SNYDER
Equipment, Inc.
Storing, Rolling, Lifting since 1947

PRODUCT INFORMATION

WHAT IS CANTILEVER RACK?

2946 Larimer St. Denver, CO 80205
303-295-1100 / 800-373-7693
FAX 303-295-2464
Email info@snyderequipment.com
www.snyderequipment.com

MODERN EQUIPMENT COMPANY, INC.

MECO OMAHA CANTILEVER RACK

CHOOSE STANDARD HEAVY DUTY • EXTRA HEAVY DUTY (X SERIES) • SERIES 2000 • MEDIUM DUTY • STRUCTURAL

- MECO OMAHA CANTILEVER RACK FOR A NEAT AND ORDERLY INVENTORY SYSTEM

- INSTANT ACCESSIBILITY TO ONE PIECE OR A FULL LOAD
- FAST, CONVENIENT HANDLING OF LONG, UNWIELDY STOCK

FOR STORAGE AND EASY SELECTION OF BAR STOCK, PIPE, STRUCTURALS, TUBING AND OTHER LONG ITEMS OR WHERE UNINTERRUPTED DECKING IS REQUIRED.

Five different basic capacity series to fit your requirements - Standard Heavy Duty, Extra Heavy Duty (X Series), Series 2000, Medium Duty and Structural. See page 25 for details applicable to Structural Cantilever Rack. The following comments apply to non-structural rack.

Available in upright heights from 6' to 20' with 2' through 10' brace widths (measured on center). Arms are completely adjustable on 3" centers to accommodate an infinite variety of items. Straight arms are available in nine different lengths with or without lips. Heavy Duty and Extra Heavy Duty arms are both available in five lengths with or without lips. Inclined arms are available in seven lengths with or without lips. A wide range of base sizes allows custom designing of rack systems to your individual needs. Uprights are punched on both sides for versatility and can be used single sided or double sided depending on the size of base used. NOTE that arms must never be placed on the back side of a single-based upright.

MECO OMAHA CANTILEVER RACKS are modular within each basic capacity series so that additional arms, uprights and cross braces may be ordered at any time to add to your existing system. Different sized arms may be interchanged on racks to further tailor your racks to different uses. Standard and Heavy Duty arms are designed for use on both Standard Heavy Duty and Extra Heavy Duty (X Series) uprights.

Single sided uprights can be converted to doubles when used with longer bases designed to accommodate placement of arms on both sides. Upright capacities can be computed by multiplying the number of arms per upright by the individual arm capacities - NOT TO EXCEED TOTAL UPRIGHT CAPACITIES LISTED. Arm capacity is based on EVEN DISTRIBUTION OF LOAD. All racks are designed for quick assembly and come with complete instructions and hardware for installation.

Completely adjustable MECO OMAHA CANTILEVER RACKS eliminate storage problems. Heavy duty steel construction permits storage of tubes, bars, structurals and other long heavy items that must be kept off the floor. Bases can be used for extra storage. Forklift easily loads off and on arms and bases. Fast, convenient handling of heavy, long unwieldy stock. Instant accessibility to one piece or a full load. For longer materials, simply add braces and uprights to fit your requirements.

Specially designed MECO OMAHA CANTILEVER RACK systems may be required to meet your needs. MECO OMAHA representatives will work with you to develop the most feasible and economical rack system for your special situation. Special label requirements can be met at a slight additional cost. Ask us to quote prices and specifications for rack systems not covered in the MECO OMAHA BUYER'S GUIDE.

WHAT IS CANTILEVER RACK?

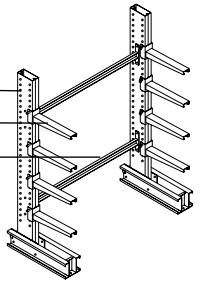
Cantilever Rack is a freestanding storage unit with horizontal load carrying arms extending outward from a single vertical column. The absence of a vertical support on the outboard ends of the arms permits uninterrupted storage of long lengths of material.

