

Building a Tower for your Mini Dumbbell



Introduction

I try so far as possible to avoid building towers for my dumbbells. However, I have constructed two for demonstration purposes. The first, built for my own use, is fairly lightweight and requires diagonal bracing. It is rigid when erected but erection takes at least half an hour and requires the tightening of a minimum of twenty four bolts. The second is based very largely on a modification of my design by Alan Griffin. It is more robust than my original tower but has just eight bolts and can be erected in less than ten minutes. The following drawings, photographs and notes describe the second design. I make no claim for them to be fully comprehensive but they should contain enough information to enable a similar tower to be constructed.

A tower tall enough to stand beneath to ring will not fit in the average living room! For this a shorter tower will be needed and ringing, for people of average adult height, will have to be done sitting down. So one point to be considered quite early in the construction process is whether the tower is to be installed in a fixed location or is to be available for demonstration purposes in different locations. In the latter case, one option is to have two sets of legs, one long, one short. Another option, more versatile but visually slightly less pleasing, is to have a short set, with bolt-on extensions.



Extensions raised



Extensions lowered

Please Note:

The information in this leaflet is given in good faith. However, it is up to the would-be constructor to satisfy him or herself that he/she is not carrying out tasks that he/she considers are either unsafe or beyond their competence.

Material List

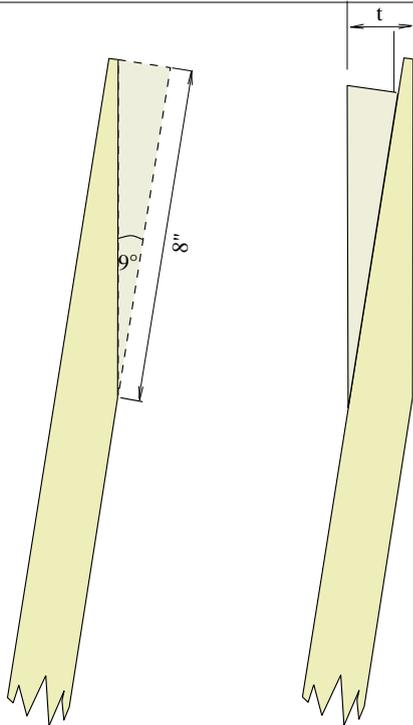
3mm mild steel for plates for legs and platform
0.9m x 0.6m (3' x 2') x 12mm plywood for platform
90mm x 40mm (3½" x 1½") softwood for platform rails [2 off, 1.5m]
90mm x 40mm (3½" x 1½") softwood for legs [4 off, 2.4m]
M10 nuts (8 off for brazing to inner plates)
M10 hex.hd. bolts x 100mm (8 off for fixing legs)
M10 washers (8 off for heads of leg bolts)
Screws: Steel No.12 x 3" (4 off, for pinning half lap joints)
Steel No.12 x 3½" (8 off, for attaching rail extensions)
Brass or Steel No.6 x 1"(32 off, for securing MS plates)

Construction Notes:

1. The drawings call for nuts to be brazed or welded to the inner steel plates. Fixing the nuts in this way reduces assembly time and reduces undue joint movement. However, it is not essential for the nuts to be fixed in this way.
2. As an alternative to cutting a wedge from the top of each leg member, the leg ends could be left uncut and 9° wedges cut from other timber mounted on both front and back of the leg tops. This would require longer M10 bolts which might be difficult to source.
3. Leg finishing:
If the legs are left with the lower ends untrimmed they will be interchangeable but will not stand flat on the ground. It would be better to trim the ends at 12.5° (long side) and 9° (short side) so that they stand flat. They will not then be interchangeable.
4. Leg Length:
Using 2.4m timber cut to 2.25m (89") for the legs, the platform will stand approx. 2.2m (85") above the ground with the highest point of the dumbbell approx. 2.9m (112") above the ground. This is about the comfortable minimum height for a 6ft ringer standing under the platform.
The tower will be more rigid if shorter and if the legs are reduced by 0.5m to 1.75m (69") they will fit in many small cars and there should be sufficient headroom to accommodate the tower and dumbbell in any public building. However, at this reduced height it will only be possible for a full grown person to ring sitting down. The reduced overall height of 2.44 (96") may still be tight in a modern domestic room [typical ceiling height 2.4m (93")] so check before deciding exactly how much to remove. Try to avoid shortening the legs more than necessary as arguably the appearance of the tower will be spoilt if it becomes too squat.
5. Leg extensions:
Short legs can always be extended and if the tower is intended to be used in different locations the most versatile solution is to have short legs with bolt-on L-shaped extensions. These will fit around the legs and can be permanently fitted, bolted as required in either the extended or unextended position. If the extensions increase the leg length by approx. 0.48m (19") the rope will not need altering on the wheel when the extensions are fitted or removed.

