

Home Built Dance Dance Revolution Arcade Style Metal Pad

Built By: ddrhomepad

<http://www.geocities.com/ddrhomepad>

**Build Your Own Metal DDR Dance Pad
(Press CTRL+F to search for words and phrases)**

1. Sheet Metal and Plywood

Cut 5 square pieces from ½ inch plywood. Each piece should measure 10-7/8 inches by 10-7/8 inches. Then cut 5 square pieces of 26 gauge sheet metal. Each piece should measure 12 inches by 12 inches. Each DDR panel is an 11 inch square, so when you bend the sheet metal around the plywood, each square should measure around 11 inches.

2. Metal Panel

Center the sheet metal over the wood and drill 4 holes, one in each corner. Put a screw in each corner, but don't screw them in all the way yet. I used Phillips Mod Truss, Lath, Self Drill screws that are 1-1/4 inches long. Now take a rubber mallet and pound the sheet metal so it wraps around the sides of the plywood. You will have to snip the corners with tin snips. Underneath the plywood, glue two rails along the sides, laying the wider sides flat to reach from corner to corner. I used 1 inch by 2 inch MDF fiberboard. Pre-drill holes in the MDF for the screws because the fiberboard splits. Now screw the 4 screws all the way into the rails. You will build 5 of these panels. All the rails run horizontally (left to right), with the wider 2 inch side lying flat.

***UPDATE *** - Because the MDF splits easily, I would use some other 1 inch by 2 inch rail, something cheap like pine.

3. Brackets

You will need 16 brackets. They are called Stanley corner braces (2 inches). There are two brackets in each package and they cost almost \$3 per package. Screw each bracket into the sides of the 5 metal panels. You will have to puncture the sides of the sheet metal with something sharp like a nail and pre-drill the hole before screwing in the screws. Make sure the brackets are even with the surface of the sheet metal panels. The screws that come with the Stanley braces are only ½ inch long. To make the pad stronger, don't use these screws, but screws that are at least 1 inch long.

4. Frame

After you have screwed all 16 brackets together to the 5 metal panels, you should have a frame that looks like this. The blank spots are where the arrow buttons will go. You should have 5 metal panels that are about 11 inches square and 4 blank spots that are also about 11 inches square. The whole frame should measure 33 inches by 33 inches.

5. Dance Pad Controller and Wiring Diagram

This is the \$5.99 PlayStation Controller that I opened up and soldered. There are 5 wires soldered to the controller, one each for UP, DOWN, LEFT, RIGHT and GROUND. The black wire is the controller's wire that plugs into the PlayStation. I drilled a hole in the controller and the tan cable is a telephone wire with five wires that go to the pad. I designed the pad this way so that the controller is still functional. I use it for the X and O, and START and SELECT buttons. You can buy it at Gamestop for only \$5.99.

To solder the controller:

- 1- Where the cable comes out of the controller, drill a hole underneath it so that the telephone cable can fit through there.
- 2- Put the telephone cable through the hole in the controller.
- 3- Take out the circuit board from the controller.
- 4- Drill a very small hole at the edge of the solder points. (I used 1/16 inch drill bit)
- 5- Stick the wire through the back of the circuit board into the hole you just drilled.
- 6- Solder the wire to the solder point.
- 7- Repeat the steps for all five solder points - UP, DOWN, LEFT, RIGHT and GROUND. (You will have to cut away some of the circle shaped plastic in the controller to fit the wires.)
- 8- Put the controller back together, use some tape to hold the shoulder buttons from being pressed.
- 9- Plug the controller into the PlayStation and put in a game.
- 10- Touch the ground wire to each of the UP, DOWN, LEFT, and RIGHT wires to see if everything works correctly.

These are the solder points on the circuit board. I only soldered wires to UP, DOWN, LEFT, RIGHT and GROUND. Larger picture at [DDR Metal Catastage](#).

This is a diagram of the wiring from the PlayStation controller to the pad. There are 5 wires coming from the controller — UP, DOWN, LEFT, RIGHT and GROUND. Get 4 more wires and connect them to the GROUND wire by twisting them and soldering them all together, or use a wire nut, so that you have a total of 4 GROUND wires. Now you have 8 wires going into the pad — 4 GROUND wires, and one each for UP, DOWN, LEFT, and RIGHT. The 4 GROUND wires are each connected to the 4 sheet metal on peg board panels. The other 4 wires, UP, DOWN,

LEFT, and RIGHT, connect to the sheet metal attached to the lucite panels for the UP, DOWN, LEFT, and RIGHT arrows.

