

UNIBUILD

TECHNICAL MANUAL



Revision 12 – 16.11.2020

UNI EN 15512 STANDARD
CE MARKING OF STRUCTURAL COMPONENTS

METALSISTEM[®]

UNIBUILD

DIMENSIONS AND UNITS OF MEASUREMENT

This technical manual adopts SI (International System) standard units of measurement. Metalsistem S.p.A. uses this standard of measurement for all its documents. All dimensions shown in this document are subject to production tolerances.

-	Force	Newton	(N)	(10N=1daN≈1Kg)
-	Length	millimeters	(mm)	

CLIENT SATISFACTION

Internet site
www.metalsistem.com

We will be pleased to receive any comments regarding the Metalsistem product described in this document on the Metalsistem portal www.metalsistem.com.

REFERENCE DOCUMENTATION

REFERENCE DOCUMENTATION	
Code	Document Title
MUM01	Heavy Duty Pallet Racking, Drive-In and Mezzanine Operating and Maintenance Manual
MT07	Pallet Racking Accessories Technical Manual

REVISION LIST

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REVISIONS

Rev.	Description	Author	Date
06	Updated UNI EN 15512 reference standards Revised beam and frame load bearing capacity tables Revised bracing chapter Inserted special configuration section	David Terzi Arturo di Gioia	07/2014
07	Updated baseplate codes Correction of typos and minor changes to ch. 1	Arturo di Gioia	11/2015
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09	Replaced 140/3 beams with 140/33 beams	David Terzi	05/2019
10	Inserted 172/5 load bearing capacity and code tables	David Terzi	06/2019
11	Unbraced frame LBC for L=3600mm beams	Arturo di Gioia	05/2020
12	General revisions to paragraph 1 and to the document Replaced 106/3 beams with 106/33 beams	David Terzi	11/2020



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1

CALCULATION, SAFETY AND INSTALLATION STANDARDS

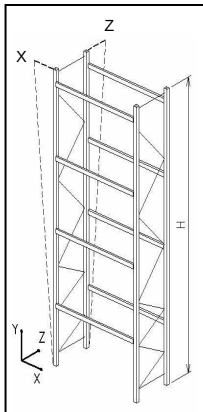


Fig. 1.1

Racking alignment



Fig. 1.2

Order codes for various sign plaques can be found in the "Pallet Racking Accessories Technical Manual", code MT07



Fig. 1.3

CISI
Italian Manufacturers of Industrial Racking (FEM-RANDS member)

AISEM
Associazione italiana sistemi di sollevamento, elevazione e movimentazione (FEM Member)

ANIMA
Confindustria - meccanica varia

A products' correct technical application and its visual appearance distinguishes both the customer and the manufacturer. METALSISTEM recommends that customers apply the maximum diligence in the application and use of the product in strict conformity with the prescriptions and characteristics shown in this manual. The design and assembly of installations must be carried out by qualified expert personnel. METALSISTEM declines all liability for improper use of the product or use that is not specifically authorized.

a) Scope

This manual applies to class 400 (wide and narrow aisle without automation) and class 300 (very narrow aisle without automation) pallet racking installations as defined by UNI EN 15620 standard. Installations in classes other than those described in this manual require additional engineering conducted by the METALSISTEM technical department.

b) Suitability of floor slabs

Before commencing any installation, the suitability of the floor slab must be checked. The customer must provide the necessary data to perform this assessment.

The flatness of the floor slab: must be checked, taking into account the dimensions, the intended use and the load bearing capacity of the installation.

Unless otherwise expressly mentioned, the floor tolerances shall be in accordance with UNI EN 15620 Standard.

c) Clearances

The minimum installation operating tolerances and clearance of the installation from the building and its fixtures must be agreed with the customer, using UNI EN 15620 standard as reference.

d) Assembly

The rack must be erected by adequately trained and skilled personnel in conformity with national occupational and safety laws and the diagrams and indications in this technical manual and installation instructions. Special attention must be given to the tightening of bolts and the installation of all the safety devices, in compliance with the safety procedures and using suitable tools and PPE equipment commensurate with the activities to be carried out (refer also to "Metalsistem Heavy Duty Pallet Racking, Drive-In and Mezzanine Operating and Maintenance Manual", code MUM01). All activities must be in compliance with working environment, equipment and safety measures imposed by statutory legislation in the place of installation.

e) Rack alignment

The vertical plumb of the pallet racking frames must be checked along both the depth (Z) and length (X) directions. UNI EN 15620 standard states that, unless more restrictive tolerances have been specified, the maximum permissible deviation off both directions must not exceed H/350 for class 400 installations and H/500 for class 300 installations, where H represents the height of the uprights expressed in millimeters (Fig. 1.1). Refer to "Metalsistem Heavy Duty Pallet Racking, Drive-In and Mezzanine Operating and Maintenance Manual", code MUM01, for a more detailed tolerance explanation.

f) Safety signage and load bearing capacity plaques

Refer to the statutory regulations of the installation location for guide lines regarding the application of safety signage to installations. In Europe, the 92/58/EEC directive and its amendments provide the minimum requirements for the provision of safety and/or health signs at work.

It is mandatory to install the following minimum safety signs:

- Generic danger sign (shown for example in annex XXV of Italian legislative decree 81/08, consisting of an exclamation mark);
- Load bearing capacity plaques (required by the aforementioned legislation) in the form of an information sign. The load bearing capacity plates must be affixed in a visible position and must show the year of assembly as well as the frame series, its load bearing capacity, the beam pair load or shelf bearing capacity (uniformly distributed load), the unit load, the height of the first beam from ground and the number of levels (Fig. 1.2). For order codes of the load bearing capacity boards, refer to the "Pallet Racking Accessories Manual" MT07);

It is also advisable to provide:

- Emergency exit signs erected in conformity with the instruction of local authorities or fire consultant;
- Specific prohibitions and danger signs, if required.

g) Standard Safety Considerations for Racking

Frames must always be fastened to the floor slab with a minimum of two (2) M12 anchor bolts per upright. In applications where the frame height is greater than 5 times the frame depth for single side rows, or 10 times the frame depth in double side rows, the racking must be accessorized with portal ties or wall ties. Note that walls ties are possible only after confirmation of the walls structural adequacy which must be confirmed by the property owner prior to their application. It is strictly prohibited to tie to walls in seismic areas.



Double side frames are defined as a pair of frames placed one behind the other and connected by pairs of adequately dimensioned spacer bars placed at the connection points of the frame diagonal spacer bars or however never more than 2000 mm apart.

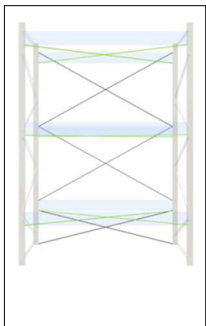


Fig. 1.4

The use of portal ties may be avoided in single entry runs if the following instructions are applied.

For frame base to height ratios:

- Up to 1:5 : Standard frame bracing
- Between 1:5 and 1:6 : Frame with 8 short diagonal spacer bars
- Between 1:6 and 1:7 : Frame with 8 short diagonal spacer bars
 - : Maximum bay length of 2720mm with
 - : 20% reduction in the admissible frame load bearing capacity for unbraced rows.
 - : 10% reduction in the admissible frame load bearing capacity for braced rows.

Upright protection must be provided to all frames subjected to the risk of collision by material handling equipment (refer to "Pallet Racking Accessories Manual", code MT07).

METALSISTEM will not be held liable for injuries or losses due to improper installation and/or use.

h) Reference standards

The structural calculation reference standard are:

- UNI EN 15512:2009 "Steel static storage systems - Adjustable pallet racking systems - Principles for structural design";
- UNI EN 15620:2009 "Steel static storage systems - Adjustable pallet racking - Tolerances, deformations and clearances";
- UNI EN 1993-1-1:2015 "Eurocode 3 - Design of steel structures - Part 1-3: General rules and rules for buildings";
- UNI EN 1993-1-3:2007 "Eurocode 3 - Design of steel structures - Part 1-3: General rules - Supplementary rules for cold-formed members and sheeting";
- UNI EN 1993-1-8:2005 "Eurocode 3 - Design of steel structures - Part 1-8: Design of joints".

Materials reference standards:

- UNI EN 10346:2015 "Continuously hot-dip coated steel flat products - Technical delivery conditions";
- UNI EN 10149-1:2013 "Hot-rolled flat products made of high yield strength steels for cold forming. General delivery conditions";
- UNI EN 10149-2:2013 "Hot-rolled flat products made of high yield strength steels for cold forming. Delivery conditions for thermomechanically rolled steels";
- UNI EN 10204:2005 "Metallic products - Types of inspection documents (3.1 certificate)".

Other reference standards:

- UNI EN 15635:2009 "Steel static storage systems - Application and maintenance of storage equipment";
- UNI EN 1090-1:2018 "Execution of steel and aluminium structures - Part 1: Requirements for conformity assessment of structural components";
- UNI EN 1090-2:2018 "Execution of steel and aluminium structures - Part 2: Technical requirements for steel structures";
- ACAI-CISI testo unico del 11/05/2004: "Technical standards for pallet racking";
- ACAI-CISI testo unico del 26/02/2004: "Self certification regulations".



Fig. 1.5

METALSISTEM laboratory
equipment:
Tensile testing machine
(100000 N capacity)

i) Structural component testing

The structural design is based on results derived from laboratory testing conducted by the Department of Mechanical and Structural Engineering at the University of Trento, Italy, and by the laboratories of METALSISTEM Research Centre

j) Structural analysis

The structural design has been conducted using the finite element method with ANSYS, STRAUSS7 and IT.RACKS! software, in compliance with the indications of UNI EN 15512 standard.

k) Beam pair load bearing capacities

The beam pair load bearing capacities have been calculated using the following assumptions:

- Uniformly distributed load;
- resistance and stability checks in accordance with UNI EN 15512 standard, with material factors $\gamma_{M,0} = \gamma_{M,1} = 1,1$; $\gamma_{M,2} = 1,25$;
- beam pair safety coefficient of at least 2 respect to collapse;
- maximum deflection of 1/200 of the beam length;
- mandatory installation of safety pins to beams;
- specific conditions listed under the load bearing capacity tables.

The load bearing capacities of the beams are based on the use of Euro pallets in a good conditions.

l) Frame load bearing capacities

The tables contained in Section 9 of this manual are used to find the frame series that match the load demands of a pallet racking installation as a function of the height from ground of the first pair of beams (first loading level), the beam series, the length of the beam and of the height of the frame.

These tables are applicable to pallet racking with:

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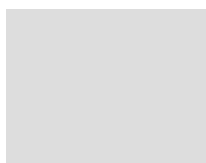


Fig. 1.6

Raw material:
Galvanized
structural steel
coils

- A distance between levels equal to or less than the height of the first beam from ground;
- an equal load acting on all levels;
- permissible sway (movement) deformation in accordance with UNI EN 15620 limits for Class 300 and Class 400 pallet racking;
- resistance and stability checks according to UNI EN 15512 standard, with material factors $\gamma_{M,0} = \gamma_{M,1} = 1,05$; $\gamma_{M,2} = 1,25$;
- every upright anchored to ground with a minimum of two (2) anchor bolts;
- compliance with the specific conditions listed under the load bearing capacity tables.

Given that the load bearing capacity of the frame is also dependent from other factors (height of beam from ground equal to or more than the centre distance between the bay beams, frame base to height ratio, seismicity of the area, environmental factors such as vibrations, atmospheric conditions, etc) contact Metalsistem Technical Offices regarding doubts concerning non-standard applications, large or complex installations requiring optimization, or structural controls for specific solutions.

The frame load bearing capacities have been determined considering horizontal forces induced by imperfections as defined by UN EN 15512 standard. Horizontal forces due to wind, vibrations, impact, seismic activity or other have not been considered. If these conditions apply, contact Metalsistem Technical Office.

EN15512 Standards applies material factors which may vary between the European member states with $\gamma_{M,0}$ values ranging from 1.0 to 1.1. Metalsistem frame load bearing capacity tables have been determined using a $\gamma_{M,0}$ value of 1.05. Clients of member states which apply different $\gamma_{M,0}$ values shall contact Metalsistem Technical Office.

m) Installation environment, use and maintenance of the product

The load bearing capacities and the surface finish of the materials are based on use of the racking in indoor non-aggressive environments. Use of the racking outdoors or in environments with high risk of corrosion will automatically invalidate the warranty of surface finishes. If the racking is to be installed outdoors, it is mandatory to consult the METALSISTEM Technical Department.

For guidelines regarding the normal use of the shelving and the periodic checks of its components required by UNI EN 15635 standard, refer to "Metalsistem Heavy Duty Pallet Racking, Drive-In and Mezzanine Operating and Maintenance Manual", code MUM01.

n) Bracing

The bracing system, composed of a bracing tower or by cross bracing, its frame connection accessories and horizontal cross bracing components, is a structural element which limits the movement of the racking and guarantees its global stability. This system is designed to absorb the horizontal forces caused by out of plumb imperfections and by storage and retrieval of goods as defined by UNI EN 15635 standard.

o) Raw material

The mechanical properties of the high tensile structural steel entering METALSISTEM production are guaranteed by accompanying 3.1 certificate (UNI EN 10204).

Depending on the structural relevance of the components, the materials employed have characteristics ranging between S315 and S355 for pickled steels and between S280 and S400 for galvanized steels (in compliance with UNI EN 10149 and with UNI EN 10346 respectively).

The surface treatment of the structural steels may either be hot dip galvanized with "SENDZIMIR" process or powder coated pickled steel..

p) Bolted assemblies

The national standards or local regulations covering the installation may require, depending on the intended use, the application of CE certified bolts. The EN 15048-1 standard is the reference for CE certified bolted joints.

CE marked bolts come in a single package containing both the bolts and nuts. METALSISTEM has, in its price list, a selection of CE certified bolts that can be used in place of the standard bolts.

The full list of bolts available in the METALSISTEM price list is contained in the "Pallet Racking Accessories Technical Manual", code MT07.

q) Anchoring

The standard anchoring method which METALSISTEM provides for static conditions, in absence of seismic actions, considers expansion anchor bolts which are CE marked according to ETAG 001 Annex C – Option 7.

Alternative anchor bolts, which may be used for specific load or assembly conditions, are available for order.

Independent of the adopted anchor bolt, METALSISTEM requires that all anchor bolts are set in strict conformity with the anchor bolt manufacturer instructions so that the quality of the connection is not compromised.

Contact METALSISTEM technical office for further indications

r) Fire protection

Consult the "Metalsistem Heavy Duty Pallet Racking, Drive-In and Mezzanine Operating and Maintenance Manual", code MUM01, for information regarding reaction and resistance to fire of components and assemblies for standard pallet racking applications.

It is the responsibility of the racking designer to verify with the customer any possible clearance needs deriving from integration requirements with fire protection systems

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s) Controls

The raw material entering production sustains ongoing testing by Metalsistem internal Quality Control Department. The tests confirm the mechanical properties (elongation, yield, rupture), dimensional characteristics (gauge and width) surface finish (absence of defects, uniformity, resistance of coating). Metalsistem has its own internal testing facilities able to conduct SIT (Servizio di Taratura in Italia) certified tensile tests (approx. 1000 per year), dimensional tests and performance tests (stub column, beam end connector stiffness, shear and deflection) on finished product. Salt spray, scratch resistance and other tests are conducted by external facilities.

Testing of finished products are conducted by the internal Metalsistem Quality Control Office. The system certifying agency RINA guarantees consistent product quality

t) Certifications

Metalsistem production has been certified by the following international standards:

- | | |
|--|---|
| -- Structural steel fabrication center | - production workshop no. 753/10; |
| -- ISO 14001 | - Environmental management system; |
| -- ISO 9001 | - Quality management system; |
| -- BS OHSAS 18001 | - Occupational Health and Safety Management System; |
| -- CISI | - quality and safety mark; |
| -- AEO FULL | - Authorized Economic Operator; |
| -- UNI EN ISO 3834 | - Qualified fusion welding process; |
| -- EN 1090-1 | - Certificate of conformity assessment of structural components |

u) Non Standard applications

For non-standard solutions and/or calculations, contact the METALSISTEM technical department.

METALSISTEM reserves the right to make any changes to the product it deems to be appropriate at any time.

v) Safety apparel

The purchaser is responsible to determine the type, locations, and needs of the safety equipment to be fitted to the installation (e.g.: upright and frame protection, floor guide rails, protections against the falling of stored goods, walkway protection and covers, seismic design) to mitigate the risks connected to the usage conditions of each specific installation. The vendor shall inform the purchaser of the available solutions and products, in order to correctly and knowingly choose the most suitable safety apparel based on their need. Nevertheless it is the responsibility of the end user to verify the conformity of the installation with the evolution of safety and functional requirements that may occur during the service life of the installation.

2

DIMENSIONING

2.1

PALLET RACKING LOAD BEARING CAPACITY PROCEDURE

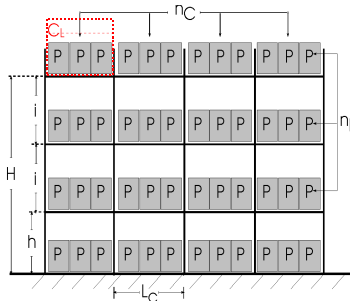


Fig. 2.1

The load bearing capacity of a pallet racking installation is derived from the combined performance of frames and beams and their geometric disposition as well as the loading requirements of the installation. The optimised solution is therefore obtained through a process of iteration during which the bay design is refined.

A) GATHER PROJECT DATA

The designer must have the following information

- P = Unit load
- n_P = number of pallets per pair of beams
- L_C = clear beam span
- n_L = number of levels (excluding ground)
- n_C = number of bays
- h = height of first level
- I = centre distance between beam levels
- H = final beam level height
- P_s = frame depth

Other Definitions

- C_L = Load per level
- S_S = Base to height ratio
- C_S = Frame load

B) PAVEMENT ADEQUACY CHECK

Obtain confirmation from the client that the pavement is suited for the pallet racking installation, its geometry and loads.

C) BEAM SIZING

The following procedure is used for the selection for the beam section:

Calculate the load per pair of beams:

$$C_L (\text{load per level}) = P \times n_P$$

Refer to the GREEN tables, when applying the beams to UNIBUILD 150/170/180 frames, or to the BLUE tables, when applying the beams to UNIBUILD 200/220/300 frames, of Section 9:

The beam is selected as a function of L_C , C_L and P, ensuring that the unit load limit is respected. In the first instance the GREEN tables are applied. If a satisfactory result is not obtained, the BLUE tables are applied.

D) FRAME SIZING

The following procedure is used for the selection of the frame:

Calculate the frame base to height ratio

$$S_S (\text{base : height ratio}) = H / P_s$$

Consult paragraph 4.3 to assess the base to height ratio. If required, act on the frame configuration and apply the load bearing capacity reduction.

Calculate the load acting on the frame

$$C_S (\text{frame load}) = C_L \times n_L$$

Refer to all notes contained in Section 8 "PALLET RACKING FRAME AND BEAM LOAD BEARING CAPACITY NOTES". After considering this section, proceed to the load bearing capacity tables.

Consistency must always be maintained when selecting the series of frame and beam load bearing capacity tables. If, for example the BLUE table series has been selected for the beams, the frames too must be selected from the BLUE tables.

The frame load bearing capacity tables are divided by, upright series and height, beam profile section and length as well as unbraced, partially braced or fully braced row configurations.

In the same way that the beam selection is limited by the load unit, some frames are also limited by the maximum load per pair of beams. After checking this limit, select the frame most suited to the beam section and length in an unbraced, partially braced or fully braced row configuration.

Repeat steps C and D with alternative beam and upright profiles, eventually moving between the GREEN and BLUE table series, to assess their impact on the bay configuration.

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2.2

PALLET RACKING DIMENSIONING EXAMPLE

1500	1500	1500
1500	1500	1500
1500	1500	1500
1500	1500	1500
1500	1500	1500
1500	1500	1500
1500	1500	1500

Fig. 2.2

INPUT DATA

$P = 1200 \text{ daN};$
 $n_P = 3;$
 $L_C = 2700 \text{ mm};$
 $n_L = 6 \text{ (excluding ground);}$
 $n_C = 3;$
 $h = 1000 \text{ mm};$
 $i = 1000 \text{ mm};$
 $H = 6000 \text{ mm};$
 $Ps = 1100 \text{ mm}.$

BEAM SIZING

$$C_L (\text{load per level}) = P \times n_P = 3600 \text{ daN}$$

Taking the first step of a process of iteration we examine the GREEN series of beam load bearing capacity tables. As a result of this process we select the 140/4 beam from table 9.2 of paragraph 9.2.

FRAME SIZING

This pallet rack does not have a beam on ground. For the purposes of this example we choose not to brace.

Calculate the base to height ratio

$$S_s (\text{base : height ratio}) = H / Ps = 5.5$$

As the ratio is between 1:5 and 1:6, following the notes of paragraph 4.3, we proceed with the application of the 8 short diagonal frame bracing configuration with the standard frame load bearing capacity table.

Calculate the frame load

$$C_s (\text{frame load}) = C_L \times n_L = 21600 \text{ daN}$$

As the GREEN (UNIBUILD 150/170/180) load tables were used for the beams, the same is used for the frame load bearing capacities. From Section 9.2:

1. after examining the frame load bearing capacities, table B-2 is found to satisfy the requirements of this bay configuration;
2. in table C-2, go to the H=6000 frame height group of columns and follow the intersection between the 1000mm beam height and the 2700mm length;
3. here a frame load of 23300 daN is obtained;
4. therefore the installation requirements are satisfied with the selection of a UNIBUILD 170 frame.

Note: If the first approach gave unsatisfactory results, the iteration process would have continued by examining alternative solutions; such as:

- a) exploring the partially braced or fully braced portions of the frame load bearing capacity table;
- b) examining all upright series with varying beam sections (106 or 140 riveted or welded connectors).
- c) examining the BLUE category of the UNIBUILD beam and frame load bearing capacity tables;

The dimensioning of the pallet racking bay is optimised only after having examined the above 3 steps.

B-2		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 170 - RIVETED 140 BEAM											
GREEN table	H frame = 6000 mm Lc=1800 Lc=2400 Lc=2700 Lc=3300	H frame = 8000 mm Lc=1800 Lc=2400 Lc=2700 Lc=3300				H frame = 10000 mm Lc=1800 Lc=2400 Lc=2700 Lc=3300				PARTIALLY BRACED BAYS		FULLY BRACED BAYS	
		1800	2400	2700	3300	1800	2400	2700	3300	1800	2400	1800	2400
800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
1000	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
1200	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
1400	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
1600	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
1800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
2000	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
2200	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
2400	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
2600	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
2800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800
3000	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800	23800

Frame load bearing capacity table extract.

UNIBUILD

3

UNIBUILD BEAMS



Fig. 3.1

The beams are box sections of variable thickness with riveted or welded brackets at either end. A channel running along the top face of the beam provides a lip within which a variety of accessories such as shelf panels, secondary beams, drum cradles, and other applications may be inserted (Refer to Pallet Racking Accessories Manual, code MT07).

Metalsistem's unique beam to upright connection has a series of distinctive features, including:

- optimised performance through double faced upright connection;
- beams available in a standard galvanised finish;
- the cone shaped connection enables the joint to increase in stiffness as the load is increased.

The tabled load bearing capacities refer to applications using wooden Euro pallets in a good and sufficiently rigid state of repair. The load must be stable and suited to the pallet racking installation. Disposable pallets or pallets of poor quality (not euro pallets) may only be used in conjunction with secondary beams or shelf panels.

3.1

NOTES ON THE UNIBUILD BEAM POWDER COATING

UNIBUILD beams are available in the following colour range:

STANDARD COLOURS:



Fig. 3.2

The two figures following the decimal point in the Metalsistem component codes indicate the articles finish. Therefore a XXX.G1 code refers to an article that is powder coated yellow RAL1004.

The Metalsistem list price presents all powder coated items with the ".G1" as a default finish. If any of the alternative standard finishes are required (blue RAL5010 or red RAL3000), these may be noted in the product code line of the M.O.R.S. system.

In addition to the standard colour range, other colours of the RAL scale are also available with the application of a one off surcharge.

The powder coating process follows the steps listed below:

- Hot wash degreasing and iron phosphate pre-treatment;
- Application of powder thermal setting paint;
- Curing temperature of approximately 240°C with a force ventilated air circulation oven.

This process and the intrinsic characteristics of the powder coating paints impart excellent adhesion and chemical stability to the finished surface. Therefore these surfaces have elevated resistance to knocks and abrasions, and preserve shine and colour if maintained in internal environments.

All colours are ecological, containing only organic pigments. No lead based pigments are used.

Powder coating resistance: In order to select the most appropriate product, consult the Metalsistem Technical offices should there be a necessity to place the pallet racking in aggressive environments (subject to external environment, acids, refrigerated cells etc).

Finish code extensions used by METALSISTEM

Galvanized	.95
Eletrolytically Galvanized	.20
Raw material	.00
Painted (also .B1, .R1 etc)	.G1
Specific material Finish (plastics, macrocodes etc)	.98

UNIBUILD

3.2

UNIBUILD BEAM SAFETY PINS



Riveted beam safety pin
code CP210030.95

Fig. 3.3

IMPORTANT: THE USE OF 2 SAFETY PINS PER BEAM IS MANDATORY

In conformity with the indications of the standards, beams with riveted double sided connectors must use only the Riveted Beam Safety Pin (code CP210030.95) while the welded single sided connectors must use the SPACC003.95 safety pins. The correct use of the safety pins guarantee the technical characteristics described in this manual.

The riveted beam safety pins deform when positioned. Their substitution is therefore advisable should beams be relocated.



Welded beam safety pin
code SPACC003.95

Fig. 3.4

CODE	DESCRIPTION
CP210030.95	RIVETED BEAM SAFETY PIN UB/SB/SBO
SPACC003.95	WELDED BEAM SAFETY PIN UB/SB/SBO

Tab. 3.1

3.3

MINIMUM BEAM HEIGHT FROM GROUND

Table 3.2 shows the minimum height from ground of a beam in a Unibuild installation.

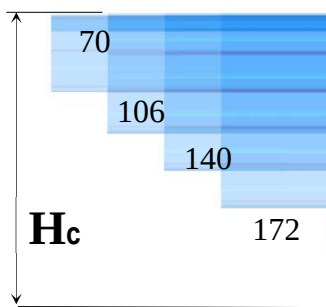


Fig. 3.5

MINIMUM BEAM HEIGHT FROM GROUND		
PROFILE HEIGHT	H _c (mm) Riveted	H _c (mm) Welded
70 BEAM		224
106 BEAM	221	224
140 BEAM	221	224
172 BEAM		274

Tab. 3.2

3.4

UNIBUILD BEAM CODES

Two separate code table categories differentiated by beam connector have been developed. These have been colour coded for clarity. The code tables and load bearing capacity table categories refer to the same colour coding system within them. ie:

- Orange load tables = riveted galvanised beams (I22, I33, I4, I44, I5, I6);
- Red load tables = welded beams (I4, I44, I5, I6);

The riveted and welded beam load bearing capacity tables have been divided into two groups. These groups tailor the beam load bearing capacity to the upright section and are colour coded GREEN for the UNIBUILD150/170/180 frames and BLUE for the UNIBUILD 200/220/300 frames. Refer to Sections 8 and 9 for the application of these tables.

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UNIBUILD

3.5

UNIBUILD RIVETED GALVANISED BEAM CODES

		CODE TABLE - TYPE :RIVETED CONNECTOR BEAMS FINISH :GALVANISED									
- Beams assembled with CP210030.95 code safety pins											
Profile Version	106/22	106/33	106/4	106/44	106/5	106/6	140/33	140/4	140/44	140/5	140/6
Maximum Unit Load	400 daN Unit load	1100 daN Unit load	1200 daN Unit load	1350 daN Unit load	1500 daN Unit load	1800 daN Unit load	1050 daN Unit load	1200 daN Unit load	1350 daN Unit load	1500 daN Unit load	1800 daN Unit load
Lc Beam Length	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code
1200	RU150138.95	RU150216.95	RU150014.95	RU150107.95	RU150026.95	RU150038.95	RU150201.95	RU150062.95	RU150118.95	RU150074.95	RU150086.95
1500	RU150139.95	RU150218.95	RU150015.95	RU150108.95	RU150027.95	RU150039.95	RU150202.95	RU150063.95	RU150119.95	RU150075.95	RU150087.95
1800	RU150140.95	RU150219.95	RU150016.95	RU150109.95	RU150028.95	RU150040.95	RU150203.95	RU150064.95	RU150120.95	RU150076.95	RU150088.95
2000	RU150141.95	RU150220.95	RU150017.95	RU150110.95	RU150029.95	RU150041.95	RU150204.95	RU150065.95	RU150121.95	RU150077.95	RU150089.95
2100	RU150142.95	RU150221.95	RU150018.95	RU150111.95	RU150030.95	RU150042.95	RU150205.95	RU150066.95	RU150122.95	RU150078.95	RU150090.95
2200	RU150143.95	RU150222.95	RU150019.95	RU150112.95	RU150031.95	RU150043.95	RU150206.95	RU150067.95	RU150123.95	RU150079.95	RU150091.95
2300	RU150190.95	RU150223.95	RU150192.95	RU150193.95	RU150194.95	RU150195.95	RU150207.95	RU150197.95	RU150198.95	RU150199.95	RU150200.95
2400	RU150144.95	RU150224.95	RU150020.95	RU150113.95	RU150032.95	RU150044.95	RU150208.95	RU150068.95	RU150124.95	RU150080.95	RU150092.95
2700	RU150145.95	RU150225.95	RU150021.95	RU150114.95	RU150033.95	RU150045.95	RU150209.95	RU150069.95	RU150125.95	RU150081.95	RU150093.95
3000	-	-	RU150022.95	RU150115.95	RU150034.95	RU150046.95	RU150210.95	RU150070.95	RU150126.95	RU150082.95	RU150094.95
3300	-	-	RU150180.95	RU150181.95	RU150182.95	RU150183.95	RU150211.95	RU150185.95	RU150186.95	RU150187.95	RU150188.95
3500	-	-	RU150023.95	RU150116.95	RU150035.95	RU150047.95	RU150212.95	RU150071.95	RU150127.95	RU150083.95	RU150095.95
3600	-	-	RU150129.95	RU150130.95	RU150131.95	RU150132.95	-	RU150133.95	RU150134.95	RU150135.95	RU150136.95
4000	-	-	RU150024.95	RU150117.95	RU150036.95	RU150048.95	-	RU150072.95	RU150128.95	RU150084.95	RU150096.95
Special	RU150137.95	RU150215.95	RU150098.95	RU150105.95	RU150099.95	RU150100.95	RU150213.95	RU150102.95	RU150106.95	RU150103.95	RU150104.95

Lc : beam length expressed in millimetres

Tab 3.3

 : MANDATORY USE OF DIAGONAL STRUTS

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UNIBUILD
3.6
UNIBUILD RIVETED GALVANISED, PAINTED BEAM CODES

		CODE TABLE - TYPE :RIVETED CONNECTOR BEAMS FINISH :GALVANISED + POWDER COATING - Beams assembled with CP210030.95 code safety pins								 Beam Safety Pin CP210030.95	
Profile Version	106/22	106/33	106/4	106/44	106/5	106/6	140/33	140/4	140/44	140/5	140/6
Maximum Unit Load	400 daN Unit load	1100 daN Unit load	1200 daN Unit load	1350 daN Unit load	1500 daN Unit load	1800 daN Unit load	1050 daN Unit load	1200 daN Unit load	1350 daN Unit load	1500 daN Unit load	1800 daN Unit load
Lc Beam Length	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code
1200	RU150138.G1	RU150216.G1	RU150014.G1	RU150107.G1	RU150026.G1	RU150038.G1	RU150201.G1	RU150062.G1	RU150118.G1	RU150074.G1	RU150086.G1
1500	RU150139.G1	RU150218.G1	RU150015.G1	RU150108.G1	RU150027.G1	RU150039.G1	RU150202.G1	RU150063.G1	RU150119.G1	RU150075.G1	RU150087.G1
1800	RU150140.G1	RU150219.G1	RU150016.G1	RU150109.G1	RU150028.G1	RU150040.G1	RU150203.G1	RU150064.G1	RU150120.G1	RU150076.G1	RU150088.G1
2000	RU150141.G1	RU150220.G1	RU150017.G1	RU150110.G1	RU150029.G1	RU150041.G1	RU150204.G1	RU150065.G1	RU150121.G1	RU150077.G1	RU150089.G1
2100	RU150142.G1	RU150221.G1	RU150018.G1	RU150111.G1	RU150030.G1	RU150042.G1	RU150205.G1	RU150066.G1	RU150122.G1	RU150078.G1	RU150090.G1
2200	RU150143.G1	RU150222.G1	RU150019.G1	RU150112.G1	RU150031.G1	RU150043.G1	RU150206.G1	RU150067.G1	RU150123.G1	RU150079.G1	RU150091.G1
2300	RU150190.G1	RU150223.G1	RU150192.G1	RU150193.G1	RU150194.G1	RU150195.G1	RU150207.G1	RU150197.G1	RU150198.G1	RU150199.G1	RU150200.G1
2400	RU150144.G1	RU150224.G1	RU150020.G1	RU150113.G1	RU150032.G1	RU150044.G1	RU150208.G1	RU150068.G1	RU150124.G1	RU150080.G1	RU150092.G1
2700	RU150145.G1	RU150225.G1	RU150021.G1	RU150114.G1	RU150033.G1	RU150045.G1	RU150209.G1	RU150069.G1	RU150125.G1	RU150081.G1	RU150093.G1
3000	-	-	RU150022.G1	RU150115.G1	RU150034.G1	RU150046.G1	RU150210.G1	RU150070.G1	RU150126.G1	RU150082.G1	RU150094.G1
3300	-	-	RU150180.G1	RU150181.G1	RU150182.G1	RU150183.G1	RU150211.G1	RU150185.G1	RU150186.G1	RU150187.G1	RU150188.G1
3500	-	-	RU150023.G1	RU150116.G1	RU150035.G1	RU150047.G1	RU150212.G1	RU150071.G1	RU150127.G1	RU150083.G1	RU150095.G1
3600	-	-	RU150129.G1	RU150130.G1	RU150131.G1	RU150132.G1	-	RU150133.G1	RU150134.G1	RU150135.G1	RU150136.G1
4000	-	-	RU150024.G1	RU150117.G1	RU150036.G1	RU150048.G1	-	RU150072.G1	RU150128.G1	RU150084.G1	RU150096.G1
Special	RU150137.G1	RU150215.G1	RU150098.G1	RU150105.G1	RU150099.G1	RU150100.G1	RU150213.G1	RU150102.G1	RU150106.G1	RU150103.G1	RU150104.G1