Cantilever Rack is the **ideal system for storing furniture, steel bars, pipe and tubing, lumber and other long, heavy items** that must be kept off the floor...provides instant accessibility to one piece or a full load. Forklift easily loads off and on arms and bases. Being modular in nature, additional arms, uprights and braces may be added as storage requirements change.

Cantilever Rack is comprised of three components:

- **Uprights**
- **Arms**
- **Brace Sets**

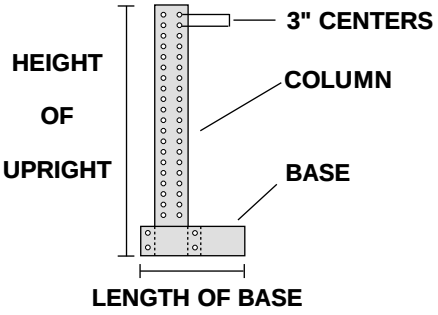
These components must be ordered in the appropriate quantities and capacities.



UPRIGHTS

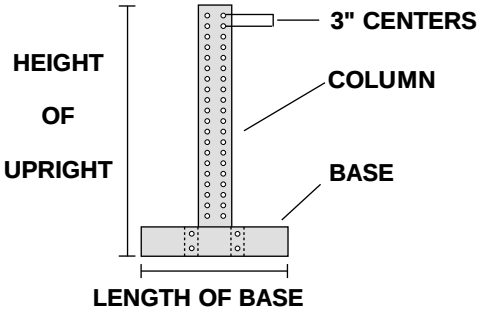
Uprights consist of a vertical column and a horizontal base which is bolted to the column. A minimum of two uprights must be ordered to form a storage bay. Each edge of the column is punched vertically on 3" centers so it may be used as a single or double sided upright depending on the size of base used. **NOTE:** The arms must never be placed on the back side of a single sided upright and base. Standard upright and base color is gray.

Single Sided Upright



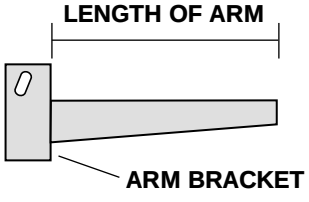
Holes are provided in the base to anchor the upright to the floor. Uprights must never be attached to walls, columns or other structures.

Double Sided Upright



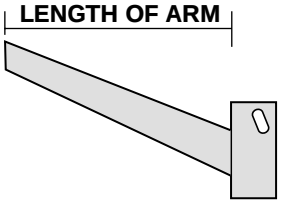
ARMS

Cantilever arms are the heart of the rack system. Proper selection can make or break a successful storage plan. MECO OMAHA offers straight arms (generally used for storing stable loads such as lumber, steel sheets, cartons and skids) and inclined arms (for cylindrical objects or loads that tend to roll forward). Arms can be adjusted on 3" centers up and down the upright and are available in lengths to 60" in a variety of capacities. The hair pin keeper permits instant adjustability and is easily inserted and removed for adjustment of arm height. Lips are available on all MECO OMAHA arms. Standard arm color is gray.



Straight Arm

Straight arms up to 48" long have a minimum pitch of 3/8" per foot to compensate for deflection. 54" and 60" arms have a minimum pitch of 5/8" per foot.



Inclined Arm

Inclined arms have a pitch of 20° or approximately 4.36" per foot.

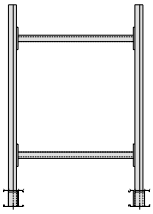
MECO OMAHA

Hair Pin Keeper

BRACE SETS

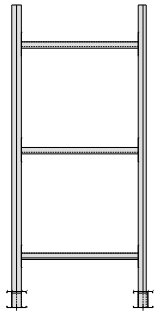
Braces are structural channel members that are bolted between pairs of uprights to provide lateral stability to the rack system. X-bracing is utilized to increase the lateral stability of the taller (15' to 20') uprights. Brace lengths are measured from centerline of upright to centerline of the next upright and are sold in sets rather than individual pieces. Standard brace color is gray.

