

ENGINEERED TO LAST

Pallet racking.

Pallet racking from single bay to very narrow aisle (VNA) up to 12 m high: frames, beams and system accessories, EN 15512 design, dimensioned layout drawings and load plate.



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Pallet racking from single bay to very narrow aisle (VNA) up to 12 m high: frames, beams and system accessories, EN 15512 design, dimensioned layout drawings and load plate. Materials: galvanized S350GD+Z200 frames bolted in jigs (uprights 2.0 and 2.50 mm, diagonals 1.5 mm, optional coating), coated S355JR beams 1.5 and 1.80 mm with welded hooks, accessories in 3 mm S275JR plate.

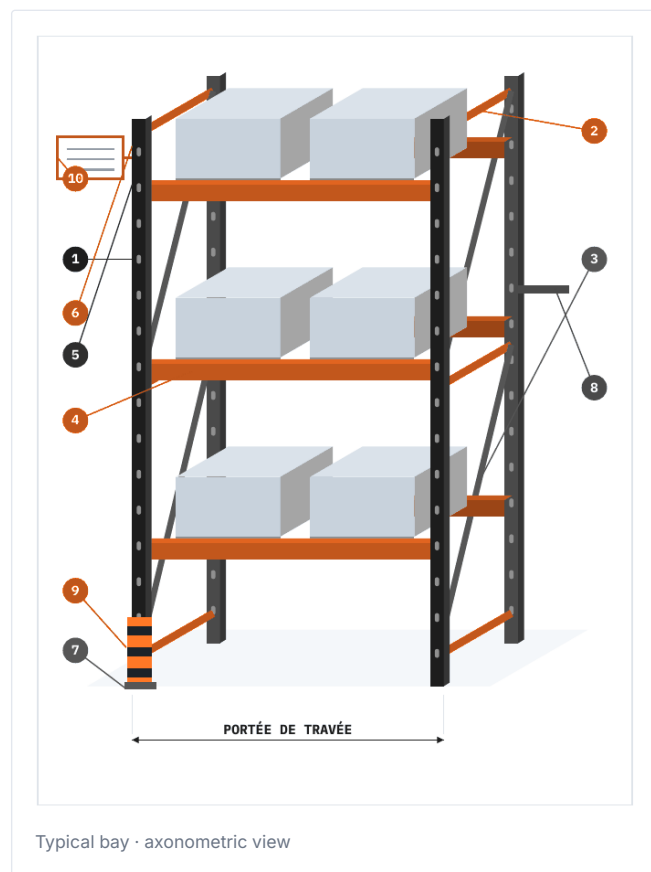
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TYPICAL BAY

Ten components are enough

From single runs to very narrow aisle (VNA) at 12 m height, the installation is built with ten mutually compatible references, whatever the configuration chosen.



THE TEN COMPONENTS

N°	COMPONENT	FUNCTION
1	RM upright	carries vertical loads
2	RH horizontal brace	upright spacing
3	RD diagonal	braces the frame
4	LG beam	carries the pallets
5	Toothed connector	beam-to-upright connection
6	Safety pin	anti-dislodgement
7	BASE plate + shim	anchoring and levelling
8	RE spacer	row connection
9	RS protection	absorbs forklift impacts
10	Load plate	EN 15635 signage

Assembly

100 % bolted

No welding on site. Levels adjustable in 50 mm steps, only after full unloading and approval of the new configuration.

Scalability

Height extension and additional bays

Counterbalance, reach or turret truck.

Documents

EN 15512 calculation note

Dimensioned layout drawings and load plate according to the scope of the offer.

RANGE 2A · COMPONENT OF THE ASSEMBLED FRAME

RM uprights

Open C section with web perforated at 50 mm pitch, S350GD+Z200 steel. Supplied galvanized, or optionally epoxy-coated in the RAL colour of your corporate identity. Two web widths, 70 and 80 mm, adjust the load class without changing the fixing system.



