User Manual

Fire Protection Shelf Container

FBM plus

FBM base

Not subject to revision

Copyright

DENIOS AG
Dehmer Straße 58-66
32549 Bad Oeynhausen
Tel.: +49 5731 753-0
Fax: +49 5731 753-199
E-mail: info@denios.de

Contents

1 General description

This chapter contains notes on the User Manual, as well as general safety instructions that must be observed when handling the Fire Protection Shelf Container.
In the following, the Fire Protection Shelf Container is also referred to as a storage system.

1.1 Notes on the user manual

This used manual is a central component of the user documentation of the storage system. Observe all notes/instructions, data and regulations contained in this user manual. The user manual will help you to operate the storage system safely and with a high rate of availability.
We reserve the right to make technical changes to the representations and specifications in the user manual to improve the storage system.

1.2 Using the user manual

This User Manual applies to the storage system. It contains all the information needed regarding correct start-up, trouble-free operation, maintenance, putting out of service and disposal. The notes and instructions in this user manual must be carefully followed and observed.
Any person who is involved in the installation, use, servicing or repair of the product is required to familiarize himself/herself with the user manual and must be trained and instructed in its handling.
The user manual must always be kept at the location of the storage system and it must also be legible at all times.
Only authorized persons may use the storage system.

	NOTE
	National regulations and safety regulations regarding hazardous substances, safety instructions, operational safety and the duties and responsibilities of the operator must be observed.

	NOTE
	Observe the special equipment compliant to your order confirmation and the corresponding user manuals.

1.3 Design of the user manual

Safety-relevant instructions are marked by appropriate symbols and are in bold italics.

Listings

Listings of features are marked by a bullet in random order.

Example:

- Feature A
- Feature B
  - Partial feature of feature B

Orders (sequences)

Work steps that must be carried out in the order indicated are numbered and the result of the work step is in italics.

Example:

1. 1st step to be carried out

   Result of 1st step

2. 2nd step to be carried out

   2.1 Partial step of 2nd step to be carried out

1.4 Safety symbols used in these installation and operating instructions

	**HAZARD**
	"HAZARD" indicates an immediate danger that results in severe bodily injuries or death.
	**WARNING**
	"WARNING" indicates a possible hazardous situation that may result in severe bodily injuries or death.
	**CAREFUL**
	"CAREFUL" indicates a possible hazardous situation that may result in minor injuries. This signal word is also used to warn of damage to property.
	**NOTE**
	"NOTE" indicates operating instructions and other useful information.

1.5 Duties and responsibilities of the operator

The operator promises only to allow those persons to work on or at the storage system who:

- are acquainted with the basic work-safety and accident-prevention regulations and who have been instructed in the handling of the storage system.
- have read and understood the safety instructions and the warnings in this user manual and who have confirmed this with their signature.
- have been trained or instructed and whose responsibilities for operating, installing, maintaining or repairing the equipment have been clearly defined.
- are instructed regularly regarding difficult situations, hazards and other special rules of behaviour.

The operator promises:

- to observe and draw notice to the generally valid legal and other binding regulations regarding accident prevention, environmental protection and the handling of hazardous substances in addition to the instructions in this user manual.
- to provide personal protection equipment.
- to regularly check the safety-conscious work of his/her personnel.
- to observe the valid legal regulations at the place in which the storage system is installed and used.

1.6 Requirements made of the personnel

All persons authorised to work on the storage system promise before commencing work:

- to observe the basic work-safety and accident-prevention regulations.
- to read the safety and warning instructions in this user manual and to confirm with their signature that they have understood them.
- to wear or use during work personal/work-related protective clothing and aids intended to ensure work safety, inasmuch as this is required for safety reasons.
- to only work within their previously determined field of expertise.

For instance, work on the electrical equipment of the storage system may only be carried out by specially trained expert staff or by instructed persons working under the instruction and supervision of such a trained person, compliant with the valid technical regulations for such work.
Access to non-authorised persons is forbidden.

	NOTE
	There may also be national regulations regarding the electrotechnical equipment of the operating company.

1.7 Notes on training

Only employ trained or instructed personnel. Clearly define the responsibilities of the personnel for operating, fitting, maintenance and repairs.
Any personnel being trained, under apprenticeship or a course of instruction, or within a general course of training must only be permitted to work at the storage system under constant supervision from an experienced person.

1.8 Hazards when handling the storage system

The storage system is state-of-the-art and has been built in compliance to approved safety regulations. Nevertheless, its improper operation may pose a risk of serious or fatal personal injury for the user or third parties, or impairments to the storage system or other property.
Only operate the storage system in perfect, safe condition and in accordance to the regulations.

HAZARD

Observe the safety instructions!

- Only operate the storage system when all integrated protective equipment and safety-relevant installations are functioning correctly.
- Immediate remedy or remove any faults that may impair safety.
- Observe instructions on residual risks and hazards in Chapter 2 "Safety instructions".

1.9 Organizational measures of the operator

The operating company is responsible for the operation and the maintenance of the storage system. National regulations and safety regulations regarding hazardous substances, safety instructions, operational safety and the duties and responsibilities of the operator must be observed. Staff must be instructed accordingly.

Instructions within the company must include the following:

- Type of storage (active/passive)
- Load capacity of storage system
- Regulations for loading and unloading
- Substances stored
- material properties
- Joint storage prohibition

1.10 Intended use

The Fire Protection Shelf Container (FBM) is a non-walk-in, type-approved fire protection system with sump for the storage of hazardous substances according to the regulations. This includes environmentally hazardous substances such as solvents, lubricants, paints, lacquers and cleaning agents. The FBM is mainly used for the active and passive storage of water-polluting substances of all WGK 1-3 (water pollutant rating) according to WHG/VAUwS *(Federal water management act/ German ordinance on installations handling water- polluting substances) as well as flammable media* (H224; H225; H226), as well as toxic and oxidizing substances according to TRGS 510*, (Storage of hazardous substances in non-stationary containers),* without the need to meet any safety distances. Their marked feature is the variable storage of small trading units, drums or 1,000 litre transport containers (IBC).

