

# TROUBLE-SHOOTING TIPS

**CAUTION!!** If you have pushed the firing button, and the rocket engine failed to ignite, wait at least one full minute before approaching the rocket.

**PROBLEM 'A'** Safety Key inserted but bulb doesn't light up.

**SOLUTION:** This situation usually indicates that the firing circuit is incomplete or there is a loose connection somewhere (usually at the launcher). Check out the circuit in the following manner:

After waiting one full minute, approach the rocket, remove it from the launcher, and set aside in a safe place. Next, check to make sure all battery and launcher connections are secure. Then back at the launcher, check the igniter clips (micro-clips) to see if they're clean. If tips are covered with exhaust residue, clean with fine sandpaper or scrape with a knife. Connect a short test piece of nichrome wire (about 2" long) between the micro-clips. Check to make sure the tips (jaws) of the clips are firmly "biting" the nichrome wire. Now insert the safety key into the panel and observe light. If bulb lights up, press firing button and watch for nichrome wire to glow red. Caution!! Do not hold nichrome wire during test.

If bulb fails to light up, check thru the circuit again for loose connections and examine the light bulb itself to make sure it's not burned out.

**PROBLEM 'B'** Light bulb glows when key is inserted, but rocket engine fails to ignite when button is pressed.

**SOLUTION:** Follow the same "check-out" procedure as described above. If the test nichrome wire glows red hot, your problem is in the igniter placement (into the engine nozzle). Remove the igniter from the engine carefully and re-install according to Centuri's Engine Operating Instruction.

Should the test nichrome not glow at all, or glow very faintly, the problem is in the battery or the wiring. Any one or more of the following conditions could result in failure of the ignition circuit:

## CHECK PROBLEM

## SOLUTION

Battery connections loose or dirty	Clean and tighten.
Battery weak or dead	Replace or recharge.
Loose wiring connections	Check all connections.
Micro-clips bent or dirty	Straighten and clean with emery board, knife or fine sandpaper.

Finally, connect up the test piece of nichrome again, insert safety key, press firing button, and watch for wire to glow red hot. If wire heats OK, begin the launch procedure again.

If the test nichrome fails to glow, repeat the "check-out" again until the problem is located.

## RECOMMENDED BATTERIES

### FOR 6 VOLT PANEL

Eveready #731 Lantern  
 Eveready #520 Lantern  
 Eveready #1461 Hot Shot  
 Eveready #1462 Hot Shot  
 Eveready #706 Emergency  
 Ray-O-Vac #641 or #918  
 Ray-O-Vac #902 or #903  
 Mallory #M904 or #M903  
 Burgess 4F4H or 4F5H

### FOR 12 VOLT PANEL

Eveready #732 Lantern  
 Eveready #1463 Hot Shot  
 Marathon #926 or 904  
 Ray-O-Vac #904 or 922  
 Mallory M904  
 Bright Star #164 or #187  
 Burgess TW2 or S461  
 Burgess 4F6H or 2G8H  
 Any Car Battery

For further information concerning model rocket launchers, igniters, rocket engines, or any rocket supplies, see your Local Hobby Dealer.

# LECTRA-LINE MODEL ROCKET FIRING PANEL

LAUNCH ALL MODEL ROCKETS  
 15 FOOT FIRING LINE WITH CLIPS  
 UNBREAKABLE MOLDED PLASTIC  
 SAFETY KEY AND "CHECK" LIGHT

**\$350**

Catalog No. EFC-1



With the LECTRA-LINE key inserted and the light on . . . you're ready to launch.

