

How to Build Reptile Enclosures

In 10 Easy Steps

A complete
guide with
Step-by-Step
Instructions
for Making
Reptile Cages



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Introduction

IMPORTANT:

Read through the entire book first if you are new to making reptile cages.

Print it out and highlight sections if you need to. Treat it as a working document (that means you can scribble on it and not feel guilty).

Making your own reptile cage can be a fun and rewarding process. This book will show you how to build a reptile or snake cage that is functional, long lasting and attractive.

Building cages is not difficult but you will need some basic tools and understanding. Even if you do not have all of the tools listed there are some tips to help you make a finished cage that looks great. If you are concerned about your ability, this book will show you other tips and tricks to make life a lot easier and help you achieve your goals.

Aim of book

The aim of the book is to help you build a cage that will house your reptile in a comfortable, clean and secure environment.

The cages have been designed to be simple to construct and easy to take care of. The designs are deliberately simple but once you have mastered the basics you can build more complex cages yourself, using the knowledge and skills you acquire building your cages.

Once you have covered the basics you:

- Can make it to suit your individual personality and style
- Can make it to suit your budget
- Build it to the size you want
- Can use a range of materials to suit your circumstances
- Can re-use the plans again and again
- Stop you wasting money on deluxe reptile tanks
- Save money as it's cheaper than snake starter kits
- Can spend the money you save on other accessories
- Build your own reptile enclosure your own cage to show it off to your friends!
- Learn how to construct snake enclosures so you can improve on them
- Never have to buy custom snake cages again

The measurements in the book are only meant as a guide. How large you need to make your cage will depend on your reptile and it's specific needs. Arboreal or climbing snakes and lizards will need more height for their cages. Burrowing animals will not need a great deal of height.

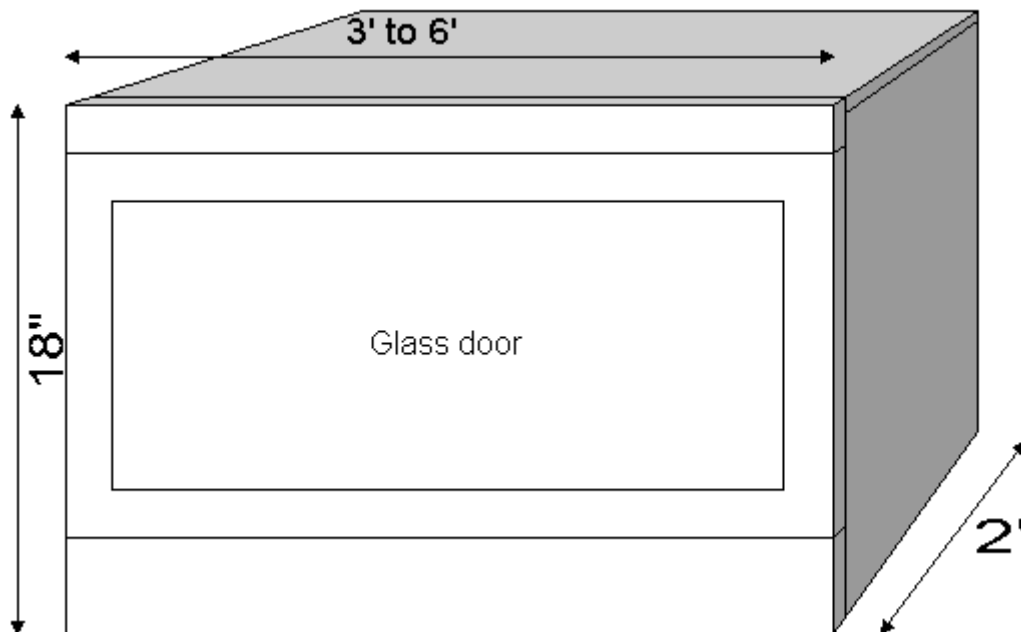
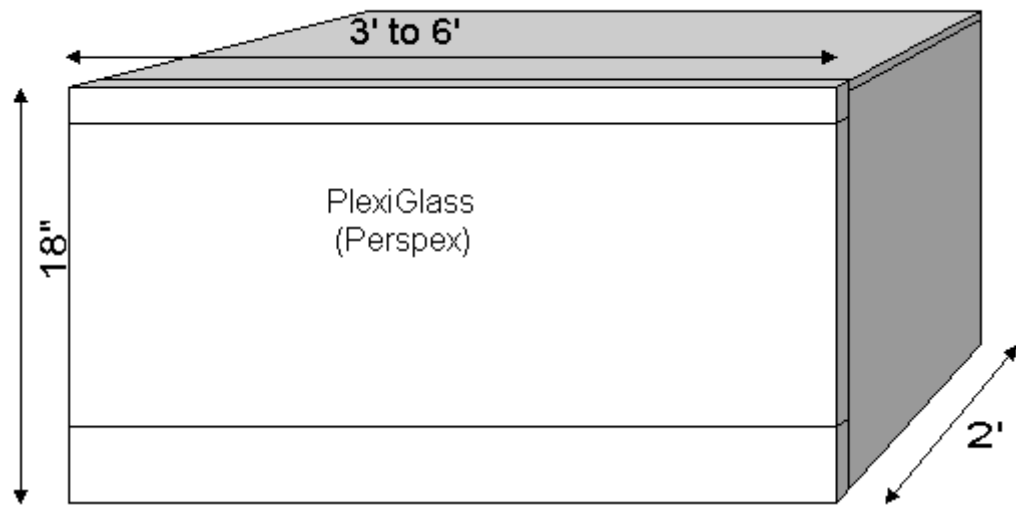
Do some research on the particular needs of you snake or lizard before you start making a cage so that you know exactly how to build a reptile cage to your pets requirements.

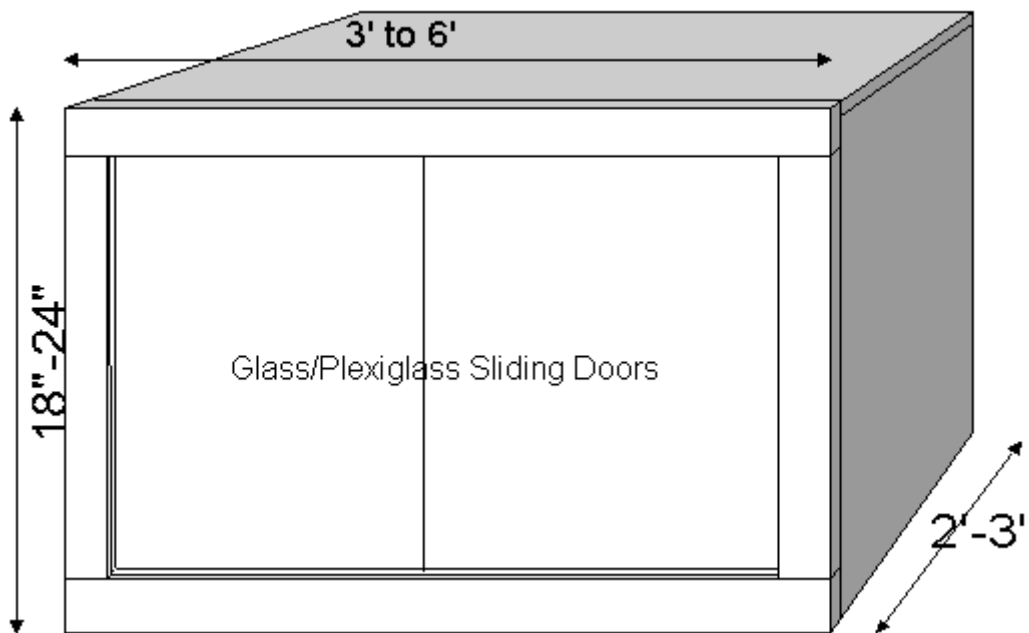
Cage types

There are a range of cage types. The most obvious of these is the difference between terrestrial cages which are elongated and arboreal cages which are tall.

Cages can have sliding glass doors, lids that open at the top, front opening doors, double doors, borrowing areas etc.

There are a multitude of variations. This book will outline how to build a basic, effective and easily built cage. Once you have the skills and tools you can pretty well make whatever you like





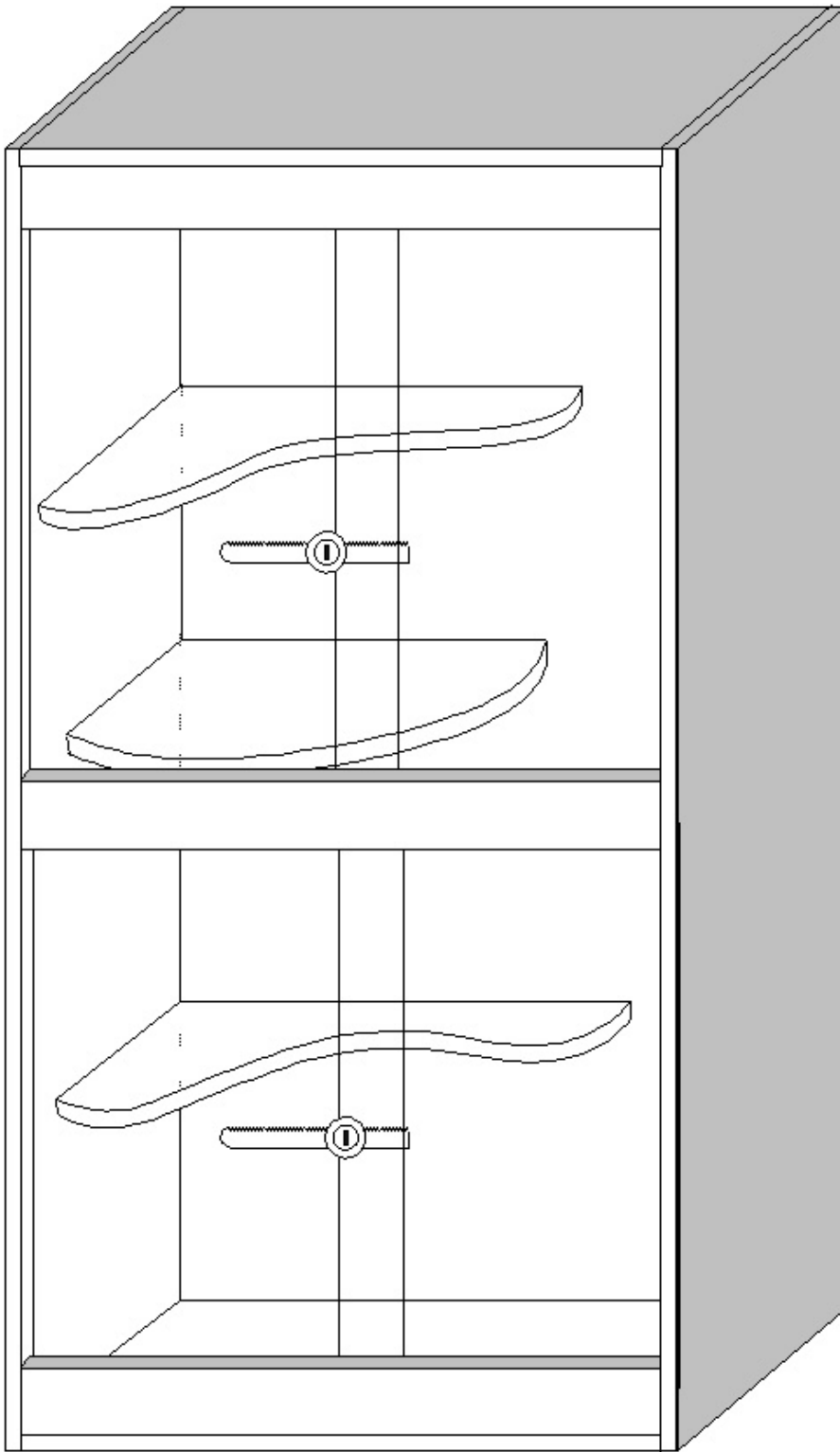
The basic design you will be building will have a lockable, hinged front door.

This front door can be made of Perspex or Plexiglass or it can be a wooden door with a glass or plexiglass insert. These plans will show you how to make both sorts.

These plans contain 4 main variations on cage size but it is a simple task to change this to any size larger or smaller by following our simple directions.

There are a few decisions you need to make before you begin building and purchase your materials.

Example of an Arboreal Cage



Cage Considerations

Doors - Glass versus Plexiglass (Perspex)

This is a personal decision but I have decided that for terrestrial cages I prefer Plexiglass (either 3/16" or 1/4") on hinged cages and glass on sliding glass door cages. Larger cages and arboreal cages are still better made with glass due to both cost and the size of the doors, clear area or other factors. For example, hinging a large door is far easier with a framed wooden door than Plexiglass as you need a very thick and expensive piece of Plexiglass for a larger door, particularly with the cabinet hinges, which I prefer on larger vertical doors due to their strength and ability to be adjusted.

For most cages these are the principal differences:

- Glass is heavier (about twice) than Plexiglass or Perspex
- Glass doors are harder to make
- The glass can break in the making process
- Glass does not scratch so it better for reptiles with sharp claws and sharp spikes.
- Glass doors are generally cheaper, but not by much.
- Plexiglass scratches more easily so you need to be careful in the construction not to scratch it.
- Plexiglass can bend and jump tracks in Sliding Glass Door cages if the reptile is large and the Plexiglass too thin.
- Plexiglass transmits more light than glass
- Plexiglass does not filter UV (ultraviolet) light

Sliding Glass Door cages require track mounts and special locks. These are easy to install and the materials are available in most good hardware stores. They are covered in the book in detail. These plans use a slight variation on the hinged door plans in that the cage uses a frame around the front of the cage to house the slide tracks. These differences have been highlighted and are simple to follow.

What lighting will you use?

The cages generally will have two types of lighting – a basking light or lights for heating and a fluorescent UV light. Many species of snake do not require the UV light but again you are urged to find out the specific requirements for your snake or reptile and having a UV light is usually a good idea anyway.

Lizards, tortoises, turtles and crocodylians require UVB light for the synthesis of Vitamin D3.

If you are uncertain, it is better to have both a basking light and a UV light like a Zoo Med's Reptisun 5.0 UVB. There is a lot of information on this subject and you should ask your local supplier or do some research on the internet if you are uncertain.

How will you ventilate you cage?

The ventilation can be done using a range of different materials. I generally use plastic vents available from larger hardware or building supplies but equally you can use aluminum mesh, plastic mesh and even plastic sheet with holes drilled in it. I like to steer clear of anything with rough edges that the reptiles can rub on and damage themselves. I also like the plastic vents because they look professional and are easy to fit.

Snakes have a slow metabolism so you do not need to over-ventilate the cage. It needs enough ventilation to have a small air flow. Usually the heat lamps and the heat gradient provide sufficient air movement to keep the cage well ventilated provided you have some vents.

How will your heat your cage?

There are a range of options available. Heat mats are a good form of heating as they can be placed below the substrate and managed with a thermostat. I do not want to go into a lot of detail with the various solutions but I have found the best solution is Flexwatt (low wattage) heat tape with a good quality thermostat.

Flexwatt make a range of heat mats in different widths that can be cut to length and easily connected to a thermostat. They can be placed directly under the substrate in the cage or under the cage. I used mine under newspaper with a substrate on top. This makes it easier to clean and enables good temperature control.

I have used some of the commercial heat mats but they were expensive and I found one I used was inclined to overheat – buckling timber it got so warm. I am also wary of heat rocks as there are some owners that claim their animals have suffered burns with them if they malfunction.

Another excellent choice is a heat panel. Two companies that make these are Pro Products and Helix. These are a bit more expensive initially but have a long lifetime and will not overheat and so will not burn your reptile.

It is important that you provide a heat gradient in the cage using a combination of basking lights and heat mats, your reptile will be able to choose where it wants to be at any particular time of the day. The heat mats should cover approximately 1/2 to 2/3 of the base of a terrestrial cage, allowing plenty of room for the animals to move about. The basking lights should be over above an area of the heat mat

in terrestrial cages so the cage goes from a hot area where the reptile can bask, to a cooler area where there is no direct heating.

Arboreal cages should use basking lights (heat lamps) at the top and even part way up the cage. Take care to make sure the animal cannot come into contact with the lamp to prevent burns.

Always use a thermometer to monitor the temperature of the cage. Used in conjunction with a thermostat you can achieve a reliable temperature gradient for your reptile. Owners with many reptile owners sometime use temperature guns to spot check parts of the cage.

Size of the cage

Snakes and reptiles are generally shy and retiring creatures so like to have shelter in the cage. When they are small, you can get away with small containers, providing you have adequate heating, shelter and light.

The size of the cage you use for a snake is generally about 2/3's of the length of the snake. A snake that grows to 6ft will do quite well in a 4'x2' cage. A snake that grows to around 4-5ft will be OK in a cage about 3'x2'. A snake that grows to 8'-9' will require a cage about 6' x 2' or 6' x 3' etc.

Some say another way to calculate the cage size is to work on 3/4 square foot for every 1 foot of snake. Using this measure an 8 ft snake will need a cage about 6 square feet i.e. about 3' x 2'. This generally results in a smaller cage. It may even be better to use 1 square foot per 1 foot of snake.

Building Materials

You need to decide what you will make your cage out of. These days there are a lot of choices. Some of these are outlined below. Each has its good points and bad points.

MDF

MDF is used for a lot of building products these days. It is very easy to cut and use, can be painted easily so it looks good and you can use reasonably thin sheets to make the cages. It is one of my preferred building materials. MDF comes in a many forms. You can get the standard 4' x 8' sheets, as well as pre cut pieces in 12", 18", and 24" inch widths, both 4' and 8' long. You should wear a mask when cutting it, as it is very dusty.

Disadvantages : -MDF can be dangerous to use if the correct safety precautions are not taken. MDF contains a substance called urea formaldehyde, which may be released from the material through cutting and sanding. Urea formaldehyde may cause irritation to the eyes and lungs. Proper ventilation is required when using it and facemasks are needed when sanding or cutting MDF with machinery. The dust produced when machining MDF is very dangerous. Masks and goggles should always be worn at all times. Due to the fact that MDF contains a great deal of glue the cutting edges of your tools will blunt very quickly. MDF can be fixed together with screws and nails but the material may split if care is not taken. If you are screwing, the screws should not be any further than 25mm in from the edge. When using screws always use pilot holes. Urea formaldehyde is always being slowly released from the surface of MDF. When painting it is good idea to coat the whole of the product in order to seal in the urea formaldehyde. For reptile cages, covering the inside of the cage with Contact will also prevent this from occurring.

Melamine

Melamine is a good cage building material, it holds up well over time, and is easy to clean. It's easy to work with, and makes a reasonably nice looking cage. Melamine comes in a variety of forms. You can get the standard 4' x 8' sheet, as well as pre cut pieces in 12", 18", and 24" inch widths, both 4 and 8 feet long. While you can get colors, they are not always easily available. If you are prepared to hunt for them there is quite a range.

Melamine is heavy and as the chips are large you need to use thicker sheets for strength, making the cages very heavy. If you do use it, it is often a good idea to use heavy duty castors on bigger cages, but again, these come at a cost. The other drawback is that you need to use a strip on the edges that are uncovered. These strips are quite easy to use as they can be ironed on with a household

iron. Be sure to match the exact width of the melamine, as cutting it back afterwards can ruin the entire appearance of that section.

Some of the newer melamine sheets look laminated or have a timber appearance as a finish and would make an attractive cage. Again cost is a factor that needs to be considered.

Plywood

Cheap plywood will look cheap and the better plywoods can be expensive. It is a good material to build with as it is strong. It can be a bit too flexible. Cabinet grade plywood will make very good looking cages, but these sheets are more expensive.

Marine Grade Plywood

This is a much more expensive plywood and is made to last weathering and excessive moisture. It can be used to make waterproof cages or cages where there will be very high humidity or even have a water pool. Used **in conjunction** with water tank liner epoxy paints you can make enclosures capable of lasting many years where where excessive humidity is required or even enclosures capable of holding water.

Shelving board

Pine shelving board can be used to advantage when building a cage. Shelving board comes in various widths up to 12", and is $\frac{3}{4}$ " thick. The width limits it somewhat as you have to use multiple pieces for large areas. These can be glued together but large clamps and extra tools are required. Ideally you would join these with dowel or specially made timber joining pieces.

Tileboard

Tileboard is a relatively new material used in bathrooms and kitchens as an inexpensive replacement for tiles. It is waterproof on one side and is generally made from a hardboard that has one surface coated with a PVC or similar material. It is quite inexpensive to make a cage from and very durable. It can be cut with conventional saws. As it is not very thick, it needs some framework timber glued to it to allow the cage to have more structural integrity.

Tools you need

There are some tools that are required to do any real cage building, and others that you will find of great benefit. They can be done without but you need to be more careful.

The more tools you have available, whether you borrow or purchase them, the easier your cage building will be.

TIP:

You can also get around some of the more difficult large sheet cuttings by going to a local cabinet maker with the specific sizes you find in this book. I have done this before and for a few dollars they will cut the pieces to the sizes you require. And they will be VERY accurate.

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. I use screws to put the cages together as they are stronger and hold better. I pre-drill quite few holes and also use the Philips head, self tapping screws to save time and effort. A set of bits is essential.

Circular saw – These are very useful. If you do not have one, a handsaw can be used but they are much more difficult. It is hard to cut

Jigsaw – Needs for cutting out vent holes. You can use a keyhole saw but I would recommend one of these if you intend on doing much cage building. They are not expensive.

Optional Electric Tools

Palm or belt sander – Sanding is hard work and one of these will save you lot of time and effort. How sore do you want your arm to be?

Table saw or Radial Arm saw – both of these are used for making good cuts, and ripping boards to a narrower width. If you do not have one, use a circular saw or see the tips above.

Router – This is not really required, but if you are going to build glass doors they are very handy. You can also use them for building arboreal cages when you make the doors.

Electric Plane – great for trimming down pieces when you are a little bit out. Smooth edges and will make cage making a lot easier.

Compound Miter Saw – Used to cut 45° angles. If you are making glass doors it is useful but generally you can use a miter box and handsaw. Not required really.

Essential Hand tools

Square – Making square cuts is essential if you are cutting the timber yourself. These are very useful. It's better to have a large one and a smaller one.

Tape measure (and ruler) – Essential

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

Sharp Knife – used for cutting wires etc

Adjustable wrench – does not have to be large but you need to tighten nuts on bolts.

Hammer – Essential

Countersink – Use these to set the heads of screws in flush with the surface of the wood. Most of the time I just use a larger drill bit. It's just as effective and quick but you have to be careful not to let the drill bit catch and drill large chunks out from your screw hole.

Tin snips – great for cutting hardware cloth or other wire mesh

Screwdrivers – Used for wiring lights and screwing materials together.

Optional Hand tools

90° clamp - This is a clamp used to secure two pieces of wood cut on 45° angles. Used one to make door frames for glass doors. If you are making glass doors these are very useful as the doors can be difficult to clamp and glue otherwise.

Silicone Gun – this is necessary if you are going to make glass doors. It holds in the glass and is flexible, reducing the likelihood of breakage.

Sharp Chisel – this is useful all around tool. Very useful to make good joins if you are making a cage with Sliding Glass Doors or for even trimming bits and pieces.

TIP:

Make sure your chisels are **SHARP!** A blunt chisel is actually more dangerous than a sharp one as you use much more force than necessary. This causes slips and nasty cuts.

Other Items

Glues

Weldbond is very good glue for things like snake cages. Liquid nails, PVA glues and general purpose wood glues are all fine. It is important to glue edges of the main components as it will make the cage stronger and last a lot longer. While the screws will hold the cage together, glue makes it a lot more rigid and strengthens the whole piece.

A hot glue gun is also great for making cage accessories such as artificial trees, adding artificial plants trimmings to branches etc.

