How to Make a Reptile Cage Stand in Five Easy Steps

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Introduction

This cage stand is practical, inexpensive, sturdy and versatile. It can be used for reptile cages, aquariums and vivariums. It is designed to be simple to build as all the cuts are square. There are only three sizes of timber required and the minimum of tools.

The top frame rises above the main supporting frame. This allows for a foam base (probably best on top of some three ply) in the case of aquariums and vivariums that have a glass base. This rise also gives extra support to glass tank sides and ends and prevents them pushing out from the tank base.

Equally, it is suitable for a reptile cage stand, with room for various accessories to be stored on the shelf.

Tools Required

Basic tools list:

Essential Electric tools

The price of many of these has reduced so much in recent times. The money I can save on buying one cage is enough to pay for two or three cheap electric tools.

Hand drill – This is vital in my opinion and they can be bought for very little. Borrow one if you have to. A set of bits is essential. A cheap battery powered drill will do the job and can be had for not much money.

Circular saw – These are very useful. If you do not have one, a handsaw can be used but they are much more difficult. Borrow one from a friend if you need to as it does make the job easier.

Optional Electric Tools

Palm sander – Sanding is hard work and one of these will save you lot of time and effort. As this job is only small, a sanding block will work equally well.

Router – This is not really required, but if you are going to make the stand more decorative is very handy. They are expensive so I would not recommend you buy one just to build one stand.

Essential Hand tools

Set Square – Making square cuts is essential if you are cutting the timber yourself. These are very useful.

Tape measure (and ruler) – Essential

Philips head screw bit – Essential for putting in your screws with an electric drill

Hammer – Essential

Nail punch – Can use a nail with then end flattened if none available.

Chisel – Needed to make the leg joins and clean them up. Best one is a sharp one!

Wood Filler

Wood putty is useful for fixing up minor blemishes and mistakes. Most of the screw joins are hidden and there are a few small nail holes that can be filled.

Glue

Any good quality PVC wood glue will do. Weldbond is an excellent general purpose PVC glue.

Paint and finishing

Once completed you can stain your stand and then give it a coat of clear polyurethane. Alternatively you can paint it any colour you choose.

Timber

Any timber will do. Generally the softer timbers like pine, redwood, oregon and cedar are easier to work with and cut. If you have power tools then the hardness of the timber is not an issue.

If you intend to paint the stand, then the cheaper timbers will be sufficient.

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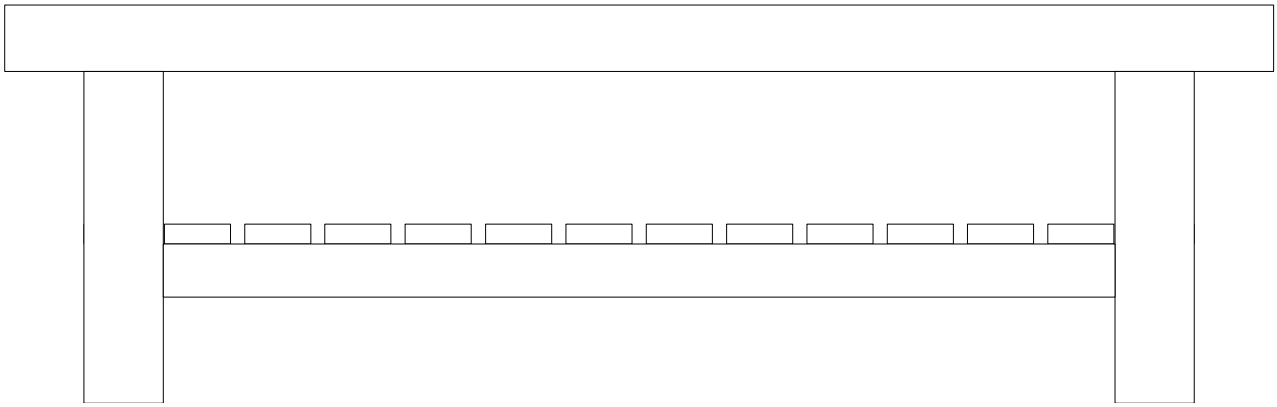
Diagrams

The stand is deliberately simple and all cuts are square. You can make the stand more decorative (see below) but it will look quite good whether you embellish the design or not.

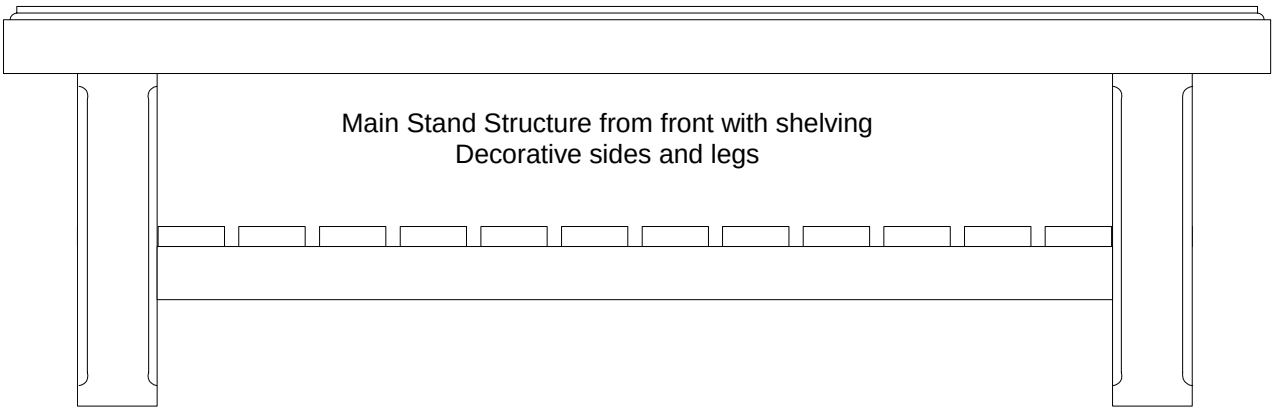
Most of the diagrams below are for a cage of base dimensions 36"x18"

Side View of Stand

Main Stand Structure from front with shelving
Decorative sides are not included



The stand above has no decorations on the sides. It will still look attractive and is equally functional.

