

# PCMA - 3D v2



This is how the PCMA-3D v2 will look like, once you finished this tutorial.

This is our way to do it, but you may find a better way. Then we would be very pleased to hear and learn from you.

Although it is quite some gear in use, it all fits into a bigger backpack as we will show you at the end of this tutorial.

As with many other setups, we start with building some modules, so things are easier to handle during the setup.

First of all we start with the red ball, actually with a module with two red balls.



This module consists of two red balls, a 3/8" male-to-male thread adapter, and a 26 cm pipe.

This module will screw onto one of the light stands.

Then, we screw a 10-cm pipe into the front hole of the lower red ball and deploy a rapid adapter and a microphone clamp.

The microphone is only here for illustrative purposes. You should apply it a little later. Just to be safe.



The next modules we will build are the left and right "arms" of the front section. To do so, we will need a 50 cm pipe, two 3/8" male-to-male thread adapters, a cube, three 10 cm pipes, three rapid adapters, and a 2 cm thread adapter.

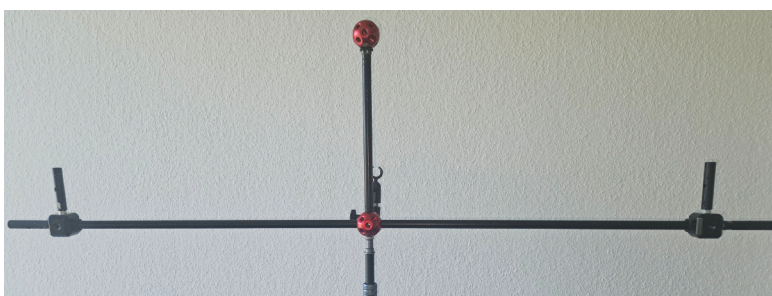
First, screw the 50 cm pipe onto one side of the cube, placing a male/male 3/8" thread adapter between the pipe and cube. Then, screw in two 10 cm pipes as shown in the picture below. Also, prepare the second male-to-male 3/8" thread adapter as shown. This is where the long pipe will be screwed in later.

When you're done, it should look like this:



Now we screw in these arms into the lower red ball and make sure, one 10 cm pipe is pointing straight upwards.

So your setup should look like shown on the right.



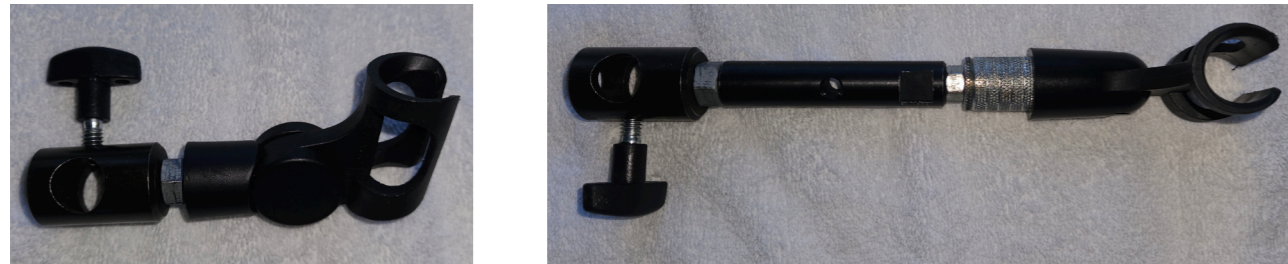
For the next module we need two 26 cm long pipes, a 10 cm long pipe, a 50 cm long pipe, and a male/male 3/8" thread adapter. Now screw the all together and a cube at the end.

Now it's time to attach a rapid adapter for the Lss resp. Rss microphones, **before** you screw this long pipe into the thread adapter of the front cube!! Your module should look similar to this:



