

UNIBUILD

PATENTED MODULAR RACKING



METALSISTEM
SISTEMI E STRUTTURE PER IL MAGAZZINO

STANDARD SPECIFICATIONS CALCULATION AND SAFETY STANDARDS

The correct use of the product, distinguishes both the Customer and the Manufacturer. METALSISTEM recommends that customers strictly follow its code of practice for the design and utilisation of its products. The design and assembly of the racking system must be carried out by qualified personnel. METALSISTEM is not responsible for any improper or non authorized use of its racking systems and accessories.

Ref. N.:	UNIBUILD 300
System:	2009
Year of Construction:	30000 daN
Frame Load Capacity:	3000 daN
Load Capacity of Beams:	1000 daN
Weight of Load Unit:	1m N° Livelli: 10
Distance between ground and first level:	

Fig. 2

a) Floor Slab Loading.

Prior to the installation of the product, check that the floor slab is of adequate load capacity.

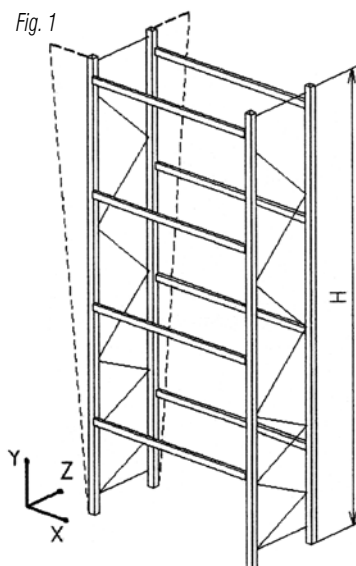
b) Site Installation.

The assembly and site installation of racking systems must be carried out by expert personnel, in full conformity with the assembly criteria and specifications tabled in this catalogue and in the UNIBUILD Technical Manual. Site personnel must ensure that all frame bolts have been tightened and all safety elements have been installed.

c) Rack Alignment.

While assembling the racking system, the verticality of the frames must be checked for both the "X" and "Z" directions. Unless more restrictive standards have been specified, the deviation off both the "X" and "Z" planes must not exceed ± 10 mm or $1/350$ of the height (ie max. deviation = $H/350$), whichever is greater (figure 1).

Fig. 1



d) Load Bearing Capacity Plate.

Load bearing capacity plates must be fastened in a clearly visible position nominating the model type, year of assembly, the maximum admitted load per bay, per pair of beams or per shelf level (expressed as a uniformly distributed load), the maximum admitted weight per load unit, the height of the first level from ground and the number of load levels per bay (figure 2).

e) Rack Safety Standard.

Rack structures must be fastened to the floor slab via two anchor bolts for every upright.

In cases where the height of the frame is:

- more than 5 times the depth, for single-sided racking;
- or, more than 10 times the depth, for double-sided racking;

that structure must be connected via top ties. Reference is made to the UNIBUILD Technical Manual MT06.

The racking structure must also be supplied complete with column and/or frame protectors.

f) Reference Standards.

The theoretical calculation is based on the following reference standards:

- ACAI-CISI - Testo Unico dated 11/05/2004: Technical Reference Standards for Pallet Racking
- C.N.R. UNI 10011/97
- C.N.R. UNI 10022/88

Reference standards for the materials are:

- UNI EN 10326
- UNI EN 10149
- UNI EN 10204
- UNI EN 10143

g) Software References.

The theoretical calculations of finished elements were elaborated with the ANSYS and SICS program. Guide lines followed as the basis for the calculations are those of the organization ACAI-CISI (Association of Italian Manufacturers of Industrial Shelving).

h) Frame Load Bearing Capacity.

The frame load bearing capacity graph in the UNIBUILD Technical Manual shows the load bearing capacity of frames used for pallet racking systems. These are expressed as a function of the height, from ground, of the first pair of beams. The following underlying assumptions apply when interpreting the graph.

The racking has:

- a minimum of 3 levels in height;
- a constant interval between the load levels or a distance between the load levels minor to the distance from ground to the first loading level;
- an equal and uniformly distributed load applied to all load levels;
- minimum two anchor bolts per upright, fastened to the floor slab.

Given that the load bearing capacity of the rack may depend on other elements such as, the number of load levels, the proportion between height and depth, installation in seismic areas, etc., contact the METALSISTEM Technical Department for consultation should there be doubts about any aspects of the installation.

i) Load Bearing Capacity of Beam Pairs.

The load bearing capacity of the beam pairs indicated in the UNIBUILD technical reference book were calculated with the following assumptions:

- loads are uniformly distributed;
- admissible tensile stress of the material; the security coefficient against rupture is equal to 2.
- deflection $1/200$ of the beam length.

It is mandatory to place beam retaining security clips on either side of all beams.

l) Custom Built Applications.

The METALSISTEM Technical Department is at the disposal of its customers for any specific calculations or custom built applications.

METALSISTEM reserves the right to modify the technical characteristics of its products at any time as it sees fit.

Technical data, dimensions and characteristics given in this document are merely indicative.

