

MODULAR STEEL STORAGE

# SUPER 4/5/6

PATENTED MODULAR RACKING



MODULAR



**METALSISTEM**  
SISTEMI E STRUTTURE PER IL MAGAZZINO



**METALSISTEM**

FEM section X

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FEM section X

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## THE GROUP



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 230.000 m<sup>2</sup>, 125.000 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 proof of the quality and reliability of our products.





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.

Fig. 2

**a) Floor slab loading.**  
Prior to installation of the product, check that the floor slab is of adequate load capacity.

The site installation of racking systems must be carried out by expert personnel following the assembly criteria and specifications tabled in the Technical Handbook of the SUPER 4-5-6 series. Site personnel must ensure that all frame bolts have been tightened and all safety elements have been installed.

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  $\pm 10$  mm or  $1/350$  of the height (ie max deviation =  $H/350$ ), whichever is greater (fig. 1). For more detailed information on verticality tolerances refer to the Technical Handbook "SUPER 4-5-6" and the Operating Instructions Assembly of Super 4-5-6 Racking; Document; MUM 01.



Load bearing capacity plate 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 total number of levels (fig.2).

In case where the height of the frame is:

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

that structure must be connected via top ties. The racking structure must also be supplied complete with column and/or frame protectors.

Reference standards for the materials are:

- EN 10142
- EN 10147
- EN 10204

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 organization CISI (Costruttori Italiani Scaffalature Industriali).

The frame load bearing capacity graph in the Technical Handbook of the SUPER 4-5-6 series shows the load bearing capacity of frames used for pallet racking systems. The load capacity is 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;
- 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.

The load bearing capacities of the beam pairs indicated in the Technical Handbook of SUPER 4-5-6 series were calculated with the following assumptions:

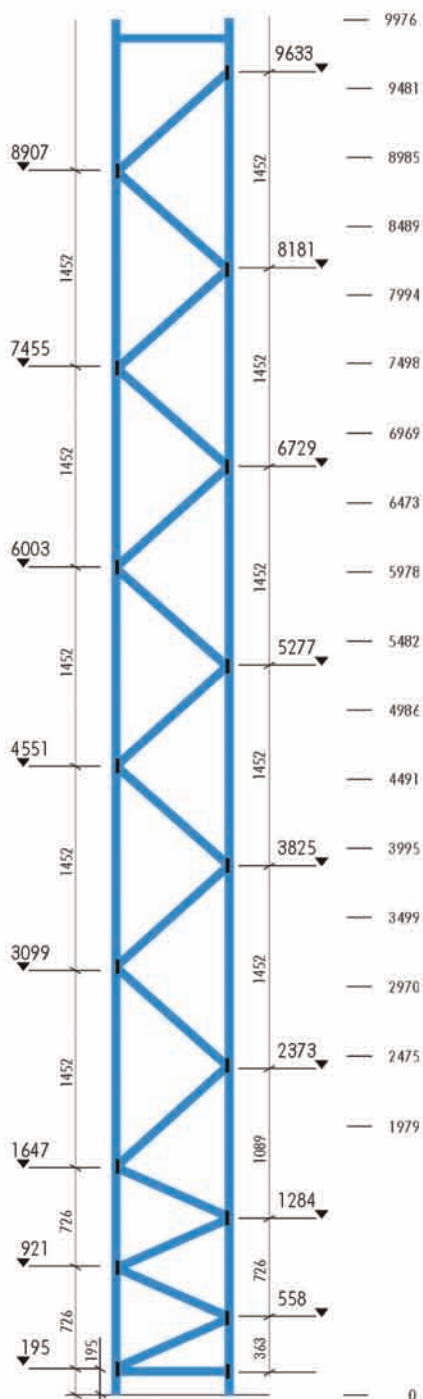
- loads are uniformly distributed;
- admissible tensile stress of the material;
- deflection  $1/200$ .

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

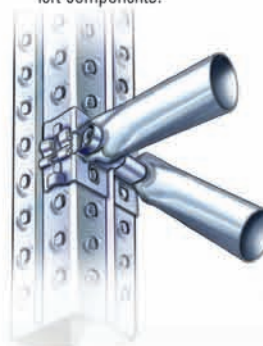
The METALSISTEM Technical Department is at the disposal of its customers for any specific calculations or custom built applications.

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.

Frame depth: from 600 to 1500 mm.



The union between the uprights and the frame bracing components is made via the frame bracket coupling. The frame must always be closed at the top and bottom with a horizontal spacer bar. The bottom area of the frame is made from 4 short diagonal spacer bars and long diagonal spacer bars to follow, up to the top. The bracing elements are sandwiched between the TS bracket coupling (code 08004) which come as right and left components.



These are always to be assembled in pairs and lock into position via the tightening of a centrally located bolt M8x70 (code 08011). The upright face with the seaming must always be oriented towards the centre of the frame.

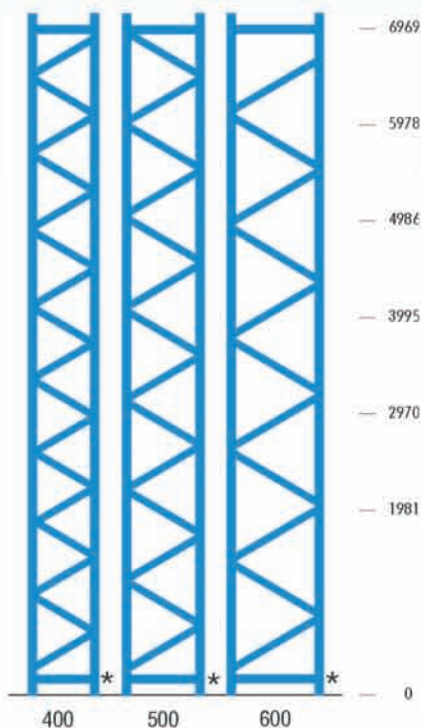




SUPER 4/5/6 is made from certified steel and carries the approval mark of TÜV PRODUCT SERVICE GmbH.



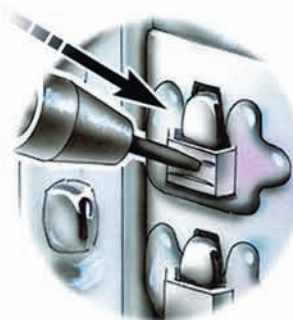
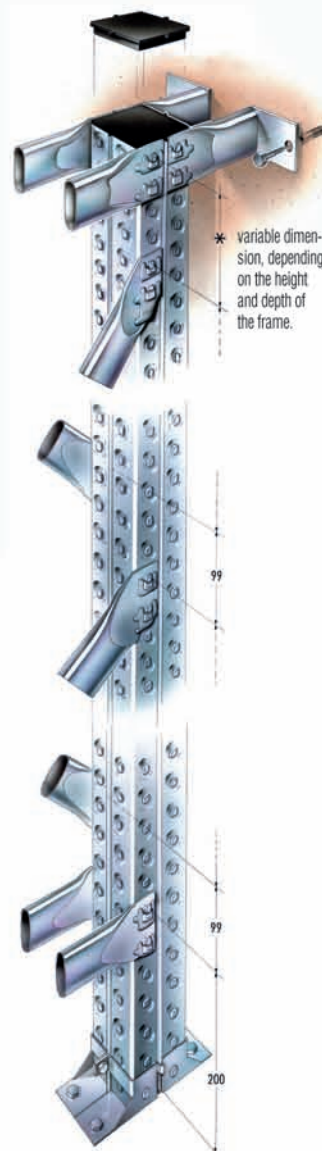
## ASSEMBLY DIAGRAM SUPER 4-5-6 INTERLOCKING FRAMES FRAME DEPTH: 400-500-600 MM



- \* at the base: double horizontal spacer bars (one internal and one external).
- \* at the top: the frame has to be closed with one horizontal spacer bar.

Interlocking frames are made from 50x25 mm oval tubes which are located directly onto the joint buttons of the uprights.

Super 4-5-6 interlocking frames are available in 400/500/600 mm depths only. For wider frame depths refer to the frame version assembled with bracket coupling and respective assembly diagram, at left. Interlocking frames must be closed at the top with one horizontal spacer bar. For the correct assembly of interlocking frames refer to the SUPER 4-5-6 Technical Handbook. Horizontal and diagonal spacer bars for interlocking frames are to be fastened using the safety locking device. The fastening of all locking devices is essential/mandatory. See sketch at right.



The joint buttons of the upright have a vertical orientation. The wider portion of the joint buttons must be positioned towards the base of the upright.



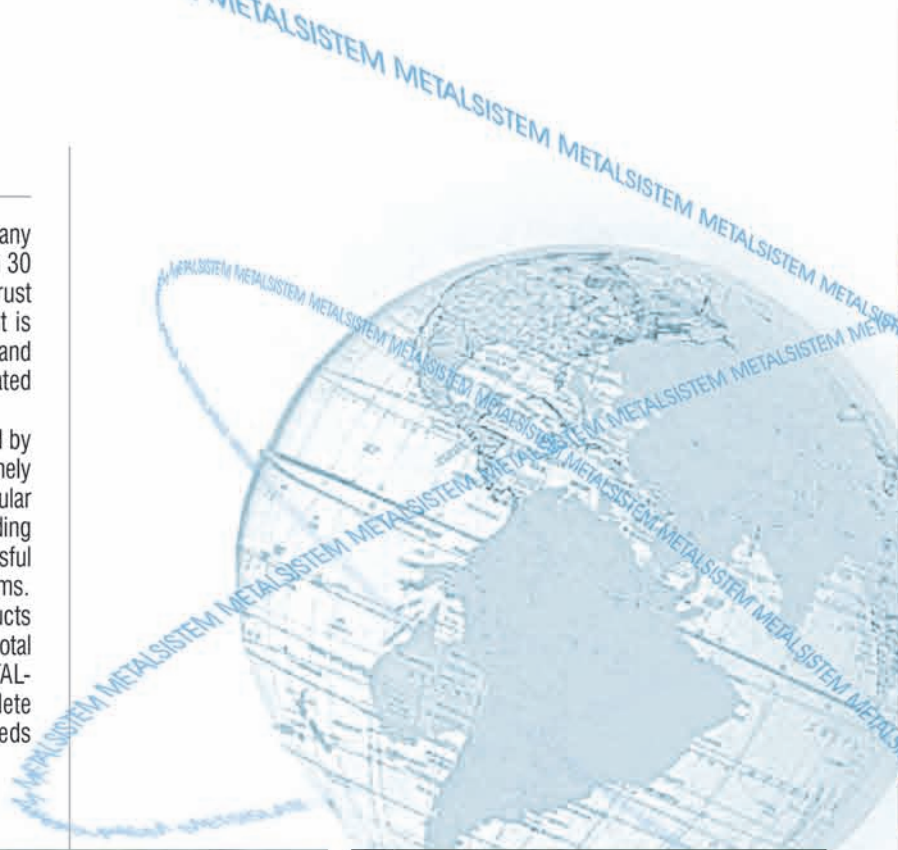
Details of security locking device on horizontal and diagonal spacer bars <for interlocking frames>.