**Centuri**

# MODEL ROCKET FIRING PANEL

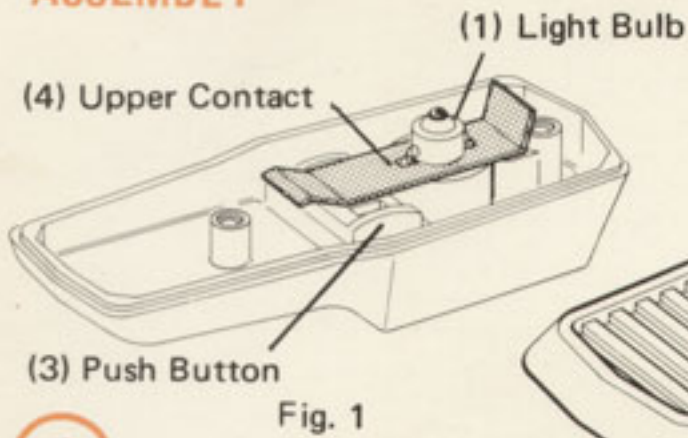
Mfg. by Centuri Engineering Co. Phoenix, Arizona

# ASSEMBLY INSTRUCTIONS

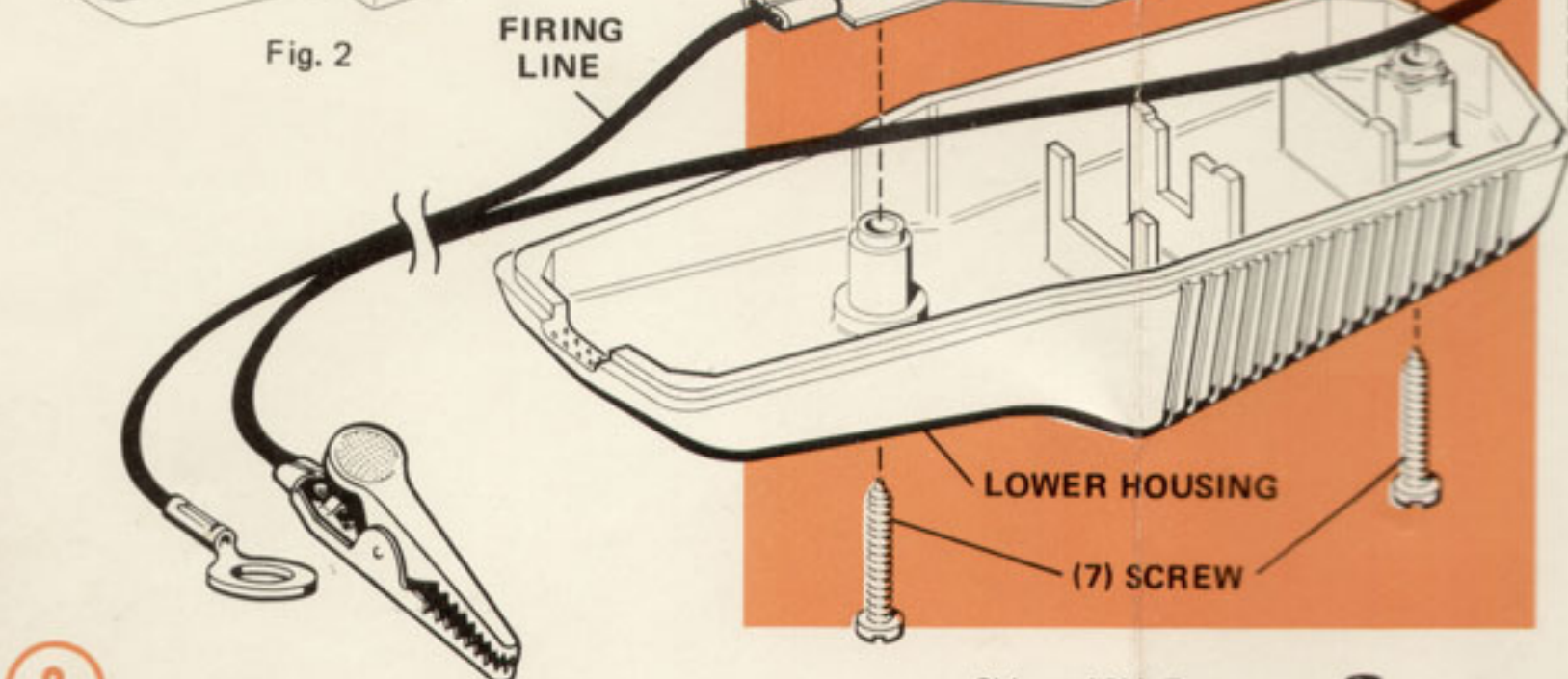
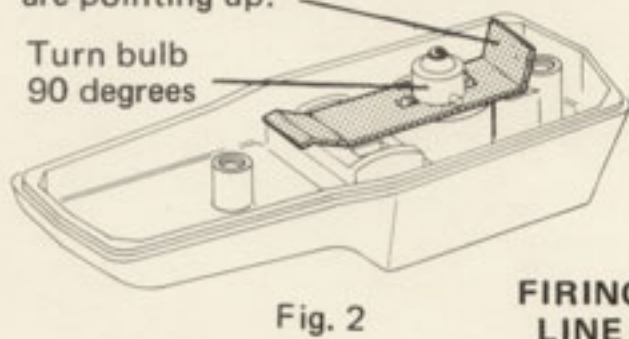
FOR BEST RESULTS . . . FOLLOW DIRECTIONS CAREFULLY!

