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<http://www.caes.uga.edu/extension/spalding/4H/ProjectSAFE/documents/OleMillTargetStands.pdf>

## The Ole Mill Range – Target Holders w/Pellet Stops

These stands were designed for the 3 x 20 Air Rifle event. Six targets may be hung at one time. With that as our starting place, we found that you could also shoot Air Pistol as well as both Sporter and Precision Air Gun events on them. We have even had success with BB, but that's another matter for another day.

The basic materials list would include –

#8 Hex Head Self Tapping Screws, 10 – 20 per stand, depending on your preference.  
5-foot lengths of 2 inch, schedule 40 PVC Pipe. It's usually easier to get a 10 foot section and cut it in half. You'll need 16 feet (each leg is 1 foot long, with a 20 inch piece across the back, on the ground) of 2 inch PVC per target stand.

I use two 90-degree elbows across the back to tighten the whole thing up, with the 20-inch connector across the back on the ground. The two "T"s are straight, and should not be anything else, such as clean outs, or "Y"s. This is the strength of your stand. You can put the connector piece in the front or back it make little difference.

When you get the stand together, you may want to use up to 6 of the #8 Hex Head Self Tapping Screws to hold the PVC together in the elbows and "T"s. I chose to use PVC Cement on the legs into the "T"s and allow for the 5 foot sides and the 20 inch back cross to be removed for storage / transportation. It all folds into a very small package. I like the yellow pressure caps in the front legs to dress the project up a bit. The yellow pressure caps really don't have a function other than esthetics. I added 4 sheet rock screws to the leg bottoms, outer edges, for leveling. This feature, is seldom used, but its there if we need it.

Galvanized 16-gage sheet steel. The top piece is 26  $\frac{3}{4}$  x 16, and the bottom is 26  $\frac{3}{4}$  x 30. I can't emphasize this enough; don't use anything except Galvanized sheet steel. Anything else will rust and you'll be very unhappy with the mess it will cause. If you want full coverage on the back of the stand, either go full coverage with the sheet steel (this raises the price significantly) or add  $\frac{3}{4}$  inch plywood between the sheet steel in the center and on the bottom if you think you need that much protection. We've been using this slightly open design for about 8 years and it's been fine for us. You will want to pre drill the holes in the sheet steel (4 hole in the top, and 6 in the bottom) along the outer edge (We went with about  $\frac{3}{8}$  from the edges) and that can be a separate operation while you're cutting the PVC. Plan on using a spring loaded center punch and breaking several drill bits. We made a jig to hold everything in place, but we were building 52 stands. For a smaller number, I might just lay two 2x4s on a table and drill there.

If you do build the jig, the stands will be uniform, and the process goes very fast.

NOTE – This will save you lots of time and aggravation.

Cutting the slot in the PVC for the cardboard was the missing link in this whole process. We went through about a dozen trial and error stands before we figured this one out. When you cut (Lengthwise) PVC, it contracts or shrinks. When you get ready to cut your side pieces, I recommend using a table saw with a fence, and either two blades, (side by side), or a dado to cut the slot  $\frac{1}{4}$  of an inch. You can make a 2 x 4 guide and screw it (Three screws seemed to work fine) to the PVC so that it holds is all slides evenly and straight (A crooked cut, means throw that side away and start over...). Most PVC Pipe has lettering on it and surprisingly it's straight enough to use as a guide. Here's the magic of the whole operation. Stop, read this then read it again! Do not cut the PVC side pieces all the way from end to end. Put a stop mark 6 inches from the bottom, or better yet, put a mechanical stop on your table saw so that the side only goes through 4  $\frac{1}{2}$  feet. That along with the  $\frac{1}{4}$  inch cut will allow the PVC to hold the cardboard firmly, but not too tight. If you cut completely from end to end, throw that side away...

A word on acquiring materials. Cost will vary from location to location as well as with your supporters. We paid for some of our Galvanized Sheet steel and got some donated. Over the course of a couple of years, as we grew, the price of 16 gage Galvanized Sheet Steel tripled in price. That's one of the factors in the dimensions we used. We cut as many pieces as we could out of a large sheet. Sheet Metal prices fluctuate; check prices in your local area before you lock yourself into the amount of metal you are going to use. PVC Pipe and the Elbows and "T"s were mostly given to us by a friendly Plumbing Supply and Local Plumber. Free is hard to beat. We did go to Lowe's and Home Depot for a few odds and ends and they would give us a very small discount (about 10% as I recall) , but that was it. Even if you pay cost to a Local Plumbing Supply, it's about half of what's marked at the big Home Care Stores. Just depends on your budget and number of stands you're building. Don't forget to mark your Target Heights per the Rule Book. You'll note the black center marks in the photos. Center the two Sighter Bulls on the black marks and you should be legal. We also use small metal rods to hang replaceable cardboard. We attach the Targets to the Cardboard with Bulldog Clips and it's very secure, Flat, and easy and quick to hang and remove targets. The more stands you have, the more this time savings will mean to you.

#### **5.5.4 Target Heights**

Target holders on the range must facilitate the placement of the targets at the correct height. Correct target heights, when measured from the level of the firing point to the center of the target are:

Prone position 0.5 meters (19.7 in.) ( $\pm$  10 cm. or 4 in.)

Standing position 1.4 meter (55 in.) ( $\pm$  5 cm. or 2 in.)

Kneeling position 0.8 meters (31.5 in.) ( $\pm$  10 cm. or 4 in.)

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