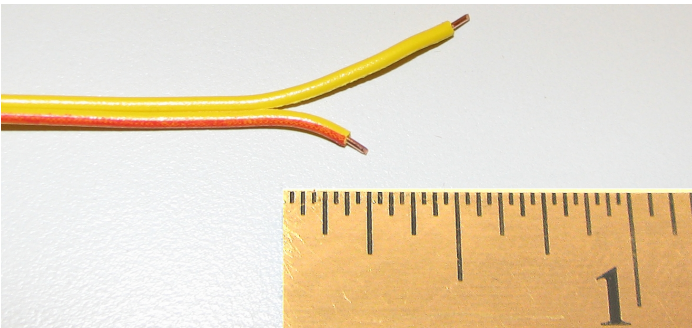


E-MATCH SUBSTITUTES FOR THE HA45 & DD100

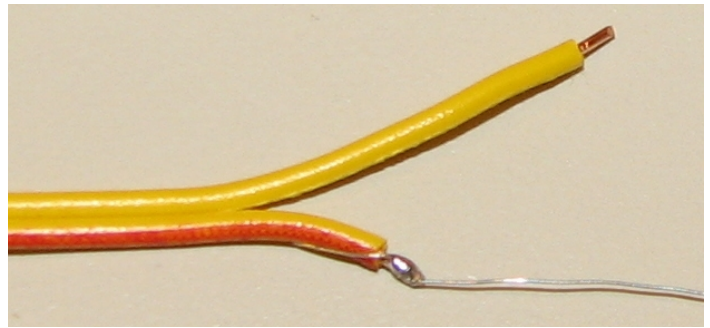
If you are having difficulty finding commercial electric matches for your altimeter, you can make suitable replacements easily and inexpensively by following the procedure outlined below (note: these substitute ematches are NOT suitable for capacitive discharge altimeters such as the MAWD). Remember that the reliability of your deployment system is only as good as the weakest point in the system; if you don't feel that you have the ability to fabricate these ematches consistently and accurately, don't try! It is imperative that the connections between the bridgewire and leadwire be soldered – if you don't have tools or skills to do the soldering properly, please enlist the help of someone that does.

You will need:

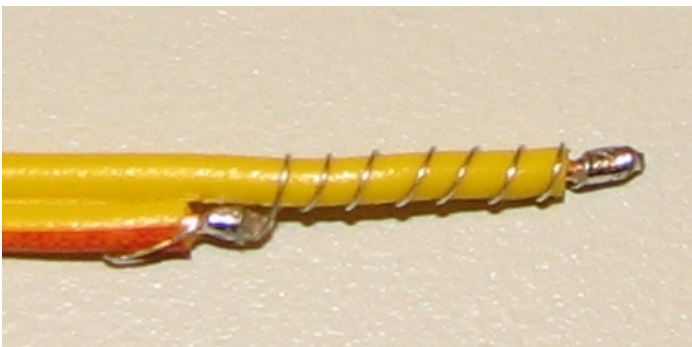
- * Short pieces of 24 to 28 gauge twinlead wire (salvage from used motor igniters at your next launch...)
- * 40 gauge bare copper wire for bridgewire
- * Solder and soldering tools



Separate individual conductors on twinlead, cut one to 1/4" and other to 5/8". Strip 1/8" insulation from each end. Bend ends slightly in a "Y" formation to make next step easier.



Hold 40 gauge bridgewire parallel to shorter prepared end and wrap several turns around stripped end. Solder bridgewire to stripped leadwire end.



Straighten both leadwires and wrap seven or eight turns of bridgewire around the insulation on the longer leadwire end. You should avoid sharp bends in the bridgewire where it meets the leadwire. When you get to the end of the leadwire, continue wrapping several turns of bridgewire onto the stripped end of the leadwire.

Solder and trim excess bridgewire. If you used soldering flux, make sure you clean all flux residue from the joints and allow the match to dry. Use a magnifier to inspect the finished end for breaks and poor solder joints.

Using your ematches:

Store the ematches carefully (e.g. inside a soda straw) so that the wound end does not get damaged. Check the resistance of each ematch before installing it in your rocket, it should be in the 0.3 to 0.5 ohm range. These matches will require 3 - 4 amps of current to fire, so it is important that you use a new, high quality 9V battery in your altimeter. Most 9V NiCad or NiMH batteries will NOT work properly.

The bridgewire will glow with a nice orange heat when energized, but since it does not have a flammable pyrogen coating it is *imperative* that the coil be in full contact with your black powder charge. Make sure you make your ejection charges with wadding and a cap (which can be as simple as masking tape) that will keep the BP from shifting away from the coil in flight.

Practice making a dozen ematches before using them in flight; test them with your altimeter and make sure that you have 100% success rate before proceeding. After your tests you can trim the burned end back and wrap on a new bridgewire so that your tests will be nearly waste-free.