FIRST ESTES INDUSTRIES CATALOG

The first product offering (catalog) to be sent to the mail order customers of Estes Industries was the listing of four motors on the back of the rocket motor instruction sheet. In early 1960 these four motors were the entire consumer product line of the company. Although the first run of these instructions was done by a Denver printer, all subsequent runs were mimeographed using an electronic stenciling process.

The initial ads for the sale of motors appeared in the classified section of Popular Mechanics and Popular Science magazines. Our response at the time was three motors packaged in a mailing tube with Jetex ignition material and the instruction/catalog reorder sheet (top sheet).

After receiving a good response from the classified ads, an 8 page booklet was printed and provided the rocketeer with the plans for three (3) rockets; the Arrow-C, Sky Bird and Orange Bullet. The first parts "catalog" printed (mimeographed) in mid 1960 included parts for these rockets along with a few other items (sheet two). In mid 1960, the combination of the rocket motor instruction sheet (with motor listing) and the parts sheet listing was the `catalog` of the day for the model rocketeers of America.

At that time Estes Industries had developed its equipment for making engines, a machine affectionately called `Mable`, and was in the process of developing a machine to manufacture balsa nose cones. Some of the parts listed in this `catalog` were acquired from the failing pioneer company, Model Missiles, Inc. and the body tubes were hand rolled (manufactured) by Mrs. Estes using a slotted aluminum mandrel.

The first rocket kit to be offered by the company, the Astron Scout, had not yet been developed and would not become available until early 1961.

The attached copies are provided from the historical document files of Vernon Estes by:

Vernon Estes

Date: 7-15-87

Estes Industries, Inc.

5505 TEJON STREET DENVER 21, COLORADO

ROCKET MOTOR DATA AND INSTRUCTIONS

NAR RECOGNITION: All of the motors listed are approved for official use by the National Association of Rocketry Standards and Testing Committee.

MOTOR CLASSIFICATION: All motors are classified according to the rules set forth by the NAR. This means that each motor will have stamped on it a letter followed by a number and followed by a second number. The letter indicates the total impulse in pound-seconds. The first number indicates the average thrust and the second number gives the length of time delay before the ejection charge. (Example: A motor classified as an A-.8-3 would have a total maximum impulse of that required for an A motor — .7 lb. - sec. It would have an average thrust of 0.8 pounds and a time delay of 3 seconds.)

QUALITY CONTROL: All motors are manufactured on completely automatic equipment. One out of every two hundred motors is static tested on a recording type of test stand which graphically records a precise record of the maximum thrust, thrust variations, minimum thrust, overall thrust duration, length of time delay, and strength of ejection charge. Tolerances are kept as small as possible so that these motors make excellent propellants for contests and exhibitions.

THRUST: All motors have an initial thrust of approximately 16 oz. This tapers to a minimum thrust of about 12 oz.

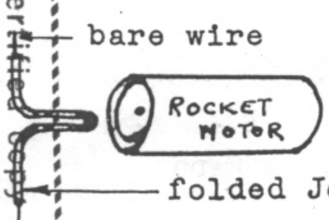
SIZE: All motors have the same physical dimensions, 13-32 inch i.d. by 11-16 inch o.d. by 2¾ inches long.

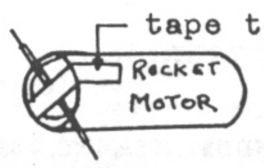
SECURING THE MOTOR IN THE MISSILE: Different missles are designed to secure the motor in various ways. Always follow the model manufacturer's recommendation in this respect. If your missile requires the motor to be held against the body tube by friction, this can be accomplished easily by wrapping the motor with tape or by looping a suitable sized rubber band around the motor casing several times. Always be sure the motor is mounted securely so that the thrust of the motor will not push it forward into the rocket body when it is ignited.

