

IN SPACE AND TIME...

# UNIBUILD



SISTEMI E STRUTTURE PER IL MAGAZZINO

**METALSISTEM**



**METALSISTEM**

FEM section X

**METALSISTEM**

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FEM section X

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## THE COMPANY

Founded in 1968, METALSISTEM commenced its activities specialising in the design and production of machinery for the cold profiling of metals. The experience gathered, numerous highly innovative patents resulting from intense research and development and the considerable market success of the first range of cold form zinc coated profiles quickly channelled METALSISTEM into the production of the latter of its activities.

Today the METALSISTEM Group is an articulated network of companies with its head office and main production facility in Rovereto, Italy. The Group has consolidated its position as one of the major industries within the Material Handling Sector.

Through products and services aimed at providing complete assistance for all warehousing, product showcasing and sales outlet requirements, the companies of the METALSISTEM Group are able to offer their customers a wide range of products of the highest quality, highly competitively priced, with very rapid delivery times and a first class back up service, as well as tailor made solutions providing efficient and rational use of internal storage areas and material handling environments. Lightness, strength and modular form, coupled with the ease of integrating and expanding already existing structures are but a few of the successful features of the METALSISTEM storage and shelving systems.

The success of the METALSISTEM Group is the result of a precise managerial choice based on research of new production technologies and continuous development and innovation of its product range. A direction which has produced numerous international patents (testament to the uniqueness of the METALSISTEM product), continuing improvements in safety, quality and versatility.

METALSISTEM's company strategy is to offer products of the highest quality, very competitively priced, with rapid delivery times backed up by a first class service.

The numerous product lines are conceived and designed by METALSISTEM's internal Research and Development Centre, as are the profiling lines and equipment required for their manufacture.

The automated production facilities for the cold profiling of metals have enabled METALSISTEM to achieve one of the highest levels of productivity in the world, today. Rigorous laboratory tests are conducted on the prime material entering production, and on the final product, thus ensuring the continuing evolution of efficiency and quality standards.

All products have elevated structural characteristics and ensure high quality standards recognised by the most important European certification bodies, such as Germany's TÜV Product Service GmbH, Austria's Ö-NORM, Rome's I.S.P.E.S.L., ACAI/CISI (Associazione Costruttori Acciaio Italiani - Sezione Costruttori Italiani di Scaffalatura Industriale), the latter of which METALSISTEM has membership, and others. The company's ISO 9001 quality assurance system is certified by IGQ.

With an annual turnover of exceeding 260 Million Euro, the METALSISTEM Group premises occupy a total area of 200.000 m<sup>2</sup>, 120.000 of which are dedicated to production. The METALSISTEM Group affiliated companies and distributors provide a world wide commercial network covering the domestic market and the industrialised nations of the world, able to satisfy the most demanding needs.

We value greatly the high level of trust that is placed in us by our customers and feel that it is





# SAFETY STANDARDS AND CALCULATION ASSUMPTIONS

The correct use of a product, distinguishes both the Customer and the Manufacturer.

METALSISTEM recommends that Customers make use of their product in strict conformity with the design characteristics given and standards of best practice.

The design and assembly of the racking systems must be carried out by qualified personnel.

METALSISTEM is not responsible for any improper or inappropriate use of its product.

Ref. no:

System:

**UNIBUILD 300**

Year of Construction:

**1998**

Frame Load Capacity:

**30000 Kg**

Load Capacity of Beams:

**3000 kg**

Weight of Load Unit:

**1000 kg**

Distance between ground and first level:

**1m. Nr. levels: 10**

## a) Floor slab loading.

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

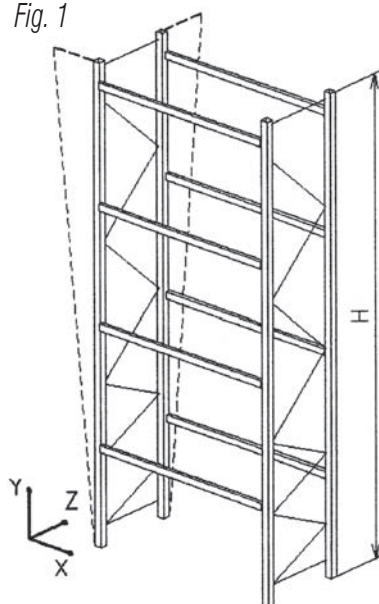
## b) Site installation.

The site installation of racking systems must be carried out by expert personnel following the assembly criteria and specifications tabled in this catalogue and in the UNIBUILD Technical Reference Book. 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 of both the "X" and "Z" planes must not exceed  $\pm 10$  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, load bearing capacity of the frames, load bearing capacity per pair of beams or per shelf (expressed as a uniformly distributed load), the load unit applied, the height of the first level from ground and the number of levels (see figure at left).

## 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.

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:

- C.N.R. 10011/88

- C.N.R. 10022/84

Reference standards for the materials are:

- EN 10142

- EN 10147

- EN 10204

## g) Software references.

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

## h) Frame load bearing capacity.

The load bearing capacity graph in the UNIBUILD Technical Reference Book 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 4 consecutive bays of equal length;

- a minimum of 3 levels divided equally in height;

- a constant interval between the levels;

- an equal and uniformly distributed load has been applied to all levels.

Given that the load bearing capacity of the rack may depend on other elements such as, the number of 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 were calculated with the following assumptions:

- loads are uniformly distributed;

- admissible tensile stress of the material;

- deflection  $1/200$ .

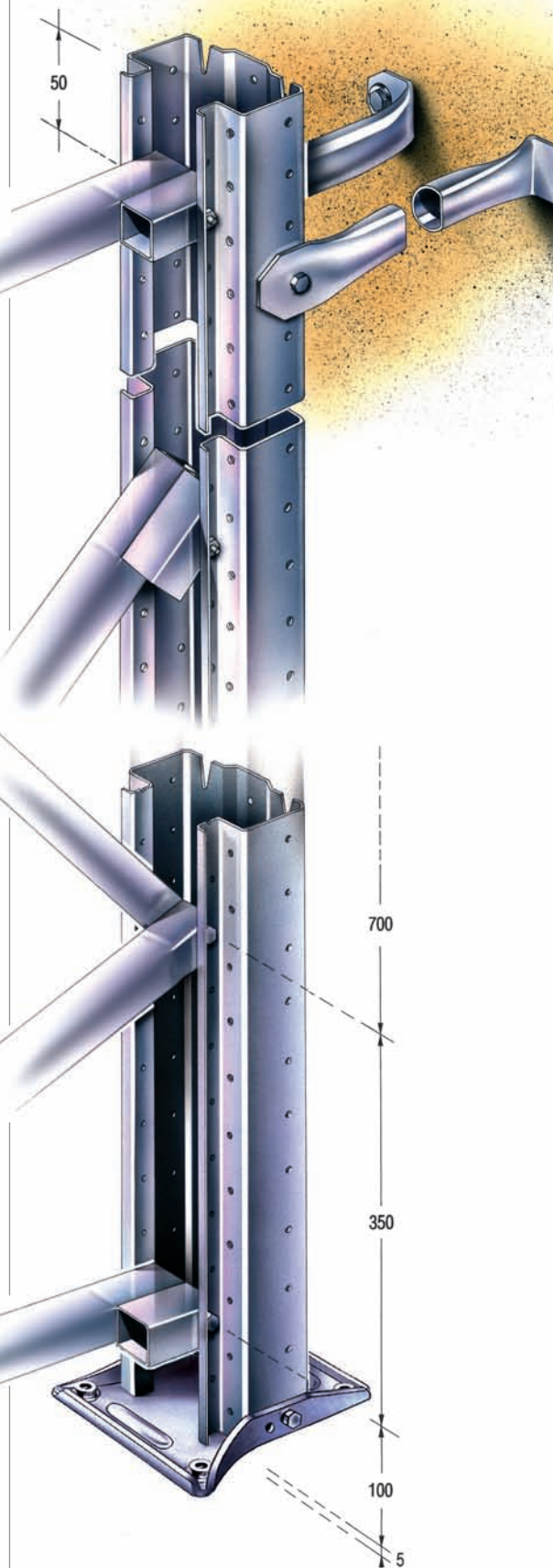
It is mandatory to place beam retaining security clips on either side of all beams.

