

UNARCO

PALLET RACK & ENGINEERED SYSTEMS



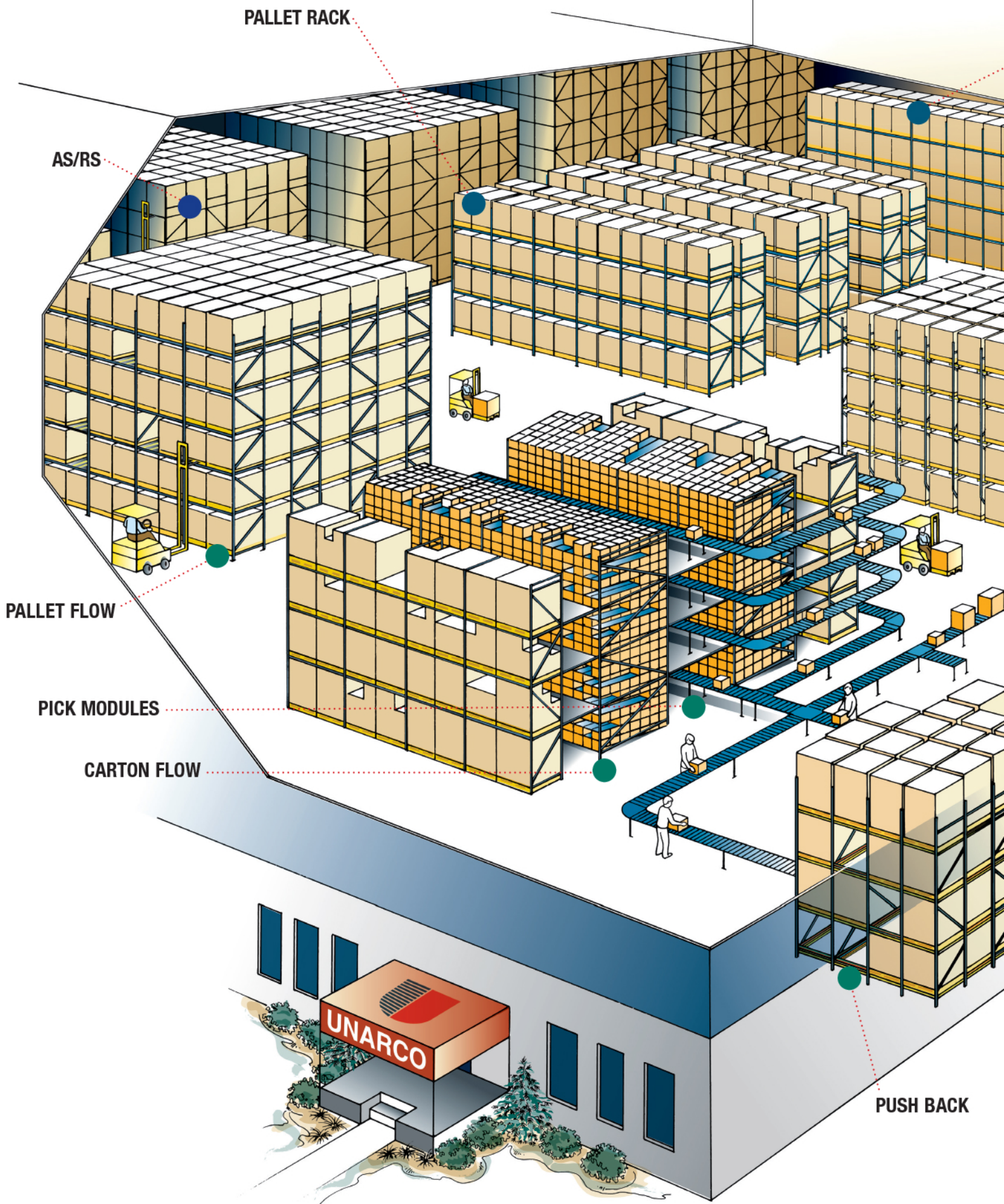
PRODUCTS CATALOG



COMPLETE STORAGE SOLUTIONS



UNARCO



STRUCTURAL RACK

DRIVE-IN/DRIVE-THRU

CANTILEVER

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www.unarcorack.com



UNARCO

Single-Source Capability

UNARCO handles projects from the simplest warehouse to the most complex pick module. Our team of qualified engineers can solve any application issue presented. We have big ideas for even the smallest warehouse. When coupled with project management and installation services, you can leave the coordination to us. Put your project in our hands and let innovation work for you.

ENGINEERING INSTALLATION PROJECT MANAGEMENT



PALLET RACK



PICK MODULES



PALLET FLOW



RACK REPAIR



DRIVE-IN/DRIVE-THRU



U N A R C O



UNARCO

The wide range of UNARCO's products allows for an efficient solution to any warehousing requirement. Because of our long history in the industry, we have developed a product line that has been successfully implemented for many years. From standard pallet rack to carton flow and push back, to complicated AS/RS systems, UNARCO manufactures rack systems to increase your warehouse productivity.



- **Selective Pallet Rack**
 - Roll-Formed
 - Structural
- **Pick Modules**
- **Carton Flow**
- **Pallet Flow**
- **Push Back**
- **Drive-In/Drive-Thru**
- **Cantilever**
- **Mezzanines**
- **AS/RS**
- **Retail Accessories**
- **Rack Repair**



UNARCO MATERIAL HANDLING, INC.

UNARCO was the first pallet rack manufacturer in the industry. With nearly sixty years in production, engineering and design, no one offers more experience in how to increase efficiency in warehouses and distribution centers.

Flexibility that you will not find in other large pallet racking manufacturers stems from the ability to produce an entire line of warehouse storage solutions including carton flow, pallet flow, push back, drive-in/drive-thru and cantilever. But more importantly, UNARCO has structured its customer service and manufacturing facilities to LISTEN to customers' needs and respond with custom designs and smarter solutions.



Strategic Plant Locations

UNARCO's network includes field representatives and stocking distributors across the country.



PANDORA, OHIO



LEWISVILLE, TEXAS



SPRINGFIELD, TENNESSEE





STATE OF THE ART PAINT APPLICATION

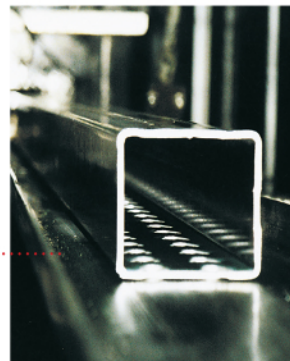
UNARCO has invested millions of dollars in state of the art powder coat paint lines for a superior finish. Parts begin at a four-stage washer which meticulously cleans the product before sending it through booths with over 25 guns. The parts then travel through a 200-foot-long bake oven to insure a durable finish.



Powder Coat Paint Booth

MODERN MANUFACTURING AND PROFESSIONALLY SKILLED LABOR

UNARCO's plants of over one million square feet are streamlined for maximum efficiency and computer guided accuracy. The modern manufacturing process starts with coils of high-strength steel, certified to meet our demanding specifications for chemistry and thickness. Beams and uprights are formed and welded to exacting standards by advanced robotic equipment and A.W.S. certified welders. UNARCO maintains top quality throughout the manufacturing and finishing process with a highly skilled work force.



Computerized Mills



High-Strength Steel Coils

- **America's first manufacturer of pallet rack**
- **Complete product line for any storage requirement**
- **History of successful working relationships with consultants and integrators throughout the United States**
- **Proven engineering and design history**
- **Seismic calculations and local building code compliance**
- **Installation and project management capabilities**
- **Vast distributor network**
- **Member of Rack Manufacturers Institute (RMI) with R-Mark certification, which guarantees compliance to latest RMI specifications**
- **Solid financial backing of multi-billion dollar corporation**



*The
Renco Group,
Inc.*

Selective Pallet Rack ROLL-FORMED

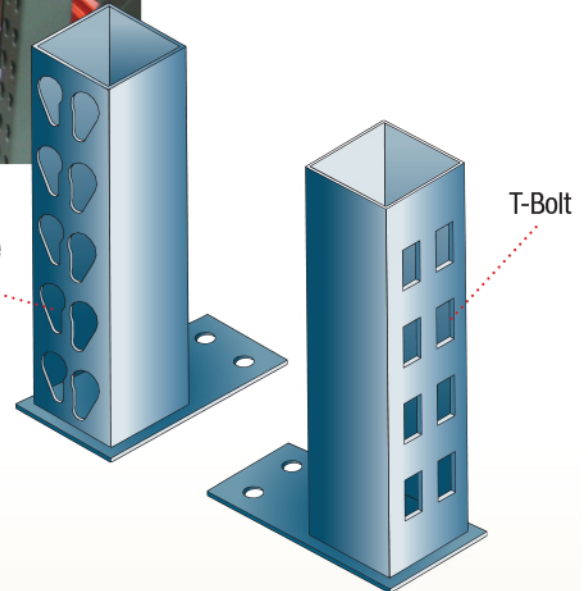


- **Roll-formed**
- **All-welded construction**
- **Wide variety of column sizes**
- **Closed tube or open section columns**
- **Available with bolted or automatic locking devices**
- **Sturdy miter-cut bracing**
- **Rigid connections**
- **40-foot continuous length capability**

Standard Selective Pallet Rack is the basis for most warehouse storage systems. UNARCO can provide all varieties from light to heavy-duty, open to closed tubes and bolted to automatic locking connections. Computerized mills insure that tolerances on all roll-formed beams and uprights are precise and install with ease.



Interchangeable



SUPERPOST CLOSED TUBE

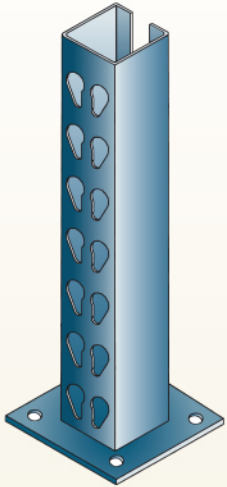
- 30% - 40% greater load capacities than same gauge open back design uprights
- Over 200 times more resistant to torsional forces
- Cleaner - no areas to trap dust and debris
- Resists frontal impact five times more than structural column



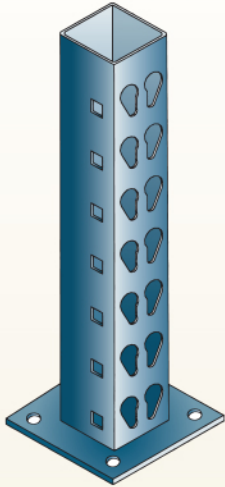
UNARCO

UPRIGHTS

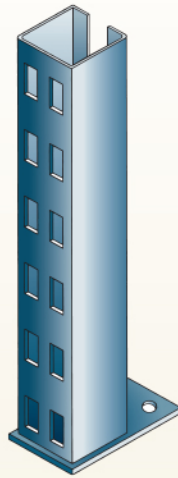
pallet rack



Shown with optional seismic base plate



Shown with optional side punching



Shown with optional UPICK side punching

INTERCHANGEABLE Non-Bolted Connection

Interchangeable tear drop upright columns will accept most industry standard "Interchangeable" beams

Manufactured with or without side holes

Available in open or closed tube sections

T-BOLT Bolted Connection

T-Bolt upright columns front-end-only connection allows for easy installation because you never need to reach into the column

Extra rigid connection

Available in open or closed tube sections

Pallet Rack: See pages 8-9 for available column sizes and capacities

U.S. Patent #5,624,045
Gravity
Locking Device

Interchangeable:
Adjustable on 2" centers

U.S. Patent #4,496,061
T-Bolt
Locking Device

T-Bolt:
Adjustable on 3" centers

BEAM CONNECTIONS

Selective Pallet Rack COMPONENTS

ROLL-FORMED UPRIGHTS

GENERAL UPRIGHT CAPACITY GUIDELINES FOR T-BOLT UPRIGHTS

SUPERPOST T-BOLT

| COLUMN SIZE | 3 x 2 | 3 x 2 | 3 x 2 | 3 x 3 | 3 x 3 | 3 x 3 | 3 x 3 | 4 x 3 | 4 x 3 | 4 x 3 |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| PART NO. | T0142 | T0132 | T0122 | T0143 | T0133 | T0123 | T0103 | T0134 | T0124 | T0104 |
| MAXIMUM UNSUPPORTED LENGTH | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS |
| 36" | 33,620 | 30,545 | 36,181 | 32,023 | 43,716 | 52,950 | 65,590 | 50,281 | 64,143 | 83,278 |
| 48" | 22,242 | 28,680 | 33,990 | 27,556 | 36,983 | 44,585 | 55,039 | 47,403 | 60,224 | 77,937 |
| 60" | 17,655 | 22,437 | 26,498 | 22,631 | 29,811 | 35,742 | 43,928 | 42,129 | 53,092 | 68,233 |
| 72" | 13,249 | 16,587 | 19,502 | 17,709 | 22,889 | 27,279 | 33,347 | 36,405 | 45,475 | 57,998 |
| 84" | 9,816 | 12,186 | 14,328 | 13,330 | 16,965 | 20,143 | 24,572 | 30,567 | 37,834 | 47,863 |
| 96" | 7,556 | 9,330 | 10,970 | 10,320 | 13,008 | 15,422 | 18,813 | 24,923 | 30,566 | 38,323 |

OPEN SECTION T-BOLT

| COLUMN SIZE | 3 x 1 ⁵ / ₈ | 3 x 1 ⁵ / ₈ | 3 x 3 | 3 x 3 | 3 x 3 | 3 x 3 |
|----------------------------|-----------------------------------|-----------------------------------|--------|--------|--------|--------|
| PART NO. | T0145 | T0135 | T0146 | T0136 | T0126 | T0106 |
| MAXIMUM UNSUPPORTED LENGTH | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS | POUNDS |
| 36" | 17,902 | 22,751 | 25,618 | 34,383 | 43,637 | 53,939 |
| 48" | 13,913 | 17,607 | 20,691 | 27,257 | 34,076 | 42,035 |
| 60" | 11,196 | 14,042 | 17,165 | 22,304 | 27,569 | 33,895 |
| 72" | 8,721 | 10,831 | 13,860 | 17,761 | 21,700 | 26,549 |
| 84" | 6,771 | 8,354 | 10,922 | 13,856 | 16,802 | 20,537 |
| 96" | 5,375 | 6,600 | 8,771 | 11,045 | 13,320 | 16,272 |

All values in the above tables assume that each column carries half of the frame load. The table values are expressed in pounds per frame. These values are based on gravity loading only that is purely axial. Any condition where the axial load is accompanied by moment, the axial load capacity will be less. This will occur for non-symmetrical loading conditions. The capacities also assume the base plates and the bracing are of adequate strength and that all other parts of the rack have been properly designed. All values are for undamaged racks that are installed plumb. It is the rack user's responsibility to properly maintain the racks to ensure that the carrying capacity of the racks is not reduced by damage and that any changes to the rack configuration do not cause an unsafe condition.

