BRASS®
REGALANLAGEN GMBH

Former shelving systems

Instructions for the shelf inspection

EN

BAUHAUS edition
English

FORMER SYSTEMS

MAINTENANCE

After assembly, keep these instructions for later use

Issued: 09.2022 – We reserve the right to make changes based on technical advances

GENERAL INFORMATION

Dear customer,

In this publication, we have compiled information about Brass' former shelving systems. These shelves have not been offered for sale for years, but are still used in many places. If this is also the case for you, the following pages contain our instructions for inspecting the shelves and for possibly converting them, as well as information about the spare parts offered for sale.

Shelf inspection

- DIN EN 15635 and DGUV (German Social Accident Insurance) regulation no. 108-007 (formerly BGR 234) regulate the mounting and handling of shelving units. This includes the requirement for carrying out an annual shelf inspection (see page 20).
- **Damaged components may only be repaired by the manufacturer.** Brass offers a repair service for slightly damaged elements. Please tell us about the extent of the damage and we will gladly make you an offer.

Conversion

- **Existing shelves may only be converted** in the unloaded state by suitable, trained personnel.
- The warehouse operator must ensure that the floor in the installation location can safely support all loads applied (net weight + load). Concrete substrates must be at least of grade C20/25. For static reasons, the shelves must **always be anchored to the floor.** Therefore, installation is only permitted on concrete floors with a sufficient borehole depth; asphalt floors, composite stone paving, gravel floors and concrete floors with underground heating and similar are **not suitable**.
- **If a shelf partition and/or position is changed,** the existing load capacity stickers must be checked for validity. If the load capacity stickers are no longer valid, ask us for new stickers..
- **Questions relating to fire protection** should be clarified with your local fire service or a specialist company for operational safety and fire protection (e.g. water-permeable removable shelves when using sprinkler systems).

Comprehensive information can be found in the assembly and operating instructions for the current shelving systems.

SL80 HEAVY DUTY SHELF

Shelf stands (side frames)

The SL80 shelving system was Brass's first heavy duty shelf and was manufactured from 1981 to 2005. You can recognise SL80 shelves by these characteristics:

- Profile slots with integrated round hole for the locking pins ("keyhole")
- Stand width 80 mm, inner width 50 mm

Depending on the version, the shelf stands are made of 2, 3 or 4 mm thick steel plate. The material thickness determines the permissible load (see following pages).

Cross members

The same profiles and claws (70 mm grid) are used on the cross members as on the current SL100 shelves. Therefore the cross members are interchangeable.

Conversion

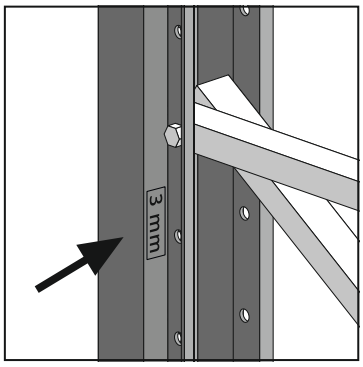
⚠ **Check the condition of the stands and cross members.** If slightly damaged, individual parts can be reordered. Please ask for our spare parts catalogue. Heavily damaged side frames must be completely replaced for safety reasons.

⚠ The first SL80 stands were still welded together. If damaged, they must be completely replaced.

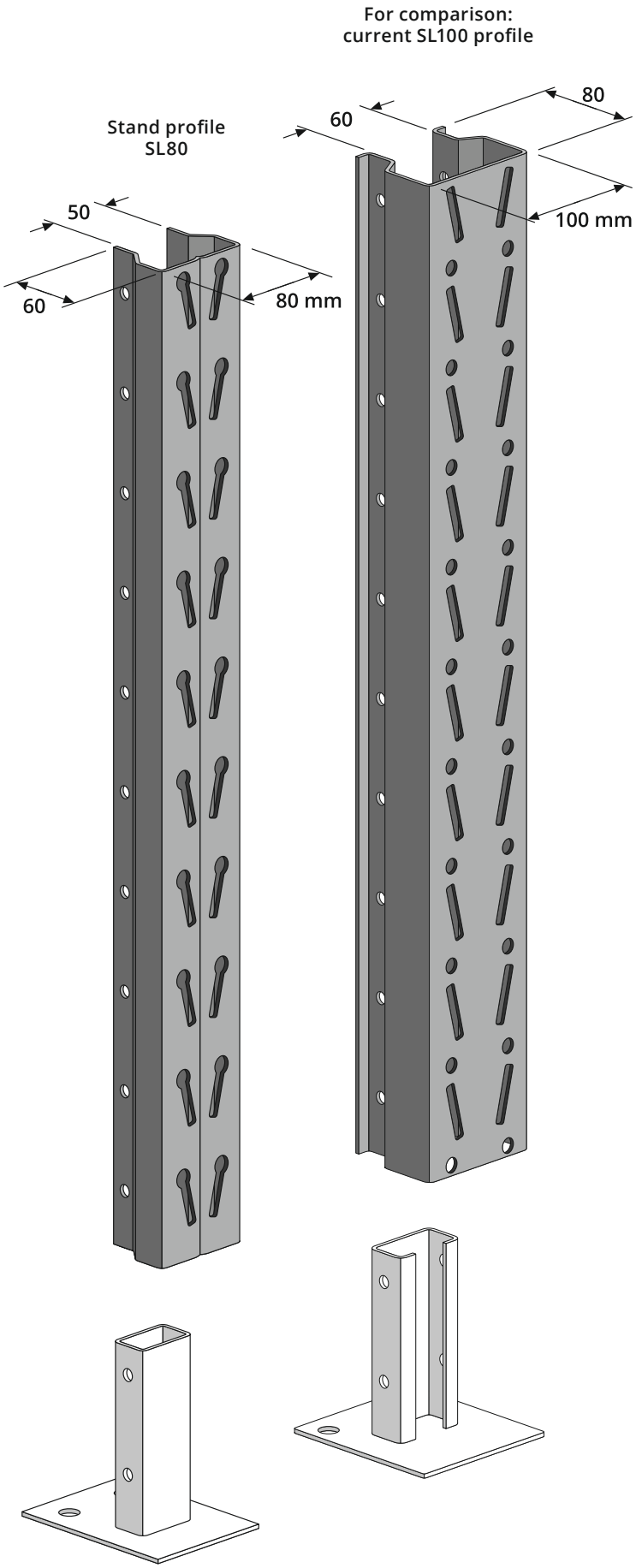
⚠ All stands must be attached to the floor with an approved ground anchor (e.g. Hilti HS110/M12) or equivalent anchorage. **Always use 1 ground anchor per base plate.**

ℹ **Load capacity stickers** with the maximum permissible shelf and bay loads for your shelf must be affixed to each shelf. We recommend one sticker per row of shelves. For different cross members, the respective load capacity of the shelves must be clearly visible.

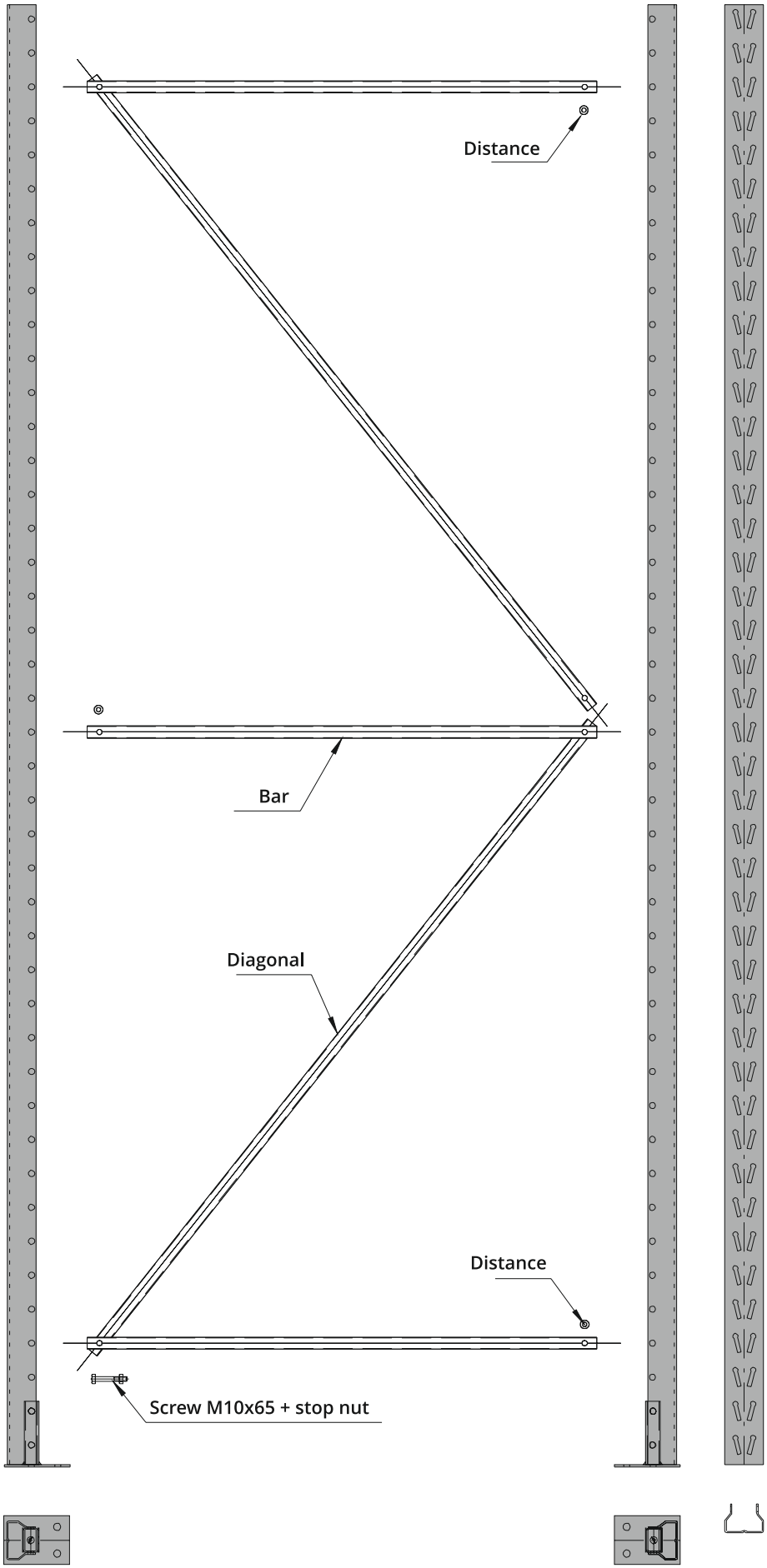
More information can be found in the assembly instructions for the current SL100 shelf.