## 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 indicative only.



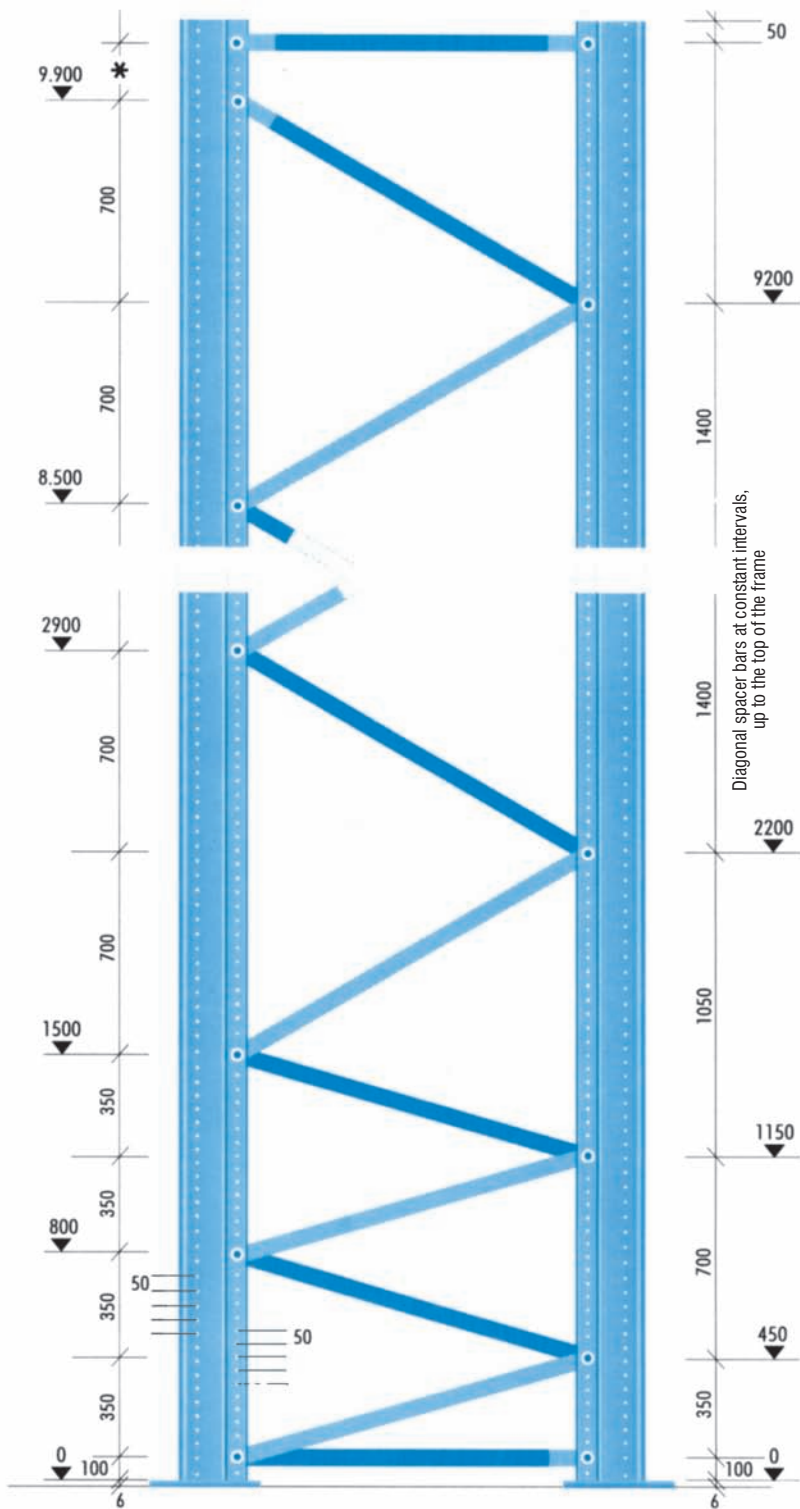
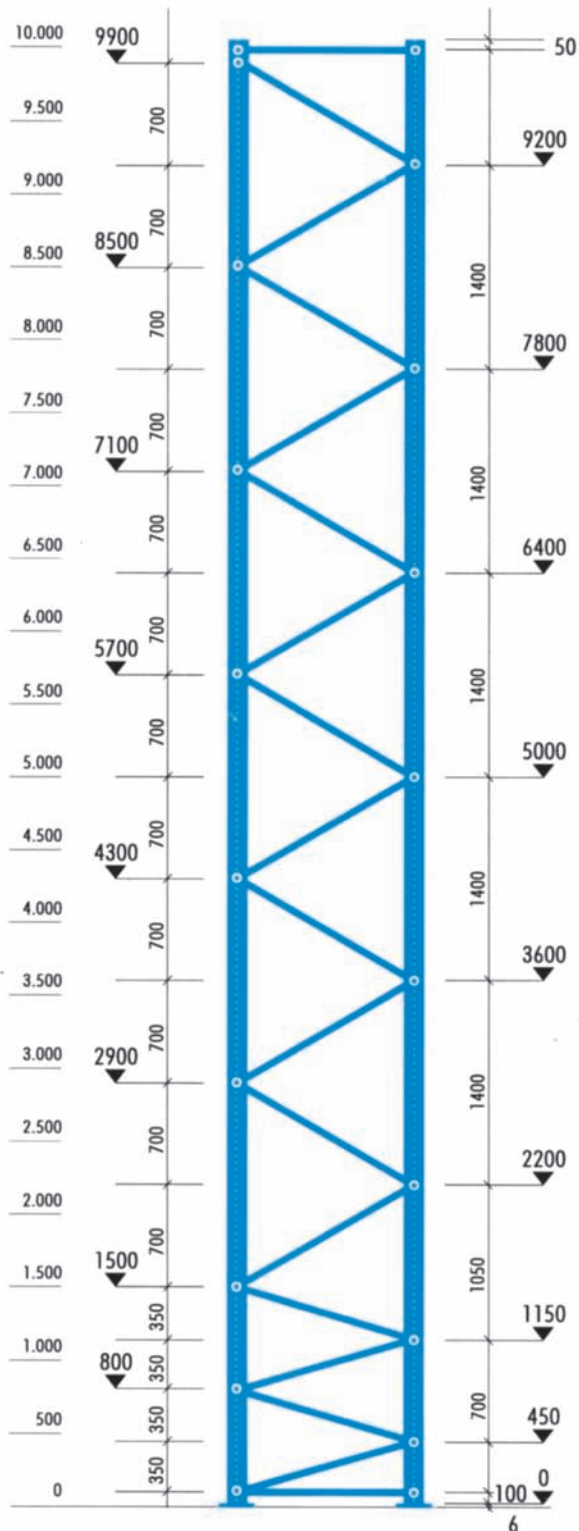


# DIAGRAM FOR ASSEMBLING BRACING OF UNIBUILD FRAMES

UNIBUILD systems are made from high tensile steel, certified according to EN 10204 3.1B and carry the approval mark of TÜV PRODUCT SERVICE GmbH.



variable dimension,  
depending on the height of the frame





# THE COMPANY TODAY

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METALSISTEM products are now in use in a great many installations throughout the world, and after more than 25 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 shelving components are produced on fully automated production lines. The folding

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The shelving components are produced on fully automated production lines. The folding and cold processing techniques developed by METALSISTEM are designed to obtain light and extremely strong components. Lightness, strength and modular form, coupled with the ease of integrating and expanding already existing structures are but a few of the successful features of the METALSISTEM Industrial Storage Systems.

Ideal storage solutions for a whole host of products supplied worldwide are created here 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.











905 904

903 902

901



IDRANTE

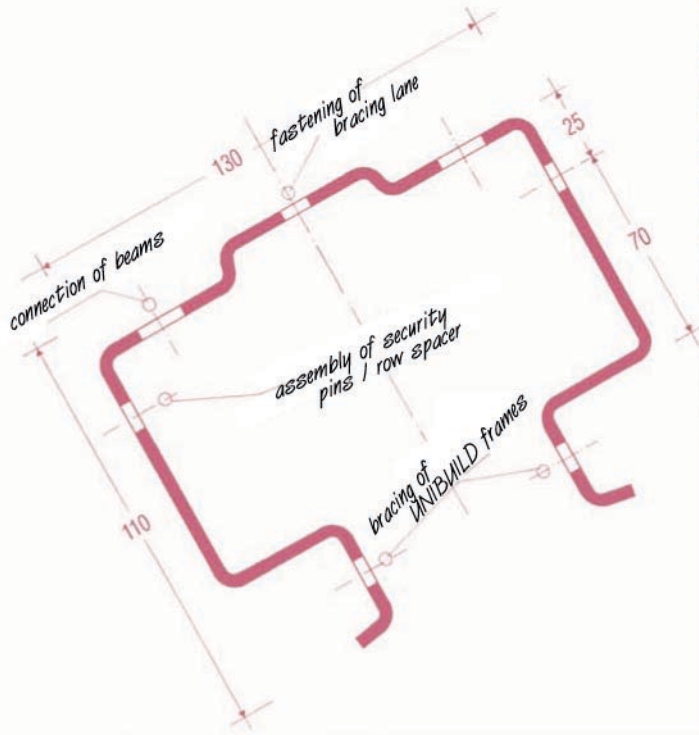




## THE PRODUCT

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 EN 10204 3.1B.

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.

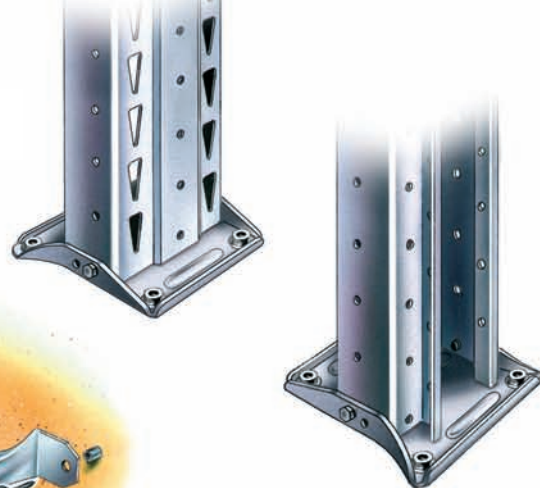
The grooves on top of the beams are used to locate modular heavy duty shelf panels, pallet support bars and drum cradles for the storage of non palletised or special goods.

The frames are made from prime quality, certified, high tensile hot dipped galvanised 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.

