WELCOME TO THE REAL WORLD OF SPACE

Unless you're already an "old pro" at model rocketry, you're about to discover an exciting new hobby. Soon now, you'll assemble your first rocket, take it to a carefully selected site, and check it out for the last time. You'll start the countdown, "5-4-3-2-1—LIFTOFF!" Then, like scientists at the Cape, you'll whisper "GO, baby, GO!" and like them, you'll experience a tremendous feeling of relief and satisfaction when the parachute blossoms to bring your rocket safely home.

That's the way your model rocket activities will begin whether your first launch comes as you participate in a rocket class at school, your activities in a Boy Scout Troop or as a new member of the local rocket club, or if you are working strictly on your own with only Mom or Dad occasionally participating.

But regardless of how you get started you will soon realize that the Estes program of model rocketry involves much more than just a place to buy rockets. Our staff has prepared informative booklets and technical reports on important rocketry subjects and, as Estes customers, you'll receive free copies of the Model Rocket News. To make your participation in model rocketry even more meaningful we've recently formed the ESTES AEROSPACE CLUB. It's easy for you to join the EAC and, as a part of your membership, you'll receive the special Viper rocket, colorful decals, iron on shirt transfers, etc. In addition you will receive awards and certificates recognizing your progress and accomplishments (pages 76 and 77).

We hope you will also participate in the Design of the Month Contest (page 78) and, as you progress in your new hobby, send us your ideas and suggestions because it's only when we know what you want and need that we are able to build an even better program to meet your present and future requirements.

For the 1973 catalog Estes has also introduced many new products including an expanded line of cold propellant rockets, the new, Goony Birds, the 'ready to fly' Firing Line, more Mini-Brute models and the Citation kit line which comes packaged in attractive cellophane. With over 90 rockets now available, a huge assortment of parts and supplies and sophisticated products such as the Transroc and the Cineroc you have an almost endless opportunity to advance in this exciting hobby.

But if you are just starting in model rocketry, the best value for you is one of the Estes Starter Kits. These kits contain everything you need to make your first rocketry project successful; and the equipment, supplies and literature which are included will be useful to you as your involvement in model rocketry broadens.

Thousands of young people are sharing these experiences with you. Enjoy your new hobby. Learn from it. It is our conviction that from you — today's model rocketeers — will come tomorrow's scientists opening new frontiers in space for America and the world.

Sincerely,

Vern Estes

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by Estes Industries
Ponson, Colorado
LITHO IN USA.
BASIC MODEL ROCKET COMPONENTS

A NOSE CONE
Usually shaped to minimize air resistance.

B RECOVERY SYSTEM
Brings it back to earth in an undamaged, reliable condition. In this model a parachute deployed by an ejection charge in the engine is used.

C PAYLOAD SECTION
Used to carry instruments, specimens, etc. Some models may omit this section for sport or high-performance flights.

D BODY TUBE
The basic airframe of the rocket.

E LAUNCH LUG
A tube which slips over the launch rod to guide the model until it reaches the speed necessary for the fins to control the flight.

F FINS
Act like the feathers on an arrow, guiding the rocket in a precise flight pattern.

G ENGINE RETAINER
A block or ring used to position the engine in the body tube.

H ENGINE
A pre-packaged solid propellant device which provides the power to make the rocket fly. Single and upper stage engines contain a smoke tracking/delay charge to let the model coast up to peak altitude before the ejection charge pops out the parachute.

SKILL LEVEL CHART

ROCKET TYPE CODING:

- RTF = Ready-To-Fly
- G = Goonybird
- MR = Mini-Brute
- SS = Single Stage
- MS = Multi-Stage
- C = Cluster
- BG = Boost Glider
- S = Scale

*SKILL LEVEL EXPLANATION*

1. Very Simple
   - Beginning Rocketeer
2. Fairly Easy
   - Intermediate Rocketeer
3. Average
   - Craftsman Rocketeer
4. Challenging
   - Advanced Rocketeer
5. Extremely Challenging
   - Expert Rocketeer

ENGINE

MODEL NAME | ROCKET TYPE | PAGE |
------------|-------------|------|
Aero-Hi     | SS          | 18   |
Alpha       | SS          | 19   |
Alpha III   | SS          | 19   |
Bartholm    | RTF         | 9    |
Big Bertha  | SS          | 21   |
Birdie      | SS          | 11   |
EAC Viper   | SS          | 26   |
Galaxy Guppy| G           | 16   |
Hornet      | MB          | 11   |
Javelin     | MB          | 15   |
Little John  | MB          | 14   |
Mark II     | SS          | 19   |
Mini-Bertha | MB          | 12   |
Missile     | MB          | 10   |
Cruiser     | MB          | 39   |
Rogue       | MB          | 14   |
Scout       | MB          | 20   |
Screamer    | MB          | 10   |
Sky Hook    | SS          | 19   |
Star Sniper | G           | 16   |
Streak      | SS          | 20   |
Super Fies  | MB          | 15   |
Vampire     | RTF         | 9    |
X-Ray       | SS          | 21   |

SOLID PROPULSANT

MODEL NAME | ROCKET TYPE | PAGE |
------------|-------------|------|
Avenger     | MS          | 23   |
Bandit      | MS          | 26   |
Beta        | MS          | 13   |
Cherokee D  | SS          | 24   |
Cloud Hopper| SS          | 17   |
Cobra       | G           | 24   |
Demon       | SS          | 20   |
Midget      | MS          | 11   |
Missile Toe | G           | 16   |
Patriot     | SS          | 40   |
Red Max     | SS          | 39   |
Sandhawk    | G           | 16   |
Saratoga    | SS          | 39   |
Sky Shriek  | G           | 17   |
Wac Corporal| SS          | 31   |
Zoom Broom  | G           | 17   |

SOLID POWER

MODEL NAME | ROCKET TYPE | PAGE |
------------|-------------|------|
Aerofly 300| S           | 32   |
Aparee II  | MS          | 30   |
Arcas      | S           | 33   |
Constellation| SS       | 22   |
Delta      | SS          | 51   |
Drifter    | SS          | 32   |
Falcon     | BG          | 26   |
Farside    | MS          | 30   |

Notes:
- *In older Estes catalogs Skill Levels are referred to as Degrees of Challenge.
- ** See pages 76 and 77 for more information on Skill Levels.
ESTES FIRING LINE STARTER KIT

Ready-to-Launch in Minutes

The Firing Line Starter Kit is a rugged, portable system designed to provide countless launches for your enjoyment.

