

DUNE™

FLYING MODEL ROCKETRY OUTFIT

SKILL LEVEL 1 - Suggested For Beginners



Featuring Easy-To-Assemble

THE GUILD HEIGHLINER

Flying Model Rocket

PLUS:

- COMPLETE LAUNCH CONTROL SYSTEM WITH FUTURISTIC LAUNCH CONTROLLER AND STURDY LAUNCH PAD
- TWO HIGH PERFORMANCE ROCKET ENGINES, SOLAR IGNITERS AND PARACHUTE RECOVERY WADDING

This kit requires assembly. Glue, paint, finishing supplies, and batteries - Not included.

8 or 12 volt lantern battery required for operation.

Recommended for ages 10 to adult. Adult supervision suggested for those under 12 years of age when flying model rockets.



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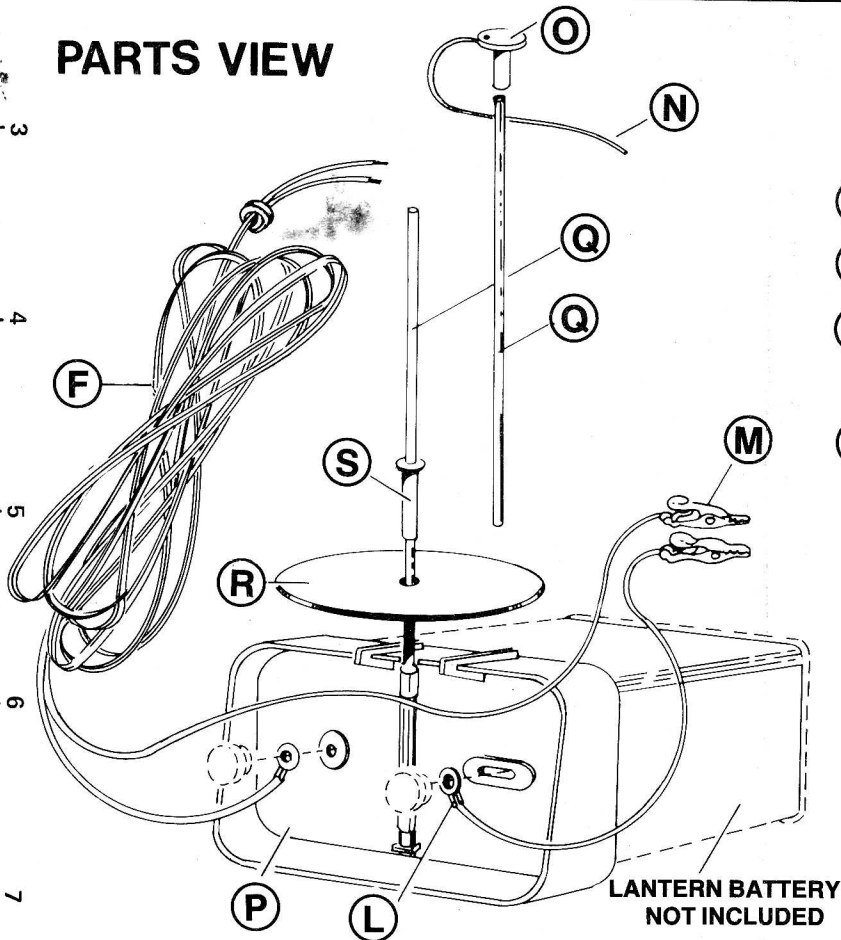
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Flying Model Rocket