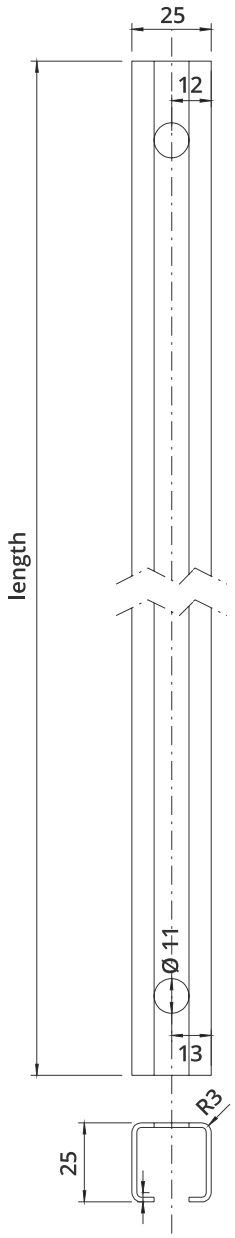
The material thickness is indicated by stickers on the inside of the stand profiles (at viewing height)



Overview



Bar / diagonal



Loading procedure

- **Heavier loads at the bottom.** Load the shelves as evenly as possible, from bottom to top. Store heavy loads as far down as possible with lighter goods further up.
- **Careful handling:** Align the pallet laterally, drive straight into the storage bay and place the load down vertically on the cross beam
- If you wish to **correct the position of a pallet at a later stage,** lift it up beforehand. Do not try to displace the pallets when positioned on the cross members!

⚠ The shelf must be manoeuvred with a forklift truck and a suitable lifting device operated by trained warehouse personnel!

⚠ **Set down the pallets and/or lift them again very carefully.** Setting them down suddenly could cause the pallets to break!

⚠ Only use undamaged pallets; defective pallets can break!

max. shelf load

The permissible load per shelf (= pair of cross members) depends on the stand frames and cross members used, and also on the bay width and shelf height. The following values apply to a shelf height of up to 1,250 mm, for profiles with a 4 mm plate thickness, a shelf height of up to 2,200 mm.

⚠ The maximum permitted deflection per cross member is L / 200

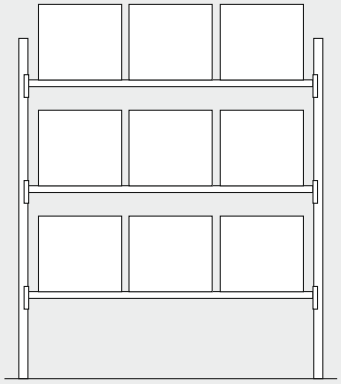
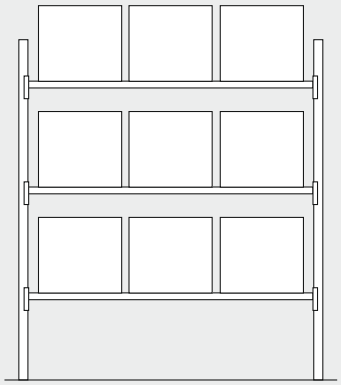
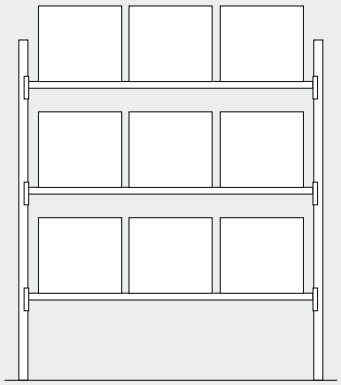
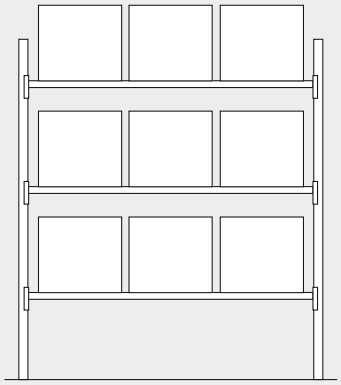
max. bay load

The permitted load is also limited by the load capacity of the side frames. The bay load is specified as the upper limit, i.e. the sum of all shelf loads between two side frames.

⚠ The overall load of all shelves in a shelf bay must not exceed the maximum bay load!

Load limits

Simplified presentation for shelf width 270 cm, shelf height up to 200 cm.
The information applies to evenly distributed loads. Shelf loads for tile display racks can be found on the following two-page spread.

		Stands SL80/2 2-mm plate thickness	Stands SL80/3 3-mm plate thickness	Stands SL80/4 4-mm plate thickness
Cross member RT60		**600 kg max. shelf load**	**600 kg max. shelf load**	**600 kg max. shelf load**
		600 kg max. shelf load	**600 kg max. shelf load**	**600 kg max. shelf load**
		600 kg max. shelf load	**600 kg max. shelf load**	**600 kg max. shelf load**
		5,400 kg max. bay load	**10,000 kg max. bay load**	**13,000 kg max. bay load**
Cross member RT100		**1,500 kg max. shelf load**	**2,000 kg max. shelf load**	**2,000 kg max. shelf load**
		1,500 kg max. shelf load	**2,000 kg max. shelf load**	**2,000 kg max. shelf load**
		1,500 kg max. shelf load	**2,000 kg max. shelf load**	**2,000 kg max. shelf load**
		5,400 kg max. bay load	**10,000 kg max. bay load**	**13,000 kg max. bay load**
Cross member RT120		**2,300 kg max. shelf load**	**3,000 kg max. shelf load**	**3,000 kg max. shelf load**
		2,300 kg max. shelf load	**3,000 kg max. shelf load**	**3,000 kg max. shelf load**
		2,300 kg max. shelf load	**3,000 kg max. shelf load**	**3,000 kg max. shelf load**
		5,400 kg max. bay load	**10,000 kg max. bay load**	**13,000 kg max. bay load**
Cross member RTS120		**3,000 kg max. shelf load**	**3,600 kg max. shelf load**	**4,200 kg max. shelf load**
		3,000 kg max. shelf load	**3,600 kg max. shelf load**	**4,200 kg max. shelf load**
		3,000 kg max. shelf load	**3,600 kg max. shelf load**	**4,200 kg max. shelf load**
		5,400 kg max. bay load	**10,000 kg max. bay load**	**13.000 kg max. bay load**

High-bay construction/tile display racks in SL80, shelf height 5530 mm

For presentation purposes (e.g. tiles, floor coverings) special shelf extension variants are available. The following safety instructions must be observed:

