READ THIS BEFORE YOU BEGIN:

- Study the illustrations and sequence of assembly. THE SEQUENCE OF ASSEMBLY IS EXTREMELY IMPORTANT. READ ALL INSTRUCTIONS BEFORE USE. USE MR-LMS™ MOTORS AND MOTOR 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 1-435-865-7100 OR EMAIL at warranty@aerotech-rocketry.com.

- DO NOT OPEN MOTOR KIT UNTIL READY TO USE.

PARTS:

**MR-LMS™ MOTOR KIT (PER MOTOR)**

- MR-LMS™ 29/60 casing
- Propellant grain
- Liner (2' long brown paper tube)
- MR-LMS™ 29mm forward closure
- Forward insulator (black fiber washer)
- Delay insulator (13/16" O.D. white paper tube)
- Delay o-ring (3/32" thick X 13/16" O.D.)
- RMS-Plus™ delay element (short solid part)
- Delay spacer (short colored paper ring)
- Ejection charge container (2-part red plastic cap)
- Ejection charge retainer cap (red rubber cap)
- Copperhead™ igniter
- Rubber band igniter holder
- Alt thrust ring (1/4" long paper ring)
- Self-adhesive motor identification label

ITEMS NEEDED FOR USE:

- Super Lube™ or other grease
- Hobby knife
- 5-minute epoxy
- Cyanoacrylate adhesive

Chapter 1. Forward Closure Assembly

1-1. Apply a light coat of Synco™ Super Lube™ or other grease to the delay o-ring.

1-2. **Fig.-1:** Chamfer both inner edges of the delay insulator with your fingernail. Assemble the RMS-Plus™ delay element, delay insulator, delay spacer and delay o-ring as shown.

1-3. **Fig.-2:** 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.-2 into the delay cavity, delay o-ring end first, until it is seated against the forward end of the MR-LMS™ forward closure.

Chapter 2. Case Assembly

2-1. **Fig.-4:** Install the propellant grain into the liner.

2-2. **Fig.-5:** Push the liner assembly into the motor casing until it is seated against the nozzle end of the case.

2-3. **Fig.-5:** Install the forward insulator (black fiber washer) into the motor casing until it is seated against the liner assembly.

2-4. **Fig.-5:** Mix about 5 grams of a good-quality 5-minute epoxy. Apply a liberal coat of epoxy to the inside surface of the casing in the threaded area above the liner assembly. CAUTION: Do not allow epoxy to contact the propellant grain surface.

2-5. **Fig.-6:** Apply a liberal coat of epoxy to the threaded area of the previously assembled forward closure assembly. CAUTION: Do not allow epoxy to contact the delay grain surface. With the motor casing held in a horizontal position, thread the forward closure assembly into the open end of the motor casing by hand until it is seated against the forward insulator. Apply additional epoxy to the joint between the forward closure and the case. Set the completed assembly aside to cure in a vertical position.

Chapter 3. Ejection Charge Installation

3-1. **Fig.-7:** Carefully open the ejection charge container (2-piece red plastic cap) and dispense the ejection charge into the ejection charge well of the forward closure.

3-2. **Fig.-8:** Press the ejection charge cap (red rubber cap) into the ejection charge well.

3-3. **Fig.-8:** Release the air trapped under the cap by puncturing the center of the cap using the sharp point of a hobby knife.

3-4. **Fig.-8:** 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.

3-5. Apply self-adhesive label to case to identify motor type and delay time. NOTE: The motor may be fired as soon as the bulkhead epoxy has solidified.

3-6. **OPTIONAL:** Bond color-coded aft thrust ring to nozzle end of case with cyanoacrylate (CA) adhesive.
Chapter 4. Preparation For Flight

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 MR-LMS™ motor kits should be returned to RCS.

Chapter 7. Fire Safety

Tests show that the pyrotechnic components of MR-LMS™ motor 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 MR-LMS™ motor kit pyrotechnic components may become involved. Direct the water at the AeroTech/RCS MR-LMS™ motor 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 MR-LMS™ motor kit pyrotechnic components. Keep motor 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.