Standard MECO OMAHA Brace Patterns



"2B" Horizontal Brace Pattern

Used on 6' to 10' Medium Duty uprights and 8' Heavy Duty and Series 2000 uprights.

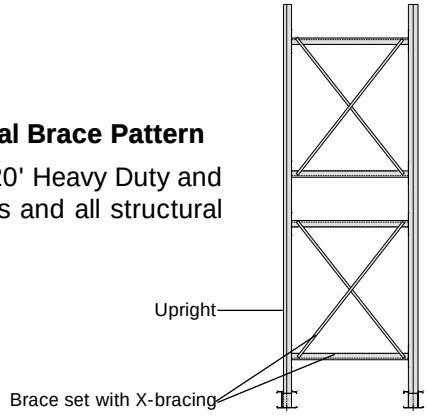


"3B" Horizontal Brace Pattern

Used on 12' Medium Duty uprights, 10' to 14' Heavy Duty and Series 2000 uprights and 12' to 14' X Series uprights.

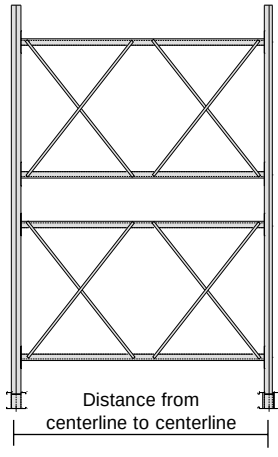
"4BX" Horizontal Brace Pattern

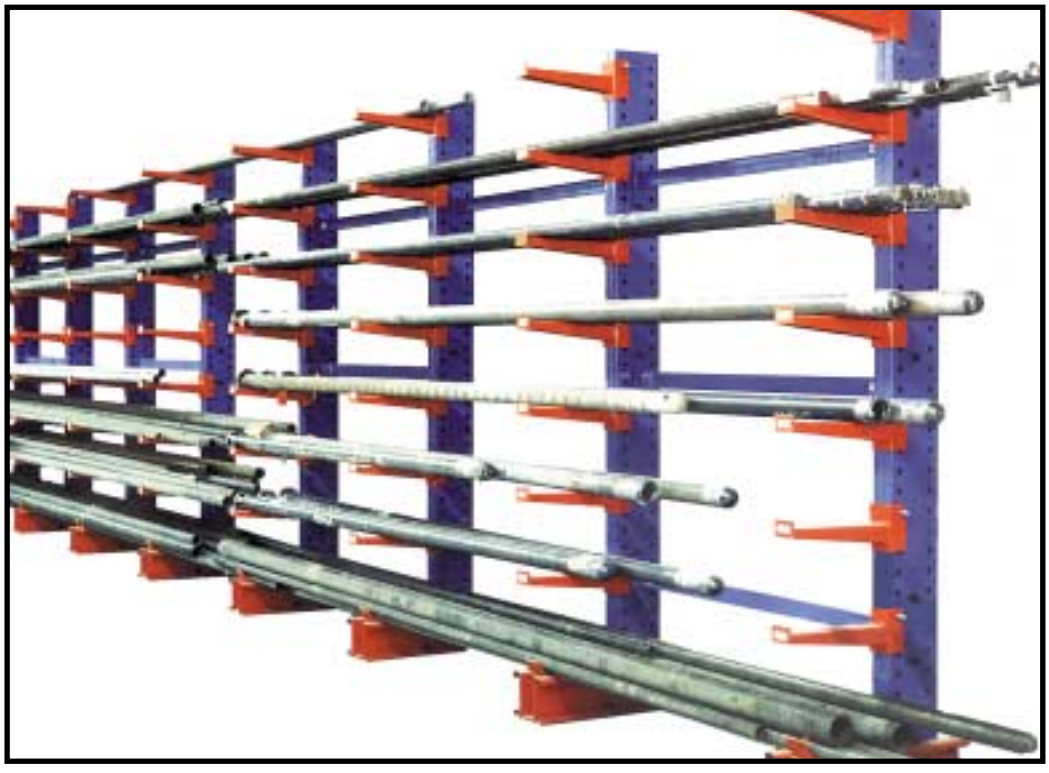
Used on 15' to 20' Heavy Duty and X Series uprights and all structural cantilever rack.



