

Pallet racks

Installation and operating instructions

for a pallet racking system made of hot-rolled steel profiles
with height-adjustable hole grid

Dear Customer,

Thank you very much for choosing a product from Bruckamp GmbH.

For the storage of goods in lattice boxes and pallets, we recommend the use of **pallet racks**. They enable space-saving storage and are available in different designs. As **a certified manufacturer of hot-dip galvanized shelving systems**, we also implement individual solutions for our customers. Our shelves can be designed in rows of any length and can be adapted in terms of load capacity and size. The shelves can be combined with various accessories such as gratings, push-through protection, collision protection or trapezoidal sheet metal for roof and rear wall cladding. You benefit from a range of products certified in accordance with DIN EN 1090 and a **load-bearing capacity** of the heavy-duty racks that has been statically proven in accordance with applicable specifications.

Please read these assembly and operating instructions before assembling the shelves. It contains important information. Please note the safety and operating instructions starting on page 3.

Warranty and warranty claims only exist if they are professionally installed in accordance with the installation instructions.

Your team from Bruckamp GmbH

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Pallet racks

Installation instructions and safety regulations



General information

The racking system must be installed properly on a level, sufficiently load-bearing surface. Flatness tolerances from Table 3 of DIN 18202 for floors.

Spalte	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Zeile	Bezug	Stichmaße als Grenzwerte in mm, bei Meßpunktabständen in m												
		0,1'	0,6	1'	1,5	2	2,5	3	3,5	4'	6	8	10'	15'
3	Flächenfertige Böden, z. B. Estriche als Nutzestriche, Estriche zur Aufnahme von Bodenbelägen Bodenbeläge, Fliesenbeläge, gespachtelte und geklebte Beläge	2	3	4	5	6	7	8	9	10	11	12	13	14

* Values for these measuring point distances are given in Table 3 of DIN 18202. The values for the other distances are interpolated.

Source: Handbook for the Screed and Flooring Industry Central Association of the German Construction Industry.

As a foundation, we recommend reinforcement with reinforced concrete mats Q257 and concrete of concrete quality C25 / 30 at the top and bottom.

The shelving components supplied by us may only be used according to your intended use. In principle, our "General Terms and Conditions" apply. Warranty and liability claims for personal injury and property damage resulting from improper use, use, disassembly or assembly, repairs, or external influence are excluded.

Mounting design

The assembly must be carried out by qualified personnel (ideally at least 3 people) with appropriate tools. No brute force must be used when assembling the components. It is to be assembled according to the instructions below. Any discrepancies must be agreed with our specialist staff.

The applicable regulations of the employers' liability insurance association must be observed. See DGUV-I 208-061

The permissible loads on the shelves must not be exceeded. You can find the burden on the load signs and accompanying documents. The specifications apply to evenly distributed static load.

Safety

Shelves must be set up vertically. The deviation of the racks from the perpendicular direction in the longitudinal and depth directions must not exceed 1/200 of the shelf height. The deviation of the horizontal is no longer equal to 1/200 of the field width.

The racks are not suitable for carrying dynamic loads.

Damaged shelf parts must be replaced immediately.

All load specifications apply to indoor construction, in areas not at risk of earthquakes.

Shock loads from unusual loads are not provided.

The Regal Inspection

The Industrial Safety Ordinance regards storage equipment / racks as work equipment. According to §10 of the BetrSichV, these must be regularly checked by qualified persons. Any damage must be recorded, measured and documented. The controls are based on the new European standard DIN EN 15635. It determines the sequence of inspections of storage facilities/racks.

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Safety and operation



The rack must be loaded from bottom to top.

The goods to be stored must be carefully and slowly placed on the crossbars.
Care must be taken not to damage the trusses, the shelf frames and the bandages.

When removing goods from the shelf, care must be taken to ensure that the shelf is not damaged.
There is a risk that trusses will be lifted by the forklift forks. In particular, the
Trusses of the level above are not to be lifted by the forks or the fork carriage or the goods.

In the event of damage to the rack, the rack must be relieved immediately. It may only be carried out after
professional
replacement of the damaged parts or can be used again after proper repair.

The shelf must be checked regularly. In particular, in the event of damage, the procedure described in
point 11 must be followed.

Preparations

Inspection of the shelf parts

1. Before assembly, check the correctness and completeness of the shelf parts, any additional items, as well as the fastening material.
2. Make sure that the shelf parts are in an undamaged and perfect condition.