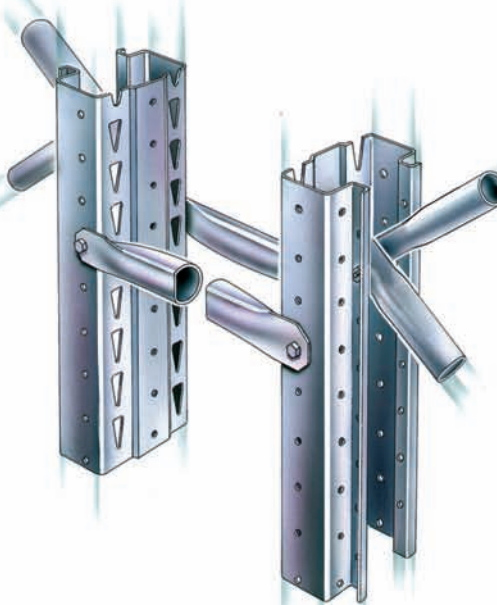
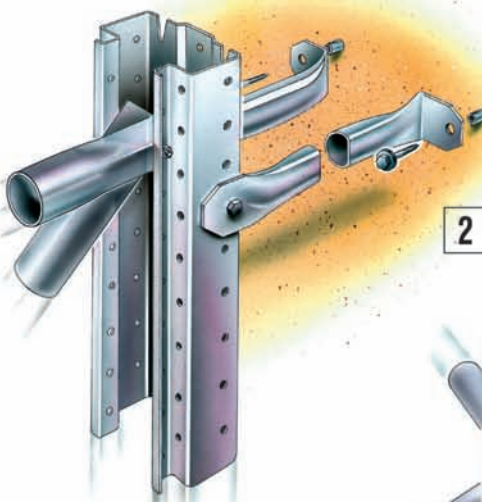
1