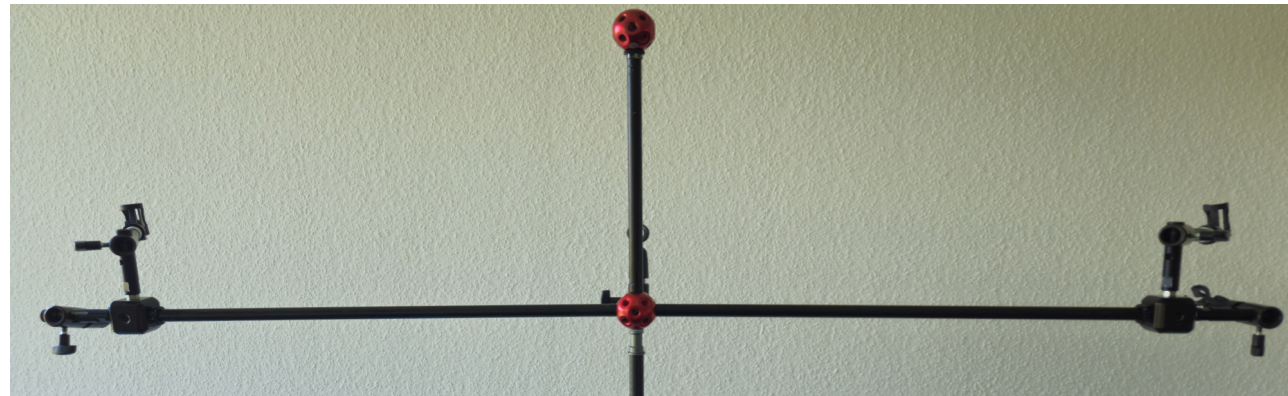
Take a closer look on the orientations of the microphone clamps. The longer part of them should be on the „outside“ of the array. We need the longer part to push the microphones a little bit outside. We use a little trick to see it right away: we don't fasten these rapid adapters. If the longer part of the clamp does not „look“ to the outside of the array, something is wrong.

Now we will prepare the additional microphone arms and put them into their places. We start at the front. Get a 10 cm pipe, a 2 cm thread adapter, two rapid adapters and two microphone clamps. Screw it all together as shown:



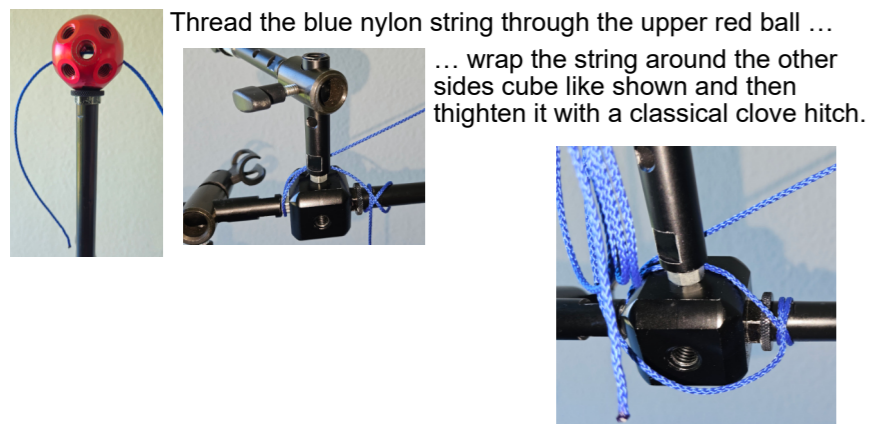
We need four sets of these. Two for the front and two for the rear.

Once you are done, apply two sets on each side of the front rig.

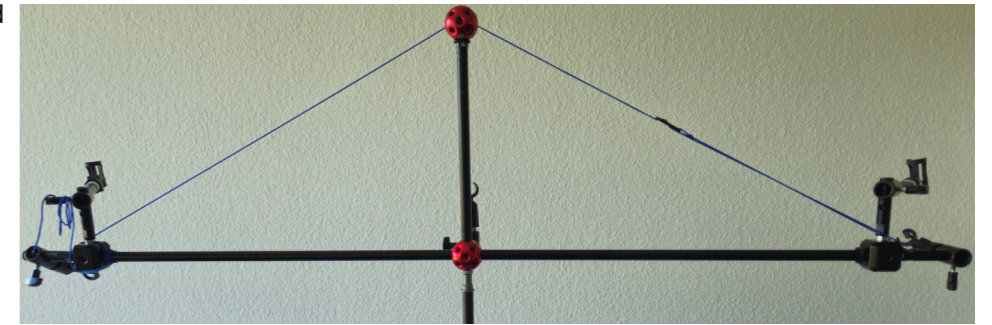


This is the nearly complete front rig. As you can see, the "arms" hang down a bit at the ends, and the whole rig is a bit fluffy. Now we will stabilize it with a 2m long blue nylon string and a tent rope tensioner.

Use the tent rope tensioner to build a sling and sling it like this. Either on the right or the left side.

