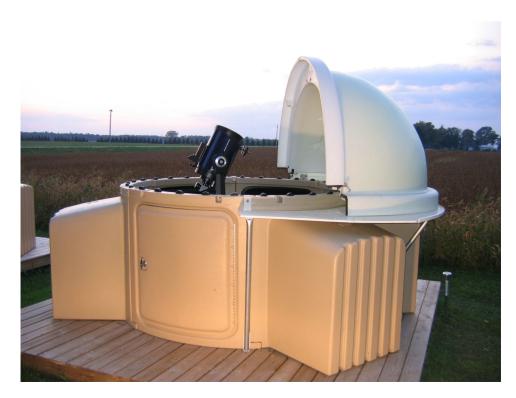


POD Zenith Table (PZT)

Step by Step – U Shaped Wooden Table

Construction Instructions



Please Read Instructions fully before you begin.

There are elements such as painting the brackets that should be accomplished before you begin construction.

Part 1 - The Table

What you will need

A flat floor space of at least 10' X 10'

Materials

2 sheets of ¾", 4' X 8' plywood, preferably "Marine Grade" but this not absolutely necessary. Marine Grade plywood will last longer than regular plywood when exposed to the elements year round. It must be ¾" thick. It may have to be specially ordered at your local lumber supplier in order to get this thickness. 5/8" thickness is more common. DO NOT USE 5/8" plywood. Use only ¾" thick plywood. The plywood should be "finished" or smooth on one side, at least. Always keep the sheet you are sawing "finished side up".

Two 8' lengths of your choice of wood or metal trim, which is at least 1 1/2" high. This trim goes around the edge of the table to keep the dome from sliding off. If your dome is high off the ground, consider adding a metal trim that's over 2" high. Read the instructions thoroughly before deciding which type of trim you want to use. You'll need screws to attach the trim of your choice.

One tube of silicone caulking for the table edge trim.

Tools

Jigsaw for curved cuts; skill saw for straight cuts; protective goggles and dust mask; drill with 3/8" or 7/16" drill bit; cordless screwdriver or variable speed drill for driving screws; a 1" or 2" nail, and a hammer; at least 80" of cord or string; one pencil, pen, or marker; measuring tape of at least 8' length; a straight edge of at least 4' in length; two saw horses, or two raised forms for supporting the plywood when sawing; allen key for the bracket bolts; wrench for tightening bolts; painting materials.

* Please WEAR PROTECTIVE GOGGLES when sawing wood, etc. Keep your eyes safe for doing astronomy!

This is what you're going to start off with



This is what you're going to end up with



Fig. 2

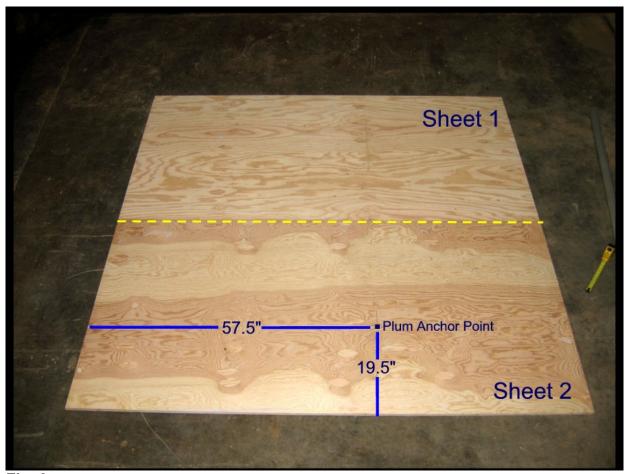


Fig. 3

Begin with the two sheets of plywood laid side by side, perfectly aligned with each other. In the accompanying images, plywood Sheet 1 is at the top and plywood Sheet 2 is at the bottom of the picture.

On Sheet 2, from the left edge measure 57.5" toward the right edge, then 19.5" straight up from the bottom edge of the sheet (See Fig. 3).

The point at which the two measurements intersect is our "Plum Anchor Point", from which we will be drawing curved lines to mark the shape of the first two table parts.

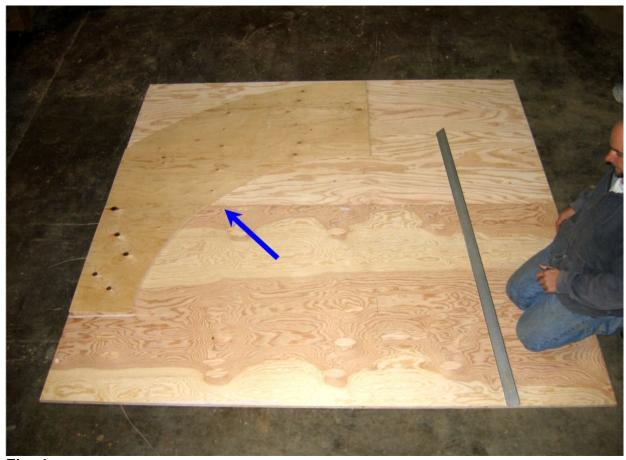


Fig. 4

This image is not a construction step. It is intended to show you the shape and size of the first two pieces we will be cutting out of the sheets. We've laid previously made "pattern" pieces on top of the sheets to show you what we're creating in the next series of instructions.



Fig. 5

Temporarily, hammer a nail into Sheet 2 at the Plum Anchor Point you've just created. The nail should be 57.5" from the left edge and 19.5" from the bottom edge of the sheet.