6. Underneath the Arrow

Now it's time to build each arrow. Measure the blank space, it should be about an 11 inch square, but it may not be perfect. Measure each blank space for the arrows separately because they might not be all the same size. Now cut a piece of peg board to fit under the brackets. Cut 4 pieces of the MDF fiberboard for rails, laying the wider side flat to support the arrow panel. Put screws through the peg board into the rails so that the top of the screws are flush with the peg board. I used 1 inch black drywall phillips screws that fit perfectly in the peg board holes. Pre-drill the holes because the screws will split the MDF.

This is how the pad will look from underneath. The UP and DOWN rails run vertically. The LEFT and RIGHT arrows run horizontally. You could add more rails for the center section for more strength. If you need to build your pad to accommodate more weight, just add more rails to each peg board panel.

7. Sheet Metal on Peg Board

Cut a piece of sheet metal into a 9-1/2 inch square and use spray adhesive to glue it to the peg board and duct tape the sides. On the top left of the picture is a white wire, this is the ground wire from the controller that is soldered to the corner of the 9-1/2 inch square piece of sheet metal. The brown stuff around the sides is high density weatherstripping. The white triangles in the corners are foam core, 3/16 of an inch thick. If you can't find foam core, you could probably cut up an old mouse pad for the triangles. The foam core and weatherstripping will hold up a lucite panel with sheet metal. Make 4 of these peg board panels for the UP, DOWN, LEFT, and RIGHT arrows. To cut down sheet metal costs, you can make it 9-1/2 inches by 9 inches instead of a perfect 9-1/2 inch square.

UPDATE - To make the arrows more sensitive, I cut two 1/2 inch gaps in the weatherstripping along all four sides. The arrows feel less spongy, and the gaps let air trapped in between the lucite panels escape. Also, don't use aluminum sheet metal, the solder won't stick to it. Use 26 gauge zinc stainless steel or sheet metal that says "plated steel sheet." The sheet metal will look like it has speckles on it.

8. Sheet Metal Attached to Lucite Panel

This is the underside view of an arrow with a 9 1/2 inch square piece of sheet metal attached to a piece of lucite with spray adhesive and duct tape. The lucite is 3/32 of an inch thick. This piece will sit on top of the weatherstripping. You will build 4 of these, one for the UP, DOWN, LEFT, and RIGHT arrows. From the controller there will be 4 wires for UP, DOWN, LEFT and RIGHT.

Solder each of the wires to the corner of the 4 sheet metal panels and cover the soldered part with a few layers of duct tape. You should rough up the corner with sandpaper to make the solder stick better. When this panel is stepped on, it will complete the circuit with the sheet metal on the peg board, and the weatherstripping will push it back up. Measure each blank space separately for the arrows and cut the lucite pieces to fit underneath the brackets. The lucite pieces should be a little smaller than an 11 inch square, probably about a 10-3/4 inch square, but they may not be all the same size for each arrow.

9. The Two Panels That Make An Arrow

These are the two panels that make up an arrow. On the top of the picture, you can see a white wire that is soldered to the corner of the 9 1/2 inch square piece of sheet metal attached to the lucite. In this picture is the DOWN arrow, so the long wire you see is the DOWN wire from the controller. To the left of the long wire is a small wire. This is one of the 4 GROUND wires that connect to the sheet metal on peg boards.

10. Close Up of Arrow

You can use any kind of arrow graphics that you want. Just find a graphic and sandwich it between the two pieces of lucite. It is very important to use 3/32 inch thick lucite so that the arrow panels and the non-arrow panels end up being the same height. This arrow panel consists of (from top to bottom):

- * Clear lucite
- * Arrow graphics
- * Clear lucite with sheet metal glued to underside
- * Weatherstripping and foam core
- * Sheet metal on peg board
- * MDF rails for support

The arrow panel sits underneath the brackets. You will have to drill holes through the lucite and peg board and into the MDF rails. Make sure that the bracket screws do not touch the 9-1/2 inch sheet metal contacts, or it could cause a short.

11. DDR Pad

This is the completed Dance Dance Revolution pad. The whole pad measures 33 inches by 33 inches. For the complete dimensions to a Dance Dance Revolution arcade game check out The Melting Pot.

