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 (except the grain spacer o-rings). This will facilitate assembly and prevents the threads from seizing.

1-2. Fig.-1: Hold the forward (black) closure in a vertical position, smoke charge cavity facing up. Insert the smoke charge insulator into the smoke charge cavity until it is seated against the forward end of the cavity.

1-3. Fig.-2: Apply a liberal amount of grease to one end of the smoke charge element. Insert the greased end of the smoke charge element into the smoke charge cavity until it is seated against the end of the cavity. Set the completed forward closure assembly aside.

Chapter 2. Case Assembly

2-1. Fig.-3: Using a hobby knife or similar tool, carefully deburr (chamfer) both inside edges of the liner tube (2-3/4" O.D. black plastic tube).

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. NOTE: The M1550R reload kit includes a single large throat nozzle rather than the multi-throat “Medusa™ nozzle shown in the illustrations.

2-3. Fig.-5: Perform the remaining assembly steps with the liner held in a horizontal position. Install the AFT (1” dia. core) propellant grain into the liner, seated against the nozzle grain flange. Install the four FORWARD (7/8” dia. core) propellant grains into the liner, placing the four (4) grain spacer o-rings (1/16” thick x 2-1/2” O.D.) between each propellant grain. WARNING: The grains must be installed in the correct order as described or the motor may fail on ignition. NOTE: Three propellant grains are shown in all illustrations for simplicity. RMS™-75/6400 motors use five (5) grains.

2-4. Fig.-6: Place the greased forward seal disk (3/32” thick x 2-3/16” O.D.) o-ring into the groove in the forward seal disk.

2-5. Fig.-7: Insert the smaller (o-ring) end of the seal disk into the open end of the liner tube until the seal disk flange is seated against the end of the liner.

2-6. Fig.-8: Push the liner assembly into the motor case until the nozzle protrudes approximately 1-3/4” 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.

2-7. Fig.-9: 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 seal disk.

2-8. Fig.-10: 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 closure during the last 1/8” to 3/16” of travel.

2-9. Fig.-11: Place the greased aft (1/8” thick X 2-3/4” O.D.) o-ring into the groove in the nozzle.

2-10. Fig.-12: Thread the aft 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.
3-1. Fig.-13: Insert the coated end of a Firestar™ or other igniter through the 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, untread 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 seal disk and nozzle from the casing by pushing on the nozzle end. Remove the forward seal disk from the liner, and remove and discard the forward seal disk O-ring. DO NOT DISCARD THE FORWARD SEAL DISK! Discard the nozzle and liner. Using wet wipes or damp paper towels, wipe the inside of the casing and the forward seal disk 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
WARNING: 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 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, 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.