ESTES
A SUBSIDIARY OF DAMON

Ready to Launch

T.M.

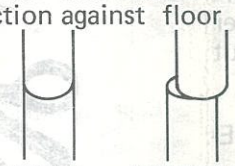
Flying Model Rocketry Starter Outfit

Model Rocketry is recommended for ages 10 to adult. Adult supervision is suggested for those under 12 years of age when flying model rockets.

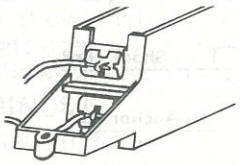
ASSEMBLING THE LAUNCHER

NOTE: Requires only four "AA" Alkaline Energizer batteries to become completely operational. Follow the assembly instructions carefully! USE ONLY ESTES SOLAR IGNITERS WITH THIS LAUNCH SYSTEM!

1. Remove all tape from rod ends. Join the two launch rod sections. Tap bottom of lower rod section against floor or hard surface until sections are firmly together. Check to be sure the rod halves match smoothly at the joint. If necessary, rotate one of the rods until it lines up exactly with the other rod.



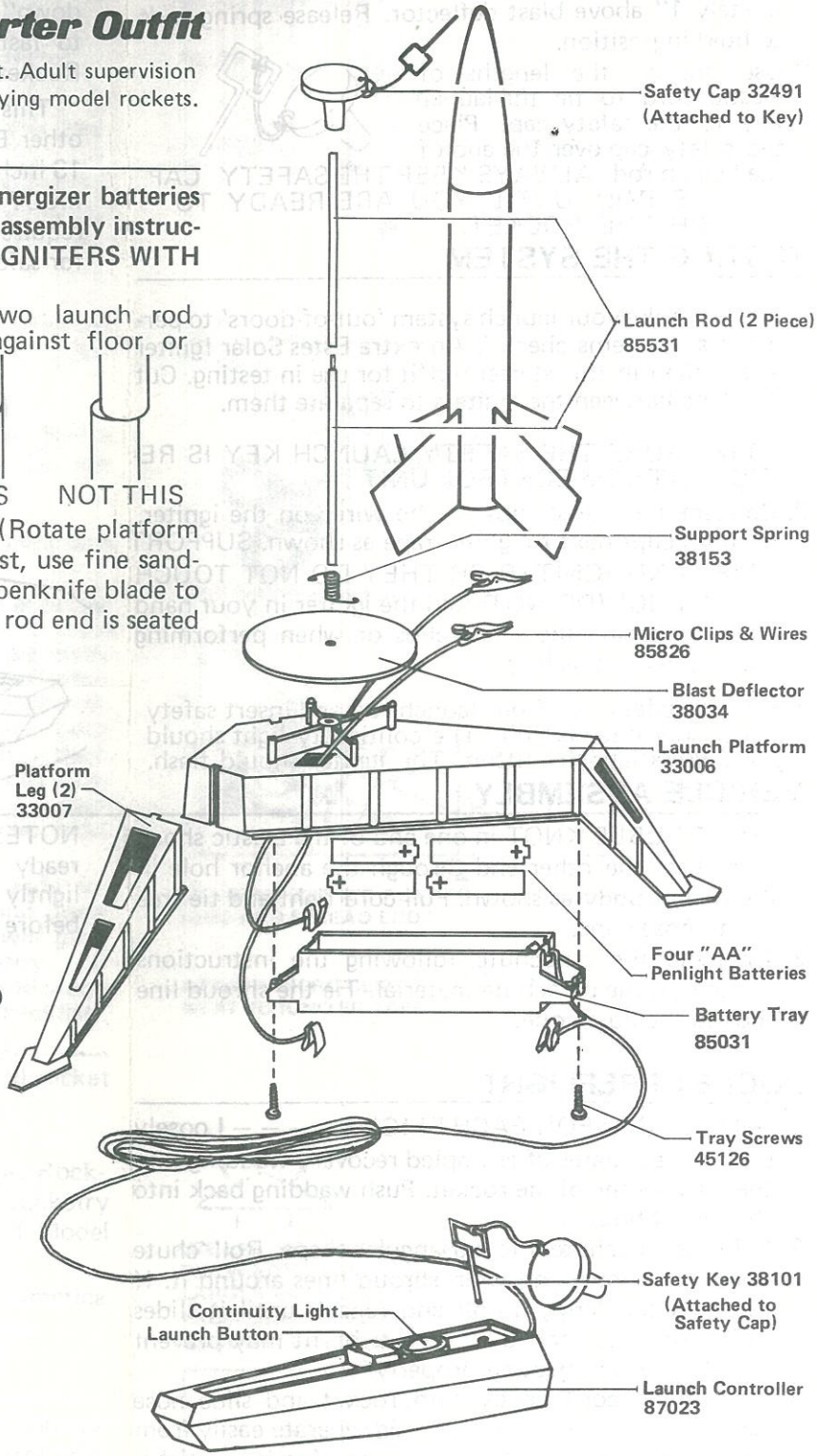
2. Push launch rod into socket on platform. (Rotate platform while inserting rod.) If fit is too tight at first, use fine sandpaper to sand round the rod end, or use a penknife blade to enlarge the socket opening slightly. Be sure rod end is seated at least 1/4" into socket.
3. Install both micro-clip wire leads in <u>one</u> end of the plastic battery tray. Slip one metal battery terminal onto the top of the tray end as shown. Push it into place as far as it will go. Slip the other micro-clip battery terminal onto the bottom of the tray. Following the same procedure, install both launch cord battery terminals onto the opposite end of the battery tray.