## THE COMPANY TODAY

METALSISTEM products are now in use in a great many installations throughout the world, and after more than 30 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 and racking 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.



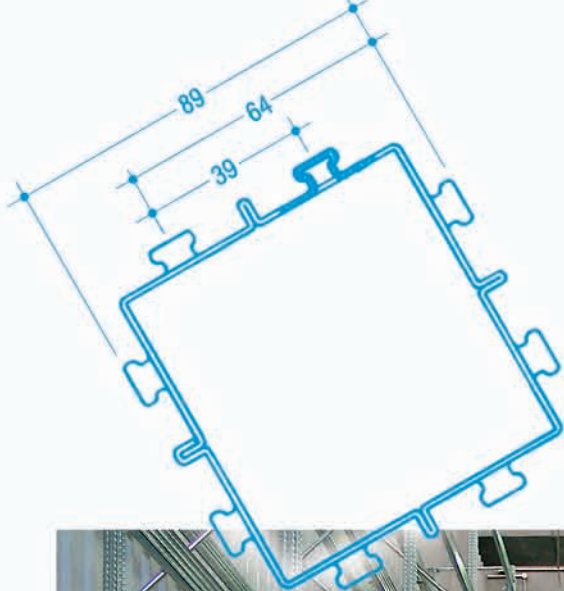






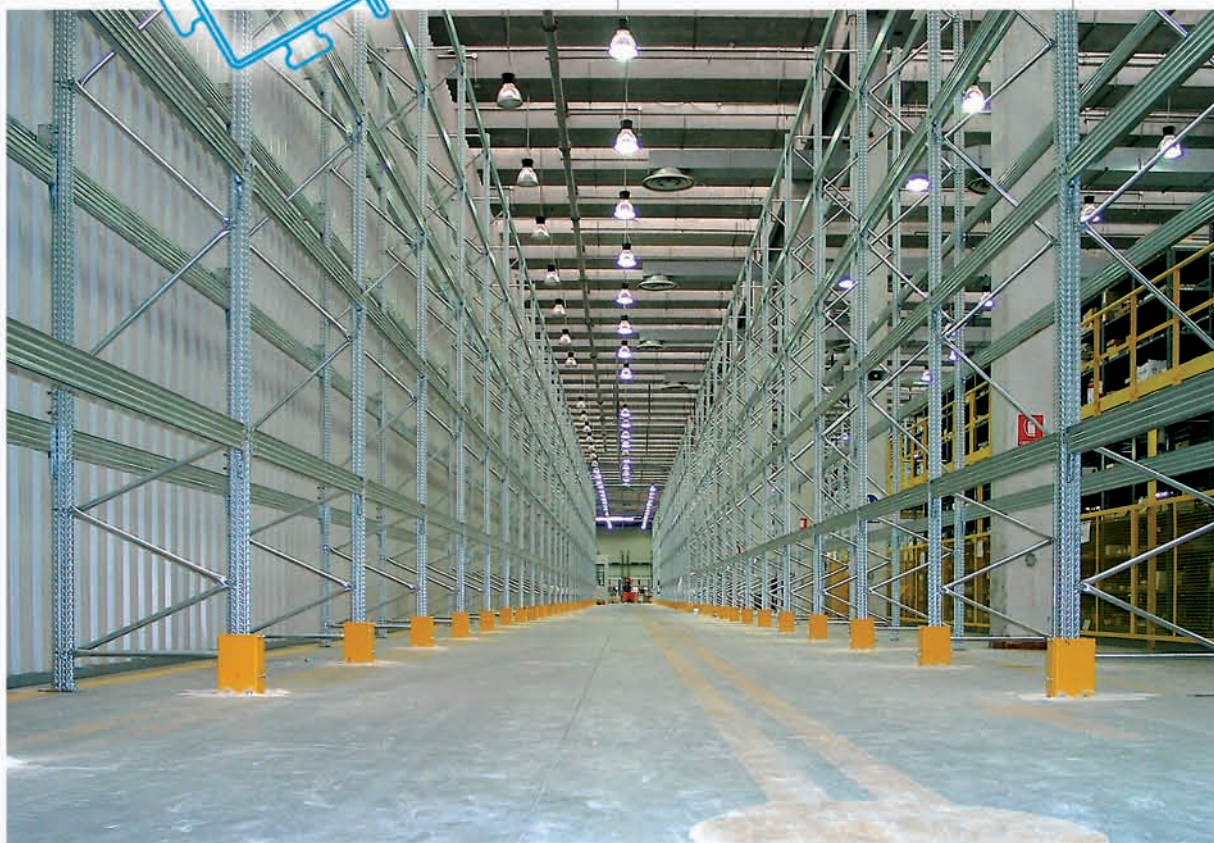






## THE PRODUCT

The versatility of METALSISTEM installations make 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.





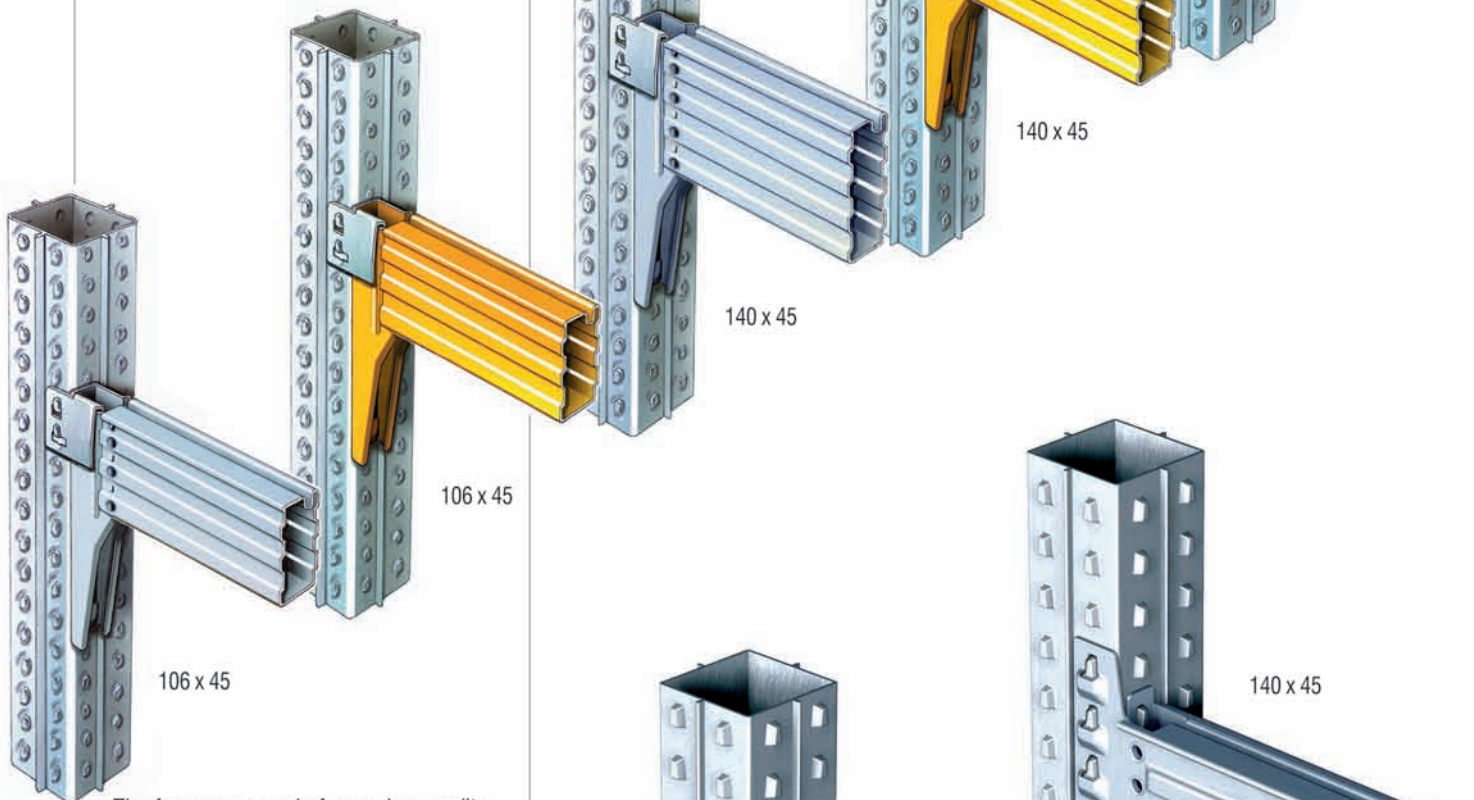
## MAIN STRUCTURAL COMPONENTS

The design of the various components is the result of rigorous technical testing and the highly specialized knowledge developed over years of experience in the field of metal processing.