"4BXX" Horizontal Brace Pattern

Used on all 15' to 20' uprights when the brace length exceeds 84" centerline to centerline of upright.





MECO OMAHA cantilever rack application consisting of uprights, arms and braces.

Standard color for all cantilever rack components is gray. Custom colors available at slight additional cost.

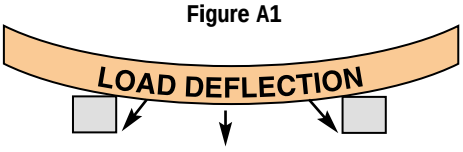
DESIGNING A CANTILEVER RACK SYSTEM

The key to a successful cantilever rack system is the answer to one question: **What is the product (load) being stored?** The answer must include the **length**, **depth**, **height** and **weight** of the product. Once this data is ascertained it becomes a simple matter to determine the required arms, uprights and braces.

A. DETERMINE THE NUMBER AND SPACING OF ARMS

The load must be supported by enough arms to prevent load deflection. Deflection may cause damage to the load being stored as well as the arms (figure A1). To detect deflection, place the load over two wooden blocks (to represent cantilever arms) as shown in figure A2. If deflection is not present it is acceptable to use a two arm system as long as this does not create an overload condition. If the load shows deflection use three blocks as shown in figure A3 or four blocks as in figure A4. **IMPORTANT:** The load should overhang the end arms by one-half the distance from upright centerline to upright centerline. Failure to observe this measure may cause an overload condition on the arms.

Figure A1



Improperly Loaded

(Not enough arms to prevent load deflection.)

Adhering to these guidelines will ensure that each arm supports an equal amount of the load's weight.

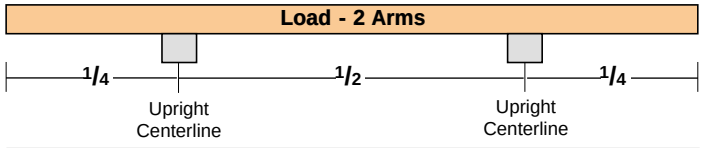


Figure A2

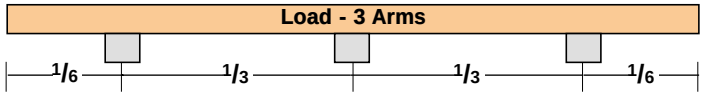


Figure A3

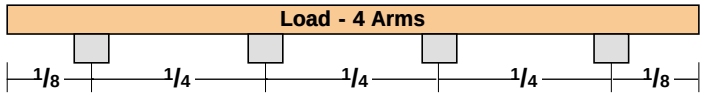


Figure A4

B. DETERMINE THE LENGTH OF THE ARMS

The depth of the load should never exceed the length of the arm. A 48" wide bundle of plywood requires a 48" long arm, bundles of steel 24" wide require a 24" arm and so on. Rated arm capacities may be seriously diminished if proper loading techniques are not observed. Figures B1, B2 and B3 illustrate correct and incorrect arm loading.

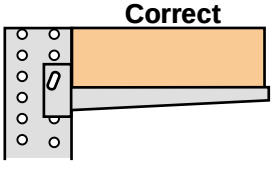


Figure B1

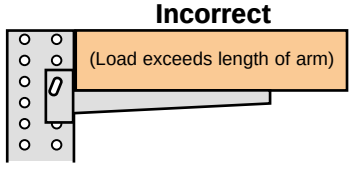


Figure B2

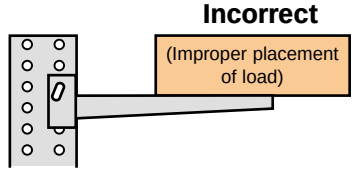


Figure B3

NOTE: All arm capacities are based on an evenly distributed load as in figures B4 and B5 below.