Heavy duty metal base plate



2

Wall ties

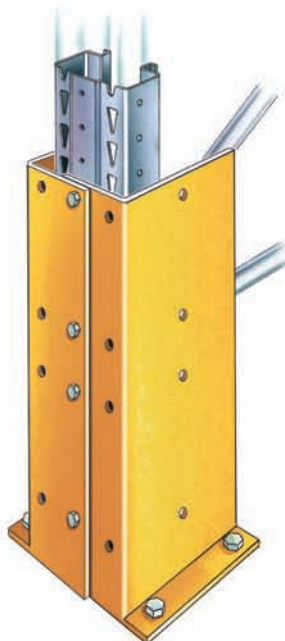


3

Row spacers

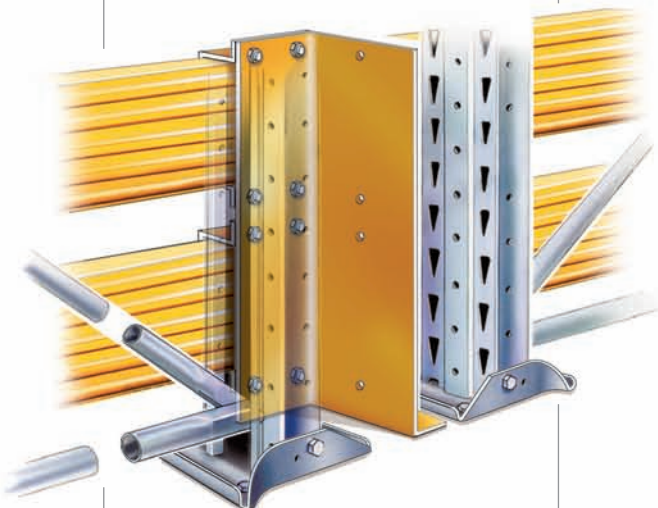
4

Column protector



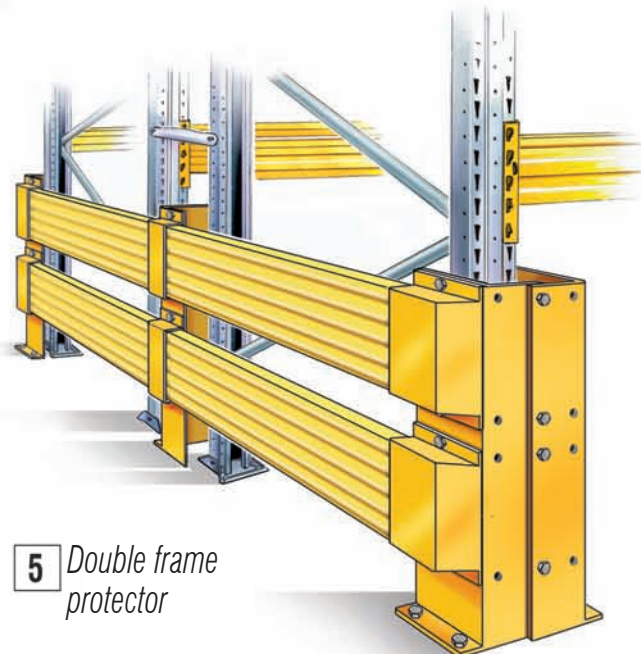
5

Double frame protector

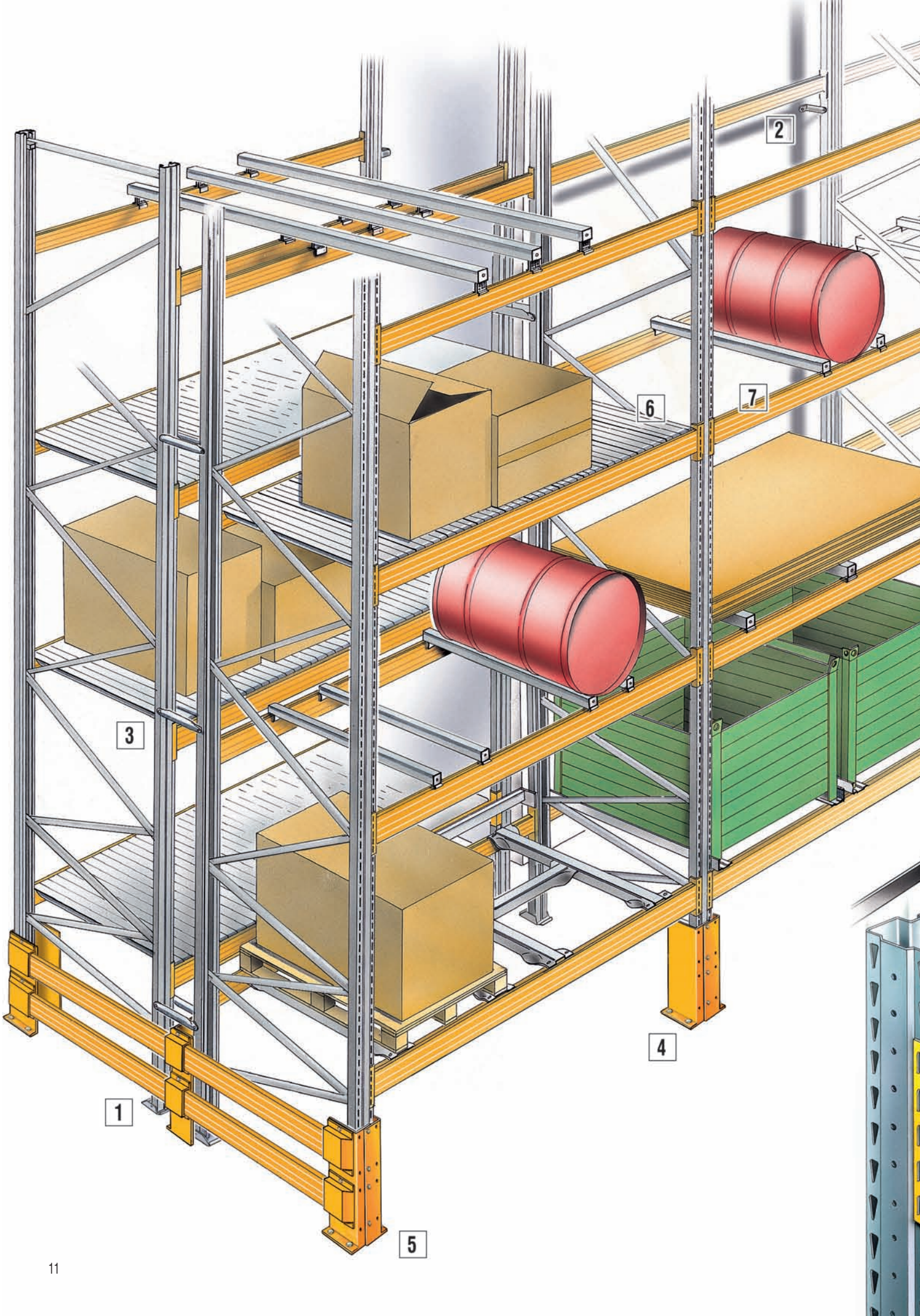


5

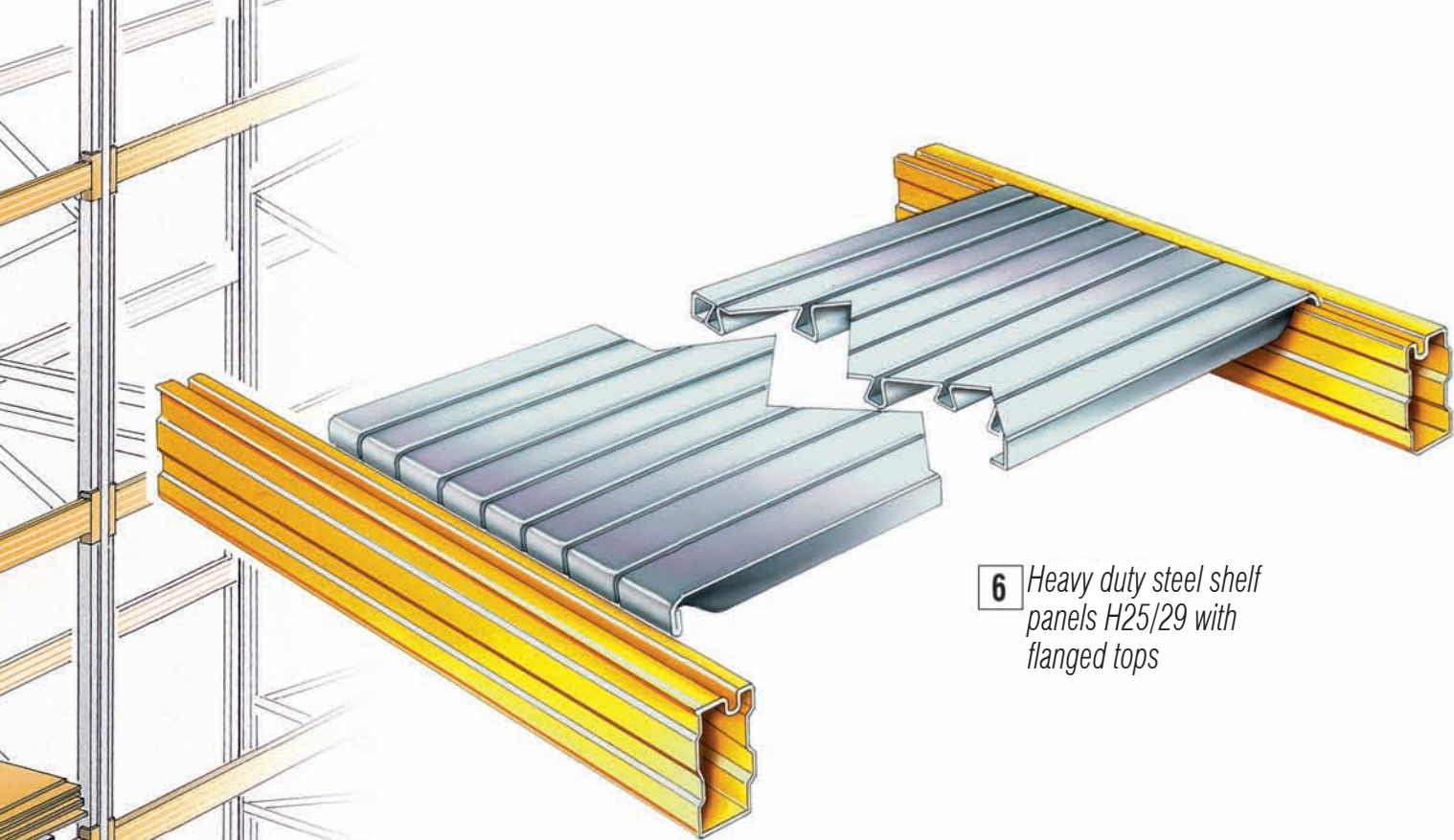
Double frame protector



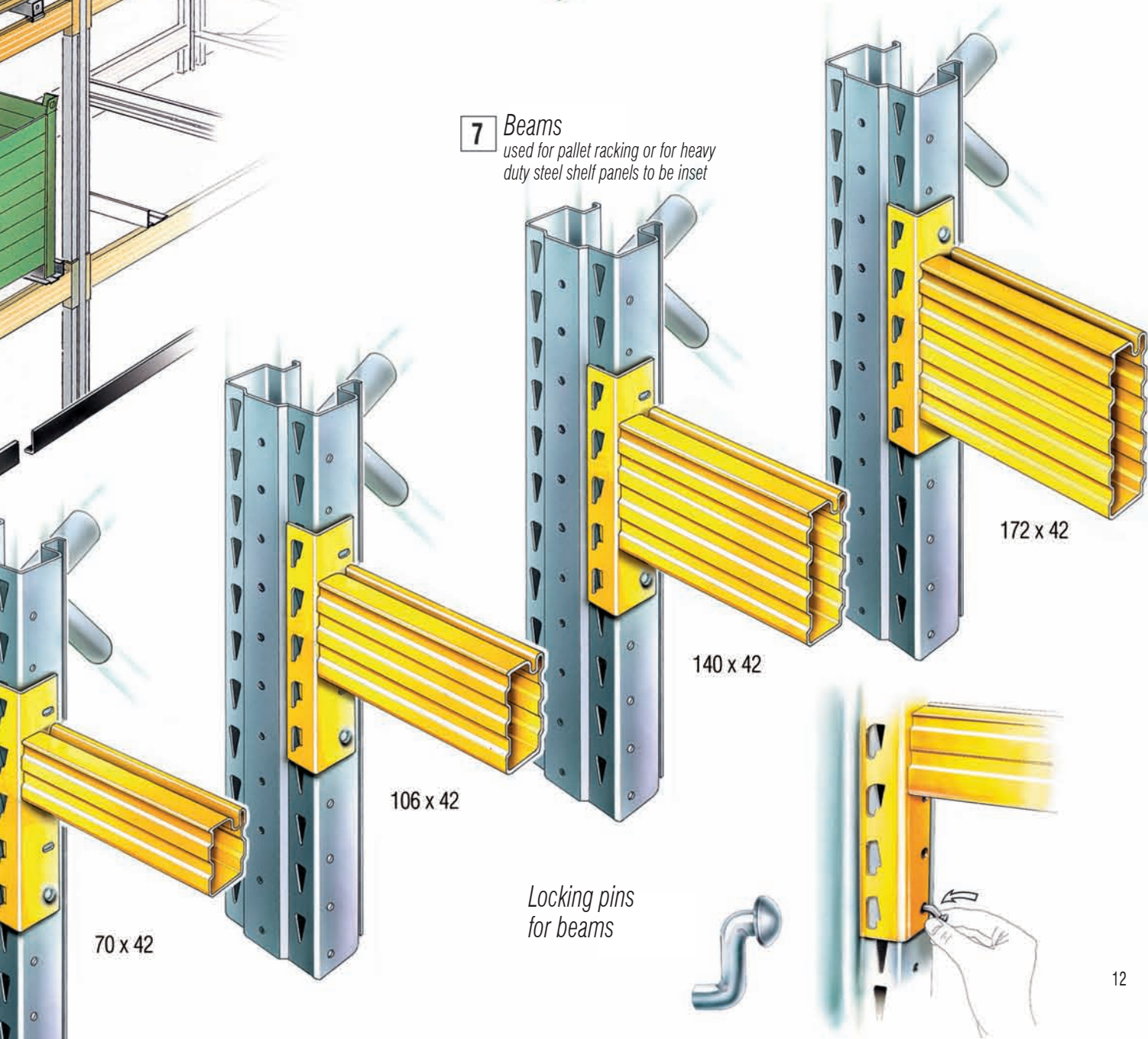




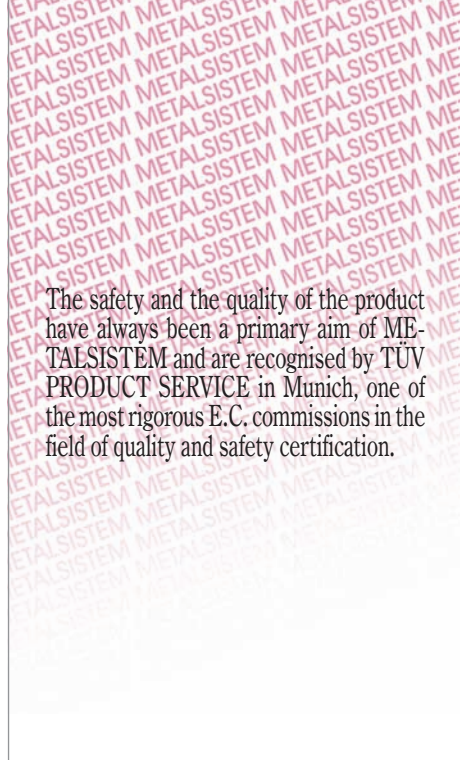
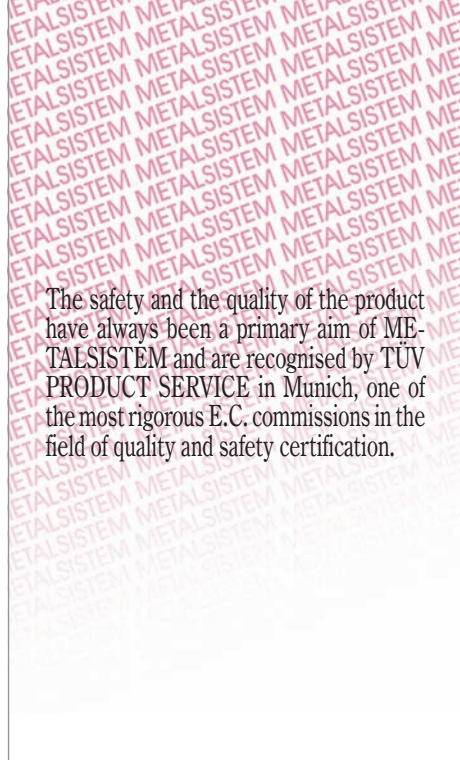
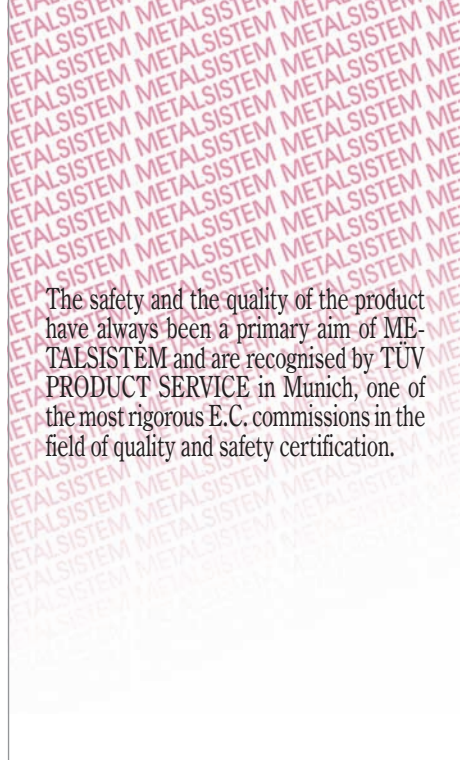




