**Chapter 4. Preparation For Flight**

4-1. **Fig. 12:** Insert the black coated end of the Copperhead igniter through the nozzle throat and into the slot or core in the propellant grain(s) until it stops against the delay element.

4-2. **Fig. 12:** Using scissors of a hobby knife, cut a corner off the closed end of the nozzle cap to create a vent hole about 1/16” wide. Push the nozzle cap over the nozzle to hold the igniter in place.

4-3. Install the RMS motor into the rocket’s motor mount tube. Ensure that the motor is securely retained in the rocket by using positive mechanical means to prevent it from being ejected at the time of ejection charge firing. If using a motor hook, be sure to hold the hook away from the motor during insertion into the motor tube to prevent the hook from scraping the motor casing. Position the hook tab into the slotted recess in the aft closure.

4-4. Prepare the rocket’s recovery system and then launch the rocket in accordance with the National Association of Rockety (NAR) Safety Code and National Fire Protection Association (NFPA) Code 1122. **NOTE:** It is strongly recommended that you use the AeroTech Interlock™ igniter clip with Copperhead igniters. Tests have shown that nearly 100% ignition reliability is achieved with an Interlock clip used in conjunction with a properly-installed Copperhead igniter and a fully-charged 12-volt car battery.

4-5. If a misfire occurs and a loaded AeroTech/RCS RMS motor does not ignite for any reason within five seconds of pressing the launch button, release the launch button and remove the safety key from the electrical launch controller. WAIT ONE MINUTE before approaching or allowing anyone else to approach the rocket. Keep your fingers and hands out from underneath the rocket and away from the possible path of the exhaust jet. DO NOT place any part of your body over the launch pad. Disconnect the clip from the Copperhead igniter. Carefully remove the rocket from the launch pad. Keeping the motor nozzle pointed away from your face and body - and away from any other person’s face or body - remove the red plastic nozzle cap and repeat the motor preparation and launching process.

**Chapter 5. Post-Recovery Cleanup**

**NOTE:** Perform RMS motor cleanup as soon as possible after motor firing. Propellant and delay residues become difficult to remove 24 hours after motor firing. These residues can lead to corrosion of metal parts. DISPOSE OF SPENT MOTOR COMPONENTS PROPERLY.

5-1. After the motor has cooled down, remove the forward and aft closures. Remove and discard the delay insulator and delay o-ring from the forward closure. Using wet wipes or damp paper towels, remove all propellant, delay and ejection charge residues from the closures. **WARNING:** FAILURE TO REMOVED DELAY RESIDUE FROM THE INSIDE OF THE FORWARD CLOSURE CAN LEAD TO GAS LEAKAGE AROUND THE DELAY O-RING ON A SUBSEQUENT FLIGHT AND DAMAGE TO YOUR RMS FORWARD CLOSURE AND ROCKET VEHICLE.

5-2. Remove the nozzle, liner assembly and forward and aft o-rings from the case and discard. Using wet wipes or damp paper towels, wipe the inside of the case to remove all propellant residue.

5-3. Apply a light coat of grease to all threads and the inside of the motor case. Reassemble parts and store in a dry place.

**Chapter 6. First Aid**

For a minor burn, apply a burn ointment. For a severe burn, immerse the burned area in ice water at once and see a physician as quickly as possible. In the unlikely event of oral ingestion of the propellant, induce vomiting and see a physician as quickly as possible. The AeroTech/V RCS composite propellant consists primarily of ammonium perchlorate and a rubber-like plastic elastomer.

**Chapter 7. Disposal**

Damaged or defective RMS reload kits should be returned to RCS.

**Chapter 8. Fire Safety**

Tests show that the pyrotechnic components of RMS reload kits will not explode in fires and normally will not ignite unless subjected to direct flame and then will burn slowly. Use water to fight any fires in which AeroTech/RCS RMS reload kit pyrotechnic components become involved: Direct the water at the AeroTech/RCS RMS reload kit pyrotechnic components to keep them below their 550 deg. F autoignition temperature. Foam and carbon dioxide fire extinguishers will NOT extinguish burning propellants of the type used in RMS reload kit pyrotechnic components. Keep reload kit pyrotechnic components away from flames, sources of heat and flammable materials.

**Typical Time-Thrust Curve:**

Certified by the National Association of Rockety

**RMS-24/60 NEW BLUE THUNDER MOTOR KIT DATA**

<table>
<thead>
<tr>
<th>Casing Design</th>
<th>Performance Design</th>
<th>Total Impulse (Typ.)</th>
<th>Propellant Wt.</th>
<th>Loaded Motor Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMS-24/60</td>
<td>F51NT</td>
<td>55.1 lnsce</td>
<td>26.5 g (0.058 lb)</td>
<td>82 g (0.181 lb)</td>
</tr>
</tbody>
</table>

**RMS-24/60 HARDWARE DATA**

<table>
<thead>
<tr>
<th>Hardware Designation</th>
<th>Motor Diameter</th>
<th>Motor Length</th>
<th>Hardware Weight</th>
<th>Reload Kit Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMS-24/60</td>
<td>.938&quot; (24mm)</td>
<td>3.75&quot;</td>
<td>29.3 g (0.087 lb)</td>
<td>F51NT</td>
</tr>
</tbody>
</table>

**NOTE:** SALE TO PERSONS UNDER 18 YEARS OF AGE PROHIBITED BY FEDERAL LAW. **WARNING:** FLAMMABLE: Read Instructions Before Use. KEEP OUT OF REACH OF CHILDREN. FOR USE ONLY BY INDIVIDUALS 18 YEARS OF AGE OR OLDER. DO NOT SMOKE when loading these motors or use in the vicinity of open flames.