Required tools

In order to be able to carry out the installation correctly, we advise you to have the following tools ready:

- Tape measure
- Lot
- Wasserwaage
- Plastic or rubber mallet
- Wrench or socket wrench
- Powerful impact drill
- Impact drill Ø 16.0 mm
- Possibly forklift and work platform

Inspection of concrete floor and floor tolerances of the building

Check before starting installation:

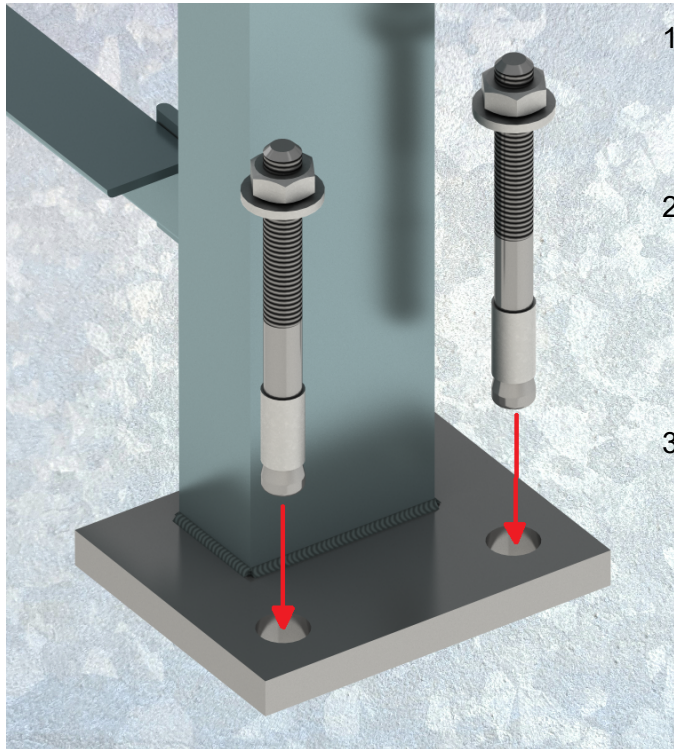
1. Whether the load-bearing capacity of the concrete floor is sufficiently high to be able to absorb the point loads of the rack including the load that occur later. The same applies to the temporary loads caused by the assembly aids during shelf assembly. If in doubt, contact the manufacturer.
2. The Boden type:
 1. Check at any time whether the actual situation is compatible with the applicable starting points of the rack configuration.
 2. Normally, a good C25/30 concrete quality with a minimum of ceiling thickness of 250mm.
3. Whether there are expansion joints.
4. The flatness of the floor (e.g. with a spirit level). The allowable tolerances are listed on page 6. Otherwise, contact the manufacturer.

Shelf Measurement

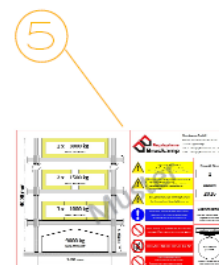
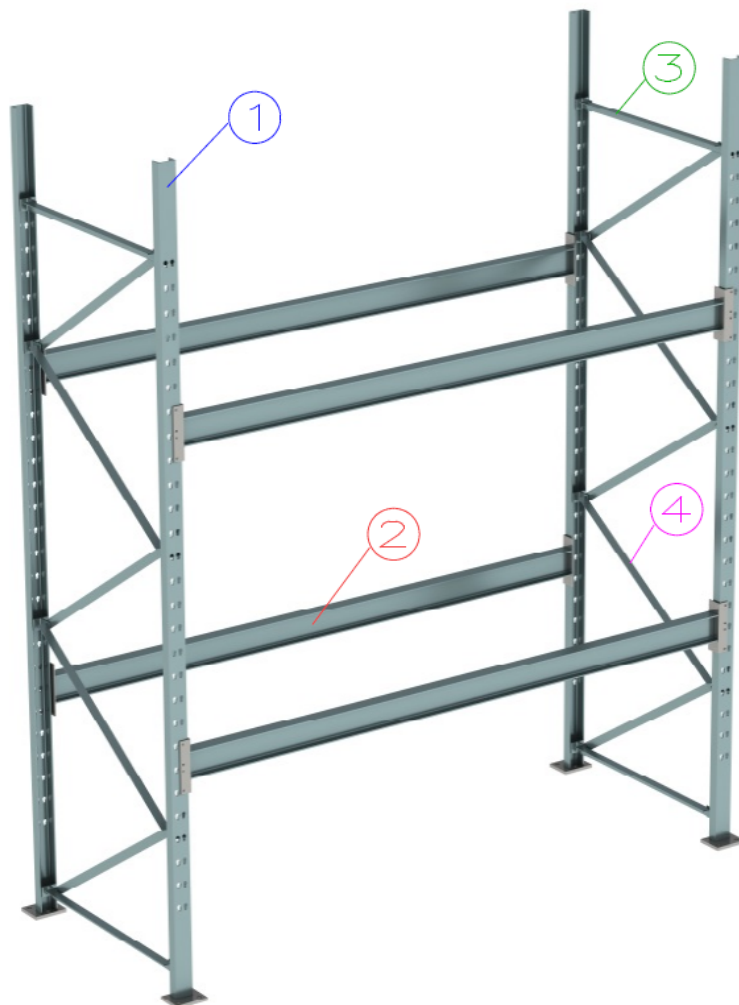
5. Before you start rack assembly, measure the planned total area and draw the shelf positions.
6. If you are using it indoors, check whether the clear height of the hall is sufficient.
7. Check that the positions of the building supports do not collide with those of the racking system.

