



Tool Tip...

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Paper Cutting Station



Figure 1: Cutting paper the traditional way.

Introduction:

Cutting paper is a task so routine and repetitive in pyro manufacture that any improvement in efficiency will pay for itself in a short time. The task of cutting paper is so commonplace that some people may not give it much thought, but once you work with the paper cutting jig shown here you will wonder how you ever got along without it.

The traditional method of cutting paper is shown in Figure 1, which is used primarily for cutting sheets of paper. The sheet is folded over on itself a measured distance, then a sharp knife is used to cut down the fold. The advantage of this method is that you can cut several sheets of paper at one time. However, the disadvantage is that it is difficult to cut small strips this way, the cuts are hard to keep straight and the procedure does not lend itself to cutting paper from rolls.

Using paper from rolls results in less waste and is preferred by many hobbyists. Rolls are also easier to store than large sheets of kraft, which must be stored flat in a heavy stack that is also difficult to move around. Those who prefer working with sheets, usually for the advantage of being able to cut many pieces in one pass, must build special shelving that is large enough to hold several separate stacks of the various weights they work with.

The paper cutting station shown in Figure 2 works with both rolls and sheets, and takes up a minimal amount of shop space. The rig is designed to insure that cuts are parallel, that the paper is held down to prevent sliding or ripping during cutting, and that strips of any size can be easily and quickly cut. A built in length gauge allows for easy measurements of up to 18" wide strips without the need of holding a ruler during the process.

The concept is quite simple: A thin aluminum channel serves as a guide for the knife blade while cutting. The paper is fed under a hold-down bar and pulled out over a measuring table that has parallel



Figure 2: A cutting station that works with both rolls and sheets.



Figure 3: Pipe fittings used to hang paper rolls.

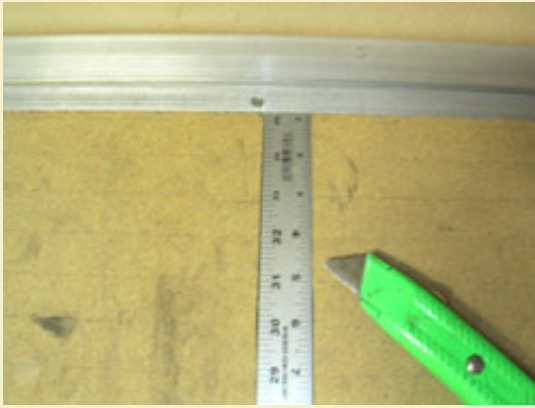


Figure 4: Closeup of the cutting slot and length scale.



Figure 5: Cutting from a roll using a utility knife.

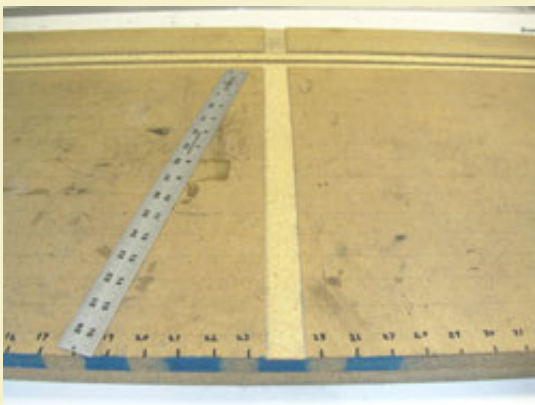


Figure 6: Base board assembled with channels cut for inlays.

lines marked out every inch. A central ruler allows finer measurements with a 1/4" accuracy. The paper is pulled out to the proper mark, then the knife is run down the slot as seen in Figure 5.

The cutting block is ideally located under large rolls of paper stacked above one another as seen in Figure 2. Half inch plumbing pipe fixed to a sturdy wall mount is ideal for holding heavy rolls of kraft paper. The sheets are easily slipped under the aluminum hold-down bar and pulled as you cut.

