



JOS 6 STRINGS KRAR CONSTRUCTION INSTRUCTIONS

TOOLS REQUIRED

Drill, Drill bits: 6mm (fixings) , 2mm (tuning machines), 1mm (string holes)
Fine File, M6 Hex wrench, Screwdriver, Chisel, Saw, Sanding drum, Sandpaper
Varnish or paint as preferred

MAIN COMPONENTS

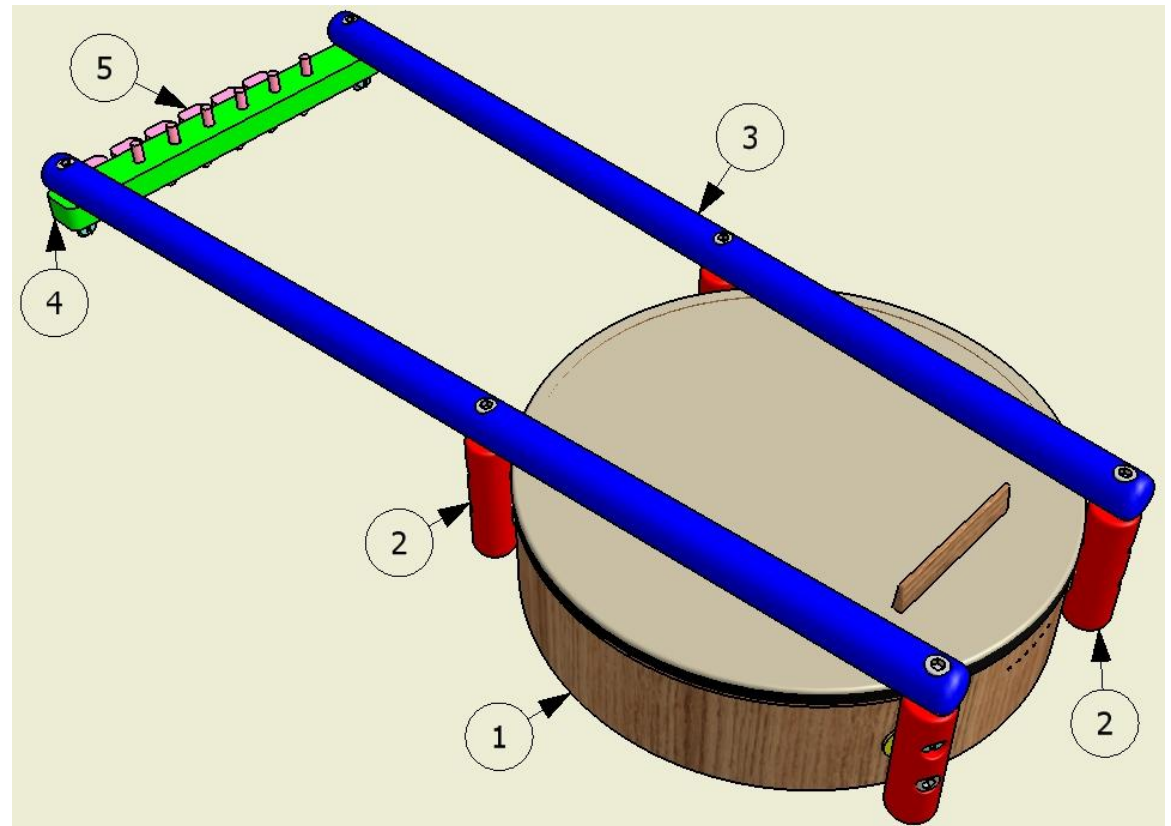
1 – **DRUM** (can be fixed or tuneable, preferably synthetic head, 10" on the images but can be of any size)

2 – **CONNECTORS** (4 wooden dowels of any suitable shape: this tutorial based on the same diameter round dowels)

3 – **POSTS** (2 wooden dowels 22-25mm diam and 600mm length) Hard wood (ash, oak, etc) is preferred for construction due to its superior structural properties. (Though a broom handle would work as well)

4 – **TUNING MACHINE HEAD** (wood, approx 15mm thick, 9" wide)