Frame capacities are based on maximum unsupported length, which is the measurement of the distance between the floor and the top of the first beam or the maximum spacing between beams, whichever governs.

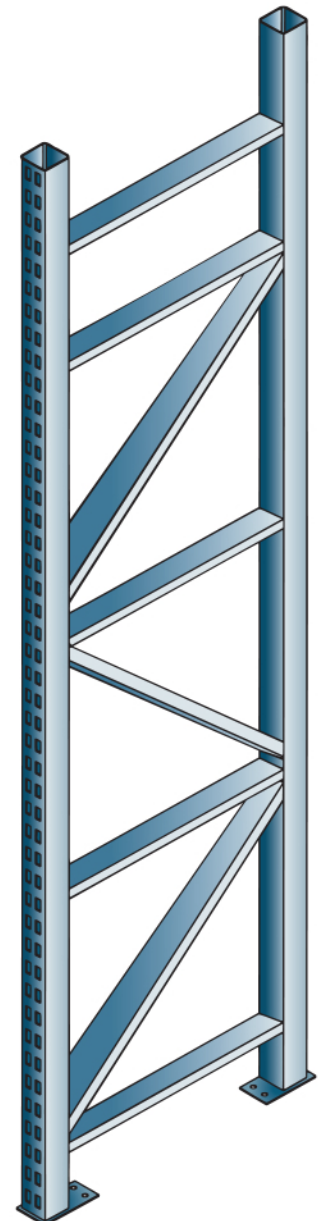
Refer to unarcorack.com for latest updates to installation instructions and user manuals.

CONTACT THE UNARCO SPRINGFIELD OFFICE FOR ANY OF THE FOLLOWING CONDITIONS:

- Any application where the frame load exceeds 31,000 lbs. (23,600 lbs for 3 x 1.625 columns or 28,700 lbs. for 3x2 column). These frames may need larger base plates or heavier bracing.
- Any application that requires seismic design where the design ground acceleration S_s exceeds 25%g in IBC areas.
- Configurations that require a frame deeper than 60 inches or higher than 40 feet.
- Applications that involve support of platforms or catwalks or any application other than normal pallet rack.
- Any single row where the height-to-depth ratio exceeds 6 to 1. These must be checked for anchorage against overturning.
- Any condition which creates uncertainty as to the proper use of these tables.

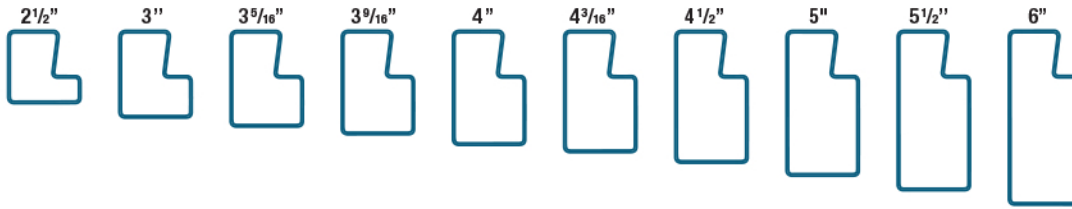
Please visit unarcorack.com for Interchangeable capacities and uprights with side punching.

Column protection is recommended for uprights subjected to potential column abuse from lift trucks.



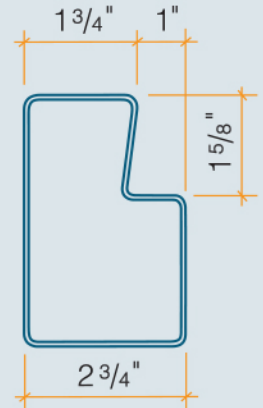
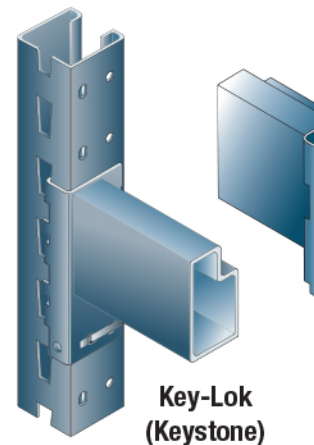
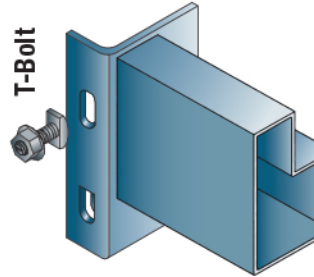
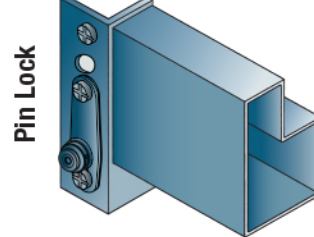
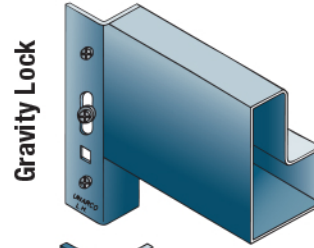
ROLL-FORMED BEAMS

pallet rack - roll-formed



BEAM CAPACITIES FOR T-BOLT - GRAVITY LOCK - PIN LOCK

| BEAM SPAN | PART NUMBER | RMI CAPACITY |
|-----------|--------------------|-------------------------------------|
| 48" | F2 6356 04800SS000 | 7991# 3.56" x 48"L... 16 ga. |
| 60" | F2 6356 06000SS000 | 6544# 3.56" x 60"L... 16 ga. |
| 72" | F2 6356 07200SS000 | 5573# 3.56" x 72"L... 16 ga. |
| 84" | F2 6356 08400SS000 | 4876# 3.56" x 84"L... 16 ga. |
| 96" | F2 6250 09600SS000 | 2126# 2.50" x 96"L... 16 ga. |
| | F2 6331 09600SS000 | 3452# 3.31" x 96"L... 16 ga. |
| | F2 6356 09600SS000 | 3972# 3.56" x 96"L... 16 ga. |
| | F2 6400 09600SS000 | 5009# 4.00" x 96"L... 16 ga. |
| | F2 6418 09600SS000 | 5296# 4.18" x 96"L... 16 ga. |
| | F2 6450 09600SS000 | 5832# 4.50" x 96"L... 16 ga. |
| | F2 6500 09600SS000 | 6730# 5.00" x 96"L... 16 ga. |
| | F2 6550 09600SS000 | 7701# 5.50" x 96"L... 16 ga. |
| 108" | F2 6600 09600SS000 | 8742# 6.00" x 96"L... 16 ga. |
| | F2 4600 09600SS000 | 9897# 6.00" x 96"L... 14 ga. |
| | F2 6356 10800SS000 | 3206# 3.56" x 108"L... 16 ga. |
| | F2 6400 10800SS000 | 4044# 4.00" x 108"L... 16 ga. |
| | F2 6418 10800SS000 | 4431# 4.18" x 108"L... 16 ga. |
| | F2 6450 10800SS000 | 5184# 4.50" x 108"L... 16 ga. |
| | F2 6500 10800SS000 | 6038# 5.00" x 108"L... 16 ga. |
| | F2 4500 10800SS000 | 6800# 5.00" x 108"L... 14 ga. |
| 120" | F2 4600 10800SS000 | 8842# 6.00" x 108"L... 14 ga. |
| | F2 6356 12000SS000 | 2649# 3.56" x 120"L... 16 ga. |
| | F2 6400 12000SS000 | 3329# 4.00" x 120"L... 16 ga. |
| | F2 6418 12000SS000 | 3643# 4.18" x 120"L... 16 ga. |
| | F2 6450 12000SS000 | 4254# 4.50" x 120"L... 16 ga. |
| | F2 6500 12000SS000 | 5353# 5.00" x 120"L... 16 ga. |
| | F2 4500 12000SS000 | 5943# 5.00" x 120"L... 14 ga. |
| | F2 4600 12000SS000 | 7997# 6.00" x 120"L... 14 ga. |
| 144" | F2 6356 14400SS000 | 1902# 3.56" x 144"L... 16 ga. |
| | F2 6400 14400SS000 | 2377# 4.00" x 144"L... 16 ga. |
| | F2 6418 14400SS000 | 2596# 4.18" x 144"L... 16 ga. |
| | F2 6450 14400SS000 | 3021# 4.50" x 144"L... 16 ga. |
| | F2 6500 14400SS000 | 3785# 5.00" x 144"L... 16 ga. |
| | F2 4500 14400SS000 | 4192# 5.00" x 144"L... 14 ga. |
| | F2 4600 14400SS000 | 6369# 6.00" x 144"L... 14 ga. |
| | F2 3600 14400SS000 | 7653# 6.00" x 144"L... 13 ga. |
| | F2 2600 14400SS000 | 8979# 6.00" x 144"L... 12 ga. |



UNARCO rack designs conform to the latest Rack Manufacturers Institute (RMI) specifications and AISI Cold Formed Steel Design Manual.

Sturdi-Bilt

- All capacities are expressed in pounds per pair of beams. Only gravity loading and the RMI required impact have been considered.
- All values are based on a uniformly distributed load (i.e. each beam carries 50% of the load) and assume proper installation and no beam damage.
- The deflection limit for all beams is the length divided by 180.
- Roll-formed beams that are longer than 150" require crossbars, lateral ties, wire decks or some other type of lateral restraint.
- Values in the table are for beam bending only. Shear on the connectors and weld strengths, etc. are not taken into consideration.
- Capacities include 12.5% impact for two pallets side by side. For a three-pallet-wide shelf, the values should be multiplied by 0.95. For one pallet per shelf the values should be multiplied by 0.90.

PLEASE CONTACT THE UNARCO SPRINGFIELD OFFICE FOR THE FOLLOWING CONDITIONS:

- Beams that are longer than 144"
- Ground acceleration S_s exceeds 25%g in IBC areas
- Shelf load in excess of 10,000 lbs.
- Beam application where the proper use of the tables is unclear

Original Sturdi-Bilt and Key-Lok (Keystone) products may be ordered to add to an existing rack system.



Structural Rack

Structural racks are designed with high-strength structural steel C-Channels for added toughness and rigidity. UNARCO offers 3" and 4" upright posts with sturdy structural steel bracing. Heavy-duty structural beams range from 3" to 6" in height to meet the most demanding load criteria.

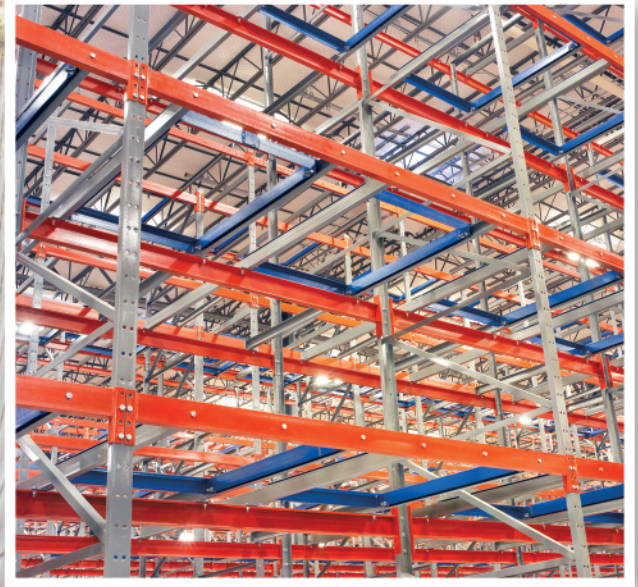
UNARCO also manufactures a 3" structural column with teardrop punching. This allows the addition of interchangeable roll-formed beams as an economic and efficient option.

The high-strength and durability of structural steel combined with UNARCO engineering and design can solve any project dilemma and create a more efficient warehouse space.



HIGH-STRENGTH STRUCTURAL STEEL

UNARCO Structural Racks are designed to prevent damage from forklift abuse. The posts are constructed from structural steel and are much thicker than roll-formed posts; particularly at the corners which are the primary impact points.



Structural Push Back Rack

AS/RS

Structural upright
with structural
beam

STRUCTURAL BOLTED

Heavy-duty 3" or 4" structural steel C-Channels have pre-punched bolt holes on 4" centers. Structural steel beams include beam connectors that are punched on 2" centers for 2" vertical beam adjustability.

Structural upright
with roll-formed
beam



UNARCO

RIGID

EFFICIENT

ECONOMICAL

UNARCO Engineering uses the high-strength and durability of structural steel for large projects with heavy loads or highly engineered pick modules.