Screws

Self tapping screws make building the cage a lot faster. A cordless drill is much better for this as you can adjust the torque (meaning you do not ruin the screw head and can apply the right amount of pressure)

Pre-drilling some of the holes to guide the screws and make it easier is important.

Screw holes

I use wooden plugs to fill holes that have the screws but this requires a drill stand and special bits that make the plugs. It is well worth the trouble if you are going to build other items.

TIP:

Pre-drill the holes when joining the sides, back, top and bottom for the main sections. This will make sure the screws go in straight and do not go sideways, poking into or outside the cage and ruining its appearance.

Putty

Wood putty is useful for fixing up minor blemishes and mistakes. If you countersink your screws you can fill in the holes with putty. If you paint the cage, you will not see any of the screws or screw holes.

Silicone

This is useful for covering over rough bits like bolts and is used to help waterproof the cage, particularly around the base to wall joins.

Paint and finishing

If you use MDF you can use a spray pack paint can to paint the cage, as the material has a very smooth finish.

If you make your cages from plywood, you can use a polyurethane or clear finish. You can also stain it to darken it and give a better appearance. Generally the plywood is rougher and these sorts of finishes will look better on this material.

Melamine does not require paint but you do need to cover the edges that are exposed with an iron on strip so the wood chips do not show through.

If you do paint or use a clear coating on a cage you need to give it plenty of time to not only dry but to air the cage out and remove as many of the excess vapors as possible before putting an animal into the cage.

Screw Head Caps

When using melamine or coated / laminated MDF boards, you can get special screws that have plastic cappings. This gives a neat finish for cages where you use either melamine or laminated/coated MDF. They do stick out a little but do not detract a lot from the appearance of the cage. They are available in a range of colors (see below).

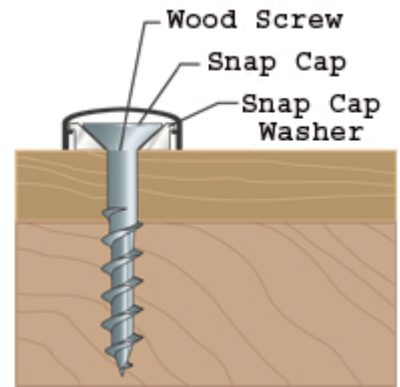
Using these screw, you would create the cage as per normal but would not countersink the screws.

There are two main types.

With the first type the screws are left flush (level) with the surface of the material and the plastic screw head cap is placed into the screw. A little dab of glue ensures it does not come away easily and stays in place.



The second type has a special washer that you place under the screw. The cap then snaps onto the washer. This type has a slightly higher profile, meaning it sticks out a bit more.



Cage Materials

Let's get started. These plans will make a cage that has a melamine base with MDF, melamine or plywood sides and timber strips across the front to act as both a substrate dam and to strengthen the structure.

If you want a larger cage it is a simple matter of adding 12" or 24" to the lengths of the base, back, fronts and tops.

Similarly, you can add 6" or 12" to the depths of the cages etc. Make sure you add the number of screws required. This works out at about 8 screws per extra 12" (1') of length and about 4 screws per extra 6" of depth.

TIP:

Making a cage is NOT a race. TAKE YOUR TIME. If you are uncertain at any point:

STOP what you are doing

READ the instructions again

THINK about what you NEED to do to solve the problem.

If you are flustered, WALK AWAY for 30 minutes and THEN COME BACK.

You will find a list of materials for 3'x2' case below, along with screws, bolts, hinges, lighting and other material.

There are two sets of materials listed for the 3'x2' cages and the 4'x2' cages.

This is because you can use 1/2" thick sheeting or 3/4" thick sheeting. This book tries to account for both and you need to be clear on which it is you are using.

Essentially, the thickness of your material will determine the size of the base and the back. See [Diagrams](#) for a more complete explanation.

List of materials for Terrestrial Cage

These lists cover 3' x 2' and 4' x 2' cages. It is a relatively simple matter to 'upsized' the materials. After you have read through the instructions you will be able to work out a complete list of your own.

Note the differences for the Sliding Glass Door cage. This has a frame at the front of the cage that is different from the cages with the hinged doors and so has slightly different timber requirements.

Timber List for 3' x 2' Cage

Timber	1/2" MDF or Plywood	3/4" MDF or Plywood
Base (Melamine)	2' 11" x 1' 11 1/2"	2' 10 1/2" x 1' 11 1/4"
Top	3' x 2'	3' x 2'
Sides	2' x 1' 6"	2' x 1' 6"
Back	2' 11" x 1' 6"	2' 10 1/2" x 1' 6"
Main front strip (pine or other timber) - not needed for sliding glass door	3' x 4" x 3/4"	3' x 4" x 3/4"
Top front strip (pine or other timber) - not needed for sliding needed glass door	3' x 1 3/4" x 3/4"	3' x 1 3/4" x 3/4"
Front frame (pine or other timber) - sliding glass door only	10' x 1 3/4" x 3/4"	10' x 1 3/4" x 3/4"
<i>Glass Door Only</i>		
Door Frame (3/4" pine or other timber)	3 pieces @ 3' x 1 3/4" 2 @ 1' 6"	2 pieces @ 3' x 1 3/4" 2 @ 1' 6"

Timber List for 4' x 2' Cage

Timber	1/2" MDF or Plywood	3/4" MDF or Plywood
Base (Melamine)	3' 11" x 1' 11 1/2"	3' 10 1/2" x 1' 11 1/4"
Top	4' x 2'	4' x 2'
Sides	2' x 1' 6"	2' x 1' 6"
Back	3' 11" x 1' 6"	3' 10 1/2" x 1' 6"
Main front strip (pine or other timber) - not needed for sliding glass door	4' x 4" x 3/4"	4' x 4" x 3/4"
Top front strip (pine or other timber) - not needed for sliding glass door	4' x 1 3/4" x 3/4"	4' x 1 3/4" x 3/4"
Front frame (pine or other timber) - sliding glass door only	12' x 1 3/4" x 3/4"	12' x 1 3/4" x 3/4"
<i>Glass Door Only</i>		
Door Frame (3/4" pine or other timber)	2 pieces @ 4' x 1 3/4" 2 @ 1' 6"	2 pieces @ 4' x 1 3/4" 2 @ 1' 6"

Other materials (All door types)

This list covers the materials that are required for both size cages and both door types (glass and Plexiglass)

TIP:

The screw numbers below are accurate but it is recommended that you buy more than the stated amount to account for losses and damage etc.

Screws	3' x 2' Cage	4' x 2' Cage
1 1/2" – Philips head self tapping for securing the timber strips to the front of the cage. I place a screw every 6" along the strips.	18	22
1 1/4" for 1/2" thick material 1 3/4" for 3/4" thick material Philips head self tapping for securing the sides - every 6".	40	48
3/4" screws for securing basking light battens	2 per batten	2 per batten
1/2" – for securing plastic vents. If you are using other vent types then clearly you would need to alter this figure and even the screw size.	8	12
1/4" – for securing florescent batten to cage roof	2-3	2-3

General materials for cages

- 2 Plastic vents approximately 6" x 3" or 8" x 4" (You could add another vent for a 4' cage if you choose. Larger vents are OK also.) 2 or 3 round cupboard vents could be used in place of these.
- Light batten for Fluorescent light (2' or 3') and UV fluorescent light globe to fit
- Light fitting for basking light (s) and globe (s)
- 2 x 3'-4' cheap extension cords or electrical wiring (You can cut these and use for the lights. I like to put inline switches in them but this is a personal preference)
- Heat mat (see other booklet "How to make heat mats" on how to make one)

TIP:

Purchase the Plexiglass or Glass after you have made the main cage and are ready to install it. That way you can measure it from your cage or door dimensions and ensure you get the measurements correct.

Specific Materials for cage with Plexiglass or Perspex Door

- Plexiglass or Perspex can use either 3/16" or 1/4". Get the Plexiglass after you have constructed the main cage.
 - For 1/2" thick material the dimensions should be 3' x 1' 6 1/2" (3ft cage) or 4' x 1' 6 1/2" (4ft cage) - length x 1' 6 1/2"
 - For 3/4" thick material the dimensions should be 3' x 1' 6 3/4" (3ft cage) or 4' x 1' 6 3/4" (4ft cage) - length x 1' 6 3/4"
- 1 x 1 1/4" Cam lock (see picture below) – need 3/4" drill bit
- 2 screen holders or similar to hold the ends of the doors. These are small but you can get larger ones made of metal that are a lot stronger for large reptiles. (see picture below)
- 3 hinges " x 1"
- 6 bolts and nuts 1/2" x 5/32" (or thereabouts) to bolt to the Plexiglass door
- 8 x 3/4" screws (hinges and door holders)

Specific Materials for cage with Glass Door

- 3/32" glass. Get the glass or Plexiglass after you have constructed the door. That way you will be certain you have the right size. The sizes are written below but these are not exact. It is far more preferable to make the door frame and then measure the inside.
 - For 1/2" thick material the dimensions should be about 2' 9 1/2" x 10" (3ft cage) or 3' 9 1/2" x 10" (4ft cage)
 - For 3/4" thick material the dimensions should be about 2' 9 1/2" x 10 1/4" (3ft cage) or or 3' 9 1/2" x 10 1/4" (4ft cage)
- 1 x 1 3/4" Cam lock (see picture below) – need 3/4" drill bit
- 4 x 1 3/4" screws
- 3' strip of piano hinge. This can be bought by the foot and is not expensive. It will last a lot longer then normal hinges and it much stronger when holding on the door.
- Enough 1/2" screws for the piano hinge
- 2 Hook & eye fittings (see picture below)

Specific Materials for cage with Sliding Glass Door

- 5/32" (4mm) to 3/16" (5mm) thick glass or Plexiglass. Get the glass or Plexiglass after you have constructed the door. That way you will be certain you have the right size. The sizes are written below but **these are not exact**. It is far more preferable to *make the door frame and then measure the inside of the frame where the glass will fit*. Plexiglass is unsuitable for larger reptiles as it can bend and jump tracks. It is also inclined to scratch as the doors pass each other if there is material between them.

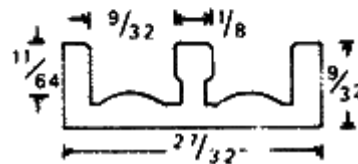
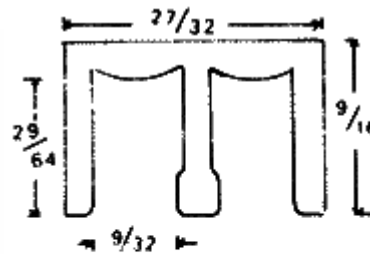
Approximate sizes are given below.

You will need to **MEASURE** the cage before purchasing the glass or plexiglass.

- For 1/2" thick material 2 sheets at *about* 1' 11" x 14 9/16" (4ft cage) or 1' 5" x 14 9/16" (3ft cage)
- For 3/4" thick material 2 sheets at *about* 1' 11" x 14 13/16" (4ft cage) or 1' 5" x 14 13/16" (3ft cage)
- Sliding Glass Door Lock (see picture below)
- 6 x 1 1/2" screws extra for frame around cage front
- Sliding Glass Tracks - Metal for larger reptiles or plastic for smaller herps - sometimes called SLIDING PLASTIC TRACK for 1/4" PANELS or 1/4 6' Bypass Plastic Track
- Strong Glue like Liquid Nails or Araldite to secure the tracks to the timber frame
- Small screws or nails to further secure the tracks (optional)



Plastic Track



End view of track

Optional (all)

- Solid castors to make the cage easily moveable.



Metal door holder



Glass Door Lock

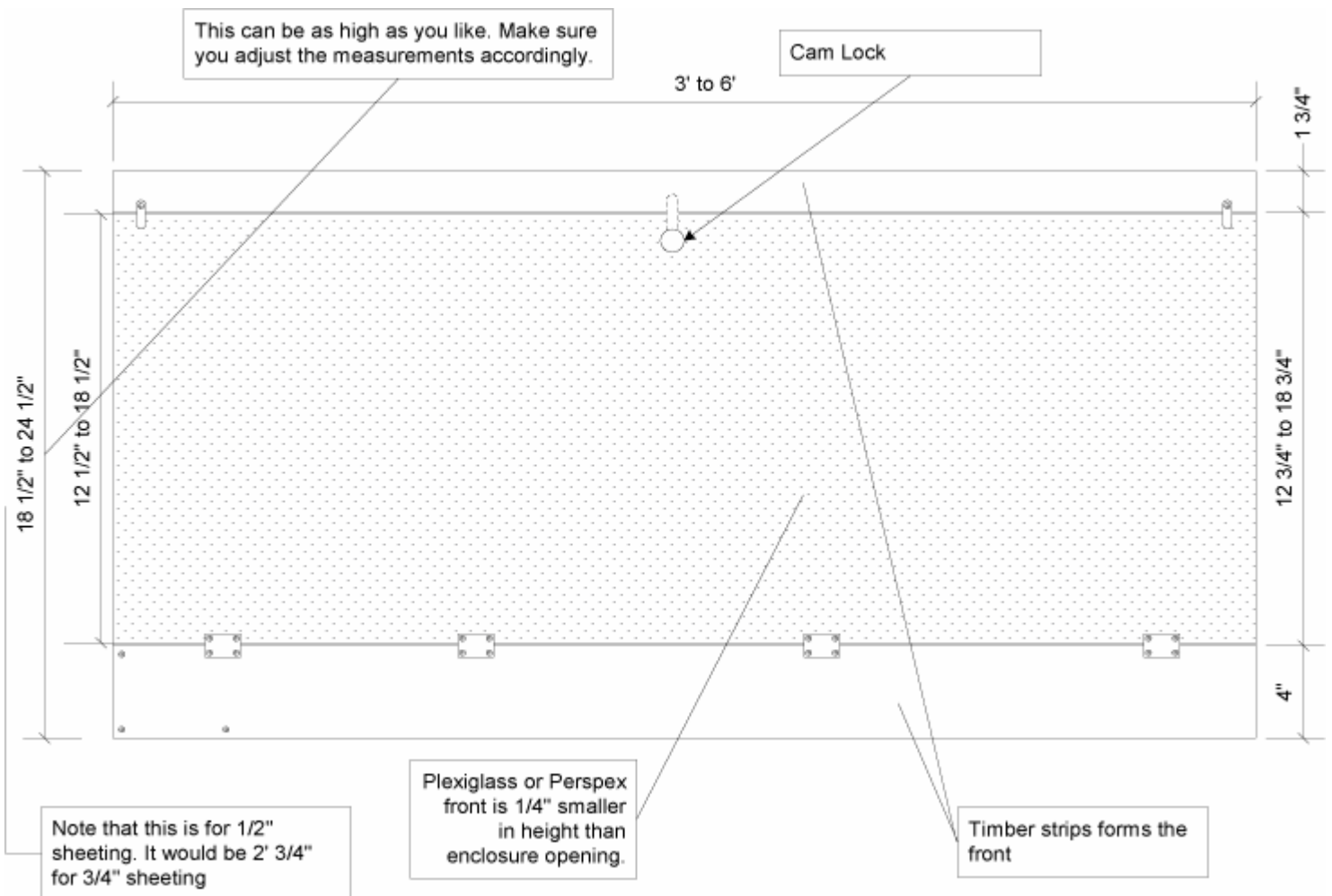
Detailed Diagrams

These diagrams are really only a reference. You can alter all of the sizes to fit your circumstances and particular reptile.

You can make your cage higher or wider or longer as you please, just use the guiding ideas. You will find some information below to help you work out the dimensions of the materials you need for any particular cage size you want. I have just used these sizes as commonly set cage sizes but you can make it to whatever dimensions you require.

Front View of Cage

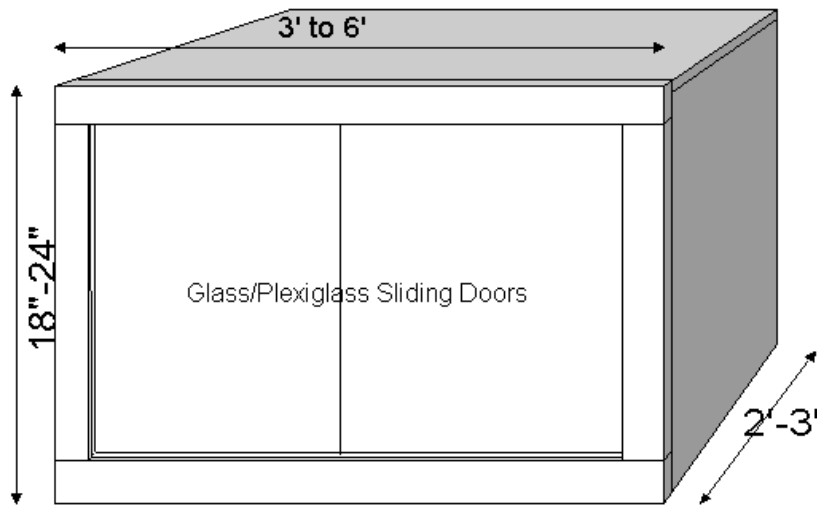
This diagram shows what a 3'x2' cage with a Plexiglass front looks like from the front.



Sliding Door Cage

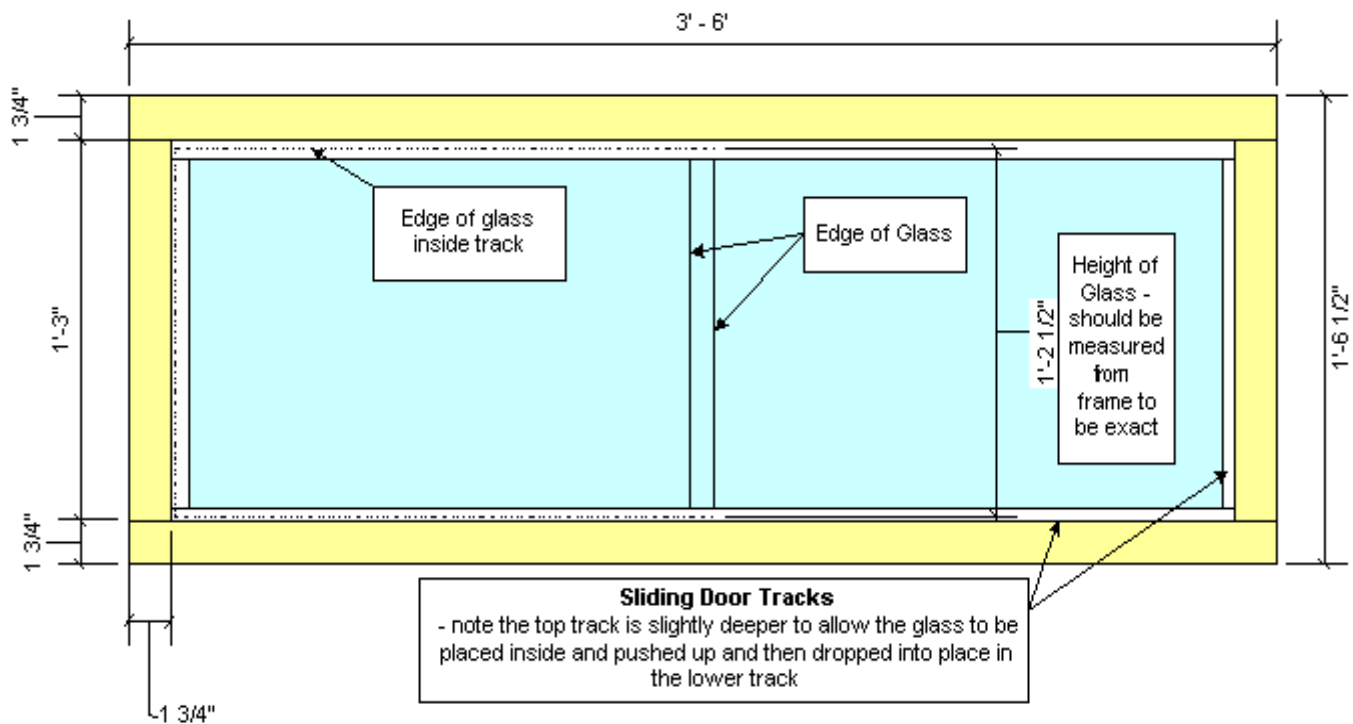
The diagram below is the basic construction for a cage with sliding glass doors.

The front frame can be the same however the one below uses a 1 1/2" timber frame all the way around. This can be any size you choose.



Front Detail - Sliding Doors

The frame could be made of wider timber for a longer cage, in which case it would be better to make the cage slightly higher.

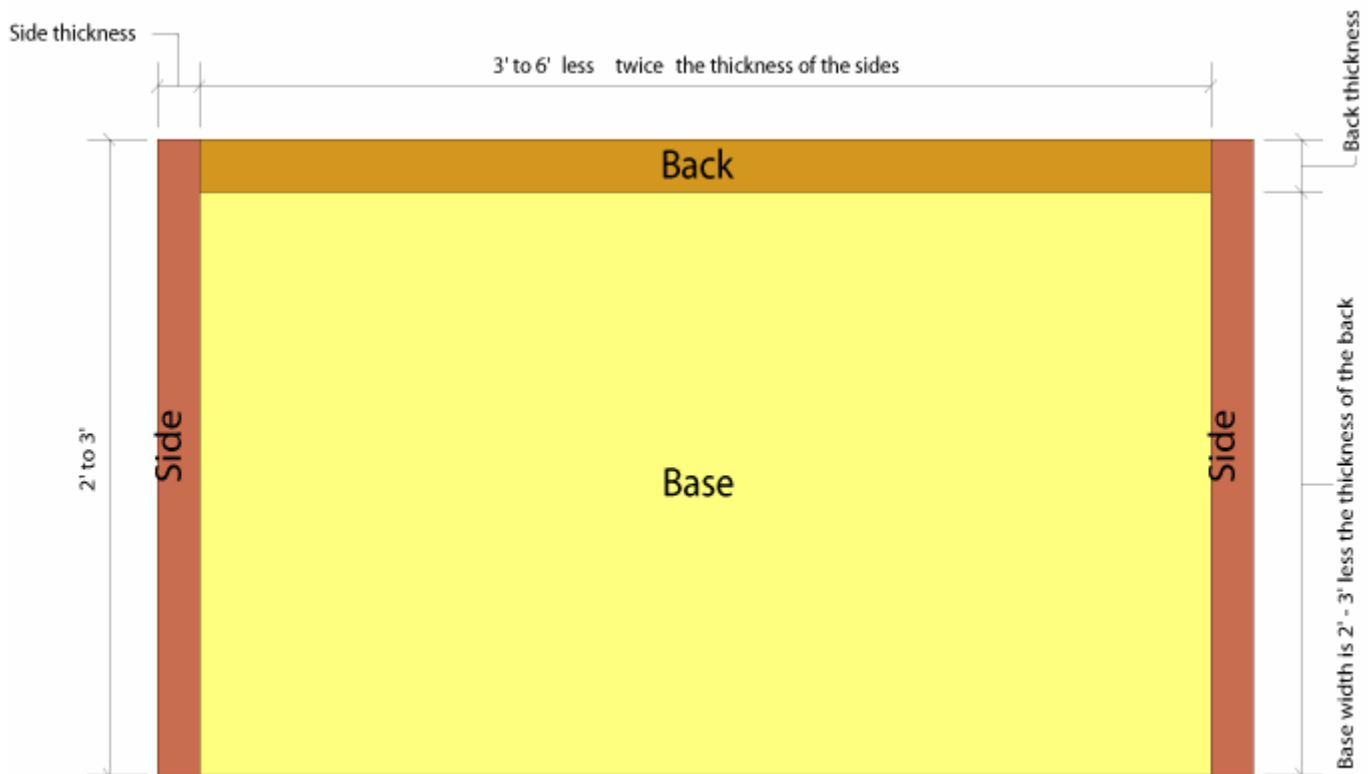


Calculating the Timber Sizes

Actual measurements are written further on in the book but for general reference the TOP has been used to determine the cage size. Using this you can then calculate the rest:

- The BASE will need to be the same length of the top, less twice the thickness of the material. It is also the same width as the TOP less one thickness of the material.
e.g. if your material is 1/2" thick then the base is 1" less in length and 1/2" less in width.
e.g. if your material is 3/4" thick then the base is 1 1/2" less in length and 3/4" less in width.
- The BACK is the same length as the base and the same height as the SIDES.
- The SIDES are the width of the base PLUS the thickness of the BACK.