Lc : beam length expressed in millimetres

Tab 3.4



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UNIBUILD
3.7
WELDED BEAM CODES

	CODE TABLE - TYPE :WELDED CONNECTOR BEAMS FINISH :POWDER COATED										 Beam Safety Pin SPACC003.95			
	Beams assembled with SPACC003.95 code safety pins													
Profile Version	70/4	70/5	106/4	106/44	106/5	106/6	140/4	140/44	140/5	140/6	172/5	172/6		
Maximum Unit Load	1200 daN Load Unit	1500 daN Load Unit	1200 daN Load Unit	1350 daN Load Unit	1500 daN Load Unit	1800 daN Load Unit	1200 daN Load Unit	1350 daN Load Unit	1500 daN Load Unit	1800 daN Load Unit	1350 daN Load Unit	1800 daN Load Unit		
Lc Beam Length	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code		
1200	RU160116.G1	RU160125.G1	RU160181.G1	RU160195.G1	RU160209.G1	RU160223.G1	RU160237.G1	RU160251.G1	RU160265.G1	RU160279.G1	RU160391.G1	RU160134.G1		
1500	RU160117.G1	RU160126.G1	RU160182.G1	RU160196.G1	RU160210.G1	RU160224.G1	RU160238.G1	RU160252.G1	RU160266.G1	RU160280.G1	RU160392.G1	RU160135.G1		
1800	RU160118.G1	RU160127.G1	RU160183.G1	RU160197.G1	RU160211.G1	RU160225.G1	RU160239.G1	RU160253.G1	RU160267.G1	RU160281.G1	RU160393.G1	RU160136.G1		
2000	RU160119.G1	RU160128.G1	RU160184.G1	RU160198.G1	RU160212.G1	RU160226.G1	RU160240.G1	RU160254.G1	RU160268.G1	RU160282.G1	RU160394.G1	RU160137.G1		
2100	RU160120.G1	RU160129.G1	RU160185.G1	RU160199.G1	RU160213.G1	RU160227.G1	RU160241.G1	RU160255.G1	RU160269.G1	RU160283.G1	RU160395.G1	RU160138.G1		
2200	RU160121.G1	RU160130.G1	RU160186.G1	RU160200.G1	RU160214.G1	RU160228.G1	RU160242.G1	RU160256.G1	RU160270.G1	RU160284.G1	RU160396.G1	RU160139.G1		
2300	RU160346.G1	RU160347.G1	RU160348.G1	RU160349.G1	RU160350.G1	RU160351.G1	RU160352.G1	RU160353.G1	RU160354.G1	RU160355.G1	RU160397.G1	RU160356.G1		
2400	RU160122.G1	RU160131.G1	RU160187.G1	RU160201.G1	RU160215.G1	RU160229.G1	RU160243.G1	RU160257.G1	RU160271.G1	RU160285.G1	RU160398.G1	RU160140.G1		
2700	RU160123.G1	RU160132.G1	RU160188.G1	RU160202.G1	RU160216.G1	RU160230.G1	RU160244.G1	RU160258.G1	RU160272.G1	RU160286.G1	RU160399.G1	RU160141.G1		
3000	-	-	RU160189.G1	RU160203.G1	RU160217.G1	RU160231.G1	RU160245.G1	RU160259.G1	RU160273.G1	RU160287.G1	RU160400.G1	RU160142.G1		
3300	-	-	RU160190.G1	RU160204.G1	RU160218.G1	RU160232.G1	RU160246.G1	RU160260.G1	RU160274.G1	RU160288.G1	RU160401.G1	RU160292.G1		
3500	-	-	RU160191.G1	RU160205.G1	RU160219.G1	RU160233.G1	RU160247.G1	RU160261.G1	RU160275.G1	RU160289.G1	RU160402.G1	RU160143.G1		
3600	-	-	RU160192.G1	RU160206.G1	RU160220.G1	RU160234.G1	RU160248.G1	RU160262.G1	RU160276.G1	RU160290.G1	RU160403.G1	RU160165.G1		
4000	-	-	RU160193.G1	RU160207.G1	RU160221.G1	RU160235.G1	RU160249.G1	RU160263.G1	RU160277.G1	RU160291.G1	RU160404.G1	RU160144.G1		
Special	RU160145.G1	RU160146.G1	RU160148.G1	RU160149.G1	RU160150.G1	RU160151.G1	RU160152.G1	RU160153.G1	RU160154.G1	RU160155.G1	RU160376.G1	RU160156.G1		

Lc : beam length expressed in millimetres

Tab 3.5

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UNIBUILD

4

UNIBUILD FRAMES

4.1

UNIBUILD 150/170/180/200/220/300 FRAME CODES

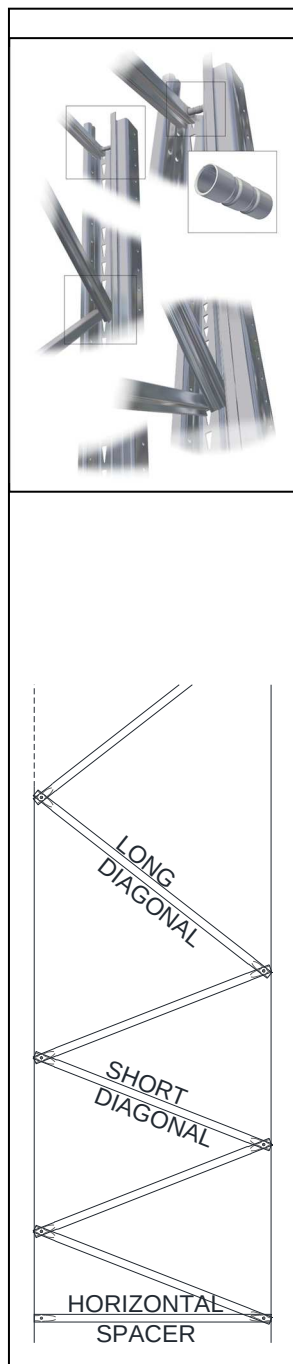


Fig. 4.1

The frame bracing components are roll formed structural steel profiles. These components are galvanised using the SENDZIMIR process.

HEIGHT (mm)	UNIBUILD 150 Cod.	UNIBUILD 170 Cod.	UNIBUILD 180 Cod.	UNIBUILD 200 Cod.	UNIBUILD 220 Cod.	UNIBUILD 300 Cod.	DEPTH (mm)
3000	UB11R001.95	UB11R199.95	UB11R397.95	UB11R595.95	UB11R793.95	UB11RA00.95	700
3500	UB11R002.95	UB11R200.95	UB11R398.95	UB11R596.95	UB11R794.95	UB11RA01.95	
4000	UB11R003.95	UB11R201.95	UB11R399.95	UB11R597.95	UB11R795.95	UB11RA02.95	
4500	UB11R004.95	UB11R202.95	UB11R400.95	UB11R598.95	UB11R796.95	UB11RA03.95	
5000	UB11R005.95	UB11R203.95	UB11R401.95	UB11R599.95	UB11R797.95	UB11RA04.95	
5500	UB11R006.95	UB11R204.95	UB11R402.95	UB11R600.95	UB11R798.95	UB11RA05.95	
6000	UB11R007.95	UB11R205.95	UB11R403.95	UB11R601.95	UB11R799.95	UB11RA06.95	
6500	UB11R008.95	UB11R206.95	UB11R404.95	UB11R602.95	UB11R800.95	UB11RA07.95	
7000	UB11R009.95	UB11R207.95	UB11R405.95	UB11R603.95	UB11R801.95	UB11RA08.95	
7500	UB11R010.95	UB11R208.95	UB11R406.95	UB11R604.95	UB11R802.95	UB11RA09.95	
8000	UB11R011.95	UB11R209.95	UB11R407.95	UB11R605.95	UB11R803.95	UB11RA10.95	
8500	UB11R012.95	UB11R210.95	UB11R408.95	UB11R606.95	UB11R804.95	UB11RA11.95	
9000	UB11R013.95	UB11R211.95	UB11R409.95	UB11R607.95	UB11R805.95	UB11RA12.95	
9500	UB11R014.95	UB11R212.95	UB11R410.95	UB11R608.95	UB11R806.95	UB11RA13.95	
10000	UB11R015.95	UB11R213.95	UB11R411.95	UB11R609.95	UB11R807.95	UB11RA14.95	
10500	UB11R016.95	UB11R214.95	UB11R412.95	UB11R610.95	UB11R808.95	UB11RA15.95	
11000	UB11R017.95	UB11R215.95	UB11R413.95	UB11R611.95	UB11R809.95	UB11RA16.95	
11500	UB11R018.95	UB11R216.95	UB11R414.95	UB11R612.95	UB11R810.95	UB11RA17.95	
12000	UB11R019.95	UB11R217.95	UB11R415.95	UB11R613.95	UB11R811.95	UB11RA18.95	
12500	UB11R020.95	UB11R218.95	UB11R416.95	UB11R614.95	UB11R812.95	UB11RA19.95	
13000	UB11R021.95	UB11R219.95	UB11R417.95	UB11R615.95	UB11R813.95	UB11RA20.95	
13500	UB11R022.95	UB11R220.95	UB11R418.95	UB11R616.95	UB11R814.95	UB11RA21.95	
3000	UB11R023.95	UB11R221.95	UB11R419.95	UB11R617.95	UB11R815.95	UB11RB00.95	800
3500	UB11R024.95	UB11R222.95	UB11R420.95	UB11R618.95	UB11R816.95	UB11RB01.95	
4000	UB11R025.95	UB11R223.95	UB11R421.95	UB11R619.95	UB11R817.95	UB11RB02.95	
4500	UB11R026.95	UB11R224.95	UB11R422.95	UB11R620.95	UB11R818.95	UB11RB03.95	
5000	UB11R027.95	UB11R225.95	UB11R423.95	UB11R621.95	UB11R819.95	UB11RB04.95	
5500	UB11R028.95	UB11R226.95	UB11R424.95	UB11R622.95	UB11R820.95	UB11RB05.95	
6000	UB11R029.95	UB11R227.95	UB11R425.95	UB11R623.95	UB11R821.95	UB11RB06.95	
6500	UB11R030.95	UB11R228.95	UB11R426.95	UB11R624.95	UB11R822.95	UB11RB07.95	
7000	UB11R031.95	UB11R229.95	UB11R427.95	UB11R625.95	UB11R823.95	UB11RB08.95	
7500	UB11R032.95	UB11R230.95	UB11R428.95	UB11R626.95	UB11R824.95	UB11RB09.95	
8000	UB11R033.95	UB11R231.95	UB11R429.95	UB11R627.95	UB11R825.95	UB11RB10.95	
8500	UB11R034.95	UB11R232.95	UB11R430.95	UB11R628.95	UB11R826.95	UB11RB11.95	
9000	UB11R035.95	UB11R233.95	UB11R431.95	UB11R629.95	UB11R827.95	UB11RB12.95	
9500	UB11R036.95	UB11R234.95	UB11R432.95	UB11R630.95	UB11R828.95	UB11RB13.95	
10000	UB11R037.95	UB11R235.95	UB11R433.95	UB11R631.95	UB11R829.95	UB11RB14.95	
10500	UB11R038.95	UB11R236.95	UB11R434.95	UB11R632.95	UB11R830.95	UB11RB15.95	
11000	UB11R039.95	UB11R237.95	UB11R435.95	UB11R633.95	UB11R831.95	UB11RB16.95	
11500	UB11R040.95	UB11R238.95	UB11R436.95	UB11R634.95	UB11R832.95	UB11RB17.95	
12000	UB11R041.95	UB11R239.95	UB11R437.95	UB11R635.95	UB11R833.95	UB11RB18.95	
12500	UB11R042.95	UB11R240.95	UB11R438.95	UB11R636.95	UB11R834.95	UB11RB19.95	
13000	UB11R043.95	UB11R241.95	UB11R439.95	UB11R637.95	UB11R835.95	UB11RB20.95	
13500	UB11R044.95	UB11R242.95	UB11R440.95	UB11R638.95	UB11R836.95	UB11RB21.95	

Tab. 4.1

UNIBUILD

UNIBUILD 150/170/180/200/220/300 FRAME CODES



M12X120
Expansion anchor bolt
Cod. **00042.20**

IMPORTANT:

Frames must be fixed to the floor with no less than 4 code 00042.20 anchor bolts.

Use shims (fig 4.4), if necessary, to level the frames to the correct tolerance.

00042.20 – Is the standard anchor bolt. This is a CE certified M12 expansion anchor bolt in accordance with ETAG 001, Annex C – Option 7, fit for a maximum shimming height of 15mm under the base plate.

As an alternative, for needs tied to dynamic actions or for operational preferences, the following anchoring alternatives are also available:

VI000084.20 – CE certified M12 expansion anchor bolt in accordance with ETAG 001 Annex C – option 1 and ETAG 001 Annex E – option C2, fit for a maximum shimming height of 15mm under the base plate.

VI000197.20 – CE certified M10 screw anchor bolt in accordance with ETAG 001 Annex C – option 1 and ETAG 001 Annex E – option C1, fit for a maximum shimming height of 10mm under the base plate.

Fig. 4.2

HEIGHT (mm)	UNIBUILD 150 Cod.	UNIBUILD 170 Cod.	UNIBUILD 180 Cod.	UNIBUILD 200 Cod.	UNIBUILD 220 Cod.	UNIBUILD 300 Cod.	DEPTH (mm)
3000	UB11R045.95	UB11R243.95	UB11R441.95	UB11R639.95	UB11R837.95	UB11RC00.95	900
3500	UB11R046.95	UB11R244.95	UB11R442.95	UB11R640.95	UB11R838.95	UB11RC01.95	
4000	UB11R047.95	UB11R245.95	UB11R443.95	UB11R641.95	UB11R839.95	UB11RC02.95	
4500	UB11R048.95	UB11R246.95	UB11R444.95	UB11R642.95	UB11R840.95	UB11RC03.95	
5000	UB11R049.95	UB11R247.95	UB11R445.95	UB11R643.95	UB11R841.95	UB11RC04.95	
5500	UB11R050.95	UB11R248.95	UB11R446.95	UB11R644.95	UB11R842.95	UB11RC05.95	
6000	UB11R051.95	UB11R249.95	UB11R447.95	UB11R645.95	UB11R843.95	UB11RC06.95	
6500	UB11R052.95	UB11R250.95	UB11R448.95	UB11R646.95	UB11R844.95	UB11RC07.95	
7000	UB11R053.95	UB11R251.95	UB11R449.95	UB11R647.95	UB11R845.95	UB11RC08.95	
7500	UB11R054.95	UB11R252.95	UB11R450.95	UB11R648.95	UB11R846.95	UB11RC09.95	
8000	UB11R055.95	UB11R253.95	UB11R451.95	UB11R649.95	UB11R847.95	UB11RC10.95	
8500	UB11R056.95	UB11R254.95	UB11R452.95	UB11R650.95	UB11R848.95	UB11RC11.95	
9000	UB11R057.95	UB11R255.95	UB11R453.95	UB11R651.95	UB11R849.95	UB11RC12.95	
9500	UB11R058.95	UB11R256.95	UB11R454.95	UB11R652.95	UB11R850.95	UB11RC13.95	
10000	UB11R059.95	UB11R257.95	UB11R455.95	UB11R653.95	UB11R851.95	UB11RC14.95	
10500	UB11R060.95	UB11R258.95	UB11R456.95	UB11R654.95	UB11R852.95	UB11RC15.95	
11000	UB11R061.95	UB11R259.95	UB11R457.95	UB11R655.95	UB11R853.95	UB11RC16.95	
11500	UB11R062.95	UB11R260.95	UB11R458.95	UB11R656.95	UB11R854.95	UB11RC17.95	
12000	UB11R063.95	UB11R261.95	UB11R459.95	UB11R657.95	UB11R855.95	UB11RC18.95	
12500	UB11R064.95	UB11R262.95	UB11R460.95	UB11R658.95	UB11R856.95	UB11RC19.95	
13000	UB11R065.95	UB11R263.95	UB11R461.95	UB11R659.95	UB11R857.95	UB11RC20.95	
13500	UB11R066.95	UB11R264.95	UB11R462.95	UB11R660.95	UB11R858.95	UB11RC21.95	

3000	UB11R067.95	UB11R265.95	UB11R463.95	UB11R661.95	UB11R859.95	UB11RD00.95	1000
3500	UB11R068.95	UB11R266.95	UB11R464.95	UB11R662.95	UB11R860.95	UB11RD01.95	
4000	UB11R069.95	UB11R267.95	UB11R465.95	UB11R663.95	UB11R861.95	UB11RD02.95	
4500	UB11R070.95	UB11R268.95	UB11R466.95	UB11R664.95	UB11R862.95	UB11RD03.95	
5000	UB11R071.95	UB11R269.95	UB11R467.95	UB11R665.95	UB11R863.95	UB11RD04.95	
5500	UB11R072.95	UB11R270.95	UB11R468.95	UB11R666.95	UB11R864.95	UB11RD05.95	
6000	UB11R073.95	UB11R271.95	UB11R469.95	UB11R667.95	UB11R865.95	UB11RD06.95	
6500	UB11R074.95	UB11R272.95	UB11R470.95	UB11R668.95	UB11R866.95	UB11RD07.95	
7000	UB11R075.95	UB11R273.95	UB11R471.95	UB11R669.95	UB11R867.95	UB11RD08.95	
7500	UB11R076.95	UB11R274.95	UB11R472.95	UB11R670.95	UB11R868.95	UB11RD09.95	
8000	UB11R077.95	UB11R275.95	UB11R473.95	UB11R671.95	UB11R869.95	UB11RD10.95	
8500	UB11R078.95	UB11R276.95	UB11R474.95	UB11R672.95	UB11R870.95	UB11RD11.95	
9000	UB11R079.95	UB11R277.95	UB11R475.95	UB11R673.95	UB11R871.95	UB11RD12.95	
9500	UB11R080.95	UB11R278.95	UB11R476.95	UB11R674.95	UB11R872.95	UB11RD13.95	
10000	UB11R081.95	UB11R279.95	UB11R477.95	UB11R675.95	UB11R873.95	UB11RD14.95	
10500	UB11R082.95	UB11R280.95	UB11R478.95	UB11R676.95	UB11R874.95	UB11RD15.95	
11000	UB11R083.95	UB11R281.95	UB11R479.95	UB11R677.95	UB11R875.95	UB11RD16.95	
11500	UB11R084.95	UB11R282.95	UB11R480.95	UB11R678.95	UB11R876.95	UB11RD17.95	
12000	UB11R085.95	UB11R283.95	UB11R481.95	UB11R679.95	UB11R877.95	UB11RD18.95	
12500	UB11R086.95	UB11R284.95	UB11R482.95	UB11R680.95	UB11R878.95	UB11RD19.95	
13000	UB11R087.95	UB11R285.95	UB11R483.95	UB11R681.95	UB11R879.95	UB11RD20.95	
13500	UB11R088.95	UB11R286.95	UB11R484.95	UB11R682.95	UB11R880.95	UB11RD21.95	

Tab. 4.1

UNIBUILD

UNIBUILD 150/170/180/200/220/300 FRAME CODES

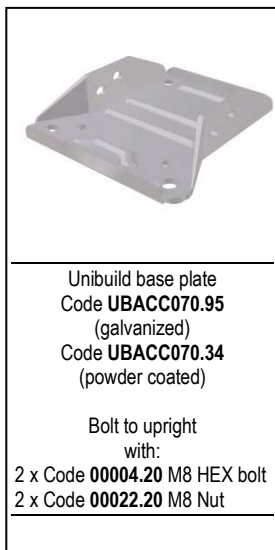


Fig. 4.3



Fig. 4.4

HEIGHT (mm)	UNIBUILD 150 Cod.	UNIBUILD 170 Cod.	UNIBUILD 180 Cod.	UNIBUILD 200 Cod.	UNIBUILD 220 Cod.	UNIBUILD 300 Cod.	DEPTH (mm)
3000	UB11R089.95	UB11R287.95	UB11R485.95	UB11R683.95	UB11R881.95	UB11RE00.95	1100
3500	UB11R090.95	UB11R288.95	UB11R486.95	UB11R684.95	UB11R882.95	UB11RE01.95	
4000	UB11R091.95	UB11R289.95	UB11R487.95	UB11R685.95	UB11R883.95	UB11RE02.95	
4500	UB11R092.95	UB11R290.95	UB11R488.95	UB11R686.95	UB11R884.95	UB11RE03.95	
5000	UB11R093.95	UB11R291.95	UB11R489.95	UB11R687.95	UB11R885.95	UB11RE04.95	
5500	UB11R094.95	UB11R292.95	UB11R490.95	UB11R688.95	UB11R886.95	UB11RE05.95	
6000	UB11R095.95	UB11R293.95	UB11R491.95	UB11R689.95	UB11R887.95	UB11RE06.95	
6500	UB11R096.95	UB11R294.95	UB11R492.95	UB11R690.95	UB11R888.95	UB11RE07.95	
7000	UB11R097.95	UB11R295.95	UB11R493.95	UB11R691.95	UB11R889.95	UB11RE08.95	
7500	UB11R098.95	UB11R296.95	UB11R494.95	UB11R692.95	UB11R890.95	UB11RE09.95	
8000	UB11R099.95	UB11R297.95	UB11R495.95	UB11R693.95	UB11R891.95	UB11RE10.95	
8500	UB11R100.95	UB11R298.95	UB11R496.95	UB11R694.95	UB11R892.95	UB11RE11.95	
9000	UB11R101.95	UB11R299.95	UB11R497.95	UB11R695.95	UB11R893.95	UB11RE12.95	
9500	UB11R102.95	UB11R300.95	UB11R498.95	UB11R696.95	UB11R894.95	UB11RE13.95	
10000	UB11R103.95	UB11R301.95	UB11R499.95	UB11R697.95	UB11R895.95	UB11RE14.95	
10500	UB11R104.95	UB11R302.95	UB11R500.95	UB11R698.95	UB11R896.95	UB11RE15.95	
11000	UB11R105.95	UB11R303.95	UB11R501.95	UB11R699.95	UB11R897.95	UB11RE16.95	
11500	UB11R106.95	UB11R304.95	UB11R502.95	UB11R700.95	UB11R898.95	UB11RE17.95	
12000	UB11R107.95	UB11R305.95	UB11R503.95	UB11R701.95	UB11R899.95	UB11RE18.95	
12500	UB11R108.95	UB11R306.95	UB11R504.95	UB11R702.95	UB11R900.95	UB11RE19.95	
13000	UB11R109.95	UB11R307.95	UB11R505.95	UB11R703.95	UB11R901.95	UB11RE20.95	
13500	UB11R11R.95	UB11R308.95	UB11R506.95	UB11R704.95	UB11R902.95	UB11RE21.95	
3000	UB11R111.95	UB11R309.95	UB11R507.95	UB11R705.95	UB11R903.95	UB11RF00.95	1200
3500	UB11R112.95	UB11R310.95	UB11R508.95	UB11R706.95	UB11R904.95	UB11RF01.95	
4000	UB11R113.95	UB11R311.95	UB11R509.95	UB11R707.95	UB11R905.95	UB11RF02.95	
4500	UB11R114.95	UB11R312.95	UB11R510.95	UB11R708.95	UB11R906.95	UB11RF03.95	
5000	UB11R115.95	UB11R313.95	UB11R511.95	UB11R709.95	UB11R907.95	UB11RF04.95	
5500	UB11R116.95	UB11R314.95	UB11R512.95	UB11R710.95	UB11R908.95	UB11RF05.95	
6000	UB11R117.95	UB11R315.95	UB11R513.95	UB11R711.95	UB11R909.95	UB11RF06.95	
6500	UB11R118.95	UB11R316.95	UB11R514.95	UB11R712.95	UB11R910.95	UB11RF07.95	
7000	UB11R119.95	UB11R317.95	UB11R515.95	UB11R713.95	UB11R911.95	UB11RF08.95	
7500	UB11R120.95	UB11R318.95	UB11R516.95	UB11R714.95	UB11R912.95	UB11RF09.95	
8000	UB11R121.95	UB11R319.95	UB11R517.95	UB11R715.95	UB11R913.95	UB11RF10.95	
8500	UB11R122.95	UB11R320.95	UB11R518.95	UB11R716.95	UB11R914.95	UB11RF11.95	
9000	UB11R123.95	UB11R321.95	UB11R519.95	UB11R717.95	UB11R915.95	UB11RF12.95	
9500	UB11R124.95	UB11R322.95	UB11R520.95	UB11R718.95	UB11R916.95	UB11RF13.95	
10000	UB11R125.95	UB11R323.95	UB11R521.95	UB11R719.95	UB11R917.95	UB11RF14.95	
10500	UB11R126.95	UB11R324.95	UB11R522.95	UB11R720.95	UB11R918.95	UB11RF15.95	
11000	UB11R127.95	UB11R325.95	UB11R523.95	UB11R721.95	UB11R919.95	UB11RF16.95	
11500	UB11R128.95	UB11R326.95	UB11R524.95	UB11R722.95	UB11R920.95	UB11RF17.95	
12000	UB11R129.95	UB11R327.95	UB11R525.95	UB11R723.95	UB11R921.95	UB11RF18.95	
12500	UB11R130.95	UB11R328.95	UB11R526.95	UB11R724.95	UB11R922.95	UB11RF19.95	
13000	UB11R131.95	UB11R329.95	UB11R527.95	UB11R725.95	UB11R923.95	UB11RF20.95	
13500	UB11R132.95	UB11R330.95	UB11R528.95	UB11R726.95	UB11R924.95	UB11RF21.95	

Tab. 4.1

UNIBUILD

UNIBUILD 150/170/180/200/220/300 FRAME CODES

HEIGHT (mm)	UNIBUILD 150 Cod.	UNIBUILD 170 Cod.	UNIBUILD 180 Cod.	UNIBUILD 200 Cod.	UNIBUILD 220 Cod.	UNIBUILD 300 Cod.	DEPTH (mm9)
3000	UB11R133.95	UB11R331.95	UB11R529.95	UB11R727.95	UB11R925.95	UB11RG00.95	1300
3500	UB11R134.95	UB11R332.95	UB11R530.95	UB11R728.95	UB11R926.95	UB11RG01.95	
4000	UB11R135.95	UB11R333.95	UB11R531.95	UB11R729.95	UB11R927.95	UB11RG02.95	
4500	UB11R136.95	UB11R334.95	UB11R532.95	UB11R730.95	UB11R928.95	UB11RG03.95	
5000	UB11R137.95	UB11R335.95	UB11R533.95	UB11R731.95	UB11R929.95	UB11RG04.95	
5500	UB11R138.95	UB11R336.95	UB11R534.95	UB11R732.95	UB11R930.95	UB11RG05.95	
6000	UB11R139.95	UB11R337.95	UB11R535.95	UB11R733.95	UB11R931.95	UB11RG06.95	
6500	UB11R140.95	UB11R338.95	UB11R536.95	UB11R734.95	UB11R932.95	UB11RG07.95	
7000	UB11R141.95	UB11R339.95	UB11R537.95	UB11R735.95	UB11R933.95	UB11RG08.95	
7500	UB11R142.95	UB11R340.95	UB11R538.95	UB11R736.95	UB11R934.95	UB11RG09.95	
8000	UB11R143.95	UB11R341.95	UB11R539.95	UB11R737.95	UB11R935.95	UB11RG10.95	
8500	UB11R144.95	UB11R342.95	UB11R540.95	UB11R738.95	UB11R936.95	UB11RG11.95	
9000	UB11R145.95	UB11R343.95	UB11R541.95	UB11R739.95	UB11R937.95	UB11RG12.95	
9500	UB11R146.95	UB11R344.95	UB11R542.95	UB11R740.95	UB11R938.95	UB11RG13.95	
10000	UB11R147.95	UB11R345.95	UB11R543.95	UB11R741.95	UB11R939.95	UB11RG14.95	
10500	UB11R148.95	UB11R346.95	UB11R544.95	UB11R742.95	UB11R940.95	UB11RG15.95	
11000	UB11R149.95	UB11R347.95	UB11R545.95	UB11R743.95	UB11R941.95	UB11RG16.95	
11500	UB11R150.95	UB11R348.95	UB11R546.95	UB11R744.95	UB11R942.95	UB11RG17.95	
12000	UB11R151.95	UB11R349.95	UB11R547.95	UB11R745.95	UB11R943.95	UB11RG18.95	
12500	UB11R152.95	UB11R350.95	UB11R548.95	UB11R746.95	UB11R944.95	UB11RG19.95	
13000	UB11R153.95	UB11R351.95	UB11R549.95	UB11R747.95	UB11R945.95	UB11RG20.95	
13500	UB11R154.95	UB11R352.95	UB11R550.95	UB11R748.95	UB11R946.95	UB11RG21.95	

3000	UB11R155.95	UB11R353.95	UB11R551.95	UB11R749.95	UB11R947.95	UB11RH00.95	1400
3500	UB11R156.95	UB11R354.95	UB11R552.95	UB11R750.95	UB11R948.95	UB11RH01.95	
4000	UB11R157.95	UB11R355.95	UB11R553.95	UB11R751.95	UB11R949.95	UB11RH02.95	
4500	UB11R158.95	UB11R356.95	UB11R554.95	UB11R752.95	UB11R950.95	UB11RH03.95	
5000	UB11R159.95	UB11R357.95	UB11R555.95	UB11R753.95	UB11R951.95	UB11RH04.95	
5500	UB11R160.95	UB11R358.95	UB11R556.95	UB11R754.95	UB11R952.95	UB11RH05.95	
6000	UB11R161.95	UB11R359.95	UB11R557.95	UB11R755.95	UB11R953.95	UB11RH06.95	
6500	UB11R162.95	UB11R360.95	UB11R558.95	UB11R756.95	UB11R954.95	UB11RH07.95	
7000	UB11R163.95	UB11R361.95	UB11R559.95	UB11R757.95	UB11R955.95	UB11RH08.95	
7500	UB11R164.95	UB11R362.95	UB11R560.95	UB11R758.95	UB11R956.95	UB11RH09.95	
8000	UB11R165.95	UB11R363.95	UB11R561.95	UB11R759.95	UB11R957.95	UB11RH10.95	
8500	UB11R166.95	UB11R364.95	UB11R562.95	UB11R760.95	UB11R958.95	UB11RH11.95	
9000	UB11R167.95	UB11R365.95	UB11R563.95	UB11R761.95	UB11R959.95	UB11RH12.95	
9500	UB11R168.95	UB11R366.95	UB11R564.95	UB11R762.95	UB11R960.95	UB11RH13.95	
10000	UB11R169.95	UB11R367.95	UB11R565.95	UB11R763.95	UB11R961.95	UB11RH14.95	
10500	UB11R170.95	UB11R368.95	UB11R566.95	UB11R764.95	UB11R962.95	UB11RH15.95	
11000	UB11R171.95	UB11R369.95	UB11R567.95	UB11R765.95	UB11R963.95	UB11RH16.95	
11500	UB11R172.95	UB11R370.95	UB11R568.95	UB11R766.95	UB11R964.95	UB11RH17.95	
12000	UB11R173.95	UB11R371.95	UB11R569.95	UB11R767.95	UB11R965.95	UB11RH18.95	
12500	UB11R174.95	UB11R372.95	UB11R570.95	UB11R768.95	UB11R966.95	UB11RH19.95	
13000	UB11R175.95	UB11R373.95	UB11R571.95	UB11R769.95	UB11R967.95	UB11RH20.95	
13500	UB11R176.95	UB11R374.95	UB11R572.95	UB11R770.95	UB11R968.95	UB11RH21.95	

Tab. 4.1

UNIBUILD

UNIBUILD 150/170/180/200/220/300 FRAME CODES

HEIGHT (mm)	UNIBUILD 150 Cod.	UNIBUILD 170 Cod.	UNIBUILD 180 Cod.	UNIBUILD 200 Cod.	UNIBUILD 220 Cod.	UNIBUILD 300 Cod.	DEPTH (mm)
3000	UB11R177.95	UB11R375.95	UB11R573.95	UB11R771.95	UB11R969.95	UB11RJ00.95	1500
3500	UB11R178.95	UB11R376.95	UB11R574.95	UB11R772.95	UB11R970.95	UB11RJ01.95	
4000	UB11R179.95	UB11R377.95	UB11R575.95	UB11R773.95	UB11R971.95	UB11RJ02.95	
4500	UB11R180.95	UB11R378.95	UB11R576.95	UB11R774.95	UB11R972.95	UB11RJ03.95	
5000	UB11R181.95	UB11R379.95	UB11R577.95	UB11R775.95	UB11R973.95	UB11RJ04.95	
5500	UB11R182.95	UB11R380.95	UB11R578.95	UB11R776.95	UB11R974.95	UB11RJ05.95	
6000	UB11R183.95	UB11R381.95	UB11R579.95	UB11R777.95	UB11R975.95	UB11RJ06.95	
6500	UB11R184.95	UB11R382.95	UB11R580.95	UB11R778.95	UB11R976.95	UB11RJ07.95	
7000	UB11R185.95	UB11R383.95	UB11R581.95	UB11R779.95	UB11R977.95	UB11RJ08.95	
7500	UB11R186.95	UB11R384.95	UB11R582.95	UB11R780.95	UB11R978.95	UB11RJ09.95	
8000	UB11R187.95	UB11R385.95	UB11R583.95	UB11R781.95	UB11R979.95	UB11RJ10.95	
8500	UB11R188.95	UB11R386.95	UB11R584.95	UB11R782.95	UB11R980.95	UB11RJ11.95	
9000	UB11R189.95	UB11R387.95	UB11R585.95	UB11R783.95	UB11R981.95	UB11RJ12.95	
9500	UB11R190.95	UB11R388.95	UB11R586.95	UB11R784.95	UB11R982.95	UB11RJ13.95	
10000	UB11R191.95	UB11R389.95	UB11R587.95	UB11R785.95	UB11R983.95	UB11RJ14.95	
10500	UB11R192.95	UB11R390.95	UB11R588.95	UB11R786.95	UB11R984.95	UB11RJ15.95	
11000	UB11R193.95	UB11R391.95	UB11R589.95	UB11R787.95	UB11R985.95	UB11RJ16.95	
11500	UB11R194.95	UB11R392.95	UB11R590.95	UB11R788.95	UB11R986.95	UB11RJ17.95	
12000	UB11R195.95	UB11R393.95	UB11R591.95	UB11R789.95	UB11R987.95	UB11RJ18.95	
12500	UB11R196.95	UB11R394.95	UB11R592.95	UB11R790.95	UB11R988.95	UB11RJ19.95	
13000	UB11R197.95	UB11R395.95	UB11R593.95	UB11R791.95	UB11R989.95	UB11RJ20.95	
13500	UB11R198.95	UB11R396.95	UB11R594.95	UB11R792.95	UB11R990.95	UB11RJ21.95	

Tab. 4.1

UNIBUILD

4.2

UNIBUILD FRAME ASSEMBLY

Table 4.2 indicates the number of frame bracing components for every standard frame height up to a frame depth of 1500mm in the single frame bracing configuration. Table 4.3 shows the frame and frame bracing dimensions as well as the dimensions of the bay accessories.