This experience has enabled METAL-SISTEM to offer innovative products of the highest quality, highly competitively priced, and to produce a highly technical solution to the most important shelving problems, such as rapid assembly, stability and strength, low cost and load bearing capacity. The components are subjected to regular and rigorous technical tests.

1

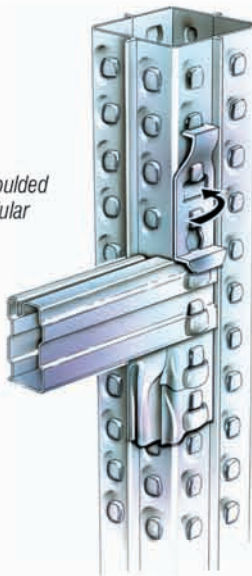
Beams used for pallet racking or for heavy duty steel shelf panels to be inset.



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

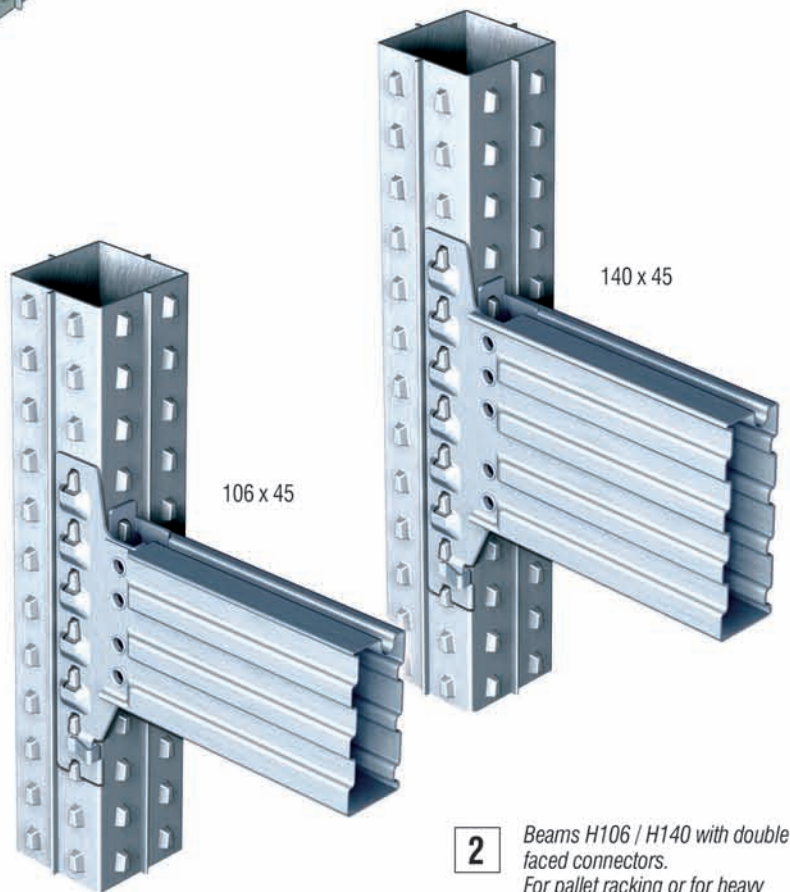
3

Beams H70 with moulded connectors for modular steel shelf panels

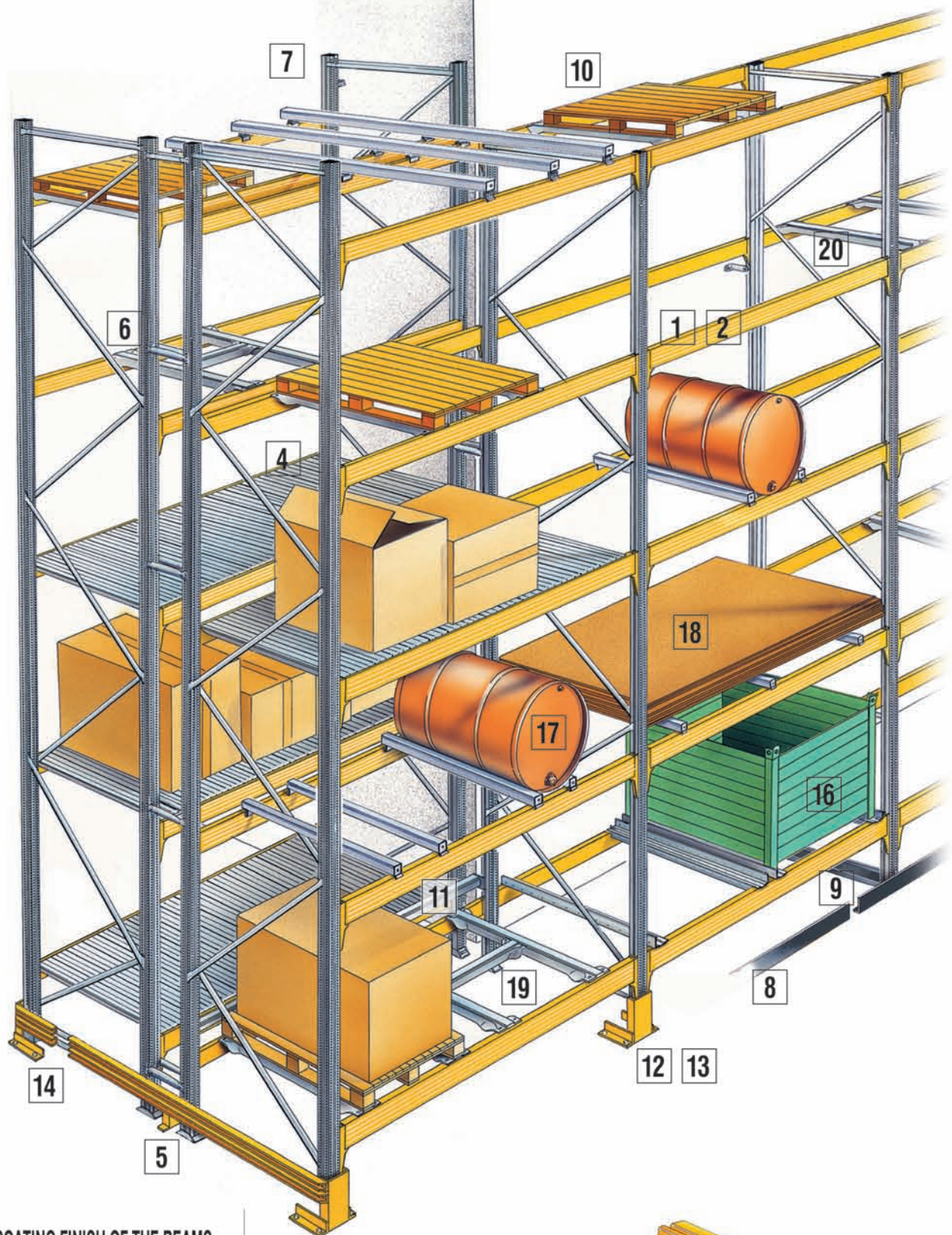


2

Beams H106 / H140 with double faced connectors. For pallet racking or for heavy duty steel shelf panels to be inset.

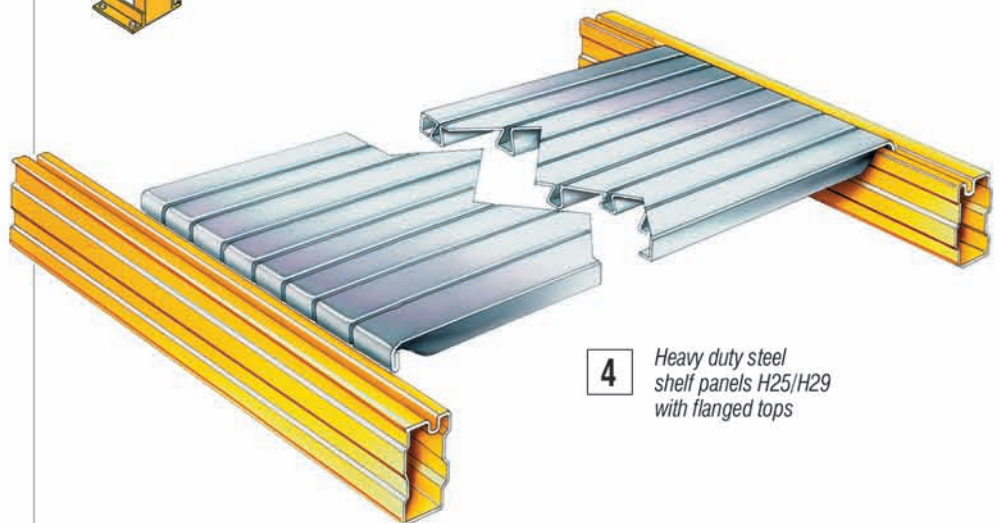






**POWDER COATING FINISH OF THE BEAMS**  
Standard colour: yellow, RAL 1004.

- 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.