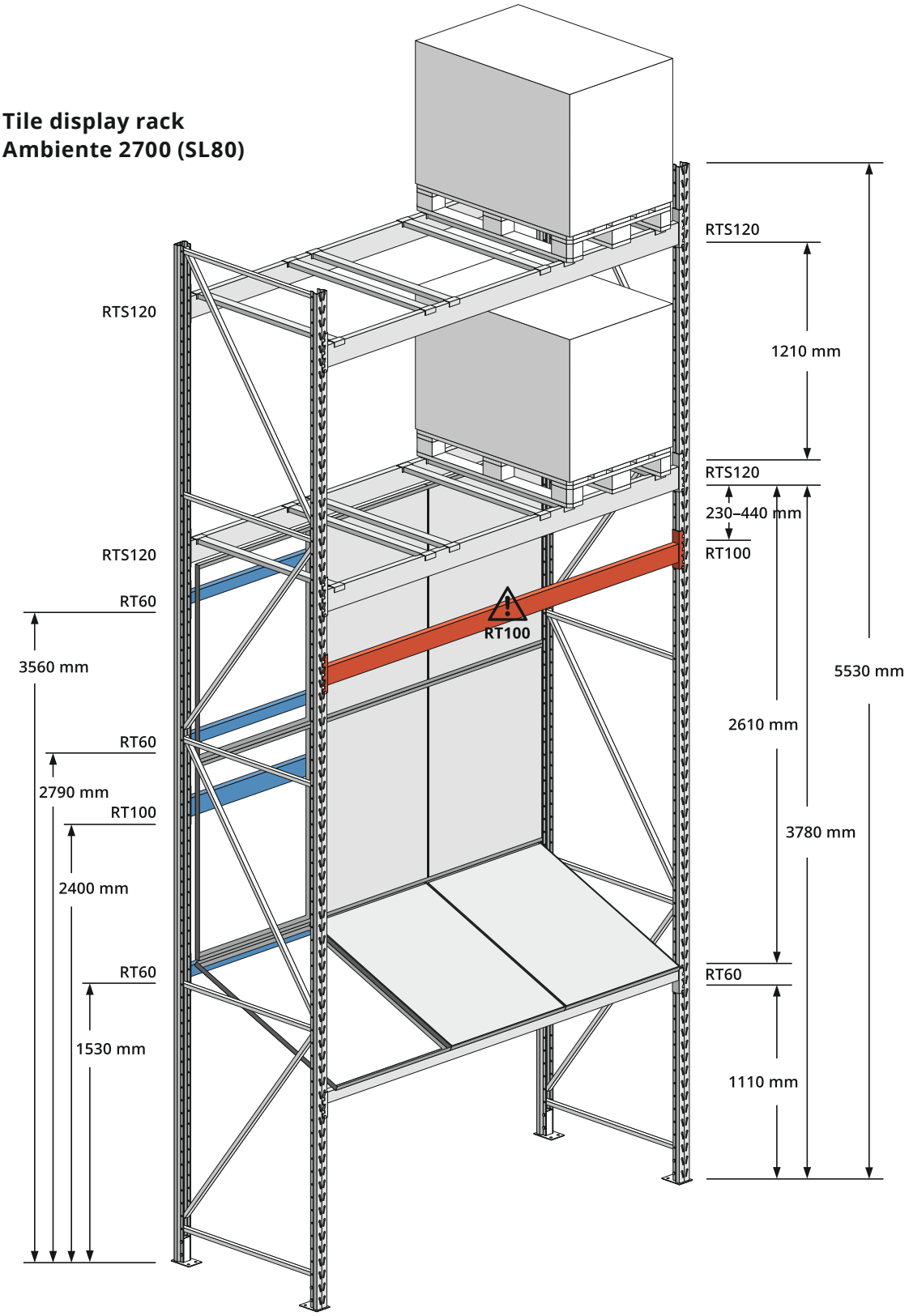
At least 2 storage levels must be installed per shelf bay.

For stabilization, a safety cross member must be attached to the front, at least 230 mm below the storage levels. **According to the static stability calculations, this safety cross member is indispensable!**

- **max. shelf load:**
  2,300 kg (SL80/3*) resp. 3,200 kg (SL80/4)**
  Applies to 2 storage levels; for additional shelves/ storage levels, the shelf loads must be distributed.
- **max. bay load:**
  4,600 kg (SL80/3*) resp. 6,400 kg (SL80/4)**
  Applies to systems with at least 4 shelf bays; for 1 to 3 bays, the bay load is reduced to 80%.

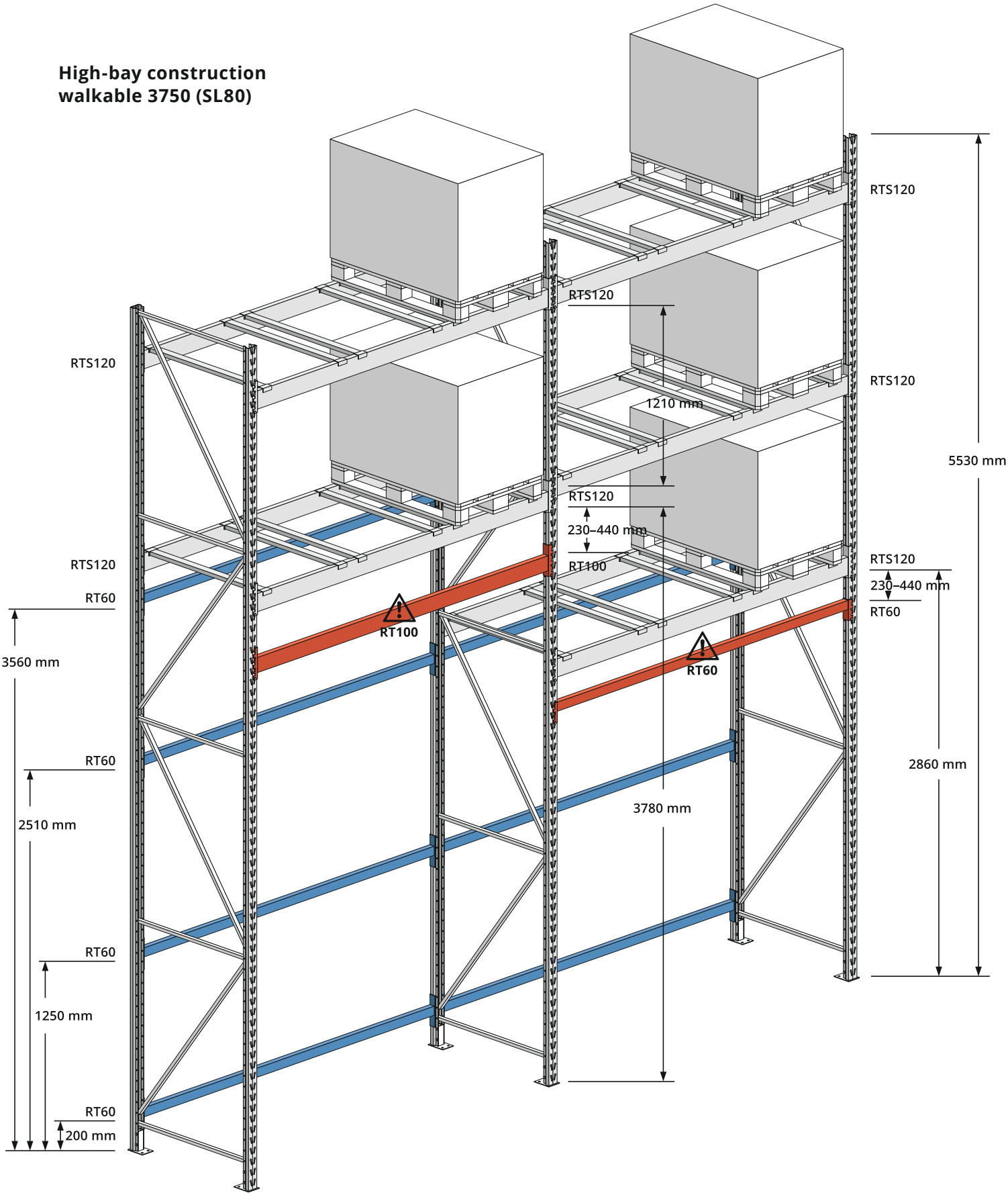
* SL80/3: 3 mm plate thickness, see page 4
** SL80/4: 4 mm plate thickness, see page 4

Tile display rack
Ambiente 2700 (SL80)



High-bay construction walkable 2650 (SL80)

High-bay construction walkable 3750 (SL80)



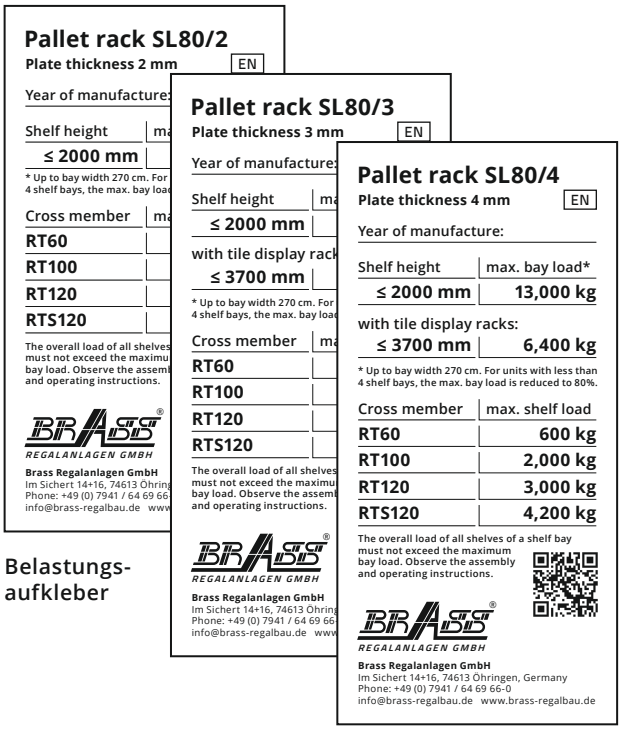
Load capacity stickers

Pursuant to DGUV (German Social Accident Insurance) regulation no. 108-007 (formerly BGR 234), load capacity stickers must be attached to fixed shelves with a shelf load of 200 kg or more or a bay load of 1,000 kg or more. These capacity load stickers should have been supplied with your shelf delivery. If they are missing or if you require more stickers, please contact us.

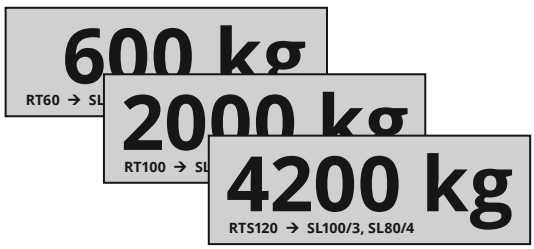
- Load capacity stickers contain the maximum permissible shelf and bay loads for your shelving system. **We recommend affixing one sticker at eye level at the end of each row of shelves.**
- The additional **cross member stickers** are only used on pallet shelves. Please note that some cross members have different load limits depending on the stands on which they are fitted!
- Thoroughly clean the adhesive areas beforehand so that the sticker remains in place for years.

Instruct your warehouse staff not to exceed the load specifications stated on the load capacity stickers when using the shelving!

