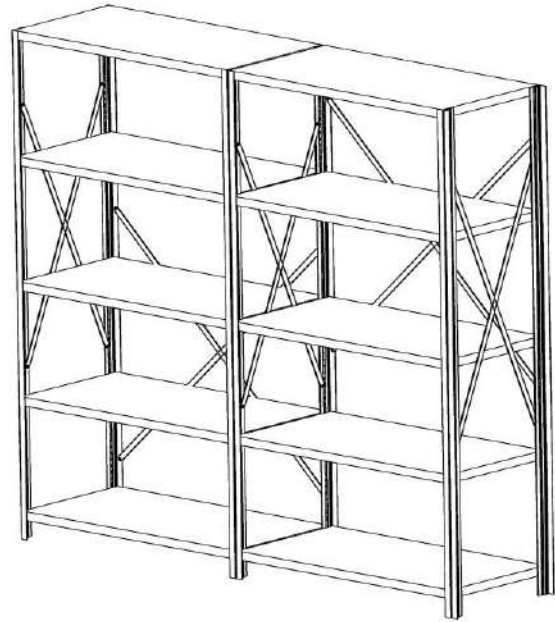
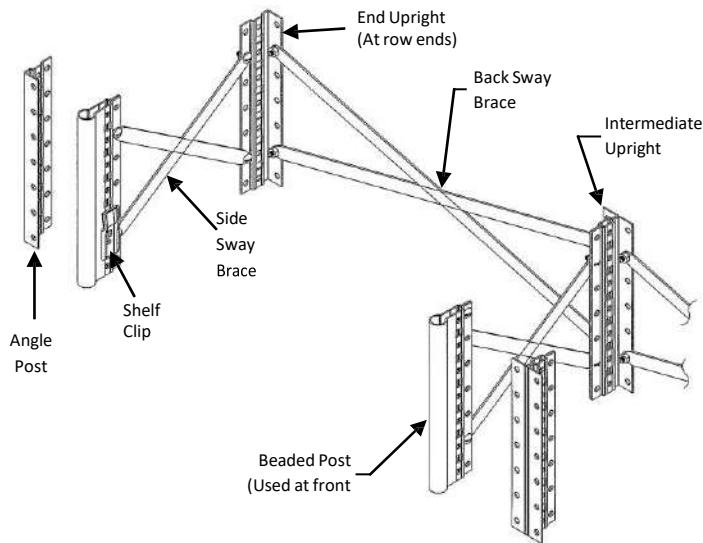
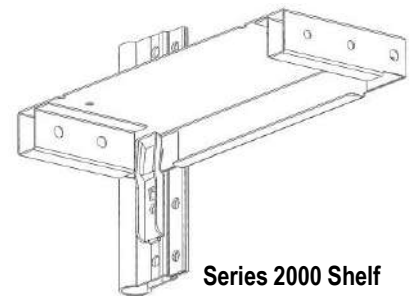


OPEN UNIT ASSEMBLY

1. The first and last uprights in a row of shelving are End Uprights. The remaining uprights in a row are Intermediate Uprights (see assembly graphic above). To build the End Upright, lay the front and rear post parallel to each other on the floor or saw horses. Position Angle Posts with the 1" flange pointing up. The front post may be Beaded or Angle. The back post is always Angle.