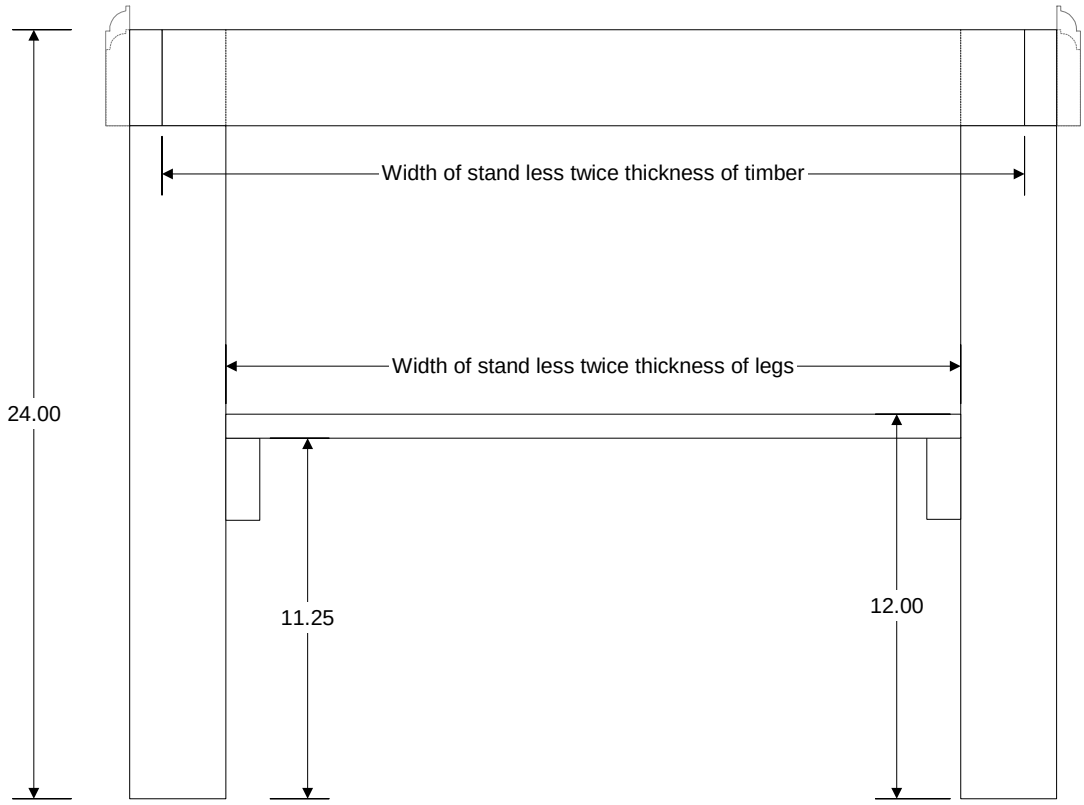


The legs here have been routed and decorated as an example. How you finish is entirely up to you and your imagination. Sometimes simple is best.

End View

Note the decorative sides at the top of the stand which are grayed out. These are attached after the main structure is completed. They can sit above the main support frame, allowing a foam base, timber supports or plywood to be inserted under the tank. Foam should be used for any tanks with a glass base.

This rise strengthens the aquarium or vivarium base, particularly if it is a reasonably close fit (not too close as you might not be able to get it in. They can also be made level with the cage, depending on your requirements, but I would recommend they be a little higher.



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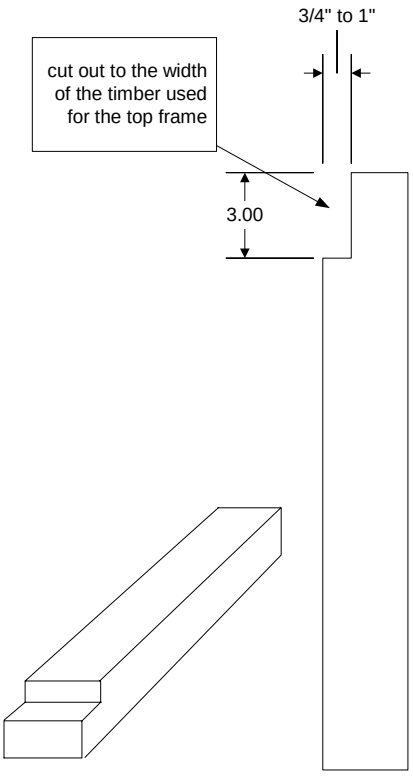
Legs

The legs have a section cut out from them to enable the top frame to sit on a solid base and hold the weight of the cage of vivarium.

You can vary the height of the legs to suit your needs. Just remember to adjust your timber purchases accordingly.

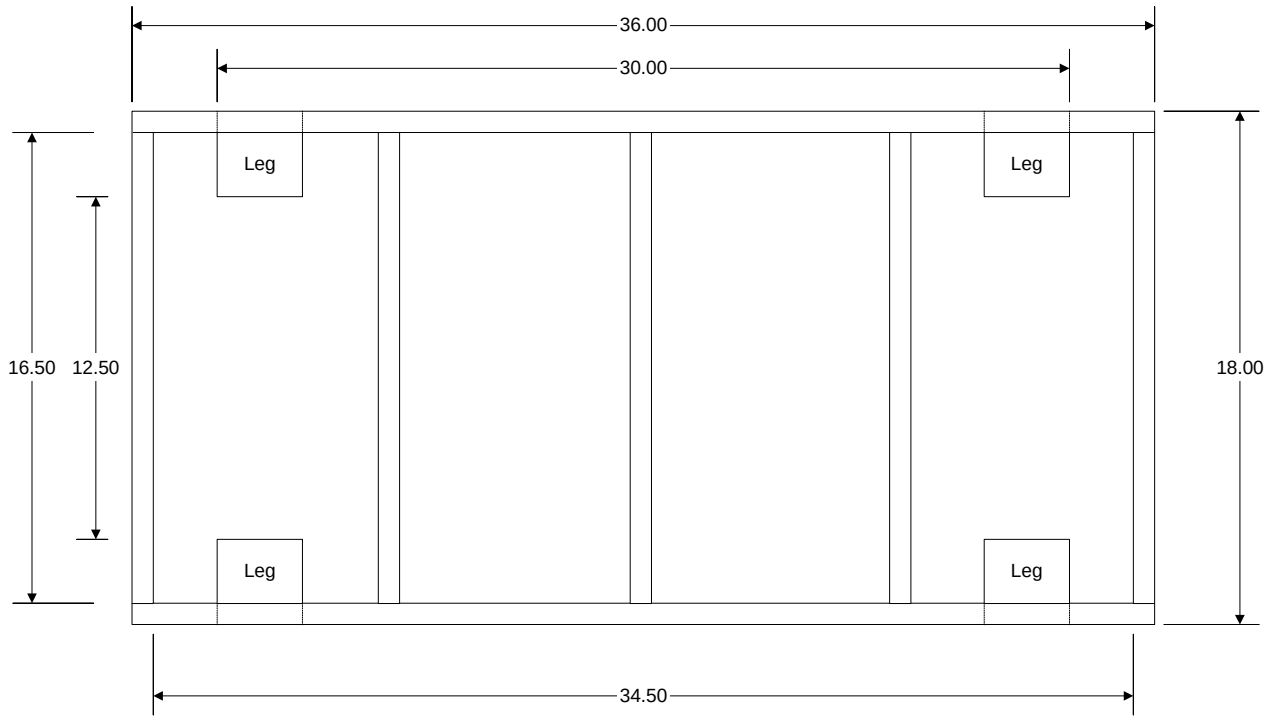


Side view & detail of legs for stand.

Top Frame (for 36'' x 18'' cage)