Vertical framing of selective racking, braced frames for high-bay, very narrow aisle installations up to 12 000 mm.

The upright is not sold separately: it is bolted in a jig at the factory and delivered within the assembled frame. The properties below justify the load classes; they are not an order reference. Frame class selection: page 14.

CROSS-SECTIONS actual geometry



SIZE RANGE S350GD+Z200 · section and thickness in mm · cumulative load in kg

REFERENCE	SECTION H × B	THICKNESS	FRAME CLASS	CUMULATIVE LOAD
RM 70/80	80 × 70	2.00	RAY-3T	3 000
RM 70/100	100 × 70	2.00	RAY-6T	6 000
RM 80/100	100 × 80	2.00	RAY-9T	9 000
RM 80/100	100 × 80	2.50	RAY-12T	12 000
RM 80/120	120 × 80	2.50	RAY-18T	18 000
RM 70/90	90 × 70	2.00	RAY-3T	3 000
RM 70/120	120 × 70	2.00	RAY-9T	9 000

Lengths from 3 400 to 12 000 mm in steps of 50 mm. Z200 galvanized as standard, RAL epoxy coating as an option.

STEEL
S350GD+Z200

THICKNESSES
2.00 · 2.50 mm

LENGTHS (MM)
3 400 to 12 000

FINISH
Z200 galvanized

RANGE 2B

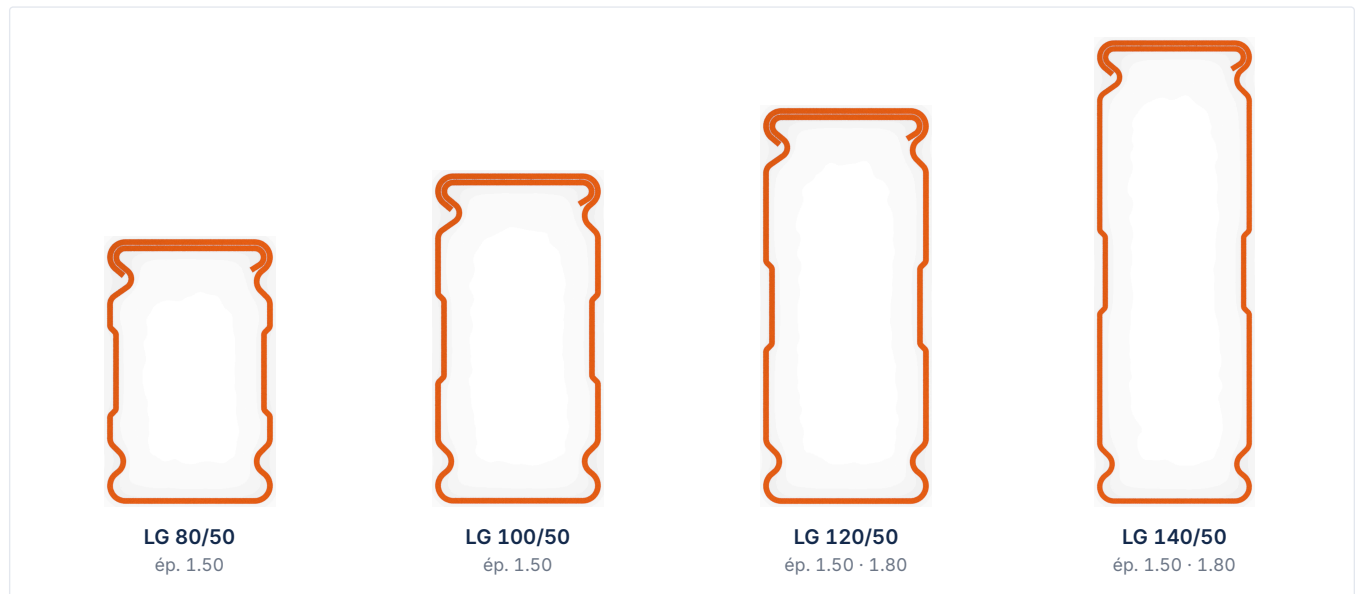
LG beams

S355JR box section with double lip return on each flange, supplied pre-painted. This stiffener multiplies the effective inertia by 2.4 to 3 compared with a plain C of the same dimensions: an LG 120 carries more than twice an LG 80 for the same span.