**6** Heavy duty steel shelf panels H25/29 with flanged tops





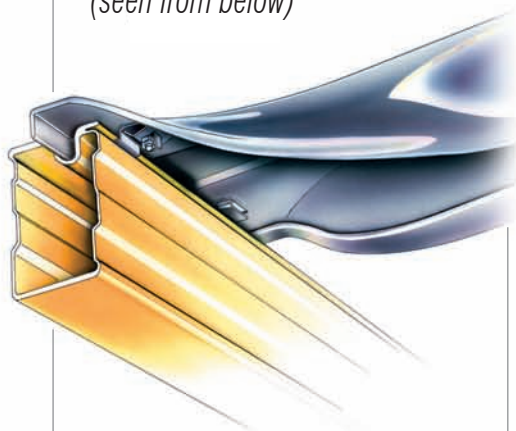




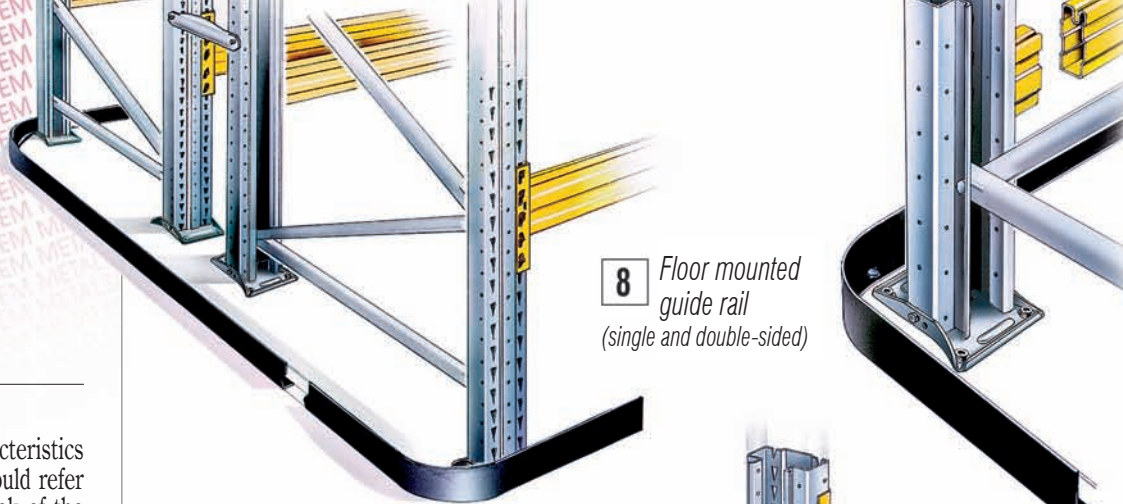
# ACCESSORIES

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

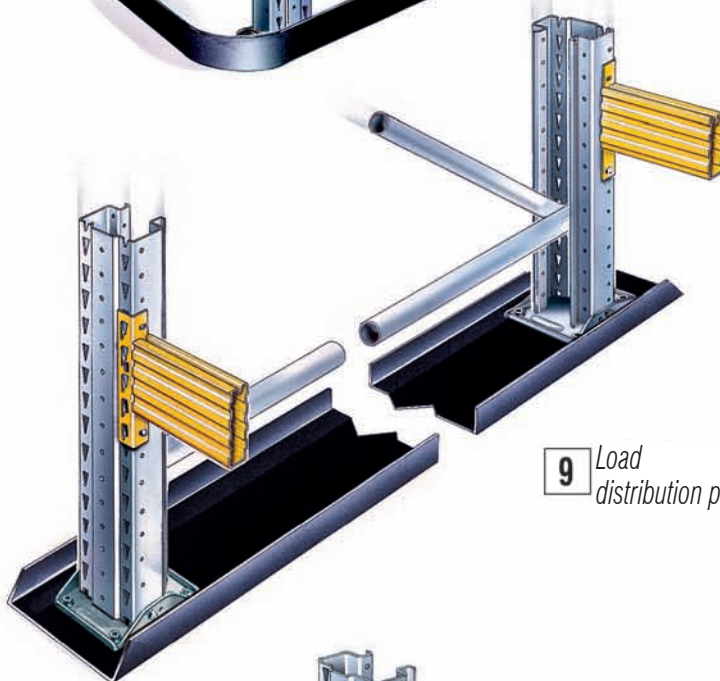
*Pallet support bar  
(seen from below)*



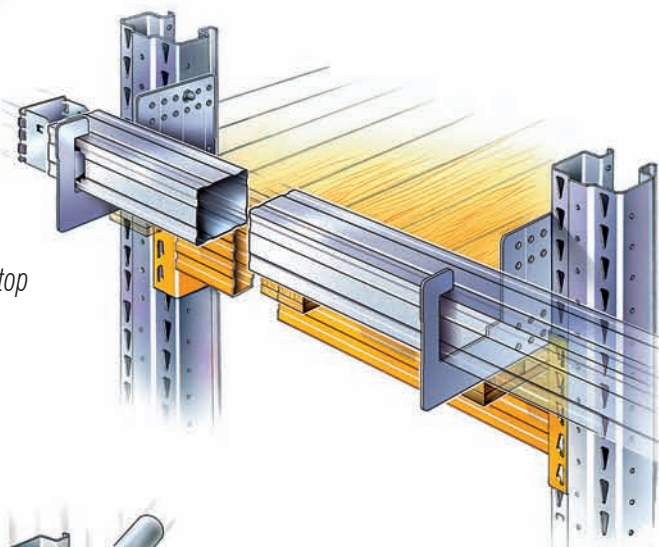
**8** Floor mounted  
guide rail  
(single and double-sided)