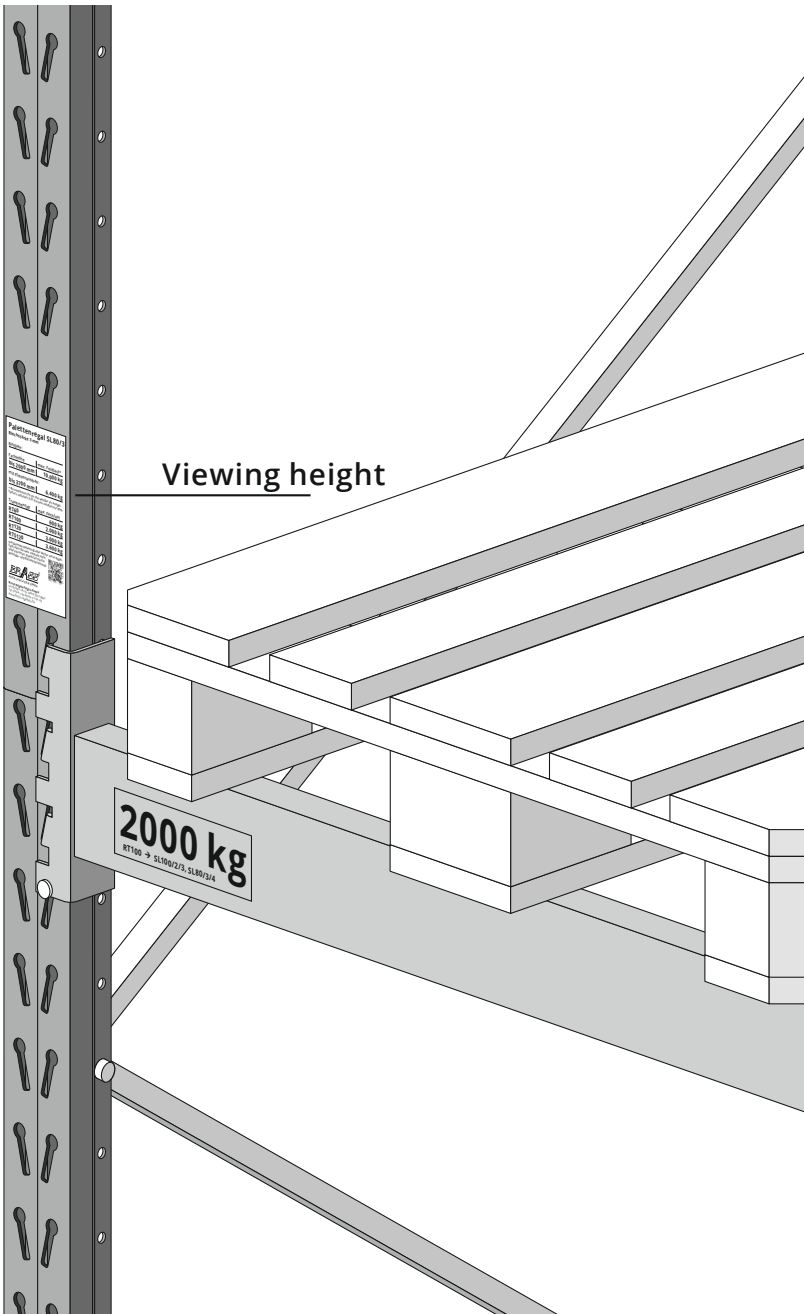
The information on the stickers may lose its validity if the shelf is converted (e.g. if the shelf heights or the number of pairs of cross members in the shelf bay changes)!



Belastungs-
aufkleber



Examples of cross member stickers
(pallet shelves only)



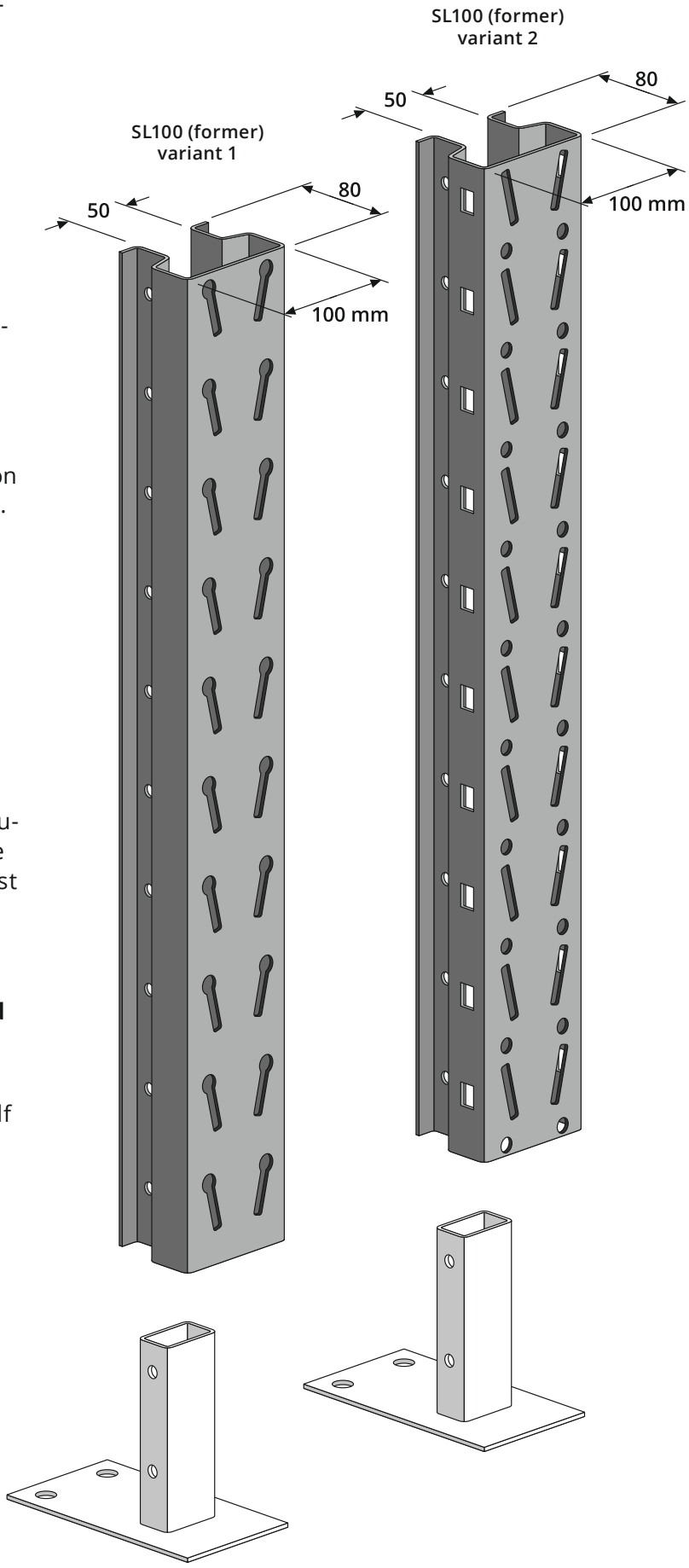
SL100 HEAVY DUTY SHELF (FORMER)

Shelf stands (side frames)

The first generation SL100 shelf system was manufactured from 1981 to 2005. You can recognise the former SL100 stands by these characteristics:

- Variant 1: Slots with integrated round hole for the locking pins (“keyhole”)
- Variant 2: Slots and separate round hole, square hole on the side
- Both variants: Stand width 100 mm, inner width 50 mm (current SL100 shelf: 60 mm)

Depending on the version, the shelf stands are made of 2 mm or 3 mm thick steel plate. The material thickness determines the permissible load.



Traversen

The same profiles and claws (70 mm grid) are used on the cross members as on the current SL100 shelves. Therefore the cross members are interchangeable.

max. load

The limit values can be found in the assembly and operating instructions for the current SL100 shelf.

