Free standing cat enclosure

Cats love to move around and keep watch over their territory. They need a warm dry bed and somewhere to laze in the sun. By building your own cat enclosure you can tailor it exactly to the needs of your cat. Cats love the variety that this system of enclosure provides, especially if it is linked to the family home through a cat door. To help you design the layout to suit the space that you have available on your property we give you detailed instructions on how to build a basic enclosure together with add on auxiliary enclosures and linking tunnels that you can mix and match to make the perfect enclosure.

Some basic design considerations:

1. Cats must have shelter from sun, wind and rain (however they do need a sunny spot within the enclosure).
2. Cats must have a weatherproof sleeping compartment with a raised bed (which must be kept in a clean and hygienic condition), along with a separate exercise area.
3. The cat litter tray area must be well away from the cat’s eating and sleeping areas and must be kept dry and be easily cleaned. Litter trays must contain an appropriate litter material and be cleaned daily (many cats will not use soiled litter, and will therefore soil elsewhere in the enclosure).
4. Disinfectants containing phenol must never be used around cats.
5. To prevent disease, your cat must be regularly wormed and vaccinated (as per veterinary recommendations), and flea control must also be undertaken. Accommodation should provide good ventilation, as this is vital to prevent build up of odours that can cause respiratory problems in cats.
6. Hygiene and odour shouldn’t be a problem as long as your cat uses its litter tray and the tray is cleaned regularly. However, in the event of your cat soiling the ground in the enclosure, you may have to consider adding some type of flooring. This could be as simple as installing small gauge wire mesh on the floor, to prevent cats from digging and soiling in the dirt. Alternatively, you could install concrete or timber flooring that will also be easy to hose down.
7. Cats require plenty of social contact with owners. This can be achieved by providing access to the house through a cat door (and tunnel if applicable).
8. Each enclosure should provide a scratching pole and be designed to provide cats with at least two platforms at different heights. The platforms should be connected by static (eg planks) or swinging walkways. Cats should also have access to climbing frames and an interesting visual outlook.
9. In a group enclosure a number of hiding and escape areas should be provided to enable cats to avoid aggression from other cats.

10. The size of your enclosure will depend on the number of cats you wish to house, and how well they get on. The floor area of an enclosure must be at least 2 square metres for each cat, with a minimum height of 2 metres, plus tunnels and auxiliary enclosures. These dimensions are based on the presumption that cats will also have regular access to the house.

A basic walk in unit is an essential start to your design and should incorporate a weatherproof sleeping compartment with a raised bed or hammock, together with a specific feeding area. Don’t forget to provide a separate bowl for each cat. This basic unit can be linked to one or a number of auxiliary enclosures by means of wire tunnel. See Figure 10 for an example of a finished free standing cat enclosure. The enclosures are made from an open welded mesh and can be used to keep the litter tray well away from the main eating and sleeping area.

**Base unit**

The base unit is constructed around a simple steel frame welded from square section tubing, and includes a walk in door for cleaning. The unit is clad with a combination of steel sheeting and wire netting. See Figure 10 for an example of a finished free standing cat enclosure, including a base unit. The frame can be welded, which is easy to learn so if you can borrow a welder and get some instruction, spend time with scrap steel and practice. You will be surprised just how enjoyable and easy it is. The easiest welding position for a beginner is to weld a horizontal joint, so it is a good idea to turn the work where possible to present a flat welding position. If however you do not have access to a welder, either have the frame made for you at a local engineering shop, or alternatively you can use prefabricated fittings, which are available from specialist welding and engineering workshops. They can also supply and cut square steel tubing to suit the fittings. The fittings come in a range of configurations, such as tee joint, corner joint, and right angle that will be used in your design. The square tubing slips neatly into the joint and is fixed with a self-tapping tec screw or pop rivet (see Figure 1).
**Tools required**
- Cordless Drill and bits
- F clamps with plastic feet
- Tec screw driver bit
- Angle grinder with cut off and grinding wheels
- Pop rivet gun
- Safety goggles
- Roofing square
- Leather gloves
- Tape measure

- Welder (note that welding is optional)
- Tin snips
- Welding magnets
- Handsaw
- Welding hammer
- Pliers
- Welding mask
- 8mm masonry bit
- Bolt cutter

**Material 25X25mm tubing**

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**Construction**

**Step 1 – Design**
First read through the step-by-step instructions to familiarise yourself with the component units and the construction techniques and then establish the number

and type of units that you require. Go outside and decide on your preferred layout, marking it out with pegs, paint or tape. It is a good idea to leave this set out overnight, and return the next day with fresh eyes and ideas. Once you have decided on your layout, draw a simple plan to work from on 2cm x 2cm square graph paper to give you a 1:100 scale drawing. Use the plan to make up a materials and cutting list and set to work, following the simple step-by-step instructions.

**Step 2 – Prepare a cutting list**
Working from your plan, prepare a materials and cutting list. Here is a sample-cutting list that has been taken from the drawing of the basic unit in Figure 2 which constructs an approximate 1 x 2 metre enclosure (which is the minimum size per cat – see “Design Considerations” for details). Prepare a similar cutting list from your plan specification.

