



A SUBSIDIARY OF DAMON

# SOLAR LAUNCH CONTROLLER



## • PARTS LIST

- |   |                                  |           |
|---|----------------------------------|-----------|
| 1 | Launch Controller - upper half   | FS-10 PPA |
| 1 | Launch Controller - lower half   | FS-10 PPB |
| 1 | Launch Button                    | FS-10 PPC |
| 1 | Plastic Standoff                 | FS-10 PPD |
| 1 | 6 volt Bulb (type 51)            | AL-6      |
| 4 | Self threading screw (#4 x 1/2") | ST-4050   |
| 1 | Safety Key                       | FS-10 SK  |
| 1 | Brass Contact "A"                | FS-10 BCA |
| 1 | Brass Contact "B"                | FS-10 BCB |
| 1 | Decal                            | KD-FS-10  |
| 1 | Lead Wire (#24)                  | LW-24 KE  |
| 2 | Micro Clip (Steel)               | MC-1      |
| 1 | Brass Contact "C"                | FS-10BCC  |
| 1 | Steel Contact                    | BC-3      |
| 1 | Steel Contact                    | BC-3      |
| 1 | Instruction Sheet                | 2653-72   |

WIRING HARNESS

## IMPORTANT!

READ THIS MANUAL BEFORE  
ASSEMBLING YOUR LAUNCHER

## THE SOLAR LAUNCH CONTROLLER

The Solar Launch Controller is designed to ignite all standard 1/4A through D powered single engine rockets. Multi-stage models are also compatible if the booster contains only one engine. This system presents an entirely new launching concept; just four **alkaline** AA type batteries contained in the hand controller provide all of the necessary power to ignite the new Solar igniter. This system eliminates bulky battery packs and their troublesome transportation. Now the entire hand controller and power supply can be carried to and from the launch site in the pocket of a jacket.

### ASSEMBLING THE CONTROLLER

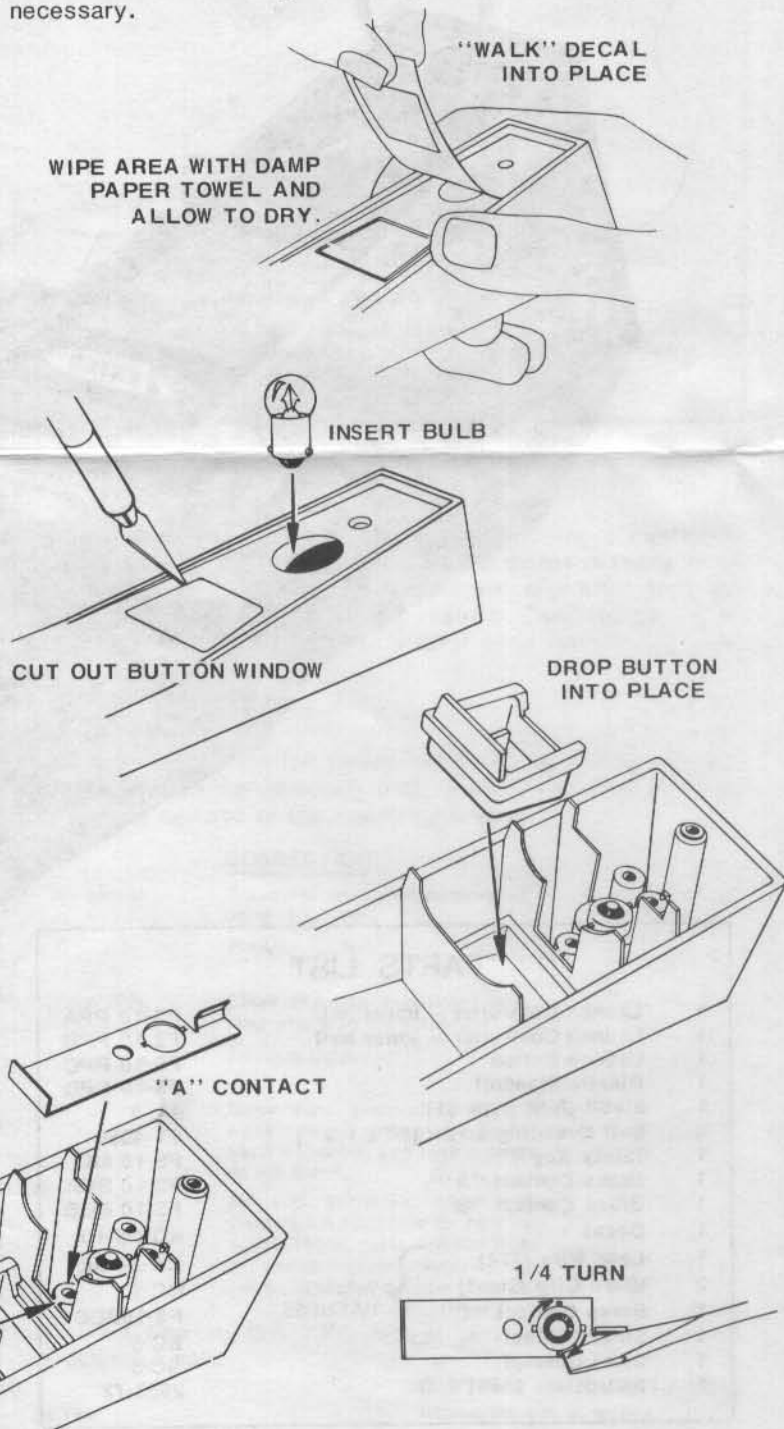
The Solar Launch Controller has been designed to assemble quickly, easily, and accurately. All of the electrical connections have already been soldered for you. The only tools you will require are a screwdriver with a 3/16" wide blade and a hobby knife. Read, then re-read, each step be-