UNIBUILD FRAME ASSEMBLY - COMPONENT TABLE			
HEIGHT (mm)	DEPTH 400-1500 mm		
	HORIZONTAL SPACER n°	SHORT DIAGONAL n°	LONG DIAGONAL n°
2000	2	4	-
2500	2	4	1
3000	2	4	2
3500	2	4	2
4000	2	4	3
4500	2	4	4
5000	2	4	4
5500	2	4	5
6000	2	4	6
6500	2	4	7
7000	2	4	7
7500	2	4	8
8000	2	4	9
8500	2	4	9
9000	2	4	10
9500	2	4	11
10000	2	4	12
10500	2	4	12
11000	2	4	13
11500	2	4	14
12000	2	4	14
12500	2	4	15
13000	2	4	16
13500	2	4	17

Tab. 4.2

UNIBUILD FRAME BRACING DIMENSION TABLE						
NOM. FRAME DIM. (mm)	REAL FRAME DIM. (mm)	DIM. HORIZ. SPACER (mm)	DIM. SHORT DIAG. (mm)	DIM. LONG DIAG. (mm)	REAL SHELF LENGTH (mm)	REAL SECOND- ARY LENGTH (mm)
					Hor. Spacer + 83	Hor. Spacer + 83
400	391	259	461.6	-	342	-
500	490	358	519.0	-	441	-
600	589	457	588.8	863.7	540	-
700	688	556	666.7	917.1	639	639
800	787	655	750.0	978.0	738	738
900	886	754	837.0	1045.1	837	837
1000	985	853	926.6	1117.3	936	936
1100	1084	952	1018.1	1193.4	1035	1035
1200	1183	1051	1110.9	1272.9	1134	1134
1300	1282	1150	1204.7	1355.1	1233	1233
1400	1381	1249	1299.4	1439.5	1332	1332
1500	1480	1348	1394.6	1525.7	1431	1431

Tab. 4.3

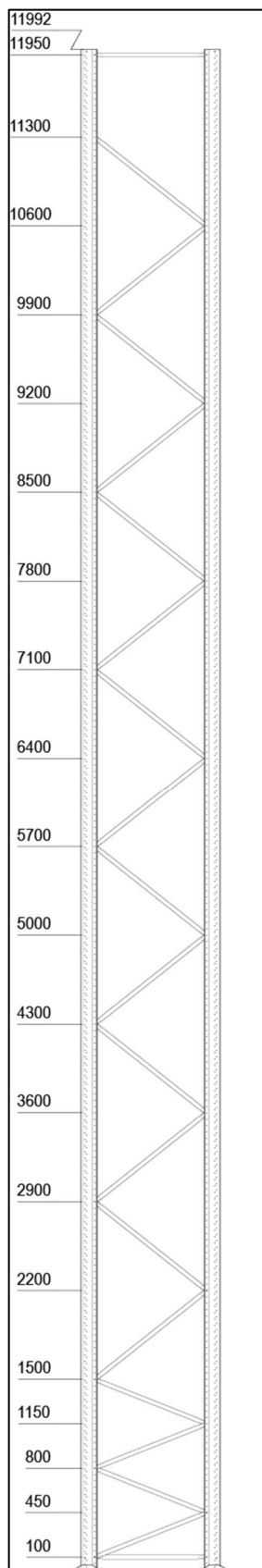


Fig. 4.5

The frame bracing must always be closed at the base and at the top with horizontal spacer bars.

Figure 4.5 shows the standard frame bracing locations for UNIBUILD frames.

As described in Section 8 of this manual, frame loads that exceed 26000daN require the application of double frame bracing from the base of the frame to a height of 3650mm.

The double frame bracing, shown in red in figure 4.6, indicates how the diagonal bracing rises in a cross formation one pitch off the standard frame bracing locations while the horizontal bracing component remains in the same location. An additional horizontal bracing component is placed 100mm above the end of the double bracing section of the frame.

The frame bracing elements are connected to the upright with DIN 933 M8x80 8.8 ZP HEX bolts (code **00009.20**) and DIN 982 M8 ZP nylon ins. nuts (code **00022.20**).

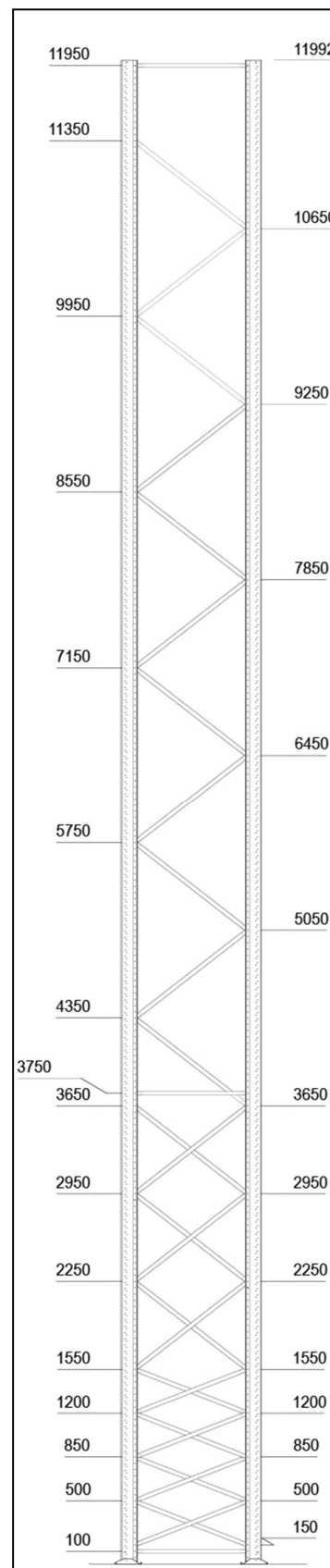
The frame bracing compensator (macrocode **UBACC075.98**) includes a galvanized dowel and a washer.

The recommended tightening torque is in the 15Nm – 20Nm range.

UB FRAME BRACING COMPENSATOR UBACC075.98		
Code	Q.ty	Description
00020102.95	1	Galvanized dowel for clip
00039.20	1	8X24X2 washer DIN 9021 ZP



Fig. 4.6



UNIBUILD

4.3

SPECIAL UNIBUILD FRAME BRACING CONFIGURATIONS

Modifications to the frame bracing and limitations to the frame load bearing capacity can allow the frame base to height ratio to be may exceed 1:5 (as defined by point "e" of Section 1) without requiring the application of portal ties. The following conditions apply:

- ratios up to 5 :- Standard frame bracing;
- ratios from 5 to 6:- Frame bracing containing 8 short diagonal spacer bars;
- ratios from 6 to 7: - Frame bracing containing 8 short diagonal spacer bars;
 - Maximum bay lengths of 2700mm and;
 - a 20% reduction in the tabled admissible frame load bearing capacity or;
 - a 10% reduction in the admissible frame load bearing capacity for braced rows.

Use the height of the top loading level to calculate the height to depth ratio (see figure 4.7)

NOTE:

Restating points "e" and "j" of Section 1, all uprights must be anchor bolted to ground with a minimum of 2, M12x120 anchor bolts per upright and the load bearing capacity of the industrial floor must be checked for structural adequacy.

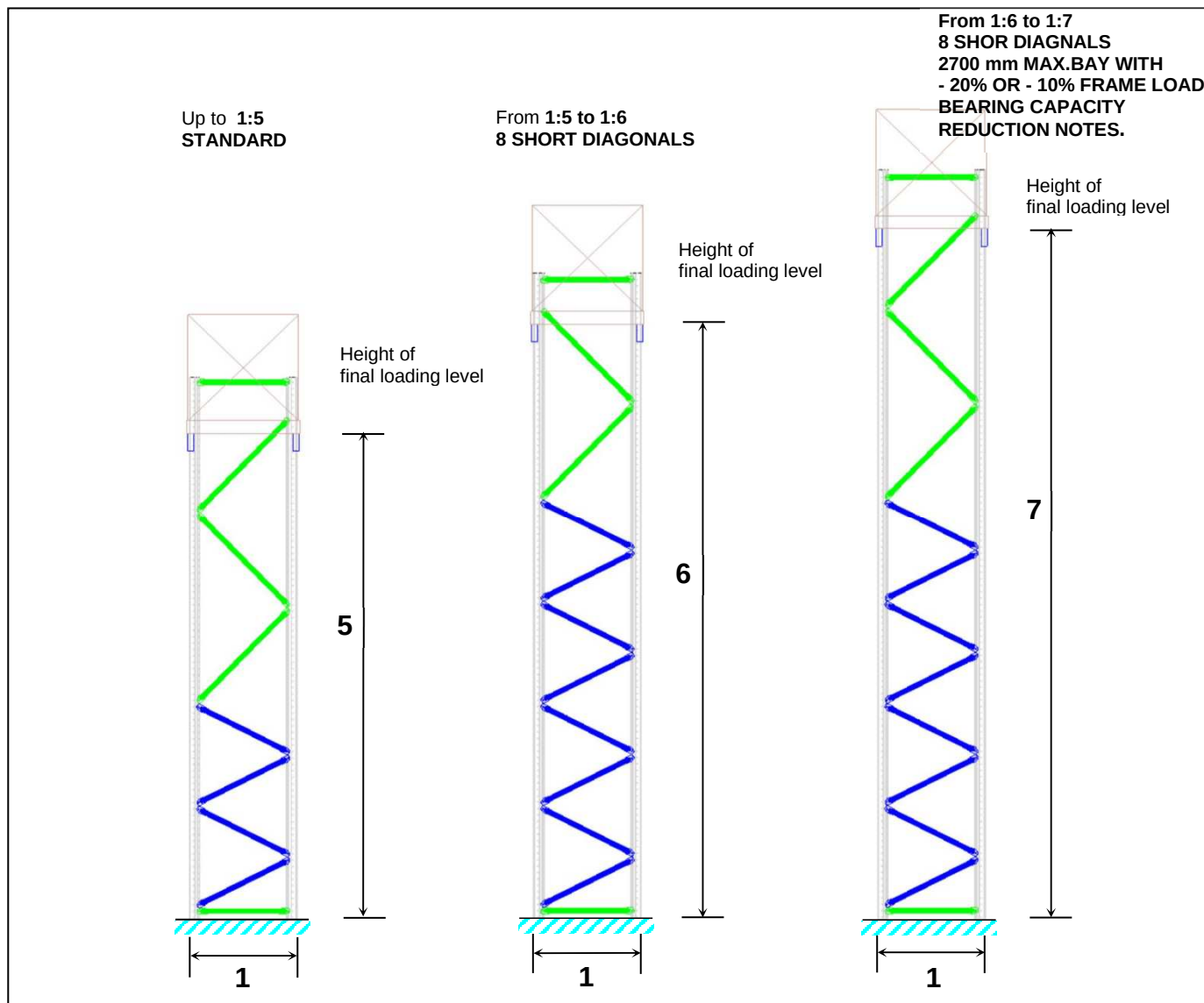


Fig. 4.7

UNIBUILD

4.4

**UNIBUILD 150/170/180/200/220/300
HORIZONTAL, SHORT AND LONG FRAME SPACERS**



Fig. 4.8

NOMINAL FRAME DEPTH (mm)	HORIZONTAL SPACER Code	SHORT DIAG. SPACER Code	LONG DIAG. SPACER Code
700	UB140001.95	UB140010.95	UB140019.95
800	UB140002.95	UB140011.95	UB140020.95
900	UB140003.95	UB140012.95	UB140021.95
1000	UB140004.95	UB140013.95	UB140022.95
1100	UB140005.95	UB140014.95	UB140023.95
1200	UB140006.95	UB140015.95	UB140024.95
1300	UB140007.95	UB140016.95	UB140025.95
1400	UB140008.95	UB140017.95	UB140026.95
1500	UB140009.95	UB140018.95	UB140027.95
SPECIAL	UB140028.95	UB140029.95	UB140030.95

Tab. 4.4

Table 4.5 shows the calculation method used to determine the order lengths for the frame bracing components. Contact the Metalsistem Technical Office when applying nominal frame dimensions in excess of 1500mm.

ORDER LENGTH FORMULAE FOR SPECIAL FRAME BRACING			
COMPONENT	FORMULA	LENGTH LIMITS	
		Min (mm)	Max (mm)
Horizontal	$L_{\text{real horizontal}} = L_{\text{real frame}} - 132 \text{ mm}$	268	1555.5
Short Diag.	$L_{\text{real short diag.}} = \sqrt{(L_{\text{real horizontal}} - 58)^2 + (350)^2} + 58$ mm	268	1555.5
Long diag.	$L_{\text{real long diag.}} = \sqrt{(L_{\text{real horizontal}} - 58)^2 + (700)^2} + 58$	268	1555.5

Tab. 4.5

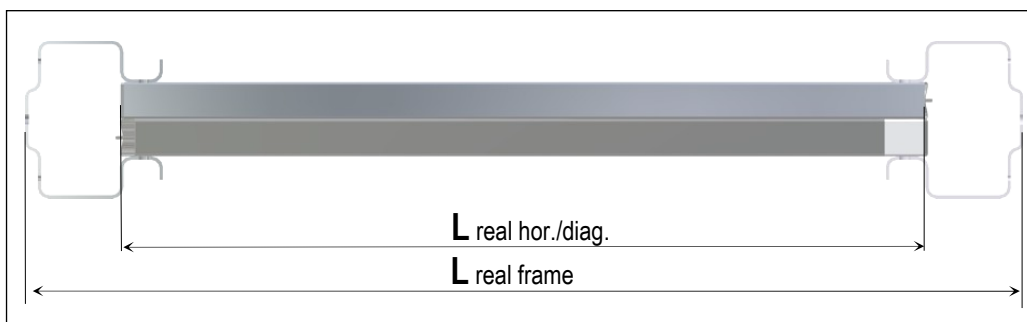


Fig. 4.9

UNIBUILD

4.5

DOUBLE SIDE UNIBUILD ROW SPACERS

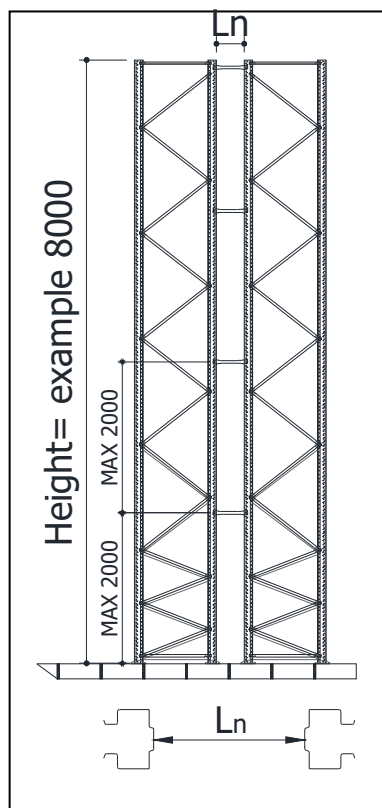


Fig. 4.10

The UNIBUILD row spacers, code **SO210004.95** are used to tie double side frames. Row spacers must always be used in pairs and are fixed to the uprights with HEX M8x20 bolts (code 00004.20) and M8 nylon insert nuts (code 00022.20).

The row spacers are assembled to the side of the uprights adjacent to the connection points of the frame bracing, however never at intervals greater than 2000mm.

Figure 4.10 shows an example of 8 meter frames in a double entry configuration in which 5 pairs of spacer bars are used to tie the frames together.

The row spacers can be ordered in lengths (Ln) that range from 230 to 1500mm. Dimensions lower than 230mm can use the Universal Fasteners (Pallet Racking Accessories manual MT07). Contact the Metalsistem technical office for dimensions greater than 1500mm.

The industry standard set out in the UNI EN 15620:2009 suggests that the distance between pallets in a double side configuration in a CLASS 400 pallet racking installation should be 100mm. Assuming an application with euro pallets on 1000mm deep UNIBUILD frames this translates to a net distance between uprights (Ln) of 315mm.

Therefore the following formula is applied when ordering UNIBUILD spacer bars (code **SO210004.95**).

$$L = L_n + 85\text{mm}$$

For example in an installation using euro pallets and 1000mm deep UNIBUILD frames the spacer bars are ordered using the following formula:

$$L = 315 + 85 = 400\text{mm}$$

Where:

L = Spacer bar order length

Ln = Net span between double entry frames (Fig. 4.10).

4.6

WALL TIES

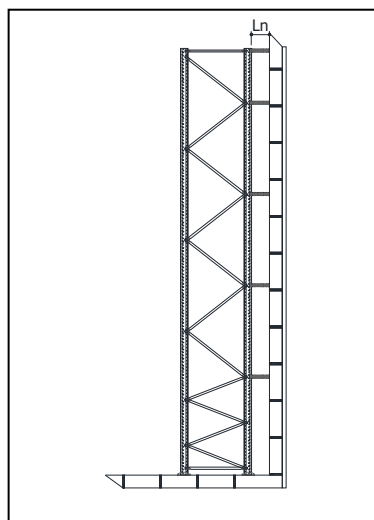


Fig. 4.11

Universal Fasteners are used to tie frames to walls. Information regarding the Universal Fasteners are contained in the "Pallet Racking Accessories Manual" code MT07.

IMPORTANT:

The wall ties are assembled in pairs adjacent to the connection points of the frame bracing, however never at intervals greater than 2000mm (Fig.4.11).

A pair of row spacers must always be used to close the top of the frames.

The structural integrity of the wall must be ascertained, proven to be adequate for the intended application and authorised as such by the building supervisor before connecting the pallet racking frame to the wall (refer to Section 1, point e).

UNIBUILD
4.7
UNIBUILD PORTAL TIES

Portal ties become necessary and wall ties are not permitted or if the frame base to height ratio has exceeded the indications of Paragraph 4.3.

The function of the portal tie is to increase stability by connecting frames across a corridor. It is therefore necessary that all portal tie frames be aligned.

NOTE: If the base to height ratio of double side frames exceed the parameters set in section 1, point e) or paragraph 4.3 refer to the Metalsistem Technical Office.



Fig. 4.12

A portal tie is formed by connecting a UNIBUILD upright to the top of the corridor facing upright of the bay frames. Universal Fasteners ("pallet racking accessories" MT07), bolted with M8x20 bolts, to the left and to the right of the aisle facing upright on either side of the corridor provide the connection points for the creation of this component. Table 4.6 shows all the components necessary for the creation of one portal tie.

UNIBUILD PORTAL TIE		
Code	Quantity	Description
UB13RXXX.95	1	Unibuild upright portal tie 5'000mm maximum length
00020102.95	No. = $(L / 750 + 1) \times 2$ (rounded to the nearest integer)	Galvanized dowel for clip
00039.20	No. = $(L / 750 + 1) \times 3$ (rounded to the nearest integer)	8X24X2 washer DIN 9021 ZP
00009.20	Number = $L / 750 + 1$	M8x80 HEX bolt 8.8 ZB
00022.20	Number = $L / 750 + 1$	M8 nut UNI7473
08374.95	4	L=310 Universal Fastener
SO210003.95	12	SBO compensation plate
00004.20	12	M8x20 HEX bolt UNI5739 8.8ZB
00022.20	12	M8 high nutUNI7473

Tab. 4.6

Note:

1. The upright length needs to be 200mm longer than the corridor width (rounded upwards to the nearest pitch);
2. This solution aligns to the upright holes and is therefore set at an even 50mm +46 mm pitch (XX46 – XX96mm). The corridor can be untied from the standard pitch by bolting a pair of Universal Fasteners onto the portal tie;
3. The portal tie uprights must be closed at the ends and at a constant pitch of 750mm with the Components. Spacer bar and M8x80 bolts.

5.0

UNIBUILD 150/170/180/200/220/300 UPRIGHT CODES

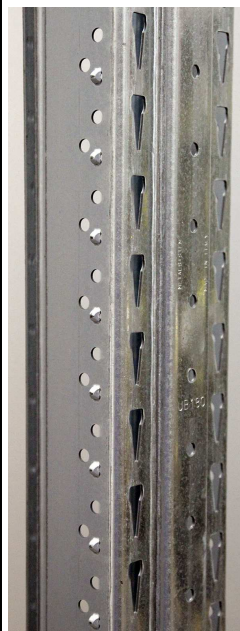


Fig. 5.1

HEIGHT mm	UNIBUILD 150 Code	UNIBUILD 170 Code	UNIBUILD 180 Code.	UNIBUILD 200 Code.	UNIBUILD 220 Code.	UNIBUILD 300 Code.
3000	UB13R001.95	UB13R023.95	UB13R045.95	UB13R067.95	UB13R089.95	UB13R111.95
3500	UB13R002.95	UB13R024.95	UB13R046.95	UB13R068.95	UB13R090.95	UB13R112.95
4000	UB13R003.95	UB13R025.95	UB13R047.95	UB13R069.95	UB13R091.95	UB13R113.95
4500	UB13R004.95	UB13R026.95	UB13R048.95	UB13R070.95	UB13R092.95	UB13R114.95
5000	UB13R005.95	UB13R027.95	UB13R049.95	UB13R071.95	UB13R093.95	UB13R115.95
5500	UB13R006.95	UB13R028.95	UB13R050.95	UB13R072.95	UB13R094.95	UB13R116.95
6000	UB13R007.95	UB13R029.95	UB13R051.95	UB13R073.95	UB13R095.95	UB13R117.95
6500	UB13R008.95	UB13R030.95	UB13R052.95	UB13R074.95	UB13R096.95	UB13R118.95
7000	UB13R009.95	UB13R031.95	UB13R053.95	UB13R075.95	UB13R097.95	UB13R119.95
7500	UB13R010.95	UB13R032.95	UB13R054.95	UB13R076.95	UB13R098.95	UB13R120.95
8000	UB13R011.95	UB13R033.95	UB13R055.95	UB13R077.95	UB13R099.95	UB13R121.95
8500	UB13R012.95	UB13R034.95	UB13R056.95	UB13R078.95	UB13R100.95	UB13R122.95
9000	UB13R013.95	UB13R035.95	UB13R057.95	UB13R079.95	UB13R101.95	UB13R123.95
9500	UB13R014.95	UB13R036.95	UB13R058.95	UB13R080.95	UB13R102.95	UB13R124.95
10000	UB13R015.95	UB13R037.95	UB13R059.95	UB13R081.95	UB13R103.95	UB13R125.95
10500	UB13R016.95	UB13R038.95	UB13R060.95	UB13R082.95	UB13R104.95	UB13R126.95
11000	UB13R017.95	UB13R039.95	UB13R061.95	UB13R083.95	UB13R105.95	UB13R127.95
11500	UB13R018.95	UB13R040.95	UB13R062.95	UB13R084.95	UB13R106.95	UB13R128.95
12000	UB13R019.95	UB13R041.95	UB13R063.95	UB13R085.95	UB13R107.95	UB13R129.95
12500	UB13R020.95	UB13R042.95	UB13R064.95	UB13R086.95	UB13R108.95	UB13R130.95
13000	UB13R021.95	UB13R043.95	UB13R065.95	UB13R087.95	UB13R109.95	UB13R131.95
13500	UB13R022.95	UB13R044.95	UB13R066.95	UB13R088.95	UB13R110.95	UB13R132.95
SPECIAL	UB13R133.95	UB13R134.95	UB13R135.95	UB13R136.95	UB13R137.95	UB13R138.95

Tab. 5.1

NOTE : The Unibuild upright is produced in a length multiple of 50mm

The upright length is given by the following formula

$$H_{\text{real}} = H_{\text{nom}} - 8 \text{ mm}$$

UNIBUILD Upright



Fig. 5.2

UNIBUILD
Upright profile

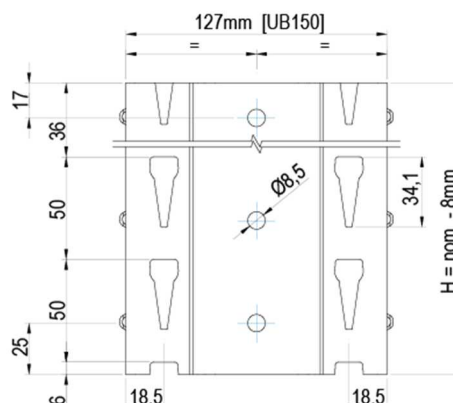


Fig. 5.3

6

UNIBUILD SPINE BRACING

The partially and fully braced columns of the frame load bearing capacity tables refer to the following standard vertical bracing solutions.

- a. Partially braced bracing tower;
- b. Fully braced bracing tower;
- c. Cross bracing with stirrups (under the conditions of paragraph 8.4).

Points a) and b) refer to the use of a bracing tower. This is an independent structure, made from Super 456 uprights and accessories, that is placed behind a single side pallet rack or between double side pallet racking rows. The bracing tower is connected to the pallet racking row with Universal Fasteners and by tensioners attaching the tower uprights to the bays in the locations described in the following paragraphs. The assembly of the bracing tower is completed by placing horizontal bracing under three levels of the braced bay.

As the bracing tower is a standalone structure and is of standardised dimension, it can be preassembled and placed in position with ease and at speed.

The cross bracing method uses bracing stirrups which are connected to the frames at every beam level, both vertically and horizontally. Single side applications apply additional struts connecting the bracing connection brackets behind the loading beams while double side applications brace horizontally across the spacer bars as well as between the beams.

6.1

PARTIALLY BRACED ROW - BRACING TOWER RULES OF APPLICATION

The rules for the application of the PARTIALLY braced system are:

1. This bracing tower must rise to the first beam level at or above half the height of the final beam level. The following examples clarify this point;

Case 1: a bay containing 6 beam levels with centre distance 1200mm. Therefore the final beam level is at 7200mm in height. Half this height is 3600mm which coincides with the 3rd beam level. As the bracing tower is ordered in 1000mm multiples we choose a bracing tower height of 4000mm.

Case 2: 5 beam levels with centre distance 1500mm. Therefore the final beam level is at a height of 7500mm. Half this height is 3750mm. The beam directly below is at 3000mm and above is 4500mm. Applying the rule we must adopt a 5000mm high bracing tower as the beam immediately above the half way mark is at 4500mm and we must round this to the nearest 1000mm multiple.

2. The bracing tower must be connected to its adjacent bay with PLAN BRACING in accordance with the indications of Paragraph 6.3.

6.2

FULLY BRACED ROW - BRACING TOWER RULES OF APPLICATION

The rules for the application of the FULLY braced system are:

1. The bracing tower must rise at least to the final beam level (rounded in excess to the nearest 1000mm);
2. The bracing tower must be connected to its adjacent bay with PLAN BRACING in accordance with the indications of Paragraph 6.3.

6.3

BRACING TOWER COMPONENTS

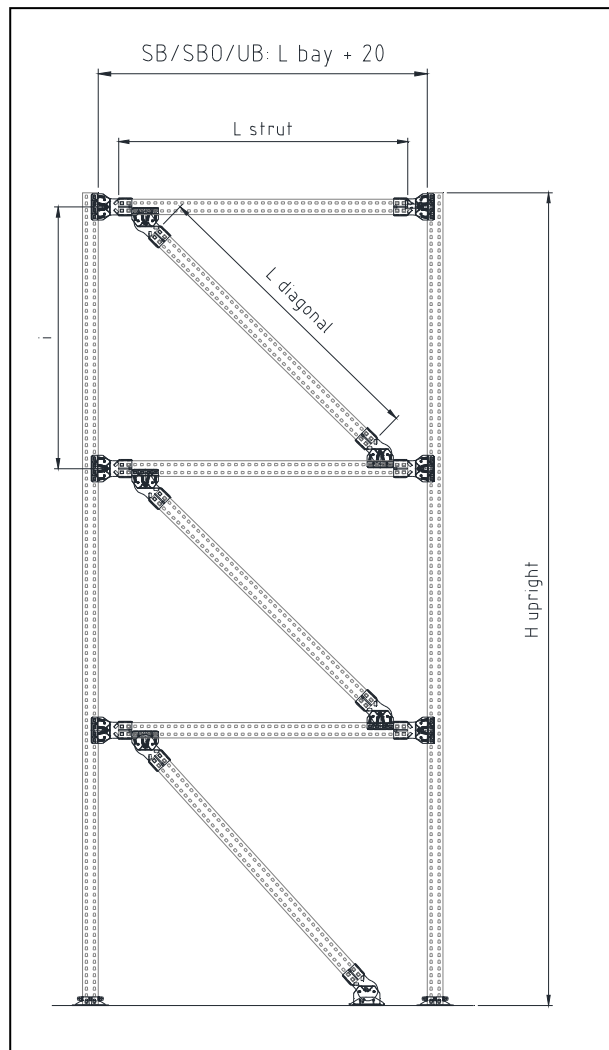


Fig 6.1

The vertical elements of a bracing tower are made from Super 6 uprights while TS3 sections are used for the horizontal and diagonal components of the assembly.

The bracing towers can be ordered by following 6 simple steps.

Step 1 – Bracing tower upright height and components

Paragraphs 6.1 and 6.2 provide the calculation method to determine the height of partial and full height bracing towers. Table 6.1 provides the corresponding upright codes together with the position of the horizontal struts and the quantity of horizontal and diagonal struts of a bracing tower.

BRACING TOWER CONFIGURATION					
H Tower (mm)	H upright (mm)	Upright code	No. Diag. Struts	No. Horiz. Struts	Centre distance (mm)
3000	2970	01604.95	2	2	1421
4000	3995	01608.95	3	3	1289
5000	4986	01612.95	4	4	1190
6000	5978	01616.95	4	4	1454
7000	6969	01620.95	5	5	1355
8000	7994	01624.95	6	6	1289
9000	8985	01628.95	6	6	1454
10000	9976	01632.95	7	7	1388
11000	11001	09014.95	8	8	1355
12000	11992	09014.95	8	8	1454

Tab. 6.1

Step 2 – Determine length of TS3 horizontal struts

Table 6.2 shows the horizontal strut length corresponding to the bay beam length.

HORIZONTAL STRUT LENGTHS (code 09008.95)	
Beam Length (mm)	Horizontal strut length (mm)
1800	1615
1900	1714
2000	1814
2100	1913
2200	2012
2300	2111
2400	2210
2500	2309
2600	2408
2700	2508
2800	2607
2900	2706
3000	2805
3100	2904
3200	3003
3300	3103
3400	3202
3500	3301
3600	3400

Tab. 6.2

Step 3 – Determine the length of the TS3 diagonal strut

Table 6.3 shows the diagonal strut lengths as a function of bay length and bracing tower height.

