

Calc

Result

Breadcrumb Trail

# "Bonnyrigg" Archery Stands



**General view of full stand. Note how the rear cross bar is slightly wider than the rear legs, to match the front legs when folded.**



Detail of top cross bar joint to front leg - a simple lap joint will speed up construction time considerably, at the cost of a slight decrease in rigidity.



Joint between front & back legs - top of back leg must be chamfered so that it does not interfere with the boss.



Detail of front cross bar, front leg (half-lap joint), and support arm. The support arm is not quite fully in place, hence a small amount of the "tell tale" red paint is still visible.



Detail of rear cross bar, rear leg, and the rear of the support arm. Note that the head of the coach-bolt is very low profile, and much less likely to damage an arrow than a conventional hex-head bolt.



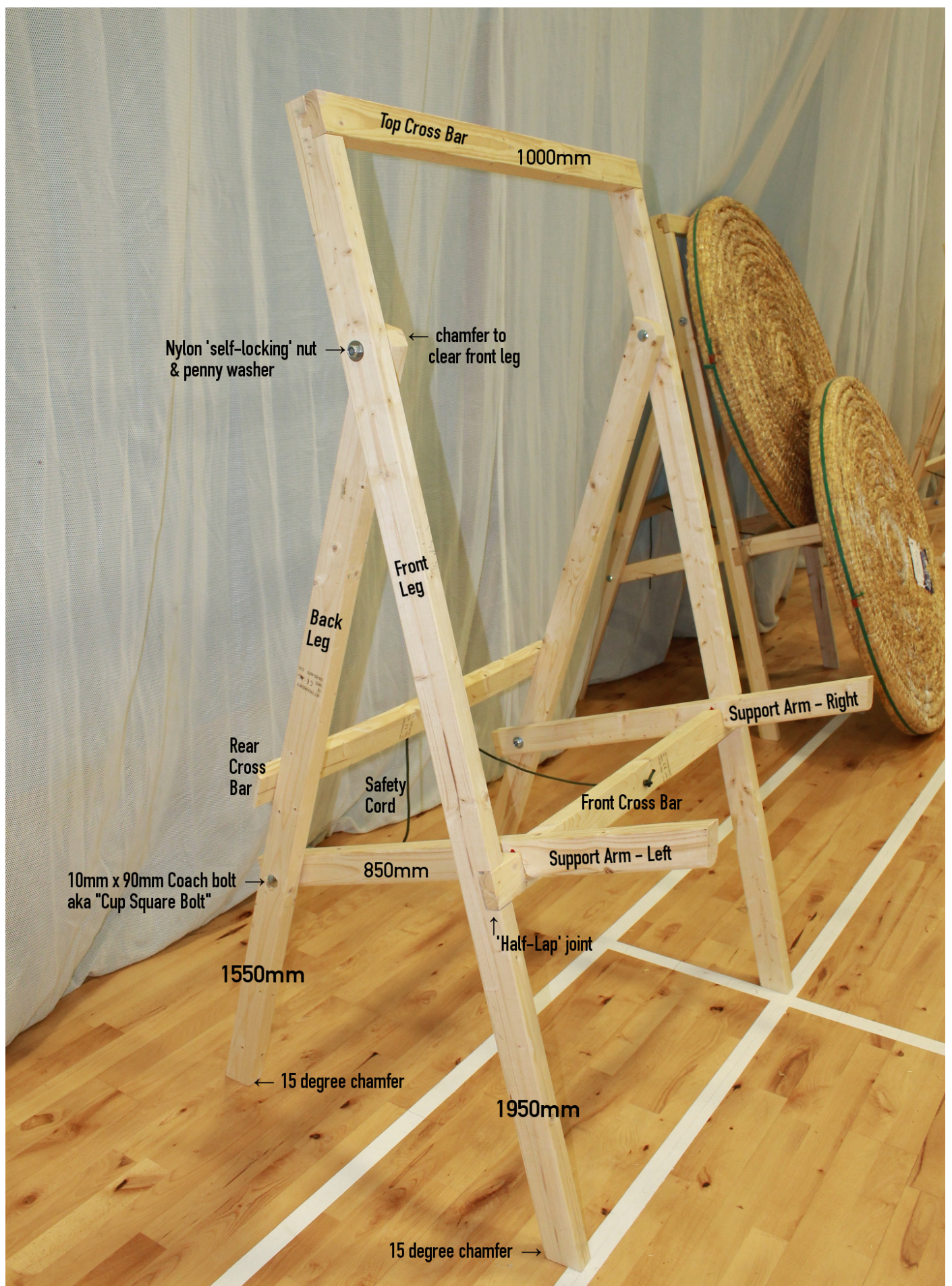
Several complete stands, note the safety cord which is not meant to be taut - the support arms define the exact angle.



Top half of stand, note how both front cross bars are flush to the front of the upright, but not to the rear, due to half-lap joints. In contrast, the rear cross bar is a simple "surface mount" joint so that it does not interfere with the support arms or the front legs, when the stand is folded.