Conversion

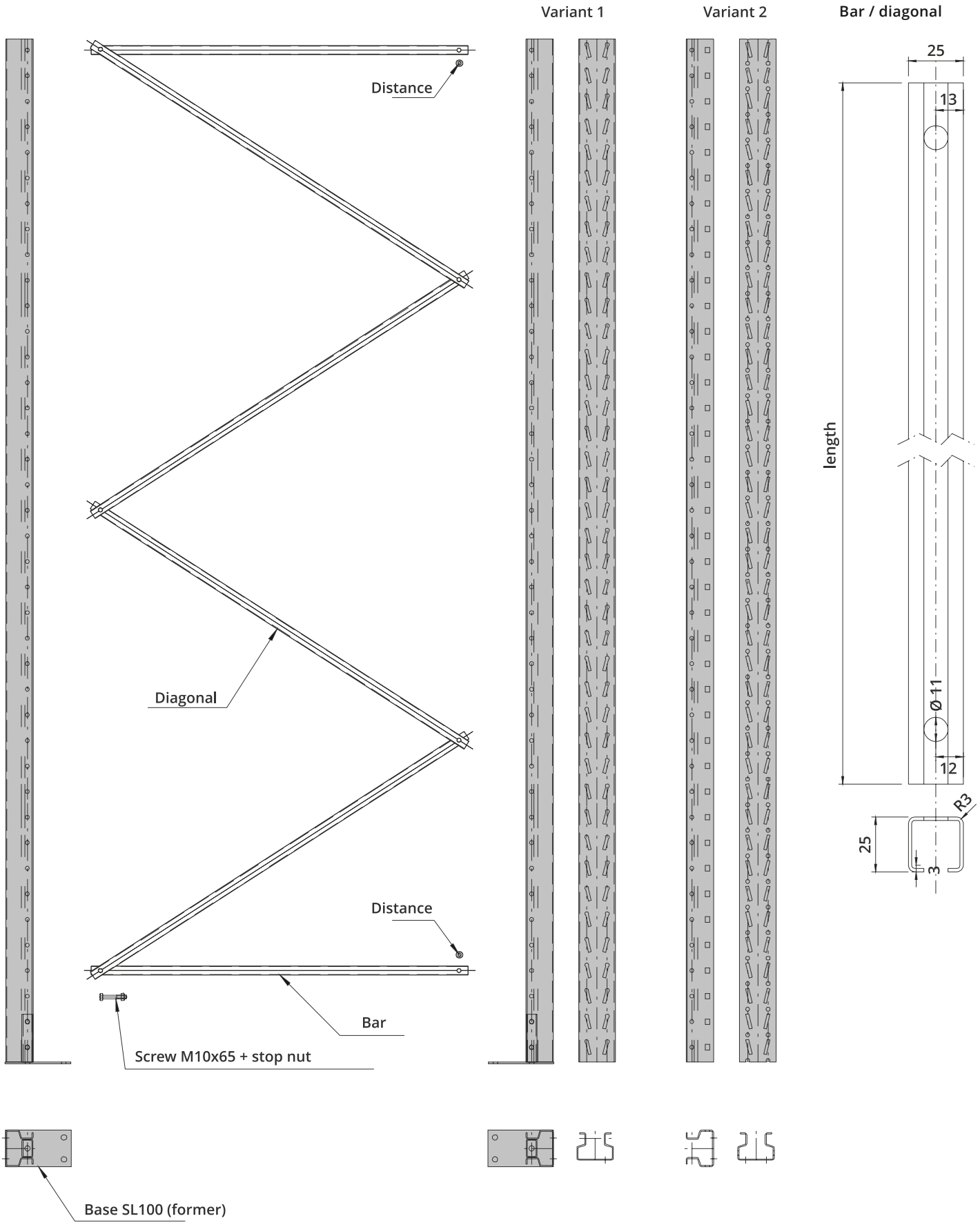
⚠ **Check the condition of the stands and cross members.** If slightly damaged, individual parts can be reordered. Please ask for our spare parts catalogue. Heavily damaged side frames must be completely replaced for safety reasons.

⚠ All stands must be attached to the floor with an approved ground anchor (e.g. Hilti HS110/M12) or equivalent anchorage. **Always use 1 ground anchor per base plate.**

ℹ **Load capacity stickers** with the maximum permissible shelf and bay loads for your shelf must be affixed to each shelf. We recommend one sticker per row of shelves. For different cross members, the respective load capacity of the shelves must be clearly visible.

More information can be found in the assembly instructions for the current SL100 shelf.

Overview


Variant 1
Variant 2
Bar / diagonal
Distance
Diagonal
Distance
Bar
Screw M10x65 + stop nut
Base SL100 (former)
25
13
length
Ø 11
12
R3
25
3

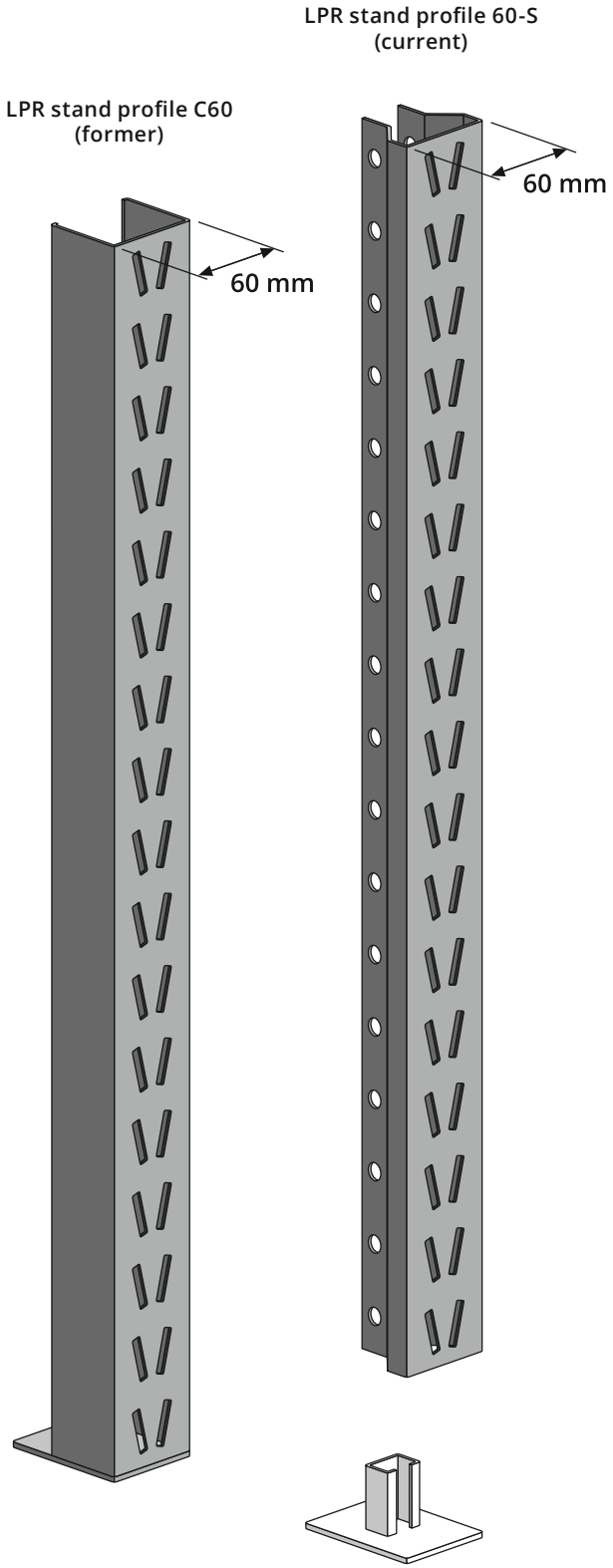
LPR WIDE SPAN SHELF (FORMER)

Shelf stands (side frames)

The first generation LPR shelf system was manufactured until 2005:

- Stand profile C60, without the double rebate of the current 60-S profiles
- The bracing was welded whereas the current stands are connected with screws
- The width of the stand profiles is 60 mm on both versions

Damaged C60 stands can be replaced by new stands with the 60-S profile.



Cross members

The same profiles and claws (grid dimension 40 mm) are used on the cross members as on the current LPR shelves. Therefore the cross members are interchangeable.

max. load

The limit values can be found in the assembly and operating instructions for the current LPR shelf.

Conversion

⚠ **Check the condition of the stands and cross members.** Damaged components must be replaced for safety reasons.

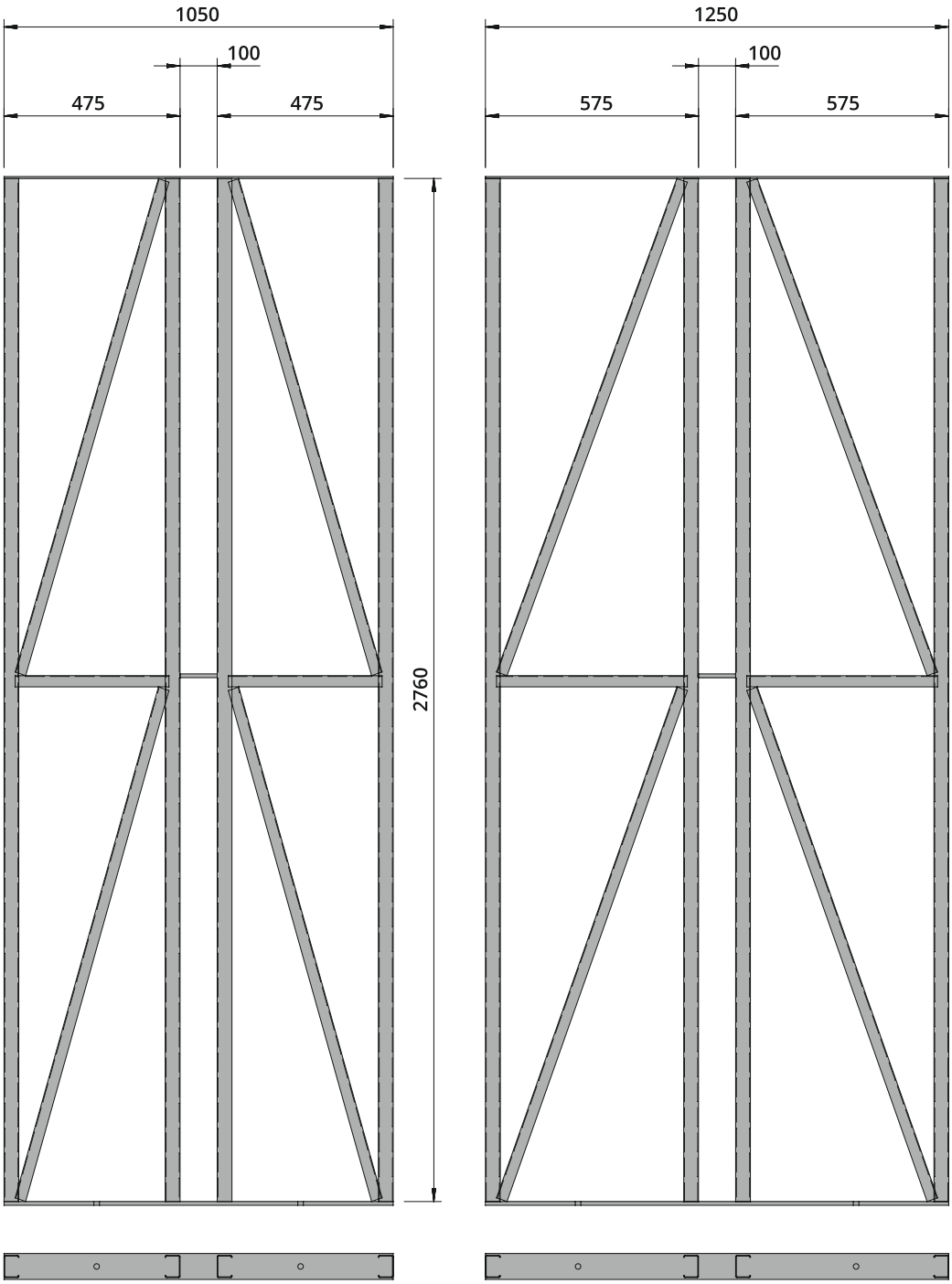
⚠ All stands must be attached to the floor with stud anchors (e.g. Hilti HSA M12x115) or equivalent anchorage. **Always use 1 ground anchor per base plate.**

ℹ **Load capacity stickers** with the maximum permissible shelf and bay loads for your shelf must be affixed to each shelf. We recommend one sticker per row of shelves. For different cross members, the respective load capacity of the shelves must be clearly visible.