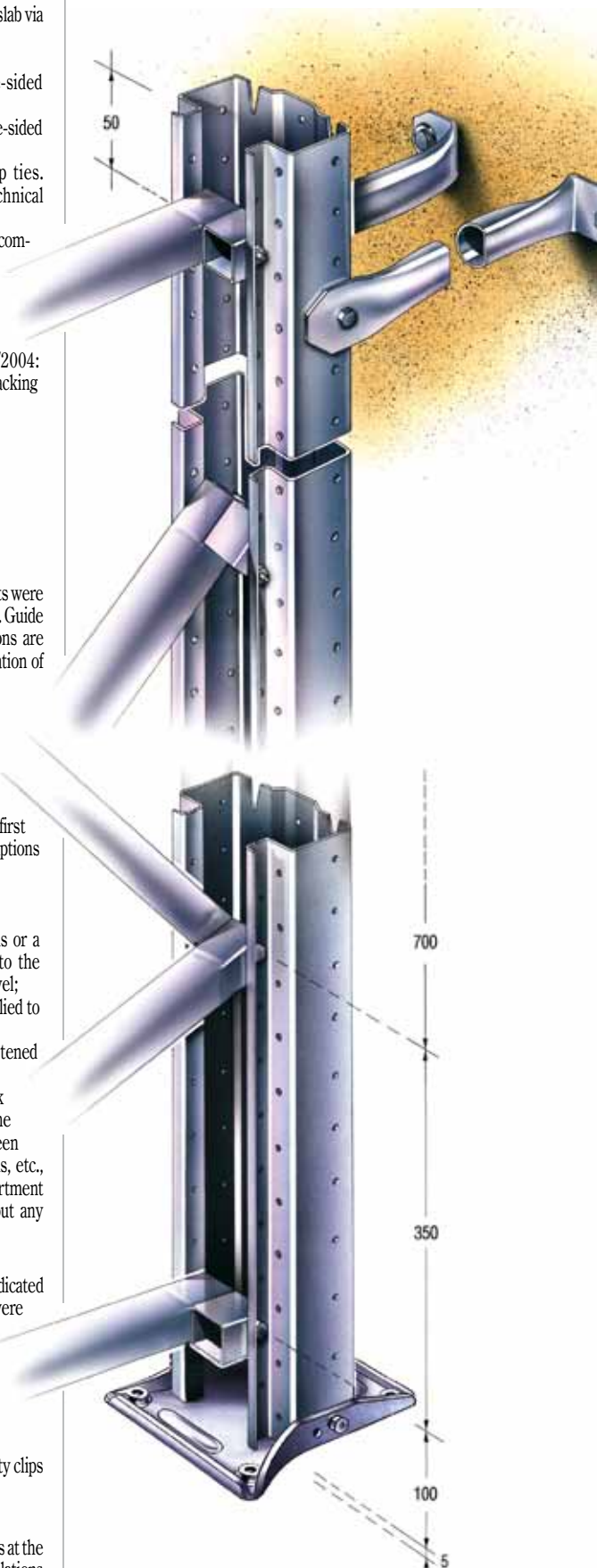
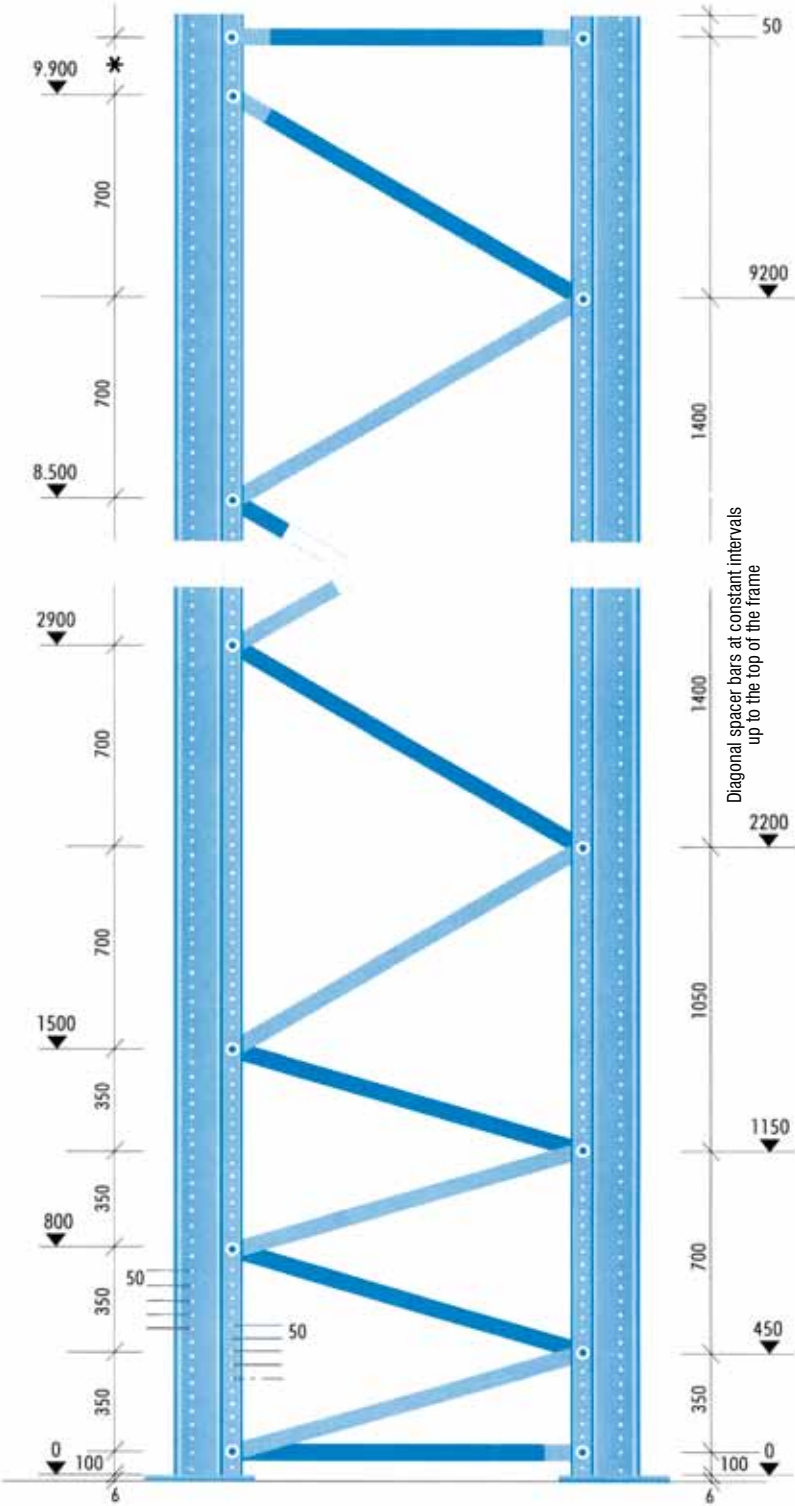
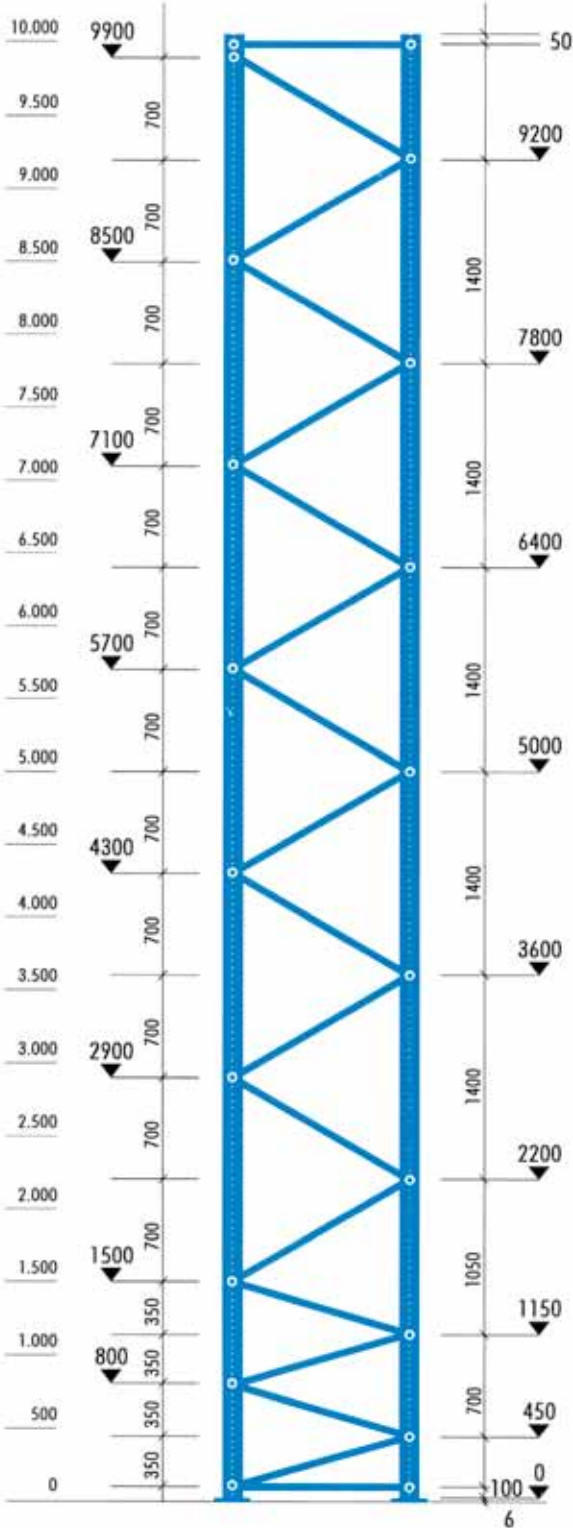


DIAGRAM FOR ASSEMBLING BRACING OF UNIBUILD FRAMES



★ variable dimension,
depending on the height of the frame



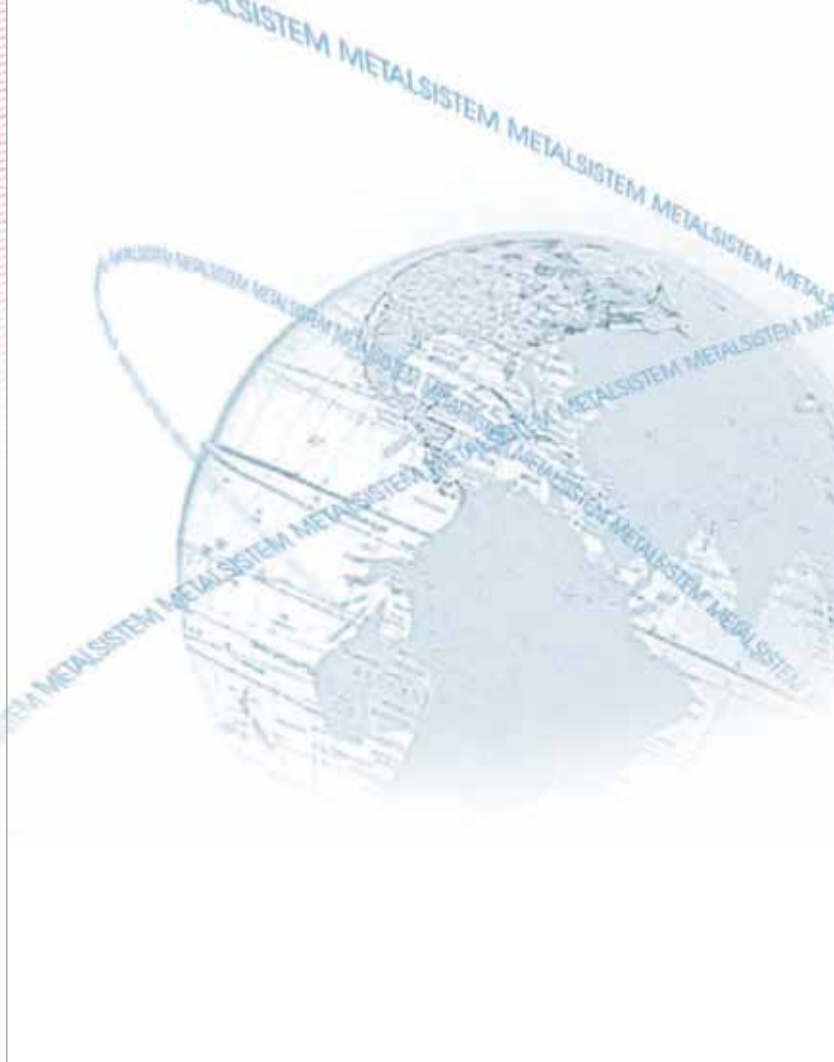
THE COMPANY TODAY

METALSISTEM products are now in use in a great many installations throughout the world, and after more than 35 years production, we value greatly the high level of trust that is placed in us by our customers and feel that it is proof of the quality of our products.

The racking components are manufactured on fully automated roll forming lines using METALSISTEM technology developed by its research and development centre.

METALSISTEM's efforts are poised at creating sturdy and strong components agile in their assembly and modular in their application. These features coupled with the ease of integrating and expanding existing installations are but a few of the successful features of METALSISTEM's industrial storage systems.

Ideal storage solutions for a whole host of products supplied worldwide are created thanks to a total commitment to research and development. The METALSISTEM Technical Department is at the complete disposal of its customers, to study their individual needs and to propose the most effective solutions.