RECOVERY SYSTEM WRAPPERS AND PROTECTORS: Since many missile designs do not require wrappers for parachutes and streamers, they are not included herein. They are easy to make by cutting out a piece of typing or similar quality paper adequate to *completely* cover on all sides and ends the plastic parachute or streamer. Completely wrap the plastic in the wrapper and insert in the missile before attaching the nose cone.

IGNITION: These NAR approved rocket motors are designed to be fired by electrical means. On or about January 1, 1961, there will be available a specially designed 1½ volt igniter for this purpose. Until the above mentioned igniter is available, a substitute igniter may be devised as follows:

Obtain a 2¼" long piece of Jetex Wick (if not supplied with motor obtained from your local hobby store). Remove ¼" of the powder composition from each end. Fold and secure the Jetex in the nozzle as shown in the figure below.





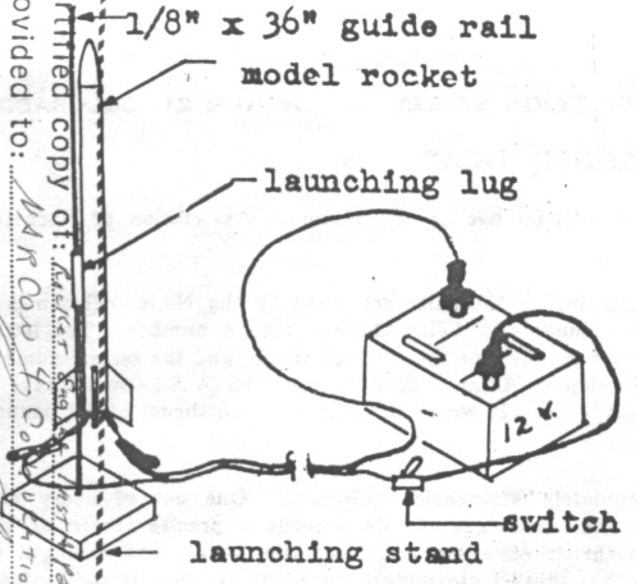
To fire the rocket motor using Jetex Wick, it will be necessary to obtain a 6 volt or 12 volt car battery or a 6 volt Hot Shot Battery, and 15 ft. or more of two conductor No. 18 gauge wire or larger. A more elaborate system may also include battery clips, a *spring return* safety switch, clips for attaching the lead wires to the igniter, public

ORDER FORM ON REVERSE SIDE

ESTES INDUSTRIES, INC.

5505 Tejon Street

Denver 21, Colorado



address system for giving a count down, etc. The pictoral diagram shows how the firing system is to be hooked up. It is not necessary to remove the battery from your car. Be sure the wires connecting the battery with the rocket motor are removed from the battery before hooking up the igniter.

SAFETY RULES. These motors should be used only on devices which are specifically designed to perform properly with the type of motor being used. All motor mounts and materials surrounding the motor must be constructed of non-metallic materials such as plastic, paper, wood, etc. Never fire a rocket which does not have incorporated within it some type of recovery system which will break the aero-dynamic stability for the return flight. Never stand closer than 12 feet away from any rocket motor when it is being operated. Always fire rockets in a vertical direction only using a suitable launching system which will maintain a vertical flight direction until the rocket has reached sufficient speed to stabilize itself. Always store rocket motors in a cool dry place. Never subject a rocket motor to heat greater than 150 degrees F. Do not in any way tamper with or attempt to alter the motor casing, propellant, nozzle, etc. Never attempt to reload an expended motor casing. 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 motors.

STANDARD TYPES OF MOTORS AVAILABLE

Type A-.8-3 (.7 lb.-sec.)
USE: To propel single stage recoverable toy missiles to altitudes of 200 to 800 feet. Ideal for use in city area where recovery field is small.
Catalog No. 160-A-.8-3
List each $.35 3 for $1.00

Type A-.8-4 (.7 lb.-sec.)
USE: To propel second stage of recoverable missiles — use in connection with type B-.8-0.
Catalog No. 160-A-.8-4
List each $.35 3 for $1.00

Quantity prices available to qualified dealers and organizations. Write for additional information.

