

### 3. Safety

#### Safety first

Safety is paramount in all laboratories: every day your staff have to handle a multitude of hazardous chemicals that are often dangerous to their health. It's reassuring that there is laboratory storage equipment available that makes the laboratory environment a safer place to work. Our safety storage equipment reduces the potential danger to a minimum.



## 3.1 Storage of hazardous substances

### 3.1 Storage of hazardous substances

Several regulations must be observed particularly when storing hazardous substances. The most important regulations are presented in the following section.

Hazardous substances are substances or preparations with one or several of the following properties:

- **explosive**
- **oxidising**
- **extremely flammable**
- **highly flammable**
- **irritating**
- **harmful to health**
- **toxic**
- **very toxic**
- **corrosive**
- **hazardous to the environment**

These also include substances which can cause the development of hazardous or explosive substances or preparations during their use. Hazardous biological material from biological and genetic engineering as well as materials that can transmit pathogens are also regarded as hazardous substances.

Irritating, harmful and toxic substances can be further categorised according to the type of hazard:

- sensitising
- hazardous to reproduction
- carcinogenic
- mutagenic

In Germany, the handling of substances at the workplace is subject to the German Ordinance on Hazardous Substances (GefStoffV). General information regarding the storage of hazardous substances can be found in §24 of the Ordinance on Hazardous Substances.

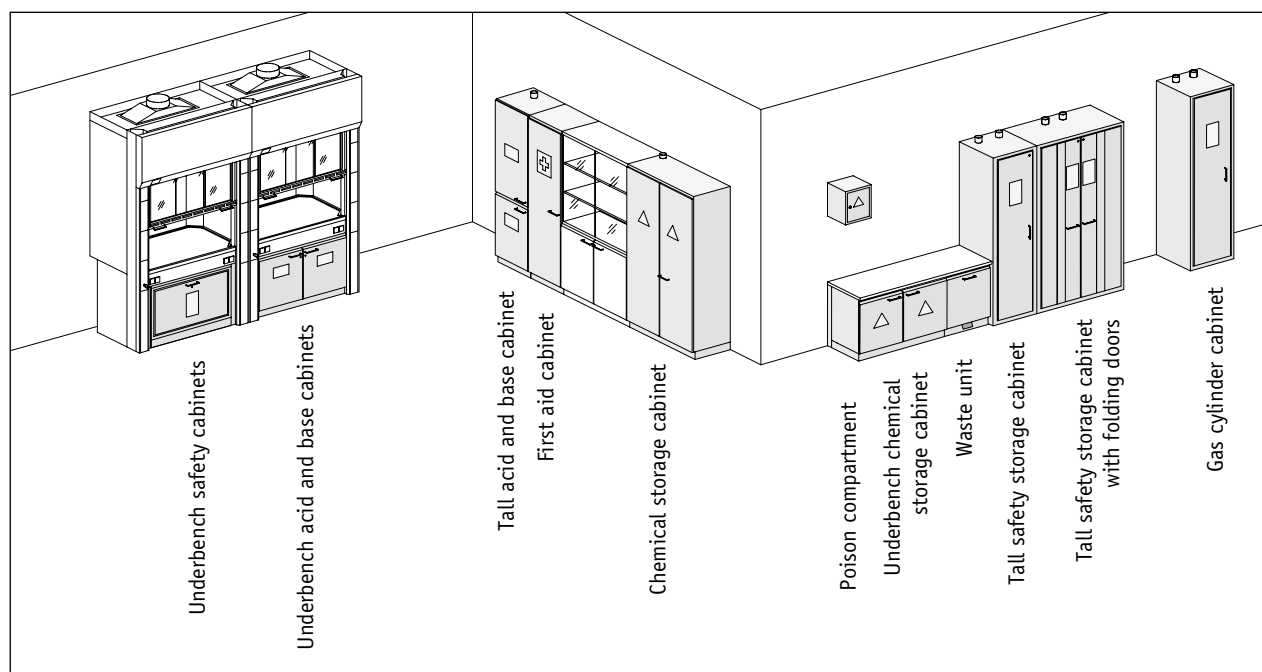
(1) "Hazardous substances must be kept or stored so that they do not endanger human health or the environment. Suitable and reasonable precautions must be taken to prevent misuse or incorrect use as far as possible. The hazards connected with use must be recognisable during storage for delivery or for immediate use.

(2) Hazardous substances must not be kept or stored in containers whose shape or designation could cause the contents to be confused with foodstuff. Hazardous substances must be kept or stored in a clear arrangement and not right next to drugs, foodstuff, or animal foodstuff including additives.

(3) Substances and preparations marked with T+ or T must be kept under lock and key or stored so that only authorised personnel have access to them."

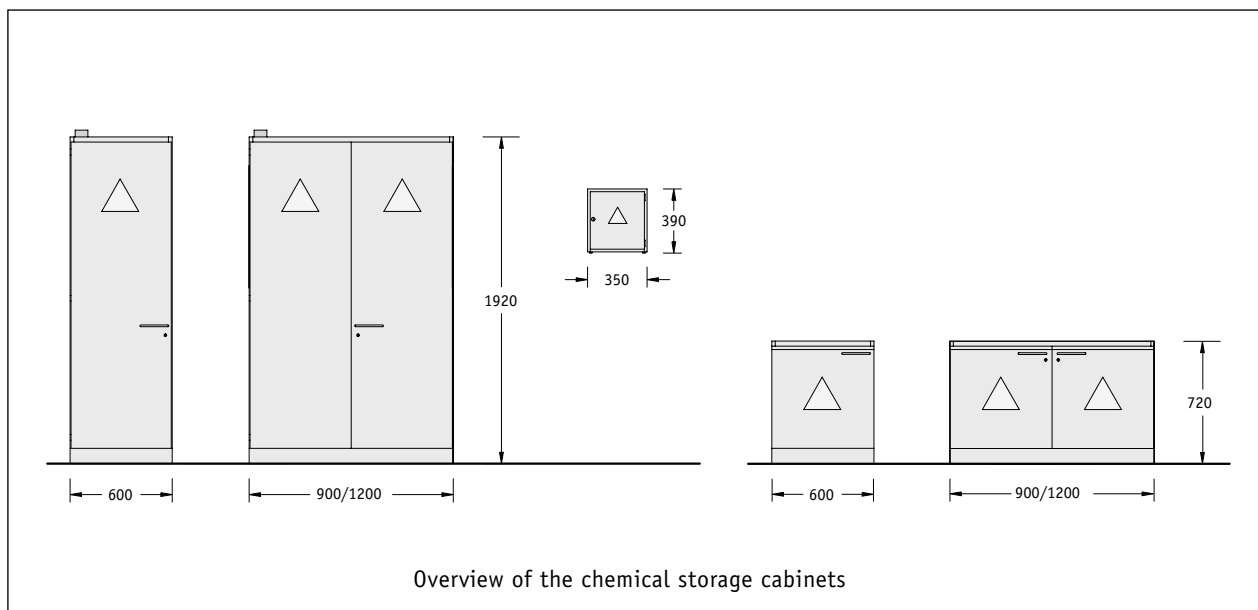
For this purpose Köttermann offers a wide range of special cabinets. All cabinets are extractable in order to prevent pollutant emissions in the laboratory. This is an important prerequisite in order to ensure that maximum values of hazardous substances at the workplace (maximum admissible concentration, technical guideline concentration and permissible exposure limit values) cannot be exceeded on a continuing basis.

**You see:** we make every effort to ensure your safety – after all people are a laboratory's most valuable asset.



## 3.2 Chemical storage cabinets

### 3.2 Chemical storage cabinets



**Chemical storage cabinets are perfect for the storage of the following substance classes:**

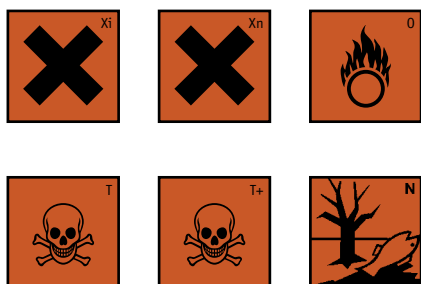
- irritating
- toxic
- very toxic
- hazardous to the environment
- oxidising.