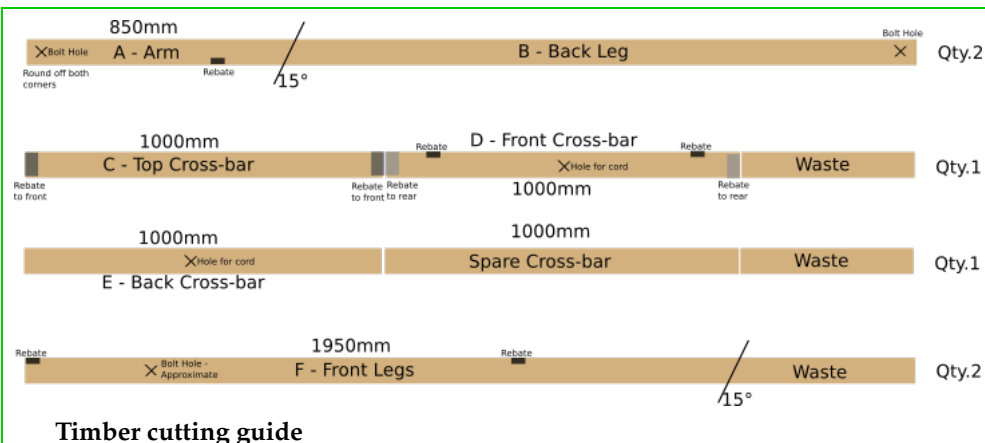
Straw boss in place, note how the tell-tale red paint is not visible, and that the support arms are long enough to easily support a second boss if "pass throughs" are a problem.



General dimensions / scheme of parts.

# Parts List, per stand

1. CLS Timber, 63 x 38mm, 2400mm lengths, qty. 6 (Qty 5.5 if making several stands.)
2. Cup Square Bolts (Coachbolts) 10mm or 12mm x 90mm long, qty.4
3. Penny Washers, to fit coachbolts, qty. 12 Matching fibre/rubber washers if available.
4. Lock-nuts, Nylon insert, to fit coachbolts, qty.4
5. Wood screws, 6mm x 90mm long, qty. 8
6. Wood screws, 6mm x 60mm long, qty. 4
7. Cord, rope or webbing; approx 1m but allow a little extra for the knots if using thick rope



## Notes



**Bolt shafts wrapped with masking tape to correct diameter**

Wrap shaft of bolt with approx. four layers of masking tape (approx six inches long), to match or exceed the size of the threads.

Use a fibre washer if possible, or glue two penny washers together, either way, get the widest washer available.

A small patch of red paint on the front of the front cross bar can provide a useful "Tell-tale" to indicate that the support arms are not fully in place. When the support arm is in place, draw a pencil line around the bottom of the support arm, on the front face of the front cross bar, then remove the support arm and paint almost up to pencil line. The same thing can be done on the sides of the support arm, where it would normally be inside the notch in the front cross bar. (The photos explain this better than I can.)

# Marking out / construction

Fashion a rebate of approx. 25mm to the top of the front legs (Part F) and a matching rebate to either end of top cross-bar C.

Measure c. 45mm down from top of back leg - Part B for bolt hole.

Line up front and back legs (Parts F + B), drill bolt hole through both legs for top pivot.

Measure up 550mm from the base of back leg B, for bolt hole to pivot the support arms. Adjusting this height will adjust the height of the boss, which will be necessary if the stand is built to a different width, or if your bosses are not 1230mm in diameter, which is the current competition standard. A slight counter-bore may be required to hide head of bolt, on the outside face of the leg, if a hex-head bolt is used.

Fit coach-bolt/cup-square bolt through front leg. A sharp tap with a hammer should settle the 'square' into the timber of the leg. Fit two washers + a fibre washer, then the back leg. When held upright, the chamfered feet should point in opposite directions, and when opened out, the feet should sit flat on the floor. Fit third washer, and loosely fit a temporary (plain) nut.

The back legs require a slight chamfer at the top, otherwise the corner will protrude in front of the front legs. Stand the legs upright and fully open, and mark the protrusion with a pencil. Dissassemble the legs and remove the top corner of the back legs, as marked.

Measure  $(68\text{mm} / 2) = 34\text{mm}$  (half the width of your timber) from back (rounded) end of support arm for bolt hole

Fit coach-bolt/cup-square bolt through back leg. Fit two washers + a fibre washer, then a support arm, long edge uppermost. Fit third washer, and loosely fit a temporary (plain) nut. NB. The washers are intended to act as spacers between the various parts, fibre or rubber washers help to stop the joints swinging too freely.

Fit top cross-bar Part C. This should be a snug fit in the half-lap joint at the top of the front leg.

Loosely fit the front cross-bar D, between front legs.

Carefully open the frame ensuring that the feet are sitting flat on the ground. Lower the support arms so that they rest on top of the front cross-bar and mark the points of contact with a pencil.

Remove the support arms and the front cross-bar. Square off the pencil marks and cut a rebate on each arm, and a pair of rebates on the cross-bar to match. Note that there will be a slight angle between the arms and the cross-bar, and the edges will need to be splayed out slightly if the two rebates are to mate easily. (Final adjustment will probably be necessary once the stand is fully assembled.)

Ensure frame is folded, fit rear cross beam E, circa six inches / 150mm above the position of the front cross-bar.

Open the stand, and fit a restraining rope. The rope should not be taught, as it is merely a safety feature to prevent the stand accidentally opening too far. For outdoor use, drill peg holes in all four feet, and dip the feet in an appropriate wood preservative.

Both the front and back legs have chamfered feet - double check that these face in opposite directions before fitting locknuts to all bolts.

All joints are intended to be screwed from the rear of the stand - this does mean that the length of most of the screws is critical, but dramatically reduces the chance of damaging an arrow through hitting a screw-head.

Ensure all bolts are tight before use - ideally there should be a little resistance in each joint, to prevent accidental injury from swinging parts.