Pallet racks

Assembly Pallet racks

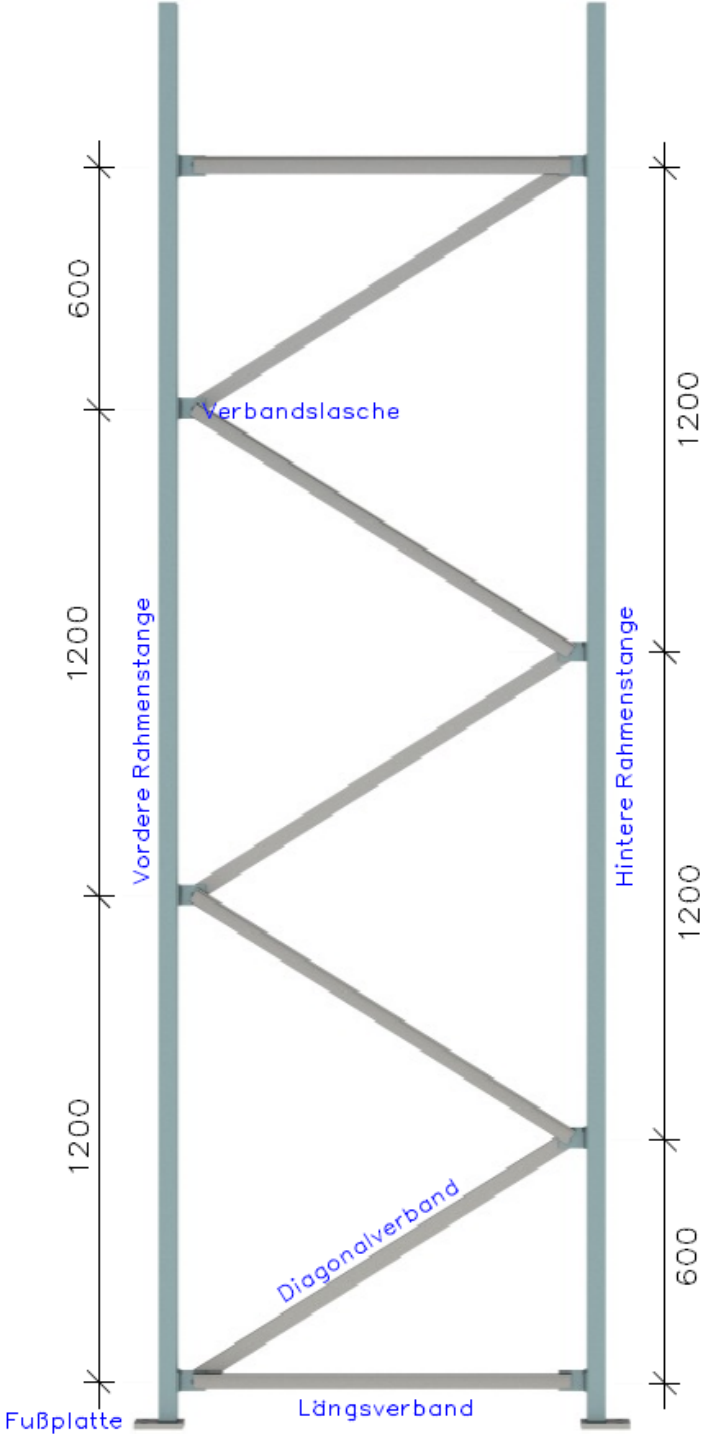


1. In the case of single rows of shelves, the base plate of each frame bar must be connected to the 2 ground anchors.
2. In the case of double rack rows, the outer base plates must be anchored with 2 ground anchors each. The inner footplates should be fastened with at least one ground anchor per plate.
3. The shelf foot sections are suitable for securing in your position, especially against unintentional displacement (e.g. by forklift forks). Approved ground anchors must be used for fastening to a concrete foundation.



