Putting Together A Rack Job

Please first see Scope of Responsibility on Contents page.

Step 1. Find out everything there is to know about the item you are handling/storing. Find out the three-dimensional size and weight of every load and pallet going to any location. Remember that the pallet may not be exactly the same size as the load, there may be overhang one way or the other. Also be careful to ask about the quality of the bottom of the pallets and whether or not they are capable of resting on just beams. If they are broken or rotted, they might require wire deck to safely support them.

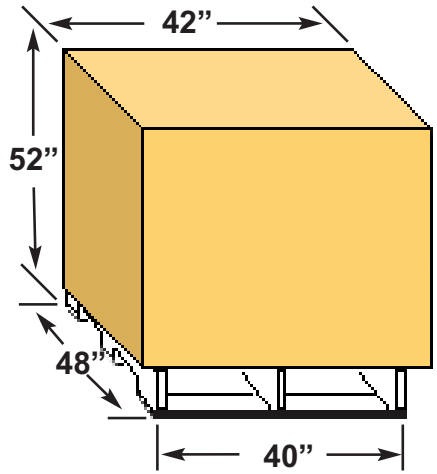
Step 2. Find out everything there is to know about the area that the rack is going to be installed. Start with the physical dimensions of the available space. Next the floor condition, its load bearing capacity and any slope. Find out about the available clear headroom and the presence of any overhead or other obstructions. Find out if there are any access-ways that the rack must not obstruct. Column centerlines and size are also important for flue space specification and layout information.

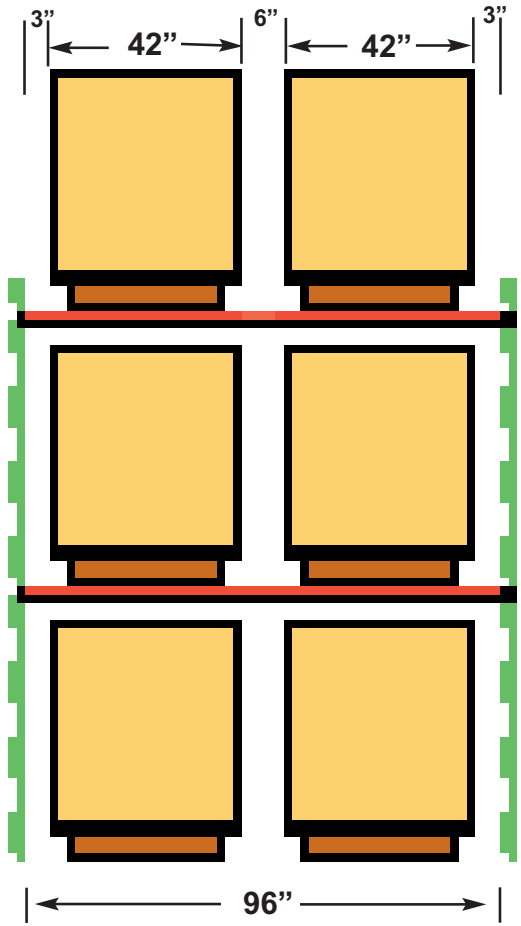
Step 3. Find out the method to be used for storing and retrieving loads in the rack (most often a Fork Truck). Can it carry the proposed load? What is its width and right angle turn dimension? What is its maximum lift height? Remember you must subtract from this number, usually 6", for most pallets to be lifted clear of the beam. Take note of anything else that might impede on its safe interaction with the rack.

Step 4. Select the beam. First decide how many loads should be on each beam level. The length of the beam can be determined by adding three inches to either side of the pallet, (or load, whichever is largest), and multiplying by all the loads on the beam. For example, a load/pallet of 42" width, two to a beam = 42" +3" +3", multiply by 2 and this comes to a 96" beam. The 3" additions are to give adequate side clearance for loading and unloading. The model of beam should then be selected from the 'Beam Capacity Chart', making sure that the loads do not exceed the maximum capacity. If the beams are longer than 120" they should be tied across the middle to prevent beam spread. If loose decking is to be used, any pair of beams over 90" in length should be tied across the middle for the same reason.

Step 5. At this point ALWAYS start a sketch of each individual bay, no matter how small the job.

Step 6. Figure out how many beam levels you will have in any bay. Are the first pallets/loads going to sit on the floor, or on a set of beams? To calculate the number of levels add together the pallet and load height plus 6" for clearance. Add the face/height of the beam you just selected for the overall total. Fit as many levels as possible in the height available remembering to make sure the fork truck is able to lift the pallet off the top beam with it's maximum fork height capabilities. It usually needs an additional 6-8" of lift height over the top beam. Finally make sure there is enough clearance for any sprinkler requirements.





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Step 7. **A.** Figure out the frame capacity necessary. Add up all of the beam loads acting on the frame, then work out the largest pallet opening on the frame (usually floor to first beam but occasionally beam to beam above that). Loads on either side of the frame up to the center points of the beams, act upon the frames. Note that in the illustration below there is 15,000 lbs. acting on the middle frame. Now, using the Frame Capacity Chart, select the appropriate frame model. **B.** Figure out how high the frame needs to be to reach the top of the top beam. In most applications you should then add between 6" and 18" (up to the next standard frame size) to allow for flexibility in installation. If the customer wants the frame flush with the top of the top beam, be very sure to check the load dimensions again very carefully and check the floor for the possibility of slope in both the 'cross-aisle' and 'down-aisle' directions. **C.** Figure out how deep the frame needs to be. The dimension of the pallet determines this. In most applications an overhang of 3" on either side of the pallet is desirable (if the pallet is 48" deep the frame should be 42"). If the application demands that the pallets be flush with the front and back faces of the rack bay, cross supports from beam to beam MUST be used. The cross supports may be crossbars or wire deck.

Step 8. Now put together your final sketch showing all the bays that go together to make up a row, and count up all the beams and frames you need for the system.

Step 9. Is your system a single row? Or will it be installed 'back-to-back' with another row of rack? If it is back-to-back, it should be tied across the 'flue space' in the middle with row spacers. You should always use a minimum of two row spacers no matter the height. You should also ensure there is not a gap greater than 10' in height between row spacers, adding a third or fourth one if necessary.

Step 10. You must now check to see whether your system is stable or not. First, check the height compared to the depth for overturning stability. To do this, find the height from the floor to the top of the very topmost beam. Now, divide that figure by either, the depth of the frame (if this is a single row); or, the depth of both frames plus the row spacers (if this is a back-to-back row). Is the answer to your division sum larger than 6.0? If so you will need to call your Husky representative for assistance, as the system is unstable. Second, check for rotational stability. Do you have only a single beam level between frames in a bay anywhere? If so you will need to call your Husky representative for assistance, as this system also is unstable.

General Pallet rack installations are structurally engineered systems that carry heavy loads. The steps above give a guideline for the safe specification of components for simple cases where conditions are perfect. They are written with regard to RMI 2007 which is the guiding industry specification at time of publication. If, in the future, this specification is revised or overridden; or, if you have any doubt or confusion whatsoever about any of the steps above, please contact your Husky representative for assistance Finally, please remember that your system should be shimmed level and anchored to the floor (one anchor per leg).