



4-Player Pedestal Arcade cabinet for MAME

by **severdhed** on March 14, 2016

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Intro: 4-Player Pedestal Arcade cabinet for MAME

This will show you how I constructed my 4 player MAME pedestal cabinet. There are a lot of things you may want to customize to your liking. I will show you how I made mine, you can feel free to tweak it to your liking. This houses a standard windows PC to run the MAME arcade emulator, and outputs to a 42" LCD TV.



Step 1: Items you will need:

Supplies:

- 3/4" MDF or plywood (I used 6 pre-cut 2ftx4ft sheets of MDF, it is a little more expensive, but easier to transport and work with)
- T-Molding: 30ft
- 30" piano hinge
- small chain or rope (to support lid when open, 2 ft should be plenty)
- screw in leg levelers
- small carriage bolts for mounting joysticks (size can vary, based on which joysticks you use)
- t-nuts of various sizes (4 for mounting legs, 4 smaller ones for each joystick)
- Wire, two colors, at least 50 ft (I think I used 18 gauge)
- crimp-on female wire disconnects (I used about 100 of them)
- zip ties (optional, but great for cable management) wood screws
- wood glue
- paint
- 1/8" plexiglass slightly larger than the surface of the control panel (my panel is 18" x 46")
- wood screws of various sizes
- one 8ft 2x4 board
- about 20ft total of 1x2 pine board
- about 10 feet of 1x4 pine board (you could also use MDF, if you don't mind the cutting)

TOOLS:

- circular saw
- jig saw
- Router with straight bit, v-groove bit, flush trim bit, and 1/16" slot cutter
- drill with 1 1/8" Forstner bit, various small drill bits for bolt holes.
- 3" hole saw
- various clamps
- screw driver
- measuring tape
- straight edge
- square
- pencils/markers
- ratcheting wire crimpers (don't bother with the non ratcheting kind, you will be doing a lot of crimping, spend the \$15 on a ratcheting crimper from Harbor Freight, your hands will thank you)

- wire strippers

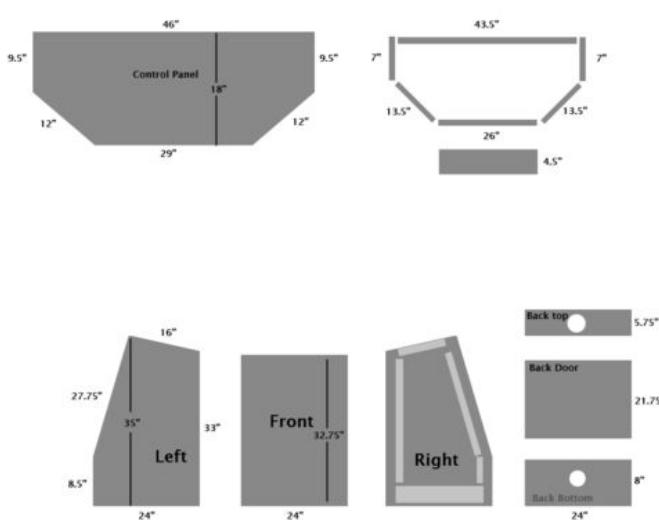
OTHER:

- 4 arcade joysticks (I used Ultimarc J-Stiks/Sanwa JLWs)
- 3" Arcade trackball with USB interface (i used an Electric Ice-T Deluxe from groovygamegear.com)
- 31 - arcade pushbuttons (i used HAPP concave pushbuttons)
- USB Control interface (I used an iPac 4 from Ultimarc)
- trackball mounting plate
- PC for emulation (PC specs depend on what games you wish to use. a 3ghz pentium 4 for 4gb of ram should be plenty for mame, you may need more if you choose to add PC games or other emulators)
- display (i used a 42" vizio 1080p TV)

Step 2: Plan out your cabinet

I designed this cabinet build around simplicity. I didn't want to try to haul full sheets of MDF in my minivan by myself, so I used pre-cut 2ft x 4ft pieces of MDF for the construction. This means that no panel is larger than 2ft x 4ft. also, this prevented me from having to cut a bunch of long straight cuts. the front, back and both sides are 24" wide, so there was very little cutting involved. I started off using Google SketchUp to design the unit, then tweaked it until it looked right. I was going for simple. I've included a diagram with the dimensions of the boards you will need to make it like mine.