Unsuitable for corrosive and inflammable hazardous substances.

Chemical storage cabinets are continuously ventilated to discharge hazardous vapours and to prevent them from entering the laboratory. Steel cabinets like Köttermann chemical storage cabinets are ideal for the storage of chemicals because they are constructed of non-absorbent material.

The shelves of the chemical storage cabinets are dished to contain spillages. In addition a catchment tray with perforated plate insert is available.

Lockable doors if required prevent unauthorised access. A separately lockable poison compartment which can be installed in the cabinet is available as an option.

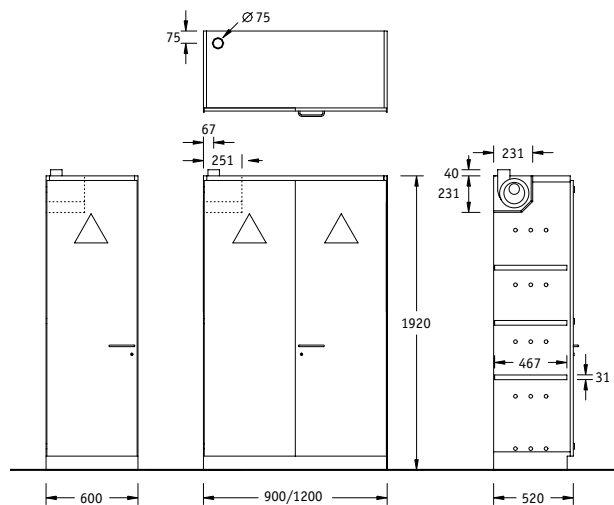


## 3.2 Chemical storage cabinets

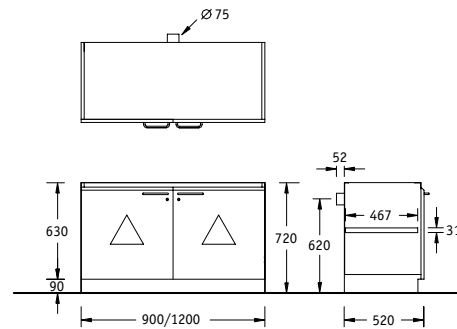
### Chemical storage cabinet design:

Material:	Galvanised and epoxy powder coated steel
Colour:	Light blue (similar to RAL 7035)
Fittings:	Lockable doors
	Shelves, weight bearing capacity 30 kg
	Extract spigot Ø 75
Integrated fan (optional):	Radial fan, 2600 rpm; 230V/50Hz;
	PPS; with visual on/off indicator

Cabinets without an integral fan must be connected to an external discharge fan or to the onsite fume extract system. The fume extract system (including fan if necessary) has to be designed separately.



Chemical storage cabinets



Underbench chemical storage cabinets

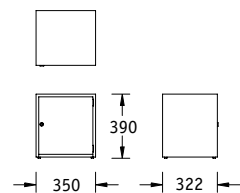
Chemical storage cabinets extracted air			
	Width in mm	Extracted air volumetric flow (m³/h)	Pressure drop (Pa)
Underbench cabinet	600	5,0	1,0
	900	7,0	1,0
	1200	9,0	2,0
Tall storage cabinet	600	30	17,0
	900	40	30,5
	1200	55	55,0

With an integrated fan a residual pressure for line losses of 165 Pa minus pressure drop of the cabinet is available.

## 3.2 Chemical storage cabinets

### Poison compartment design:

Material: Galvanised and epoxy powder coated steel  
 Colour: Light blue (similar to RAL 7035)  
 Fittings: Lockable door  
 Use: As wall mounted cabinet or installed in chemical storage cabinets



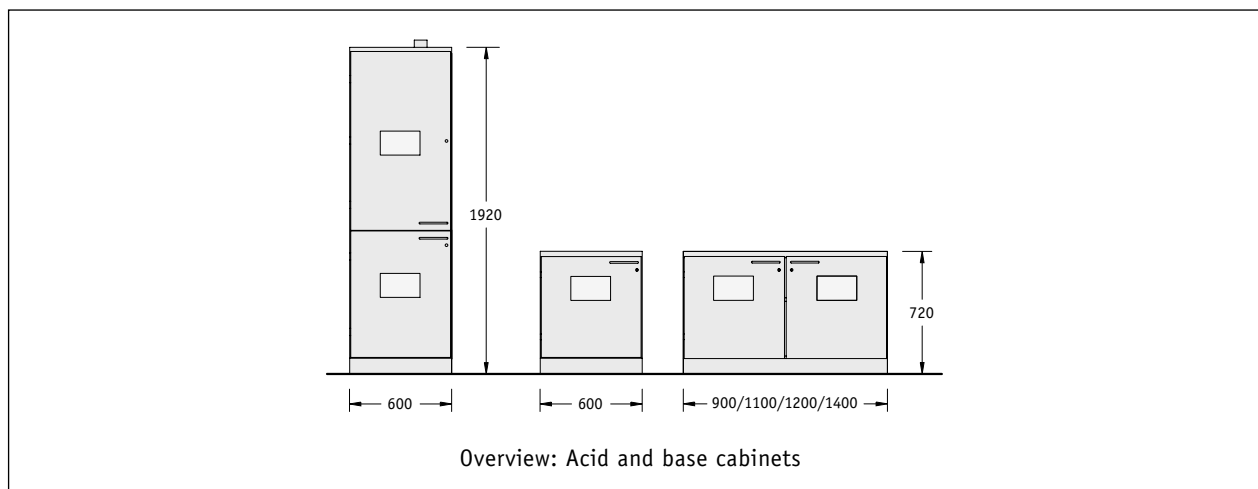
Poison compartment

Chemical storage cabinets				
	Order no.	Description	Dimensions in mm (W x H x D)	Additional information
	2.335.002	Chemical storage cabinet, 1 door, hinged right, 3 shelves	600 x 1920 x 520	with fan
	2.335.006	Chemical storage cabinet, 1 door, hinged right, 3 shelves	600 x 1920 x 520	without fan
	2.335.003	Chemical storage cabinet, 1 door, hinged left, 3 shelves	600 x 1920 x 520	with fan
	2.335.007	Chemical storage cabinet, 1 door, hinged left, 3 shelves	600 x 1920 x 520	without fan
	2.335.004	Chemical storage cabinet, 2 doors, 3 shelves	900 x 1920 x 520	with fan
	2.335.008	Chemical storage cabinet, 2 doors, 3 shelves	900 x 1920 x 520	without fan
	2.333.C	Chemical storage cabinet, 2 doors, 3 shelves	1200 x 1920 x 520	with fan
	2.323.003	Chemical storage cabinet, 2 doors, 3 shelves	1200 x 1920 x 520	without fan
	3.520.003	Underbench chemical storage cabinet, 1 shelf	900 x 720 x 520	without fan
	3.520.004	Underbench chemical storage cabinet, 1 shelf	1200 x 720 x 520	without fan
	2.872.8	Poison compartment, 1 door, hinged right	350 x 370 x 322	

An air flow monitor is available as an accessory for chemical storage cabinets.

## 3.3 Acid and base cabinets

### 3.3 Acid and base cabinets



**Acid and base cabinets are suited for the storage of the following substance classes:**

- corrosive and simultaneously
- irritating
- toxic
- very toxic
- hazardous to the environment.

They are unsuitable for inflammable hazardous substances.

Acid and base cabinets are continuously ventilated in order to prevent accumulation of harmful gases within the atmosphere of the laboratory or storage area. Köttermann acid and base cabinets are made of solid polypropylene, a material that has extremely good chemical resistance.

Acid and base containers are stored in separate, fully seam welded, liquid tight polypropylene trays. Teflon rails ensure smooth tray action, even when heavily laden.