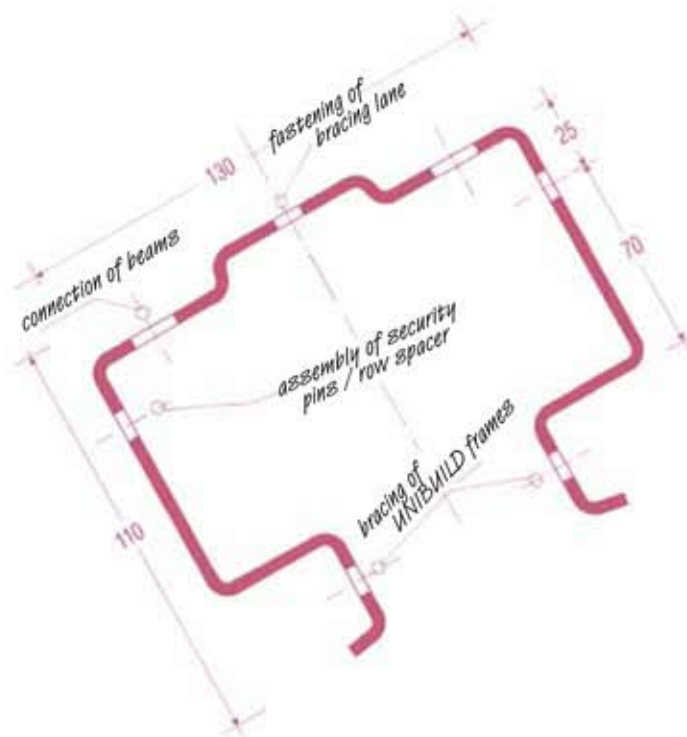












THE PRODUCT

The versatility of METALSISTEM installations makes them suitable for a wide range of applications not illustrated here. METALSISTEM offers innovative products of the highest quality, providing highly technical solutions to the most important racking problems, such as rapid assembly, extreme stability and strength and utmost cost-efficiency.



MAIN STRUCTURAL COMPONENTS

The design of the various components is the result of rigorous technical testing and the highly specialised knowledge developed over years of experience in the field of metal processing. The components are subjected to regular and rigorous technical tests.

The structural components are made from high tensile steel, certified according to UNI EN 10204 3.1 standards.

The beams are profiled sections with quadruple flange thickness at points of maximum stress for high loading capability. The welded beam connectors have five anchor points.

The grooves on top of the beams are used to locate modular heavy duty shelf panels, pallet support bars and drum cradles for the storage of non palletised or special goods.

The frames are made from prime quality, certified, high tensile hot dipped galva-nised steel (procedure SENDZIMIR), thus ensuring a high level of durability.

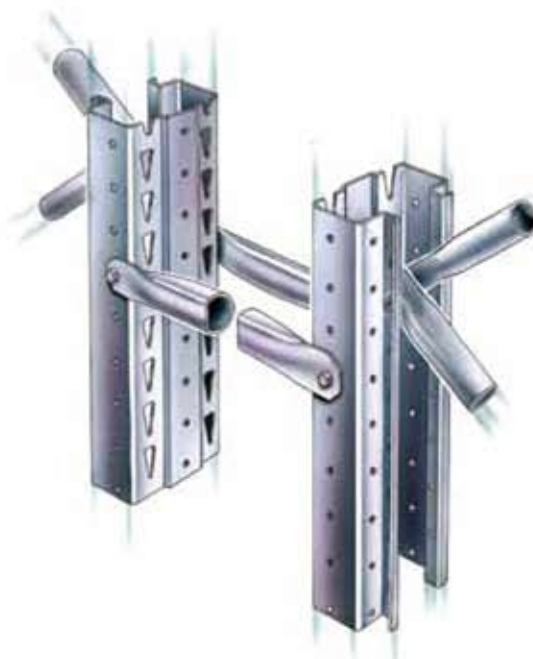
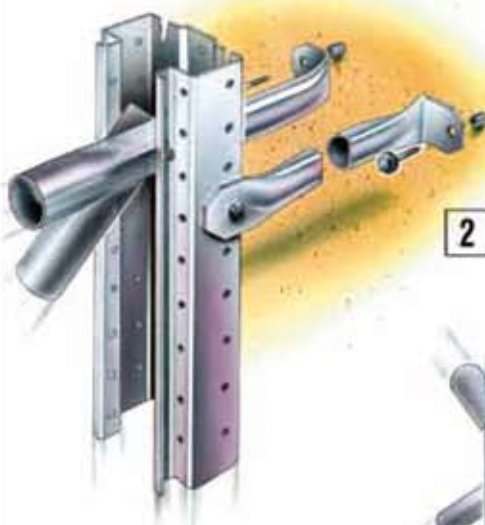
Regarding technical data, characteristics and dimensions, customers should refer to the Technical Reference Book of the UNIBUILD series.

