

PVC Puppet Stage

Doug Ledbetter::HowTos::PVC Puppet Stage

My children have been involved in dramatic presentations for several years but recently they needed to use puppets in their presentation. We didn't have a puppet stage, so I began doing research into the best way to build one. I found a few helpful pages on the web, but nothing that really spelled out the details so I decided to document what I built in case it might help somebody else.

Materials Checklist

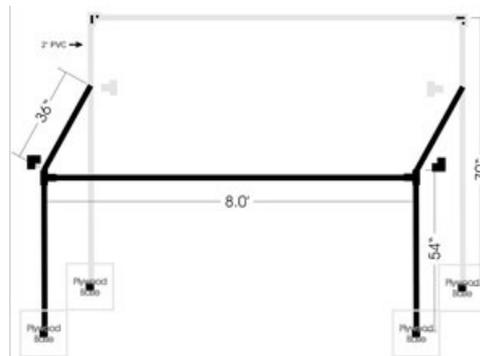
1. Plywood. You'll need enough to cut out four squares that are one foot each (in other words, about 4 square feet). It doesn't need to be terribly thick. 1/4" would be fine.
2. 2" PVC Pipe. I chose 2" PVC to keep it sturdy. It worked wonderfully. You'll need up to 5 pieces of pipe, depending on how large you want to make your puppet stage.
3. Four 2" PVC 90-degree elbows
4. Four 2" PVC pipe-to-pipe couplers. What you would use to splice two pieces of PVC pipe together
5. Four "end caps" which have a flat bottom and will slip into the 2" couplers.
6. Four 2" PVC T-connectors
7. Four carriage bolts (with flat washers, lock washers and nuts)
8. PVC cleaner and glue
9. Sandpaper (around 220 grit would be fine)

I spent about \$50 on the materials at the local **Home Depot**.

Tools Checklist

1. Electric Drill
2. [Optional] Drill press
3. Deep well socket sized to match the nuts you purchased
4. Power miter saw, circular saw or hacksaw
5. [Optional] orbital sander

Here's a basic diagram of the puppet stage.



As you can see, it's pretty large. In fact, it turned out to be a bit too large for our purpose, so I narrowed it from 8 feet wide to 6 feet wide. The stage can be disassembled for easy transportation as long as you follow my directions for which joints to glue and which to leave as friction joints.

Installation Steps

Note: you can click on the photos to get a larger view!

1. Start with the feet. Cut out the four plywood feet. They should be roughly 1' square. Use the sand paper to take out any rough edges to prevent splinters.

Next, drill a hole in the center of each plywood foot and also in the center of

the PVC end caps. I used my drill press for this, but a hand electric drill would work too. You will want to countersink the bottom of the plywood feet so that your carriage bolts will be flush with the bottom of the foot. I used a spade drill bit for this that was just wider than the head of the carriage bolt.

Insert the carriage bolts through the bottom of the plywood feet and up through the PVC end caps. Use the flat washer then the lock washer and finally the nut to secure the PVC end caps to the plywood foot. Don't over-tighten the nut with your socket and ratchet. This is plastic, ya know!

Use the PVC cleaner and glue to attach the PVC couplers to the PVC end caps. Be sure to dry fit this beforehand. You want to leave enough room in the coupler so that you can insert a PVC leg at least an inch so that it will hold the leg securely. I used a scrap block of wood around 3/4" in size to act as a spacer between the plywood foot and the PVC coupler while I was gluing it. That kept each coupler the same distance from the plywood too.

Let this joint dry before attempting to fit the 2" uprights into this base. It will probably only take 20-30 minutes tops for the glue to dry.



Note the counter sink allows the carriage bolt to be flush (or recessed) with the bottom of the foot.



Final assembly seen here with a 2" PVC pipe inserted.