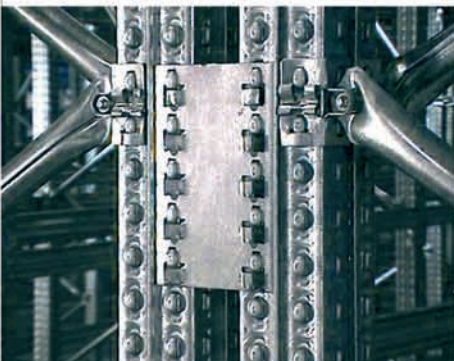
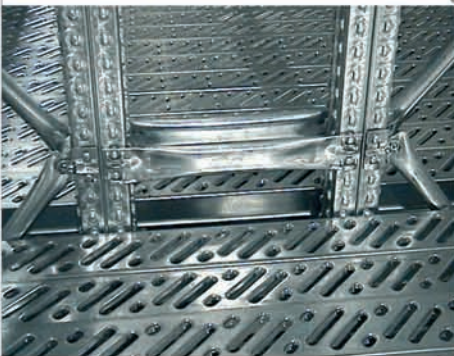


**4** Heavy duty steel shelf panels H25/H29 with flanged tops

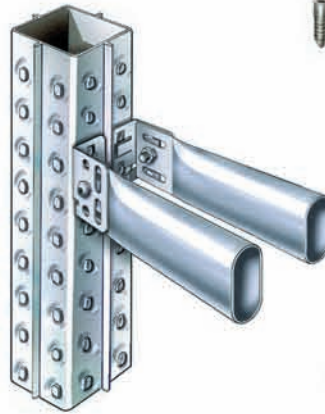
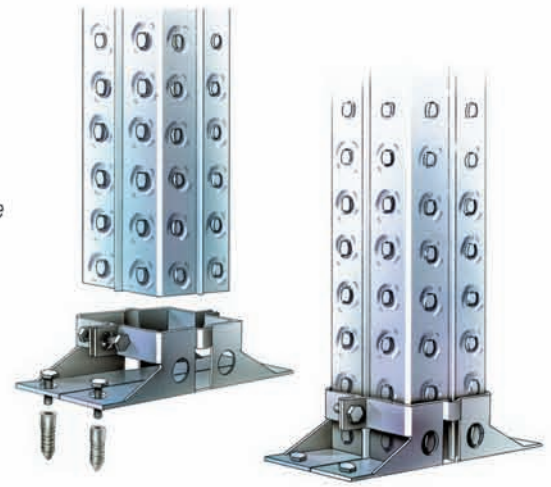


All the structural components are made from high tensile steel, certified according to EN 10204 3.1B. The beams are profiled sections with quadruple flange thickness at points of maximum stress for high loading capability. The grooves on top of the beams are used to locate modular heavy duty steel shelf panels, pallet support bars and drum cradles for the storage of non palletized or special goods.

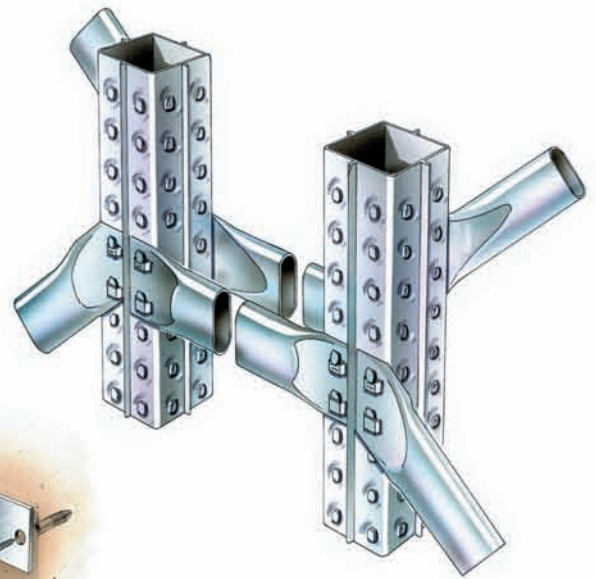
The uprights are closed boxed sections, without holes or cut-outs. They provide eight location points on four sides for connecting unidirectional beams or bracing elements.



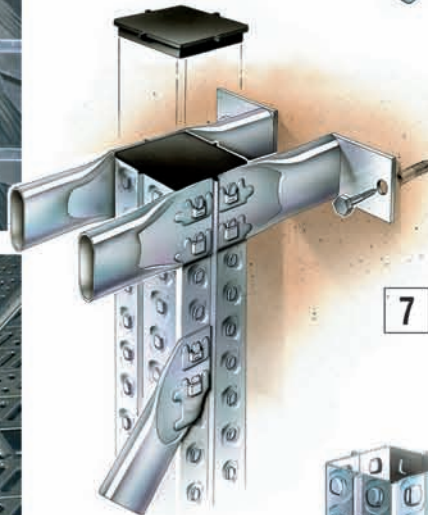
**5** Heavy duty metal base plate



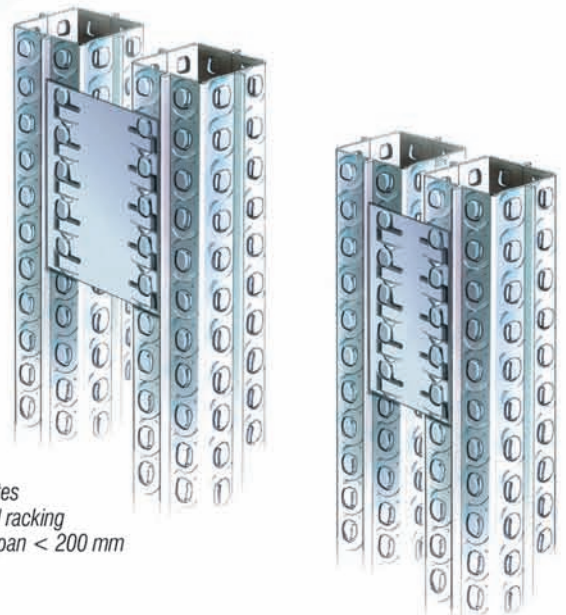
**6** Row spacers



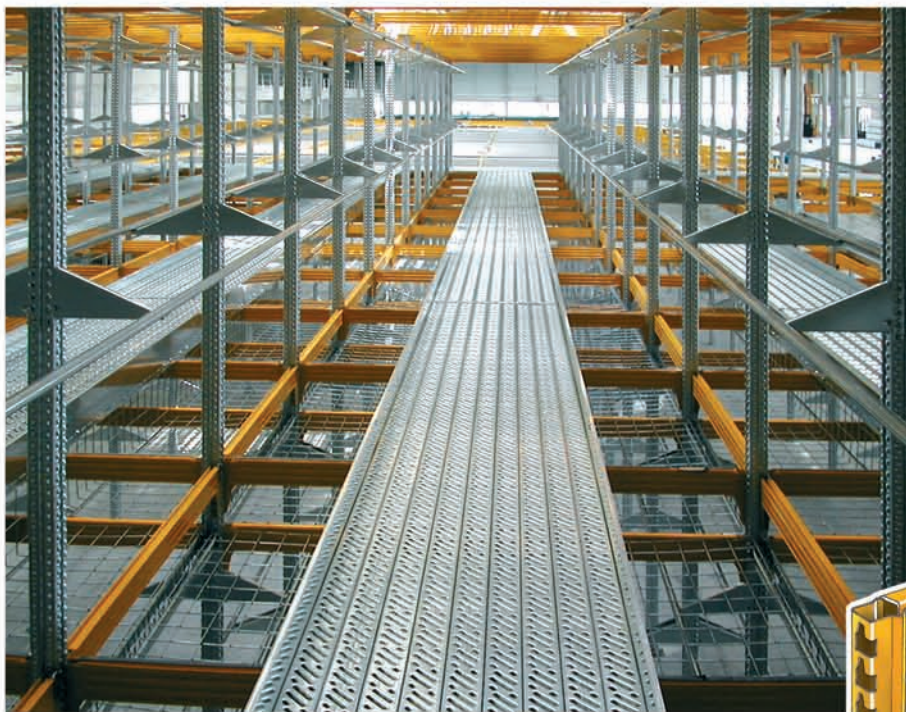
**7** Wall ties



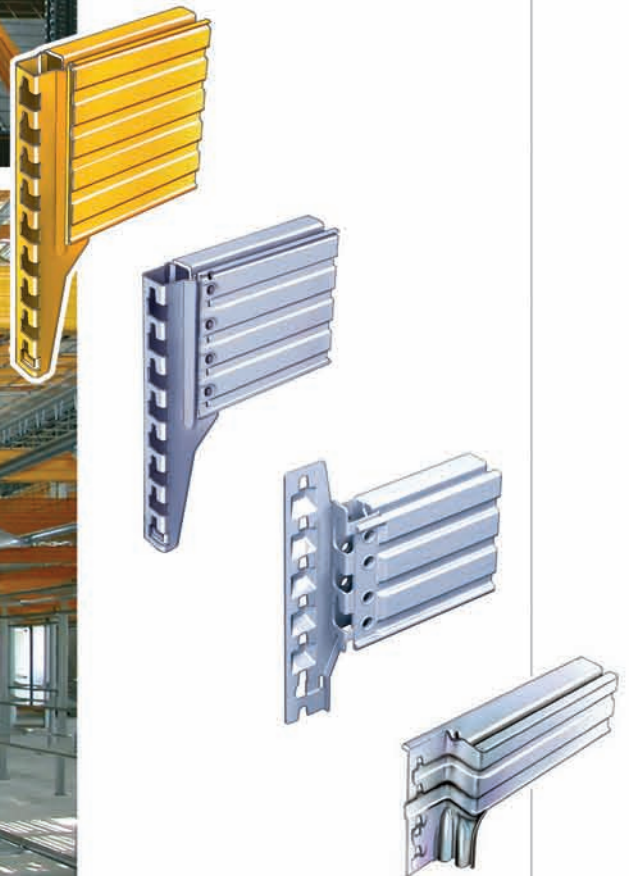
**6a** Row spacer plates for double sided racking  
50 mm < net span < 200 mm







Frames allow four beams to be fitted in parallel, at the same height. This extraordinary versatility enables the product to be highly suitable for the easy construction of both platforms and pallet racking. The safety and the quality of the product have always been a primary aim of METALSISTEM and are recognized by TÜV PRODUCT SERVICE in Munich, one of the most rigorous E.C. commissions in the field of quality and safety certification.



