



ASSEMBLY INSTRUCTIONS

Pallet rack

PR4500-A



Please read this manual before using the product and follow the instructions it contains!

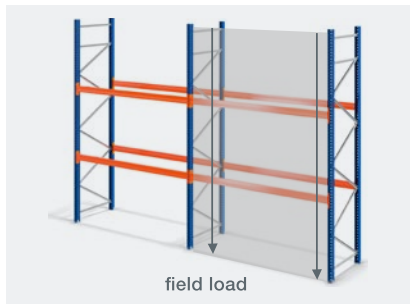
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Do not over-tighten screws!

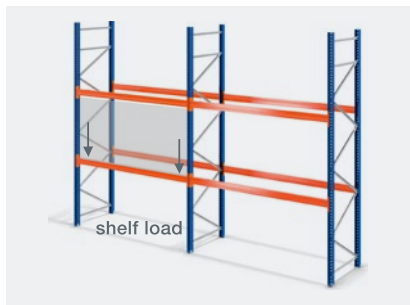
EXPLANATION OF TERMS

UNIT LOAD



- Total load capacity between 2 horizontal bars
- Max. unit load capacity: 9000 kg

COMPARTMENT LOAD



- Total load capacity per beam level
- Max. shelf load depends on beam length

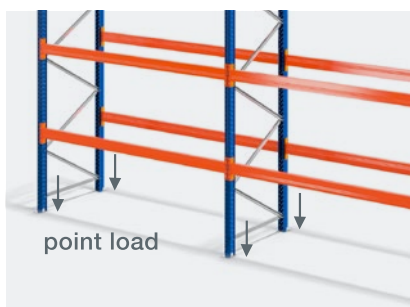
180 cm	→	max. 1000 kg
270 cm	→	max. 1500 kg
360 cm	→	max. 1350 kg



Maximum load per pallet

Due to the lower compartment load, if the beam length is 360 cm, four pallets may only be stored with a maximum load of 337 kg each.

POINT LOAD



- A load on the foundation generated by the upright
- Max. point load per foot plate: 2250 kg (outer uprights)
- Max. point load per foot plate: 4500 kg (inner uprights)



Load capacity

The information on load capacity refers to a shelf with at least 2 bays and at least 2 levels (4 cross members), which are evenly suspended in height to ensure the maximum shelf and bay load. The operation of a shelf bay with only one level is prohibited! Suspending only one level in a bay reduces the shelf and bay load enormously due to the statics. Our load tests and all specifications therefore always refer to at least 2 levels.

OVERVIEW

DRUM SHELF

Painted steel shelf for 110 cm deep pallet racks. The drum shelf is simply placed between the beams and is suitable for barrels up to a filling volume of 200 L.

UPRIGHT

A complete upright consists of: 2 cold-rolled, blue upright rods as well as the galvanised diagonal and cross struts and the foot plates incl. bolt anchors. All required screw material is included.

Available upright depth 80 cm or 110 cm.

BEAMS

Beams are the load carriers of a pallet rack. Individually height-adjustable in 50 mm increments.

Available in the lengths: 180 cm, 270 cm, 360 cm

L-PROFILE RACK PROTECTOR

With yellow / black signal strips to protect the outer rack uprights. Each with four bolt anchors for floor mounting. Mandatory according to DIN EN 15635.

SUPPORT BAR

Support bars are attached transversely to the beams, for example to increase the load capacity of the wooden shelves. Load capacity per support bar: 600 kg

U-PROFILE RACK PROTECTOR

With yellow / black signal strips to protect the inner rack uprights. Each with four bolt anchors for floor mounting.

Complete upright

STEEL SHELF

The floor is painted in signal orange RAL 2004. Steel shelves are placed directly onto the beams and are self-fixing.

PUSH-THROUGH PROTECTION

Prevents unintentional movement of the pallet to the rear.



WOODEN SHELF

Shelves (chipboard, 38 mm) are placed on the beams and fixed using four locking plates.

SPACER

Spacer – 20 cm – for parallel positioning of racks. Spacers can also be used to fix the rack to the wall.

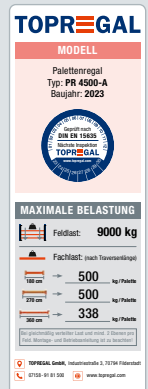
MESH REAR WALL

Steel rack back panel painted in orange. It prevents stored goods from falling down.

LOAD CAPACITY LABEL

Self-adhesive load capacity label with information on load capacity – complies with DIN EN 15635.

Always supplied and must be attached to the rack in a clearly visible position.



LOAD DISTRIBUTORS

They distribute the weight of the upright, e.g. to protect floors susceptible to damage. The result is a significant reduction in the point load.

GALVANISED MESH DECK

Shelf made of galvanised mesh. The modules are placed on the beams and are self-fixing due to the special construction.

CRASH PROTECTION RAIL

Protects the rack system from damage to the outer uprights and their struts caused by accidental collisions, e.g. with forklift trucks.

GENERAL INFORMATION

PREVENT DANGERS

The TOPREGAL® product you have purchased is manufactured in accordance with the current state of the art and complies with the applicable regulations and rules. Nevertheless, it may pose a danger to people and property if:

- the rack is not properly assembled, improperly modified or converted.
- accessories used are not original ones.
- the safety regulations are not observed.

Therefore, every person involved in the assembly must read and follow the safety regulations and, if necessary, you should have them confirm this with a signature.

ACCIDENT PREVENTION REGULATIONS

All relevant accident prevention regulations apply:

- generally accepted safety rules
- country-specific regulations
- Guidelines for storage facilities and equipment of the respective country

PLEASE NOTE

Before assembly, commissioning or use, the information contained in these instructions must be observed. If you need technical support, please contact us.