The purpose of the LECTRA-LINE 1 Firing Panel is to transfer electrical current from a dry cell or storage battery to the rocket engine igniter wire upon your command for safe ignition and launching of your model rockets. It can be used with practically all types of model rocket launchers including Centuri's LIA-50, LIA-77, and LIA-100. Its safety interlock design requires that the safety key be inserted before the electrical system will operate. This firing panel also incorporates a continuity check light which advises you that the electrical circuit is complete when the light bulb is glowing.

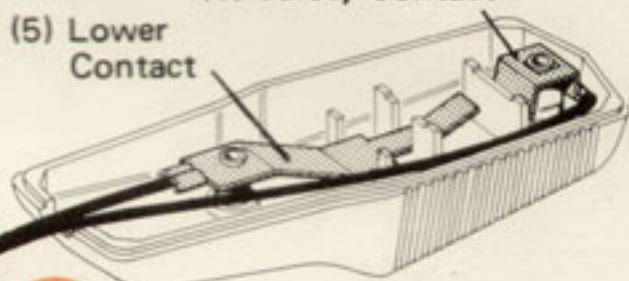
## ASSEMBLY



**1** Insert light bulb (1) into upper housing (2). Hold bulb with fingertip and turn over. Insert push button (3). Position upper contact (4) as shown in Fig. 1 and lock by turning light bulb 90 degrees as shown in Fig. 2. Be sure the ears of the upper contact are pointing up.

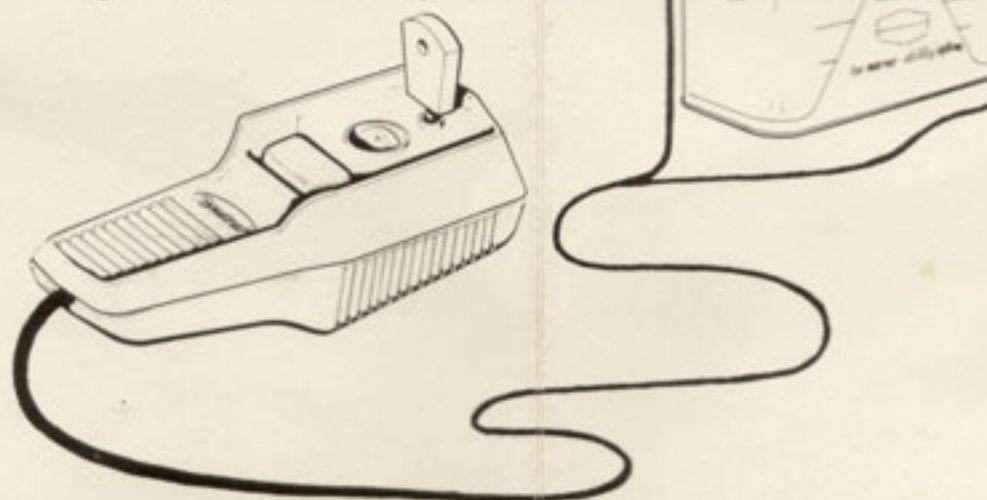


**2** Position lower contact (5) and safety contact (6) as shown in Fig. 3.



**3** Carefully assemble the two halves and fasten together with the two screws (7). DO NOT overtighten the screws as this may cause stripping of the threads.