Evenly Distributed Load (front to back) Full rated arm capacity

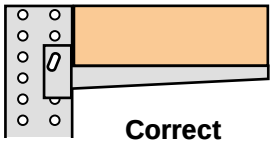


Figure B4

Centered Load Full rated arm capacity

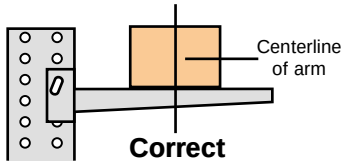


Figure B5

Tip Loading Arm capacity may be reduced by up to 50%

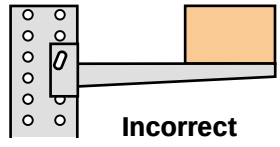


Figure B6

C. DETERMINE THE HEIGHT OF THE UPRIGHT

When determining the height of the upright it is important to consider the ceiling height, forklift reach, sprinkler systems and other factors, such as local building codes, that might effect the overall height.

The height of the upright in figure C1 is determined by adding the base height, the number of loads to be stored, the arm thickness plus 6" clearance between the load and next arm. Contact your MECO sales professional for various rack dimensions such as base height and arm thickness.

IMPORTANT: The load placed on the base does not diminish the rated capacity of the upright. Thus, the heaviest loads should be placed on the base.

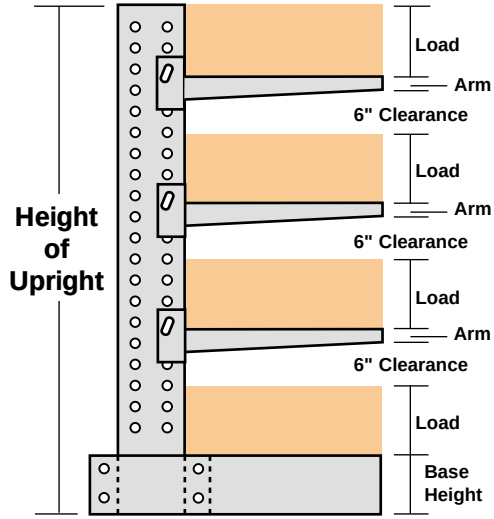


Figure C1

D. DETERMINE ARM AND UPRIGHT CAPACITIES

As previously discussed, each arm supports an equal amount of the load's weight. By determining the number of arms per level and dividing it into the weight per level, the required arm capacity can be determined (see example at right).

To determine the required capacity of each upright, multiply the number of arms per side by the load on each arm. In figure D1, each arm holds 2500 lbs. Twelve arms per side times 2500 lbs. per arm equals 30,000 lbs., which when divided by three uprights, results in a required minimum capacity of 10,000 lbs. per upright.

The correct upright can be selected by matching the minimum upright capacity of 10,000 lbs. with the upright capacities set forth on the following pages. Assuming a 48" arm, the U1058 on page 6 with 12,600 lbs. capacity is the only upright that will handle the load **NOTE:** The Medium Duty MU1057 has only 3800 lbs. capacity while the Series 2000 2U1062 has 8600 lbs. capacity.

The proper 48" arm (requiring 2500 lbs. of capacity) can be found on page 7: either the XHDSA48 at 2500 lbs. or the XHDSA483M at 3000 lbs. capacity.

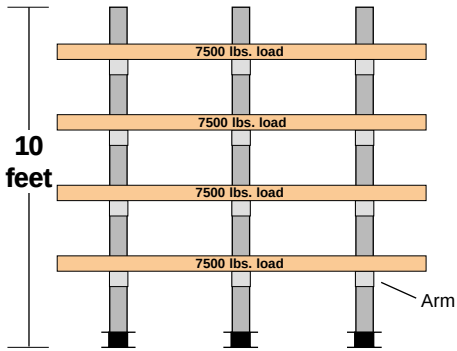


Figure D1

Example: 7500 lbs. per level divided by three arms = 2500 lbs. required capacity per arm.