It requires only 4 alkaline penlight batteries (size AA) to become completely operational.

Shipping weight 2 lbs., 8 oz.

The Firing Line Starter Kit includes:
- Ready-To-Fly Vampire Model Rocket
- Firing Line Launch Pad
- Safety Interlock Key
- Pre-soldered Micro-Clips
- Metal Blast Deflector
- Pre-assembled Launch Controller
- 24" Launch Rod
- Three A3-I-T Safety Certified Mini-Engines
- Recovery Wadding
- Igniters
- Tape Discs

Cat. No. 0701 .................. ONLY $12.95

Features Everything you need to lift-off TODAY!

CITATION STARTER KIT

The Estes Citation Starter Kit includes everything the young rocketeer will need for his first mission. This deluxe kit, packed in a reusable Field Operations Box, includes the Quasar rocket with metalized plastic nose cone and fin assembly. This dramatic, easy-to-build model requires no painting. Shipping weight 4 lbs.

Citation Starter Kit included:
- Quasar Rocket
- Star-Port Launch Pad
- Launch Control System
- Rocket Support Spring
- 3 Safety Certified Estes Rocket Engines
- Recovery Wadding
- Hobby Knife
- Glue Packet
- Tape Discs
- Igniters

Cat. No. MKS-8 ............... $11.95
STARTER KITS

ALPHA III STARTER KIT

- High-flying, easy-to-assemble Alpha III kit, 3 engines, instructions.
- Porta-Pad — sturdy tripod launcher and Launch Control System.
- Fact-filled Estes' Alpha Book of Model Rocketry

Start with this complete outfit. The Astron Alpha III is easy to build and fly with plastic nose cone and fins. Demonstrating most rocketry principles, it can attain altitudes of 1000 feet or more. Parachute recovery brings your "bird" back for flight after flight. Both the Porta-Pad launcher and the complete launch control ignition system will serve you well throughout your rocketry career. To get you off to the right start, the comprehensive Estes' Alpha Book of Model Rocketry is included.

Shipped in a sturdy field box with handle and compartments for engines, supplies, tools, etc. Shipping weight 3 lbs.

STARTER KIT INCLUDES: Alpha III kit, 3 engines — Two A8-3's and one B6-4; Launch Control System, FS-5; Porta-Pad Launcher; Alpha Book of Model Rocketry; Instructions. Batteries not included. Recommended batteries: Ray-O-Vac No. 918, Eveready No. 731, Burgess TW-1, or any 6 or 12 volt car battery.

Cat. No. KS-7 .......... $8.95

DELUXE STARTER KIT

It's all here! This is the most complete outfit offered to build, finish and fly a model rocket. At one low price you get everything needed to get ready for launch: rocket, instructions, engines, launcher, electrical ignition system, tools and paints. All you need is the battery power for ignition. Use with car or heavy duty lantern battery.

Packaged in a reusable field box with handle and compartments for engines, supplies, tools, etc., this outfit is perfect - especially if you've done no model building before.

Kit includes all construction and finishing materials—a knife, glue, sandpaper, paints, brush, brush cleaner — supplies which can be used in building several more rockets. Shipping weight 3 lbs., 8 oz.

- Alpha Rocket (Balsa Nose Cone and Fins)
- Launch Control System
- Porta-Pad Launcher
- Estes' Alpha Book of Model Rocketry
- Three Safety Certified Engines
- Construction and Finishing Supplies

Cat. No. KS-8 .......... $9.95

BEGINNER'S SPECIAL

For those who have a launcher available or wish to build their own (instructions included) all the above items except the field box, Porta-Pad and launch control system are included.

Shipping wt. 12 oz.

Cat. No. KS-2 .......... $3.25
ESTES FIRING LINE
READY TO FLY

BANSHEE
Skill: Level 1
Sleek design
Great performance
Ogive nose cone
Bright decor
Quick engine installation
Mini-engine powered

Specifications
Length: 9.6”
Body Dia.: 1.0”
Weight: 1.25 oz.
Shipping wt.: 14 oz.

Recommended Engines
A3-4T (First flight) A10-3T
Cat. No. 0703 $3.95

EXHAUST

VAMPIRE
Completely decorated
High performance design
Made of durable plastic
Sharp decals
Mini-engine powered

Specifications
Length: 9.14”
Body Dia.: .94”
Weight: 1.5 oz.
Shipping wt.: 14 oz.

Recommended Engines
A3-4T (First flight) A10-3T
Cat. No. 0704 $3.95

X-15
Scale model
Skill: Level 1
Detailed styling
Authentic U.S.A.F. decor
Impressive desk model
Parachute recovery

Specifications
Length: 9.5”
Wing Span: 3.6”
Weight: 1.33 oz.
Shipping wt.: 14 oz.

Recommended Engines
A3-4T (First flight) A10-3T
Cat. No. 0705 $3.95

U.S. AIR FORCE

Engines not included
MORE MINI-BRUTES...  
Mini-Priced, Too.

MOSQUITO  
Skill Level 1  
Specifications  
Body Dia. 0.541" (13.73mm)  
Length 3.9" (9.8cm)  
Weight 0.1 oz. (2.83 gr)  
Shipping wt. 4 oz.  
Recommended Engines  
1/4 A3-2T (First flight) 1/4 A3-4T  
1/2 A3-4T A3-6T A10-3T  
Cat. No. TK-1 $ .59

SCREAMER  
Skill Level 1  
Spectacular streamer recovery. Balsa and paper construction with simple paint pattern and decals.  
Specifications  
Body Dia. 0.541" (13.73mm)  
Length 7.8" (19.81cm)  
Weight 0.255 oz. (7.18 gr)  
Shipping wt. 8 oz.  
Recommended Engines  
1/4 A3-2T (First flight) 1/4 A3-4T  
1/2 A3-4T A3-6T A10-3T  
Cat. No. TK-2 $ 1.25

