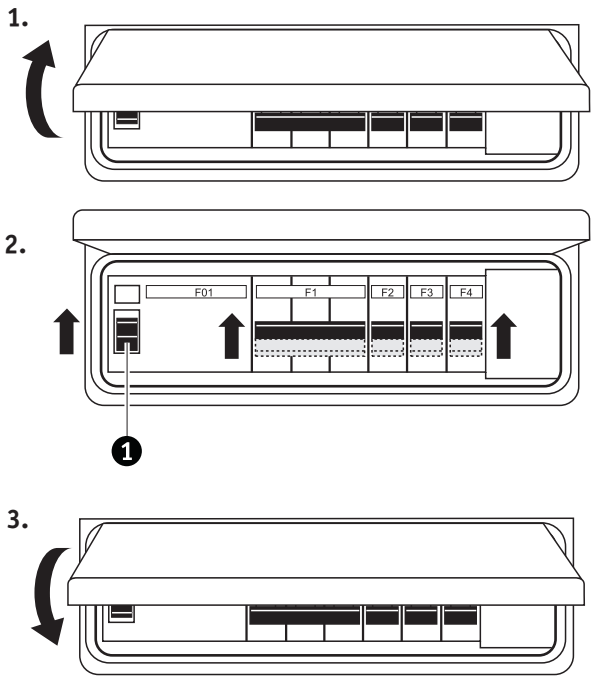
Electric shock may cause death

- All works on electric supplies must be carried out by suitably qualified electricians.

2.3.1 Internal electric supplies

The supply unit is incorporated into the media supply system, in other words, it is part of the service cell, service wall or boom or part of a fume cupboard. Protection is also internal.

Start using the fuse unit



Protection in emergencies

In emergencies, the power protection switch ❶ disables automatically all connected electrical leads. Following this, it is necessary to have all electrical connections checked by a suitably qualified electrician.

If the media supply system has an integrated emergency stop switch, this switch can be used to switch off all connected leads, equipment, lamps, etc.

2.3.2 External electric feed

For external electrical feeds, the protection is supplied on site by means of feed boxes. These cannot be controlled.

2.4 Cleaning and maintenance

Cleaning and maintenance of your Köttermann Systemlabor is described in section "Additional Information", beginning at page 86.

3 Extract from technical data sheets

Load capacity

Component	Load capacity
Shelving	15 kg per shelf
Support rod system	5 kg static total load for each support (distance at 100 mm from support) for higher loads, it is necessary to offer extra table top support.

Plug socket loads

Component	Max. load *
Plug socket 230 V	16 A
Plug socket 230 V CEE	16 A
Plug socket 400 V CEE	16 A or 32 A

* Maximum loads can be adjusted depending on country specific circumstances and may vary from these values.

4 Regular checks

INFORMATION

We would like to recommend regular maintenance of your Köttermann Systemlabor. With a maintenance contract, you can be sure that you comply will all mandatory safety regulations and maintenance intervals.
Please contact Köttermann's Headquarter or one of our distributors.

- ▶ Media supplies should be checked regularly (at least once a year).
- ▶ If you should find any faults, please inform customer service.

5 Troubleshooting

INFORMATION

You can deal with the following faults yourself.

Faulty lights

- ▶ Lights used (bulbs etc.) are commonly available and can easily be replaced.

INFORMATION

The following faults can only be remedied by a specialised company, authorised by Köttermann to carry out such works.

- Sticking taps.
- Leaking taps or supply pipes.
- Pressure control or gauges of controlled or high purity gas fittings do not work.
- High purity gases are not as pure as required.
- Shelving is defective.
- Electrical components do not work.

Safety Storage

Contents

1 General safety information

1.1 Warning signs

Cabinets used for the storage of hazardous substances might show the following warning signs.

▶ Please ensure that all warning signs located on cabinets are always easy to read, are visible and clean.

Cabinet for hazardous substances containing flammable fluids

EN 14470-1, Type F90

Fire resistant for 90 Minutes

▶ Close doors

▶ Keep away from sources of ignition

- Highly combustible

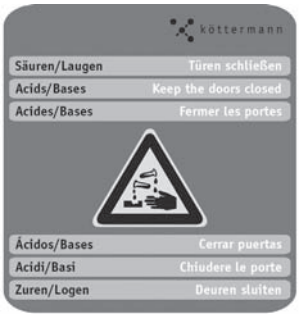
Cabinet for hazardous substances containing gas cylinders

EN 14470-2, Type G30

Fire resistant for 30 Minutes

▶ Close doors

- Gas cylinders
- Highly combustible



Acid and base cabinets

▶ Close doors

- Corrosive

Poison compartment

- Poisonous or very poisonous

First Aid cabinet

Fire extinguisher

1.2 Use of cabinets for the storage of hazardous substances

Cabinets for the storage of hazardous substances can only protect if the hazardous substances are stored properly and none of the safety features of the cabinet are impeded.

§ Comply with all national legislation and regulations as well as all guidelines within this user handbook.

§ According to TRbF 20 Appendix L, combustible substances in the work place must be stored in protective cabinets pursuant to EN 14470-1.

§ Pursuant to the legislation governing dangerous substances, poisonous and very poisonous chemicals must be safely stored, so that unauthorised persons have no access to them.

- Only store materials for which the cabinet has been certified.
- Please comply with special restrictions when storing different dangerous materials together.
- Please comply with the permitted storage capacities.
- Do not place anything in front of open cabinets. This would prevent the automatic closure of the doors, should there be a fire.
- Please check that all insert trays/ shelves are positioned correctly.
- Remove spilled chemicals immediately.
- Store hazardous substances only up to a height where they can be removed safely.

- Storage of chemicals is only permitted in suitable containers and with the required labelling in place.
- Containers holding aggressive chemicals must be stored in special acid/base cabinets with permanent ventilation.
- When storing fluids, please ensure that the volume stored in fragile vessels does not exceed the capacity of the shelving and/or the collection tray.
- Prior to the first use, it is necessary to carry out safety checks on all cabinets intended for the storage of hazardous substances.
- Use cabinets for the storage of hazardous substances only if they are in perfect condition.
- Use cabinets for the storage of hazardous substances only following the appropriate training. Non-authorised persons are not permitted to have access to the cabinet.
- Keep all doors/ drawers closed.
- Storage of corrosive fluids or gases within safety cabinets intended for the storage of flammable fluids, in gas cylinder cabinets or in chemical cabinets can influence the functions of the locking mechanism for air intake and extraction.
- Safety cabinets are not suitable for the storage of self-combustible or self-degrading substances.
- Substances with combustion at below 100 °C cannot be stored within a working environment in safety cabinets. The exception is storage in ventilated cabinets with special layers, which prevent combustion.
- The floor tray must have a minimum volume of 10 % of all vessels stored in the cabinet or at least 110 % of the largest individual vessel stored in the cabinet, whichever is the largest.
- The floor catchment tray must not be used as storage space without the perforated inset.
- Supply of poisonous, very poisonous and flammable gases is only permitted with functioning ventilation of the gas cylinder cabinet.

1.3 Special danger notices

1.3.1 Safety cabinets for flammable fluids without forced ventilation

If safety cabinets are not equipped with forced ventilation, it is necessary to define an explosion danger zone around the cabinet.

- Please comply with the legislation governing labelling for explosive danger zones (in Germany TRbF 20 Appendix L).

Köttermann recommends continual extraction from safety cabinets

1.3.2 Pipes in gas cylinder cabinets and safety cabinets for flammable liquids.

Pipes for gas supplies running through the cabinets reduce the fire resistance of the cabinets.

- Pipes and hoses can only be run within specified areas and using special pipe ducting towards the outside.
- All redundant holes must be sealed correctly.

1.3.3 Obligation to test

All safety cabinets according to EN 14470-1 and fire resistant pressure gas cylinder cabinets according to EN 14470-2 must be tested annually by specialised engineers, who are authorised by the manufacturer to carry out such tests.

If such tests are not conducted by expert staff, authorised by the manufacturer, all guarantees become null and void.

1.4 Opening of safety and gas cylinder cabinets following a fire

All safety cabinets according to EN 14470-1 and fire resistant pressure gas cylinder cabinets according to EN 14470-2 ensure that during a fire the temperature within the cabinet will only rise very slowly. However, the high heat capacity of the isolation material can lead to a situation, where the temerature will continue to rise even after the event: the temperature continues to rise, although the fire on the outside of the cabinet has been extinguished. This could lead to the forming of a flammable vapour/air mixture.