In order to avoid personal injury and damage to property, please note the following

- the guidelines of the storage facilities and equipment DIN EN 15635 – in the current issue.
- the relevant workplace directives and regulations.
- the information from your safety officer.
- the structural conditions and regulations, in particular the condition and load-bearing capacity of the floor.
- And ensure that the facilities are in good order and condition. Damaged or deformed components must be replaced immediately. If in doubt, stop installation or use, secure the installation area and inform your safety officer.
- that loading may only be carried out after all assembly work has been completed.
- that the persons carrying out the assembly and conversion work are to be secured against falling in accordance with DIN EN 15635.
- that protective clothing such as helmets, gloves, safety shoes etc. must be worn during assembly and conversion.
- that the racks must be effectively protected against impact from forklifts or other vehicles.

ASSEMBLY PREPARATION

All original TOPREGAL components used to stabilise the warehouse equipment must be attached without restriction. These include in particular frame components, unit assemblies, diagonal struts, beams, floor anchors, screws / fastening elements and safety pins. During assembly one should ensure that the screws are not over-tightened. The screws must be pre-fastened by hand and later tightened using suitable tools such as a cordless drill or a wrench.

PLANNING

Before the shelves are set up, the area provided for them is measured and the position of the shelf rows is recorded. Tape measure and chalk line are best suited for this. When setting up the racking, please note that the intended racking row spacing is not equal to the working aisle width and that pallets, containers or empties may protrude into the aisle. The required working aisle width can be obtained from the manufacturer of the operating device or from your safety officer. Transport routes for power-driven or track-bound conveyors must be wide enough to ensure a safety clearance of at least 0.5 m on both sides of the conveyors. The space required for manoeuvring operations must also be taken into account when dimensioning. The safety clearance can be dispensed with if access by persons is prevented by structural measures.

TESTING OF FLOOR AND FLOOR TOLERANCES

Before installing racking equipment, check

- whether the load-bearing capacity of the floor is suitable to safely absorb the intended loads. If in doubt, ask a specialist and have the load-bearing capacity determined. The responsibility for the correctness of the information given lies with the builder-owner.
- the surface of the floor: a reinforced concrete slab, min. **200 mm thick, concrete quality C20/25** is required. If the surface is provided with a magnesite screed, insulating plates must be used to avoid of corrosion and special ground anchors are required.



Assembly

Racks may only be used in accordance with the assembly and installation instructions supplied by us. Operating instructions can be set up and modified. The conversion of racks may only be carried out in an unloaded condition.

SERVICE & CONTACT

Contact our product experts and find help and solutions for your product. Here you will find all contact information listed by country and language: www.topregal.co.uk/en/service

Responsible for the content:

TOPREGAL GmbH
Industriestrasse 3
70794 Filderstadt
GERMANY
www.topregal.com

TECHNICAL REGULATIONS

BASIC STRUCTURE

A shelf row consists of at least 2 fields. At least two compartments (4 crossbars) must be hooked into each compartment will be. The shelf heights are to be kept approximately the same for all compartments. If the height of the compartments varies from compartment to compartment 30 %, the maximum field load is reduced.

The uprights are connected to the base plates by screw connections and then fixed in the load-bearing floor. The trusses are attached by simple plug-in construction with locking pins.

UPRIGHT HEIGHT

The compartments of the first and last bay of a shelf row must be hooked in at least 50 cm below the upright height to prevent the load from falling. For all other bays, the highest bay must be hooked at least 10 cm below the upright height.

PASSAGEWAYS

Passages for industrial trucks and forklift trucks must be secured against falling stored goods. This can be achieved, for example, by ensures the insertion of a wooden shelf. The clear height must be 25 cm higher than the vehicle height, but at least 200 cm.

COLLISION PROTECTION

Corner areas and passages must be protected by a collision guard with yellow-black hazard marking that is not connected to the rack. (see DIN EN 15635)

SAFETY DISTANCES

When assembling, the exact location of the rack must be marked on the floor beforehand. The necessary safety distance to structural parts (e.g. wall, column) and aisles must be observed. (see DIN EN 15635) In addition to the wall distance of 100 mm, the possible pallet overhang must be taken into account. If the pallet protrudes 60 mm, a total safety distance of 160 mm applies. However, if pedestrian traffic is possible between the wall and the row of shelves, there must be no overhang apart from the pallet.

CONDITION OF THE SOIL

The minimum component thickness of the soil is 20 cm, the minimum borehole depth is 10 cm. The evenness of the ground is to be measured according to DIN EN 15635. The minimum concrete quality is C 20/25.

IDENTIFICATION

Marking by a load plate is mandatory. These are included in the delivery.

TESTED SAFETY

Our pallet racking meets the requirements of DIN EN 15635 for load, rigidity and stability. Tested safety to offer you a high quality and safe rack.



VERTICAL INSTALLATION / DEFLECTION

The shelf must be aligned vertically. Deviations of the shelf supports from the vertical in the length and depth of the shelves must not exceed 1/200 of the shelf support heights. To compensate for uneven floors, height compensation plates can be used - but only up to a maximum of 2 cm. The individual uprights must be aligned within a row of shelves.