#### Design:

Material:

Extremely chemical resistant polypropylene

Colour:

Light blue (similar to RAL 7035)

Fittings:

Double doors, lockable

Pull-out trays seam welded, liquid tight polypropylene, load bearing capacity 30 kg

Extract spigot Ø 75

Integrated fan (optional):

Radial fan, 2600 rpm; 230V/50Hz;

PPS; with visual on/off indicator

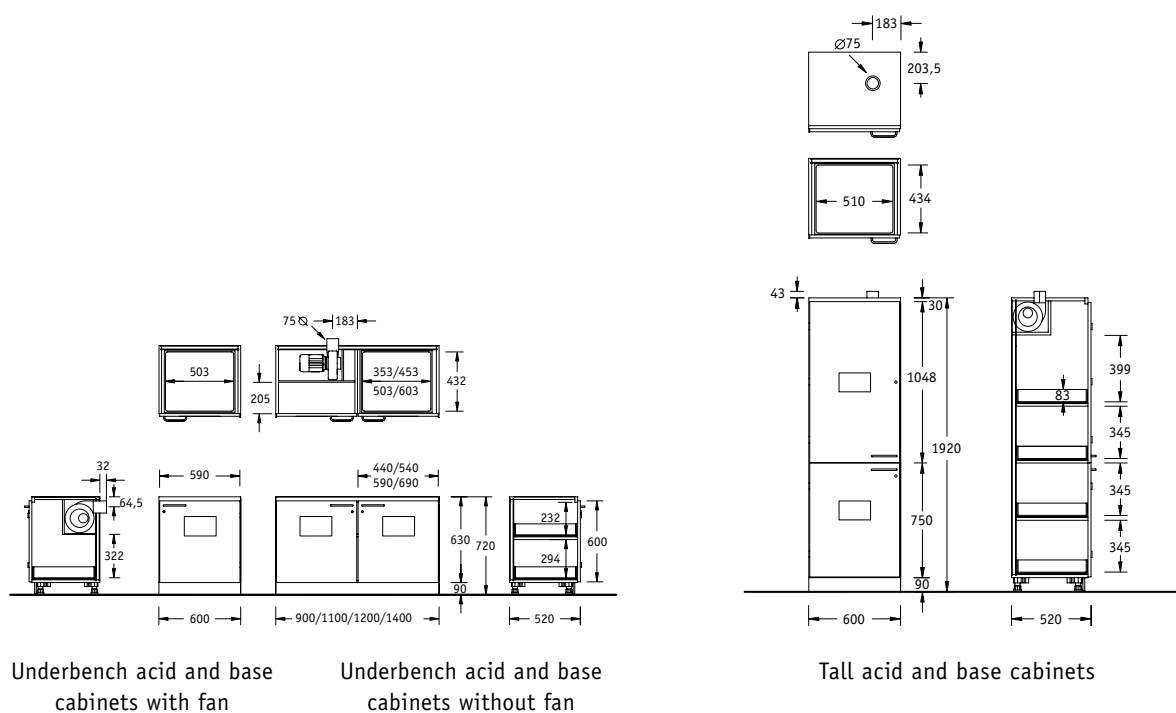
Cabinets without a fan must be connected to an external fan or to the onsite fume extract system. The fume extract system (including fan if necessary) has to be designed separately.

Maximally adjustable bottle heights		
	Top drawer (mm)	Bottom drawer (mm)
Underbench cabinet	294	232
Tall storage cabinet	397 (1 drawer)	343 (3 drawers)

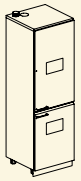
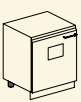
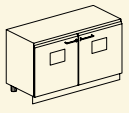
### 3.3 Acid and base cabinets

Chemical storage cabinets extracted air			
	Width in mm	Extracted air volumetric flow (m <sup>3</sup> /h)	Pressure drop (Pa)
Underbench cabinet	600	9	5
	900	15	6
	1100	19	6
	1200	20	5
	1400	25	7
Tall storage cabinet	600	23	15

With an integrated fan a residual pressure for line losses of 220 Pa minus pressure drop of the cabinet is available.



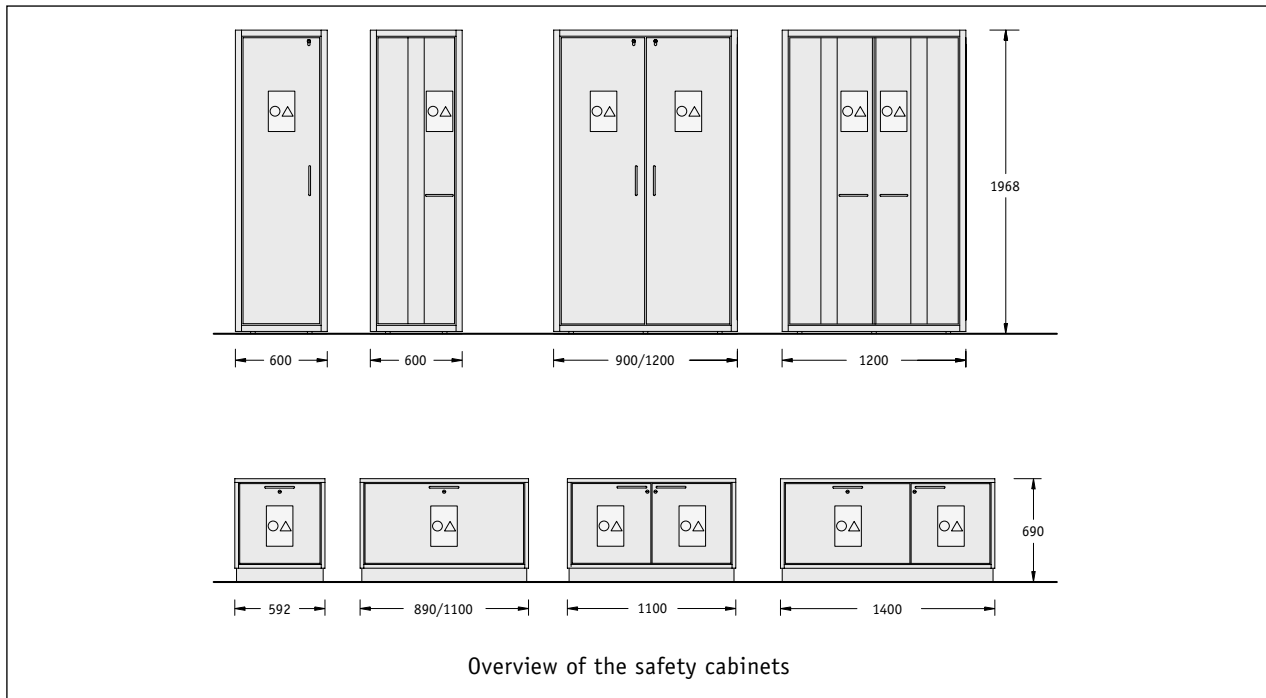
### 3.3 Acid and base cabinets

Acid and base cabinets made of polypropylene with 4 drawers (tall cabinets with additional compartment for accessories)				
	Order no.	Description	Width in mm	Additional information
	2.336.026	Tall acid and base cabinet, 2 doors, hinged left, 4 drawers	600	with fan
	2.336.036	Tall acid and base cabinet, 2 doors, hinged right, 4 drawers	600	with fan
	2.336.027	Tall acid and base cabinet, 2 doors, hinged left, 4 drawers	600	without fan
	2.336.037	Tall acid and base cabinet, 2 doors, hinged right, 4 drawers	600	without fan
	2.336.034	Underbench acid and base cabinet, 1 door left, 2 drawers	600	without fan
	2.336.035	Underbench acid and base cabinet, 1 door right, 2 drawers	600	without fan
	3.528.014	Underbench acid and base cabinet, 2 doors, 3 drawers	900	with fan
	3.528.015	Underbench acid and base cabinet, 2 doors, 4 drawers	900	without fan
	2.336.040	Underbench acid and base cabinet, 2 doors, 4 drawers	1100	without fan
	3.528.012	Underbench acid and base cabinet, 2 doors, 3 drawers	1200	with fan
	3.528.013	Underbench acid and base cabinet, 2 doors, 4 drawers	1200	without fan
	2.336.041	Underbench acid and base cabinet, 2 doors, 4 drawers	1400	without fan

An air flow monitor is available as an accessory for acid and base cabinets.