NOTE

Technical forced ventilation is required when storing flammable liquids.

The storage system must only be used within the performance limits listed in Chapter 4 "Technical Data".

1.11 Incorrect usages

In particular, an incorrect usage is:

- Storing of inadmissible substances:
  - It is required to proof the resistance of the sump material to the medium to be stored before storing (refer to the Design Approval).
- Use of storage systems for other purposes than those listed in Chapter 1.10 Intended use.
- Operation, maintenance and repair of the storage system by unauthorized and/or non-instructed persons.
- Storing of inadmissible trade units:
  - The trading units must comply with the provisions for the Transportation of Dangerous Goods.
- Joint storage prohibition: Media that can react with each other must not be stored via the same sump.
- Exceeding the stored quantities and load capacity.
- Jamming open doors, e.g. with wedges, stones, etc.

1.12 Claims and liability

Claims and liability in case of injury to persons or damage to property are excluded when they have been caused by one or more of the following:

- Incorrect usage:
- Improper assembly, commissioning, operation and maintenance.
- Operating the storage system with defective safety equipment or improperly attached or non-functioning safety and protection devices.
- Non-observance of the instructions in the user manual regarding transport. storage, assembly, start-up, operation and maintenance.
- Non-authorized structural changes.
- Insufficient monitoring of parts subject to wear.
- Incorrectly run repair work.
- Catastrophes caused by external influences and force majeure.
- Vandalism.

2 Safety instructions

2.1 Safety symbols on the product

Warning and prohibition stickers on the storage system:	
	Access to unauthorized persons forbidden.
	Fire, naked flames and smoking forbidden.
	Area in which an explosive atmosphere may occur.
	Caution: Only close the door with the switch.

2.2 General safety instructions

HAZARD

Danger to persons and the storage system!

- Observe all safety and danger instructions on the storage system and keep these complete and legible and neither change nor remove them.
- Observe all general and special safety instructions in this user manual and the operating instructions of third-party manufacturers as well as of the operator for the system parts delivered.
- Do not carry out any work where there are reservations regarding safety.
- Always keep the user manual within easy reach at the location of the machinery.
- Immediately shut down the storage system and report the fault to the responsible location/person if safety equipment is damaged, defective or has been altered.
- Observe the valid for safety and health regulations during work.
- Do not independently retrofit the storage system.
- It is forbidden for unauthorised persons to enter the storage system.
- Fire, naked flames or smoking are not allowed.
- Packagings and trading units must comply with the provisions for the transportation of dangerous goods.

HAZARD

Danger to life from electrical voltage!

- If current becomes live at defective parts and cable then switch off the power and leave the hazard zone.

	▪ Only authorised expert personnel are permitted to maintain and repair the system in accordance to the circuit diagram.

WARNING

Hazard from explosive atmosphere!

- Fire, naked flames or smoking are not allowed.
- Only store materials for which the storage is designed.

2.3 Operational safety instructions

HAZARD

Hazard to persons!

- Hazardous substances may only be handled when wearing the prescribed safety equipment.
- Be careful and attentive in the whole area of the storage system.

WARNING

Incorrect operation of the storage system!

- Use the storage system in accordance to the instructions.
- Check the storage system for damages before working at it.
- Only use the storage system when it is in technically perfect, operational and functional conditional.
- First correctly repair any damages to the storage system and after this put the storage system into operation.
- Only store materials for which the storage system is designed.
- The trading units for the materials must comply with the provisions for the Transportation of Dangerous Goods.
- The trading units may only be opened for filling and emptying. They are only allowed to be dispensed above the sump.
- The load capacity of the storage system must not be exceeded!
- The substances must be stored in a way that all trade units and the sump can be viewed.
- When designed as an active storage system, the handling area must also be secured by the sump.

WARNING

Improper operation of the storage system!

- Only trained expert personnel may operate the storage system.
- Acquaint yourself with the storage system.
- Clearly define responsibilities and working areas,
- Be aware of the possible hazards at the storage system.
- Never exceed the permitted storage capacity.
- Only actuate the door using the lock button.

	▪ Fire alarms must not be connected through to the fire alarm system.

WARNING

Replacing the storage medium!

- A proof of the resistance of the sump to the storage medium is required.

CAREFUL

Risk of crushing at rotating/moving parts!

- There is the risk of bruising/crushing when using the door.
- If an open door is blown by wind then the door may be closed/opened by the wind.

2.4 Safety instructions for equipment, maintenance, repairs, troubleshooting

HAZARD

Hazard to persons!

- When necessary, adequately cordon off the area for installation work and maintenance work during maintenance/repairs and when troubleshooting.
- Be careful and attentive in the whole area of the storage system.
- Carry out installation work and troubleshooting in which safety equipment and/or enclosures are made non-functional with the utmost care. Clearly define responsibilities and working areas,

HAZARD

Hazard to persons from electric shock

- Never touch live parts.
- Only switch off the storage system with the main switch.
- Live system parts at which inspection, maintenance or repair work is carried out must be switched off. First make sure that the parts switched off are no longer live, then ground and short-circuit, and isolate other live parts in the vicinity.
- The electrical equipment of the storage system must be inspected and/or checked regularly. Loose connections, cable with faulty insulation or other faults must be remedied immediately.
- Only authorised expert personnel are permitted to maintain and repair the system.

	**CAREFUL**
	Improper maintenance and repair work at the storage system! ▪ Depending on the place of installation, maintenance may only be carried out by a certified specialist company according to WHG (German Water Management Act), or by trained personnel. ▪ Only trained expert personnel may install the storage system. ▪ Observe the safety instructions in this user manual and in the operating instructions of the third-party manufacturer and only carry out maintenance and repair work after doing this.