More information can be found in the assembly instructions for the current LPR shelf.

Overview

Double stands were welded in one piece until 2005, in depths of 105 and 125 cm. They were replaced by two individual stands with shelf connectors.



HEA160 CANTILEVER RACK

Shelf stands

The HEA160 system was manufactured until 2000.

- Stand profile HEA160, cantilever arm IPE120
- Perforation with 200 mm hole spacing
- Cantilever arms are bolted
- Welded feet

max. load

- max. load per arm / foot: 600 kg
- max. load per stand: 3,000 kg

Neither value may be exceeded.

Conversion

Check the condition of the stands and cantilever arms. Damaged components must be replaced for safety reasons.

All stands must be attached to the floor with 4 ground anchors (holes in the feet profiles).

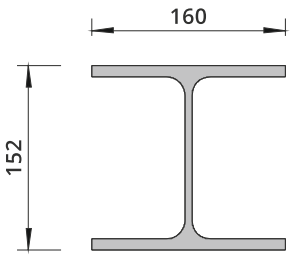
Load capacity stickers with the maximum permissible loads for your shelf must be affixed to each shelf. We recommend one sticker per row of shelves.

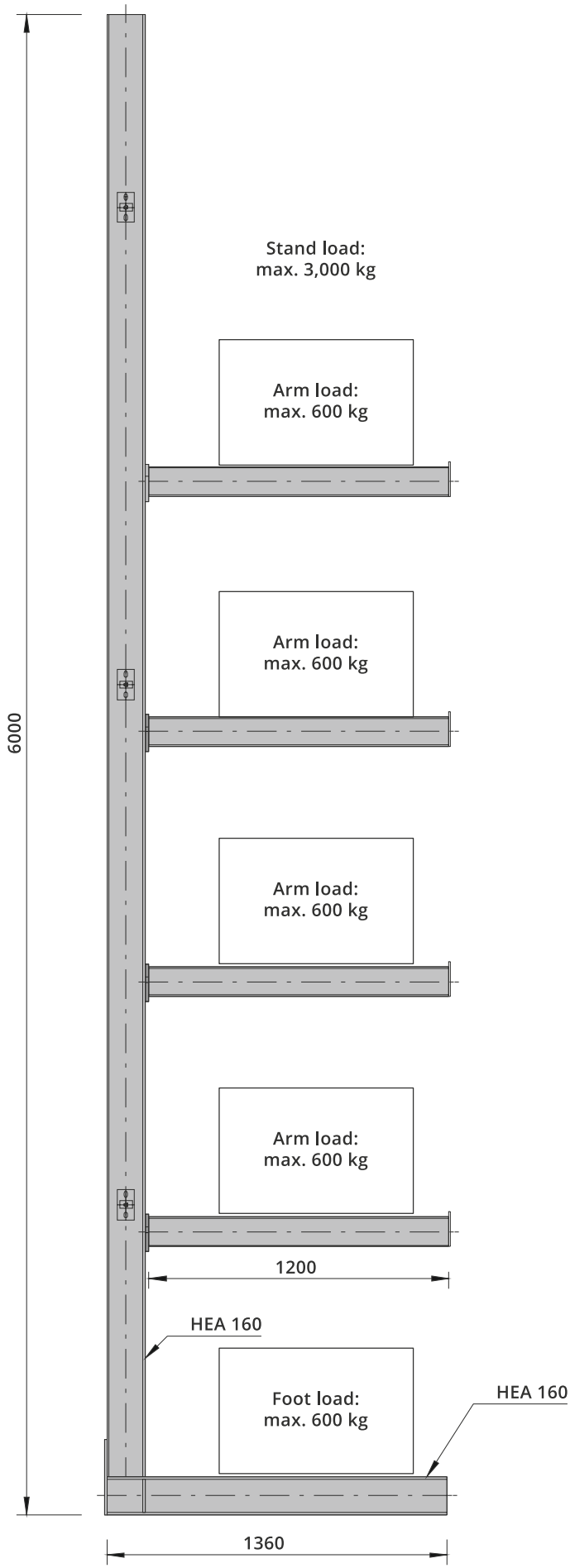
Cross brace

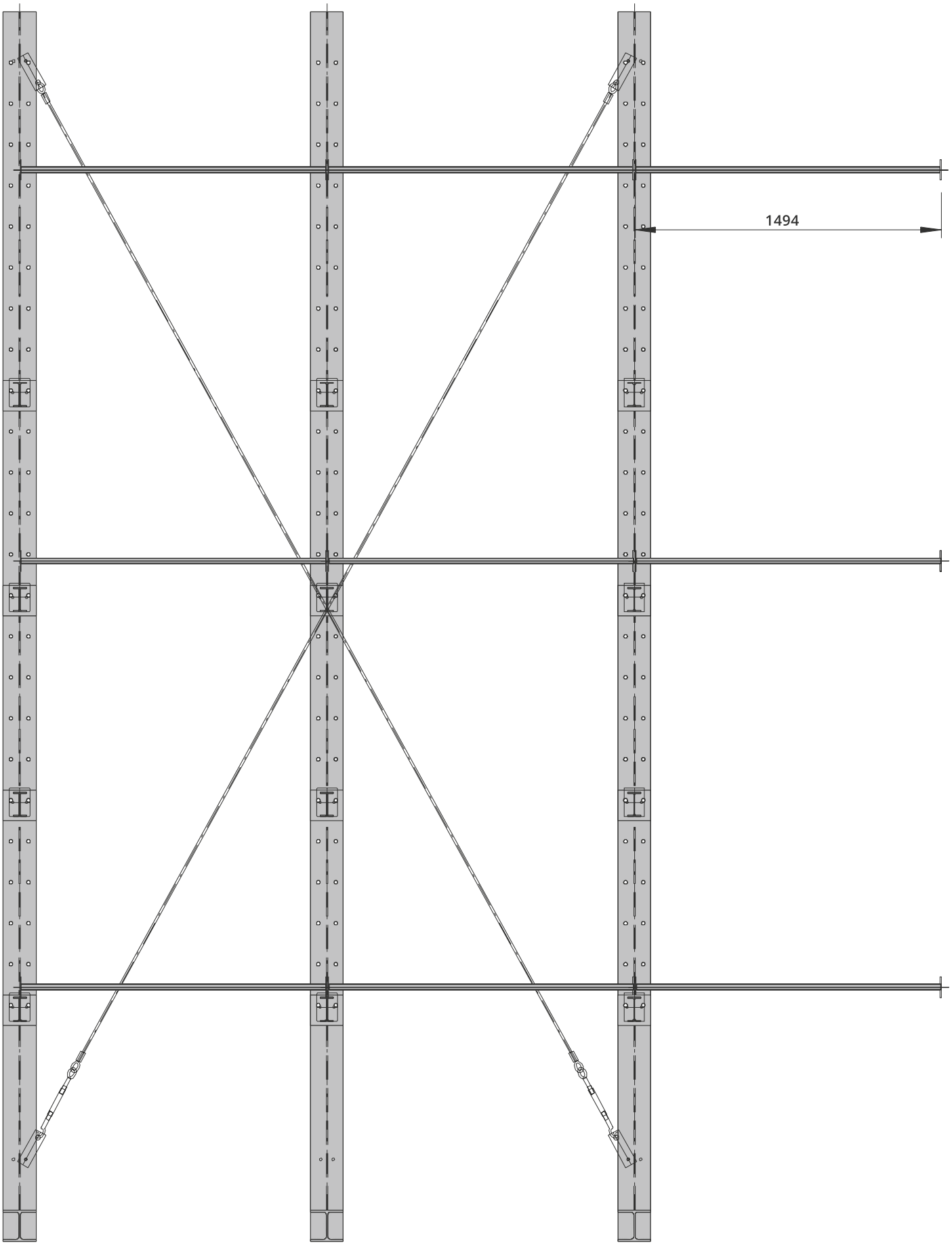
The HEA160 cantilever rack is composed of at least three shelf stands (2 shelf bays) and is reinforced crosswise by rope bracings.

- from 2 shelf bays: 1 cross brace
- from 4 shelf bays: 2 cross braces
- from 12 shelf bays: 3 cross braces
- from 22 shelf bays: 4 cross braces

The cross braces are available as spare parts.






1494

K1 / K2 CANTILEVER RACK

Shelf stands

The HEA160 system was manufactured until 2005.