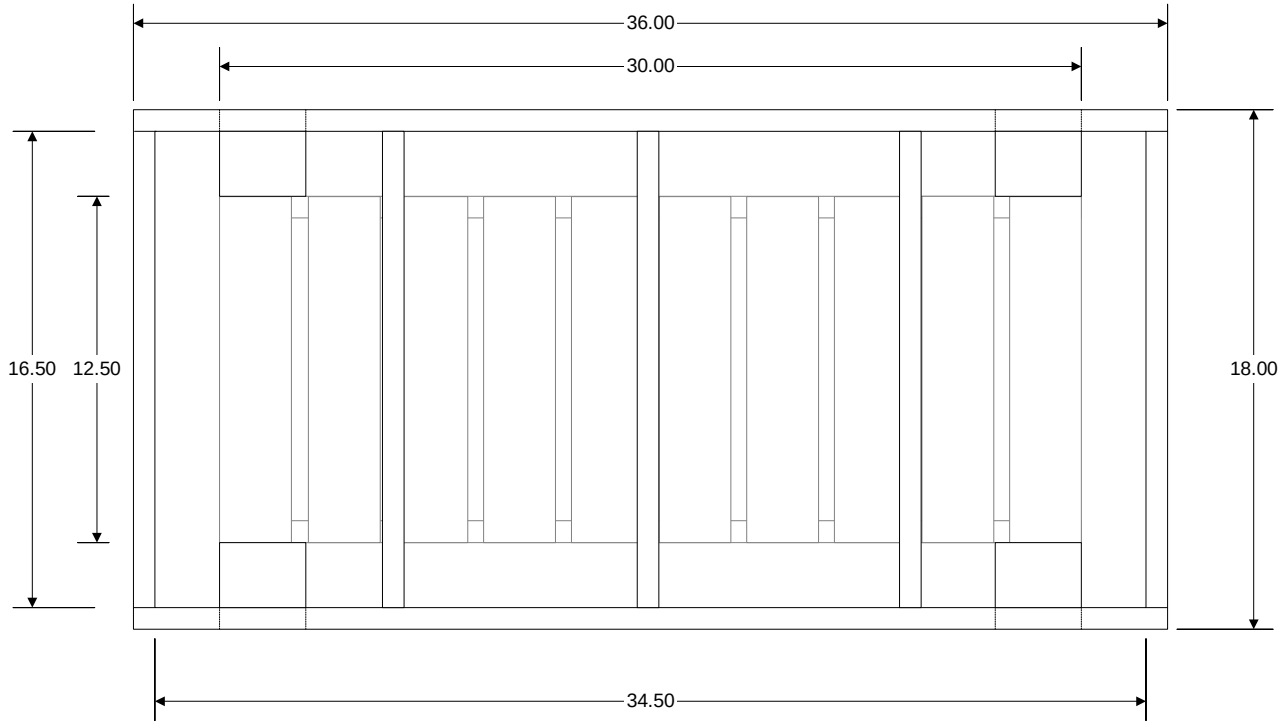
The diagram below shows the frame that is placed on top of the legs. This frame is the main supporting frame for the vivarium or cage.

Main Stand Structure from above showing legs and no shelving.
The cross bars provide support for the vivarium's base



This diagram shows the main frame again but the shelving has been included. It is grayed out but you can see where it is positioned. This distance between the legs is marked as 30" but this can be varied to suit. In the construction it is easier to use a piece of timber to get the distance the same from each end.

Main Stand Structure from above showing legs and shelving (grayed).
The cross bars provide support for the vivarium's base



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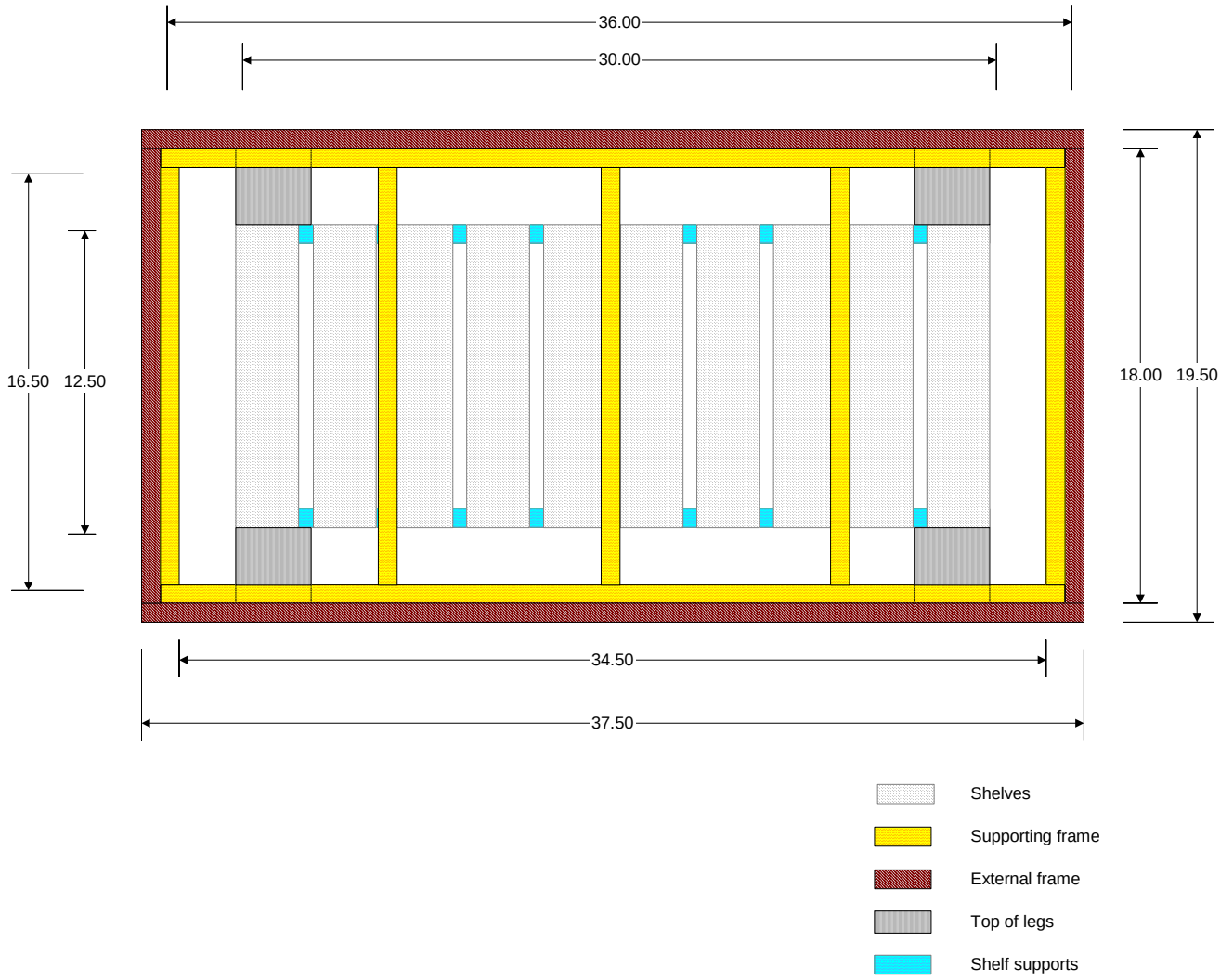
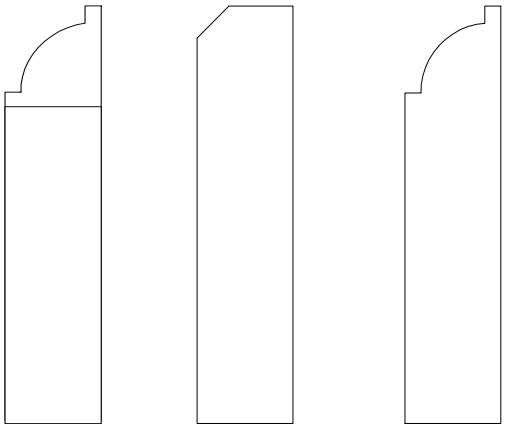
This diagram shows the complete stand from above. The darker outside is the finishing frame. It can be decorative but if the stand is used for and aquarium or vivarium it can serve to 'hold' the base of the tank in place and ensure the bottom seals are reinforced.



The finishing sides can be routed or bevelled to improve the look of the stand.



These can be:

- made from wider timber that is then routed with a suitable profile
- made by fitting or gluing a decorative mould to the top of timber the same size as the supporting frame after the external frame is fitted. This can easily be cut at a 45 degree angle at the ends to give a decorative finish.

