Chapter 2. Case Assembly (Cont'd)

**READ THIS BEFORE YOU BEGIN:**

DO NOT OPEN RELOAD KIT UNTIL READY TO USE.

DO NOT USE ANY PARTS OF THE RMS™ SYSTEM THAT ARE DAMAGED IN ANY WAY. If in doubt, contact RCS at the number above for assistance.

**DO NOT MODIFY THE MOTOR IN ANY WAY.** Modification of the motor or the reload kit parts could result in motor failure, lead to the destruction of both your rocket and motor and may cause personal injury, death and/or property damage. Modification of the motor or reload kit in any way will invalidate your motor warranty.

**USE ONLY AEROTECH/RCS RMS™ RELOAD KITS AND MOTOR PARTS TO REFURBISH YOUR RMS™ MOTOR.** The AeroTech/RCS reload kits have been designed specifically for use in your particular AeroTech/RCS RMS™ motor. Use of imitation components may destroy your motor, rocket and payload and will invalidate your motor warranty. Only use AeroTech/RCS RMS™ reload kits intended for your specific AeroTech/RCS RMS™ motor. **DO NOT INTERCHANGE PARTS!** Do not use AeroTech/RCS RMS™ reload kits or motor components for any other purpose than to refurbish an AeroTech/RCS RMS™ motor.

**DO NOT REUSE ANY OF THE DISPOSABLE PARTS OF THE RMS™ RELOAD KIT.** This includes the liner, nozzle and o-rings. These components have been designed for one use only and must be discarded after firing. Reuse can result in motor failure during subsequent operation and will invalidate your motor warranty.

Motors are hot after firing. Although the RMS™ operates at a lower temperature than most disposable motors, the higher thermal conductivity of the aluminum motor parts may make it seem otherwise. If necessary to handle a motor before it has cooled down, use a rag or similar article.

- Read and follow the safety code of the Tripoli Rocketry Association (TRA) and comply with all federal, state and local laws in all activities involving high power rockets.
- SAVE THE RELOAD KIT PLASTIC BAG FOR THE USED RELOAD PARTS. DISPOSE OF BAG AND PARTS PROPERLY.

**ITEMS NEEDED FOR USE:**

- Synco™ Super Lube™ or other grease
- Hobby knife
- Electric match withthermaleite, Firestar™ or other igniter
- Masking tape
- Wet wipes or damp paper towels
- A coating of grease on the outside surface of the liner will facilitate installation and casing cleanup after motor firing.

**PARTS:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>RMS™-75 HARDWARE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75mm aft closure</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>75/2560 case (K560W reload)</td>
<td>1</td>
<td></td>
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<tr>
<td>75/3840 case (L850W reload)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>75/5120 case (M1297W reload)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>75mm plugged forward closure</td>
<td>1</td>
<td></td>
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</tbody>
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**RELOAD KIT**

- Nozzle (large black plastic part) 1
- Liner (2-3/4" O.D. black plastic tube) 1
- Propellant grains 2-4
- Feed & aft o-rings (1/8" thick X 2-3/4" O.D.) 2
- Smoke charge (short solid part) 1
- Smoke charge insulator (1-1/2" O.D.) tube 1
- Forward insulator (2-3/4" O.D. fiber washer) 1
- Nozzle Cap (2-1/4" dia. red cap) 1

**2-2.** Fig.-4: Insert the larger diameter portion of the nozzle into one end of the liner, with the nozzle liner flange seated against the liner.

**2-3.** Fig.-5: Perform the remaining assembly steps with the liner held in a horizontal position. Install the propellant grains into the liner, seated against the nozzle grain flange. **NOTE:** Three propellant grains are shown in all illustrations for simplicity. RMS-75/2560 motors use two (2) grains, RMS-75/3840 motors use three (3) grains and RMS-75/5120 motors use four (4) grains.

**2-4.** Fig.-6: Push the liner assembly into the motor case until the nozzle protrudes approximately 1/8" from the end of the case. **NOTE:** A coating of grease on the outside surface of the liner will facilitate installation and casing cleanup after motor firing.

**2-5.** Fig.-7: Place the forward insulator (2-3/4" O.D. fiber disk) into the forward (bulkhead) end of the case until it is seated against the forward liner.

**2-6.** Fig.-8: Place the greased forward (1/8" thick X 2-3/4" O.D.) o-ring into the forward (bulkhead) end of the case until it is seated against the forward insulator.

**2-7.** Fig.-9: Thread the previously-completed forward closure assembly into the forward end of the motor case by hand until it is seated against the case. **NOTE:** There will be considerable resistance to threading in the closing during the last 1/8" to 3/16" of travel.

**2-8.** Fig.-10: Place the greased aft (1/8" thick X 2-3/4" O.D.) o-ring into the groove in the nozzle.

**2-9.** Fig.-11: Thread the aft (gold) closure into the aft end of the motor case by hand until it is seated against the case. **NOTE:** There will be considerable resistance to threading in the closure during the last 1/8" to 3/16" of travel. It is normal if a slight (1/32" to 1/16") gap remains between the closure and the case, and the grains rattle slightly in the liner after tightening.
Chapter 3. Preparation For Flight

Install Igniter Against Smoke Charge

3-1. Fig.-12: Insert the coated end of a Firestar™ or other igniter through the center nozzle throat until it stops against the smoke charge element.

3-2. Secure the igniter to the nozzle with a piece of masking tape or the 2-1/4" dia. red nozzle cap supplied with the reload kit. NOTE: Cut a 1/8"-1/4" wide slot in the corner of the cap to allow for igniter venting.

3-3. 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.

3-4. 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.

Chapter 4. Post-Recovery Cleanup

NOTE: Perform motor clean-up as soon as possible after motor firing. Propellant and smoke 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 bags and boxes and dispose of properly.

4-1. After the motor has cooled down, unthread and remove the forward and aft closures.

4-2. Remove the smoke charge insulator from the forward closure and discard. Using wet wipes or damp paper towels, remove all smoke charge and propellant residues from the closures.

4-3. Remove and discard the forward and aft o-rings from the motor case. Remove the liner, forward insulator and nozzle 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.

4-4. 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 5. 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 6. Disposal

Damaged or defective reload kits should be returned to RCS.

Chapter 7. 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 light any fires in which AeroTech/RCS RMS™ reload kit pyrotechnic components may 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.

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.

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