Connector cut from 3 mm S275JR strip, welded to the beam end: three teeth on light classes, four on heavy classes. Safety locking pin, two per beam.

CROSS-SECTIONS closed box



LOADS PER BEAM PAIR L = beam length · deflection L/200 and resistance · S355JR · loads in kg

SECTION	ÉP. mm	CLASS	L 1 850 mm	L 2 700 mm	L 3 600 mm
LG 80/50	1.50	LIS-950	2 050	950	500
LG 100/50	1.50	LIS-1650	3 300	1 650	900
LG 120/50	1.50	LIS-2600	4 300	2 600	1 450
LG 120/50	1.80	LIS-3100	5 150	3 100	1 750
LG 140/50	1.50	LIS-3550	5 200	3 550	2 050
LG 140/50	1.80	LIS-4250	6 250	4 250	2 450

Values in kg per pair of beams, beam lengths (bay spans) 1 850 · 2 700 · 3 600 mm, defined on page 09: minimum of deflection L/200 and resistance under factored load $F = 1.4$. Choice of beam class: page 13.

STEEL
S355JR

THICKNESSES
1.50 · 1.80 mm

CONNECTORS
Welded hooks

FINISH
Pre-painted

RANGE 2C · COMPONENTS OF THE ASSEMBLED FRAME

RH horizontal braces, RD diagonals

The horizontal brace keeps the uprights apart and prevents their rotation at the top. The diagonal takes horizontal forces – pallet impact, wind, earthquake – and forms the vertical bracing of the frame.



Galvanized C 40 × 27 × 1.50 diagonal.

Horizontal and diagonal braces are not sold separately: they are fitted in jigs at the factory, in the assembled frame. **Their number, pitch and section are defined by the project's EN 15512 calculation note; none may be removed without this justification.** The thresholds below are minimum preselection requirements.

BRACING GUIDELINES minimum requirements · final arrangement according to the EN 15512 calculation note

01

RH horizontal brace required

Above 3 000 mm height. Number and pitch per the EN 15512 calculation note.

02

RD diagonal required

Above 5 000 mm height. Below that, arrangement set by the EN 15512 calculation note.

03

Diagonals over the full height

For high-bay and seismic zones.

RANGE S350GD+Z200 · bolted fixing M10 gr. 8.8 · dimensions in mm

REFERENCE	SECTION	LENGTHS	APPLICATION
		D 850 / 1 100 / 1 250	
RH 40×27	40 × 27 × 1.50	813 · 1 063 · 1 213	horizontal brace · H 3 000 to 12 000 mm
RD 40×27	40 × 27 × 1.50	1 000 · 1 205 · 1 340	diagonal · bracing
RD 40×37	40 × 37 × 1.50	1 000 · 1 205 · 1 340	reinforced · H > 9 000 mm or seismic



Beams on upright perforated at 50 mm pitch · levels adjusted only after full unloading and validation of the new configuration.

RANGE 2D

Assembled frames

The frame is the complete vertical unit: two uprights, their horizontal and diagonal braces bolted in a jig at the factory, drilled base plates. It is delivered cut to the building height, ready to anchor.

Bolting

Jig-assembled

Controlled flatness, coating intact.

Anchors

EN 1992-4

BASE plates, M12 anchors.