- **Strength**
- **Durability**
- **Easily Repaired**
- **Abuse Resistant**
- **Heavy-Duty Structural Bracing**

STRUCTURAL

INTERCHANGEABLE

Hybrid

Heavy-duty 3" structural steel C-Channels have pre-punched teardrop openings on 2" centers. This hybrid design combines the ruggedness of structural steel uprights and the option of adding efficient roll-formed step beams.

Structural upright with structural beam

Structural posts with interchangeable punching

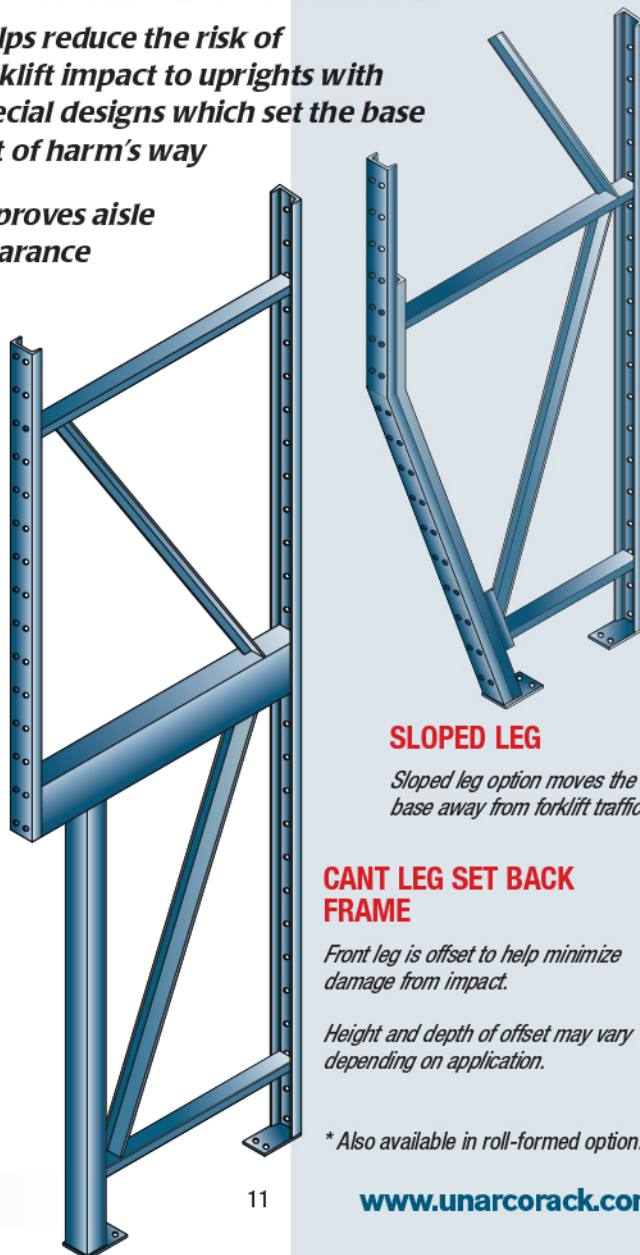
Structural upright with roll-formed beam



pallet rack - structural

FRAME OPTIONS

- **Helps reduce the risk of forklift impact to uprights with special designs which set the base out of harm's way**
- **Improves aisle clearance**



SLOPED LEG

Sloped leg option moves the base away from forklift traffic.

CANT LEG SET BACK FRAME

Front leg is offset to help minimize damage from impact.

Height and depth of offset may vary depending on application.

** Also available in roll-formed option.*

Structural Uprights

UPRIGHT FRAME SELECTION

STRUCTURAL CHANNEL
FRAME TABLES BOLTED

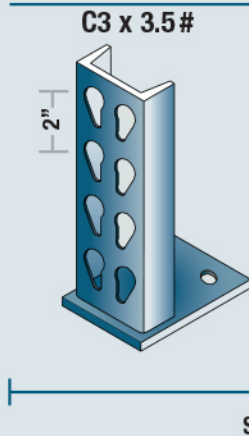
| COLUMN SIZE | C3 x 3.5# | C3 x 4.1# | C4 x 4.5# | C4 x 5.4# |
|-------------|-----------|-----------|-----------|-----------|
| Shelf Space | 40" Pan. | 40" Pan. | 40" Pan. | 40" Pan. |
| 36" | 27,515 | 29,821 | 44,172 | 47,134 |
| 42" | 27,515 | 29,821 | 44,172 | 47,134 |
| 48" | 27,515 | 29,821 | 44,172 | 47,134 |
| 54" | 27,515 | 29,821 | 44,172 | 47,134 |
| 60" | 27,515 | 29,821 | 44,172 | 47,134 |
| 66" | 27,515 | 29,821 | 44,172 | 47,134 |
| 72" | 27,320 | 28,037 | 44,172 | 47,134 |
| 78" | 23,940 | 24,400 | 44,172 | 47,134 |
| 84" | 20,724 | 21,033 | 44,126 | 46,257 |
| 90" | 18,053 | 18,322 | 40,610 | 42,229 |
| 96" | 15,867 | 16,103 | 37,162 | 38,328 |

* Indicated in pounds.

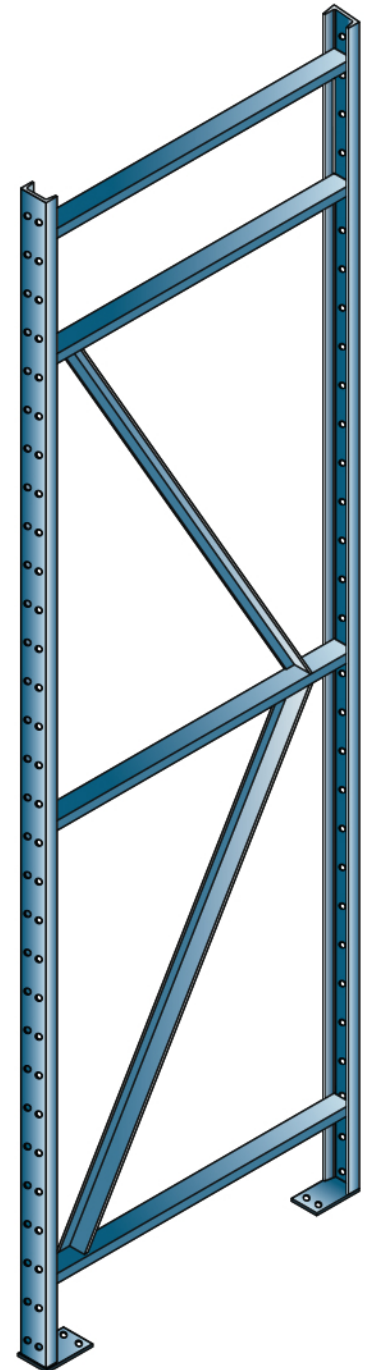
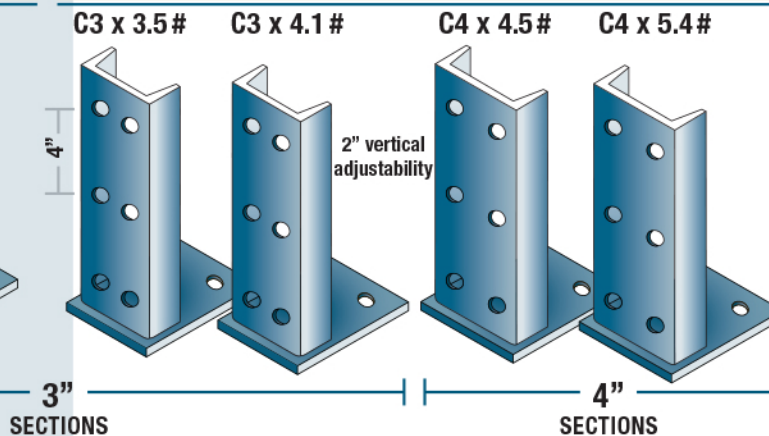
STRUCTURAL CHANNEL
FRAME TABLES TEAR DROP

| COLUMN SIZE | C3 x 3.5# |
|-------------|-----------|
| Shelf Space | 40" Pan. |
| 36" | 26,848 |
| 42" | 26,848 |
| 48" | 26,848 |
| 54" | 26,848 |
| 60" | 26,848 |
| 66" | 26,848 |
| 72" | 26,657 |
| 78" | 23,360 |
| 84" | 20,222 |
| 90" | 17,616 |
| 96" | 15,483 |

STRUCTURAL
INTERCHANGEABLE



STRUCTURAL
BOLTED



All values in the above tables assume that each column carries half of the frame load. The table values are expressed in pounds per frame. These values are based on gravity loading only that is purely axial. Any condition where the axial load is accompanied by moment, the axial load capacity will be less. This will occur for non-symmetrical loading conditions. The capacities also assume that the base plates and the bracing are of adequate strength and that all other parts of the rack have been properly designed. All values are for undamaged racks that are installed plumb. It is the rack user's responsibility to properly maintain the racks to ensure that the carrying capacity of the racks is not reduced by damage and that any changes to the rack configuration do not cause an unsafe condition.

Frame capacities are based on the unsupported length, which is the measurement of the distance between the floor and the top of the first beam or the maximum spacing between beams, whichever governs.

Refer to www.unarco.com for latest updates to installation instructions, user manuals and safety notices.

Capacities do not take seismic, wind or other lateral forces into consideration.

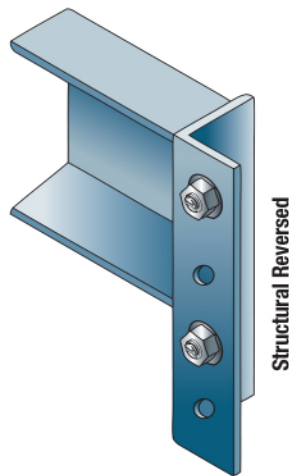
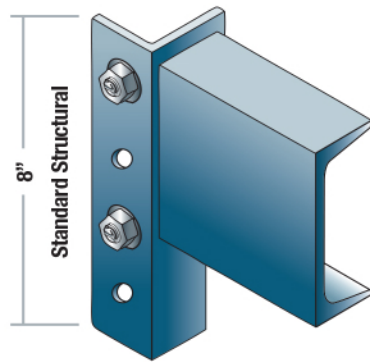
Upright frames have to be anchored with at least one anchor bolt in each post and require a minimum concrete floor strength of 3,000 PSI for the maximum loads.

CONTACT UNARCO FOR ANY OF THE FOLLOWING CONDITIONS:

- Any application where the frame load exceeds 31,000 lbs. These frames may need larger base plates or heavier bracing.
- Any application that requires seismic design where the design ground acceleration S_s exceeds 25%g in IBC areas.
- Configurations that require a frame deeper than 60 inches or higher than 40 feet.
- Applications that involve support platforms or catwalks or any application other than normal pallet rack.
- Any single row where the height-to-depth ratio exceeds 6 to 1. These must be checked for anchorage against overturning.
- Any condition which creates uncertainty as to the proper use of these tables.

Column protection is recommended for uprights subjected to potential column abuse from lift trucks.

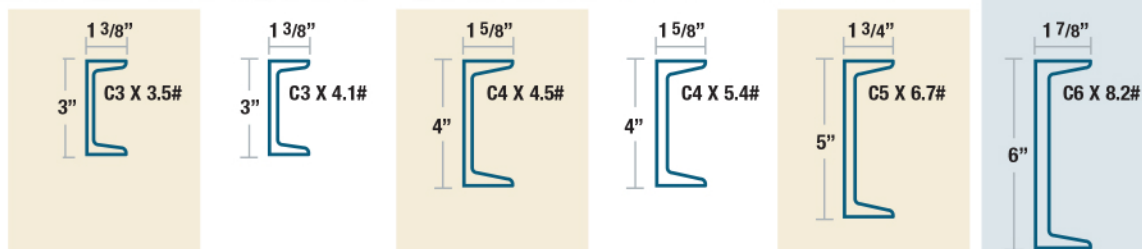




pallet rack

2" vertical adjustability

BEAM CAPACITY CHART (indicated in pounds)



| BEAM SIZE | C3 x 3.5# | | C3 x 4.1# | | C4 x 4.5# | | C4 x 5.4# | | C5 x 6.7# | | C6 x 8.2# | |
|-----------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| | W/O Tie | W/ Tie | W/O Tie | W/ Tie | W/O Tie | W/ Tie | W/O Tie | W/ Tie | W/O Tie | W/ Tie | W/O Tie | W/ Tie |
| 48" | 12,425 | 12,425 | 13,409 | 13,409 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 |
| 60" | 9,412 | 9,764 | 10,234 | 10,422 | 14,880 | 15,896 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 |
| 72" | 7,371 | 8,009 | 8,087 | 8,567 | 11,402 | 12,869 | 12,581 | 13,912 | 16,000 | 16,000 | 16,000 | 16,000 |
| 84" | 5,887 | 6,502 | 6,529 | 6,776 | 8,896 | 10,697 | 9,907 | 11,590 | 14,418 | 16,000 | 16,000 | 16,000 |
| 90" | 5,284 | 5,716 | 5,896 | 5,954 | 7,859 | 9,824 | 8,830 | 10,657 | 12,744 | 16,000 | 16,000 | 16,000 |
| 96" | 4,750 | 5,068 | 5,276 | 5,276 | 6,899 | 9,058 | 7,882 | 9,838 | 11,186 | 14,721 | 15,856 | 16,000 |
| 102" | 4,244 | 4,527 | 4,709 | 4,709 | 6,108 | 8,380 | 6,986 | 9,115 | 9,864 | 13,591 | 13,927 | 16,000 |
| 108" | 3,809 | 4,070 | 4,231 | 4,231 | 5,447 | 7,776 | 6,232 | 8,469 | 8,762 | 12,584 | 12,332 | 16,000 |
| 114" | | 3,680 | | 3,824 | | 7,233 | | 7,890 | | 11,681 | | 16,000 |
| 120" | | 3,345 | | 3,473 | | 6,742 | | 7,254 | | 10,867 | | 15,587 |
| 126" | | 3,054 | | 3,169 | | 6,298 | | 6,598 | | 10,129 | | 14,508 |
| 132" | | 2,800 | | 2,903 | | 5,760 | | 6,026 | | 9,457 | | 13,525 |
| 138" | | 2,577 | | 2,669 | | 5,285 | | 5,525 | | 8,841 | | 12,627 |
| 144" | | 2,379 | | 2,463 | | 4,865 | | 5,084 | | 8,276 | | 11,802 |
| 150" | | 2,203 | | 2,279 | | 4,494 | | 4,692 | | 7,754 | | 11,041 |
| 156" | | 2,046 | | 2,114 | | 4,163 | | 4,344 | | 7,271 | | 10,338 |

- Please consult Springfield Engineering for any shelf load over 10,000 lbs.
- All capacities are expressed in pounds per pair of beams. Only gravity loading and the RMI required impact have been considered.
- All values are based on a uniformly distributed load (i.e. each beam carries 50% of the load) and assume proper installation and no beam damage.
- The deflection limit for all beams is the length divided by 180.
- Structural beams that are longer than 108" require lateral ties.
- Values in the table are for the beam bending only.
- Capacities include 12.5% impact for two pallets side by side. For a three-pallet-wide shelf, the values should be multiplied by 0.95.
- For one pallet per shelf, the values should be multiplied by 0.90.
- Capacity chart is based on current RMI specifications.