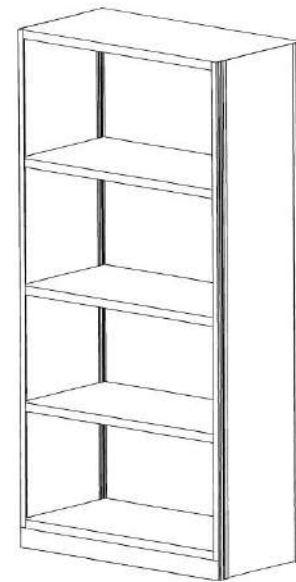
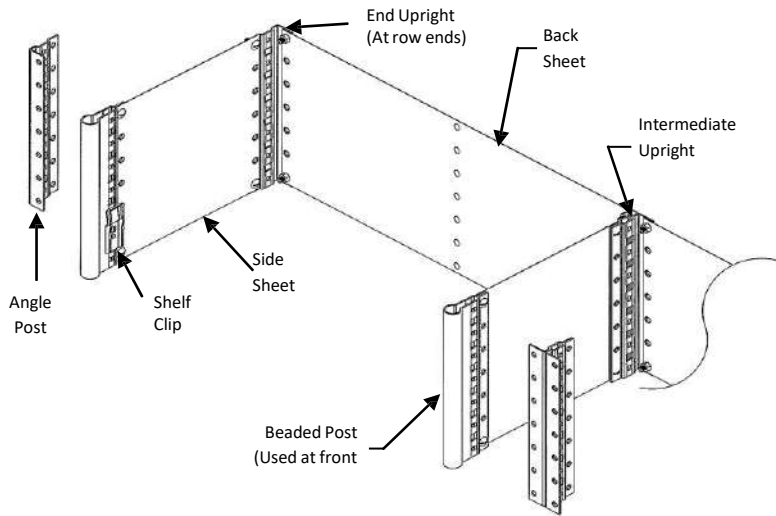
Install Shelf Clips on both posts at the desired shelf locations by inserting the fingers of the clip into the rectangular holes in the post and sliding down until the clip is fully seated. Install the clips for the bottom shelf in the bottom two rectangular holes; install the clips for the top shelf in the top two rectangular holes.

Using a shelf to determine proper spacing of posts, attach a pair of Side Sway Braces to the posts forming an "X" with $\frac{1}{4}$ -20 x $\frac{5}{8}$ " screws and nuts. See page 3 for information regarding sway brace locations. Note: Bolts cannot be placed where shelves are located.

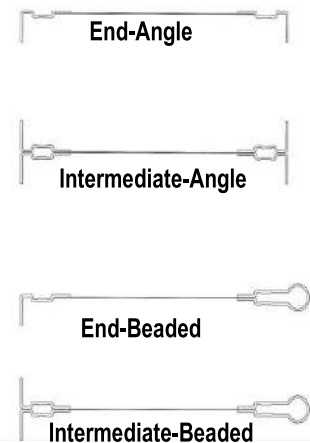
Clip to Post Connection

2. Intermediate Uprights are built like End Uprights, except Double Angle Posts replace Single Angle Posts (see graphic above). Double Angle Posts are made by bolting two Single Angle Posts together with two $\frac{1}{4}$ -20 x $\frac{5}{8}$ " screws and nuts, one near the top of post and one near the bottom. Install Shelf Clips on both sides of the post assembly. Attach a pair of Sway Braces to the front and rear posts as in Step 1.
3. Stand two End Uprights or an End and Intermediate Upright to build the first unit. Hold the uprights in position and install the top and bottom shelves on to the shelf clips. Make sure shelves are completely seated on the clips by tapping them down with a soft hammer. Repeat this process with the rest of the shelves in the first unit.
4. While holding the unit vertical, install a pair of Back Sway Braces in an "X" pattern using $\frac{1}{4}$ -20 x $\frac{5}{8}$ " screws and nuts. Attach the Back Sway Braces on the inside of the rear Angle Posts as shown.
5. If building a row of shelving, continue to add units by standing additional upright assemblies and installing shelves and back braces. The last upright in the row of shelving must be an End Upright.
6. Back-to-back (double) rows are built like single rows, except common Back Sway Braces are used. The common braces are installed on the inside of one of the units, with the bolts going through both rear posts of the back-to-back units. This will securely tie the back-to-back units together.

CLOSED UNIT ASSEMBLY



Welded Upright Assemblies – top view



1. End Uprights are the first and last uprights in a row of shelving. The remaining uprights in a row are Intermediate Uprights (see assembly graphic above). End and Intermediate Uprights are available in welded assemblies or may be built.

To build, lay the front and rear post parallel to each other on the floor or saw horses. Position Angle Posts with the 1" flange pointing up. The front post may be Beaded or Angle. The back post is always Angle.

