

AeroTech RMS™ Delay Modification Procedure

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Work away from other rocket motors and propellant, at least 25 feet from any open flame or heat source. Delay adjustments should be performed at the launch site during rocket and motor preparation. Be aware that delay modifications always **shorten** the time delay and are permanent...if you make a mistake, simply start over using another RMS™ delay module available from your AeroTech Consumer Aerospace products dealer.

1. Refer to the "AeroTech Delay Lengths" cross-reference chart to calculate the difference between the starting length of the delay module and the desired final module length for your target delay time. For example, to create a **short** (6 second) delay for an I161W reload kit from the **medium** (10 second) delay supplied with the kit, calculate the difference in length between the two delay modules:

$$.594" - .500" = 0.094" \text{ difference (drill depth)}$$

Alternatively, the drill depth can be approximately determined by multiplying the number of seconds of delay time reduction desired by .024"-.031" per second.

2. Create a "depth stop" by wrapping a 12" - 24" length of masking tape around a 3/16" diameter drill bit at the drill depth distance from the **tip** of the bit, calculated according to the above formula. Alternatively, an aluminum bushing or "stop collar" 1/2" - 3/4" diameter with a 3/16" diameter center hole may be used, secured to the drill bit with a set screw tightened in the selected location (available from McMaster-Carr, part no. 8959A16).

3. Holding the drill bit in one hand, place the bit against the center of one end of the delay module. Rotate the drill bit clockwise while applying light pressure against the module. Drill into the delay module until the depth stop bottoms out against the end of the delay propellant. Rotate the drill for several more revolutions (**without** applying pressure to the module) in order to clear the delay propellant from the drilled hole.

4. Install the modified delay module into the RMS™ motor forward closure with the drilled end facing the combustion chamber (propellant). Finish assembling the RMS™ motor according to the instructions that accompanied your particular reload kit.

Destroy the delay propellant drillings by igniting electrically outdoors away from people, buildings, animals and other flammable materials. **DO NOT** dispose of any propellant composition that contains Ammonium Perchlorate on the ground, in a landfill or in a septic or public sewer system.

NOTE: Please be aware that AeroTech's RMS™ reload kit warranty with regard to pyrotechnic time delays **only** covers failure of the delay to ignite or to remain lit (i.e., partially remaining unburned delay element). It **does not cover** any failure of recovery system deployment not the result of delay element extinguishment, and any other failures resulting from reload kits not used in accordance with instructions. Prior to using AeroTech products, please read the complete AeroTech warranty policy at:

<http://aerotech-rocketry.com/customersite/warranty/warranty.html>

AeroTech Division
RCS Rocket Motor Components, Inc.
Cedar City, UT 84720

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HAND DRILLING PROCEDURE FOR AEROTECH RMS™ DELAY GRAINS

Fig. 1



Using a stop collar or multiple wraps of masking tape, set the depth required using a machinist scale, 1/32" exposed drill bit tip per second shorter delay time desired than existing delay time.

Fig. 2



Align Drill bit and stop on center of delay grain

Fig. 3



Hand drill only until stop bottoms against delay grain

Fig. 4



Finished drilled delay grain. Dispose of propellant scraps properly