1 Rahmenstange 2 Regaltraverse 3 Längsverband
 4 Diagonalverband 5 Belastungsschild

Pallet racks
Assembly Pallet racks



Component Overview					
Frame height	Frame bars	Longitudinal bend	Diagonal Cross Over	Screws & Nuts M12x40 mm	U-washers 13x2 mm
2000 mm	2	2	3	6	6
2500 mm	2	2	4	7	7
3000 mm	2	2	4	7	7
3500 mm	2	2	5	8	8
4000 mm	2	2	6	9	9
4500 mm	2	2	7	10	10
5000 mm	2	2	8	11	11
5500 mm	2	2	8	11	11
6000 mm	2	2	9	12	12
6500 mm	2	2	10	13	13
7000 mm	2	2	11	14	14

The following applies to the screw connection: Unpreloaded screw sets must be tightened at least hand-tightly in accordance with the EN 1090-2 design standard, taking care to ensure that they are not overloaded. In order to achieve a uniform, tangible condition, more than one tightening pass may be necessary. Solid = condition that can be achieved by a person with a normal-sized wrench without extension.



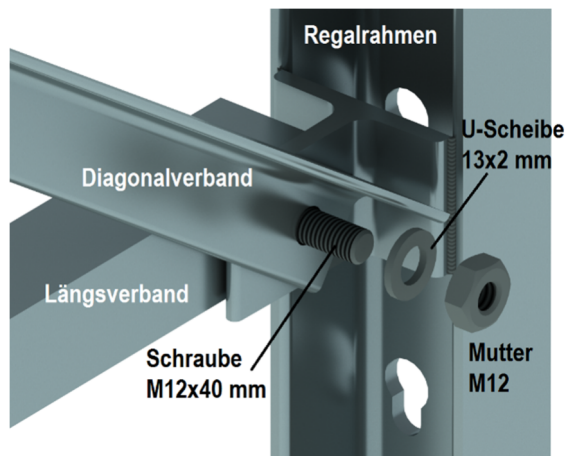
Richtwerte „Handfest“ – Anziehmomente *		
Schraube	M 12	M 16
Anziehmoment Nm	15	35

* Auszug aus Ausführungen von Stahlbanken (Tab. KII 8-1)

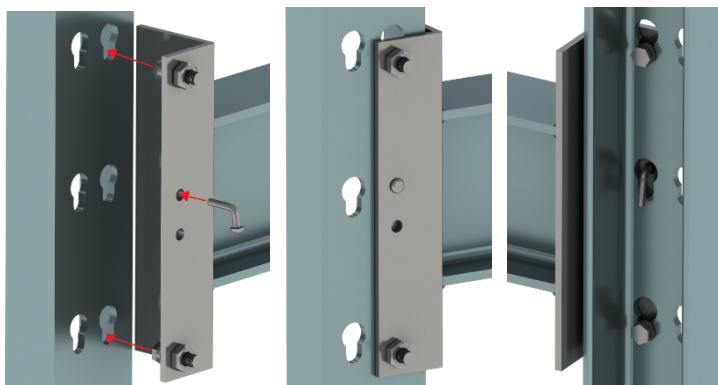
- Place 2 frame poles next to each other at a distance of a longitudinal bond.
Note that there are 2 different frame bars.
Screw the required longitudinal and diagonal braces to the welded bracing lugs.
- The connected components are to be pulled together in such a way that they reach a largely flat system. Screws and nuts must not be welded. Nuts must be installed in such a way that their marking is visible during the inspection after assembly.

! You can find an exact number of dressings per frame in the "Component Overview"!

Assembly of the bandages



Installation of the trusses



Installation instructions

1. A minimum of 3 people are required to set up the pallet rack!
2. The first shelf frame is erected and held in place by 2 people.