### 3.4 Safety cabinets



#### 3.4.1 Storage of inflammable hazardous substances

The storage of hazardous substances is subject to different national directives. Here reference is made to the current German legal position. If you need information on the safe storage of flammable hazardous substances in other countries please ask our planners.

Combustible fluids may only be supplied in laboratories. Storage in workrooms is not permitted in Germany according to §3 of the Ordinance on Hazardous Substances.

The storage of hazardous substances in excess of that used in one day is prohibited.

Exceptions are safety cabinets according to EN 14470-1. In these cabinets the storage of combustible hazardous substances is permitted in closed containers and quantities below the obligation to inform (TRbF 20, appendix L).

**Safety cabinets are ideal for the storage of the following substance classes:**

- highly flammable
- extremely flammable and simultaneously
- irritating
- toxic
- very toxic
- hazardous to the environment
- corrosive (conditionally)

Combined storage of unstable or spontaneously flammable substances is not permitted.

Exceptions: flammable liquids with an ignition temperature below 100°C (almost all conventional laboratory substances have higher ignition temperatures. An exception is e.g. carbon disulphide with an ignition temperature of 95°C).

Köttermann safety cabinets have the highest fire resistance class FWF90. This means the inside temperature of the cabinet may not exceed 200° C in a standardized fire chamber test after 90 min of fire exposure.

Largest possible, admissible storage amount		
Hazard category according to VbF	Maximum storage quantity per cabinet	
	In fragile containers	In other containers
A I	60 L	450 L
A II oder B	200 L	3000 L

The permissible storage quantities are reduced in safety cabinets with a lower fire resistance. Details can be found in TRbF 20, appendix L, section 3.2. (Technical Regulations for Combustible Fluids.)

## 3.4 Safety cabinets

### 3.4.2 Tested for safety according to EN 14470-1

The purpose of Köttermann safety cabinets is to protect people in a laboratory in the event of a fire. Their doors close automatically at temperatures above 50°C. Intumescent seal door joints and ventilation spigots effectively. The insulating sandwich construction of the cabinet protects the stored hazardous substances against heat and flames. Thus combustible fluids do not ignite spontaneously, the fire load in the laboratory is reduced and the staff have enough time to get to safety.

Safety cabinets play an important role in fire safety. According to EN 14470-1, their correct working order must be demonstrated in a fire test.

Köttermann safety cabinets meet all requirements of the EN 14470-1 adopted in 2004:

- Every cabinet model underwent the fire chamber test in an independent testing institute.
- Every cabinet is certified according to EN 14470-1 and has a fire resistance of 90 minutes.
- Every cabinet meets the requirements of the significant safety law and bears the GS mark.

Beyond the requirements of the European standard, Köttermann Q.A. system allows production line cabinets to undergo a fire chamber test at random by an independent testing institute.

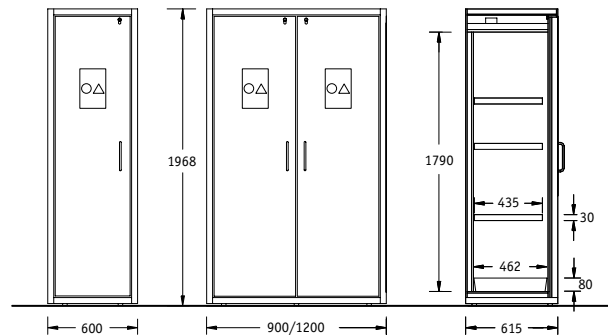
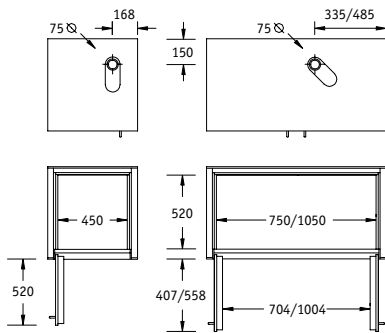


### 3.4.3 Tall safety cabinets for combustible fluids

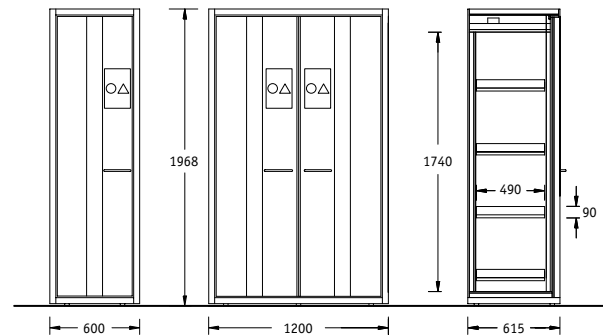
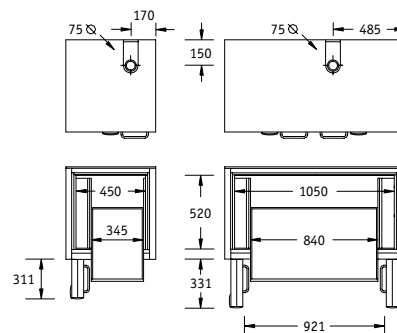
#### Design:

With hinged doors and shelves:	Double doors with 90° opening angle Tilt resistant shelves
With folding doors and shelves:	Low door depth of opened doors Integrated jamming protection Tilt resistant shelves Automatic door stop system
With folding doors and drawers:	Low door depth of opened doors Integrated jamming protection Automatic draw-ins with time-delayed self draw-in Drawers hold spilled solvent volume Automatic door stop system
Material:	Galvanised and epoxy powder coated steel
Colour:	Light blue (similar to RAL 7035) or yellow (RAL 1004)
Fire resistance:	90 minutes (FWF90) certified according to EN 14470-1
Fittings:	Smooth running, corrosion resistant door locking device Height adjustment Earth connection Catchment tray with perforated plate insert Lockable doors 75 DN extract connection spigot with flash arrestor

## 3.4 Safety cabinets



Tall safety cabinets  
with hinged doors and storage shelves

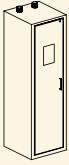
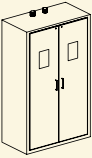
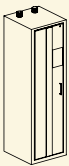
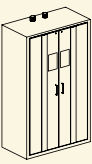
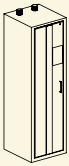
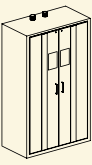


Tall safety cabinets  
with folding doors and drawers

Specifications tall safety cabinets								
Outside dimensions W x H x D (mm)	Air flow (m <sup>3</sup> /h)	Pressure drop (Pa)	Weight (kg)		Inside dimensions W x H x D (mm)	Drawer dimensions W x H x D (mm)	Weight bearing capacity (kg)	Catchment tray volume (l)
600 x 1968 x 615	4	2	260	3 shelves	450 x 1740 x 520		75 each	22
				4 drawers	450 x 1740 x 520	345 x 50 x 500	25 each	
1200 x 1968 x 615	9	4	420	3 shelves	1050 x 1740 x 520		75 each	33
				4 drawers	1050 x 1740 x 520	840 x 90 x 490	60 each	

All models: extract spigot Ø 75

### 3.4 Safety cabinets

Tall safety cabinets for storage of combustible fluids				
	Order no.	Description	Dimensions in mm (W x H x D)	Additional information
	2.335.304	Tall cabinet, 1 hinged door, 3 shelves, 1 catchment tray with perforated plate insert, door left	600 x 1968 x 615	Colour light blue
	2.335.306	Tall cabinet, 1 hinged door, 3 shelves, 1 catchment tray with perforated plate insert, door right	600 x 1968 x 615	Colour light blue
	2.335.300	Tall cabinet, 2 hinged doors, 3 shelves, 1 catchment tray with perforated plate insert, 2 doors	1200 x 1968 x 615	Colour light blue
	2.335.202	Tall cabinet, 1 folding door, incl. door stop, 3 shelves, 1 catchment tray with perforated plate insert, door left	600 x 1968 x 615	Colour light blue
	2.335.204	Tall cabinet, 1 folding door, incl. door stop, 3 shelves, 1 catchment tray with perforated plate insert, door right	600 x 1968 x 615	Colour light blue
	2.335.200	Tall cabinet, 2 folding doors, incl. door stop, 3 shelves, 1 catchment tray with perforated plate insert, 2 doors	1200 x 1968 x 615	Colour light blue
	2.335.251	Tall cabinet, 1 folding door, incl. door stop, 4 drawers, 1 catchment tray with perforated plate insert, door left	600 x 1968 x 615	Colour light blue
	2.335.252	Tall cabinet, 1 folding door, incl. door stop, 4 drawers, 1 catchment tray with perforated plate insert, door right	600 x 1968 x 615	Colour light blue
	2.335.250	Tall cabinet, 2 folding doors, incl. door stop, 4 drawers, 1 catchment tray with perforated plate insert, 2 doors	1200 x 1968 x 615	Colour light blue

An air flow monitor is available for safety cabinets on request.