Levelling

6 mm

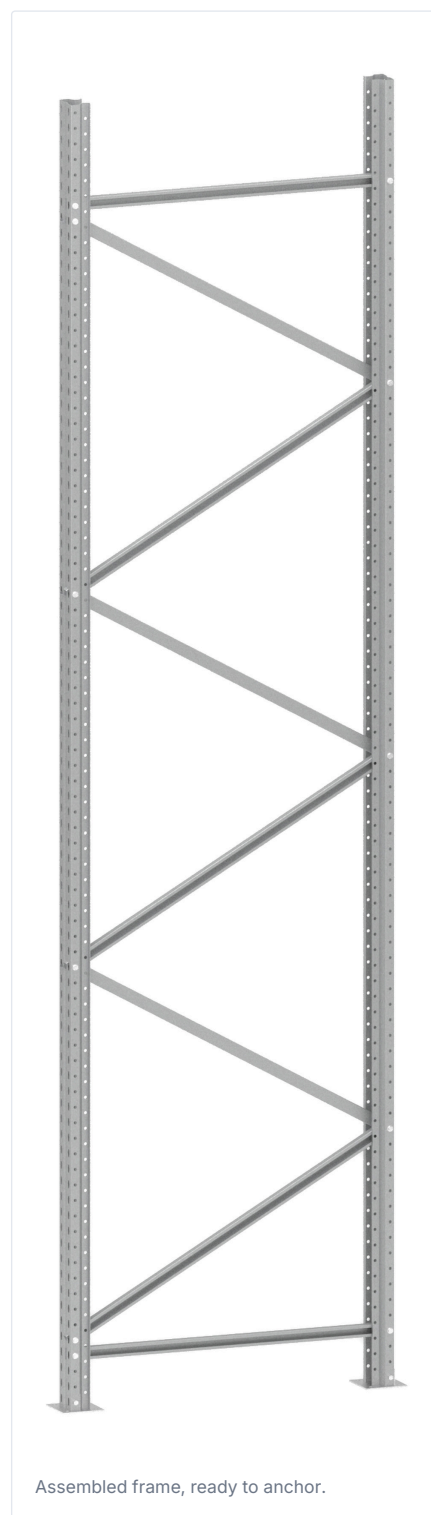
Stackable RN 71 / 72 shims.

Order code RAY [class] · H [height] · P [depth]. Example: RAY-12T · H 6 600 · P 1 100.

CLASSES, HEIGHTS AND DEPTHS cumulative load in kg

CLASS	STUD	CUMULATIVE LOAD
RAY-3T	RM 70/80 · 2.00	3 000
RAY-6T	RM 70/100 · 2.00	6 000
RAY-9T	RM 80/100 · 2.00	9 000
RAY-12T	RM 80/100 · 2.50	12 000
RAY-18T	RM 80/120 · 2.50	18 000

Heights from 3 400 to 12 000 mm in steps of 50 mm. Depths 850 · 1 100 · 1 250 mm, 1 100 recommended for a Euro pallet long side on. Cumulative load is the sum of the levels carried by the beams. Frame class selection: page 14.



Assembled frame, ready to anchor.

STEEL

S350GD+Z200

ASSEMBLY

Bolted

HEIGHTS (MM)

3400 to 12000

DEPTHS (MM)

850 to 1250

THREE BASIC SCHEMES

Typical configurations

All are built with the same range: switching from one to another changes neither the frames nor the beams, only the connection accessories.

A

Single-row rack

Single row along a wall or at the end of an aisle, accessible from one side only. Depth 850 mm for the Euro pallet short side, 1 100 mm long side. Wall fixing with RW 100 to 800 spacers.

SPAN

1850 to 3600 mm

HEIGHT

H 12000 mm

DEPTH

850 to 1250 mm

B

Double-row back-to-back rack

Two rows linked by RE row spacers from 50 to 500 mm, in steps of 50. Two circulation aisles, access from both sides. Total depth of about 2 400 mm with the 200 mm anti-fall clearance.

SPAN

2 700 mm typical

BACK-TO-BACK CLEARANCE

200 mm

SPRINKLER

Compatible

C

High-bay, very narrow aisle

Frames up to 12 000 mm, 1 600 mm aisle, turret truck. Diagonals over the full height required. Requires a slab flatness of F 3 mm / 2 m and a guide rail.