1. Prepare upper controller half for decal by wiping flat area about the button, bulb, and key openings with a damp paper towel and allow to dry.
2. Carefully peel the backing from the mylar decal. If the two circular openings are not thoroughly free, wait until the decal is in place before removing them. Hold the decal between two fingers near the Estes emblem and position the opposite end into place using the plastic "walls" as a guide. Slowly "walk" the remainder of the decal into place. During this process, note carefully the alignment of the holes of the controller and decal. If a miss-match occurs - stop. Pull the decal up and reposition it properly. This can be done several times if needed without damaging the decal. Once the decal is positioned correctly, gently rub it down with a finger. Finally, pop or cut out the launch button window and discard it.
3. Insert the continuity lamp from the decal side of the upper controller half. Orient the two bayonet pins on the lamp so that they pass through the appropriate opening in the lamp well.
4. Drop the launch button into place from the under side of the upper controller half as shown.
5. Position the "A" contact over the lamp base and down onto the plastic framework as illustrated. Use a screwdriver to turn the lamp 1/4 turn, then press down on the lamp base so that the bayonet pins are firm against the brass contact.

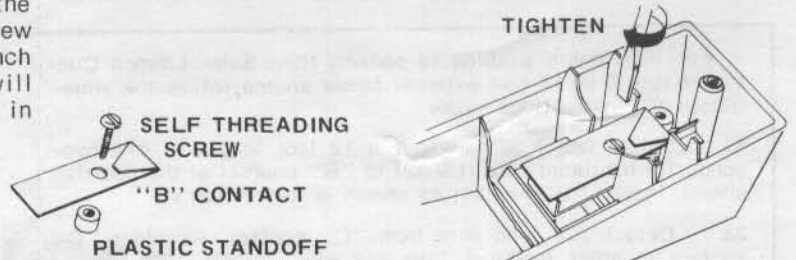
## THE SOLAR IGNITER

The Solar Launch Controller and Solar Igniter are designed to be used together. DO NOT use standard nichrome igniters wire with the Solar launch system. Use ONLY Solar Igniters with the Solar Launch Controller. When ordering igniters specify NWI-2 Solar Igniters.

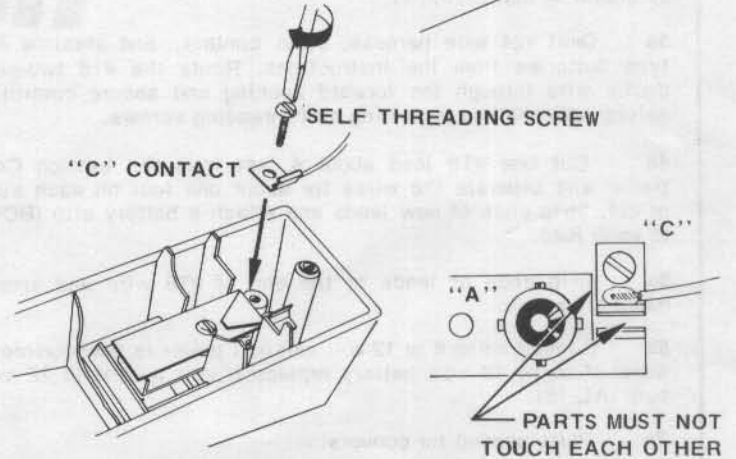
fore proceeding with it. Avoid careless assembly as a careful assembly will insure a highly attractive and reliable unit. Check your controller parts for excess plastic flash. Fine sand or cut away excess plastic with hobby knife if necessary.



