



# Pallet Rack



Penco Pallet Rack is a carefully engineered system designed to provide highly efficient storage of palletized items. Combining design excellence with the use of high strength steel to achieve a superior strength to weight ratio, Penco Pallet Rack can handle nearly any job you can give it.

The following pages detail the wide range of sizes, capacities and accessories that make Penco Rack one of the best values for your storage dollar.

## Design Features

The basic components of Penco Pallet Rack are Upright Frames and Beams. Each is manufactured to exacting tolerances to provide many years of dependable service at their rated loads.

### A. Step Down Design

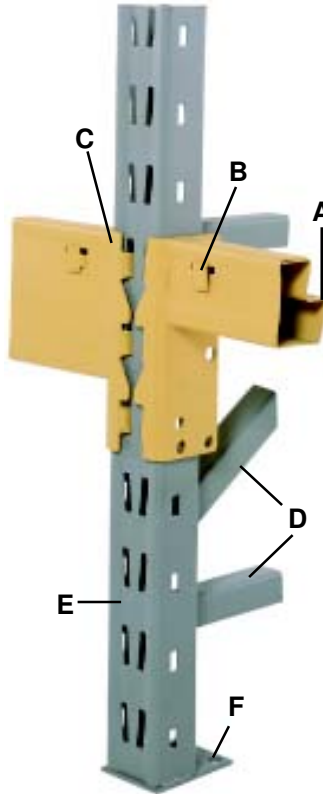
All beams have a step for the purpose of accepting accessories. Two step sizes are available: 7/8" and 1-5/8" high.

### B. Beam Locking Key for Safety

A unique recessed safety key made from heavy gauge steel engages a slot in the side of the post. It resists an upward force from material handling equipment up to 1000 pounds. It is an integral part of the beam assembly, can be engaged easily without tools, and is clearly visible for checking.

### C. Heavy Duty Beam End Connector

Beam ends are made from extra heavy gauge steel. They feature a three prong connection which assures positive beam to post alignment along the 8-1/2" length of the connector, and uniform load distribution. Tabs extend along the face of the beam to provide extra protection to the prongs during transit and installation.



### D. Welded Upright Frame Bracing

Upright frame columns are securely MIG welded together with channel type braces for maximum rigidity.

### E. Upright Column

A continuous post roll formed into an "M" design for added strength. Slanted slots on the column allow for beam placement on 3" vertical centers. Slots on column sides accept the safety beam locking key. The design allows for beams to be placed flush with the top, or as close as 9" from the floor.

### F. Foot Plate

A heavy gauge foot plate is securely welded to each post to provide load distribution over 13.7 square inches, and two holes allow for floor anchoring from either side of the frame.

## How to Select Pallet Rack

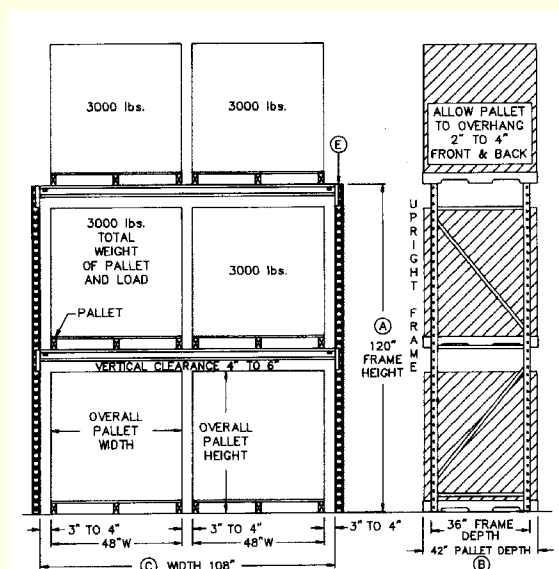
**A. Height:** Measure the vertical dimensions of the pallet, pallet load and beam. Add an extra 4" to 6" clearance between bottom of beam above and top of load on pallet. Top beam should be at least 6" lower than the maximum lifting height of your forklift.

**B. Depth:** Measure the depth of the pallet. Pallet should overhang the frame by 3" front and back. (Example: for a 48" deep pallet use a 42" deep frame).

**C. Width:** Measure the width of the load and pallet, and use the greater of the two. Add 3" to 4" between loads, and between loads and upright frames to determine correct beam length. Select beams with a capacity equal to or greater than the total load of each level. (See "How to Order Beams" on the Pallet Rack Beam page).

**D. Frame Capacity:** Add the total weight of all loads for each bay, excluding the pallets on the floor (a bay is the space between two upright frames).