Be careful that it is made from the same timber as the frame if you intend to stain it. If you intend to paint the stand then this would work with any timber.

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Different Stand Sizes

At the end of this booklet are a range of diagrams of different dimensions for the cage stand. Whichever you choose, it is best to make the cage or vivarium before the stand to ensure your stand will fit the cage. You can easily make minor adjustments to the stand but it is almost impossible to reduce the size of a cage or vivarium.

Timber List

The following table is a list of the timber required for the simple stand. Timber is measured in ft lengths. You need to make sure the timber you buy is a little in excess of the length quoted below. For example the 4ft stand has one piece at 8ft. This is meant to be cut into two 48" lengths. If it is exactly 8ft long there is no allowance for the saw cuts. Unfortunately there is a trend among some timber suppliers to give exact lengths so you my have to buy 9ft to make sure.

Frame and Shelves

2 3/4" x 3/4"

Length	Width	Top Frame	Shelves
36	18	2 @ 6ft	2 @ 5ft + 1 @ 6ft
36	24	1 @ 6ft + 1 @ 8ft	3 @ 5ft + 1 @ 6ft
48	18	1 @ 8ft + 3 @ 3ft	1 @ 6ft + 2 @ 7 ft
48	24	1 @ 8ft + 2 @ 6ft	4 @ 6ft

Decorative or Top Frame Sides

These go around the top frame. They can be decorative, plain or slightly bevelled. They give the stand a nicer finish. These sides are ideally made with timber that is wider then that timber that makes the top frame and shelving.

Either 2 3/4" x 3/4" or 3 3/4" x 3/4"

Length	Decorative Sides	
36	2 @ 37 1/2" & 2 @ 19 1/2"	2 @ 5ft
36	2 @ 37 1/2" & 2 @ 25 1/2"	2 @ 6ft
48	2 @ 49 1/2" & 2 @ 19 1/2"	2 @ 6ft
48	2 @ 49 1/2" & 2 @ 25 1/2"	2 @ 7ft

Legs

The legs are made from 2 3/4" x 2 3/4” timber. You can change the height to suit your needs.

2 3/4" x 2 3/4"

Legs	
4 @ 24"	1 @ 8ft

Other materials

Screws

Main Structure

1 3/4" Screws

	Frame	Legs
36"x18" and 36"x24"	16	16
48"x18" and 48"x24"	20 or 24 (depends on no. braces)	16

Attaching Finishing Frame

1 1/4" Screws

	No.
36"x18" and 36"x24"	10-12
48"x18" and 48"x24"	12-14

Nails

These are rough estimates. Numbers will depend on shelf width and number of shelves.

	1 1/2"	2" (thin) for securing long pieces of finishing frame
36"x18" and 36"x24"	40	8
48"x18" and 48"x24"	56	8

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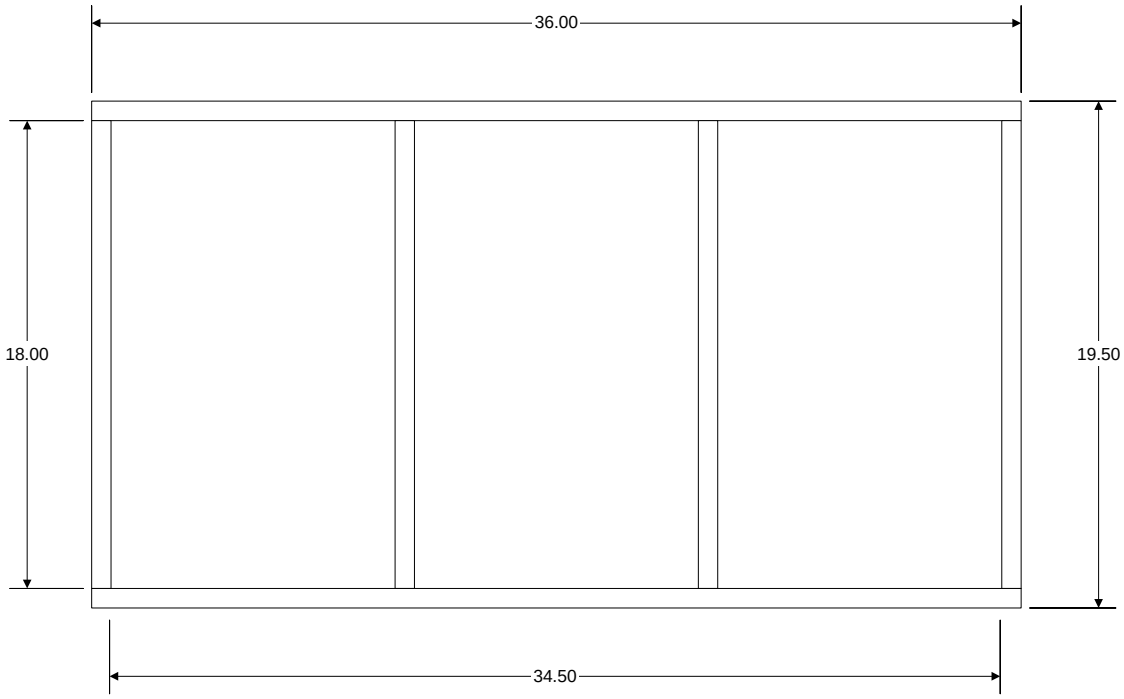
Making the Stand

Step One – The Support Frame

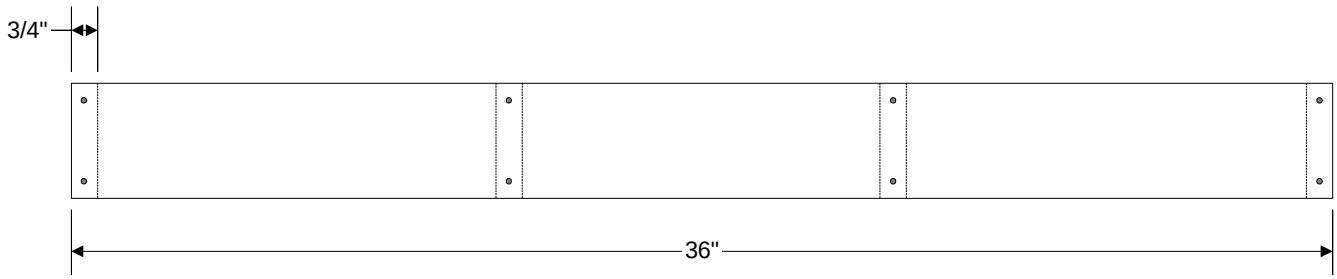
The first step is to make the support frame. It needs to be square. It consists of two long sides, two ends and two or more internal cross brace pieces. The ends and the cross pieces are all the same length. These measurements are for a 36"x18" vivarium or cage.

The Supporting Frame Structure



Begin by cutting the two side pieces to the length of your cage or vivarium. If you vivarium is 36" long you will need four cross pieces, if it is48" long, you will need 5 (as a minimum – for a full aquarium it may be better to use 6).

Mark the longer sides where you be attaching the cross pieces. Pre-drill the holes on the long sides to allow the frames to pull in the cross braces. Make sure the holes are close to size of the screw so that the braces are pulled in tight when the screws are tightened.