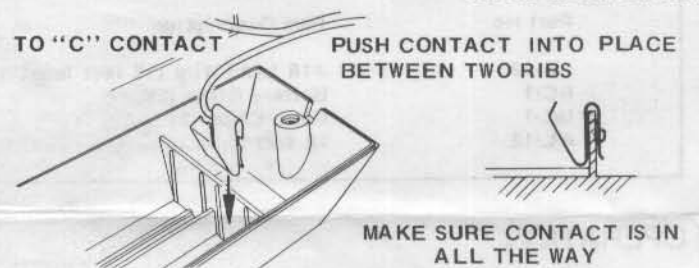
6. Pass one of the self threading screws through the "B" brass contact and plastic standoff as shown. Screw this assembly into the hole between the lamp and launch button. When this has been installed properly, there will be a slight upward bow in the "B" contact as it aids in holding the lamp in place.



7. Install the small "C" brass contact which has been pre-soldered to the wiring harness. Drape the wire over the edge of the controller and secure the contact with one of the self threading screws. **Be sure that a gap exists between the "C" and "A" contacts as shown so these contacts are not allowed to touch. If contacts touch, a short circuit may occur.**



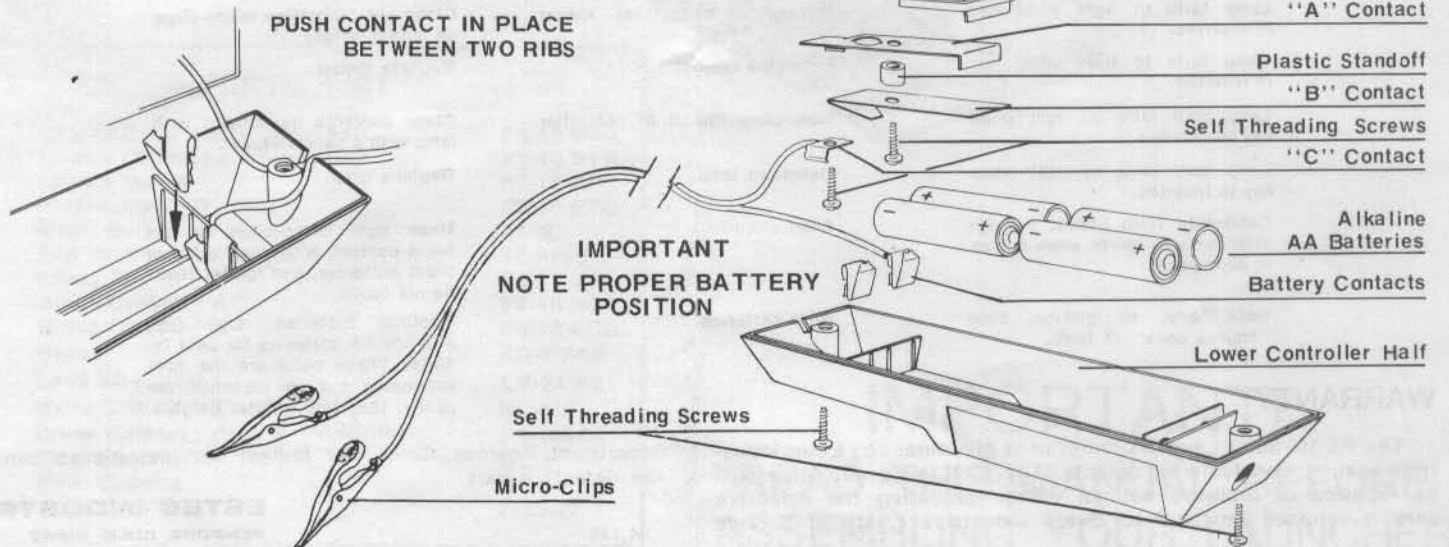
8. Firmly press the steel contact, which is soldered to the wiring harness, into place. Position it in the lower controller half between the two small molded ribs as illustrated.



9. Firmly press the remaining steel contact into place. No wiring will be required for this contact. Once the controller halves are assembled, the "B" brass contact will make contact with the clip and insure proper electrical operation.

Install four **alkaline** AA type batteries as shown, route the twin lead wire through the forward opening, and secure the controller halves with the two remaining self threading screws. Assembly of the Solar Launch Controller is now complete.

PUSH CONTACT IN PLACE BETWEEN TWO RIBS



## EXTERNAL POWER SOURCE CONVERSION

For individuals wishing to convert their Solar Launch Controller to a 6 or 12 volt external power source, follow the illustration and instructions below.

**1a** Solder one lead end from a 12 foot length of #18 two-conductor insulated wire (LW-12) to "B" contact at the position shown. Install "B" contact as shown in instruction #6.

**2a** Detach #24 lead wire from "C" contact. Resolder "C" contact to other lead end from #18 wire. Install "C" contact as shown in instruction #7.

**3a** Omit #24 wire harness, steel contact, and alkaline AA type batteries from the instructions. Route the #18 two-conductor wire through the forward opening and secure controller halves with the two remaining self threading screws.

