

Drive-In Pallet Racking System

Product Manual · User Guide — High-Density Warehouse Storage

Maximum Density. Minimum Aisles.



1. What Is Drive-In Pallet Racking?

Drive-in pallet racking is a high density storage system where forklifts enter directly into the rack structure to place and retrieve pallets. Within each lane, horizontal pallet support rails run the full length of the pallets, providing continuous support eliminating the need for internal beams and creating clear, unobstructed space for forklift access.

Because most aisles are eliminated, drive-in racking can increase storage density dramatically compared with selective (standard) pallet racking, making it one of the most space-efficient storage solutions available.

- **LIFO principle:** Last In, First Out — ideal for homogeneous stock with high turnover of the most recent goods.
- **Deep lanes:** typically 2 to 10+ pallets deep per lane, configurable by forklift type and site.
- **Forklift-driven:** reach trucks and counterbalance forklifts operate inside the lanes.



2. Key Features & Benefits

- **Maximum Storage Density:** Removes most aisles, enabling 2–4 times more pallets per square metre compared to selective racking within the same floor area.
- **High Space Utilisation:** Deep lanes without internal beams maximise vertical clearance, permitting pallets to be stacked across multiple levels.
- **Cost-Effective Density:** Delivers high-density storage using fewer rack components and less building volume per pallet location.
- **Heavy-Duty Steel Construction:** Upright frames made of cold-rolled steel with punched holes and bolted joints ensure stable, rigid assemblies.
- **LIFO & FIFO Configurations:** Standard drive-in supports LIFO inventory rotation; incorporate a through lane (drive-through) to enable FIFO stock rotation.
- **Customisable to Your Pallet:** Designed specifically for your pallet dimensions, load capacity, and forklift type — accommodating everything from compact EU pallets to standard 48"×40" GMA pallets.



3. Components of a Drive-In Racking System

- **Upright Frames:** Welded steel frames with punched holes for rail attachment. Height, depth and section size are calculated per load case.
- **Horizontal Support Rails:** Longitudinal rails inside each lane supporting pallets along their full width. No beams inside the lane — clearance for the forklift.
- **Floor Guide Rails:** Ground-level rails that guide the forklift straight into the lane, preventing contact with the frame and pallet misalignment.
- **Top Rails & Tie Beams:** Connect the top of frames across bays and lanes, distributing load and stabilising the whole block.
- **Base Plates & Anchors:** Heavy-duty base plates fixed to a verified concrete floor with expansion anchors for stability and safety.
- **Safety Accessories:** Column protectors, rear backstop nets, pallet guides and end-of-lane protection to guard structure and goods.

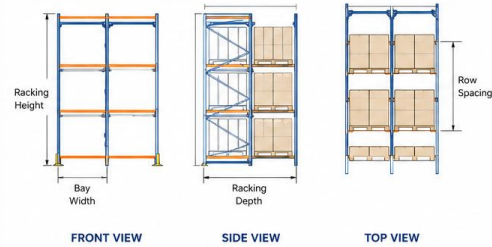
DRIVE IN RACKING

PRODUCT SPECIFICATIONS

	ITEM	SPECIFICATION	OPTION
STRUCTURAL FEATURES	Racking Type	Drive In Racking	—
	Load Capacity	500 – 2000 kg/pallet	Customizable
	Racking Height	3000 – 12000 mm	Customizable
	Racking Depth (Loading Depth)	2 – 6 pallets deep	Customizable
	Bay Width	1050 – 1500 mm	Customizable
MATERIAL	Row Spacing	1000 – 1500 mm	Customizable
	Upright Frame	Q355B High Strength Steel	Q235B / Q355D
	Beam	Q355B High Strength Steel	Q235B / Q355D
	Rail (Guide Rail)	Q235B Steel	—
PERFORMANCE	Surface Treatment	Powder Coated / Galvanized	Hot-dip Galvanized
	Surface Finish	Powder Coating (80–120 µm)	Hot-dip Galvanized
	Color	Blue / Orange / Grey	Customizable
	Corrosion Resistance	High	Higher (Galvanized)
PALLET COMPATIBILITY	Operating Temperature	-30°C to +50°C	—
	Pallet Type	Wooden / Plastic / Steel Pallet	—
	Pallet Size (L×W)	1200×1000 mm	Customizable
	Pallet Height	Max. 150 mm	Customizable
CONFIGURATION	Entry / Exit	Single Entry & Single Exit	Double Entry Available
	Installation	Boltless Assembly	Bolted Optional
	Forklift Type	Counterbalance Forklift	Reach Truck (Optional)