3 Transport, installation and commissioning

3.1 Safety instructions

	**HAZARD** **Observe the safety instructions!** ▪ Observe the safety instructions in Chapter 2 "Safety instructions" and especially Chapter 2.4 "Safety instructions for equipment, maintenance, repairs, troubleshooting".

3.2 Securing the load

Before transport:

- Do not exceed the permitted total height and width.
- Close single-leaf doors for transport; otherwise:
  - Check the transport securing device of the doors.

Fig. 3-1: without transport securing device

Fig. 3-2: with transport securing device

- Fasten the container at the stipulated fastening points.

3.3 Transporting by crane

	WARNING
	Risk of accident and damages to the storage system! The following warnings must be observed for safe transport of the storage system. ▪ The angle of contact of the carrying ropes must not exceed 60°. ▪ For storage systems with 6 or 8 crane eyes, the middle carrying rope must be tensioned. ▪ The storage system may only be transported when empty!

Fig. -33: Transport strap

The storage system is hooked to the crane by transport straps The minimum bearing capacity of the crane must accord to the weight of the storage system.

3.4 Transporting with lifting gear

The storage system can be transported using a fork-lift with fork extension and an appropriate lifting capacity.

	WARNING
	Risk of accident and damages to the storage system! The following warnings must be observed for safe transport of the storage system. ▪ The storage system may only be transported when empty! ▪ Observe the correct length of the fork of the fork-lift! ▪ For the FBM base, the rectangular timbers must be replaced before placing down.

	NOTE
	Do not push the storage system over the floor/ground.

3.4.1 Erection of the Fire Protection Shelf Container FBM base with lifting gear

Preconditions:

The fork lift meets the requirements.

Fire Protection Shelf Container FBM base is delivered on rectangular timbers.

Work steps:

1. Transport the Fire Protection Shelf Container FBM base to the place of installation by means of a fork lift and place it.

   At the place of installation, place the Fire Protection Shelf Container on rectangular timbers.

2. The fork lift hoists the Fire Protection Shelf Container FBM base using the transport straps in the roof area.

   Rectangular timbers are now accessible.

3. Unscrew the rectangular timbers.

   Now, the rectangular timbers are removed.

4. Put the Fire Protection Shelf Container FBM base down at the place of installation.

3.5 Erection conditions

3.5.1 Installation space requirements

- With regard to bearing capacity, serviceability and durability, the foundation must comply with DIN EN 206.
- The flatness tolerance of the foundation must comply with DIN 18202 Table 3.
- Concrete strength must be at least C25 / 35.
- Bearing capacity = Empty weight + max. load

3.5.2 Alignment

Preconditions:

The installation space meets the requirements.

Positioning has been carried out compliant with the layout plan.

Work steps:

1. Place the storage system at the required position.

	NOTE
	To be able to reach the rear fixing points, a minimum distance of 60 cm should be kept to buildings and the other facilities.

2. Remove the transport securing device of the doors.

   For hinged doors, they are in the centre at the top end.

Fig. -34: Winged door – transport securing device

   2.1 Unscrew the screws (a).

   2.2 Remove the transport securing device (b).

   2.3 Re-tighten the closing sequence control (c).

3. Align the width of the storage system in the horizontal direction; use levelling plates if necessary.
4. Align the length of the storage system in the horizontal direction; use levelling plates if necessary.

   The doors must be aligned flush to each other, see Figure

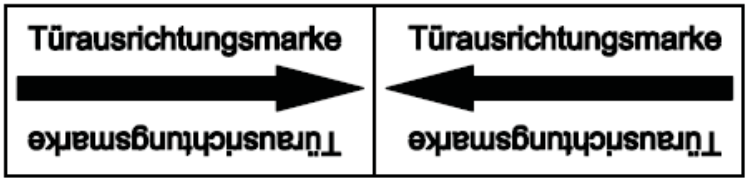


Fig. -35: Door alignment marks

3.5.3 Fixing to floor

Preconditions:

The installation space meets the requirements.

Work steps:

1. Anchor the storage system to the fastening clips on the base plate with one heavy duty anchor for each base point.

	NOTE
	Observe the operating instructions of the manufacturer of the heavy duty anchor.

3.6 Commissioning

3.6.1 Connecting the electrical lines

	NOTE
	The electrical installation may only be connected by an authorised electrician.

Connections to be made by customer:

- Electric supply, fuse: As specified in the circuit diagram (observe correct phase rotation)

3.6.2 Equipotential bonding

	NOTE
	The operator must connect the equipotential bonding system to the foundation earth connector before commissioning. Only use suitable material for this.

Grounding designed compliant with:

- DIN EN 50164-2 (VDE 0185-202)

3.6.3 Adjustment of door retaining device

Preconditions:

The door retaining device is in transport position (the arms are turned back by 180°.

Work steps:

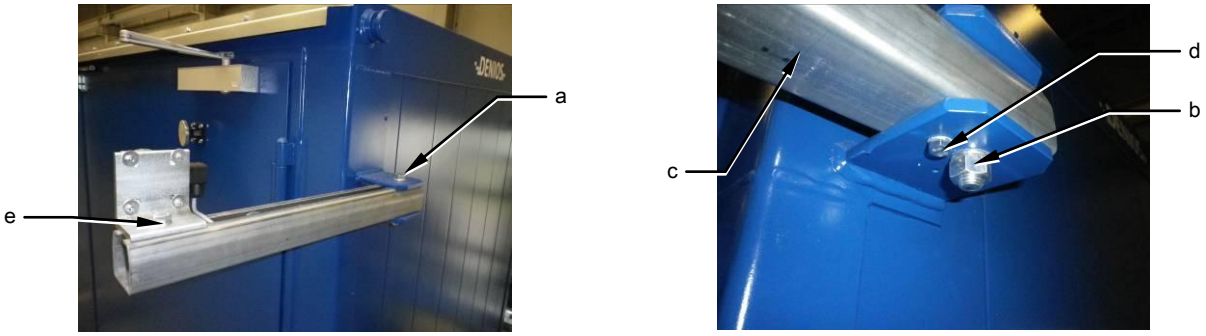


Fig. -36: Door retaining device

1. Release the screw (a) and the nut (b) on the arm.
2. Screw the fixing screw (d) off

   Arm is released.
3. Bring arm in assigned position. (door opening angle approx. 100°).
4. Tighten the screw (a) and the nut (b).
5. Fix the arm (c) by tightening of the fixing screw (d).
6. If required, readjust the magnetic clamp holder by releasing the screw (e).