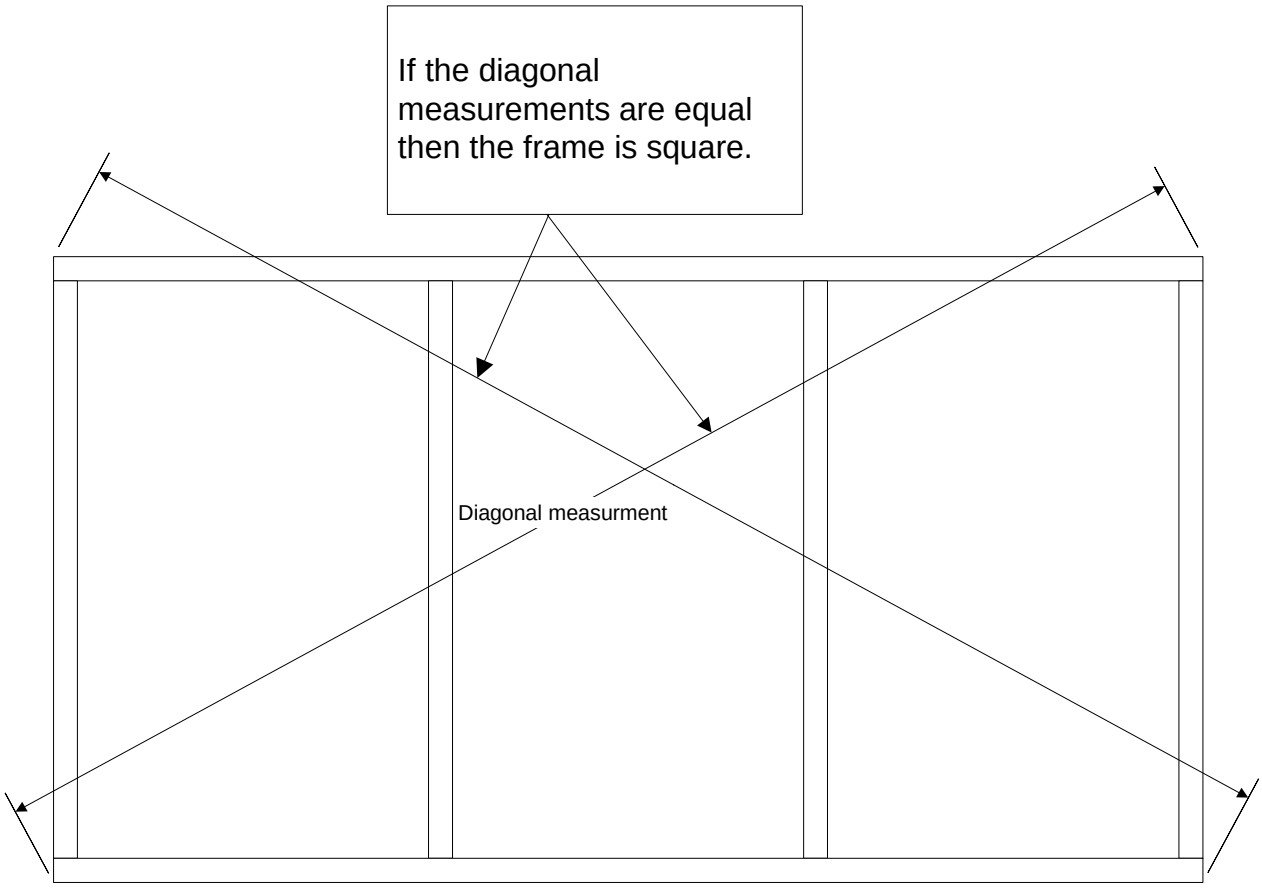
Once the holes are drilled, put some glue on the ends of the cross braces and screw them into place. Make sure the join is nice and level at the ends so you get a nice finish. Attach all of the braces to the sides in turn.

Having done this you should now have the support frame.

Squaring the Frame

The frame itself will need to be square. It will probably allow some movement but you need to make it square and secure it in place while you let the glue dry.

The easiest way to make sure the frame is square is to measure the diagonals (from one corner to the other). If the length of the diagonals is **exactly** the same then the frame is square. It may be necessary to secure the end of the frame to allow you to move the other end and get the frame exactly square. You may also want someone to help you and hold it in position while you measure it.



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Once you know it is square you can then attach a temporary piece of timber diagonally across the frame with some nails to hold it in place until the glue dries. Don't hammer the nails all the way in – that way they are easy to remove.

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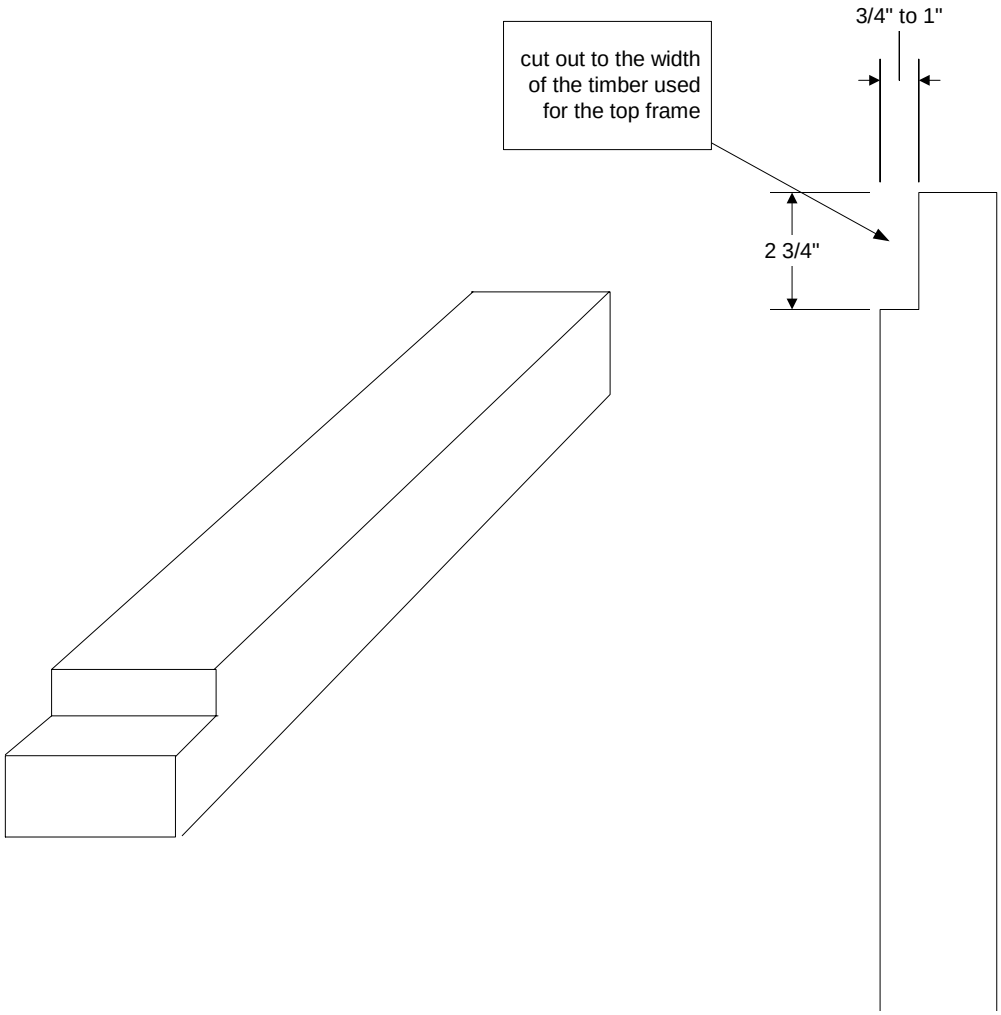
Step Two – The Legs

While the Support frame glue is drying you can make the legs. The legs have a section cut out at the top that is the same width as the timber making the support frame and as wide as the support frame. This is where the support frame sits and supports the cage.