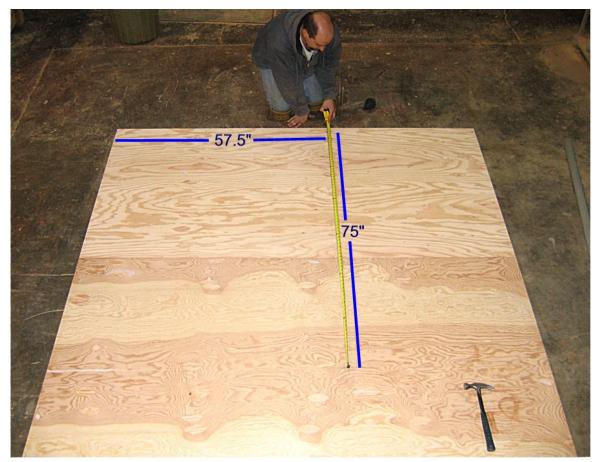


Fig. 6

Using the nail at the Plum Anchor Point, measure 75" straight up toward the top of Sheet 1. You should end up at a point 1"- 1.5" from the top edge of sheet 1, and 57.5" from the left edge of the sheet. Mark that point with your pencil.

Note - The camera lens and perspective may make it appear as if the line is not parallel to the sheet edge, but in reality it is.



Fig. 7

Take 80" of string and tie it loosely around the Plum Anchor Nail. Now go up to the mark you just made at the top of Sheet 1 (75" above the anchor point), and tie your pencil onto the end of the string so that the pencil ends up perfectly aligned with your mark.

Next you will be keeping the string taut and using it to mark a curved line toward the left side of Sheet 1, as seen in the following few images.



Fig. 8

Jay is using the plum line with pencil to mark the first curved line. We've superimposed a black line so that the line is easier to see.

Keep going...



Fig. 9

Keep the plum line taut as you continue to draw a curved line all the way to the left edge of the sheet. This completes the first curved line.

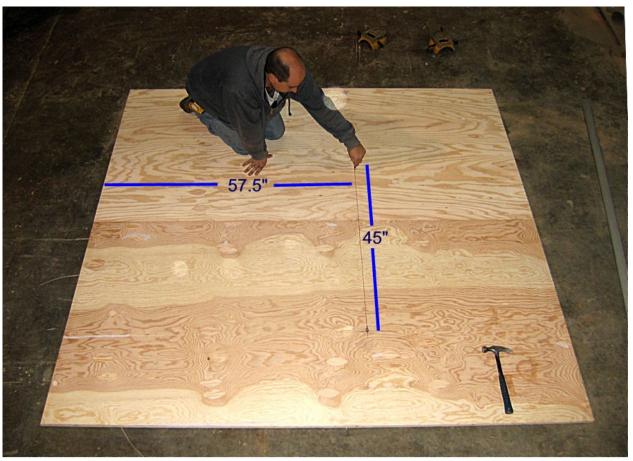


Fig. 10

Now we need to create a second curved line, parallel to the first one, separated by 30". This will create a U shaped PZT tabletop that is 30" deep.

To do this, use the Plum Anchor Point to measure 45" straight up (as you did with the longer 75" measurement earlier). This mark is also 57.5" from the left edge of Sheet 1.

Shorten the plum string so that it's now 45" in length, and the pencil lines up with the mark you've just made that's 45" up from the Anchor Point.

This will be the starting point for drawing the second curved line.

The next couple of images show Jay drawing the second curved line.



Fig. 11

Jay drawing the second curved line.

Keep drawing...



Fig. 12

Keep the line taut and continue drawing until the line is about a foot from the bottom of Sheet 2. This completes the curved lines for the first two PZT tabletop pieces.

Next we will connect the curved lines, at their ends, with straight lines, to complete the shapes to cut out.

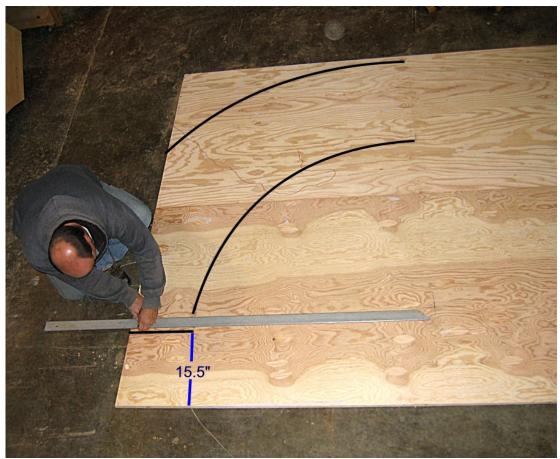


Fig. 13

Use the straight edge to draw a line that is 15.5", from the bottom edge of Sheet 2, and intersects the lower curved line you've just drawn.



Fig. 14

Complete the saw lines by drawing a line that connects the lower and upper curves at their starting points. This line should be 57.5" from the left edge of Sheet 1.

Don't Forget! Measure Twice. Cut Once.



Move Sheet 2 out of the way and in its place prepare saw horses for laying Sheet 1 on to begin sawing.



Fig. 16

Mount Sheet 1 on the saw horses in such a fashion that none of your cut lines will cause the saw blade to come in contact with the horses.