12. DDR Pad with Back Section

I added a small back section to the pad for added safety. It's made of 1 inch by 3 inch MDF fiberboard that's 33 inches long wrapped in sheet metal and screwed together with a 1 inch by 2 inch piece of MDF fiberboard that's also 33 inches long and with a 2 inch strip of peg board that's 33 inches long to make it 1/8 higher than the pad. Even though the back-piece is higher, you can't see the difference, but you can feel the back-piece with your feet if you are drifting too far backwards which makes it safer. If you plan on adding the back-piece, make your bottom peg board 33 inches by 35 inches instead, so you can connect the back-piece without the 2 inch strip of peg board. I also used 4 long screws to go through the MDF rail on the back-piece to the MDF rails on the pad.

13. Bottom of Pad

This is a view of the bottom of the pad. It's one big piece of 33 inch by 33 inch peg board. I used the rough side of the peg board on the bottom so the pad won't slide around. I pre-drilled all the holes and screwed 1 inch Phillips drywall screws into the MDF rails. I then labeled all the holes where the screws go just in case it needs fixing. If you decide to add the back-piece for added safety then cut the bottom peg board 33 inches by 35 inches.

14. Complete Dance Dance Revolution Setup

This is my complete setup with my home built Dance Dance Revolution arcade style metal pads. The PlayStation is hidden in the cabinet, and the controller is hanging on the cabinet door. I bought these computer speakers from Dell that they mis-priced for only \$25. They are THX certified Altec Lansing ADA885. It has an 8 inch sub-woofer that pumps out the bass which makes it feel more like the arcade game.

15. Two DDR Pads for Doubles

I built a second pad to play doubles. The distance between the two DDR pads for doubles is 1-13/16 inches. I screwed together two pieces of 1 inch by 2 inch MDF and bent sheet metal around the 2 inch side, which actually measures 1-1/2 inches. I then cut two 6 inch straps from some scrap sheet metal and screwed them into the pads and the new middle piece. Strapping the two pads together makes the distance between them 1-13/16 inches.

16. Frequently Asked Questions

How much did the metal pad cost?

It cost me about \$135 to build. You can build a cheaper version if you don't use the brackets and sheet metal, but then you won't get that feel of an arcade style pad because the sheet metal lets you do slides, and the lucite arrows fit underneath the brackets so your feet can feel exactly where all the arrows are.

How do you cut the sheet metal and lucite?

Use a good pair of tin snips to cut the sheet metal and a jigsaw with a blade that cuts metal for the lucite. You could also cut the lucite with a Dremel Rotary tool or use a sharp tool to score the lucite many times on both sides and then snap it off over the side of a table.

Where do you get the brackets?

The brackets are from Home Depot and they are 2 inch Stanley corner braces (2 per package) I found mine in the section with door parts. I'm pretty sure they are called Stanley brackets. You will need 16 of them or 8 packs at \$2.46 per pack.

What is foam core and where do I buy it?

Foam core is just styrofoam sandwiched by two pieces of glossy paper. It is 3/16 of an inch thick. I bought it from Wal-Mart in the art and school supply section. It's with the poster boards. You can probably find it at any arts and crafts store. I've also seen it at Michaels.

What kind of wire should I use?

Buy a Category 5 (Cat 5 for short) cable. There are 8 wires in the cable. Home Depot sells some cheap Cat 5 cable by the foot for only 14 cents per foot. You will need at least 10 to 15 feet of cable.

How do I build a stronger pad to accommodate more weight?

Instead of using 1 x 2 rails underneath the pad, use 1 x 3 rails throughout the whole pad, or just add more rails underneath all of the nine panels. For the bottom piece of the pad, instead of using 1/4 inch peg board, use 1/2 inch plywood. Now it will be very strong and heavy.

Can I use aluminum foil for the contacts?

Aluminum foil will work, but because of all the abuse the pad gets from jumping, the foil eventually rips and sags causing double and triple hits per step. I used foil in the beginning, but it became a hassle replacing the foil when it ripped. So using sheet metal as a contact is the best solution because it never needs to be replaced.

Why didn't you use micro switches for the arrows?

A DDR pad takes a lot of abuse and micro switches can break. Plus, micro switches make a clicking sound, which can be annoying. By using sheet metal contacts that are 9-1/2 inches square, the whole arrow practically becomes one big switch. This design lets you step anywhere on the arrows and it will register a step.