3.6.4 Checking and adjustment work

	NOTE
	The technical ventilation of the storage system is preset at the factory for equipment with heating, cooling and / or exhaust air monitoring.

Preconditions:

- Electrical supply is established.
- Equipotential bonding has been established with the foundation earth connector.

Work steps:

1. Check the door retaining device in open and fixed position. (see assembly instruction for door retaining device)
2. Check the heating by activating the thermostat.

   The heating switches on.
3. Check the door locking and securing system by actuating it once.

   The doors close.

   3.1 If the doors do not close, adjust the overhead door closer and the closing sequence control if necessary. storage system aligned? Refer to chapter 3.5.2 "Alignment"

   The doors close.
4. Check the technical ventilation by pressing the "Exhaust air on" key switch on the control cabinet.

   The exhaust air switches on.
5. Check the lighting by pressing the light switch.

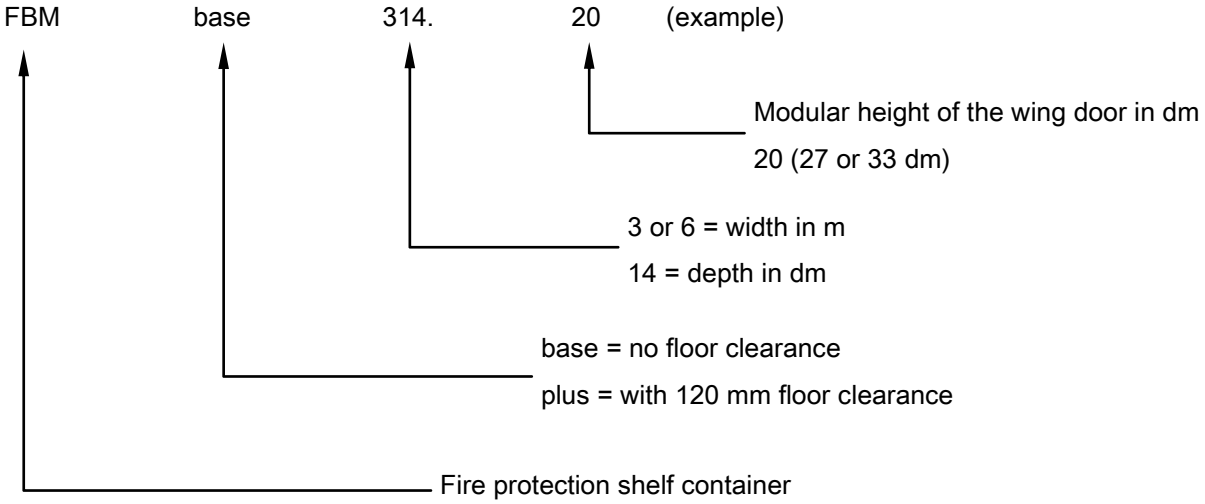
   The light is switched on.

4 Technical Data

4.1 Complete system

Designation:	Fire Protection Shelf Container
Bearing load for uniformly distributed load:	1250 kg/m²
Basic snow load:	1.56 kN/m² (= 1.25 kN/m² / 0.8)
Wind load:	0.5 kN/m²
Paint:	min. 40 µm epoxy-based primer min. 40 µm covering paint made of 2-component acrylic (High-Solid-Lack)

4.2 Model codes



4.3 Dimensions and load

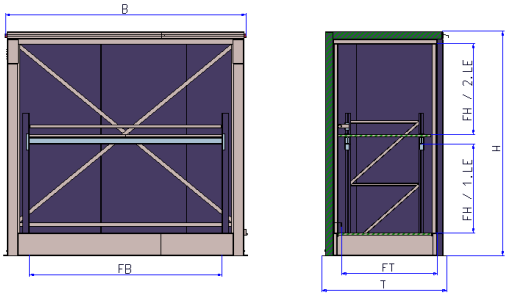


Fig. -41: Dimension sketch Fire Protection Shelf Container FBM base 314

Model:	FBM base 314.20	FBM base 314.27	FBM base 314.30
External dimension W x D x H (mm):	3380 x 1750 x 2455	3380 x 1750 x 3155	3380 x 1750 x 3455
Clear shelf dimensions SW x SD (mm)	2915 x 1340	2700 x 1300	2700 x 1300
Clear shelf height SH (mm) 1st level / 2nd level	1950 / -	1250 / 1250	1400 / 1400
Clear door dimensions W x H (mm)	2915 x 1950	2915 x 2650	2915 x 2950
Sump capacity:	1000	1000	1000
Weight (kg):	2400	2600	3000
Storage capacity:	8 drums (200l) 2 IBCs 2 Chemical pallets 3 Euro pallets	16 drums (200l) 4 Chemical pallets 6 Euro pallets	16 drums (200l) 4 IBCs 4 Chemical pallets 6 Euro pallets