AISLE

1600 to 1900 mm

HEIGHT

H 12000 mm

CLASSES

RAY-12T and RAY-18T

REFERENCE CLEARANCES AND DIMENSIONS · EURO PALLETS

Layout templates

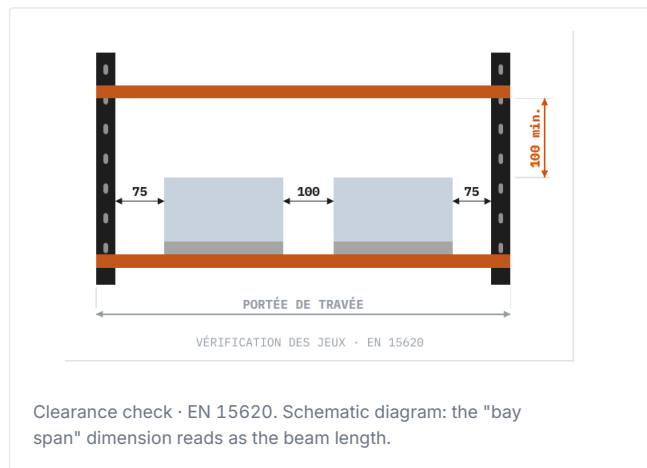
Minimum dimensions for an EN 15620 compliant installation. The pallet governs everything: frame depth, beam length and aisle width all follow from its format and orientation.

LAYOUT PARAMETERS EN 15620

PARAMETER	PALLET 800 × 1 200	PALLET 1 000 × 1 200	NOTE
Frame depth	850 mm	1 100 mm	long side: 1 100 / 1 250
Pallet upright clearance	75 mm	75 mm	EN 15620 §6.1
Clearance between pallets	100 mm	100 mm	on the same pair of beams
Clearance above pallet	100 mm	100 mm	150 mm for high-bay racking
Pallet overhang	50 mm	50 mm	beyond: check the aisle
Aisle · counterbalance truck	3 500 mm	3 600 mm	varies by manufacturer
Aisle · reach truck	2 700 mm	2 800 mm	steel-to-steel width
Aisle · turret truck	1 600 mm	1 700 mm	slab F 3 mm / 2 m
Clearance between row backs	200 mm	200 mm	fall prevention and sprinkler

Indicative aisle widths. The actual width depends on the truck: fork length, tiller, manufacturer dimensions. To be confirmed with the handling equipment supplier before finalising the drawings.

DEFINITIONS terms used identically throughout the section



TERM	DEFINITION
Beam length	Nominal beam length, including connectors: 1 850 · 2 700 · 3 600 mm. Order reference and basis of the load tables (page 05, page 13).
Bay span	In this catalogue, equal to the beam length.
Clear width	Clear opening between the inner faces of the two uprights of a bay, which houses the pallets and their clearances. Exact value according to the layout drawing.
Spacing between uprights	Centre-to-centre distance between the uprights of a bay: clear width + width of one upright.

LEVELLING · CONNECTION · PROTECTION

Accessories & protection

Levelling, row connection and impact protection: accessories compatible with RM 70 and RM 80 uprights.

STRUCTURAL ACCESSORIES compatible with RM 70 and RM 80

	FAMILY	REFERENCES	DIMENSIONS	APPLICATION
	Base plate	BASE 100 · 120	3 mm strip, drilled Ø12	M12 anchors
	Levelling shim	RN 71 · 72	thickness 1 and 2 mm	uneven slab
	Row spacer	RE 50 to 500	tube 40 × 40 × 1.50	back-to-back connection
	Wall spacer	RW 100 to 800	100 to 800 mm	against load-bearing wall
	Pallet support	RP 080 · 110 · 125	depth 800 / 1 100 / 1 250	non-standard pallet
	Mechanical anchor	RA M12 × 110	zinc-plated expansion	2 per frame · 4 per footplate