**Welding Tips**
1. Have water handy when welding to cool the welds.
2. A welding magnet can be used to hold components in place when tack welding joints.
3. If you are using an arc welder then pick off the slag from the welded joint as you go and re-weld where necessary.
4. If you live in a coastal area specify a salt resistant sheet steel cladding.
Alternative to Welding
When using prefabricated joiners (Figure 1), follow the same construction order, fixing each joint as you go. Use self drilling tec screws or bolts to attach the door hinges, latch and fittings and finish the frame with a good quality exterior paint.

Step 4 - Installation
If fixing on a concrete base, first check for square by measuring corner to corner. Fix the bottom rails with 8mm Dyna-Bolt (Figure 3). Where there is no concrete base, fix the frame directly to the ground with tent pegs driven through holes drilled in the bottom rail.

Step 5 - Door
If you find that the finished door lacks rigidity then clad the bottom section with metal cladding which will act as a brace. The hinges and latch are fitted to the frame on the outside with welds or self drilling tec screws. See Figure 4. Give some thought to a childproof locking system.

Step 6 - Cladding
First establish the shelter requirements for your base unit and plan which areas will be covered with sheet steel and with wire mesh.

Mesh
Cut each metal mesh panel to size and fix with self drilling tec screws and washers (Figure 5). Do not fix the edges that will be later covered with the steel cladding.

Sheeting
Calculate the sheet sizes required, bearing in mind that the standard cover is 760 mm per sheet. The material is available in a range of stock lengths that you can cut to size with an angle grinder and cut off wheel. The cladding is fixed with self-tapping tec screws and a cordless drill. Fix the first panel along the upright steel corner frame and check that the frame is square and then clamp the panel to the horizontal rails. Check again and then fix these edges with the Tec screws. Continue fixing around the frame until completed. See Figure 6.

Roof
Measure the roof opening from corner to corner to check for square and fix the roof panels across the narrow width. When affixing roof sheets, tec screws must be used on the high points of ridges in the roof cladding. Now cover the exposed edges of the roof cladding with "U" section steel capping, using self drilling roofing tec screws. See Figure 7. However it should be noted that larger enclosures may require extra roof support.
Auxiliary mesh enclosures
These free standing units are constructed from 50 x 50mm galvanised welded mesh, wired together with galvanised tie wire. The size and shape of each enclosure will depend on your requirements and also the stock sizes of mesh that is available from your supplier. Common sheet sizes are 2400mm x 1200mm, 2000 x 1200mm and 3000mm x 2400mm. See Figure 10 for an example of a finished free standing cat enclosure, including an auxiliary unit.

Tools required
• Tape measure
• F clamps
• Bolt cutters 450mm
• Roofing square
• Angle grinder
• Hammer
• Pliers with wire cutter

Materials list
• 50x50mm galvanised weldmesh
• Dog clips
• Tent pegs or masonry plugs
• Hardwood post 50x50mm
• Galvanised tie wire

Construction
Step 1 – Design and construction
Visit your steel supplier and obtain a list of stock sizes that are available and design the modules around these stock sizes to minimise off cuts. Cut the mesh with the angle grinder or bolt cutters and grind off sharp protrusions. Tie the panels together with tie wire. As cats do not dig deep enough to escape there is no need for a floor panel, and the enclosure can be held in place with either tent pegs or masonry plugs. For a door simply cut a small opening and cover with an oversize piece of mesh hinged on one side with tie wire or netting clips. The hinged door (which should open inwards) can be latched closed, with spring loaded clips (eg like dog clips). See Figure 8. Depending on how flexible the mesh is, you may need to secure the door with multiple clips to prevent the cat from squeezing through gaps. If you prefer, the entire lid panel can be hinged to allow easy access.

Step 2 – Fittings
Each enclosure should provide a hardwood scratching pole, which can be fixed to an internal wall with tie wire. The enclosure also requires at least two levels of platforms that are joined by a climbing plank (platforms can either be supported by a stand or wired to the structure).

Step 3 – Access tunnels
The individual units are interconnected by tunnels, which can also be connected to the house via a cat door. See Figure 10 for an example of a finished free standing cat enclosure, including tunnels. These tunnels are made by folding a 900mm wide length of weldmesh and anchoring it to the ground. Either bend the 900mm wide weldmesh over in an arch and fasten it across the bottom with tie wire, or bend two right angles with the aid of a jig made from 2 lengths of hardwood and clamps (See Figure 9). If a tunnel is to be suspended off the ground, the floor is made from 300mm wide lengths of steel cladding that is wired to the bottom of the tunnel with tie wire. The tunnels are wired on to the component units and all protruding wire ends are folded back out of harm’s way. To give your cat an entertainment centre, put a birdbath within view just outside the enclosure. It doesn’t seem to worry the birds and will provide your cat with hours of entertainment.
Netting clips or tie wire
Attached side
(Door)
Opening side
Spring loaded clips/dog clips

* Door needs to open inwards
** Enough dog clips to secure door needed so cat can’t squeeze through gaps in flexible mesh

Note: Figure 10 shows the basic building structure prior to the addition of other features (platforms, climbing planks, scratching posts, beds etc) as described in the text.

**Figure 8. Design and construction of door**
**Figure 9. Tunnel bending**
**Figure 10. Sketch of finished free standing enclosure (base unit, auxiliary enclosure + tunnels)**