Double frame guard

1
Heavy duty metal base plate

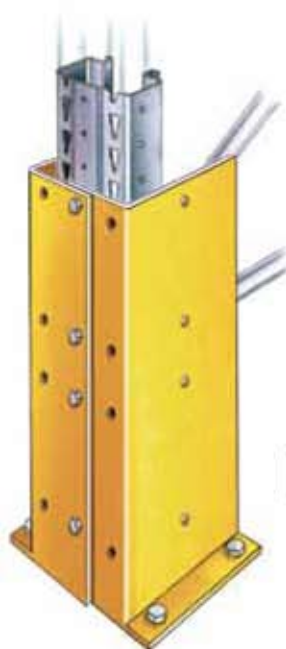


2 *Wall ties*

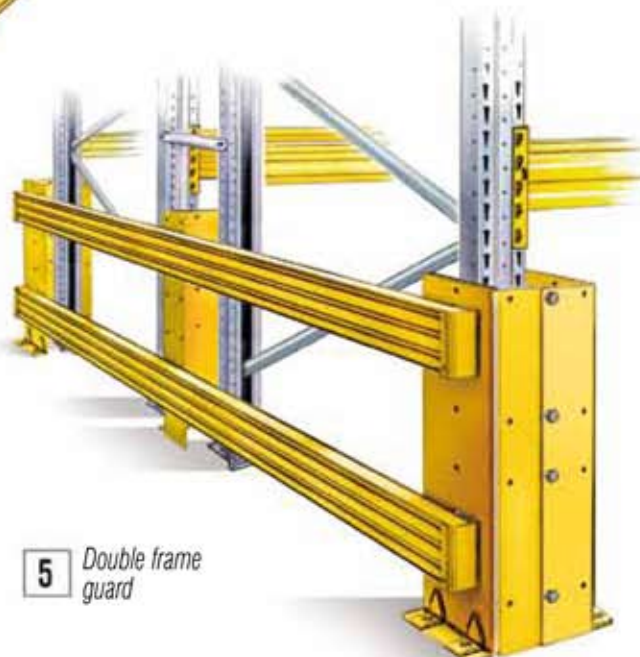


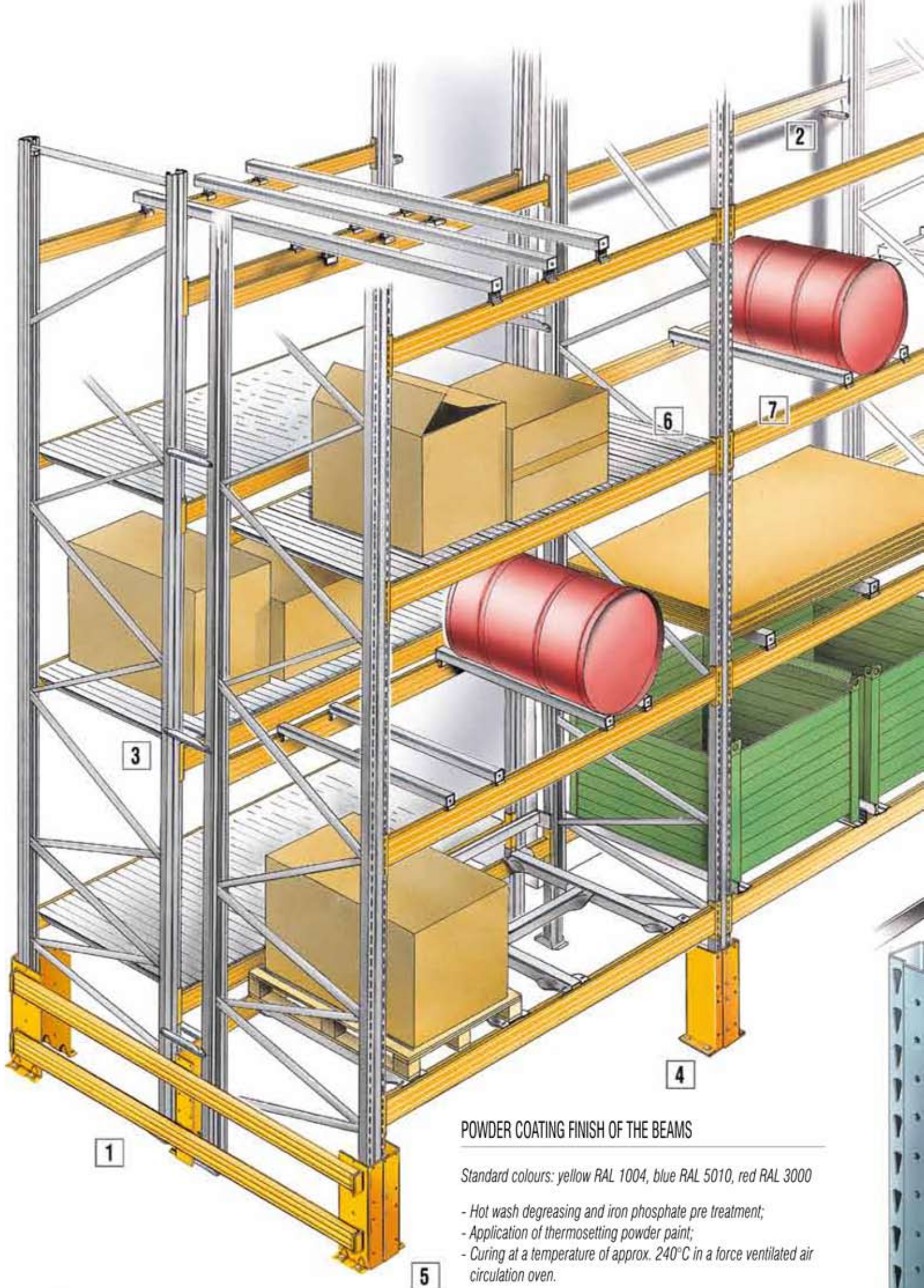
3 *Row spacers*

4 *Column guard*



5 *Double frame guard*

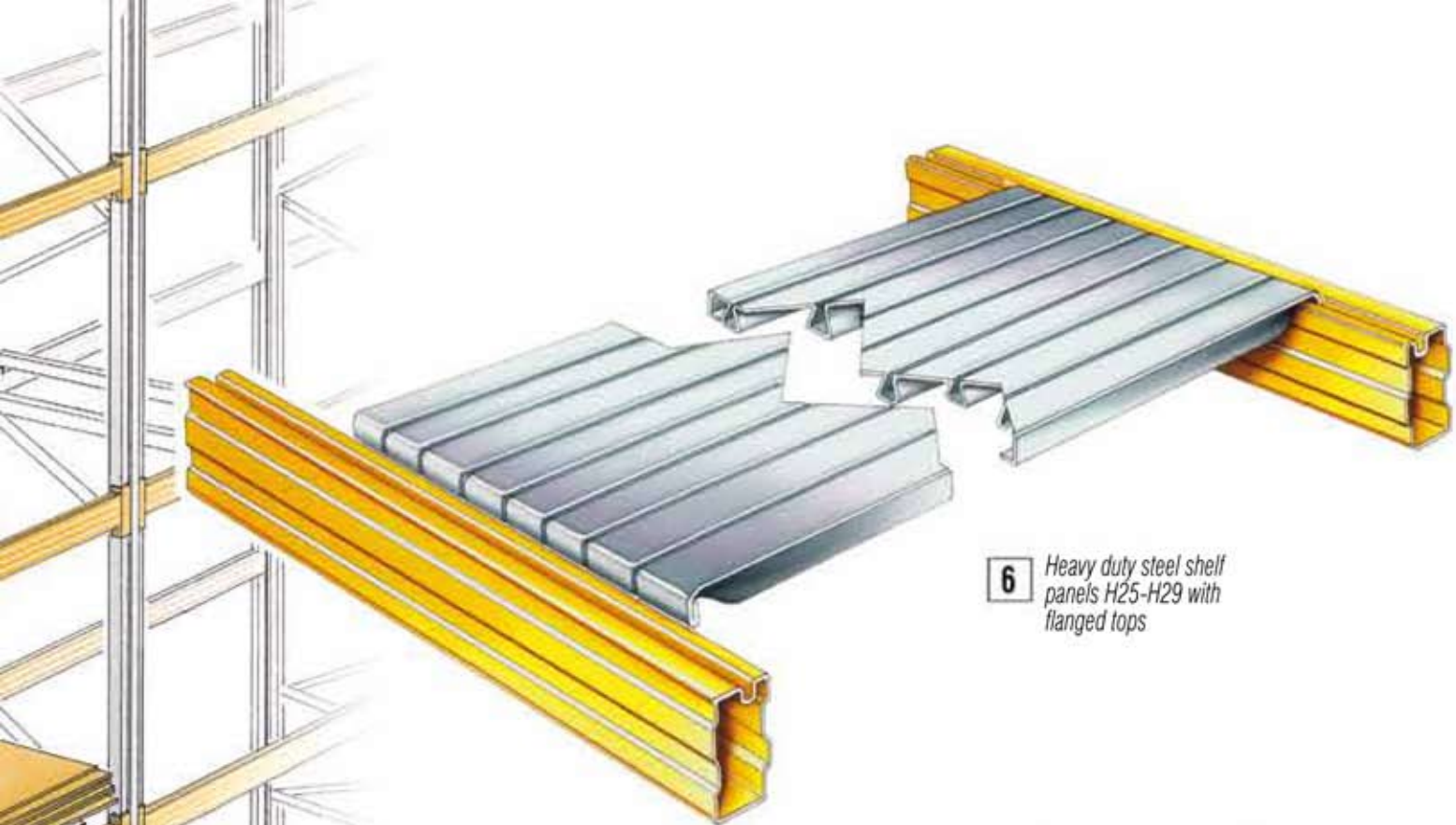




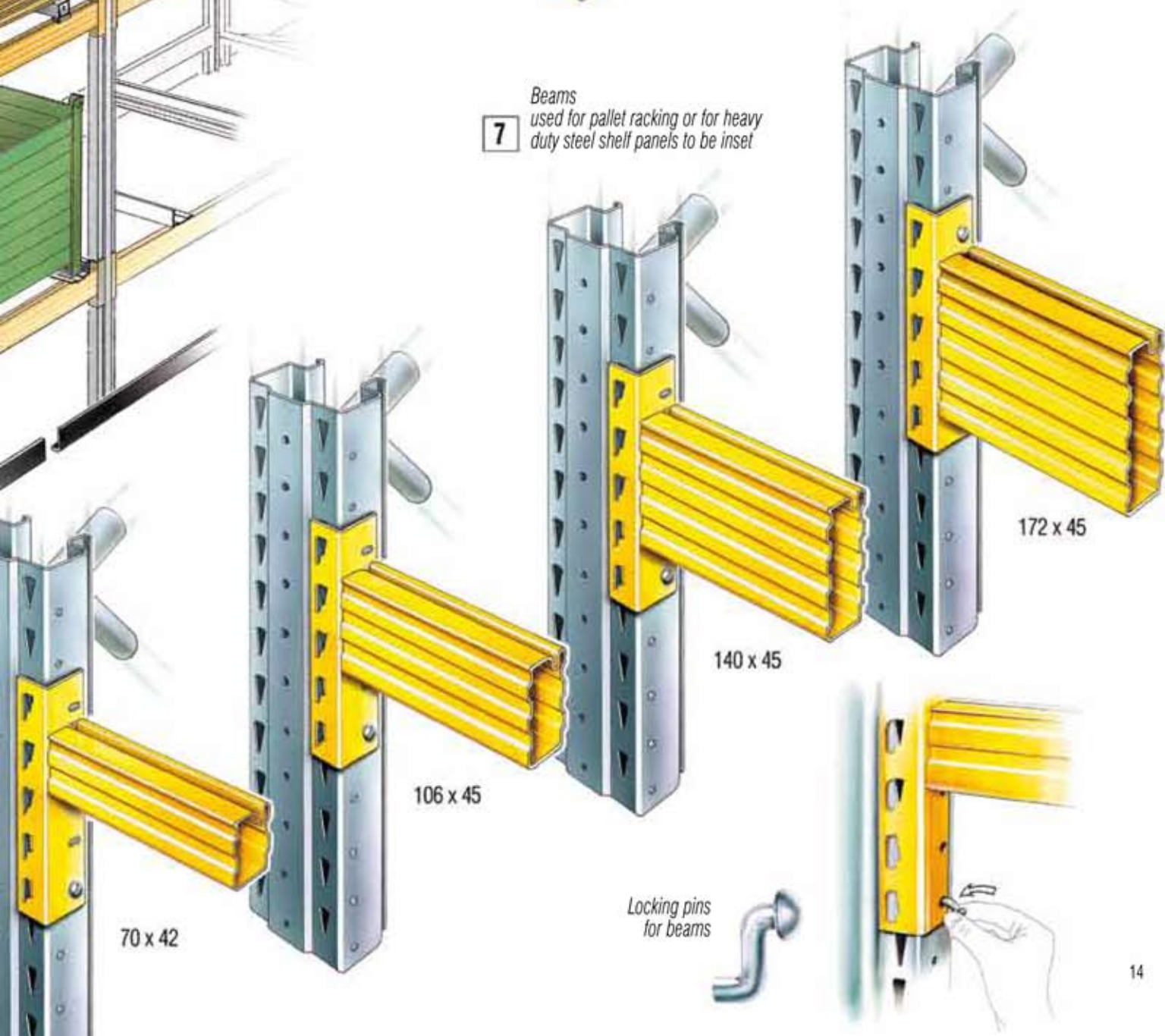
POWDER COATING FINISH OF THE BEAMS

Standard colours: yellow RAL 1004, blue RAL 5010, red RAL 3000

- Hot wash degreasing and iron phosphate pre treatment;
- Application of thermosetting powder paint;
- Curing at a temperature of approx. 240°C in a force ventilated air circulation oven.



6 Heavy duty steel shelf panels H25-H29 with flanged tops



7 Beams used for pallet racking or for heavy duty steel shelf panels to be inset



The safety and the quality of the product have always been a primary aim of METALSISTEM and are recognised by TÜV PRODUCT SERVICE, one of the most rigorous E.C. commissions in the field of quality and safety certification.