Install Shelf Clips on both posts at the desired shelf locations by inserting the fingers of the clip into the rectangular holes in the post and sliding down until the clip is fully seated. Install the clips for the bottom shelf in the bottom two rectangular holes; install the clips for the top shelf in the top two rectangular holes.

The Upright Side Sheet is attached to the side of the Angle or Beaded post as shown using 1/4- 20 x 5/8" Truss Head screws and nuts. Upright Sheets are supplied with two screws and nuts for every foot of height. Note: Bolts cannot be placed where shelves are located.

2. Intermediate Uprights are built like End Uprights, except Double Angle Posts replace Single Angle Posts (see graphic above). Double Angle Posts are made by bolting two Single Angle Posts together, along with the common upright side sheet, with 1/4-20 x 5/8" screws and nuts. The Upright Side Sheet should be positioned to the side of the Double Angle Posts. Install shelf clips on both sides of the post assembly.

If a Beaded Post is used, attach the Upright Side Sheet to the side of the Beaded Post with 1/4-20 x 5/8" Truss Head screws and nuts.

3. Stand two End Uprights or an End and Intermediate Upright to build the first unit. Hold the uprights in position and install the top and bottom Shelves on to the shelf clips. Make sure shelves are completely seated on the clips by tapping them down with a soft hammer. Repeat this process with the rest of the shelves in the first unit.
4. While holding the unit vertical, install a Back Sheet using 1/4-20 x 5/8" screws and nuts. Attach the Back Sheet to the inside of the rear angle posts as shown. Slide one edge of the sheet between the shelf and post; then slide the other edge bowing the Back Sheet as needed. Line up the holes in the post with holes in the back and bolt in place using 1/4-20 x 5/8" Truss Head screws and nuts. Note: Bolts cannot be placed where shelves are located. Bolt backs according to number of bolts and spacing shown below.

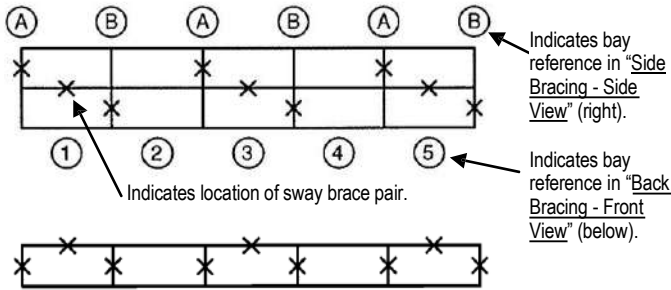
Height of Closed Back	Total Number of Bolts and Nuts	Maximum Bolt Spacing
To 3' 11-1/2"	4	46-1/2"
4'1" to 5'11-1/2"	6	36"
6'1" to 7'11-1/2"	8	31-1/2"
8'1" to 9'-11-1/2"	10	30"

5. If building a row of shelving, continue to add units by standing additional uprights and installing shelves and backs. The last upright in a row is an end upright. All units in a row are to be securely bolted together.
6. Back-to-back (double) rows are built like single rows, except common backs are used. The common Back Sheet is installed on the inside of one of the units, with the bolts going through both rear posts of the back-to-back units. This will securely tie the back-to-back units together.

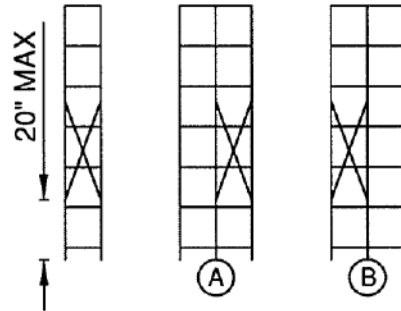


SWAY BRACING PATTERNS – NOTE: Bracing patterns represent the minimum bracing required for units 8'-1" high and under in Seismic Zone 0.