DANGER

Danger of explosion

- Before opening any safety or gas cylinder cabinet following a fire, wait for a period of at least 6-times of the time the fire was active.
- Before opening any safety or gas cylinder cabinet, please ensure that there are no combustion sources within a radius of at least 10 m around the cabinet.
- If you open any safety and gas cylinder cabinet, use only spark free tools.

2 Safe operation

NOTICE

Please obtain information with respect to any country specific legislation. It is possible that permitted uses in your country differ from those stated here.

DANGER

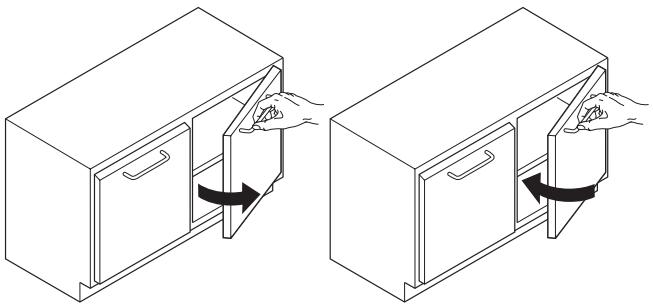
Danger of explosion

- Do not place items within the opening area of the cabinet, as this would prevent the automatic closure of the doors in case of fire.

2.1 Doors and drawers

2.1.1 Opening and closing doors

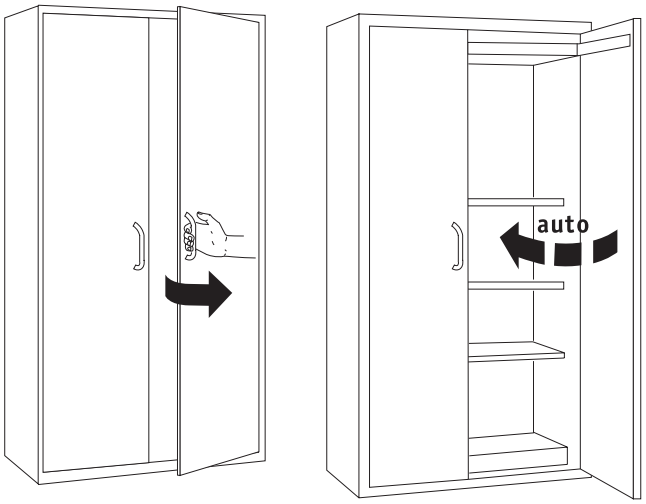
Chemical cabinets / First Aid cabinets / acid and base cabinets / safety underbench cabinets with hinged doors / gas cylinder cabinets



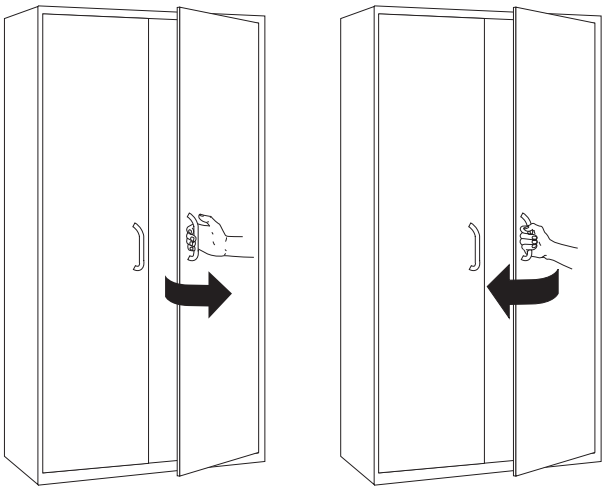
INFORMATION

Safety underbench cabinets with hinged doors will close automatically in case of fire.

Tall safety cabinets with hinged doors



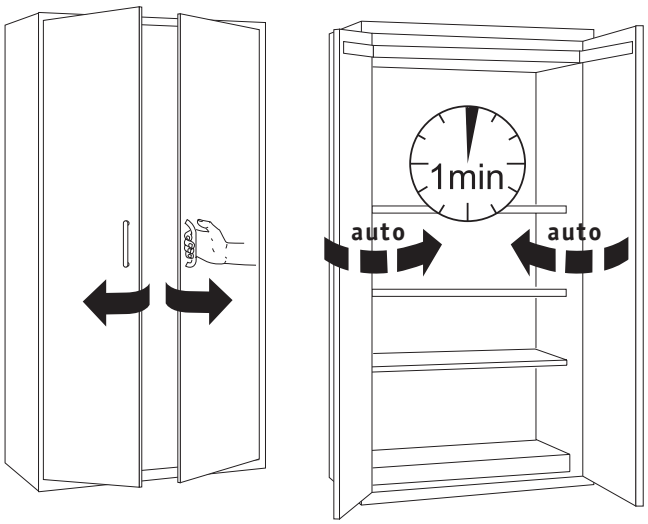
Tall safety cabinets with hinged doors and door stop



INFORMATION

Tall safety cabinets with hinged doors close automatically in case of fire.

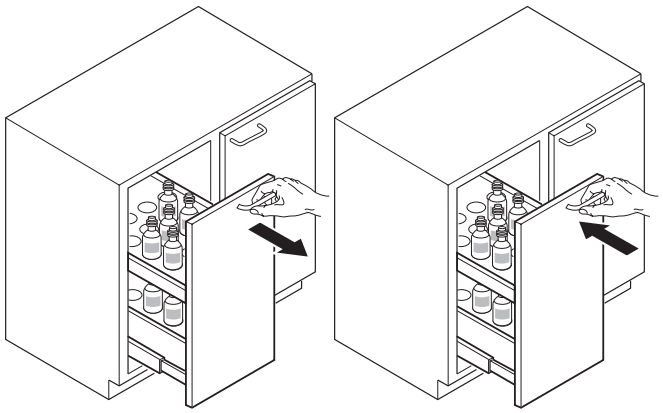
Tall safety cabinets of the Type ErgoPlus with hinged doors or folding doors



INFORMATION

Tall safety cabinets ErgoPlus with hinged doors close automatically in case of fire.

Underbench safety cabinet with drawer



INFORMATION

Drawers with permanent self-closure will normally retract into the cabinet.
Drawers without permanent self-closure will retract automatically in case of fire.

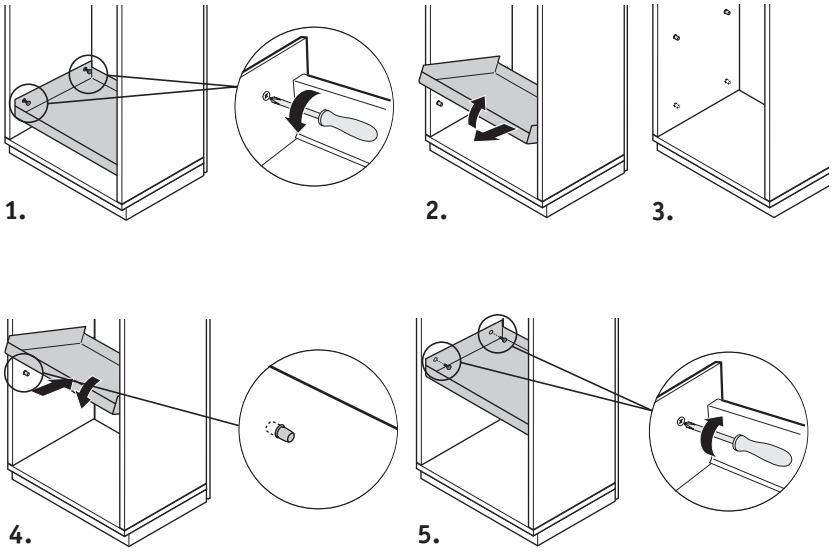
2.2 Adjustment of shelving

The following cabinets are equipped with adjustable shelving:

- Safety cabinets for flammable fluids
- Chemical cabinets
- First Aid cabinets

Safety cabinets for flammable fluids

For improved stability, shelving within safety cabinets is placed on shelf supports and fastened with screws to the carcass wall.