See the diagram below to get a better idea.



View of Cage from above showing base, back and sides only

TIP:

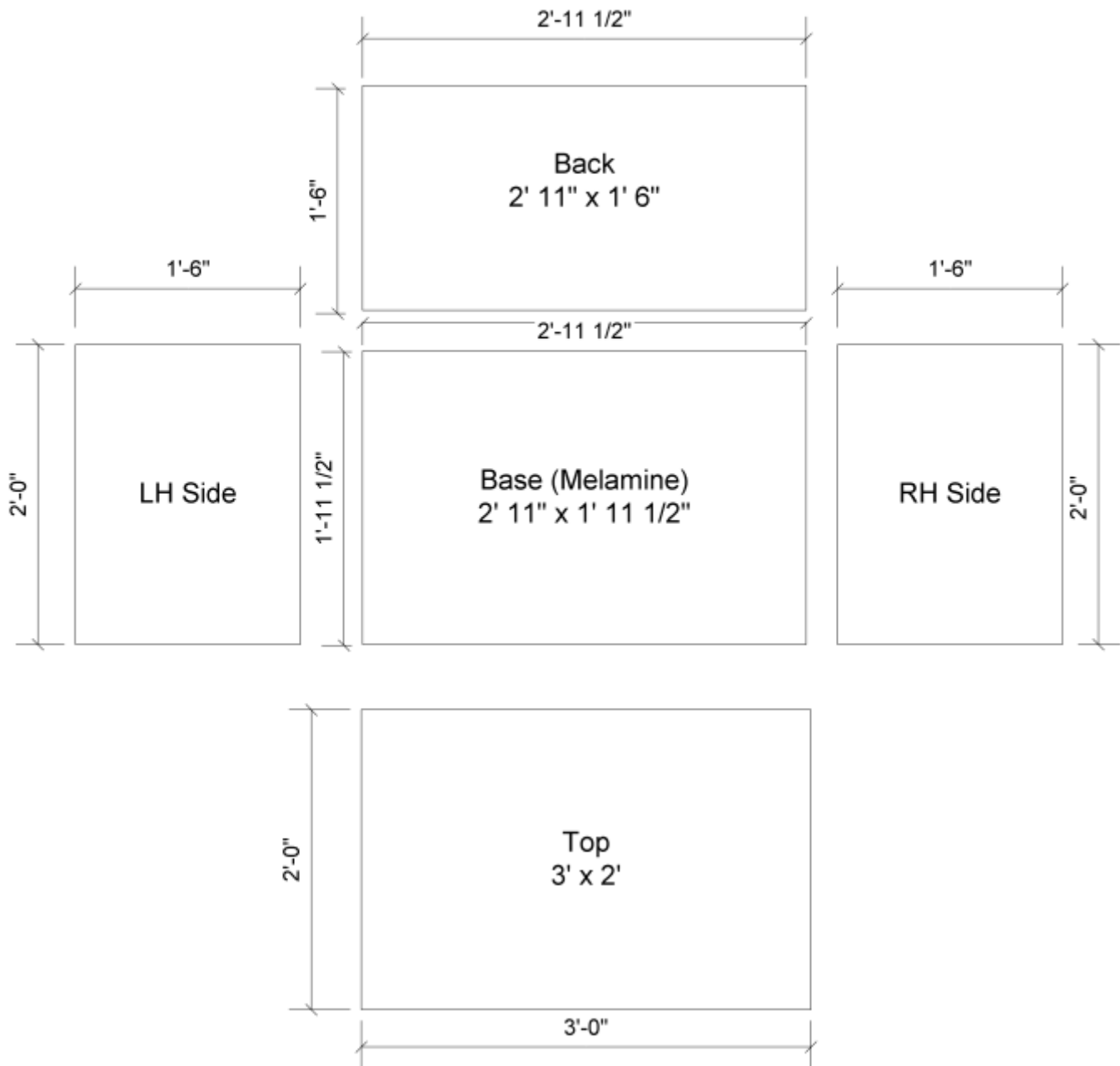
You can use the measurements from the diagrams in the next few pages to get the large pieces cut to size at a cabinet makers or kitchen shop for a few dollars if you do not have the tools or if are not confident enough to do it at home. I have used this method many times with various pieces of material. It Works!!

Home Depot will also cut MDF or plywood to size if you ask.

3' X 2' Cage Material Dimensions Using 1/2" Material

The diagram below has the dimensions for a 3'x2' cage using sheeting for the sides and back that is 1/2" thick. The cage will be lighter and provided you take enough care, will be strong and very functional.

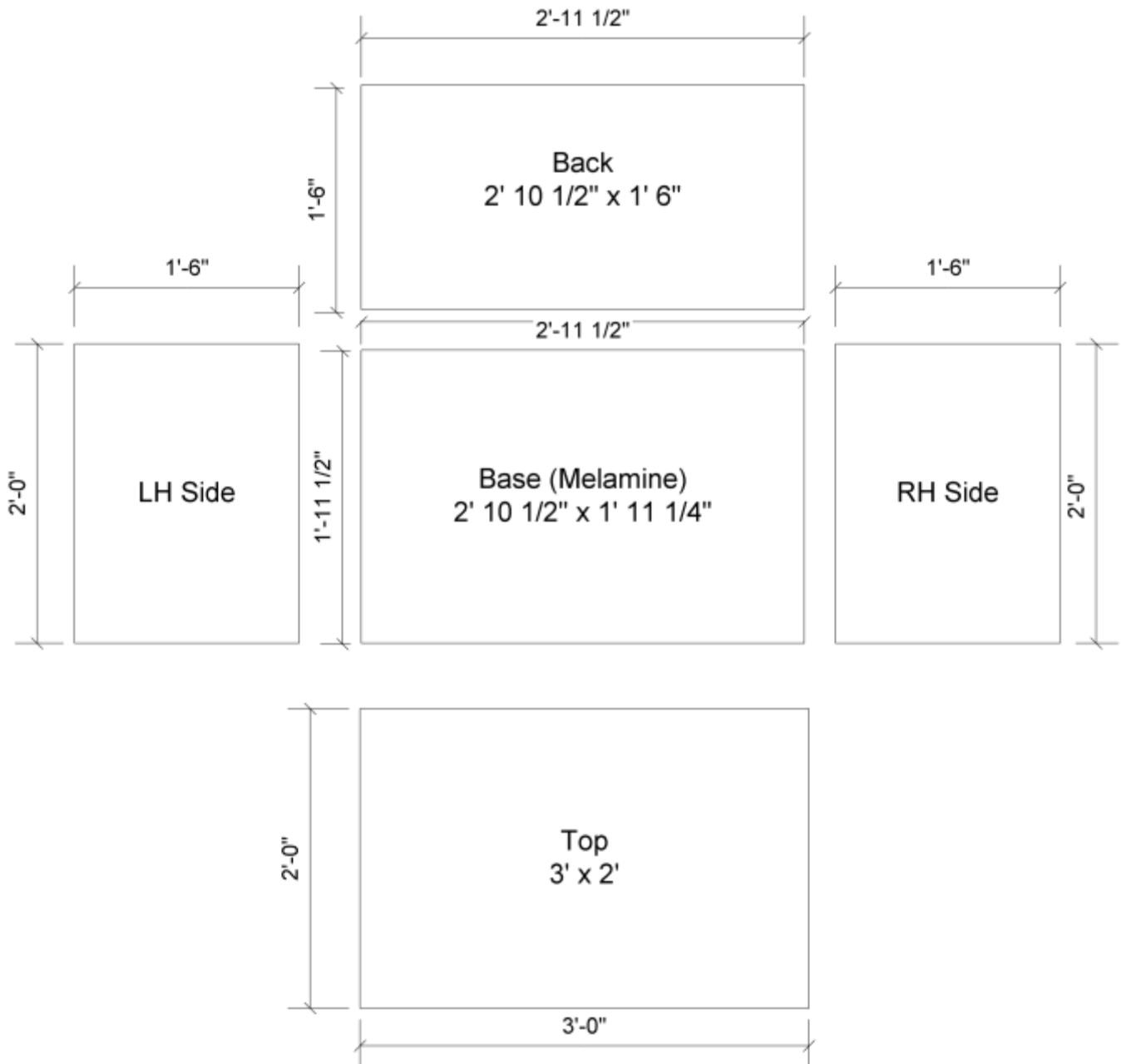
Dimensions for a 3' x 2' Enclosure Using 1/2" thick MDF, Plywood or Melamine



3' X 2' Cage Material Dimensions Using 3/4" Material

The diagram below has the dimensions for a 3'x2' cage using sheeting for the sides and back that is 3/4" thick. This cage is much heavier.

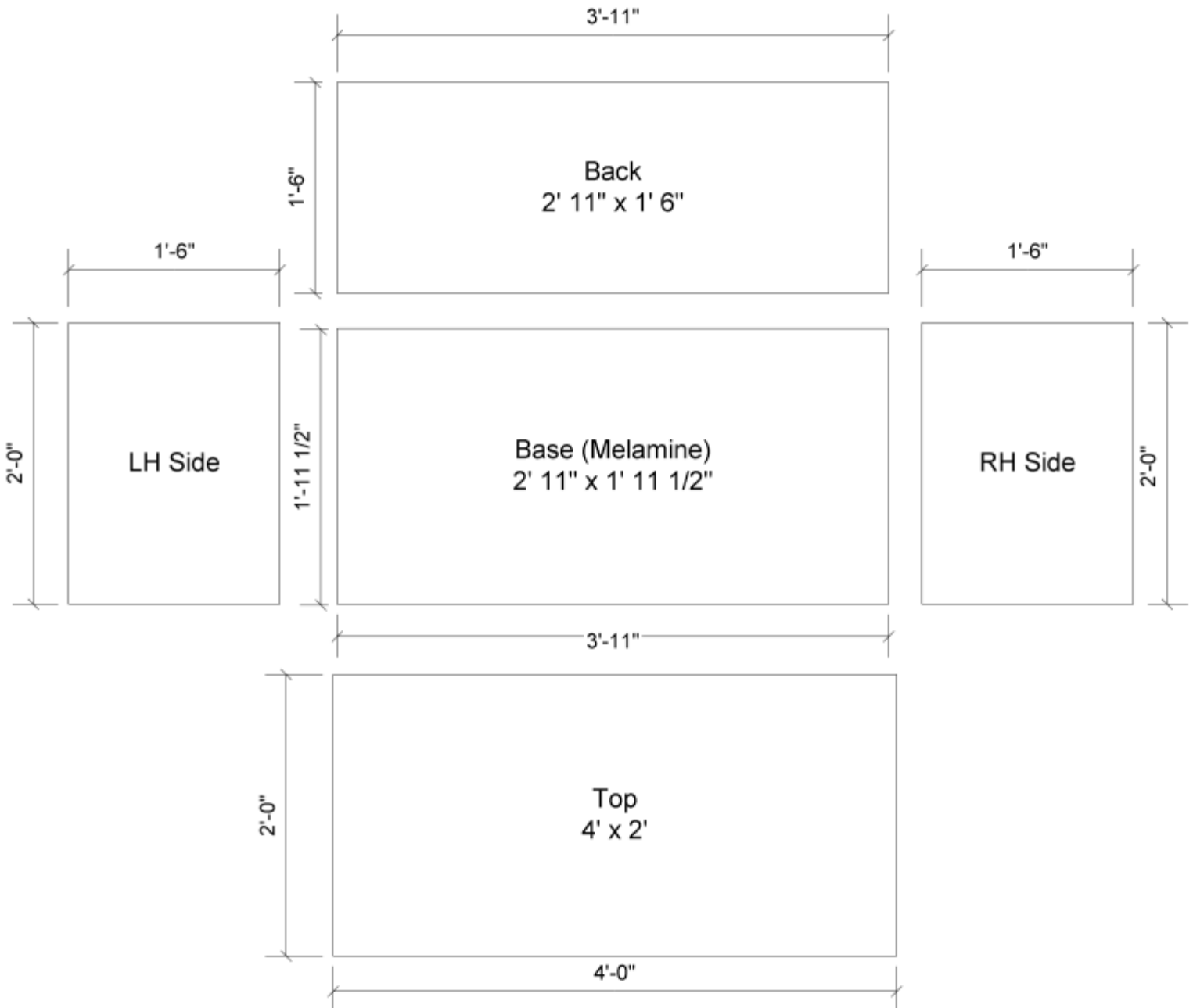
Dimensions for a 3' x 2' Enclosure
Using 3/4" thick MDF, Plywood or Melamine



4' X 2' Cage Material Dimensions Using 1/2" Material

The diagram below has the dimensions for a 4'x2' cage using sheeting for the sides and back that is 1/2" thick. This cage is much lighter but still strong.

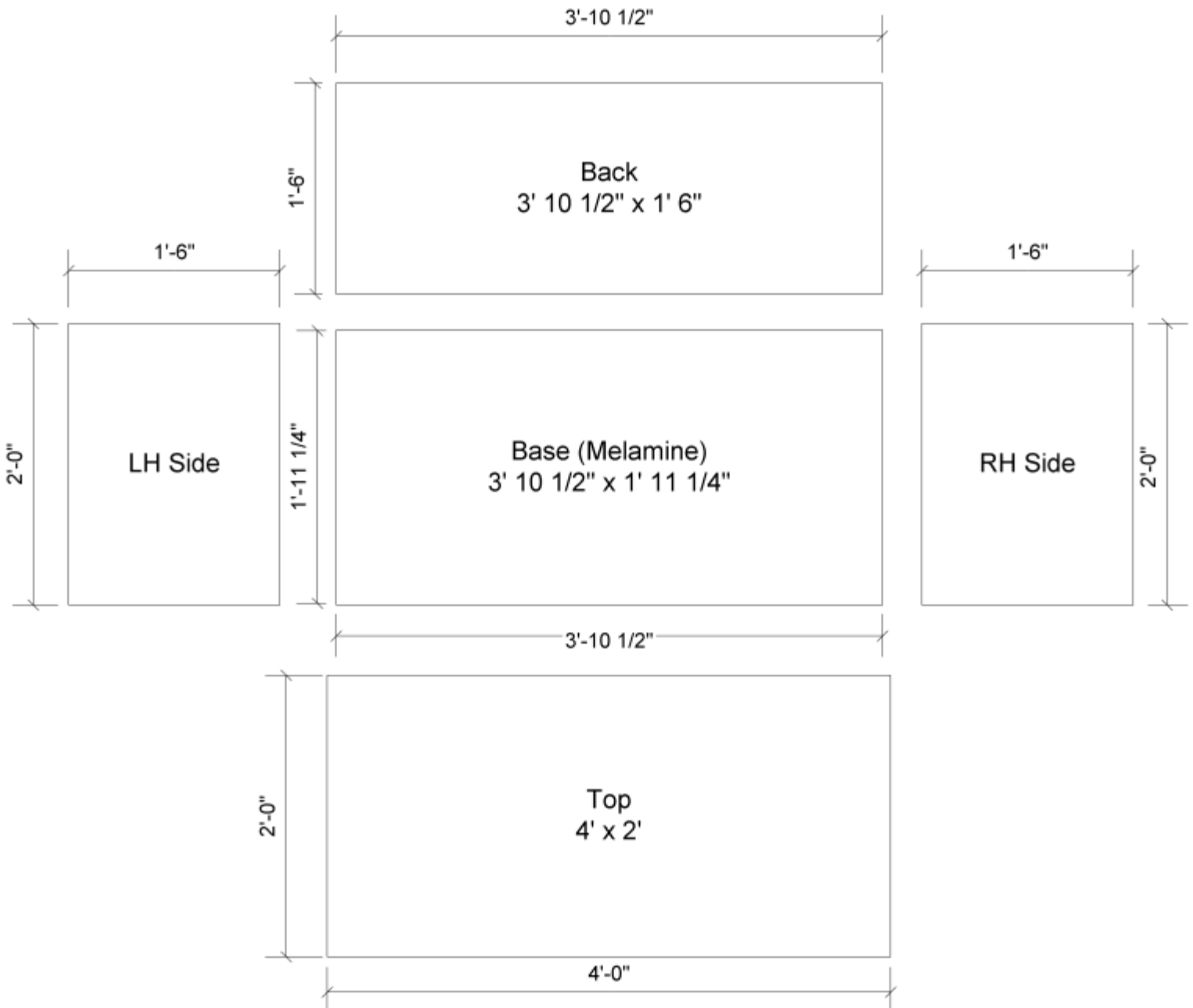
Dimensions for a 4' x 2' Enclosure Using 1/2" thick MDF, Plywood or Melamine



4' X 2' Cage Material Dimensions Using 3/4" Material

The diagram below has the dimensions for a 4'x2' cage using sheeting for the sides and back that is 3/4" thick. This cage is would be very heavy and may require castors to move it easily.

Dimensions for a 4' x 2' Enclosure Using 3/4" thick MDF, Plywood or Melamine



Step by step instructions

Step 1 - Cutting the pieces

Start by cutting all of your sheet timber to the sizes in the diagram for your particular cage. Do not worry about the timber fronts or doors at this stage.

You need to make sure you cut the timber square as the whole cage structure depends on the base, backs and sides being square.

TIP:

Once you have cut the base, use it as a template for the length of the back, as they are the same length.

Similarly you can use the sides to ensure they are the same height as the back.

This picture shows the cut pieces of the base, back and two sides laid out before assembly. The sides should be the thickness of the back wider than the base.



Covering the Inside of the Cage

You may want to cover the inside of the cage with a [Contact](#) coating at this stage if you do not want to paint the inside of the cage. This will help protect the cage from moisture and also give it a nicer appearance.

Contact coating is a PVC sheet with an adhesive background.



If you are going to use Contact it is a good idea to make the vents at this stage. The contact can then be cut away from the vent holes after covering. These holes in this diagram are circular and use cupboard vents but you can use any vent system. (see [Ventilation](#))



Cut the Contact to the required length and put it on the pieces, making sure the surface is clean and free of dust and other particles.

Smooth it carefully to ensure there are no air bubbles.

Once the boards are covered, trim the edges with a sharp knife or a razor.

You can cover each piece entirely.



The cage at below has the contact covering all of the insides.

The construction is identical to the construction outlined below, except that the inside of the cage is coated with contact.



Step 2 - Putting on the sides and back

Start by screwing and gluing the sides to the base using the 1" screws (if you use 3/4" thick sheeting the screws will need to be 1 1/2" to 1 3/4").

I would normally pre-drill the two end holes on the side first without any glue so I know the screw will go in easily and be in the right spot. Take your time and avoid rushing when putting in the screws. It is easy to make mistakes as they go in quickly once you start.

TIP: Start by only putting in two 1" screws at each end (not too close) without glue. Then apply the glue. Once they are in you can drill and put the others in without having to hold material.

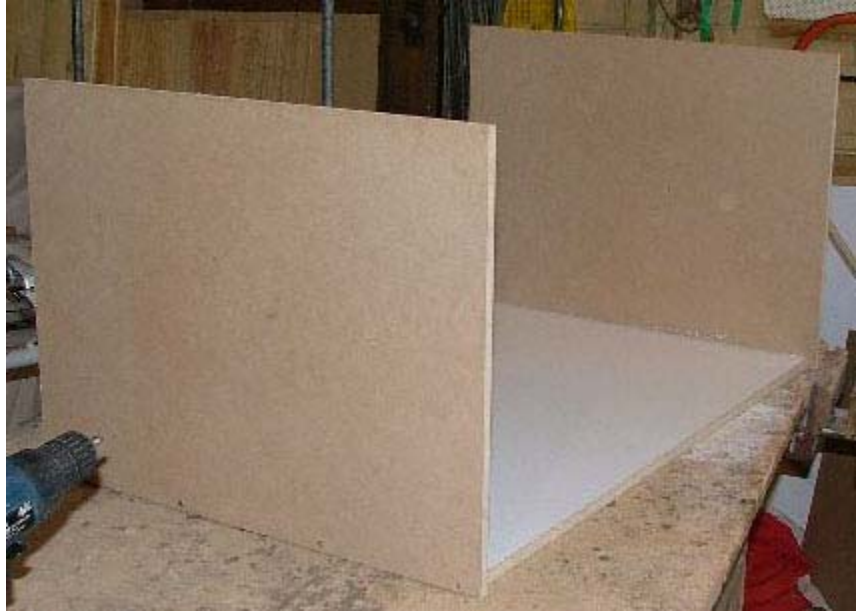
I use a clamp here as you need something to hold them together. Once the first two are in it is very easy to put the remainder. Screws should be placed about every 6".



Pre-drill all of the holes in succession, including the counter sinking, so screwing them in later is quick and easy.

The sides are best put on first as they are not very heavy compared to the back. Notice the sides extend beyond the width of the base.

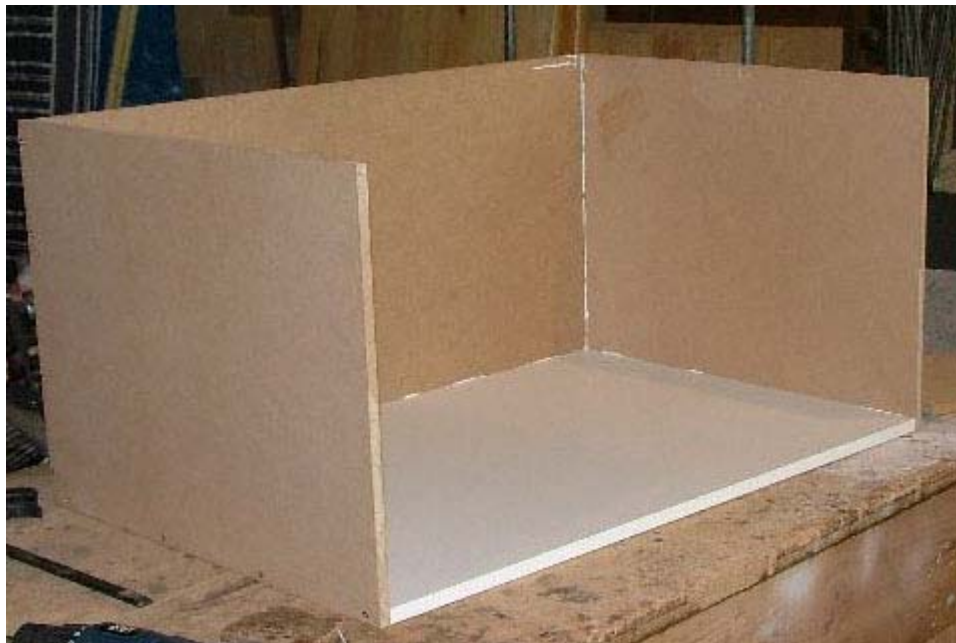
The glue may ooze out from the joint, so it is important that you clean it up as you go.



Next you put on the back. Run glue along the base and the edges of the sides and carefully place the back into position.

I would drill two screw holes first at the top and put in some securing screws. Once this is done, putting in the remaining screws is very easy. Place these about every 6" along the base and up either side.

If the back and sides are square, the unit will be square at this stage. Notice the glue that has oozed out. A damp cloth is the best way to remove it. It should be done now, before it dries.



Step 3 - Putting on the top

The top should fit exactly over the structure.

Run glue along all of the top edges and carefully place the top into position. Pre drill two or more screw holes to hold it into position and screw these in.