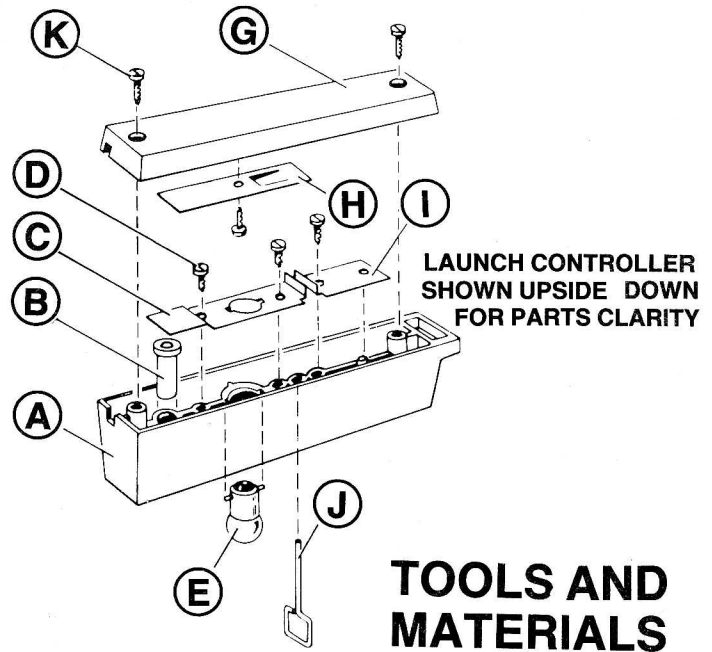
LAUNCH CONTROL SYSTEM

FOR USE WITH 6 VOLT OR 12 VOLT LANTERN TYPE BATTERY AND ESTES SOLAR IGNITERS ONLY. DO NOT LAUNCH ROCKETS GREATER THAN 28 INCHES IN LENGTH OR MORE THAN 4 OUNCES IN WEIGHT FROM THIS LAUNCH PAD. Model Rocketry is recommended for ages 10 to adult. Adult supervision is suggested for those under 12 years of age when flying model rockets.

PARTS VIEW



LANTERN BATTERY NOT INCLUDED



LAUNCH CONTROLLER SHOWN UPSIDE DOWN FOR PARTS CLARITY

TOOLS AND MATERIALS

To assemble and test the launch system you will need the following tools and materials:

1. Small, or medium size, screwdriver
2. Sharp model knife
3. Pliers
4. Scissors
5. Masking tape, 1/2 inch wide
6. 6 volt, or a 12 volt, heavy-duty lantern battery (See "Battery Power")

BEFORE YOU START

Read all instructions before beginning construction on your model. Make sure you have all parts and materials. When you are thoroughly familiar with the assembly procedure, begin construction. Check off each step as you complete it.

BATTERY POWER

For your safety, all model rocket engines are ignited electrically. Your Estes Launch System is designed to use either a 6 volt or a 12 volt heavy-duty lantern battery.

Use only a 6 volt or a 12 volt lantern battery with screw-on type battery knobs.

RECOMMENDED BATTERIES

6 VOLT

Eveready #731
Ray-O-Vac #918
Burgess #TW-1
RCA #VS317
NEDA #918

12 VOLT

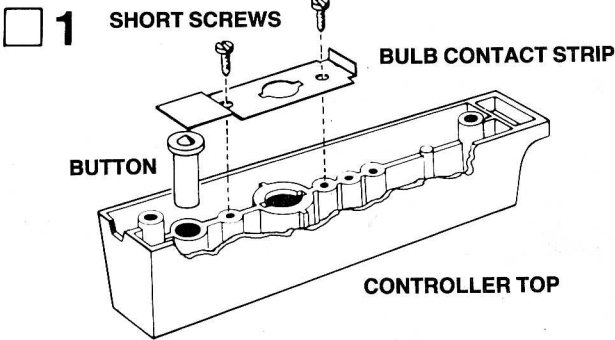
Eveready #732
Ray-O-Vac #926
Burgess #TW-2
RCA #VS342
NEDA #926

PARTS LIST

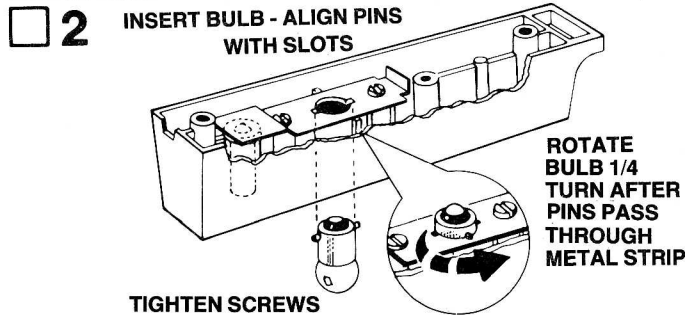
PART NO.