The cabinets are available

- in further fitting variants
- in the colour safety yellow
- with additional accessories

on request.

## 3.4 Safety cabinets

### 3.4.4 Underbench safety cabinets for combustible fluids

#### Design:

With hinged doors:

Double doors with 90° opening angle

Catchment tray with perforated plate insert

With pull-out trays:

Easy to use drawers with perforated plate insert

contains any solvent spillage,

Perfect for collecting flammable wastes

or in combination.

Material:

Galvanised and epoxy powder coated steel

Colour:

Light blue (similar to RAL 7035) or safety yellow (RAL 1004)

Fire resistance:

90 minutes (FWF90) certified according to EN 14470-1

Fittings:

Height adjustment

Earth connection

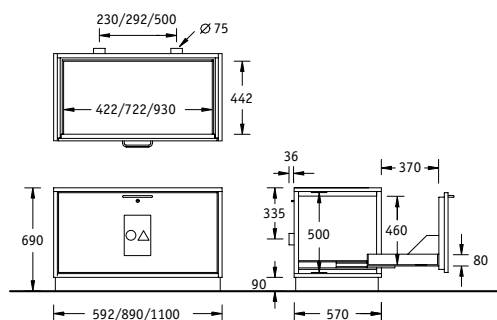
Catchment tray with perforated plate insert

Doors and drawers lockable

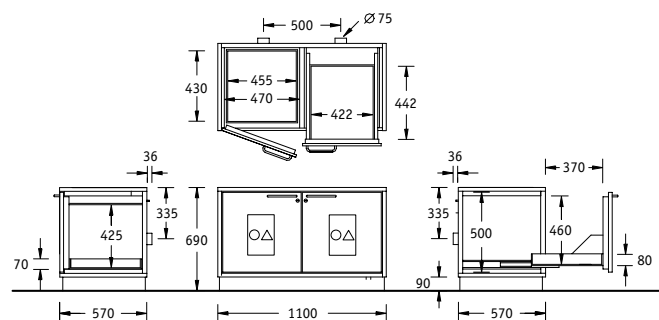
Steel plinth with integrated floor extraction

(a larger extraction volume is required for floor extraction)

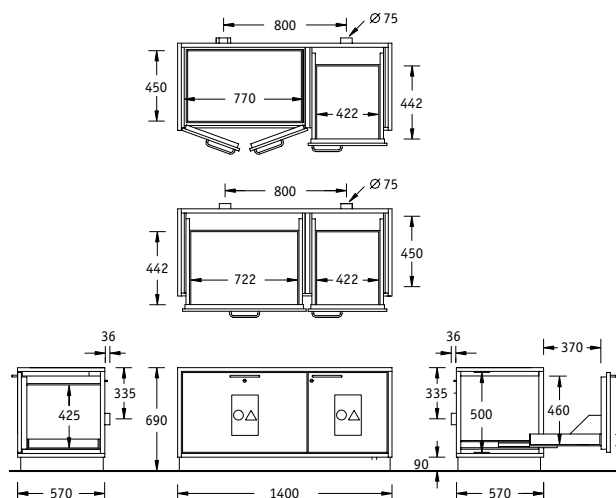
75 DN extract connection spigot with flash arrestor



Underbench safety cabinets, width 592/890 mm



Underbench safety cabinets, width 1100 mm


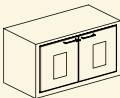
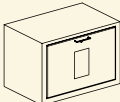
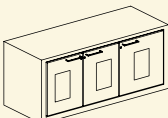
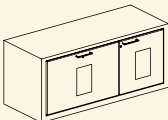


Underbench safety cabinets, width 1400 mm

### 3.4 Safety cabinets

Specifications underbench safety cabinets								
Outside dimensions W x H x D (mm)	Air flow (m <sup>3</sup> /h)	Pressure drop (Pa)	Weight (kg)		Outside dimensions drawer/door W x H x D (mm)	Inside dimensions drawer B x H x T (mm)	Usable inside height (mm)	Weight bearing capacity (kg)
592 x 690 x 570	2	1	90	1 drawer	470 x 500 x 450	422 x 80 x 442	460	25
890 x 690 x 570	2	1	140	1 drawer	770 x 500 x 450	722 x 80 x 442	460	50
1100 x 690 x 570	2	1	165	2 hinged doors	980 x 500 x 450		440	30
1100 x 690 x 570	2	1	165	1 hinged door left	470 x 500 x 450		440	30
				1 drawer right	470 x 500 x 450	422 x 80 x 442	460	25
1100 x 690 x 570	2	1	165	1 drawer	980 x 500 x 450	930 x 80 x 442	460	50
1100 x 690 x 570	2	1	165	2 drawers	each 470 x 500 x 450	each 422 x 80 x 442	460	25
1400 x 690 x 570	3	1	200	2 hinged doors left	each 385 x 500 x 450		440	30
				1 drawer right	770 x 500 x 450	422 x 80 x 442	460	25
1400 x 690 x 570	3	1	200	1 drawer right	470 x 500 x 450	422 x 80 x 442	460	50
				1 drawer left	770 x 500 x 450	722 x 80 x 442	460	25

All models: extract spigot Ø 75

Underbench safety cabinets			
	Order no.	Description	Dimensions in mm (W x H x D)
	3.520.107	Underbench safety cabinet, 1 drawer	592 x 690 x 570
	3.520.106	Underbench safety cabinet, 1 drawer	890 x 690 x 570
	3.520.105	Underbench safety cabinet, 2 hinged doors, 1 catchment tray	1100 x 690 x 570
	3.520.104	Underbench safety cabinet, 1 hinged door left, 1 drawer right, 1 catchment tray	1100 x 690 x 570
	3.520.103	Underbench safety cabinet, 2 drawers	1100 x 690 x 570
	3.520.102	Underbench safety cabinet, 1 drawer	1100 x 690 x 570
	3.520.101	Underbench safety cabinet, 2 hinged doors left, 1 drawer right, 1 catchment tray	1400 x 690 x 570
	3.520.100	Underbench safety cabinet, 2 drawers	1400 x 690 x 570