DIMENSION REFERENCE



HIGH LOAD CAPACITY
500 – 2000 kg per pallet



SPACE UTILIZATION
Maximize storage density with deep-lane design



SAFE & RELIABLE
Strong structure with high stability and safety



CUSTOMIZABLE
Various sizes, colors and configurations available



COST-EFFECTIVE
Ideal solution for dense storage needs

① Note: All dimensions and load capacities can be customized according to your warehouse layout and requirements.

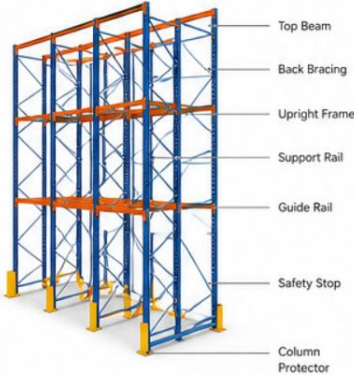
4. Technical Specifications & Configuration Options

The tables below list typical values for a standard drive-in racking system. All dimensions and capacities are engineered to order — final values are confirmed after site survey and load calculation.

Parameter	Typical Value / Range	Notes
Storage principle	LIFO (drive-in) / FIFO (drive-through)	Defines lane design
Pallet size	1000×1200mm/1200×1200 mm 48"×40" (1219×1016 mm) / custom	One pallet size per lane
Pallet load capacity	500 – 1500 kg (typical per pallet)	Calculated per project
Storage depth	2 – 10+ pallets per lane	Forklift-dependent
System height	Up to 12 m (standard up to 10 m)	Depends on forklift lift height
Lane width	≥ pallet width + clearance for forklift mast	Per site & truck spec
Density gain vs selective racking	Typically +50% – +300% pallet positions	Same footprint

Parameter	Standard
Steel grade	Q235B
Surface treatment	Electrostatic powder coating
Coating thickness	60 – 80 µm
Standard colours	Frame: Blue , Grey , Orange — custom RAL available

* Values shown are typical industry configurations for reference. Exact loads, dimensions and compliance documents are provided with each project's engineering calculation.

PRODUCT STRUCTURE	TECHNICAL SPECIFICATIONS	HOW IT WORKS																								
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APPLICATIONS	PRODUCT DETAILS
   	    
COLD STORAGE FOOD & BEVERAGE LOGISTICS CENTER MANUFACTURING	Upright Frame Support Rail Column Protector Base Plate Safety Stop

5. Applications

- **Cold Storage & Freezers:** Maximises expensive refrigerated volume — fewer aisles means less cooled space wasted. Rapid load/unload minimises cold air loss.
- **Food & Beverage:** Palletised finished goods in deep lanes with LIFO rotation for production batches and seasonal stock.
- **FMCG & Retail Distribution:** High-volume pallet buffers for fast-moving consumer goods between production and despatch.
- **Paper & Packaging:** Uniform palletised reels and cartons stored in long lanes at consistent heights.
- **Chemicals & Paints:** Palletised drums and boxes where homogeneous stock groups allow deep lane storage.
- **Spare Parts & Bulk Goods:** Seasonal or buffer stock that benefits from dense, low-handling storage.