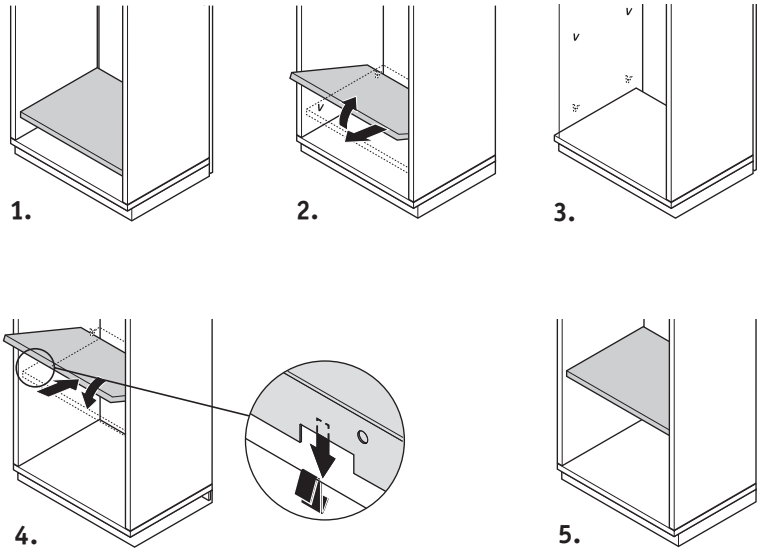


Chemical cabinets and First Aid cabinets

Shelves are held by 4 Z-shaped bottom supports, which are hung into the pre-drilled slots in the cabinet's side panels. Notches in the shelves prevent accidental pulling out of the shelf.

WARNING

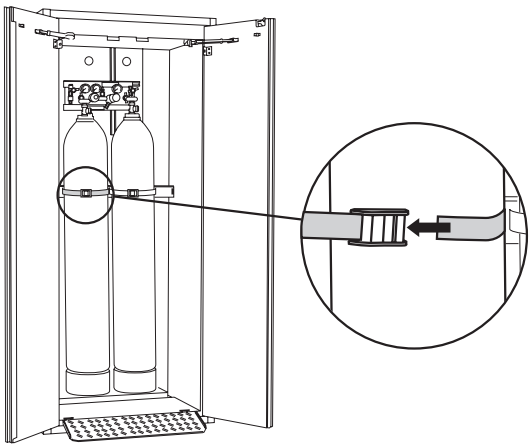
- ▶ When adjusting shelves please ensure that there are no vessels on the shelf, in order to avoid items falling and damaging containers.
- ▶ Protect shelves in safety and gas cylinder cabinets against high loads with screws in the internal cabinet side panels.
- ▶ After any adjustment, please ensure that the shelves of chemical cabinets are placed correctly.



2.3 Operation of gas cylinder cabinets

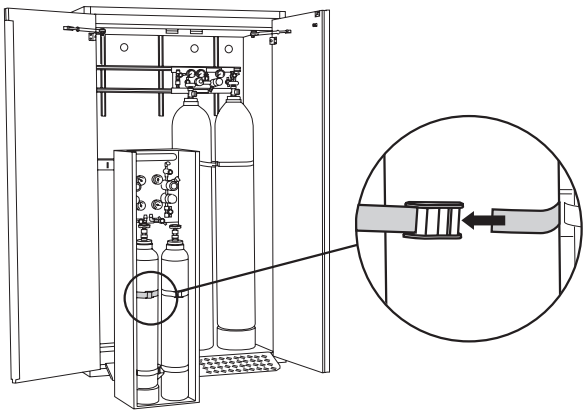
Secure gas cylinders

Gas cylinders must be secured so that they cannot topple.



Media station for gases

Gas cylinders in media stations must also be secured so that they cannot topple.



Installation of fittings/taps

Only specialised firms may carry out installations of fittings within the cabinet, especially installation of pipes through insulation.

2.4 Cleaning and maintenance

Cleaning and maintenance of the surfaces of your Köttermann Systemlabor are described in the section "Additional Information" beginning on page 86.

3 Extract from technical data sheets

3.1 Tall cabinets with hinged or folding doors

		1200 mm wide	600 mm wide
Type numbers with folding doors		2-335-SSJREA	2-335-SSDREA
Type numbers with hinged doors		2-335-SSJREF	2-335-SSDRFF
Cabinet weight	with folding doors	420 kg	260 kg
	with hinged doors	310 kg	260 kg
Permitted total weight		600 kg	
Load capacity of shelves		75 kg	
Safety catchment tray			
Load capacity		max. 30 kg	max. 30 kg
Volume		33 l	22 l
Max. storage volume		330 l	220 l
Largest single volume		30 l	20 l
Drawers			
Load capacity		60 kg	25 kg
Catchment volume		19 l	11 l
Max. storage volume		190 l	110 l
Largest single volume		55/17 l	20/10 l

3.2 Underbench cabinets with drawers and/or doors

	1400 mm wide	1100 mm wide	
2 drawers (left and right)	3-520-SSLDDLN	3-520-SSIDDLN	–
1 drawer (right), 2 hinged doors	3-520-SSLDDNN	–	–
1 drawer (centre)	–	3-520-SSIDDBN	–
1 drawer(right), 1 hinged door	–	–	3-520-SSIDDNN
2 hinged doors (left and right)	–	–	3-520-SSIDDFN
Cabinet weight	200 kg	165 kg	
Permitted overall weight [kg]	420 kg	300 kg	

	1400 mm wide	1100 mm wide	
Drawer left hand side			
Load capacity	50 kg	25 kg	–
Catchment volume	25 l	14 l	–
Max. storage volume	250 l	150 l	–
Largest single volume	22 l	12 l	–
Drawer right hand side			
Load capacity	25 kg	25 kg	25 kg
Catchment volume	14 l	14 l	13 l
Max. storage volume	140 l	140 l	130 l
Largest single volume	12 l	12 l	11 l
Drawer - centre			
Load capacity	–	50 kg	–
Catchment volume	–	32 l	–
Max. storage volume	–	320 l	–
Largest single volume	–	29 l	–
Hinged doors, left : safety catchment tray			
Load capacity	30 kg	30 kg	–
Catchment volume	25 l	14 l	–
Max. storage volume	250 l	140 l	–
Largest single volume	22 l	12 l	–
Hinged doors, right; safety catchment tray			
Load capacity	–	–	30 l
Catchment volume	–	–	28 l
Max. storage volume	–	–	280 l
Largest single volume	–	–	25 l

3.3 Underbench cabinets with drawer

	890 mm wide	592 mm wide
Type number	3-520-SSGDDBN	3-520-SSDDDBN
Weight	140 kg	90 kg
Permitted overall weight	300 kg	
Drawers		
Load capacity	50 kg	25 kg
Catchment volume	25 l	14 l
Max. storage volume	250 l	140 l
Largest single volume	22 l	12 l

3.4 Gas cylinder cabinets

Tall cabinets with hinged doors	1400 mm wide	1200 mm wide	900 mm wide	600 mm wide
Type number	2-335-GELSDFN	2-335-GEJSDFN	2-335-GEGSDFN	2-335-GEDSDFN
Weight	480 kg	440 kg	310 kg	260 kg
Permitted overall weight	600 kg			
Load capacity of shelves	75 kg			

3.5 Tall cabinets for acid and base storage

Tall acid and base cabinet		600 mm wide
Type number		2-335 ACRFJ (with fan) 2-335 ACRFN (without fan)
Cabinet weight		116 kg
Permitted overall weight		300 kg
Pull out tray	Load	30 kg
	Volume	12,5 l

3.6 Underbench for acid and base storage

		1400 mm	1200 mm	1100 mm	900 mm	600 mm
Type number with fan		–	3-520 AGJFJ	–	3-520 AEJFJ	–
Type number without fan		3-520 AOJFN	3-520 AGJFN	3-520 APJFN	3-520 AEJFN	3-520 ACJFN
Cabinet weight		94 kg	88 kg	85 kg	66 kg	44 kg
Permitted overall weight		200 kg				
Pull out tray	Load capacity	30 kg				
	Volume	15 l	12,5 l	11,5 l	9 l	12,5 l

3.7 Tall chemical cabinets

Tall chemical cabinets		1200 mm wide	900 mm wide	600 mm wide
Type number with fan		2-335 CGRFJ	2-335 CERFJ	2-335 CCRFJ
Type number without fan		2-335 CGRFN	–	–
Cabinet weight		130 kg	110 kg	80 kg
Permitted overall weight		300 kg		
Insert tray	load capacity	30 kg		
	volume	16 l	12 l	8 l
Floor tray	volume	48 l	36 l	24 l

3.8 Underbench chemical cabinets

Underbench chemical cabinets		1200 mm wide	900 mm wide
Type number with fan		3-520 GCJFN	3-520 CEJFN
Cabinet weight		38 kg	31 kg
Permitted overall weight		300 kg	
Insert tray	load capacity	30 kg	
	volume	16 l	12 l

4 Maintenance and regular checks

Safety cabinets for the storage of flammable fluids and cabinets for gas cylinders can only provide the protection they are designed for if they are maintained regularly.

- ▶ In case of any damage, please contact an authorised specialist firm immediately.

4.1 Daily checks

Catchment trays

- ▶ Please remove any leaked material immediately and dispose of.