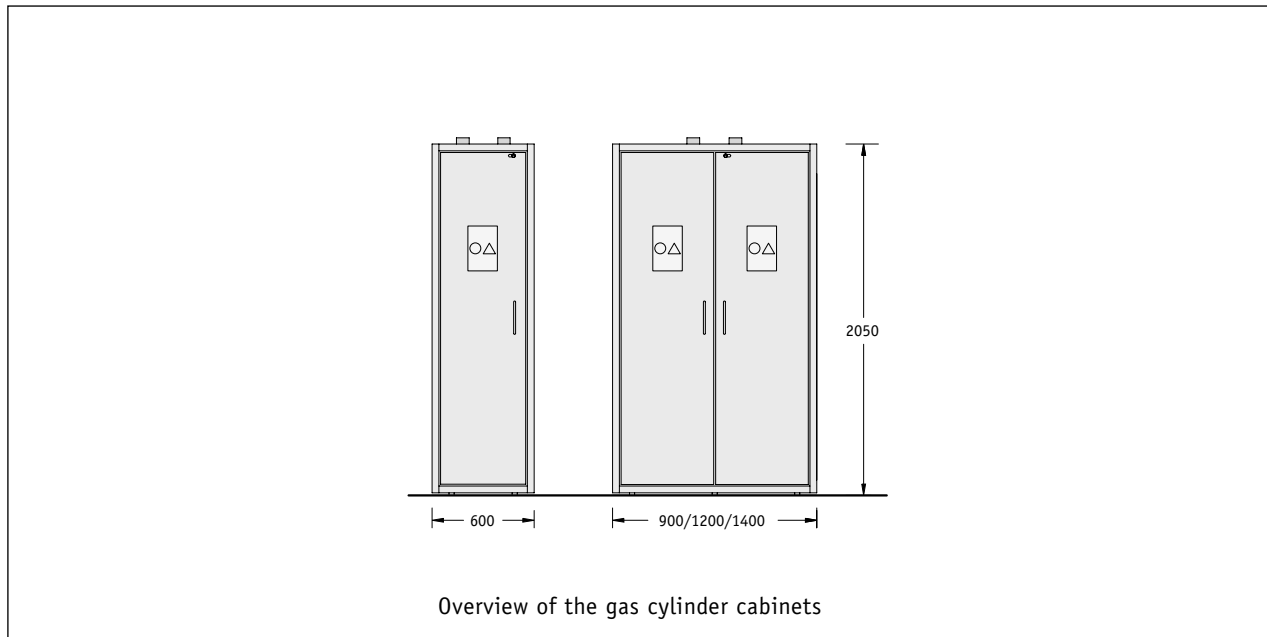
Drawers and catchment trays have a perforated plate inside.

The cabinets are available

- in further fitting variants
- in the colour safety yellow
- with additional accessories

on request.

### 3.5 Gas cylinder cabinets



#### 3.5.1 Provision of compressed gases in compressed gas cylinders

Due to their high filling pressure, gas cylinders can be extremely dangerous. For this reason the provision of compressed gases at the workplace is subject to several regulations such as the German TRGS 526 "Laboratories" (Technical Regulations for Hazardous Substances in Laboratories):

„5.4.3.1 To avoid hazards compressed gas cylinders must be set up outside the laboratories and the gases must be supplied to the workstations through permanently installed pipes. If this is not possible and compressed gas cylinders must be operated in laboratories with an increased risk of fire, the compressed gas cylinders must be protected in the event of a fire against extreme heat through special protective measures. If such protective measures are not possible or practical, the compressed gas cylinders must be put in a safe place at the end of work or after completion of a test run.

Hazards exist e.g. during fires from detonations or during transport of the cylinders.

Depending on the possible fire load, compressed gas cylinders are protected e.g. by

- storage in cabinets according to DIN 12925-2 „Laboratory equipment; cabinets for compressed gas cylinders; safety requirements, inspection“ ...“

„5.4.3.4 Compressed gas cylinders with very toxic, toxic or carcinogenic gases must be continuously extracted if they are set up in the laboratory.

This is achieved by installing the cylinders in fume cupboards or in ventilated cylinder cabinets.

See appendix „Toxic Gases“ of the accident prevention regulation „Gases“ (BGV B6 (Trade Association Regulation B6))...”

## 3.5 Gas cylinder cabinets

### 3.5.2 Safety tested and certified according to DIN 12925-2

The purpose of Köttermann gas cylinder cabinets is to protect people in a laboratory against exploding cylinders in the event of a fire. The insulating sandwich construction of the gas cylinder cabinets protects the provided compressed gas cylinders against heat and flames. Staff in the laboratory have enough time to get to safety.

Safety cabinets play an important role in fire safety. According to DIN 12925 Part 2, their correct working order must be demonstrated in a fire test.

The construction of Köttermann gas cylinder cabinets meets the FWF 90 safety cabinet requirements in every technical respect. They far exceed easily the requirements of the DIN 12925 Part 2.

Beyond the requirements of the European standard, Köttermann Q.A. system allows production line cabinets to undergo a fire chamber test at random by an independent testing institute.

**DIN**

### 3.5.3 Gas cylinder cabinets

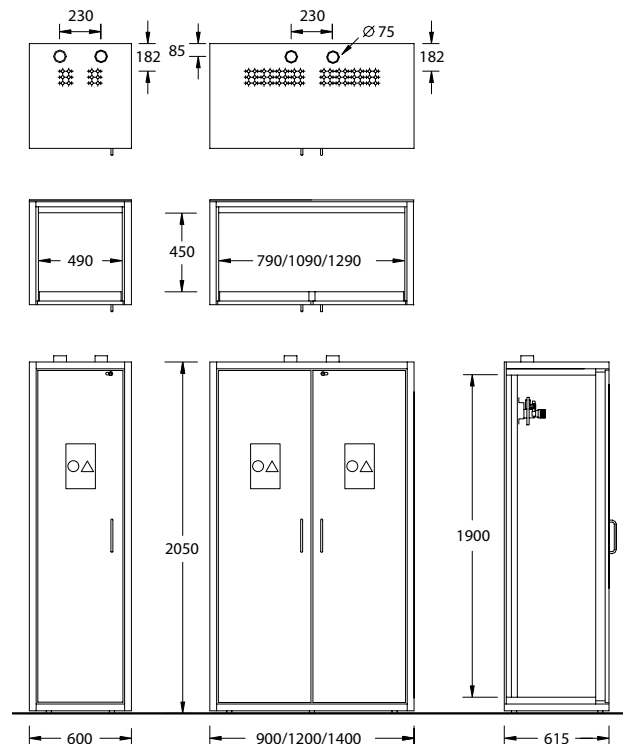
In Köttermann gas cylinder cabinets, compressed gas cylinders are secured to prevent falling. The surface of the gas cylinders are protected by the special thermal insulation against extreme heat in the event of a fire (in accordance with DIN 12925 Part 2).

Additionally the use of gas cylinder cabinets shortens ducting routes and, in comparison to a central gas supply, lowers the chance of gases being contaminated during their passage through the ducting system.

#### Required ventilation:

- Inert gases (without technical ventilation)
- combustible and oxidising gases (min. 10-fold ventilation)
- toxic and very toxic gases (min. 120-fold ventilation)

In cylinder cabinets compressed gas containers of different gases may be connected or provided simultaneously for evacuation TRG (Technical Regulations for Compressed Gases 280: Sec. 8.3.3).



Gas cylinder cabinets



## 3.5 Gas cylinder cabinets

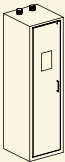
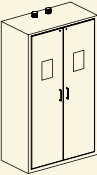

### Design:

Material:	Galvanised and epoxy powder coated steel
Colour:	Light blue (similar to RAL 7035) or safety yellow (RAL 1004)
Fire behaviour:	certified according to DIN 12925 Part 2
Fittings:	1 permanently installed loading ramp Assembly rails for the installation of taps Cylinder holders with securing straps Pass through for up to 60 gas ducts Double doors with 160° opening angle and door latch Doors lockable Height adjustment Earth connection

Accessories:	Height adjustable cylinder holder, hooked in on the side For provision of smaller cylinders up to 10 l Ermeto screw connection for leading gas lines through the cabinet ceiling
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Specifications gas cylinder cabinets according to DIN 12925 part 2					
Outside dimensions W x H x D (mm)	Inside dimensions W x H x D (mm)	Weight (kg)	Air flow; pressure drop for combustible and oxidising gases	Air flow; pressure drop for toxic and very toxic gases	Max. number of gas pass-throughs
600 x 2050 x 615	490 x 1900 x 450	260	4 m³/h; 20 Pa	50 m³/h; 77 Pa	12
900 x 2050 x 615	790 x 1900 x 450	310	7 m³/h; 25 Pa	81 m³/h; 83 Pa	24
1200 x 2050 x 615	1090 x 1900 x 450	440	9 m³/h; 28 Pa	112 m³/h; 105 Pa	48
1400 x 2050 x 615	1290 x 1900 x 450	480	11 m³/h; 30 Pa	132 m³/h; 115 Pa	60

Extract spigot for all cabinets Ø 75

Gas cylinder cabinets according to DIN 12925 part 2			
	Order no.	Description	Dimensions in mm (W x H x D)
	2.335.407	Gas cylinder cabinet, 1 hinged door, mounted left	600 x 2050 x 615
	2.335.409	Gas cylinder cabinet, 1 hinged door, mounted right	600 x 2050 x 615
	2.335.405	Gas cylinder cabinet, 2 hinged doors	900 x 2050 x 615
	2.335.403	Gas cylinder cabinet, 2 hinged doors	1200 x 2050 x 615
	2.335.401	Gas cylinder cabinet, 2 hinged doors	1400 x 2050 x 615
	8.100.004	Cylinder holder, hooked in on the side	
	8.100.006	Ermeto screw connection	

The cabinets are available

- in further fitting variants
  - in the colour safety yellow
  - with additional accessories
- on request.