A	1	Launch Controller Top (type PRP-1B)	32494
B	1	Launch Button (type PRP-1A)	32494
C	1	Bulb Contact Strip (type FSS-4D)	38065
D	4	Short Screws (type M297) 1/4"	45139
E	1	Arming Check Light Bulb (type AL-12)	38021
F	1	17 Foot Launch Wire (#24-2)	85212
G	1	Launch Controller Bottom (type PRP-1C)	32494
H	1	Lower Contact Strip (type FSS-4E)	38066
I	1	Key Contact Strip (type FSS-4F)	38067
J	1	Safety Interlock Key (type FSK-10)	38101
K	2	Long Screws (type ST-4050) 1/2"	45126
L	2	Terminal Lugs (type TL-1)	38151
M	2	Micro-Clips (type MC-1)	38121
N	1	Safety Key Cord (type SC-4B) 9"	85750
O	1	Rod Safety Cap (type PRP-1F)	32494
P	1	Launch Pad Base (type PRP-1D)	32494
Q	1	2-Piece Launch Rod (type RLR-1)	87080
R	1	Blast Deflector (type BD-3)	38034
S	1	Rocket Support Stand-Off (type PRP-1E)	32494

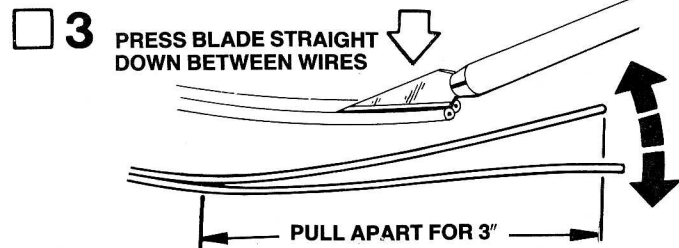
ASSEMBLY INSTRUCTIONS



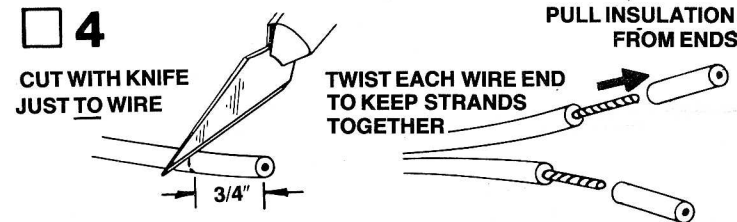
Insert launch button (part B) into launch controller top (part A). Position "bulb contact strip" (part C) as shown. Start two short screws (part D) into the controller holes.
DO NOT TIGHTEN SCREWS UNTIL STEP 2.



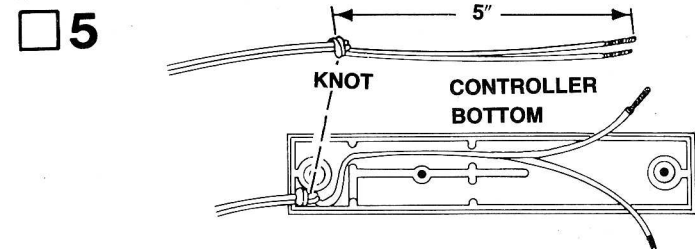
Push the light bulb (part E) BASE END FIRST into controller top. Align the small bulb pins with slots in the controller and in the metal strip. Push bulb pins past the metal strip. Rotate the bulb 1/4 turn to keep it from falling out. Tighten screws for a firm fit.
DO NOT OVERTIGHTEN SCREWS.