You also need to plan out what type of controls you wish to have, and how many buttons per player. This can vary based on which types of games you want to be able to play. I personally wanted a 3" trackball for centipede and millipede, as well as bowling/golf games. If you are just using MAME, you only need a max of 4 buttons per player for 4 player games, but some of the 1 and 2 player games need more (mostly fighting games) i opted for 4 buttons for players 3 and 4, and 7 buttons for players 1 and 2. (player 3 and 4 are off to the sides because they aren't used as much, leaving players 1 and 2 in the center of the panel. Most fighting games only use 6 buttons, but the 7th button comes in handy. This way i have 4 buttons on the top row to simulate the Neo Geo layout. I also have a few none mame games that i play on here through steam, including Mortal Kombat 9, Injustice, and Street Fighter 4.



all material is .75" thick. internal bracing (light gray on right panel) are set back 1.25" from edges so that there is a .5" lip once the front and back panels are set in place.

Step 3: Build the 2x4 base

Start by building a rectangular base for the cabinet out of 2x4s. It needs to be 24" wide x 21.5" deep. I used wood glue and some screws to hold it together.



Step 4: Cut out the first side

Draw out the shape of your first side onto one of the 2ftx4ft sheets of MDF. Once you are happy with it, cut it out using your circular saw.



Step 5: Use first side as a template for the second side.

Take your first side that you cut out, clamp it to an other sheet of MDF, then use the router with a flush trim bit to cut out the second side, this way they will be identical.



Step 6: Attach 1x2 pine braces to sides

cut some 1x2 pine boards into strips and screw/glue them to the sides for bracing. they should be flush with the top edge, and set back 1.25" from the front and back edges. also stop about 4" from the bottom to allow room for the base you built earlier. I attached these with short wood screws and glue. (make sure the screws aren't too long, or they will break through the sides.)

Do this for both sides, making sure you flip one so that these strips end up on the inside of the cabinet.



Step 7: Cut the T-Molding slot on the side panels.

First you will want to round over both of the bottom corners of your side boards to create a smooth transition for your molding, i used a jigsaw.

Before assembling the cabinet, now would be a good time to cut the slots for the T molding. Use your router with a 1/16" slot cutter bit for this, make sure it is centered in the MDF. I cut the slot along the front, bottom and back sides, it is not necessary on the top.



Step 8: Start assembly

build a top brace out of 1x2 boards, 24" wide by 13 deep. this will be the brace for the top.

once this is done, using wood glue and screws, attach the 2x4 base and the top brace to one of the sides of the cabinet.

as you can see, i also mounted some leg levelers to the bottom 2x4 base using t-nuts. These are simply threaded into the t-nuts and can be adjusted to keep the cabinet level.



Step 9: Attach second side panel

Repeat the last step for the other side, attach it with glue and screws. At this point, you can then stand your cabinet upright.



Step 10: Insert bottom panel and rear panel.

I cut my bottom panel from some scrap OSB i had lying around. If I had it to do over again, i'd use MDF. i cut it to fit inside the bottom of the cabinet, and screwed it to the 2x4 base. I used a 1" spade bit to drill some air vents in the bottom.

I also cut the bottom rear panel and attached it. It is 8" high and 24" wide. I used a 3" hole saw to make a hole. This hole is for the power/video cables. This panel is attached only using wood glue. the top edge of this board is beveled to match the angle of the back panel. this way the back door panel can sit flush on top of it.



Step 11: Cut and attach front panel.