An air flow monitor is available for gas cylinder cabinets on request.

## 3.5 Gas cylinder cabinets

### 3.5.4 Pressure relief stations

The pressure relief stations listed here are used to remove high-purity gases from compressed gas cylinders. They can be installed directly in gas cylinder cabinets and are available in different types and with different fittings.

In general two materials are used:

- Brass: for non-aggressive gases up to purity class 6.0
- Stainless steel: for aggressive gases up to purity class 6.0

**The following variants are available:**

- Station pressure reducer for 1 cylinder with internal gas purging for consumption up to approx. 20 m<sup>3</sup>/week. The compressed gas cylinder has to be exchanged when there is a shortage of gas.
- Battery pressure reducer with manual changeover for 2 cylinders for consumption up to approx. 60 m<sup>3</sup>/week. When there is a gas shortage, it is possible to change over manually from one compressed gas cylinder to the other.
- Battery pressure reducer with automatic changeover for 2 cylinders with internal gas purging. For consumption higher than approx. 60 m<sup>3</sup>/week. When there is a gas shortage, changeover to the other cylinder is carried out automatically.

The station and battery pressure reducers can be fitted with a contact manometer and signal box for visual and audible warning when there is a gas shortage. The line pressure limit can be set by the user.

Taps with flame arrestor must be used for acetylene.

We require the following information in order to select the right gas tap:

- Gas type and purity
- Material of the tap and supply lines


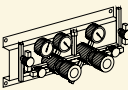
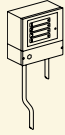
We can prepare a customised quote for the supply system based on this information.

#### Gas shortage signal box

The gas shortage signal box enables monitoring of the gas supply of 4 gas cylinders at most. Faults in the gas supply are signalled visually and audibly. The acoustic signal can be reset manually, the visual warning does not cancel until the fault is eliminated.

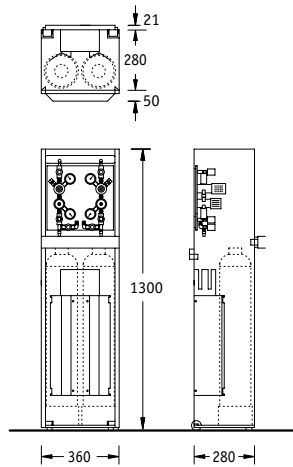
For operation the signal box requires the following number of contact manometers:

- Station pressure reducer for one cylinder:  
1 contact manometer
- Battery pressure reducer with manual change-over:  
1 contact manometer per battery
- Battery pressure reducer with automatic change-over:  
2 contact manometers per battery

Accessories for gas cylinder cabinets			
	Order no.	Description	Additional information
	9.000.500	Station pressure reducer for one cylinder with internal gas purging	Brass
	9.000.510	Station pressure reducer for one cylinder with internal gas purging	Stainless steel
	9.000.502	Battery pressure reducer with manual changeover for 2 cylinders, with internal gas purging	Brass
	9.000.512	Battery pressure reducer with manual changeover for 2 cylinders, with internal gas purging	Stainless steel
	9.000.501	Battery pressure reducer with automatic changeover for 2 cylinders, with internal gas purging	Brass
	9.000.511	Battery pressure reducer with automatic changeover for 2 cylinders, with internal gas purging	Stainless steel
	9.000.111	Contact manometer for station pressure reducer or battery pressure reducer	Brass
	9.000.212	Contact manometer for station pressure reducer or battery pressure reducer	Stainless steel
	9.000.112	Gas shortage signal box	

## 3.5 Gas cylinder cabinets

### 3.5.5 Gas service unit



Gas service unit

The mobile gas service unit enables the provision of gases. The complete unit can be stowed in a Köttermann safety cabinet for pressure gas cylinders after gas extraction or overnight.

All gas units can be fitted with a two-stage extraction pressure reducer. A pressure reducer for a cylinder or a semi-automatic battery pressure reducer for two cylinders are available alternatively. The latter switches automatically to the second cylinder when the first one is empty.

#### Design:

Dimensions: 450 x 800 x 520 mm  
Holding capacity: 1 20 l gas cylinder (according to DIN 4664) or  
1-2 10 l gas cylinders (according to DIN 4664)

#### Fitting variants:

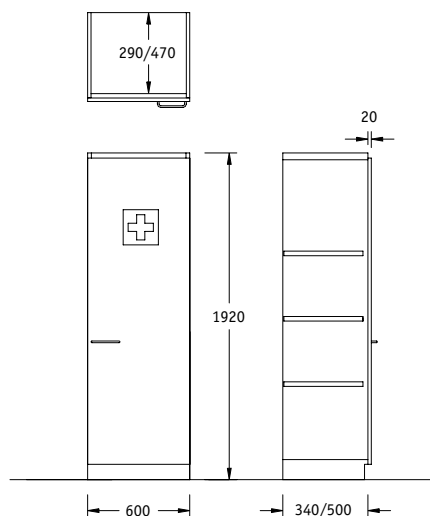
1 station pressure reducer  
for 1 cylinder, (1 gas type),  
2 station pressure reducers  
for 2 cylinders, (2 gas types),  
1 battery pressure reducer  
for 2 cylinders, (1 gas type) with manual change-over,  
1 battery pressure reducer  
for 2 cylinders, (1 gas type) with semi-automatic change-over

All pressure reducers are equipped with a gas purging system.

It is advisable to plan the fitting with the suitable extraction pressure reducer together with our expert planners.

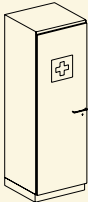


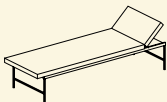
## 3.6 First aid and fire protection

### 3.6 First aid and fire protection

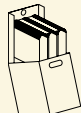
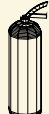
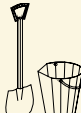







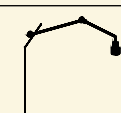


First aid cabinets

Wherever dangerous chemicals are used, accidents or small fires can happen. A first aid kit has to be available in the laboratory for just these cases. The first aid cabinets and cases from Köttermann contain a kit that meets DIN standards: the tall storage cabinet is additionally equipped with a stretcher, blanket, fire extinguisher and two fire blankets as well as a fire bucket with shovel. Emergency showers for the entire body and one or two-sided eye showers are used for acid burns. Fire extinguishers are available with a carbon dioxide filling or with dry powder.