MIDGET  
Skill Level 2  
No midget in performance, this unique two-stage rocket gets the most out of the mini-engines. Graceful flight, fast takeoff. Parachute for upper stage. Booster tumbles down.  
Specifications  
Length 8.6" (21.8cm)  
Body Dia. 0.776" (19.7mm)  
Weight 0.4 oz. (11.3 gr)  
Shipping wt. 6 oz.  
Recommended Engines  
UPPER STAGE  
1/4 A3-2T (First flight) 1/2 A3-4T A3-6T A10-3T  
BOOSTER STAGE  
1/2 A3-4T (First flight) A3-6T A10-3T  
Cat. No. TK-40 $ 1.50

BIRDIE  
Skill Level 1  
Badminton goes "out of sight" when you launch your mini-engine powered Birdie. It's a standard plastic badminton shuttle-cock with an engine mount... and it goes like no bird ever thought of going.  
Specifications  
Length 2.8" (7.1cm)  
"Fin" Span 2.6" (6.6cm)  
Weight 0.28 oz. (8 gr)  
Shipping wt. 5 oz.  
Recommended Engines  
1/4 A3-2T (First flight) 1/4 A3-4T  
1/2 A3-2T A3-6T A10-3T  
Cat. No. TK-44 $ .69

HORNET  
Skill Level 1  
A Mini-Brute with a payload section for space experiments! Extra heavy duty construction. Quick change engine mount.  
Specifications  
Length 10.25" (26.0cm)  
Body Dia. 0.767" (19.5mm)  
Weight 0.5 oz. (14 gr)  
Shipping wt. 6 oz.  
Recommended Engines  
1/2 A3-2T (First flight) A3-2T A3-4T A10-3T  
Cat. No. TK-4 $ 1.25
Super soaring, cloud-busting Estes Mini-Berths are the favorites of rocketeers. Blast off to mini-model rocketry fun with single stage, scale, multistage and exotic designed Estes Mini-Berths.

**MINI BERTHA**

**Skill Level 1**
The really tough Mini-Brute. Parachute recovery with colorful 8” plastic “chute. Two color decal sheets. Balsa and paper construction.

**Specifications**
- Length: 11.25” (28.58 cm)
- Body Dia.: 0.736” (18.7 mm)
- Weight: 0.484 oz. (13.71 g)
- Shipping wt.: 6 oz.

**Recommended Engines**
- (First flight)
  - 1/2A3-2T
  - A3-4T
  - A10-3T

**Cat. No. TK-3**
$1.50

**BETA**

**Skill Level 2**
Can be flown single stage or with a booster for high flights. Low weight, streamlined design with parachute recovery.

**Pat. No. 3,392,302**

**Specifications**
- Length: 13.76” (35.0 cm)
- Body Dia.: 0.736” (18.7 mm)
- Weight: 0.76 oz. (21.2 g)
- Shipping wt.: 6 oz.

**Recommended Engines**
- UPPER STAGE
  - 1/4A3-2T: A10-3T
  - 1/2A3-4T: A3-4T
  - 1/2A3-6T

- BOOSTER STAGE
  - 1/2A3-0T (First flight): A10-0T
  - A3-0T

**Cat. No. TK-46**
$1.50

**STAR BLAZER**

**Skill Level 3**
Real space ship look with its forward crew cockpit canopy, structural fairing strips and streamlined fins. Quick change engine mount. Payload section.

**Specifications**
- Length: 11.5” (29.2 cm)
- Body Dia.: 0.736” (18.7 mm)
- Weight: 0.76 oz. (21.2 g)
- Shipping wt.: 6 oz.

**Recommended Engines**
- 1/4A3-2T (First flight): A10-3T
  - 1/2A3-2T
  - A3-4T
  - A10-3T

**Cat. No. TK-31**
$2.25

*Engines not included*
NEW! MINI-BRUTE

New from Estes, world-leader in Model Rocketry! 6 new MINI-BRUTES have super-powered mini-engines to send them soaring high, wide and happy into space — to open up a whole new world of mini-rocketry fun and excitement!

**AERO-HI**
Skill Level 1
A sounding rocket vehicle of scale-like appearance. High performance design with realistic decor. Features fin strap-on and payload coupler decals, ogive nose cone.

**Specifications**
- Length: 11.5" (29.5cm)
- Diameter: 0.736" (18.7mm)
- Weight: 0.75 oz. (21.2 gr)
- Shipping wt.: 6 oz.
- Recovery: 8" Parachute

**Recommended Engines**
1/4A3-2T (First Flight)
A3-4T A10-3T
Cat. No. 0817 $1.50

**LITTLE JOHN**
Skill Level 1
An authentic appearance of a semi-scale model. Surface to surface military vehicle with U.S. Army decor.

**Specifications**
- Length: 14.0" (35.6cm)
- Diameter: 0.736" (18.7mm)
- Weight: 0.736 oz. (21.2 gr)
- Shipping wt.: 6 oz.
- Recovery: 12" Parachute

**Recommended Engines**
1/4A3-2T (First Flight)
A3-4T
Cat. No. 0819 $1.75

**ROGUE**
Skill Level 1
Sounding research vehicle. A scale-like appearance with realistic decor. Excellent for sport flying has superior performance.

**Specifications**
- Length: 11.7" (29.7cm)
- Diameter: 0.736" (18.7mm)
- Weight: 0.75 oz. (21.2 gr)
- Shipping wt.: 6 oz.
- Recovery: 8" Parachute

**Recommended Engines**
1/4A3-2T (First Flight)
A3-4T A10-3T
Cat. No. 0818 $1.50

**ALPHA III**
Skill Level 1
Just like the Alpha except it's easier to assemble and fly. Plastic nose cone and fins.

**Specifications**
- Length: 12.25" (31.1cm)
- Body Dia.: 0.976" (24.8mm)
- Weight: 1.2 oz. (33.0 gr)
- Shipping wt.: 10 oz.