Now it is a matter of placing the remaining screws in the top,

strengthening the whole structure. Again, pre-drill all of them so that you are sure the screws will not poke through into the cage or out of the material.



Cage without Contact Covering

Cage with Contact Covering
(Note: the vents are already cut and installed on this cage)



If you are concerned about further water proofing the cage

somewhat, as water can damage the cage over time, it is a good idea to run a bead of silicone around the base/wall join. Use an ice cube, icy-pole stick, disposable gloves or plastic spoon to smooth around the edge. This will prevent water getting into the join and expanding the timbers.

Step 4 - Attaching the Front Pieces

Hinged Door Cages

These can be any sort of timber. I use pine as it is inexpensive and the cages are painted, but any sort will do. The timber is 3/4" thick.

These pieces do a number of functions. They both add rigidity to the cage structure.

The smaller piece goes along the top. This prevents the top sheet from sagging.

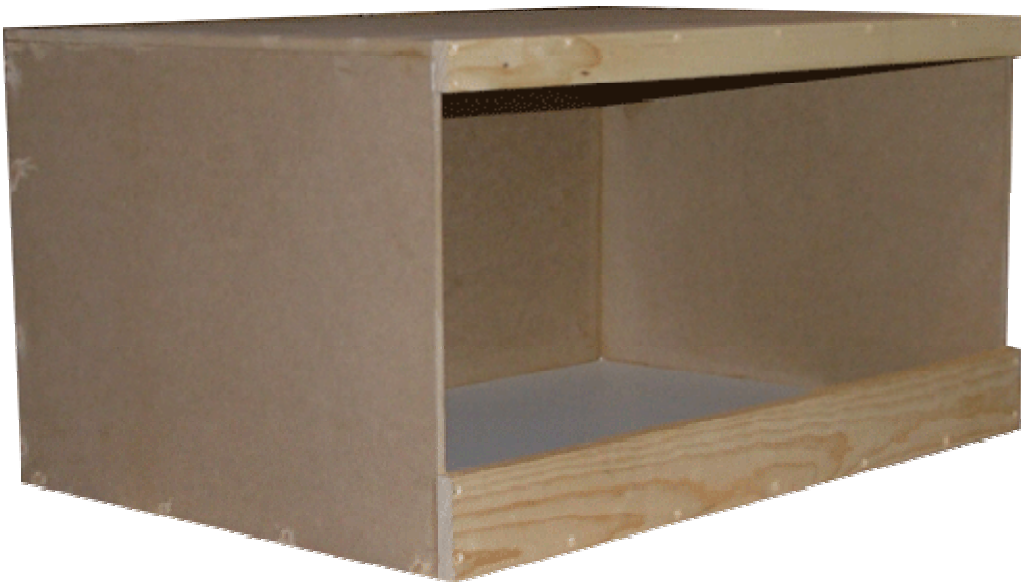
The larger one goes along the bottom of the cage. It creates a structure for the door to hang onto and also acts as a dam for the substrate.

Cut the pieces to the desired length of 3 ft or 4 ft, depending on the cage.

It is probably easier to put the cage on its back for this. You could also use clamps underneath the rail to hold it in position while you secure it into place.

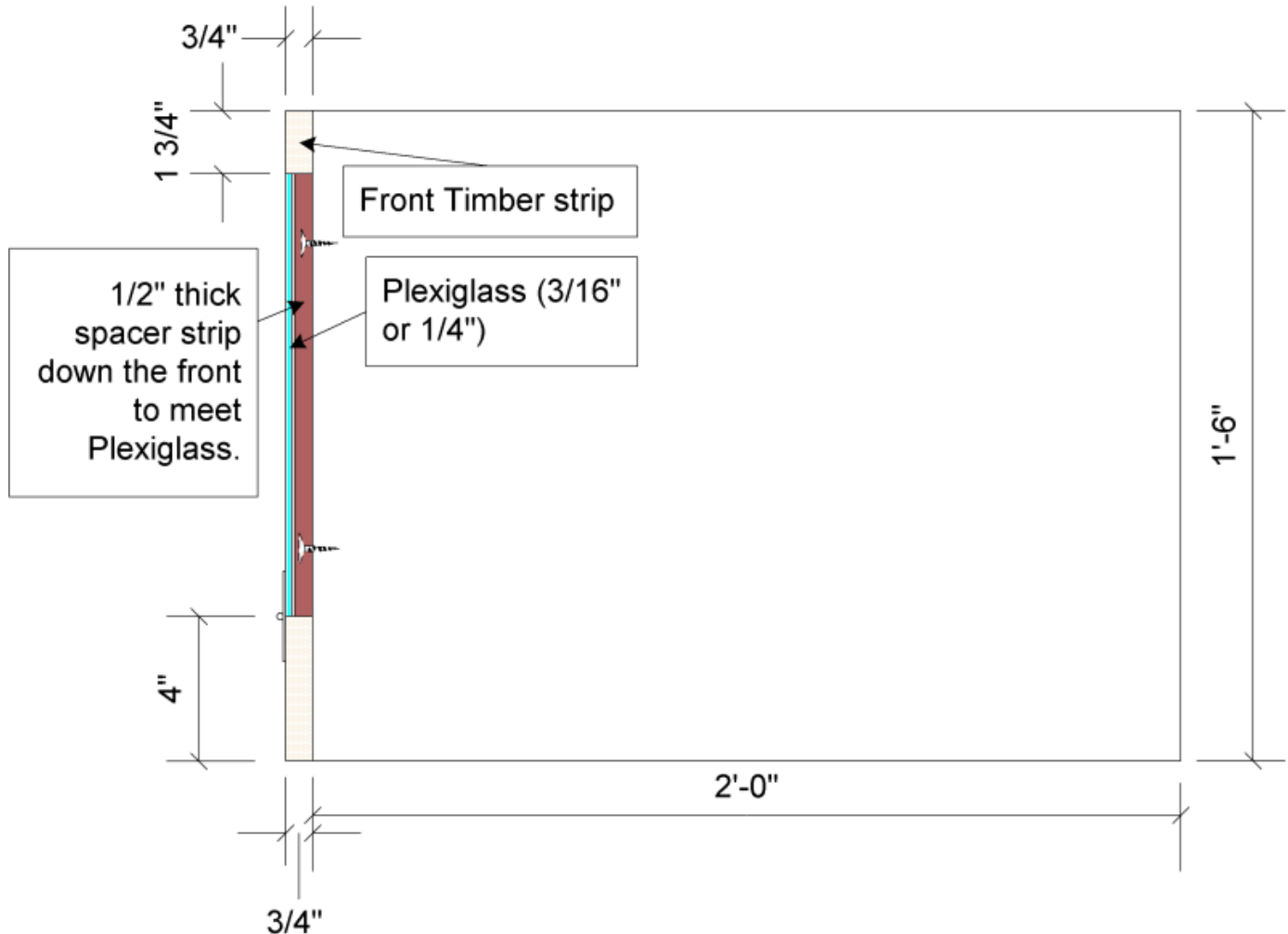
Pre-drill some holes and then run some glue along the front edges of the cage. Place the timber strips in position and then secure them with 1 3/4" screws.

Place a screw about every 6". Be careful near the corners and try to avoid other screws you may have already in the structure.



Putting on the Spacer Strips for a Plexiglass Door.

If you are using a glass door, you do not need spacer strips to do this as the door is the same thickness as the front timber strips. (You can skip this section and go to [Step 5](#) for instructions on installing the vents)



Before you put on the Plexiglass (Perspex) door, you need to put some spacer strips down the front of the cage to close any gaps as the Plexiglass is a lot thinner than the front timber strips (see diagram on page 17).

You can use cut off from the plywood or MDF or small strips of timber for the spacer strips. The spacer strips need to be the about 1/2" thick so that when the Plexiglass rests on the strip it is flush with the timber strip that goes along the front of the cage. See the diagram below for a detailed view of the cage from the side.

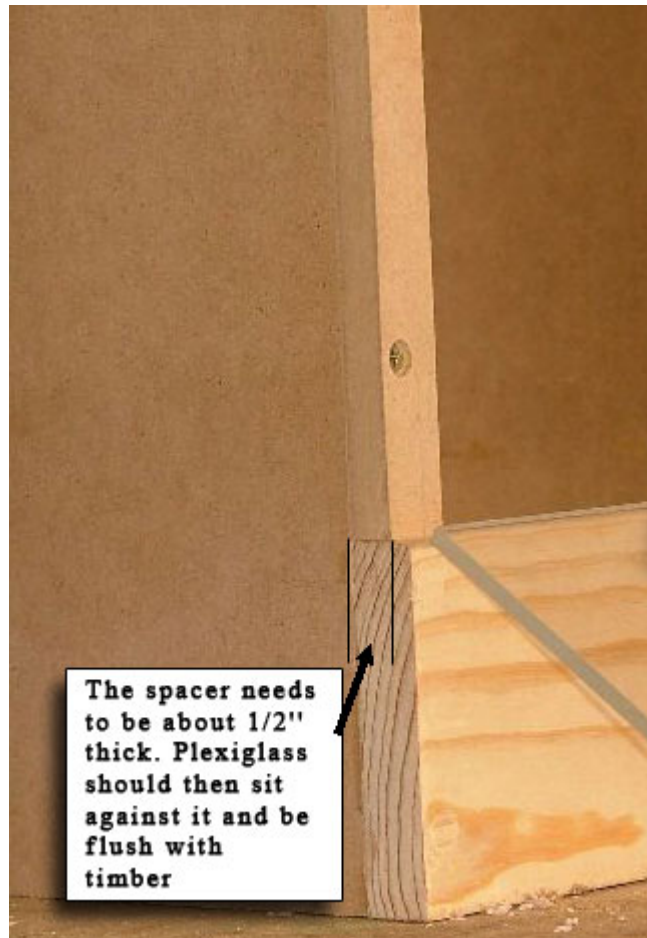
Measure the distance between the two timber pieces along the top and bottom and cut your 1/2" spacer strips to that length.

They can be 3/4" to 1" wide. This does not matter.

Place them into position and pre drill the holes.
Make sure you are careful to drill these properly.

Glue them and secure them with screws.

If they are the correct thickness, the plexiglass (perspex) will be close to the spacers, making it secure against you reptile escaping from the cage.



Sliding Door Cages

Sliding glass door cages have a different front on them. The frame is simple to make. You need to cut the two of the 1 3/4" x 3/4" timber pieces to the same length of the cage and two to the same height of the cage. For a longer cage, these would be wider for greater strength and the cage a little higher to compensate.

A simple method to get the exact lengths is to line the timber along the cage and mark the timber where the cage edge is for the length. Do the same for the height.

The frame pieces use a simple join.

Both ends of the pieces are cut as in the diagram and then overlapped and glued. The frame can be attached to the cage and then screwed or nailed in place.



These pieces have been cut to size and the timber is ready to be put on the cage. They have no Contact coating on them but this can be put on at any time.



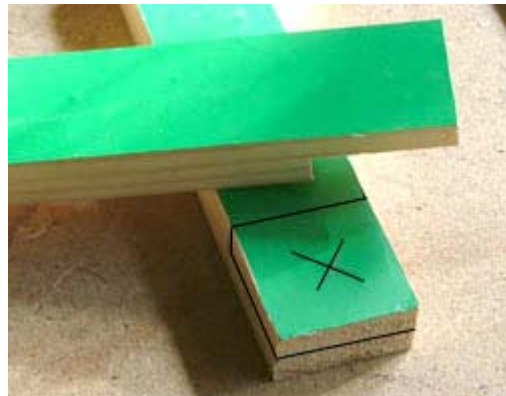
Making the joins is relatively simple but you need to take care to ensure a good fit.

The joins can be cut using a saw and a chisel as in the diagrams below. Another way is to find a local cabinet maker and get them to cut the joins for a few dollars - this is also useful if you do it when they cut the timber to size.

Mark the join using the width of the framing timber.



One of these pieces has been already done. The one with the X is about to be cut. Notice the line along the sides and ends. It is useful to make these as a guide to where you will be cutting and chiseling to.



Also notice that the one with the green back will have the green section removed. This is one of the side pieces. The other is one of the longer top or bottom pieces.

Cut the joint 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 half the thickness of the timber and make the joint using a number of cuts.



This is the joint at the back that faces into the cage.



This is the join at the front of the cage.



Now glue and nail the frames to the front of the cage.

Make sure the frame is square before you secure it with screws or nails.

If you use nails, punch the nails in slightly. This will allow you to fill the punch holes with a timber putty so that the nails do not show when you stain or paint the frame.

If you use screws, countersink the screws or use a large bit to make a hole to fit the screw head and allow the screw heads to be below the surface of the timber and again, fill the holes with a timber putty before staining.

If you choose not to do this, the frame can look attractive using quality screws, provided you place them evenly. Stainless steel or brass screws will give the cage a nice finish if you decide to leave the screws exposed.



Step 5 - Installing the vents

We are now ready to cut the vent holes and put in the vents. Actually, once you have made one you would probably do this earlier as they are easier to attach when the cage is in pieces.

If you are covering the inside of the cage you should have already done this and can skip this section and go to the next step [Putting on the Door\(s\)](#).

Get your vents and measure the size of the hole that you need to cut out. Be careful to make sure you have account for the screw positions and do not cut out too big a hole.



The vent on the right is about 6 1/2" x 3 1/2" but the hole pictured is only 5 1/2" x 2 1/2".

Get your vents and measure the size of the hole that you need to cut out. Be careful to make sure you have account for the screw positions and do not cut out too big a hole.

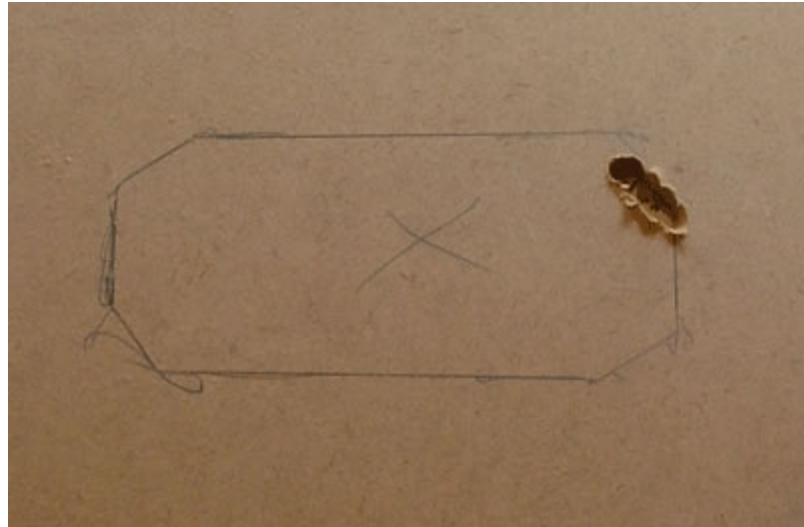
The vent on the right is about 6 1/2" x 3 1/2" but the hole pictured is only 5 1/2" x 2 1/2".

If your vent is an odd shape or is round it is a good idea to make a cardboard template of the shape and use this to draw around before cutting the holes.

Care fully measure where you vents will be positioned. The vents in the cage being made are about 2" from the top and 6" from either end, but it does not make a great deal of difference.

They are placed in the back of the enclosure here purely for visual reasons but they work equally well in the side.

You will need to drill some holes for your jigsaw or keyhole saw to start off with.



Carefully cut out the shape and secure the vents, making sure they are level and straight.

Finished vent hole at right.

It's not very neat but being at the back of the cage it will not be visible.

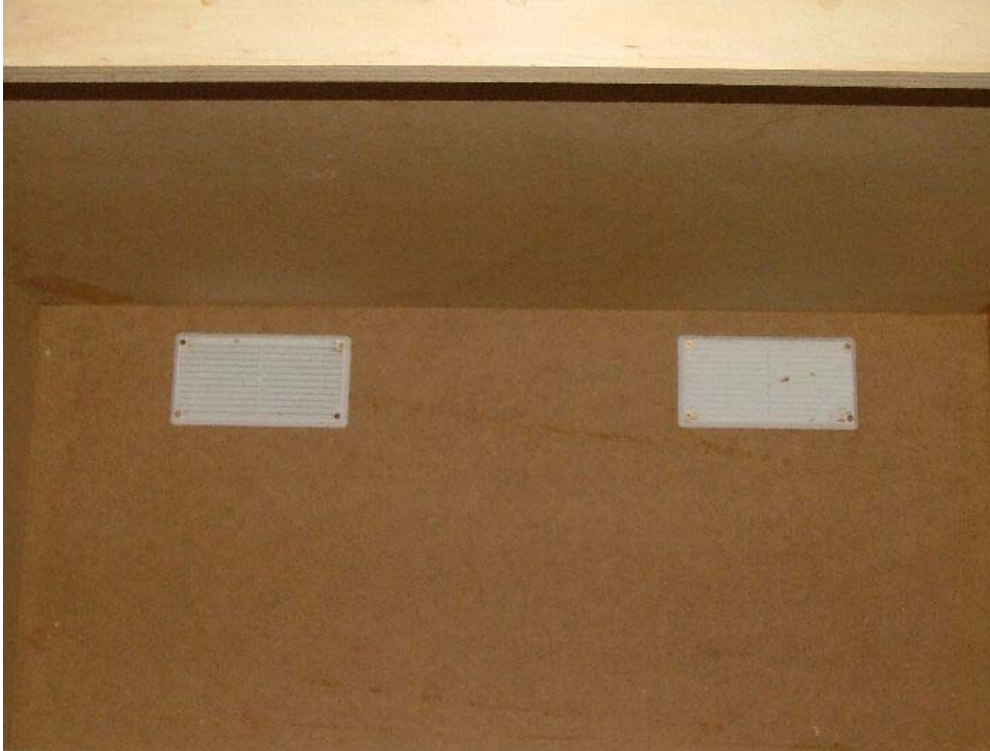


TIP:

If you intend to paint your cage, now is a good time to fill all the holes and paint it, before the vents are secured. All the timber work is done – unless you have a glass door, and that can be painted later.

Completed vents inside the cage.

Ideally this cage should have been painted before securing the vents. It is easy enough to remove them and paint it later.



An alternative is to use a large round drill and make round vent holes that use cupboard vents. Unfortunately the drill bits for these can be expensive so I have not put them in a general option but if you intend to make a few cages it is probably worth the investment. Again, drilling them after you have initially cut the timber and before you start to construct the cage is a good idea.



Round drill holes - these are 1 1/8" diameter. and suit cupboard vents.

Step 6 - Putting on a Door

Plexiglass Door

You should be able to measure the dimensions of the opening for your Plexiglass door easily. Allow about 1/4" for spacing of the Plexiglass (that is 1/8" top and bottom - this can be 1/16").

You need to allow for the hinges and any variations in your cage dimensions.

For a 3 ft cage use three hinges and for a 4 ft cage use four (or more) hinges, depending on the thickness of your plexiglass.

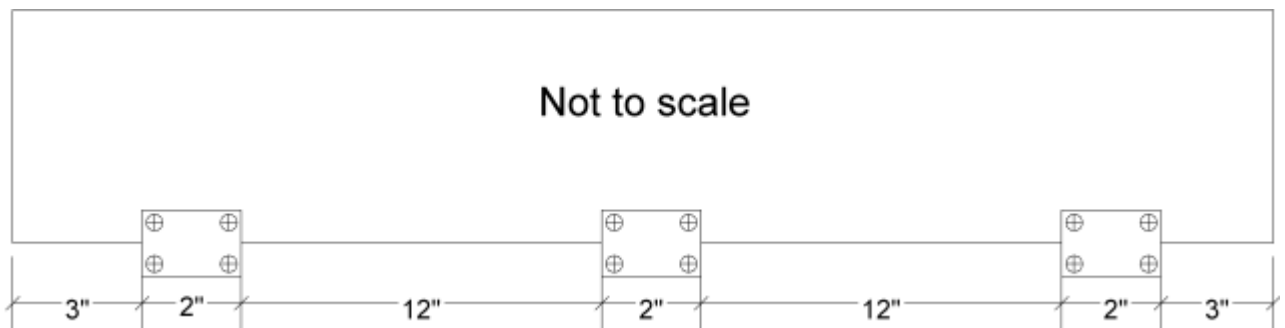
TIP:

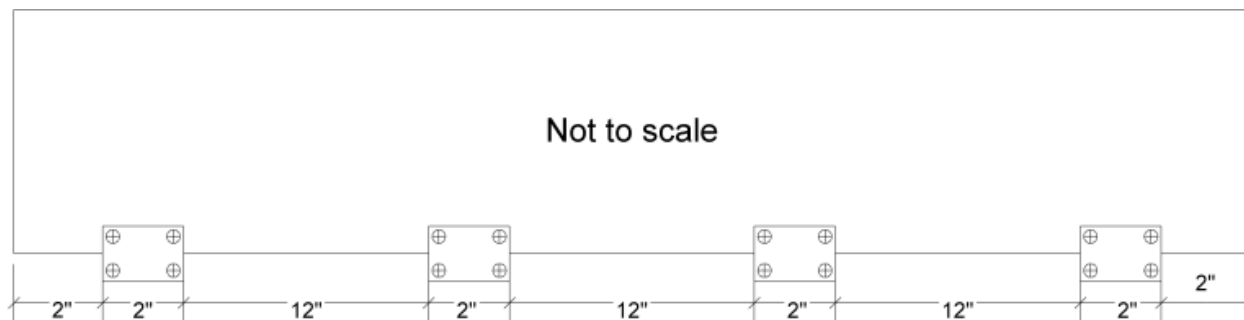
Use a piece of scrap timber under the Plexiglass when drilling the holes. The holes should be drilled carefully without too much pressure to prevent the Plexiglass cracking but enough to prevent chipping when the drill bit breaks through.

Measure out the distance for the hinges carefully and mark these on your Plexiglass. A small non-permanent marker pen is good for this.

The diagrams below show you where to place the hinges on your Plexiglass.

3 ft piece of Plexiglass





4 ft piece of Plexiglass

Carefully mark where you need to make the holes for the hinges on the Plexiglass.

Hinging the Door

Make sure you have the hinges level and mark the center of the holes for each of the hinges.

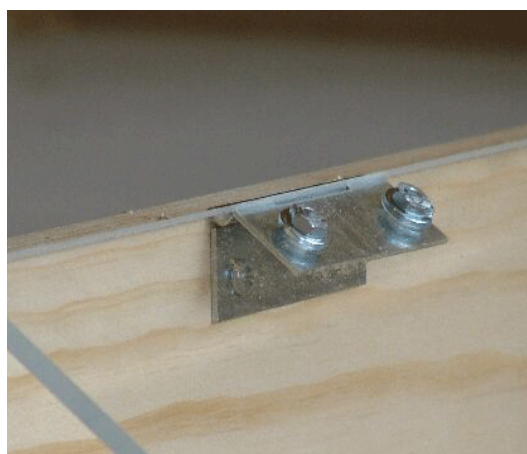
Drill each hole and attach the hinges to the Plexiglass door.

If the bolts are too long, you may have to shorten them.



These bolts have been shortened and smoothed using a file.

You should either file them so they are smooth or put a coating over the top of them, like a dab of PVA glue, nail polish or silicone. This helps prevent any injury to the animals.



The bolts at right have a dab of Silicone – not very elegant but effective.



Carefully line up the door with the cage and mark the center of the hinge holes for the screws.

Note the nails under the Plexiglass to ensure an even distribution along the timber front.

Attach the Plexiglass door to the cage using 1/2" screws.

Again, put in the two end screws first, check the door before putting in the remaining screws.



Sliding Glass Doors

Sliding Glass or Plexiglass doors are simple to install. A sliding lock mechanism can easily be fitted for locking the cage.