At right you can see how the leg is attached to the main frame.

To make the legs

Cut the 2 3/4" x 2 3/4" timber to the length of each leg. It is important that they are equal in length.

If you intend to use castors on your stand you will need to take the height of these into account.

About 24" is quite a good height.

Now mark out the section of the leg that has to be cut out. It is easiest to use the timber that will be fitting into the cut to draw the section that will be cut out as in the diagram at right (this is not the exact same timber).

Cut the join in a few places with a saw and chisel out the joined section. If you have a power saw you can set the depth of the cut to the thickness of the frame timber (3/4") and make the join using a number of cuts. Once these are made it is a simple matter to clean the join with a chisel and test it for accuracy and to make sure it fits correctly and is level with the frame.

It is a good idea to sand the legs at this point.

Once the legs are ready to be attached we need to mark out where they will go on the frame.

Below you can see the marks where the legs are to be attached. You can use a piece of timber to set the distance from the frame to the legs. This ensures it is even all around. At right you can see an example of this of how you can make the distance to the legs the same all around.

You can use the legs to mark the width on the frame. In the picture below you can see that the holes for the screws have been pre-drilled. They are about the same size as the screw. This will allow the screw to go through the frame and pull the legs into the frame nice and tight.

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To Attach the Legs

You should be ale to place the frame o the legs and have a freestanding structure. Set up your stand with the legs and the frame on top (it's a bit tricky but I'm sure you can manage it).

Put some glue inside the join. Now use a piece of timber to set the distance to the legs.

Holding the leg tightly in place or better still, clamp it or have someone else hold it in place. Now drill in the securing screws. Repeat this for each leg.

You should now have a frame with four legs attached as in the diagram below.

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Step Three – The Shelf

The shelf is made of two pieces running between the stand legs. Slats of timber are then nailed to these two pieces.

Attaching the Shelf Supports

To get the length of the supporting pieces, measure the distance to the outside of the legs at the top of the legs (where they are connected to the frame). This will ensure that distance between the legs is the same length all the way down. The legs can be 'moved' a bit to make sure they are nice and straight when attach the shelf supports.

Measure and cut the shelf supports. Pre drill two holes at each end for the securing screws.

Lay the shelf on its side place the shelf support piece on the legs at the same height. Once again, can use a piece of timber to make sure the height of the shelves at each end is equal.

Dab a bit of glue on each and then clamp, or hold this in place. Attach with screws.

Repeat for the other side.

Cutting the shelf slats

Measure the distance between the legs at the top of the stand where the legs are connected to the frame. This ensures the legs will be the same distance apart where the shelf is.

Cut enough slats for the shelf.

Attaching the shelf slats

This is probably one of the trickier bits. It's easy to nail them into place. The tricky bit is making it even.

Here's one way.

Semi-attach a shelf slat at one end so it is even with the legs on both side. To do this, nail the slat into position using only two nails. **Leave enough of the nail head out** to make it easy to remove and take the slat off. Do no hammer it all the way in. Now semi-attach another slat at the other end.

Each slat will only have two nails in initially and these will not be hammered all the way in. That way you can easily remove and adjust the slats to get the correct distance.

Having the two slats in at each end, place the remaining slats so they are roughly even. At this stage I try and get a piece of wood or anything suitable that I can place between the slats to make them even. Using this 'spacer', place it between the first slat and the next one. Temporarily attach the slat with two nails, not fully driven in.

Now move onto the next slat. Repeat this until you have them all in place. If your spacer is correct they will be nice and evenly spaced. I have to confess to having three shots at this before I got it evenly spaced. That is why having enough of the nail head out to make removed easy is so important.

Once you are happy, nail the slats into position (you may choose to use glue as well).

Using a nail punch, punch the nails in. These punch holes will be filled with wood putty to create a nicer finish.

The stand above has the slats attached and the nails holes punched and filled.

At right is another view showing detail underneath.

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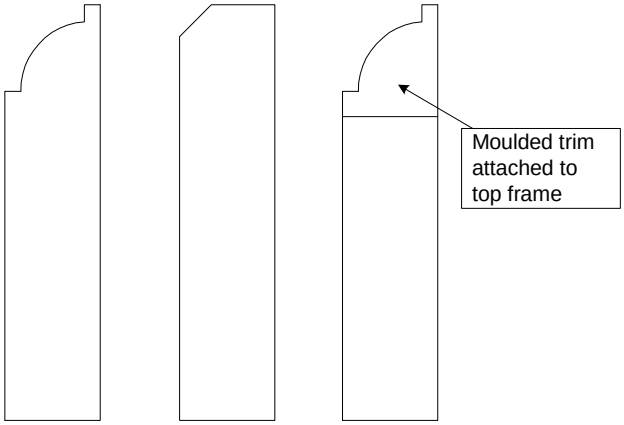
Step Four – The Frame Trim

As previously mentioned the top frame can be decorative or plain. It much depends on what you want.

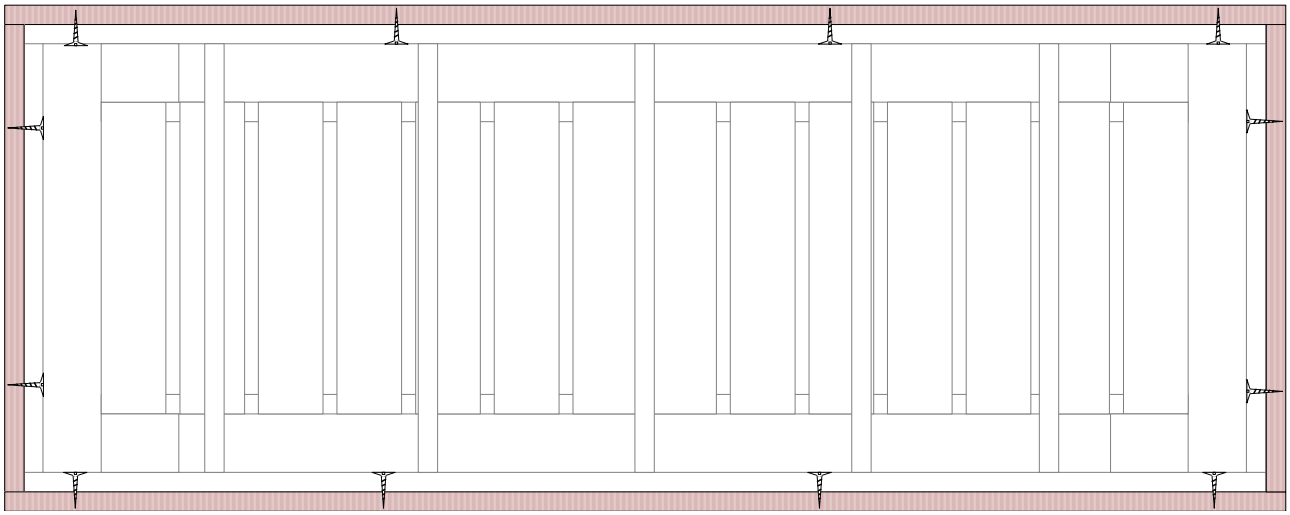
In the case of the one in the pictures, the frame was made and the routed with a decorative finish.

Equally you could bevel the edge or even use the same size timber as the support frame and attach (nail and glue for strength) a moulded trim to the top of this. If this was done it would be preferable to be of the same timber as the stand, unless you intended to pain it.