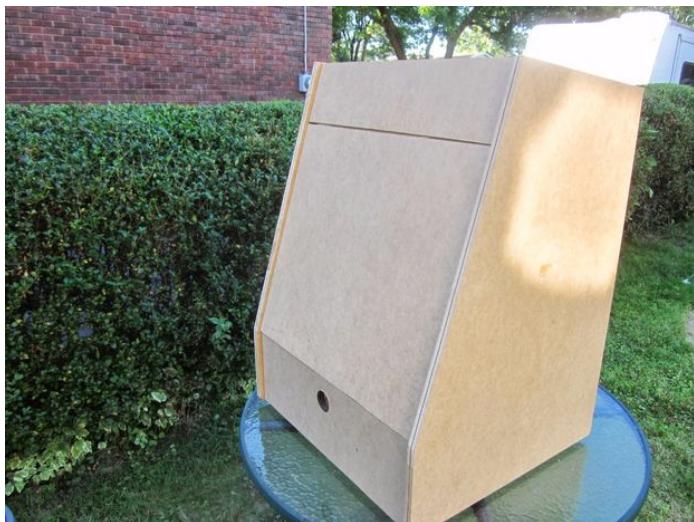
cut the front panel to size and attach it using wood glue.



Step 12: Cut and attach rear panels

The top rear panel is 24 x 5.75" with a hole in the center for a standard PC fan. I used a hole saw for this, i believe 3" as well. This is glued in place.

the back door is cut to size, and just sits in place. It is held in by gravity. I ended up installing a barrel lock at the top to keep it shut.



Step 13: Build the box for the control panel

Using some 1x4 pine boards and the measurements from the included diagram, build a base for the control panel and glue it together. It should be slightly smaller than the top of the panel so that there will be some overhang. The bottom of mine is made from OSB again, but it would be better with MDF. Once the box is complete, screw or bolt it to the base.



Step 14: Prepare control panel top

Cut out the shape of your control panel, making sure there is an overhang over your box you just built. Mark the locations of your controls. Take lots of time planning this, you will be stuck with it for a while. I drilled small pilot holes at each button/joystick location. Then drill out all button holes and joystick holes with a 1 1/8" Forstner bit. Take your time and do it right. I used a drill guide i picked up at harbor freight to keep the drill at a right angle to the wood.

Also, using a 3" hole saw, drill out the hole for your trackball.





Step 15: Recess area for joysticks

I wanted to mount my joysticks from below, with no visible bolts. I used some Japanese sticks (Sanwa JLW) because they can easily be switched from 8 way to 4 way mode. (I didn't want the clutter of a dedicated 4 way stick). When undermounted on a 3/4" panel, the sticks were just too short. To fix this, I used the router to recess a pocket for the joysticks to sit in. I routed away about half the thickness of the panel in these areas.



Step 16: Cut trackball hole in plexiglass

I didn't want any visible bolts in the panel, so I had to use a trackball mounting plate. I also didn't want this to be visible. It will be flush mounted under the plexiglass and artwork. Before I could do that, I had to cut the trackball hole in the plexiglass. This was done by clamping the plexiglass to the panel so that there was a small overlap on all sides. Then using the 3" hole as a template, I used the router with a flush trim bit to cut the 3" hole in the plexiglass.



Step 17: Prepare trackball mount

now that the plexiglass is cut, remove it and set it aside for later. now lining up the hole in the trackball plate with the hole in the wood, trace around the trackball mounting plate...and remove it. then insert the trackball in the hole, upside down, and trace around its footprint....then remove it

the plate will have 4 bolts welded onto it, mark their locations as well, and drill ou the holes for the bolts.

using your jigsaw, cut out the hole large enough for the trackball assembly to fit through.

the final part of this step is to use the router to create a recessed area for the plate to fit in, so that it sits flush with the surface of the wood.



Step 18: Prepare joystick mounts

using the base of your joystick as a template, line it up with the joystick holes you drilled and mark the locations of the bolt holes. drill these out with the appropriate size drill bit.

once again, we dont want any mounting hardware visible through the panel, so we are using T-nuts to mount them. use a spade bit to create a recess for each of the t-nuts so that they sit flush with the top of the panel.

then insert your t-nuts and trackball mounting plate.



Step 19: Cut button holes in plexiglass

Place your plexiglass back onto your panel, being sure to line up the trackball hole and making sure there is an overlap on all sides, then clamp it in place. I placed my hole saw in the hole just to help keep it lined up.