UNARCO rack designs conform to the latest Rack Manufacturers Institute (RMI) specifications and AISC 14th Edition.

Refer to unarcorack.com for latest updates to installation instructions, user manuals and safety notices.

Engineered Systems

UNARCO has over a half century worth of experience designing and manufacturing highly engineered rack systems including Pick Modules, Rack Supported Buildings and AS/RS projects. The industry's strongest engineering team integrates a multitude of storage solutions into multi-level work platforms including UNARCO Carton Flow, Pallet Flow, Push Back and Drive-In Systems.

Integration of miles of conveyor and sortation systems that help product flow through the distribution center are all supported by UNARCO pallet rack. Level after level of high speed product movement from pallet to carton to conveyor to the dock, all works because UNARCO Engineers have the experience to plan and design a complete distribution system.

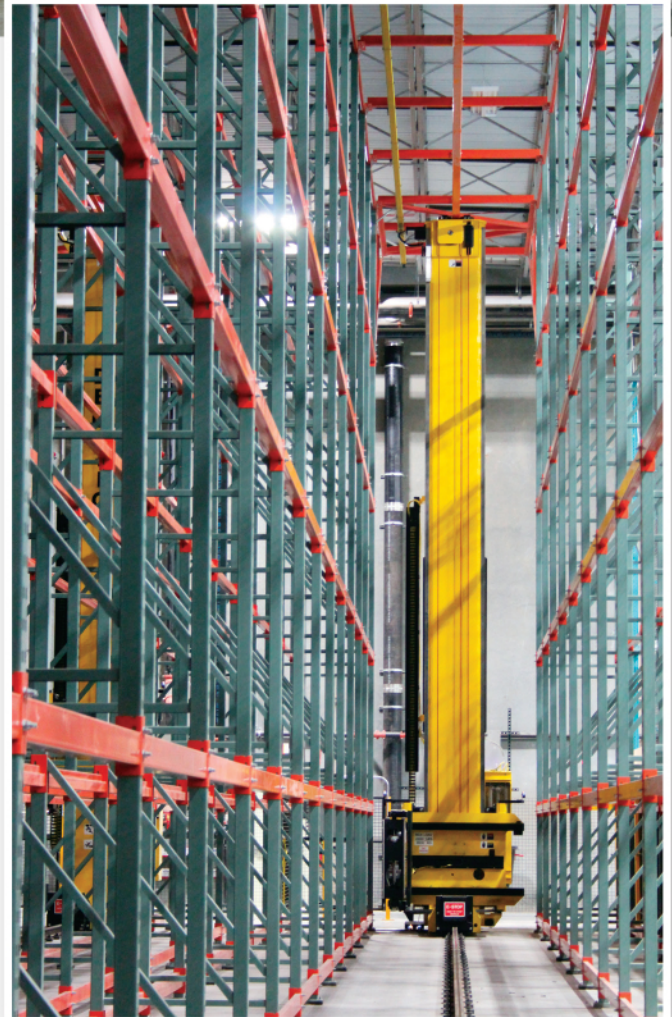


Conveyors run through multi-level rack-supported systems for product sortation

AS/RS

Automated Storage and Retrieval Systems (AS/RS) are computer controlled systems for storing and retrieving large quantities of products with virtually no manual labor. AS/RS systems can store and retrieve pallets, totes, trays or cartons. Systems use cranes to move through narrow aisles of pallet rack guided by a raised metal rail attached to the concrete. An automated mechanism reaches into the storage locations within the rack to retrieve or place the load. AS/RS provides order picking accuracy at a higher speed than traditional picking systems.

Large cranes run on rails in the aisles to store and retrieve product automatically.

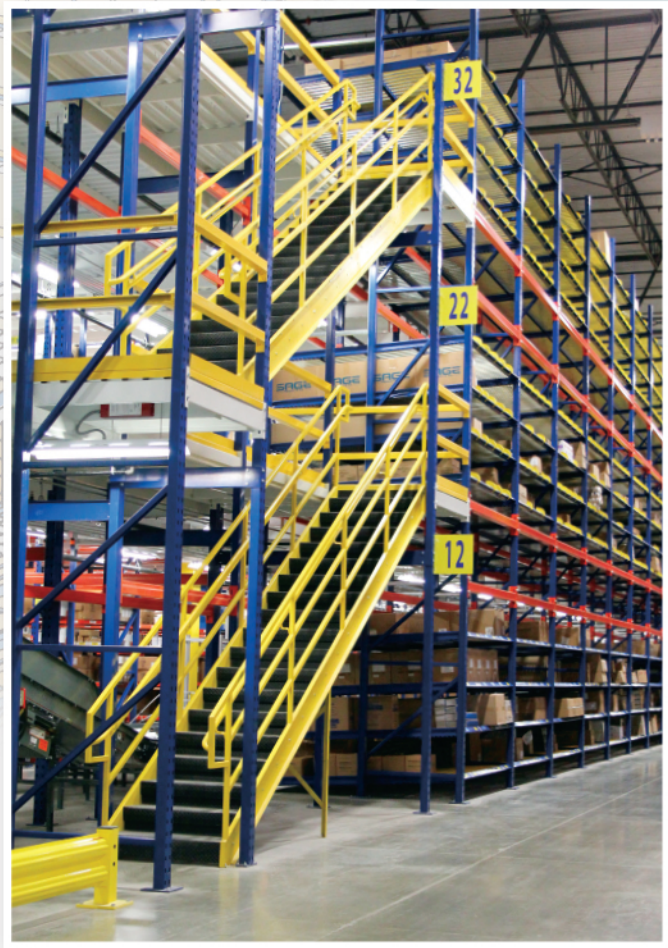


UNARCO

Order Fulfillment and Distribution Center Efficiency

SINGLE SOURCE

- *Calculations*
- *Permitting*
- *Codes Interpretation*
- *Seismic Criteria*
- *Installation Drawings*
- *Site Surveys*
- *Purchase Integration*
- *Project Management*
- *Turn-Key Solutions*



Pick Modules

Pick Modules are multi-level engineered racking systems that store and move pallets and cartons through a distribution center efficiently. UNARCO designs warehouse storage facilities capable of fulfilling over one hundred thousand orders per day or processing millions of orders per week.

- **Efficient product distribution**
- **Smaller warehouse footprint**
- **Lower operating costs**

Integrated stairs and work platforms help product breakdown from pallet to carton to piece for easy order fulfillment.



UNARCO flooring systems support multiple layers of order picking and sortation equipment.

Carton Flow



Carton Trax steel axle carton flow with UPICK knock-down modular shelves.

All of UNARCO's carton flow systems are gravity driven. Product is loaded from behind onto sloped shelves and easily flows forward to the picking position. UNARCO offers UPICK modular shelves or KPICK welded shelf design; both with snap-in rollers. UNARCO's premium carton flow line, RHINOTRAC, has pre-assembled, full-width lay-in roller units.

RhinoTrac lanes allow cartons to flow forward to picking position at conveyor with full-width roller carton support.

- ***First-in/First-out***
- ***Dedicated Stock/ Retrieval Aisles***
- ***Split Case Picking***
- ***Case/Carton Picking***

Separation of the loading, restocking and retrieval aisles allow pickers to operate more efficiently. Carton flow systems can grow into multi-level modules to take full advantage of vertical area and let you maximize your warehouse floor space.

RhinoDeck



RhinoDeck with 1.1" high galvanized steel side channels will drop into any existing carton flow system with no hardware or hanger brackets required.



RhinoTrac fully assembled carton flow lanes drop into any manufacturer's pallet rack



UNARCO

CARTON TRAX

STEEL AXLE PREMIUM CARTON FLOW

carton flow

OPTIONS



UPICK

UPICK Snap-In Roller Track
Modular/Knock-Down Shelves



KPICK

KPICK Snap-In Roller Track
Factory Welded Shelves

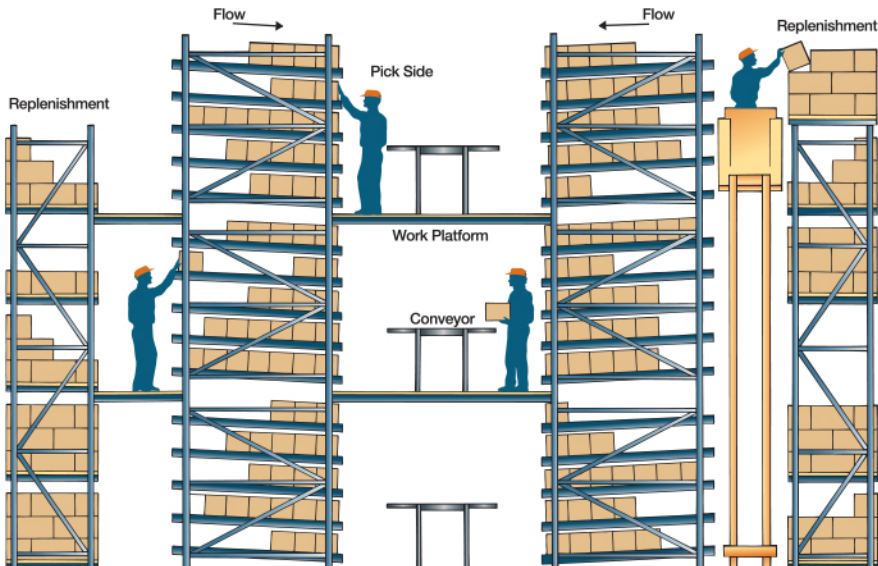


RHINOTRAC

RhinoTrac Full-Width Carton Flow Roller

*UNARCO manufactures
traditional snap-in roller
track and full-width lay-in
roller units*

MULTI-LEVEL MODULES



Multi-level modules incorporate stair and railing systems with our superior flooring support system to increase efficiency by using all available vertical space.

RHINOTRAC HEAVY-DUTY CARTON FLOW

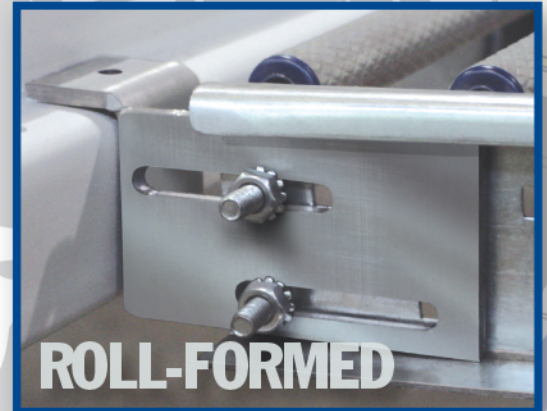


RhinoTrac rests below beam level in the front for maximum storage and a helpful product stop.