Attaching the frame is relatively simple. Measure the length of the end pieces - they will be the same length as the width of the supporting frame. The sides will be the length of the support frame plus twice the witch of the top frame timber.

The diagram below highlights the top frame as seen from above. Note the screws attaching the frame from inside the support frame.



Once the pieces are cut you can rout them.

If you are using a mould trim you would start to attach them now. If you choose no decoration you would also attach them now.

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Attaching the Top Frame

As in a lot of the construction of the stand, it is best to pre-drill some holes for the screws that will secure the top frame. You need to make sure the screw length is less than twice the width of the framing timbers so that they do not show through when drilled into place. For example if you are using 3/4" timber, the screws would need to be about 1 1/4" in order to secure the frame yet not show through when drilled into place.

Drill two screw holes at each end and three or four screws along the sides of the support frame (depending on the size of your stand). You will be attaching the top frame with screws coming from inside the support frame. This will make sure that no screws are visible in the finished piece.

It is best to have someone hold the pieces in place or, better still, use a clamp to hold the frame in place before you put in the screws.

Attach the ends first. A dab or two of glue and then hold or clamp the end piece in place, making sure the bottom of the frame piece is level with the support frame at both ends.

Screw the frame and secure it into place. Repeat for the other end.

Similarly, attach the sides. Some glue at the end, where the side pieces meet the end grain of the end pieces, is a good idea.

Once this is all done you may choose to put couple of nails into the side pieces to hold the join in place a bit more and remove or reduce any gaps.

Side view. Nearly there.

Another view, at right, showing the outer frame in a little more detail.

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Step Five – Finishing Off

Castors

Should you want to move it around, it is a simple matter to fit castors. Make sure they are strong enough to support the stand and cage. The strongest would probably be those that have a shaft that runs into the legs of the stand. These are not expensive and are usually strong enough.

You need to drill a 3/8" hole into the center of each leg. The stand will need to be upside down for this. Try to ensure the hole is vertical - this will make the castor run better and also look better.

You can see the external holder the castor sits into.

These are placed into the hole and then hammered into place to secure them. You will need to remover this piece from the castor before you place it into the hole.

They can be tricky to remove but with a screw driver and some patience you can remove them. Once removed, you will need to tap them back into shape so the castor clicks into position and stays there.

There are also castors that use a screw in base. As long as you use suitably large enough screws, they will also be adequate for the job.

Preparation

You will need to fill all of the punch holes and blemishes in the timber with suitable wood filler.

Once this is done you can sand the stand. An electric sander makes this easy but as it is only a small item, a sanding block and sandpaper will be adequate.

The best sandpaper is the no-fill sandpaper. Use 120 grit to start with and then 150 or 180 grit for the final sand.

Finishing Coats

How you is up to you.

You can

- Paint it
- Coat it with a clear coat poly urethane
- Stain it ad then use a clear coat finish
- Danish Oil (very good for quality timber)

Good luck and happy stand making.

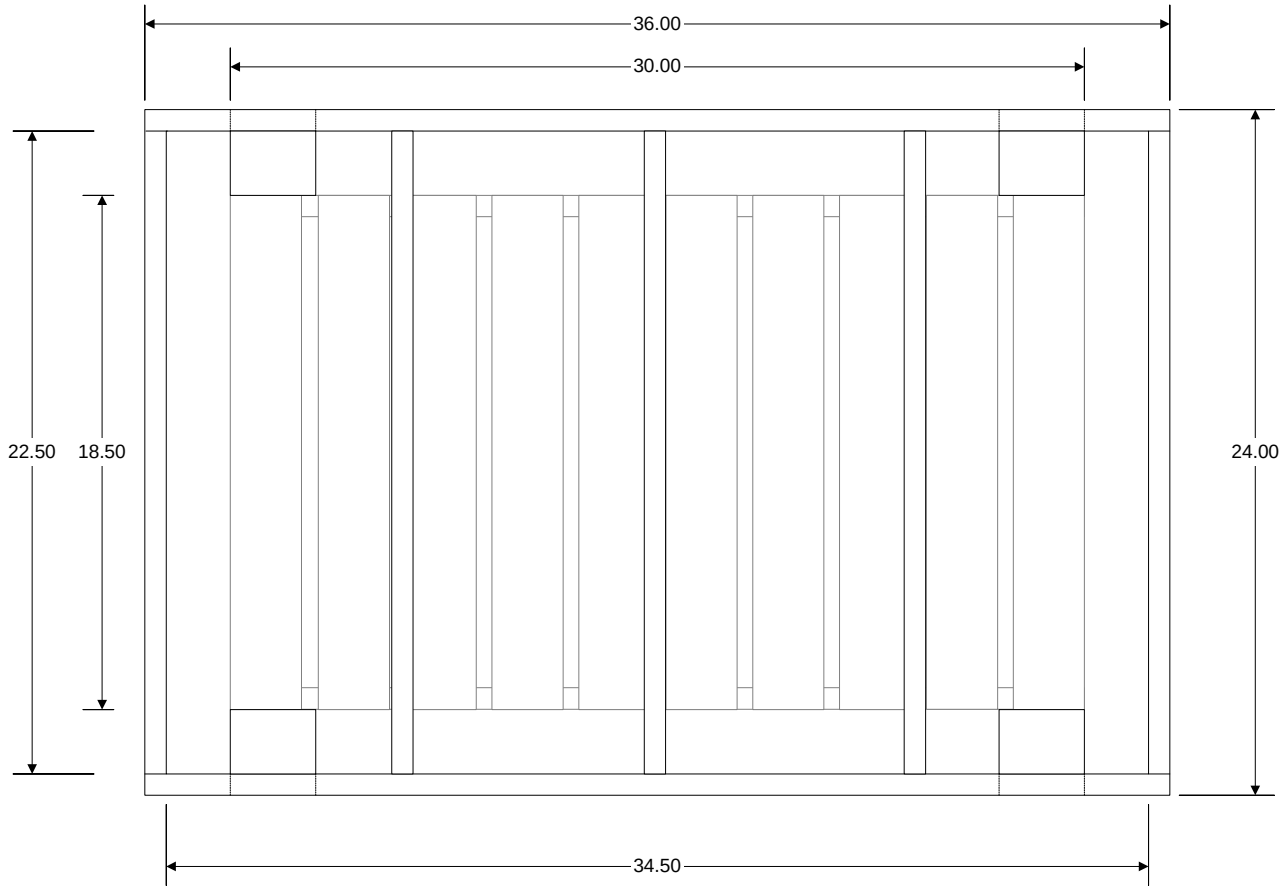
Appendix

Diagrams for different stand sizes

The external top frame has been omitted from these diagrams. The views are from above and the shelving has been grayed out to make it easier to distinguish from the main frame. As mentioned earlier, it is best to make your cage or vivarium before making the cage stand.