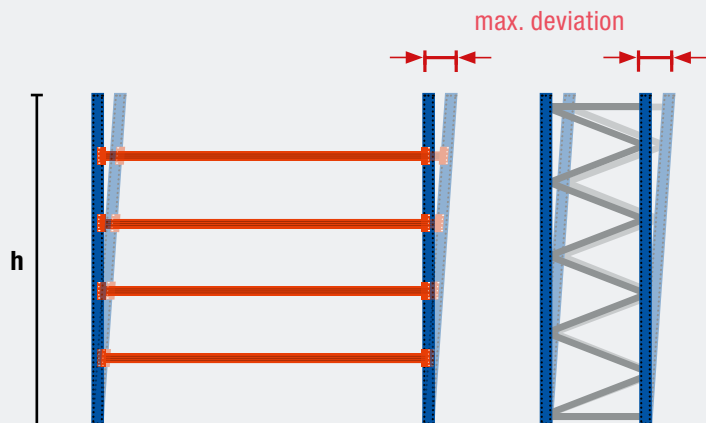
There is a general obligation to anchor the floor! Suitable bolt anchors are included in the delivery. The shelves may only be loaded after assembly is complete.

EXAMPLE OF PLUMB SET UP: RACK UPRIGHT HEIGHT 4 M

$$\frac{\text{Shelf height } h}{200} = \text{max. deviation}$$

$$\frac{400 \text{ cm}}{200} = 2 \text{ cm}$$

In this example, the maximum deviation in the longitudinal and transverse directions must therefore not exceed 2 cm.

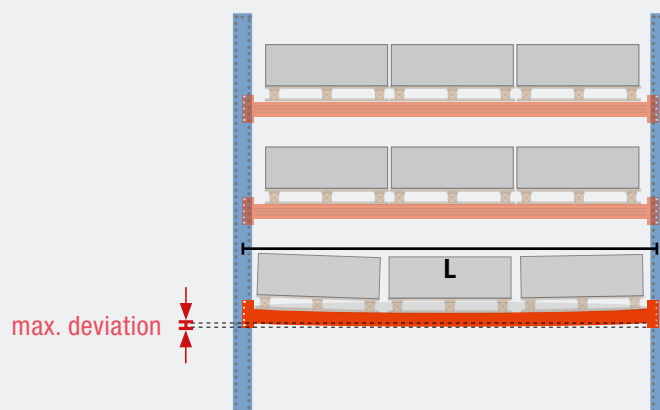


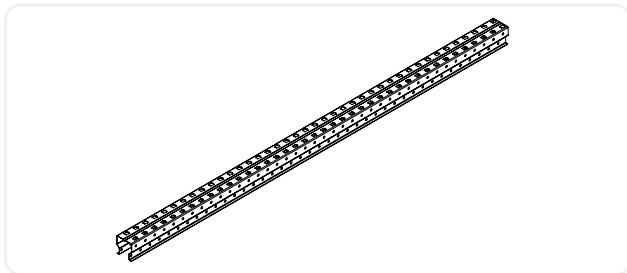
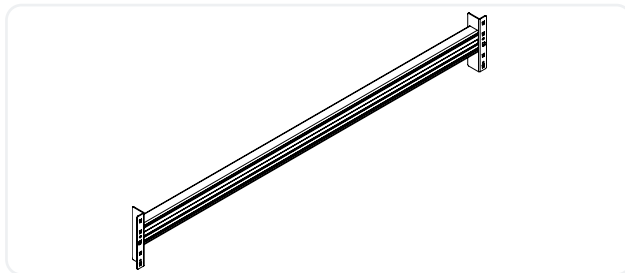
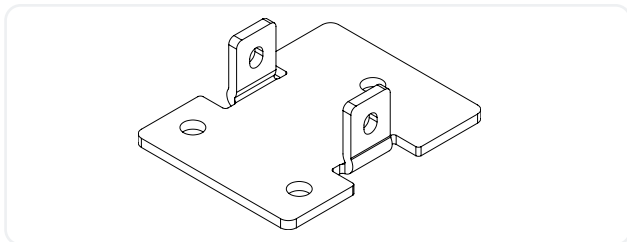
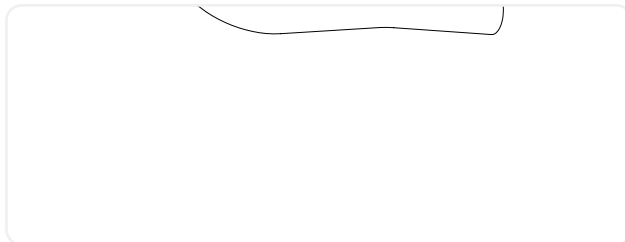
EXAMPLE OF DEFLECTION: BEAM LENGTH 2,7 M

$$\frac{\text{Beam length } L}{200} = \text{max. deviation}$$

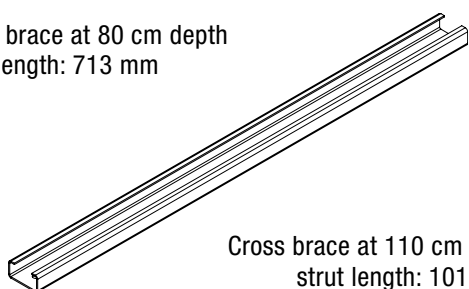
$$\frac{270 \text{ cm}}{200} = 1.35 \text{ cm}$$

The maximum deflection in this example must therefore not exceed 1.35 cm.