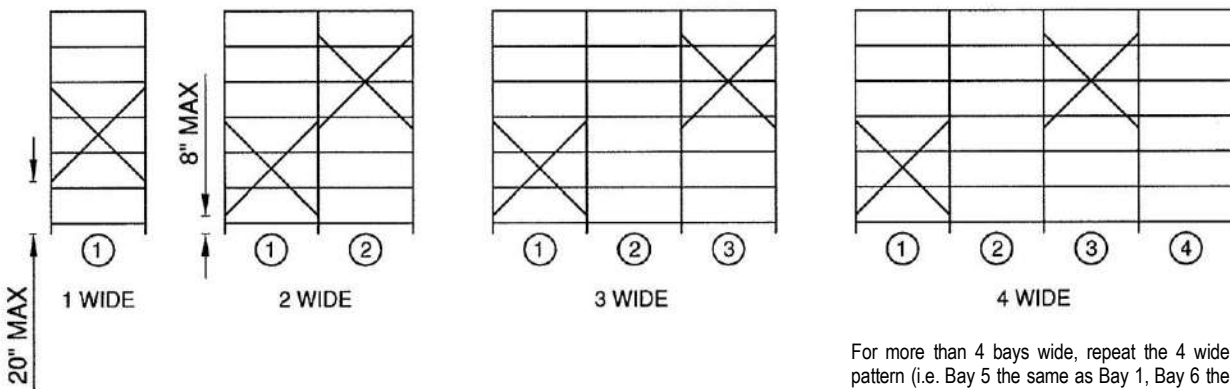
Back and Side Bracing – Top View



Side Bracing – Side View

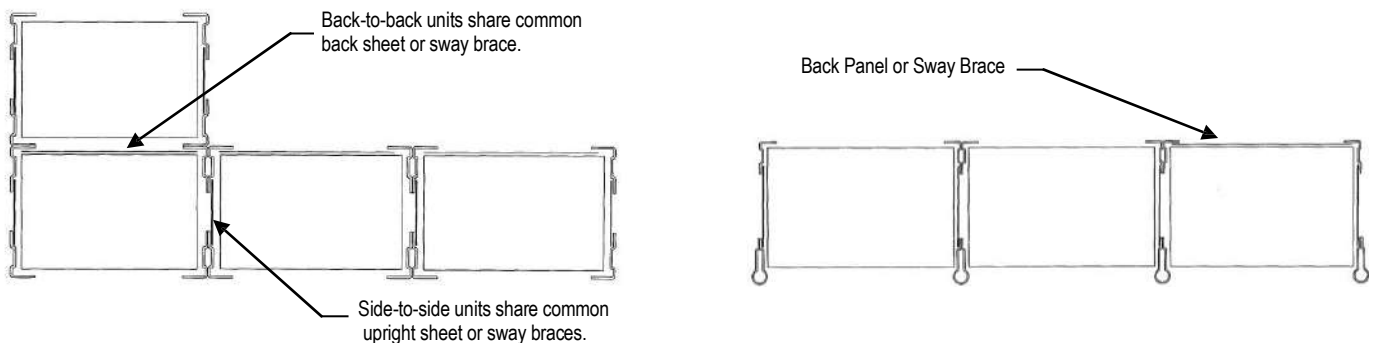


Back Bracing – Front View

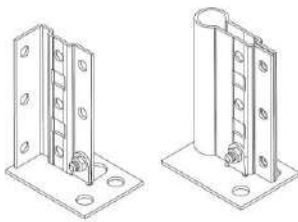


For more than 4 bays wide, repeat the 4 wide pattern (i.e. Bay 5 the same as Bay 1, Bay 6 the same as Bay 2, etc.).

Unit Detail for Back and Side Bracing – Top View



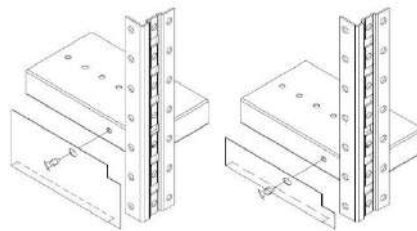
SHELVING ACCESSORIES



Foot Plate – Angle and Beaded Post

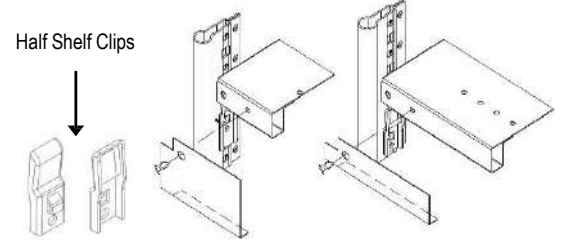
Attach Angle Post with 1/4-20 x 5/8" truss head screw and nut. Attach Beaded Post with 1/4-20 x 1" truss head screw and nut. Floor anchors are not supplied with foot plates. *

NOTE: When factory welded uprights are used, field drill bottom hole of angle post for footplate.