IMPACT PROTECTIONS RAL 1023 · 3 mm S275JR plate

	FAMILY	REFERENCES	DIMENSIONS	APPLICATION
	Upright protection	RS-U 400	ribbed sheet, h 400 mm	forklift aisle
	Corner protector	RS 400 A	folded sheet, h 400 mm	aisle corner
	Wall, single row	RS 800P · 110P · 125P	depth 800 / 1 100 / 1 250	anti-spill
	Wall, double row	RS 802P · 112P · 125P	integrated 200 mm spacer	bolted

A component deformed by an impact must be replaced, never reused. The cost of an upright protector bears no comparison with that of a bay to be unloaded and rebuilt.

MATERIAL
Plate 3 mm

STEEL GRADE
S275JR

PROTECTIONS
RAL 1023

COMPATIBILITY
RM 70 and RM 80

EQUIP EACH LEVEL ACCORDING TO THE LOAD

Decks & equipment

Non-standard pallets, manual picking, sprinkler requirements: each level receives the appropriate equipment, fitted on the existing pair of beams. No drilling, no modification of the frame.

FLOORS AND DECKING

TYPE	REFERENCE	PROPERTIES	APPLICATION
Tubular decking	RT 080 · 110 · 125	galvanized omega profiles	fragile pallets, distributed loads
Steel grating	RC 080 · 110 · 125	30 × 100 mesh, galvanized	sprinkler · picking · anti-dust
Chipboard panel	RA 22 · RA 38	thickness 22 or 38 mm, fitted on Z	manual picking, cartons
Timber decking	PB 27-11	tongued fir boards 2 700 × 1 100 × 24	picking, bulk
Pallet support	RP 080 · 110 · 125	2 per pallet position minimum	non-standard pallet

LOAD SECURING

TYPE	REFERENCE	PROPERTIES	APPLICATION
Back stop	RBP 080-125	steel tube fixed to uprights	pallet positioning · protects the back
Anti-collapse mesh	RG 2200 · 2700 · 3300	50 × 50 mesh, steel frame	rack back on pedestrian area
Bay divider	RSV 400 · 600	removable vertical	long overhanging loads

Selection rule

Uniformly distributed load on decking: use 80 % of the beam pair capacity (table page 13).
Point load: please consult us.

In-rack sprinkler

The RC grating lets water through in accordance with insurance requirements. The vertical clearance must be validated with the inspection body.

INSTALLATION

On pair of beams

DRILLING

None

DECKING

80 % used

SPRINKLER

RC grating

OPERATING IN COMPLIANCE

Safety & operation

A rack is monitored like lifting equipment. The EN 15635 standard governs inspection and damage management.

THE THREE INSPECTION LEVELS

FREQUENCY	BY WHOM	PURPOSE
Continuous	operators and forklift drivers	immediate reporting of any impact or visible anomaly
Weekly	person responsible for racking safety	documented visual inspection, lower levels first
Annual	competent person	expert inspection with written report

DAMAGE CLASSIFICATION

Green · monitor

Deformation within limits. Record, identify, re-examine at the next inspection.

Orange · risk

Limit exceeded up to twice. Unload immediately and replace before returning to service; reloading prohibited.

Red · danger

More than twice the limit. Unload immediately, isolate the bay, replace before reloading.

DEFORMATION LIMITS EN 15635 §9.4.4 · gauge over 1 m

ELEMENT	DIRECTION	GREEN LIMIT
RM upright	bending in the frame plane	5 mm / m
RM upright	out-of-plane bending, aisle direction	3 mm / m
Diagonal and horizontal brace	any direction	10 mm / m
LG beam	residual unloaded deflection after unloading	0 permitted

Cold forming rules out repair by straightening: work hardening has altered the steel. The component is replaced; availability and lead time are confirmed in the quotation.