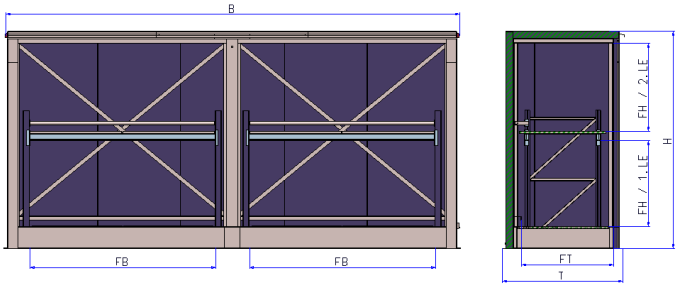


Fig. -42: Dimension sketch Fire Protection Shelf Container FBM base 614

Model:	FBM base 614.20	FBM base 614.27	FBM base 614.30
External dimension W x D x H (mm):	6595 x 1750 x 2455	6595 x 1750 x 3155	6595 x 1750 x 3455
Clear shelf dimensions SW x SD (mm)	2 x 2915 x 1340	2 x 2700 x 1300	2 x 2700 x 1300
Clear shelf height SH (mm) 1st level / 2nd level	1950 / -	1250 / 1250	1400 / 1400
Clear door dimensions W x H (mm)	2 x 2915 x 1950	2 x 2915 x 2650	2 x 2915 x 2950
Sump capacity:	2 x 1000	2 x 1000	2 x 1000
Weight (kg):	4000	4900	5100
Storage capacity:	16 drums (200l) 4 IBCs 4 Chemical pallets 6 Euro pallets	32 drums (200l) 8 Chemical pallets 12 Euro pallets	32 drums (200l) 8 IBCs 8 Chemical pallets 12 Euro pallets

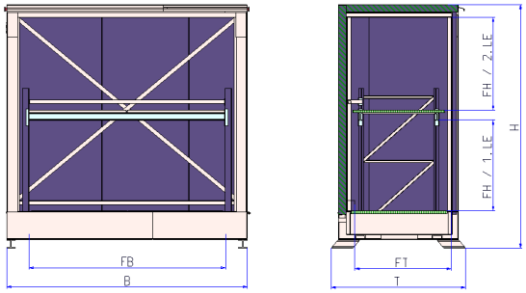


Fig. -43: Dimension sketch Fire Protection Shelf Container FBM base plus 314

Model:	FBM plus 314.20	FBM plus 314.27	FBM plus 314.30
External dimension W x D x H (mm):	3370 x 1850 x 2640	3370 x 1850 x 3340	3370 x 1850 x 3640
Clear shelf dimensions SW x SD (mm)	2915 x 1340	2700 x 1300	2700 x 1300
Clear shelf height SH (mm) 1st level / 2nd level	1950 / -	1250 / 1250	1400 / 1400
Clear door dimensions W x H (mm)	2915 x 1950	2915 x 2650	2915 x 2950
Sump capacity:	1000	1000	1000
Weight (kg):	2700	3200	3300
Storage capacity:	8 drums (200l) 2 IBCs 2 Chemical pallets 3 Euro pallets	16 drums (200l) 4 Chemical pallets 6 Euro pallets	16 drums (200l) 4 IBCs 4 Chemical pallets 6 Euro pallets

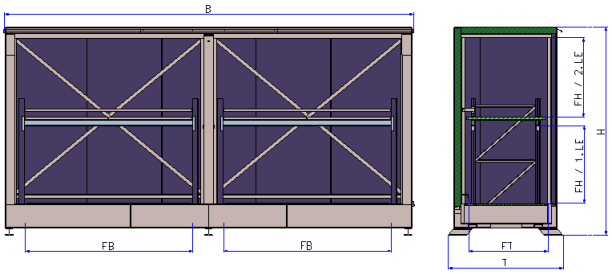


Fig. -44: Dimension sketch Fire Protection Shelf Container FBM base plus 614

Model:	FBM plus 614.20	FBM plus 614.27	FBM plus 614.30
External dimension W x D x H (mm):	6590 x 1850 x 2640	6590 x 1850 x 3340	6590 x 1850 x 3640
Clear shelf dimensions SW x SD (mm)	2 x 2915 x 1340	2 x 2700 x 1300	2 x 2700 x 1300
Clear shelf height SH (mm) 1st level / 2nd level	1950 / -	1250 / 1250	1400 / 1400
Clear door dimensions W x H (mm)	2 x 2915 x 1950	2 x 2915 x 2650	2 x 2915 x 2950
Sump capacity:	2 x 1000	2 x 1000	2 x 1000
Weight (kg):	4800	5500	6000
Storage capacity:	16 drums (200l) 4 IBCs 4 Chemical pallets 6 Euro pallets	32 drums (200l) 8 Chemical pallets 12 Euro pallets	32 drums (200l) 8 IBCs 8 Chemical pallets 12 Euro pallets

4.4 Mounting components

4.4.1 Sump

Material:	Steel (DIN EN 10 025)
Material No.:	1.0038
Sheet thickness:	5 mm
Leak test:	DIN EN 571-1

4.4.2 Frame

Material:	Steel (DIN EN 10 025)
Material No.:	1.0038
Steel frame structure:	hollow and rolled steel sections

4.4.3 Exterior cover

Exterior walls and roof:	F-90-A fire-protection plates (compliant with EN 13501-1)
Roof:	Non walk-in

4.4.4 Storage space

Material:	Galvanized steel
Surface load for uniformly distributed load:	1250 kg / m²

4.4.5 Door elements

Access:	Long container side
Door design:	2-leaf with ANTI-PANIC lock
Fire protection:	See separate proof
Opening side:	outwards
	closes automatically; with additional closing sequence control on 2-leaf door
	lockable in ANTI-PANIC function

4.4.6 Built-in shelving (type FBM xxx.27/30)

Steel frame W x D (mm)	2700 x 1260
Bay load:	4500 kg (evenly distributed)