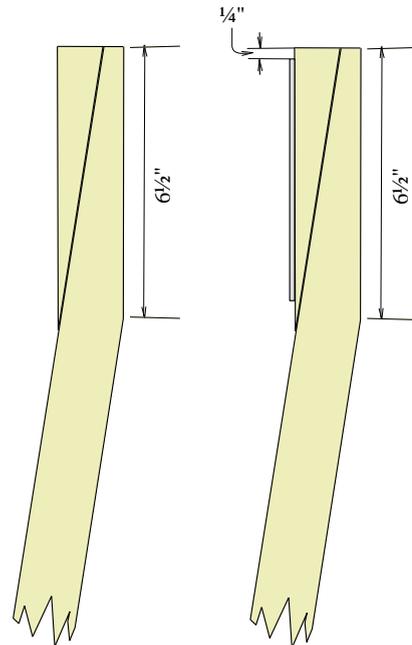
Extra materials for leg extensions

0.7m x 95mm x 19mm (27" x 3¾" x ¾") and 0.7m" x 44mm x 19mm (27" x 1¾" x ¾") softwood, [length to suit required extension with, say, 0.23m (9") overlap].
No. 6 x 1" wood screws (say 20) for constructing extensions (plus glue).
8 more M10 bolts, nuts and washers.



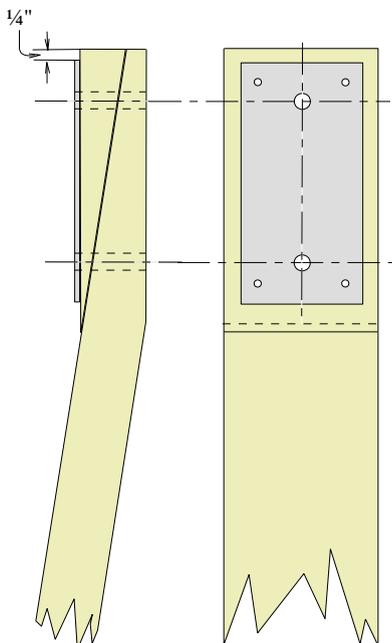
Operation 1:
Cut a 9° wedge, 8" long from one end of the leg.

Operation 2
Reverse the wedge and place against the unsawn face of the leg. Adjust up and down until the thickness matches the rest of the leg. Glue (and if desired screw) the wedge to the face of the leg.



Operation 3
Trim end of leg to give 6½" face to back of leg, as shown

Operation 4
Screw prepared plate to leg with No.6 x 1" woodscrews (4 off)