- **Compatibility with all pallet rack brands**
- **Easy installation – No hardware required**
- **Damage resistant aluminum rollers**
- **Galvanized side channels supported by heavy-duty end-plates for constant impact loading**

RHINOTRAC END SUPPORTS

- Integrated supports mean no brackets to install
- Slotted end supports adjust to vary the length and insure proper fit



STURDY CONSTRUCTION

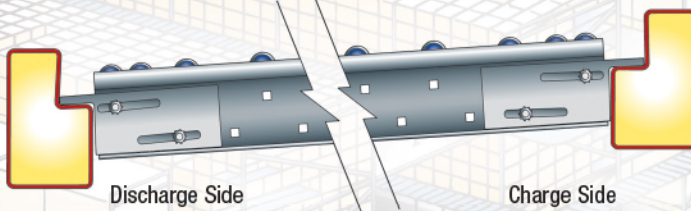
- .75" diameter aluminum, diamond embossed, damage-resistant rollers
- Superior bushing design with heavy-duty axles
- 2.5" high galvanized steel side channels with .25" diameter carriage bolt tie rods for increased capacity

STANDARD ROLLER WIDTHS:
6", 9", 12", 15"

STANDARD ROLLER CENTERS:
1", 2" and 3" on center

TRACK SUPPORT

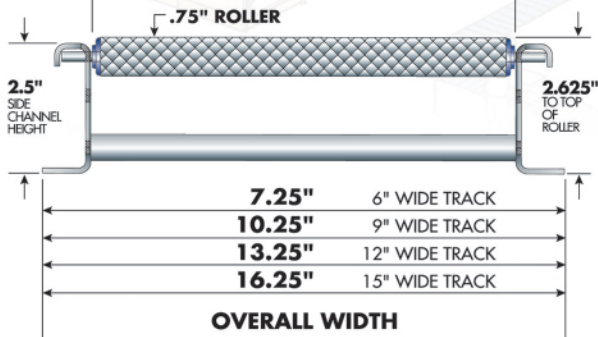
carton flow - rhinotrak



RHINOTrak Roller Dimensions

NOMINAL WIDTH

| | |
|---------|----------------|
| 5.375" | 6" WIDE TRACK |
| 8.375" | 9" WIDE TRACK |
| 11.375" | 12" WIDE TRACK |
| 14.375" | 15" WIDE TRACK |



RHINOTrak
www.rhinotrak.com



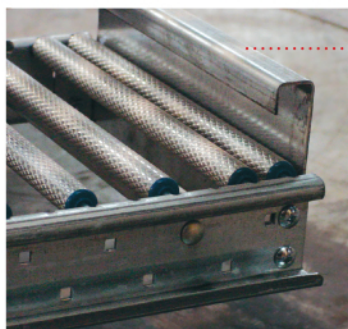
OPTIONS



Internal Knuckle Shelf



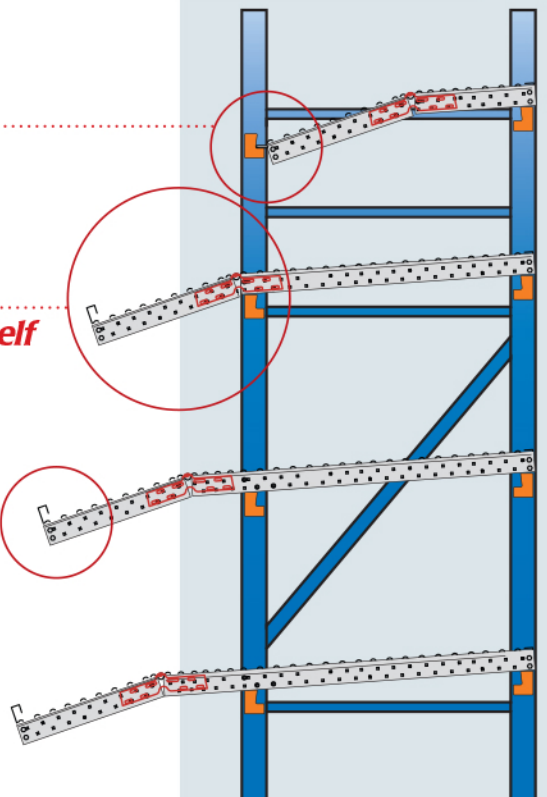
External Knuckle Shelf



Box Stop



Tilt Tray

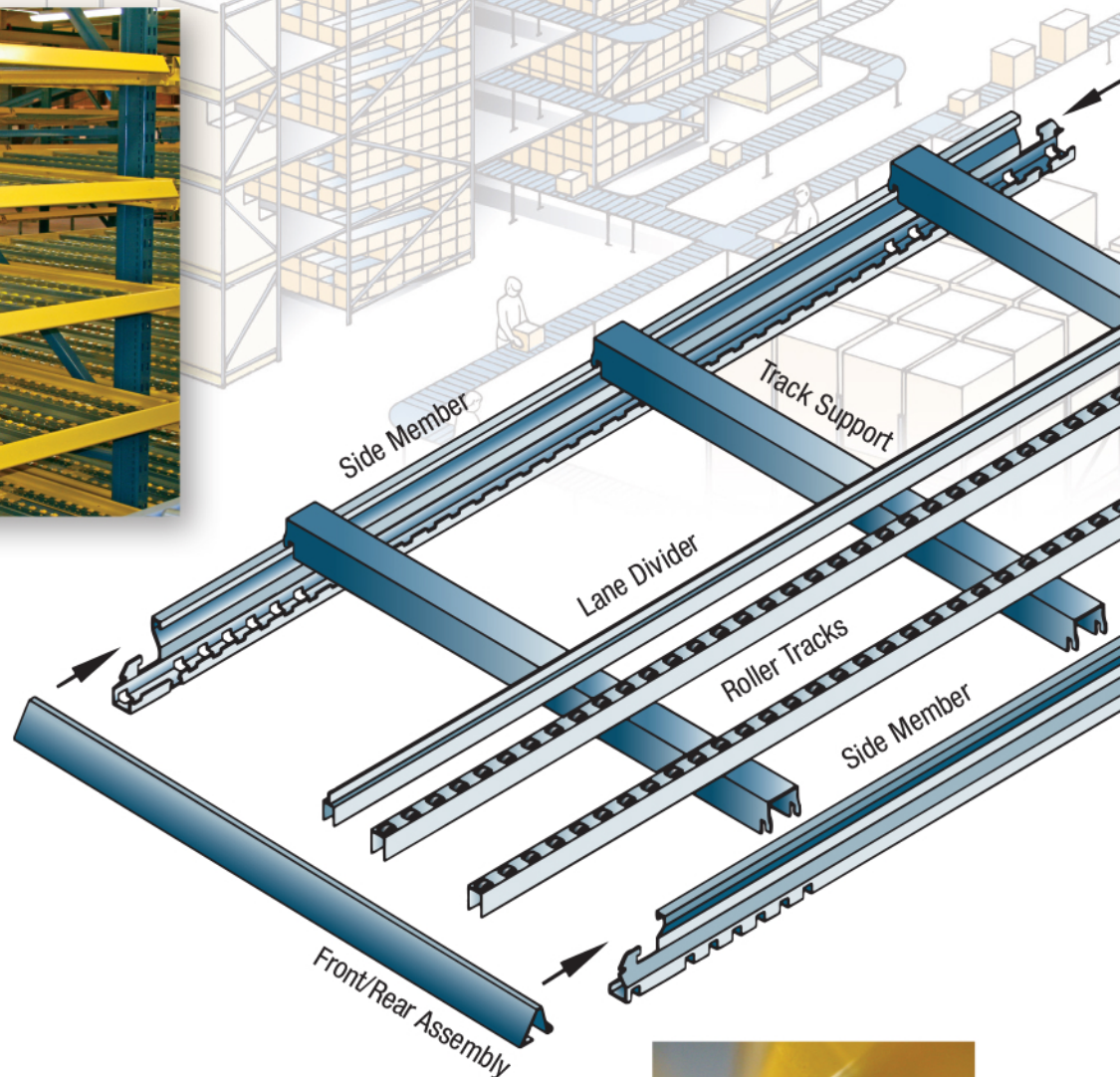


Carton Flow UPICK MODULAR DESIGN COMPONENTS



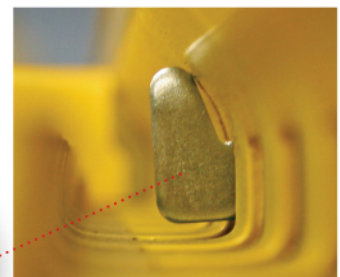
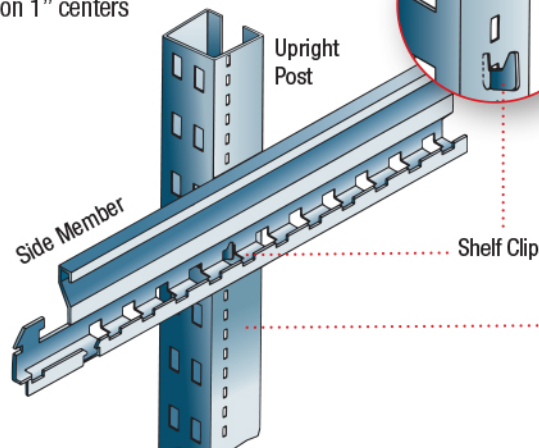
UNARCO's UPICK modular system makes installation of even the most complex modules simple.

- **Modular design for shipping ease**
- **Quick and easy installation**
- **Designed for projects ranging from single-level to multi-level modules**
- **Easily modified as product sizes or capacities change**
- **May be added to existing rack**
- **Easily works around building columns**



Modular design makes it simple to add shelves or supports

- Shelves easily attach to uprights
- Vertically adjustable on 1" centers

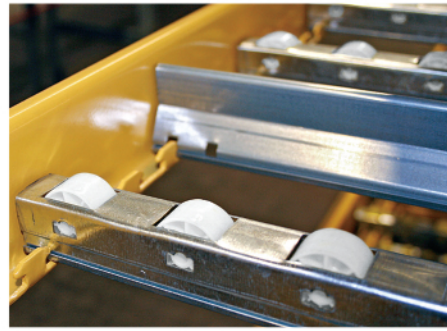
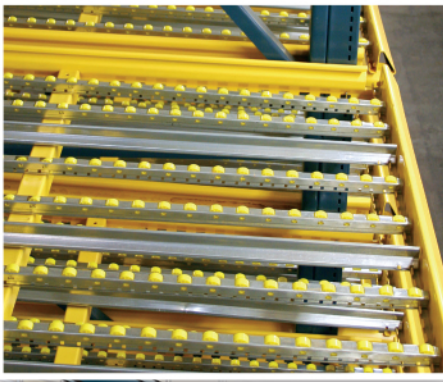


Shelf Clip

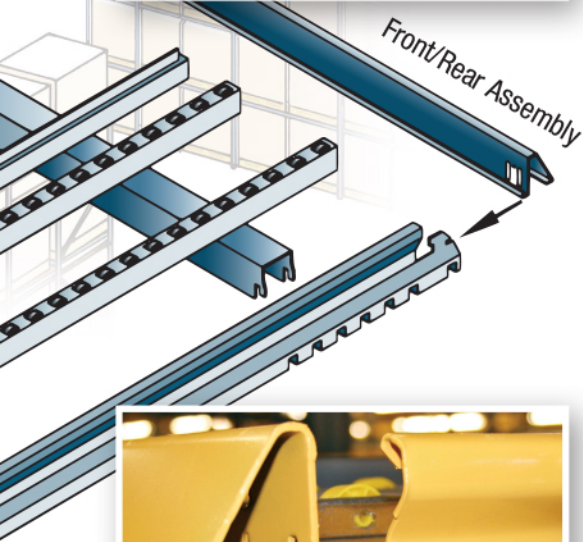


UPICK Side Punching

UNARCO also offers W-Strip retrofit add-on for existing uprights with no side punching.

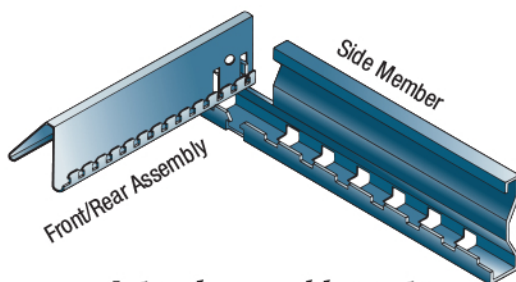


Carton Trax steel axle carton flow track



Front Tilt Tray tilts cases forward for easier picking and access

All parts snap together with minimal hardware



Interchangeable parts make installation and ordering less confusing

- Front and rear assembly are interchangeable
- Side members are not left and right specific



Side Profile - Lay-Back Shelves

Carton Flow KPICK WELDED SHELF COMPONENTS

UNARCO KPICK is a welded shelf carton flow option which requires no shelf assembly and fits with all Kingway carton flow. Inclined shelves have snap-in roller track to move cartons by gravity from the restocking to the picking side of the system.

A full range of components are available to customize the system to every customer's needs. Standard bays can combine with overhead storage options or mezzanine capabilities for pick module applications.

Customization is easy as load requirements and box sizes change. Assembly is logical and requires no special tools.



OPTIONS

- **Welded shelf**
- **Snap-in track**
- **Numbered scales for rapid assembly**
- **Precision slots**

Designed for multiple configurations to optimize space.

Mult-level systems offer substantial savings in floor space.



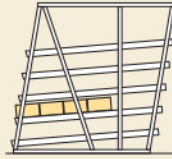
UNARCO

Standard Vertical Frame and Shelf Combinations



Square front vertical frame with straight shelves.

Full case picking



10° layback vertical frame with straight shelves.

Open case picking when cases vary in size



10° layback vertical frame with carton tilt shelves.

Open case picking with similar size cases



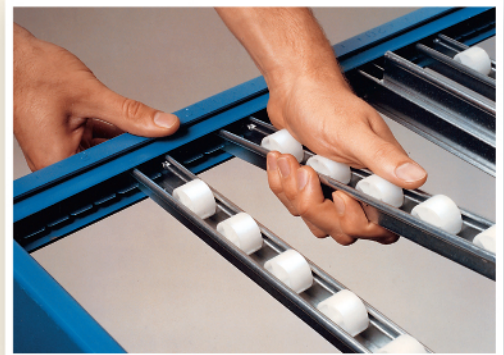
Optional impact deck helps prevent track damage.



Optional numbered scales for rapid assembly.

Shelf Hanger Clip

Unique clip fits into a single slot to attach the pre-assembled, welded shelf. No tools are required.



Snap-in track

Roller Track

Allows movement at the lowest slope angle to maximize space utilization.

| | 60" DEEP BAYS | 90" DEEP BAYS | 120" DEEP BAYS |
|----------------------------|---------------|---------------|----------------|
| STANDARD BAY | | | |
| WITH PALLET BARS | | | |
| WITH OVERHEAD STORAGE RACK | | | |

180" AND 240" DEPTHS ARE ALSO AVAILABLE

Pallet Flow

UNARCO's Pallet Flow system is also driven by gravity. It is perfect for fast-moving product with first-in/first-out stock rotation.