5 – **TUNING MACHINES** (6 rail guitar machine heads but single machine heads can be used)

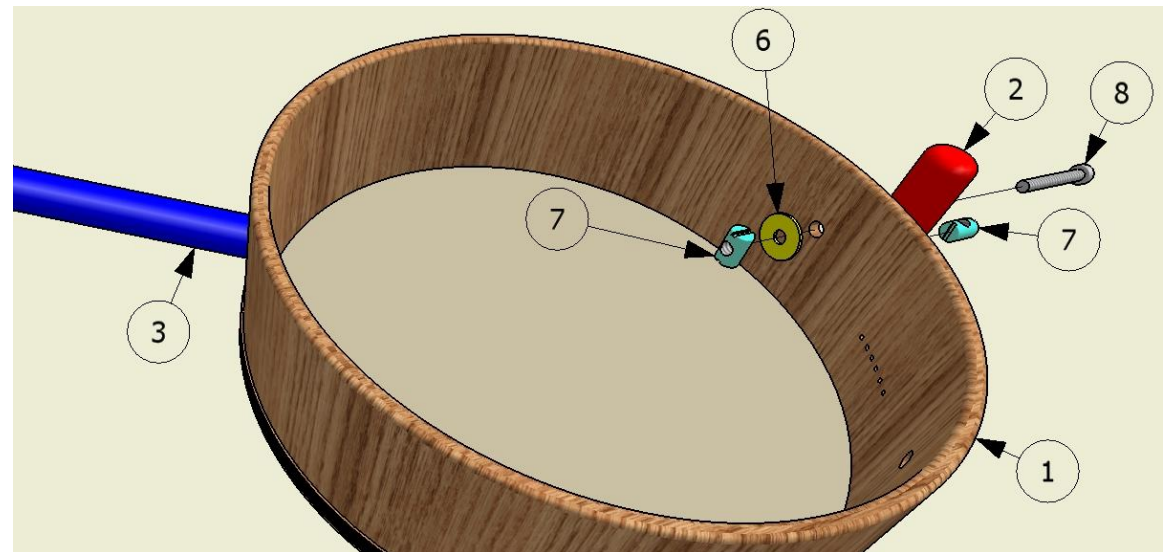
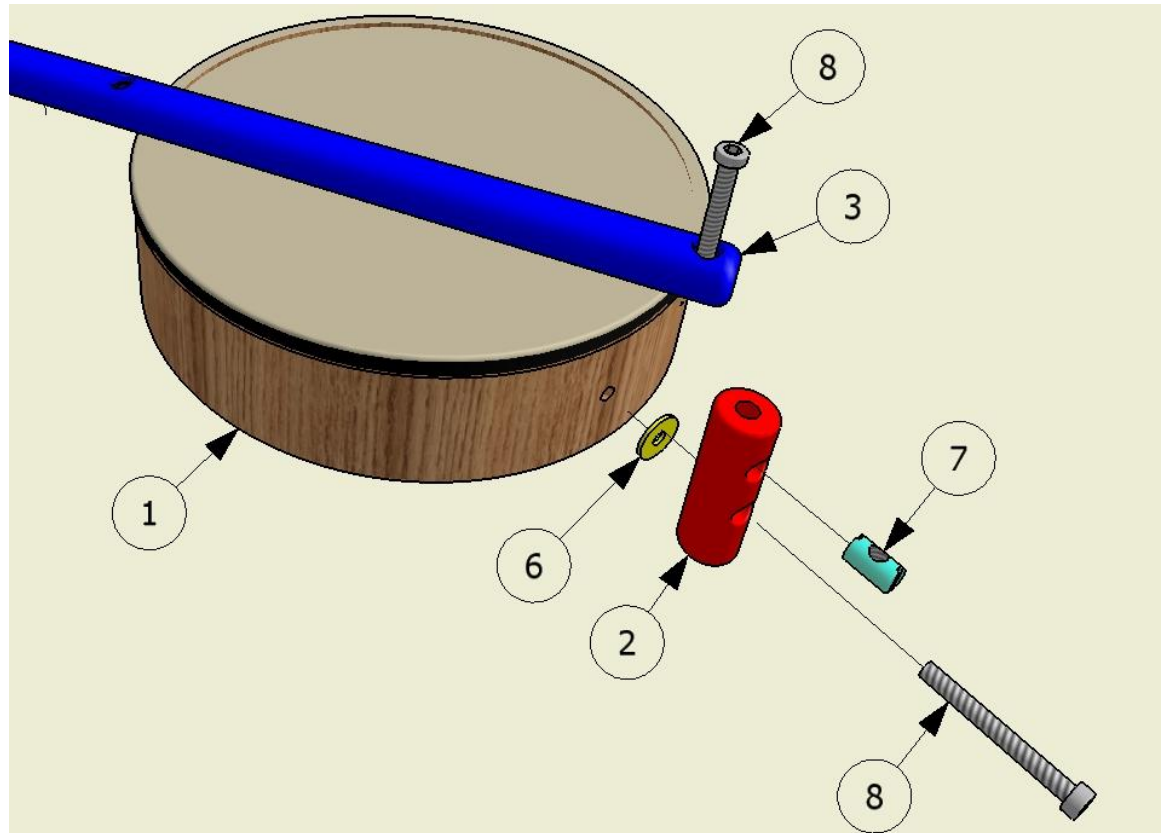