DIAGONAL STRUT LENGTH (code 09008.95)										
BAY (mm)	BRACING TOWER HEIGHT (mm)									
	3000	4000	5000	6000	7000	8000	9000	1000 0	1100 0	12000
1800	1714	1615	1582	1748	1681	1615	1748	1681	1681	1748
1900	1781	1714	1648	1814	1748	1714	1814	1781	1748	1814
2000	1880	1781	1714	1880	1814	1781	1880	1847	1814	1880
2100	1946	1880	1814	1979	1913	1880	1979	1913	1913	1979
2200	2023	1946	1880	2045	1979	1946	2045	2012	1979	2045
2300	2111	2045	1979	2111	2078	2045	2111	2078	2078	2111
2400	2177	2111	2078	2210	2144	2111	2210	2177	2144	2210
2500	2276	2210	2144	2276	2243	2210	2276	2243	2243	2276
2600	2342	2276	2243	2375	2309	2276	2375	2342	2309	2375
2700	2442	2375	2342	2442	2408	2375	2442	2442	2408	2442
2800	2541	2475	2442	2541	2508	2475	2541	2508	2508	2541
2900	2607	2574	2508	2640	2574	2574	2640	2607	2574	2640
3000	2706	2640	2607	2706	2673	2640	2706	2706	2673	2706
3100	2805	2739	2706	2805	2772	2739	2805	2772	2772	2805
3200	2871	2838	2805	2904	2871	2838	2904	2871	2871	2904
3300	2970	2937	2904	3003	2937	2937	3003	2970	2973	3003
3400	3069	3003	2970	3069	3036	3003	3069	3036	3036	3069
3500	3169	3103	3069	3169	3136	3103	3169	3136	3136	3169
3600	3235	3202	3169	3268	3235	3202	3268	3235	3235	3268

Tab. 6.3

Step 4 – Selection of bracing tower assembly accessory codes

A set of macro codes have been developed to simplify the ordering process of the bracing tower assembly accessories. Table 6.4 shows the codes which group together all accessory components required to assemble a single bracing tower.

NOTE: These codes exclude horizontal spacer bars and horizontal bracing components (both length variable codes discussed elsewhere).

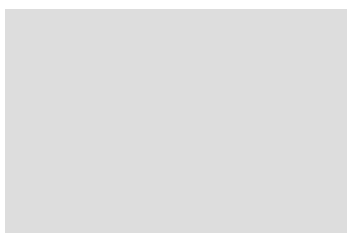
BRACING TOWER ACCESSORY KIT CODES		
code	Description	
AI210022.98	H3000	UB BRACING TOWER ACCESSORIES
AI210023.98	H4000	UB BRACING TOWER ACCESSORIES
AI210024.98	H5000	UB BRACING TOWER ACCESSORIES
AI210025.98	H6000	UB BRACING TOWER ACCESSORIES
AI210026.98	H7000	UB BRACING TOWER ACCESSORIES
AI210027.98	H8000	UB BRACING TOWER ACCESSORIES
AI210028.98	H9000	UB BRACING TOWER ACCESSORIES
AI210029.98	H10000	UB BRACING TOWER ACCESSORIES
AI210030.98	H11000	UB BRACING TOWER ACCESSORIES
AI210031.98	H12000	UB BRACING TOWER ACCESSORIES

Tab. 6.4

Step 5 – Bracing Tower Row Spacers

The Universal Fasteners are used as bracing tower row spacers. These are assembled in pairs and close the top of the bracing tower and are placed at 1000 mm along its height. Their purpose is to connect the bracing tower to the pallet racking row.

UNIBUILD



A pair of row spacers is formed by fixing a 184mm Universal Fastener (code 08372.95) to the side of a UNIBUILD upright with a 90° L=134mm Universal Fastener (code 08380.95 or 08382.95) bolted to the front face of the UNIBUILD upright. The pair is connected to the bracing tower upright with Drive-in couplings and bolts.

The **UB210007.98** macro code groups together the Universal Fasteners and connection accessories required to form one connection level. Table 6.5 provides the quantities of macrocode required for the 10 standard bracing tower heights.

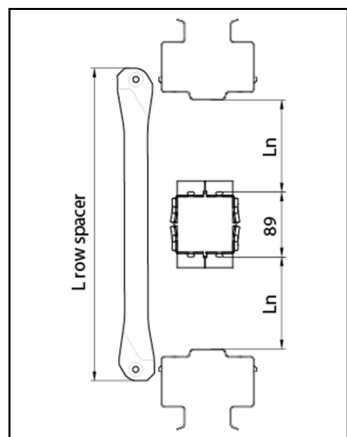


Fig 6.2

BRACING TOWER CONNECTION KIT		
TOWER HEIGHT (mm)	SINGLE SIDED code & qty.	DOUBLE SIDED code & qty.
	UB210007.98	UB210007.98
3000	3	6
4000	4	8
5000	5	10
6000	6	12
7000	7	14
8000	8	16
9000	9	18
10000	10	20
11000	11	22
12000	12	24

Tab 6.5

The Universal Fasteners contain both holes and slots. In this application only the holes may be used. The hole locations produce an L_n length of 61mm, 103mm or 145mm.

The row spacers of the standard double side bays (code **SO210004.95**, Paragraph 4.5) must be adapted to the dimensions present in the bracing tower bay. This dimension is calculated using the following formula:

$$L_{row.spacer} = 2 \times L_n + 173 \quad (\text{figure 6.2})$$

Step 6 – Horizontal bracing (AI210016.98)

The selection of the height at which the horizontal bracing shall be placed is independent from the adopted bracing tower solution. Three levels of horizontal bracing will be located in the braced bays following the same logic for both partial and fully braced towers. Therefore the following rules apply:

- Level 1:** Placed at the beam closest to one quarter of the height of the final beam level. This level of horizontal bracing must be connected to the uprights of the bracing towers;
- Level 2:** Placed at the beam immediately at or above the half the height of the final beam level. This level of horizontal bracing must be connected to the uprights of the bracing towers;
- Level 3:** Placed at the final beam level. This level of horizontal bracing must be connected to the uprights of the full height bracing tower only.

The horizontal bracing is composed of bracing stirrups (the dimension of which can be obtained in the Metal Excel sheet) and accessories connecting the bracing stirrups to beams. These accessories also include a set of tensioners and Drive-in couplings connecting the rear beams to the uprights of the bracing tower.

The macrocode AI210016.98 includes all accessories required to connect 3 bracing level connections (therefore order 1 accessory for a set of full height single side bracing stirrups).

Fig 6.3

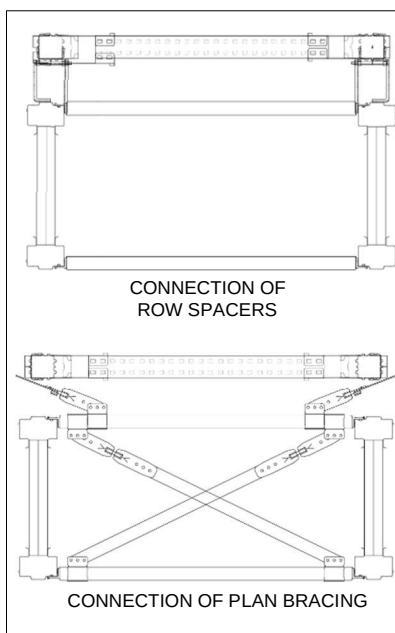


Fig. 6.3 shows the connection of the row spacers and plan bracing between the pallet bracing bay and the bracing tower.

6.4

COMPONENTS FOR SINGLE SIDE VERTICAL BRACING WITH STRUT

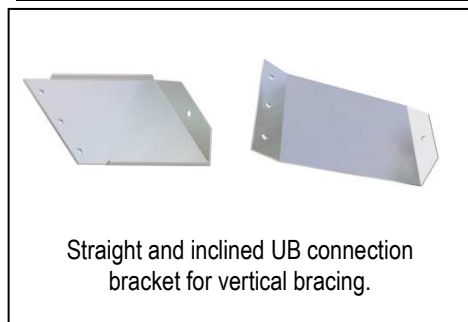


Fig. 6.4



Fig. 6.5

FIG.	COMPONENTS	CODE
6.4	Inclined UB connection bracket for vertical bracing	UBACC057.95
6.4	Straight UB connection bracket for vertical bracing	UBACC056.95
	M8 x 20 HEX Bolt 8.8 DIN933 Zp	00004.20
	M8 High nylon insert nut DIN982 Zp	00022.20
6.6	42 x 3 Modular bracing stirrup + Compensator	Tables 6.9 & 6.10
	½ turnbuckle with Ø 10,5 mm hole	08886.95
	M10 x 90 Cyl. Head Sockt conn. Bolt 8.8 DIN931 Zp	00076.20
	M10 Nut 6/S DIN934 Zp	00034.20
6.5	70x70x1 Raised Pallet Support Beam (bracing strut)	08650.95

Tab. 6.6

Calculation of the bracing strut length (code 08650.95)

$$\text{Strut Length} = L_c - 6\text{mm}$$

Refer to ISTM-030 "Single entry bracing systems for bays containing back stop beams" for the assembly procedure.

6.5

CALCULATION OF THE SINGLE SIDE BRACING STIRRUP LENGTH

The stirrup length calculations uses the following variables referring to figures 6.7:

- L_c = beam length
- H_2 = Ground to top beam height
- H_1 = Ground to bottom beam height
- K = Height between the top of the beam profile and the bracing bracket hole. For :
 - = 106 and 140 riveted beam = 227 mm
 - = 70, 106 and 140 welded beam = 230 mm
 - = 172 welded beam = 280 mm
- D = Height of the first bracing bracket hole from ground = 144 mm

To calculate the lengths:

- $D_h = L_c - 40$ centre distance between bracket holes on opposite sides of the bay.
- $d_{v1} = H_1 - K - D$ centre distance between ground and first level bracket holes.
- $d_v = H_2 - H_1$ centre distance between upper level and lower level brackets

The formula to apply for the calculation of the centre distance between the bracing connection holes from ground to beam level is:

Centre distance between bracing bracket holes at ground level = $\sqrt{dv1^2 + dh^2}$

The formula to apply for the calculation of the centre distance between beam levels is:

Centre distance between bracing bracket holes between beam levels = $\sqrt{dv^2 + dh^2}$

Example:

Input:

bay L = 2700 mm

beam Lc = 2700 mm

H1 = 1521 mm

H2 = 2571 mm

Therefore:

Dh = Lc - 40 = 2660 mm

dv1 = 1521 - 227 - 144 = 1150 mm

dv2 = 2571 - 1521 = 1050 mm

Centre distance between bracing bracket holes at ground level = $\sqrt{1150^2 + 2660^2} = 2898 \text{ mm}$

Centre distance between bracing bracket holes between beam levels = $\sqrt{1050^2 + 2660^2} = 2860 \text{ mm}$

Use the "PIATTI SPECIALI / SPEC. BRACING" button of the METAL Excel sheet (available from the reserved area of the Metalsistem internet site) to determine the standard and special bracing stirrup codes corresponding to the dimensions resulting from the above calculation.

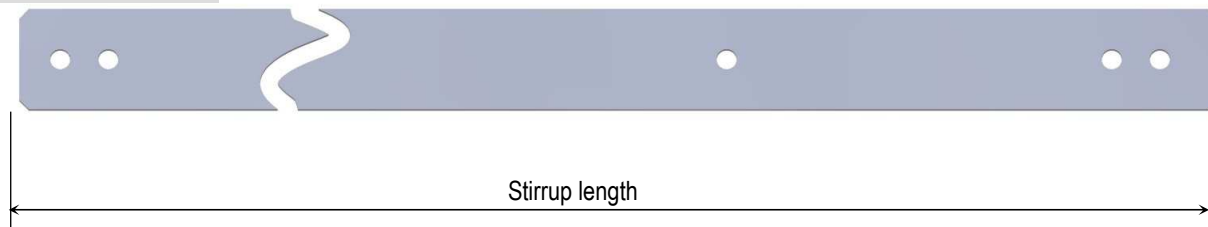


Fig. 6.6

UNIBUILD

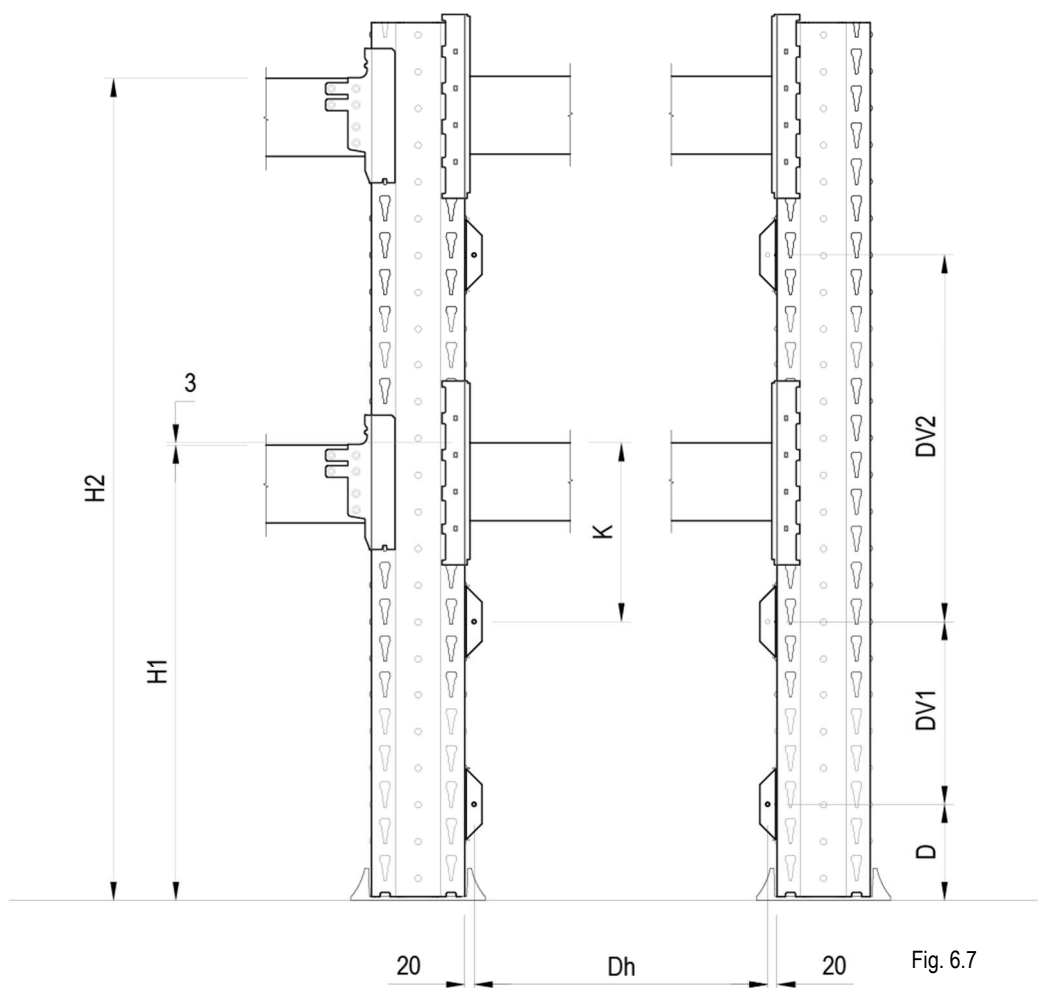


Fig. 6.7

6.6

COMPONENTS FOR DOUBLE SIDE VERTICAL BRACING

Double side bracing is composed of vertical bracing elements that arrive at the beam level and by horizontal bracing placed at every beam level forming a continuous connection through the double side bays. Beam levels placed on ground do not require the application of plan bracing.



UB Double sided vertical bracing bracket

Fig. 6.8

FIG.	COMPONENT	CODE
6.8	UB Double sided vertical bracing bracket	UBACC018.95
6.9	Double sided spacer for vertical bracing (L= xxx)	08355.95
6.6	42 x 3 Modular bracing stirrup + Compensator	Tables 6.5 & 6.6
	M8 x 110 HEX Bolt 8.8 DIN931 Zp	00011.20
	M8 High nylon insert Nut DIN982 Zp	00022.20
	M8 x 30 HEX Bolt 8.8 DIN933 Zp	00008.20
	M8 High nylon insert Nut DIN982 Zp	00022.20
	M8 x 20 HEX Bolt 8.8 DIN933 Zp	00004.20
	M8 High nylon insert Nut DIN982 Zp	00022.20
	½ turnbuckle with Ø 10,5 mm hole	08886.95
	M10 x 90 Cyl. Head Sockt conn. Bolt 8.8 DIN931 Z	00076.20
	M10 Nut 6/S DIN934 Zp	00034.20

Tab. 6.7

UNIBUILD



Double sided spacer for vertical bracing

Fig 6.9



Fig.6.10

IMPORTANT:

The length of the Double Entry Bracing Spacer Bar (fig.6.9). is not equal to the length of the row spacer (code **SO210004.95**). The Double Entry Bracing Spacer Bar is ordered using the resultant of the following formula.

$$L \text{ (Bracing spacer)} = L_n \text{ (Net dist. between frames)} + 79 \text{ mm}$$

NOTE:

Minimum distance between frames (**L_n**) is **200** mm.

6.7

HORIZONTAL BRACING COMPONENTS



Bracket for horizontal bracing

Fig.6.11

FIG.	COMPONENTS	CODE
6.11	Bracket for horizontal bracing	08908.95
	5.5x19 HEXSDAP SCR. DIN 7504 /KZp	00058.20
	M8 x 20 HEX Bolt 8.8 DIN933 Zp	00004.20
	M8 High nylon insert Nut DIN982 Zp	00022.20
6.14	42 x 2 Modular bracing stirrup + Compensator	Table 6.5 & 6.6
	½ turnbuckle with Ø 10,5 mm hole	08886.95
	M10 x 90 Cyl. Head Sockt conn. Bolt 8.8 DIN931 Zp	00076.20
	M10 Nut 6/S DIN934 Zp	00034.20

The horizontal bracing brackets are screwed into the beams with a pair of self tapping screws (code 00058.20).

The 3 holes present in the side lip of the bracket provide the connection for the bracing stirrup components within the bay while the hexagonal insert in the centre of the bracket provides a seat for the introduction of the M8 x 20 bolt (code 00004.20) which in turn is used to provide a connection point for the bracing stirrups that are placed between the bays in double entry configurations.

UNIBUILD

6.8

MODULAR BRACING STIRRUPS

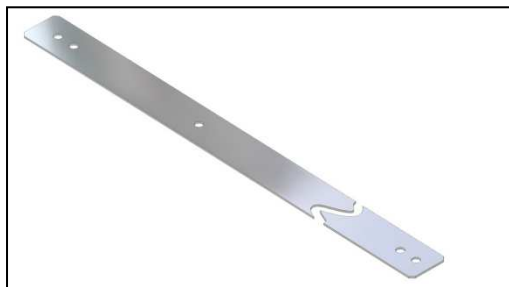


Fig 6.12

42x2 or 42x3 Modular bracing stirrups
to be coupled with the compensating bracing stirrups
unless the SPECIAL length stirrups are used.

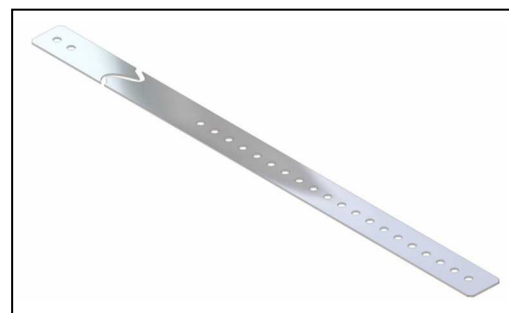


Fig 6.13

42x2 o 42x3 compensating bracing stirrup
to be paired with the modular bracing stirrups.

42x2 MODULAR BRACING STIRRUPS		
LENGTH (mm)	CODE	GAUGE
1200	08746.95	2 mm
2400	08747.95	2 mm
2450	08748.95	2 mm
SPECIAL	08749.95	2 mm

42x3 MODULAR BRACING STIRRUPS		
LENGTH (mm)	CODE	GAUGE
1200	08736.95	3 mm
2400	08737.95	3 mm
SPECIAL	08738.95	3 mm

Tab. 6.9

42x2 MODULAR BRACING STIRRUPS		
LENGTH (mm)	CODE	GAUGE
600	08741.95	2 mm
1000	08742.95	2 mm
1400	08743.95	2 mm
1800	08744.95	2 mm
2200	08745.95	2 mm

42x3 MODULAR BRACING STIRRUPS		
LENGTH (mm)	CODE	GAUGE
600	08731.95	3 mm
1000	08732.95	3 mm
1400	08733.95	3 mm
1800	08734.95	3 mm
2200	08735.95	3 mm

Tab. 6.10

Figure 6.14 shows the "modular bracing stirrup" with "compensator" assembly cases.

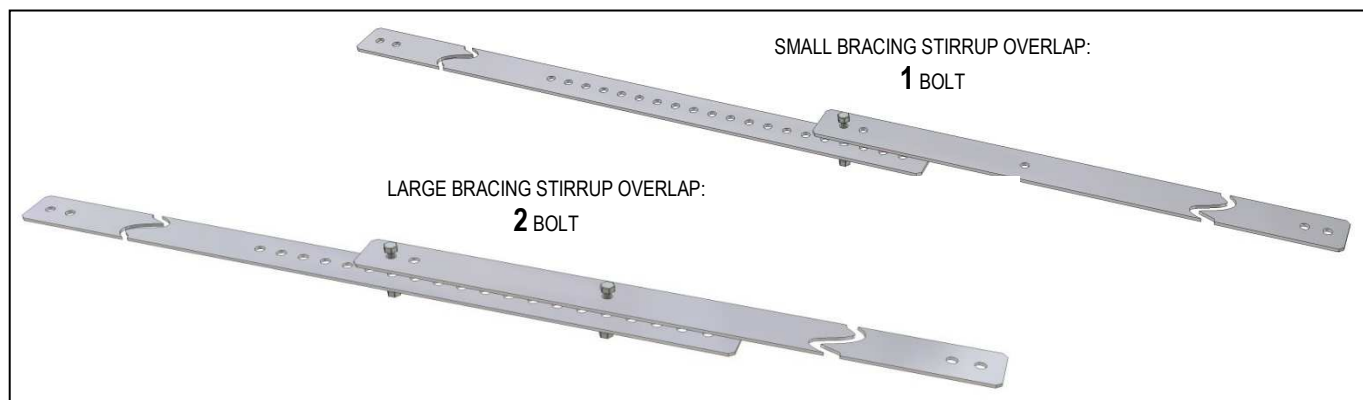


Fig 6.14

NOTE: The Metalsistem Excel Spread Sheet (available from the reserved section of the Metalsistem internet site) must be used to determine the correct combination of modular bracing stirrups to be applied to any one given bay/height combination.

UNIBUILD

6.9

BRACING ACCESSORY MACRO CODES

Macrocodes, containing all vertical and horizontal modular bracing stirrup accessories (both for 42x3 and 42x2), have been created to facilitate the quotation and order of bracing. Double side bracing also requires, in addition to the accessory macro codes, Bracing Bay Double Side Spacer Bars (code 08355.95) to be ordered separately. Refer to tables 6.11 and 6.12.

SINGLE ENTRY BRACING ACCESSORY MACRO CODES

	MACROCODIE	CONTENTS	Fig. 6.15 colours
UB SINGLE ENTRY GROUND BRACING ACCESSORIES	UBACC053.98	Brackets and bolts	
+			
UB SINGLE ENTRY BRACING ACCESSORIES	UBACC052.98	Brackets tensioners and bolts	
HORIZONTAL STRUT	08650.95	Raised pallet support bar	
+			
42X2 OR 42X3 MODULAR BRACING STIRRUPS + COMPENSATORS)	Table 6.9 & 6.10	-	

Tab. 6.11

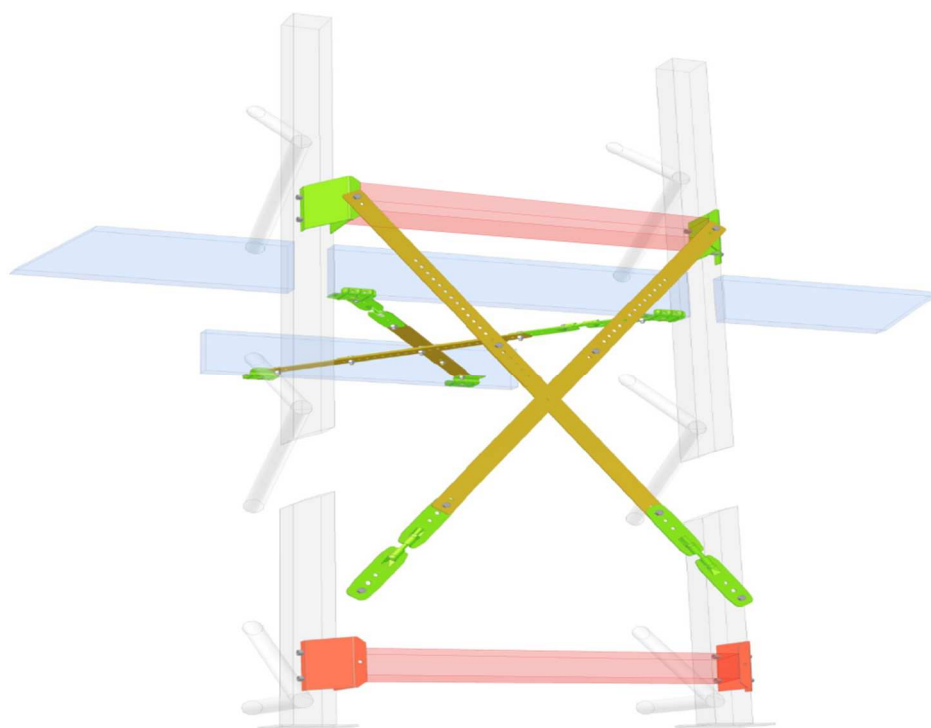


Fig. 6.15

EXAMPLE: the components required to make up the braced bay of figure 6.15 are:

- N° 2 Tab. 6.9 & 6.10 42x3 modular bracing stirrup + 42x3 compensator (vertical bracing)
- N° 2 Tab. 6.9 & 6.10 42x2 modular stirrup + 42x2 compensator (horizontal bracing)
- N° 2 08650.95 Raised pallet support bar (Horizontal strut) L= beam length – 6mm
- N° 1 UBACC053.98 UB SINGLE ENTRY GROUND BRACING ACCESSORIES
- N° 1 UBACC052.98 UB SINGLE ENTRY BRACING ACCESSORIES

UNIBUILD

DOUBLE ENTRY BRACING ACCESSORY MACRO CODES

	MACROCODE	CONTENTS	Fig. 6.16 Colours
UB DOUBLE ENTRY GROUND BRACING ACCESSORIES	UBACC055.98	Brackets and bolts	
+			
UB DOUBLE ENTRY BRACING ACCESSORIES	UBACC054.98	Brackets, tensioners and bolts	
+			
42X3 MODULAR BRACING STIRRUPS + COMPENSATORS	Table 6.9 & 6.10	-	
+			
DOUBLE SIDED SPACERS FOR VERTICAL BRACING	08355.95	-	

Tab.6.12

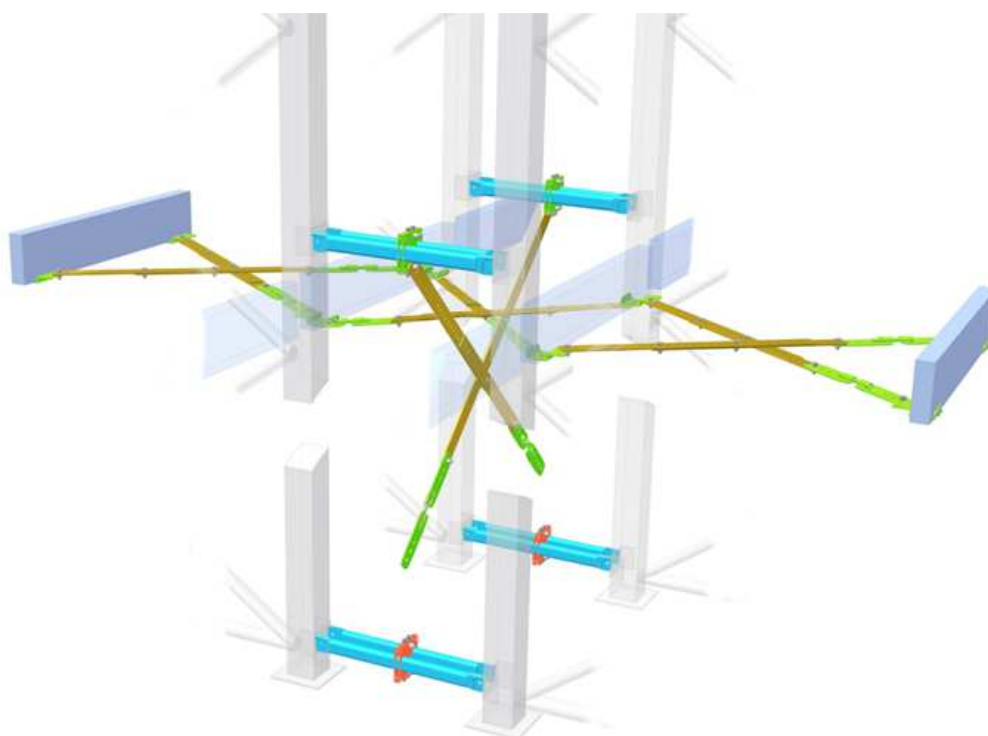


Fig. 6.16

EXAMPLE: the components required to make up the braced bay of figure 6.16 are:

- N° 2 Tab. 6.9 & 6.10 42x3 modular bracing stirrup + 42x3 compensator (vertical bracing)
- N° 4 Tab. 6.9 & 6.10 42x2 modular stirrup + 42x2 compensator (horizontal bracing) within and between the bays
- N° 1 UBACC055.98 UB DOUBLE ENTRY GROUND BRACING ACCESSORIES
- N° 1 UBACC054.98 UB DOUBLE ENTRY BRACING ACCESSORIES
- N° 8 08355.95 DOUBLE SIDED SPACERS FOR VERTICAL BRACING $L = L_n + 79 \text{ mm}$

UNIBUILD

7.0

UNIBUILD SPECIFIC ACCESSORIES

7.1

UNIBUILD UPRIGHT SPLICE

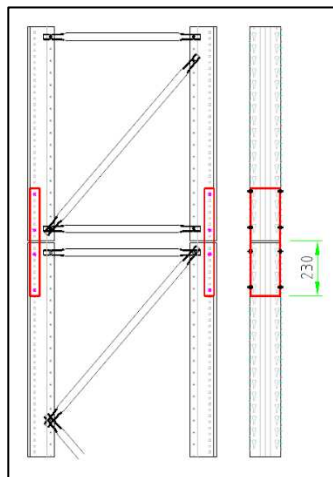


Fig. 7.1

Where necessary the UNIBUILD upright profile may be spliced with the UNIBUILD UPRIGHT SPLICE (code **UB210008.95**).

This component is inserted into the upright to the dimension shown in figure 7.1 (230mm). The introduction of the splice does not disturb the existing frame bracing which must be closed at the top with a horizontal spacer bar.

Application notes:

1. the splice may be used for the addition of only one loading level with a maximum load of 4000daN per pair of beams;
2. the splice upright may have a length no greater than 1500mm;
3. the splice frame must be of the same UNIBUILD series as the frame;
4. every splice must be fasted to the uprights with 8 M8x20 bolts and nylon nuts (codes 00004.20 + 00022.20);
5. the splicing frames must contain frame bracing following the notes of Section 4.3;
6. cross bracing must be placed between the final beam level under the splice and the beam level over the splice. This bracing must connect the 2 levels vertically and be present horizontally at both levels. At least one bay shall be braced for every eight consecutive bays.

UNIBUILD

8

PALLET RACKING FRAME AND BEAM LOAD BEARING CAPACITY NOTES

8.1

UNIBUILD BEAM LOAD BEARING CAPACITY NOTES

CHOOSING THE CORRECT UNIBUILD BEAM PAIR

Four UNIBUILD beam load bearing capacity tables have been developed. These have been divided into 2 groups of tables, each containing the load bearing capacities for riveted and welded connector beams applied to UNIBUILD 150-170-180 and UNIBUILD 200-220-300 uprights respectively. The tables have been colour coded as follows:

- | | | |
|---|---------------------------|--|
| - | GREEN table series | refer to beams applied to UNIBUILD 150 / 170 / 180 frames |
| - | Orange table | riveted beams - /22, /33, /4, /44, /5, /6 |
| - | Red table | welded beams - /4, /44, /5, /6 |
| - | BLUE table series | refer to beams applied to UNIBUILD 200 / 220 / 300 frames |
| - | Orange table | riveted beams - /22, /33, /4, /44, /5, /6 |
| - | Red table | welded beams - /4, /44, /5, /6 |

The beams are dimensioned following a process of iteration which starts with the examination of the GREEN series of load bearing capacity tables followed, if necessary, by the examination of the of the BLUE series of tables. The steps to be taken are:

1. Check the “**Maximum Permissible Unit Load per Profile**” section of the beam load bearing capacity tables before consulting the beam pair uniformly distributed load bearing capacity section for the applicable length. Both load bearing capacity conditions must be satisfied;
2. Check the maximum beam pair load bearing capacity in the frame load bearing capacity tables;
3. Table cells that are shaded in dark grey are for beam levels that must contain diagonal struts. The application of at least 6 pallet support beams properly fixed to the main beams as detailed in “Pallet Racking Accessories Technical Manual”, code MT07, may substitute diagonal struts for beam lengths up to 3600mm; for longer beams contact Metalsistem Technical Office);
4. Check that the UNIBUILD upright assumption are correct, if not, repeat steps 1 through to 4 using the alternative upright or beam series combination;
5. If step 4 fails, repeat steps 1 through to 4 replacing the GREEN table series with the BLUE series.

NOTE: The UNIBUILD series uprights have a net span between the uprights equal to the dimension of the beam (L_c), special beam lengths are ordered with this dimension.

Contact the Metalsistem Technical Office for applications with beam lengths (L_c) greater than **4000mm**.