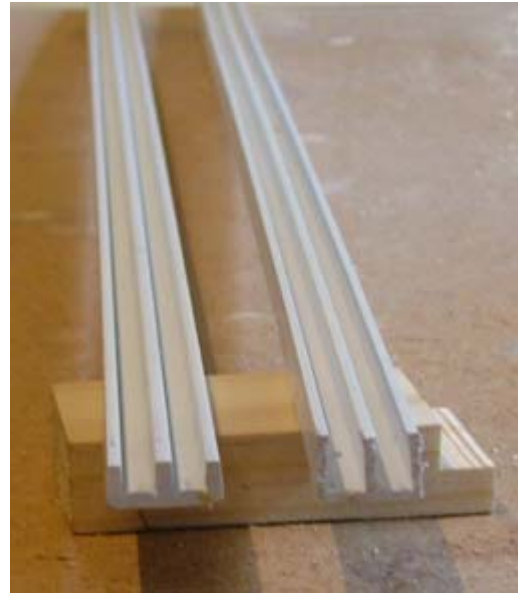
The front of the cage should have a square frame.

There are two main types of sliding glass track, metal or plastic.

If your snakes or reptiles are larger it is better to use metal tracks and 5mm glass as plastic tracks and plexiglass can bend or the tracks can be broken by a large reptile thumping the cage doors.

Smaller animals can use either but use Plexiglass that is 3/16" (min 5/32") thick so the animal cannot bend it and escape.

The bottom track is the shallower track and the top track is the deeper track. When you to insert the glass into the top track and you push it up and allow it to drop into the lower track.



The tracks can be glued to the cage frame. Many tracks also have small holes for using small nails to pin the track to the frame as well as glue. The glue can be liquid nails or a strong glue like Araldite.

The cage at right is ready to have the tracks installed. You would probably stain the front and paint the sides at this stage.

Measure the bottom edge and cut the bottom track to size.



Run a strip of glue along the edge of the frame.

Place the track on the glue and secure it. You can tack it into place with brads (very small nails).

Measure and cut the top and glue it into place. You may need to tape or clamp it into place until the glue dries.

Repeat for the two side. One will have a deeper edge than the other but this is not important.

Now the sliding tracks are all in place.



To install the glass, measure the distance from the wood at the top to the top of the bottom slider.

You will need to subtract about an extra 1/6" of an inch to account for the thickness of the base of the top slider. It is better to be slightly smaller in height than too large as the glass will not fit into place.

If you are ordering glass you must make sure of the following:

- Vertical edges must be arised and polished (removes any sharp areas)
- Bottom edge **MUST** be rounded and polished
- Corners should be rounded to a 3/8" radius

If you are going to cut your own glass I have an excellent article on my site at <http://www.reptile-cage-plans.com/articles/cages/cutglass.html> to view the article.



To install the glass, insert it into the back top slider first and push it upwards all the way into the slot. Now swing the glass into the bottom back slider and lower it into place.

Repeat the same for the front piece.

If you are using large sheets of glass for large cages e.g. 6ft it is better to purchase the sliders with ball bearings in the base.

Wooden Door with internal Glass or Plexiglass

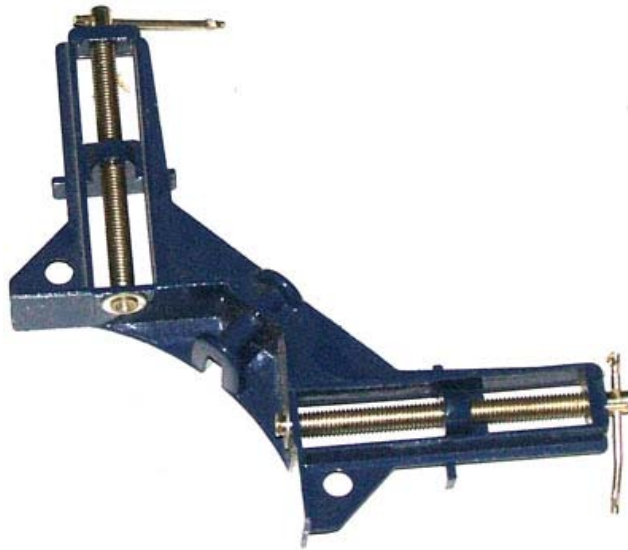
NOTE:

If you are going to put Plexiglass on your frame you do not need to make a channel in the door frame. You can screw the Plexiglass onto the back on the door.

Wooden doors require a bit more work than a Plexiglass door but they are simple enough to make if you have the right tools. A framing clamp is very useful. You can purchase these for very little and if you intend to make a number of doors they are well worth the investment.

The difference between the cost of a sheet of plain glass and Plexiglass is almost the equivalent of the cost of a cheap set of framing clamps.

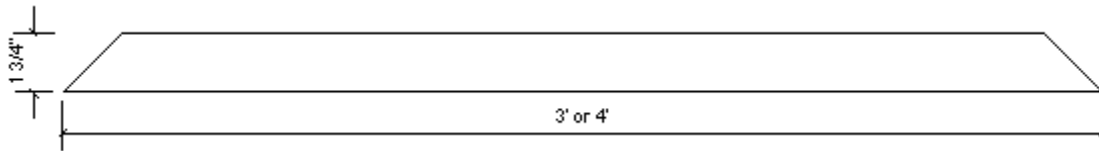
Below is a very cheap framing clamp. If you do use these, make sure you put a piece of timber or cardboard between the clamp and the surface of the wood to prevent damage.



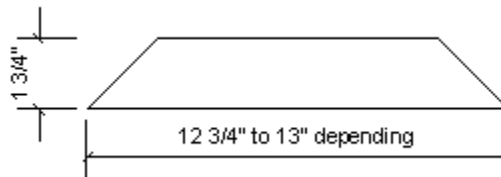
TIP:

The more accurate your 45° cut, the better the door. You need to make these cuts carefully to ensure a clean and accurate join.

Measure the top and bottom pieces and cut them with a miter box, a miter saw or radial arm saw. These pieces should both be as wide as the cage - either 3 or 4 ft.



Top and bottom pieces



Side pieces

Measure the distance between the top piece and the bottom piece. Cut your side pieces 1/4" shorter than the measurement using a miter box or saw.

TIP:

The side pieces of the door frame need to be 1/4" to 5/16" shorter than the distance between the top and bottom front timber pieces.

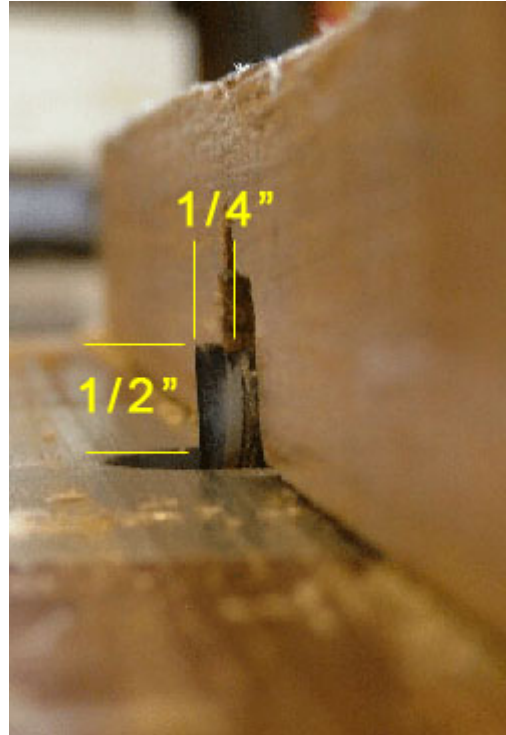
Measure this distance before you cut your side pieces using a miter box or saw to allow for differences in the thickness of the material.

Making them shorter will allow for the hinge and also the arc of the door as it closes.

If you do intend to use glass, you need to make a channel with a router.

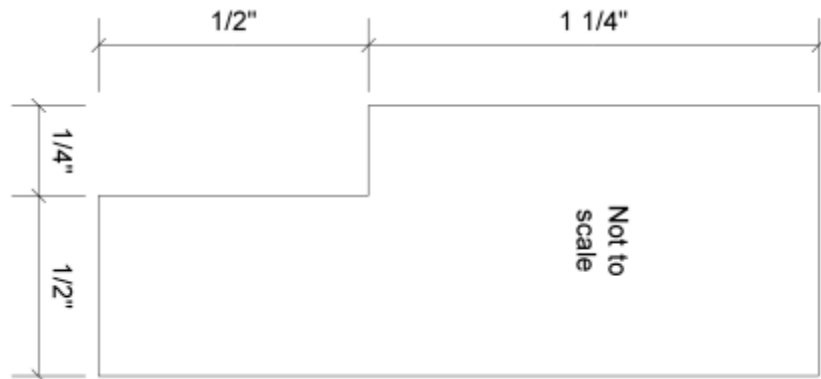
You can use an electric plane at a pinch but router will do a much better and more accurate job.

In the diagram to the right you will notice the router bit is higher. The sharp edge cuts along the front of the timber, giving a cleaner finish.

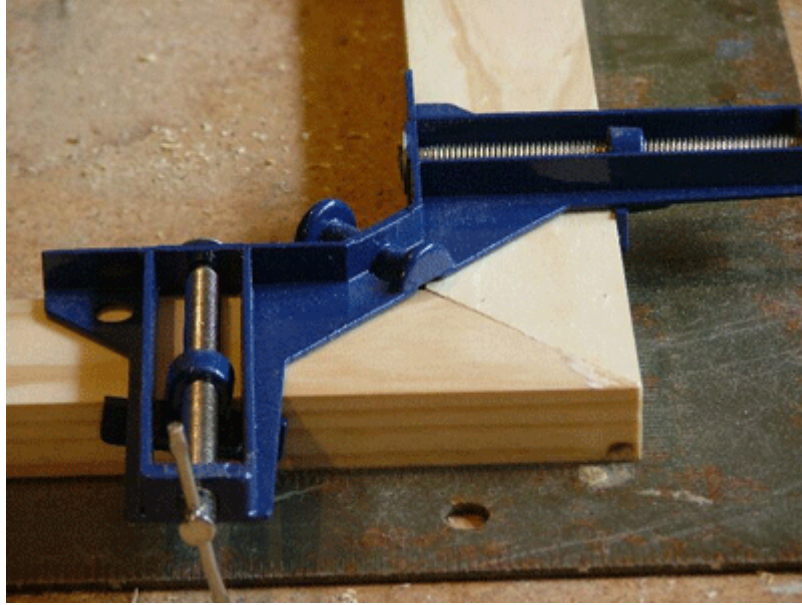


The channel for the glass to fit into can clearly be seen on the right.

Once the pieces are all cut you apply glue and clamp them together.



Make sure the door frame is square when you are clamping it.



Clamp the pieces securely.

Next you will put some screws into the frame to pull the pieces together tightly and make the structure stronger.



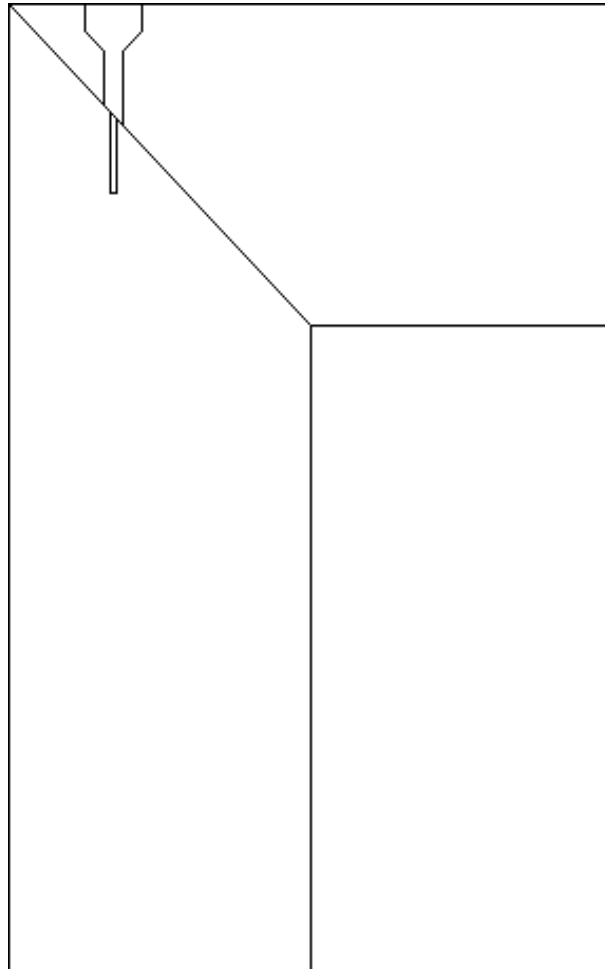
Pre-drill holes on both sides when you are sure the door is square.

These screws are better being put through the two side pieces as when put the piano hinge on the frame the screws can get in the way if they are on the bottom piece of the frame.



When you pre-drill these, make sure the size of the first hole through the outside piece is larger in diameter than the screw. The second hole, into the other piece should be smaller than the screw. See detail at right.

This ensures the screw goes through the first piece of timber easily and the screw pulls the other piece tightly into place.



Putting in the Glass

Once the glue has dried you are ready to put the Glass or Plexiglass into the door.

Measure the internal size of the door before you go and get the glass. You need to get a piece about 1/8"-3/16" smaller than the internal rebate in the door.

Run a bead of silicone around the channel of the door



You should be able to run a bead of silicon about 1/8" bit thick around the channel.

Gently place the glass into the frame and push down until it is level with the frame.

Once dry it will hold the glass in the frame. If you are worried about it falling out you can use bits of plywood or similar to hold the glass in place.

The picture here shows how to do this. Notice there is a small amount of silicone underneath the timber piece. This takes some of the shock and also holds the glass in a little more firmly.



Attaching the Door

To attach the door to the cage, a Piano hinge is used. These are strong and last a lot longer than smaller hinges on heavy doors, especially when they are opened and closed a lot.

You will need to cut the hinge to size and trim the corners.

Once this is done, place the hinge along the door so that it is evenly spaced at both ends and the round part is facing outwards from the door.



Mark the center of the holes and pre-drill them with a very small bit.

Screw all of the screws into the door.

Place the door against the cage and line up the edges either side, so the door matches the cage.

Mark the holes carefully in the center. Make sure that the outside of the hinge is level with the outside of the timber frame.

Pre-drill two holes at the ends and one in the center then use three screws to secure the hinge in place.

Test it and make any adjustments. You may need to plane some of the tops of the door if you have made the side pieces too long.

Pre-drill the remaining holes with a small drill bit and then secure the hinge with the remaining screws.



The cage with the door fitted and is ready to be sanded and painted.



Painting

If you have made your cage out of MDF, particle board or Plywood, now is a good time to paint it. The fittings are not on the cage and you can sand it and paint the cage without having to worry about going over bits and pieces.

If your cage is made of melamine then this is where you should put the covering strips and finish any exposed areas of the melamine edges.

Before you paint the cage, make sure you fill in any holes or uneven areas with a suitable wood putty or wood filler that can be painted over.

A good idea is to tape the Plexiglass door and vents off the cage (or even the wooden door) before you paint. Even though it is a bit of a nuisance, it saves you time in the long run, especially if you are doing three coats.

Give the cage a good sanding after you have filled the holes and before you paint. The smoother the surface of the cage, the better the paint finish.

The cages can be painted with enamel or acrylic paint if it is MDF. Satin, gloss or flat paints are a matter of preference. If you are uncertain the best thing to do is to use a satin paint as it is neither too glossy and does not look flat either.

You can paint the cages with brushes or rollers or spray.

Spray works well on MDF as the MDF board has a very smooth finish that allows for a good finish with spray paint.

If you are going to spray paint, use plenty of newspaper. Tape newspaper over areas you do not want to get paint on such as vents (if still on) and the melamine floor.

Lightly sand with a very fine sandpaper between each coat of paint. It is best to have two to three coats of paint. The cage in the picture below has three coats. It is fully covered to seal in the formaldehyde.

If you are using plywood, you can stain the wood with a dark stain first and then put two clear coats of polyurethane over the top. Staining allows you to give the timber deeper colors and also hides any small blemishes and minor mistakes.

The painted cage below is ready to have the fittings put back on it.

This has already got castors on it, but these are easily put on at any time. ([see below](#))



Putting it all together

Step 7 - Adding Locks

Hinged Cages

I like to be able to lock my snake cages. It's not that theft is a big issue where I live but rather if I have visitors or young children around I like to be able to lock the cages and prevent people opening them or someone taking out my snakes without my permission.

A simple Cam lock is quite effective.

To install a Cam lock you will need a 3/4" drill bit. You will need a 1 1/4" Cam lock for a Plexiglass cage and a 1 1/2" Cam lock for a wooden door frame.

Installing a Cam lock is a reasonably simple procedure.

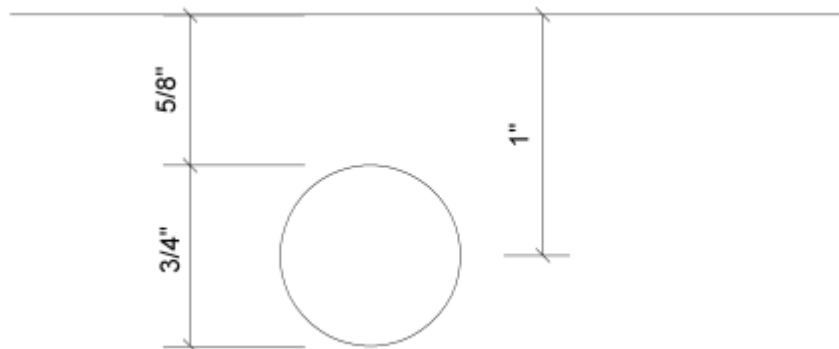


Measure along the top of the door and mark the center. This is where the Cam lock will be placed. Measure 1" in from the top of the door. This is the center of the hole for the Cam lock.

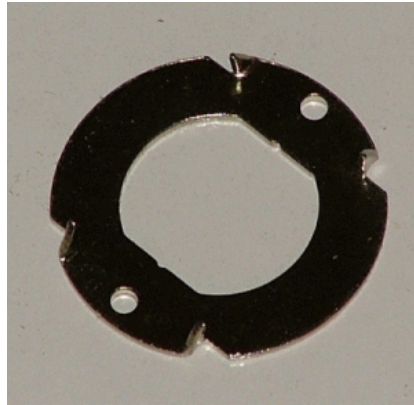
Drill a 3/4" hole. Place the Cam lock in the hole.

Before you tighten the Cam lock, make sure that it turns the correct way to lock the cage. Make the necessary adjustments and then tighten the securing bolts.

If your Cam lock comes with a pronged washer (see – picture - it looks like a washer with protruding pieces that go in the timber to hold it in place), use that piece to secure the lock in place on the timber frame.



You do not need that piece if you are using Plexiglass as it will damage the Plexiglass.



Sliding Glass Door Cages

The slide lock is installed by attaching the long piece to the edge of the back glass or Plexiglass sheet.



The securing nut on the back should be quite tight to prevent the latch from moving when it is being unlocked or locked.

Use pliers to tighten it to prevent this movement.

At right you can see a fitted lock.



Step 8 – Adding Door Fasteners

Depending on the type of door you use, you can have a range of fasteners. The ones at right are plastic but if you are concerned about strength, use the double ended metal ones.

These are stronger and will withstand much more pressure on the front door.

Plexiglass doors can use Fly Wire Screen holders or even a strip of timber with a hole in it, attached to the front of the cage.



Wooden Doors can also use these or can use hook & eye latches attached to the side of the door.

These are very simple to put on. Take care when attaching them to measure equal distances from the edges of the cage or doors. It just makes the cage look a lot more professional if these small things are done correctly.

These are simply screwed into the top piece of timber on the cage. Notice the piece will not sit totally flat on the timber. This is generally not the case for metal ones, which are stronger but can scratch the Plexiglass.

Because these plastic ones did not sit flush on the timber front they to have a small hole drilled to about 1/8" depth. This enables them to sit flush on the timber surface hold the Plexiglass in securely.



The metal fasteners usually sit flush. It may be useful to insert a small washer between them and the timber to allow easier moving and not damage the cage surface.

The hook and eye latch at right is also very easy to install. The best way is to put the hook onto the door frame on the side first. This allows you to get a good position on the position for the eye that the hook goes into.



Make sure the hook latch has the eyelet piece positioned horizontally; extending the hook as far as it can reach. To do this mark where to place the eyelet for the hook, taking care to ensure the end of the hook will line up with the eyelet.

As you can see from the picture at right, both eye pieces are set horizontally. This prevents movement of the latch and eye pieces, keeping the door securely and tightly in position.



Step 9 – Lighting

Lighting will generally consist of basking lights that provide heat for the reptiles and UV light for their health and well-being. Some species of snakes do not require UV but many lizards and turtles require UV light for their skin and shells to remain hard, as well as their general health.

This cage will have both. You will need electrical wiring of some description to wire both lights.

Cheap extension cords, with one end cut off, make good light wiring if you do not have any electrical wire handy. Make sure you strip the wire back to reveal the wires underneath. A razor or sharp knife will do the job quite nicely.

Drill holes at the top of the cage that are large enough to put the wiring through.



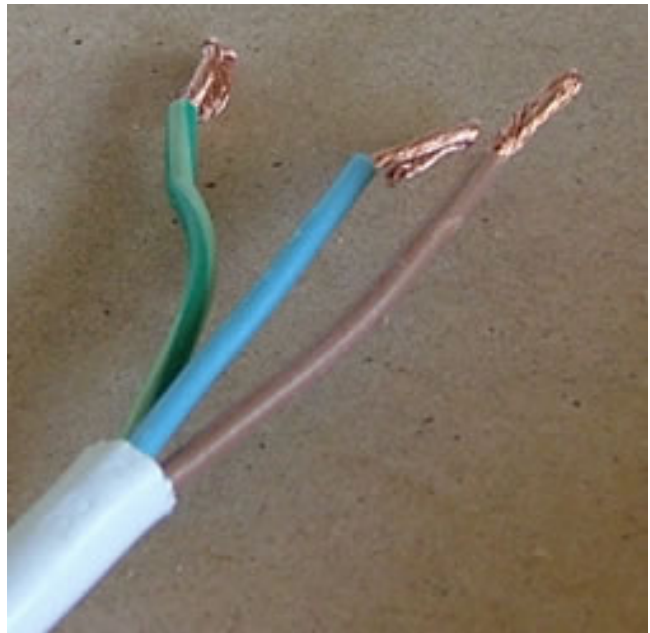
Basking Light

The batten for the basking light may have to have a piece cut out of the side to allow the wire to go in.

Your basking light may also need a wire cover to prevent snakes that climb from touching the globe and burning themselves.

Cut the wire like the diagram at right. These wires were cut to expose about double what would fit into the light batten. The wires are then twisted and folded over to make stronger and better connections.

Put the wire through the hole in the back of the cage.



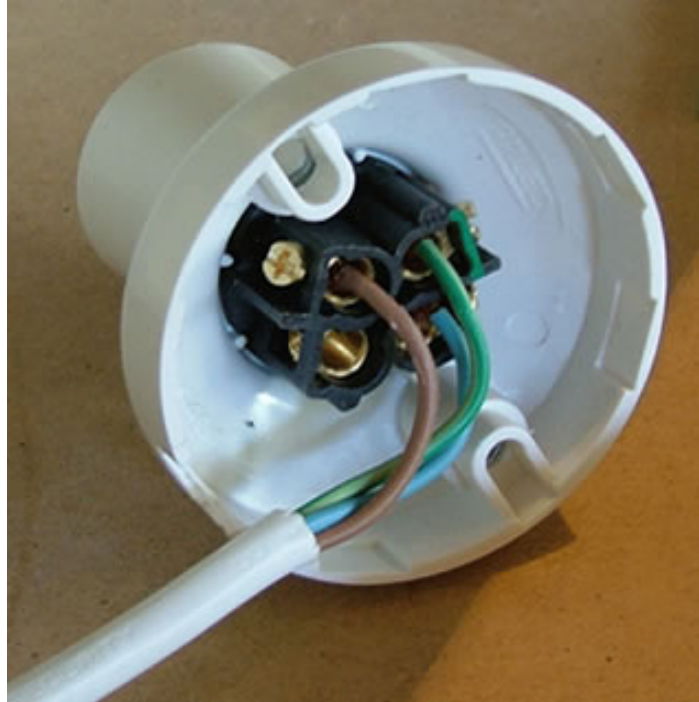
A wire cover can be made with any wire mesh and the secured to the roof of the cage around the light. These can also be purchased from most reptile supply shops.