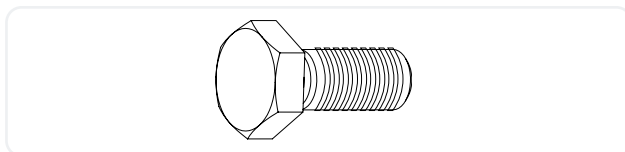
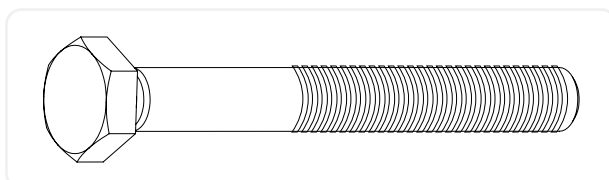


A Upright profile

F Beam

B Foot part

G Safety pin

C Cross strut

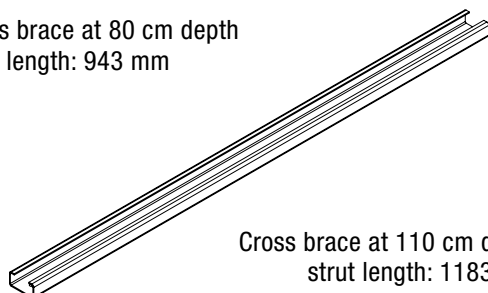
Cross brace at 80 cm depth
strut length: 713 mm



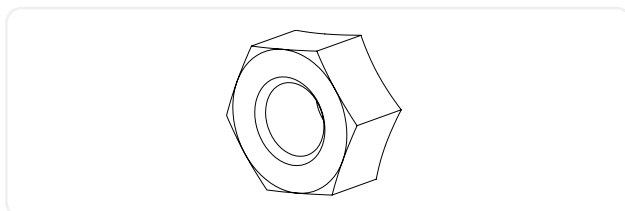
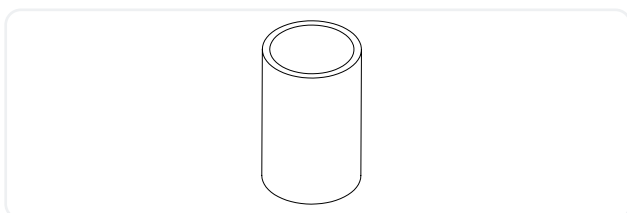
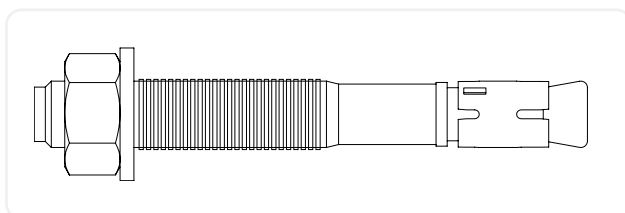
Cross brace at 110 cm depth
strut length: 1013 mm

H M8 x 20 mm hexagon screw

I M8 x 65 mm hexagon screw

D Diagonal strut

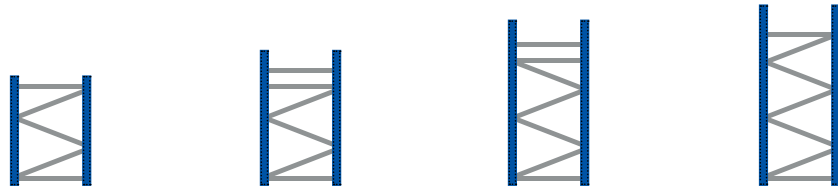
Cross brace at 80 cm depth
strut length: 943 mm



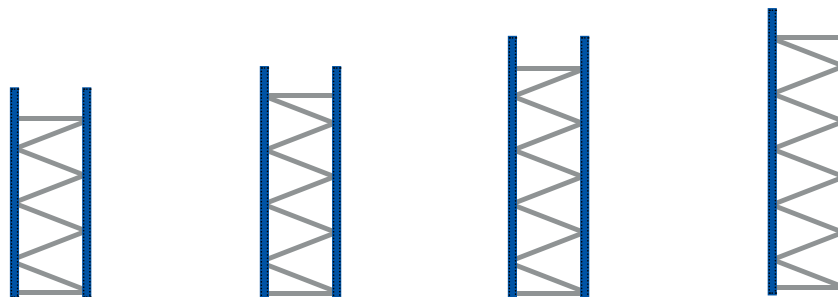
Cross brace at 110 cm depth
strut length: 1183 mm

J M8 locknut

E Spacer sleeve (length 25 mm)

K M12 x 100 mm bolt anchor


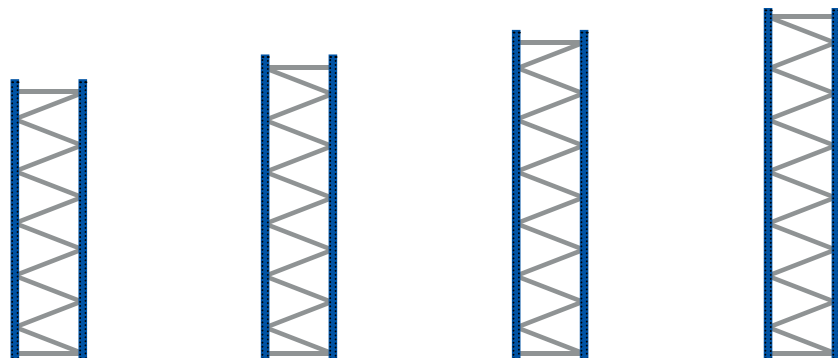
OVERVIEW RACK UPRIGHTS



Height (incl. foot plates)	200 cm	250 cm	300 cm	350 cm
Depth	80 cm / 110 cm	80 cm / 110 cm	80 cm / 110 cm	80 cm / 110 cm
Unit load	9000 kg	9000 kg	9000 kg	9000 kg
Upright	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors
No. cross struts	2	3	3	2
No. diagonal struts	3	3	4	5
Colour	RAL 5005	RAL 5005	RAL 5005	RAL 5005

