

[PALLET] [TOWER]

Product Manual

www.pallettower.com

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Appendix 1: Load Rating Tables

Change Log:

1.4, 3/9/21: Increased recommended staple length from 1.5" to 1.75" and changed diagonal bracing recommendations based on customer feedback.

1.5, 6/7/21: Simplified recommended product configurations based on customer feedback.

1. Safety Warnings

Always wear safety glasses and hearing protection during assembly and use caution when using pneumatic tools. Please observe all safety instructions provided by the staple or nail gun manufacturer. Keep fingers away from area to be fastened at all times. Beware of exposed fasteners that protrude through the wood or corner pieces. If fasteners protrude through the material, bend the fastener over to protect against cuts and scrapes.

2. Load Ratings

Pallet Tower has a standard load rating of 1850 lbs per tower and 460 lbs per shelf. Please refer to Appendix 1 for additional details on how this is determined.

The corner posts specifications are 0.275" +/- 0.010" thick. Please confirm thickness/caliper upon receipt and only use the product meets these specifications. If there is any doubt on product integrity, please submit a claim form available on the Pallet Tower website.

Only use the fasteners specified in Section 4 for construction of the tower. The staples are to be embedded a minimum of 1" into new hardwood shelves or pallets. DO NOT OVERDRIVE THE STAPLES as this will reduce their hold strength. Properly driven staples should be slightly proud of the surface for the corner posts.

Load ratings are only valid when the towers are constructed per these instructions using the materials specified.

DISCLAIMER: Pallet Tower makes no guarantee that the load ratings outlined in this document will be solely sufficient for the design & use of a tower. Variances in the structural integrity of the wood used in the base pallets and shelves is to be expected. As such, there could be circumstances where the tower was assembled correctly but still fails due to natural wood variances (e.g. knots, sapwood, voids, etc.). It is the responsibility of the customer to only use wood products that are of sound structural integrity. Use of subpar wood products voids the load ratings in their entirety.

3. Safe Loading Instructions

Always load the tower as to keep the center of gravity as low as possible. This is generally accomplished by loading the heaviest items on the lower shelves. Please contact your sales representative for additional guidance if necessary.

When loading the tower, please ensure that at least 3 diagonal braces are properly fastened. The tower becomes very laterally stable with the addition of the diagonal braces, so do not load the tower prior to installing these braces. The tower is liable to shift and/or collapse if loaded without diagonal bracing.

4. Materials Used for Construction

The **corner posts** are sold by Pallet Tower LLC. Please contact your sales representative to purchase the corner pieces for your application. Additionally, your sales representative will be more than happy to provide guidance on sources for all other materials used in construction.

The **base pallet** is recommended to be a new, hardwood pallet. A standard GMA pallet (40" x 48") with 5/8" thick deck boards is recommended. This pallet needs to be of first quality, and should not be a recycled/remanufacturer or softwood pallet. The entire weight of the assembled and loaded tower gets transmitted to the corners via the corner posts. Therefore, the deck boards must be of sufficiently high quality and quantity to bear this load when the tower is moved.

The **shelves** can be comprised of several different materials. Load capacity will vary based on shelf configuration.

1. Pallets: Recommended to specify a pallet with QTY (8) ½" deck boards and QTY (3) runners on the base of the pallet. The thinner deck boards reduces dunnage, and the reduction in runners allows for increased height for the products on the shelf underneath. Stringers are to be a minimum of 1" thick.
2. Custom Wood Shelves: Some customers utilize a custom designed wooden shelf to save weight and reduce the space taken up by the shelf thickness. This certainly has its advantages, but it is worth considering the reuse or salability of a used custom shelf for the recipient.

The **diagonal bracing** is recommended to be ½" thick by 3.5" wide wood boards (hardwood or softwood).

Fasteners are recommended to be 7/16" x 1.75" long 16-gauge staples. *These are available for purchase from Pallet Tower if desired.*

5. Tools Used in Construction

The tower is assembled with pneumatic staple gun. Recommended brands include Metabo HPT (Hitachi) and MAX. No additional tools are required. Your sales representative can provide guidance on where to purchase these tools.

Recommended stapler part numbers:

- Metabo HPT N5008AC2, 7/16" 16 Gauge Crown Stapler (available for purchase)
- MAX Superstapler TA551B/16-11, 7/16" 16 Gauge Crown Stapler (alternative option)

6. Assembly Process

Assembly Instructions:

1. Mark shelf locations on corner pieces. Ensure that all corner posts are even/flush when marking. If marking a lot of corner pieces at once, a chalk line can speed up this process by batch marking shelf locations.
2. Stack appropriate QTY of levels on the base pallet and fasten corner pieces to bottom pallet. Use the recommended fastening pattern in Figure 3. Do not overdrive staples!