Put the wires into the batten, being careful to follow the wiring directions.

If you are unsure about this, buy light battens that come with directions. This is usually pretty straightforward and most of them have color coding for the wiring to make it easier.

Green is usually earth, blue or black is neutral and red or brown is active.

For lights, generally it does not matter which connection the blue/black and red/brown go in, as long as the earth is in the correct connection.



Notice that none of the wires are exposed.

Place the basking light batten over the area where you would like the reptile to bask. Usually you would put it somewhere at one end of the cage over where the heat mat is also located if you are using a heat mat. Secure the light in with screws.

TIP:

Check how far the screws will protrude from the end of the batten into the wood before you screw them in. It is very easy to use screws that are too long and puncture the roof of the cage, ruining the cage top.

UV Light

The UV light is a special reptile fluorescent light, available from any reptile supply stores. We recommend Zoo Med's Reptisun 5.0 UVB based on current best practices. (see UV lighting sheets for more detail)



You can use a standard fluorescent batten for the UV lights. The batten may have to have a hole drilled into the side for the wiring as they are mostly made for ceiling wiring.

Put the wiring into the cage and connect the wiring it to the batten.

Attach the batten to the ceiling of your cage using 3/8" screws or 1/2" screws with a number of washers. This prevents the screws breaking through the roof of the cage.

The light should not be too far from the reptiles in order for them to get the maximum benefit from the UVB.

The light in this picture is about 15" from the animals. This distance can be shortened with basking rocks and branches in the cage, bringing the reptile to within about 12" or closer to the UVB light. This ensures better production of Vitamin D3 in your reptile.



Not all animals will require UV light so this can be a plain fluorescent in some cases.

It is a good idea to use a timer with your lighting so that you can imitate the daylight hours of your cage.

These are simple devices that are can be connected to your lights and turn them on and off automatically over a twenty four hour period. Most reptiles will require at least 9 hours of darkness



Step 10 - Heating

Heating is an essential component of any reptile enclosure. It can be in the form of a range of options including:

- Heat mats
- Ceramics lights
- Heating lamps
- Hot Rocks
- Heat boxes

Whatever you choose, you need to heat the cage, monitoring and maintaining a temperature range that's suitable for your reptile.

Heat mats come in a variety of types from homemade to commercially available pre-built mats.

You need to make sure that you have a thermostat to regulate the heat in your cage. A thermostat measures or monitors the temperature in the cage and turns the heating device on and off, based on the temperature at which it has been set.

You also need a thermometer. There are a variety of these available from a simple thermometer that can be move about the cage, to max/min thermometers to spot thermometers that can be pointed at an exact location and measure the temperature at that location.

It is essential you have at least one type of thermometer to help you monitor the temperature of the cage. If the temperature is not high enough, many snakes are not able to properly digest their food.

This booklet has an accompanying booklet on making a heat mat. These are very easy to make and do a great job of maintaining a consistent temperature in your cage.

Pictured are two variations of thermostats. One has a probe which is placed within the cage to measure the temperature at a particular place. These are more accurate but more expensive.



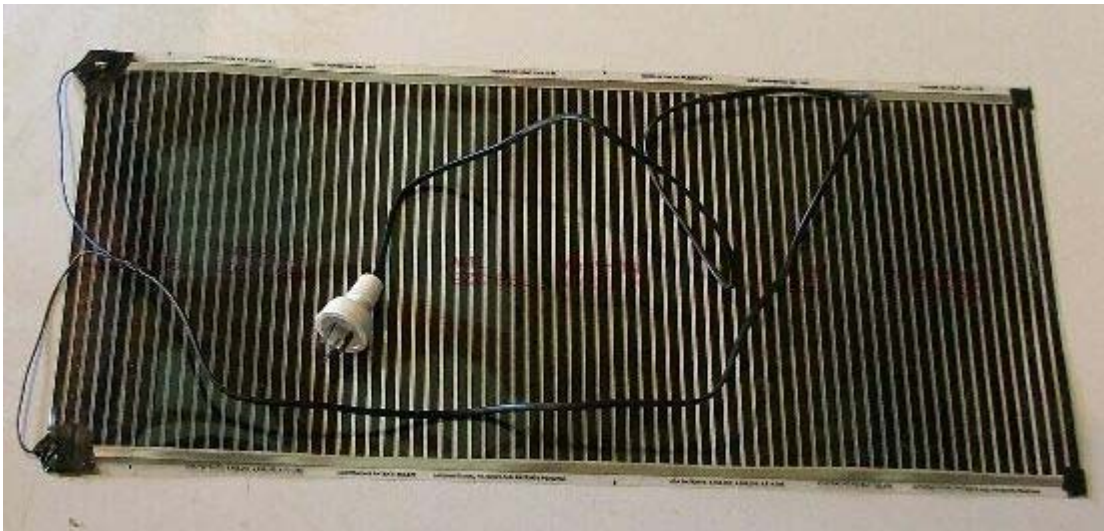
The other thermostat is placed somewhere in the cage, usually on the back wall. They are cheaper and not as accurate.



For more information and a more complete discussion go to this site:

<http://www.reptilesdownunder.com/reptile/enclosure/heating.php>.

Below is a Flexwatt heat mat with wiring. The cord is plugged into a thermostat with a probe. Usually the probe in this sort of heat mat would go on top of or underneath the mat. These mats are safe to place in cage, under substrate or newspaper.



I use both heat mats and basking lights. The Heat mats maintain the optimal lower temperature for the animal and the basking light will increase the temperature of the cage during the 'daylight' hours and allow the animal to bask or move away, depending on what it's requirements are.

The Finished Cage

Below is an example of a finished cage. Please note that there are no guards on the heat lamp and, depending on the type of reptile you keep, you may need to place a safety fitting around the globe to prevent the animal injuring itself. This is much more likely with snakes as they like to reach up and may accidentally touch the heat lamp.

If you use a heat mat, there may not even be a need for a heat lamp in the cage.

Some people like to cut a round hole in the roof of the cage and fit a dome heat light. This is relatively easy to do and you can use stove rings too give it a good finish. Some metal mesh will prevent the snake from touching the heat source.

If you do use this method, you cannot stack the cages.

Another alternative is a ceramic heat source. These are very effective and last a long time.

Below are two completed cages. The sliding one did not have any lights fitted at the time.





This cage has a vinyl floor with a heat mat that covers about half the cage under the vinyl at one end. The front pieces were stained and the sides and top were painted using spray paint (remember to tape the areas you don't want covered if you use spray paint). The inside is lined with Contact, a PVC material.

Where to from here?

Cage Accessories and Furniture

Water Bowls

Water bowls are essential. They should be at both ends of the cage and always have clean, fresh water. They can be a simple lid or a decorative piece that looks like a rock. They need to be fairly spill proof. This one pictured is made by Hagen but there are a number of other quality manufacturers. (Keep a water bottle near the cage – that way you can fill it whenever you are near)



Basking spots

Reptiles bask to generate body heat, aid digestion and maintain their health. Basking rocks allow them to get closer to the heat source, allowing the animal to manage its body heat.

Your cage should provide a basking spot below a heat lamp for your reptile's comfort.



Hide Boxes

Ideally your reptile should have a hide box at both ends of the cage to enable it to hide and regulate its temperature where it chooses. A hide box can be a simple wooden box, a manufactured product, a terracotta pot plant base with a hole cut in it, a hollow log or any number of things that would allow your reptile to feel safe and secure. Do not use pine or cedar logs, as these are thought to contain harmful tars and oils that may damage the health of your reptile.

Branches and plants

Many reptiles love to climb. My Children's Pythons love to be able to move around on branches.

Providing them with branches and natural looking pieces will make them more comfortable and improve their environment. You are encouraged to make your reptiles home as comfortable as possible, but without overcrowding it. I think some owners put too many items into a cage and the animal has nowhere to move.

Artificial plants will give your cage a more natural feel, without having to change the plant every few days.

If you use branches from outside, be sure to treat them for insects and other potential parasites. Once you treat them, make sure that the treating material has very little residue left before putting them into a cage. Leave it for a few days or more so that the material has time to degrade or vaporize.

Branches can be cut to size for the cage and fitted with cup hooks and eyelets that enable them to be hung in the cage and readily removed when the cage is being cleaned. The one at right has two branches hanging.

One goes from one side to the other (and is also attached at the back wall) and the other goes from the right side to the back wall.



You can see the detail for the cup hooks and eye at right.

The holes for the hooks were pre-drilled using a drill bit a little smaller than the threads (it should be the same size as the screw shaft minus the threads), so the hook will screw in and still allow the thread to take hold.

Once the branch has been fitted you can take it out and add artificial vines to give it a more natural appearance.



These vines were added using a hot glue gun but you could use any quality glue. Hold the vines in place with a bit of tape until the glue dries.

You can often buy a bunch of vines and cut them into smaller pieces to be used at different points on the cage.



Substrate

The substrate is the material that sits on the bottom of the cage. It can be newspaper, wood shavings (not pine or cedar), sand, artificial turf, recycled paper etc. We have had good success with cat-litter that is made from recycled paper. It removes odor, absorbs liquids very effectively and is easy to clean. If you place it over a newspaper base, it is even easier to clean up as you simply fold the newspaper in, collecting most of the substrate with it and remove the lot.

Some owners who use recycled paper do recommend that you feed the reptiles outside of the cage in another container to prevent the reptile from ingesting pieces of the substrate, which can be dangerous for their health.

As a rule of thumb I feed snakes outside of their cage anyway but owners with larger numbers of reptiles will find this time consuming.

If you use sand as a substrate, you can treat it yourself by placing it in the oven at high temperatures for about 30 minutes. This will remove any unwanted parasites or organisms from the sand. Let it cool down for quite a while before you use it as it will retain heat for some time.

Lighting Timers

A useful item to manage the lighting and lamp heating of your cage is a timer. These are relatively inexpensive to purchase but are great for when you have limited time or are out for a few days.

I have them connected up to a separate powerboard to run the lights and heating lamps, while the heat mats are on a separate board.

You can set the time for day and night and this will give your animals some consistency. This consistency can help reduce stress on the animals. It is regular and predictable, just like in the wild.

You can also slowly reduce and increase the times to mimic summer and winter if you want. They are very simple to set and reduce the number of tasks required to look after the animals. You can then concentrate on their care and feeding etc, knowing that the heating and lighting is automated.



Cage wallpaper

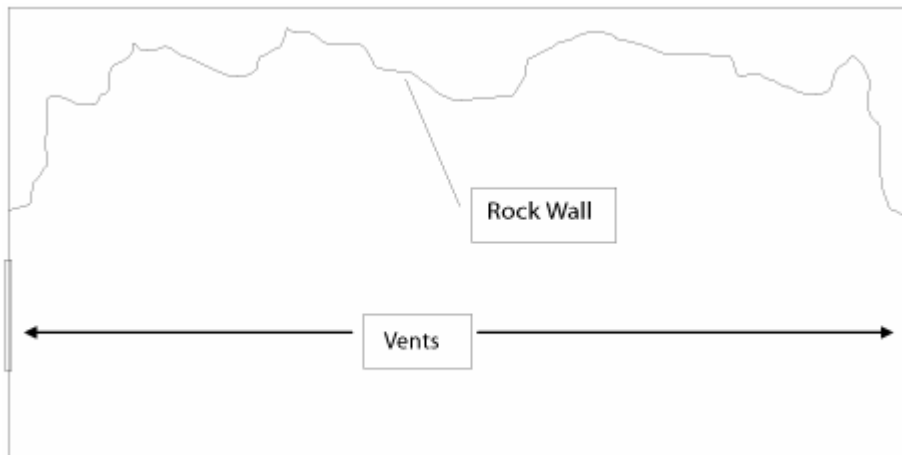
You can purchase posters or backgrounds for your cage to make it look like the animals natural environment eg desert, rainforest, savannah, woodland, grassland etc.

Fake Walls

You can create great fake walls for your reptile cage. As part of the package on making reptile cages you can download the "How to Make Fake Walls" material. This is a great guide to making fake walls. You could make it as a single sheet that you put in later or you can make it as part of the original construction. If you do this, be aware that you will still have to provide ventilation for your reptiles cage.



You may want to make the fake wall cover only the back half of the cage and place the vents in the front section at either end on the side as in the diagram below.



Artificial Trees

These can be a nice addition to your cage. You can find an inexpensive way to make them from the web site at the URL below.

<http://www.reptile-cage-plans.com/articles/cages/faketrees.html>

These are easy to make and look good in any cage. They can be made to large or small, to suit you needs. Be creative!!



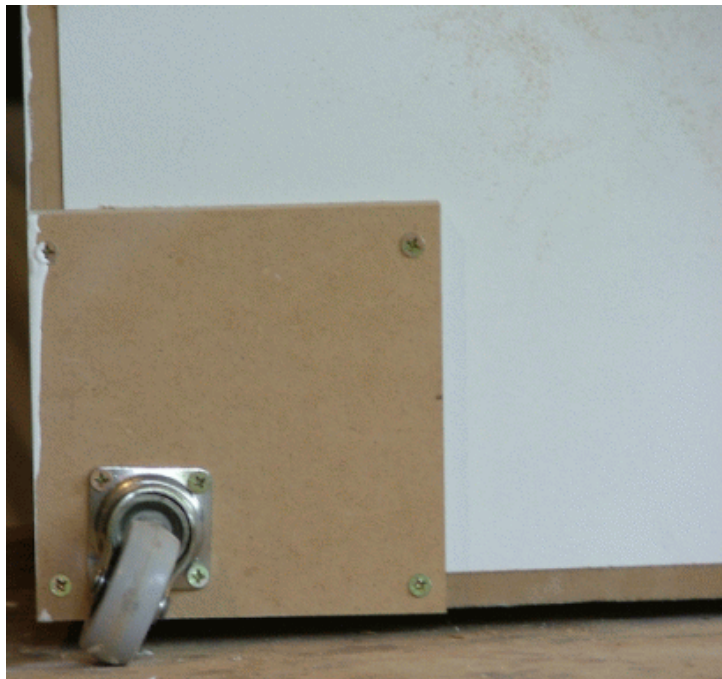
Castors

Some cages can be very heavy. Castors are a good way of allowing you to move very heavy cages.

Castors should be secured to a piece of timber that is fastened to the cage. This will distribute the weight of the cage across the securing timber more evenly, preventing the caster pushing in a weak point of the cages base.

You also need to use heavy duty castors that have ball-bearings in the turning mechanism. Otherwise the cage becomes simply too difficult to move.

If you do use castors you can secure the cage in position by using small furniture leg cups that the castors sit in, preventing movement when you knock or open the cage.



Flooring

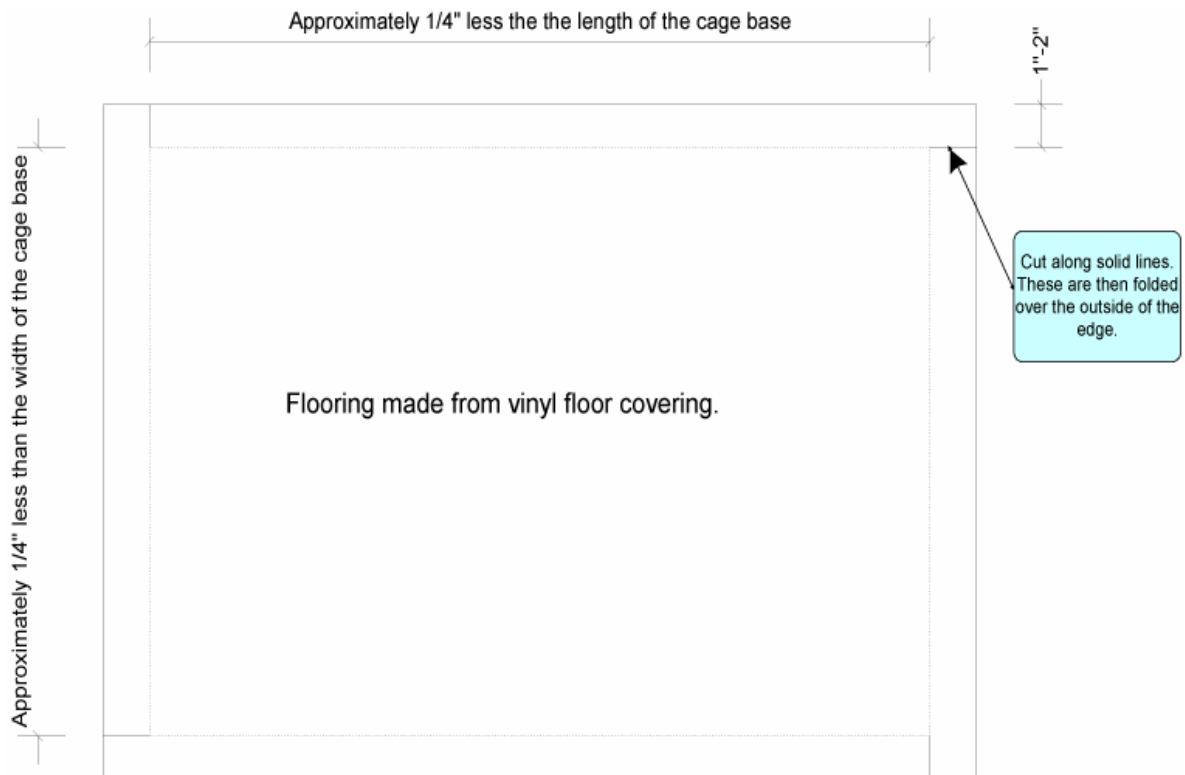
Using a heat mat and newspaper with other substrates can be very messy. One of the benefits is the ability to quickly clean the cage by removing the newspaper but it is not very attractive. Snake and lizards like to hide under the newspaper and will defecate on the heat mat and on the base of the cage.

There are also artificial turf types of materials, external carpets and a range of other suitable materials that can provide a suitable flooring.

Another way is to use a vinyl floor covering material and create an insert that sits on top of the heat mat. This should be waterproofed using Silicone and sealed around the edges to prevent the reptiles from going underneath it.

You can purchase thin floor covering materials for a few dollars. Try to get the thinner material that will fold easily. If it is too thick it is difficult to work with. Also the material needs to be pliable and easily bent without breaking. Old linoleum will tend to snap. The newer, flexible vinyl materials work much more effectively.

The diagrams below should illustrate how you can do this. These have a side on them but you could also cut the piece to the exact size of the cage as long as there was nowhere for the animal to be able to get under it.



You need a piece about 4" (100mm) longer and 2" (50mm) wider than the internal measurements of the base of the cage.

Cut it as in the diagram above. You are trying to make a vinyl tray with sides. The sides will be siliconed to the cage walls and the tray will sit over the top of the heat mat.

The final 'tray' dimensions (see above) will need to be about 1/4" less in length and width of the cage base to fit properly. This will give you some room for error and also allows for the size of the vinyl folds.

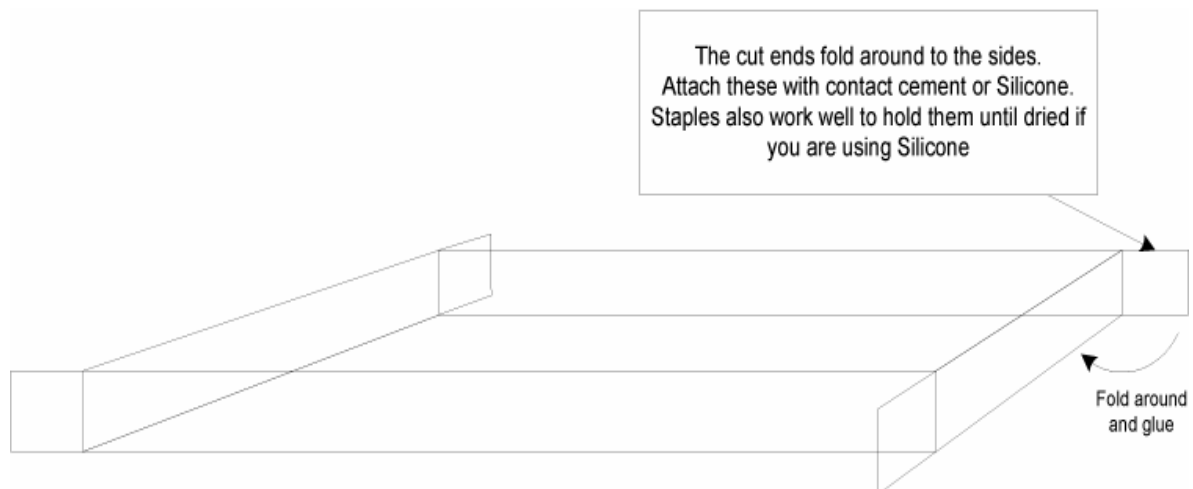
A sharp Stanley knife or good pocket knife will cut the vinyl effectively.

Contact cement can be used to glue the sides to the folding piece. If you do use contact cement, follow the instructions fully and let the contact become 'tack free'.

TIP:

It is always tempting to glue the pieces together before the cement has dried adequately but leaving it that extra bit of time will provide a better adhesion.

The diagram below illustrates how to assemble the tray.



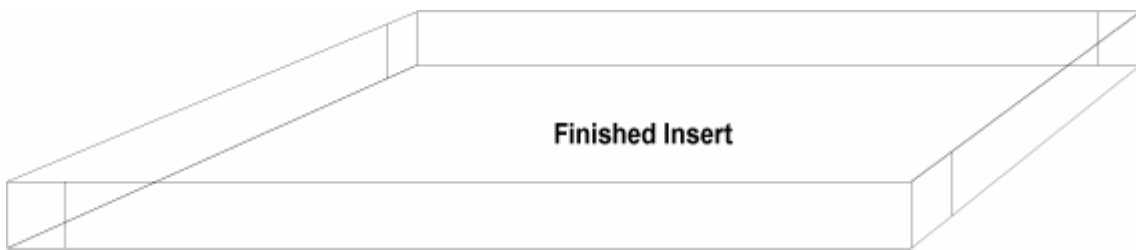
Once the piece has been glued and is ready to put into the cage you can prepare the cage. If you are using a heat mat you can use double sided tape to hold the heat mat to the floor in the correct position.

You can also cut a small slit at the back of the completed tray. This will allow you to push the thermostat's temperature probe through the base and onto the top of the heat mat.

This will give a reading of the temperature of the base of the cage. If the thermostat's probe is underneath the flooring, along with the mat, you are measuring the temperature under the flooring and may not have a correct reading of the top of the vinyl, although the difference would only be minor.

If you are using heat lights then it does not matter, as long as the temperature is adequately monitored.

You can secure the probe to the base with clear Duct tape. This tape is strong and will make a good bond with the vinyl, making it last a lot longer and preventing dust and other materials reducing the adhesion of the tape.



When you place the tray into the cage you can silicone around the edges to prevent the reptile from getting under the tray.

The finished tray should sit snugly into the base of the cage, be waterproof, easily washed and wiped and provide an excellent base for the substrate to sit on.

It may be a bit slippery so choose the material carefully before you purchase it.

As an alternative you can cut the piece to the exact size of the cage base and silicone around the edges to prevent water and reptiles getting under the mat. Make sure you silicone fully around the edges and then go around with a ice block, icy pole stick or disposable gloves to get a smooth finish and work it into the edges and complete the seal.