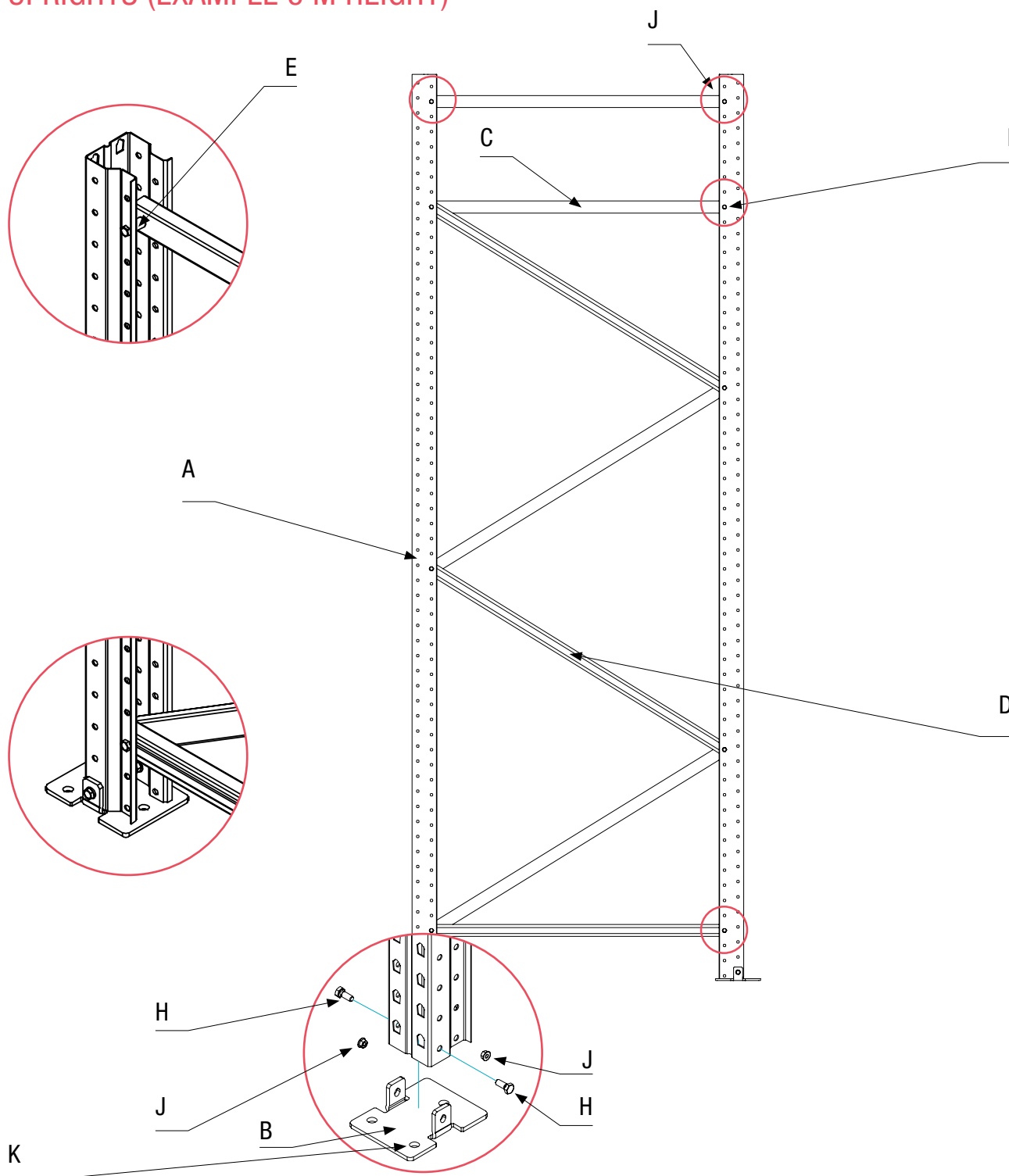


Height (incl. foot plates)	400 cm	450 cm	500 cm	550 cm
Depth	80 cm / 110 cm	80 cm / 110 cm	80 cm / 110 cm	80 cm / 110 cm
Unit load	9000 kg	9000 kg	9000 kg	9000 kg
Upright	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors
No. cross struts	2	2	2	2
No. diagonal struts	6	7	8	9
Colour	RAL 5005	RAL 5005	RAL 5005	RAL 5005



Height (incl. foot plates)	600 cm	650 cm	700 cm	750 cm
Depth	80 cm / 110 cm	80 cm / 110 cm	80 cm / 110 cm	80 cm / 110 cm
Unit load	9000 kg	9000 kg	9000 kg	9000 kg
Upright	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors	anchored to the floor using 4 bolt anchors
No. cross struts	2	2	2	2
No. diagonal struts	10	11	12	13
Colour	RAL 5005	RAL 5005	RAL 5005	RAL 5005