4.2 Monthly checks

Door closure functions perfectly

The following applies only to safety cabinets for the storage of flammable liquids with permanently self-closing doors.

Hinged doors, hinged doors with door stop, folding doors

- ▶ Release door from a minimal opening point.

  Doors must close automatically and lock (duration: max 20 seconds).

Correct position of fire protection and air seals

Only for safety cabinets for the storage of flammable fluids and gas cylinders.

- ▶ Check lip, pipe and fire protection seals for correct and secure positioning.

4.3 Annual maintenance

Köttermann's Systemlabor safety cabinets are safety relevant products. This means that they must be checked at regular intervals. You will find the next scheduled check on the check label on the outside of the door.

If the checks are not carried out or not carried out by authorised staff, this will render all guarantees null and void.

NOTICE

In accordance with ArbStättV § 4 Abs. 3, all safety relevant products in Germany must be checked annually.

INFORMATION

We would like to recommend regular maintenance of your Köttermann Systemlabor. With a maintenance contract, you can be sure that you comply will all mandatory safety regulations and maintenance intervals.
Please contact Köttermann's Headquarter or one of our distributors.

NOTICE

Please comply with all regulations applicable to your country.

5 Troubleshooting

INFORMATION

You can correct the following faults yourself:

Leaking of fluid containers

- ▶ Remove fluids from the bottom tray, using suitable materials.
- ▶ Do not use leaking vessels.

INFORMATION

The following faults can only be corrected by a Köttermann authorised specialist company.

- Longer lasting breakdown of the air extraction unit
- Corrosion
- Faulty door closure

Fume Cupboards

Contents

1 General safety information

1.1 General safety information for fume cupboards

- Only use fume cupboards if they:
  - have been commissioned by a Köttermann authorised specialised company.
  - are connected correctly to the air ventilation system,
  - deliver the necessary exhaust air volume.
  - have been checked for the correct seal of fittings.
  - have been certified to have the correct electrical installation.
- Only use fume cupboards only with an air flow monitor unit.
- When working at the cupboard you must comply with all country specific laws and regulations.
- Always pay attention to the technical data, when working at the fume cupboard.
- Only suitably qualified and trained staff may work at the fume cupboard.
- Any alterations to the fume cupboard require the permission of the manufacturer.
- If there is no work carried out at the fume cupboard, the front sash, side window and cable ducts must be closed.
- Do not keep the front sash open, using any means which would violate the designed use. Manipulation, which affects the functionality of the fronts sash limiter, leads to a loss of certification EN 14175 (laboratory fume cupboards).
- When working at the fume cupboard, keep the opening as small as possible.
- Only carry out experiments for which the fume cupboard is designed.
- Do not allow items to protrude from the fume cupboard.
- Do not use the fume cupboard, if there is a strong escape of heat.
- Do not store hazardous substances in the fume cupboard.

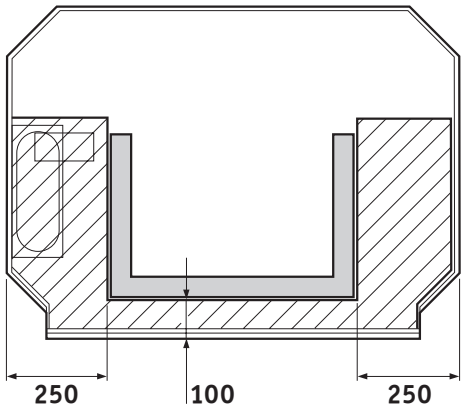
1.2 Additional safety information for high performance fume cupboards

- Comply with maximum heat load and distance of heat source to the side panels of the fume cupboard.
- Place heat plates on feet.
- Ensure that the chemical resistance of the inner lining is adequate for the expected use.
- Clean the internal space regularly.
- Rinse exhaust air pipes regularly.
- Use angas washers to treat exhaust air, when using aggressive media, for example perchloric acid.

1.3 Additional safety information for radionuclide fume cupboards

1.3.1 Shield

- The table top can be covered at the bottom with a lead shield as an optional extra.
- The load capacity of the table top is sufficient to accommodate lead shields weighing up to 1500 kg.
- Due to air technological reasons, the shaded areas must not be used for equipment for experiments.
- Retention tests according to DIN 12926 part 1 have been conducted with lead shields on the grey shaded area.



Footprint of the lead shield used during retention tests.

Do not place items within this area.

1.3.2 Handling radioactive materials

- Always comply with regulations contained in DIN 25425 as well as any safety instructions within the laboratory.
- When radioactive material is released, the extracted air must be filtered through an exhaust air filtration system.
- Check effectiveness of the exhaust air filtration system regularly.
- You must separate radioactive fluids from non-contaminated waste water.

1.4 Additional safety information for ATEX-certified fume cupboards

- Only use equipment, which is ATEX-certified within the fume cupboard.

1.5 Safe working at the fume cupboard

The best possible retaining protection of the fume cupboard is ensured when the front sash is closed.

- ▶ Only open the fume cupboard when work requires access.
- ▶ If a fume cupboard is equipped with a sliding window within the front sash, use the sliding window to reach into the fume cupboard.
- ▶ If front sashes are equipped with glove ports, use these whenever possible.
- ▶ Avoid sudden movements and do not reach too quickly into the fume cupboard when the fronts sash is opened.
- ▶ Restrict test equipment to an absolute minimum. More equipment means an increased danger of escape of dangerous substances.
- ▶ Always consider the load limits of worktops, see chapter 3 in the section "Laboratory Furniture".
- ▶ Always consider the load limits of support rod systems, see chapter 3 in the section "Media Supply".

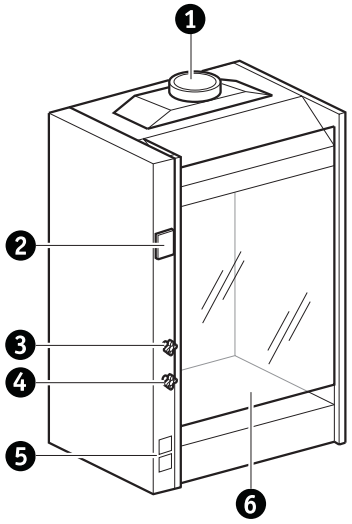
2 Safe operation

§ NOTICE

Please obtain information relating to legislation in your country. It is possible that the permitted use of products differs from the information provided here.