**Recommended Engines**
1/2A6-2 B6-4
B4-4
Cat. No. K-56 $2.00

**MARK II**
Skill Level 1
Ideal for sport or demonstration flying. Top-notch performance every time.

**Specifications**
- Length: 9.1" (23.1cm)
- Body Dia.: 0.765" (19.4mm)
- Weight: 0.7 oz. (20 gr)
- Shipping wt.: 5 oz.

**Recommended Engines**
1/2A6-2 A8-3
B6-4
B4-4
Use 1/2A6-2 for first flights.
Cat. No. K-2 $1.25

**SKY HOOK**
Skill Level 1
An exciting but easy-to-build rocket. Terrific performance flights after flight.

**Specifications**
- Length: 12" (30.5cm)
- Body Dia.: 0.765" (19.4mm)
- Weight: 0.7 oz. (20 gr)
- Shipping wt.: 5 oz.

**Recommended Engines**
1/2A6-2 A8-3
B4-4
B6-6
Use 1/2A6-2 for first flights.
Cat. No. K-8 $1.50

Engines not included
These kits are your next step on the way to becoming a real expert. They are still easy to build and fly, single-stage rockets but with some special purpose features. All kits come complete, ready-to-build, with instructions. Engines not included.

**STREAK**
Skill Level 1
Lightweight (1/3 oz. without engine) and wind-cheating design... terrific for contest and record. Feather-weight recovery.

**Specifications**
- **Length**
  - 5.6” (14.2 cm)
- **Body Dia.**
  - 0.720” (18.3 mm)
- **Weight**
  - 0.1 oz. 
  - (3 gr)
- **Shipping wt.**
  - 4 oz.

**Recommended Engines**
- 1/2A6-4
- A8-5
- B6-6
- C6-7

Use 1/2A6-4 for first flights.
Cat. No. K-4 .............. $ .69

**SCOUT**
Skill Level 1
This kit teaches balance principles. A must for the rocketeer learning to design his own models. Tumble recovery.

**Specifications**
- **Length**
  - 7” (17.8 cm)
- **Body Dia.**
  - 0.785” (19.4 mm)
- **Weight**
  - 0.3 oz. 
  - (9 gr)
- **Shipping wt.**
  - 2 oz.

**Recommended Engines**
- 1/2A6-2
- A8-3
- B6-4
- C6-5

Use 1/2A6-2 for first flights.
Cat. No. K-1 .............. $ .89

**Astron**
BIG BERTHA
Skill Level 1
Ideal for demonstration flights. Slow realistic take-off that fascinates all spectators. Parachute recovery.

**Specifications**
- **Length**
  - 24” (61 cm)
- **Body Dia.**
  - 1.637” (41.6 mm)
- **Weight**
  - 2.2 oz. 
  - (64 gr)
- **Shipping wt.**
  - 11 oz.

**Recommended Engines**
- A8-3
- B6-2
- B6-4
- C6-5

Use B6-2 for first flights.
Cat. No. K-23 .............. $3.25

**X-RAY**
Skill Level 1
Features a large see-through payload section. Perfect for research work of all kinds. Parachute recovery.

**Specifications**
- **Length**
  - 16.75” (42.5 cm)
- **Body Dia.**
  - 0.736” (18.7 mm)
- **Payload**
  - 0.7 oz. 
  - (20 gr)
- **Shipping wt.**
  - 5 oz.

**Recommended Engines**
- 1/2A6-2
- A8-3
- B6-4
- C6-5

Use A8-3 for first flights.
Cat. No. K-18 .............. $2.00

Engines not included
**SINGLE STAGE**

**SPRITE**
Skill Level 3
This unusual little rocket teaches importance of proper rocket balance. At the end of a straight-up launch, the Sprite tumbles back down close to the launcher. Great for small fields. Includes Tech Report on stability. Patent No. 3,114,317

**Specifications**
- Length: 5.3” (13.5cm)
- Body Dia.: 0.766” (19.4mm)
- Weight: 0.3 oz. (9 gr)
- Shipping wt.: 5 oz.

**Recommended Engines**
- 1/4A3-2T
- A3-4T
- 1/2A3-2T (First flights)

Cat. No. K-15 .............. $1.00

**CONSTELLATION**
Skill Level 3
The perfect single-stage high performance rocket for payload work or just fun flying. Long slender lines, “landing shocks” on each fin give a futuristic look. See-through payload section.

**Specifications**
- Length: 16.2” (41.4cm)
- Body Dia.: 0.976” (24.8mm)
- Weight: 1 oz. (28gr)
- Shipping wt.: 5 oz.

**Recommended Engines**
- 1/2A6-2
- A8-3 (First flights)
- B6-4
- B14-5

Cat. No. K-35 ............ $2.25

**DRIFTER**
Skill Level 3
Low weight and large chute capacity make this tough bird great for competition, test or sport flying. Interchangeable chutes: 24” for competition and 12” for test and sport.

**Specifications**
- Length: 14.3” (36.3cm)
- Body Dia.: 0.976” (24.8mm)
- Weight: 1 oz. (28gr)
- Shipping wt.: 5 oz.

**Recommended Engines**
- 1/2A6-2 (First flights) A8-3
- B6-4
- C6-5

Cat. No. K-14 ........... $2.25

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**TWO STAGE ROCKETS**

**Astron SHRIKE**
Skill Level 3
New easy staging method - just insert engines, plug the stages together and you’re ready to go. Pre-cut fins. Transparent payload section with foam end pads.

**Specifications**
- Length: 23.5” (59.9cm)
- Body Dia.: 0.976” (24.8mm)
- Weight: .26 oz. (7gr)
- Shipping wt.: 11 oz.

**Recommended Engines**
- A8-0
- B6-0 (First flights)
- C6-0

Cat. No. K-46 ........... $4.95

**AVENGER**
Skill Level 2
Long slender lines give this bird the sounding rocket look. Large 18” chute brings payload section back gently. Booster employs tumble recovery. Pat. No. 3,292,302

**Specifications**
- Length: 32” (81.3cm)
- Body Dia.: 1.325” (33.7mm)
- Weight: 2.7 oz. (77 gr)
- Shipping wt.: 16 oz.

**Recommended Engines**
- A8-5
- B6-6 (First flights)
- C6-7

**BOOSTER**
A8-0
B6-0 (First flights)
C6-0

Cat. No. K-38 ........... $3.50

Engines not included.
ADVANCED ROCKETEERS: Single Stage Skill Level 2

The Demon, Bandit, Cherokee-D and Cobra are ideal kits to start with as you step up to advanced rocketry science. They give you experience with large engines and clustering. All kits have parachute recovery. All four kits come complete, ready-to-build, with instructions. Engines not included.

COBRA
Ideal for your first cluster rocket (the use of more than one engine). The Cobra gives you top performance with medium size payloads (up to 4 oz.) in a 1" diameter capsule. Includes Tech Report on Clustering.