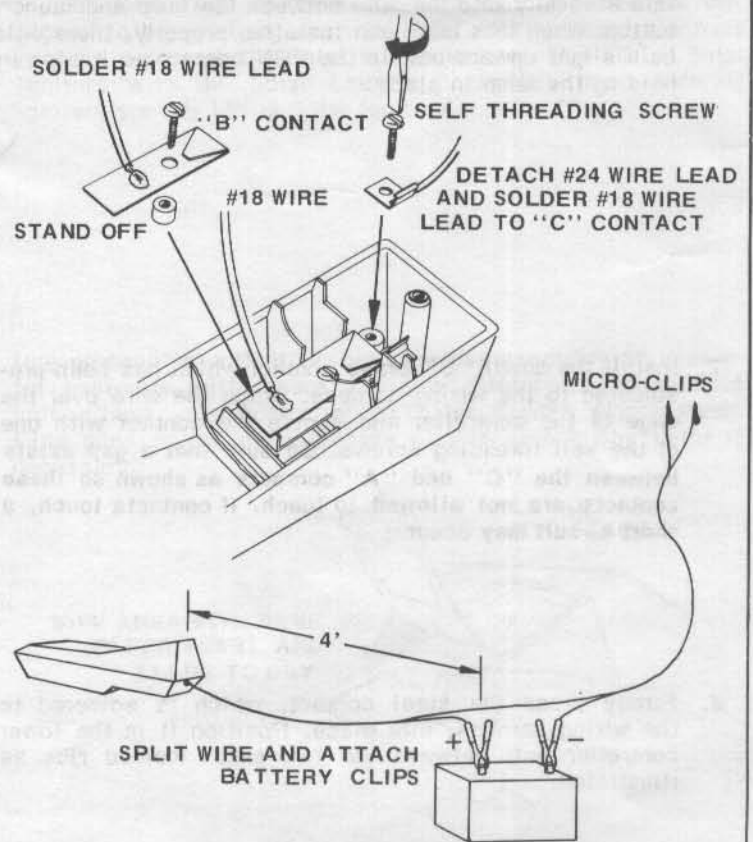
**4a** Cut one #18 lead about 4 feet from the Launch Controller and separate the wires for about one foot on each side of cut. Strip ends of new leads and attach a battery clip (BC-1) to each lead.

**5a** Strip ends of leads at the end of #18 wire and attach micro-clips.

**6a** Conversion to 6 or 12 volt external power is now complete. Note: If using 12-volt battery replace 6 volt bulb with 12 volt bulb (AL-12).

**7a** Parts needed for conversion:

Part No.	Part Description
LW-12	#18 Lead Wire (12 foot length)
BC-1	Battery Clips (2)
MC-1	Micro-Clips (2)
AL-12	12 volt bulb



## OPERATION

Operation of the Solar Launch Controller is quite simple and comparable with other Estes launch systems. Ignition safety features such as the key and continuity lamp are included for full control of the launching sequence. Once the igniter has been installed in the model and the micro-

clips attached, the safety key is inserted for a continuity check. With continuity light glowing, the model is ready to be launched. Always follow the countdown checklist included with each Estes model for best results. Don't forget to remove the safety key immediately after each launch.

## TROUBLE SHOOTING TIPS

General care of the unit is the only maintenance requirement. Avoid dropping the controller on the ground. Soil allowed to enter the unit can cause damage. Disassemble

and clean the controller periodically. If care is exercised, all screws can be removed and reinstalled several times without any damage to the mounting holes.

### PROBLEM

Lamp fails to light when key is inserted.

Lamp fails to light when key is inserted.

Lamp still fails to light when key is inserted.

Lamp still fails to light when key is inserted.

Continuity lamp glows, but igniter fails to ignite when button is depressed.

Weak lamp, no ignition, slow "bounce back" of lamp.

### CAUSE

Incomplete circuit at rocket.

Defective igniter.

Incomplete circuit at controller.

Defective lamp.

Short circuit.

Weak batteries.

### CORRECTION

Clean and reposition micro-clips on igniter leads.

Replace igniter.

Clean contacts associated with lamp with a pencil eraser.

Replace lamp.

Make sure micro-clips do not make contact with each other or blast deflector, and igniter leads do not touch.

Replace batteries. Use only alkaline AA batteries for best results. These cells are the most expensive but in launches per penny, they are a better bargain.

## WARRANTY

The FS-10, Solar Launch Controller is guaranteed by Estes Industries against manufacturing defects. Any part found defective will be repaired or replaced without charge providing the defective part is returned postpaid to Estes Industries Customer Service

Department, Penrose, Colo. For fastest service, please send only the defective part.

**ESTES INDUSTRIES**  
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