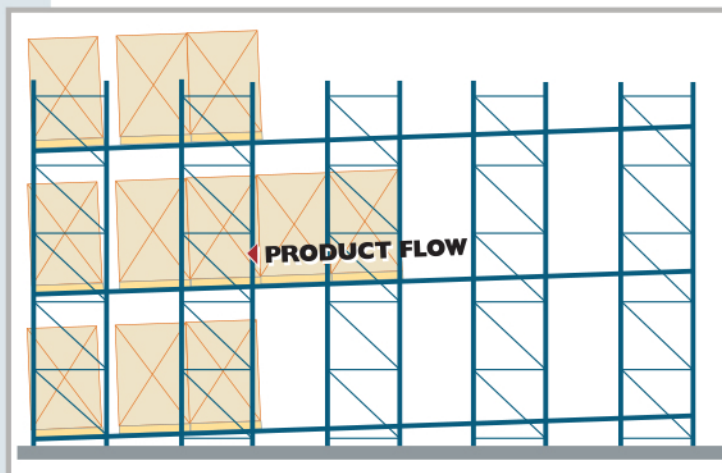
Heavy-duty skate wheels on sloped shelves let palletized loads flow forward for picking. The high-density storage utilizes warehouse space with fewer aisles.



Pallet flow rails are notched to rest on the step of the beam for a lower profile that protects ends of flow rail

PALLET FLOW

Optional in-line wheels with poly rollers



DEEP LANE PALLET FLOW

Store as many as 20 pallets deep with the use of electro-mechanical or pneumatic speed braking systems

- **Full case picking**
- **Dense storage with minimal aisles**
- **Able to accommodate full pallet loads**
- **Heavy-duty skate wheels provide excellent rolling surface for loads to flow**



UNARCO



● gravity flow - pallet flow



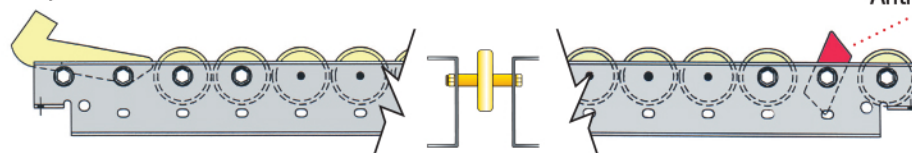
Pallets rest against pallet stop

Poly-wheel deep-lane pallet flow is available in single or staggered wheel configurations to fit any load.

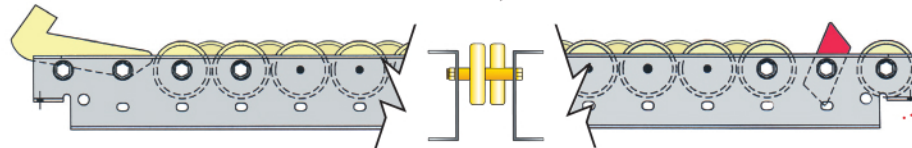
Pneumatic brakes control pallet speed

METAL SKATE WHEELS

Pallet stop

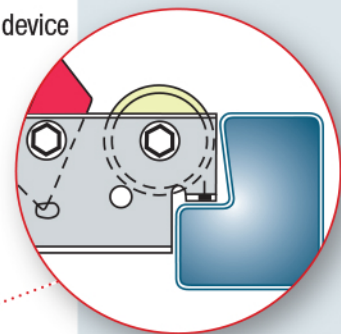


In-Line Wheels - 2", 3" or 4" centers



Staggered Wheels for heavier loads - 1 1/2" - 2" centers

Anti-backup device



Fits into step of beam



IN-LINE WHEELS

STAGGERED WHEELS



Pallet Flow used in pick module application with carton flow above



Push Back

Push Back systems work when pallet loads rest on a series of nesting carts. As a pallet is loaded from the front, it pushes the pallet behind it back one position. When it is time to unload (LIFO), the front pallet is removed and the rear pallets come forward to the front picking position, automatically.



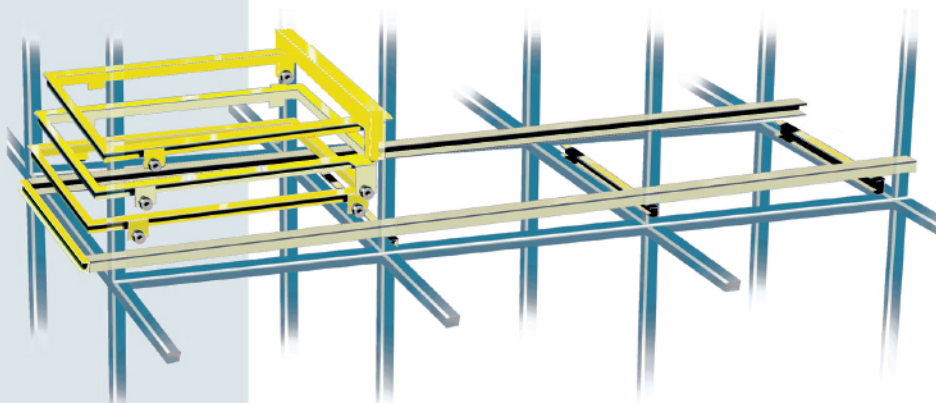
Colored carts let drivers identify pallet positions to help place and retrieve pallets in the system.

Available in Structural Steel or Roll-Formed designs



Product loads flow automatically to front picking position.

- Available in 2, 3, 4, 5 and 6 deep configurations
- Lift truck drivers never enter the rack
- Nesting carts require minimal vertical space
- Product loads are always in picking position
- No special pallets are required
- Suitable for coolers and freezers with temperatures as low as -30° F



Bottom view of nesting carts

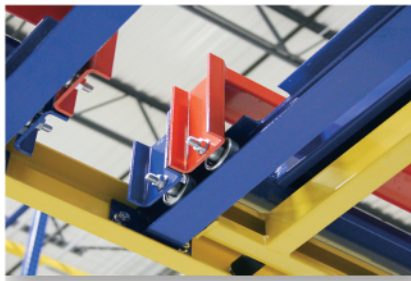
Carts nest together and pallet is loaded onto top cart. The final pallet rests on rails and allows all pallets from behind to come forward when pallet is removed.



4-deep system

The Benefits of a Push Back System

- Better floor space utilization
- Front loading only
- Automatic pallet placement to front position
- Versatile - more pick faces



Carts flow automatically on four sealed wheels



Strong structural sides and rails



STANDARD PALLET RACK



3-DEEP PUSH BACK SYSTEM



6-DEEP PUSH BACK SYSTEM

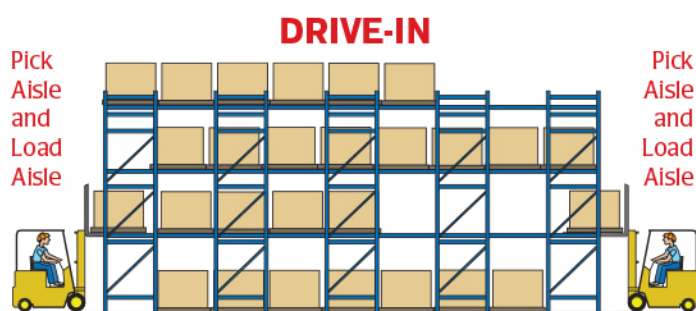
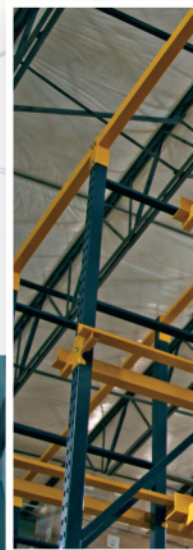
Drive-In

Pallets are placed on rails that run the depth of the rack. Drivers then enter the rack to remove pallets. Drive-In is perfect for high-density storage with minimal space devoted to aisles.

Drive-In: Load and retrieve from same side (LIFO)

Drive-In and Drive-Thru ROLL-FORMED OR STRUCTURAL

- *Used for high-density pallet storage*
- *Depth of systems reduces the need for aisles and increases space utilization*
- *Specifically for uniform pallet loads*
- *Easy to assemble*
- *Cost effective*



Typical entry view



Z-Rail support system option



Structural angle rail option

Drive-Thru

As with Drive-In, pallets are placed on rails that run the depth of the rack. Drive-Thru, however, allows drivers to load from one side and unload from the other with an added aisle on the opposite end. This system creates First-In/First-Out (FIFO) inventory management.

Drive-Thru: Load from one aisle, retrieve from separate aisle (FIFO)



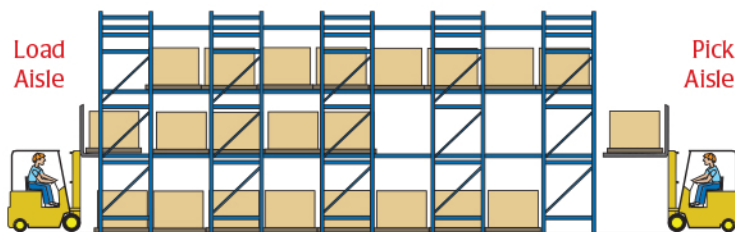
Sloped leg structural upright option

drive-in/drive-thru



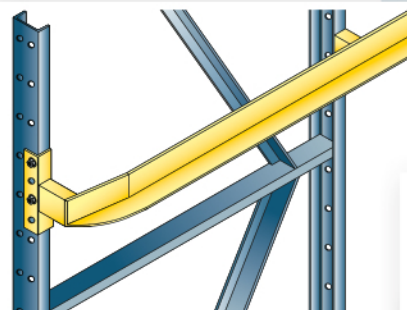
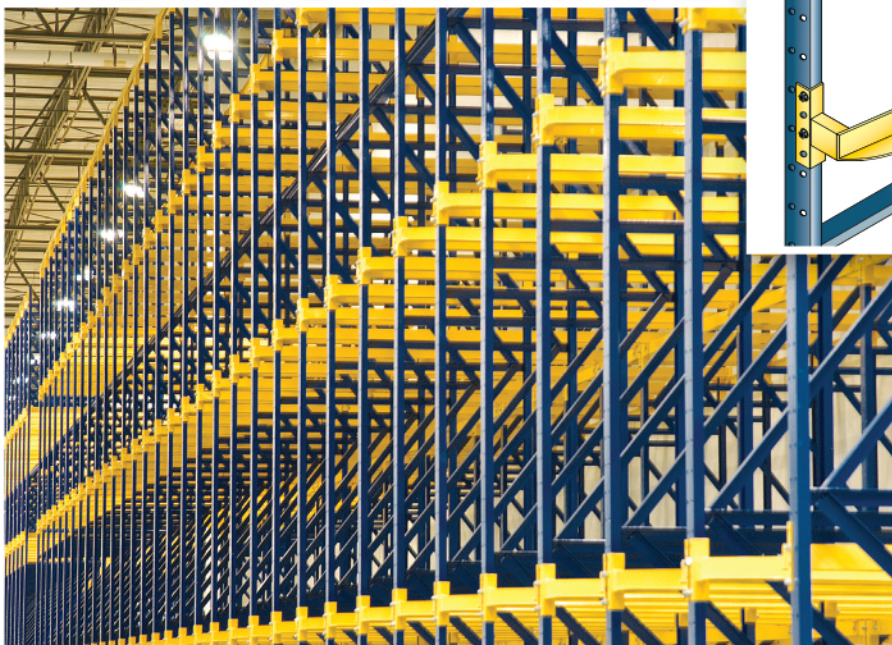
Pallets rest on rails within the bay.

DRIVE-THRU

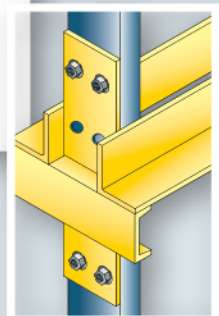


Separate load and unload points allow greater flexibility (FIFO)

STRUCTURAL



Drive-In Rail with Space Saver Arm for easier placement of pallets (shown with rounded and flared entry rail)



Straight entry rail option for structural

Cantilever

UNARCO Premium Cantilever is the perfect storage solution for elongated materials and tough storage applications. The system allows complete accessibility from the front with no horizontal obstructions. The entire length of the rack may be used for storage and easy order picking.

Flexible systems allow loads of varying length to be stored on the same rack and columns are pre-punched to easily convert from single-sided to double-sided applications. The Key Wedge connector allows arms to be moved easily as load requirements change.

Ideal for:

- Pipe and Tubing
- Lumber & Plywood
- Building Materials
- Furniture
- Sheet Steel
- Conduit
- Extrusions

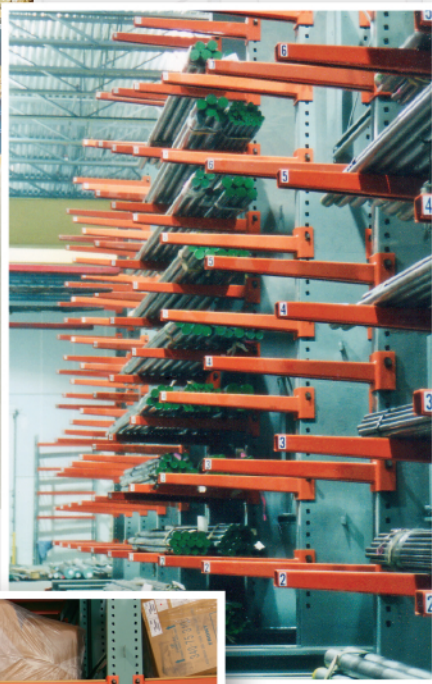
ROLL-FORMED



Full access to stored material with no obstructions

Easy Installation:

Welded one-piece column and base systems make assembly a snap. Cantilever arms lock into the down position and are raised into place as a single unit.



