Chapter 1. Forward Closure Assembly

1-1. Apply a light coat of Synco™ Super Lube™ or other grease to all threads and all O-rings. This will facilitate assembly and prevents the threads from seizing.

1-2. Fig.-1: Chamfer both inner edges of the delay insulator with your fingernail. Assemble the RMS-Plus delay element, delay insulator, aft delay spacer and delay O-ring as shown. **NOTE:** It is **not** necessary to tape the delay element or delay insulator, the hot gas seal is provided by the delay O-ring alone.

1-3. Fig.-2: Insert the forward delay spacer (1-1/8” O.D. neoprene washer) into the delay cavity until it is seated against the forward end of the cavity. Apply a light film of grease to the inner circumference of the delay cavity (but not the forward end of the cavity).

1-4. Fig.-3: Insert the delay charge assembly shown in Fig.-1 into the delay cavity, O-ring end first, until it is seated against the forward delay spacer. **NOTES:** When using a plugged forward closure **ONLY**, fill the opening in the forward delay spacer with grease prior to installing the delay charge assembly, and install the delay charge components in this order: Forward delay spacer, delay O-ring, delay element, delay insulator and aft delay spacer.

Chapter 3. Ejection Charge Installation

3-1. Fig.-10: Thoroughly clean the outside of the motor by any grease or other residue. Dispense enough ejection charge (FFFFG black powder) into the ejection charge well of the forward closure to fill the well approximately 3/4 full. **NOTE:** For 6” and larger diameter rockets, fill the well completely.
**Chapter 3. Ejection Charge Installation (Cont’d)**

3-2. Fig.-11: Apply the ejection charge cap (adhesive paper disk) to the center of the end of the forward closure. With the motor held in a NOZZLE DOWN position, gently shake the motor to settle the ejection charge into the cavity above the delay element.

**Chapter 4. Preparation For Flight**

Center Nozzle Throat

Install Igniter Against Delay Charge

**Chapter 5. Post-Recovery Cleanup**

**NOTE:** Perform motor clean-up as soon as possible after motor firing. Propellant and delay charge residues become difficult to remove after 24 hours and can lead to corrosion of the metal parts. Place the spent motor components in the reload kit plastic bag and dispose of properly.

5-1. After the motor has cooled down, unthread and remove the forward and aft closures.

5-2. Remove the delay charge assembly components from the forward closure and discard. Using wet wipes or damp paper towels, remove all delay charge and propellant residue from the closures. **WARNING:** Failure to completely remove delay charge residue from the inside of the forward closure can lead to gas leakage on a subsequent flight and damage to your RMS motor forward closure and rocket vehicle. **NOTE:** Use of a plugged forward closure will eliminate the possibility of this failure mode.

5-3. Remove and discard the forward and aft o-rings from the motor case. Remove the liner, forward insulator, nozzle and liner o-ring from the casing by pushing on the nozzle end and discard. Using wet wipes or damp paper towels, wipe the inside of the casing to remove all propellant residue.

5-4. Apply a light coat of grease to all threads and the inside of the motor case. Reassemble metal parts and store motor 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/RCS composite propellant consists primarily of ammonium perchlorate and a rubber-like plastic elastomer.

**Chapter 7. Disposal**

Damaged or defective 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 may become involved. Direct the water at the propellant residue until it is extinguished. Foam and carbon dioxide fire extinguishers will NOT extinguish pyrotechnic components. Keep reload kit pyrotechnic components away from flames, sources of heat and flammable materials.

**Disclaimer and Warranty**

**NOTICE:** 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.

**RMS™-54/426 Reload Kit Data**

<table>
<thead>
<tr>
<th>Hardware 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><strong>RMS™-54/426</strong></td>
<td>1115W</td>
<td>412 N-sec</td>
<td>219 g (0.482 lb)</td>
<td>545 g (1.20 lb)</td>
</tr>
<tr>
<td><strong>I229T</strong></td>
<td>407 N-sec</td>
<td>196 g (0.432 lb)</td>
<td>514 g (1.13 lb)</td>
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</tr>
<tr>
<td><strong>I117FJ</strong></td>
<td>361 N-sec</td>
<td>243 g (0.535 lb)</td>
<td>566 g (1.25 lb)</td>
<td></td>
</tr>
<tr>
<td><strong>I215R</strong></td>
<td>399 N-sec</td>
<td>208 g (0.458 lb)</td>
<td>527 g (1.16 lb)</td>
<td></td>
</tr>
</tbody>
</table>

**RMS™-54/426 Hardware Data**

<table>
<thead>
<tr>
<th>Hardware Designation</th>
<th>Motor Diameter</th>
<th>Motor Length</th>
<th>Hardware Weight</th>
<th>Reloads Used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RMS™-54/426</strong></td>
<td>2.125&quot; (54mm)</td>
<td>6.17&quot;</td>
<td>218 g (0.480 lb)</td>
<td>1115W, I229T, I117FJ, I215R</td>
</tr>
</tbody>
</table>

**NOTE:** Total impulse shown is typical. Motor lengths are measured from end of aft closure to end of forward closure.

**Chapter 6. Time-Thrust Curves:**

Typical Time-Thrust Curves:

**NOTE:** RMS-54/426 reload kits do not include ejection charge. Use FFFFG black powder.

**THIS PACKAGE CONTAINS ONE RMS-PLUS™ RELOAD KIT:**

- I115W-M
- I229T-M
- I117FJ-M
- I215R-M

**NOTE:** This reload kit is sold in a "medium" delay configuration ONLY. For other delays, use one of the appropriate AeroTech Reload Delay Kits (RDK’s) for the delay time desired. Please refer to the RDK cross-reference list on back of the reload kit header card for proper RDK selection.

**RMS™ 54/426 Single Grain Reloadable Motor System**

**HIGH-POWER RMS™**

**DO NOT OPEN RELOAD KIT UNTIL READY TO USE**

**Division of RCS Rocket Motor Components, Inc.**

117FJ-M

**Cedar City, UT 84720**

**1115W, I229T, I117FJ, I215R**

**High-Power RMS™**

With **RMS Plus Advanced Delay Sealing System**

**RMS™ 54/426 Single Grain**

**Typical Time-Thrust Curves:**

**Certified By the Tripoli Rocketry Association**

**Fig.-11**

**Fig.-12**

**4-1.** Insert the coated end of a FirstFire™, Fiestar™ or other igniter through the center nozzle throat until it stops against the delay charge element.

**4-2.** Secure the igniter to the nozzle with a piece of masking tape.

**4-3.** Install the 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 during recovery system deployment.

**4-4.** Prepare the rocket’s recovery system and then launch the rocket in accordance with the Tripoli Rocketry Association (TRA) Safety Code and National Fire Protection Association (NFPA) Code 1127.

**4-4.** Prepare the rocket’s recovery system and then launch the rocket in accordance with the Tripoli Rocketry Association (TRA) Safety Code and National Fire Protection Association (NFPA) Code 1127.

**Fire Safety**

W = White Lightning™, T = Blue Thunder™, FJ = Black Max™, R = Redline™

**Chapter 8. Fire Safety**

**WARNING—FLAMMABLE:** Propellant is flammable. Do not smoke while working with or near propellant. Do not store propellant near an open flame. Do not transport propellant in vehicles without proper ventilation. When transporting propellant in vehicles, propellant must be secured to prevent movement. Use caution when handling propellant to prevent injuries. **DO NOT POISON!** Keep propellant away from children. Keep propellant out of reach of children. For use only by certified high-power users 21 years of age or older. Do not smoke when loading these motors or use in the vicinity of open flames.