FIXINGS

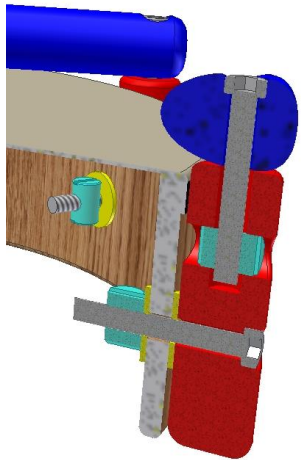
6 – M6 PENNY WASHERS 20-25 OD

7 – M6x16 CROSS DOWEL BARREL NUTS

8 – M6x30 SOCKET CUP BOLTS (though any other suitable head type can be used)



CLEARANCES



Half section view of the connector

The connector blocks which support the posts are fitted to the shell of the drum, and must clear the protruding hoop of the drumskin.

This may be achieved in two ways:

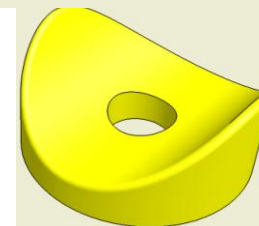
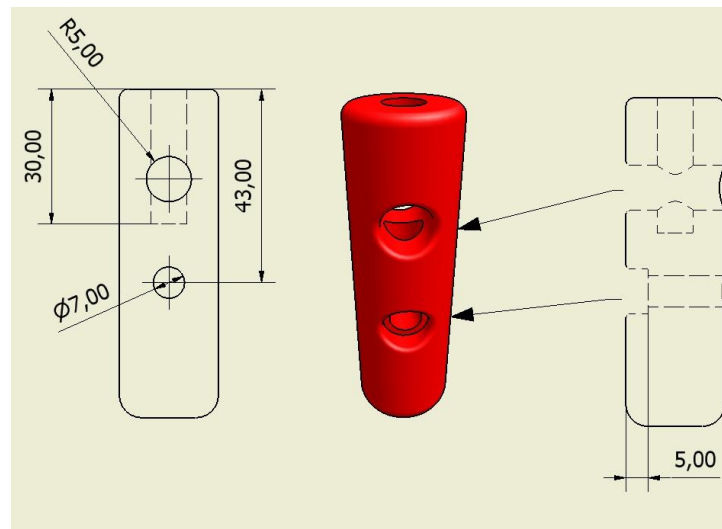
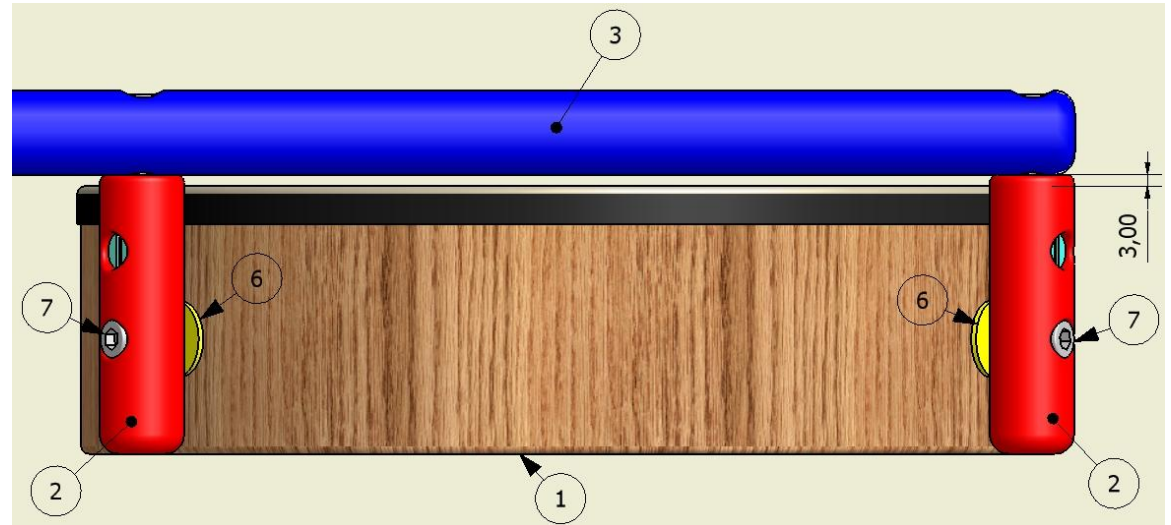
1. Cut the blocks from the dowelling used for the posts. Clearance can then be achieved by spacers, such as saddle or plain washers (6).
2. Cut an 'L' shaped block from the piece of wood used for the tuning machine head.