**Disclaimer and Warranty**

**NOTE:** As we cannot control the storage and use of our products, once sold we cannot assume any responsibility for product storage, transportation or usage. RCS shall not be held responsible for any personal injury or property damage resulting from the handling, storage or use of our product. The buyer assumes all risks and liabilities therefrom and accepts and uses AeroTech/RCS products on these conditions. No warranty either expressed or implied is made regarding AeroTech/RCS products, except for replacement or repair, at RCS’s option, of those products which are proven to be defective in manufacture within one year from the date of original purchase. For repair or replacement under this warranty, please contact RCS. Proof of purchase will be required. Note: Your state may provide additional rights not covered by this warranty.

The reload kit shown above is ONLY for use in AeroTech/RCS RMS-24/60 model rocket motor hardware.
Chapter 1. Forward Closure Assembly

For the motor to function properly, the forward closure must be assembled correctly. Make sure to follow the instructions carefully. The forward closure must be assembled exactly as shown. If in doubt, contact RCS for assistance. Do not attempt to reuse any parts of the RMS system that are damaged. Never modify the motor in any way. DO NOT USE ANY PARTS OF THE RMS SYSTEM THAT ARE DAMAGED.

Chapter 2. Case Assembly

Assembly of the case is extremely important. Read all instructions before use. Use RMS motors and components specifically designed for the AeroTech/RCS RMS motor. Never use imitation components. The AeroTech/RCS RMS motor will destroy your motor, rocket and payload and invalidate your motor warranty. DO NOT ATTEMPT TO REUSE ANY OF THE PARTS OF THE RMS SYSTEM.

Chapter 3. Ejection Charge Installation

WARNING: Do not open reload kit until ready to use. Read and follow the safety code of the National Association of Rocketry (NAR) and comply with all federal, state and local laws. Failure to do so may result in motor failure, lead cavity closure failure, possibly damaging your motor and rocket! CAUTION: DO NOT MODIFY THE MOTOR IN ANY WAY. Modifications to the motor casing or the reload kit parts could result in motor failure. DO NOT USE ANY PARTS OF THE RMS SYSTEM THAT ARE DAMAGED.

ITEMS NEEDED FOR USE:

- Wet wipes or damp paper towels
- Super Lube™ or other grease
- 24/60 forward closure (1)
- 24/60 case (1)
- 24/60 aft closure (1)
- RMS-24/60 MOTOR HARDWARE
- RELOAD KIT (2-PACK)
- Propellant grain (long slotted or cored part)

Assembly and Operation Instructions

1. Install Forward Closure Assembly

   a. Insert the delay charge assembly into the delay cavity.
   b. Press the delay element into the other end of the delay spacer and delay o-ring as shown.
   c. Place the greased 13/16" O.D. X 1/16" thick aft insulator (black fiber washer) 2.
   d. Thread the forward closure into the same end of the motor case until the large diameter end is seated against the liner assembly.
   e. Hold the liner assembly in place with your finger.
   f. Insert the liner assembly into the motor case, seated against the delay insulator tube until it is recessed equally from both ends of the case.
   g. Install the ejection charge container into the nozzle of the motor. Holding the motor in a nozzle down, snap the ejection charge container over the nozzle cap (the wider plastic cap) CAREFULLY.
   h. Thread the aft closure into the motor by hand until it stops against the case.
   i. If supplied with the reload kit, press the delay o-ring into the groove between the nozzle and the case. If not supplied, use the forward o-ring supplied with the motor (if provided).

2. Install Ejection Charge

   a. Hold the ejection charge container/nozzle cap assembly in place with one end of the tube.
   b. Using your fingernail or a blunt object, remove the burr of the forward closure on this end of the cavity until it is seated against the delay o-ring.
   c. Press the delay element into the other end of the delay spacer and delay o-ring as shown.
   d. Place the greased 13/16" O.D. X 1/16" thick aft insulator (black fiber washer) 2.
   e. Thread the forward closure into the same end of the motor case until the large diameter end is seated against the liner assembly.
   f. Hold the liner assembly in place with your finger.
   g. Insert the liner assembly into the motor case, seated against the delay insulator tube until it is recessed equally from both ends of the case.

3. Review the parts list and become familiar with all parts of the RMS system before using. Use RMS motors and components specifically designed for the AeroTech/RCS RMS motor. Never use imitation components. If in doubt, contact RCS for assistance. Do not attempt to reuse any parts of the RMS system that are damaged.

4. DO NOT OPEN RELOAD KIT UNTIL READY TO USE.