This part requires patience, take your time so you don't crack your plexiglass. I do this in two parts. The first part is to create a pilot hole. I use a V-groove bit and slowly lower it down into each of the button holes. Take your time and it will cut through the plexiglass like a hot knife through butter.

(make sure you wear safety glasses, it will throw little pieces everywhere)

Once you have your pilot holes, switch to the flush trim bit in your router. The bearing will roll around the button hole, making perfect holes in your plexiglass. You can insert a few pushbuttons in the holes to help keep everything from sliding around.

You can then remove the plexiglass and set it aside.



Step 20: Cut slot for T-molding

now you will cut the slot for your t-molding. Standard molding is 3/4" thick, the same as your MDF. However you want the molding to sit flush with the plexiglass. To do this, you need to offset your slot by the thickness of your plexiglass. This will mean that some of the MDF will stick out below the molding, to eliminate that, i used a roundover bit on the bottom side of the panel, which hides the excess.



Step 21: Make sure everything fits and is right

I decided to mount my controls and make sure everything felt right before installing the artwork.



Step 22: Drill hole for Fan and door lock

I mounted a standard pc case fan in the back to blow hot air out of the case. I used a barrel lock to keep the door in place. You just need to drill the appropriate holes in the back panels



Step 23: Add barrel lock for power switch and coin buttons

I mounted my coin buttons in the box under the panel. this keeps the panel less cluttered. simply decide where you would like them and drill out the holes with your 1 1/8" forstner bit.

i also mounted a barrel lock in the front center. this is mounted so that it is hanging straight down in its resting state, when you turn the key, the lock portion activates a microswitch which is wired to the PC power button. this step is not necessary, but makes for a nice way to turn the cabinet on.



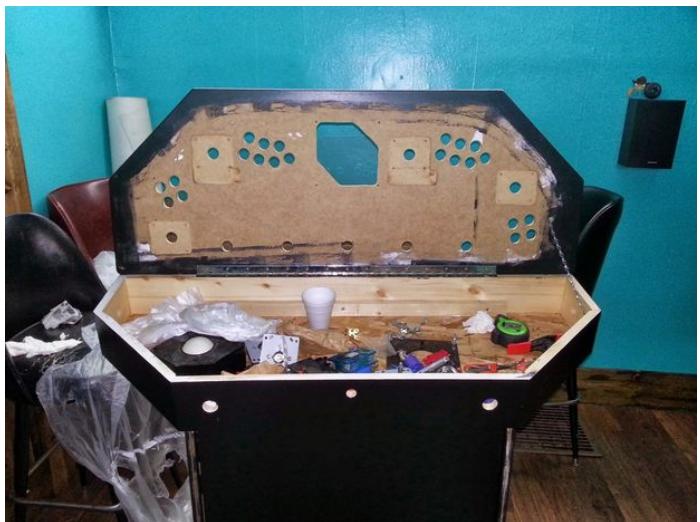
Step 24: Paint

The next step is to prime and paint. i used some Kilz 2 latex primer, followed by some Behr black semigloss with a roller.



Step 25: Attach panel with hinge

install the piano hinge on the panel so that it is fastened at the rear. as you can see, i was running low on paint so i didn't pain the inside of the control panel box, i wish i would have though.



Step 26: Artwork

I designed the control panel artwork in photoshop. Take your time and make sure it looks good when viewing it at full size. I made that image at 48 x 20" at 300dpi..it was a huge file. I had a photographer friend print it off on his big awesome printer on premium lustre photo paper. You will want to make sure the artwork is slightly larger than your panel so you don't have to worry about the edges. (If you don't have access to a large format printer, staples can do it, or there are places online that specialize this kind of thing, some that will even print on adhesive vinyl)

Once you have your artwork, place it on the control panel and line it up perfectly. I placed a bright light under the panel so i could see where the button holes were through the paper. then clamp it in place and cut out each of the button, joystick and trackball holes with an x-acto knife. take your time. I placed buttons in the holes as I went, just to keep it from moving.