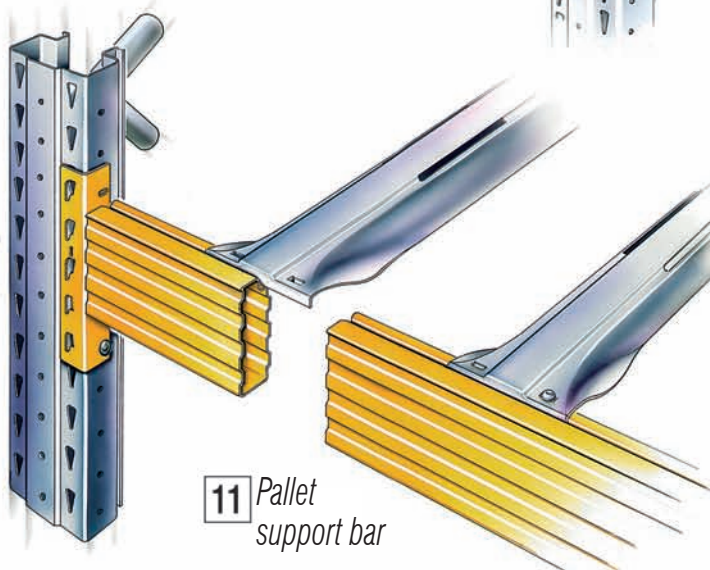
**9** Load  
distribution plate



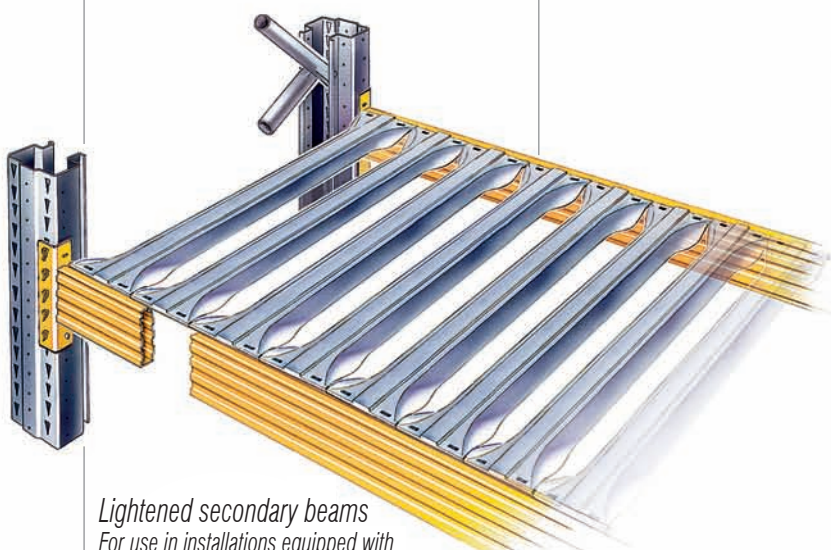
**10** Pallet backstop  
beam



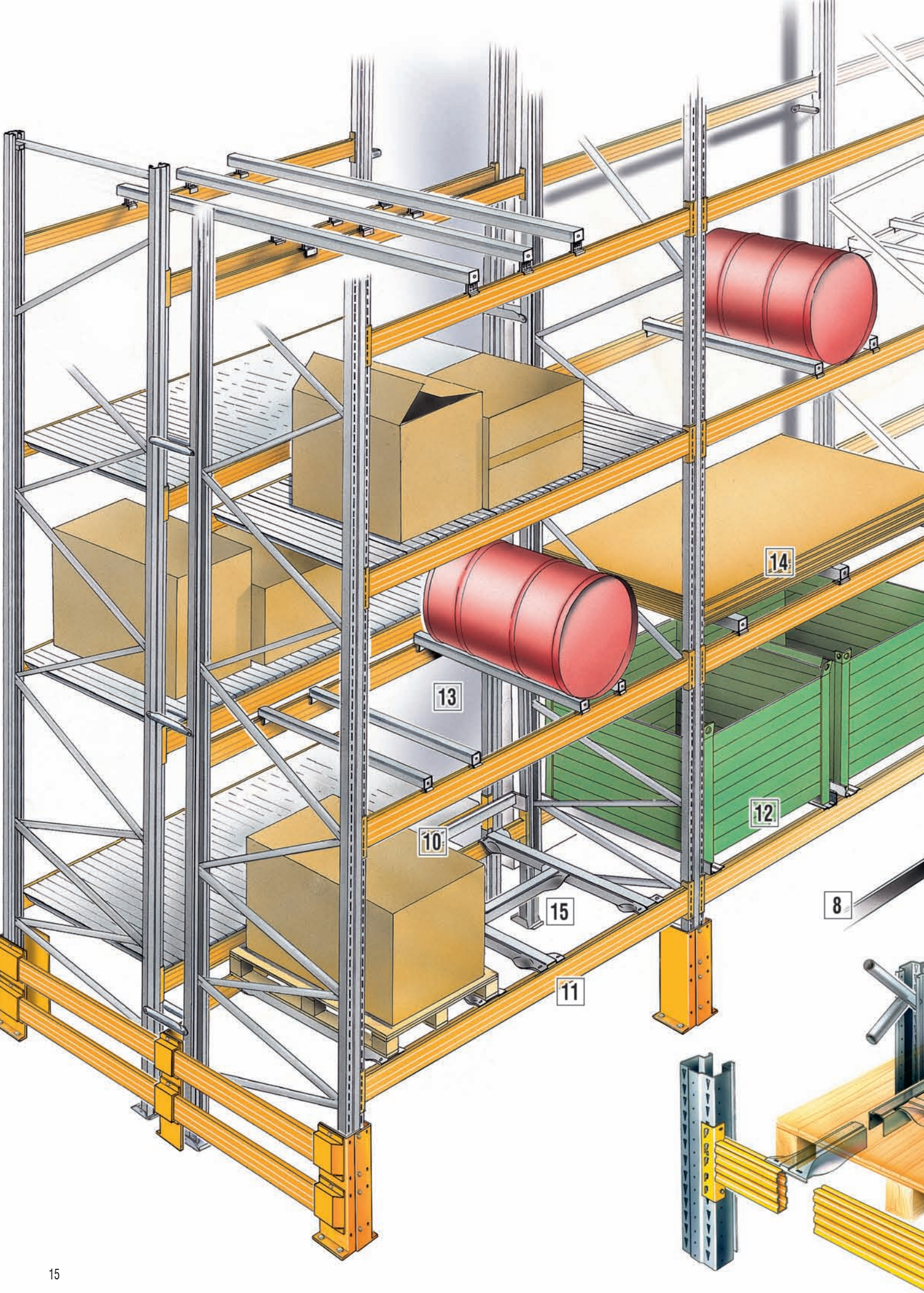
**11** Pallet  
support bar



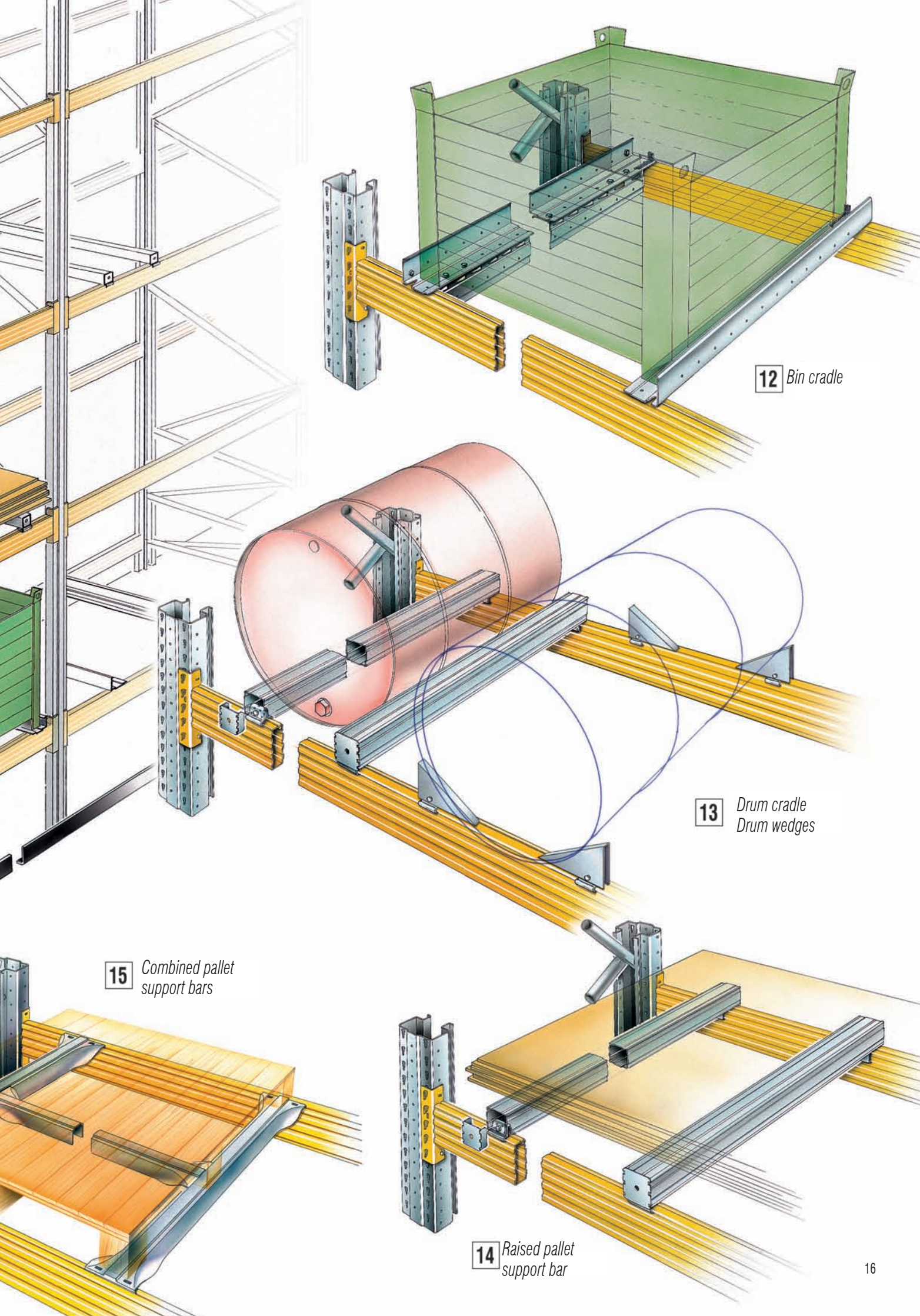
*Lightened secondary beams  
For use in installations equipped with  
sprinkler systems (shelf surface  
with coverage < 50%)*











**12** *Bin cradle*

**13** *Drum cradle  
Drum wedges*

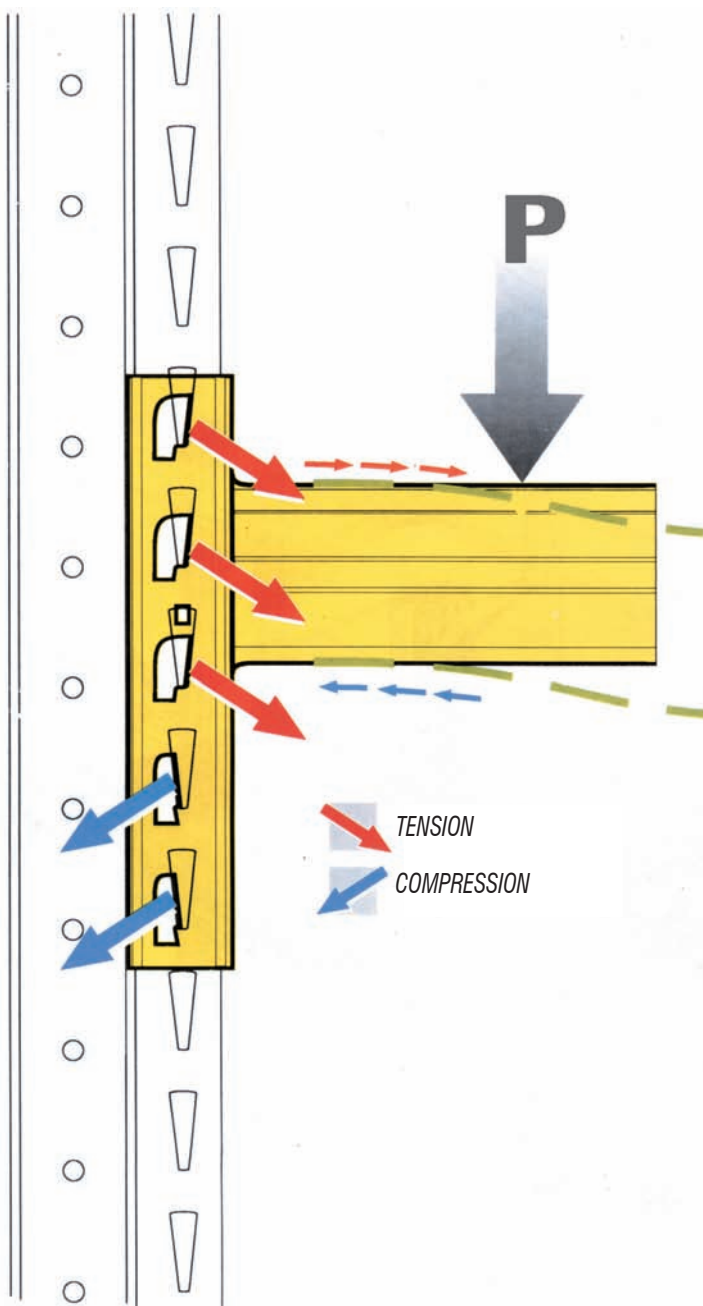
**15** *Combined pallet  
support bars*

**14** *Raised pallet  
support bar*

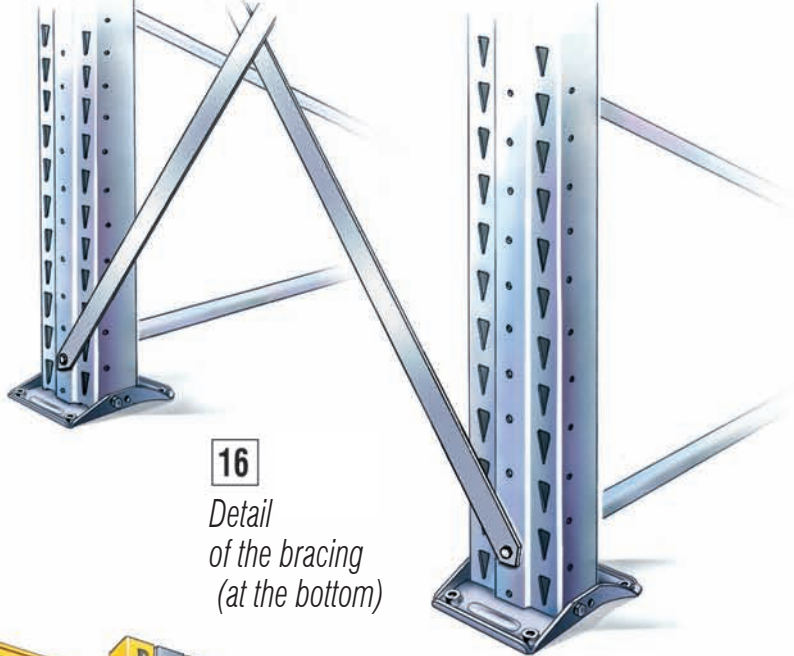


## Specific features and advantages of the beam connector system UNIBUILD series

- a. Each connector has 5 anchor points; 3 of them operating in tension and 2 in compression.
- b. The connection between beam and upright is made via tapered slots in the upright section, providing an improved connection with increased load.
- c. 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.