Use a skill saw and follow the straight line you've just drawn to cut Sheet 1 into two pieces.

Note - We've extended the vertical saw line past the lower curved line in order to accomplish this.



Fig. 17

Use the jig saw to cut the arch shape out of the Sheet 1.

Note - Keep the "keeper piece" to the left side of the cut. The wood will tend to splinter more on the right side of the cut. That's the scrap wood side.



Jay has finished the first curved cut.

Here's a web link to an AVI movie of Jay making this cut:

http://www.skyshedpod.com/images/Jay.wmv



Fig. 19

Now make the second curved cut on Sheet 1, to complete the first large piece.



A photo of the finished first piece.



Place Sheet 2 on the saw horses and follow your lines to cut out the second piece.

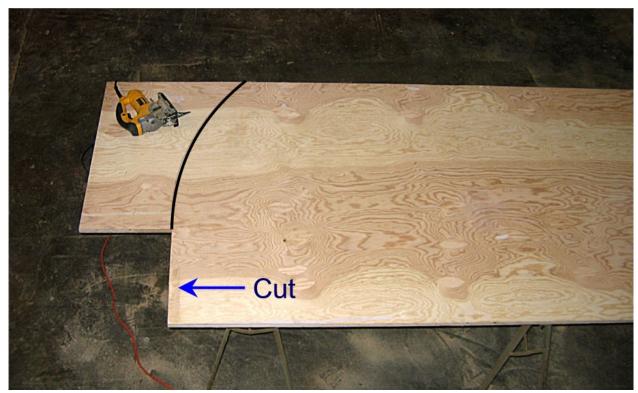


Fig. 22

We cut a notch out by sawing up from the bottom edge. This makes the curved cut easier to approach.



Finish cutting out the second piece by sawing along the curved line.



The completed second piece.



Fig. 25

Now it gets real easy.

Take the first large piece you created from Sheet 1 and lay it upside down on the large piece that remains of Sheet 2.

Always remember to keep the finished side up on the piece you're going to be sawing.

We've added lines to highlight piece 1 so that you can see it easily here. Also to show you that you trace around the perimeter of piece one, then cut that shape out of Sheet 2, like you did with Sheet 1.

This will create the third of four PZT tabletop pieces (second large piece).

One more piece and we're all done!



Fig. 26

Next spin Sheet 2 around about 180 degrees and place piece number two (the first smaller piece) upside down on it.

Trace around it as shown here and cut out the shape to create the 4th and final piece of your PZT tabletop.

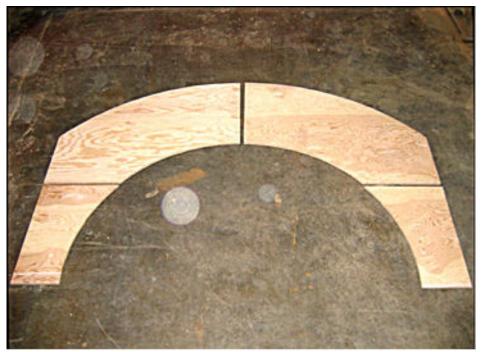


Fig. 27

Here are the 4 completed pieces.

Note - Keep the large scrap from Sheet 1 on hand; from it you will cut the small pieces to create supports for the joins in table.

Part 2 – Assembling the Table

Parts Provided

Qty 75, #10 X 3/4" wood screws; Qty 75, #10 washers; Qty 100, #10 X 1/1/4" wood screws; Qty 1, 36" steel angle brace; Qty 2, 18" steel angle brace; Qty 4, 3/8" X 3 ½" wall bolts; Qty 9, #10 X 2" wood screws; Qty 4, upper wall brackets; Qty 4, lower wall brackets; Qty 4, support poles; Qty 3, HDPE ramps.

Parts Required

Qty 30 small screws, appropriate for adding the table edge type of your choice; Qty 1, tube of carpenters glue (wood glue).

In this part we will be turning the wood over onto its underside and adding the wood and steel supports which bring the table together and make it strong enough to support the POD Dome.

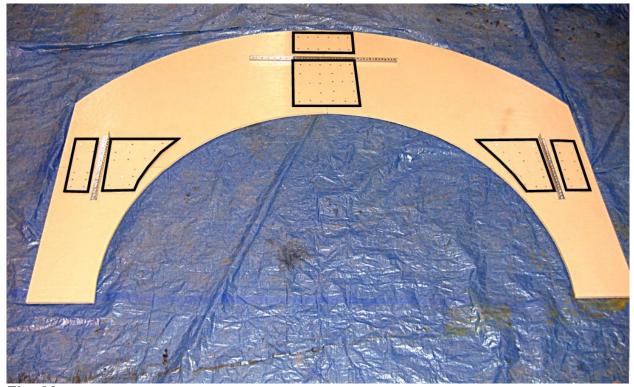


Fig. 28

This is an overview of the underside of the table with the join/supports laid out and screwed into place. We've painted the table prior to adding the supports. To increase glue adhesion of the wood joins, consider painting/varnishing the table AFTER screwing it together.

The supports are laid out by hand and are generally centered over the joins. Note – Keep the inner join support 3" from the inside edge so that it doesn't rest on a POD Bay if you have Bays. Keep the outer supports 2 $\frac{1}{2}$ " from the outer edge of the table so that they're hidden from view when looking down at the table.