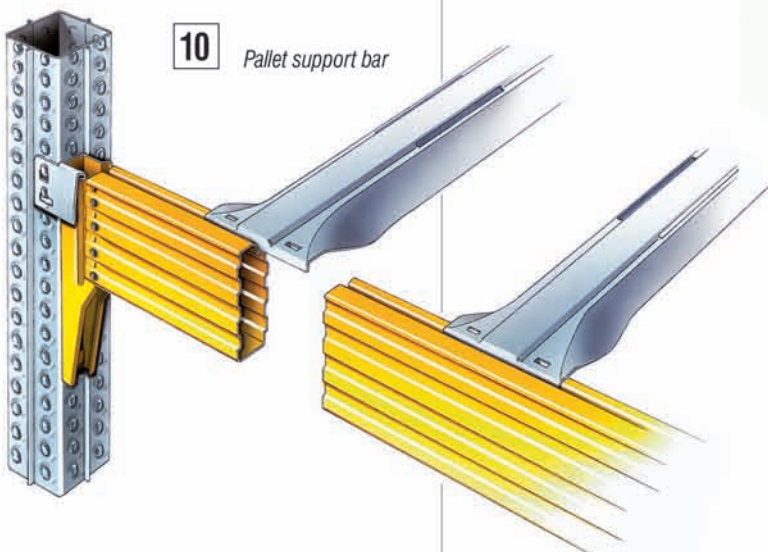


## ACCESSORIES

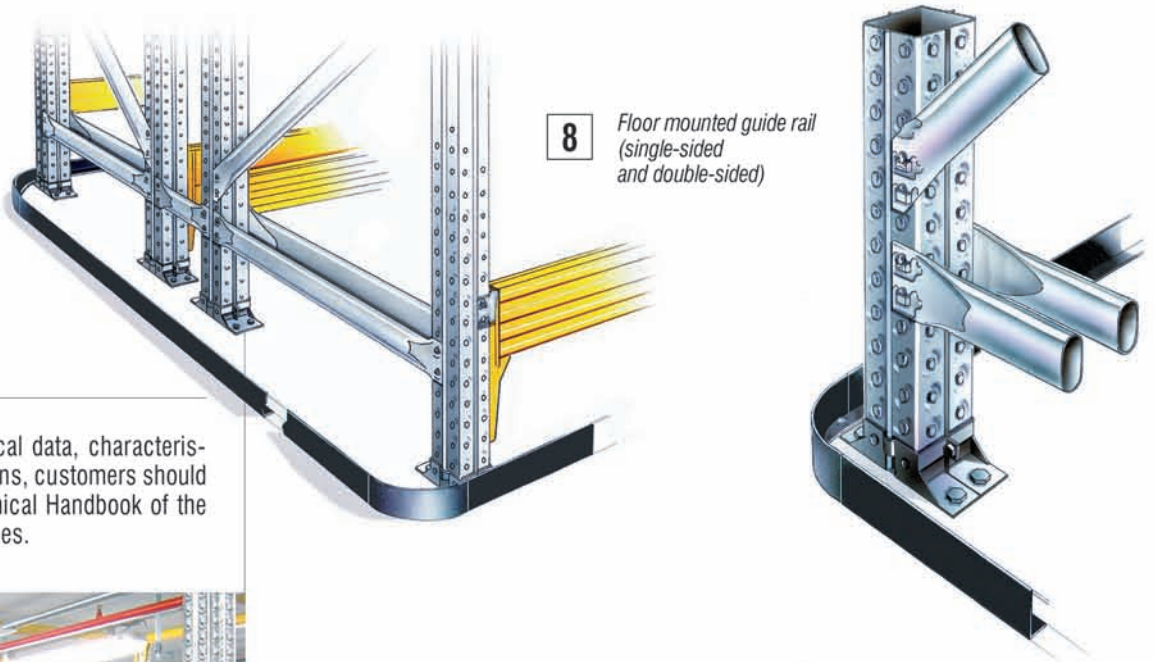
Regarding technical data, characteristics and dimensions, customers should refer to the Technical Handbook of the SUPER 4-5-6 series.



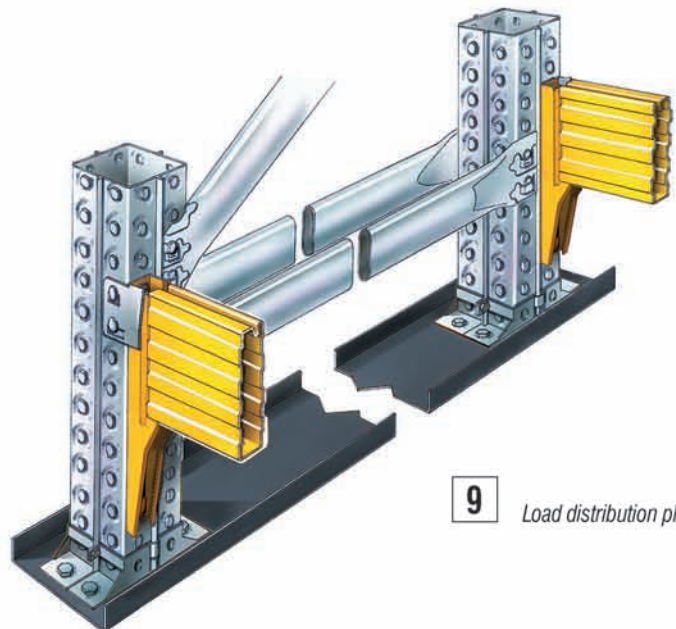
**10** Pallet support bar



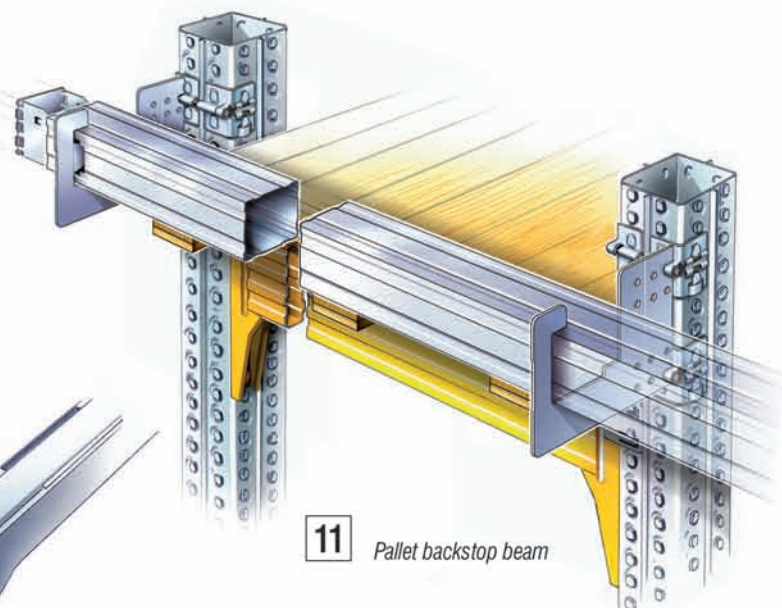
**8** Floor mounted guide rail  
(single-sided  
and double-sided)



**9** Load distribution plate



**11** Pallet backstop beam



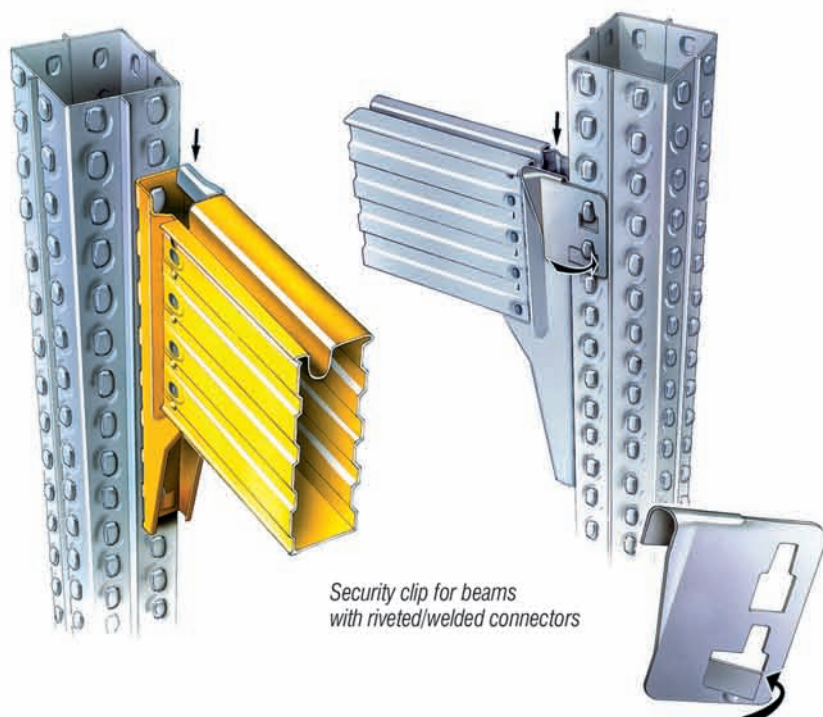


It is mandatory to locate security clips on either side of all pallet racking beams. The beam retaining clips prevent an accidental lifting of the beams off the uprights: also, in the case of beams with riveted or welded connectors, the security clips have a structural function, by further improving the efficiency of the upright/beam connection.