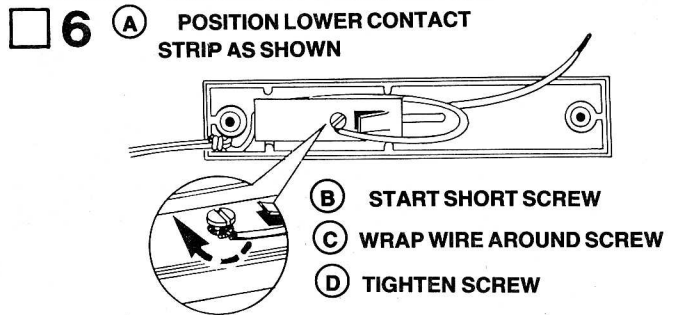
Separate the two halves of the launch wire (part F) at one end. Lay wire end flat on a table top. Push a knife blade down between the two plastic sections. Work carefully to avoid damaging the wires. Pull the two wires gently apart for a distance of about 3 inches.



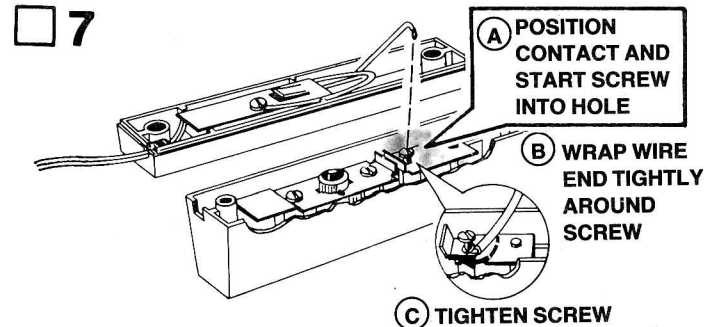
Strip off (remove) 3/4" of plastic insulation from both of the wire ends. To strip insulation, LIGHTLY cut into the plastic. Rotate (roll) the wire as you cut. Cut just through the insulation all around. DO NOT cut into the wire. Pull firmly on end of insulation to pull it off from your knife cut. Twist each stripped end to keep the many thin wires together.



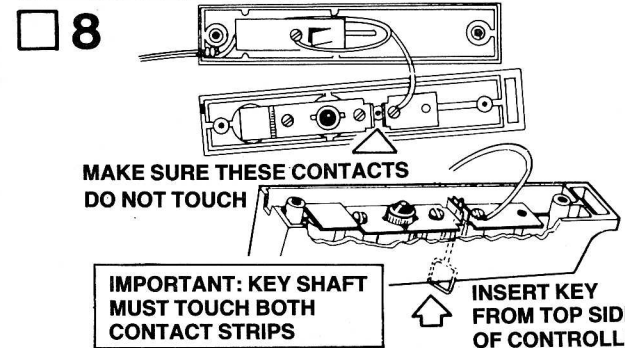
Tie a knot in the wire about 5 inches from stripped ends. Lay the wire into controller bottom (part G). Route it around the plastic center rib as shown.



Position "lower contact strip" (part H) in controller bottom. The raised cut-out in the strip should be TOWARDS the center of the controller. Start a short screw into hole, but no more than halfway. Wrap one wire end (either wire end) tightly around the screw in a clockwise direction. Tighten screw.

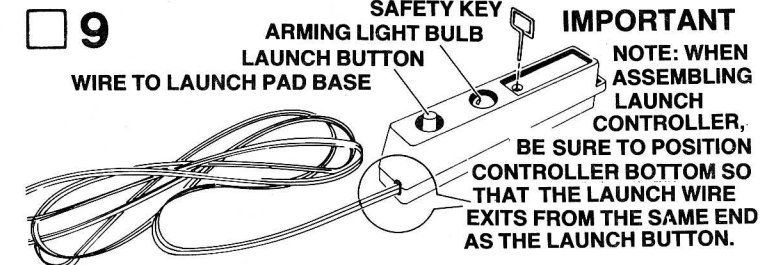


Position "key contact strip" (part I) in controller top. Start remaining short screw into hole, but no more than halfway. Loop other wire end tightly around screw in a clockwise direction. Tighten screw firmly to hold wire and contact in place.