Specifications
Length: 22.25" (56.56cm)
Body Dia.: 1.637" (41.6mm)
Weight: 2.6 oz. (71 gr)
Shipping wt.: 11 oz.

Recommended Engines
Requires 3 identical engines at launch.
A8-3
B6-4
G6-6
Use B6-4 for first flights.
Cat. No. K-10 .......... $3.50

CHEROKEE-D
Big strong "D" engine rocket that will practically sail out of sight. 18" chute brings it down safely. Flight after flight. Pre-cut fins, quick-change engine mount, detail sheets. Beautiful kit.

Specifications
Length: 21.6" (54.9cm)
Body Dia.: 1.325" (33.7mm)
Weight: 2.75 oz. (78 gr)
Shipping wt.: 11 oz.

Recommended Engines
D12-5
D12-7
Use D12-5 for first flights.
Cat. No. K-47 .......... $3.50

BANDIT
Skill Level 2
Features a new Ejection Ducting System so there's no need for recovery wadding. The Bandit has military rocket styling. The advanced recovery system will further your knowledge of model rocketry techniques.

Specifications
Length: 25.75" (65.4cm)
Body Dia.: 1.325" (33.6mm)
Weight: 2.6 oz. (73.9 gr)
Shipping wt.: 12.5 oz.

Recommended Engines
A8-3
B6-4
B14-5
G6-6
Use B6-4 for first flights.
Cat. No. K-48 .......... $4.50

Engines not included.
DEMON
Skill Level 2
NASA research-type vehicle. Comes with easy-to-see bright silver press-on foil trim. When applied to the payload section, the trim actually acts as a flashing beacon to help you with in-flight tracking and recovery.

Specifications
- Length: 28.5" (72.7 cm)
- Body Dia.: 1.325" (33.6 mm)
- Weight: 2.75 oz. (78 gr)
- Shipping wt.: 12.5 oz.

Recommended Engines
D12-7
Also:
B6-4, B14-5, C6-5
(Using EM-2060 Adapter)

Cat. No. K-58
$4.50

SPRINT
Skill Level 3
Highest performance in its class... up to 1,600 ft. with C6-7 engine. Pre-cut fins and tail cone. Decals included. Streamer recovery.

Specifications
- Length: 13.8" (35 cm)
- Body Dia.: 0.976" (24.8 mm)
- Weight: 1.0 oz. (28 gr)
- Shipping wt.: 7 oz.

Recommended Engines
1/2A6-2, A8-3, B4-6
B6-6, C6-7, B14-5
Use A8-3 for first flights.

Cat. No. K-49
$2.75

SCRAMBLER
Skill Level 3
Huge see-through payload section holds an egg or any other large payload engine cluster design gives the power to boost it. Can carry an egg to over 1,000 ft. and gently set it down. Two chutes. Decals. Includes Tech Report on clustering.

Specifications
- Length: 23.5" (59.7 cm)
- Body Dia.: 1.637" (41.6 mm)
- Payload Dia.: 1.796" (45.8 mm)
- Weight: 2.8 oz. (79 gr)
- Shipping wt.: 13 oz.

Recommended Engines
Requires 3 identical engines at launch.
A8-3, B6-4, C6-5, B14-5
Use B6-4 for first flights.

Cat. No. K-37
$4.95

GOBLIN
Skill Level 3
Powerful. Fast. This spooky kit gets up and moves. It's the rocket you'll need a good recovery team for. Adapters permit a wide range of engine possibilities.

Specifications
- Length: 14.32" (36.3 cm)
- Body Dia.: 1.325" (33.6 mm)
- Weight: 2.0 oz. (56 gr)
- Shipping wt.: 7 oz.

Recommended Engines
D12-7 (for others like A8-3, B6-4 and C6-5, with adapter EM-2060).

Cat. No. K-55
$2.75

Engines not included
BOOST GLIDERS

FALCON
Skill Level 3
A fantastic glide recovery vehicle for experienced rocketeers. Front engine type...boost glide times to over 1 1/2 minutes. Pat. No. 3,114,317

SKYDART
Skill Level 4
This totally new rocket-boosted glider design features an internal rear ejection power pod. Streamlined “Business SST” body styling results in a high performance glide along with good reliability. Parachute recovery brings power pod back safely. Pat. No. 3,157,960

Specifications
Wing Span 12.6" (31.8cm)
Length 15.8" (40cm)
Body Dia. 0.766" (18.7mm)
Weight 1.26 oz. (35.4 gr)
Weight of Glider with Pod 2.5 oz. (70.5 gr)
Shipping wt. 12 oz.

Recommended Engines
A8-3 B4-2 C6-3
Cat. No. K-57 $4.50

GYROC
Skill Level 3
An amazing and unique “helicopter” recovery system makes the Gyroc a must for your fleet. Unusual appearance.

Specifications
Length 9.8" (24.8cm)
Body Dia. 0.736" (18.7mm)
Weight 0.6 oz. (17 gr)
Shipping wt. 5 oz.

Recommended Engines
1/2A6-2 AR-3 B6-4 C6-5
Use 1/2A6-2 for first flights.
Cat. No. K-24 $1.50

Glide recovery vehicles can be spectacular fun. The model launches straight up like a conventional rocket. At elevation either the balance of the model or the position of its aerodynamic surface is changed. The wings generate lift, pulling the nose up and the model goes into a glide instead of streamlining straight down. The Gyroc has an unusual “helicopter” recovery. All kits come complete, ready-to-build, with instructions. Engines not included.
GEMINI-TITAN
Skill Level 4
This is a semi-scale model of the rocket that took America's first twoman team into orbit. This kit features clear plastic fins for stability. Use 12-v car battery and Estes F3-5 Launch Control System for dependable ignition. Includes Tech Report on engine clustering.
Specifications
Length 24.4" (622mm)
Body Dia. 2.217" (56.3mm)
Weight 3.8 oz. (106 gr)
Ship. wt. 1 lb. 3 oz.
Recommended Engines A8-3 R6-4
Use RG-4 for first flights.
Cat. No. K-21 ............ $6.95