**E. Frame:** A common frame should be used between each bay.





# Pallet Rack Upright Frames

## How To Select Upright Frame Type

1. Determine the maximum vertical opening dimension between pairs of beams or between the lowest beam level and the floor.
2. Calculate the total load imposed on the upright frame.
3. Using the chart below, find the maximum vertical spacing between beams along the bottom scale, and then draw a vertical line to intersect the lines representing the capacities of the five types of upright frames. Select the frame that has a capacity that equals or exceeds the total load imposed upon it by all beam levels.



We recommend that all upright frames be securely anchored to the floor for safety.

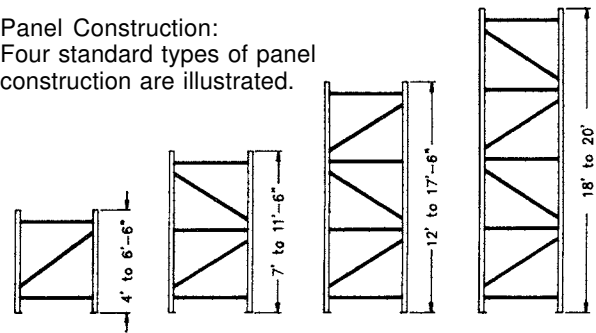
NOTE: Consult the Penco Engineering Department regarding any pallet rack to be installed in areas with high seismic activity.

Penco Pallet Rack Upright Frames are available in five load capacities. A letter code stamped into the face of the post indicates the frame type. Depths of 30", 36", 42", 48", 54" and 60" are standard, but other depths are available. Standard heights range from 48" to 240" in 6" increments, but greater heights can be achieved when splices are used.

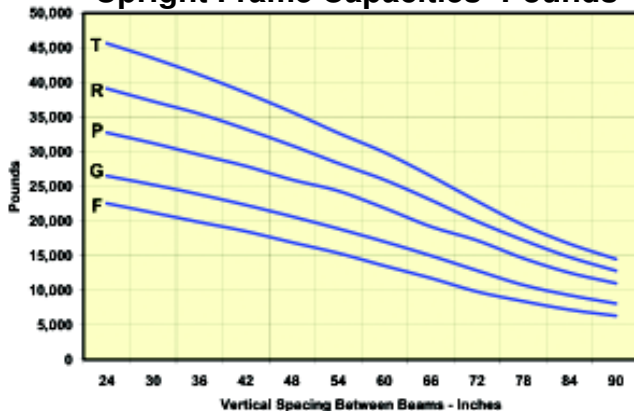
Beam heights adjust on 3" vertical centers, and are independent on each side of the frame. Beams of any type can be placed along the full height of the post; there are no dead spots on the post, even across a splice. Various load rated frames can be combined in a row of rack for maximum economy.

Penco Pallet Rack Upright Frames are furnished completely fabricated, welded into rigid units. Standard finish for upright frames is 028 Gray.

Panel Construction:  
Four standard types of panel construction are illustrated.



## Upright Frame Capacities- Pounds



The chart above indicates capacities for various vertical beam spacings for the different Penco upright frame types. Load data shown is for preliminary consideration only. Each installation must be individually evaluated for actual conditions and the use of each element in relation to the entire system with all aspects of the structural function.

## Most Popular Pallet Rack Frame Sizes

Frame Size D x H	Type F 3" x 1-3/4" 14 Gauge Cat. No.	Type G 3" x 2-1/4" 14 Gauge Cat. No.
36" x 72"	5FE072C	-
42" x 72"	5FH072C	-
36" x 96"	5FE096C	-
42" x 96"	5FH096C	-
48" x 96"	5FL096C	-
36" x 120"	5FE120C	-
42" x 120"	5FH120C	5GH120C
48" x 120"	5FL120C	-
36" x 144"	5FE144C	5GE144C
42" x 144"	5FH144C	5GH144C
42" x 192"	-	5GH192C

Frame Types	Post Size W x D	Post Gauge
F	3" x 1-3/4"	14
G	3" x 2-1/4"	14
P	3" x 3"	14
R	3" x 3"	13
T	3" x 3"	12

For a complete list of Pallet Rack Upright Frame Catalog Numbers, see the Pallet Rack section of the Illustrated Price Book.