4.4.7 Equipotential bonding

Equipotential bonding connections:	ensured at all steel parts
Earth connector (e.g. foundation):	Implemented by the operator compliant with VDE 0100

4.4.8 Electrical installation

Design:	acc. to DIN 0165
Control cabinet:	Type of protection IP 65

5 Configuration and function

5.1 Complete Fire Protection Shelf Container

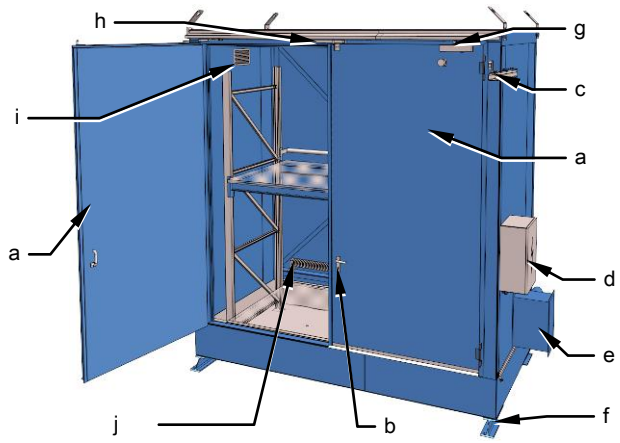


Fig. -51: Overview: Fire Protection Shelf Container FBM plus

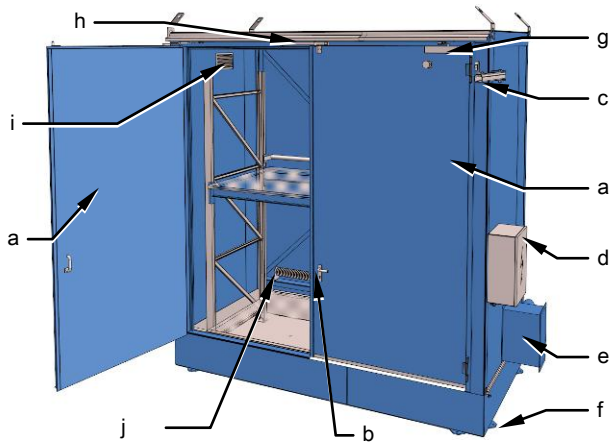


Fig. -52: Overview: Fire Protection Shelf Container FBM base

Item	Name	Function
a	Doors	Close / open storage system
b	Lock with anti-panic function	Lock / open storage system
c	Door arrester	Keep doors open.
d	Control unit	Operate and control the system, incl. door locking system buttons
e	Technical ventilation system	Passive or active storage with adjustable air exchange
f	Floor anchor	Anchor the storage system to the floor.
g	Upper door closer	Close the doors.
h	Closing sequence control	Set the order when closing the doors. (the transport securing device is located here)
i	Inlet air opening	Inlet air for technical ventilation
j	Ex heating	Designed for frost-free storage.

5.1.1 Lock with anti-panic function

In the anti-panic version, the door can be locked, i.e. the door lock is designed in a way that unauthorized persons cannot access; however, unauthorized person in the storage system can leave it unrestrictedly. From the inside, the door can be opened without a key by actuating the latch, even when it is locked from outside. After the anti-panic function has been used, the Fire Protection Shelf Container has to be locked again.

NOTE

- The key must not remain in the lock because the anti-panic function has been activated.
- The latch and key must not be activated at the same time.

5.1.2 Optional Accessories

Accessories	Designation	Application
Shelving	Additional storage level	Storage of hazardous materials
	Drum rack (extendable)	Horizontal storage of hazardous materials.
	Drum rack (turnable and extendable)	
Heater	EX heater	Frost-free storage up to -15°C outside temperature.
Technical ventilation system	Ex fire protection, 200 m³/h	Passive storage, 0.4x air exchange or Active storage 5x air exchange or >5x
	Ex-proof and fire protection 200 m³/h, silicone-free	
	Ex-proof and fire protection, 400 m³/h	
Lighting	Linear fluorescent luminary, Ex 2*36W (inside) and non EX (outside)	Lighting and illumination of the storage compartment or the anteroom.
Door retaining device	FBM 314.XX 1450N	To hold the doors and to automatically close them if a fire is detected.
	FBM 614.XX 1450N	
Sump inserts	Plastics PE/HD 1000 L	Used as additional insert for storing aggressive media.
	Plastics PE/HD 2000L electrically conductive	
	Stainless steel 1.4301 1000L	
	Stainless steel 1.4571 1000L	
Wall opening	Pipe opening up to DN 25	Additional wall bushings for pipe lines, electrical cable, etc.
Controls	Electrical control unit	Electrical control from the outside.
Ventilation monitoring	For technical ventilation	Technical monitoring of the ventilation for active storage (at least 5-fold air exchange)

6 Operation

6.1 Safety instructions

	**HAZARD** **Observe the safety instructions!** ▪ Observe the safety instructions in Chapter 2 "Safety instructions" and especially Chapter 2.3 "Operational safety instructions".

6.2 Controls and operating elements

All controls and operating elements are arranged in the control cabinet. The connected components are ready for operation after the power supply has been installed.

The control units are equipped with floating contacts for transmitting error messages.