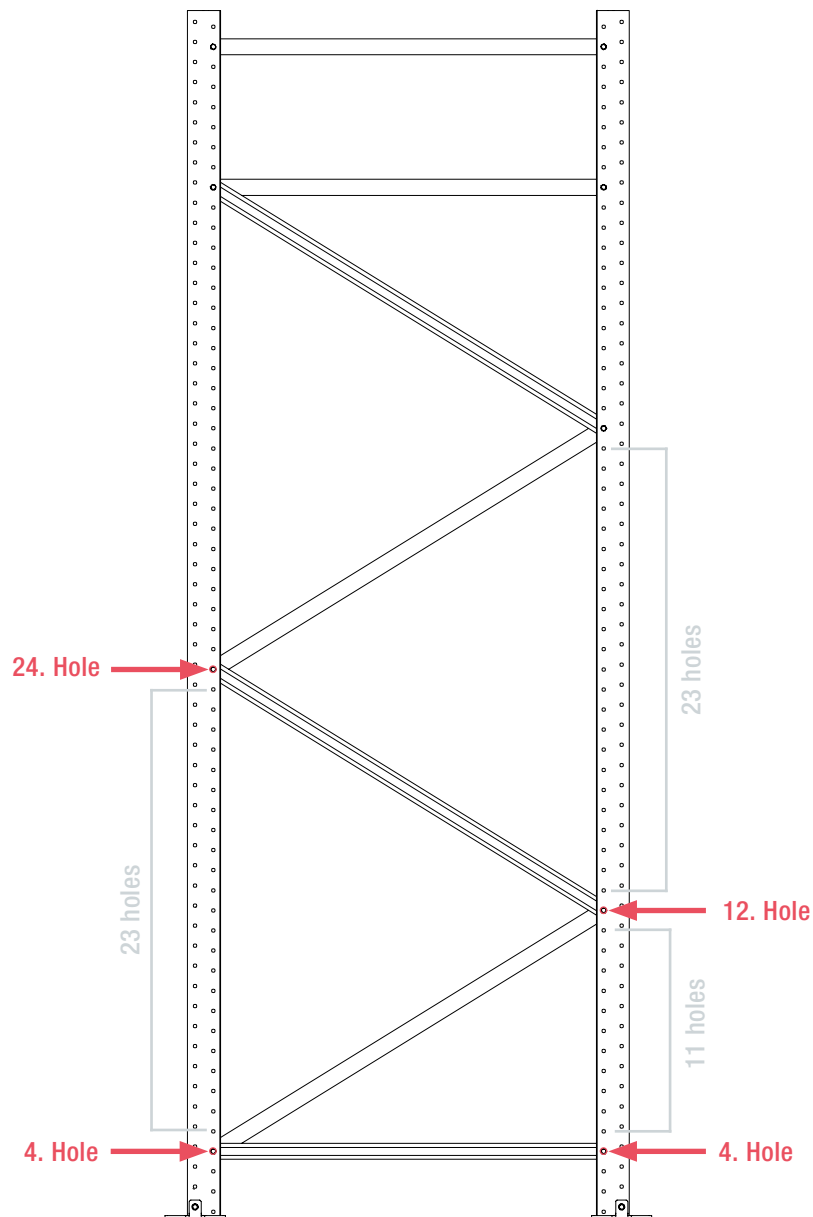
UPRIGHTS (EXAMPLE 3 M HEIGHT)



1. Assemble upright profile **A** and foot part **B** and fasten with hexagon head screws **H**, nut-M8 **J** screw it tight.
2. Cross struts **C** and diagonal struts **D** as shown in the picture with the distance sleeve **E**, the hexagon head screws **I** and fasten the locking nuts **E** to the stand.



Spacers (**E**) are required at those points where a straight cross strut is not attached with a diagonal strut. See coloured markings using the example of the 3 m uprights - the number and positions of the cross struts vary depending on the size of the shelf.