NOTE: Total arm capacity must never exceed total upright capacity.

E. DETERMINE BRACE LENGTH

Brace length is defined as the horizontal distance from centerline of upright to centerline of the next upright.

Refer to the various brace set charts for the brace length that most closely matches the arm spacing determined in step A.

HEAVYWEIGHT STRUCTURAL CANTILEVER RACK

FOR USE WHEN HIGHEST STORAGE CAPACITIES ARE REQUIRED

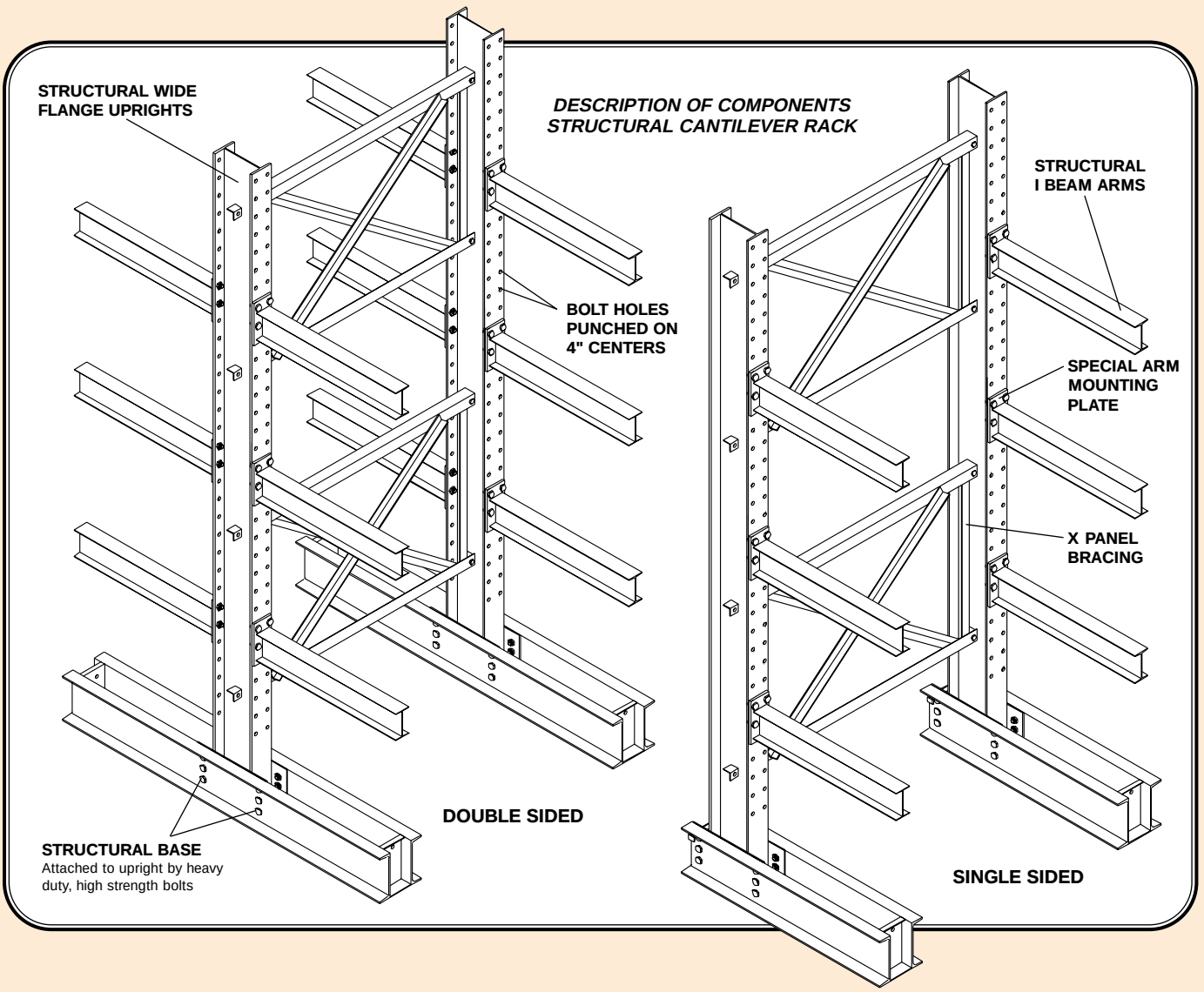
Select a MECO OMAHA Structural Cantilever Rack system when your load requirements surpass normal capacities. Uprights are fabricated from rugged structural wide flange beams with a minimum yield of 36,000 PSI. Heights are available through 24 feet. Bolt holes are punched on 4" centers the full height of the upright. Both single sided and double sided uprights are available. Structural bases are attached to the uprights by heavy duty, high strength bolts. Load on bases does not affect the total upright capacity.