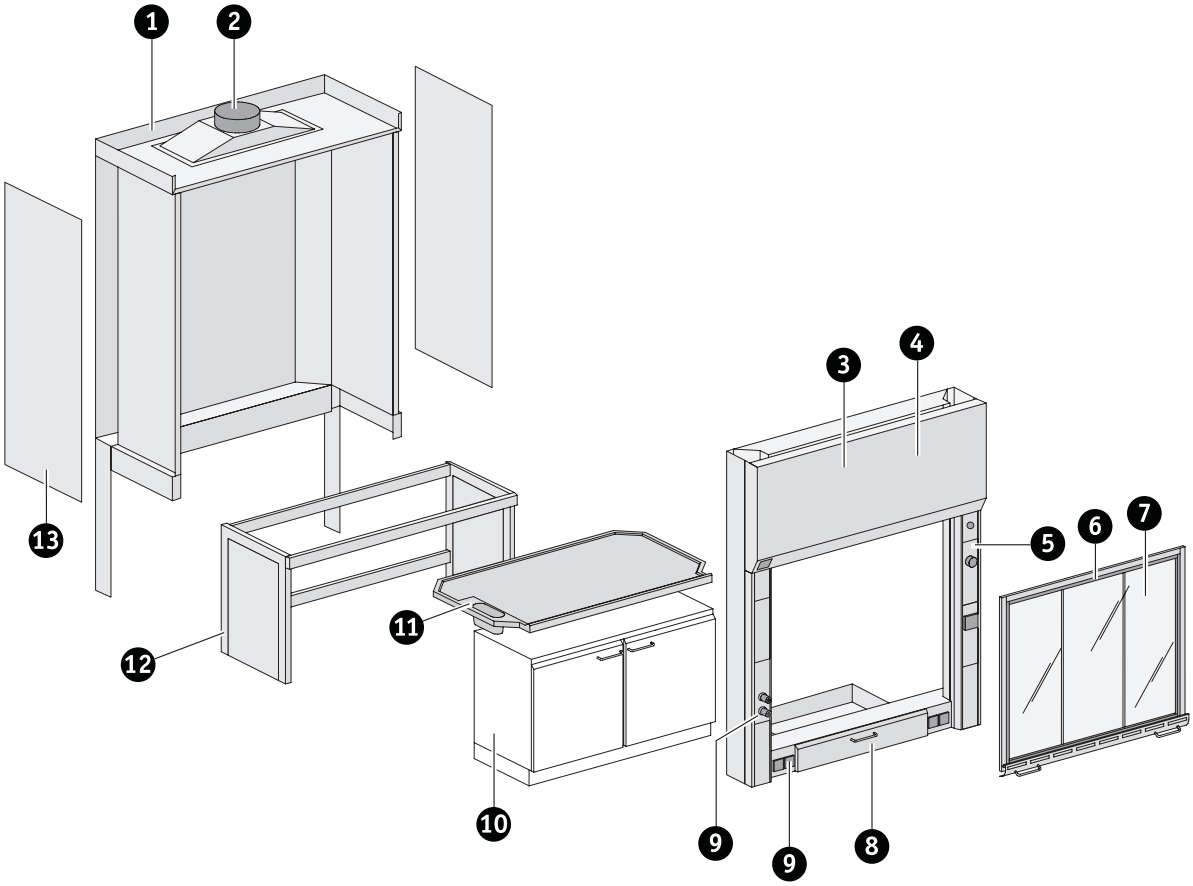
2.1 Fume cupboard design

2.1.1 View of a pharmacy fume cupboard



1. Exhaust air nozzle
2. AirMonitor
3. Combustion gas tap
4. Operating water, cold
5. 230 V plug sockets
6. Front sash

2.1.2 Fume cabinet components



1. Housing
2. Exhaust air nozzle
3. Monitor
4. Lighting
5. Front
6. Front sash
7. Panes
8. Underbench frame
9. Media
10. Underbench cabinet
11. Table top
12. A-base frame
13. Housing side panels

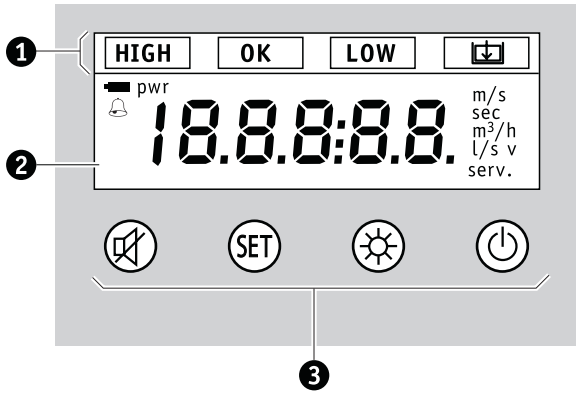
2.2 Köttermann AirMonitor

Monitoring fume cupboards plays a major part when ensuring safety in the laboratory. The Köttermann Systemlabor is equipped with the Köttermann AirMonitor, which far exceeds the requirements of EN 14175.

Köttermann AirMonitor shows the exhaust air volume and monitors the pre-set minimum and maximum values. When these values are not reached or exceeded, AirMonitor provides visible and audible alarms.

AirMonitor is battery supported and raises the alarm even during blackouts.

2.2.1 Overview AirMonitor



1. Control lights to monitor volume flow
2. Display to show volume flow
3. Keys

2.2.2 States displayed by AirMonitor

Control lights ❶	Colour	State
HIGH	yellow	volume flow too high
OK	green	Good volume flow - safe operation
LOW	red	volume flow too low - fume cupboard is not safe to use.
	yellow	front sash above working height (option)

2.2.3 Display

Apart from the current values of the volume flow, the following symbols are displayed.

Symbols ❷	Meaning
pwr	Power, Mains voltage present
	Audible alarm activated
serv.	Service interval display
	Power cut

2.2.4 AirMonitor keys

Key ❸	Function
	Stop audible signal (quit)
	Only for service purposes
	Switch lights on/off
	Switch fume cupboard on/off

2.3 Switching fume cupboard on/off

Switching the fume cupboard on/off is dependent on the air flow monitor unit.

- Köttermann AirMonitor
- Monitor unit according to specific requirements
- External monitor

2.3.1 Switching fume cupboards with Köttermann AirMonitor on/off

▶ Press key ⏻ at the AirMonitor.

AirMonitor and lighting are switched on/off. If the fume cupboard has a separate fan, this fan will be switched on/off at the same time.
The fume cupboard is operational when the green display light OK lights up.

INFORMATION

Lighting can be switched on/off whilst the fume cupboard is working by using the ☼ key.

2.3.2 Switching fume cupboards with monitor equipment according to specific requirements on/off

The operation of fume cupboards equipped with special monitor equipment is described in a separate user handbook.

2.3.3 Switching fume cupboards with external monitor on/off

NOTICE

According to EN 14175, a functioning monitor unit is a necessary part for the safe operation of a fume cupboard.

1. Before the unit is switched on, please ensure that the external air flow monitor is connected to the fume cupboard.
2. Operate on/off switch

   Ventilation system and lighting are switched on/off.

2.4 Monitoring of the fume cupboard using AirMonitor

The control lights of the Köttermann AirMonitor always show you the condition of your fume cupboard.

If the pre-set values are exceeded or not reached, there will be an additional audible signal.

OK **Green control light illuminated**

If the green control light is illuminated **OK** , the volume flow is within permissible values.
The fume cupboard is safe to use.

HIGH **The yellow control light is illuminated and a warning sounds.**

The yellow control light **HIGH** shows that the maximum permissable volume flow has been exceeded.

Remedy

- ▶ Switch the audible signal off using the switch .
- ▶ Close the front sash or keep it closed.
- ▶ Begin appropriate safety measures.
- ▶ Arrange check of the ventilation system.

  The control light turns off automatically if the volume flow returns to permissible values.

INFORMATION

The yellow control light **HIGH** remains illuminated until the volume flow has returned to permissible levels. It cannot be switched off manually.

LOW **The red control light is illuminated LOW and an audible warning signal is sounded.**

The red control light LOW shows that the volume flow has reached a level below the minimal permissible value. There is a danger that dangerous substances could reach the laboratory.

DANGER

Depending on the material used, there are various degrees of possible severe damage to health.

- Leave the danger zone immediately and begin suitable protective measures.

Remedy

- Switch the audible warning signal off, using .
- Keep the front sash closed.
- Begin suitable protective measures.
- Request suitable repair to the ventilation system.

  The control light switches off as soon as the volume flow has reached permissible values.

INFORMATION

The red control lamp LOW is illuminated until the volume flow has reached permissible values. It cannot be switched off manually.

The red control light LOW is illuminated even directly after switching the fume cupboard on, because the minimal required volume flow of the ventilation system has not been reached yet. In this case the audible warning signal sounds with a delay of approx. 10 seconds.

The yellow control light is illuminated and an audible warning signal is sounded

The yellow control light (optional extra) shows that the maximum permitted working height of the front sash has been exceeded.

Remedy

- ▶ Switch off audible warning signal, using .
- ▶ Close the front sash to at least the maximimum permissable working height.

  The control light stops automatically as soon as the front sash has reached working height or is closed.

INFORMATION

The control light is illuminated until the front sash has been returned to working height or below. It cannot be switched off manually.

This control light is an optional extra. It is not included in the standard version.

HIGH OK LOW

All control lights flash

In case of a power cut, the AirMonitor warns that operation is unsafe - all lights and displays flash and the battery symbol appears.

This alarm remains in place for at least one hour or until normal power supply has resumed.

2.5 Monitoring of the fume cupboard using other systems

2.5.1 Monitoring of the fume cupboard using specialised monitoring installations

The monitoring of the fume cupboard by means of specialised units in accordance with special market specific requirements is described in a separate operating manual.

2.5.2 Monitoring of fume cupboards using external systems

The user manual of the external monitoring systems will provide information with respect to displayed states.

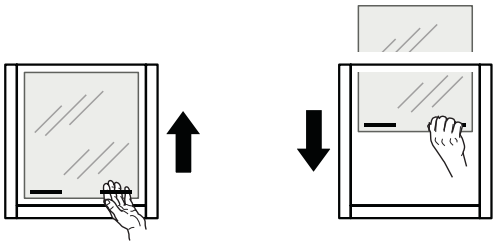
2.6 Operating the front sash

The front sash can be opened and closed in several different ways, depending on your working requirements.

- manually, see 2.6.1
- using switch AutoProtect, see 2.6.2
- using Softmatic, see 2.6.3
- using the foot switch, see 2.6.4
- open completely, see 2.6.5

2.6.1 Operating the front sash manually

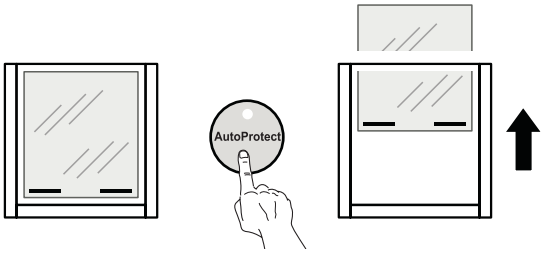
Fume cupboards with AutoProtect and without Softmatic **can be** operated manually.