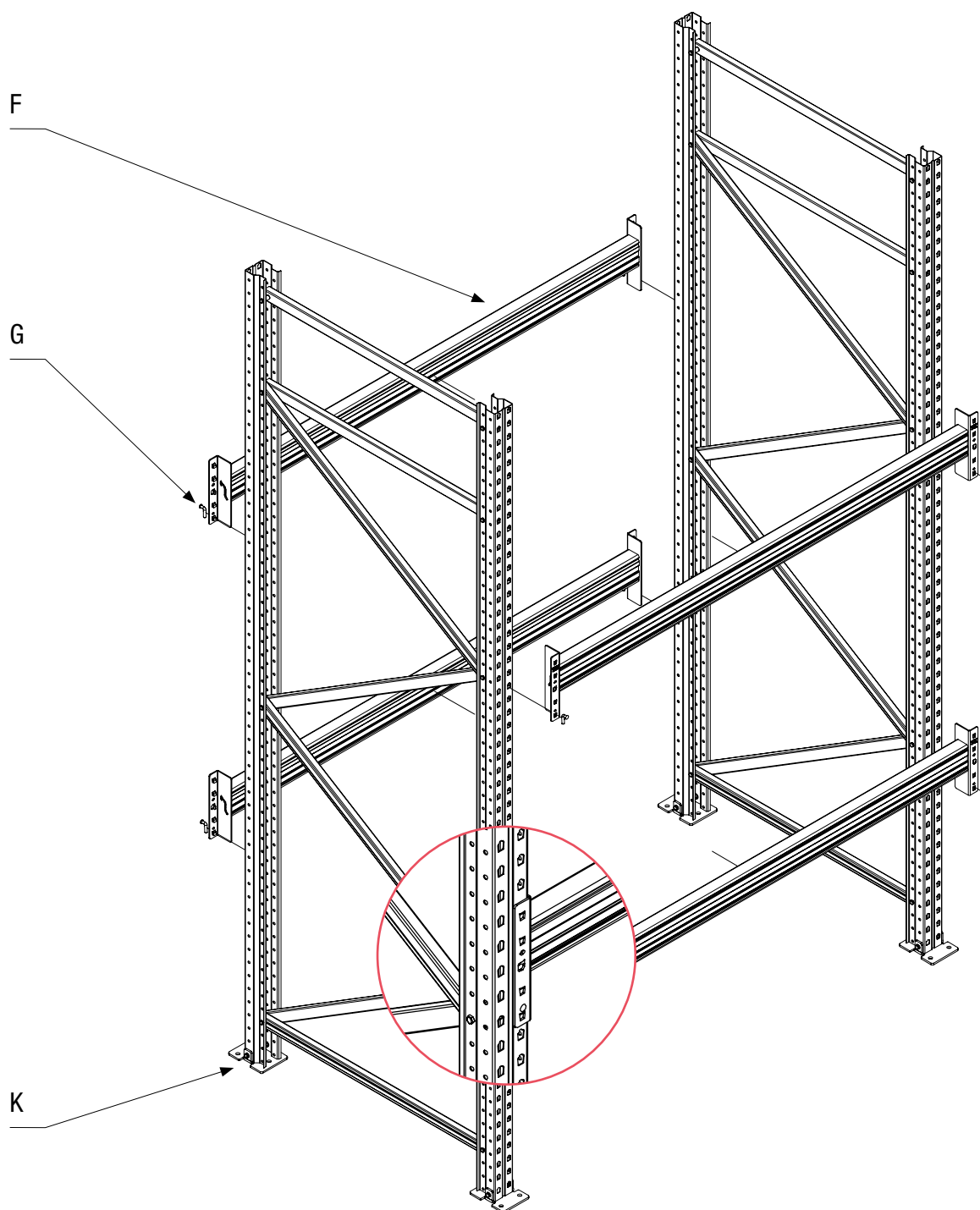


Bracing

The 1st cross strut is to be mounted in the 4th hole. Between cross brace and the following diagonal brace there are 11 holes free - i.e. the screw of the next strut goes into the 12th hole.

Between further diagonal braces there are always 23 holes to the next to release the diagonal brace.

BEAMS



1. Hook crossbars **F** in the desired position and secure with safety pin **G**.
2. Drill holes and insert Wedge Anchor **K** for floor anchoring through base plate and fix with maximum tighten 46 Nm.

BEAM ASSEMBLY



Required parts: Preassembled shelf upright, cross beam F, safety pin G

Set up the pre-assembled uprights and hook the crossbars F into the upright profile A at the desired height on both sides. Insert the locking pins G into the hole provided in the crossbar E. The trusses are hooked in a 50 mm grid.

Please note: Mount the last crossbar at least 50 cm before the end of the stand! We recommend a push-through protection here.

SHELF ASSEMBLY



Required parts: Shelf (incl. 4 Z-shelves) or grating

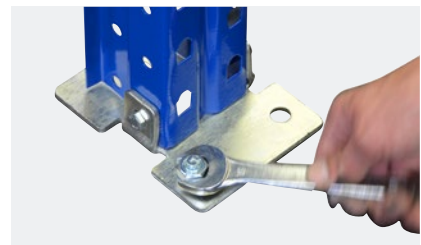
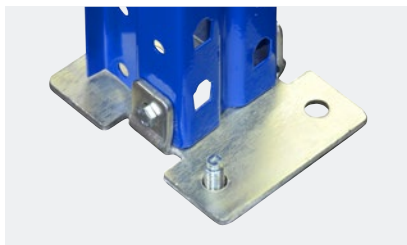
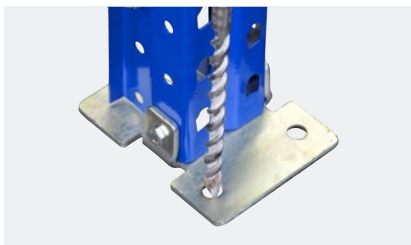
Wooden floor: Place 4 Z-sheets on the crossbars and lay the floor on the edge protector.

Grating: Place on traverses - fixes itself.

FLOOR ANCHORING BASE PLATE

Required parts: Preassembled shelf, bolt anchor L

- Drill holes in the bottom: 12 mm Ø, min. 100 mm deep
- Blow out holes clean
- Drive in bolt anchor – the nut should be flush with the thread
- Tighten anchor firmly with max. 46 Nm
- After tightening, the marking in the thread must not be visible!



Fixing the foot plate

It is perfectly sufficient to place one bolt anchor per foot plate on the double perforated side to be fastened. However, for better stability we recommend 2 bolt anchors per foot plate. The third hole serves as an alternative to provide additional stability if obstacles such as cables, steel reinforcements, etc. occur when drilling a hole.

SHELF INSPECTION

The European guideline DIN EN 15635 points out the responsibility of the operator to keep the racks in a proper condition. To this end visual inspections and expert inspections must be carried out on the racks at regular intervals in order to ensure safety. The following aspects, among others, must be examined:

- Are the rack supports perpendicular?
- Are there any cracks in the weld seams or in the base material?
- What is the condition and effectiveness of the safety devices?
- What is the condition of the building floor?
- What is the position of the load unit on the rack?
- Are load capacity labels and information notes available and up-to-date?
- Is the stability of the load units given?

The inspections carried out, defects and their remedy are to be documented in writing. This documentation is to be kept at least until the next regular inspection. However, it is advisable to keep the documentation for the entire service life of the rack. (cf. DIN EN 15635)

PERSONS QUALIFIED FOR INSPECTION

Qualified persons are those who can demonstrate specialist knowledge from recent professional activity in the environment of the test object and appropriate further training. These are e.g. fitters from the manufacturer or appropriately qualified personnel of the operator.

VISUAL INSPECTION

- Visual inspections are to be carried out on a weekly basis.
- Visual inspections may be carried out by a competent internal person.
- The scope of inspection may be reduced to those parts of the rack where defects are to be expected since the last inspection.

EXPERT INSPECTION

- Expert inspections are to be carried out at least every 12 months.
- The comprehensive expert inspection should be carried out by an expert, usually external person, and a comprehensive inspection protocol should be written.



You have questions about shelf testing or would like our certified shelf testers to do the inspection for you?