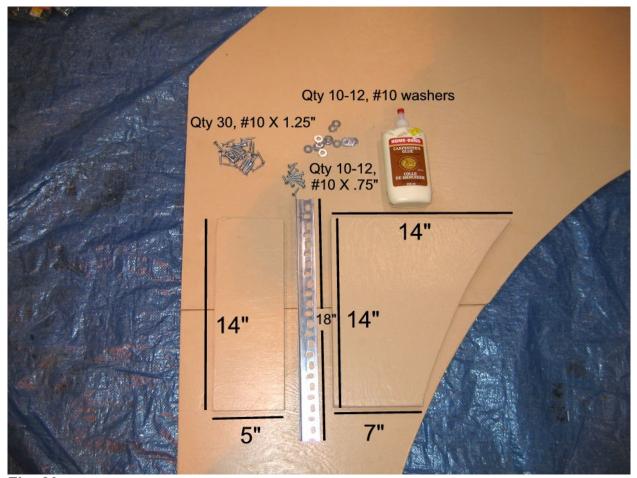


Fig. 29

Here is a look at the left side join/supports. They are the right side supports when the table is right side up.

We've used the scrap plywood pieces to create the wood join/supports. For each side of the table we've created one 5" X 14" piece, and one piece that is 7" wide at the bottom and 14" wide at the top X 14" long. Duplicate these pieces for the opposite of the table.

In between the wood join supports you can see the 18" steel angle brace.

To attach the supports you will need: Wood Glue; Qty 12, #10 1 1/4" screws for outer wood support; Qty 18, #10 1 1/4" screws for larger inner wood support; Qty 8, #10 3/4" screws and washers for the steel brace.



Fig. 30

Turn the wood join/supports over and apply the wood glue. Then turn them back over and carefully place them into the proper locations.

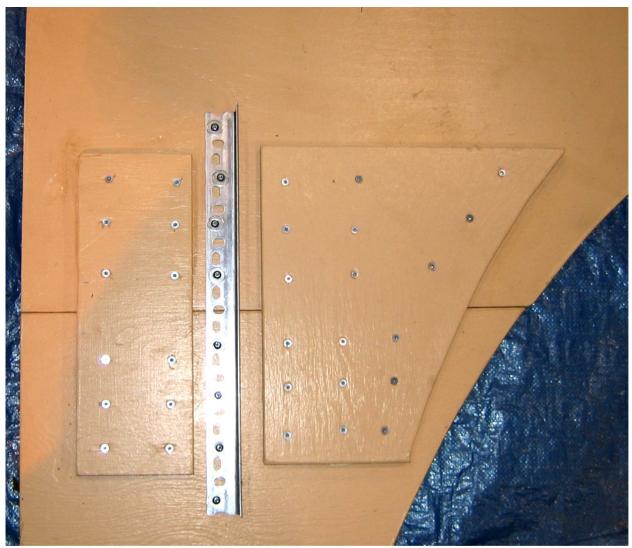


Fig. 31

Use the 1 $\frac{1}{4}$ " screws for the wood, and $\frac{3}{4}$ "screws w/ washers for the steel brace. As you can see it's just laid out by hand as the supports won't be seen from above when the table is viewed. If you want to be more exact you can draw lines with a pencil to place the screws in neat rows.

Repeat the process for the join/supports on the opposite or right side of the under table.



Here's a shot of the completed right side join/supports.

Next we do the center supports.

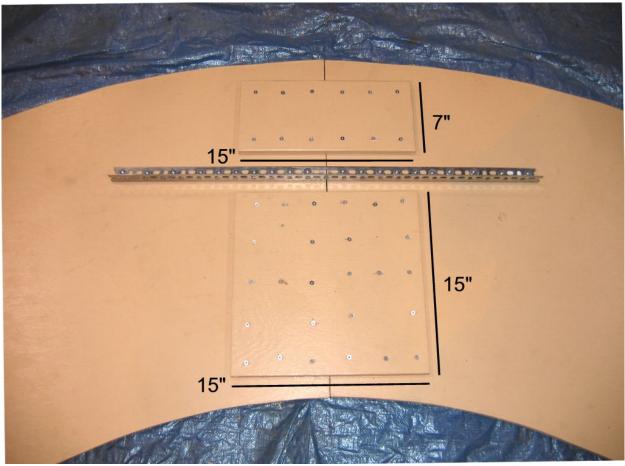


Fig. 33

For the table center create 2 join/supports from the scrap plywood. As shown they are 15" X 15" and 15" X 7". Notice the 36" steel brace in place as well.

As with the table sides, use the screws to attach the joins/supports to the table.

If you want to make the table easy to take it apart, don't glue the center join/supports on, or only glue one side of them on so that the two halves of the table can be taken apart for storage or transport.

The table is now ready to be added to the POD. But let the wood glue dry for 24 hours before proceeding if you can.