Step 27: Trim artwork, add T-Molding

Re-install the plexiglass and install the controls. using your x-acto knife, trim around the outside of your panel to remove excess paper. once that is cleaned up, install your t-molding around the panel.





Step 28: Install T-Molding on cabinet base

This is self explanatory. Install the T molding on the base of the cabinet.

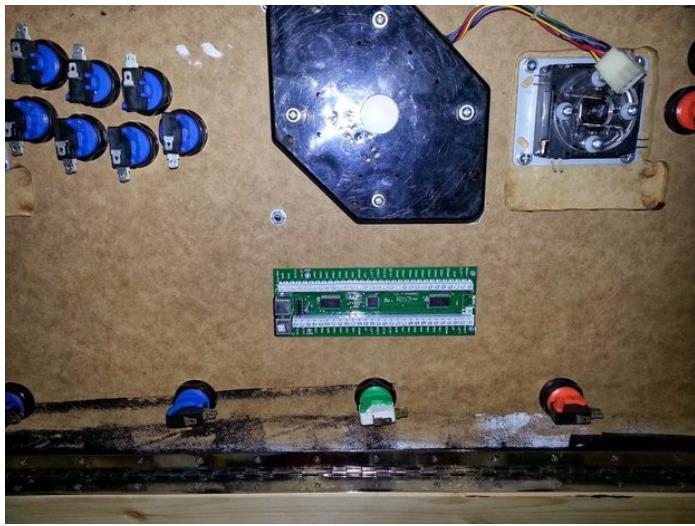


Step 29: Wire up the controls.

Find a spot to mount your control interface. I mounted mine near the center of the panel to keep the wiring as short as possible.