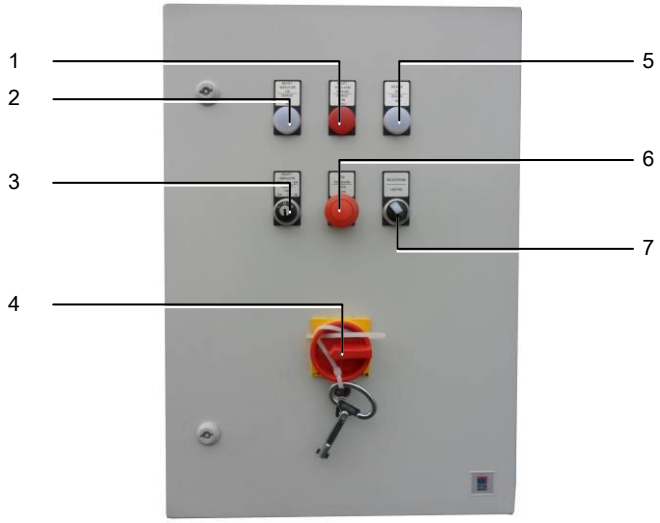


Fig. -61: Control unit type 1

Pos	Designation	Element	Function
1	Exhaust air fan fault	Display	Indicates a fault in the exhaust air fan
2	Exhaust air fan ON	Display	Indicates that the exhaust air fan is in operation
3	Exhaust air fan	Key switch	Switches on/off the exhaust air fan
4	Main switch	Lockable switch	Switches on/off the electrical supply to the complete system.
5	Heating ON	Display	Indicates that the heating is in operation.
6	Door retaining device	Mushroom pushbutton	Switch off door retention => close doors.
7	Lighting ON	Toggle switch	Switches on/off the lighting.

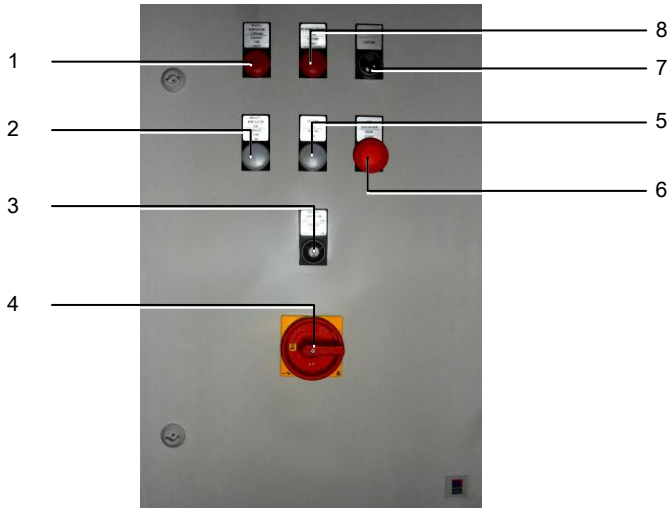


Fig. -62: Control unit type 2

Pos	Designation	Element	Function
1	Exhaust air fan fault	Display	Indicates a fault in the exhaust air fan
2	Exhaust air fan ON	Display	Indicates that the exhaust air fan is in operation
3	Exhaust air fan	Key switch	Switches on/off the exhaust air fan
4	Main switch	Lockable switch	Switches on/off the electrical supply to the complete system.
5	Heating ON	Display	Indicates that the heating is in operation.
6	Door retaining device	Mushroom pushbut-ton	Switch off door retention => close doors.
7	Lighting ON	Toggle switch	Switches on/off the lighting.
8	Heater fault	Display	Indicates a fault in the heater.

6.3 Basic checks to be made before and during operation

Before commencing work, acquaint yourself with the surroundings.

Before switching on the storage system, and during operation, pay attention at all times to any irregularities in the area of the entire storage system. The following characteristics indicate irregularities when the control unit and the storage system are switched on:

- increased noise or irregularly occurring/unusual noises.
- unusual smell.
- smoke development.

As soon as any of the above are noticed, switch off the storage system. Immediately inform the repair personnel to receive an exact assessment of the technical condition of the equipment.

The repair personnel must decide whether operation can be continued without any additional limitations to the functionality of the storage system. If a downtime is to be expected due to the damage that has been determined then repair measures must be initiated immediately.

6.4 Operating the storage system

6.4.1 Switching on the Fire Protection Shelf Container

Preconditions:

The storage system is OK (no faults detected)

Work steps:

1. Press the main switch (4).
2. Press the "Fan ON“ (3) key switch

   The exhaust air fan starts (white indicator lamp lights up)

	NOTE
	Red indicator lamp (1) lights if there is a fault in the exhaust air fan: ▪ Switch off the Fire Protection Shelf Container. ▪ It can no longer be used until the damage has been remedied. ▪ Report it to the superior / specialist engineer.

6.4.2 Loading the Fire Protection Shelf Container

Requirement:

The storage system is switched on.

Work steps:

1. Open the winged doors

   The door is kept open by the magnetic clamps on the door retaining device
2. Insert or remove the trading unit
3. Close the door using the .door lock button next to the access door on the control cabinet.

   The door closes automatically.

	NOTE
	Drums may only be placed into the Fire Protection Shelf Container or removed from it, or lifted down, using suitable equipment (e.g. drum grippers). Caution: Only actuate the door using the lock button.

6.4.3 Smoke and heat alarm

When the smoke and heat alarm is triggered:

- the door magnetic clamps automatically switch off.

  The opened door closes, heating and ventilation switch off.

- A report is made on floating contacts.

  Optical display of the warning device (2)

  The lighting remains on.

Fig. -63: Control centre

Putting the door retaining device back into operation

1. Open the control cabinet.
2. Buttons for TSZ 0400 Press the central door control system (3)

6.4.4 Heater

- Runs in automatic mode.
  - White indicator lamp (5) indicates operation.

  1. Default setting: frost-free

Fig. -64: Temperature controller (thermostat)

6.4.5 Switching on/off the lighting

1. Switch on/off the lighting by pressing the toggle switch (7).

6.4.6 Switching off the Fire Protection Shelf Container

Work steps:

1. Press the "Fan OFF“ (3) key switch

   The fan is switched off.

2. Press the main switch (4).

   The Fire Protection Shelf Container is switched off.

7 Care and maintenance

To us the storage system without problems in accordance to the instructions, the care, maintenance and repair work listed in this chapter is required. Regular care and maintenance increases the lifetime and utilisation rate of the system.

Only use materials and fuels and lubricants recommended by the manufacturer.