## Upright Frames - Available Sizes

FRAME HEIGHT	- FRAME DEPTHS -					
	30"	36"	42"	48"	54"	60"
48"	✓	✓	✓	✓	✓	✓
54"	✓	✓	✓	✓	✓	✓
60"	✓	✓	✓	✓	✓	✓
66"	✓	✓	✓	✓	✓	✓
72"	✓	✓	✓	✓	✓	✓
78"	✓	✓	✓	✓	✓	✓
84"	✓	✓	✓	✓	✓	✓
90"	✓	✓	✓	✓	✓	✓
96"	✓	✓	✓	✓	✓	✓
102"	✓	✓	✓	✓	✓	✓
108"	✓	✓	✓	✓	✓	✓
114"	✓	✓	✓	✓	✓	✓
120"	✓	✓	✓	✓	✓	✓
126"	✓	✓	✓	✓	✓	✓
132"	✓	✓	✓	✓	✓	✓
138"	✓	✓	✓	✓	✓	✓
144"	✓	✓	✓	✓	✓	✓
150"	✓	✓	✓	✓	✓	✓
156"	✓	✓	✓	✓	✓	✓
162"	✓	✓	✓	✓	✓	✓
168"	✓	✓	✓	✓	✓	✓
174"	✓	✓	✓	✓	✓	✓
180"	✓	✓	✓	✓	✓	✓
186"	✓	✓	✓	✓	✓	✓
192"	✓	✓	✓	✓	✓	✓
198"	✓	✓	✓	✓	✓	✓
204"	✓	✓	✓	✓	✓	✓
210"	✓	✓	✓	✓	✓	✓
216"	✓	✓	✓	✓	✓	✓
222"	✓	✓	✓	✓	✓	×
228"	✓	✓	✓	✓	✓	×
234"	✓	✓	✓	✓	✓	×
240"	✓	✓	✓	✓	✓	×

✓ Available    × Not available

To add height to an Upright Frame, a splice can be added. For more information on splicing frames see the Pallet Rack Accessories section.

## Upright Frame Catalog Numbering System

Position	1	2	3	4
Catalog Number	5	F	E	0 9 6

### DESCRIPTION OF PART NO. SEQUENCE:

1. Always a 5. 2. Capacity code for frame (See Pallet Rack Frame Capacities Table). 3. Depth code for frame (B = 30", E = 36", H = 42", L = 48", P = 54", S = 60") 4. Height of upright frame in inches (for example, 096 = 96 inches).

## Rigid Row Spacer

Structurally connects and spaces two rows of rack back-to-back. Bolted type. Hardware included.



Space	Cat. No.	Space	Cat. No.
6"	5AR506	30"	5AR530
8"	5AR508	36"	5AR536
10"	5AR510	42"	5AR542
12"	5AR512	48"	5AR548
18"	5AR518	54"	5AR554
24"	5AR524	60"	5AR560

## Rigid Wall Bracket

Structurally connects racks to wall for additional stability. Frame hardware included.

Space	Cat. No.
4"	5AR404
6"	5AR406
8"	5AR408
10"	5AR410
12"	5AR412
18"	5AR418



## Frame Protector

Anchors to floor at front of post. Provides protection against damage from material handling vehicles.

Height	Cat. No.
18"	5AF018



## Frame Splice

For adding to height of existing frame. Can be supplied welded in top of new frame if specified on order. (Top frame must be ordered without foot plate.) With hardware.

Frame Type	Cat. No.
F, G, P	5AU008
R, T	5AU018



## Reel Holder

Accessorizes rack for reel storage. Max. axle 2-1/2" dia.

Cat. No.
5AH000



Left Side Shown

## One Piece Beam Design



Penco has engineered its roll-formed one piece beams to achieve the highest possible strength-to-weight ratios in the most frequently desired load ratings through the use of efficient design and high strength steel.

sory use. Both the overlapping seam and the beam end connector are securely MIG welded for strength.

The face of the beam has an M-design recessed configuration for added strength, protecting the locking key, and to accept pressure sensitive labeling. Each beam is stamped with an identifying letter referring to the load bearing capacity. Beams are finished in 710 Safety Yellow for high visibility.