UNIBUILD

8.2

UNIBUILD FRAME LOAD BEARING CAPACITY TABLE NOTES FOR USE

A set of 24 tables has been developed for the dimensioning of the UNIBUILD frame load bearing capacities. These have been divided into 2 groups of 12 tables. Each group of 12 refers to a specific set of beam load bearing capacity tables.

GREEN TABLES - RIVETED AND WELDED BEAM LOAD BEARING CAPACITIES FOR UNIBUILD 150 – 170 – 180 UPRIGHT PROFILES

A-1	UNIBUILD 150 / 106 RIVETED BEAM	B-1	UNIBUILD 170 / 106 RIVETED BEAM	C-1	UNIBUILD 180 / 106 RIVETED BEAM
A-2	UNIBUILD 150 / 140 RIVETED BEAM	B-2	UNIBUILD 170 / 140 RIVETED BEAM	C-2	UNIBUILD 180 / 140 RIVETED BEAM
A-3	UNIBUILD 150 / 70-106 WELDED BEAM	B-3	UNIBUILD 170 / 70-106 WELDED BEAM	C-3	UNIBUILD 180 / 70-106 WELDED BEAM
A-4	UNIBUILD 150 / 140-172 WELDED BEAM	B-4	UNIBUILD 170 / 140-172 WELDED BEAM	C-4	UNIBUILD 180 / 140-172 WELDED BEAM

BLUE TABLES - RIVETED AND WELDED BEAM LOAD BEARING CAPACITIES FOR UNIBUILD 200 – 220 – 300 UPRIGHT PROFILES

D-1	UNIBUILD 200 / 106 RIVETED BEAM	E-1	UNIBUILD 220 / 106 RIVETED BEAM	F-1	UNIBUILD 300 / 106 RIVETED BEAM
D-2	UNIBUILD 200 / 140 RIVETED BEAM	E-2	UNIBUILD 220 / 140 RIVETED BEAM	F-2	UNIBUILD 300 / 140 RIVETED BEAM
D-3	UNIBUILD 200 / 70-106 WELDED BEAM	E-3	UNIBUILD 220 / 70-106 WELDED BEAM	F-3	UNIBUILD 300 / 70-106 WELDED BEAM
D-4	UNIBUILD 200 / 140-172 WELDED BEAM	E-4	UNIBUILD 220 / 140-172 WELDED BEAM	F-4	UNIBUILD 300 / 140-172 WELDED BEAM

The range of frame load bearing capacity tables enable the user to optimize the pallet racking technical solution to the requirements of the project.

Every table is divided into 5 blocks of columns showing frame load bearing capacities as a function of the first beam level from ground. The first 3 blocks of 4 columns show unbraced bay frame load bearing capacities as a function of 6000mm, 8000mm and 10000mm frame heights each in turn divided into 4 sub-columns based on beam length. The following 2 blocks of 2 sub-columns show the frame load bearing capacities for partially braced and fully braced row configuration using the bracing tower system as defined in Section 6 of this manual. In these columns the symbols S and D correspond to:

S = Singled sided row
D = Double sided row set

The columns referring to partially and fully braced bays show the frame load bearing capacities to the left with the corresponding bracing tower performance to the right. If we take, for example, in the GREEN table C-1 we note a frame load bearing capacity of 23650 daN corresponding to the symbol 10S/8D for a first loading level of 1500mm under the partially braced columns. This means that a UNIBUILD 180 pallet racking frame, in loading conditions as defined in this manual, has the tabled load bearing capacity if 1 bracing tower is included in every 10 consecutive bays for single side rows or every 8 consecutive sets of double side rows.

Note: The bracing tower is considered to be part of the row, not an extension of it. In the single side example above this means that one of the ten bays in the row will have a bracing tower positioned behind it.

UNIBUILD**8.3****FRAME LOAD BEARING CAPACITY TABLE CONDITIONS OF USE**

A series of assumptions have been made in order to develop the frame load bearing capacity tables. These assumptions must be respected in order to ensure that the tabled frame load bearing capacities are applicable to the pallet racking installation under examination.

The tabled load bearing capacities have been provided with the following assumptions:

1. Minimum of 2 beam levels with at least 3 bays or minimum of 3 beams levels with at least 2 bays, in conformity with point C;
2. compliance with all conditions of use noted under the load bearing capacity tables;
3. full compliance with all points of Section 1;
4. all beam levels apply the same beam section;
5. equal load placed on all beam levels;
6. all beam levels above the first, set at a pitch equal to or less than the first beam level height from ground;
7. both frame uprights are loaded equally. If the frame uprights are not equally loaded the frame load bearing capacity will be determined by doubling the highest loaded upright;
8. maximum installation height of 10 meters;
9. Frame base anchored with at least 2 anchor bolts;
10. frame base to height ratio in conformity with the indications of paragraph 4.3;
11. class 300 or 400 pallet racking installation as defined by the UNI EN 15620 standards;
12. absence of forces such as wind, vibration, impact, seismic action and other forces not related to the standard conditions of static storage.

Apply the following modifications to the standard configurations and tables for non standard conditions:

- A. **Unbraced configurations of 2 bays containing only 2 beam levels:**
- apply a 20% reduction in the tabled frame load bearing capacities.
- B. **Unbraced configurations of only 1 bay:**
- minimum of 3 levels, apply a 50% reduction in the tabled frame load bearing capacities;
- maximum ground to first beam height as specified in the footnotes under the load bearing capacity tables;
- C. **Unbraced configurations of less than 4 bays:**
- apply horizontal bracing to a beam pair at the highest beam level;
- D. **Beam on ground:**
- refer to paragraph 8.7 for load bearing capacity calculations.

Contact the Metalsistem Technical Office if doubts arise for the application of the frame load bearing capacity tables.

UNIBUILD

8.4

PALLET RACKING ROWS USING CROSS BRACING ALTERNATIVE

Paragraph 8.2 describes the application of bracing towers, subject of paragraph 6.3, and their impact of the frame load bearing capacity tables. As an alternative, cross bracing, as described in Paragraphs 6.4 to 6.9, with 42x3 vertical bracing stirrups, may also be used however these are less efficient therefore the load bearing capacity tables may be used with cross bracing only if:

1. reference is made only to the partially braced column of the frame load bearing capacity tables;
2. the presence of braced bays in a row are doubled (or in other words, the performance of the bracing system is halved);
3. braced bays, containing both vertical and horizontal cross bracing, arriving at all beam levels.

Table 8.1 shows the performance of a single cross braced bay applied to the range of UNIBUILD upright profiles in both single and double side configurations. The values shown in this table represent the number of active bays per braced bay. For example: a tabled value 3 means that one bay in a row of 3 bays shall contain bracing placed at all beams levels.

UNIBUILD FRAME CROSS BRACING PERFORMANCE (ref. Partially braced column)		
UPRIGHT PROFILE	SINGLE SIDE CONFIGURATION	DOUBLE SIDE CONFIGURATION
UNIBUILD 150	6	3
UNIBUILD 170	5	2
UNIBUILD 180	4	2
UNIBUILD 200	3	2
UNIBUILD 220	3	1
UNIBUILD 300	3	1

Tab 8.1

8.5

LOAD BEARING CAPACITIES FOR FRAMES FROM 10 000 TO 12 000mm IN HEIGHT

The height limitation imposed by point 13 of Paragraph 8.3 can be lifted to 12000mm if the following considerations are made:

1. reference is to be made only to the Partially and Fully braced columns of the frame load bearing capacity tables;
2. apply a reduction of 5% to the applicable tabled frame load bearing capacity.

UNIBUILD

8.6

FRAME BRACING CONFIGURATION FOR LOAD BEARING CAPACITIES OVER 26000 daN

The tabled load bearing capacities assume that the UNIBUILD frame uses a standard single frame bracing configuration up to a load of 26000 daN. Loads exceeding 26000 daN require the application of double frame bracing rising from the base of the frame to a height of 3650mm.

The additional frame bracing is not contemplated in the standard frame macrocodes. These components need to be added by hand. Figure 4.6 of paragraph 4.2 illustrates the configuration of the additional components

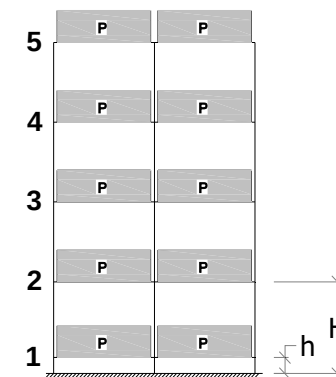
8.7

BEAM ON GROUND APPLICATIONS

A beam on ground is defined as a pair of beams of any dimension installed at a height no greater than 500mm ($h \leq 500\text{mm}$). This is a non standard application that does not comply with the standard assumptions of paragraph 8.3. This configuration can be adopted providing the following conditions are satisfied.

CALCULATION PROCEDURE:

1. Use the applicable load bearing capacity table considering the sum of loads arriving at level 2 at height "H" from ground (sum of levels 2, 3, 4 and 5 in diagram). All the conditions of use valid for standard configurations must be satisfied in this load case;
2. Apply the same load bearing capacity table a second time with the sum of all loads acting on the frame at height 500mm from ground (levels 1, 2, 3, 4 and 5 in diagram);
3. The table that satisfies both load conditions 1 and 2 may be selected.



8.8

BASE PLATE CONSIDERATIONS

A single UNIBUILD upright places a load on ground equivalent to half of the frame load over an area of 190mm x 130mm.

UNIBUILD

9.0

UNIBUILD LOAD BEARING CAPACITY TABLES

9.1

UNIBUILD HAND PICKING BEAM LOAD BEARING CAPACITIES

Picking beams are dedicated beams exclusively for manual picking operations. The load bearing capacities shown in table 9.1 refer to pairs of beams accessorized with Metalsistem H25, H29 or H58 shelving panels.

BEAM PAIR LOAD BEARING CAPACITIES [daN] – RIVETED GALVANIZED

- Beams assembled with CP210030.95 code safety pins and uniformly distributed load;
- Maximum deflection: 1/200 of "Lc"



Beam Safety Pin CP210030.95

	Beam Length (mm)	106/22 daN/pair
	1500	2000
	1800	1950
	2000	1750
	2100	1650
	2200	1600
	2300	1500
	2400	1450
	2700	1250
	2800	1150
	3000	900
	3300	700

Note: These load bearing capacities follow indications of UNI EN 15512

Tab 9.1

UNIBUILD

9.2

UNIBUILD 150/170/180 PALLET RACKING FRAME AND BEAM LOAD BEARING CAPACITIES



LOAD BEARING CAPACITY TABLE PER PAIR OF BEAMS WITH RIVETED CONNECTORS

- Beams assembled with **CP210030.95** code safety pins and uniformly distributed load;
- maximum deflection: 1/200 of the beam length "Lc"


 Beam Safety Pin
 CP210030.95

GREEN TABLES A - B - C

REFER ONLY TO THE UNIBUILD 150/170/180 LOAD BEARING CAPACITY TABLES

Profile Version	106/22	106/33	106/4	106/44	106/5	106/6	140/33	140/4	140/44	140/5	140/6
Maximum Unit Load	400 daN	1100 daN	1200 daN	1350 daN	1500 daN	1800 daN	1050 daN	1200 daN	1350 daN	1500 daN	1800 daN
Lc Beam length [mm]	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair
1500	2000	3500	4000	4500	5000	5500	3500	4000	4500	5000	5500
1800	1950	3500	4000	4500	4950	5500	3500	4000	4500	5000	5500
2000	1750	3500	3650	4100	4500	5350	3500	4000	4500	5000	5500
2100	1700	3300	3500	3900	4250	5100	3500	4000	4500	5000	5500
2200	1600	3000	3350	3750	4100	4850	3500	4000	4500	5000	5500
2300	1550	2800	3200	3550	3900	4600	3500	4000	4500	5000	5500
2400	1500	2600	2950	3300	3650	4250	3500	4000	4500	5000	5500
2700	1250	2100	2400	2700	3000	3400	3400	3800	4200	4700	5500
2800	-	1950	2150	2350	2600	3100	3200	3750	4200	4600	5400
3000	-	1350	1850	2050	2300	2700	2800	3450	3800	4250	5000
3300	-	1150	1550	1700	1900	2250	2250	2850	3150	3500	4200
3500	-	-	1350	1500	1650	1950	2000	2450	2750	3050	3600
3600	-	-	1300	1400	1550	1850	-	2350	2600	2900	3400
4000	-	-	1050	1150	1250	1500	-	1900	2100	2350	2800

Tab 9.2

Note : These load bearing capacities follow indications of UNI EN 15512



= MANDATORY USE OF DIAGONAL STRUTS

Maximum load per beam level frame limit:

UNIBUILD 150 = 5 000 daN

UNIBUILD



LOAD BEARING CAPACITY TABLE PER PAIR OF BEAMS WITH WELDED CONNECTORS

- Beams assembled with **SPACC003.95** code safety pins and uniformly distributed load;
maximum deflection: 1/200 of the beam length "Lc"



Beam Safety Pin
SPACC003.95

GREEN TABLES A - B - C

REFER ONLY TO THE UNIBUILD 150/170/180 LOAD BEARING CAPACITY TABLES

Profile Version	70/4	70/5	106/4	106/44	106/5	106/6	140/4	140/44	140/5	140/6	172/5	172/6
Maximum Unit Load	1200 daN Unit Load	1500 daN Unit Load	1200 daN Unit Load	1350 daN Unit Load	1500 daN Unit Load	1800 daN Unit Load	1200 daN Unit Load	1350 daN Unit Load	1500 daN Unit Load	1800 daN Unit Load	1350 daN Unit Load	1800 daN Unit Load
Lc Beam length [mm]	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair
1500	3000	3650	4000	4500	5000	5500	4000	4500	5000	5500	4500	5500
1800	2150	2600	4000	4500	5000	5500	4000	4500	5000	5500	4500	5500
2000	1750	2150	3750	4150	4550	5400	4000	4500	5000	5500	4500	5500
2100	1600	1950	3600	3950	4350	5150	4000	4500	5000	5500	4500	5500
2200	1500	1800	3450	3800	4150	4950	4000	4500	5000	5500	4500	5500
2300	1350	1650	3300	3650	4000	4650	4000	4500	5000	5500	4500	5500
2400	1250	1500	3050	3350	3700	4300	4000	4500	5000	5500	4500	5500
2700	1000	1200	2400	2700	3000	3400	3950	4400	4850	5500	4500	5500
2800	900	1100	2200	2450	2700	3150	3800	4250	4650	5450	4500	5500
3000	-	-	1950	2150	2350	2800	3450	3850	4300	5000	4500	5500
3300	-	-	1600	1800	1950	2300	2900	3250	3600	4250	4500	5500
3500	-	-	1400	1550	1700	2000	2550	2800	3100	3650	4400	5200
3600	-	-	1350	1450	1600	1900	2400	2650	2950	3450	4200	5000
4000	-	-	1100	1200	1300	1550	1950	2150	2400	2850	3600	4200

Tab 9.3

Note : These load bearing capacities follow indications of UNI EN 15512



= MANDATORY USE OF DIAGONAL STRUTS

Maximum load per beam level frame limit:

UNIBUILD 150 = 5 000 daN

UNIBUILD

A-1		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 150 - RIVETED 106 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	19350	19350	19350	19350	19350	19300	19000	19000	19000	19000	19300	18900	18800	18800	18800	19450	10S / 10D	19450	10S / 10D
	600	18850	18850	18850	18850	18850	18650	18450	18450	18450	18450	18650	18200	18100	18100	18050	19350	10S / 10D	19350	10S / 10D
	700	18350	18350	18350	18350	17950	18000	17850	17850	17850	17650	18000	17500	17450	17450	17150	19250	10S / 10D	19300	10S / 10D
	800	17850	17850	17850	17800	17050	17350	17250	17250	17250	16850	17350	16850	16750	16750	16250	19100	10S / 10D	19150	10S / 10D
	900	17350	17350	17350	17150	16150	16800	16700	16650	16650	16000	16800	16250	16100	15950	15350	18950	10S / 10D	19000	10S / 10D
	1000	16900	16800	16800	16450	15250	16300	16100	15950	15950	15150	16300	15600	15400	15100	14400	18750	10S / 10D	18750	10S / 10D
	1100	16350	16200	16200	15700	14450	15750	15400	15250	15250	14400	15750	14950	14700	14500	13850	18500	10S / 10D	18500	10S / 10D
	1200	15850	15650	15650	15000	13700	15250	14700	14550	14550	13700	15200	14300	14000	13850	13250	18250	10S / 10D	18250	10S / 10D
	1300	15250	15050	15050	14200	12850	14700	14000	13850	13850	12950	14600	13750	13350	13200	12600	18050	10S / 10D	18050	10S / 10D
	1400	14700	14400	14400	13400	12000	14100	13400	13200	13200	12300	14000	13200	12700	12500	12000	17800	10S / 10D	17850	10S / 10D
	1500	14100	13800	13750	12600	11150	13550	12750	12500	12500	11550	13350	12550	12100	11950	11400	17700	10S / 10D	17800	10S / 10D
	1600	13600	13250	13200	12050	10650	12950	12150	11850	11850	10900	12650	11950	11500	11300	10700	17600	10S / 10D	17700	10S / 10D
	1700	13100	12650	12600	11450	10150	12350	11500	11250	11250	10400	12050	11350	10950	10650	10150	17550	10S / 10D	17650	10S / 10D
	1800	12550	12050	12000	10850	9600	11700	10900	10650	10650	9850	11400	10750	10350	10050	9550	17550	10S / 10D	17600	10S / 10D
	1900	12050	11500	11450	10300	9100	11100	10300	10050	10050	9350	10800	10150	9800	9450	8950	17500	10S / 10D	17550	10S / 10D
	2000	11550	10900	10850	9700	8550	10450	9700	9450	9450	8800	10150	9550	9200	8750	8400	17450	10S / 10D	17500	10S / 10D
	2100	11050	10400	10350	9350	8300	10100	9300	9050	9050	8500	9750	9150	8750	8400	8050	17200	10S / 10D	17250	10S / 10D
	2200	10600	9950	9850	9000	7950	9700	8950	8700	8700	8150	9350	8750	8350	8000	7650	16450	10S / 10D	17000	10S / 10D
	2300	10100	9500	9400	8600	7650	9300	8550	8350	8350	7800	8900	8350	7900	7650	7350	15600	10S / 10D	16750	10S / 10D
	2400	9650	9050	8900	8250	7400	8950	8200	7950	7950	7500	8500	7950	7450	7300	7000	14750	10S / 10D	16500	10S / 10D
	2500	9150	8600	8400	7900	7100	8550	7800	7600	7600	7150	8100	7600	7000	6950	6650	13900	10S / 10D	16250	10S / 10D
	2600	8700	8100	7900	7500	6750	8150	7450	7250	7250	6750	7800	7250	6800	6750	6450	13900	10S / 10D	16100	10S / 10D
	2700	8200	7600	7400	7150	6500	7750	7050	6850	6850	6450	7550	6950	6550	6550	6250	13900	10S / 10D	15950	10S / 10D
	2800																13950	10S / 10D	15800	10S / 10D
	2900																13950	10S / 10D	15650	10S / 10D
	3000																13950	10S / 10D	15500	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. Maximum load per pair of beams applicable to UNIBUILD 150 frames = 5000 daN;
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2200mm;
4. **1 unbraced bay:** maximum ground to first beam height of 1500mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

A-2		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 150 - RIVETED 140 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	10S / 10D	19450	10S / 10D
	600	19350	19350	19350	19350	19150	19350	19350	19350	19350	19150	19350	19350	19350	19350	19150	19350	10S / 10D	19350	10S / 10D
	700	19300	19300	19300	19300	18900	19300	19300	19300	19300	18900	19300	19300	19300	19300	18900	19300	10S / 10D	19300	10S / 10D
	800	19150	19150	19150	19150	18550	19100	19000	19000	19000	18400	19100	18850	18850	18850	18350	19150	10S / 10D	19150	10S / 10D
	900	18850	18850	18850	18700	18000	18650	18600	18600	18600	17750	18650	18450	18450	18450	17700	19000	10S / 10D	19000	10S / 10D
	1000	18500	18500	18500	18300	17450	18200	18200	18200	18100	17100	18200	18000	18000	18000	17000	18750	10S / 10D	18750	10S / 10D
	1100	18100	18100	18050	17800	17000	17750	17750	17750	17550	16650	17700	17550	17550	17500	16450	18500	10S / 10D	18500	10S / 10D
	1200	17700	17700	17550	17350	16450	17350	17350	17300	17050	16150	17250	17050	17050	16900	15900	18250	10S / 10D	18250	10S / 10D
	1300	17300	17300	17100	16900	16000	16900	16900	16800	16550	15750	16800	16600	16550	16400	15400	18050	10S / 10D	18050	10S / 10D
	1400	16850	16850	16650	16500	15500	16500	16450	16350	16100	15300	16400	16100	16050	15850	15000	17800	10S / 10D	17850	10S / 10D
	1500	16450	16400	16200	16100	15050	16100	15950	15900	15600	14950	15950	15650	15550	15300	14500	17700	10S / 10D	17800	10S / 10D
	1600	16000	15950	15750	15600	14550	15700	15500	15450	15150	14500	15550	15150	15050	14750	14050	17600	10S / 10D	17700	10S / 10D
	1700	15600	15550	15300	15100	14100	15250	15050	14950	14700	14050	15050	14700	14550	14200	13500	17550	10S / 10D	17650	10S / 10D
	1800	15200	15100	14900	14650	13550	14850	14550	14450	14200	13550	14600	14200	14000	13650	13050	17550	10S / 10D	17600	10S / 10D
	1900	14800	14650	14450	14150	13100	14400	14050	13900	13700	13100	14150	13700	13500	13100	12500	17500	10S / 10D	17550	10S / 10D
	2000	14400	14250	14000	13650	12600	13950	13600	13400	13200	12600	13700	13200	13000	12550	12000	17450	10S / 10D	17500	10S / 10D
	2100	13950	13750	13500	13150	12200	13600	13200	13000	12750	12200	13250	12800	12550	12100	11500	17200	10S / 10D	17250	10S / 10D
	2200	13500	13250	12950	12650	11700	13200	12800	12550	12350	11750	12850	12400	12150	11600	11100	17000	10S / 10D	17000	10S / 10D
	2300	13000	12750	12450	12150	11250	12800	12350	12150	11900	11350	12400	12000	11750	11150	10600	16750	10S / 10D	16750	10S / 10D
	2400	12550	12250	11950	11650	10800	12400	11950	11700	11450	10950	12000	11600	11300	10650	10150	16500	10S / 10D	16500	10S / 10D
	2500	12100	11750	11400	11150	10350	12000	11550	11300	11000	10500	11550	11200	10900	10200	9650	16250	10S / 10D	16250	10S / 10D
	2600	11650	11300	10900	10700	9900	11600	11150	10850	10550	10100	11200	10800	10500	9900	9400	16100	10S / 10D	16100	10S / 10D
	2700	11200	10800	10400	10200	9450	11200	10750	10400	10100	9650	10850	10450	10050	9600	9050	15950	10S / 10D	15950	10S / 10D
	2800																15750	10S / 10D	15800	10S / 10D
	2900																15600	10S / 10D	15650	10S / 10D
	3000																15450	10S / 10D	15500	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. Maximum load per pair of beams applicable to UNIBUILD 150 frames = 5000 daN;
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2200mm;
4. **1 unbraced bay:** maximum ground to first beam height of 1500mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

A-3		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 150 - WELDED 70 and 106 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	10S / 10D	19450	10S / 10D
	600	19350	19350	19350	19350	19150	19350	19350	19350	19350	19150	19300	19300	19300	19300	19150	19350	10S / 10D	19350	10S / 10D
	700	19300	19300	19300	19300	18900	19200	19200	19200	19200	18900	18850	18850	18850	18850	18850	19300	10S / 10D	19300	10S / 10D
	800	19150	19150	19150	19000	18100	18850	18850	18850	18850	18550	18450	18450	18450	18450	18450	19150	10S / 10D	19150	10S / 10D
	900	19000	18950	19000	18400	17300	18600	18600	18600	18600	17850	18050	18050	18050	18050	17950	19000	10S / 10D	19000	10S / 10D
	1000	18750	18600	18650	17850	16450	18300	18300	18300	18300	17050	17650	17650	17650	17650	17300	18750	10S / 10D	18750	10S / 10D
	1100	18450	18100	18100	17150	15450	17950	17950	17850	17700	16400	17300	17300	17300	17300	16700	18500	10S / 10D	18500	10S / 10D
	1200	18050	17650	17500	16450	14400	17550	17400	17350	17050	15750	16950	16950	16950	16950	16050	18250	10S / 10D	18250	10S / 10D
	1300	17600	17200	16950	15500	13500	17200	16900	16850	16400	15100	16500	16500	16500	16500	15450	18050	10S / 10D	18050	10S / 10D
	1400	17150	16750	16350	14500	12600	16750	16450	16450	15800	14300	16100	16100	16100	16100	14900	17850	10S / 10D	17850	10S / 10D
	1500	16750	16300	15750	13500	11650	16300	15950	15950	15150	13500	15650	15650	15600	15500	14250	17800	10S / 10D	17800	10S / 10D
	1600	16300	15800	15150	12850	11150	15800	15500	15500	14550	12750	15250	15150	15100	14850	13600	17700	10S / 10D	17700	10S / 10D
	1700	15850	15300	14500	12200	10550	15350	15000	15000	13900	12200	14700	14550	14500	14250	13050	17650	10S / 10D	17650	10S / 10D
	1800	15450	14750	13900	11550	10000	14850	14550	14500	13200	11550	14200	13900	13900	13700	12400	17600	10S / 10D	17600	10S / 10D
	1900	15000	14250	13250	10950	9450	14350	14050	14000	12550	10950	13700	13300	13300	13100	11850	17550	10S / 10D	17550	10S / 10D
	2000	14550	13750	12650	10300	8900	13900	13550	13450	11850	10400	13200	12700	12700	12500	11250	17500	10S / 10D	17500	10S / 10D
	2100	14050	13250	12250	10100	8700	13450	13100	13000	11450	10000	12800	12200	12200	12000	10800	17250	10S / 10D	17250	10S / 10D
	2200	13500	12700	11850	9900	8550	13000	12650	12500	11000	9600	12400	11750	11750	11550	10400	17000	10S / 10D	17000	10S / 10D
	2300	13000	12200	11450	9700	8450	12550	12200	12050	10600	9250	11950	11250	11250	11050	9950	16750	10S / 10D	16750	10S / 10D
	2400	12450	11700	11050	9500	8250	12100	11700	11600	10150	8850	11550	10750	10750	10600	9500	16500	10S / 10D	16500	10S / 10D
	2500	11950	11200	10700	9250	8100	11650	11250	11150	9700	8550	11150	10300	10300	10100	9100	16250	10S / 10D	16250	10S / 10D
	2600	11400	10700	10300	9050	7950	11200	10800	10700	9300	8150	10800	9950	9950	9750	8700	15850	10S / 10D	16100	10S / 10D
	2700	10850	10200	9900	8850	7750	10750	10350	10250	8850	7750	10400	9650	9650	9350	8400	15450	10S / 10D	15950	10S / 10D
	2800																15050	10S / 10D	15800	10S / 10D
	2900																14650	10S / 10D	15650	10S / 10D
	3000																14250	10S / 10D	15500	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. Maximum load per pair of beams applicable to UNIBUILD 150 frames = 5000 daN;
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2200mm;
4. **1 unbraced bay:** maximum ground to first beam height of 1500mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

A-4		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 150 - WELDED 140 and 172 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	19450	10S / 10D	19450	10S / 10D
	600	19350	19350	19350	19350	19150	19350	19350	19350	19350	19150	19350	19350	19350	19350	19150	19350	10S / 10D	19350	10S / 10D
	700	19300	19300	19300	19300	18900	19300	19300	19300	19300	18900	19300	19300	19300	19300	18900	19300	10S / 10D	19300	10S / 10D
	800	19150	19150	19150	19150	18550	19150	19150	19150	19150	18550	19000	19000	19000	19000	18550	19150	10S / 10D	19150	10S / 10D
	900	19000	19000	19000	19000	18200	18750	18750	18750	18750	18200	18600	18600	18600	18600	18200	19000	10S / 10D	19000	10S / 10D
	1000	18750	18750	18750	18700	17900	18350	18350	18350	18350	17700	18150	18150	18150	18150	17850	18750	10S / 10D	18750	10S / 10D
	1100	18500	18500	18500	18400	17400	18050	18050	18050	18050	17250	17750	17750	17750	17750	17350	18500	10S / 10D	18500	10S / 10D
	1200	18200	18200	18150	18000	16900	17700	17700	17700	17700	16850	17350	17350	17350	17350	16900	18250	10S / 10D	18250	10S / 10D
	1300	17850	17850	17700	17500	16300	17400	17400	17400	17400	16350	16950	16950	16950	16950	16400	18050	10S / 10D	18050	10S / 10D
	1400	17500	17500	17250	17000	15800	17000	17000	17000	16950	16000	16550	16550	16550	16550	16000	17850	10S / 10D	17850	10S / 10D
	1500	17150	17150	16800	16500	15250	16600	16600	16600	16500	15650	16250	16250	16250	16250	15550	17800	10S / 10D	17800	10S / 10D
	1600	16750	16750	16350	16000	14650	16200	16200	16200	16000	15250	15900	15900	15900	15900	15200	17700	10S / 10D	17700	10S / 10D
	1700	16300	16300	15900	15500	14100	15800	15800	15800	15600	14800	15450	15450	15450	15400	14650	17650	10S / 10D	17650	10S / 10D
	1800	15900	15900	15500	15000	13450	15400	15400	15400	15150	14300	15050	15050	15050	14850	14200	17600	10S / 10D	17600	10S / 10D
	1900	15450	15450	15050	14500	12850	15050	15050	14950	14700	13800	14600	14600	14600	14350	13700	17550	10S / 10D	17550	10S / 10D
	2000	15050	15050	14600	14050	12300	14650	14650	14500	14300	13300	14200	14200	14200	13850	13250	17500	10S / 10D	17500	10S / 10D
	2100	14600	14600	14150	13600	12000	14250	14250	14050	13850	12950	13750	13750	13750	13400	12750	17250	10S / 10D	17250	10S / 10D
	2200	14150	14150	13750	13200	11700	13850	13850	13600	13400	12500	13350	13350	13350	12950	12350	17000	10S / 10D	17000	10S / 10D
	2300	13700	13700	13300	12800	11400	13450	13450	13150	12950	12100	12950	12950	12850	12500	11850	16750	10S / 10D	16750	10S / 10D
	2400	13250	13250	12850	12400	11150	13000	13000	12700	12550	11650	12500	12500	12350	12050	11400	16500	10S / 10D	16500	10S / 10D
	2500	12750	12750	12400	12000	10850	12600	12600	12250	12100	11250	12100	12100	11900	11600	10950	16250	10S / 10D	16250	10S / 10D
	2600	12300	12300	11950	11550	10550	12200	12150	11850	11650	10850	11750	11750	11550	11250	10650	16100	10S / 10D	16100	10S / 10D
	2700	11850	11850	11500	11150	10300	11800	11700	11400	11200	10450	11450	11400	11200	10900	10350	15950	10S / 10D	15950	10S / 10D
	2800																15800	10S / 10D	15800	10S / 10D
	2900																15650	10S / 10D	15650	10S / 10D
	3000																15500	10S / 10D	15500	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. Maximum load per pair of beams applicable to UNIBUILD 150 frames = 5000 daN;
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2200mm;
4. **1 unbraced bay:** maximum ground to first beam height of 1500mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