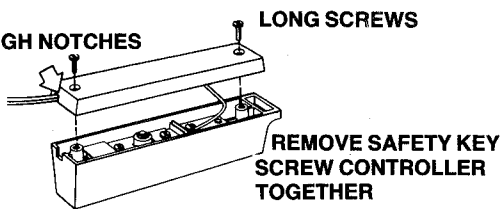
Check to be sure safety key (part J) will operate correctly. Look closely to make sure the two contact strips in controller top DO NOT touch. Insert safety key from top side of controller. Check to be sure it touches BOTH contact strips.

If key doesn't touch both contact strips, check all other parts of controller for correct fit. If everything else checks out OK, then carefully bend the contacts until they will both touch the key, but NOT each other.



Place controller halves together. (Remove safety key if it is still in place.) Check all wiring inside controller. It should run neatly beside contact strips, and NOT cover end of light bulb.

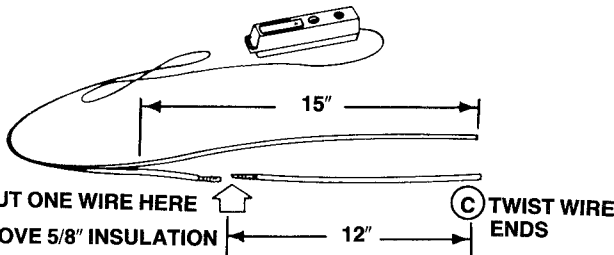
LAUNCH WIRE MUST PASS THROUGH NOTCHES



Insert two long screws (part K) to hold controller together. Be sure that launch wire passes through notches at front of controller. Tighten screws for a firm fit.

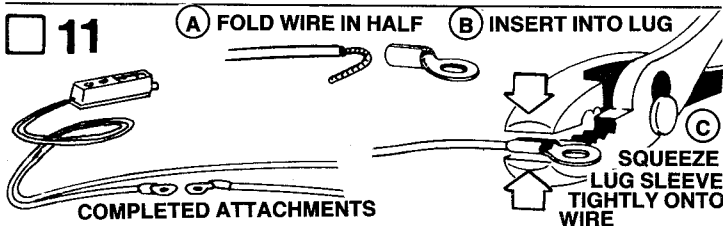
DO NOT OVERTIGHTEN SCREWS.

10



Separate wire halves at end of launch wire for a distance of 15 inches. Cut ONE wire 12 inches from the end. Strip 5/8" plastic insulation from both ends of 12 inch cut. Twist wire ends to hold the thin wires together.

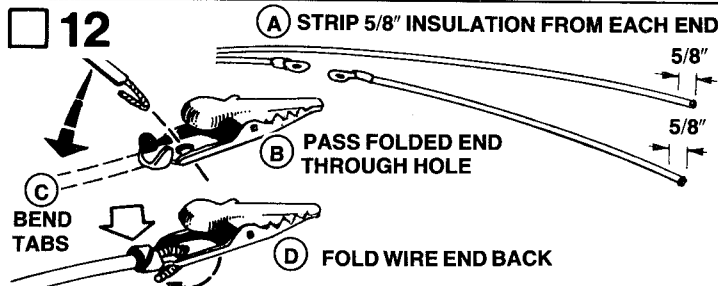
11



Fold one twisted wire end in half. Push wire into terminal lug (part L). Squeeze lug sleeve TIGHTLY on wire with pliers. Pull gently on wire to make sure lug is securely attached. Attach second terminal lug to other wire end in same manner.

For best results and most permanent connection, we recommend soldering the wires to terminal lugs.

12

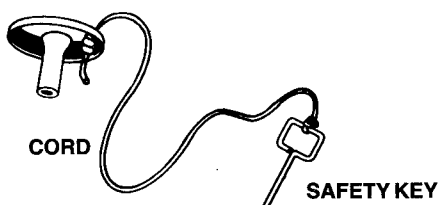


Strip off (remove) 5/8" plastic insulation from wire ends. Twist the bare wire ends, then fold in half.

