The Sequel of Assembly is Extremely Important. Read All Instructions Before Use. Use RMS Motors and Reload Kits Only in Accordance with All Instructions. Review the Parts List and Become Familiar with All Parts Before Assembly. If Any Parts are Missing or Damaged, Contact RCS at 1-336-465-7100.

**Chapter 2. Case Assembly**

**REDO KIT UNTIL READY TO USE.**

**PARTS:**

**RMS HARDWARE**

- 38mm std. or enlarged aft closure 1
- 38/400 case (1154) 1
- 38/600 case (1945) 1
- 38mm std. or plugged forward closure 1
- 38mm forward seal ring 1

**RELOAD KIT**

- Nozzle (black plastic part) 1
- Liner (1-3/8" O.D. black plastic tube) 1
- Propellant grains 4 or 5
- Aft o-ring (3/16" thick X 1-3/8" O.D.) 1
- Forward o-ring (1/8" thick X 1-3/8" O.D.) 1
- Pedal seal ring o-ring (1/16" thick X 1-1/16" O.D.) 1
- Aft insulator (1-3/8" O.D. fiber washer) 1
- Ejection charge cap (adhesive paper disk) 1
- FirstFire™ igniter 1
- Ejection charge container (1/8" O.D. red plastic cap) 1
- RMS-Plus™ delay element (short solid part) 1
- Delay insulator (13/16" O.D. tube) 1
- Delay o-ring (3/32" thick X 13/16" O.D.) 1
- Aft delay spacer (short colored paper ring) 1
- Forward delay spacer (13/16" O.D. neoprene washer) 1

**ITEMS NEEDED FOR USE:**

- Synco™ Super Lube™ or other grease
- Hobby knife
- Wet wipes or damp paper towels

**SAVE THE RELOAD KIT PLASTIC BAG FOR THE USED-RELOAD PARTS. DISPOSE OF BAG AND PARTS PROPERLY.**

**Chapter 1. Forward Closure Assembly**

1. Apply a light coat of Synco™ Super Lube™ or other grease to all threads and all 4 o-rings. This will facilitate assembly and prevents the threads from seizing.

1-1. 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.

1-2. Insert the forward delay spacer (13/16" 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.

1-3. 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. NOTE: When using a plugged forward closure ONLY, lift the opening in the forward delay spacer with grease prior to installing the delay charge assembly.

**Chapter 3. Ejection Charge Installation**

3. Thoroughly clean the outside of the motor of any grease or other residue. Open the ejection charge container and 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 4" and larger diameter rockets, fill the well completely. Save the cap for use as the nozzle cap igniter holder.
Chapter 3. Ejection Charge Installation (Cont’d)

3-2. Fig.-15: 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

4-1. Fig.-16: Using a hobby knife, cut a corner off the red nozzle cap (empty ejection charge container) to create a small (1/16”-1/8”) vent hole. Set the nozzle cap igniter holder aside.

4-2. Fig.-16: Insert the coated end of the FirstFire™ or other igniter through the nozzle throat until it stops against the delay element or forward seal ring.

4-3. Push the vented nozzle cap igniter holder over the igniter lead(s) and nozzle until it stops.

4-4. 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 at the time of ejection charge firing.

4-5. 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 5. Post-Recovery Cleanup

NOTE: Perform motor clean-up as soon as possible after motor firing. Propellant and delay 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, remove the forward and aft closures.

5-2. Remove the delay insulator, delay o-ring and forward delay spacer from the forward closure and discard. Remove and discard the nozzle and the forward and aft o-rings. Using wet wipes or damp paper towels, remove all delay and propellant residue from the closures. (SEE WARNING: FAILURE TO COMPLETELY REMOVE DELAY 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).

5-3. Remove the liner from the casing by pushing on either end. Remove the forward seal ring from the liner. Discard the liner and forward seal ring o-ring ONLY. Using wet wipes or damp paper towels, wipe the inside of the casing and the forward seal ring to remove all propellant residue. DO NOT discard the forward seal ring!

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 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, all 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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RMS™ 38/480-600 BLACK JACK™

Certified By the Tripoli Rocketry Association

Fig.-15

Ejection Charge Cap

Chapter 4. Preparation For Flight

Fig.-14

Install Igniter Against Delay Charge

Chapter 5. Post-Recovery Cleanup

Fig.-16

Nozzle Cap Igniter Holder

Chapter 6. First Aid

NOTE: MEDIUM DELAY CHARGE COMPONENTS INCLUDED. For other delay times, 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.

This package contains one RMS-PLUS™ reload kit:

I154J-M (38/480) I195J-M (38/600)

NOTE: Sale of propellant reload kits 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 certified high-power users 18 years of age or older. Do not smoke when loading these motors or use in the vicinity of open flames.