Waterproofing a cage

Option One - Waterproofing using Epoxy Paint

Cages can be made waterproof should you wish to house turtles, water dragons and other aquatic lizards and snakes or those requiring very high humidity or like to have large water bowls. The information below has been used to make plywood aquariums (having a glass front). These aquariums last many years with no leaks and remain waterproof.

Marine Grade plywood is made for outdoors and is more expensive than regular plywood but is made to last a long time. An epoxy paint of the kind used to line drinking water tanks is used to coat the inside of the cage. This makes it very water proof and resistant to high humidity. It acts as a liner to the cage. You will need to apply at least four coats of the epoxy paint.

You could even, should you wish, make a pool area within the tank using this information. You would just have to make sure that the pool area was also very water tight.

The front pieces of the cage will also need to be made from Marine Grade Plywood instead of the timber front used on regular cages. You will need to take this into account when purchasing your plywood.

If you do choose to make your tank waterproof you will need to glue the sheets (side, back, base and front) using **Resorcenol** water proof glue (ideally). Once it is allowed to dry you then apply silicone sealant around the internal edges of the base and up the sides. This ensures the internal joints are water proof.

Precautions for all procedures involving epoxy paint, the following precautions must be adhered to.

- No smoking
- Do not let brushes dry
- Do not breath fumes

Apply paint in a well-ventilated area, preferably out-of-doors, and most especially away from any air supply intake. The fumes are highly toxic, and may result in serious respiratory problems in humans if they are concentrated and exposure is prolonged.

Applying the Epoxy Paint

This is probably best done before the roof of the cage is attached. The roof can also be coated with the paint, but doing it separately allows less chance of inhaling the epoxy paint fumes.

Step One

Apply epoxy paint to all exposed wood surfaces of tank. Make coat of paint as thin as possible, while covering the wood surfaces completely, because the paint runs easily. Allow coat to dry overnight.

Step Two

Fill all cracks and holes with autobody putty, making as smooth a surface as possible. This may not be necessary, but depends if the plywood has imperfections.

Sand entire surface, using 120-grit paper or power sander.

Apply second coat. Again, insure that the coat is as thin as possible, to avoid running paint.

Step Three

Lightly sand entire surface, using 120-grit paper or power sander.

Apply a third coat

Step Four

Sand entire surface, this time using 220-grit paper or power sander. If power sander is used, then the sanding pressure applied would be less for the last coat.

Apply a fourth and final coat.

Allow tank to dry in well-ventilated, warm area for 24 hours before proceeding

The only sealer/coating that is qualified for use in an aquarium, and by extension a reptile cage, is a **two part epoxy for potable water tanks**. This coating is used to seal the interior of several thousand gallon community drinking water tanks, as a coating for holding tanks in fish farms and as a liner for large public aquariums. These coatings are NSF 61/USDA/ANSI/AWWA and FDA certified and approved. Further, epoxy coatings are highly resistant to salts and corrosion and are recommended for marine use.

Some brand name coatings that can be used are:

- carbolene brand "891" epoxy with color choices one of which is "4753"grey
- dupont brand "epoxide hs tank lining"
- sherwin williams brand "tank clad hs epoxy"
- rustoleum brand "9200" system epoxy with color choices one of which is "9271" dunes tan

Option Two - Tileboard

This is PVC or similar coated board that is very water proof. You would have to use some framing and glue. For example you would frame timber with glue underneath the base and then attach the sides and back. Some of the tileboards are PVC's or plastics and would be very water proof. With silicone and glue (like liquid nails) and some framing structure to hold things in place you could make a waterproof enclosure. Internal frames would have to be coated with epoxy resin and well sealed.

Option Three - Glass Vivarium

A Vivarium enclosure. You can find the vivarium plans on the download page. It is glass, so thermally it is not as good but it is very water proof. A nice wooden roof could be used to finish it off and hold the lighting fixtures.

Option Four - Fiberglass

Make the base deeper using a high piece of timber at the front and fiberglass a base in place (you could even place the heat mat in first, underneath a plastic sheet between the fiberglass). Fiberglass is relatively easy to apply and will act a suitable barrier to water. It has another advantage in that if you choose to make a water pool in the cage you can create the floor plan, complete with pool, and then fiberglass over the top of the entire base and up the sides.

Use large, cheap disposable brushes to paint the hardener on and use enough to give yourself time for you to coat the entire base or fiberglass you are coating.

Large Cages

Large cages present some different issues. There is a need to reinforce sections of the cage to allow for the large spans of the roof and the floor. While there is timber across the front of the cage, this is usually not enough on its own and needs other support pieces.

The timber strips across the front also need to be wider, at least 3" or 4". The strip across the base of the cage would be even wider to hide the timber supports for the base. The timber pieces on the base would need to be 3" x 1 1/2" or even 4" x 2", depending on the size of the cage.

The front of the cage would be split in two with central support. This is nothing fancy, just an upright piece of timber, but it would do two things.

1) It would break the front into two sections. If you wanted sliding glass doors the tracks only come in 6' lengths so breaking it into sections is better from that point of view.

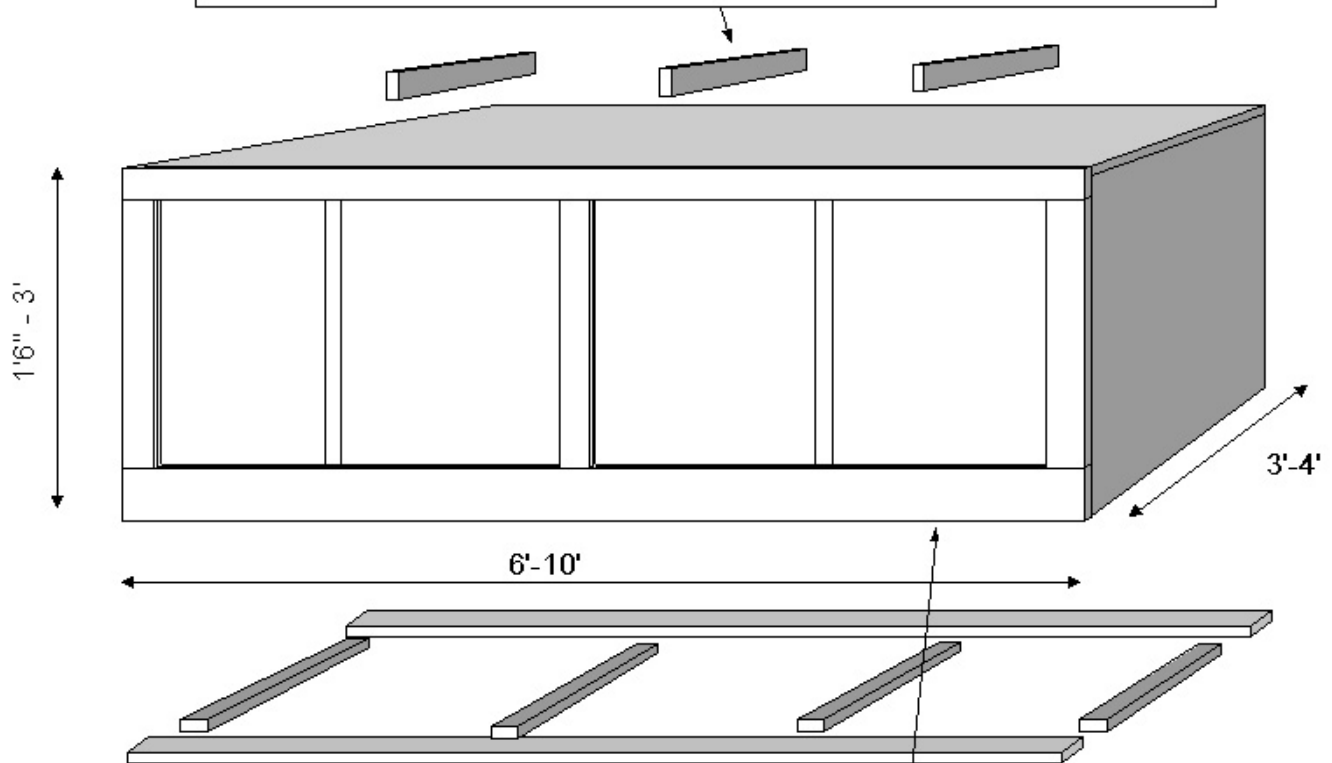
2) It would support the top of the cage. 6-10 feet is a long span, even with a strip of timber across the front. A central piece would prevent sagging.

You would also need to run pieces across roof of the middle of the cage, front to back, to stop the middle of the cage roof sagging. Again they don't have to be anything fancy 2"x1" or thereabouts, but enough to prevent sagging.

A large cage is a heavy structure. The base, made from melamine or similar, would best sit on a frame of 3" x 1 1/2" or 4" x 2" timber. A number of castors placed at corners and then evenly spaced on the base would make life easier and make the cage maneuverable. Make sure the castors are heavy duty and can easily rotate supporting a heavy weight.

Larger cage with sliding glass doors.

A timber brace running from front to back inside and along the top would strengthen the cage roof. If the cage is very large you may need three of these.



Timber pieces under the cage would strengthen the base if required.

The bottom front piece can be made higher to accommodate more substrate. This can also hide the framework timber that would be needed underneath the cage to support the large floor area.

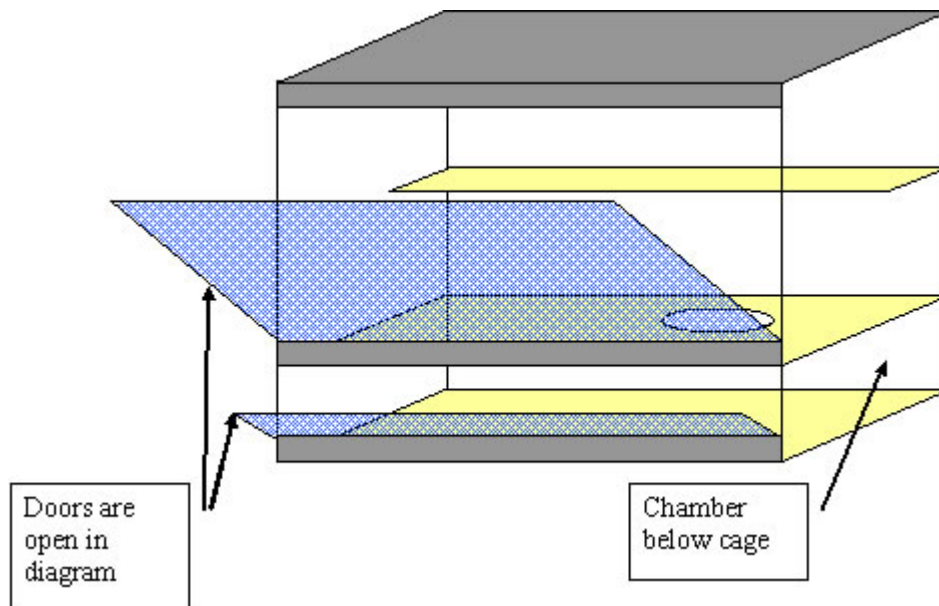
Cage Variations

Hide Shelf

Some species live in burrows or holes in the ground. Essentially you do this by creating another shelf in the cage with a hole in it to another chamber below the floor (you may need to make the cage higher).

This chamber does need a door to it but this is a fairly simple procedure using the technique you've used above.

The diagram below illustrates how a cage with a chamber could be easily made using the same techniques.



Top Lid

You can also make the top open on the cage. This adds some versatility to the cage. The top can go the about half the width of the cage, leaving room for the lights.

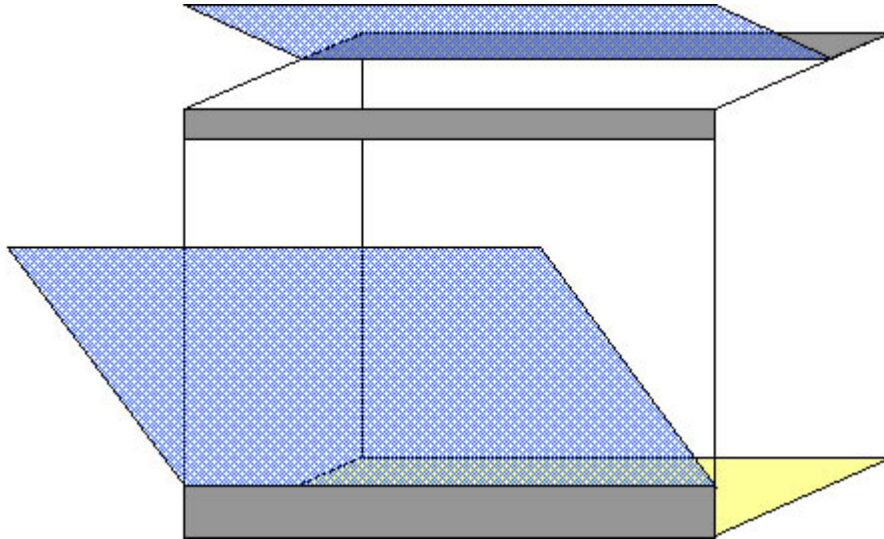
Alternatively, the top can go across the whole width of the cage, in which case the lights would be attached to the hinged lid and open up with the cage.

If you do decide to do this, make sure you allow for some extra wiring so that the lid will open properly without breaking the wiring or pulling it from the lights.

Some cages have only a top lid. This type of design is OK if the cage is low to the ground but can be a nuisance if you have the cage up higher, as access is difficult.

If you have a snake that is inclined to strike a lot, then having access only from the top will make getting the snake out difficult.

A top is useful for fast animals like striped lizards and bearded dragons as they can easily escape through an open door if your not ready.

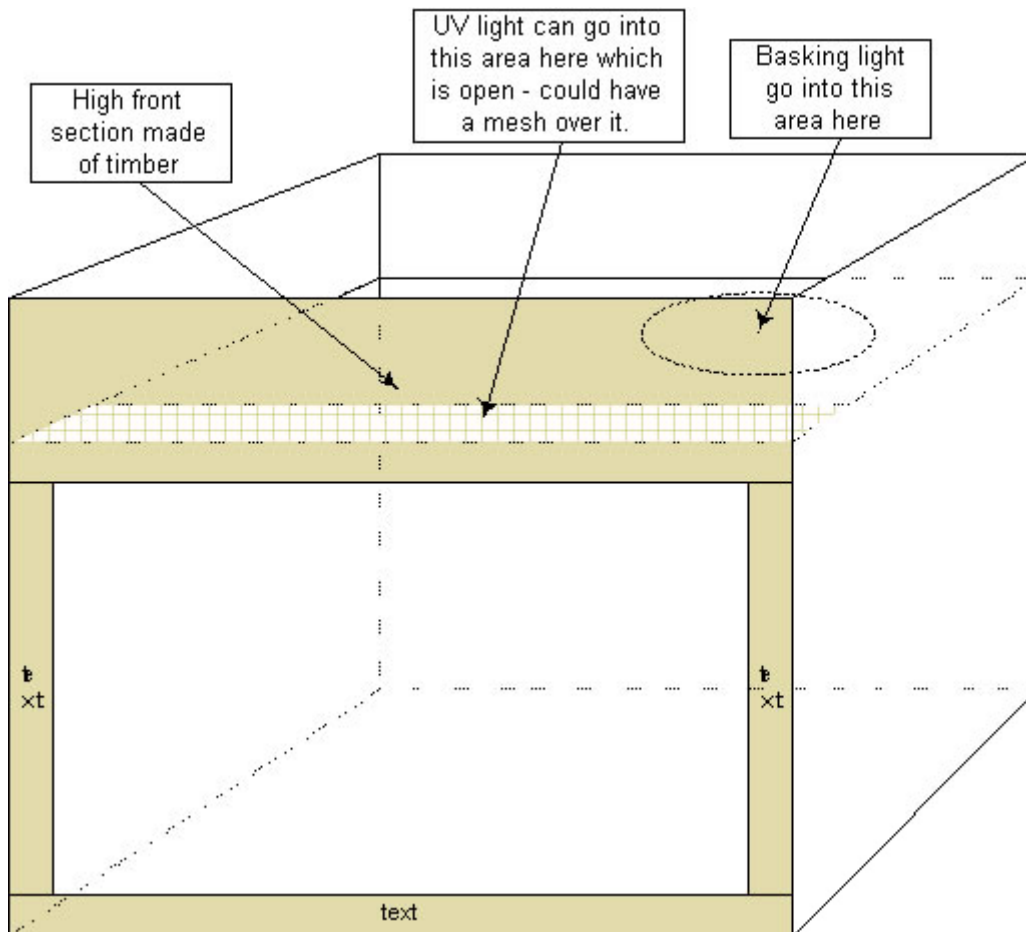


Hide Light Fittings

This is another variation which has a high front, back and sides that allows the light fittings to be placed on top of the cage and remain hidden.

The front section that holds the UV light could be in the middle or at the back provided there is enough room for the basking light.

The doors could be hinged or sliding.



Arboreal Cages

Arboreal cages can be made in a range of ways. The cage designs shown here can be adapted so that they are vertical instead of horizontal.

It is probably better to make a fairly large cage, about 5' to 6' high and about 2 1/2' to 3' wide by 2' deep. The doors are much larger and ideally you would put two doors on an enclosure of that size or have two sets of sliding doors, top and bottom.

If you use solid doors they need strong hinges and it is recommended that you use cabinet maker hinges. These have the added advantage of being adjustable as well as strong. (See Picture) You can purchase the drill piece needed to put on these hinges.

However a much simpler and more effective way is to take the doors to a cabinet maker. They have the drills preset for these and for the price of a few dollars they will drill all of the holes to the exact dimensions and locations.



The larger door will require 4 hinges and the smaller one 3, although you could get away with less if you purchase the heavy duty hinges.

The best part about this type of hinge is the way they can be adjusted. They can be adjusted by very small amounts once they are secured so your doors can line up exactly and you can ensure an evenly closing door that lines up with the cage frame correctly.

The doors can be framed or it can be cut from one piece of sheet by cutting windows out of the sheet. This is a very strong method of making large doors. The internal pieces that have been cut out can be used to put shelving for the reptile in the cage. This shelving also strengthens the sides and helps maintain the rigidity of the cage. (see diagram below)

The entire cage can be made from Melamine as it is possible to construct these cages without having any of the edges showing or having to be covered.

This allows for black, white, laminates and a host of colors.

The melamine is secured just as in the other cages but the screws should all be rebated into the melamine by about 1/8". This should be done with a 3/8" drill bit normally but as you will use plastics plugs to cover the holes. the size of the plug should be checked before you commence drilling the holes.

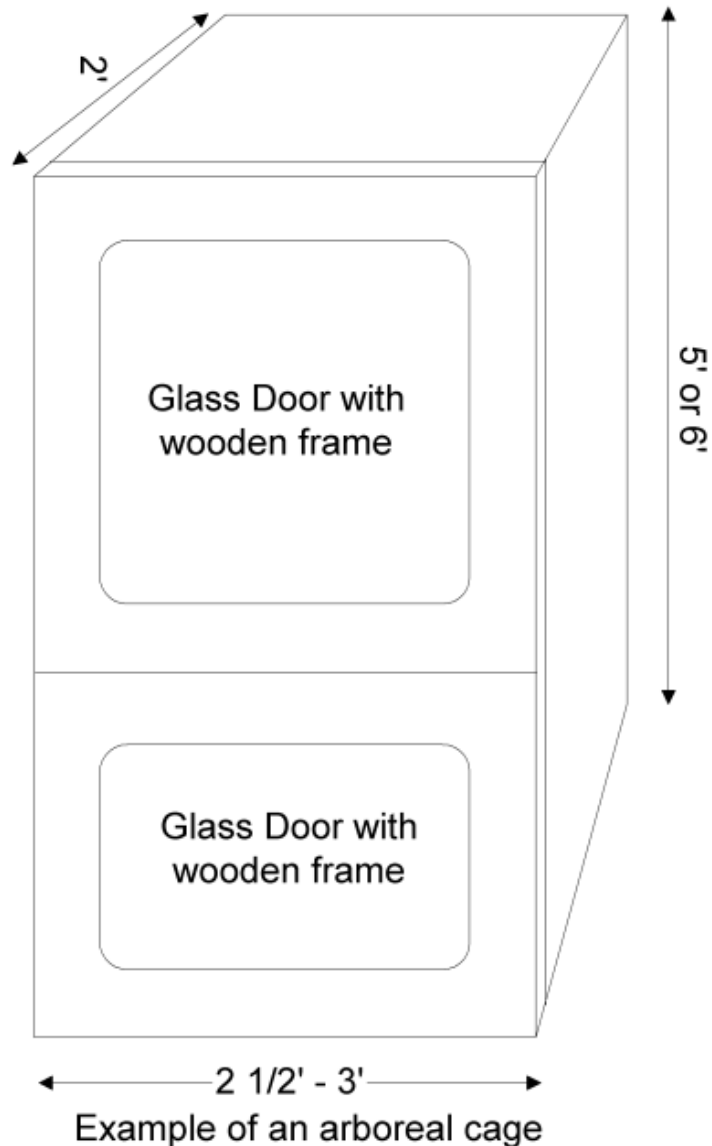
The plugs are designed to fit snugly into the drill hole and hide the screws. They are made to match the color of the melamine or laminate.

You can also get plugs that fit into the phillips head part of the securing screws, meaning you do not need to drill a hole at all and the screw can be flush with the surface of the melamine.

This example has sliding doors. There is further detail in the diagram below.

This is an easier cage to make than the solid door version as the solid doors require some specific tools and the inserts can be tricky to get a nice finish.

When making a cage like this, it may be better to go to a local cabinet maker and get them to cut the main sectional pieces to size. This will ensure a square cage and a much better finish.



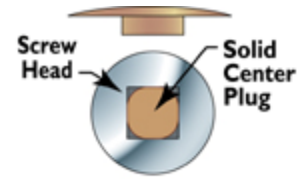
The MDF or melamine sheets can be purchased in a range of colors to create some striking cages eg black with timber strips could look quite good.

When using melamine or coated / laminated MDF boards, you can get special screws that have plastic cappings.

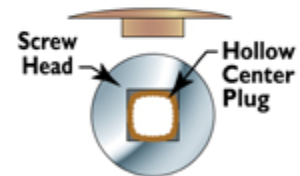
Using these screw, you would create the cage as per normal but would not countersink the screws.

Instead they are left flush with the surface of the material and the plastic screw head cap is placed into the screw.

These are available in a range of colors so you can match it to your cabinet.