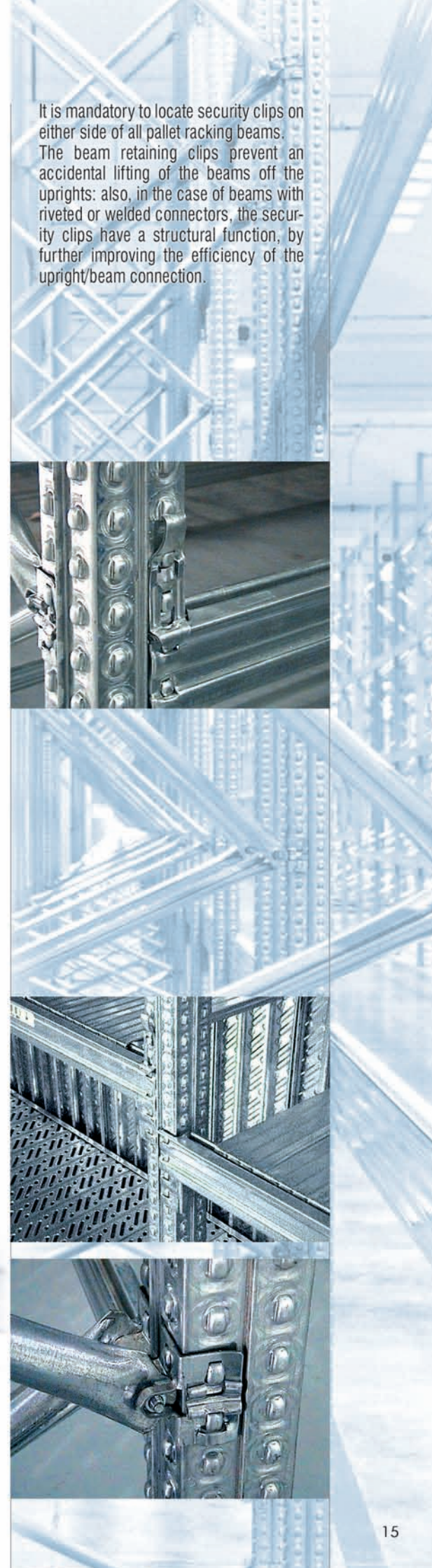
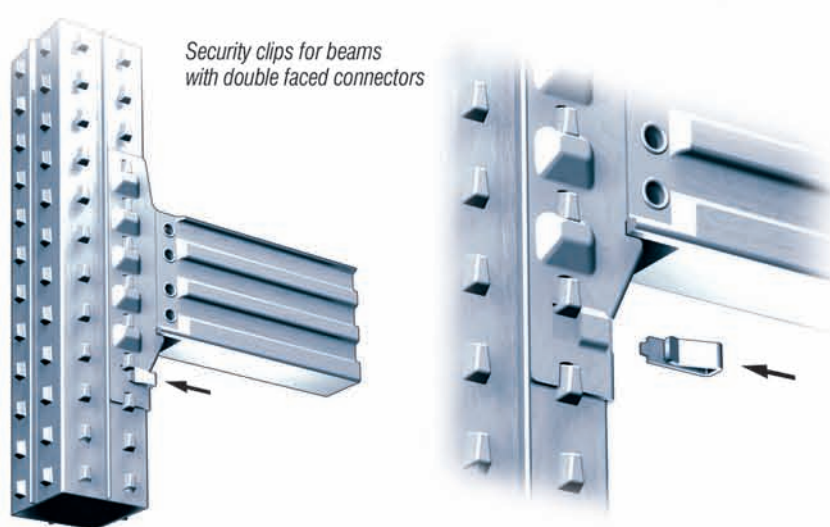
*Beam located flush with the top of the upright*

*Beam located at mid height*

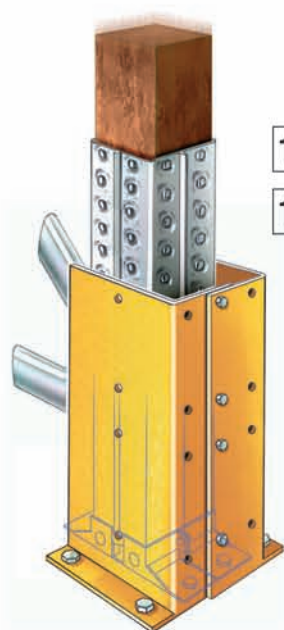
*Security clip for beams with folded connectors*



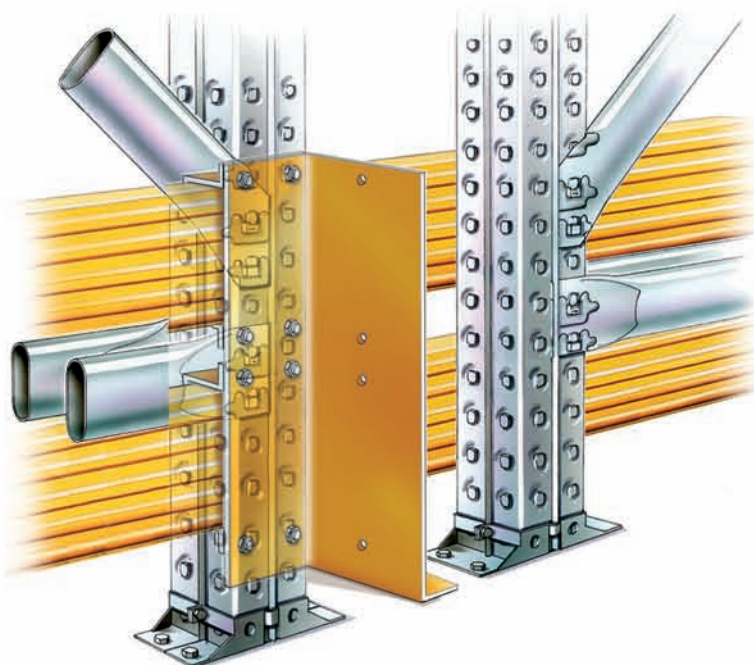
*Security clips for beams with double faced connectors*







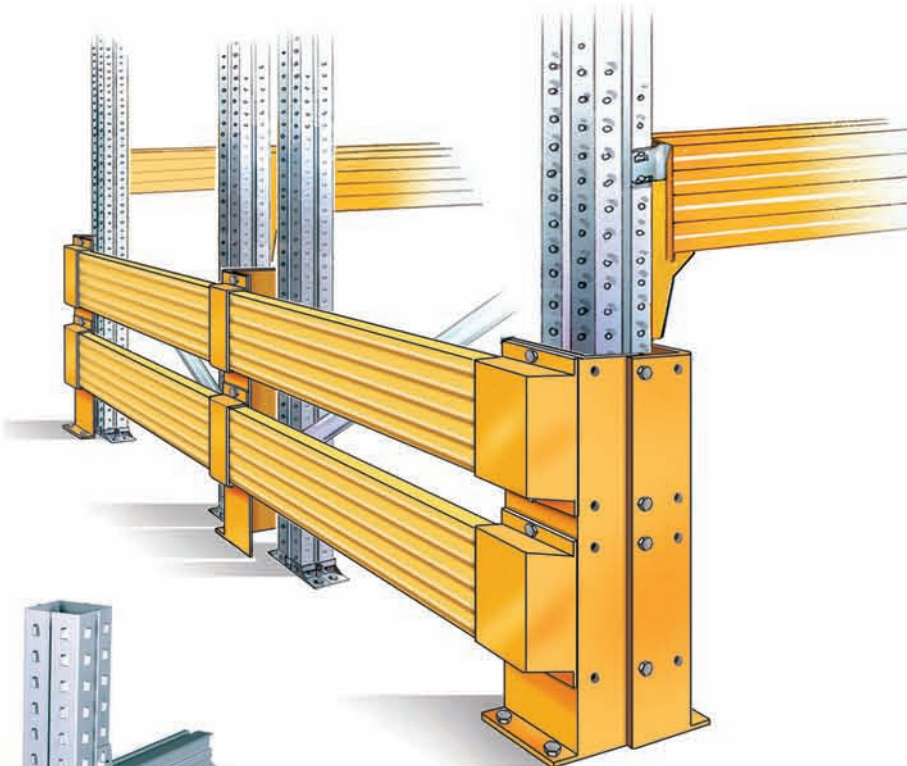
**12** Column protector  
**13** Internal wooden impact dampener



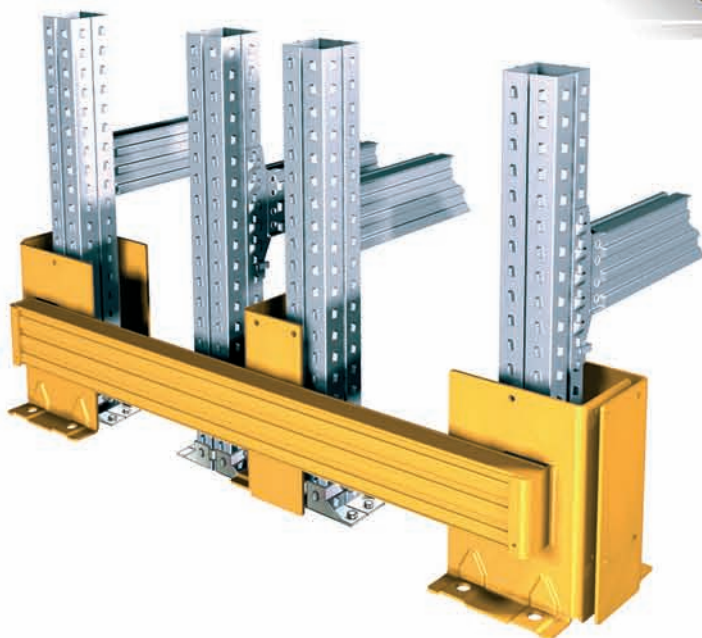
**14** Double frame protector  
H = 600 mm