Arms are manufactured from structural I beams in depths of 3", 4", 5" and 6". Other beam sizes can be utilized depending upon the capacity required. Arms through 72" long are available; most any length can be provided to meet a particular loading situation. The special MECO OMAHA arm mounting plate is punched to provide 4" vertical adjustability along the upright. Straight arms through 48" long have a minimum pitch of 3/8" per foot to compensate for deflection. Longer arms to 72" in length have a minimum pitch of 5/8" per foot. Arms are attached to the upright with high strength bolts.

Lateral stability of the rack system and upright spacing is achieved by the brace sets used. MECO OMAHA employs a sturdy brace system comprised of X panels and horizontal members engineered to ensure a stable and secure rack system for years to come.

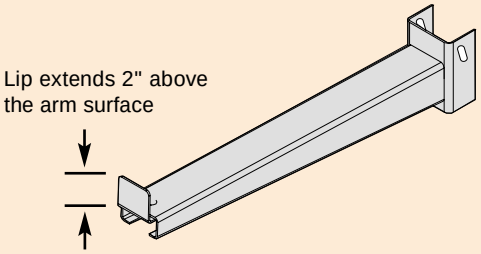
A wide array of accessories is available such as lips, pipe sockets, decks and roof supports allowing great flexibility in customizing a rack system to meet each particular storage need.

Contact your local MECO OMAHA representative for assistance in developing a structural cantilever rack system to meet your most demanding requirements.



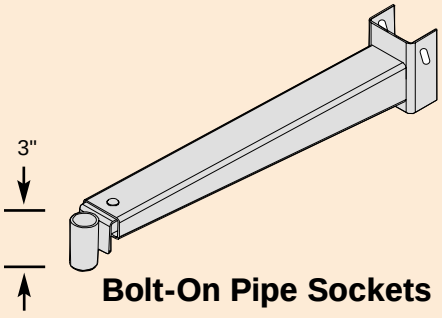
Note: STRUCTURAL CANTILEVER RACK components are not interchangeable with any other MECO OMAHA Cantilever Rack.

CANTILEVER RACK ACCESSORIES



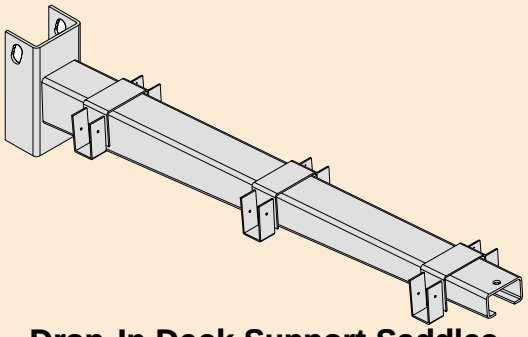
Bolt-On Arm Lips

All MECO cantilever arms are factory punched to accept a bolt-on lip at any time. Lips can also be removed when they are no longer required. Lips are not intended to bear any portion of the load.