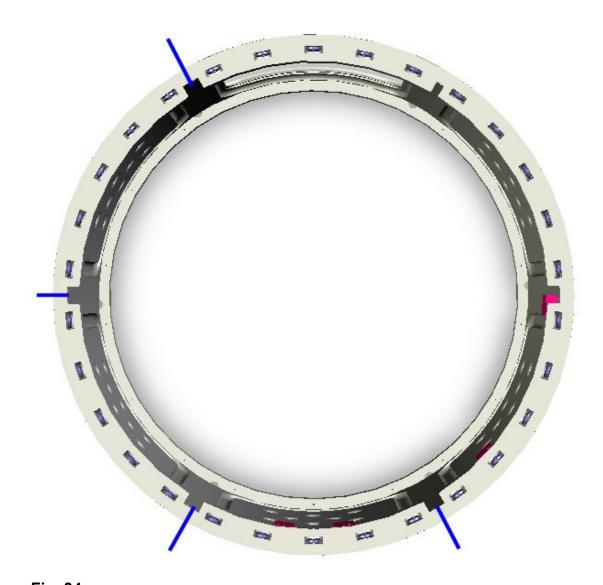


Fig. 34
Adding the table brackets to your POD

The upper and lower brackets are placed in a row around the POD wall. The PZT table can be mounted over door panels or Bays, but not over the door.



Fig. 35

You may leave your brackets in the original galvanized appearance, or use Rust-Oleum or Tremclad rust paint to paint the brackets to closely match your POD Wall/Bay color.



Fig. 36

Start by installing the top brackets. Remove the existing 3/8" bolt at the top of the Wall/Bay. Put the bracket into place and then re-bolt the top of the wall, feeding the bolt through the holes in the bracket.

Every POD is slightly different and you may need to fuss around with it a little to get the bolt back through.

Do this for all 4 upper brackets.

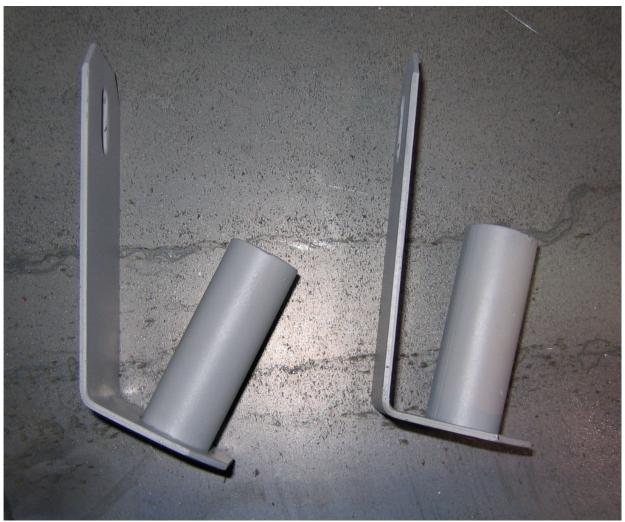


Fig. 37

The lower brackets are installed almost inline with the upper brackets but at the bottom of the wall.

The 4 lower brackets have two different angles. This is to accommodate the different steel pole lengths at the sides of the table, compared to the middle of the table where it's deeper.

The lower angle bracket pictured on the left is used in the 2nd and 3rd positions; the bracket on the right, with the higher angle, is used at the sides of the table at the 1st and 4th bracket locations.



Fig. 38

For the lower bracket you need to drill a new hole on the lower Wall or Bay.

Place the bracket so that it's resting on the ground and the slot in it is directly lined up with the bolt that's in the mid Wall/Bay position. You'll find that the center of the slot in the bracket is about 7/8" away from the crack between two adjacent Wall/Bay panels.

Draw a horizontal line in the slot and then a vertical line through that. This will be your drill mark.



Fig. 39

Here's the finished mark.

Use a 3/8" or 7/16" drill bit to drill a hole right through both layers of the POD Wall/Bay. Do this for all 4 lower brackets. Use the included 3/8" bolts, nuts and washers to secure the lower brackets



Fig. 40

Here's a shot of lower and upper brackets installed. Please ignore the dirt on our shop POD. There's a lot of mud, grease, and dust around the shop.



Fig. 41

Get a friend to help mate the table to the brackets. Here you see Rick and Pat lifting and sliding the table into position, centered on the 4 upper brackets.

One person continues to hold the table in place while the other person screws the table onto the upper brackets and screws in the support poles.



Fig. 42

While your assistant holds the table in place, use a level to angle the table slightly higher towards the outside. This way, rain water will roll toward the inside of the table and drip down between the table and the POD wall.



Fig. 43

The 4 support poles are two different lengths. The shorter ones support the sides of the table, and the longer two are for supporting the middle of the table.



Fig. 44

Start with the middle two poles to quickly support the table and give your assistant a break. Slide the pole over the lower bracket then use #10 X $^{3}4$ " screws to attach the table to the upper bracket and pole. Check your level before screwing in the poles.

If the flattened end of the pole is not at the right angle when you attempt to screw it in you can either use a vice to bend it slightly, or simply screw it into the table and the end will bend into shape as you tighten the screws.

Repeat this process for all 4 poles and 4 upper brackets. Move the top of the pole toward or away from the POD to maintain your level setting.



Fig. 45

Here's another view of Rick screwing in a support pole. You can see how it is slid over top of the lower bracket.

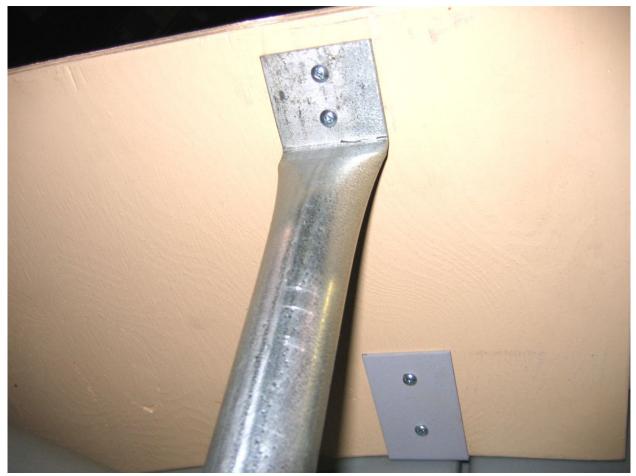


Fig. 46

Here's a shot of the side support pole and upper bracket with the screws in place.