SATURN V
(Semi-Scale)
Skill Level 3
Though not fully detailed this model of the Saturn V is an amazingly good representation of our nation's largest launch vehicle that put the first man on the moon. Scaled 1 to 242 it is a practical size to build.
Specifications
Length 18.1" (46cm)
Body Dia. 1.637" (41.66mm)
Weight 1.9 oz. (54 gr)
Shipping wt. 12 oz.
Recommended Engines AB-3 (First flights), C6-5
Cat. No. K-39 ............ $3.25

ARCAS®
Skill Level 3
A precise reproduction of the famous ARCAS® sounding and meteorological rocket.
Specifications
Length 22.8" (58cm)
Body Dia. 1.335" (33.7mm)
Weight 1.4 oz. (40 gr)
Shipping wt. 11 oz.
Recommended Engines A8-3 (First flights)
R6-4
C6-5
Cat. No. K-26 ............ $2.75

AEROBEE 300
Skill Level 3
Here is a reproduction of the Aerobee 300, a famous sounding rocket. It was used in a great many space experiments during the 1950's and 1960's.
Specifications
Length 20" (50.8cm)
Body Dia. 0.976" (24.8mm)
Weight 0.9 oz. (26 gr)
Shipping wt. 14 oz.
Recommended Engines 1/2A6-2 C6-5
A8-3 B6-4
Use A8-3 for first flight.
Cat. No. K-17 ............ $2.25

PHANTOM
This bird will never fly, but it makes a great demonstration model. Shows all of the insides of a model rocket... even a special version of a C6-5 engine. Ideal for displays and demonstrations.
Specifications
Length 12.6" (32cm)
Body Dia. 0.976" (25mm)
Weight 1.36 oz.
Cat. No. K-78 ............ $2.00

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The Atlantic Research Corporation,
Alexandria, Virginia.
SATURN 1B
Skill Level 5
This is a completely detailed model of the rocket that first lofted the lunar module on its first flights in earth orbit. Great performance from the clustering of four engines. A real beauty, both in the air and on the ground. Includes Tech Report on engine clustering.

Specifications
Length: 37" (94cm)
Body Dia.: 3.938" (100mm)
Weight: 9.9 oz. (280 gr)
Shipping wt.: 3 lbs., 5 oz.

Recommended Engines
A6-3
B6-2 (First flights)
B6-4
C6-5
(4 engines required. All must be the same)

Cat. No. K-29 $11.95

HONEST JOHN
Skill Level 4
A beautiful scale model of the U.S. Army's surface-to-surface ballistic missile. An historic rocket for your display shelf.

Specifications
Length: 13.75" (35cm)
Body Dia.: 0.976" (24.8mm)
Weight: 1.2 oz. (34 gr)
Shipping wt.: 7 oz.

Recommended Engines
1/2A6-2
A6-3 (First flights)
B6-4
B6-6
C6-6

Cat. No. K-27 $2.50

SATURN V
Skill Level 5
A truly magnificent scale reproduction of our most famous rocket... the mighty Saturn V. Scaled 1/100th of its actual size, the model stands 43½" tall. Precision molded plastic tower and engine nozzles give detailed authenticity. Includes Tech Report on engine clustering.

Specifications
Length: 43.5" (110cm)
Body Dia.: 3.938" (100mm)
Weight: 9.9 oz. (280 gr)
Shipping wts.: 3 lbs., 5 oz.

Recommended Engines
May be flown as 3 engine cluster or single engine.
Cluster Power:
C6-3 (3 required)
"D" Power:
D12-3 (1 required)

Cat. No. K-36 $16.95

MERCURY REDSTONE
Skill Level 5
The Mercury Redstone is the vehicle that boosted Commander Alan Shepard on America's first manned space flight. Beautiful kit scaled 1 to 42.

Specifications
Length: 23.5" (59.7cm)
Body Dia.: 1.637" (41.6mm)
Weight: 2.1 oz. (60 gr)
Shipping wt.: 12 oz.

Recommended Engines
A6-3
B6-4
C6-5
Use B6-4 for first flights.

Cat. No. K-41 $4.50
EXOTIC DESIGNS OF THE FUTURE

ORBITAL TRANSPORT
Skill Level 4
Spectacular flight. Showpiece on the ground. Transport lifts off under rocket power. At ejection, the reentry vehicle separates and glides back to earth.

Specifications
BOOSTER
Length: 23 1/2'' (59.7cm)
Body Dia: 0.976'' (24.8mm)
Wing Span: 7.5'' (19cm)
Weight: 2 oz. (57g)

RE-ENTRY VEHICLE
Length: 8.6'' (21.8cm)
Body Dia: 0.738'' (18.7mm)
Wing Span: 5'' (12.7cm)
Weight: 0.6 oz. (14 gr)
Shipping wt.: 16 oz.

Recommended Engines
B6-2, B6-4, C6-5
Use B6-4 for first flights.
Cat. No. K-42 $4.50

MARS LANDER
Skill Level 5
Authentic, futuristic concept in a planetary exploration vehicle. Lands upright on spinning-lid gear after parachute recovery. Highly detailed body panels with colorful decal sheets.

Specifications
Height: 12'' (30.5cm)
Body Dia: 3.8'' (96.8mm)
Landing Gear Span: 13.2'' (33.5cm)
Weight: 3.0 oz. (85 gr)
Shipping wt.: 18 oz.

Recommended Engines
B4-2, B6-2, C6-3
Use B4-2 for first flights.
Cat. No. K-43 $8.95

Astron TRIDENT
Skill Level 4
Future rocket design introduces ejection ducting which uses ejection gases to pressurize the parachute compartment for deployment of the chute.

Specifications
Length: 31.6'' (80.3cm)
Main Body Dia: 0.976'' (24.8mm)
Weight: 2.7 oz. (77 gr)
Shipping wt.: 11 oz.

Recommended Engines
A8-3, B6-2, B6-4, C6-5
Use B6-2 for first flights.
Cat. No. K-33 $4.50

MARS SNOOPER
Skill Level 4
A truly different model combines unique appearance with reliable performance. Great for show or demonstration flying. Payed section, 18'' chute and pre cut fins.

Specifications
Length: 21.7'' (55.1cm)
Body Dia: 0.976'' (24.8mm)
Weight: 2.2 oz. (62 gr)
Shipping wt.: 8 oz.