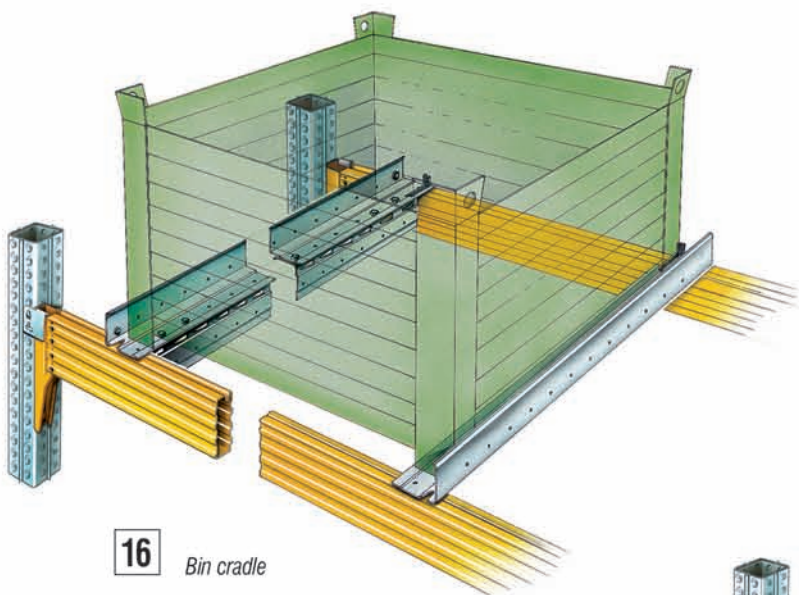
**15** External steel impact dampener



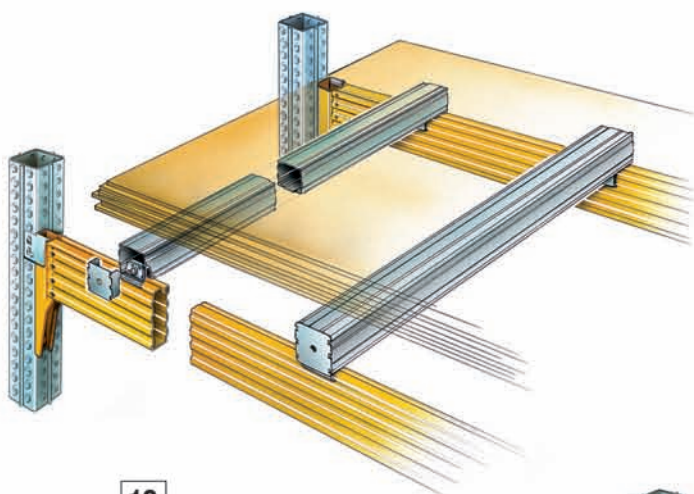
**14** Double frame protector  
H = 300 mm



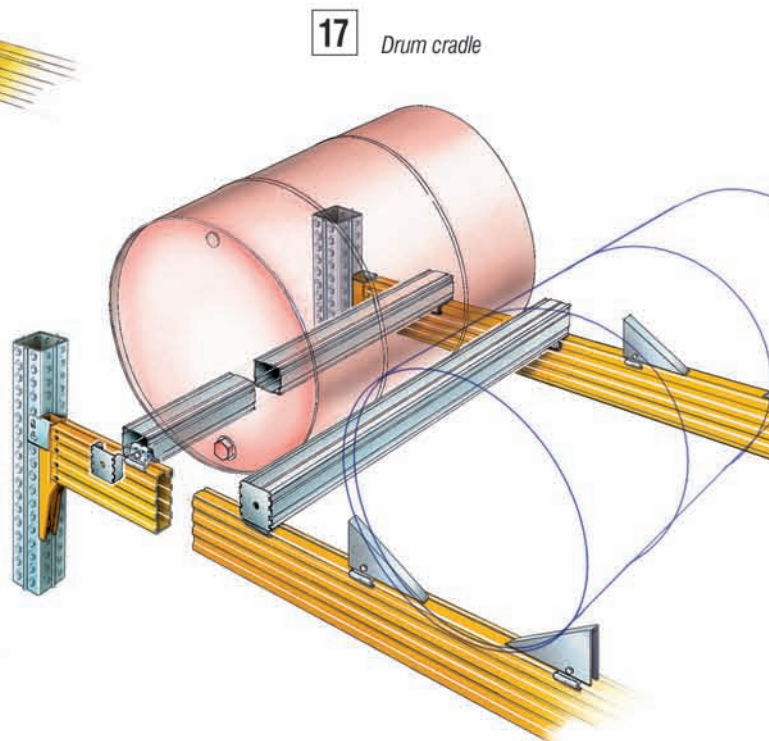




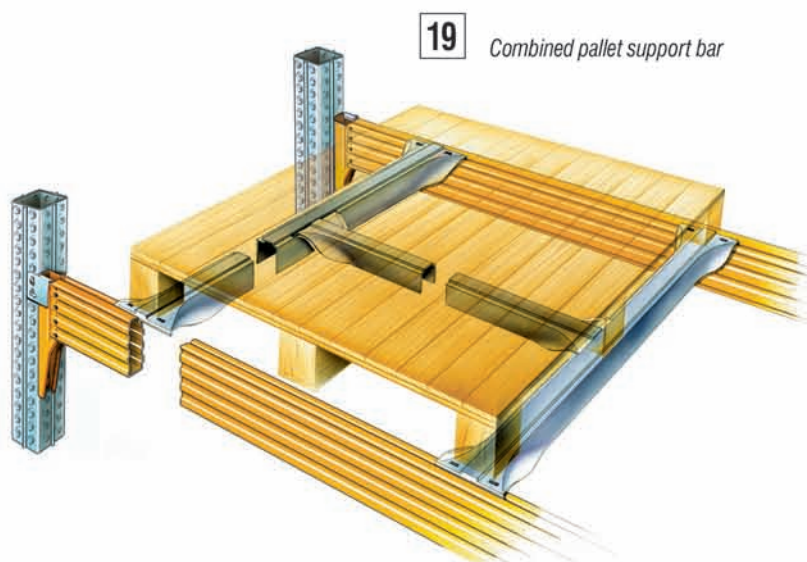
**16** *Bin cradle*



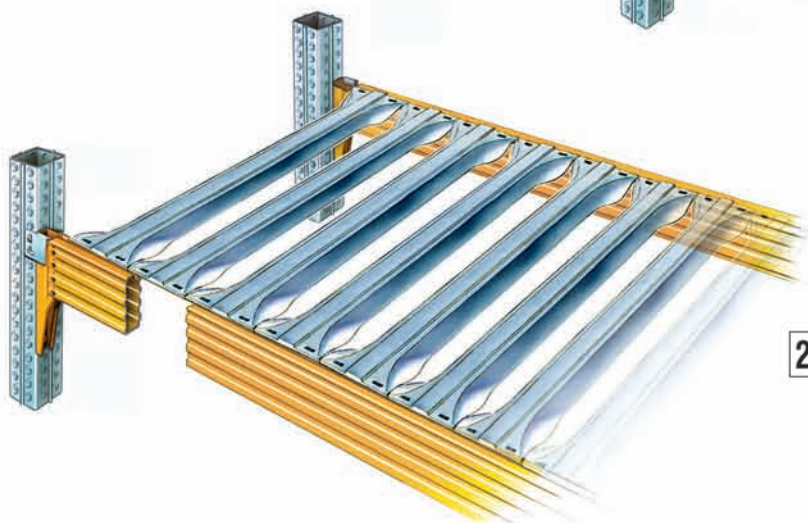
**18** *Raised pallet support bar*



**17** *Drum cradle*



**19** *Combined pallet support bar*



**20** *Lightened secondary beams  
(for use in installations equipped  
with sprinkler system  
(shelf surface with coverage <50%))*

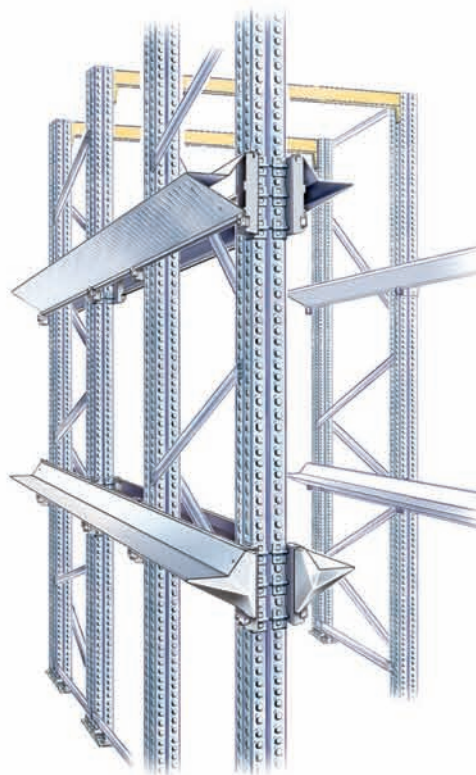


## DRIVE-IN

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 installations are possible: DRIVE-IN or DRIVE-THROUGH.

For a correct assembly of DRIVE-IN structures, customers should always refer to the assembly instructions of the SUPER 4-5-6 Technical Handbook.