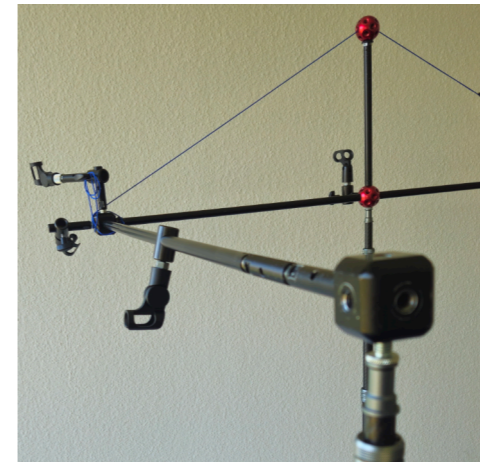


Now the front rig is finished and we can continue to mount the long pipes on each side.



Put the other two stand in roughly the position where we'll need them. Adjust the height also roughly.

Take the first long pipe. Screw it into the front cube. Be careful not to kink the long rod while screwing it in. It may be difficult to loosen if you are alone in the middle of nowhere. Therefore, we highly recommend that you practice at home several times.



Now hold the pipe in one hand and screw in the light stand. Make sure you legs don't get hit by the pod of the light stand!



Next step will be the preparations for the microphones in the back.

The setup on the other side will look principally the same, but with another direction. You can adjust the position just roughly, we will fix this, once we applied the microphones. For now this is good enough.



Now your setup should look like this, more or less.

Please note the position and the orientation of the clamps for the Lss and Rss microphones. If your clamps don't look like this, it may become difficult to put these microphones into the right height and position.



Now, it's time to set up the microphones and arrange the items correctly.

measure to ensure all distances are correct.

The first time you do this, it will take some time. But that's true of anything you learn — you need practice. Now is also the time to use your tape

We will show you some important points and demonstrate how to measure distances correctly. This is a real challenge if it is done for the first time.



These are „L“ and „R“, resp. „Tfl“ and „Tfr“.  
L&R are pointing down to the source and have an angle of 45° as shown in Hyunkooks drawing.

The capsules are exactly above each other. For convenience, take the Tfl resp. the Tfr upside down and fix the correct position. Then turn them back up again.



Depending on your microphones for „Lss“ and „Rss“, you may angle them differently. In our case the capsule of the cardioids are 18 cm away from the pipe and 9 cm below it.



The same is true for the back microphones as for the front microphones.

Make sure you lower the cardioids' vertical position (below) to the same level as the omnis in the front and the Lss and Rss, resp. Lrs and Rrs microphones.



Great! If you have followed this tutorial, your setup should look like this.



If you plan to use four-channel multicores like we do, the cabling setup may be somewhat tricky. Keep in mind that there are eleven microphones, and the distances between them are significant. So the cables of the splitters might be short in some places. As always, you may use discrete microphone cables, but keep an eye on the weight!

To ensure they are in perfect sync, we recommend recording the front microphones (L/C/R/Tfl/Tfr) with one recorder. For the other six microphones, you can use either two separate recorders or just one. Use whatever is available to you.

Ideally, you would have LTC time code (e.g., SMPTE) for all recorders used. However, due to the low divergences, it might be sufficient to "hand-clap" before every recording. However, LTC is the better choice.

First four channel multicore:	Second four channel multicore:	Third four channel multicore:
Ch 1: L	Ch 1: R	Ch 1: C
Ch 2: Lss	Ch 2: Rss	Ch 2: Tfl
Ch 3: Lrs	Ch 3: Rrs	Ch 3: Tfr
Ch 4: Tfl	Ch 4: Tfr	Ch 4: empty

As always, secure all cables, especially the splitters, with (Velcro) cable binders. If it is windy, these splitters may ruin a great recording. We have "verified" this.



This is a lot of work, but it will pay off.

The setup shown here is just one of many possible solutions. If you find a better one, we would love to hear about it! Just drop us an email and, if you can, send us some pictures.

Your local gear store may not have the same equipment. However, we are confident that there are many alternatives on the market. We don't know of them, nor are we looking for them. This is where you need to get creative.

The shown gear works for us. You are free to exchange any item anywhere. If it works for you, then it's the right choice.



As promised in the beginning, here are some pictures how all of the gear used, can be packed into a bigger backpack ( $\geq 25$  l). The total weight will be about 22 kg. Including all, like recorders and batteries.



But now it's time to have fun and make some great recordings.

Last-minute enhancement:

If you have them, replace the four 50-cm-long rods with eight 26-cm-long rods. This will allow you to close the backpack completely, which will better protect everything inside against humidity and/or rain.

When it's pouring, we also suggest using a sturdy plastic bag to cover your backpack.