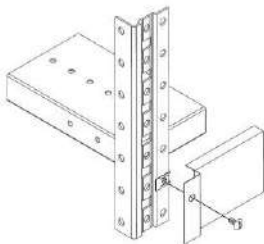
Front Base - Angle Post

Attach to face of box shelf with (3) #701487 Panel Clips. Half Shelf Clips are furnished with 1-1/2" bases.



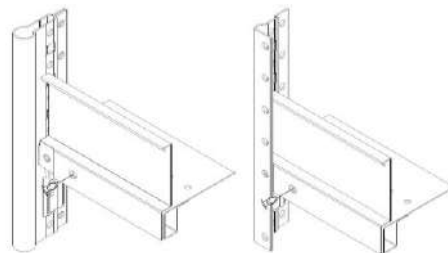
Front Base – Beaded Post

Attach to face of box shelf with (3) #701487 Panel Clips. Half Shelf Clips are furnished with 1-1/2" bases.



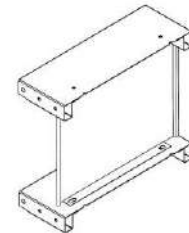
End Base

Attach to posts with Tinnerman Nuts #702517 and #10 x 1/2" truss head sheet metal screws.



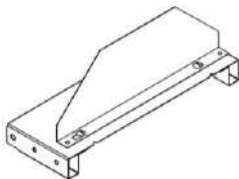
Bin Front

Attach to face of box shelf with (3) #701487 Panel Clips.



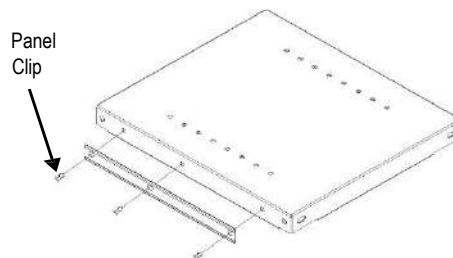
Shelf Divider

Attach to Series 2000 shelf with #701487 Plastic Panel Clips. When installed, front edge of divider is 5/8" back from front edge of shelf.



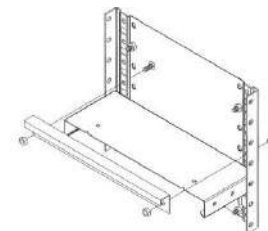
Angle Divider

Attach to Series 2000 shelf with #12-24 x 3/8" truss head screws and nuts.



Label Holder

Attach to Series 2000 Shelf With (3) #701487 Panel Clips.



Shelf Box Guide

Attach to Angle Post with 1/4-20 x 1" truss head screws and nuts.

* Lyon recommends securely anchoring all shelving.

GUIDELINES FOR INSTALLATION AND GENERAL USE

1. Make sure all fasteners are securely tightened before shelving is to be used.
2. The first shelf should be located close to the floor, typically positioned at 4", and secured to the posts via shelf clips or nuts & bolts for stability. If the first shelf is required to be positioned greater than 4", contact your Lyon Representative or the Product Engineering Department for assistance.
3. Shelving is to be hand loaded only. Any use of machinery to load the shelving may cause damage and/or failure.
4. When loading product on to the shelves, always load from the bottom of the shelving unit to the top. Also, when unloading always remove product from the top down. This will ensure that the shelving unit does not become top heavy and risk the potential for overturning.
5. Shelving should never be climbed or stepped on.