B-1		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 170 - RIVETED 106 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	25050	25050	25050	25050	25050	24600	24400	24400	24400	24400	24600	23900	23850	23850	23850	25650	7S / 7D	25650	7S / 7D
	600	24200	24200	24200	24150	23500	23600	23350	23350	23350	23150	23600	22800	22650	22600	22450	25550	7S / 7D	25550	7S / 7D
	700	23350	23350	23300	22850	21750	22650	22250	22100	22100	21650	22550	21750	21500	21200	20900	25450	7S / 7D	25450	7S / 7D
	800	22450	22350	22300	21500	20050	21650	21150	20850	20850	20150	21550	20650	20250	20000	19450	25250	7S / 7D	25250	7S / 7D
	900	21550	21300	21250	20200	18350	20750	19900	19600	19600	18650	20600	19550	19050	18750	18100	25050	7S / 7D	25050	7S / 7D
	1000	20650	20300	20250	18900	16700	19850	18650	18350	18350	17100	19600	18450	17800	17500	16800	24750	8S / 8D	24850	8S / 8D
	1100	19650	19200	19100	17450	15450	18750	17600	17400	17350	16050	18450	17450	16750	16600	15700	24400	8S / 8D	24650	8S / 8D
	1200	18650	18100	18000	16050	14200	17700	16550	16450	16200	14900	17300	16450	15700	15700	14600	24000	8S / 8D	24400	8S / 8D
	1300	17950	17300	17000	15050	13300	16600	15550	15450	15100	13750	16150	15300	14650	14650	13650	23650	8S / 8D	24100	8S / 8D
	1400	17200	16500	15950	14100	12400	15650	14550	14550	14200	13000	14950	14200	13600	13600	12700	23350	8S / 8D	23750	8S / 8D
	1500	16500	15650	14950	13100	11550	14650	13600	13600	13350	12200	14050	13450	12650	12650	11900	22250	8S / 8D	23550	8S / 8D
	1600	15700	14900	14250	12500	11000	13650	12650	12650	12500	11400	13150	12700	11700	11700	11100	20650	9S / 9D	23350	8S / 8D
	1700	14850	14100	13550	11900	10450	13050	12050	12050	11900	10900	12500	12050	11100	11100	10500	20450	9S / 9D	23300	8S / 8D
	1800	14050	13350	12850	11300	9950	12400	11450	11450	11300	10350	11900	11400	10500	10500	9950	20250	9S / 9D	23150	8S / 8D
	1900	13200	12600	12150	10700	9400	11800	10800	10800	10700	9800	11250	10750	9850	9800	9400	20100	9S / 9D	23050	8S / 8D
	2000	12400	11800	11500	10050	8850	11150	10200	10200	10100	9250	10600	10100	9250	9100	8800	19900	10S / 10D	22950	8S / 8D
	2100	11850	11300	10950	9700	8550	10700	9800	9800	9700	8900	10200	9550	8900	8700	8450	18800	10S / 10D	22550	8S / 8D
	2200	11350	10750	10450	9350	8300	10200	9400	9400	9300	8550	9800	9050	8500	8350	8050	17750	10S / 10D	22200	9S / 9D
	2300	10800	10200	9900	8950	7950	9750	9050	9050	8900	8200	9350	8550	8150	8000	7700	16650	10S / 10D	21800	9S / 9D
	2400	10300	9650	9400	8600	7650	9300	8650	8650	8550	7800	8950	8000	7750	7650	7350	15600	10S / 10D	21450	9S / 9D
	2500	9750	9150	8850	8250	7400	8850	8250	8250	8150	7500	8550	7500	7400	7250	7000	14500	10S / 10D	21100	9S / 9D
	2600	9250	8600	8350	7850	7100	8350	7850	7850	7750	7100	8250	7300	7150	7100	6750	14500	10S / 10D	20800	9S / 9D
	2700	8700	8050	7800	7500	6750	7900	7450	7450	7400	6700	7900	7050	6950	6900	6600	14450	10S / 10D	20550	9S / 9D
	2800	8200	7500	7300	7150	6500	7650	7100	7050	7050	6500	7650	6850	6700	6700	6350	14400	10S / 10D	20300	9S / 9D
	2900																14350	10S / 10D	20050	9S / 9D
	3000																14350	10S / 10D	19800	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **unbraced suspended levels:** maximum ground to first beam height of 2400mm;
3. **unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
4. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

B-2		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 170 - RIVETED 140 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	7S / 7D	25650	7S / 7D
	600	25550	25550	25550	25550	25250	25550	25550	25550	25550	25250	25550	25550	25550	25550	25250	25550	7S / 7D	25550	7S / 7D
	700	25450	25450	25450	25300	24800	25350	25300	25300	25100	24550	25300	25050	25050	25050	24500	25450	7S / 7D	25450	7S / 7D
	800	25000	25000	24800	24650	23800	24650	24650	24650	24250	23550	24550	24250	24250	24200	23300	25250	7S / 7D	25250	7S / 7D
	900	24400	24350	24050	24000	22800	23900	23900	23850	23350	22500	23800	23400	23400	23200	22150	25050	7S / 7D	25050	7S / 7D
	1000	23850	23650	23300	23300	21800	23200	23100	22950	22500	21450	23000	22600	22550	22250	21000	24750	8S / 8D	24850	8S / 8D
	1100	23100	22950	22600	22500	20950	22550	22350	22200	21800	20750	22350	21850	21700	21300	20200	24400	8S / 8D	24650	8S / 8D
	1200	22400	22250	21900	21650	20150	21900	21650	21450	21050	20050	21650	21100	20900	20350	19450	24000	8S / 8D	24400	8S / 8D
	1300	21850	21650	21200	20850	19350	21300	20900	20650	20250	19350	20950	20250	20000	19500	18600	23650	8S / 8D	24100	8S / 8D
	1400	21250	21050	20500	20050	18500	20600	20050	19800	19500	18550	20200	19450	19100	18600	17800	23350	8S / 8D	23750	8S / 8D
	1500	20700	20400	19800	19200	17700	19900	19250	18950	18700	17750	19550	18700	18300	17800	17000	23200	8S / 8D	23550	8S / 8D
	1600	20050	19750	19150	18450	16900	19200	18450	18100	17950	16950	18850	17950	17550	16950	16200	23000	8S / 8D	23350	8S / 8D
	1700	19450	19050	18500	17700	16100	18600	17750	17400	17200	16200	18100	17300	16850	16200	15500	23000	8S / 8D	23300	8S / 8D
	1800	18800	18350	17900	16950	15250	17950	17100	16700	16450	15550	17350	16700	16150	15400	14800	22950	8S / 8D	23150	8S / 8D
	1900	18200	17650	17250	16200	14450	17350	16450	16000	15700	14850	16650	16050	15450	14600	14100	22950	8S / 8D	23050	8S / 8D
	2000	17550	16950	16650	15450	13650	16750	15750	15300	14950	14200	15900	15450	14750	13800	13350	22900	8S / 8D	22950	8S / 8D
	2100	16850	16250	15900	14800	13200	16150	15150	14700	14350	13600	15250	14800	14100	13250	12800	22550	8S / 8D	22550	8S / 8D
	2200	16150	15550	15200	14200	12700	15550	14500	14100	13800	13050	14600	14150	13450	12650	12250	22150	9S / 9D	22200	9S / 9D
	2300	15450	14850	14500	13550	12250	14950	13900	13500	13200	12500	14000	13500	12750	12050	11600	21750	9S / 9D	21800	9S / 9D
	2400	14750	14150	13800	12950	11750	14350	13300	12900	12600	11950	13350	12850	12100	11450	11050	21400	9S / 9D	21450	9S / 9D
	2500	14050	13450	13100	12300	11300	13750	12650	12300	12050	11400	12750	12150	11450	10900	10450	21000	9S / 9D	21100	9S / 9D
	2600	13350	12700	12400	11700	10800	13150	12050	11650	11450	10800	12300	11700	11100	10550	10150	20750	9S / 9D	20800	9S / 9D
	2700	12650	12000	11700	11100	10350	12550	11400	11050	10900	10250	11850	11250	10700	10200	9850	20500	9S / 9D	20550	9S / 9D
	2800	11950	11300	11000	10450	9850	11900	10900	10550	10350	9800	11450	10800	10350	9900	9500	20300	9S / 9D	20300	9S / 9D
	2900																19950	10S / 10D	20050	9S / 9D
	3000																19650	10S / 10D	19800	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **unbraced suspended levels:** maximum ground to first beam height of 2400mm;
3. **unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
4. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

B-3		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 170 - WELDED 70 and 106 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	7S / 7D	25650	7S / 7D
	600	25550	25550	25550	25550	25250	25550	25550	25550	25550	25250	25200	25200	25200	25200	25200	25550	7S / 7D	25550	7S / 7D
	700	25450	25450	25450	24600	23300	25300	25300	25300	25250	24400	24600	24600	24600	24600	24600	25450	7S / 7D	25450	7S / 7D
	800	25250	25050	24600	23150	21300	24900	24850	24800	24500	23150	23900	23900	23900	23900	23600	25250	7S / 7D	25250	7S / 7D
	900	24950	24400	23750	21700	19400	24250	23950	23900	23350	21700	23250	23250	23250	23250	22250	25050	7S / 7D	25050	7S / 7D
	1000	24350	23800	22900	20200	17500	23650	23000	22950	22150	20350	22550	22550	22550	22550	20950	24850	8S / 8D	24850	8S / 8D
	1100	23650	22850	21950	18600	16100	22900	22300	22150	20800	18800	21900	21900	21750	21550	19750	24650	8S / 8D	24650	8S / 8D
	1200	22950	21900	20950	17000	14700	22150	21550	21400	19400	17250	21250	20900	20850	20450	18500	24400	8S / 8D	24400	8S / 8D
	1300	22300	21000	19650	15900	13750	21400	20800	20600	18000	15700	20350	19750	19700	19250	17250	24100	8S / 8D	24100	8S / 8D
	1400	21650	20050	18350	14850	12800	20500	19850	19650	17000	14850	19500	18600	18600	18100	16100	23750	8S / 8D	23750	8S / 8D
	1500	21000	19150	17000	13750	11900	19600	18950	18700	16000	13950	18700	17750	17750	17000	15100	23550	8S / 8D	23550	8S / 8D
	1600	20250	18250	16200	13100	11350	18700	18000	17700	14950	13100	17900	16950	16900	15950	14100	23350	8S / 8D	23350	8S / 8D
	1700	19500	17350	15400	12450	10750	17900	17300	16900	14250	12450	17200	16150	16050	15200	13450	23300	8S / 8D	23300	8S / 8D
	1800	18700	16400	14600	11800	10200	17150	16500	16100	13550	11850	16550	15350	15200	14500	12850	22750	8S / 8D	23150	8S / 8D
	1900	17950	15500	13800	11150	9600	16350	15650	15300	12850	11250	15900	14550	14350	13800	12250	22250	8S / 8D	23050	8S / 8D
	2000	17200	14600	13000	10500	9050	15600	14850	14450	12150	10600	15250	13750	13450	13050	11600	21750	9S / 9D	22950	8S / 8D
	2100	16450	14100	12650	10300	8900	15000	14300	13950	11750	10250	14550	13200	13000	12550	11150	20700	9S / 9D	22550	8S / 8D
	2200	15750	13550	12300	10100	8750	14400	13800	13450	11300	9850	13850	12700	12500	12100	10700	19700	10S / 10D	22200	9S / 9D
	2300	15000	13050	12000	9950	8600	13800	13250	12900	10900	9500	13150	12150	12050	11600	10300	18650	10S / 10D	21800	9S / 9D
	2400	14300	12550	11650	9750	8450	13250	12700	12400	10450	9100	12500	11600	11550	11100	9850	17600	10S / 10D	21450	9S / 9D
	2500	13550	12000	11300	9550	8300	12650	12150	11850	10000	8750	11800	11100	11100	10600	9450	16600	10S / 10D	21100	9S / 9D
	2600	12850	11500	10950	9350	8150	12050	11600	11350	9600	8400	11400	10750	10750	10200	9050	16150	10S / 10D	20800	9S / 9D
	2700	12100	11000	10650	9150	8000	11450	11050	10850	9150	8000	11050	10450	10450	9800	8650	15700	10S / 10D	20550	9S / 9D
	2800	11400	10500	10300	8950	7850	10950	10600	10450	8950	7850	10700	10100	10100	9400	8300	15250	10S / 10D	20300	9S / 9D
	2900																14800	10S / 10D	20050	9S / 9D
	3000																14400	10S / 10D	19800	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **unbraced suspended levels:** maximum ground to first beam height of 2400mm;
3. **unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
4. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

B-4		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 170 - WELDED 140 and 172 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	25650	7S / 7D	25650	7S / 7D
	600	25550	25550	25550	25550	25250	25550	25550	25550	25550	25250	25550	25550	25550	25550	25250	25550	7S / 7D	25550	7S / 7D
	700	25450	25450	25450	25450	24900	25450	25450	25450	25450	24900	25300	25300	25300	25300	24900	25450	7S / 7D	25450	7S / 7D
	800	25250	25250	25250	25250	24300	25000	25000	25000	25000	24450	24650	24650	24650	24650	24450	25250	7S / 7D	25250	7S / 7D
	900	25050	25050	25050	24750	23250	24450	24450	24450	24450	23800	24000	24000	24000	24000	23650	25050	7S / 7D	25050	7S / 7D
	1000	24750	24750	24450	24050	22200	23900	23900	23900	23850	23000	23350	23350	23350	23350	22700	24850	8S / 8D	24850	8S / 8D
	1100	24200	24200	23750	23100	21300	23350	23350	23350	23100	22100	22800	22800	22800	22800	21850	24650	8S / 8D	24650	8S / 8D
	1200	23650	23650	23000	22200	20450	22800	22800	22800	22400	21200	22300	22300	22300	22050	21000	24400	8S / 8D	24400	8S / 8D
	1300	23000	23000	22400	21200	19100	22250	22250	22000	21700	20300	21650	21650	21650	21350	20500	24100	8S / 8D	24100	8S / 8D
	1400	22350	22350	21800	20200	17850	21650	21650	21250	21000	19500	21000	21000	21000	20550	19950	23750	8S / 8D	23750	8S / 8D
	1500	21700	21700	21250	19250	16550	21000	21000	20450	20350	18700	20400	20400	20400	19700	19050	23550	8S / 8D	23550	8S / 8D
	1600	21150	21150	20500	18300	15800	20350	20350	19650	19650	17850	19750	19750	19550	18750	18150	23350	8S / 8D	23350	8S / 8D
	1700	20550	20450	19800	17400	15000	19700	19700	18950	18850	17050	19000	19000	18700	17950	17400	23300	8S / 8D	23300	8S / 8D
	1800	19950	19750	19100	16450	14200	19050	18950	18250	18050	16150	18300	18200	17850	17100	16600	23150	8S / 8D	23150	8S / 8D
	1900	19400	19050	18350	15550	13350	18400	18150	17550	17250	15350	17550	17400	17000	16250	15800	23050	8S / 8D	23050	8S / 8D
	2000	18800	18400	17650	14600	12600	17700	17400	16850	16450	14500	16850	16550	16200	15400	15000	22950	8S / 8D	22950	8S / 8D
	2100	18050	17650	16950	14250	12350	17150	16750	16250	15850	14000	16200	15950	15550	14800	14400	22550	8S / 8D	22550	8S / 8D
	2200	17350	16950	16300	13900	12100	16600	16150	15650	15250	13450	15600	15300	14950	14200	13850	22200	9S / 9D	22200	9S / 9D
	2300	16600	16250	15650	13500	11800	16000	15550	15050	14650	12950	15000	14700	14300	13600	13300	21800	9S / 9D	21800	9S / 9D
	2400	15850	15550	14950	13150	11550	15450	14950	14450	14050	12400	14400	14050	13700	13000	12700	21450	9S / 9D	21450	9S / 9D
	2500	15150	14800	14300	12800	11300	14850	14300	13850	13450	11850	13800	13400	13050	12400	12100	21100	9S / 9D	21100	9S / 9D
	2600	14400	14100	13600	12400	11050	14300	13700	13250	12850	11350	13300	13000	12650	12100	11650	20800	9S / 9D	20800	9S / 9D
	2700	13650	13400	12950	12050	10750	13650	13100	12650	12250	10800	12850	12550	12200	11800	11250	20550	9S / 9D	20550	9S / 9D
	2800	12950	12700	12250	11700	10500	12950	12500	12050	11750	10500	12400	12150	11750	11500	10800	20300	9S / 9D	20300	9S / 9D
	2900																19950	10S / 10D	20050	9S / 9D
	3000																19650	10S / 10D	19800	10S / 10D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **unbraced suspended levels:** maximum ground to first beam height of 2400mm;
3. **unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
4. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

C-1		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 180 - RIVETED 106 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	28400	28400	28350	28350	27950	27550	27300	27300	27300	27300	27550	26650	26550	26450	26450	29300	6S / 6D	29300	6S / 6D
	600	27200	26850	26850	26550	25750	26350	25800	25800	25800	25450	26350	25200	24850	24600	24600	29150	6S / 6D	29150	6S / 6D
	700	25950	25550	25500	24700	23500	25100	24200	24050	24050	23350	25100	23800	23200	22650	22650	29000	6S / 6D	29000	6S / 6D
	800	24700	24200	24150	22900	21250	23900	22600	22350	22350	21300	23700	22300	21700	21200	20950	28750	6S / 6D	28750	6S / 6D
	900	23450	22900	22800	21050	19100	22600	21150	21050	20850	19400	22250	20850	20250	19700	19200	28550	7S / 7D	28550	7S / 7D
	1000	22250	21550	21450	19200	16950	21300	19750	19700	19250	17500	20800	19400	18800	18200	17500	28300	7S / 7D	28300	7S / 7D
	1100	21100	20300	20050	17750	15700	19900	18450	18400	17950	16350	19200	18100	17400	17100	16150	27850	7S / 7D	28050	7S / 7D
	1200	19900	19000	18600	16350	14400	18450	17150	17100	16700	15200	17550	16800	15950	15950	14850	27000	7S / 7D	27850	7S / 7D
	1300	19050	18000	17500	15350	13500	17050	15850	15800	15450	14050	16400	15750	14900	14900	13850	26600	7S / 7D	27400	7S / 7D
	1400	18250	17000	16400	14300	12600	16050	14850	14850	14550	13300	15200	14600	13850	13850	12900	26250	7S / 7D	26950	7S / 7D
	1500	17400	16000	15300	13300	11750	15050	13850	13850	13650	12450	14300	13800	12900	12900	12100	23650	8S / 8D	26750	7S / 7D
	1600	16450	15200	14600	12700	11200	14050	12900	12900	12700	11650	13400	12950	11950	11950	11250	21000	9S / 9D	26500	7S / 7D
	1700	15500	14450	13900	12100	10650	13450	12300	12300	12100	11100	12800	12300	11350	11350	10650	20800	9S / 9D	26400	7S / 7D
	1800	14550	13700	13200	11500	10100	12800	11700	11700	11500	10550	12150	11600	10700	10700	10150	20600	9S / 9D	26250	7S / 7D
	1900	13600	12900	12500	10850	9550	12150	11050	11050	10900	10000	11500	10950	10100	10050	9550	20350	9S / 9D	26050	7S / 7D
	2000	12700	12150	11750	10250	9000	11550	10450	10450	10300	9450	10850	10250	9500	9350	9000	20150	9S / 9D	25850	7S / 7D
	2100	12150	11600	11200	9900	8700	11050	10050	10050	9950	9050	10450	9750	9100	8950	8600	19100	10S / 10D	25450	7S / 7D
	2200	11600	11050	10700	9500	8450	10550	9650	9650	9550	8700	10000	9250	8700	8600	8300	18000	10S / 10D	25050	7S / 7D
	2300	11050	10500	10150	9150	8100	10050	9250	9250	9150	8350	9600	8700	8350	8200	7900	16950	10S / 10D	24700	8S / 8D
	2400	10550	9950	9600	8750	7800	9550	8850	8850	8750	7950	9200	8200	7950	7850	7550	15900	10S / 10D	24300	8S / 8D
	2500	10000	9400	9050	8400	7550	9050	8450	8450	8350	7600	8800	7700	7550	7450	7200	14800	10S / 10D	23900	8S / 8D
	2600	9450	8850	8500	8050	7250	8550	8050	8050	7950	7250	8500	7450	7300	7300	6950	14750	10S / 10D	23600	8S / 8D
	2700	8900	8250	7950	7650	6900	8100	7650	7650	7550	6850	8100	7250	7050	7050	6700	14700	10S / 10D	23350	8S / 8D
	2800	8350	7700	7400	7300	6650	7800	7300	7200	7200	6600	7800	7000	6800	6800	6500	14650	10S / 10D	23050	8S / 8D
	2900																14550	10S / 10D	22800	8S / 8D
	3000																14500	10S / 10D	22500	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

C-2		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 180 - RIVETED 140 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	6S / 6D	29300	6S / 6D
	600	29150	29150	29150	29150	28850	29150	29150	29150	29150	28850	29150	29150	29150	29150	28800	29150	6S / 6D	29150	6S / 6D
	700	29000	29000	29000	28750	28200	28700	28650	28650	28250	27650	28600	28350	28350	28200	27250	29000	6S / 6D	29000	6S / 6D
	800	28400	28350	28000	27750	26750	27850	27800	27650	27100	26350	27650	27250	27150	26850	25850	28750	6S / 6D	28750	6S / 6D
	900	27550	27400	27000	26750	25350	26900	26750	26600	26050	25200	26700	26150	26000	25550	24500	28550	7S / 7D	28550	7S / 7D
	1000	26750	26500	26000	25750	24000	26000	25700	25550	25000	24000	25700	25050	24800	24200	23100	28300	7S / 7D	28300	7S / 7D
	1100	26000	25650	25150	24700	22900	25150	24700	24450	24100	22900	24800	24050	23700	23100	22050	27850	7S / 7D	28050	7S / 7D
	1200	25200	24800	24300	23650	21850	24350	23700	23350	23100	21850	23950	23000	22550	21950	21000	27350	7S / 7D	27850	7S / 7D
	1300	24450	23950	23450	22600	20550	23500	22700	22250	22050	20750	22950	22000	21500	20800	19950	26950	7S / 7D	27400	7S / 7D
	1400	23650	23100	22650	21550	19300	22650	21700	21250	21100	19800	22000	20950	20450	19650	18850	26600	7S / 7D	26950	7S / 7D
	1500	22850	22200	21800	20500	18050	21800	20750	20200	20200	18800	21100	20200	19700	18900	18200	26350	7S / 7D	26750	7S / 7D
	1600	22100	21400	20950	19550	17200	21000	19750	19200	19200	17800	20150	19450	18950	18150	17550	26150	7S / 7D	26500	7S / 7D
	1700	21350	20600	20100	18600	16400	20200	19050	18350	18350	17000	19250	18600	18050	17100	16550	26100	7S / 7D	26400	7S / 7D
	1800	20600	19750	19300	17650	15550	19400	18350	17450	17450	16150	18400	17700	17200	16100	15550	26000	7S / 7D	26250	7S / 7D
	1900	19850	18950	18450	16700	14700	18600	17650	16600	16600	15300	17500	16800	16300	15050	14500	25950	7S / 7D	26050	7S / 7D
	2000	19100	18100	17600	15750	13900	17850	17000	15700	15700	14500	16600	15900	15450	14000	13500	25850	7S / 7D	25850	7S / 7D
	2100	18300	17300	16800	15150	13400	17150	16250	15100	15100	13950	15900	15250	14700	13450	12950	25150	7S / 7D	25450	7S / 7D
	2200	17450	16500	16050	14550	12950	16400	15500	14500	14500	13350	15200	14550	13950	12900	12350	24400	8S / 8D	25050	7S / 7D
	2300	16650	15750	15250	13900	12450	15700	14750	13850	13800	12800	14500	13900	13200	12300	11850	23700	8S / 8D	24700	8S / 8D
	2400	15850	14950	14500	13300	12000	15000	14000	13250	13150	12250	13800	13200	12450	11750	11300	22950	8S / 8D	24300	8S / 8D
	2500	15000	14150	13700	12700	11500	14300	13250	12600	12500	11650	13100	12550	11700	11200	10700	22200	9S / 9D	23900	8S / 8D
	2600	14200	13350	12950	12100	11050	13600	12500	12000	11850	11100	12700	12050	11300	10900	10450	22200	9S / 9D	23600	8S / 8D
	2700	13400	12550	12150	11500	10550	12900	11750	11350	11200	10500	12250	11600	10950	10600	10100	22100	9S / 9D	23350	8S / 8D
	2800	12550	11750	11400	10850	10150	12250	11250	10850	10650	10100	11800	11100	10600	10250	9800	21550	9S / 9D	23050	8S / 8D
	2900																21050	9S / 9D	22800	8S / 8D
	3000																20550	9S / 9D	22500	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

C-3		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 180 - WELDED 70 and 106 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	6S / 6D	29300	6S / 6D
	600	29150	29150	29150	29150	28050	29150	29150	29150	28850	28700	28700	28700	28700	28700	28700	29150	6S / 6D	29150	6S / 6D
	700	29000	29000	28650	26950	25350	28950	28850	28800	28200	26950	28000	28000	28000	28000	27750	29000	6S / 6D	29000	6S / 6D
	800	28750	28150	27450	24800	22750	28350	27850	27800	26800	25150	27050	27050	27050	27050	25900	28750	6S / 6D	28750	6S / 6D
	900	28200	27100	26200	22600	20200	27300	26700	26700	25150	22800	26050	26050	26050	25950	24150	28550	7S / 7D	28550	7S / 7D
	1000	27400	26050	24950	20400	17650	26250	25550	25550	23550	20550	25100	24850	24850	24500	22400	28300	7S / 7D	28300	7S / 7D
	1100	26550	24850	23100	18800	16200	25200	24650	24400	21750	19000	24100	23550	23550	22800	20550	28050	7S / 7D	28050	7S / 7D
	1200	25700	23700	21200	17150	14850	24150	23550	23050	20000	17450	23100	22250	22250	21150	18750	27850	7S / 7D	27850	7S / 7D
	1300	24700	22250	19850	16050	13900	23100	22300	21700	18200	15900	21950	20850	20850	19750	17500	27400	7S / 7D	27400	7S / 7D
	1400	23700	20800	18550	15000	12950	21950	21050	20500	17200	15000	20850	19500	19450	18400	16300	26950	7S / 7D	26950	7S / 7D
	1500	22700	19400	17200	13900	12000	20800	19850	19250	16150	14100	20050	18400	18400	17300	15300	25950	7S / 7D	26750	7S / 7D
	1600	21800	18500	16400	13250	11400	19650	18650	18050	15150	13250	19300	17350	17300	16150	14250	24550	8S / 8D	26500	7S / 7D
	1700	20850	17550	15600	12550	10850	18900	17900	17200	14450	12550	18400	16550	16500	15450	13650	23850	8S / 8D	26400	7S / 7D
	1800	19900	16650	14800	11900	10250	18150	17150	16400	13750	11950	17500	15700	15700	14750	13050	23200	8S / 8D	26250	7S / 7D
	1900	18950	15750	13950	11250	9650	17400	16400	15550	13000	11350	16600	14900	14900	14000	12350	22550	8S / 8D	26050	7S / 7D
	2000	18000	14850	13150	10600	9100	16650	15600	14750	12300	10700	15700	14100	14100	13300	11750	21900	9S / 9D	25850	7S / 7D
	2100	17250	14300	12850	10400	8950	16000	15000	14200	11900	10350	15050	13500	13500	12800	11350	20850	9S / 9D	25450	7S / 7D
	2200	16450	13800	12500	10200	8800	15300	14350	13700	11450	9950	14400	12950	12950	12300	10900	19800	10S / 10D	25050	7S / 7D
	2300	15700	13300	12150	10050	8650	14600	13750	13150	11000	9600	13750	12400	12400	11800	10450	18800	10S / 10D	24700	8S / 8D
	2400	14900	12800	11850	9850	8550	13900	13100	12650	10600	9250	13100	11850	11850	11300	10000	17750	10S / 10D	24300	8S / 8D
2500	14150	12300	11500	9650	8400	13200	12450	12100	10150	8850	12450	11250	11250	10800	9550	16700	10S / 10D	23900	8S / 8D	
2600	13400	11750	11200	9450	8250	12500	11850	11600	9750	8500	12000	10950	10950	10400	9200	16250	10S / 10D	23600	8S / 8D	
2700	12600	11250	10850	9300	8100	11800	11200	11050	9300	8100	11600	10650	10650	9950	8800	15800	10S / 10D	23350	8S / 8D	
2800	11850	10750	10550	9100	7950	11300	10800	10650	9100	7950	11150	10350	10350	9550	8450	15350	10S / 10D	23050	8S / 8D	
2900																14900	10S / 10D	22800	8S / 8D	
3000																14450	10S / 10D	22500	8S / 8D	

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

C-4		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 180 - WELDED 140 and 172 BEAM																		
GREEN table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	29300	6S / 6D	29300	6S / 6D
	600	29150	29150	29150	29150	28850	29150	29150	29150	29150	28850	29150	29150	29150	29150	28850	29150	6S / 6D	29150	6S / 6D
	700	29000	29000	29000	29000	28400	29000	29000	29000	29000	28400	28750	28750	28750	28750	28400	29000	6S / 6D	29000	6S / 6D
	800	28750	28750	28750	28450	27350	28650	28650	28650	28400	27650	27950	27950	27950	27950	27550	28750	6S / 6D	28750	6S / 6D
	900	28550	28550	28400	27450	25800	27900	27900	27900	27500	26450	27150	27150	27150	27150	26400	28550	7S / 7D	28550	7S / 7D
	1000	28200	28200	27500	26400	24300	27200	27200	27200	26500	25250	26400	26400	26400	25950	25250	28300	7S / 7D	28300	7S / 7D
	1100	27350	27350	26750	25200	22500	26450	26450	26450	25650	24100	25700	25700	25700	25150	24400	28050	7S / 7D	28050	7S / 7D
	1200	26550	26550	26000	23950	20650	25700	25700	25450	24850	22900	24950	24950	24950	24300	23550	27850	7S / 7D	27850	7S / 7D
	1300	25850	25850	25050	22450	19300	24950	24950	24450	23950	21750	24100	24100	24000	23050	22350	27400	7S / 7D	27400	7S / 7D
	1400	25100	25000	24050	20950	18050	24100	24050	23350	22850	20500	23200	23150	22750	21800	21150	26950	7S / 7D	26950	7S / 7D
	1500	24400	24050	23100	19450	16700	23250	23000	22300	21700	19300	22300	22100	21650	20850	20000	26750	7S / 7D	26750	7S / 7D
	1600	23600	23150	22150	18500	15950	22350	21950	21200	20600	18050	21400	21000	20500	19700	18900	26500	7S / 7D	26500	7S / 7D
	1700	22850	22250	21150	17600	15150	21550	21050	20250	19650	17200	20500	20050	19550	18800	18000	26400	7S / 7D	26400	7S / 7D
	1800	22050	21350	20200	16650	14300	20750	20200	19350	18700	16400	19600	19150	18600	17800	17100	26250	7S / 7D	26250	7S / 7D
	1900	21250	20450	19200	15700	13550	19900	19350	18400	17750	15550	18700	18200	17700	16750	16200	26050	7S / 7D	26050	7S / 7D
	2000	20450	19550	18250	14800	12750	19100	18500	17450	16800	14700	17800	17250	16750	15750	15350	25850	7S / 7D	25850	7S / 7D
	2100	19600	18750	17550	14450	12500	18400	17800	16800	16200	14200	17100	16550	16050	15200	14800	25400	7S / 7D	25450	7S / 7D
	2200	18750	18000	16850	14100	12250	17700	17150	16150	15550	13650	16350	15900	15400	14650	14200	24800	8S / 8D	25050	7S / 7D
	2300	17950	17200	16150	13750	12000	17000	16450	15500	14950	13150	15650	15200	14750	14150	13600	24250	8S / 8D	24700	8S / 8D
	2400	17100	16400	15450	13400	11700	16300	15750	14850	14350	12550	14950	14500	14100	13600	13050	23650	8S / 8D	24300	8S / 8D
2500	16250	15600	14750	13050	11450	15600	15100	14200	13750	12050	14250	13850	13450	13000	12400	23100	8S / 8D	23900	8S / 8D	
2600	15400	14800	14050	12700	11250	14900	14400	13550	13100	11500	13800	13400	13000	12600	12000	22600	8S / 8D	23600	8S / 8D	
2700	14600	14000	13350	12350	10950	14200	13700	12900	12500	11000	13400	12950	12550	12150	11550	22100	9S / 9D	23350	8S / 8D	
2800	13750	13250	12650	11950	10700	13500	13050	12350	12000	10700	12950	12500	12100	11750	11100	21550	9S / 9D	23050	8S / 8D	
2900																21050	9S / 9D	22800	8S / 8D	
3000																20550	9S / 9D	22500	8S / 8D	

SPECIFIC LOAD CONDITIONS:

- Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
- Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
- 2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
- 1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
- The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

9.3

UNIBUILD 200/220/300 PALLET RACKING FRAME AND BEAM LOAD BEARING CAPACITIES



LOAD BEARING CAPACITY TABLE PER PAIR OF BEAMS WITH RIVETED CONNECTORS

- Beams assembled with **CP210030.95** code safety pins;
- uniformly distributed load;
- maximum deflection: 1/200 of the beam length "Lc"


 Beam Safety Pin
CP210030.95

BLUE TABLES D-E-F

REFER ONLY TO THE UNIBUILD 200/220/300 LOAD BEARING CAPACITY TABLES

Profile Version	106/22	106/33	106/4	106/44	106/5	106/6	140/33	140/4	140/44	140/5	140/6
Maximum Unit Load	400 daN	1100 daN	1200 daN	1350 daN	1500 daN	1800 daN	1050 daN	1200 daN	1350 daN	1500 daN	1800 daN
Lc Beam length [mm]	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair
1500	2000	3500	4000	4500	5000	5500	3500	4000	4500	5000	5500
1800	1950	3500	4000	4500	5000	5500	3500	4000	4500	5000	5500
2000	1750	3500	3850	4300	4700	5500	3500	4000	4500	5000	5500
2100	1650	3500	3700	4100	4450	5300	3500	4000	4500	5000	5500
2200	1600	3200	3550	3900	4300	5050	3500	4000	4500	5000	5500
2300	1500	3000	3400	3750	4100	4850	3500	4000	4500	5000	5500
2400	1450	2800	3150	3500	3850	4500	3500	4000	4500	5000	5500
2700	1250	2250	2550	2800	3100	3650	3500	4000	4400	4900	5500
2800	-	2100	2300	2550	2800	3300	3400	3800	4250	4750	5500
3000	-	1400	2050	2250	2450	2900	3000	3450	3850	4300	5000
3300	-	1200	1700	1900	2050	2400	2400	2950	3350	3700	4350
3500	-	-	1500	1650	1800	2100	2150	2650	2950	3250	3800
3600	-	-	1400	1550	1700	2000	-	2550	2800	3100	3600
4000	-	-	1150	1300	1400	1650	-	2100	2300	2550	3000

Tab 9.4

Note : These load bearing capacities follow indications of UNI EN 15512



= MANDATORY USE OF DIAGONAL STRUTS

UNIBUILD



LOAD BEARING CAPACITY TABLE PER PAIR OF BEAMS WITH WELDED CONNECTORS

- Beams assembled with **SPACC003.95** code safety pins;
- uniformly distributed load;
- maximum deflection: 1/200 of the beam length "Lc"