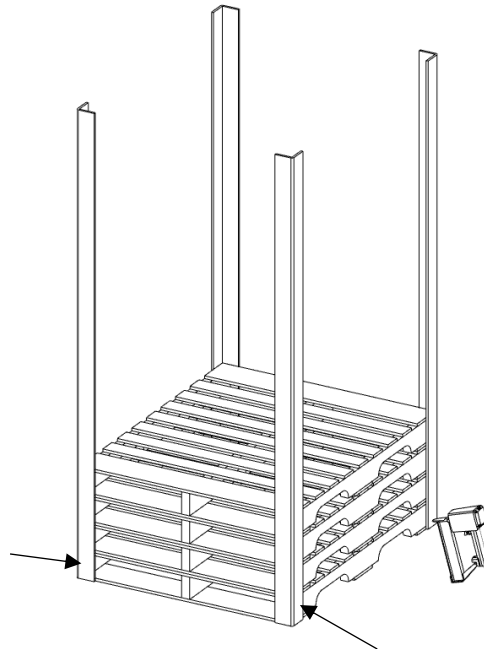


Figure 1: Attach corner posts to bottom pallet

3. Rotate tower onto its side and space levels to match marks. Fasten levels to the corner pieces. Use the recommended fastening pattern in Figure 3

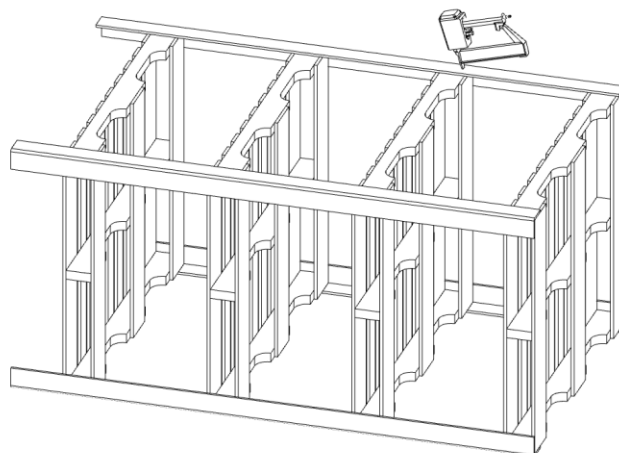


Figure 2: Rotate tower onto its side and fasten shelves.

4. Rotate tower back to vertical position. Ensure that the proper fastening pattern is used for the corner posts. When attaching the diagonal bracing, try not to overlap to the diagonal bracing on the corner posts (this reduces the length of fastener embedded into the pallet/shelf). It is recommended that the diagonal braces come to a point as shown in Figures 3 and 4.