Pipe storage cantilever



Furniture storage cantilever



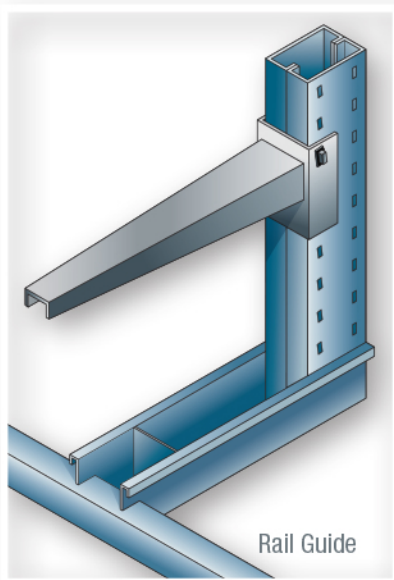
U N A R C O



Tapered columns prevent arms from protruding into the aisles under maximum load deflection.

Slotted Base Design

The slotted base design notches around rail systems to maximize aisle width and help operators move lift trucks safely through narrow aisles.



Tapered Arms

Improved vertical load clearance



cantilever

Flexible Design

- *Single-sided or double-sided storage*
- *Columns up to 48 feet*
- *3" vertical adjustability*
- *Tapered arms*
- *Heavy-gauge welded brace panels*



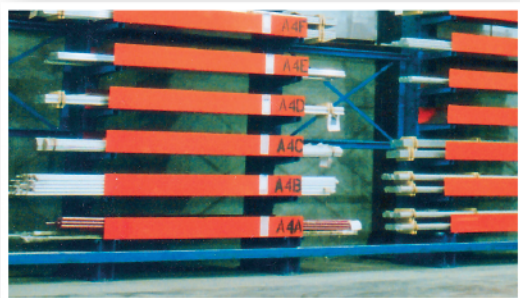
Key-Wedge Pin

Positive-locking rectangular pin allows a fast-track installation and a larger bearing area than round pins or bolts.

SINGLE OR DOUBLE-SIDED STORAGE

• Flexibility

Columns are pre-punched on both sides to allow conversion from single-sided unit to double-sided unit.



• Custom Storage Accessories

Optional material trays can hold bar and cylindrical stock.

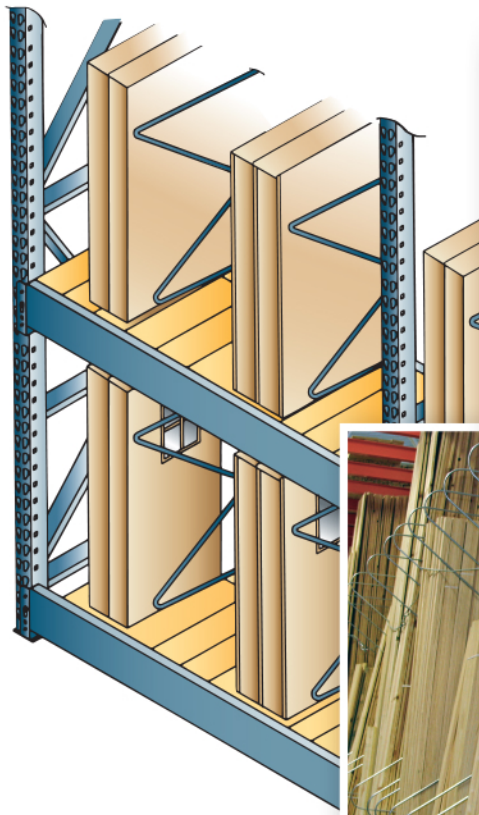
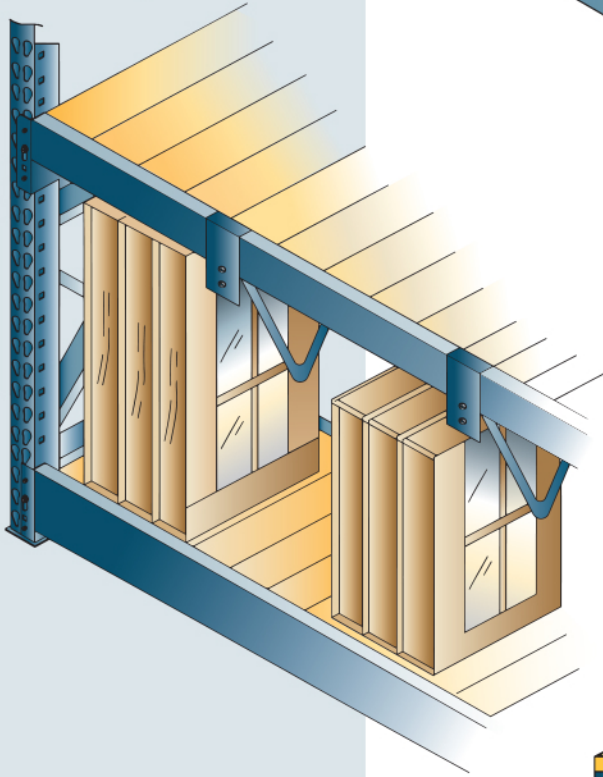


• Lumber Yard

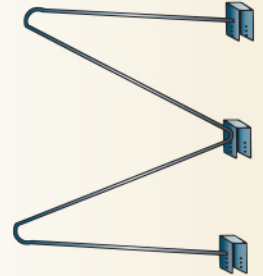
Convert your lumber yard into a covered showroom with UNARCO's canopy arms and roof system.

Retail

UNARCO has been supplying pallet rack to the retail industry for many years, not only on the distribution center side, but also on the sales floors of home centers and warehouse style stores. Our store fixtures are versatile, space saving and feature your product with maximum room for the stock levels required. Inventive designs lead to simple installation and allow for flexibility as your product changes.



Separate pipe or tubing stored vertically



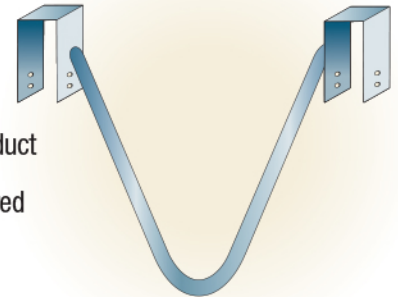
Separate wooden boards stored vertically

M-DIVIDERS

- Attach to rear beams
- Available up to 72" tall
- Light-duty: 3/8" wire
- Medium-duty: 1" tubing
- Heavy-duty: 2" tubing

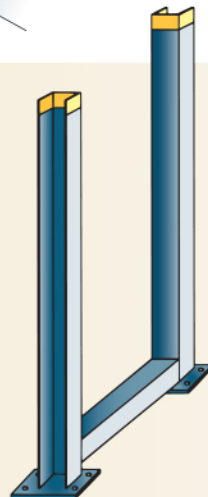
V-DIVIDERS

- Hang down to separate tall product
- No additional rear beams required
- Sturdy 1" tubing

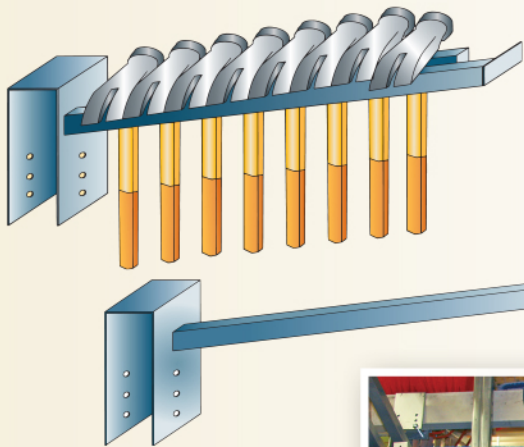


LUMBER CRADLE

- Keeps lumber in orderly stacks
- Two separate units to contain any length product
- Customers able to pick product without worry of stacks falling



TOOL HOLDERS AND DIVIDER ARMS



- Single arm
- Double arm
- Available with price signage plate

Divider Arms separate vertically stored product.

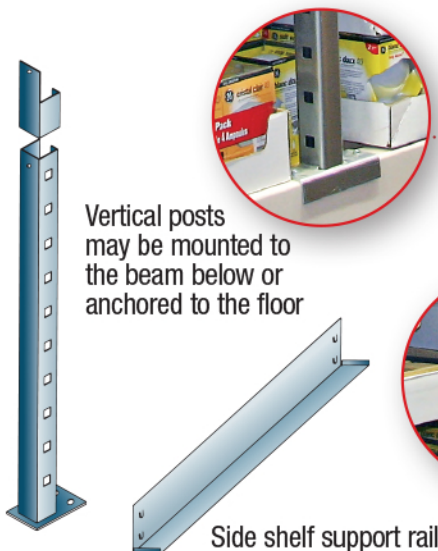
Double-Arm Tool Holders provide support and organization for both long and short handled tools.



Retail

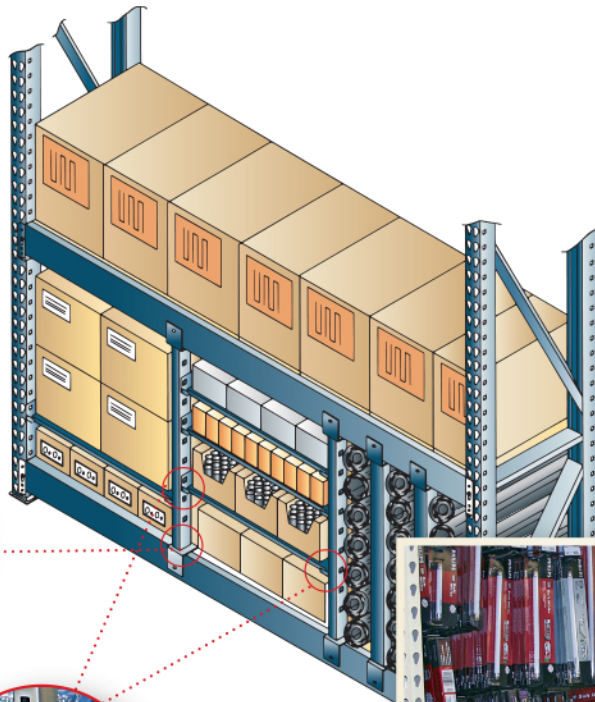
VERTICAL POST SYSTEM

- For maximum storage versatility within a bay when carton sizes are not uniform
- Can be added to existing rack
- Displays merchandise variety without adding a beam level



Vertical posts may be mounted to the beam below or anchored to the floor

Side shelf support rail



A pair of side support rails with snap-in tabs make a shelf

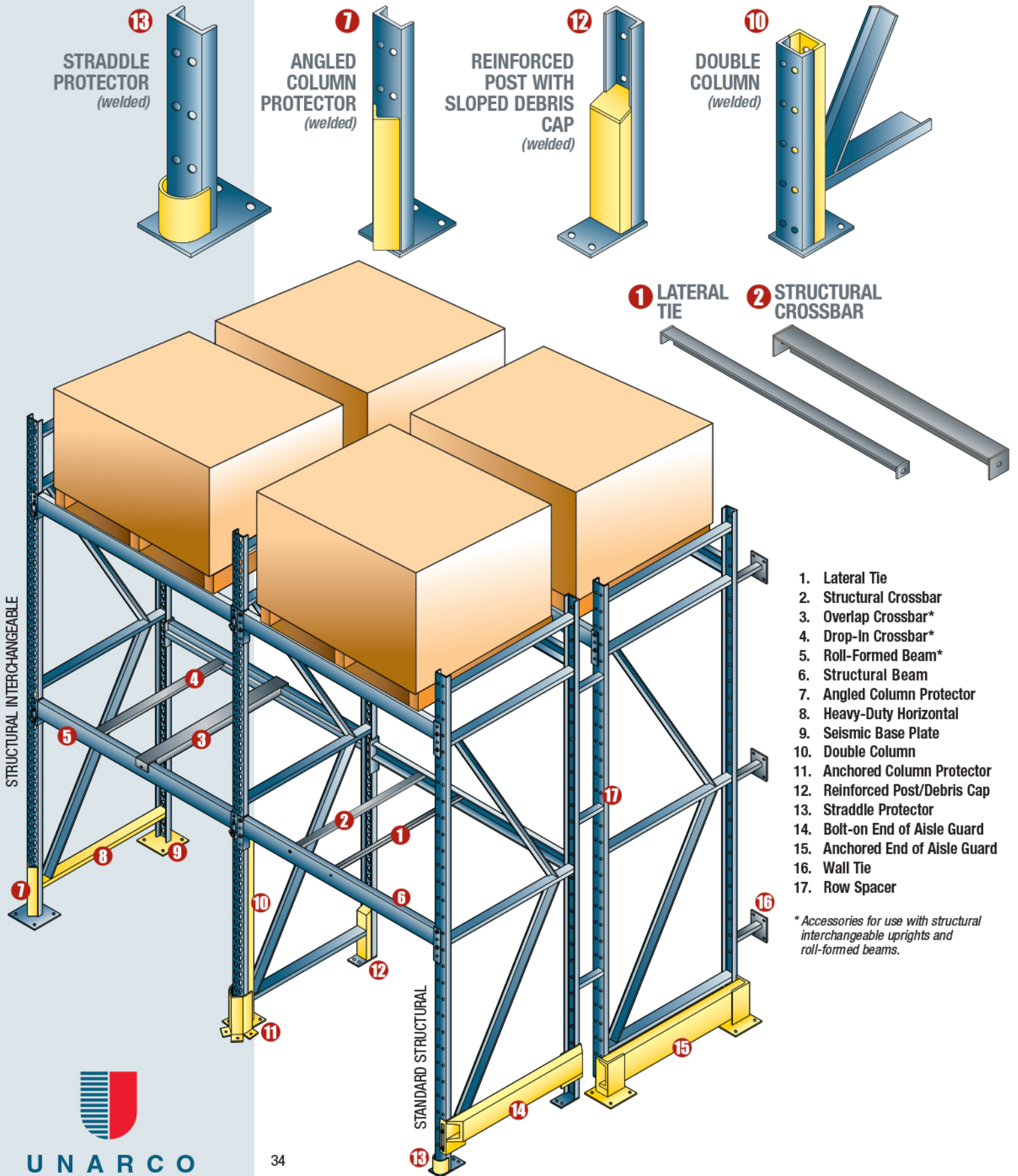
Plywood or other decking surface rests on either side