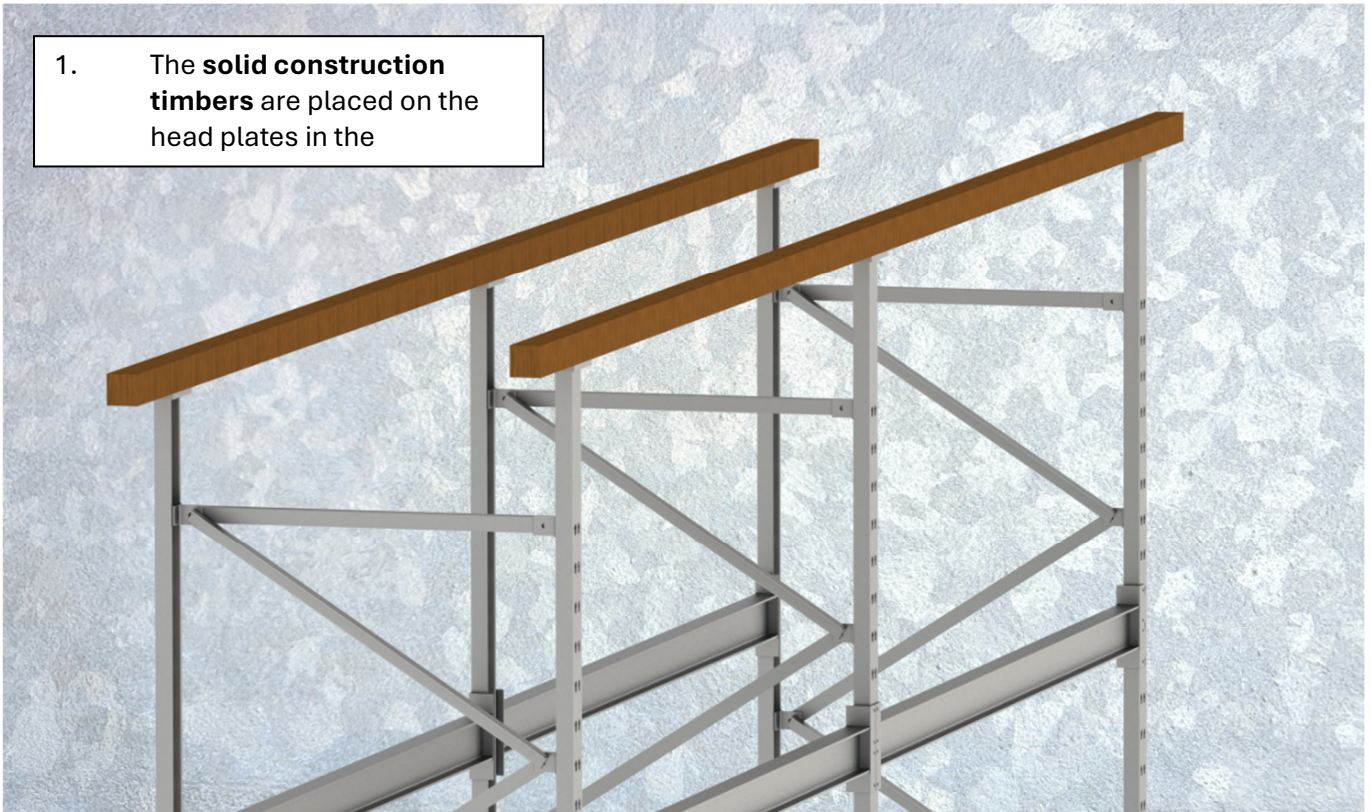
Please make sure that the Frame does not move!

For large frames, a Forklift used as an aid become.