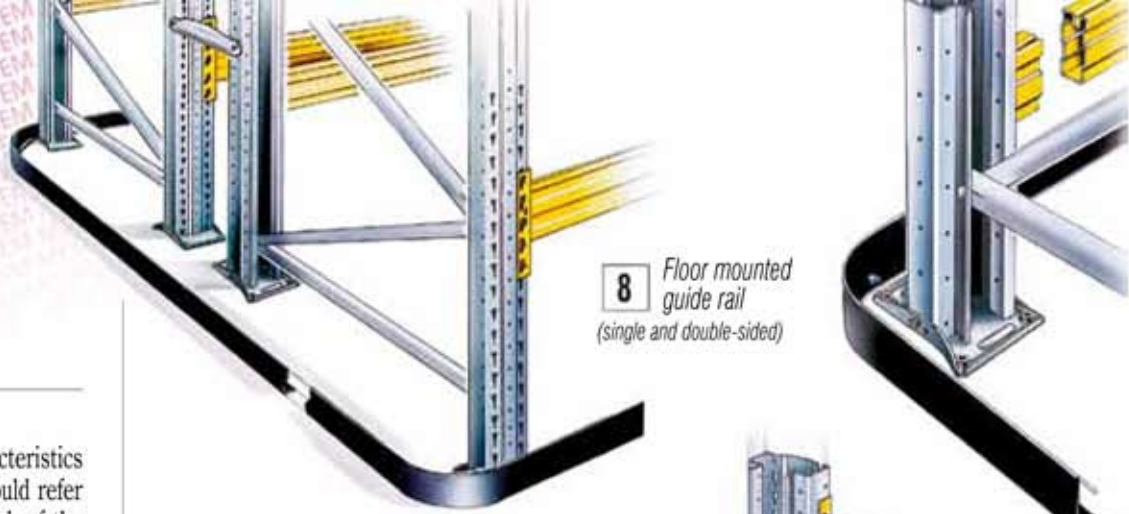
ACCESSORIES

Regarding technical data, characteristics and dimensions, customers should refer to the Technical Reference Book of the UNIBUILD series.

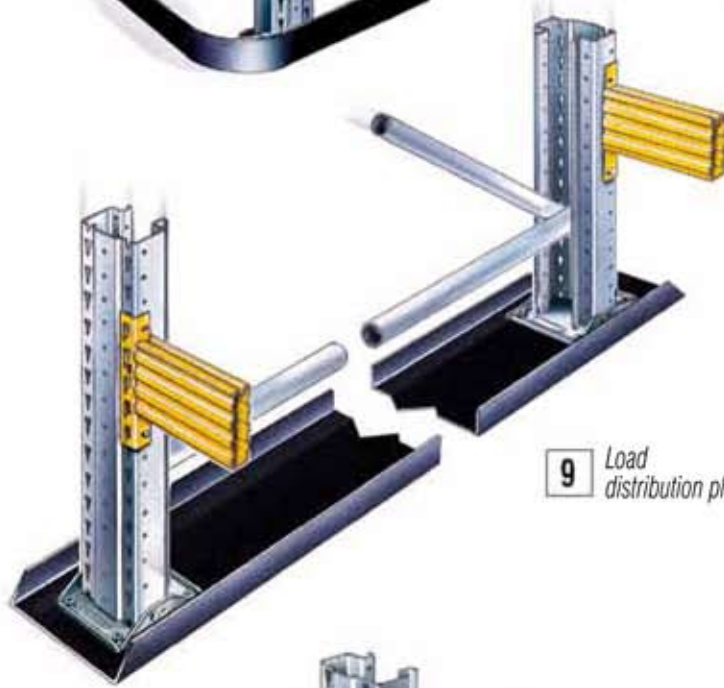
*Pallet Support Bar
(security device seen from below)*



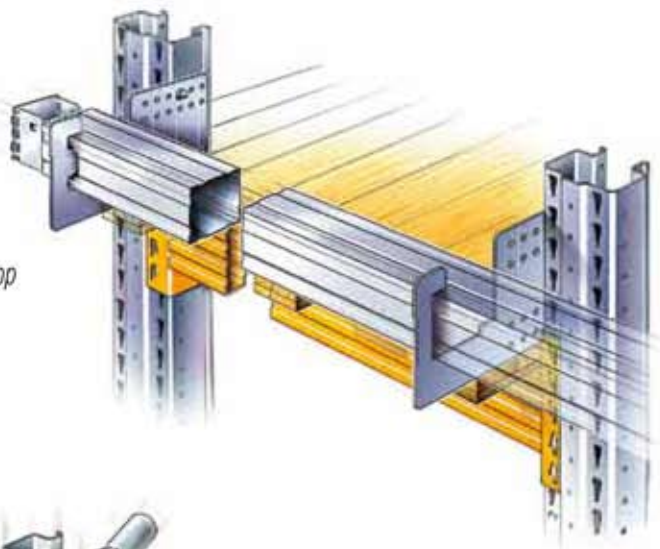
8 Floor mounted
guide rail
(single and double-sided)