IMPORTANT:
INSTALL BOTH MICRO CLIP WIRES IN SAME END OF TRAY.

4. Insert four "AA" Alkaline Energizer batteries into the battery tray. Position batteries EXACTLY AS SHOWN on tray diagram, otherwise launcher will not operate. Check to be sure that the two lower battery terminals have not moved out of position. If necessary, use a screwdriver end to push the terminal back into the battery tray.
5. Pass the micro-clip wires through openings in platform. Using a standard screwdriver, secure the battery tray beneath the launch platform. DO NOT OVERTIGHTEN the two tray screws.

IMPORTANT!
READ THIS MANUAL BEFORE LAUNCHING YOUR MODEL ROCKET.



Starter Outfit #0701

6. Use a sharp knife to carefully trim away any excess plastic from the leg ends which may prevent legs from fitting into launch platform. Slip legs into launch platform.
7. Slide blast deflector onto launch rod. Slip rocket support spring onto top of launch rod. Push spring ends toward each other to expand spring opening. It will now slide easily along rod. Position spring approximately 1" above blast deflector. Release spring ends to hold in position.
8. Use one of the lengths of elastic cord to tie the launch key to the safety cap. Place the safety cap over the end of the launch rod. ALWAYS KEEP THE SAFETY CAP ON THE ROD UNTIL YOU ARE READY TO LAUNCH THE ROCKET.

TESTING THE SYSTEM

Take your launch system 'out-of-doors' to perform a "systems check". An extra Estes Solar Igniter is supplied in this starter outfit for use in testing. Cut the tape between the igniters to separate them.

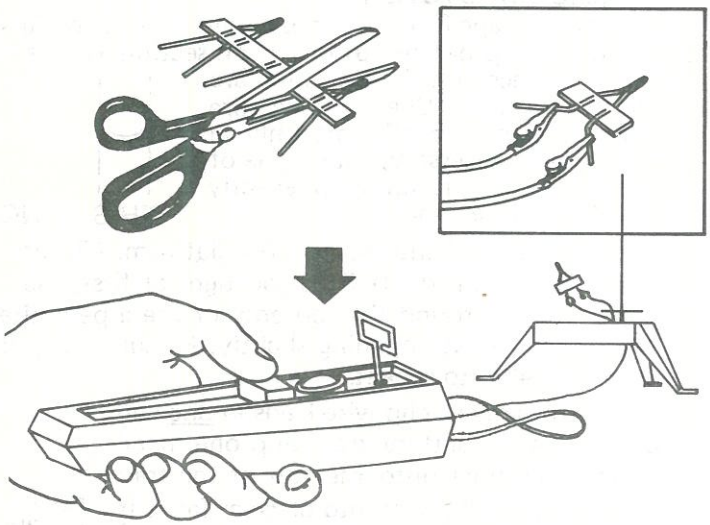
1. MAKE SURE THE SAFETY LAUNCH KEY IS REMOVED FROM CONTROL UNIT.
2. Connect the micro-clips to the wires on the igniter. Position clips next to igniter-tape as shown. SUPPORT CLIPS AND IGNITER SO THEY DO NOT TOUCH ANYTHING! (DO NOT hold the igniter in your hand when attaching the micro-clips or when performing the "systems check".)
3. Remove safety cap from launch rod and insert safety launch key into its hole. The continuity light should glow. Press launch button. The igniter should flash.