- K1-Regal: IPE200 profile
- K2-Regal: IPE2400 support, IPE270 foot
- Perforation with 100 mm hole spacing
- Cantilever arms are fitted with 2 bolts
- Welded feet

max. load

- max. load per arm / foot: 600 kg
- max. load per stand: 3,000 kg

Neither value may be exceeded.

Conversion

Check the condition of the stands and cantilever arms. Damaged components must be replaced for safety reasons.

All stands must be attached to the floor with 4 ground anchors (lugs on the feet profiles).

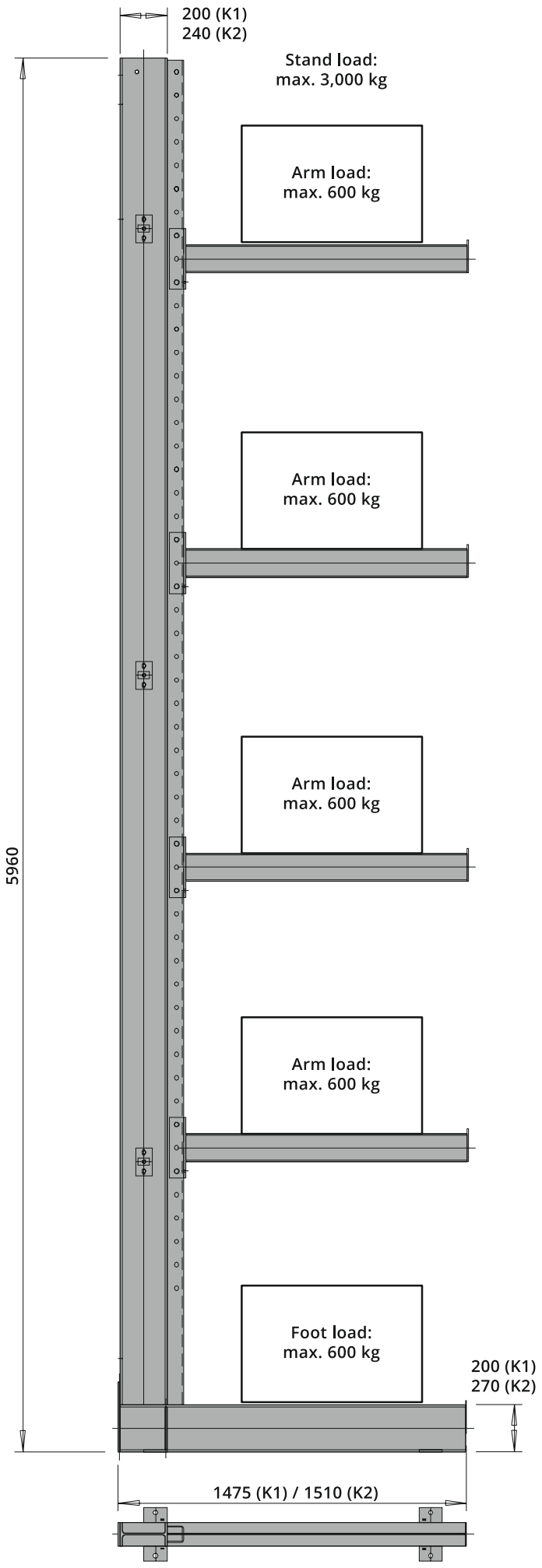
Load capacity stickers with the maximum permissible loads for your shelf must be affixed to each shelf. We recommend one sticker per row of shelves.

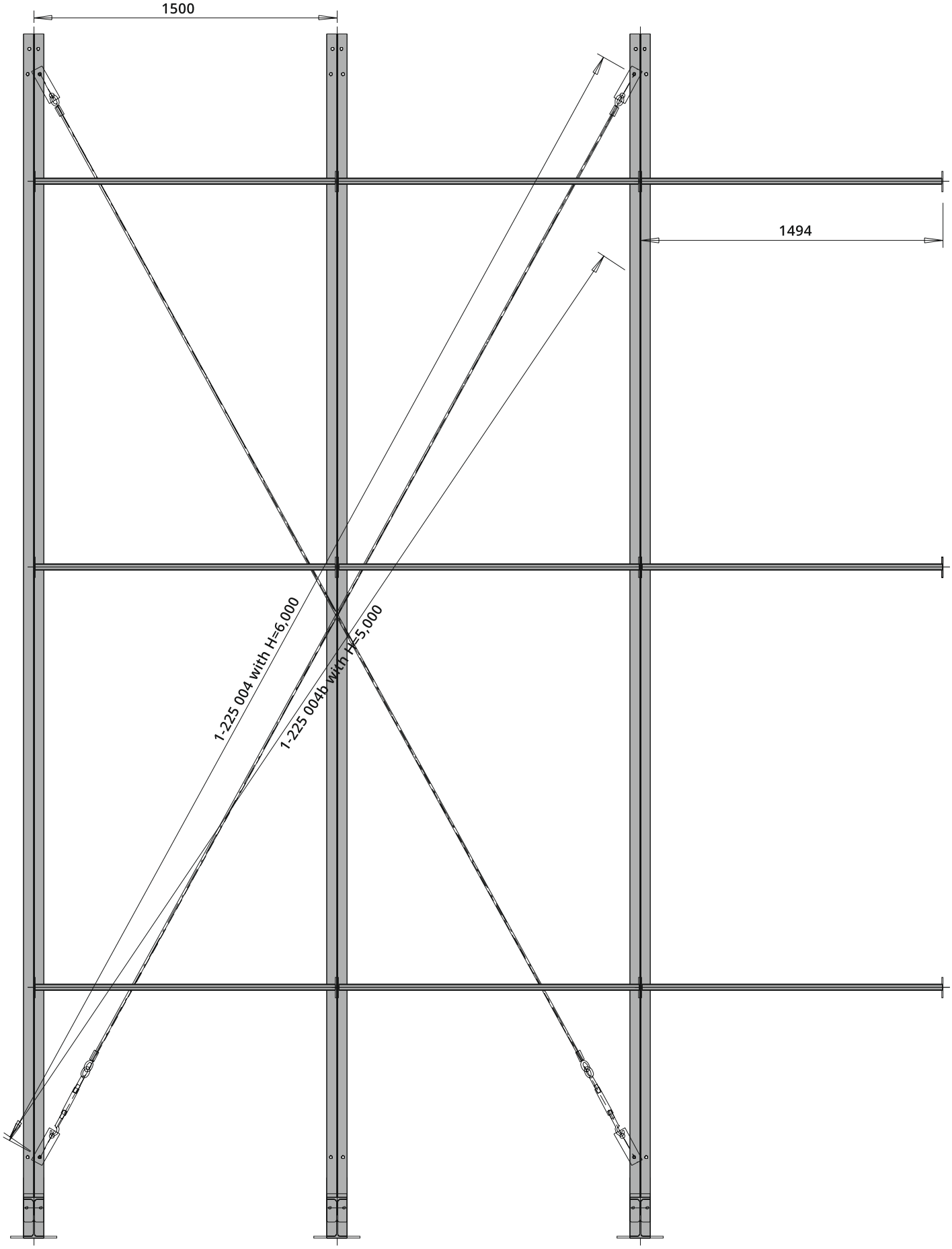
Cross brace

The K1/K2 cantilever rack is composed of at least three shelf stands (2 shelf bays) and is reinforced crosswise by rope bracings.

- from 2 shelf bays: 1 cross brace
- from 4 shelf bays: 2 cross braces
- from 12 shelf bays: 3 cross braces
- from 22 shelf bays: 4 cross braces

The cross braces are available as spare parts.




1500
1494
1-225 004 with H=6,000
1-225 004b with H=5,000

MAINTENANCE

Timely detection of damage can prevent many serious accidents and keep repair costs to a minimum. A detailed analysis of the damage often reveals the causes so that preventive measures can then be taken. Examples from other European countries such as Great Britain or the Netherlands, where such inspections have been carried out for many years, show that safety can be increased and repair costs saved at the same time.

Regular visual inspections

The operator (management) must ensure that the shelving systems are regularly inspected. A formal written report should be kept. The inspections must be carried out by the safety officer or another person entrusted with this task.

Annual shelf inspection

An inspection must be carried out by a competent person at intervals of not more than 12 months. Contact Brass Regalanlagen GmbH or your local technical inspection association (e.g. TÜV) to find a certified shelf inspector.

Legal bases

The European standard DIN EN 15635 and the German Ordinance on Industrial Safety and Health (BetrSichV) require warehouse operators to have their shelving systems regularly inspected by a certified shelf inspector. The BetrSichV applies to the provision of shelves by the employer and to the use of shelves by employees. Paragraph 10 of BetrSichV requires regular inspections of storage facilities. In accordance with §3, the type, scope and time limits for the necessary inspections must be determined for shelving. The scope and procedure for storage facility inspections are regulated in European standard DIN EN 15635.

What is inspected?

- General condition of the shelves
- Stability of the shelves (resistance to tilting)
- Vertical position of the shelves
- Correct assembly
- All shelf components and protective devices are checked for completeness and damage
- Assessment of loading equipment and load for suitability/arrangement
- Correct labelling of the shelves

Test report

After the inspection, the manager or person responsible for the shelving system is handed a written report with observations and suggestions for the necessary actions to be taken.

In the event of accidents

Safe use of your shelving system is only guaranteed within the specified tolerances. If parts of the shelving become deformed in an accident or for another reason, the damage must be assessed and further action must be taken if necessary (see following pages).