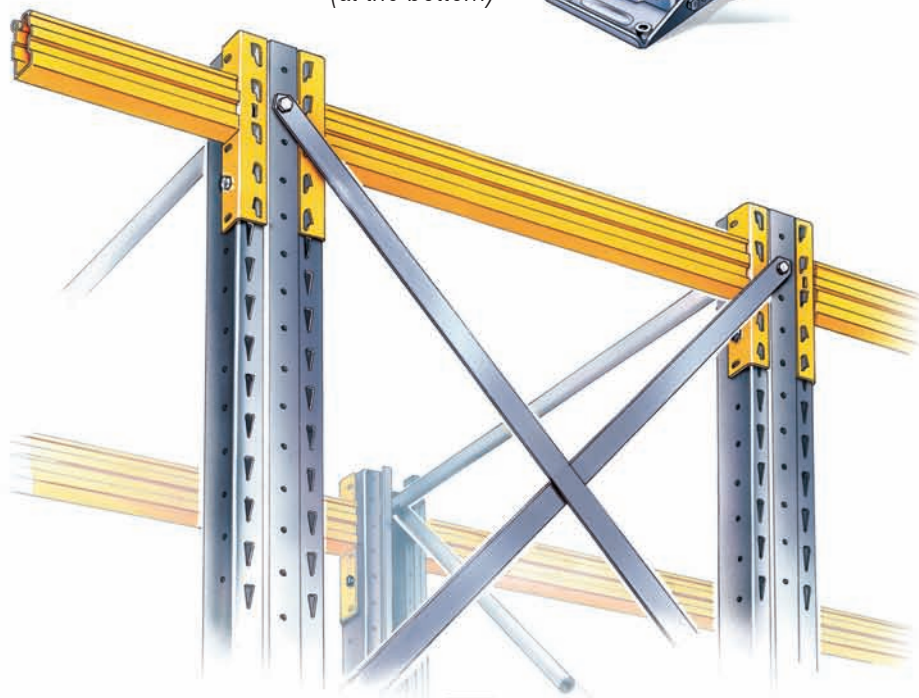






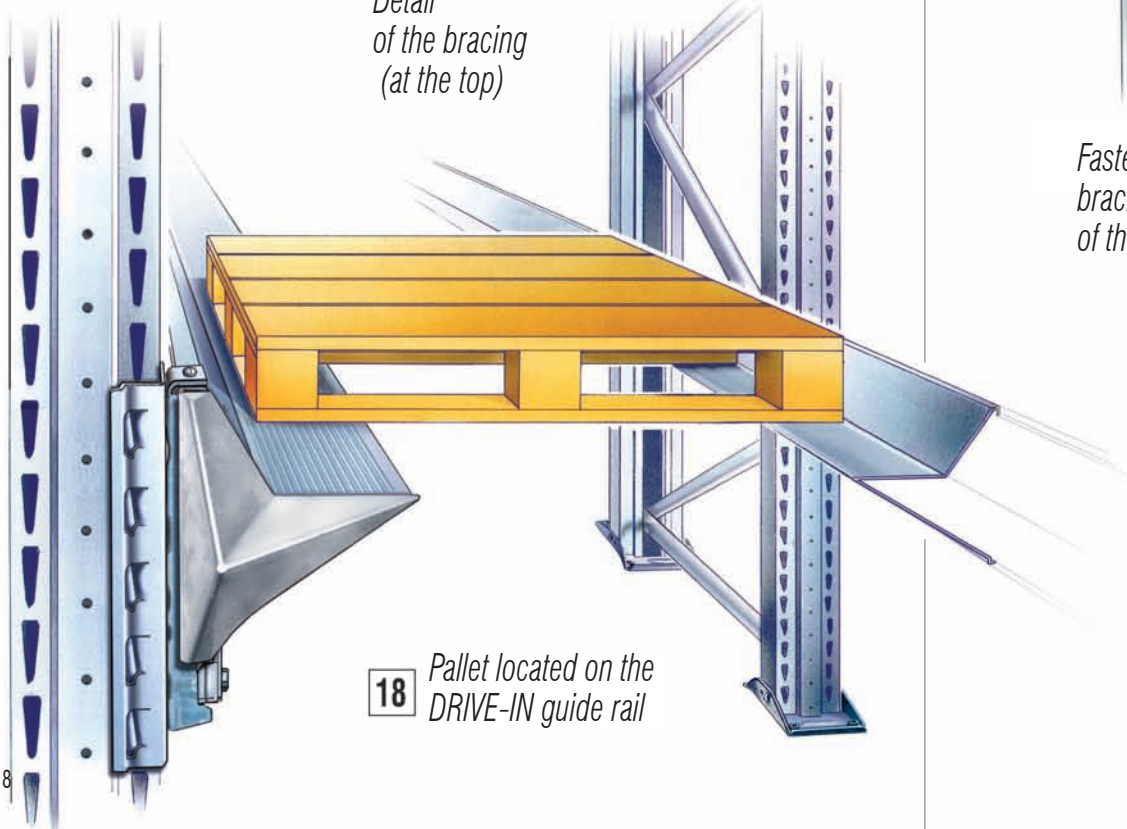
**16**

*Detail  
of the bracing  
(at the bottom)*



**17**

*Detail  
of the bracing  
(at the top)*

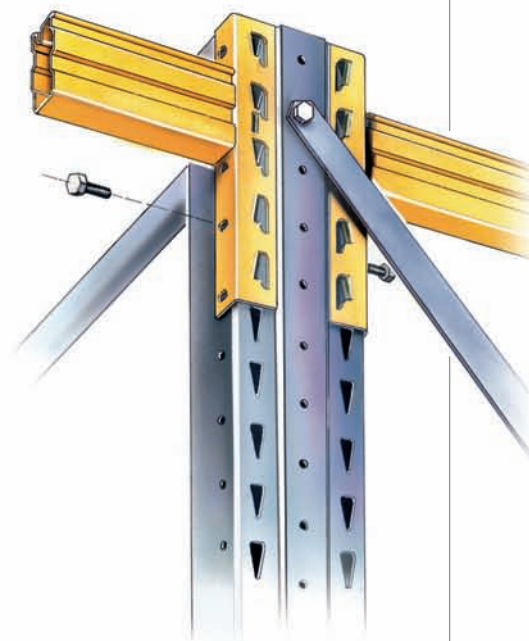


**18**

*Pallet located on the  
DRIVE-IN guide rail*

## DRIVE - IN

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

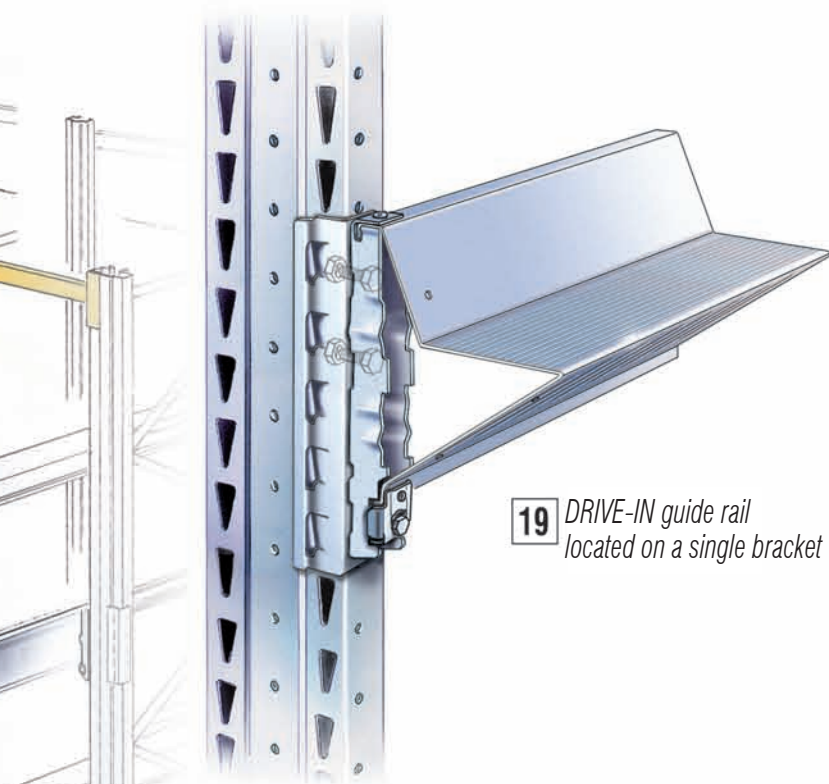


*Fastening of the  
bracing lane at the top  
of the frames*

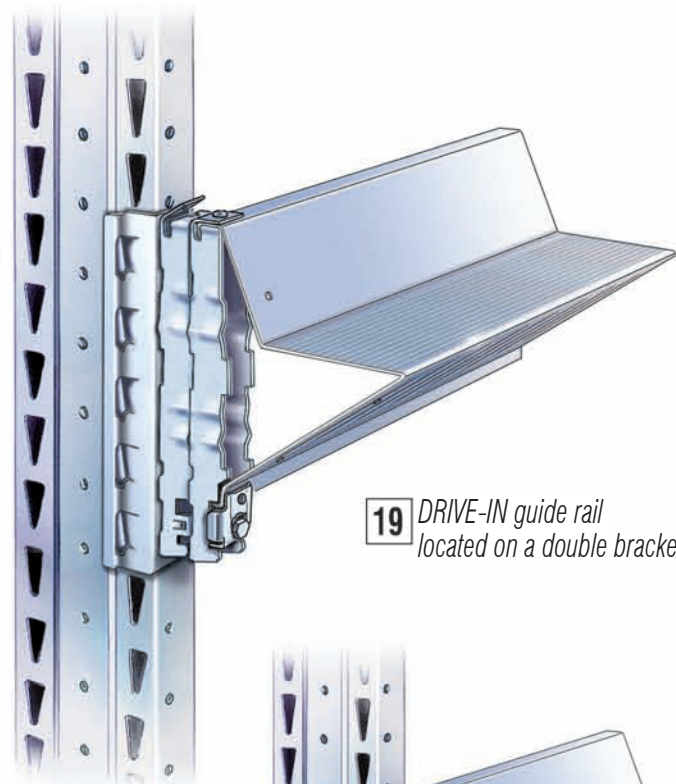








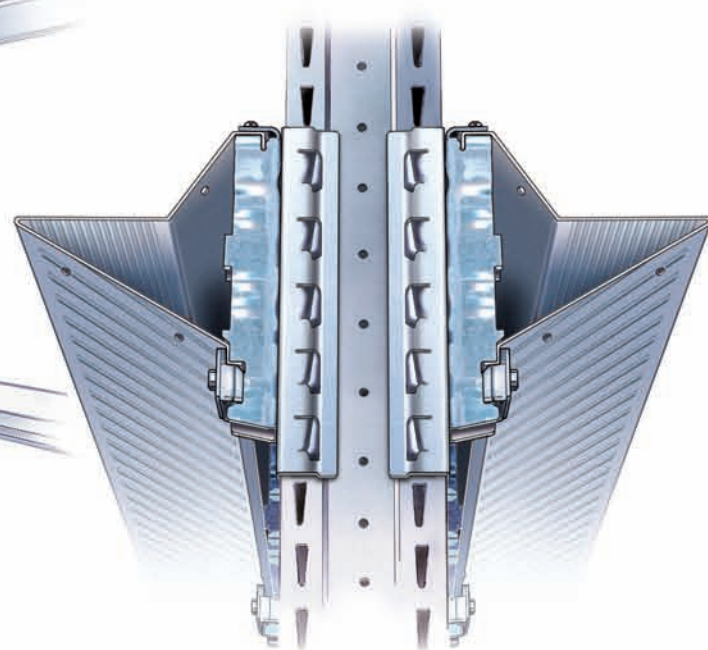