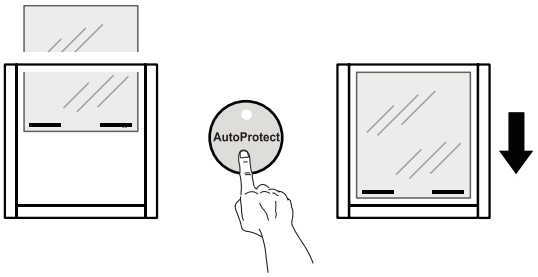
2.6.2 Operate the front sash using switch "AutoProtect"

AutoProtect ensures that during normal operation the front sash can only open up to a pre-set working height - and this only when there is actually a person working at the fume cupboard.

Open front sash



Close front sash



INFORMATION

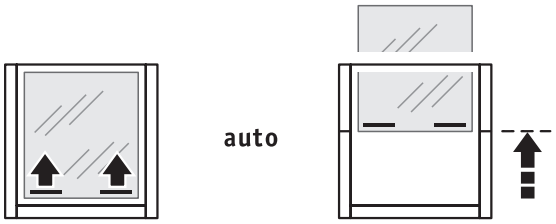
If the fume cupboard is not closed, the front sash closes when the switch "AutoProtect" is pressed.

2.6.3 Operate front sash with Softmatic (optional extra for fume cupboards with AutoProtect)

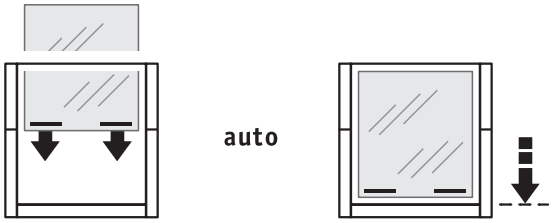
INFORMATION

If fume cupboards are equipped with Softmatic the front sash has to be only slightly pulled up or down. The front sash will then open/close automatically.

Open front sash

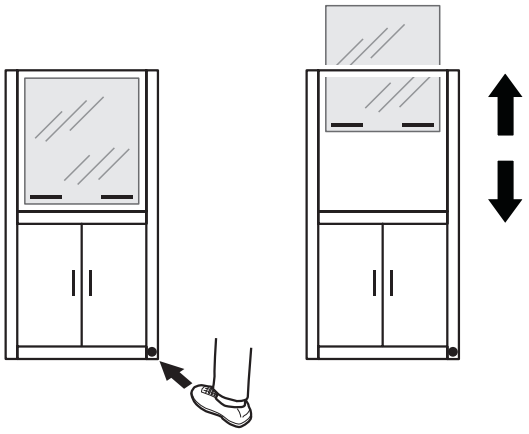


Close front sash



2.6.4 Operate front sash using the foot switch (optional)

Open /close



The front sash will (depending on the starting point) either automatically open or close up to working height.

2.6.5 Opening the front sash completely

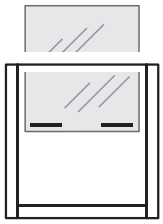
For certain tasks, i.e. experiment preparation, it can be necessary to open the front sash completely.

DANGER

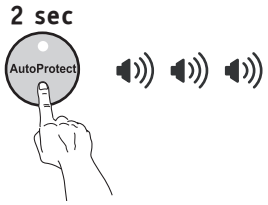
Danger of explosion, poisoning

- Ensure prior to opening the front sash, that there are no explosive or poisonous gases or vapours, which could escape.

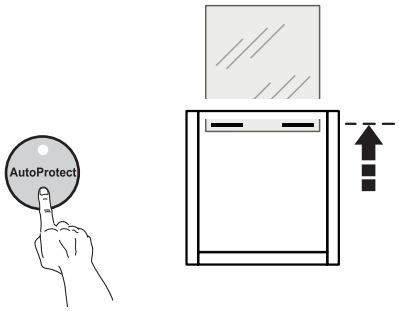
1. Open front sash up to normal working height.



2. Hold switch "AutoProtect" approx. 2 seconds until an audible signal sounds.



3. Press "AutoProtect" again.



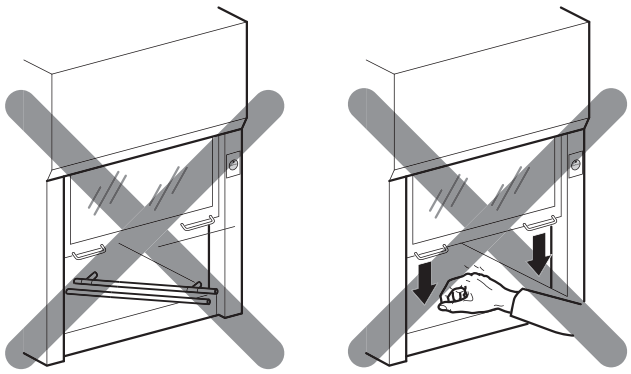
2.6.6 Automatic closure

WARNING

Danger of crushing or damage to property

The front sash closes automatically, if no-one is working at the fume cupboard. The front sash also closes automatically following a power cut, as soon as power supply is restored.

- ▶ Ensure that nothing protrudes from the cupboard.
- ▶ Do not reach into the fume cupboard whilst the front sash is closing.



2.6.7 Following a power cut

Following a power cut AutoProtect restarts operation automatically.

If the front sash was open during the power cut it will close automatically as soon as the power supply is restored.

2.7 Media supply in the fume cupboard

2.7.1 General

Generally, all media can be supplied within the fume cupboard.

Please refer to the information in the section "Media Supply" with respect to labelling and fittings (taps).

2.7.2 Power supply in the fume cupboard

Fume cupboards use the same power supply, which is described in the section "Media Supply"

Plug Sockets in the fume cupboard are provided either as single units or as modules. All plug sockets within the working area can be controlled individually from the outside.

DANGER

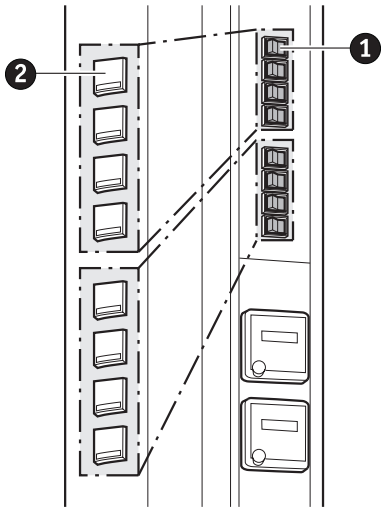
Danger of electric shock, danger of explosions

- ▶ Ensure that the plug sockets in the fume cupboard correspond with the labels on the equipment to be connected.
- ▶ Only switch on those power sockets that are actually needed.

Control plug sockets in the fume cupboard

▶ Switch the plug socket in the fume cupboard on/off ❷ using the appropriate switch ❶ , located at the cupboard column.

If the plug socket is switched on, the appropriate switch shows a green light.



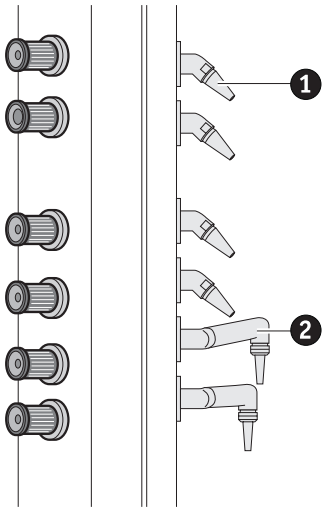
INFORMATION

We recommend to label and/or number the plug sockets in the fume cupboard.

2.7.3 Media outlets in the fume cupboard

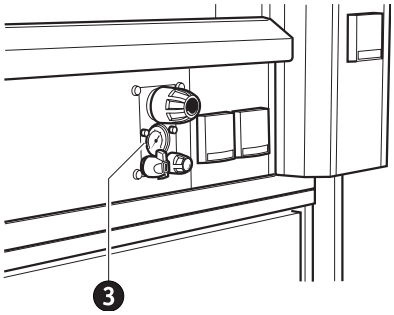
Located in the column

Gas outlets ❶ and water outlets ❷ are easily accessible, positioned at the front of the column.



In the fume cupboard frame

It is possible to position further fittings, for example taps for high purity gas ❸, within the fume cupboard frame.