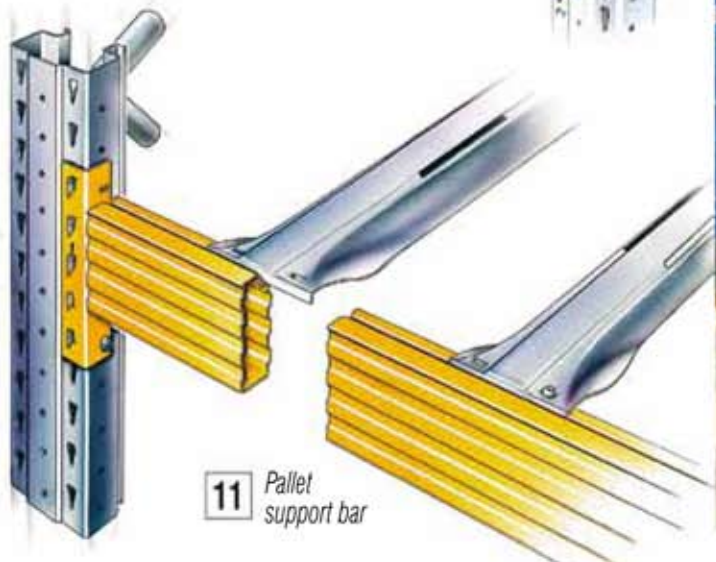
9 Load
distribution plate



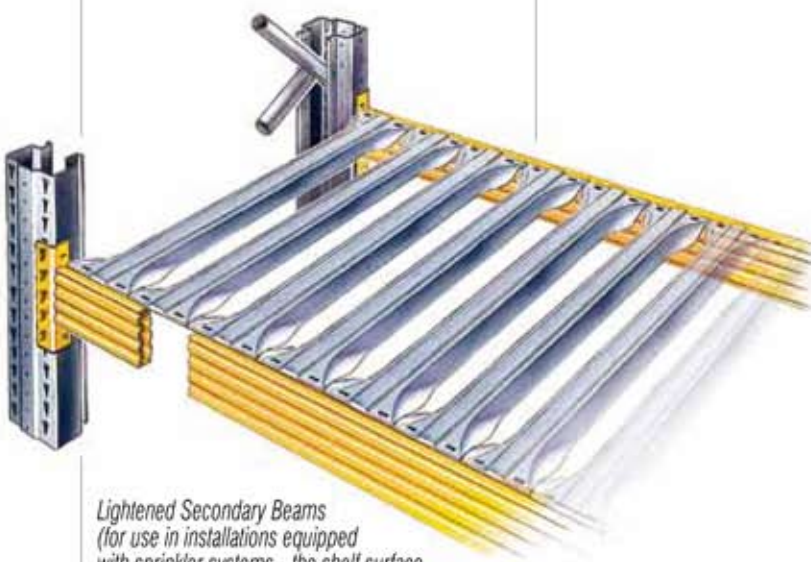
10 Pallet backstop
beam

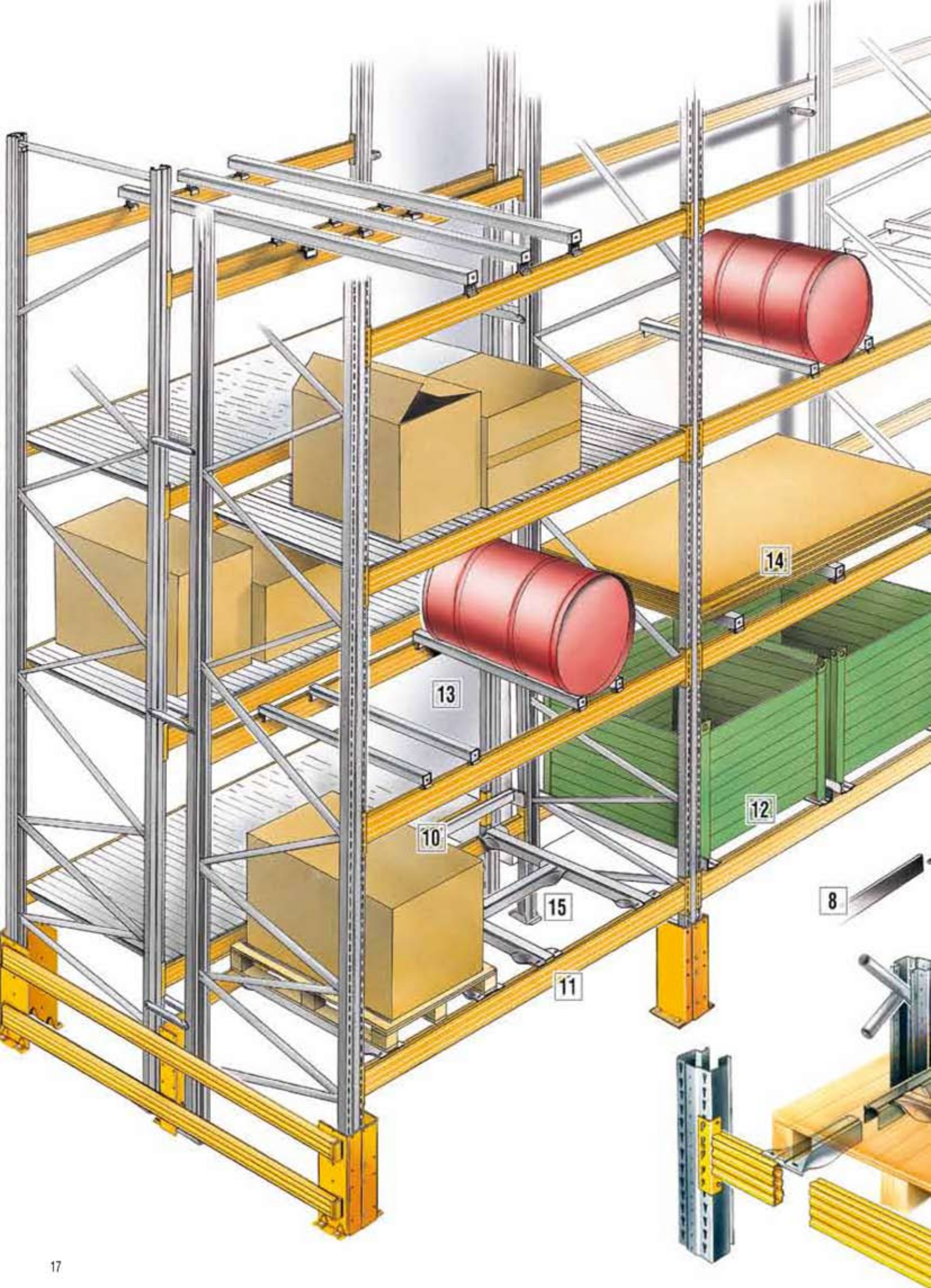


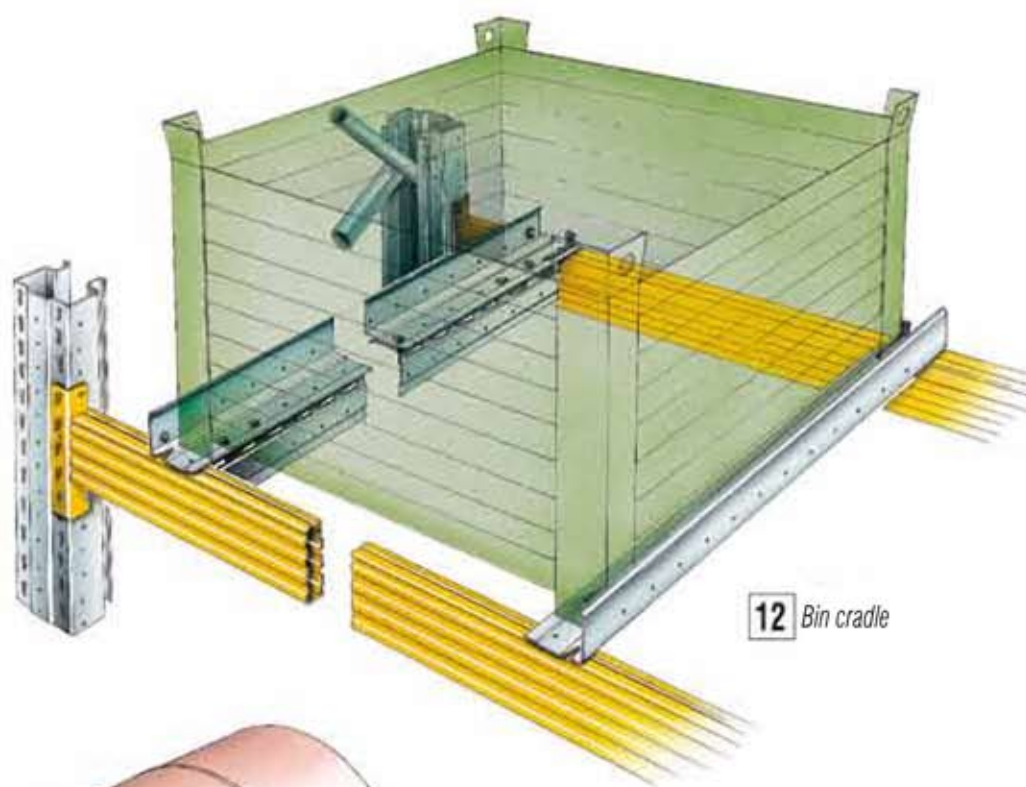
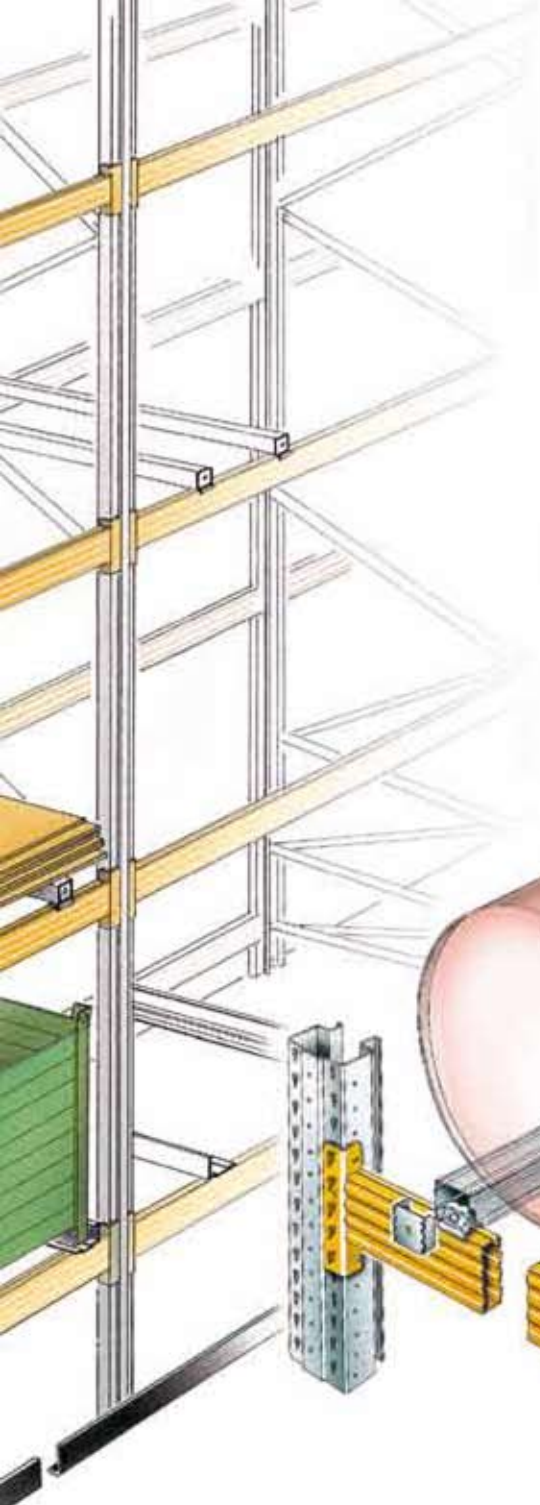
11 Pallet
support bar



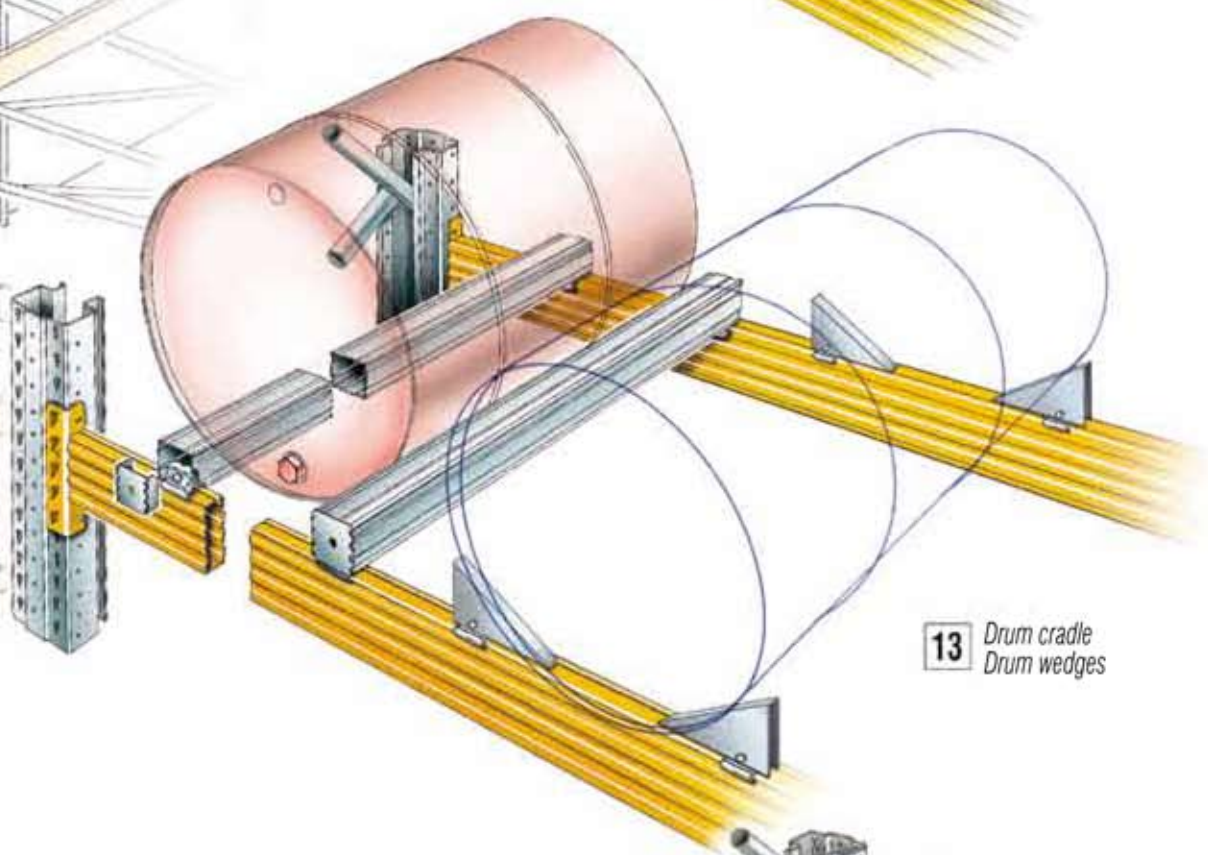
*Lightened Secondary Beams
(for use in installations equipped
with sprinkler systems - the shelf surface
has a coverage of <50%)*