Height of the blocks (2) is determined by the height of the drum (1) plus 1-3MM extra to provide clearance between the drum's head and posts (3).

Holes for M6 bolts can be drilled at 7-8MM for liberating tolerances .)

For tuned drums, where the diameter of the head is larger than the diameter of the body, additional spacers are required between connectors and the drum body.

Nylon saddle washers is a smooth way connecting all components together

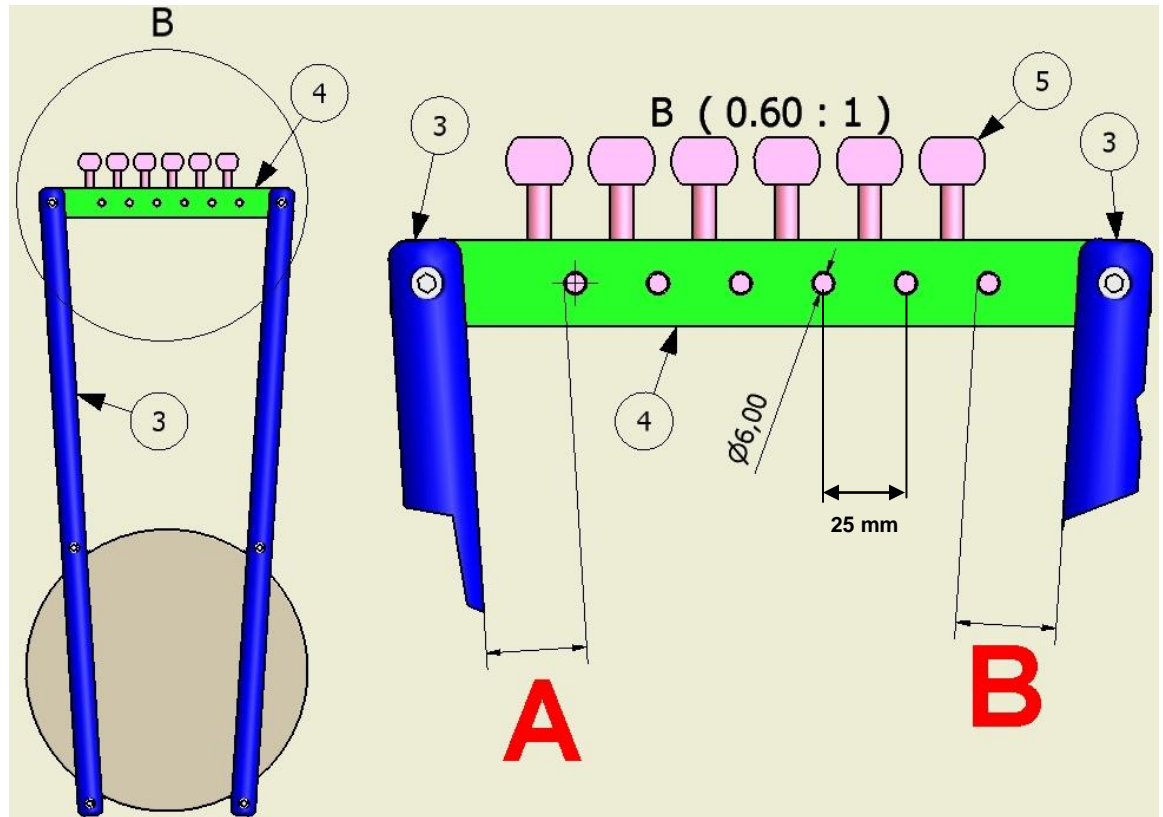
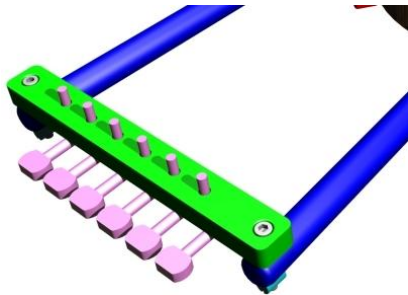