A shot of all support poles in place and the table secured to the POD.



Next we add the ramps for sliding the dome on and off.

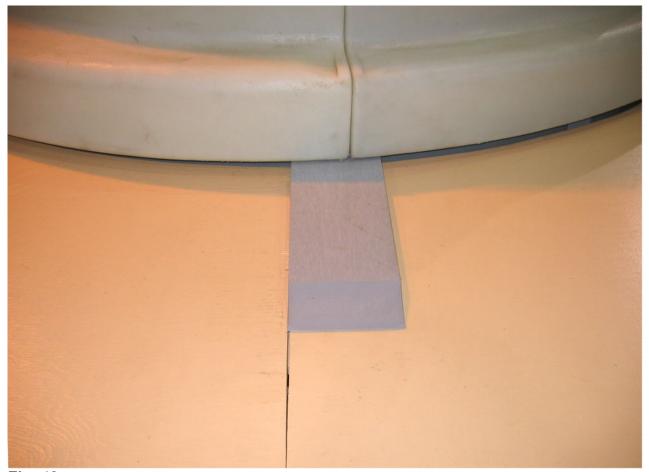


Fig. 49

The center ramp is thinner and wider than the two outer ramps. It is 7/8" X 6". It's easy to add it to the table. Just slide it up against the wall, under the dome and off center, so that it will be screwed onto one piece of the table (in case you take the table apart in the middle in the future).

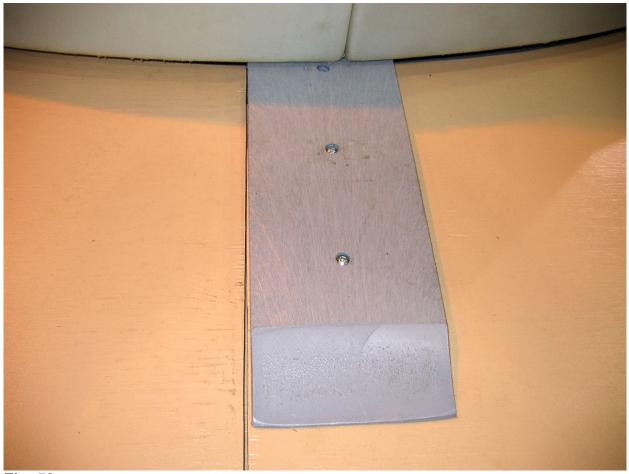


Fig. 50

We used the 3/8" drill bit to countersink holes for the #10 2" screws that attach the ramp to the table. NOTICE we should have drilled the inner hole a little farther from the end of the ramp to make it easier to use a variable speed drill, or cordless screwdriver, to screw in the screw.

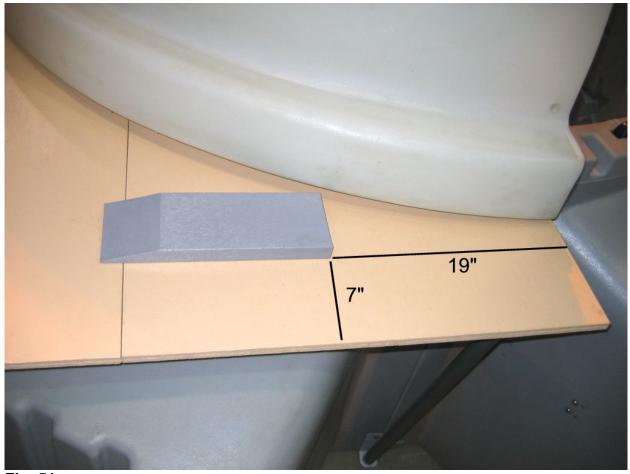


Fig. 51

Correct placement of the side ramps is important. Measure and place the ramp in the position shown above. The placement is more important in the photo than the measurements are. Your table may measure a little differently. The important thing is that the ramp corner is very close to the dome, without touching it or going under it.

Countersink and use the #10 2" screws to attach the ramps to the table.

The production ramps are 2" shorter than the prototype shown here, so the end of your ramp will come before the wood join line, not as shown above with the prototype ramp.

Duplicate the process for the opposite side ramp.

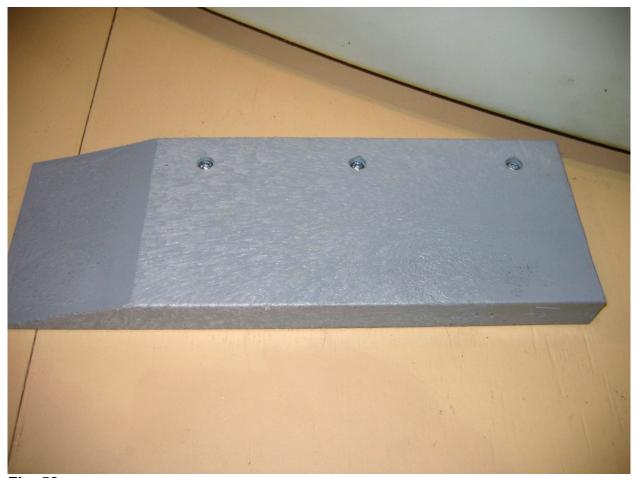


Fig. 52

We've installed the screws off center so as to catch the wood join/support underneath the table for added strength.