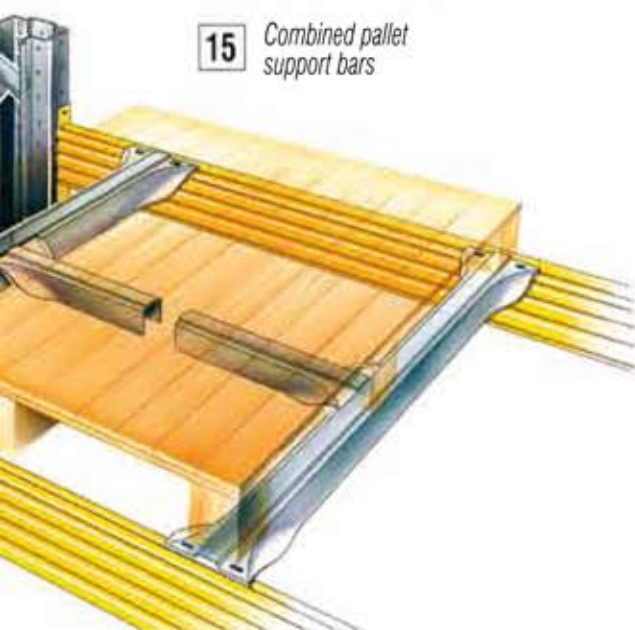




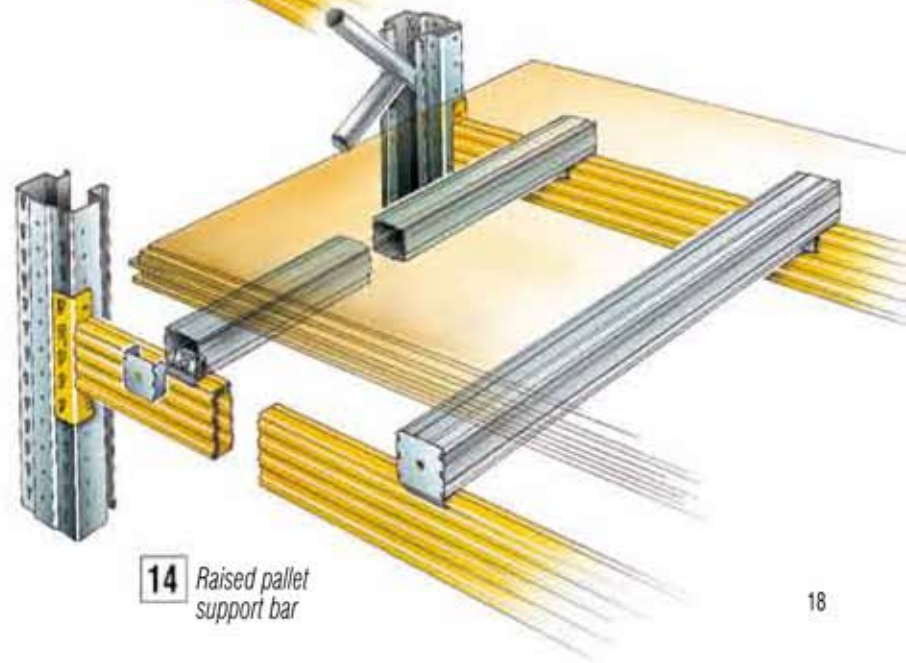
12 Bin cradle



13 Drum cradle
Drum wedges



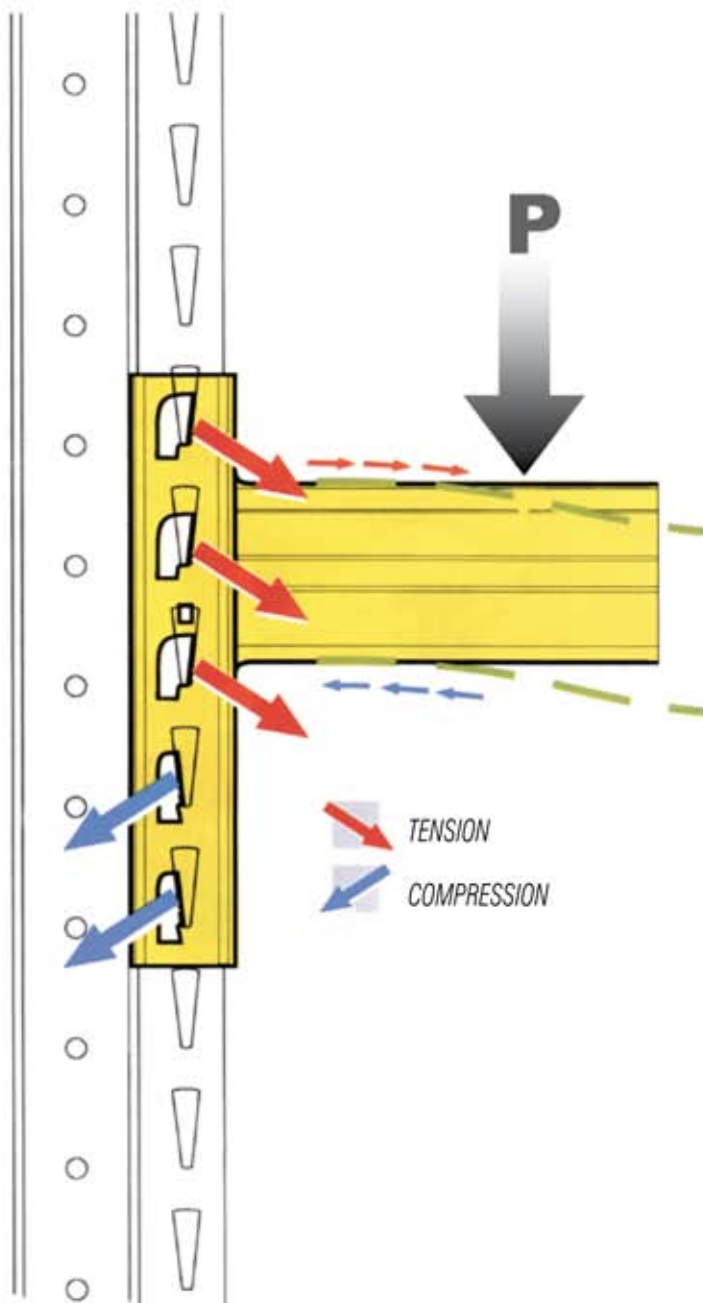
15 Combined pallet support bars

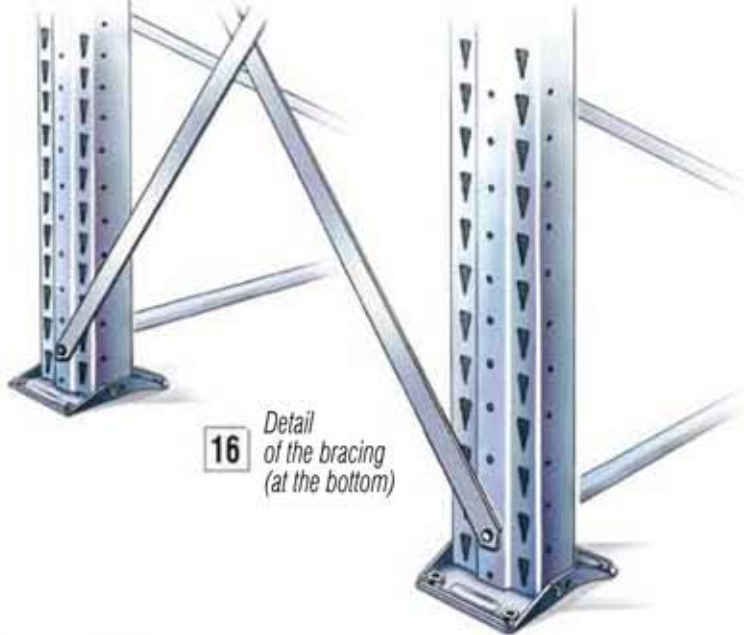


14 Raised pallet support bar

Specific features and advantages of the beam connector system UNIBUILD series

- Each connector has 5 anchor points; 3 of them operating in tension and 2 in compression.
- The connection between beam and upright is made via tapered slots in the upright section, providing an improved connection with increased load.
- The specific design features of the end connector prevent rotation of the connector in the upright section and improve the load bearing capacity of the beams.