First aid and fire protection				
	Order no.	Description	Dimensions in mm (W x H x D)	Additional information
	2.321.038	First aid cabinet with kit to DIN 13169 (plus: stretcher with a blanket, fire extinguisher, two fire blankets, fire bucket with a shovel)	600 x 1920 x 520	3 shelves, lockable, hinged left
	2.321.037	First aid cabinet with kit to DIN 13169 (plus: stretcher with a blanket, fire extinguisher, two fire blankets, fire bucket with a shovel)	600 x 1920 x 520	3 shelves, lockable, hinged right
	2.321.051	First aid cabinet without kit	600 x 1920 x 360	3 shelves, hinged right
	2.321.035	First aid cabinet without kit	600 x 1920 x 360	3 shelves, lockable, hinged right
	2.321.052	First aid cabinet without kit	600 x 1920 x 360	3 shelves, hinged left
	2.321.034	First aid cabinet without kit	600 x 1920 x 360	3 shelves, lockable, hinged left
	2.321.045	First aid cabinet without kit	600 x 1920 x 520	3 shelves, hinged right
	2.321.K	First aid cabinet without kit	600 x 1920 x 520	3 shelves, lockable, hinged right
	2.321.046	First aid cabinet without kit	600 x 1920 x 520	3 shelves, hinged left
	2.321.Y	First aid cabinet without kit	600 x 1920 x 520	3 shelves, lockable, hinged left
	7.716.051	First aid cabinet with kit to DIN 13169	404 x 462 x 170	
	7.716.052	First aid case filled to DIN 13169	400 x 300 x 150	
	7.716.072	First aid case filled to DIN 13157	260 x 170 x 110	
	7.716.055	Emergency stretcher	700 x 2000	

### 3.6 First aid and fire protection

First aid and fire protection			
	Order no.	Part	Additional information
	7.716.057	Steel mounting brackets for fire blanket	200 x 340 x 300 mm
	7.716.056	Fire blanket in accordance with DIN 14155	
	7.716.058	Fire extinguisher, 2 kg	Filled with carbon dioxide
	7.716.059	Fire extinguisher, 6 kg	Filled with ABC powder
	7.716.060	Fire bucket with sand shovel	
	7.716.074	Stretcher, foldable twice	
	7.716.075	Wool blanket for stretcher	
	7.710.675	Eye shower in accordance with DIN 12899 Part 2, 1 nozzle, for table mounting, incl. safety mark	Hose length: 1500 mm, with table pass through M28x1.5, Connection: inside thread 1/2"
	7.710.676	Eye shower in accordance with DIN 12899 Part 2, 2 nozzles, for table mounting, incl. safety mark	Hose length: 1500 mm, with table pass through M28x1.5, Connection: Inside thread 1/2"
	7.716.533	Eye shower in accordance with DIN 12899 Part 2, 1 nozzle, for wall mounting, incl. safety mark	Hose length: 1,500 mm, with wall bracket, Connection: Inside thread 1/2"
	3.225.119	Eye shower in accordance with DIN 12899 Part 2, 1 nozzle, for service column, incl. safety mark	Including cassette 150 x 300 mm, for service columns
	3.225.120	Eye shower in accordance with DIN 12899 Part 2, 1 nozzle, for service wall, incl. safety mark	Including cassette 100 x 350 mm, for service wall
	7.716.076	Body shower in accordance with DIN 12899 Part 1, for wall mounting	Connection thread 1/2" Height: 605 mm Depth: 700 mm
	7.724.145	Body shower in accordance with DIN 12899 Part 1, for mounting on wall above doors	Connection thread 1/2" with 2 reducers: 1" to 3/4" and 3/4" to 1/2", Height: 700 mm, Depth: 470 mm

# Any questions?

## United Kingdom:

Köttermann Ltd.  
8 The Courtyard  
Furlong Road  
Bourne End  
Buckinghamshire SL8 5AU  
United Kingdom  
Tel. +44(0)16 28/53 22 11  
Fax +44(0)16 28/53 22 33  
E-Mail: sales@kottermann.co.uk

## Austria:

Köttermann GmbH Austria  
Castellgasse 22/1  
A-1050 Wien  
Tel. +43(0)1/5 44 93 74-0  
Fax +43(0)1/5 44 93 74-72  
E-Mail: office@koettermann.at

## Belgium/Luxembourg:

Köttermann bvba  
Keesinglaan 26  
B-2100 Antwerp  
Tel. +32(0)3/3 60 97 90  
Fax +32(0)3/3 25 83 47  
E-Mail: info@kottermann.be

## France:

Köttermann SARL  
Parc GVIO – BP 7411  
36, Rue de La Haye  
F-38074 St. Quentin Fallavier  
Tel. +33(0)4 74/95 23 80  
Fax +33(0)4 74/95 23 89  
E-Mail: mail@kottermann.fr

## Germany:

Köttermann GmbH & Co KG  
Industriestraße 2-10  
D-31311 Uetze/Hänigsen  
Tel. +49(0)51 47/9 76-0  
Fax +49(0)51 47/9 76-8 44  
E-Mail: info@koettermann.de

## Netherlands:

Köttermann bv  
Keizersgracht 62  
NL-1015 CS Amsterdam  
Tel. +31(0)20/5 20 75 57  
Fax +31(0)20/5 20 75 10  
E-Mail: info@kottermann.nl

## Poland:

Koettermann Sp. z o.o.  
ul. Przasnyska 6  
PL-01-756 Warszawa  
Tel. +48(0)22/8324760  
Fax +48(0)22/8324761  
E-Mail: biuro@koettermann.pl

## Spain:

Köttermann Systemlabor S.A.  
c/Agustín de Foxá, 25-10° A  
E-28036 Madrid  
Tel. +34/91/7 32 01 10  
Fax +34/91/7 32 01 11  
E-Mail: mail@koettermann.es

## Switzerland:

Köttermann AG  
Industriestrasse 37  
CH-8625 Gossau ZH  
Tel. +41 44/9 36 18 09  
Fax +41 44/9 35 18 68  
E-Mail: info@koettermann.ch

## Internet under:

[www.koettermann.com](http://www.koettermann.com)

## Our partners

### Argentina:

Microclar Argentina S.A.  
Dardo Rocha 674  
RA-1641 CJA Acassuso  
Pcia. de Buenos Aires  
Argentina  
Tel. +54(0)11/47 92 40 09  
Fax +54(0)11/47 43 13 26  
E-Mail: hmeyer@fibertel.com.ar

### China:

A & S Technology Limited  
Rm 602-606 Trend Centre  
29-31 Cheung Lee Street  
Chaiwan  
Hongkong  
Tel. +852/28 98 80 20  
Fax +852/28 98 90 76  
E-Mail: astech@astech.com.hk

### Italy:

Labozeta S.r.l.  
Via Tiburtina, 1166  
I-00156 Roma  
Tel. +39 06/4 11 17 07  
Fax +39 06/41 22 40 50  
E-Mail: info@labozeta.it

### Malaysia/Singapore:

IPROLAB SDN BHD (675812-V)  
72, Jalan Tun Ahmad Zaidi Adruce  
P.O. Box 2071  
MAL-93742 Kuching, Sarawak  
Tel. +60(0)82/23 81 63  
Fax +60(0)82/42 81 63  
E-Mail: dmens@streamyx.com

### Mexico:

Importaciones Runkel, S.A. de C.V.  
Antares 19  
04810 México, D.F.  
MEXICO  
Tel. +52/(0)55/56 79-31 27  
Fax +52/(0)55/56 79-08 57  
E-Mail: fl@runkel.com.mx

### Philippines:

CyberTec Corp.  
20 Maaralin St., Central Distr.  
RP-Diliman, Quezon City  
Tel. +63/2/4 33 43 72  
Fax +63/2/9 28 11 07  
E-Mail: cybertec@eastern.com.ph

### Russian Federation:

PEL Co. Ltd.  
ul. Barochnaya 8-4  
RUS-197110 St. Petersburg  
Tel. +7 812/230-7553  
Fax +7 812/235-2958  
E-Mail: info@pel.spb.ru

### Saudi-Arabia:

National Scientific Co. Ltd.  
Office No. 204, 2nd Floor  
Al Bandarieh Center  
Pepsi Cola Road  
Al Khobar  
Kingdom of Saudi Arabia  
Tel. +966 3-887-7953  
Fax +966 3-887-7968  
E-Mail: dammamoffice@nsc-ksa.com

### Slovenia:

Labormed d.o.o.  
Zg. Pirnice 96c  
SI -1215 Medvode  
Tel. +386 1 3621 414  
Fax +386 1 3621 415  
E-Mail: info@labormed.si