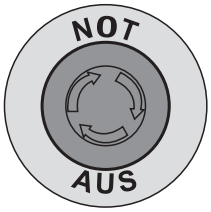


INFORMATION

For further information relating to the use of fittings please refer to part 2.1.2 in the section "Media Supply".

2.7.4 Emergency stop switch

If applicable, emergency stop switches on the fume cupboards are configured in accordance with the individual requirements of your laboratory.



Please consult you laboratory manager or your laboratory manual with respect to:

- which power circuits and media are controlled through the emergency stop switch of your fume cupboard.
- which further measures have to be taken in case of emergency.
- how you should respond when the system restarts following an emergency stop.

2.8 Cleaning and maintenance

WARNING

Danger of poisoning

- Before cleaning the fume cupboard, please ensure that the cupboard is free from any dangerous substances.

The only cleaning required for your fume cupboard concerns the surfaces as described in the section "Additional Information" beginning on page 86.

- Clear the inside of the fume cupboard prior to cleaning.
- Ensure that all residues of aggressive substances are immediately removed correctly.

Additional cleaning information with respect to high performance fume cupboards.

- Clean extraction ducts regularly - at least once every six months.
- Rinse connecting hoses to the gas scrubber regularly - at least once every six months.

3 Extract from technical data sheets

3.1 Walk-in laboratory fume cupboards Type 2-451

	BA 1200x900	BA 1500x900	BA 1800x900	BA 2000x900	BA 2100x900
Weight at housing height H	273 kg	311 kg	347 kg	–	383 kg
Weight at housing height H1	278 kg	317 kg	354 kg	–	391 kg
Required ceiling load capacity, incl. 200 kg/m² constructions within the fume cupboard	478 kg	517 kg	554 kg	–	591 kg

3.2 Laboratory fume cupboards with bench height 500 mm Type 2-452

		TA 1200 x 900-500	TA 1500 x 900-500	TA 1800 x 900-500	TA 2000 x 900-500	TA 2100 x 900-500
Weight without table top, height H		294 kg	355 kg	398 kg	414 kg	449 kg
Weight without table top , height H1		304 kg	365 kg	408 kg	424 kg	459 kg
Weight table top (with waste basin)	**Ceramics**	46 kg	61 kg	77 kg	87 kg	92 kg
	Epoxid	25 kg	34 kg	43 kg	49 kg	52 kg
	Trespa	19 kg	24 kg	29 kg	33 kg	34 kg
	Stainless steel	19 kg	26 kg	34 kg	38 kg	41 kg
	Polypropylene	19 kg	25 kg	31 kg	35 kg	37 kg
Perm. loads for table tops.	**on 120 x 120 mm**	200 kg				
	whole top	200 kg	200 kg	200 kg	230 kg	250 kg
Required ceiling load capacity without frames, with heaviest table top and max. load of table top at a height of H1		550 kg	626 kg	685 kg	741 kg	801 kg

3.3 Laboratory fume cupboards with bench height 900 mm Type2-453

		TA 1200 x 900-900	TA 1500 x 900-900	TA 1800 x 900-900	TA 2000 x 900-900	TA 2100 x 900-900
Weight without table top, height H		210 kg	234 kg	259 kg	274 kg	281 kg
Weight without table top, height H1		213 kg	239 kg	266 kg	281 kg	291 kg
Weight table top (with waste basin)	**Ceramics**	66 kg	84 kg	102 kg	114 kg	120 kg
	Epoxid	36 kg	46 kg	56 kg	62 kg	66 kg
	Trespa	31.5 kg	39 kg	46.5 kg	51.5 kg	54 kg
	Stainless steel	27 kg	34 kg	42 kg	46 kg	49 kg
	Polypropylene	27 kg	35 kg	43 kg	51 kg	58 kg
Permitted load of table tops	**on 120 x 120 mm**	200 kg				
	whole plate	200 kg	224 kg	272 kg	304 kg	320 kg
Required ceiling load capacity without frames, with heaviest table top and max. load of table top at a height of H11		479 kg	547 kg	640 kg	699 kg	731 kg

3.4 High performance fume cupboards according to DIN 12924T02 Type 2-454

		AA 1200	AA 1500	AA 1800
Weight without table top, height H Ceramics interior		290 kg	330 kg	370 kg
Weight without table top, height H1 Polypropylene interior		235 kg	265 kg	290 kg
Weight table top (with waste basin)	**Ceramics**	62 kg	84 kg	102 kg
	Polypropylene	27 kg	35 kg	43 kg
Permitted load of table tops	**on 120 x 120 mm**	200 kg		
	whole plate	200 kg	224 kg	272 kg
Required ceiling load capacity without frames, with heaviest table top and max. load of table top at a height of H1		552 kg	638 kg	744 kg

3.5 Radionuclide fume cupboards Type 2-455

		RA 1200 x 900-900	RA 1500 x 900-900
Weight without table top at height H		210 kg	234 kg
Weight without table top at height H1			
Weight table top (with waste basin and waste opening) stainless steel	**Without lead shield**	28 kg	34 kg
	With lead shield (20 mm)	205 kg	255 kg
Permitted load of table tops	**on 120 x 120 mm**		
	Whole plate	1600 kg	1600 kg
Required ceiling load capacity without frames, with heaviest table top and max. load of table top		2050 kg	2150 kg

3.6 Industrial fume cupboards with bench height 900 mm Type 2–463

	Depth 950 mm	**TA 1200 x 950-900**	**TA 1500 x 950-900**	**TA 1800 x 950-900**	**TA 2000 x 950-900**	**TA 2100 x 950-900**
	Depth 1050 mm	**TA 1200 x 1050-900**	**TA 1500 x 1050-900**	**TA 1800 x 1050-900**	**TA 2000 x 1050-900**	**TA 2100 x 1050-900**
Weight without frame and table top	**depth 950**	250 kg	275 kg	300 kg	325 kg	350 kg
	depth 1050	265 kg	290 kg	315 kg	340 kg	365 kg
Weight table top (with waste basin) 950/1050	**Tile**	30/33 kg	38/42 kg	46/50 kg	51/56 kg	54/59 kg
	Epoxid	36/40 kg	46/51 kg	56/61 kg	62/68 kg	66/72 kg
	Trespa	31/34 kg	39/43 kg	46/51 kg	51/56 kg	57/59 kg
	Stainless steel	27/30 kg	34/37 kg	42/46 kg	46/51 kg	49/54 kg
Permitted load for table top *	**120 x 120 mm**	200 kg				
	distributed	200 kg	224 kg	272 kg	304 kg	320 kg
Required ceiling load capacity incl. 200 kg/m² construction in the fume cupboard		520 kg	595 kg	675 kg		790 kg

* without extract air material, Caution: without frame under the fume cupboard any application of loads or the operation of the fume cupboard is not permitted!

3.7 Pharmacy fume cupboards according to DIN 12924 part 4

	Type 2-447-C / 2-447 CV
Weight	79 kg
Load capacity of base	20 kg on an area of 120 x 120mm 50 kg on the whole table top
Required table load capacity	140 kg

3.8 Extraction hoods on the basis of DIN 12924 part 4

	Type 2-447-BST / 2-447 BVST
Weight	54 kg
Required table load capacity	140 kg

3.9 Extraction flues and directed extraction

	Flues	Directed extraction	
		Wall mounted	Ceiling mounted
Weight	38 kg	6 kg	5 kg

4 Annual maintenance and regular checks

Köttermann's Systemlabor fume cupboards are safety relevant products. This means that they must be checked at regular intervals. You find the next scheduled check on the check label on the outside of the door.

If the checks are not carried out or not carried out by authorised staff, this will render all guarantees void.

§ NOTICE

In accordance with TRGS 526/BGR 120 par. 11.5 and ArbStättV § 4 par. 3 all fume cupboards in Germany are subject to an annual maintenance obligation.

INFORMATION

We would like to recommend regular maintenance of your Köttermann Systemlabor. With a maintenance contract, you can be sure that you comply will all mandatory safety regulations and maintenance intervals.
Please contact Köttermann's Headquarter or one of our distributors.

§ NOTICE

Please comply with any legislation in your country.

- ▶ If your fume cupboard has not passed the most recent safety check, please stop operation, until a Köttermann authorised expert firm has carried out any necessary measures.

5 Troubleshooting

WARNING

Danger of poisoning, explosion

Escape of dangerous substances when there are faults with the fume cupboard.

- ▶ If an alarm is given, cease work at the fume cupboard and immediately take appropriate safety measures.

INFORMATION

You can remedy the following faults yourself.