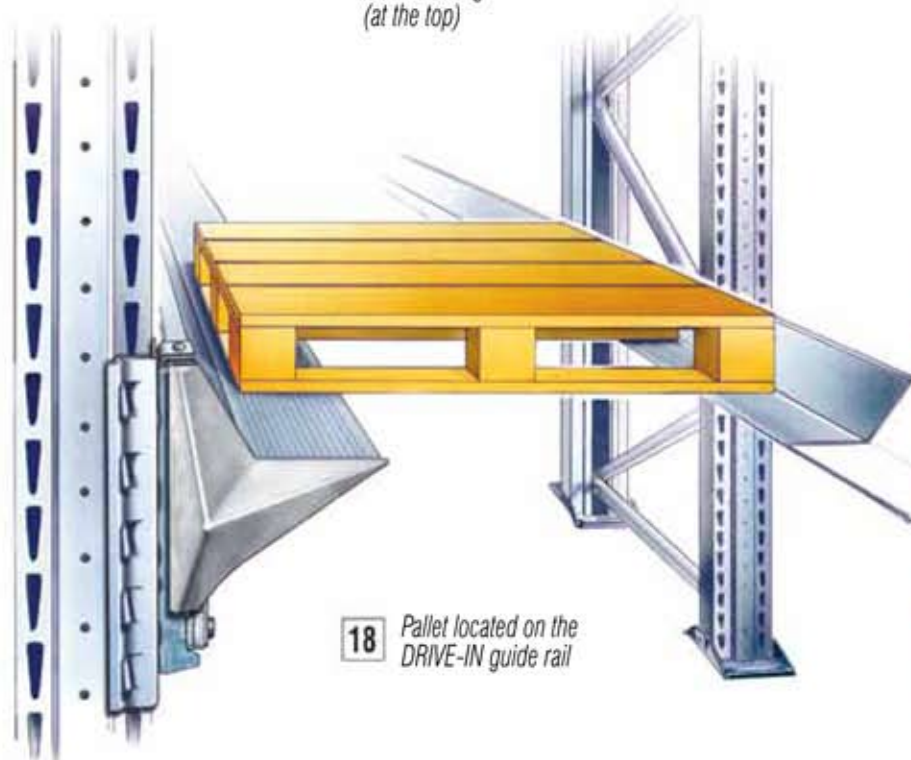




16 *Detail of the bracing (at the bottom)*



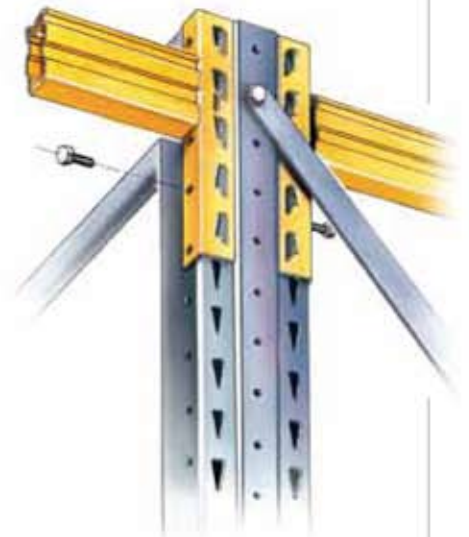
17 *Detail of the bracing (at the top)*



18 *Pallet located on the DRIVE-IN guide rail*

DRIVE - IN

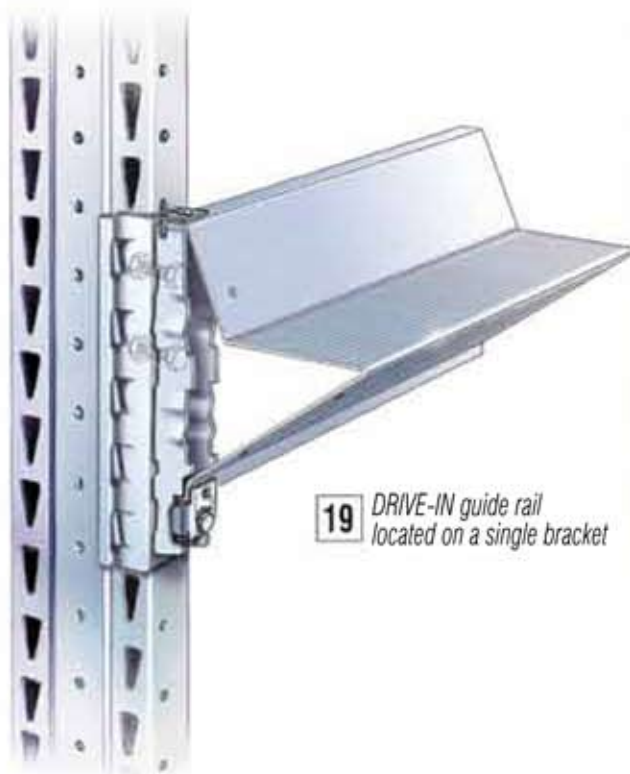
For a correct assembly of DRIVE-IN structures, customers should always refer to the assembly instructions of the UNIBUILD Technical Reference Book.



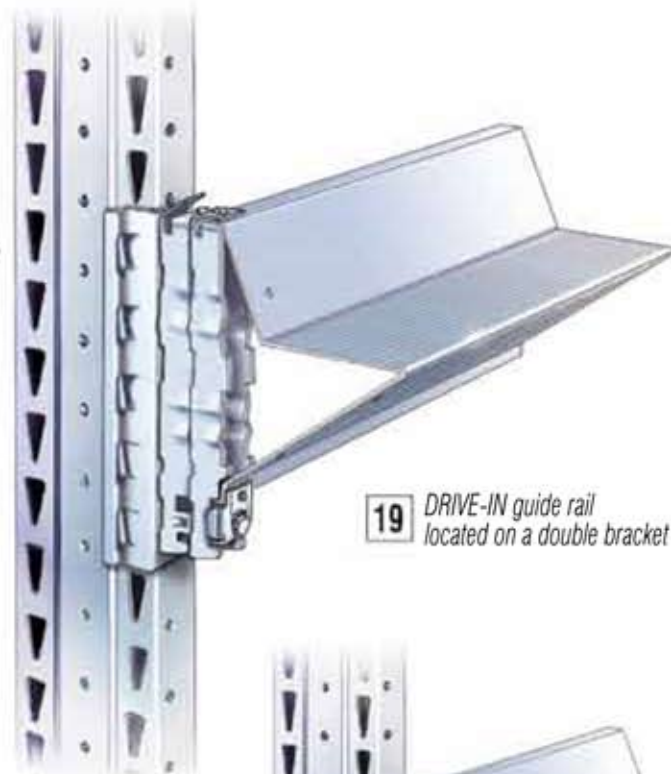
Fastening of the bracing lane at the top of the frames







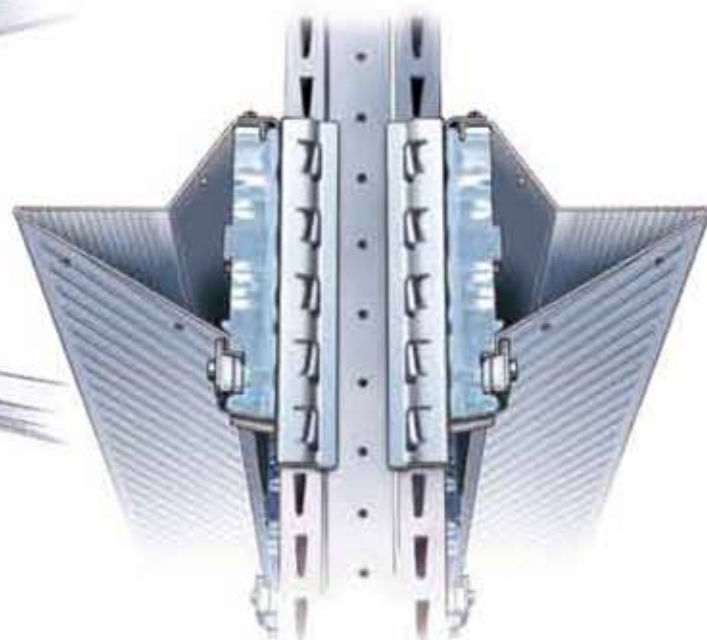
19 *DRIVE-IN guide rail located on a single bracket*



19 *DRIVE-IN guide rail located on a double bracket*

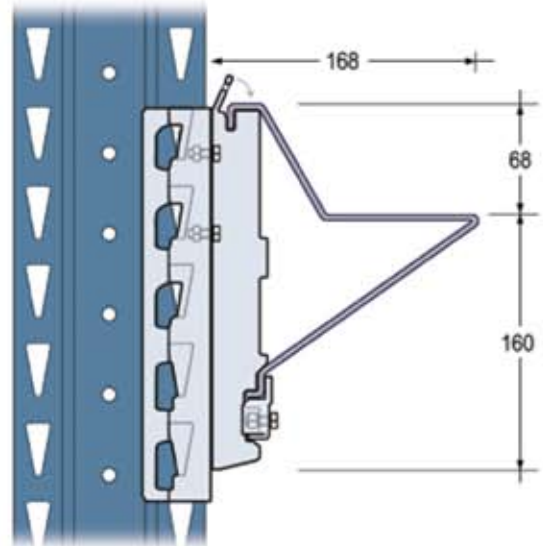


20 *Entrance Crescent for DRIVE-IN guide rail*



21 *Double Sided DRIVE-IN guide rails located on single brackets*

The DRIVE-IN racking system allows the maximum use of space, and volume due to the elimination of access aisles. The storage volume is therefore more than doubled compared with standard pallet racking. Two kinds of installation are possible: DRIVE-IN or DRIVE-THROUGH.

















METALISTEN



FEM section X

U N I B U I L D



MODULAR STEEL STORAGE SYSTEMS

N. EDIZIONE	DATA ED.	N. REV.	DATA REV.	DATA STAMPA
01	1999	02	03/2009	03/2009