OWNER MAINTENANCE

The owner shall maintain the structural integrity of the installed shelving by assuring proper operational, housekeeping, and maintenance procedures including, but not limited to, the following:

- Prohibit any overloading of the shelving, be it a concentrated/point load, moving load, any uniformly distributed load, or the overall load on the system.
- Regularly inspect for damage. If damage is found, immediately isolate the affected area. A design professional should evaluate the damage so that the system can be restored to its original design capacity.
- Sheared or loose anchors and/or bolts shall be replaced or tightened and dislodged shims shall be realigned.
- Require that all product stored on the shelving is properly stacked and stable.
- Ensure that the shelving is not reconfigured or otherwise modified in a manner not within the original design or intended use without the advice of a qualified design professional.

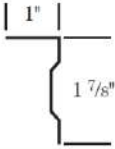
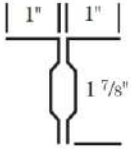
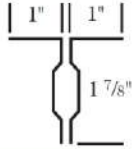
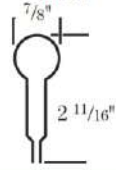
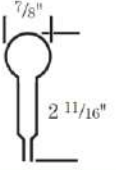
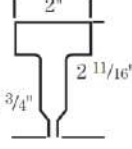
FOOT PLATES AND ANCHORING

Lyon **recommends** the use of foot plates on all shelving units to spread loads, prevent damage to floor surfaces, aid in shimming uprights to a plumb condition and to allow anchoring when necessary. Anchoring of posts is **required** when the top loaded shelf is over 8'-1" high AND the height to depth ratio of the shelving section exceeds four (4). Seismic or wind loading may require anchoring shelving less than 8'-1" in height. However, for maximum safety it is recommended that all shelving be anchored. Contact the Product Engineering Department at Lyon for assistance when you know or suspect seismic or wind loading must be considered.

- Height, as used in this ratio is defined as the distance from the floor to the top of the highest load on the top shelf, or the top shelf height if no load is placed on that shelf.
- Depth is the overall depth of the shelving section, or the combined depth of back – to – back sections, provided the sections are securely tied together at a minimum of two (2) places (top and bottom) at each back – to – back upright.
- Where the height to depth ratio is exceeded, upright assemblies should be top tied across the aisle(s) as well as anchored to the floor.
- If the shelving is attached to the building structure, the vertical and horizontal forces imposed by the shelving on the building must be calculated. The shelving user, building owner, or their agents should be informed of these forces and their location.
- Shelving should be installed with a maximum tolerance from the vertical of 1/2" in 10' or more of height, unless tighter tolerances are specified.
- When shims are used on an uneven floor, the posts must have footplates and anchors. Contact Lyon's Product Engineering Department for information on correct anchor type and foot plate for your specific application.

LOADING

Shelving Post Load Table

Shelving Post Load Table - ANSI MH 28.1 - 1997						
	Single Angle Post - Sway Brace Bolted Side Sheet Welded End Upright	Double Angle Post - Sway Brace Bolted Side Sheet	Double Angle Post Welded Intermediate Upright	Beaded Post - Sway Brace Bolted Side Sheet	Beaded Post - Welded Upright	Heavy Duty Post
						
Shelf Spacing	Allowable Axial (Vertical) Load (lbs.) Per Post Type					
12"	1800	3600	4800	4300	4900	8300
18"	1325	2650	4500	3100	4100	8000
24"	900	1600	4100	1950	3200	7800
30"	670	1340	3600	1300	2250	7500
36"	500	1000	3100	1000	1650	7000
42"	--	--	2500	750	1250	6500
48"	--	--	1900	--	--	5900

Post capacities are dependent upon shelf spacing – the carrying capacity of a post increases as shelf spacing decreases. Do not exceed allowable loads listed.