- *M-Dividers*
- *V-Dividers*
- *Lumber Cradles*
- *Tool Holders*
- *Divider Arms*
- *Vertical Post Systems*

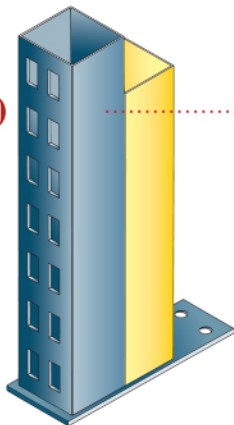
Upright Rack Safety Options

STRUCTURAL DURABILITY OPTIONS



ROLL-FORMED DURABILITY OPTIONS

10



DOUBLE COLUMN

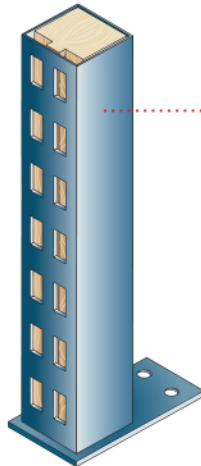
- Two posts welded together help protect against damage



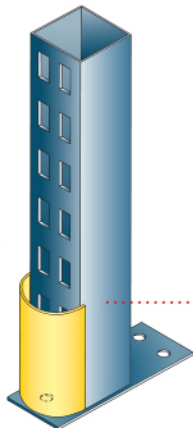
rack safety options

WOOD-FILLED UPRIGHTS

- UNARCO's patented design lets the wood absorb the shock of impact and limits damage to column

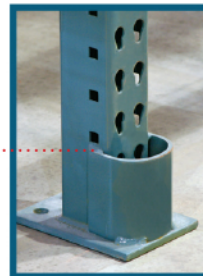


13



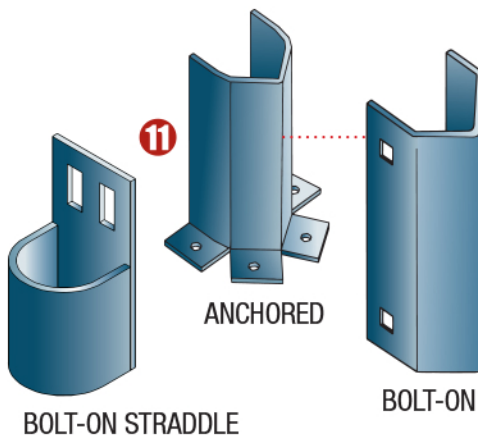
FRONT STRADDLE PROTECTOR ADD ON

- Welded to uprights during manufacturing
- Protects upright from damage
- Durable 1/4" thick steel



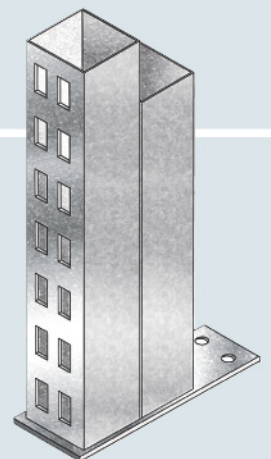
COLUMN PROTECTORS

- Provides impact resistance
- *Anchored to floor*: for designs with no side punching
- *Bolted to upright*: for interchangeable rack with side punching
- Front-bolted Straddle Protector
- Available in 12", 18" or 24" high



BOLT-ON STRADDLE

BOLT-ON



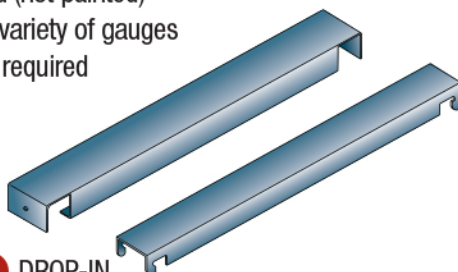
WEATHER RESISTANT

Hot dipped galvanized finish available on any pallet rack order for freezer or outdoor usage

Rack Hardware

CROSSBARS

- Overlap crossbars provide pallet support
- Pre-galvanized (not painted)
- Available in a variety of gauges depending on required capacity

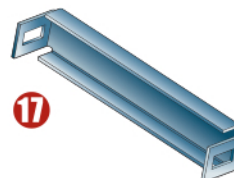


3 OVERLAP

4 DROP-IN

BACK CONNECTORS

- Available in 6", 8", 10", 12", 18"
- Pre-galvanized (not painted)
- Includes (2) T-Bolts and whiz nuts



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SHIM PLATES

- All rack on unlevelled floors should be leveled with shims



Available in multiple sizes and thickness

Upright Rack Repair

MORE ABUSE RESISTANT THAN THE ORIGINAL UPRIGHT

SAFETY

**MINIMAL FACILITY INTERRUPTION
REDUCE MAINTENANCE COSTS**

Before attempting to repair damaged rack and to insure rack capacities are adequate, please consult UNARCO Engineering.

Rack repair kits should only be installed by trained personnel.

Let UNARCO set up a scheduled inspection and maintenance program to help insure the safety of your warehouse.

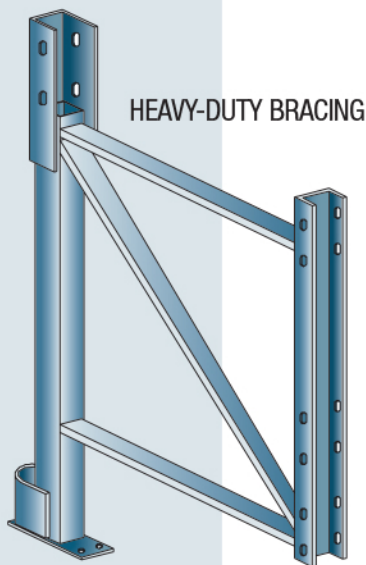
OPTIONS

Trained technicians can install bolt-on options to fix low-level damage with specially designed repair kits.

- Engineered repair options
- In most cases no welding is required
- Installs easily into existing rack of most manufacturers
- Available in structural channel or tubular roll-formed versions



Bolt-on sloped leg option gets the upright out of the forklift traffic path to prevent repetitive damage.



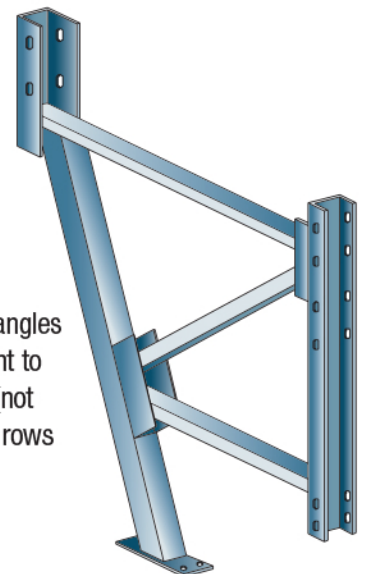
STANDARD STRAIGHT-LEG REPAIR KIT

Shown with welded straddle column protector.

Roll-formed options allow beam placement at lower levels.

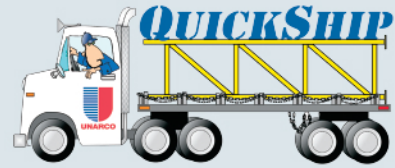
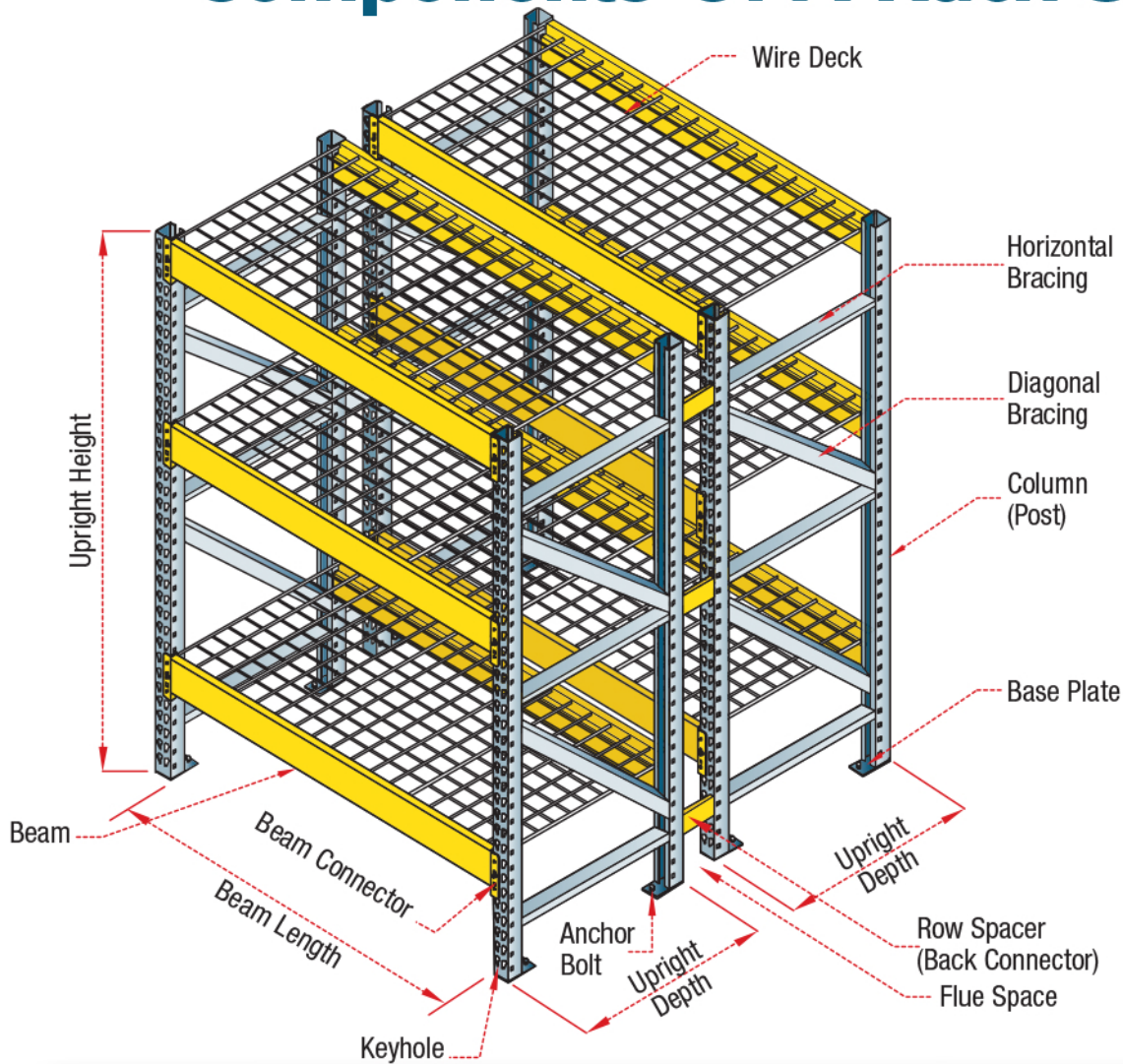
SLOPED-LEG REPAIR KIT

Optional Sloped-Leg Kit angles the front leg of the upright to improve aisle clearance (not recommended for single rows of rack).



UNARCO

Components Of A Rack System



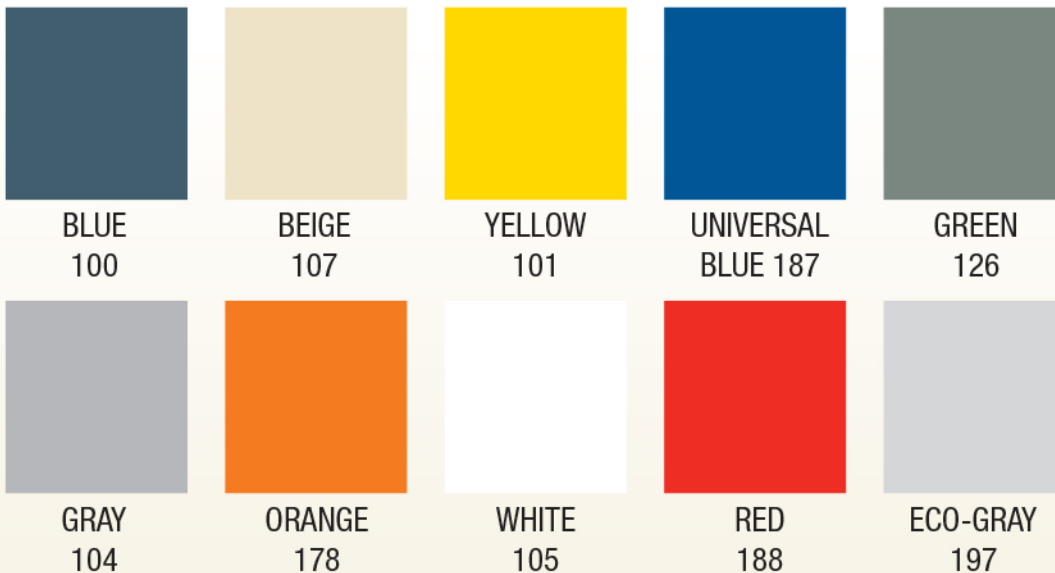
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Phone, Tablet, Computer
Anytime - Anywhere
with
Mobile Rack Warrior



UNARCO Mobile App

UNARCO Standard Colors

High-quality powder coated finishes for durability and rust resistance



**EARTH - FRIENDLY
 OPTION**

*Made from recycled
 Class-A
 reclaimed powder*



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