2. Cut the PVC into the required lengths. To build the puppet stage to the size indicated in the above diagram, make the following cuts:

- 2 - 96" Lengths (stage width - adjust to your liking)
- 2 - 36" Lengths (stage depth)
- 2 - 50" Lengths (frontdrop height)
- 2 - 55 1/2" Lengths (backdrop height - bottom part)
- 2 - 13 1/2" Lengths (backdrop height - top part)
- 2 - 3" Lengths (cut from scraps)

Notes on gluing PVC pipe:

- After cutting the pipe, there may be some rough edges. If so, you can smooth those edges with some sandpaper.
- It's always a good idea to dry fit the joints before gluing. I usually mark the pieces when they are dry fitted together so that I instantly know where they go when I'm gluing. You don't want to make a mistake with the gluing. You have about 10 seconds to move the parts in the joint before the glue gets really stiff.
- These joints aren't going to carry water, but it still a good idea to take the time to create a good joint which will hold up to many setup and tear down cycles.
- Thoroughly clean both mating surfaces with PVC cleaning solution before gluing.
- Allow the cleaning solution to evaporate before applying glue (it won't take long).
- Apply a thin layer of glue to the socket and a generous amount of PVC glue to the pipe to be inserted. Don't worry about excess glue squishing out. Just try to keep the glue from getting on your skin or anything important.
- Push the pieces together and then turn them about 1/4" to thoroughly distribute the glue within the

joint.

- You may want to mark which joints have been glued to make disassembly easier.

3. Dry fit the front joint components to make sure everything looks OK. For this front joint section, you'll need the two 50" lengths, two 90-degree elbows and two T-connectors for each side of the stage. You'll use the 3" length you cut from scrap to connect the 90-degree elbow to the T-connector. Remember to make two of these assemblies — one for the front-left and one for the front-right.

Once you feel comfortable with the dry fit, you can glue the following:

- T-connector to 3" scrap
- 3" scrap to 90-degree elbow
- 50" front leg pipe to bottom of the T-connector from previous step

That's all you should glue on this assembly if you want to be able to disassemble the puppet stage and make it easily transportable. Do not glue the 96" front crossbar or the 36" depth bar.

4. Dry fit the rear joint assembly. For this assembly you will need two T-connectors, the 55 1/2" pipe and the 13 1/2" pipe. Once you're satisfied with the fit, glue the following joints:

- 55 1/2" length to the bottom of the T-connector
- 13 1/2" length to the top of the T-connector

Next, dry fit and then glue the two 90-degree elbows to the back 96" crossbar.

5. Once the joints are dry (typically 20-30 minutes) you can assemble the entire puppet stage easily:

1. Insert the two 70" rear upright assemblies into two feet
2. Slip the rear cross bar onto the tops of the two rear upright assemblies. Friction will hold this joint.
3. Insert the two 36" front upright assemblies into two feet. Friction will hold these in place.
4. Insert the front cross bar between the two front upright assemblies. Friction will hold this joint.
5. Insert the two 36" depth pipes to connect the back half with the



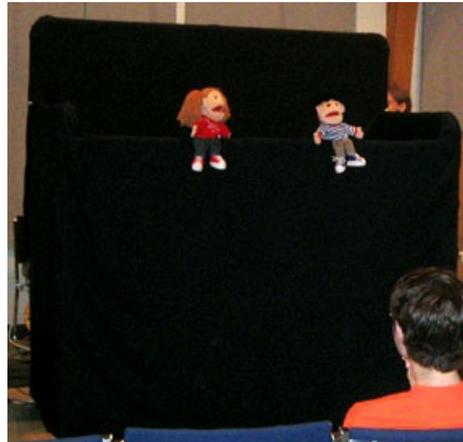
front half. Friction will hold this joint.

As you can see from the finished assembly, I shortened the width of the puppet stage to about six feet (note the splice in the back cross piece).

You will find this design to be roomy enough for two or more puppeteers. The 2" PVC pipe also provides plenty of strength even when outside on a breezy day.



6. The final touch requires a bit of cloth and somebody capable of running a sewing machine. My wife constructed a two piece curtain set out of a heavy dark blue cloth. The front curtain is doubled over and sewn together with a tunnel at the top through which the pipe can be slipped. The back curtain is doubled and sewed along the left, top and right sides so that it slips over the back pipe like a slip cover. The curtains are secured to the pipes with velcrow strips which have a self-adhesive back.



View from the inside.

I hope these instructions help you out! If you have any questions, please [let me know!](#)