Allowable shelf loads

Allowable Shelf Loads - ANSI MH 28.1															
Series 2000															
Shelf Size	18 gauge	20 gauge	22 gauge	Shelf Size	18 gauge	20 gauge	22 gauge	Shelf Size	18 gauge	20 gauge	22 gauge	Shelf Size	18 gauge	20 gauge	22 gauge
24" x 12"	--	850	500	36" x 24"	1250	800	550	42" x 32"	950	600	330	54" x 18"	750	480	--
24" x 18"	--	750	500	36" x 30"	900	600	450	42" x 36"	900	550	300	54" x 24"	750	480	--
24" x 24"	--	600	500	36" x 36"	900	550	350	48" x 12"	750	500	275	54" x 30"	650	460	--
30" x 12"	--	850	500	42" x 12"	900	600	330	48" x 15"	850	525	285	54" x 32"	650	460	--
30" x 18"	--	800	500	42" x 15"	900	600	330	48" x 18"	900	550	300	54" x 36"	600	430	--
30" x 24"	--	700	500	42" x 18"	950	650	355	48" x 24"	900	550	300	60" x 18"	600	420	--
36" x 12"	1100	800	500	42" x 24"	1000	650	355	48" x 30"	750	525	285	60" x 30"	560	400	--
36" x 15"	1100	825	500	42" x 30"	1000	625	340	48" x 36"	750	500	275	60" x 36"	500	375	--
36" x 18"	1200	850	500												








WARNING! – Do not exceed evenly distributed (uniform) loads shown above. Concentrated (point) loads or impact (dropped) loads could fail shelves even though these loads may be considerably less than the allowable evenly distributed load shown.


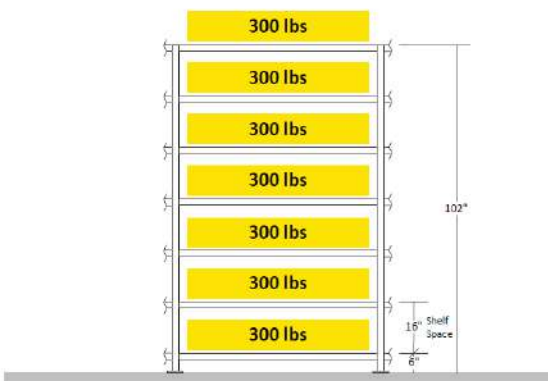
LOAD PLAQUE

It is the responsibility of the owner/end user of the shelving to display in one or more conspicuous locations a permanent plaque(s), such as at the ends of rows or on top of access stairways. The plaque(s) shall show in clear legible print:

- a) The maximum permissible uniformly distributed shelf load
- b) The average shelf load, if applicable
- c) The floor loading if shelving is a shelf-supported pick module
- d) The maximum total load per bay

Example of a load capacity and compliance plaque for shelving

	<p>WARNING</p> <p>Do not alter the structure without:</p> <ul style="list-style-type: none"> • Evaluation by a Design Professional, and/or, • Seeking approval from the Supplier
	<p>WARNING</p> <p>DO NOT CLIMB ON SHELVING</p>
	<p>WARNING</p> <p>Report all damage to management</p>
	<p>CAUTION</p> <p>Conduct regular inspections to check for:</p> <ul style="list-style-type: none"> • Proper application and use • Loads within allowable limits • Damage or dislodgement of structure or components
	<p>WARNING</p> <p>Shelving is for hand stacked product only</p>
	<div style="text-align: center;">  <p>Storage Manufacturers Association</p> <p>www.mhi.org/sma</p> <p>sponsored by </p> </div>

	<p>WARNING</p> <p>LOADING DETAILS</p> <ul style="list-style-type: none"> • All product loads to be uniformly distributed • For more info, see load application and configuration drawings
	
<div style="border: 2px solid black; padding: 10px; display: inline-block;"> <p>2100 lbs</p> <p>Maximum Shelving Unit Load</p> <p>(X" Wide x Y" Deep x Z" High Unit)</p> </div>	
<p>Client:</p> <p>Project Reference:</p> <p>Date Supplied:</p>	

The above figure is not intended to limit the plaque details, but rather is presented as a possible example. It is the intent of the plaque to inform the storage facilities manager of the safe shelving capacity and any plaque that transmits the required information is acceptable. The manager of the facility has the responsibility to be cognizant of this load limit and to instruct all operating personnel to see that the permissible load is not exceeded.

Plaques should not be transferred to any reconfigured or relocated shelving without first verifying the applicability of the information on the plaque to the new configuration or location by a qualified design professional.