



## Before you begin:

Read the instructions completely and study the diagrams. Use the reload kit only in accordance with all instructions. Review the parts list and if any parts are missing or damaged, contact your Loki Research dealer for replacements. Note that in some reloads the liner tube is packaged separately from the other parts.

### Parts List:

#### Motor Hardware

motor case with thrust ring	1
graphite nozzle	1
forward bulkhead	1
nozzle washer	1
retaining rings	2

#### Reload Kit

Liner tube brown (or black for J175 and K250)	1
Propellant grain(s)	1 to 5
Primary O-rings (1/8" thick)	2
Smoke O-ring (3/32" thick)	1
Smoke element	1

### Required, but not supplied:

Internal retaining ring pliers.\*  
O-ring lubricant\*\*  
Electric motor igniter  
Protective Eyewear

\* we recommend "Knipex" brand retaining ring pliers. These may be purchased from [www.mcmaster.com](http://www.mcmaster.com), use part #5449A92.

\*\*Use petroleum jelly, synthetic automotive grease, or silicone based greases.

## Assembly Instructions

### FOR YOUR SAFETY ALWAYS WEAR EYE PROTECTION

1. Check that all hardware pieces are clean and free of grease and soot. In particular, check and clean the retaining ring grooves and the smoke grain cavity in the bulkhead.
2. Apply a light film of grease to the smoke grain O-ring (small, 3/32" thick) and install into the internal groove in the bulkhead.
3. Apply a **thick heavy coat of grease** to the forward end of the smoke element to inhibit burning (Fig. 1).
4. Loosen the thumb screw air valve. Place the smoke element on end, greased end up, on a flat surface. Push the bulkhead over the smoke element and press down until the end is flush with the bulkhead (Fig. 2).
5. Tighten the thumb screw air valve.
6. Coat the two primary O-rings (large, 1/8" thick) with grease. Install one Primary O-ring onto the bulkhead O-ring groove and one Primary O-ring onto the nozzle O-ring groove. Rub a light film of grease on the inside of each end of the motor case extending approximately one inch into the case.
7. Push the recessed shoulder of the nozzle into the liner tube and slide together (liner tube first) into the thrust ring end of the motor case (see diagram below). **Be sure to use the correct size nozzle** (see table on front page).
8. Place the stainless steel nozzle washer against the nozzle and install the retaining ring using appropriate retaining ring pliers. Always wear eye protection.
9. Stand the motor upright on the nozzle end and drop the propellant grain(s) into the liner tube. When loading the J175 and K250 moonburners, the slotted end of the grain goes against the nozzle. The slot assists igniter insertion.
10. Install the assembled bulkhead into the top of the motor and secure with the second retaining ring. There may be a small amount of empty space in the case and the grain(s) may rattle. This is normal.
11. Make a final visual inspection to ensure that both retaining rings are fully seated in their grooves. The motor can now be installed in the rocket. Use positive mechanical means to prevent the motor from being ejected during flight.
12. Install an electrical igniter only when at the launch pad. Slide the igniter through the nozzle all the way up until it touches the bulkhead or smoke element. Secure in place with tape or other means to prevent the igniter from sliding down.
13. Fire from a safe distance in accordance with NFPA code 1127 and the rules of your launch site. **CAUTION! Motor will be hot after firing!** Allow to cool before handling.

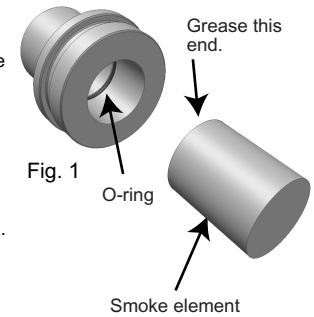


Fig. 1

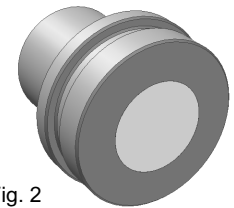


Fig. 2