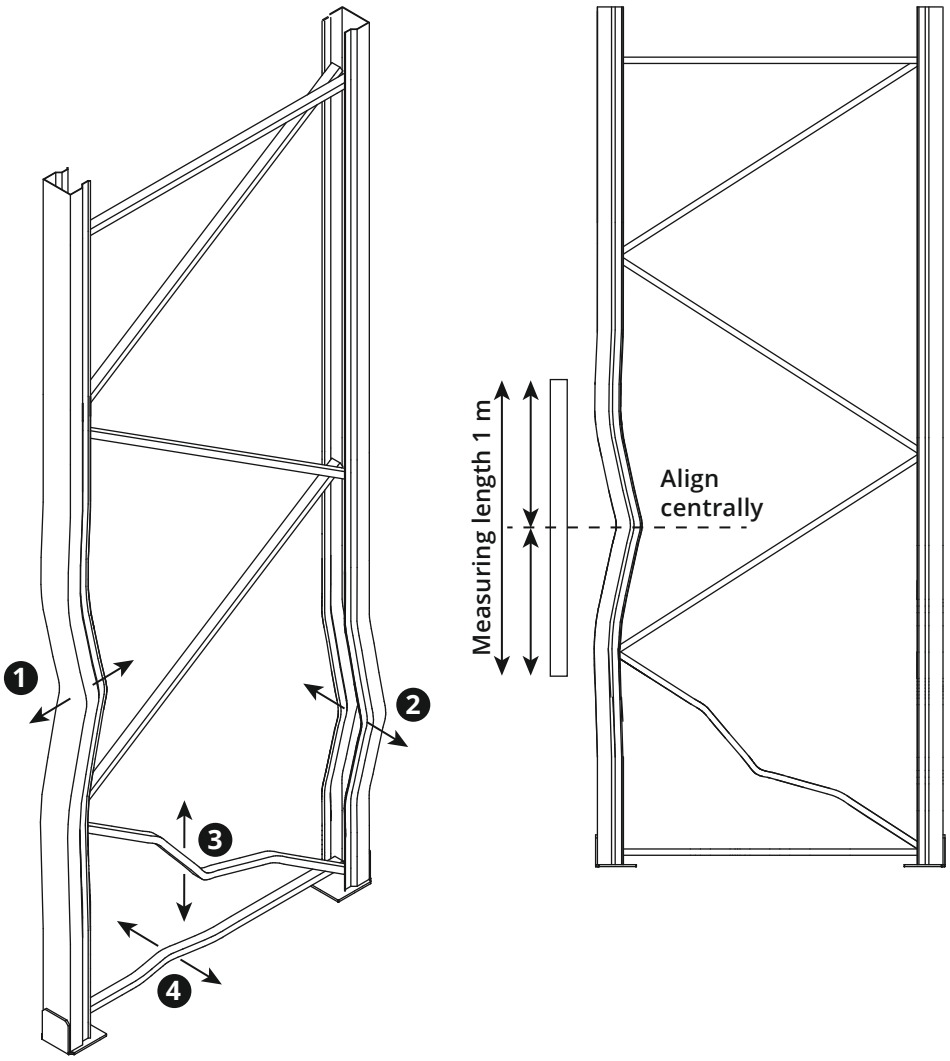
⚠ **Instruct your warehouse staff to immediately notify your manager or the person responsible for the shelving systems of any visible damage to the shelving!**

Damage to side frames

Deformations of the profile frame (usually because a fork lift truck has driven into it) must be assessed with regard to the degree of danger. After a deformation of the shelf components has become apparent, the **depth of the deformation** must be measured (centre of the measuring rod above the centre of the deformation) at the respective point with a 1,000-mm measuring rod in accordance with DIN EN 15635.

Depending on the depth of the deformation, **the measures specified below must be taken,** e.g. the shelf must be unloaded or the parts replaced. Unauthorised repairs without the manufacturer's consent or without original components are prohibited!

Deformation:	**1**	**2**	**3**	**4**	
Danger level green: Monitor!	up to 3 mm	up to 5 mm	up to 10 mm	up to 10 mm	No change in the load values, the shelf can continue to be used. Mark the damaged points for the next inspection.
Danger level orange: Act soon!	up to 5 mm	up to 9 mm	up to 19 mm	up to 19 mm	The damages must be repaired as soon as possible. Immediate unloading of the rack is not absolutely necessary but parts that have already been unloaded must not be reloaded. If the shelf has been unloaded, the operator must **mark it as barred from use** and it may only be approved for storage after the repair has been carried out.
Danger level red: Act immediately!	6 mm and more	10 mm and more	20 mm and more	20 mm and more	**The shelf must be unloaded immediately and prevented from any use whatsoever!** The manufacturer must be consulted and all affected components replaced!



1 Front deformation of the frame profile in the depth direction

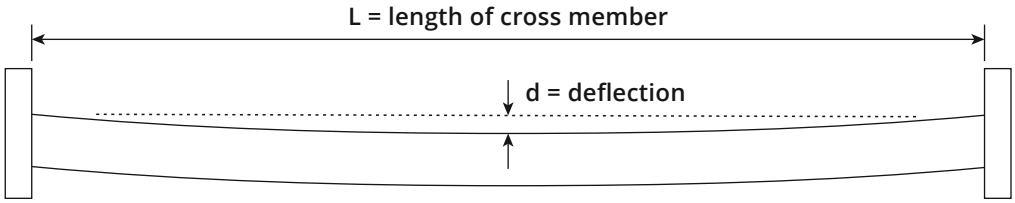
2 Side deformation of the frame profile

3 Vertical deformation of the struts

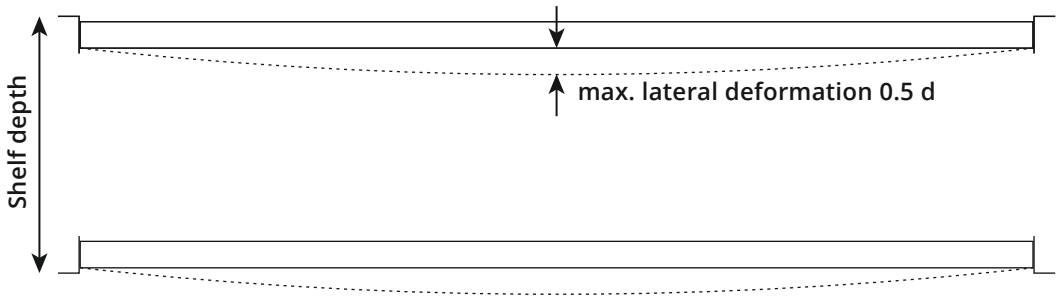
4 Lateral deformation of the struts

Damage to cross members (SL80, SL100, LPR)

- When fully loaded, cross members may bend downwards (deflection) by max. 1/200 of their length (L/200). Larger deflections are not permitted. After unloading, there should be no more deflection (elasticity of the material). Cross members with **permanent deflection deformations, including when unloaded**, are defective and must be replaced!



- The **lateral deformation or torsion** of a cross member due to overload must not exceed 50% of the normal vertical deflection under full load. Cross members with larger deformations must be replaced!



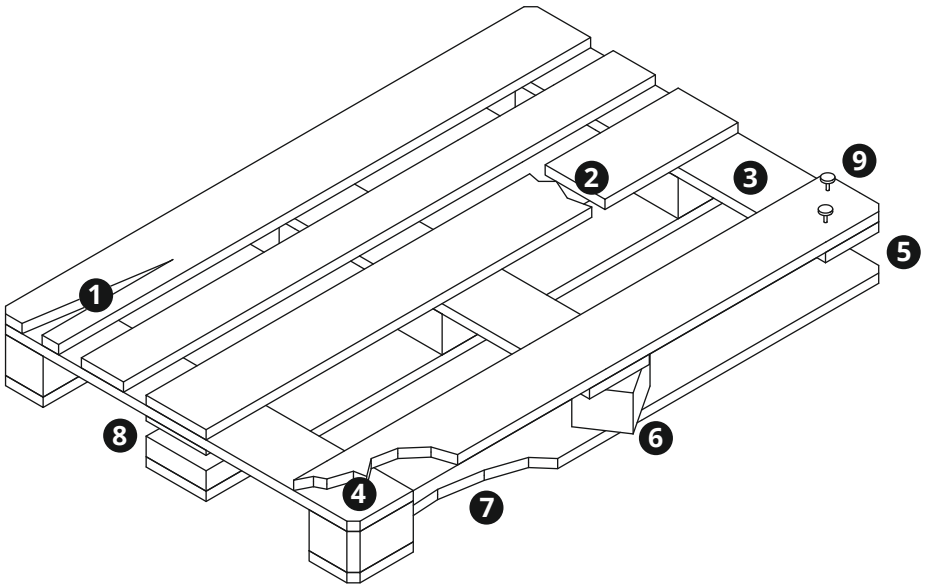
- Cross members which have been **damaged by a vehicle driving into them** and cross members with **damaged hooking claws or welded joints (cracks)** must be replaced!

If in doubt, please do not hesitate to contact us.

Damage to pallets

To avoid accidents, only perfect, undamaged pallets may be used on the shelves. Pallets with one of the types of damage listed below must be replaced immediately as otherwise the load capacity is no longer guaranteed (see also DIN EN ISO 18613).

1. **Gaps of more than half of the board length or board width**
2. **Broken board**
3. **Missing board**
4. **More than a third of the board width is missing**
5. **Block missing**
6. **Block turned by more than 30°**
7. **More than a quarter of the board width is missing between two blocks**
8. **Gaps of more than half of a block width or block height**
9. **Nails sticking out**



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