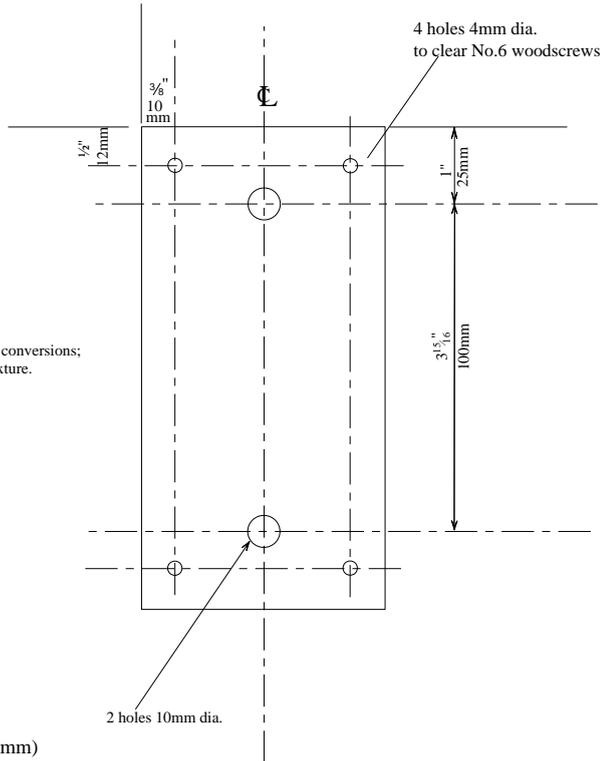


Operation 5
Drill 10mm dia. holes through leg from plate side, taking care to keep drill at right angles. Turn leg over and open out holes to 11mm dia. as far as back of plate.

Trim the completed legs to the desired length, e.g.
2.25m (89") for tall legs or
1.75m (69") for short legs

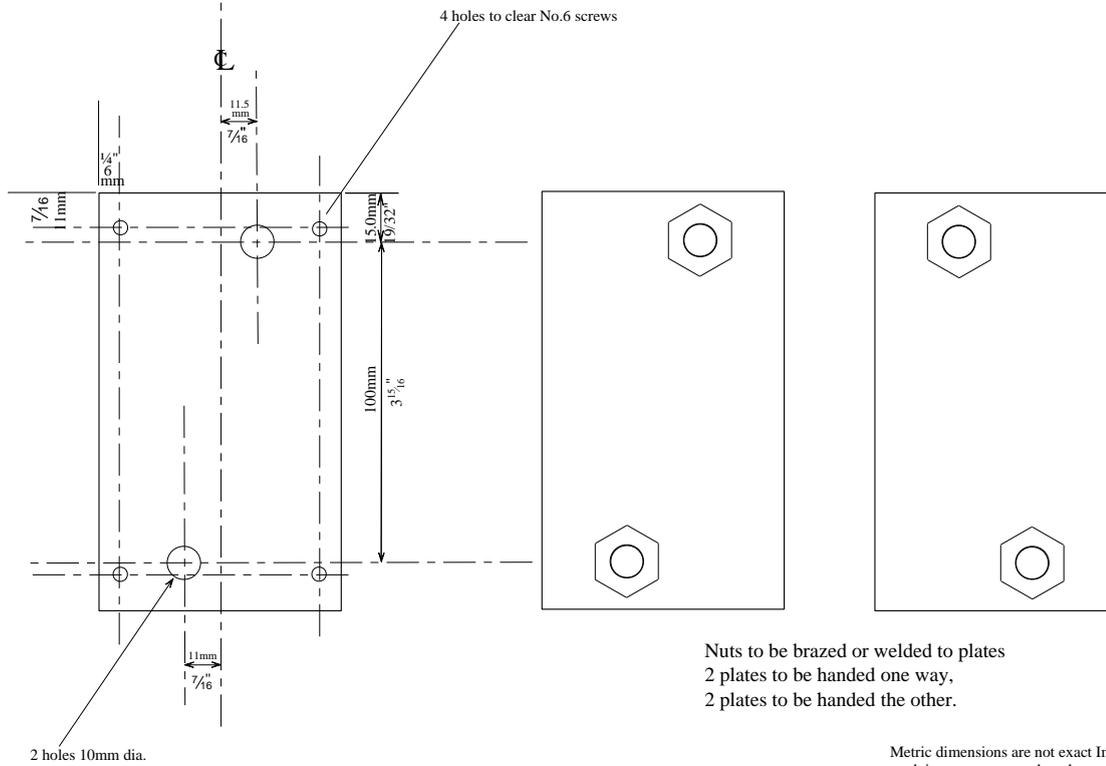
LEG DETAIL

Metric dimensions are not exact Imperial conversions;
work in one system or the other, not a mixture.