Attach micro-clips (part M) to ends of launch wires. Push wire end through small hole in bottom of micro-clip. Lay wire back along clip bottom so the plastic insulation is just BEHIND the micro-clip tabs. Use pliers to bend tabs (one-at-a-time) down TIGHTLY onto wire. (Stick through hole) back along bottom of micro-clip.

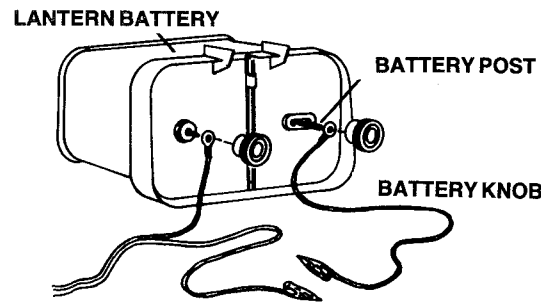
For best results and most permanent connections, solder the launch wires to the micro-clips.

13 SAFETY CAP



Tie safety key cord (part N) to rod safety cap (part O) and safety key as shown.

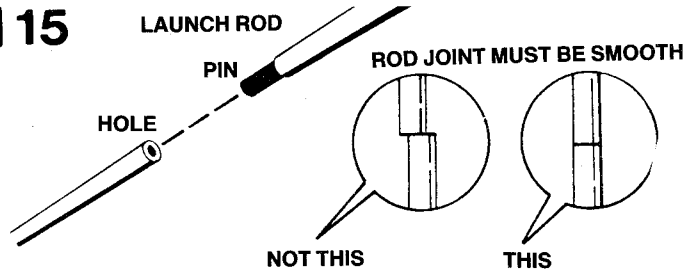
14



Place launch pad base (part P) on end of your 6 volt or 12 volt lantern battery. Place terminal lugs over battery posts as shown. Screw on battery knobs which came with your battery.

If you are using a 12 volt battery, notice that the battery posts will fit through pad base openings only when the battery is turned correct way on backside of pad base.

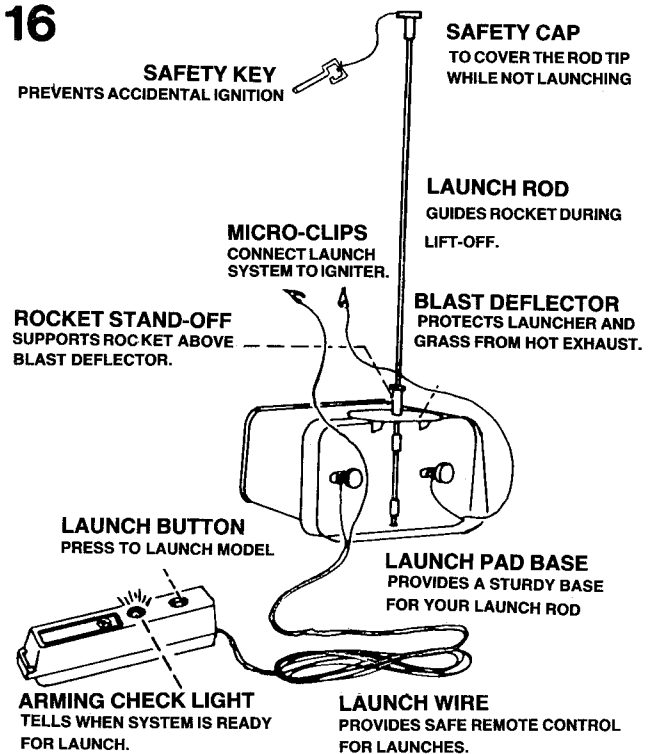
15



Join the launch rod sections (part Q). Insert rod section with pin end into hole end of other rod section. Tap assembled sections lightly on concrete floor to firmly join them.