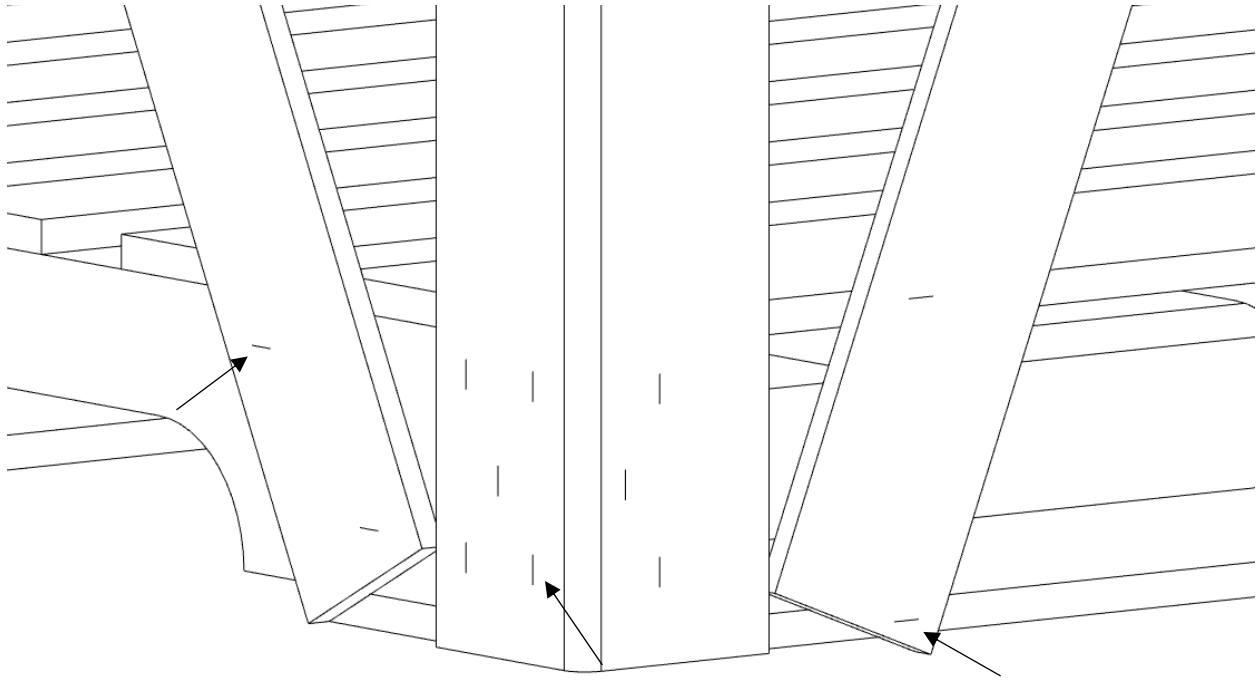


Figure 3: Recommended fastening pattern for base pallet (8 staples minimum per corner post). Try not to overlap diagonal bracing on corner posts. For each additional shelf, a minimum of 5 staples is recommended in the corner post plus 2 staples in the diagonal bracing.

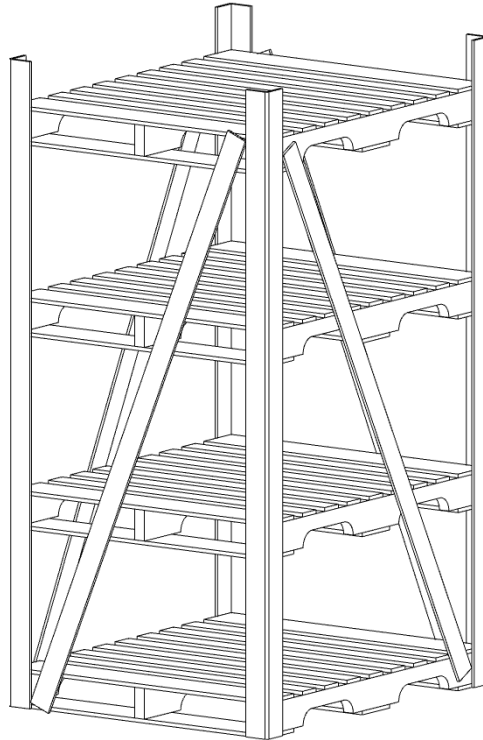


Figure 4: Finished Tower Example

7. Additional Reference Information

- Handling skids of corner pieces
 - Each skid of corner pieces contains 600 pieces.
 - The dimensions of each corner piece skid is approximately 40" W x 84" L x 41" H. The skid weighs approximately 3000lbs.
 - A forklift rated to 5,000 lbs equipped with fork extensions is recommended to handle the skids.
- Storage of corner pieces
 - Recommended to store corner pieces in a dry environment. Prolonged exposure to moisture can result in surface mold on paper face and/or other cosmetic damage. The structural integrity of the corners will not be compromised.
- When shipping LTL, the recommended NMFC code is 71290-03, Class 110.

Appendix 1: Load Rating Tables

The standard load rating for Pallet Towers is 1850 lbs for the entire tower, and 460 lbs per shelf. This is based on forces required for fastener failure (either pulling out of the wood or pulling through the corner post). Testing has been performed on both hardwoods and softwoods. The diagonal braces are not assumed to contribute to the load ratings.

Table 1: Forces Required for Staple Failure

Staple Location	Hardwood (Oak)	Softwood (Spruce/Pine/Fir)
Side (face grain)	250 lbs	160 lbs
End (end grain)	200 lbs	130 lbs

Table 2: Recommended Quantity of Staples

Recommended Number of Staples	Hardwood (Oak)	Softwood (Spruce/Pine/Fir)
<i>Base Pallet:</i>		
Side (face grain)	5	<i>Not Recommended</i>
End (end grain)	3	
Load capacity (with 4x factor of safety)	1850 lbs	
<i>Shelves:</i>		
Side (face grain)	3	3
End (end grain)	2	2
Load capacity (with 10x factor of safety)	460 lbs	296 lbs

If you would like to deviate from the recommended Pallet Tower design, the data presented in this Appendix should be used as a starting point for design of the tower, but additional testing must be performed to ensure that the tower is adequately strong for the customers unique needs.

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