Talk to us about it! Phone 01495 707222

L / U-PROFILE COLLISION PROTECTION

ARTICLE NO. L-SHAPE = 4749, 9870 /
U-SHAPE = 4748, 9668



- Heights: 40 cm / 80 cm incl. 4 bolt anchors
- Painted in yellow with black signal stripes
- Corner rack protection to protect the outer uprights from accidental impact by lifting equipment such as forklift trucks, ants, etc.
- According to DIN EN 15635

CRASH PROTECTION RAIL

ARTICLE NO. 40 cm = 11757, 11758, 11759, 5434, 11760
80 cm = 11761, 11762, 11763, 11764, 11765



- Material thickness: 4 mm
- Height: 40 cm / 80 cm
- Lengths: 93 cm / 123 cm / 193 cm / 253 cm / 360 cm
- Painted in yellow with black signal stripes
- Protection against accidental collision, e.g. with industrial trucks
- According to DIN EN 15635

SUPPORT BAR

ARTICLE NO. 1223



- Support bar / depth support for pallet racks with 80 cm or 110 cm depth
- Load capacity: 600 kg
- Colour: TOPREGAL orange (corresponds roughly to RAL 2004)
- Support bars are used, for example, to increase the load-bearing capacity of the shelves
- According to DIN EN 15635

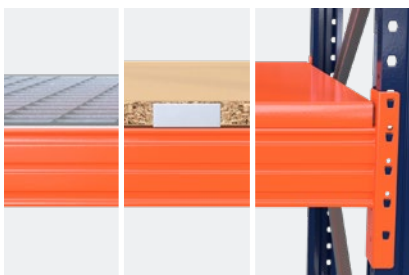
DRUM SHELF

ARTICLE NO. 20808



- Depth: 111.5 cm (for 110 cm deep pallet racks)
- Material: Steel, powder-coated
- Colour TOPREGAL orange (corresponds roughly to RAL 2004)
- Is placed between the beams without additional fastening
- Welded push-through protection prevents the drums from slipping through
- Max. load per level: 1000 kg
- Suitable for drums up to a filling quantity of 200 L

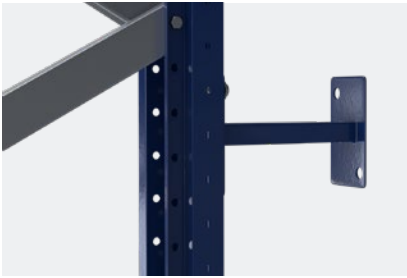
SHELVES



- **Galvanised mesh shelf:** Material thickness: 1.5 mm / galvanised / mesh size: 99.9 x 99.9 mm / self-fixing due to welded angles / max. load: 800 kg
- **Wooden shelf:** Material thickness: 38 mm / P2 chipboard / assembly using galvanised Z-plates / max. load: 1500 kg
- **Steel shelf:** Material thickness: 1.5 mm / height of the steel shelf: 40 mm / Colour: similar to RAL2004 pure orange / Self-fixing due to welded angles max. load: 1000 kg

SPACER

ARTICLE NO.. 1912



- Spacer for parallel positioning of rows of pallet racks
- Can also be used to fix the rack to the wall
- Length: 20 cm
- Colour: TOPREGAL blue (corresponds roughly to RAL 5005)
- For upright height < 3 m we recommend 2 spacers per upright
- For upright height > 3 m we recommend 3 spacers per upright

PUSH-THROUGH PROTECTION

ARTICLE NO. 1334, 1333, 1335



- Width: 180 cm, 270 cm and 360 cm
- Push-through protection prevents unintentional movement of the pallets to the rear
- Colour: TOPREGAL orange (corresponds roughly to RAL 2004)
- According to DIN EN 15635

MESH BACK PANEL

ARTICLE NO. 7101, 7100



- Available at a length of 180 cm and 270 cm
- Height: 100 cm
- Colour: TOPREGAL orange (corresponds roughly to RAL 2004)
- The sides of pallet racks not intended for loading and unloading (individual rows of racks!) must be secured against any falling of loading units and pallets

LOAD DISTRIBUTOR

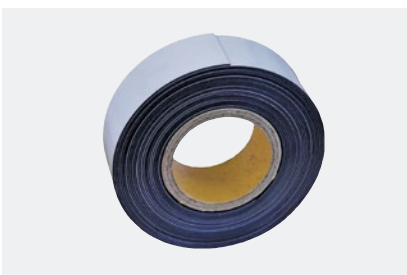
ARTICLE NO. 1790



- Load distributor for upright with 110 cm depth
- Length: 120 cm
- Protects the floor and reduces the point load

MAGNETIC TAPE

ARTICLE NO. 9590, 9591



- Magnetic tape for labelling racks or e.g. on car bodies, machines, beams, metal cabinets, etc.
- Dimensions: L 10m / B 5 cm or 10 cm / T 0.15 cm
- Reusable
- Easy cutting to size with standard scissors



LR2000 STORAGE RACK

- Height of rack 2 m – 4 m
- Upright depths 40 cm, 50 cm, 60 cm, 80 cm, 100 cm or 120 cm available
- Beams are individually height-adjustable in 5 cm increments and available in 110 cm / 220 cm lengths
- Various deck types, extensive range of accessories



MFR1000 MULTIPURPOSE RACK

- One rack – countless variations
- Tailored to your work areas
- Modular design – expandable at any time
- Exclusive from TOPREGAL



MFW1000 MULTI-PURPOSE WORKBENCH

- Height-adjustable table from 76 cm – 116 cm (with castors from 90 cm – 130 cm)
- 60 cm + 80 cm deep
- Back panel with over 25 different tool holders
- Modular design / individually configurable and adaptable to your needs



HAND PALLET TRUCK

- Manoeuvrable, stable hand pallet truck (70 kg net weight)
- Max. load 2500 kg
- fork length of 1.150 mm
- Stroke range 85 – 200 mm
- Effortless transport of euro pallets and mesh pallets



Individually configurable at www.topregal.co.uk

TOPREGAL[®]