Check to be sure the rod sections match smoothly at joint. Rotate one rod, if necessary, for a smooth joint.

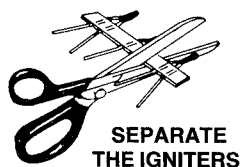
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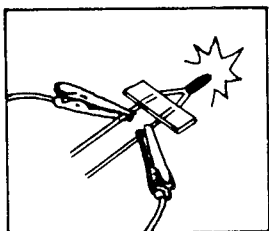
Mount launch rod on launch pad base. Slide either rod end through both loops on pad base. Slide metal blast deflector (part R) down launch rod so it rests on pad base supports. Slip rocket stand-off (part S) onto rod as shown. Place safety cap on end of launch rod.

IMPORTANT:
ALWAYS CAP LAUNCH ROD END WHEN NOT LAUNCHING ROCKETS!

TESTING THE SYSTEM



SEPARATE THE IGNITERS



Take your launch system OUTSIDE to perform a "systems check".

1. Cut tape between engine igniters to separate them.
2. **REMOVE SAFETY KEY FROM LAUNCH CONTROLLER.**
3. Connect micro-clips to igniter wires. Position clips next to igniter-tape as shown. SUPPORT CLIPS AND IGNITER SO THEY DO NOT TOUCH ANYTHING! Hold igniter by paper strip when attaching micro-clips, or when performing the "systems check".
4. Insert safety key FIRMLY into launch controller. The arming light bulb should now glow. Press launch button. The igniter should flash! At the same time, the arming light should go out.

If the system does not function correctly, check the battery and the wiring until you find the problem and correct it. Refer also to the Trouble Shooting Checklist below.



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MISFIRE PROCEDURE

Occasionally the igniter will heat and burn into two pieces without igniting the engine. This is almost always caused by a failure to install it correctly. **REMOVE SAFETY KEY** from launch controller and **wait one minute.** Remove the model, clean the igniter residue from the engine nozzle, and install a new igniter. Repeat the Countdown Checklist.

RECOVERY PROCEDURE

Remove used engine after each flight. "Spring" engine hook aside and pull out engine from rocket. Inspect rocket model to be sure everything is in order. Follow Rocket Preflight and Rocket Countdown for each launch.

RELAUNCH COMPONENTS

You will need the following items for additional launches of your model rocket:

1. Estes model rocket engines as recommended in the rocket assembly instructions.
2. Estes Solar Igniters (part no. 2301).
3. Estes Flameproof Recovery Wadding (part no. 2274).

These launch accessories are available from your local Estes hobby retailer.

CAUTION — WARNING

Be sure to follow the *HIAA-NAR Model Rocketry Safety Code when launching your model rockets.

*HIAA - Hobby Industry Association of America
 NAR - National Association of Rocketry

For your safety DO NOT alter, dismantle, or unwrap model rocket engines or their ingredients in any way. Soak unwanted engines in water to destroy.

TROUBLE SHOOTING CHECKLIST

ALWAYS REMOVE SAFETY KEY FROM LAUNCH CONTROLLER BEFORE APPROACHING LAUNCH PAD!