 Beam Safety
Pin
SPACC003.95

BLUE TABLES D-E-F

REFER ONLY TO THE UNIBUILD 200/220/300 LOAD BEARING CAPACITY TABLES

Profile Version	70/4	70/5	106/4	106/44	106/5	106/6	140/4	140/44	140/5	140/6	172/5	172/6
Maximum Unit Load	1200 daN Unit Load	1500 daN Unit Load	1200 daN Unit Load	1350 daN Unit Load	1500 daN Unit Load	1800 daN Unit Load	1200 daN Unit Load	1350 daN Unit Load	1500 daN Unit Load	1800 daN Unit Load	1350 daN Unit Load	1800 daN Unit Load
Lc Beam length [mm]	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair	L.B.C. daN/ pair
1500	3000	3650	4000	4500	5000	5500	4000	4500	5000	5500	4500	5500
1800	2150	2600	4000	4500	5000	5500	4000	4500	5000	5500	4500	5500
2000	1750	2150	3950	4350	4750	5500	4000	4500	5000	5500	4500	5500
2100	1600	1950	3800	4150	4550	5350	4000	4500	5000	5500	4500	5500
2200	1500	1800	3650	4000	4350	5150	4000	4500	5000	5500	4500	5500
2300	1350	1650	3500	3850	4200	4900	4000	4500	5000	5500	4500	5500
2400	1250	1500	3250	3550	3900	4550	4000	4500	5000	5500	4500	5500
2700	1000	1200	2650	2900	3200	3700	4000	4500	5000	5500	4500	5500
2800	900	1100	2400	2650	2900	3350	3800	4250	4750	5500	4500	5500
3000	-	-	2150	2350	2550	3000	3450	3850	4300	5000	4500	5500
3300	-	-	1800	2000	2150	2500	2950	3350	3700	4350	4500	5500
3500	-	-	1600	1750	1900	2200	2700	3000	3300	3850	4400	5200
3600	-	-	1550	1650	1800	2100	2600	2850	3150	3650	4200	5000
4000	-	-	1300	1400	1500	1750	2150	2350	2600	3050	3600	4200

Note : These load bearing capacities follow indications of UNI EN 15512

Tab 9.5



= MANDATORY USE OF DIAGONAL STRUTS

UNIBUILD

D-1		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 200 - RIVETED 106 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	30150	30150	30150	29900	29300	29100	28850	28850	28850	28850	29100	28200	28050	27750	27750	31150	6S / 6D	31150	6S / 6D
	600	28800	28550	28550	27950	26950	27750	27100	27000	27000	26650	27750	26550	26050	25700	25650	30950	6S / 6D	30950	6S / 6D
	700	27400	27100	26950	25800	24450	26400	25300	25050	25050	24350	26400	24850	24100	23450	23450	30800	6S / 6D	30800	6S / 6D
	800	25950	25600	25350	23700	22000	25100	23500	23150	23150	22000	24650	23150	22450	21800	21550	30500	6S / 6D	30500	6S / 6D
	900	24550	24000	23800	21600	19550	23400	21850	21650	21400	19950	22950	21450	20800	20150	19650	30250	6S / 6D	30250	6S / 6D
	1000	23150	22400	22200	19450	17150	21700	20250	20150	19600	17900	21200	19750	19150	18450	17800	30000	6S / 6D	30000	6S / 6D
	1100	22150	21200	20600	18050	15900	20300	18850	18800	18350	16700	19500	18500	17650	17350	16400	29050	6S / 6D	29750	6S / 6D
	1200	21150	19950	19000	16600	14600	18900	17500	17450	17050	15500	17800	17200	16150	16150	15100	27300	7S / 7D	29500	6S / 6D
	1300	20100	18700	17900	15550	13700	17450	16100	16100	15800	14300	16650	16050	15100	15100	14100	26950	7S / 7D	29050	6S / 6D
	1400	19000	17500	16800	14550	12800	16450	15150	15150	14850	13500	15450	14900	14000	14000	13100	26600	7S / 7D	28600	6S / 6D
	1500	17900	16250	15650	13550	11900	15450	14200	14150	13950	12700	14550	14050	13050	13050	12300	23950	8S / 8D	28400	7S / 7D
	1600	16900	15500	14950	12900	11400	14450	13200	13200	13000	11950	13700	13150	12150	12100	11450	21350	9S / 9D	28150	7S / 7D
	1700	15900	14750	14200	12300	10800	13800	12550	12550	12400	11350	13050	12400	11500	11500	10900	21100	9S / 9D	28050	7S / 7D
	1800	14900	13950	13500	11650	10250	13150	11900	11900	11800	10750	12400	11600	10900	10900	10350	20900	9S / 9D	27950	7S / 7D
	1900	13900	13200	12750	11050	9650	12550	11250	11250	11150	10200	11750	10850	10300	10300	9750	20650	9S / 9D	27800	7S / 7D
	2000	12900	12450	12000	10400	9150	11900	10600	10600	10550	9600	11100	10100	9700	9700	9200	20400	9S / 9D	27600	7S / 7D
	2100	12300	11900	11500	10050	8800	11350	10200	10200	10150	9250	10700	9650	9300	9300	8800	19350	10S / 10D	27200	7S / 7D
	2200	11750	11300	10950	9650	8550	10850	9800	9800	9700	8850	10250	9200	8900	8900	8450	18300	10S / 10D	26750	7S / 7D
	2300	11150	10750	10400	9300	8250	10300	9350	9350	9300	8500	9850	8750	8500	8500	8050	17200	10S / 10D	26350	7S / 7D
	2400	10600	10200	9900	8950	7950	9800	8950	8950	8900	8100	9450	8300	8100	8100	7700	16150	10S / 10D	25900	7S / 7D
	2500	10050	9600	9350	8550	7600	9250	8550	8550	8500	7700	9000	7850	7700	7700	7350	15100	10S / 10D	25450	7S / 7D
	2600	9450	9050	8800	8200	7350	8750	8150	8150	8100	7400	8650	7600	7500	7500	7100	15000	10S / 10D	25000	8S / 8D
	2700	8900	8450	8250	7800	7050	8200	7750	7750	7700	7000	8200	7400	7300	7300	6850	14900	10S / 10D	24550	8S / 8D
	2800	8300	7900	7750	7450	6700	7850	7400	7350	7350	6700	7850	7150	7100	7100	6650	14850	10S / 10D	24150	8S / 8D
	2900	7750	7300	7200	7050	6450	7500	7050	7000	7000	6450	7500	6950	6850	6850	6400	14750	10S / 10D	23700	8S / 8D
	3000																14650	10S / 10D	23250	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

D-2		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 200 - RIVETED 140 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	6S / 6D	31150	6S / 6D
	600	30950	30950	30950	30950	30600	30950	30950	30950	30950	30600	30950	30950	30950	30950	30400	30950	6S / 6D	30950	6S / 6D
	700	30800	30800	30800	30600	29800	30450	30400	30300	29750	29200	30350	30000	30000	29700	28650	30800	6S / 6D	30800	6S / 6D
	800	30200	30200	29850	29450	28250	29500	29350	29150	28450	27700	29300	28800	28650	28200	27100	30500	6S / 6D	30500	6S / 6D
	900	29300	29150	28750	28300	26700	28550	28250	28000	27450	26400	28250	27600	27300	26700	25550	30250	6S / 6D	30250	6S / 6D
	1000	28400	28150	27700	27150	25200	27550	27100	26850	26400	25200	27200	26350	26000	25200	24050	30000	6S / 6D	30000	6S / 6D
	1100	27550	27250	26850	25900	23800	26700	25950	25600	25350	23950	26250	25350	24750	24000	22900	29700	6S / 6D	29750	6S / 6D
	1200	26750	26400	26000	24650	22500	25800	24800	24400	24250	22750	25300	24300	23500	22750	21750	29050	6S / 6D	29500	6S / 6D
	1300	25850	25350	24900	23350	21100	24950	23650	23150	23150	21550	24100	23200	22500	21750	20900	28700	6S / 6D	29050	6S / 6D
	1400	25000	24300	23850	22100	19700	23950	22750	22050	22050	20400	22900	22150	21550	20600	20050	28300	7S / 7D	28600	6S / 6D
	1500	24100	23250	22750	20800	18300	22950	21800	21000	21000	19250	21950	21200	20600	19650	19100	28050	7S / 7D	28400	7S / 7D
	1600	23300	22350	21800	19850	17450	21950	20900	19900	19900	18150	21000	20250	19650	18500	18100	27750	7S / 7D	28150	7S / 7D
	1700	22500	21500	20900	18850	16600	21150	19950	19100	19000	17300	20000	19250	18650	17550	17250	27700	7S / 7D	28050	7S / 7D
	1800	21700	20600	20000	17900	15800	20300	19050	18300	18050	16450	19000	18250	17700	16600	16350	27700	7S / 7D	27950	7S / 7D
	1900	20900	19700	19100	16950	14950	19500	18100	17500	17100	15650	18000	17300	16750	15650	15450	27650	7S / 7D	27800	7S / 7D
	2000	20100	18850	18150	16000	14100	18650	17200	16650	16150	14800	17000	16300	15800	14700	14550	27600	7S / 7D	27600	7S / 7D
	2100	19200	18000	17350	15400	13600	17900	16500	15950	15500	14250	16300	15600	15000	14100	13800	26600	7S / 7D	27200	7S / 7D
	2200	18300	17150	16550	14750	13150	17150	15800	15250	14900	13650	15600	14900	14200	13450	13100	25600	7S / 7D	26750	7S / 7D
	2300	17400	16300	15750	14150	12650	16350	15050	14500	14250	13050	14850	14200	13400	12750	12350	24600	8S / 8D	26350	7S / 7D
	2400	16550	15450	14950	13550	12200	15600	14350	13800	13600	12450	14150	13500	12600	12100	11550	23550	8S / 8D	25900	7S / 7D
2500	15650	14600	14150	12950	11700	14800	13650	13100	13000	11900	13450	12800	11800	11450	10800	22550	8S / 8D	25450	7S / 7D	
2600	14750	13750	13350	12350	11300	14050	12950	12350	12350	11350	13000	12350	11450	11150	10500	22500	8S / 8D	25000	8S / 8D	
2700	13900	12900	12500	11700	10800	13250	12250	11650	11650	10700	12550	11850	11100	10800	10250	22300	8S / 8D	24550	8S / 8D	
2800	13000	12050	11700	11100	10350	12600	11600	11150	11050	10300	12100	11350	10800	10450	9950	21750	9S / 9D	24150	8S / 8D	
2900	12100	11200	10900	10500	9850	11900	11000	10600	10450	9850	11650	10850	10450	10150	9650	21200	9S / 9D	23700	8S / 8D	
3000																20700	9S / 9D	23250	8S / 8D	

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

D-3

FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 200 - WELDED 70 and 106 BEAM

BLUE table	H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	6S / 6D	31150	6S / 6D
	600	30950	30950	30950	30550	29350	30950	30950	30950	30950	30300	30600	30600	30600	30600	30600	6S / 6D	30950	6S / 6D
	700	30800	30800	30450	28050	26400	30750	30450	30300	29650	28150	29800	29800	29800	29100	29800	6S / 6D	30800	6S / 6D
	800	30500	29650	28800	25550	23450	30000	29200	29100	28000	26000	28650	28650	28550	28550	26900	6S / 6D	30500	6S / 6D
	900	29800	28500	27100	23100	20600	28900	28150	28000	25850	23350	27550	27350	27150	27000	24750	6S / 6D	30250	6S / 6D
	1000	28900	27300	25400	20600	17800	27750	27150	26900	23750	20750	26450	25750	25700	25300	22650	6S / 6D	30000	6S / 6D
	1100	28000	25700	23400	18950	16350	26600	25950	25300	21950	19150	25350	24300	24250	23350	20800	6S / 6D	29750	6S / 6D
	1200	27100	24100	21400	17300	14950	25400	24700	23650	20200	17600	24300	22850	22800	21400	18950	6S / 6D	29500	6S / 6D
	1300	25950	22600	20050	16200	14000	24200	23400	22050	18400	16050	23150	21350	21350	20050	17750	6S / 6D	29050	6S / 6D
	1400	24800	21100	18700	15100	13050	23050	22100	20800	17350	15150	21950	19900	19900	18650	16500	6S / 6D	28600	6S / 6D
	1500	23650	19600	17350	14000	12100	21850	20800	19550	16350	14250	20950	19000	18750	17550	15450	7S / 7D	28400	7S / 7D
	1600	22600	18700	16550	13350	11450	20650	19500	18350	15300	13300	19900	18100	17650	16400	14450	8S / 8D	28150	7S / 7D
	1700	21550	17750	15750	12650	10900	19750	18600	17500	14600	12700	18950	17200	16850	15650	13850	8S / 8D	28050	7S / 7D
	1800	20550	16850	14900	12000	10350	18850	17750	16650	13850	12100	17950	16300	16000	14950	13200	8S / 8D	27950	7S / 7D
	1900	19500	15950	14100	11350	9750	17900	16850	15800	13150	11450	17000	15350	15150	14200	12550	8S / 8D	27800	7S / 7D
	2000	18500	15050	13300	10650	9200	17000	15950	14950	12450	10800	16000	14450	14350	13500	11900	9S / 9D	27600	7S / 7D
	2100	17700	14550	12950	10500	9050	16350	15400	14400	12000	10450	15350	13900	13800	13000	11450	9S / 9D	27200	7S / 7D
	2200	16900	14050	12650	10300	8900	15700	14800	13900	11550	10100	14700	13300	13250	12500	11050	10S / 10D	26750	7S / 7D
	2300	16150	13600	12300	10100	8750	15000	14200	13350	11150	9700	14000	12750	12750	12000	10550	10S / 10D	26350	7S / 7D
	2400	15350	13100	12000	9950	8600	14350	13650	12850	10700	9350	13350	12150	12150	11450	10150	10S / 10D	25900	7S / 7D
	2500	14550	12600	11700	9750	8500	13700	13050	12300	10300	8950	12700	11600	11600	10950	9700	10S / 10D	25450	7S / 7D
	2600	13750	12150	11350	9550	8350	13050	12450	11800	9850	8550	12300	11300	11300	10550	9350	10S / 10D	25000	8S / 8D
	2700	12950	11650	11050	9400	8200	12400	11900	11250	9450	8200	11850	11050	11050	10100	8950	10S / 10D	24550	8S / 8D
	2800	12200	11200	10750	9200	8050	11800	11350	10850	9250	8050	11450	10750	10750	9700	8550	10S / 10D	24150	8S / 8D
	2900	11400	10700	10400	9050	7900	11200	10800	10500	9050	7900	11050	10500	10400	9250	8150	10S / 10D	23700	8S / 8D
	3000																10S / 10D	23250	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

D-4		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 200 - WELDED 140 and 172 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	31150	6S / 6D	31150	6S / 6D
	600	30950	30950	30950	30950	30600	30950	30950	30950	30950	30600	30950	30950	30950	30950	30600	30950	6S / 6D	30950	6S / 6D
	700	30800	30800	30800	30800	30150	30800	30800	30800	30800	30150	30600	30600	30600	30600	30150	30800	6S / 6D	30800	6S / 6D
	800	30500	30500	30500	30150	28400	30450	30450	30450	30300	29550	29750	29750	29750	29750	29200	30500	6S / 6D	30500	6S / 6D
	900	30250	30250	29900	28950	26550	29700	29700	29700	29100	28100	28900	28900	28900	28900	27750	30250	6S / 6D	30250	6S / 6D
	1000	29750	29750	28850	27700	24700	29000	29000	28800	27850	26450	28050	28050	28050	27600	26400	30000	6S / 6D	30000	6S / 6D
	1100	29050	29050	28100	25950	22800	28150	28150	27700	26900	24950	27250	27250	27250	26650	25450	29750	6S / 6D	29750	6S / 6D
	1200	28300	28300	27300	24150	20800	27300	27300	26600	25950	23450	26450	26450	26300	25600	24450	29500	6S / 6D	29500	6S / 6D
	1300	27500	27300	26250	22650	19500	26500	26300	25500	24950	21950	25400	25350	24900	24150	23050	29050	6S / 6D	29050	6S / 6D
	1400	26750	26250	25200	21100	18150	25500	25200	24250	23600	20750	24350	24000	23450	22700	21750	28600	6S / 6D	28600	6S / 6D
	1500	25950	25250	24100	19600	16850	24500	24100	23050	22250	19500	23350	22850	22250	21400	20450	28400	7S / 7D	28400	7S / 7D
	1600	25050	24250	23000	18700	16100	23500	23000	21800	20900	18250	22300	21750	21050	20050	19200	28150	7S / 7D	28150	7S / 7D
	1700	24150	23250	21850	17750	15250	22600	22000	20800	19950	17400	21350	20700	20050	19150	18300	28050	7S / 7D	28050	7S / 7D
	1800	23250	22250	20750	16800	14450	21700	21050	19800	18950	16550	20350	19700	19100	18200	17450	27950	7S / 7D	27950	7S / 7D
	1900	22300	21250	19600	15900	13650	20800	20050	18800	18000	15700	19350	18700	18100	17300	16550	27800	7S / 7D	27800	7S / 7D
	2000	21400	20250	18500	14950	12900	19900	19100	17800	17050	14850	18400	17700	17100	16400	15700	27600	7S / 7D	27600	7S / 7D
	2100	20500	19400	17800	14600	12600	19150	18350	17150	16450	14300	17650	17000	16450	15750	15100	26800	7S / 7D	27200	7S / 7D
	2200	19600	18550	17100	14250	12350	18400	17650	16500	15800	13800	16900	16300	15800	15100	14500	25950	7S / 7D	26750	7S / 7D
	2300	18700	17700	16400	13950	12150	17650	16950	15850	15200	13300	16150	15600	15100	14450	13900	25100	7S / 7D	26350	7S / 7D
	2400	17850	16850	15700	13600	11900	16900	16250	15200	14600	12750	15400	14900	14450	13800	13300	24200	8S / 8D	25900	7S / 7D
2500	16950	16050	15000	13250	11600	16150	15550	14550	14000	12250	14650	14200	13800	13200	12700	23350	8S / 8D	25450	7S / 7D	
2600	16050	15200	14300	12900	11400	15400	14800	13900	13350	11650	14250	13750	13300	12800	12300	22850	8S / 8D	25000	8S / 8D	
2700	15150	14350	13550	12550	11150	14700	14100	13250	12750	11150	13800	13250	12850	12400	11800	22300	8S / 8D	24550	8S / 8D	
2800	14250	13500	12850	12200	10850	13950	13350	12650	12350	10900	13350	12750	12400	12000	11350	21750	9S / 9D	24150	8S / 8D	
2900	13350	12650	12150	11750	10600	13200	12550	12050	11950	10600	12900	12300	11900	11600	10850	21200	9S / 9D	23700	8S / 8D	
3000																20700	9S / 9D	23250	8S / 8D	

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

E-1		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 220 - RIVETED 106 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	32950	32800	32800	32100	31450	31750	31350	31200	31200	31200	31750	30550	30100	29650	29650	34300	5S / 5D	34300	5S / 5D
	600	31300	30950	30950	29700	28450	30050	29100	28950	28950	28200	29950	28450	27750	27400	27250	34050	5S / 5D	34050	5S / 5D
	700	29700	29200	29000	27200	25600	28400	26850	26750	26550	25250	28150	26300	25450	25000	24750	33800	5S / 5D	33800	5S / 5D
	800	28050	27400	26900	24700	22800	26700	24600	24550	24100	22400	25900	24250	23450	23100	22500	33500	5S / 5D	33500	5S / 5D
	900	26450	25550	24750	22200	20100	24400	22550	22500	22000	20300	23650	22200	21450	21050	20250	33200	6S / 6D	33200	6S / 6D
	1000	24800	23700	22600	19700	17350	22100	20550	20450	19950	18150	21400	20100	19450	18950	18050	32900	6S / 6D	32900	6S / 6D
	1100	23500	22000	21000	18250	16100	20700	19300	19250	18650	17000	19750	18850	17900	17900	16650	30500	6S / 6D	32650	6S / 6D
	1200	22200	20350	19400	16800	14800	19300	18050	18000	17350	15750	18100	17550	16350	16350	15250	27650	7S / 7D	32350	6S / 6D
	1300	20900	19100	18250	15800	13900	17850	16800	16750	16100	14550	16900	16350	15250	15250	14200	27250	7S / 7D	31850	6S / 6D
	1400	19600	17900	17100	14750	13000	16850	15650	15600	15150	13750	15700	15200	14200	14200	13150	26850	7S / 7D	31350	6S / 6D
	1500	18300	16650	15950	13750	12100	15800	14450	14450	14200	12950	14800	14250	13250	13250	12400	24250	8S / 8D	31100	6S / 6D
	1600	17300	15850	15200	13100	11500	14800	13250	13250	13250	12150	13950	13350	12300	12300	11700	21650	9S / 9D	30850	6S / 6D
	1700	16300	15000	14500	12450	10950	14150	12700	12700	12650	11500	13300	12550	11700	11700	11100	21400	9S / 9D	30750	6S / 6D
	1800	15250	14200	13750	11850	10400	13500	12150	12150	12000	10950	12650	11700	11100	11100	10500	21150	9S / 9D	30650	6S / 6D
	1900	14250	13350	13000	11200	9800	12850	11600	11600	11350	10350	12000	10900	10450	10450	9950	20900	9S / 9D	30550	6S / 6D
	2000	13250	12550	12250	10550	9250	12200	11050	11050	10700	9750	11300	10100	9850	9800	9350	20650	9S / 9D	30450	6S / 6D
	2100	12650	11950	11700	10200	8950	11650	10600	10600	10300	9400	10900	9700	9450	9400	8950	19600	10S / 10D	30000	6S / 6D
	2200	12050	11400	11150	9800	8650	11100	10200	10200	9900	9000	10450	9250	9050	9000	8550	18550	10S / 10D	29500	6S / 6D
	2300	11450	10850	10600	9450	8350	10550	9750	9750	9500	8600	10050	8850	8650	8600	8200	17450	10S / 10D	29000	6S / 6D
	2400	10850	10300	10050	9050	8050	10000	9300	9300	9050	8250	9600	8400	8250	8200	7800	16400	10S / 10D	28500	7S / 7D
	2500	10250	9750	9500	8700	7750	9450	8850	8850	8650	7850	9200	8000	7850	7800	7500	15350	10S / 10D	28000	7S / 7D
	2600	9650	9150	8950	8350	7450	8900	8400	8400	8250	7500	8800	7750	7650	7600	7200	15250	10S / 10D	27050	7S / 7D
	2700	9050	8600	8450	7950	7150	8350	7950	7950	7800	7100	8350	7550	7450	7400	6950	15150	10S / 10D	26100	7S / 7D
	2800	8450	8050	7900	7600	6800	8000	7600	7550	7500	6800	8000	7300	7200	7200	6700	15000	10S / 10D	25200	7S / 7D
	2900	7850	7450	7350	7200	6550	7650	7200	7150	7150	6550	7650	7100	7000	7000	6500	14900	10S / 10D	24250	8S / 8D
	3000																14800	10S / 10D	23350	8S / 8D

SPECIFIC LOAD CONDITIONS:

- Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
- Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
- 2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
- 1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
- The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

E-2		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 220 - RIVETED 140 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	5S / 5D	34300	5S / 5D
	600	34050	34050	34050	34050	33700	34050	34050	34050	34050	33700	34050	34050	34000	33750	33250	34050	5S / 5D	34050	5S / 5D
	700	33800	33800	33800	33250	32400	33450	33200	33100	32550	32050	33200	32600	32450	31900	31100	33800	5S / 5D	33800	5S / 5D
	800	33250	33100	32450	31850	30500	32250	31800	31600	31000	30400	31900	31100	30850	30200	29200	33500	5S / 5D	33500	5S / 5D
	900	32150	31900	31150	30400	28600	31100	30400	30100	29750	28550	30600	29650	29200	28450	27400	33200	6S / 6D	33200	6S / 6D
	1000	31000	30700	29800	28950	26650	29900	29050	28600	28350	26700	29300	28150	27550	26750	25600	32900	6S / 6D	32900	6S / 6D
	1100	30000	29450	28750	27400	24700	28800	27750	27250	27000	25200	28050	26950	26300	25450	24450	32650	6S / 6D	32650	6S / 6D
	1200	28950	28200	27650	25800	22800	27700	26500	25900	25650	23750	26800	25700	25050	24000	23350	31950	6S / 6D	32350	6S / 6D
	1300	27900	27000	26400	24250	21350	26600	25250	24550	24300	22250	25400	24450	23800	22700	22050	31550	6S / 6D	31850	6S / 6D
	1400	26800	25750	25100	22650	19950	25450	24100	23350	23000	20950	24000	23150	22500	21250	20850	31100	6S / 6D	31350	6S / 6D
	1500	25750	24500	23850	21050	18550	24350	23000	22150	21700	19750	22900	22000	21350	20050	19650	30750	6S / 6D	31100	6S / 6D
	1600	24800	23500	22800	20100	17700	23250	21900	21000	20400	18500	21850	20900	20150	18850	18400	30350	6S / 6D	30850	6S / 6D
	1700	23900	22550	21700	19150	16850	22200	20850	19900	19400	17650	20700	19800	19150	17850	17500	30400	6S / 6D	30750	6S / 6D
	1800	22950	21550	20650	18150	16000	21150	19800	18850	18350	16800	19600	18750	18150	16900	16600	30450	6S / 6D	30650	6S / 6D
	1900	22050	20550	19600	17200	15150	20150	18750	17800	17300	15950	18500	17700	17100	15950	15700	30550	6S / 6D	30550	6S / 6D
	2000	21100	19600	18500	16200	14250	19100	17700	16700	16250	15100	17400	16650	16100	15000	14800	30450	6S / 6D	30450	6S / 6D
	2100	20150	18700	17700	15600	13800	18350	16950	16000	15650	14450	16650	15900	15400	14350	14150	29050	6S / 6D	30000	6S / 6D
	2200	19200	17800	16900	15000	13300	17600	16200	15300	15000	13900	15950	15200	14650	13750	13500	27500	7S / 7D	29500	6S / 6D
	2300	18200	16900	16050	14350	12850	16800	15450	14600	14400	13300	15200	14500	13950	13150	12850	25950	7S / 7D	29000	6S / 6D
	2400	17250	16000	15250	13750	12350	16050	14750	13900	13800	12700	14500	13800	13250	12500	12200	24450	8S / 8D	28500	7S / 7D
	2500	16300	15100	14450	13100	11900	15300	14000	13200	13200	12100	13750	13100	12550	11800	11500	22900	8S / 8D	28000	7S / 7D
	2600	15300	14200	13600	12500	11400	14500	13250	12500	12500	11500	13300	12600	12100	11400	11150	22800	8S / 8D	27050	7S / 7D
	2700	14350	13300	12800	11900	11000	13750	12500	11800	11800	10900	12850	12100	11650	11050	10750	22450	8S / 8D	26100	7S / 7D
	2800	13400	12400	11950	11250	10500	13000	11850	11300	11250	10450	12400	11600	11200	10650	10350	21900	9S / 9D	25200	7S / 7D
	2900	12400	11500	11150	10650	10050	12200	11250	10800	10550	10000	11900	11100	10800	10250	9950	21350	9S / 9D	24250	8S / 8D
	3000																20800	9S / 9D	23350	8S / 8D

SPECIFIC LOAD CONDITIONS:

- Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
- Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
- 2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
- 1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
- The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

E-3

FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 220 - WELDED 70 and 106 BEAM

BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	34300	34300	34300	34300	34250	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	5S / 5D	34300	5S / 5D
	600	34050	34050	34050	32700	30100	34050	34050	34050	33900	32350	33700	33700	33700	33700	33500	34050	5S / 5D	34050	5S / 5D
	700	33800	33700	32700	29700	26950	33800	33250	33250	31650	29300	32600	32600	32500	32500	30950	33800	5S / 5D	33800	5S / 5D
	800	33500	32100	30350	26700	23900	32750	31650	31650	29400	26200	31100	30900	30500	30250	28200	33500	5S / 5D	33500	5S / 5D
	900	32750	30450	28000	23750	20850	31200	30100	30100	26650	23550	29650	28700	28450	27950	25500	33200	6S / 6D	33200	6S / 6D
	1000	31600	28850	25650	20750	17900	29650	28550	28300	23950	20900	28200	26500	26450	25700	22850	32900	6S / 6D	32900	6S / 6D
	1100	30250	26600	23600	19100	16450	28150	27100	26300	22150	19300	26850	24900	24850	23700	20950	32650	6S / 6D	32650	6S / 6D
	1200	28900	24350	21600	17450	15050	26650	25550	24300	20350	17750	25550	23250	23200	21650	19100	32350	6S / 6D	32350	6S / 6D
	1300	27450	22850	20250	16350	14100	25150	23950	22300	18550	16150	24150	21750	21750	20300	17900	31100	6S / 6D	31850	6S / 6D
	1400	25950	21300	18900	15200	13150	23850	22600	21050	17550	15250	22750	20300	20250	18900	16700	29850	6S / 6D	31350	6S / 6D
	1500	24500	19800	17550	14100	12150	22500	21250	19800	16500	14350	21500	19400	19400	17750	15650	27350	7S / 7D	31100	6S / 6D
	1600	23400	18850	16700	13450	11550	21200	19900	18550	15450	13450	20300	18500	18500	16600	14600	24850	8S / 8D	30850	6S / 6D
	1700	22250	17950	15850	12750	11000	20200	18950	17700	14750	12800	19300	17650	17650	15850	14000	24150	8S / 8D	30750	6S / 6D
	1800	21150	17000	15050	12100	10450	19200	18050	16850	14000	12200	18300	16750	16700	15150	13300	23450	8S / 8D	30650	6S / 6D
	1900	20000	16100	14200	11400	9800	18200	17150	16000	13300	11550	17300	15900	15700	14400	12700	22750	8S / 8D	30550	6S / 6D
	2000	18900	15150	13400	10750	9250	17200	16250	15150	12550	10900	16350	15050	14700	13650	12050	22050	9S / 9D	30450	6S / 6D
	2100	18100	14700	13100	10550	9100	16550	15650	14600	12100	10500	15650	14500	14100	13150	11600	21050	9S / 9D	30000	6S / 6D
	2200	17300	14200	12750	10400	8950	15900	15050	14050	11700	10150	14950	13900	13550	12650	11150	20050	9S / 9D	29500	6S / 6D
	2300	16500	13750	12450	10200	8850	15300	14450	13550	11250	9800	14300	13300	12950	12150	10700	19000	10S / 10D	29000	6S / 6D
	2400	15700	13250	12150	10000	8700	14650	13900	13000	10850	9450	13600	12750	12350	11600	10250	18000	10S / 10D	28500	7S / 7D
	2500	14900	12800	11850	9850	8550	14000	13300	12500	10400	9050	12950	12150	11800	11100	9800	16950	10S / 10D	28000	7S / 7D
	2600	14100	12300	11500	9650	8450	13350	12700	11950	9950	8650	12550	11800	11500	10650	9450	16500	10S / 10D	27050	7S / 7D
	2700	13300	11850	11200	9500	8300	12700	12150	11450	9550	8300	12100	11450	11200	10250	9050	16000	10S / 10D	26100	7S / 7D
	2800	12500	11350	10900	9300	8150	12100	11600	11050	9350	8150	11700	11100	10900	9800	8650	15550	10S / 10D	25200	7S / 7D
	2900	11700	10900	10600	9150	8000	11500	11000	10650	9150	8000	11300	10750	10600	9400	8250	15050	10S / 10D	24250	8S / 8D
	3000																14550	10S / 10D	23350	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

E-4

FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 220 - WELDED 140 and 172 BEAM

BLUE table	H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	34300	5S / 5D	34300	5S / 5D
	600	34050	34050	34050	34050	34050	34050	34050	34050	33700	34050	34050	34050	34050	33700	34050	5S / 5D	34050	5S / 5D
	700	33800	33800	33800	33800	32550	33800	33800	33800	33100	33800	33800	33800	33800	33100	33800	5S / 5D	33800	5S / 5D
	800	33500	33500	33500	32650	29950	33500	33500	33500	32950	32100	32750	32750	32750	32050	33500	5S / 5D	33500	5S / 5D
	900	33200	33200	33050	30800	27450	32700	32700	32400	31600	30100	31650	31650	31650	31250	30400	6S / 6D	33200	6S / 6D
	1000	32900	32900	31900	28950	24900	31700	31700	30750	30200	28250	30600	30600	30600	29650	28800	6S / 6D	32900	6S / 6D
	1100	31900	31750	30550	26650	22900	30600	30550	29400	28950	26200	29500	29500	29150	28050	27100	6S / 6D	32650	6S / 6D
	1200	30900	30350	29200	24350	20950	29550	29350	28000	27200	24200	28450	28100	27450	26500	25350	6S / 6D	32350	6S / 6D
	1300	29900	29100	27650	22850	19650	28500	28100	26650	25450	22150	27000	26500	25800	24750	23750	6S / 6D	31850	6S / 6D
	1400	28850	27850	26100	21300	18300	27250	26700	25150	24000	20900	25600	24900	24150	23050	22050	6S / 6D	31350	6S / 6D
	1500	27850	26550	24550	19750	17000	26000	25300	23650	22600	19700	24450	23600	22800	21700	20800	6S / 6D	31100	6S / 6D
	1600	26750	25400	23400	18850	16150	24750	23900	22150	21150	18450	23300	22350	21450	20400	19500	6S / 6D	30850	6S / 6D
	1700	25700	24200	22250	17900	15350	23750	22800	21250	20200	17600	22200	21300	20450	19450	18600	6S / 6D	30750	6S / 6D
	1800	24600	23000	21050	17000	14550	22800	21750	20400	19200	16750	21050	20200	19450	18550	17750	6S / 6D	30650	6S / 6D
	1900	23550	21850	19900	16050	13750	21800	20650	19550	18200	15850	19950	19150	18450	17600	16850	6S / 6D	30550	6S / 6D
	2000	22450	20650	18750	15100	13000	20800	19600	18650	17250	15000	18850	18100	17450	16700	15950	6S / 6D	30450	6S / 6D
	2100	21500	19850	18050	14800	12700	20000	18850	18000	16600	14450	18100	17400	16800	16050	15350	6S / 6D	29100	6S / 6D
	2200	20550	19000	17350	14450	12450	19200	18100	17300	16000	13950	17300	16700	16100	15450	14750	7S / 7D	27750	6S / 6D
	2300	19600	18200	16650	14100	12250	18400	17350	16650	15400	13400	16550	15950	15450	14800	14150	7S / 7D	26350	6S / 6D
	2400	18600	17350	15950	13800	12000	17600	16600	15950	14800	12900	15800	15250	14750	14200	13500	8S / 8D	24950	7S / 7D
	2500	17650	16550	15250	13450	11750	16750	15850	15250	14150	12350	15050	14550	14100	13550	12900	8S / 8D	23600	7S / 7D
	2600	16700	15750	14550	13100	11500	15950	15100	14600	13550	11800	14600	14150	13650	13200	12400	8S / 8D	23050	7S / 7D
	2700	15750	14900	13850	12750	11250	15150	14350	13900	12950	11300	14150	13700	13150	12850	11950	8S / 8D	22450	7S / 7D
	2800	14750	14100	13150	12450	11000	14400	13700	13200	12550	11050	13700	13300	12700	12500	11450	9S / 9D	21900	7S / 7D
	2900	13800	13300	12450	12100	10750	13600	13100	12450	12150	10750	13300	12900	12200	12150	11000	9S / 9D	21350	8S / 8D
	3000																9S / 9D	20800	8S / 8D