WARNING

Risk of accident and damages to the storage system!

- To ensure safe operation of the storage system, this maintenance work must be run regularly and at the intervals indicated. Non-observance of this may result in damages and increased risk of accident.
- Before performing the maintenance or repair works, cut off the access to the storage system for unauthorized people!
- Use an instruction label that draws attention to the maintenance or repair work.
- Switch off the power supply (when applicable) and secure it against being switched back on,
- Only use original spare parts from the manufacturer
- Re-attach the protective equipment after completing work!

7.1 Safety instructions

HAZARD

Observe the safety instructions!

- Observe the safety instructions in Chapter 2.2 "General safety instructions" and especially Chapter 2.4 "Safety instructions for equipment, maintenance, repairs, troubleshooting".

7.2 Maintenance plan

See enclosed maintenance plan

8 Troubleshooting

8.1 Faults during the work flow

If there are faults in the work flow of the storage system, inform the company repairs department. Take note of the error message shown in the visualisation when looking for and remedying the fault.
If there are faults in the control unit and/or the electrics then consult an electrician who can determine and remedy the fault using the circuit diagrams.

	NOTE
	If the storage system is damaged it has to be put out of service and labelled accordingly.

8.2 Fault table

Fault	Reason	Remedy
Exhaust air fan not functioning / red fault display "exhaust air fan" lights	Defective exhaust air fan / connection contacts interrupted	Check electrical connection of exhaust air fan and replace fan if necessary
	Power failure	Check pre-fuse/ motor protection switch
Doors close automatically	Defective clamping magnet / connection terminals interrupted / break in line or cable	Check clamping magnets, terminals and lines
	Multisensor defective / connection terminals interrupted	Check the multisensor and connection terminals
	Switch defective / connection terminals interrupted	Check the switch of the door retaining device and the connection terminals; replace the defective components if necessary.
	Power failure	Check pre-fuse
Lighting not functioning	Defective luminescent lamps / incorrect electrical connection	Check electrical connection of lighting and replace lamps if necessary
	Switch defective / connection terminals interrupted	Check the lighting switch and replace the electrical connections if necessary.
	Power failure	Check pre-fuse
Heating not functioning	Safety temperature controller (STB) has triggered	Reset the STB
	Defective heating / incorrect electrical connection	Check electrical connection of heating replace heating if necessary
	Thermostat defective	Replace the thermostat
Liquid in the sump	Rainwater	Get the storage system sealed. Dispose the liquid from the sump without damaging the environment.
	Leaky container	Dispose the liquid from the sump without damaging the environment. Check the sump for damages.
Bent grid	Load too high.	Replace the grid. Check the storage system for damages.

9 Disposal

	NOTE
	Before the disposal, any hazardous residue must be thoroughly cleaned off from the container!

The storage system is comprised of various components and parts which must be disposed or recycled in compliance to the local and legal regulations.

Kontroll- und Wartungsplan *

DENIOS

Gegenstand	Tätigkeit	Anleitung/Grundlage	Erstprüfung	bei Bedarf, nach Anforderung	wöchentlich	monatlich	viertel jährlich	halb jährlich	jährlich	alle 2 Jahre	alle 3 Jahre
Lager für brennbare Flüssigkeiten	Prüfung vor Inbetriebnahme	BetrSichV, TRbF 20, TRbF 600 ff	Sachverst.	Sachverst.							
Auffangwanne	Erstprüfung im Herstellerwerk	LAWA	Hersteller								
Auffangwanne	besichtigen auf ausgelaufenen Flüssigkeit	Stawa-R			Betreiber						
Auffangwanne	kontrollieren, protokollieren	WHG §19i								Betreiber	
Auffangwanne	reinigen	WHG §19i		Betreiber							
Auffangwanne	Oberflächenschutz ausbessern	WHG §19i		Betreiber							
Auffangwanne	Beschädigungen ausbessern	WHG §19i		Hersteller, Fachbetrieb							
Gitterrost	kontrollieren	BetrSichV		Betreiber					Betreiber		
Gitterrost-Befestigung	kontrollieren	BetrSichV		Betreiber					Betreiber		
Gitterrost	austauschen	BetrSichV		Betreiber							
Regalsystem	kontrollieren, insbesondere Hakenverbindung und Verschraubung	BetrSichV							Betreiber		
Regalsystem	Oberflächenschutz ausbessern	BetrSichV							Betreiber		
Flügeltür	kontrollieren, insbesondere Dichtungen, Scharniere, Schlösser	BetrSichV							Betreiber		
Flügeltür-Scharnier	ölen	BetrSichV							Betreiber		
Flügeltür-Schließanlage	kontrollieren, insbesondere Schließfunktion, Schließfolge	BetrSichV	Hersteller						Sachkundiger		
Torfeststellanlage; Branderkennung	kontrollieren	BetrSichV / Zulassung				Betreiber			Sachkundiger		
Technische Lüftung	kontrollieren	BetrSichV / BGR 104		Betreiber					Betreiber		
Technische Lüftung-Absperrvorrichtungen	kontrollieren	gem. Betriebsanleitung		Betreiber					Betreiber		
Branderkennungseinrichtung, Brandmeldeanlage	kontrollieren	DIN / VDE 0833 / VdS					E-Fachkr.				
Elekrische Anlage gesamt	Erstprüfung	BGV A3 / BetrSichV / VDE	E-Fachkr.								
Elekrische Anlage gesamt	Wiederholungsprüfung	BGV A3 / BetrSichV / VDE									E-Fachkr.

* Die angegebenen Wartungs- und Prüfintervalle sind Empfehlungen. Die erforderlichen Intervalle richten sich nach behördlichen Auflagen, Betriebsbedingungen, Herstellerangaben, Normen und Vorschriften, die vom Betreiber zu prüfen und einzuhalten sind.