The cutter also works with sheets of kraft, chipboard and posterboard, as one or more sheets can be fed under the hold-down bar and cut in the same way. The 1/8" thick aluminum bar is flexible enough to pull up with your fingers when sliding paper under it, yet still does a good job at keeping the paper from sliding or binding up on the knife blade when cutting.

Materials:

- (x) 4 ft long 1/2" threaded plumbing pipe
- (2x) 3-1/2 in. long 1/2" threaded plumbing pipe
- (2x) 1/2" threaded flange mount
- (1) 4 ft x 20-1/2" 3/4" particle board
- (1) 4 ft x 16-1/2" 3/4" particle board
- (1) 4 ft x 3-1/2" 3/4" particle board
- (1) 4 ft long 1-1/2" x 1/8" thick aluminum bar stock
- (2) 4 ft long 3/4" aluminum angle stock
- (6) 3/4" long #6 wood screws
- (4) 1" long #6 wood screws
- (12) 1-1/4" long #6 wood screws

Construction:

The cutting block is constructed from two sheets of 3/4" particle board to provide a heavy base that is resistant to sliding around as you cut. The three pieces are ripped from a standard 4 ft wide sheet. The dimensions are designed so that the unit fits onto a standard piece of 22" kitchen countertop with rear splash guard. The 20-1/2" wide piece is used as the bottom piece, then the two top pieces are aligned with the front and back edge such that a small 3/8" gap is between them.

The top edges of the boards on each side of the channel must be rabbited to form a 1/8" deep inlay so the angled aluminum used to line the channel will seat flush with the cutting board surface. The rabbit cut can be made before the pieces are assembled, or you can cut them both at once after assembly if you have a dado blade that goes out to 1-3/8" wide.

The two top boards are held down to the bottom base board with the 1-1/4" wood screws, screwed from the bottom to keep the cutting surface clean. Figure 6 shows the slotted base ready for metal inlays. A central slot has also been cut to allow a section of metal yard stick to seat flush with the



Figure 7: Closeup of angle aluminum fitted into cutting channel.

cutting surface. This is a fancy extra and is not really necessary, as you could also just draw a ruler on your table using a permanent marker. Whatever method you use, the scale must measure from the center of the cutting slot.

Figure 7 and 8 shows the two pieces of angle aluminum being installed into the slot. The screw holes must be countersunk into the aluminum so that the taper head screws used to hold it down will sit flush with the surface and not catch the paper as it passes over them. The screws that hold down the 1-1/2" wide hold-down bar must be no more than a few inches from the edge, giving you maximum area for sliding sheets under it. Most sheets and rolls will not be wider than 36" , so you have a good 12" of margin to play with.



Figure 8: Attaching hold-down bar behind cutting slot.

Figure 9 shows the finished cutting board. You will want to mark a series of lines parallel to the cutting slot, measured out at one inch intervals from the center of the slot. The central measuring scale is used to determine the desired width of your paper strips, while the parallel lines are used to insure an even width across the cut. It is pretty easy to eye-ball dimensions between the one inch marks with a 1/4" degree of accuracy.

It is also handy to have another scale or ruler running along the front edge of the board, which is used to quickly measure strips that need to be sized down across the short direction once cut in the long direction.



Figure 9: Finished cutting board.

This cutting board will work for all the kraft, chipboard and poster board you need to cut for making single break shells up to 8". The longer strips required for multi-breaks will often exceed the built-in scale on the board and you will have to hold out a metal yard stick butted up against the hold-down bar when pulling large sheets out to size. If you plan to cut a lot of large pieces for this purpose, you could consider installing the cutting board at the end of a long table with a graduated scale along it's edge similar to those found in a fabric shop. However, this arrangement will sacrifice the comfortable position of cutting while standing directly in front of the cutter.

It also helps to install rubber feet or sit the cutting block on top of anti-slip rubber cabinet liner material if you will be using it on a Formica table top or similar slippery surfaces. You could just bolt it down, but it is worth while to keep the cutter portable if there is even a remote chance you need to take it with you for a group construction project somewhere. Once you use this tool, you will find it frustrating to return to the old fold and cut method or, even worse, drawing

lines on paper and cutting with scissors! 🔥

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