What do you use for the X, O, Triangle and Square buttons?

The pad is wired into the controller, so the controller is completely functional. I use the controller for the menu and for selecting songs. I also use the controller for the X, O, Triangle and Square buttons.

How well does the pad work?

The pad works perfectly; when you step on an arrow it registers perfectly. You can do slides and you can feel where the arrows are with your feet. So far I can pass twelve catastrophics (9 feet)

on my pad — Electro Tuned (the SubS mix), Matsuri JAPAN, Romansu no Kami-sama, PARANOiA ETERNAL, NO LIMIT (RM Remix), CAN'T STOP FALLIN' IN LOVE (SPEED MIX), BROKEN MY HEART, DYNAMITE RAVE, AFRONOVA PRIMEVAL, B4U glorious style, INSERTiON, and Healing Vision (Angelic mix).

Will the pad break?

The pad is very durable and the pad won't physically break. But because of all the abuse a pad will take from stepping and jumping, you might have small problems that are easy to fix like a wire coming loose. The best thing about a home-built metal pad is that because you built it, you will know how to fix it.

Will you build and sell me a metal pad?

This project is for someone who has a lot of time and enjoys building things. Because a DDR pad takes a lot of abuse, small problems will occur like a wire coming loose. The problems are easy to fix, but if I sold a pad there is no way that I can guarantee that it will always work 100% for you all the time.

I have more questions. Will you help me?

Post the question at DDR Freak. I or someone else who has built a metal pad will answer your questions.

17. Troubleshooting Questions

I used MDF for the rails and some holes are stripped.

MDF strips easily, so pre-drill all the holes. Better yet, use some other cheap kind of wood like pine for the rails. If you already stripped the holes, put some glue and wood toothpicks into the hole, then screw in the screw.

Why am I getting double and triple hits for each step?

First isolate which arrow is causing the problem. You can check this by testing each arrow during the menu. The problem is that the contacts are touching when they shouldn't be or there is a loose connection somewhere. Check to see if the wire soldered to the corner of the 9 ½ inch square piece of sheet metal is making good contact. All of the bare wire has to be covered with solder and be solid. Check the tape over the same connection because sometimes a sharp solder point can poke through the tape and make a connection with the sheet metal on lucite. Another thing to check for is loose or frayed wires that are usually by the rails. Make sure there's foam core in the corners under the brackets and enough weatherstripping to keep the two pieces of sheet metal apart. Also, make sure the screws going through the brackets to the MDF rails do not touch any of the sheet metal contacts.

Why am I getting BOOS when I know I'm hitting the step?

This problem is related to the double and triple hits problem. If an arrow is flickering a little because it's making contact when it shouldn't, then you will get BOOS because the arrow will register a step when it flickers just before you step on it.

Why are there dead spots on the arrow that don't register a step?

The problem could be from double or triple hits for each step (see above). Check the weatherstripping and move the weatherstripping around if you isolate a dead spot.

How do you clean the pad?

The pad may get sticky from dirt, humidity or sweat. I spray some Pledge furniture polish onto a paper towel and clean all the squares. The pad then becomes slippery enough so that doing slides becomes really easy.

18. Materials and Costs

\$34- 2' by 3' 26 gauge zinc stainless steel (2 pieces) at Home Depot Note : I found 2' by 4' 26 gauge plated steel at Lowes cheaper Don't buy aluminum sheet metal, the solder will not stick to it.

\$24- 16 Stanley brackets (8 packages - 2 brackets per package)

\$22- 2' by 4' piece of Lucite 3/32 inch thick or .093

\$8- 1" by 2" MDF Fiberboard 6 foot length (4 pieces)

\$3- 1" by 3" MDF Fiberboard 4 foot length (1 piece)

\$8- 4' by 4' Peg Board 1/4 of an inch thick

\$7- PlayStation Controller

\$7- 1-1/4 inch Phillips Mod Truss, Lath, Self Drill Screws 1 inch Black Drywall Phillips Screws

\$6- 1/2 inch Plywood 2' by 3'

\$6- Spray Adhesive and Duct Tape

\$5- Telephone Wire and Solder

\$2- Foam Core 3/16 of an inch thick

\$3- M-D High Density Foam Tape Weatherstrip 1/4 inch thick, 1/2 inch wide Closed-Cell Foam

\$135- Estimated total cost of building DDR pad