Recommended Engines
A8-3, B4-2, B6-4, C6-5
Use B6-4 for first flights.
Cat. No. K-20 $3.25

Engines not included
SAROS
Skill Level 2
An excellent scale-like model for any rocketeer. A new feature is the integral fin unit/engine mount providing immediate and positive location of the thrust rings. The embossed metallic press-on material and decal arrangement add the final professional touch of realism not found in other models in its class.

Specifications
Length 22.5" (57.2cm)
Body Dia. 0.976" (24.8mm)
Weight 1.5 oz. (43 gr) 8 oz.
Shipping wt.

Recommended Engines
A8-3 B6-4
A8-5 C6-5
B4-4
Use A8-3 for first flights.

Cat. No. K-64 $3.50

Replacement Plastic Parts Kit (Saros)
Includes nose cone, adapter and fin unit.
Cat. No. PRP-64 $1.50

INTERCEPTOR
Skill Level 3
A spectacular model for display or flight. The most colorful and exciting Estes Rocket ever! Carefully detailed plastic wing pods, nose cone, and tail cone. Two huge decal sheets.

Specifications
Length 26" (66cm)
Wing Span 7.4" (18.8cm)
Body Dia. 1.325" (33.6mm)
Weight 3.85 oz. (109 gr)
Shipping wt. 12 oz.

Recommended Engines
B4-2 B6-4 C6-5
Use B6-4 for first flights.
Cat. No. K-60 $5.95

Replacement Plastic Parts Kit
Includes nose cone, 2 wing pods and tail cone.
Cat. No. PRP-50 $1.35

RED MAX
Skill Level 2

Specifications
Length 16.25" (41.3cm)
Body Dia. 1.037" (26.3mm)
Weight 2.375 oz. (67 gr)
Shipping wt. 12 oz.

Recommended Engines
B4-2 (First flights) B6-2
B6-4 C6-5
Cat. No. K-2 $2.95

QUASAR
Skill Level 1
Dramatic and easy-to-build model for beginners. Bright metallic plastic nose cone and fin assembly. Metalized and pre-printed mylar wrap-on decal for the body tube. No painting required! Recovery by 12” plastic parachute for many, many flights.

Specifications
Length 14" (35.6cm)
Body Dia. 0.576" (14.6mm)
Weight 1.5 oz. (42 gr)
Shipping wt. 10 oz.

Recommended Engines
A8-3 (First flights)
B4-2 C6-5
Cat. No. K-1 $2.00

BOMARC
Skill Level 4
A beautifully detailed, superb scale rendering of the U.S.A.F. surface-to-air interceptor missile. Features molded plastic components, and die cut balsa parts. Big authentic decals, vinyl stripping and metalized myler panels. At apogee, the engine pod is ejected and continues down by parachute while the model returns as a boost glider... with a gentle, flat glide pattern.

Specifications
Length 23" (58.4cm)
Body Dia. 1.325" (33.6mm)
Weight 3.8 oz. (108 gr)
Shipping wt. 12 oz.

Recommended Engines
B4-2 B6-2 (First flights) C6-3
Cat. No. K-5 $5.95

Engines not included
PATRIOT
Skill Level 2
Big, burly and impressive sport model - over 25" tall. Spectacular "All-American" red, white and blue decor. Two big decal sheets, 5 colors in all. Fast, easy construction with molded plastic nose cone and die-cut balsa fins. Recovery by 18" parachute.

SPECIFICATIONS
Length 26" (66cm)
Body Dia. 1.637" (41.6mm)
Weight 3.3 oz. (94 gr)
Shipping wt. 12 oz.

RECOMMENDED ENGINES
B4-2 (First flights) B6-4 C6-5
Cat. No. KC-3 .................. $3.95

STARSHIP VEGA
Skill Level 3
A look into tomorrow . . . deep space, interplanetary exploration vehicle. Great sport flying performance. Futuristic landing legs on rear fins. Complete with 3-color decal sheet, die-cut fins and bright foil body wrap-on. Parachute (12") recovery system.

SPECIFICATIONS
Length 19.5" (49.5cm)
Body Dia. 0.976" (24.8mm)
Weight 1.88 oz. (53 gr)
Shipping wt. 12 oz.

RECOMMENDED ENGINES
B4-2 (First flights), B6-4 C6-5
Cat. No. KC-4 .................. $4.95

Engines not included.
**N.A.R.H.I.A.A. COLD PROPELLANT MODEL ROCKET SAFETY CODE**

1. **ENGINES** — I will use only factory made model rocket engines in the manner recommended by the manufacturer. I will re-load cold propellant rocket engines only with the propellant recommended by the manufacturer.

2. **RECOVERY** — I will always use a recovery system in my model rockets that will safely return them so that they may be used again. I will conduct pre-flight tests to assure the recovery system functions properly before launching the rocket.

3. **WEIGHT LIMITS** — My model rocket will weigh no more than 16 oz. at lift-off.

4. **STABILITY** — I will check the stability of my model rockets before their first flight, except when launching models of proven design.

5. **FLYING CONDITIONS** — I will not launch my model rocket in high winds, near buildings, power lines, tall trees, low flying aircraft or under any conditions which might be dangerous to people or property. I will never attempt to recover a model rocket from a power line or other dangerous place.

6. **LAUNCH ROOD** — To prevent accidental eye injury, I will always place the launcher so the end of the rod is above eye level or cap the end of the rod with my hand when approaching it. I will never place my head or body over the launching rod. When my launcher is not in use, I will always store it so that the launch rod is not in an upright position.

7. **LAUNCH TARGETS & ANGLE** — I will not launch rockets to their flight path will carry them against targets on the ground, and will never use an explosive warhead or a payload that is intended to be flammable. My launching device will always be pointed within 30 degrees of vertical.

8. **LOADED ROCKETS** — I will never store or leave a loaded cold propellant rocket untended. I will always keep a loaded rocket on a launcher or firmly restrained. I will never point a loaded rocket or its rocket nozzle at anyone or allow anyone to be in the flight path of a rocket during launch preparations.

9. **CONSTRUCTION** — I will never use metal nose cones or metal fins.

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**ESTES COLD PROPELLANT ROCKETS**

Here they are — Estes' new line of sensational rockets and rocket planes — flying models with quality you'll appreciate — and performance you'll rave about!

What's more . . . no permit or license is required for their non-flammable cold propellant!

At last — you can enjoy the full potential of fun and excitement in model rocketry with Estes' unique line of liquid propellant rockets!