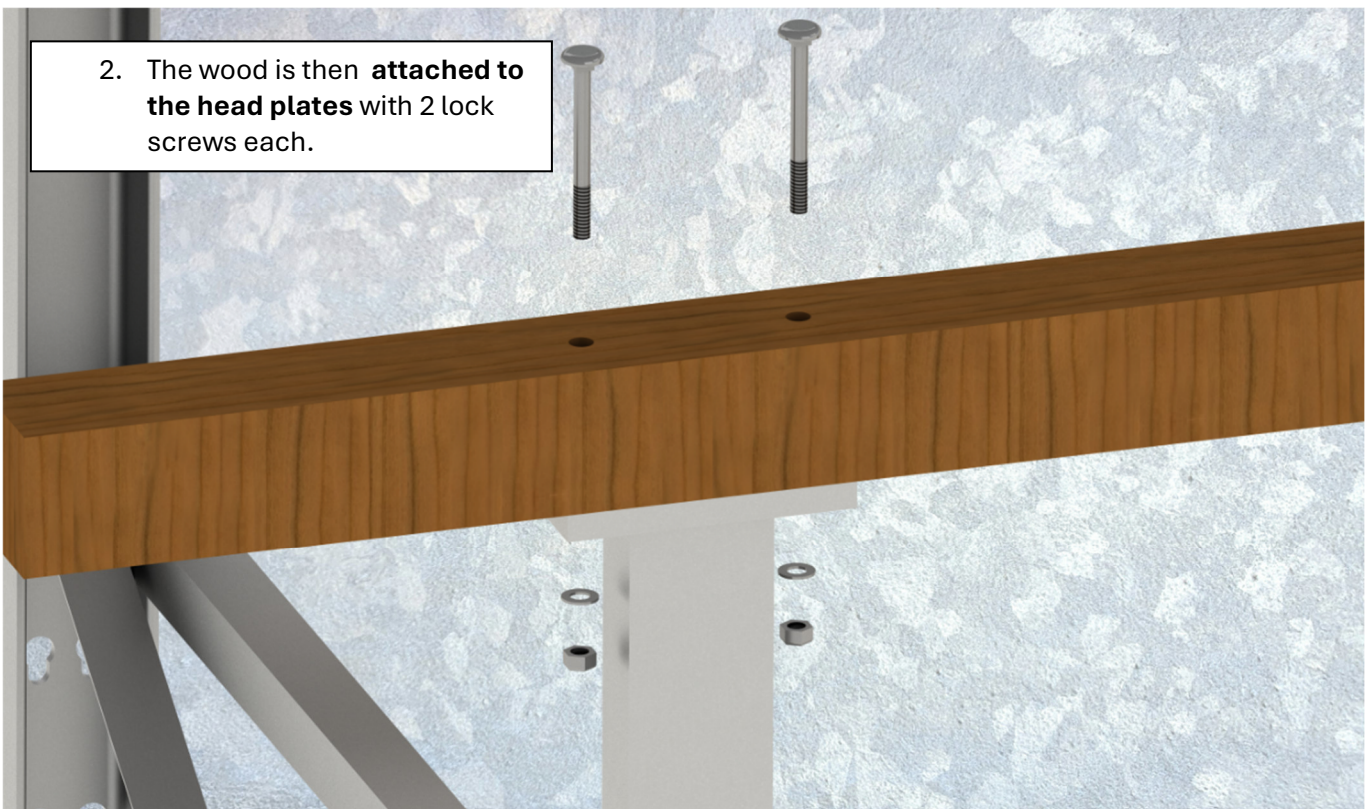
1. With the help of the shelf trusses, the position of the second frame is determined.
2. Once both frames have been erected, the trusses are hooked in and immediately secured with a locking pin. 2 pieces per crossbeam (see pictures)
3. At least 2 pairs of trusses must be installed per field, with a lower shelf height of max. 1.50 m, in order to be able to guarantee the stability of the rack.

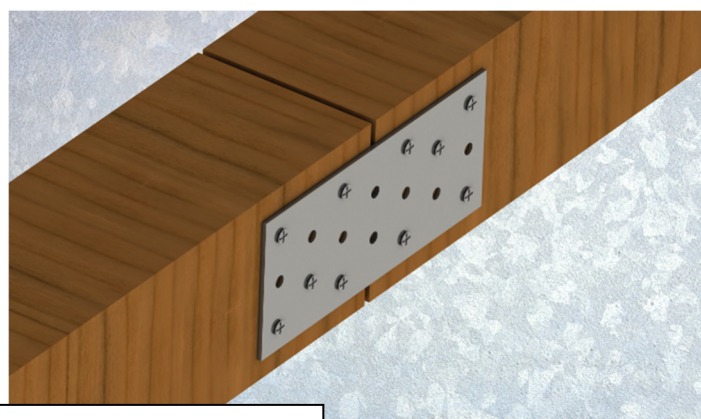
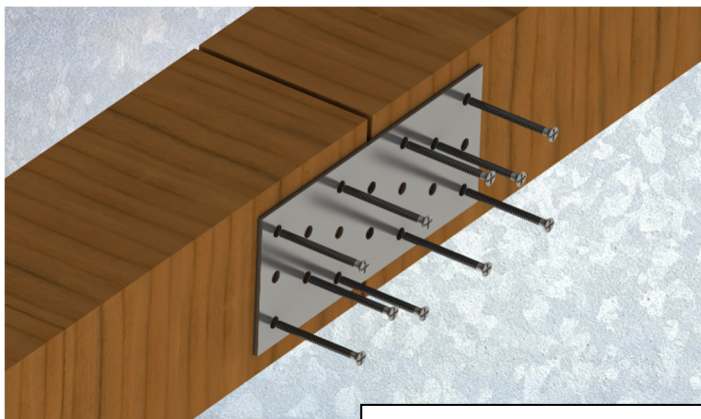
Roof structure