Type ~~B-.8~~ (1.1 lb.-sec) (B.8-4)
USE: To propel single stage recoverable missiles to altitudes of 500 to 1500 feet. May also be used as second stage propellant when used with B-.8-0 below.
Cat. No. 160-B-.8-4
List each $ .40 3 for $1.10

Type B-.8-0 (1.1 lb.-sec)
USE: May be used as a single unit booster or in a clustered booster arrangement. Will automatically ignite second stage motor at burnout. Also may be used for propelling other devices where time delay and ejection charges are not desired. Will propel missiles to altitudes of 800 to 2500 feet when used in 2-stage arrangements.
Cat. No. 160-B-.8-0
List each $ .40 3 for $1.10

CUT ALONG LINE

ESTES INDUSTRIES, INC. - 5505 TEJON ST. - DENVER 21, COLORADO
ORDER FORM - (PLEASE PRINT)

		Quan.	Catalog No.	DESCRIPTION	Unit Price	TOTAL

DATE ____________

ENCLOSED IS $ ____________

PLEASE RUSH THE ITEMS LISTED TO:

____________ Name

____________ Street

____________ City, Zone & State

TOTAL ____________

REQUIRED TAX (IF ANY) ____________

TOTAL ENCLOSED ____________

5505 Tojon Street

ESTES INDUSTRIES, INC.

Denver 21, Colorado

ROCKET PARTS LIST

The following items, as well as rocket motors (see separate sheet), may be purchased by mail order. In retail quantities, prices are postpaid anywhere in the United States or Canada. Payment must accompany order. Be sure to show Cat.# and underlined description. For your convenience you can use the order form included with the motor instruction sheet. You may find it to your advantage to be able to buy direct from your hobby dealer. Ask him to write to us for wholesale prices on rocket supplies and motors.

<u>BODY TUBE</u>: 13-3/4" long x .750" i.d. x .840" o.d. Cuts to make one body tube for the ARROW-C or two body tubes for the SKY BIRD.
Cat.# 160-BT-1A------------------------------------List each 50¢

<u>BODY TUBE</u>: Body tube for ORANGE BULLET. 2-1/2" long x .720" i.d.
Cat.# 160-BT-2------------------------------------List each 30¢

<u>NOSE CONE</u>: 5" long vinyl plastic nose cone to fit body tubes of .750" i.d. For all rockets similar to the ARROW-C.
Cat.# 160-PNC-2------------------------------------List each 75¢

<u>NOSE CONE</u>: Polyethylene plastic nose cone for the SKY BIRD and other similar rockets.
Cat.# 160-PNC-1------------------------------------List each 25¢

<u>FINS</u>: Complete plastic fin unit matched to fit body tube #160-BT-1A above. For use on the SKY BIRD and other rockets.
Cat.# 160-PF-1------------------------------------List each 50¢

<u>RUBBER</u>: 1/8" x 18" long model airplane contest rubber to attach missile body to recovery mechanism.
Cat.# 160-CR-1---------------------------List each 25¢ 3 for 50¢

<u>JETEX WICK</u>: Sealed can containing 40" Jetex Wick, enough for twenty igniters.
Cat.# 160-JW-1------------------------------------List each 35¢

<u>PLANS</u>: Handbook titled "Model Rocketry", gives complete plans for building three unique model rockets---the ARROW-C, the SKY BIRD, and the ORANGE BULLET (an NAR record holder), as well as a host of additional information on rocket construction. Includes pictures, drawings, and illustrations, a must for all beginners.
Cat.# 160-P-1------------------------------------List each 25¢

<u>ROD LAUNCHER</u>: Includes wood base, metal blast deflector plate and 36" long rod.
Cat.# 160-RL-1------------------------------------List each $1.50

<u>TOWER LAUNCHER</u>: 42" high steel tower for launching most models such as ARROW-C and ORANGE BULLET. Tower is pictured on front page of plan booklet listed above. Produces a really authentic appearance.
Cat.# 160-TL-1------------------------------------List each $9.95