**21** Entrance crescent for DRIVE-IN guide rails



**22** Pallet located on the guide rail / stub arms



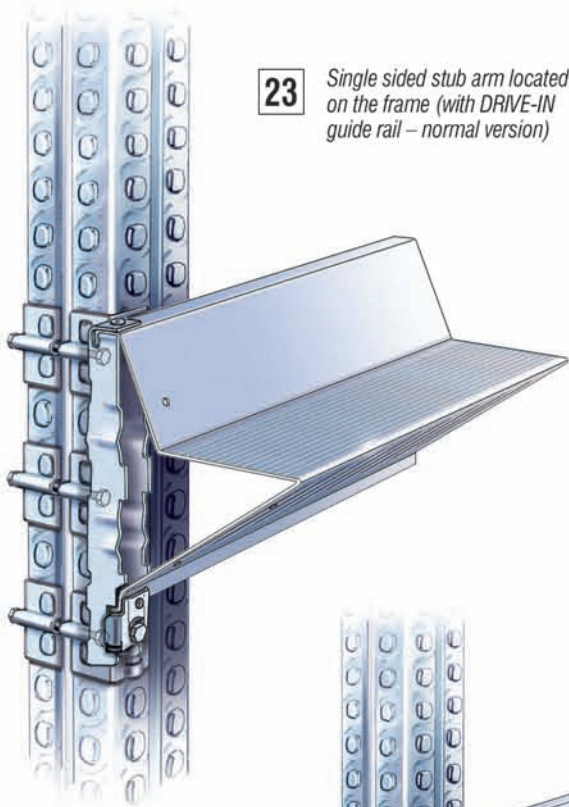




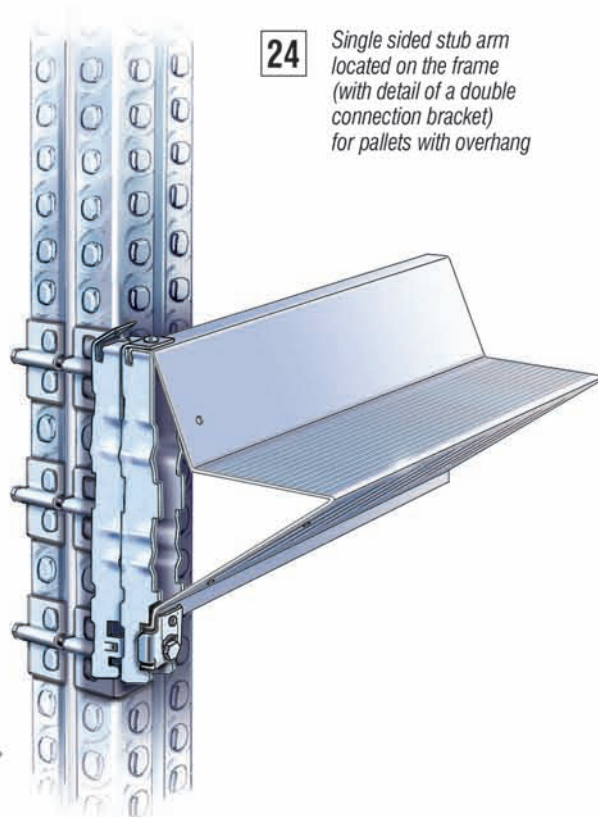




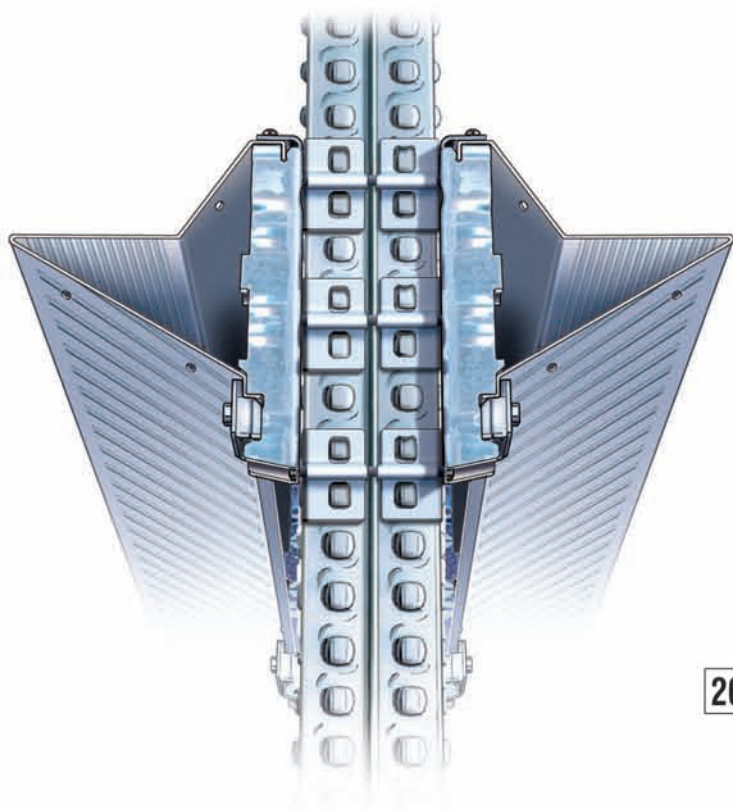
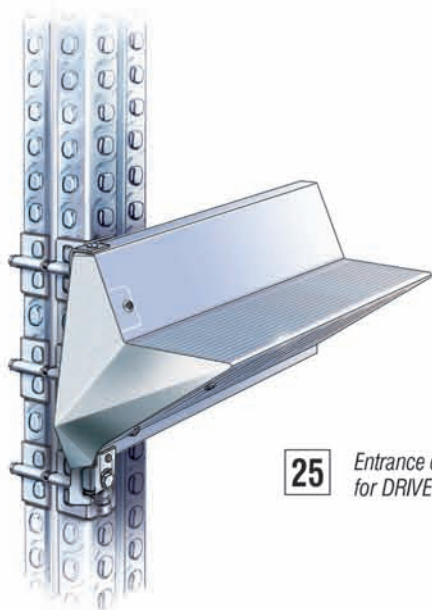
**23** Single sided stub arm located on the frame (with DRIVE-IN guide rail – normal version)



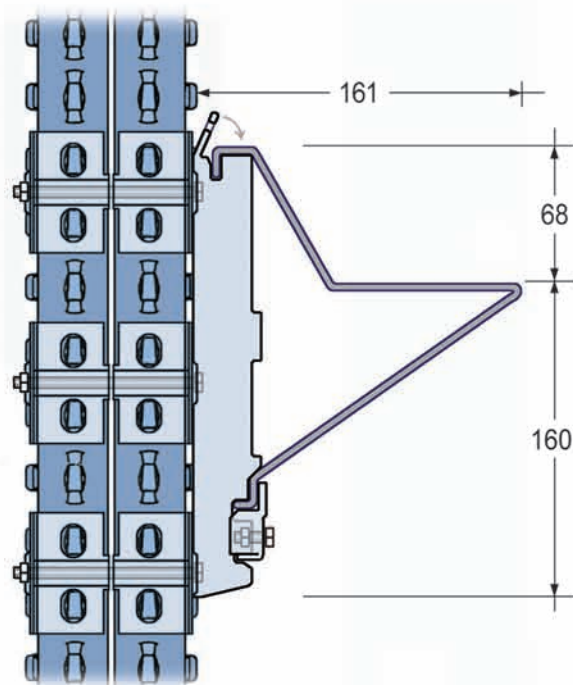
**24** Single sided stub arm located on the frame (with detail of a double connection bracket) for pallets with overhang



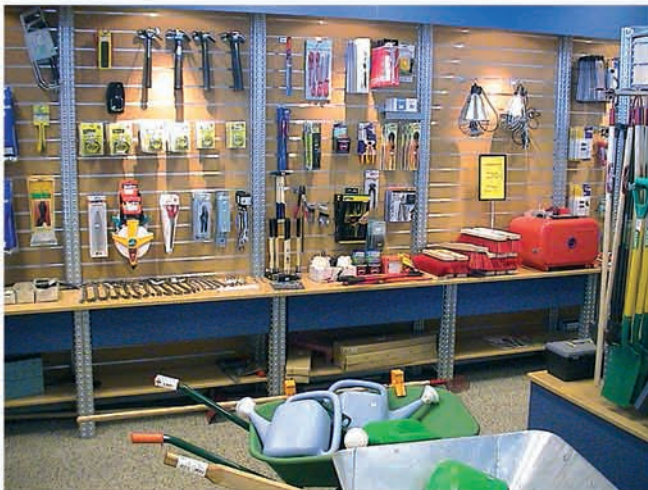
**25** Entrance crescent for DRIVE-IN guide rail (detail)



**26** Double sided stub arms located on the frame





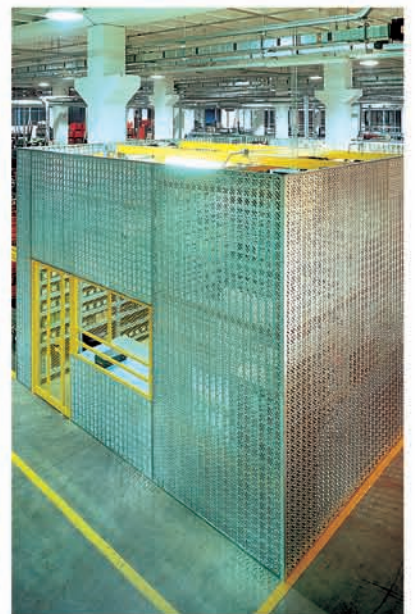


**Thanks to its attractive high-tech design,** SUPER 4-5-6 racking is pleasing to the eye and can provide excellent solutions for the retail and shopfitting sector. It is ideally suited for both the food and non-food areas within large sales surfaces.









Due to the 4-sided upright design with 8 connection points along its four faces, the SUPER-6 series is ideally suited for the construction of platforms, two-tier and multi-tier installations, providing additional storage surface. SUPER-6 installations are accessorised modular structures that can be tailored to the specific requirements of the customers.











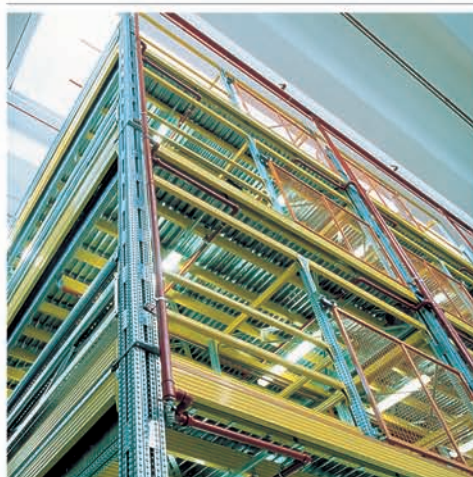




**METALSISTEM**



FEM section X



SUPER 4 / 5 / 6

MODULAR STEEL STORAGE SYSTEMS

**METALSISTEM**  
SISTEMI E STRUTTURE PER IL MAGAZZINO

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