



# 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.

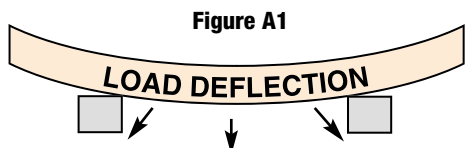


Figure A1  
Improperly Loaded  
(Not enough arms to prevent load deflection.)

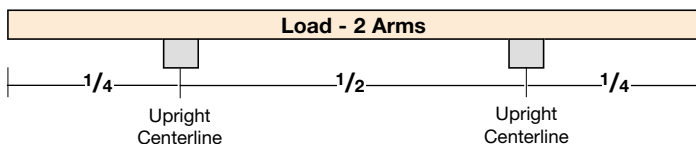


Figure A2

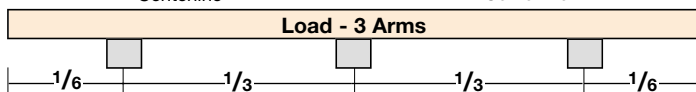


Figure A3

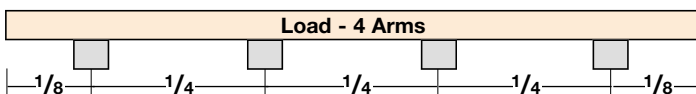


Figure A4

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

## 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.

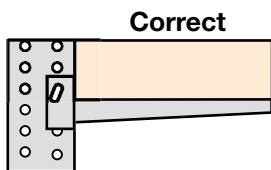


Figure B1

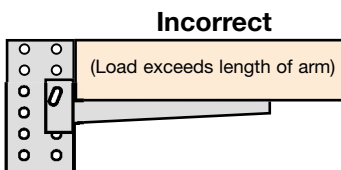


Figure B2

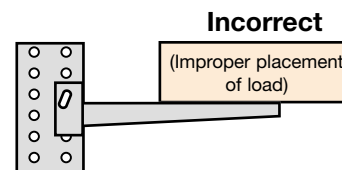


Figure B3

**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

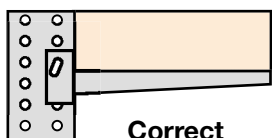


Figure B4

Centered Load  
Full rated arm capacity

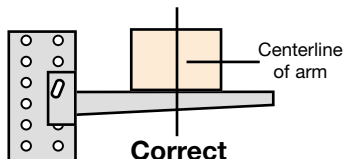


Figure B5

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

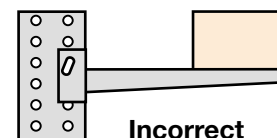


Figure B6