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

IMPORTANT - IMPORTANT - IMPORTANT

The launch platform should be firmly anchored to avoid tipping over when launching on windy days, or when launching other Estes model rockets. Leg "Hold-down" stakes made from coat hanger wire should be used to fasten each platform foot-pad to the ground. (See Rocket Countdown illustration.)

This rocket starter outfit may also be used to launch other Estes model rockets. Rockets that are longer than 13 inches, or that weigh more than 2 ounces with engine MUST NOT be flown from this launcher. Larger rockets require a longer launch rod and a larger launching pad for safety and proper lift-off guidance.



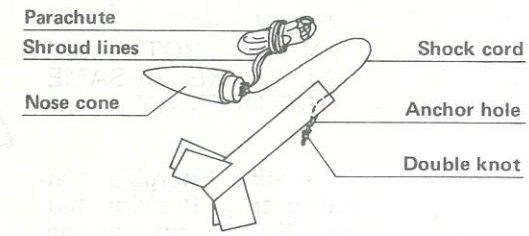
VEHICLE ASSEMBLY

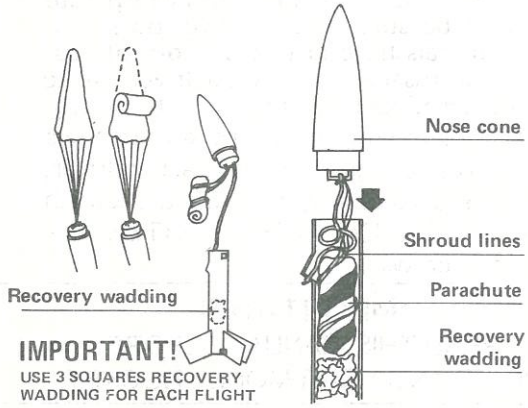
1. Tie a DOUBLE KNOT in one end of the elastic shock cord. Pass the other end through the anchor hole in the rocket body as shown. Pull cord tight and tie free end to nose cone.
2. Assemble the parachute following the instructions printed on the parachute material. Tie the shroud line ends to the nose cone.

ROCKET PREFLIGHT

1. IMPORTANT: FOR EACH FLIGHT – – – – Loosely pack three squares of crumpled recovery wadding into the forward end of the rocket. Push wadding back into the rocket body.
2. Fold the parachute into a triangular shape. Roll 'chute tightly as shown and wrap shroud lines around it. If 'chute is too large, unroll and repack until it slides easily into the rocket. A very tight fit may prevent parachute from ejecting properly.
3. Pack shock cord neatly into rocket and slide nose cone into place. Nose cone should separate easily from rocket, but not be extremely loose. If it is too tight, sand inside of rocket body end and shoulder of nose cone with very fine sandpaper. If nose cone is too loose, add a wrapping of transparent tape to the shoulder of the nose cone.

NOTE: Do not pack parachute until you are actually ready to launch. For maximum opening reliability, lightly dust the 'chute with ordinary talcum powder before each flight, especially in colder weather.





ROCKET COUNTDOWN

T-MINUS 11 Use an Estes A3-4T Mini-Engine for launching your Vampire rocket.

T-MINUS 10 Push plastic lock ring firmly onto nozzle end of engine. Insert engine into rear of rocket. Locate lock ring tabs into matching rocket body slots. Use engine lock tool to turn ring CLOCKWISE 1/4 turn, or until it stops. DO NOT FORCE OR OVERTIGHTEN.

T-MINUS 9 [9A] Cut tape to separate igniters. Do not remove tape from individual igniters.

[9B] Insert coated end of igniter into engine nozzle as far as possible. (Igniter end must touch propellant at bottom of nozzle opening.)

[9C] Bend igniter wires flat to the lock ring while keeping igniter firmly to bottom of engine nozzle.

[9D] Secure igniter with tape disc. Spring ends of igniter about 1" apart. Do not disturb tape on igniter.

For additional launches, use a short strip of masking tape to secure igniter.

T-MINUS 8 Make sure the launch key is still attached to the safety cap on the end of the launch rod. It must never be inserted into the controller until you are ready to launch. Position support spring above blast deflector. Remove safety cap and slide rocket onto launch rod. IMPORTANT: Launch rod must pass through both rocket launch lugs. Replace safety cap on rod. Attach micro-clips to igniter ends. (Attach micro-clips as close to igniter tape as possible). Clips must not touch each other or metal blast deflector. Be sure micro-clip wires do not snag on rockets fins.

T-MINUS 7 Alert all personnel that rocket is ready for launch. Remove safety cap from launch rod and insert launch key into controller. Continuity light will glow to show that system is now "Armed and Ready". (If light does not come on, remove key from controller and follow procedures from Trouble Shooting Checklist).