1. The **solid construction timbers** are placed on the head plates in the

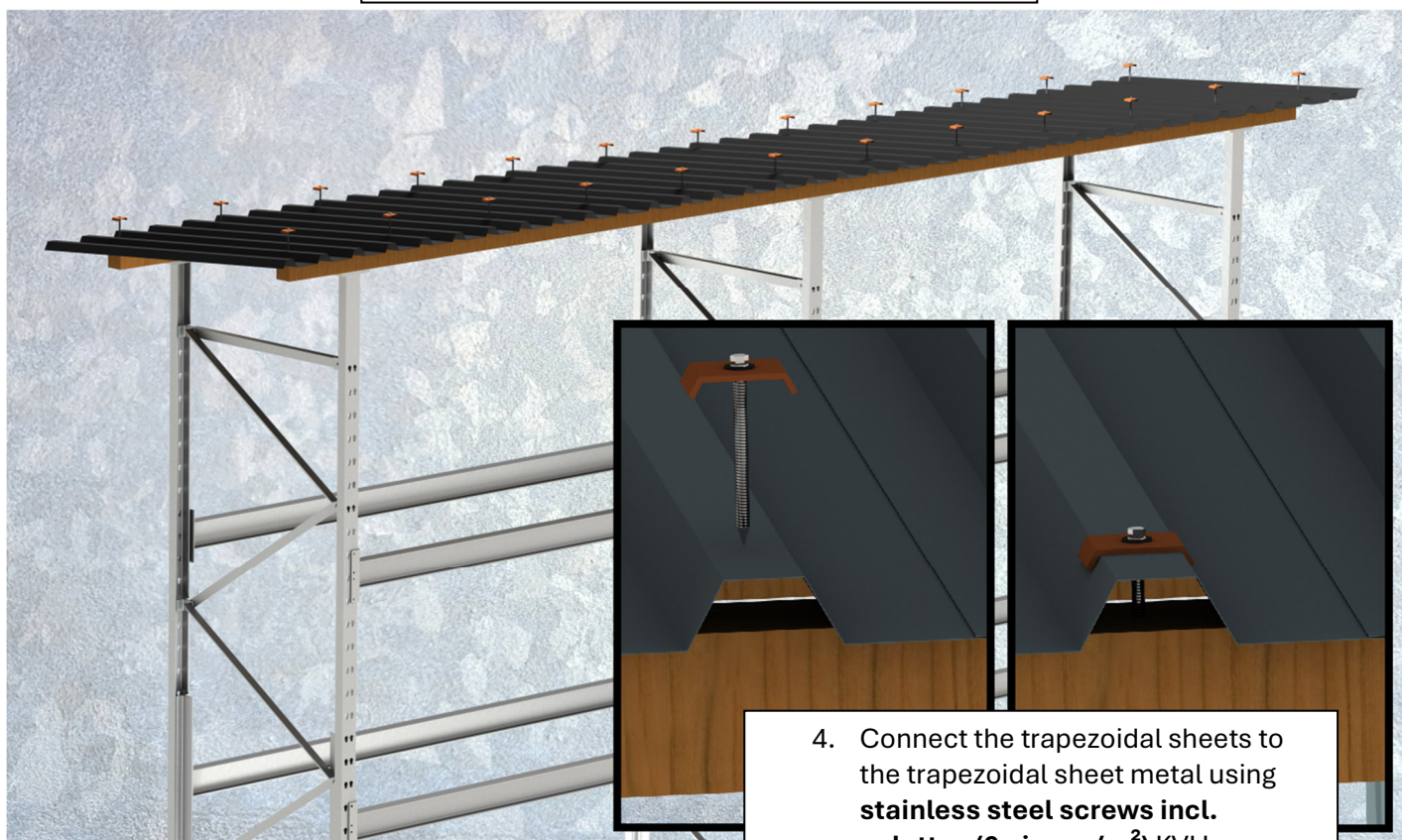


2. The wood is then **attached to the head plates** with 2 lock screws each.

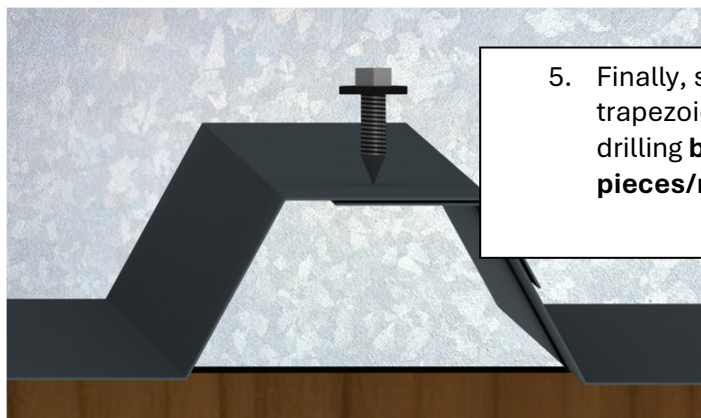




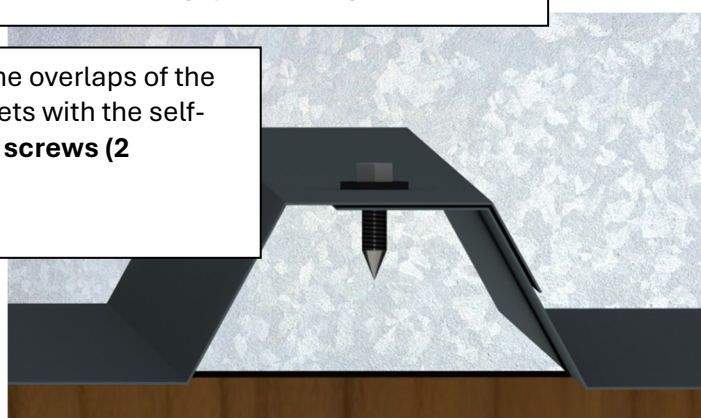
3. Screw the butt joints of the timbers (if available) with **2 perforated sheets** and **20 Assy screws** each, on the opposite sides.



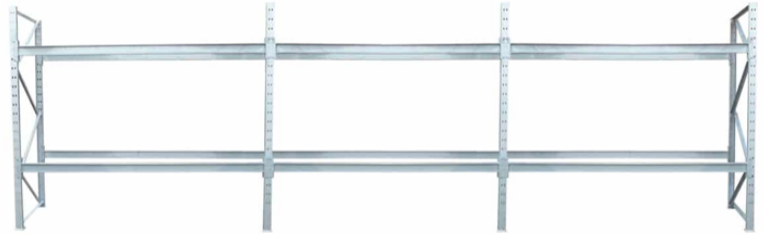
4. Connect the trapezoidal sheets to the trapezoidal sheet metal using **stainless steel screws incl. calottes (6 pieces/m²) KVH**.



5. Finally, screw the overlaps of the trapezoidal sheets with the self-drilling **bimetal screws (2 pieces/m²)**.



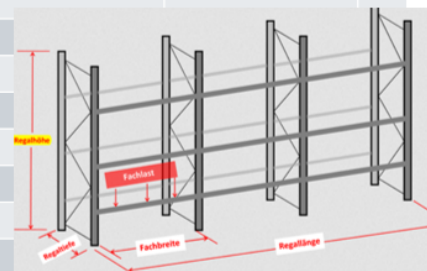
U- Profil 80 x 45 mm	
Rahmen	
Höhe bis in m	Lagerware
2	
2,5	
3	x
3,5	x
4	x
4,5	x
5	x
5,5	
6	



Traversen für Palettenregal

Traversenlänge in mm	Profil	Tragfähigkeit in kg	Profil	Tragfähigkeit in kg	Profil	Tragfähigkeit in kg
	Lager	IPE 100	Lager	IPE 120	Lager	IPE 140
1800	x	5.000	x	6.400		7.600
2000		4.550		5.900		7.100
2200	x	4.050	x	5.350		6.600
2500		3.600		4.650		5.950
2700	x	3.000	x	4.500	x	5.450
2800		2.800		4.400		5.200
3000	x	2.550	x	4.300		4.850
3300		2.250		3.300		4.150