This completes the ramps.

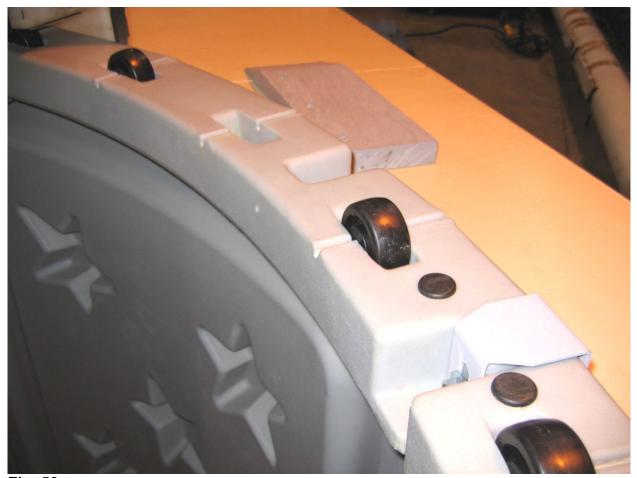


Fig. 53

Remove the wheel that is two wheels away from the side bracket, as shown in this photo.

One wheel is removed from each side like this so that the Quick Release Bracket doesn't catch on it as you lift the dome on and off the wall.

Losing the two wheels creates only a slight difference in dome rotation as your POD Wall has more than enough wheels around its circumference.



Fig. 54

Since this PZT is being made for a POD which will be situated on an 8" raised deck, we're using simple wood molding for the table edge. Here's an 8' length that we've cut to length to fit half of the curved part of the table edge. We've added glue to it prior to screwing it to the table edge.



Fig. 55

Here we're using #6 3/4" screws to attach the trim to the table edge.



Rick adds silicone caulking to seal the gap between the trim and table.

The PZT is now complete.

Part 3 – Quick Release Brackets



Fig. 57

To make your PZT easy to use we've designed Quick Release Brackets. They allow you to quickly remove and replace the dome brackets without having to unscrew them. This allows you to quickly slide the dome on and off.



Fig. 58

Unscrew your existing dome brackets and replace them with the QRBs. We only use three dome QRB/dome brackets. Five is a little overkill and not needed in most instances. Install one QRB in the right of center mounting location on the dome, and one QRB at each side of the dome near the pivot location.

Nine stainless steel cap socket screws are included. They replace the original dome brackets screws so that the dome bracket fits over them.



Fig. 59

This is the same photo. Notice that we have fed the handle into the QRB. It's designed to come out so that it won't get in the way when you're moving the dome on and off. Notice that even though stainless steel is strong, you get surface scratches on it easily. When we make QRBs they all get tossed into a large box together and that tends to scratch them up pretty good.

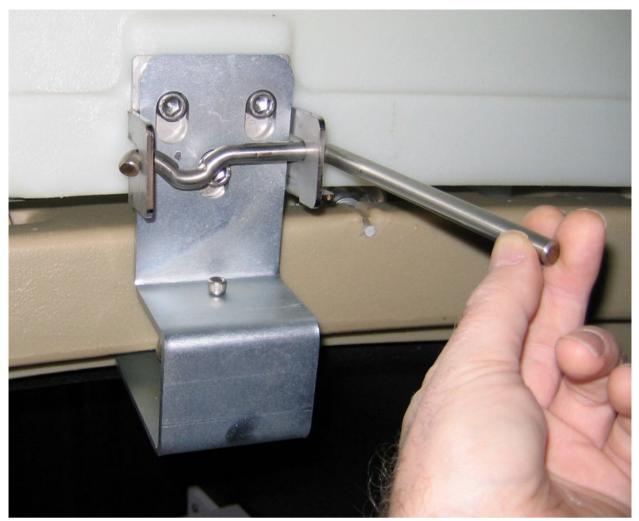


Fig. 60

To insert the dome bracket, raise the handle to a horizontal position and slide the bracket up between the QRB handle and the QRB screws. This might be a little tight or tricky at first. Here I'm holding the handle out with my left hand because I'm holding the camera with my right hand.

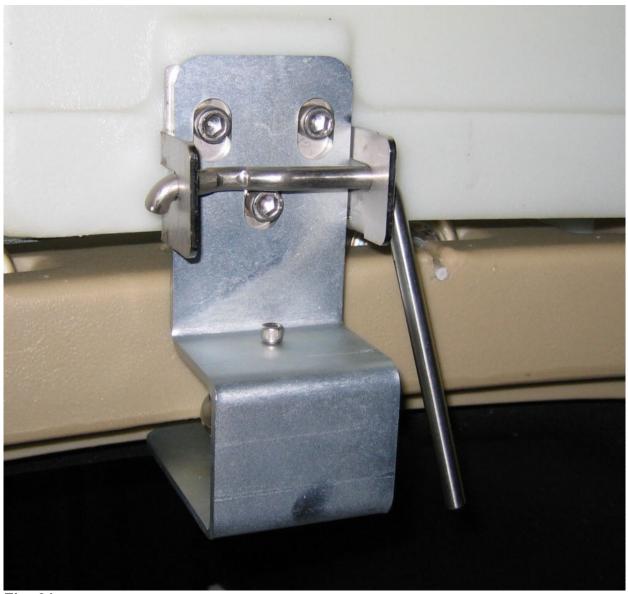


Fig. 61

Once the dome bracket is in place, lower the QRB handle to pressure clamp the bracket in place. This might be tight at first. You can repeatedly loosen and tighten the handle to wear the dome bracket a little to make the fit not quite as tight. It will not wear too much, just enough.