SPECIFIC LOAD CONDITIONS:

- Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
- Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
- 2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
- 1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
- The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

F-1		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 300 - RIVETED 106 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	39000	38450	38450	36750	35050	37650	35800	35450	35450	34900	37500	35350	34150	33050	33050	40900	4S / 4D	40900	4S / 4D
	600	36300	35450	35250	32050	29600	34450	32600	32300	32150	31000	34100	32000	30850	30350	30100	40500	4S / 4D	40500	4S / 4D
	700	34000	32900	32400	29200	26650	31250	29400	29100	28700	27200	30700	28650	27600	27600	26400	40150	4S / 4D	40150	4S / 4D
	800	31650	30300	29550	26300	23700	28000	26150	25950	25250	23500	27850	26150	25150	25150	23850	39350	5S / 5D	39750	5S / 5D
	900	29350	27650	26700	23450	20850	25600	24250	23750	23150	21300	25050	23700	22700	22700	21300	36850	5S / 5D	39350	5S / 5D
	1000	27050	25050	23800	20550	18050	23250	22350	21550	21050	19100	22250	21200	20300	20300	18800	34350	5S / 5D	38950	5S / 5D
	1100	25250	23450	22150	19050	16750	21800	20700	20200	19650	17850	20600	19800	18650	18650	17350	31400	6S / 6D	38600	5S / 5D
	1200	23450	21700	20450	17550	15350	20400	19050	18850	18300	16550	18950	18400	17050	17050	15950	28500	7S / 7D	38250	5S / 5D
	1300	22200	20400	19250	16500	14450	19000	17400	17400	16900	15250	17700	17150	15700	15700	14850	28050	7S / 7D	37650	5S / 5D
	1400	20950	19100	18100	15450	13500	17950	16400	16400	15900	14400	16500	15850	14400	14400	13750	27650	7S / 7D	37100	5S / 5D
	1500	19700	17800	16900	14400	12600	16850	15400	15400	14900	13550	15600	14850	13750	13750	13000	25050	7S / 7D	36800	5S / 5D
	1600	18600	16950	16100	13700	12000	15800	14400	14350	13900	12650	14750	13850	13150	13150	12300	22450	8S / 8D	36500	5S / 5D
	1700	17550	16100	15300	13050	11400	15150	13700	13650	13250	12050	14050	13050	12450	12450	11650	22150	9S / 9D	36350	5S / 5D
	1800	16450	15300	14500	12400	10850	14450	13000	13000	12550	11400	13350	12200	11700	11700	11050	21850	9S / 9D	36250	5S / 5D
	1900	15350	14450	13700	11750	10300	13800	12300	12300	11900	10750	12700	11400	11000	11000	10450	21550	9S / 9D	36150	5S / 5D
	2000	14300	13600	12900	11100	9650	13100	11600	11600	11250	10150	12000	10600	10250	10250	9800	21250	9S / 9D	35800	5S / 5D
	2100	13600	13000	12350	10700	9400	12500	11150	11150	10800	9750	11550	10150	9850	9850	9400	20200	9S / 9D	34400	5S / 5D
	2200	12950	12350	11750	10300	9050	11900	10750	10750	10350	9400	11050	9700	9450	9450	9000	19150	10S / 10D	33000	6S / 6D
	2300	12300	11700	11150	9900	8700	11250	10300	10300	9900	8950	10600	9300	9050	9050	8600	18100	10S / 10D	31600	6S / 6D
	2400	11600	11050	10550	9500	8400	10650	9850	9850	9500	8550	10100	8850	8600	8600	8200	17050	10S / 10D	30200	6S / 6D
	2500	10950	10400	10000	9100	8100	10050	9450	9450	9050	8200	9650	8400	8200	8200	7800	16000	10S / 10D	28800	6S / 6D
	2600	10300	9800	9400	8750	7750	9400	9000	9000	8600	7750	9250	8150	8000	8000	7550	15850	10S / 10D	27750	7S / 7D
	2700	9600	9150	8800	8350	7450	8800	8550	8550	8200	7400	8800	7950	7750	7750	7300	15650	10S / 10D	26700	7S / 7D
	2800	8950	8500	8250	7950	7150	8400	8100	8100	7850	7100	8400	7700	7500	7500	7000	15500	10S / 10D	25700	7S / 7D
	2900	8300	7850	7650	7550	6800	8000	7650	7550	7500	6800	8000	7450	7300	7300	6750	15350	10S / 10D	24650	8S / 8D
	3000	7650	7250	7050	7050	6500	7650	7250	7050	7050	6500	7650	7250	7050	7050	6500	15150	10S / 10D	23600	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

F-2		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 300 - RIVETED 140 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	4S / 4D	40900	4S / 4D
	600	40500	40500	40500	40500	40050	40500	40500	40500	40500	40050	40500	40500	40200	39600	39050	40500	4S / 4D	40500	4S / 4D
	700	40150	40150	40150	39200	37200	40050	39250	38800	38400	37400	39400	38250	37700	36950	36450	40150	4S / 4D	40150	4S / 4D
	800	39750	39150	38400	36750	34100	38250	37050	36450	36100	34750	37300	36150	35550	34600	33900	39750	5S / 5D	39750	5S / 5D
	900	38300	37350	36550	34250	31050	36600	35100	34100	34000	32000	35250	34050	33400	32200	31400	39350	5S / 5D	39350	5S / 5D
	1000	36700	35500	34750	31800	28000	34950	33150	31750	31750	29350	33150	32000	31200	29750	29000	38950	5S / 5D	38950	5S / 5D
	1100	35150	33650	32800	29350	25850	33400	31650	30050	29850	27350	31350	30150	29350	27950	27050	38600	5S / 5D	38600	5S / 5D
	1200	33600	31750	30850	26950	23750	31800	30100	28350	27800	25350	29600	28350	27500	26150	25050	37800	5S / 5D	38250	5S / 5D
	1300	32150	30200	29050	25300	22250	30250	28600	26650	25800	23350	27900	26600	25750	24500	23500	37400	5S / 5D	37650	5S / 5D
	1400	30700	28700	27300	23650	20800	28750	27050	25100	24350	22000	26200	24850	24000	22800	21850	37050	5S / 5D	37100	5S / 5D
	1500	29250	27150	25500	22000	19300	27250	25500	23600	22950	20750	24800	23500	22600	21500	20600	35300	5S / 5D	36800	5S / 5D
	1600	27950	25900	24300	21000	18400	25750	23950	22100	21500	19400	23450	22100	21250	20150	19300	33600	5S / 5D	36500	5S / 5D
	1700	26700	24600	23150	20000	17550	24500	22750	20950	20450	18500	22250	20950	20200	19150	18350	33100	6S / 6D	36350	5S / 5D
	1800	25400	23350	21950	18950	16650	23250	21550	19850	19400	17600	21000	19850	19100	18100	17400	32600	6S / 6D	36250	5S / 5D
	1900	24150	22050	20750	17950	15750	22000	20350	18750	18350	16700	19750	18700	18000	17100	16450	31950	6S / 6D	36150	5S / 5D
	2000	22850	20750	19600	16950	14850	20750	19100	17650	17300	15800	18500	17550	16950	16050	15500	31100	6S / 6D	35800	5S / 5D
	2100	21800	19800	18700	16350	14350	19850	18300	16950	16650	15200	17750	16800	16150	15400	14850	29700	6S / 6D	34400	5S / 5D
	2200	20750	18850	17850	15750	13900	19000	17450	16250	15950	14550	16950	16050	15400	14700	14150	28300	7S / 7D	33000	6S / 6D
	2300	19700	17900	17000	15150	13400	18100	16600	15550	15300	13950	16150	15300	14600	13950	13450	26900	7S / 7D	31600	6S / 6D
	2400	18650	16950	16100	14550	12950	17250	15750	14900	14600	13300	15400	14550	13850	13150	12800	25300	7S / 7D	30200	6S / 6D
	2500	17600	16000	15250	13950	12400	16400	14900	14200	13950	12650	14600	13800	13050	12400	12150	23750	8S / 8D	28800	6S / 6D
	2600	16550	15050	14400	13350	11950	15500	14100	13500	13250	12050	14150	13300	12650	12100	11700	23500	8S / 8D	27750	7S / 7D
	2700	15500	14100	13550	12750	11450	14650	13250	12800	12550	11400	13700	12750	12200	11800	11300	22900	8S / 8D	26700	7S / 7D
	2800	14450	13100	12650	12200	11000	13900	12550	12200	11950	10950	13250	12250	11800	11500	10850	22300	8S / 8D	25700	7S / 7D
	2900	13400	12150	11800	11550	10500	13100	11900	11550	11350	10450	12800	11750	11350	11150	10450	21700	9S / 9D	24650	8S / 8D
	3000	12350	11200	10950	10750	10050	12350	11200	10950	10750	10050	12350	11200	10950	10750	10050	21050	9S / 9D	23600	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

F-3		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 300 - WELDED 70 and 106 BEAM																			
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED		
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS	
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	40900	40900	40900	40650	37050	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	4S / 4D	40900	4S / 4D
	600	40500	40500	40500	34350	30900	40500	40500	40500	38450	36300	40300	40300	40050	39950	37950	40500	4S / 4D	40500	4S / 4D	
	700	40150	39350	37100	31100	27700	39950	38950	38700	34450	31650	38350	37300	37200	36550	33550	40150	4S / 4D	40150	4S / 4D	
	800	39750	36250	33600	27850	24550	37800	36450	36100	30400	27100	36100	34350	34250	33250	30200	39750	5S / 5D	39750	5S / 5D	
	900	38150	33200	30100	24600	21450	35450	34100	32900	27600	24300	33850	31350	31350	30000	26900	39350	5S / 5D	39350	5S / 5D	
	1000	36250	30100	26650	21350	18400	33100	31600	29750	24800	21550	31600	28400	28400	26750	23700	38950	5S / 5D	38950	5S / 5D	
	1100	33950	27750	24550	19700	16950	31300	29500	27600	22950	19950	29600	26750	26750	24600	21750	36550	5S / 5D	38600	5S / 5D	
	1200	31650	25400	22450	18000	15500	29550	27350	25450	21100	18350	27600	25050	25050	22500	19800	32800	6S / 6D	38250	5S / 5D	
	1300	29800	23800	21050	16850	14500	27750	25250	23300	19250	16750	25850	23450	23450	21100	18550	31500	6S / 6D	37650	5S / 5D	
	1400	27900	22200	19600	15700	13500	25950	23850	22000	18150	15800	24100	21850	21850	19700	17300	30150	6S / 6D	37100	5S / 5D	
	1500	26050	20650	18200	14550	12500	24200	22450	20700	17100	14850	22800	20700	20700	18500	16200	27700	7S / 7D	36800	5S / 5D	
	1600	24850	19650	17350	13850	11950	22450	21050	19400	16000	13900	21500	19550	19550	17300	15200	25200	7S / 7D	36500	5S / 5D	
	1700	23700	18700	16500	13150	11350	21500	20200	18500	15250	13300	20450	18600	18600	16500	14500	24500	8S / 8D	36350	5S / 5D	
	1800	22500	17750	15600	12450	10700	20550	19200	17600	14500	12600	19400	17650	17650	15750	13850	23750	8S / 8D	36250	5S / 5D	
	1900	21300	16750	14750	11800	10150	19600	18250	16700	13750	11950	18300	16700	16700	15000	13200	23050	8S / 8D	36150	5S / 5D	
	2000	20150	15800	13900	11100	9500	18700	17300	15800	13000	11300	17250	15750	15750	14250	12500	22300	8S / 8D	35800	5S / 5D	
	2100	19300	15350	13600	10900	9400	18000	16700	15250	12550	10900	16550	15200	15200	13700	12050	21300	9S / 9D	34400	5S / 5D	
	2200	18450	14950	13300	10700	9250	17250	16050	14700	12100	10500	15800	14600	14600	13150	11550	20300	9S / 9D	33000	6S / 6D	
	2300	17600	14500	12950	10550	9150	16550	15450	14150	11650	10100	15100	14050	14050	12600	11100	19300	10S / 10D	31600	6S / 6D	
	2400	16750	14100	12650	10350	9000	15850	14800	13600	11200	9700	14350	13450	13450	12100	10600	18250	10S / 10D	30200	6S / 6D	
	2500	15900	13650	12350	10200	8850	15150	14200	13050	10800	9350	13650	12900	12900	11550	10200	17250	10S / 10D	28800	6S / 6D	
	2600	15050	13200	12050	10000	8700	14450	13550	12500	10350	8950	13250	12600	12600	11100	9750	16750	10S / 10D	27750	7S / 7D	
	2700	14200	12800	11700	9850	8550	13700	12950	11950	9900	8550	12850	12350	12150	10650	9400	16250	10S / 10D	26700	7S / 7D	
	2800	13350	12350	11400	9650	8500	13000	12450	11550	9700	8450	12450	11950	11700	10200	9000	15750	10S / 10D	25700	7S / 7D	
	2900	12500	11900	11100	9500	8350	12350	11800	11150	9500	8350	12050	11550	11250	9750	8550	15250	10S / 10D	24650	8S / 8D	
	3000	11650	11500	10800	9300	8200	11650	11150	10800	9300	8200	11650	11150	10800	9300	8200	14750	10S / 10D	23600	8S / 8D	

SPECIFIC LOAD CONDITIONS:

- Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
- Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
- 2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
- 1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
- The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD

F-4		FRAME LOAD BEARING CAPACITY TABLE [daN] UNIBUILD 300 - WELDED 140 and 172 BEAM																		
BLUE table		H frame = 6000 mm					H frame = 8000 mm					H frame = 10000 mm					PARTIALLY BRACED		FULLY BRACED	
		Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	Lc=1800	Lc=2400	Lc=2700	Lc=3300	Lc=3600	daN	BAYS	daN	BAYS
HEIGHT OF FIRST BEAM LEVEL FROM GROUND [mm]	500	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	40900	4S / 4D	40900	4S / 4D
	600	40500	40500	40500	40500	40050	40500	40500	40500	40500	40050	40500	40500	40500	40500	40050	40500	4S / 4D	40500	4S / 4D
	700	40150	40150	40150	39700	37150	40150	40150	40150	40150	39300	40150	40150	40150	39900	39300	40150	4S / 4D	40150	4S / 4D
	800	39750	39750	39750	36450	33300	39750	39750	39300	39250	36800	39000	39000	39000	37500	36600	39750	5S / 5D	39750	5S / 5D
	900	39350	39350	38550	33200	29500	38850	38850	37300	36600	33200	37200	37150	36500	35100	33800	39350	5S / 5D	39350	5S / 5D
	1000	38950	38400	36800	29950	25750	37250	36950	35250	33950	29650	35350	34700	33800	32500	31150	38950	5S / 5D	38950	5S / 5D
	1100	37850	36450	34100	27600	23750	35600	35050	33150	31450	27450	33450	32550	31500	30300	28800	38600	5S / 5D	38600	5S / 5D
	1200	36300	34500	31450	25200	21700	33900	33200	31050	28950	25200	31600	30350	29150	27900	26500	38250	5S / 5D	38250	5S / 5D
	1300	34600	32500	29500	23650	20300	32200	31350	28900	26450	22950	29750	28400	27300	26100	24750	37650	5S / 5D	37650	5S / 5D
	1400	32900	30500	27550	22050	18950	30600	29600	27300	24950	21700	27950	26450	25400	24300	23050	37100	5S / 5D	37100	5S / 5D
	1500	31200	28450	25600	20450	17550	29000	27850	25650	23500	20400	26700	25050	24050	23450	21750	36250	5S / 5D	36800	5S / 5D
	1600	29800	27150	24400	19500	16750	27350	26150	24050	22000	19100	25500	23650	22650	22050	20400	34550	5S / 5D	36500	5S / 5D
	1700	28400	25800	23200	18500	15900	26150	24950	22950	21000	18200	24150	22500	21600	21050	19450	33650	5S / 5D	36350	5S / 5D
	1800	27050	24500	22000	17550	15100	25000	23750	21850	19950	17300	22800	21400	20550	20050	18550	32800	6S / 6D	36250	5S / 5D
	1900	25650	23150	20800	16600	14250	23800	22550	20750	18950	16400	21500	20250	19550	19050	17650	31950	6S / 6D	36150	5S / 5D
	2000	24250	21850	19600	15650	13400	22600	21350	19700	17950	15500	20150	19100	18500	18050	16750	31100	6S / 6D	35800	5S / 5D
	2100	23200	21000	18950	15300	13200	21700	20550	18950	17300	15000	19350	18350	17800	17350	16150	29700	6S / 6D	34400	5S / 5D
	2200	22150	20100	18250	15000	12900	20800	19750	18250	16700	14450	18550	17600	17050	16650	15450	28300	7S / 7D	33000	6S / 6D
	2300	21100	19250	17550	14650	12650	19900	18950	17550	16050	13900	17700	16800	16350	15950	14850	26900	7S / 7D	31600	6S / 6D
	2400	20050	18400	16850	14350	12400	19000	18200	16850	15450	13350	16900	16050	15650	15250	14250	25500	7S / 7D	30200	6S / 6D
	2500	19000	17550	16200	14000	12200	18100	17400	16150	14800	12850	16100	15300	14950	14500	13600	24100	8S / 8D	28800	6S / 6D
	2600	17950	16700	15500	13700	11950	17200	16600	15450	14200	12300	15650	14900	14500	14100	13100	23500	8S / 8D	27750	7S / 7D
	2700	16900	15850	14800	13350	11700	16250	15800	14750	13550	11750	15150	14500	14050	13700	12550	22900	8S / 8D	26700	7S / 7D
	2800	15850	15000	14150	13050	11450	15450	14950	14100	13150	11500	14700	14100	13650	13250	12050	22300	8S / 8D	25700	7S / 7D
	2900	14800	14100	13450	12700	11250	14600	14100	13400	12800	11250	14250	13650	13200	12850	11500	21700	9S / 9D	24650	8S / 8D
	3000	13750	13250	12750	12400	11000	13750	13250	12750	12400	11000	13750	13250	12750	12400	11000	21050	9S / 9D	23600	8S / 8D

SPECIFIC LOAD CONDITIONS:

1. Refer to Paragraph 8.3 for the general limitations of the application of these load bearing capacity tables;
2. **Apply double frame bracing for frame loads over 26000daN (refer to notes of Paragraph 8.6);**
3. **2 unbraced suspended levels:** maximum ground to first beam height of 2400mm;
4. **1 unbraced bay:** maximum ground to first beam height of 2000mm, minimum 3 suspended levels, apply a 50% reduction in the tabled frame load bearing capacities;
5. The partially and fully braced columns of this table refer to BRACING TOWER applications only. Refer to Paragraph 8.4 for instructions on the proper application of the cross bracing alternative.

UNIBUILD**10****SPECIAL CONFIGURATIONS**

As stated in other sections of this manual, the frame load bearing capacity tables consider frames loaded under standard conditions (ie: those which form part of the basic assumptions of Sections 1 and 8). Nevertheless, special conditions may exist, for example when a beam is placed on ground (Section 8.7), for which the tables need to be applied in a manner which respects the basic calculation assumptions.

The following paragraph provides instructions for the correct interpretation of common pallet racking applications which fall outside the tables load bearing capacity assumptions.

10.1**CROSS AISLE TUNNEL**

The creation of cross aisle tunnels is made possible under the following conditions:

1. Cross aisle tunnels must contain adequate frame protection and occupational health and safety provisions;
2. End cross aisle tunnels are accepted only if the end frame load and first beam level comply with the tabled frame bearing capacities ($H \leq H_{\max}$ of Fig. 10.1);
3. Consecutive cross aisle tunnels are accepted only if the central frame load and first beam level comply with the tabled frame bearing capacities ($H \leq H_{\max}$ of Fig. 10.1);
4. Single or multiple cross aisle tunnels are to be considered as divisions of a row which create multiple blocks. For this reason these blocks must be dimensioned as isolated rows.

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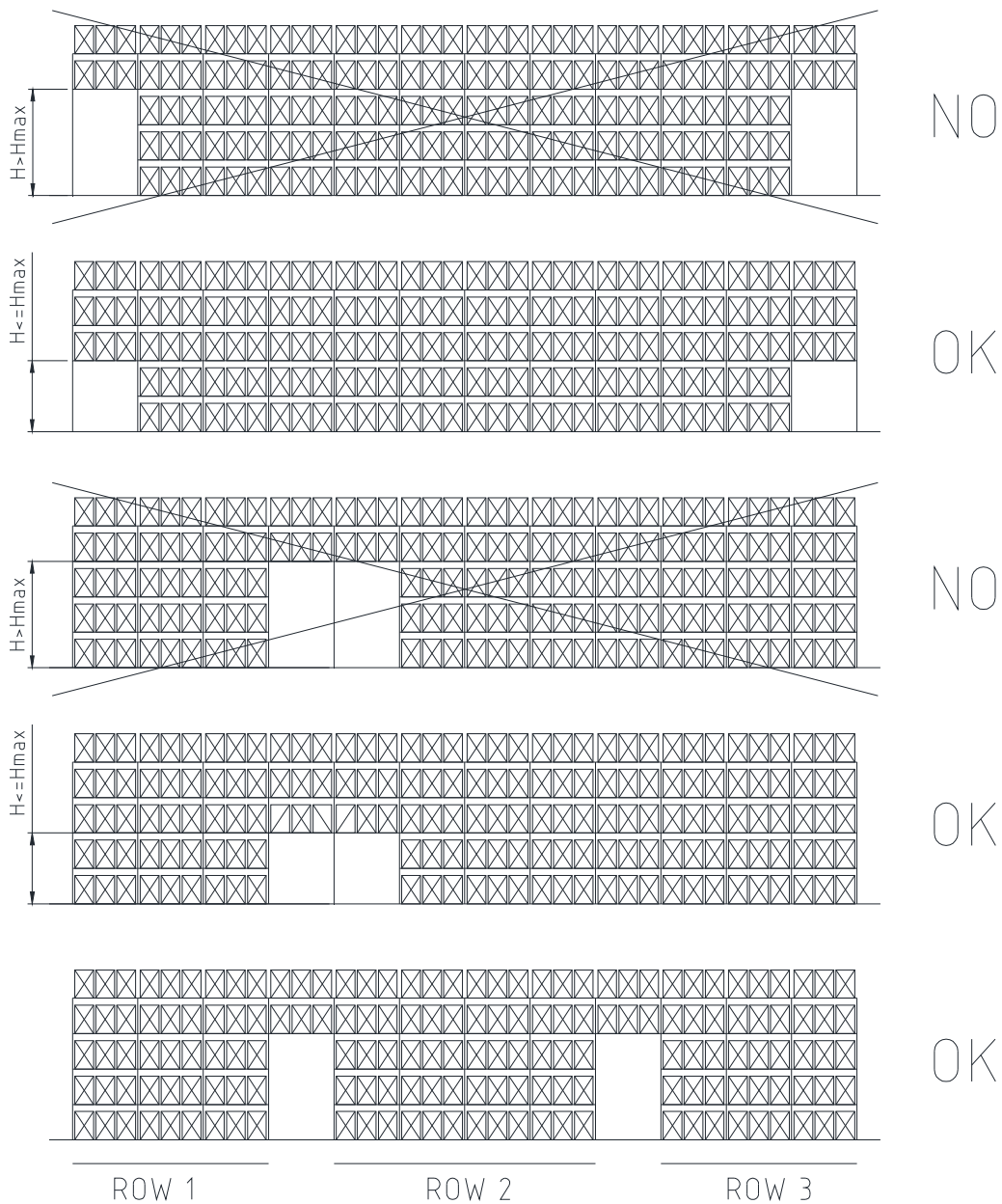
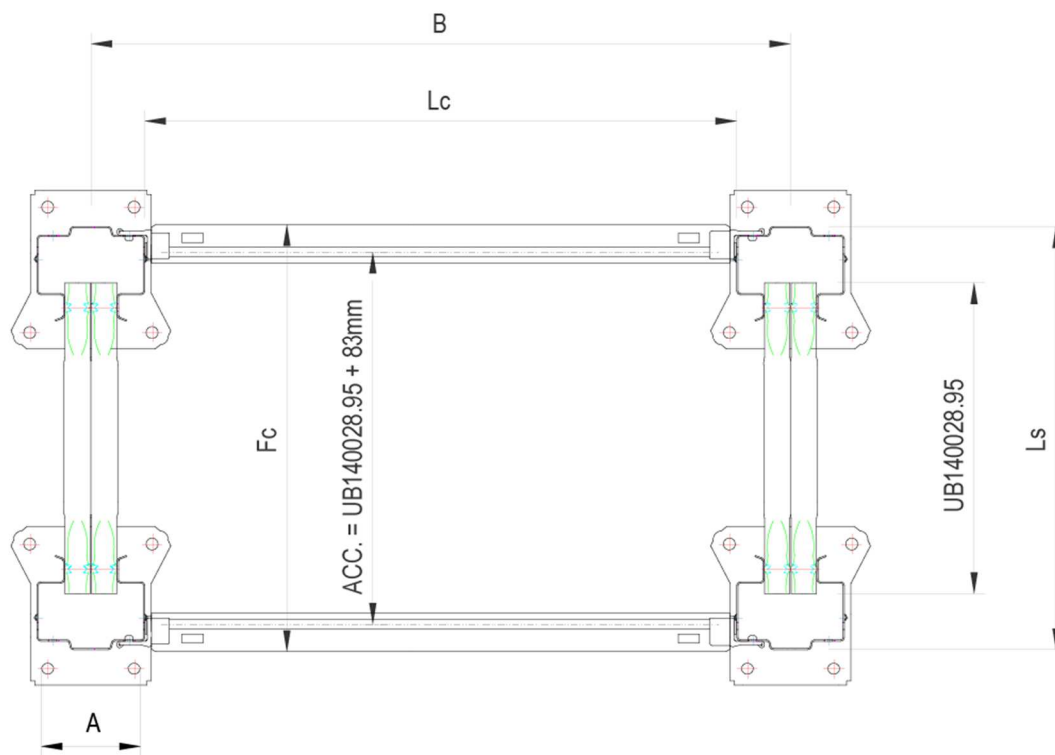


Fig. 10.1

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DIMENSIONAL CHARACTERISTICS



Lc = BEAM LENGTH:	Overall beam length
Ls = FRAME DEPTH:	Overall frame width
Ln = NET DISTANCE:	Clear span between uprights
Fc = EXTERNAL EDGE OF BEAM	Total dimension to external face of beam.

	A	B
UB150	127	Lc + 128
UB170	128	Lc + 129
UB180	129	Lc + 130
UB200	129	Lc + 130
UB220	130	Lc + 131
UB300	131	Lc + 132

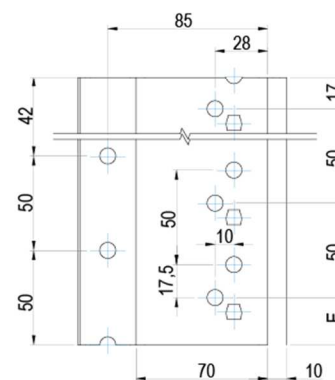
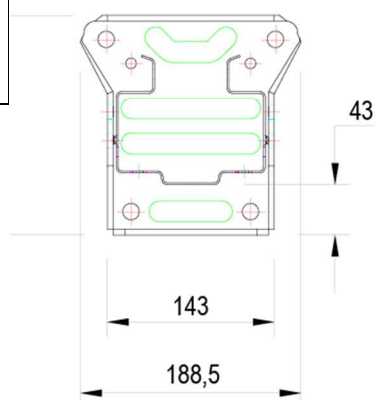
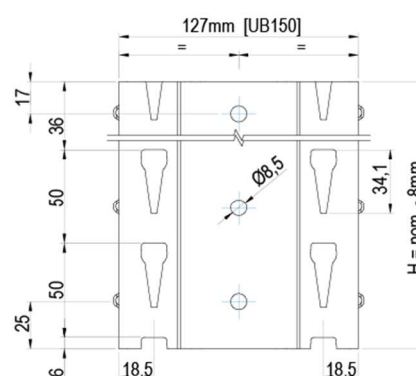


Fig 10.1

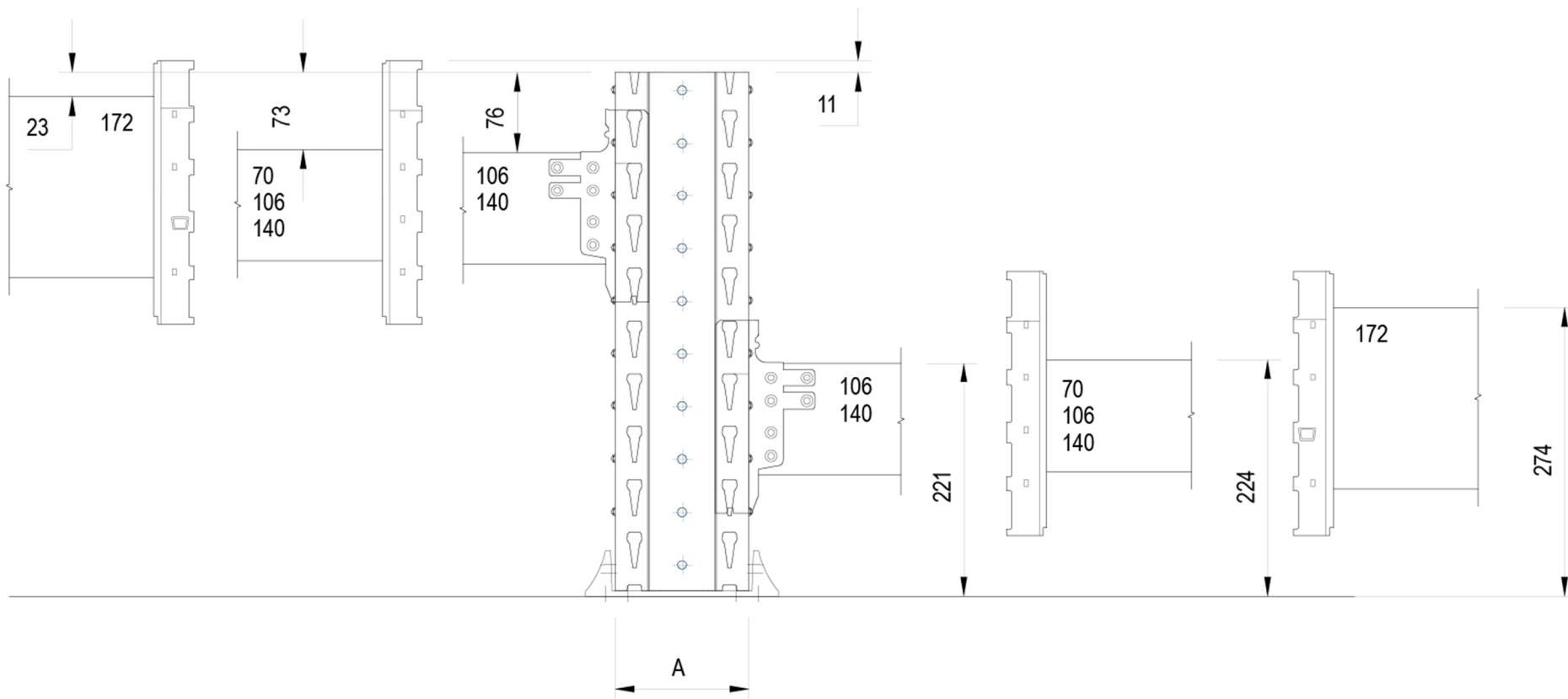


Fig. 10.2

MINIMUM AND MAXIMUM BEAM CONNECTION LEVELS FOR UNIBUILD FRAMES

Rev.	date	Page	Classification
12	16.11.2020	76 of 76	CONTROLLED