There is no light

- ▶ Change light tube.
- ▶ Change starter.

AutoProtect does not open/close the front sash

- ▶ Remove items from the sensor area of the light barrier.
- ▶ Clean the optical unit of the light barrier.

LED on switch "AutoProtect" flashes red/green (power cut)

See 2.6.7.

LED on switch "AutoProtect" lights up red (fault or overload)

- ▶ see 2.6.7.

No mains power in the fume cupboard

- ▶ Switch on plug socket

INFORMATION

The following problems must be dealt with by a specialised company, which is authorised by Köttermann.

- Control light LOW is illuminated.
- All control lights flash, battery symbol lights up.
- Noticeable escape of hazardous substances.
- The front sash is difficult to move or is jammed.
- AutoProtect does not open/close the fronts sash.
  LED in the "AutoProtect" switch does not light up.
- There is no power supply in the fume cupboard although the plug socket is turned on.

Additional Information

Contents

1 Cleaning and maintenance

1.1 Cleaning and maintaining laminated furniture

1.1.1 Cleaning material

Recommended cleaning material

- Common household non-abrasive cleaning materials
- Short chain alcohols (methylated spirits, iso-propanol)

Stain removal

- Petroleum ether
- Benzine
- Ligroine

INFORMATION

We recommend that you first test the materials on a small, inconspicuous area.

Unsuitable cleaning agents

- Abrasive cleaning material that will affect the shine of the surface.
- Organic solvents of medium polarity (i.e. Acetone, ethyl acetate or chlorinated hydrocarbon) can irreversibly damage the surface.

Removal of stubborn stains

If you have any questions regarding the removal of stubborn stains, please contact Köttermann. We will help you to find the suitable cleaning agent.

1.1.2 Cleaning and maintenance

- ▶ Remove any residues and stains immediately using a suitable cleaning agent.
- ▶ Wipe light dirt off with a soft, damp cloth.
- ▶ Remove more stubborn dirt with one of the recommended cleaning agents.
- ▶ Lubricate movable parts, for example hinges and fittings regularly with resin and acid free oils.
- ▶ Do not hang acid containing cleaning cloths for drying over any fittings.
- ▶ Do no store open containers holding chemicals within the cabinets.

1.1.3 Disinfection

Resistance

The surface of the materials is **resistant** to many common disinfectants, for example

- oxidative alcohol solutions
- solutions containing formalin
- disinfection with hydrogen peroxide and formaldehyde

The furniture surfaces are not resistant to disinfection using UV-light.

INFORMATION

We recommend that you first test the materials on a small, inconspicuous area.

1.2 Cleaning worktops

1.2.1 Recommended cleaning agents

Worktops can be cleaned with common household cleaning agents.

1.2.2 Cleaning and maintenance

INFORMATION

If you wish to treat individual stains with chemicals, please pay attention to the differing resistance qualities of worktop materials.

We recommend that you first test the materials on a small, inconspicuous area.

- ▶ Remove any residues and stains immediately using a suitable cleaning agent.
- ▶ Wipe light dirt off with a soft, damp cloth.
- ▶ Remove more stubborn dirt with one of the recommended cleaning agents. Before you treat any more stubborn stains, please obtain information with respect to the resistance characteristics of the worktop material, see following table.

Chemical resistance characteristics of worktop materials

	Melamine (Standard)	Melamine Top Resist	Trespa Athlon	Trespa TopLab Plus	Ceramics / composit ceramics	Tile	Stainless steel	Epoxid-resin	Polypropy-lene
Solvents									
Ethanol	+	+	+	+	+	+	+	+	+
Isopropanol	+	+	+	+	+	+	+	+	+
Acetone	+	+	+	+	+	+	+	+	+
Ethyl acetate	+	+	+	+	+	+	+	+	+
Chloroform	+	+	+	+	+	+	+	+	+
Diethyl ether	+	+	+	+	+	+	+	+	+
Toluene	+	+	+	+	+	+	+	+	–
n-Hexan	+	+	+	+	+	+	+	+	+
Petroleum ether	+	+	+	+	+	+	+	+	0
Mineral acids									
Hydrochloric acid, concentrate	–	+	–	+	+	+	–	+	–
Sulphuric acid, concentrate	–	0	–	0	+	+	–	+	+
Sulphuric acid 50 %	–	0	–	0	+	+	–	–	+
Azotic acid, concentrate	–	0	–	0	+	+	–	–	–
Phosphoric acid, concentrate	–	+	–	+	+	+	–	0	+
Hydrofluoric acid	–	0	–	–	–	–	–	–	+
Organic acids									
Formic acid , concentrate	–	0	–	+	+	+	+	+	–
Acetic acid, concentrate	+	+	+	+	+	+	+	+	+
Bases									
Caustic soda [, 20 %	+	+	0	+	+	+	+	+	+
Ammonia solution, concentrate	+	+	+	+	+	+	+	+	+
Neutral solutions									
Formaldehyde, 25 %	+	+	+	+	+	+	+	+	+

	Melamine (Standard)	Melamine Top Resist	Trespa Athlon	Trespa TopLab Plus	Ceramics / composit ceramics	Tile	Stainless steel	Epoxid-resin	Polypropy-lene
Oxidants									
Hydrogen peroxide, 30 %	–	+	–	+	+	+	+	+	+
Potassium permanganate, 5 %	+	+	+	+	+	+	+	–	+
Caliumdichromate, 5 %	+	+	+	+	+	+	+	+	+
Iodine, 5 % in Chloroform	+	0	+	+	+	+	+	+	–
Reducing agent									
Sodium sulphite 5 %	+	+	+	+	+	+	+	+	+
Colourants									
Eosins	+	+	+	+	+	+	+	+	+
Methylene blue	+	+	+	+	+	+	+	+	+
Crystal violet	+	+	+	+	+	+	+	+	+

+ Suitable material

0 Material of limited suitability

– Unsuitable material

Chemical and solvent test with Köttermann powder coat, light blue

The following table shows the resistance of the powder coating. The resistance of the powder coating does not only apply to furniture, but also to all surfaces coated with these materials. These values do not claim to be scientifically objective and are designed to provide some guidance when choosing a suitable material. No legally binding rights arise from this.

Chemical	Exposure	Result
25 % caustic soda	Up to 12 days	No damages
10 % caustic soda	Up to 12 days	No damages
50 % sulphuric acid	Up to 12 days	No damages
10 % acetic acid	Up to 12 days	No damages
25 % nitric acid	Up to 1 day	No damages
	Up to 12 days	Discolouring, but no damages
10 % ammonia	Up to 12 days	No damages
10 % formic acid	Up to 12 days	No damages
85 % formic acid	1 hour	No damages
	1 day	Blistering
	Up to 12 days	Blistering
10 % sodium carbonate	Up to 12 days	No damages
30 % potassium permanganate	Up to 9 days	No damages
	Up to 12 days	Discolouring but no damages
30 % hydrogen peroxide	Up to 12 days	No damages
Ethyl acetate	1 hour to 12 days	Softening, reversible
Acetone	1 hour to 12 days	Softening, reversible
Toluene	1 hour to 12 days	Softening, reversible
Benzine	Up to 12 days	No damages
98 % ethanol	Up to 12 days	No damages
Iso-Propanole	Up to 12 days	No damages

2 Abreviations

AFNOR	Associtation Française de Normalisation
ArbStättV	Arbeitsstättenverordnung (workplace legislation)
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ATEX	Atmosphère explosible, (inoffical name of the product guideline 94/9/EG of the European Union) (explosion protection)
BGR	Berufsgenossenschaftliche Richtlinien (professional guidelines)
BS	British Standard
CE	Communauté Européenne, (certifies that a product conforms with EU regulations).
DIN	Deutsches Institut für Normung e. V. (German Standards Agency)
DVGW	Deutsche Vereinigung des Gas- und Wasserfaches e. V. (German Association of the gas and water industries)
EN	European norm
ESG	Single pane safety glass
FWF	Feuerwiderstandsfähigkeit (fire resistance)
GefStoffV	Gefahrstoffverordnung (legislation for dangerous substances)
PP	Polypropylene
PPS	Polypropylene flame resistance
RAL	RAL Deutsches Institut für Gütesicherung und Kennzeichnung e. V. (German Institute for quality control and labeling)
TRbF	Technische Regeln für brennbare Flüssigkeiten (technical regulations for flammable fluids)
TRG	Technische Regeln für Druckgase (technical regulations for pressurised gases)
TRGS	Technische Regeln für Gefahrstoffe (technical regulations for dangerous substances)
TÜV	Technischer Überwachungsverein (technical control association)
V	Volt

3 Addresses

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