Materials:
4 MS plates, 6" (150mm) x 3" (75mm)

OUTSIDE PLATES

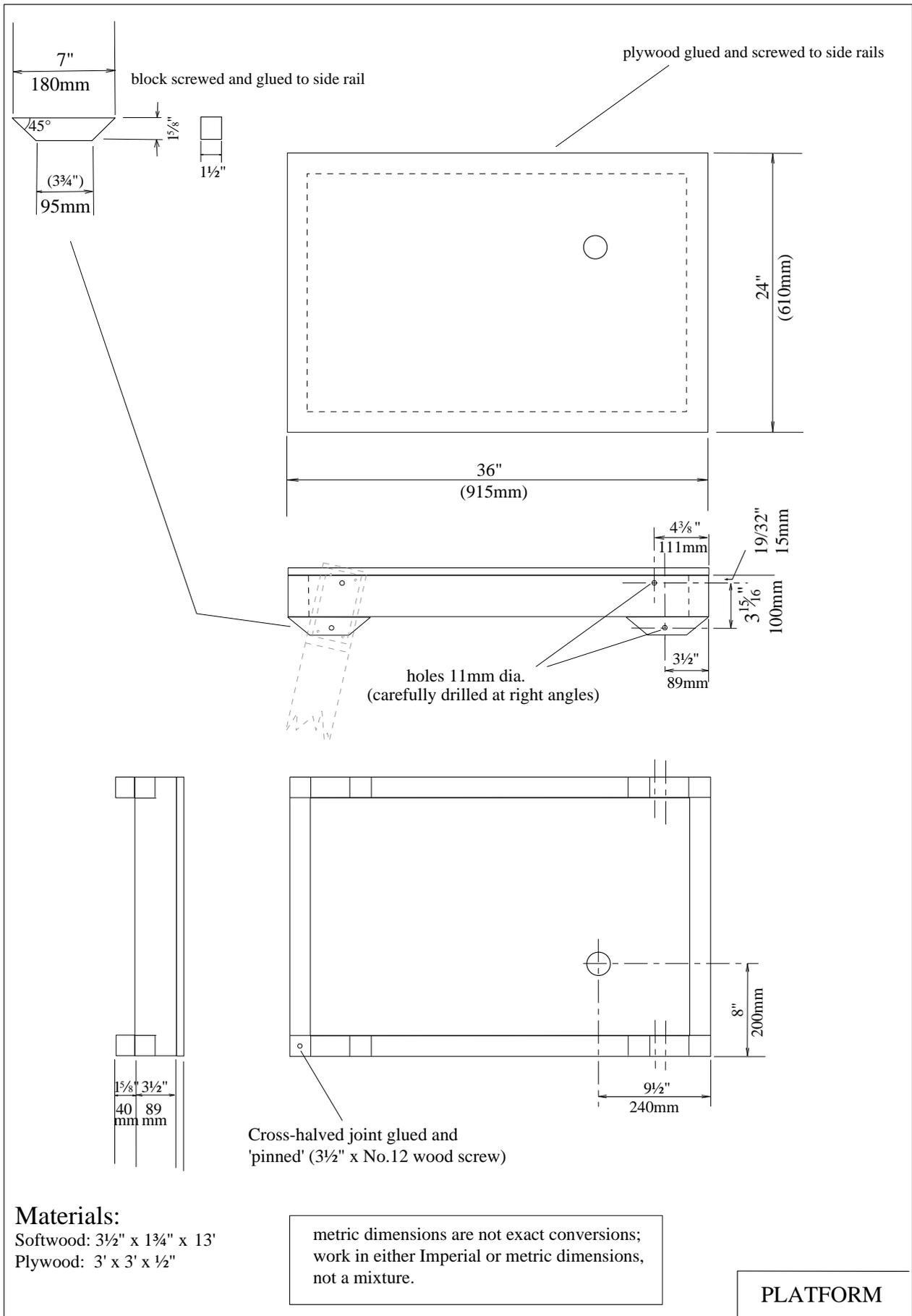


Nuts to be brazed or welded to plates
2 plates to be handed one way,
2 plates to be handed the other.