**19** *DRIVE-IN guide rail  
located on a single bracket*



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



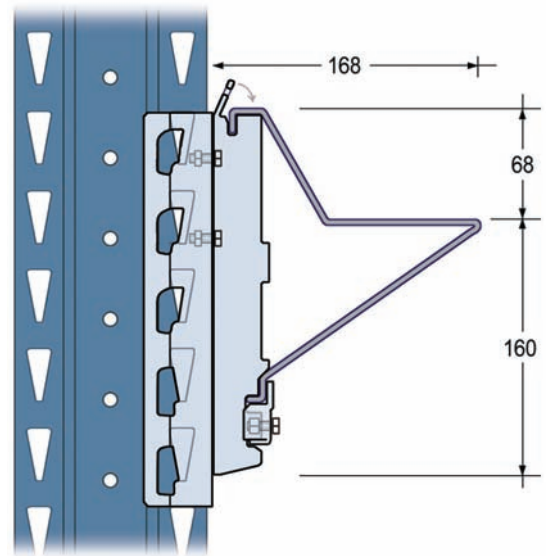
**20**  
*Entrance crescent  
for DRIVE-IN  
guide rail (detail)*



**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.







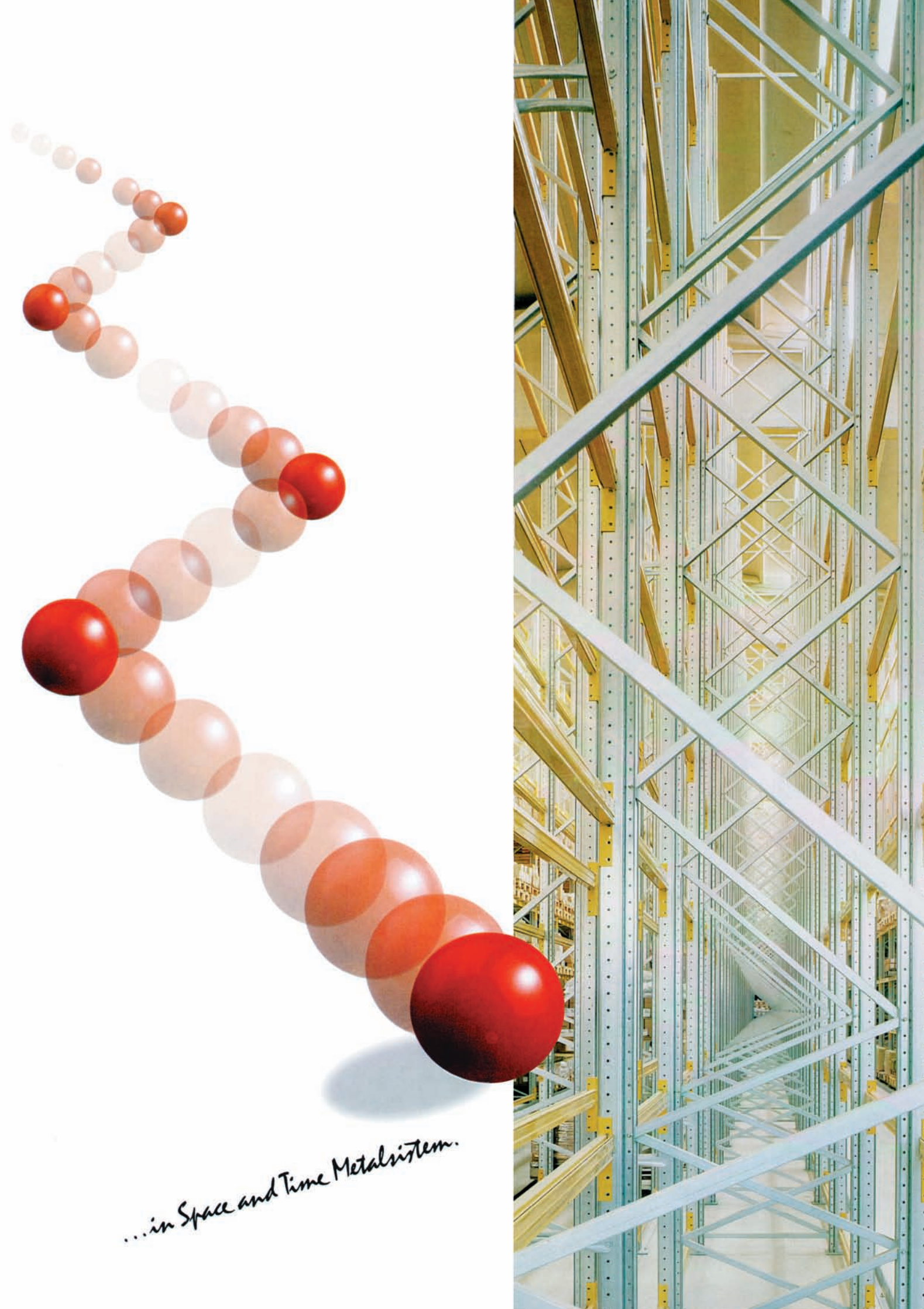












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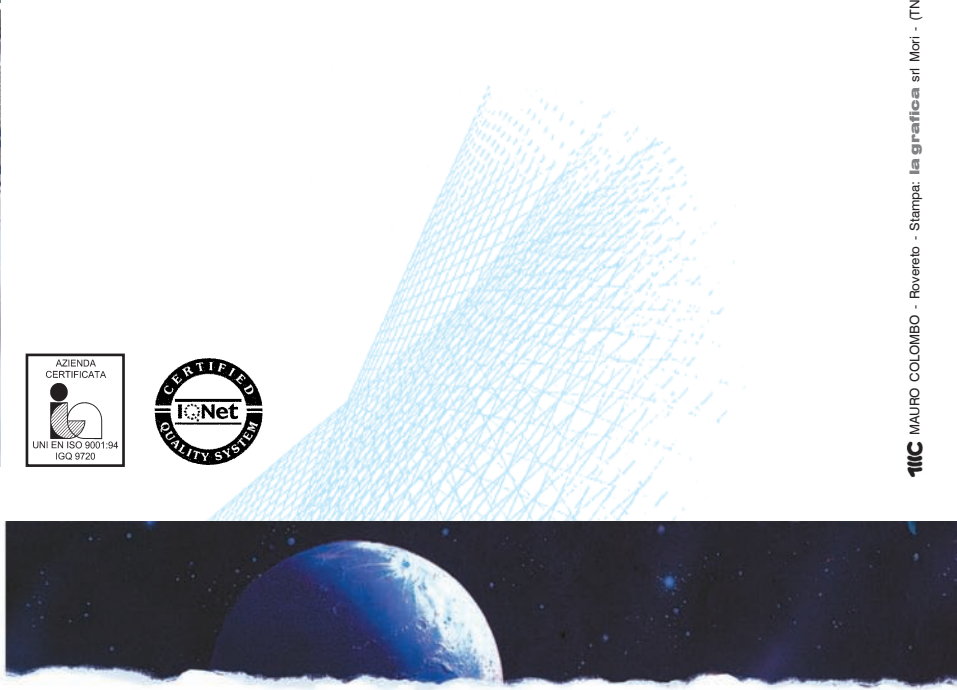
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NR. EDIZIONE	DATA EDIZIONE	NR. REVISIONE	DATA REVISIONE	DATA STAMPA
01	1999	01	03/2002	03/2002