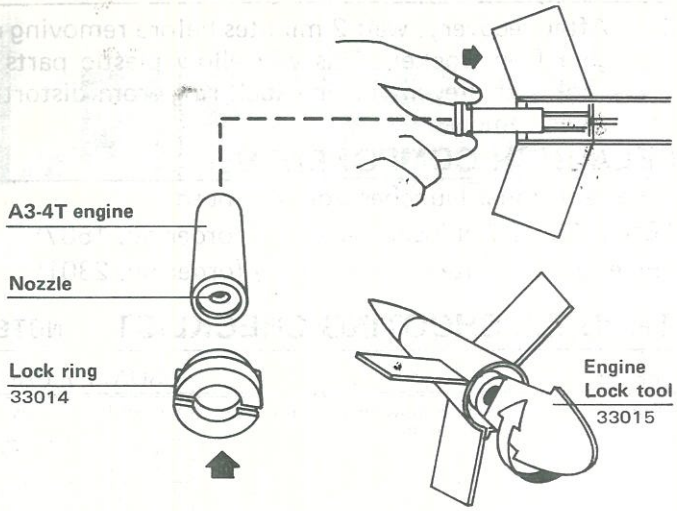
T-MINUS 6 Give brief countdown: **5-4-3-2-1**..... IGNITION! Press launch button and HOLD until rocket engine ignites and rocket lifts-off.

NOTE: Be sure to follow the *HIAA-NAR Model Rocketry Safety Code when carrying out your model rocketry activities. (See page 8 of "The Alpha Book of Model Rocketry".)

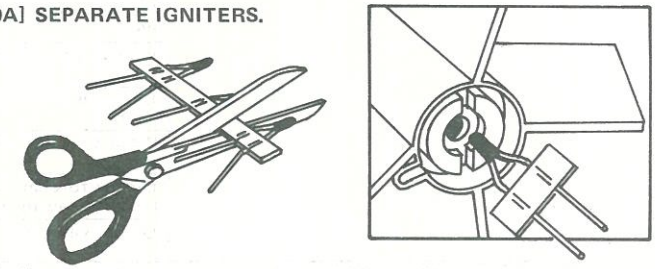
*HIAA-NAR - Hobby Industry Association of America
National Association of Rocketry

MISFIRE PROCEDURE

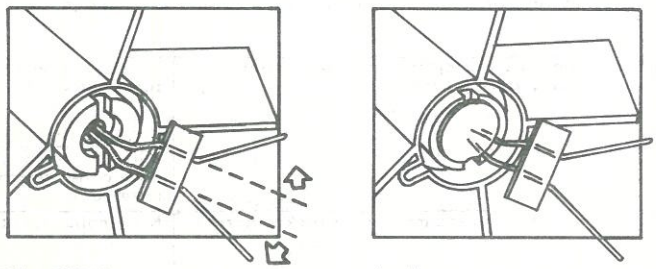
If engine does not ignite, wait one minute before approaching rocket. Remove launch key from control unit, disconnect micro-clips, and slide rocket off the launch rod. Rotate engine lock ring COUNTER-CLOCKWISE to remove engine from rocket. Discard igniter and repeat "Rocket Countdown".



[9A] SEPARATE IGNITERS.



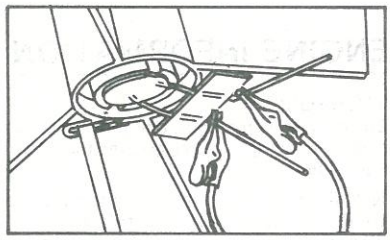
[9B] IGNITER END INTO NOZZLE AND AGAINST PROPELLANT.



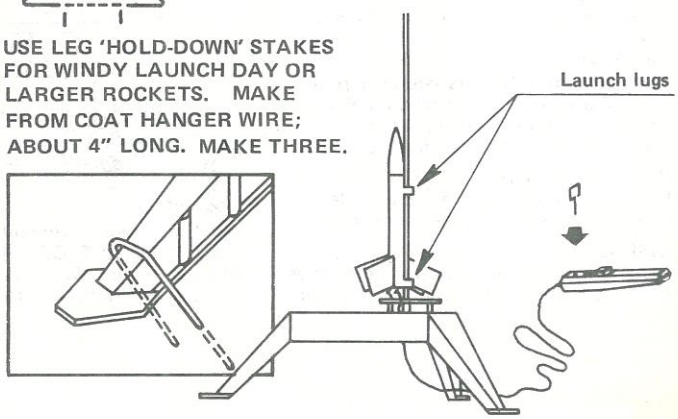
[9C] BEND IGNITER FLAT TO RING AND SPREAD ENDS.