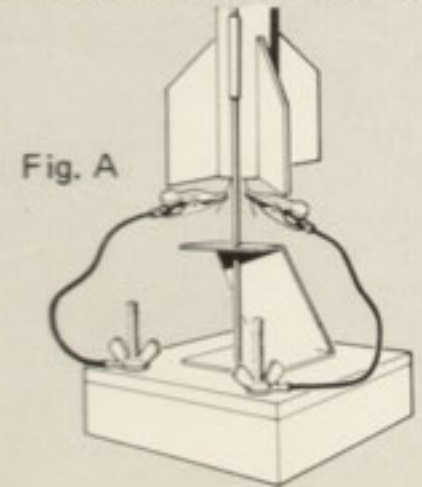
With safety key inserted, and the light on, you are ready to launch.



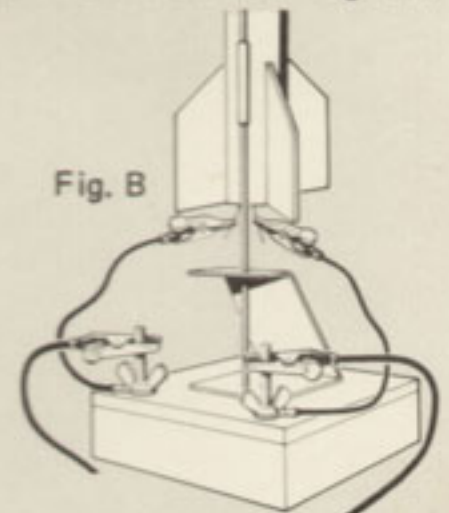
## OPERATING PROCEDURE

FIRST install the nichrome igniter wire in the engine nozzle as described in CENTURI's Engine Operating Instructions.

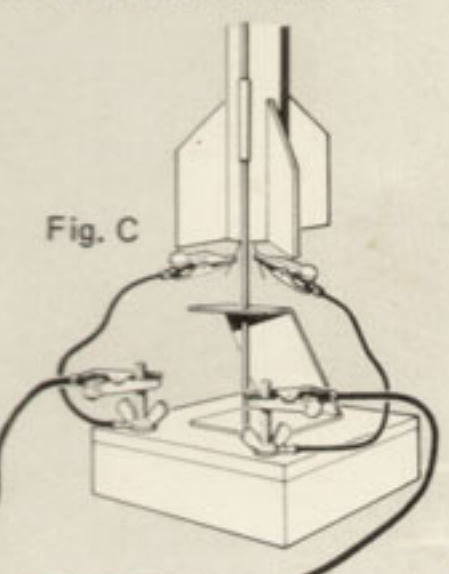
NEXT clip the igniter lead clips of your launcher to the extending igniter wires as close up to the nozzle as possible without touching the two together. (See Fig. A). Also make sure that both clips do not touch the metal exhaust deflector as this would cause a short.



NOW clip the alligator clips of both the firing line and the Jumper Line to the binder posts of your launcher (see Fig. B).



THEN connect the two ring terminals to the battery posts. (See Fig. C). If you are using a car battery, you will need large clips such as Centuri's EMC-46.



FINALLY return to the Firing Panel and insert the safety key. If the light goes on, your circuit should be ready to operate properly. You are now ready to launch. Give a short countdown to alert those around you before launching. Press the button firmly and hold until engine ignites. If the bulb fails to light, see trouble shooting tips on back page.