3600	x	2.100	x	2.700		3.700
3800		1.900		2.550		3.500

Technische Vorgaben:		
Feldlast kg	Fachhöhe oben max. m	Fachhöhe unten max. m
9.000	2,00	1,50
12.000	1,80	1,50
14.100	1,60	1,50
Die angegebenen Lasten gelten bei:		
min. 3 Feldern(4 Ständer) in Längsrichtung und höhengleichen Traversen		
Ein Knickschutz ist bei der Aufstellung im Aussenbereich vorzusehen!		
Sind die Kriterien nicht erfüllt, müssen Feld- und Fachlast abgemindert werden:		
2 Felder (3 Ständer) = -15 %		
1 Feld (2 Ständer) = -30 %		



Maintenance book

Warehouses and operating equipment

Basic information about the inspection

In accordance with DIN EN 15635 in conjunction with DIN EN 15629, the operator of a racking system is obliged to carry out regular maintenance and inspections of the system. This should be carried out systematically and regularly and follows a hierarchical approach with several levels of inspection:

1. Immediate notification
2. Weekly visual inspections
3. Annual expert inspections

Damage detected by the inspection must be remedied by the operator.

Premises: _____

Contact: _____

Manufacturer shelving system: Bruckamp GmbH

Shelf Type: _____

Year of construction: _____

Date	Activity carried out	Remark	Name	Signature