[9D] SECURE WITH TAPE DISC OR MASKING TAPE.

ATTACH MICRO-CLIPS NEXT TO IGNITER TAPE.



USE LEG 'HOLD-DOWN' STAKES FOR WINDY LAUNCH DAY OR LARGER ROCKETS. MAKE FROM COAT HANGER WIRE; ABOUT 4" LONG. MAKE THREE.



RECOVERY PROCEDURE

1. After recovery, wait 2 minutes before removing engine from rocket. This will allow plastic parts to cool and prevent engine lock ring from distorting when removed.
2. Clean flat jaws of micro-clips frequently to insure good contact with igniter. (An emery board, nail file, or sandpaper works well.)

RELAUNCH COMPONENTS

For addtional launches you will need:

*Estes A3-4T Mini-Engines - - - - - (order no. 1507)

*Estes Solar Igniters - - - - - - - - - - (order no. 2301)

*Estes Flameproof Recovery Wadding - (order no. 2274)

*All these products are available from your local Estes hobby retailer.

TROUBLE SHOOTING CHECKLIST

NOTE: REMOVE SAFETY KEY BEFORE APPROACHING LAUNCH PAD

PROBLEM	USUALLY CAUSED BY	CORRECTION
Continuity light fails to glow or launch button depressed and no ignition occurs.	Safety launch key not completely inserted.	Push key firmly into control unit 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 as described in "Recovery Procedure".
	Broken or damaged igniter.	Replace with fresh igniter and repeat "Rocket Countdown".
	Batteries positioned incorrectly in battery tray.	Position batteries exactly as shown on battery tray diagram.
	Weak or dead batteries.	Replace with fresh Alkaline "AA" penlight batteries only.
	Dirt or foreign material between batteries and battery tray terminals.	Clean battery ends and battery tray terminals.
	Defective bulb	Replace
Igniter burned, but did not ignite engine.	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.
Nose cone falls off during flight before parachute ejection.	Nose cone fit into body is too loose.	Add wrapping of scotch tape to shoulder of nose cone.

ENGINE INFORMATION

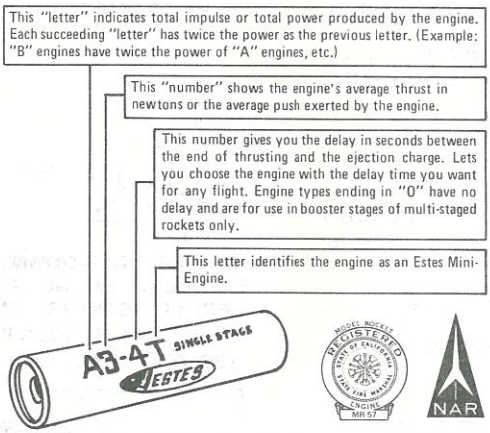
STORAGE:
Store engines in a cool, dry place. Never expose to temperatures greater than 150° Fahrenheit.

NOTE: Due to use, storage, and other conditions beyond our control, no warranty is either made or implied as to the performance or reliability of these engines.

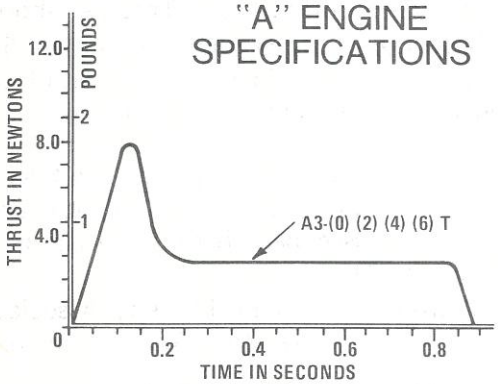
FIRST AID:
For minor burns use first-aid burn ointment. For severe burns consult a physician. In case propellant is swallowed, induce vomiting and call a physician.

IN CASE OF FIRE:
Extinguish fires near or among model rocket engines in a normal manner.

DISPOSAL:
Damaged, defective, or unwanted engines should be destroyed by soaking in water.



All Estes Model Rocket Engines are "SAFETY AND CONTEST CERTIFIED" by the National Association of Rocketry and comply with the codes of the National Fire Protection Association.



Engine Type	Total Impulse		Average Thrust		Propellant Weight Oz.
	Pound-seconds	Newton-seconds	Pounds	Newtons	
A	0.56	2.50	0.65	2.98	0.124

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