STANDARDS REFERENCE

STANDARD	PURPOSE
EN 15512	design: frames, beams, connectors
EN 15620	tolerances, clearances, slab flatness
EN 15635	inspection, damage, load plate
EN 1993 · EN 1992-4	Eurocode 3 · anchorage in concrete
EN 10346 · EN 10025-2 · EN 10204	S350GD+Z200 and S355JR steels · 3.1 certificate

FIRST READING

Span × load beam class

Find the row for your bay span (beam length, see page 09) and the column for your load per pair of beams, including pallets and goods. The cell gives the minimum class to select.

WORKING LOAD PER BEAM PAIR kg

SPAN	1 000	1 000 to 1 500	1 500 to 2 000	2 000 to 2 500	2 500 to 3 500	3 500 to 5 000	5 000 to 7 000	7 000 to 10 000
1 850 mm	LIS-950	LIS-950	LIS-950	LIS-1650	LIS-2600	LIS-3100	-	-
2 700 mm	LIS-1650	LIS-1650	LIS-2600	LIS-2600	LIS-3550	-	-	-
3 600 mm	LIS-2600	LIS-3100	LIS-3550	-	-	-	-	-

Cells (-): load outside the standard range for this span, consult the design office. Allowable load: the lower of deflection L/200 and resistance under factored load, S355JR steel. With decking, use 80 % of the table capacity (page 11).

Reading example

Bay of 2 700 mm, two Euro pallets placed long side forward (1 200 mm at the front, frame depth 850 mm), 1 000 kg each.

Width required with the clearances on page 09: $2 \times 1\,200 + 2 \times 75 + 100 = 2\,650$ mm, less than 2 700 mm.

Load per beam pair: $2 \times 1\,000 = 2\,000$ kg. Row 2 700 mm, column 1 500 to 2 000 kg: the cell shows LIS-2600.

Result: LIS-2600, LG 120/50 · 1.50 in 2 700 mm length, 600 kg margin.



Bay span and load per pair of beams.

CLASSES

LIS-950 to
LIS-4250

SPANS (MM)

1 850 to 3 600

CRITERION

L/200 and $F = 1.4$

STEEL

S355JR

SECOND READING

Height × column load frame class

Column load is the sum of the loads of all levels carried by one frame, including rack self-weight, about 5 %, and horizontal forklift actions according to EN 15512 §6.3.2.3.

ALLOWABLE COLUMN LOAD kg

HEIGHT	< 2 000	2 000 to 4 000	4 000 to 6 000	6 000 to 8 000	8 000 to 12 000	12 000 to 18 000
3 000 mm	RAY-3T	RAY-6T	RAY-6T	RAY-9T	RAY-12T	RAY-18T
5 000 mm	RAY-3T	RAY-6T	RAY-6T	RAY-9T	RAY-12T	RAY-18T
7 000 mm	RAY-3T	RAY-6T	RAY-9T	RAY-12T	RAY-18T	-
9 000 mm	RAY-3T	RAY-6T	RAY-9T	RAY-12T	RAY-18T	-
12 000 mm	RAY-6T	RAY-9T	RAY-12T	RAY-18T	-	-

Preselection values derived from frame loads at 6 and 8 m. The project's EN 15512 calculation note validates the final choice when it is part of the design scope. Classes RAY-9T, 12T and 18T: availability to be confirmed in the offer.

PROJECT SHEET six data are enough

01

Bay span

Beam length in mm: 1 850 · 2 700 · 3 600
(definitions page 09).

02

Load per location

In kg, pallet and goods.

03

Clear height

Under trusses or under sprinklers.

04

Number of levels

Ground included.

05

Frame depth

850 · 1 100 · 1 250 mm.

06

Forklift type

Counterbalance, reach or turret truck.

CLASSES

RAY-3T to
RAY-18T

HEIGHTS (MM)

3 000 to 12 000

DESIGN

EN 15512

STEEL

S350GD+Z200

Your notes

Let's talk about your project.

THE 2026 COLLECTION

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