Beams are offered in eight basic styles with different vertical profiles and steel gauges. Beam step heights of 7/8" and 1-5/8" are available for a wide variety of acces-

## Beam Selection Chart\*\*

Clear Span* (Inches)	B		D		H		J		N		S		X		Y	
	Cap.** (Lbs./Pr.)	Cat.No. (Pair)	Cap.** (Lbs./Pr.)	Cat.No. (Pair)	Cap.** (Lbs./Pr.)	Cat.No. (Pair)	Cap.** (Lbs./Pr.)	Cat.No. (Pair)	Cap.** (Lbs./Pr.)	Cat.No. (Pair)	Cap.** (Lbs./Pr.)	Cat.No. (Pair)	Cap.** (Lbs./Pr.)	Cat.No. (Pair)	Cap.** (Lbs./Pr.)	Cat.No. (Pair)
48	8,920	5BB048	8,380	5BD048	9,430	5BH048	10,670	5BJ048	12,170	5BN048	-	-	-	-	-	-
54	7,920	5BB054	7,445	5BD054	8,370	5BH054	9,480	5BJ054	10,810	5BN054	-	-	-	-	-	-
60	7,120	5BB060	6,695	5BD060	7,530	5BH060	8,520	5BJ060	9,730	5BN060	-	-	-	-	-	-
66	6,470	5BB066	6,080	5BD066	6,840	5BH066	7,740	5BJ066	8,830	5BN066	-	-	-	-	-	-
72	5,920	5BB072	5,570	5BD072	6,260	5BH072	7,090	5BJ072	8,090	5BN072	9,560	5BS072	-	-	-	-
78	5,460	5BB078	5,135	5BD078	5,770	5BH078	6,540	5BJ078	7,460	5BN078	-	-	10,220	5BX078	-	-
84	5,070	5BB084	4,760	5BD084	5,360	5BH084	6,060	5BJ084	6,920	5BN084	-	-	9,480	5BX084	12,650	5BY084
90	4,720	5BB090	4,430	5BD090	4,990	5BH090	5,650	5BJ090	6,450	5BN090	7,630	5BS090	8,840	5BX090	11,800	5BY090
96	4,420	5BB096	3,990	5BD096	4,670	5BH096	5,290	5BJ096	6,040	5BN096	7,190	5BS096	8,280	5BX096	11,050	5BY096
102	4,160	5BB102	3,530	5BD102	4,390	5BH102	4,980	5BJ102	5,680	5BN102	6,720	5BS102	7,790	5BX102	10,390	5BY102
108	3,920	5BB108	3,150	5BD108	3,990	5BH108	4,690	5BJ108	5,340	5BN108	6,340	5BS108	7,350	5BX108	9,800	5BY108
114	3,540	5BB114	2,830	5BD114	-	-	4,440	5BJ114	-	-	-	-	6,950	5BX114	9,280	5BY114
120	3,190	5BB120	2,550	5BD120	3,230	5BH120	4,130	5BJ120	4,810	5BN120	5,690	5BS120	6,600	5BX120	8,800	5BY120
126	2,900	5BB126	2,310	5BD126	-	-	-	-	4,570	5BN126	5,410	5BS126	6,270	5BX126	8,370	5BY126
132	2,840	5BB132	-	-	-	-	-	-	4,410	5BN132	5,160	5BS132	5,980	5BX132	7,980	5BY132
138	2,410	5BB138	-	-	-	-	-	-	4,030	5BN138	-	-	5,710	5BX138	7,620	5BY138
144	2,220	5BB144	-	-	2,240	5BH144	-	-	-	-	4,740	5BS144	5,500	5BX144	7,340	5BY144

### How to Order Beams

**1. Select the Required Clear Span** (distance between posts). Allow for a minimum of 3" between pallet and post, and a minimum of 4" between adjacent pallets. Allow additional separation if load overhangs the pallet. For sizes not shown, contact your Penco representative.

**2. Determine the Required Capacity.** Add up the maximum load to be placed on one pair of beams. Remember that capacities are based on evenly distributed loading, not point loading.

\*\* Capacity of beam pairs is calculated in compliance with RMI Specifications and AISI Standard. Calculations assume uniform load distribution. Beams of 138" and 144" span require a minimum of two (2) Heavy Duty Cross Bars.

\* Clear span is measured from inside frame to inside frame.

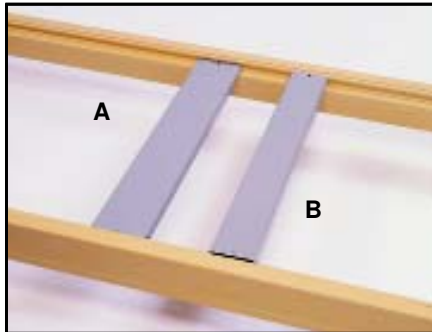
NOTE: Beam capacity is reduced if loading is on the step only, unless beams are stabilized by some form of front to back tie.