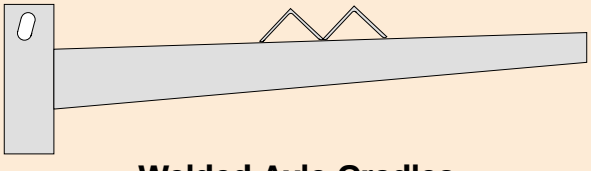
Bolt-On Pipe Sockets

Pipe sockets can be field installed or removed as needs dictate - just like bolt-on lips. Inside diameter of the socket is 1 3/8". Removable pipe is not included. Pipe sockets are not intended to bear any portion of the load.



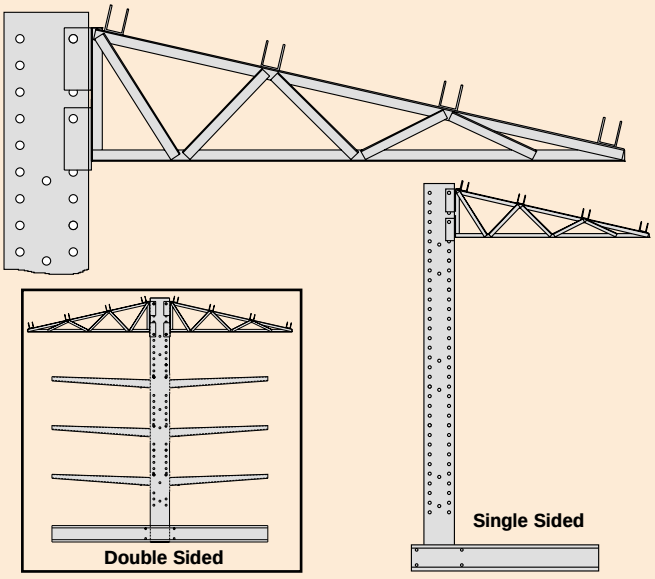
Drop-In Deck Support Saddles

Add a plywood deck to the cantilever system to store bulky items such as boxes, cartons and furniture. MECO will pre-engineer the saddles to accommodate 2x4 cross supports. Saddles must be positioned along the arm to ensure equal distribution of weight. Deck support saddles can also be provided for the bases. Saddles must be fastened to the arms and bases. Field drilling is required. Fasteners are not included. Other saddle styles available. Please inquire.



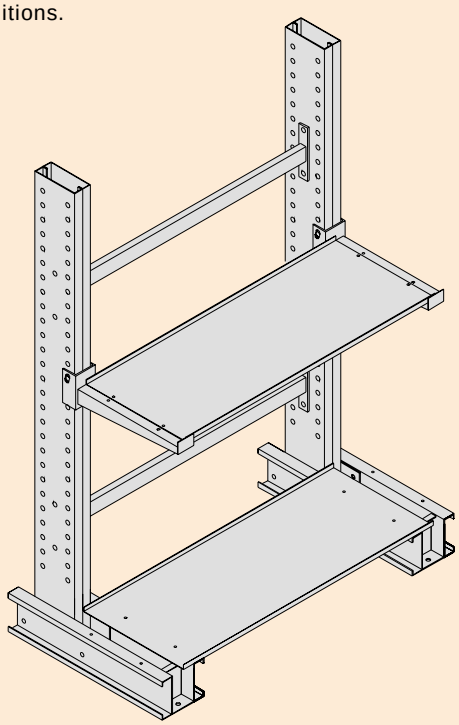
Welded Axle Cradles

Reels, spools and rolls can be stored between arms with the addition of axle cradles. Axle is not included.



Roof Supports

Turn a cantilever rack system into covered storage with MECO OMAHA roof supports. Can be used as single or double sided roof (depending on length of base used). Purlin clips included. **NOTE** that the use of roof supports can significantly reduce the rack's capacity due to wind and snow loads. MECO will custom design the roof supports to conform with local wind and snow load conditions.



Steel Decks

MECO offers optional steel decks to withstand the harshest industrial environment. Ideal for storage of short lengths of material, dies, castings and other items that require an uninterrupted length of heavy duty decking. Steel angles are welded to the underside of the deck for additional strength. Arms and decks are precision-drilled to accept mounting hardware.