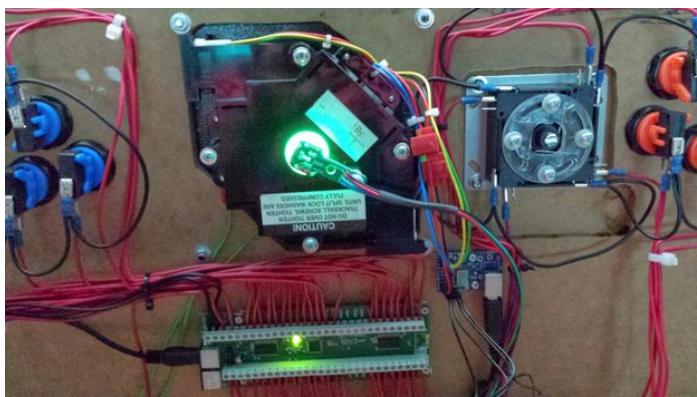
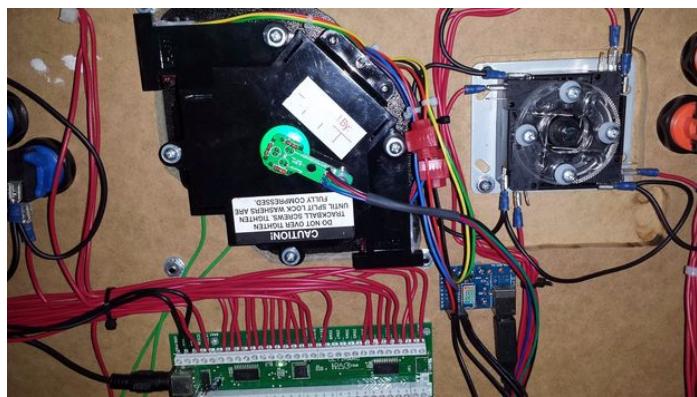
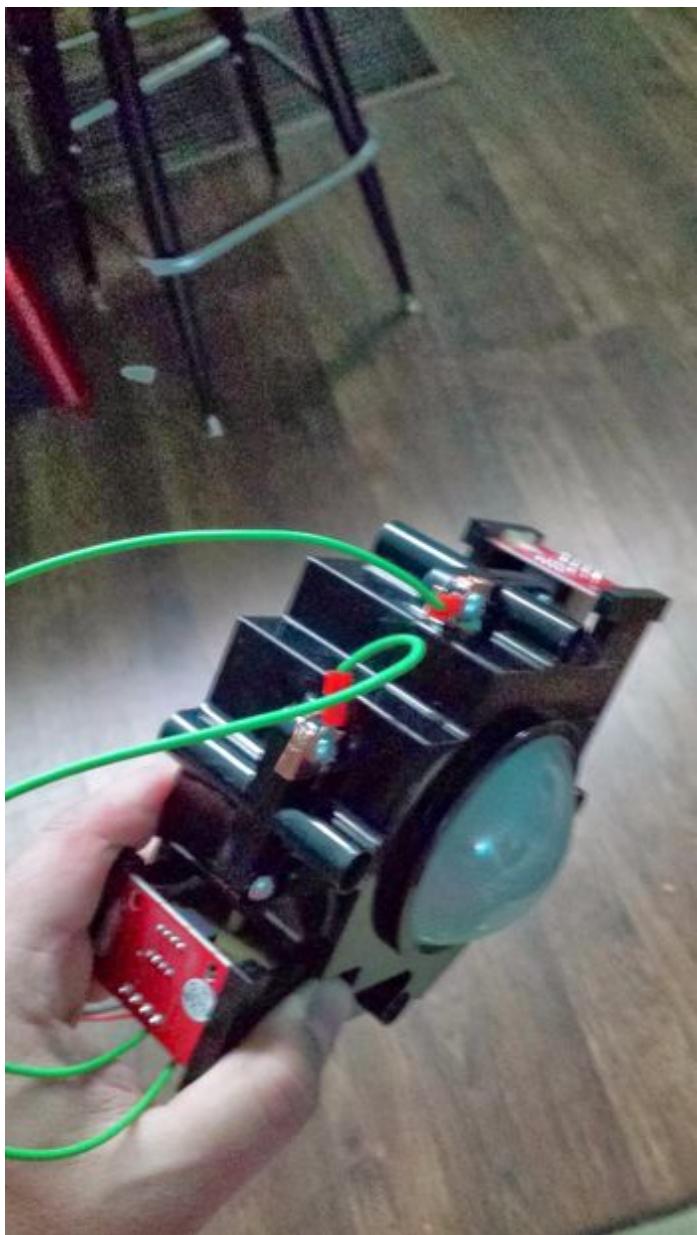
Each button will have a microswitch, and each joystick will have 4. Using your ratcheting crimpers, crimp on a wire disconnect and connect it to the NO terminal on the switch, then route your wire to an input on the ipac. This needs done for each microswitch.

Once that is done, you need to connect a ground wire to every GRND terminal on every switch. These do not need to be discrete wires, you can chain them together. You will be crimping a ton of connectors. Take your time to route the wires nicely, you will thank yourself later.



Step 30: Wire up your trackball

Mount your trackball into the mounting plate and connect it to your usb mouse interface. The one i used also has LED lighting that needs to be connected to a 5v and ground. The Optiwiz that came with my trackball provides this.





Step 31: Add a PC and monitor.

This part is so difficult to document because each person's needs are different.

I mounted a 42" LCD tv on the wall for my display.

There is plenty of space inside the base of the cabinet to store a PC. I used an older AMD phenom II x4 machine with 8gb of ram, running windows 7 x64. I don't plan on going into great detail on setting up the PC, there are many other sources for this info. This instructable was for building the cabinet. If you need more inspiration or assistance, check out the forums at arcadecontrols.com





Step 32: Enjoy.

If you followed the instructions, you should end up with an awesome 4 player pedestal cabinet. Here you can see the final product, with the original sketchup render.





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ZacharyR17 says:

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Mar 15, 2016. 10:00 AM [REPLY](#)



bluenoiseMF says:

Thank you for the excellent write-up! My son and I are in the process of building a similar cabinet and have all the parts and tools, but I was unsure how to best drill the button holes in the plexiglas. I am going to use your method as it's brilliant. Yours looks great!

Mar 15, 2016. 8:20 AM [REPLY](#)