PROBLEM	USUALLY CAUSED BY	CORRECTION
Arming check light does not glow at all when key is inserted.	Dead battery, Bad micro-clip or terminal lug connections. Bad connections inside controller. Bulb burned out. Damaged igniter.	Check battery. Clean micro-clips. Check terminal lugs. Check all wiring against assembly instructions. Replace bulb with #53 12 volt bulb only. Try fresh igniter.
Arming check light glows weakly and/or flickers slightly. Igniter does not flash.	Bad connections - probably micro-clips.	Clean and reattach micro-clips. Check terminal lugs. Check all other connections.
Arming check light glows, but igniter does not flash at all.	Micro-clips or igniter wires are touching each other.	Make sure micro-clips do not touch each other, or launch rod, or blast deflector. Check wiring in controller.
Igniter flashes as soon as clips are connected to it, even with safety key out.	Short circuit in controller.	Re-wire controller carefully, following assembly instructions.
Igniter flashes when safety key is inserted without pressing launch button.	Controller contact strips bent; loose wire pieces inside controller.	Straighten controller contact strips. Clean out inside of controller.
Arming check light glows when key is not in place.	Safety key contacts are touching.	Bend contacts so connection can be made only by the safety key.
Launch button depressed, but engine does not ignite.	Safety key not completely inserted.	Push key firmly into controller until it stops.
	One or both micro-clips pulled loose from igniter ends.	Attach micro-clips securely to igniter ends.
	Micro-clips touching each other.	Move micro-clips apart.
	Both micro-clips touching metal blast deflector.	Move micro-clips away from blast deflector.
	Poor contact between micro-clips and igniter ends.	Clean flat contact surfaces on micro-clips.
	Broken or damaged igniter.	Replace with fresh igniter and repeat "Rocket Countdown".
	Weak or dead battery.	Replace with fresh 6 volt or 12 volt heavy-duty lantern battery.
Igniter burned, but did not ignite engine.	Dirt or foreign material between battery posts and terminal lugs.	Clean battery posts and terminal lugs.
	Igniter pulled away from engine nozzle.	Replace with fresh igniter and repeat "Rocket Countdown".
Parachute is scorched or melted by hot ejection gases.	Not enough recovery wadding used.	Refer to "Rocket Preflight" instructions for correct number of wadding squares to be used for each flight.
Parachute does not eject completely from rocket body during flight.	Too much recovery wadding used or packed too tightly into rocket body.	Use correct number of wadding squares as directed in "Rocket Preflight" instructions. Pack wadding more loosely into rocket body.
	Shroud lines or shock cord caught between nose cone and rocket body when inserting nose cone.	Repack parachute, shroud lines, and shock cord carefully into rocket body.
Nose cone fails to separate from rocket during flight.	Nose cone fit into body is too tight.	Nose cone should separate easily from rocket body, but not be extremely loose. If fit is too tight, sand inside of body end and shoulder of nose cone with fine sandpaper.

DUNE

FLYING MODEL ROCKETRY OUTFIT

SKILL LEVEL: 1 - Beginner

Featuring Easy-To-Assemble THE GUILD HEIGHLINER Flying Model Rocket

- EASY TO ASSEMBLE, CONTROLLED AND HIGH PERFORMANCE
- TWO HIGH PERFORMANCE ROCKET ENGINES, RECOVER AND PARACHUTE RECOVERY WADDING

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ESTES Flying Model Rocket

LAUNCH CONTROL SYSTEM

FOR YOUR MODEL OF ALL LAUNCHER AND BATTERY AND ESTES GUILD HEIGHLINER. SEE THE FACTS ABOVE FOR THE FULL RANGE OF LAUNCHER AND BATTERY MODELS. THIS LAUNCH CONTROL SYSTEM IS THE ONLY ONE OF ITS KIND. IT IS THE ONLY ONE OF ITS KIND. IT IS THE ONLY ONE OF ITS KIND.

PARTS VIEW

BEFORE YOU START

BATTERY POWER

The Alpha - Mini-Kit of Model Rocketry

DUNE THE GUILD HEIGHLINER

ESTES

Model Rocket Engine Instructions



Discover Model Rocketry

FULL COLOR PLUS! FULL ROCKETry GUIDE!

ASK FOR ONE TODAY!

Discover all the exciting things you can do with model rockets! The all-in-one guide to everything you need to know to get started in rocketry. Includes: rocketry 101, launching, building, recovery, and more. Includes: launch pads, launch tubes, and more. Includes: launch tubes, launch pads, and more. Includes: launch tubes, launch pads, and more. Includes: launch tubes, launch pads, and more.

Ask your local Estes retailer for one today!



ESTES

Model Rocket Recover Wadding

PK 86112

Includes: 100 pieces of green foam wadding for model rocket recovery.