Square Drive Screw Cap
Solid Center Compresses to Lock Cap in Recess



Typical Screw Cap
Hollow Center deforms to "fit" Recess, but compresses easily and may unexpectedly fall out



White



Gray



Black



Beige



Natural



Lt. Brown



Med. Brown



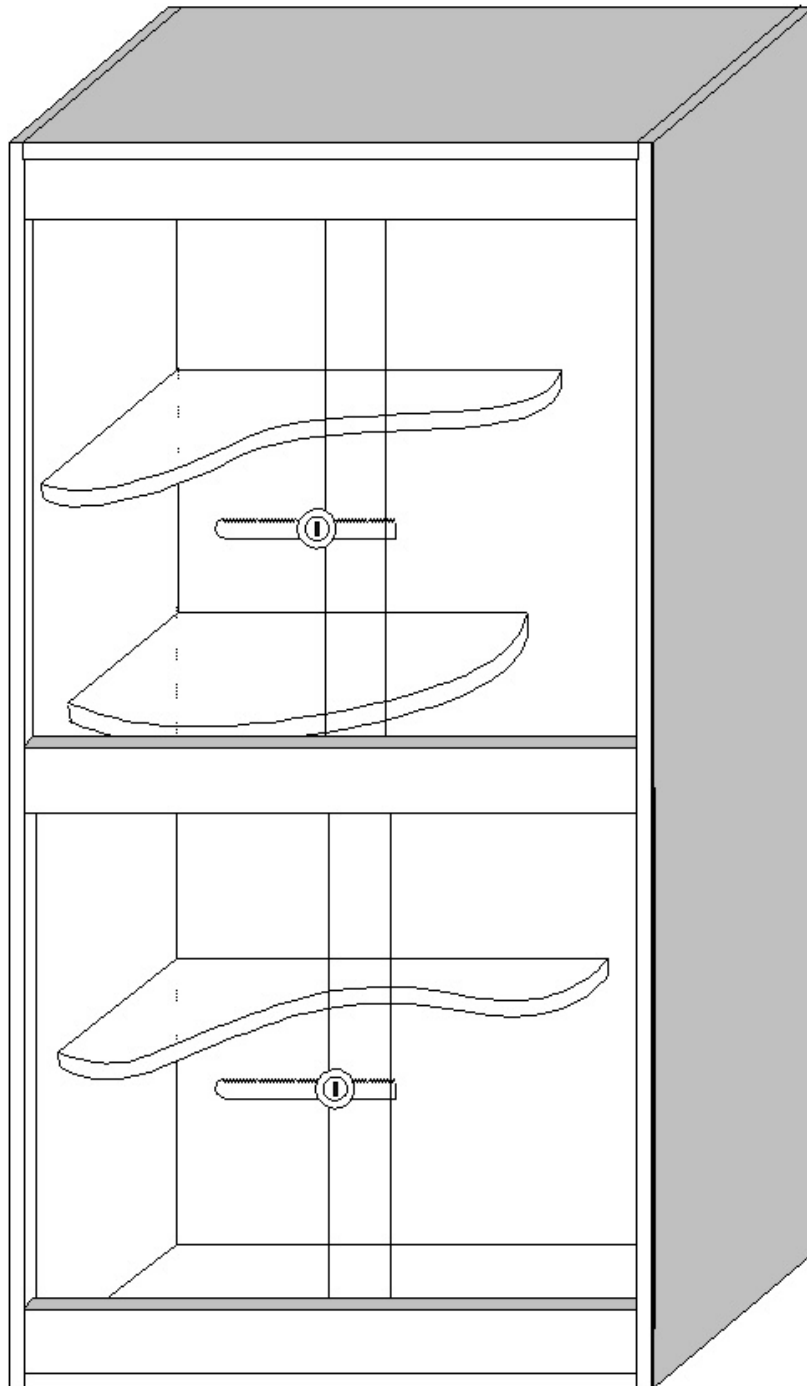
Dk. Brown

The diagram below illustrates these.

Side view of the arboreal cage with sliding glass doors.

In this version, the channels that hold the sliding glass have been placed on a piece of timber that is attached to the front piece.

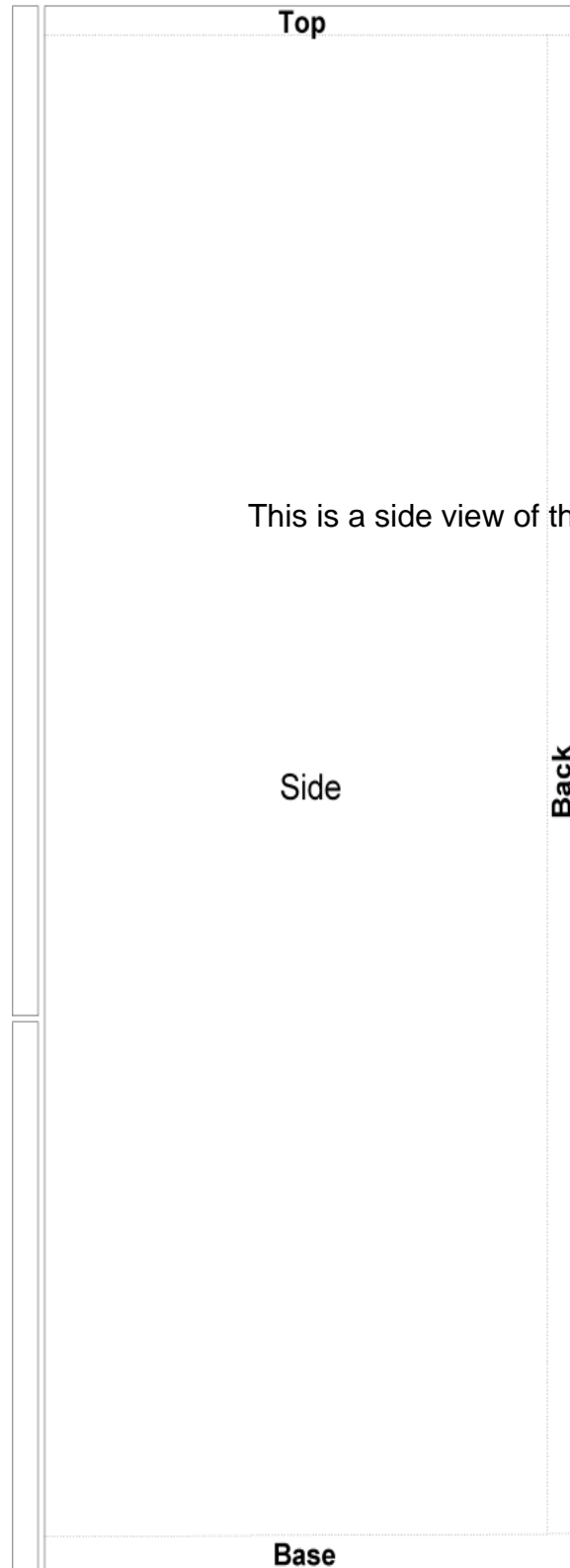
This gives it a number of advantages. It is stronger as the timber pieces can be glued together and the sides can have more purchase.



It also allows the sliding glass tracks to be glued not only to the piece they are sitting on but also to the front piece. This creates a stronger channel which is important as the glass pieces can be quite large.

This diagram below shows the main construction of the cage. The main cage structure uses the existing edge of the melamine. This gives the cage a clean and neat finish. It also means that you do not have to paint the cage structure.

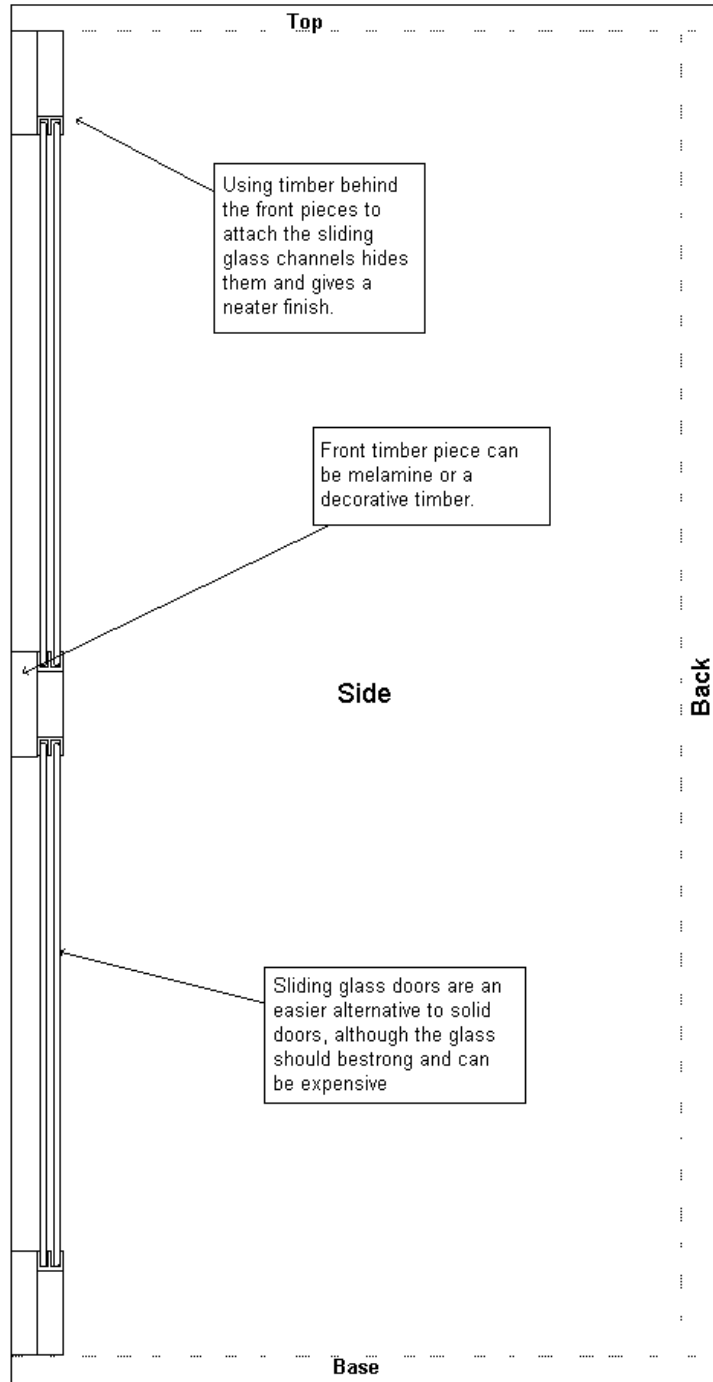
Notice the shelving. This can be use for the reptile to rest on and also adds strength to the cage. You can of course add branches and other decorations. The shelves are made from the material cut from the front doors.

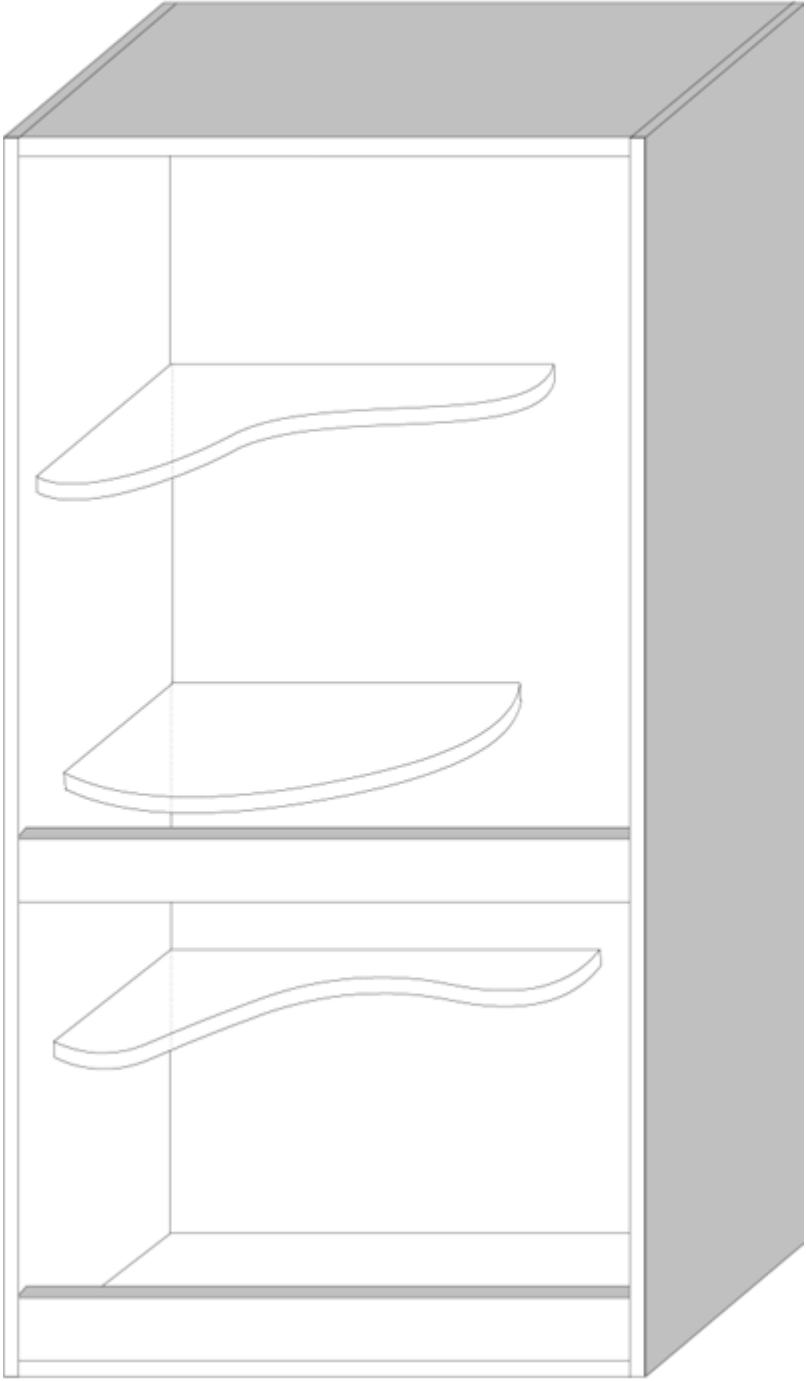


This is a side view of the cage to show h

The cage has a small dam at the base and another strip of timber across the front. This is optional but it does serve two functions. It strengthens the front sides and keeps them from bowing.

It also gives a strip for the two doors to meet together, making the cage more secure.





Front Doors (solid)

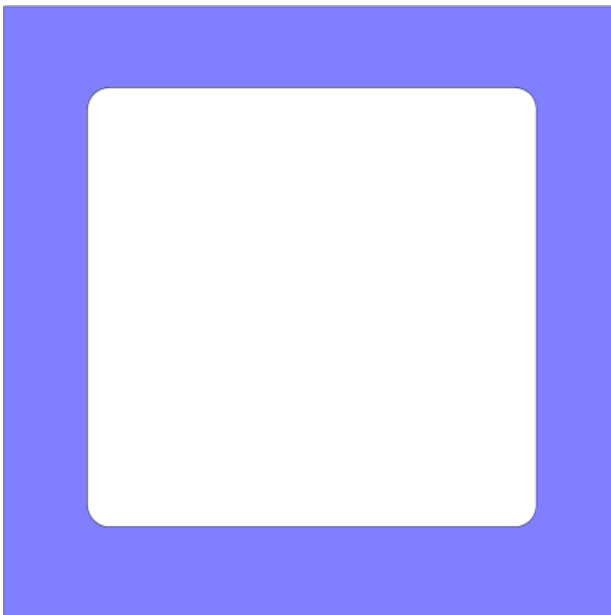
The front doors are MDF sheets with the window pieces cut from them.

The hardest part is cutting the lines straight. A strip of timber clamped to the sheet will allow you to run a jigsaw along it in an accurate fashion and provide a straight line. The corners will need to be very carefully cut and sanded to smooth curve.

If you use glass you will need to rout the inside of the frame.

Plexiglass provides an easier alternative if you do not have a router as you can drill holes in the Plexiglass and then attach it to the door with screws.

These doors can also be made from strips of melamine or they can be made from timber. You need to make them quite solidly as they will be heavy and put a lot of strain on any joints. This is why making the door from a single piece of sheet can give a better result.



The larger door should require about three hinges and the smaller one two, although more hinges will be stronger.

You can see the detail for the back of the door if you are going to use glass. The routed area would be the same dimensions as was used on the door frame for the terrestrial cage.

Silicone and perhaps some timber strips will ensure the glass is kept in place.

Finish

Probably the best way to finish the melamine is with plastic plugs that go into the screw holes. These plugs can be bought in colors to match the melamine and will hide the screws, giving the cage a professional finish.

Painting doors

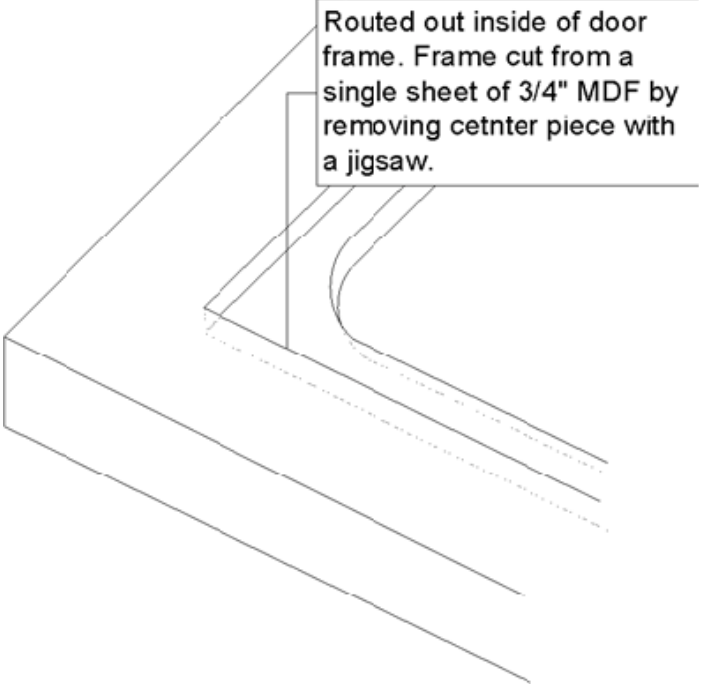
The doors should be painted before the glass or plexiglass is inserted. Three coats with a light sand between coats is recommended. Spray painting the door will provide a smoother and more even finish, without leaving brush marks.

If you use melamine for the, you can purchase tape that can be ironed onto the side of the melamine, giving a professional finish. You will need to iron it onto the inside part of the section where the windows are and this can be a bit tricky so you need to take care there.

Securing Locks

You can use a variety of locks on your cages. A lockable hinged hasp can be used. These are screwed onto the front door and the lockable hasp is attached to the side of the cage.

The picture shows one type of these hasps. They can be picked up from larger hardware stores. An alternative is to get a hinge hasp that you put your own lock on, but the hasps with the lock already on it is a much neater solution and will look more attractive.



Routed out inside of door frame. Frame cut from a single sheet of 3/4" MDF by removing center piece with a jigsaw.



Heating and lighting for arboreal cages.

Basking lights are important for arboreal species but they must be covered to prevent the reptile from burning itself. Two or three lights can be placed at the top of the cage. You can also place a light under one of the cage shelves. This will serve to provide a better heat gradient and also allow the reptile access to a heat source at lower levels.

Humidity is also often important for these species. This can be achieved in a number of ways:

- a waterfall in the cage base
- installing a humidifying device (mistifiers, humidifiers)
- a large water bowl. This is particularly important for those animals that like to soak themselves. Be aware that animals that do soak themselves will also defecate in the water bowl so the water will need to be changed daily.

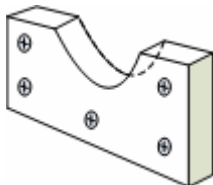
Climbing branches

Climbing branches should be added to arboreal cages. Many arboreal animals only feel safe when elevated.

If you are using natural timber, clean it thoroughly with a wire brush or similar device. It is also a good idea to treat it for insect pests using insect killer. Once you have done this, set it aside for about a week to allow the insecticide to degrade. Use a pyrethrin based insecticide if possible as pyrethrin is a naturally occurring substance.

As the branches are large you need to be sure they are securely attached to the cage and do not wobble or move about. The diagram at right illustrates the sort of bracket that can be used to hold a branch up.

If you do this, it is recommended you also drill a hole in the branch near where it attaches to the wall and use securing screws to prevent movement.



Cages for Juvenile Reptiles

Juvenile reptiles can easily be kept in small containers for quite a long time. They do not require a large space and will thrive quite happily in smaller areas.

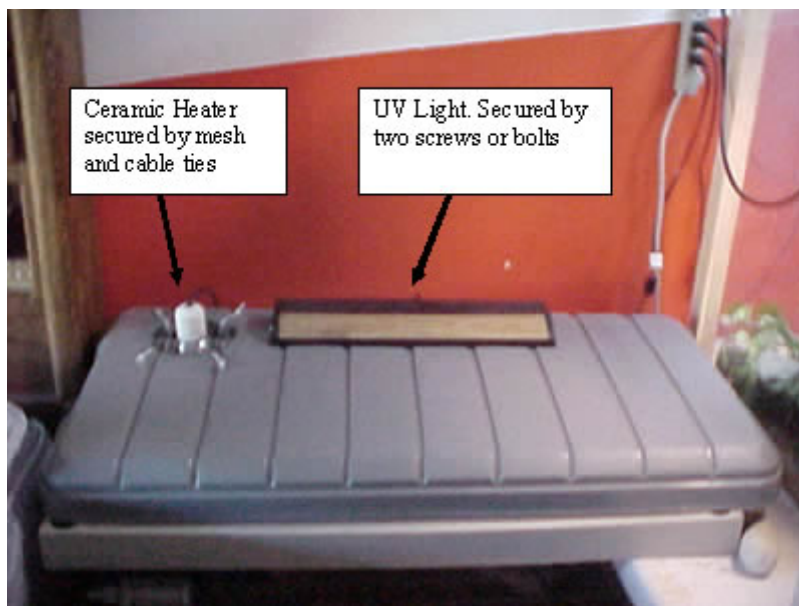
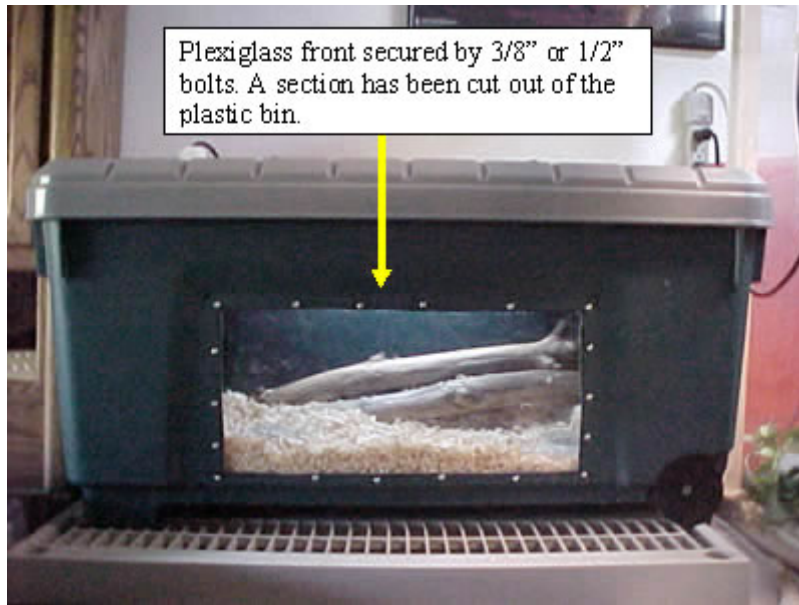


The cage above will house a juvenile snake provided a heat mat is placed underneath it and the temperature within the cage is monitored. Again, the reptile should be provided with a range of temperatures, so that heat mat would only need to be under about 1/2 to 2/3rd's of the cage.

When the reptile is large enough it can be moved to a larger container. Some owners progressively move their animals from smaller cages to larger cages as the animal grows.

The holes on this cage are possibly a little large for some species so make sure that you air holes are too small for the snakes head or reptile to fit through.

You can also easily convert plastic bins to juvenile snake or lizard cages. This example below illustrates how to do this.



A cage like this can last a young reptile quite a long time, until they need to graduate to a larger cage.

Conclusion

I hope you have found this booklet a valuable resource.

Other resources and articles can be found at:

<http://www.reptile-cage-plans.com/resources.html> and <http://www.reptile-cage-plans.com/articles/articles.html>.

These will be being added to continuously. Any contributions or any feedback would be greatly appreciated, as would any tips, tricks and ideas that you would like to see added to the book. If there are any glaring omissions or mistakes on my part, I apologize for these and ask that you send me an email pointing these out so they can be rectified in future publications.

Please understand that this is a work in progress and I have endeavored to provide the best possible information available at the time. As the book is updated you will be able to download the updated versions at no cost.

I can be contacted via support@reptile-cage-plans.com.

Happy Reptile Keeping.

Regards

A handwritten signature in black ink, appearing to read 'Mark Chapple', with a stylized flourish at the end.

Mark Chapple