6. Standard Installation Process

Drive-in racking must be installed by trained technicians following the engineered drawings and site conditions. A typical project follows these steps:

1. **Site Survey & Layout** — floor levelness, concrete grade, column positions, fire sprinkler clearance and forklift aisle requirements are surveyed and drawn into the layout.
2. **Foundation Verification** — the concrete floor is checked for thickness and compressive strength to receive anchor bolts. All anchors are torque-tested.
3. **Frame Assembly** — upright frames are erected in sequence per the layout drawing, aligned with a spirit level and temporarily braced.
4. **Rail Installation** — horizontal support rails and floor guide rails are fitted into frame holes at the engineered heights and bolted securely.

5. **Top Bracing & Tie Beams** — top rails and tie beams connect frames across the block, then all bolts are torqued to specification.
6. **Anchoring** — base plates are drilled, anchored with expansion bolts and re-torqued. Safety accessories (column guards, backstops) are fitted.
7. **Load Test & Inspection** — racks are inspected level-by-level with a sample pallet load to verify rail alignment and stability.
8. **Handover & Operator Briefing** — forklift operators are briefed on lane entry procedure, speed limits and loading rules before daily use.

Installation must be performed by certified rack installers. Never erect, modify or relocate racking without engineering approval.

7. Safety Guidelines

- **Respect Load Limits:** Never exceed the rated pallet load, lane capacity or system height. Loads must be evenly distributed on the support rails.
- **Trained Operators Only:** Only certified forklift operators may enter lanes. Lane entry must be slow, straight and guided by the floor rails.
- **Use Correct Pallets:** Pallets must be undamaged, correctly sized and fully supported. No overhang — it can snag frames or fall between rails.
- **Inspect Regularly:** Daily visual checks for bent rails, loose anchors or damaged frames. Any damage must be reported and repaired before further use.
- **No Unauthorised Modification:** Never add, remove or reposition rails, frames or bracing without written engineering approval.
- **Housekeeping:** Keep lanes and aisle ends clear of debris, empty pallets and obstructions. Ensure emergency exits and fire routes stay clear.

8. Frequently Asked Questions

Q: What is the difference between drive-in and drive-through racking?

A: Drive-in racking has one entrance per lane and works on LIFO (Last In, First Out). Drive-through racking has entrances at both ends of the lane and works on FIFO (First In, First Out), making it suitable for date-sensitive goods.

Q: How many pallets deep can a drive-in lane be?

A: Typically 2 to 10+ pallets per lane, depending on the forklift type (reach truck or counterbalance), lane height and pallet weight. Depth is calculated per project to keep retrieval times practical.

Q: Is drive-in racking suitable for cold storage?

A: Yes. It is one of the most popular solutions for cold rooms and freezers because it packs maximum pallets into expensive refrigerated space and reduces aisle volume. Steel quality and corrosion protection are specified for low-temperature environments.

Q: What floor is required for drive-in racking?

A: A level concrete floor with adequate thickness and compressive strength for the anchor system. The exact requirement (typically 150 mm+ thickness, C25/C30 or better) is verified during site survey.

Q: Can existing warehouses be converted to drive-in racking?

A: Yes, provided the building height and floor conditions allow it. A site survey and load calculation confirm feasibility and produce the engineered layout.

9. Plan Your High-Density Storage

Drive-in pallet racking offers a space-efficient solution for warehouses managing high volumes of palletised goods with limited SKUs. By eliminating most aisles and allowing forklifts to access deep storage lanes, drive-in racking systems significantly boost the number of pallet positions per square metre compared to selective racking — making it ideal for cold storage, food & beverage, FMCG distribution, paper, chemicals, and spare parts warehousing.

Send us your pallet size, weight, building height and target capacity — we will return a free layout drawing, load calculation and quotation.

Contact Information

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The banner features a stylized orange logo of a storage rack on the left. To its right, the company name 'Guangzhou Maobang Storage Equipment Co., Ltd.' is written in a bold, dark blue font. Below the name, three circular icons (location pin, envelope, and phone) are aligned vertically, each followed by its corresponding contact information: 'No. 6, Xiangping Road, Panyu District, Guangzhou City', 'admin@racksshelf.com', and '+86-13922173260'. The background of the banner is light gray with a faint geometric pattern and a line drawing of a warehouse interior with multiple levels of shelving.

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