



## 6" 3-Break Maltese Shell, Part I...

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Figure 7: Two 14.5" strips of file folder paper and a piece of 30lb kraft for rolling spolettes.



Figure 8: Strips are laid end to end and painted with a 50/50 mixture of white glue and water.



Figure 9: Finished spolette tubes ready for drying.

### Making the Spolettes:

The type of tube used to make spolettes is very important. The inside diameter should be kept small, about 1/4", so that there is less surface area for the internal shell pressure to act on. The tube walls must be thick and made from strong paper in order to prevent the tube from splitting during loading. Because a lot of pressure will be acting on the powder charge when each break bursts, the powder must be rammed as hard as possible to lock it in place and prevent blow-through. Blow through occurs when the burst pressure of one break blows the spolette charge out the end of the tube and sets off the next break simultaneously, ruining the shell.

Tubes sold as "spolette tubes" by most hobby suppliers are inadequate for the job. While it is possible to find good quality spolette tubes, they can be expensive and often must be purchased in bulk quantities. For this project we will roll our own spolette tubes in a way similar to how the Maltese also make them.

An ideal paper for making spolettes is manila file folder paper. Using the legal size folders, which are 14.5" wide, cut two 3.5" wide strips for each spolette you will make (eight strips altogether). You will also need a 6" long strip of 30lb kraft that is also 3.5" wide. Figure 7 shows the paper and a 1/4" dia. aluminum rod used to roll the tube on.

Using a mixture of 50/50 white glue and water, paint the surface of the kraft strip first, then overlay a manila strip by 1/4" and fully coat it. Overlap the second manila strip by 1/4" and coat all of it except the last few inches. Begin rolling the tube from the dry end, as seen in Figure 8. If your paper is aligned straight and your rolling rod was perpendicular to the paper, you should get tubes that look like Figure 9. These should be 5/8" O.D. and fit snugly into the hole punched in your top disks. These tubes must be allowed to fully dry before loading.

The spolettes are rammed very hard with meal in several increments as if building a rocket, only there is no nozzle and the powder runs flush with one end of the tube. If your tubes came out concaved on one side, cut off a small length or sand them down to get the end level on the powder side. The other end does not need to be flush cut.

The burn time for these spolettes needs to be about 2 seconds each, and no more than that. Depending on how fast your powder is and how hard you ram it, this will be a charge of between 5/8" and 7/8". You will have to do timed trials with whatever meal you are using to determine the correct powder charge.

The Maltese do not drill back their powder cores, or even use the tapered rammer for the last increment (see [spolette article](#)). However, I find it easier to

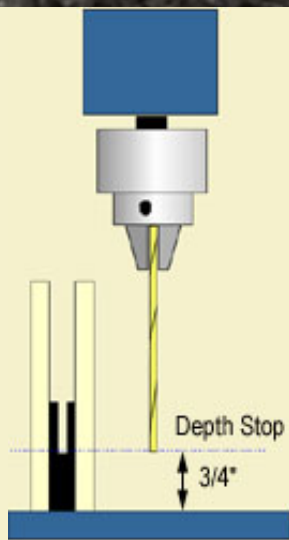


Figure 10: Using a drill press to drill back spolettes.

simply ram in three 1/4" teaspoon increments and then use a drill press with a depth-stop setting to drill through the excess comp to form a small hole that stops at the correct height of the powder core (see Figure 10). This not only achieves consistent and accurate timing across all spolettes, but also improves ignition on the passfire side. The more powder rammed into a spolette, the harder it is for burst pressure to blow through it. Thus, the drill-back method also decreases blow-through risk.

Once all the spolettes are loaded, two turns of 30 lb kraft are rolled around them so that about an inch of paper overhangs each end, as seen in Figure 11. A strip of paste is brushed down the center from end to end so that no gas can pass between the spolette tube and the paper.

Three sticks of black match are tied into the nosing paper on the passfire end, while the paper on the other end is twisted around the exposed powder core as a protective covering.

[More...](#)

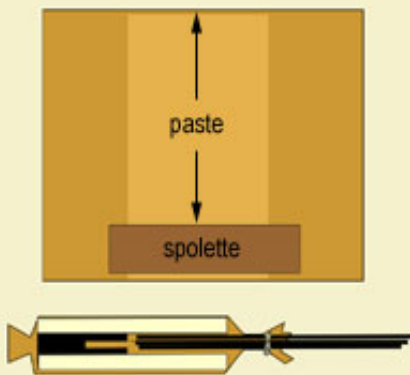


Figure 11: Rolling on the nosing paper and tied in black match.