Metric dimensions are not exact Imperial conversions;
work in one system or the other, not a mixture.

Materials:
4 MS plates, 5 3/8" (130mm) x 3" (75mm)
8 M10 nuts

INSIDE PLATES

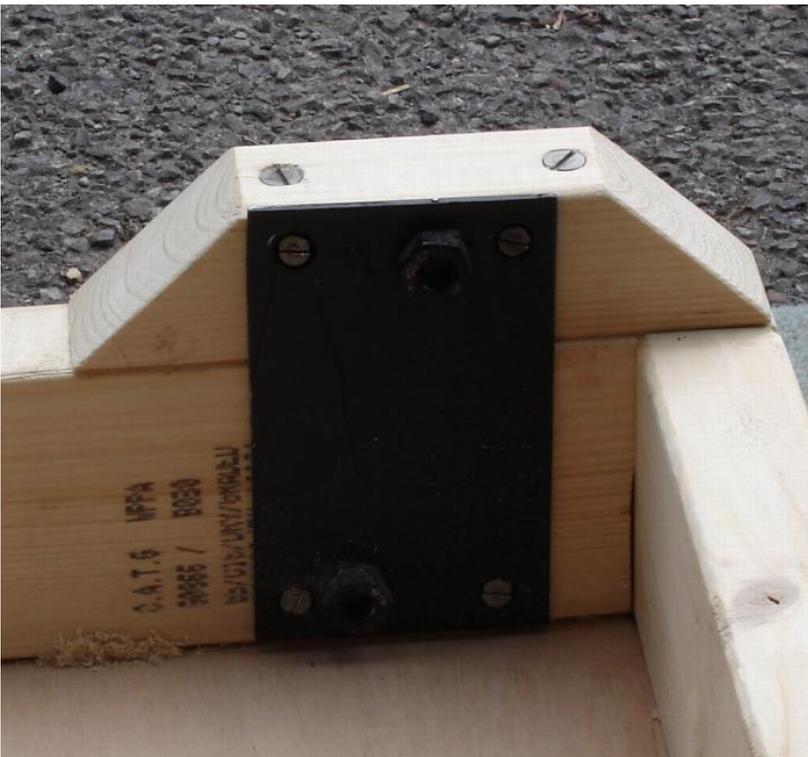




Platform, inverted



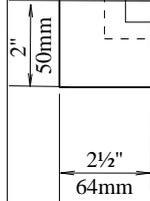
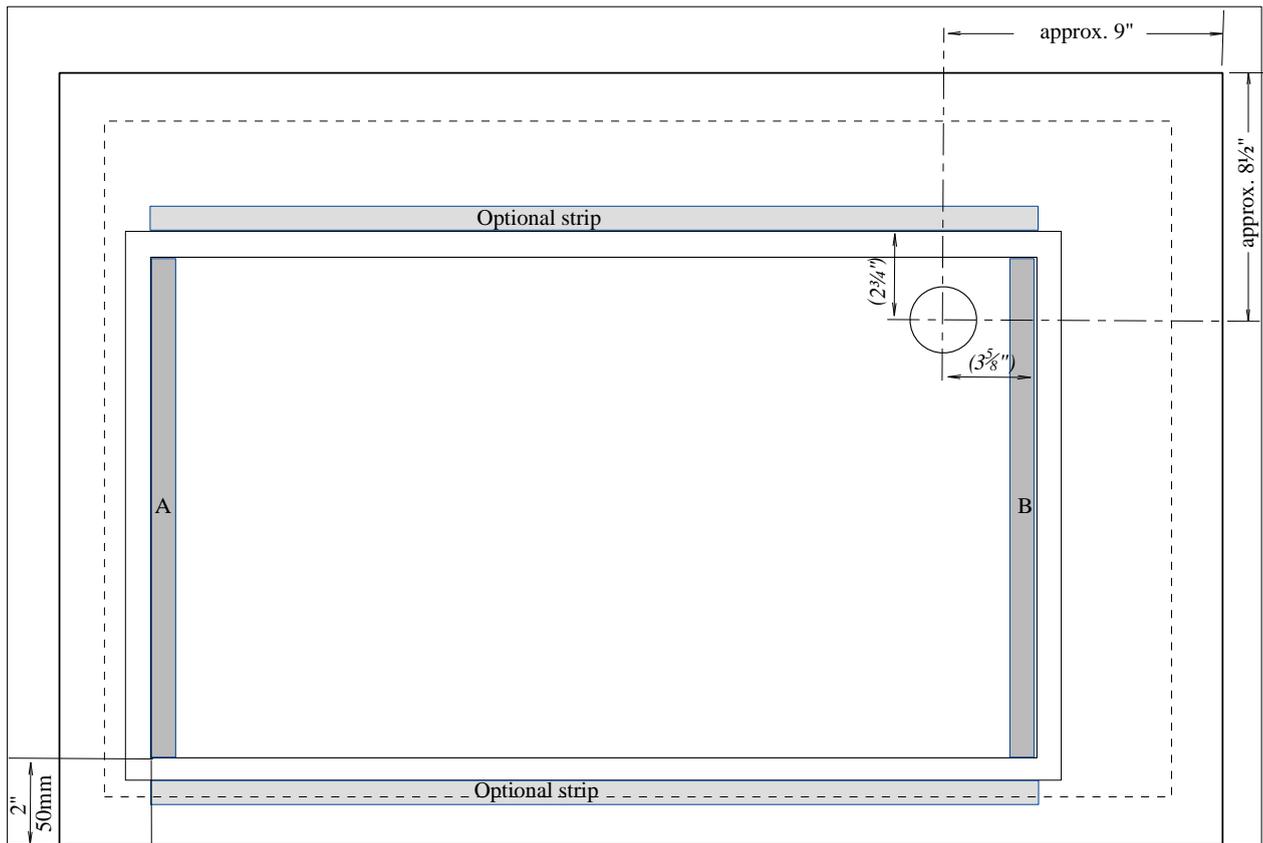
Leg detail, face



Inside plate



Leg detail, side



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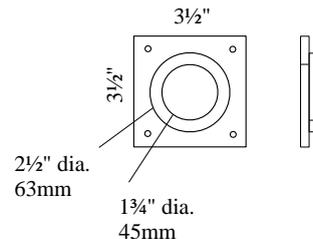
1. Cut two softwood strips $15 \frac{3}{8}'' \times 1 \frac{1}{4}'' \times \frac{3}{4}''$ (30-mm x 33mm x 19mm).
Check that the strips will fit in the slots in the base of the dumbbell frame without being forced. Trim as necessary to achieve this.
2. Glue and screw one of the strips to the top of the platform in position A.
Place the dumbbell over the strip, so that the locating strip is between the two end cross members furthest from the pulley block.
3. Ensure that the dumbbell frame is parallel with the platform edges and carefully mark through the frame onto the platform the position of the rope hole in the pulley block and the slot for the second locating strip.
4. Cut a 2" dia. hole for the rope in the position just marked.
5. Drill two holes through the platform for locating the second strip in position B.
Remove the dumbbell from the platform.
Place the strip in position and screw up from the underside of the platform into the strip
(Note: It will ease setting up and dismantling if this is made removable, for example by using machine screws located in the strip and securable from under the platform with wing nuts.

Optional extras:

If desired, two light strips may be fixed to the platform either side of the dumbbell frame, to limit sideways movement.

A ceiling boss may be easily made from two pieces of 6mm plywood, using $2 \frac{1}{2}''$ (63mm) and $1 \frac{3}{4}''$ (45mm) holesaws for the hole and ring.

Turn buttons may be fitted to the top of the locating strips near the wheel end to limit any tendency of the dumbbell to lift during ringing.



MOUNTINGS



Platform, top view

E&OE

John Norris
June 2009, rev'd 10 Sept' 14
(JRN@orpheusmail.co.uk)