STRING SPACING

When connecting head (4) to posts (3) make sure that distances (A & B) from outer strings to the posts are the same.

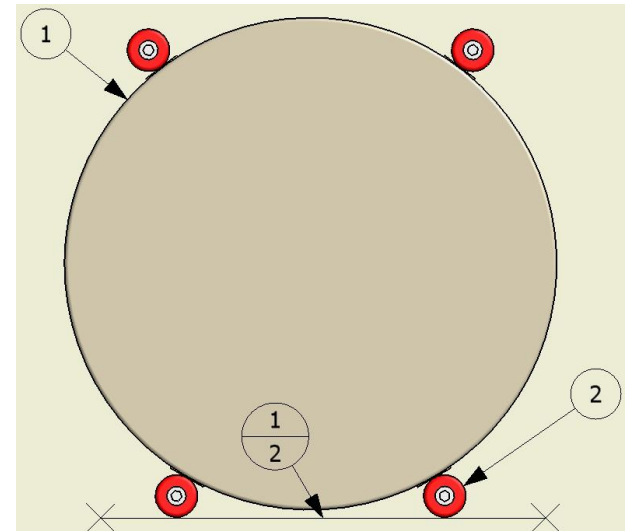
Its easier to have the head to be of an excessive length (i.e. 11+”) and the excesses to be cut off once the correct distances had been established, drilled and bolted.

The head can be positioned below or above the bars

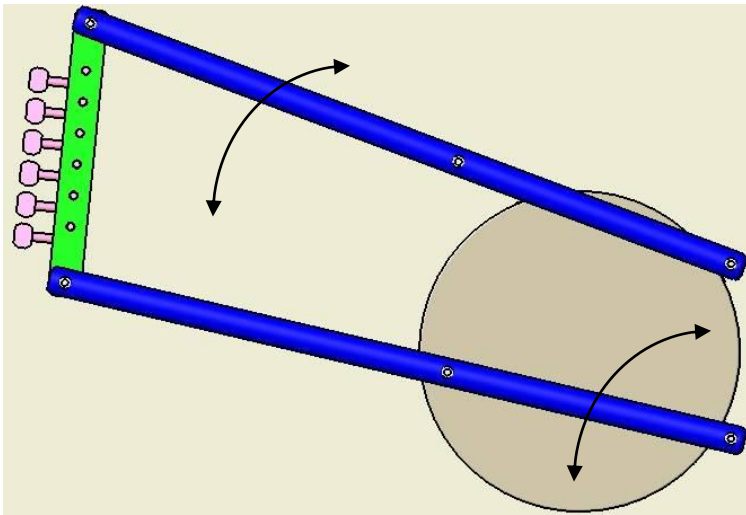


The spacing of the tuning machine posts, and therefore the holes to accommodate them, is preset if a single strip of 6 machine heads is used. Otherwise space the holes 25mm apart.