To remove the dome bracket raise the handle to the horizontal position and slide the dome bracket down. Then take the handle out in preparation for sliding the dome off.



Fig. 62

Loose QRB Handle Tip! This one comes from POD/PZT owner Steve Gallion. If your QRB handle is too tight when you engage it, you can repeatedly engage and disengage it to wear the parts down a little, or even file a touch off the QRB handle peak that impacts the QRB plate.

But what if your handle is too loose when you engage it? There can be small differences in the thickness of dome brackets from batch to batch, so yours may be a touch thicker or thinner than another set. That small difference could mean your handle engages loosely. Plus the handles are made by hand and a very small difference in the handle shape could make it engage loosely as well.

If you find this happens when you engage a handle, place a 3/8" washer behind the left cap socket screw in the QRB plate. This will push the dome bracket out slightly and make it closer to the handle, causing it to engage sooner. Add additional washers if needed. Start with 1 per cap screw.

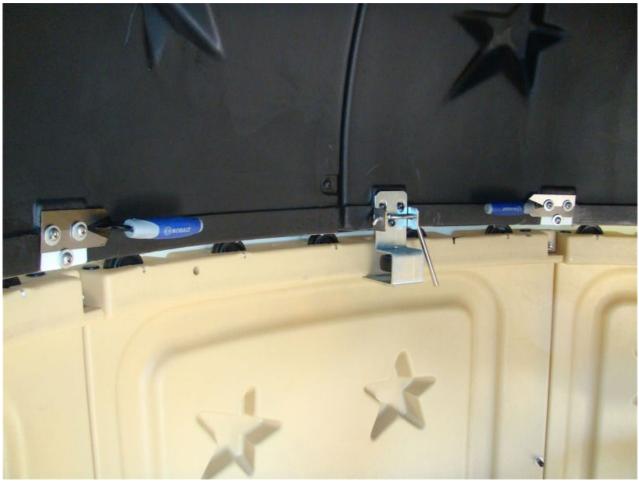


Fig. 63

Dome Handle Tip! This one comes from Michael Sullivan in AZ. Since we're not using two of the bracket locations with the QRBs, Michael bought two plastering trowels, drilled two $\frac{1}{2}$ " holes in them, and mounted them at the unused bracket locations has handles to grab on to when rotating the dome.

After installing the handles Michael found that he rarely uses them for rotation, but they can assist when pulling the dome back on from the PZT.

Notice he's using quality 2" bladed trowels, with bent handles so that you can get your fingers between the handle and dome. I think at least one of these handles would come in handy when pulling the middle of the dome back on the wall.



Dome Handle Tip! Here's Steve Gallion's trowel handle idea, using a flat trowel in an unused dome bracket location. Sweet!

Using the PZT

Rotate the dome so that it's lined up with the PZT and ramps.

Use the QRB handles to remove the dome brackets.

Remove the QRB handles. Carefully slide the dome off onto the PZT, sliding the dome on the PZT ramps.

Watch carefully to make sure the QRBs are not catching any wheels in the POD Wall. You may need to lift the dome slightly on either side while sliding, to make sure the QRBs don't catch the wheels or wall.

Keep sliding the dome back until it contacts the edge trim at the end of the table.

Sliding the dome back on is easiest with two people. This way each person can grab a side of the dome near the pivot point and pull it back up onto the wall. If you're sliding the dome back on alone, you'll need to walk back and forth and pull each side on a bit at a time.

Once you get one side of the dome back on the wall, add one of the pivot location dome brackets to keep the dome in place, reversing the process with the QRBs that you used to take the dome brackets off.

Now go to the opposite and pull that side onto the wall. Secure that dome bracket in place.

Lastly, grab the Secondary Dome in the middle and pull the middle of the dome toward you to get the middle of the dome back onto the wall, and add the third dome bracket.

This process may take a little bit of practice to do it smoothly. The dome will "flatten out" slightly on the table and a little effort might be needed to pull it back into line on top of the wall.

Notice we haven't discussed securing the dome when it's on the table. This is because it is assumed you will not be using the PZT when wind speeds are high enough to blow the dome off the table. Generally, "seeing" conditions in high winds would be poor, so it's assumed you wouldn't be using the PZT in such conditions.

It will take a lot of wind to blow the 200 lb dome off the table. The dome can be secured to the table from the back when it's slid off by using a large C clamp to hold it in place on the table (assuming you have easy access to the end of the table).

Monitor the SkyShed POD Yahoo Group where, no doubt, ideas and discussions will spring up about using the PZT. Watch for details in the POD group. As first adopters your input and feedback is greatly appreciated.

Clear Skies! Wayne Parker support@skyshedpod.com Ph. (Canada) 519-345-0036