36'' x 24''

Main Stand Structure from above showing legs and no shelving.
The cross bars provide support for the vivarium's base



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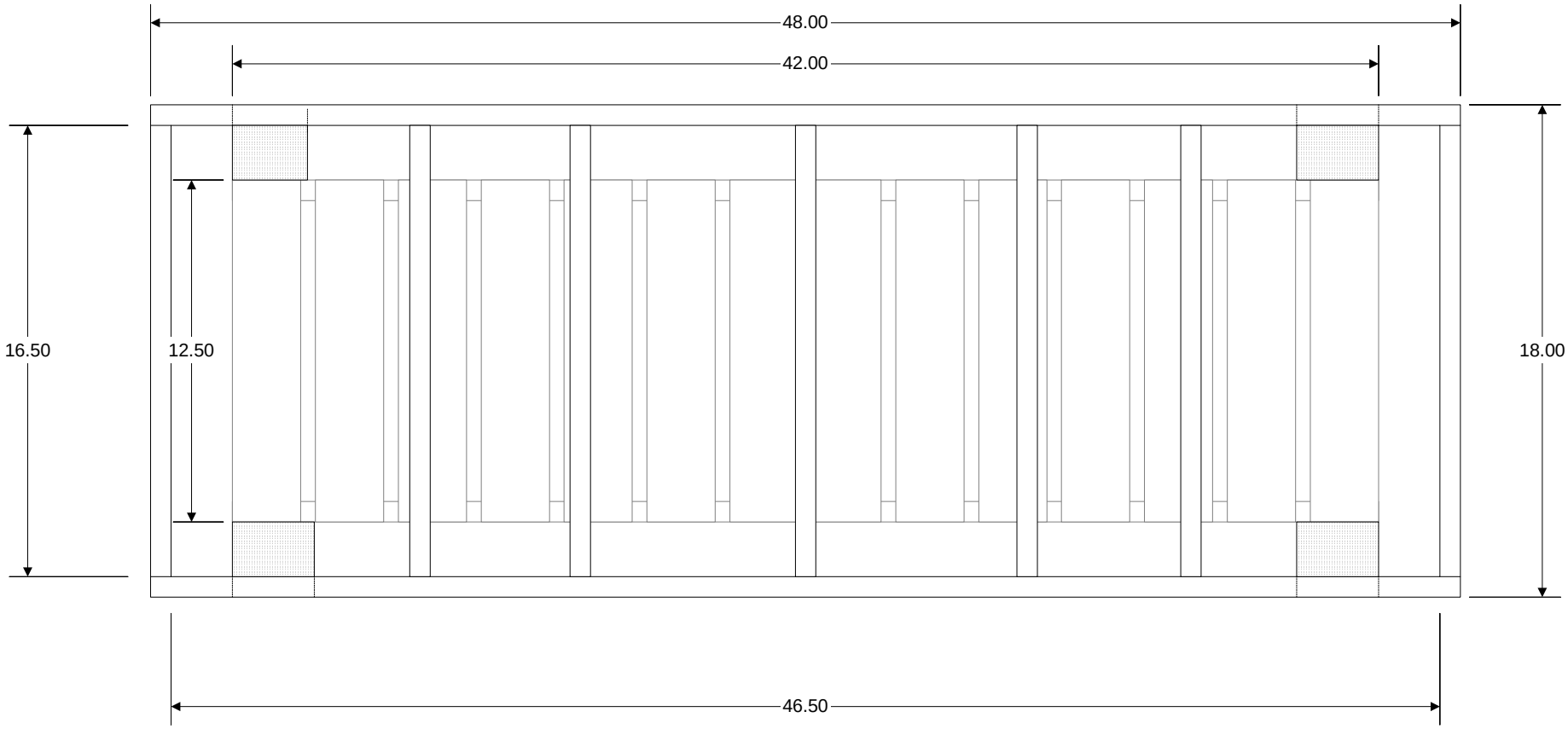
48'' x 18''

Main Stand Structure from above with shelving (light gray)

This lengths and widths should be the length and width of the cage.
Ideally is should be a fraction wider to account for any small differences.



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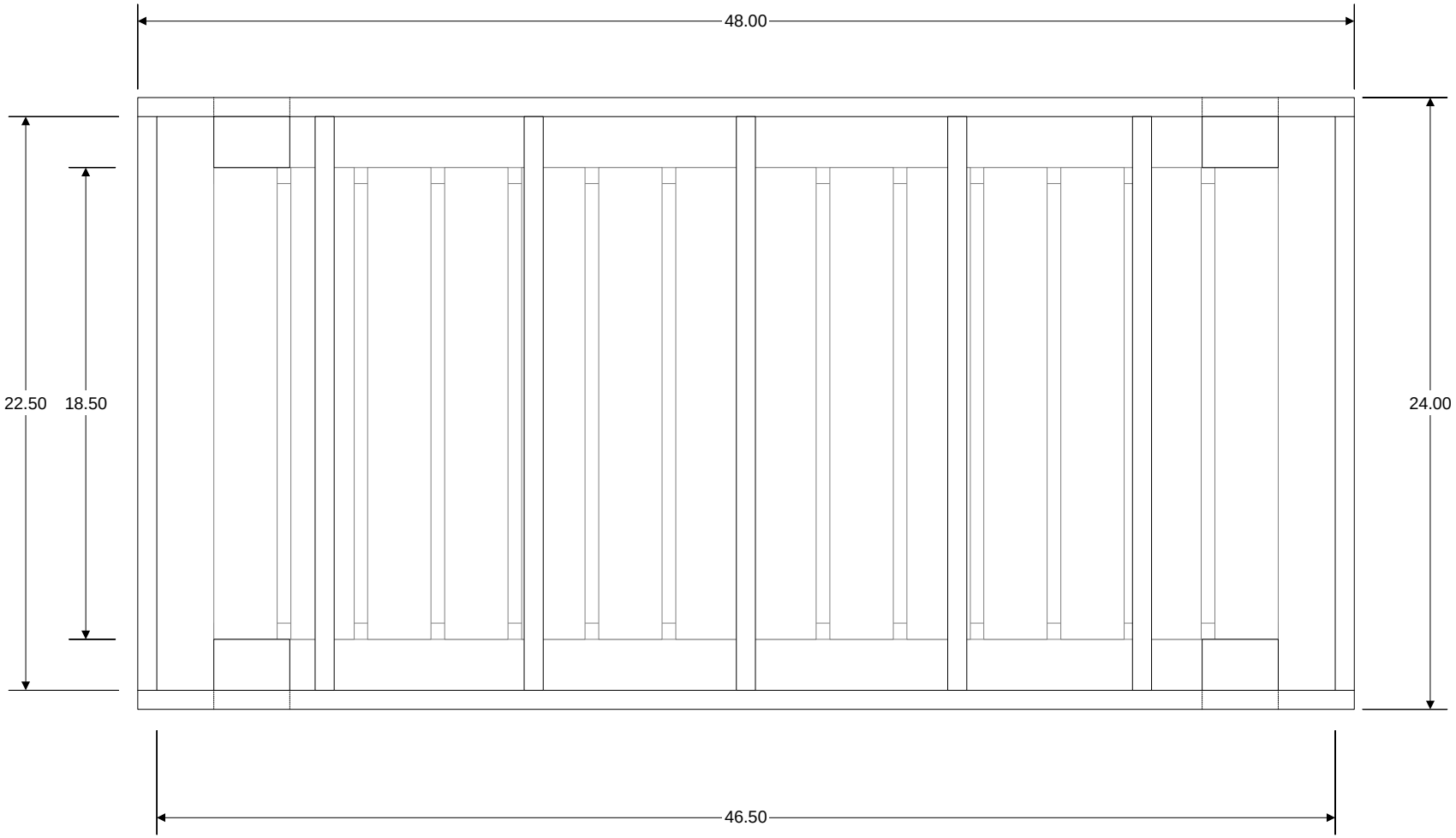
48'' x 24''

Main Stand Structure from above showing legs and shelving (gray).
The cross bars provide support for the vivarium's base.
External top frame is not shown.



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