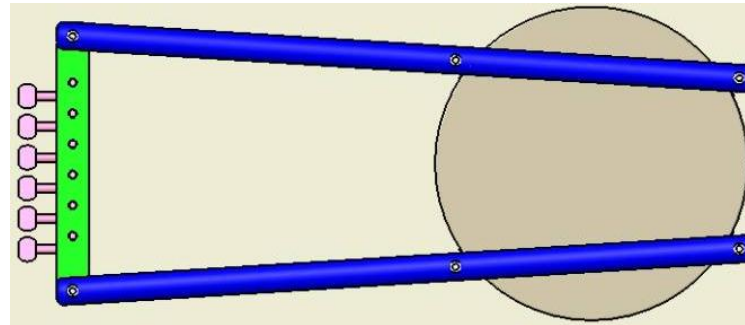
Ideally bottom blocks (2) should be positioned slightly below the bottom of the drum in order to act as “feet” for the instrument, allowing it to be positioned upright on the horizontal surfaces.



ALIGNMENT OF POSTS



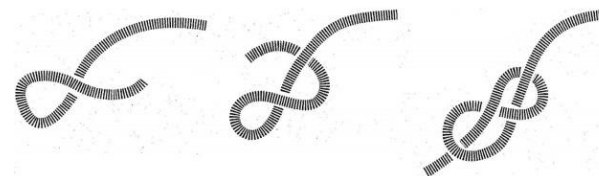
Bottom blocks to be installed first in order to align the posts symmetrically



STRING FITTING

6 holes of 1mm diam and spaced approx 4-5mm apart to be drilled to accommodate strings.

Strings are terminated inside of the drum with a "figure eight" or any other suitable end knot



BRIDGES

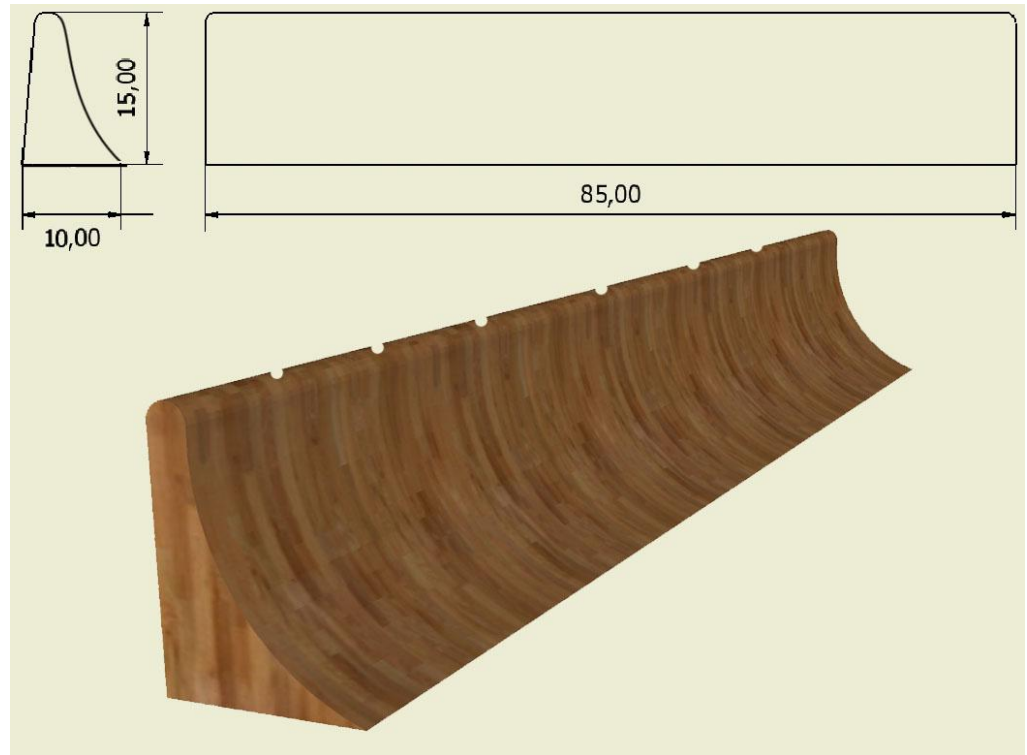
The bridge has a triangular profile, with one steep side and one shallow. It features a wide base to prevent 'flipping'.

