

# WALL ROPES

Please consult a builder and/or engineer before fixing hooks to walls to ensure that the structure and proposed installation is capable of supporting the loads.

The following is offered as a guide only.

## Design Loads

Anchor bolts - Minimum withdrawal load capacity of 200kg.  
Anchor bolts should be steel with a minimum diameter of 12mm.

Walls - Allow 200 kg of horizontal force per rope set applied at a height of 2 metres from floor.

## Location of anchors

Top ropes: distance from floor 2000 mm  
Middle ropes: distance from floor 1000 mm  
Bottom ropes (optional): distance from floor 40 mm  
Horizontal distance between ropes: 450 mm  
Horizontal distance between sets of ropes (minimum) 600 mm

## Ropes

Top rope length: 1100 mm (When folded in two and drawn taut)  
Bottom rope length: 820 mm (When folded in two and drawn taut)  
Rope material: 12mm double-braided polyester (available from marine suppliers). Melt cut ends, use Jacobs ladder knot.

## Wall structure

Ensure wall structure is strong enough for applied loads. Allow 200 kg of horizontal force per rope set.

Remember people are often killed when brick walls fall on them. Slam dunking basket balls has caused this to happen! (This seems to happen with relatively unsupported walls of outbuildings. Be careful!!)

## Rope anchors

**In masonry walls** several types of fixing can be used.

The most common type is the "Dyna Bolt" available from hardware shops. These are best used in solid walls such as concrete or relatively solid bricks. Use 12mm diameter and take note of the recommended hole diameter.

Where the masonry wall has cavities such as in many clay or concrete bricks, it is satisfactory to use a special adhesive such as (Ramset) "Chemset" With this stuff the holes are drilled and then filled with adhesive before inserting the anchor bolts. The adhesive then sets fixing the anchor.

In both cases either 12mm eye bolts (bolts with an eye loop on the end) or plain threaded rod (studs) can be used. With the latter, an eye nut (12mm) is screwed on after the anchor is set.

**In timber framed walls** several techniques could be used.

You can pass a bolt right through the wall from the other side. If the studs in the wall are conveniently placed at the appropriate spacing (450mm) you can pass the bolts right through the studs. Coach bolts (12mm) would be best.

If the studs are not conveniently spaced you will need to fix a horizontal baton across the wall (on the opposite side to the ropes) passing over at least 2 studs. This should be at least 20mm thick X 40mm wide. The bolts will pass through the batons, the heads of the bolts resting on the batons. You may also need a baton on the rope side of the wall if the wall lining material is soft such as plaster.

An alternative method if you do not have access to the back of the wall is to fix heavy batons (minimum 25mm x 50mm) to the rope side of the wall only and to pass the rope anchor bolts through these batons only (not through the wall). These batons need to be securely fixed to the wall studs using 10mm dia coach screws. There should be at least as many coach screws attaching the baton to the studs as there are ropes attached to the batons. The ropes will be attached to the baton using 12mm dia bolts, either eye bolts as above with nuts on the back side of the baton which will have to be let into the wall surface or by coach bolts whose heads are at the back of the baton with eye nuts screwed to the rope side for the ropes to attach to.

The risks associated with the connections failing are great so if you are in any doubt as to the security of your system you should consult a builder or engineer.