## The Penco Beam End Connector

Beam ends are manufactured from heavy gauge steel, featuring a sturdy reinforced three prong connection for even load distribution. The prongs fit easily into the slanted slots of any Penco rack upright, then lock down for a tight fit, as the oversized 3" x 8-1/2" flat surface hugs the post increasing lateral stability. Once the beam locking key is engaged, the beam end is prevented from accidental disengagement. Beams can be easily removed and adjusted by manually disengaging the locking key.



### Cross Bars 7/8" Step Beams



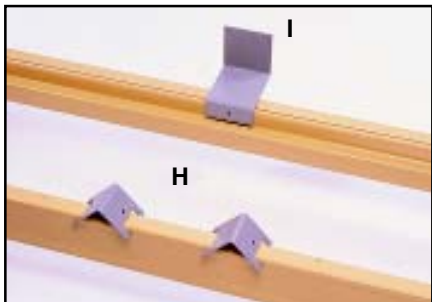
**A. 1/2" Plywood Support** – Supports sheets of 1/2" Plywood.

Frame Depth	Cat. No.
30"	5AP230C
36"	5AP236C
42"	5AP242C
48"	5AP248C

**B. General Duty Cross Bar** – For supporting loads smaller than unit depth.

Frame Depth	Cat. No.
30"	5AX530C
36"	5AX536C
42"	5AX542C
48"	5AX548C
54"	5AX554C
60"	5AX560C

### Drum Wedge and Pallet Stop



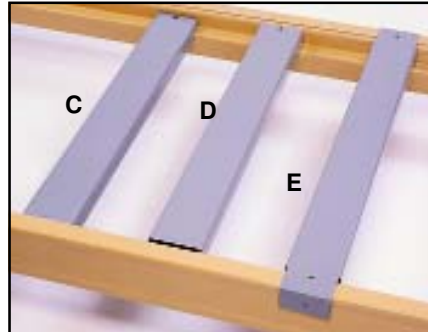
**H. Drum Wedge** – Two loose triangular stops for drum storage. Install on front beam only.

Cat. No. (Pair) 5AW000

**I. Pallet Stop** – Attaches to rear beam with Tek screw Cat. No. 08822 included. For 1-5/8" step beam only.

Cat. No. (Pair) 5AT00H

### Cross Bars 1-5/8" Step Beams



**C. 3/4" Plywood Support** – Supports 3/4" sheets of Plywood.

Frame Depth	Cat. No.
30"	5AP330
36"	5AP336
42"	5AP342
48"	5AP348
54"	5AP354
60"	5AP360

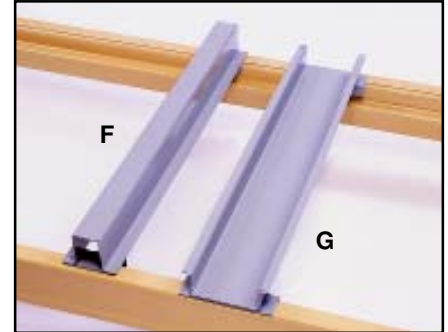
**D. General Duty Cross Bar** – Supports loads smaller than unit depth on 1-5/8" step beams. Not for plywood.

Frame Depth	Cat. No.
30"	5AX630C
36"	5AX636C
42"	5AX642C
48"	5AX648C
54"	5AX654C
60"	5AX660C

**E. Heavy Duty Flanged Cross Bar** – Supports heavier loads smaller than unit depth on 1-5/8" step beams.

Frame Depth	Cat. No.
30"	5AX730C
36"	5AX736C
42"	5AX742C
48"	5AX748C
54"	5AX754C
60"	5AX760C

### Fork Clearance Bar and Heavy Duty Skid Channel



**F. Fork Clearance Bar** – Provides proper fork clearance for unpalletized stock, 2" wide by 2-3/4" high.

Frame Depth	Cat. No.
30"	5AF330C
36"	5AF336C
42"	5AF342C
48"	5AF348C
54"	5AF354C
60"	5AF360C

**G. Heavy Duty Skid Channel Assembly** Provides a channeled base for skid runners, 4" wide by 2" high.

Frame Depth	Cat. No.
30"	5AS230C
36"	5AS236C
42"	5AS242C
48"	5AS248C

### Coil Bed (full depth)



For proper placement and storage of cylindrical items.

Frame Depth	Cat. No.
30"	5AC030C
36"	5AC036C
42"	5AC042C
48"	5AC048C



*Automotive parts warehouse using wire containers on rack.*



*Communications company central warehouse.*



*Optical Goods Manufacturing/Distribution Warehouse.*



*Retail store back room bulk storage.*



*Publishing company warehouse.*



*Publishing company warehouse.*