The shallow side may optionally be shaped into a curve by removing material with a chisel and sanding (to reduce the mass of the bridge)

It should be positioned around 60 – 70mm from the base of the instrument, with the steep side towards the base of the instrument.

Then double sided sticky tape may be used to fix the bridge in place on the drum head surface

It should have slots to accommodate the strings cut on the top edge made with a fine file, with the depth such that around 2/3 of the sting is still protruding.



HEALTH & SAFETY, NOTES

Always use adequate personal protection equipment (PPE), such as protective eyewear and dust masks (if working with hardwoods).

Woodworking drilling bits are highly recommended as they do not lift drilled material up as twist drills do and deliver better precision.

When drilling recesses to accommodate bolt heads proceed with a larger diameter woodworking drilling bit first to the depth required to flush the head, then a smaller diameter through.

When drilling through holes use scrap wood as a pad for a better finish of exit hole.

Utilizing a vise capable of securing round dowels is also recommended for cutting and drilling.

PARTS and SUPPLIERS

Drums: There are many options for drums, both tuneable and fixed head. We have used 8 inch drums for convenience – larger 10 or 12 inch options are viable. Generally higher quality = higher price! It is also possible to buy a cheaper tuneable drum and replace the skin with a more expensive better quality type)

Tuning Machines: these are generally available from local music shops in standard guitar configuration (2 x strips of three). They are cheaper on line, and may also be purchased as individual items (which means you can vary the spacing) and as 2 x strips of 6-in-a-row (meant for 12-string guitars). These have the advantage of being easy to fit and easy to line up for hole drilling etc. (Note – suppliers from China are much cheaper, but have long delivery times)

Woods: oak planking and pine dowelling are commonly available at local timber merchants. Hardwood dowelling is available on-line.

Hardware: components are standard B&Q, Screwfix or local hardware shop items.

Strings: Nylon filament such as Fishing line are easily available in a variety of thicknesses. They are cheap, but usually come in lengths of 10 – 40 metre spools, so wasteful if you are only making one or two instruments. Alternatively Harp strings can be purchased on-line – these are available as nylon or gut if preferred, they are expensive but you can try variations to suit. Or you could use a set of Classical Guitar strings (though these will include wound bass strings which give a different character to the instrument).

Part	Example	Supplier	Cost
Drum	Stagg Tuneable HAW-008	Rockmusicshop, & various on ebay	£16.99
	Stagg 14884 Pre-tuned (fixed)	Amazon	£ 8.97
	Remo Frame Drum (fixed)	Knock on Wood	£14.99
	Meinl NINO43 (fixed)	Gear-4-music	£23.00
Tuning Machines	6R6L 12 String Machines Chrome	From China via ebay	£8.49
	12 String Western Machine Heads	Instruments-4-music	£17.90
Woods	Ash Dowel 22.5 mm 1 metre	G&S Specialist Timber	£3.15 ea
	Oak offcuts	Local timber yard	£10 - £20
Strings	200, 150, 100 lb x 10 metres	Local fishing shop	£2.49 ea
	40,50,60 lb, 40 metres	Local fishing shop	£3.50 ea
	Harp strings 4 th octave C, E 3 rd octave G, D, F 2 nd octave E	Bow Brand from camacharps.co.uk	£5.00 ea £ 4.25 ea £3.75
	Guitar set		