Every model is powered by RP-100 — the non-flammable aerosol propellant. Easy to build and fun to fly, both rockets and rocket planes feature a special timer system for release of a parachute at the top of the flight — the entire rocket then floats to earth.

Rocket plane kits include a separate plane which is carried piggyback hundreds of feet up by the rocket. It eases free into aerobatic flight — while the rocket parachutes to earth!

Most kits are complete with everything you'll need to launch the rocket, including launcher and propellant. Complete kits retail for as low as $6.95.

So don't miss the fun of the future — Estes rockets are here today!
**Shrike Jet Plane**  
Skill Level 1  
The Shrike is constructed of the finest quality styrofoam for light weight and durability, molded with extraordinary precision to produce perfect aerodynamic balance. The wing and tail surfaces are shaped within thousands of an inch — all to give you the best in Jet Plane fun. You’ll be astonished how well the Shrike flies! Fuel for 10 flights included. Ready to fly.  
Shipping weight 32 oz.  
Cat. No. 5090  
$4.95

**XS-1 Space Shuttle**  
Skill Level 1  
Rocket Powered Space Shuttle! Powered by a miniature rocket engine, the XS-1 soars through the air on a realistic jet trail, then glides hundreds of feet.  
READY TO FLY — Just fill engine with propellant.  
The Space Shuttle plane is accurately molded of foamed styrene. The engine is sturdy aluminum, slips into plane for powered flights.  
Everything is there for fun with the XS-1.  
Shipping weight 32 oz.  
Cat. No. 5101  
$4.95

**Sergeant**  
Skill Level 3  
The Sergeant is a U.S. Army battlefield support missile that is reliable, mobile, and simple to operate. It is inertially guided by means of dragbrakes to control range and fin flaps to control altitude and direction. The actual missile is 35 feet long and weighs 10,000 pounds.  

**Kit Includes**  
- Decals  
- Pre-formed nose cone  
- Parachute system  
- Manual firing system  
- Launcher  
- Cold Propellant for 3 flights

**Specifications**  
Length: 15.5”  
Altitude: 600’  
Shipping weight: 38 oz.  
Cat. No. 5124  
$11.95

**Sandpiper**  
Skill Level 3  
You’re right on target with this flying semi-scale model being developed for the Air Force. The actual Sandpiper is 15 feet long and attains a speed of Mach 4. It is used as a practice target for other missiles. This model can fly to 500 feet with only 2½ ounces of propellant.  

**Kit Includes**  
- Manual Firing System  
- All Parts and Accessories  
- Parachute System  
- Propellant for 3 flights  
- Launcher

**Specifications**  
Length: 13.5”  
Shipping weight: 38 oz.  
Cat. No. 5125  
$11.95

**Valkyrie 2**  
Skill Level 2  
Altitudes to 1000 feet. Apply battery voltage to the electrical firing unit, and a cloud of exhaust indicates lift-off. Slowly at first, then faster the Valkyrie climbs, nearly 300 feet per second. Then a coast to apex, and suddenly the parachute pops for a safe recovery. Everything is here... for the most spectacular flights... in this complete Valkyrie-2 Rocket System.  

**Kit Includes**  
- Tripod launcher  
- RP-100 Cold Propellant  
- Electrical Firing System

**Specifications**  
Length: 18”  
Body Diameter: 1.0”  
Shipping weight: 40 oz.  
Cat. No. 5092  
$15.95
THE BARON ROCKET PLANE

with Booster Rocket
Skill Level 4

The Baron catapults hundreds of feet into the sky, glides longer, farther than any other cold propellant rocket. All parts are in the kit.
Baron Plane and Complete Booster Rocket, Launcher and propellant included.

SPECIFICATIONS
Length 22.5"
Wing Span 12"
Body Diameter 1"
Shipping Weight 40 oz.

Cat. No. 5102 $12.95

X-13 ROCKET PLANE

with Booster Rocket
Skill Level 4

This sleek delta wing design makes the X-13 Rocket Plane one of our highest flying cold propellant rocket planes. Everything is included in this high flying rocket plane kit.

SPECIFICATIONS
Length 18"
Wing Span 7.5"
Body Diameter 1"
Shipping Weight 39 oz.

Cat. No. 5122 $11.95

YANKEE 5

Skill Level 2
All-American stars and stripes decal
Payload section
Sleek lines
Parachute recovery

SPECIFICATIONS
Length: 17"
Diameter: 0.976"
Weight (with engine): 2.06 oz.
Shipping wt.: 32 oz.

Cat. No. 1112 $7.95

MARAUDER

Skill Level 2
Sounding rocket decal
Great sports model
Easy-to-build
Payload section
Parachute recovery

SPECIFICATIONS
Length: 18.5"
Diameter: 0.976"
Weight (with engine): 2.06 oz.
Shipping weight: 32 oz.

Cat. No. 1110 $7.95

COLDPOWER CONVERTIBLE

Pre-assembled, cold propellant engine, die-cut fins, press-on decals and plastic launch controller are included in all Cold Power rockets. Converts from RP-100 cold propellant to use standard Estes model rocket engines.

All rockets on this page include:
* RP-100 - Propellant
* Launcher
* Cold Power Converter

SHARK

Skill Level 2
Surface-to-air missile styling
Deluxe sports model
Payload section
Parachute recovery

SPECIFICATIONS
Length: 18.5"
Diameter: 0.976"
Weight (with engine): 2.06 oz.
Shipping weight: 32 oz.

Cat. No. 1111 $7.95

ASTRO-COAL

Skill Level 4

The high flying Astro-Coal leaps off the pad and zooms to a spectacular altitude on a cloud of rocket exhaust... then plane and rocket split and one glides while the other parachutes... from hundreds of feet up!

SPECIFICATIONS
Length 18"
Wing Span 10"
Body Diameter 1"
Shipping Weight 39 oz.

Cat. No. 5123 $11.95

46

47
Honest John
Skill Level 2
Scale Model
U.S. Army surface-to-surface ballistic missile
decor
Excellent performance
Parachute recovery
Authentic decals

Specifications
Length: 14.5"
Diameter: 0.976"
Weight (with engine): 2.06 oz.
Shipping wt.: 18 oz.
Cat. No.: 1104
Only $4.95

TEROS
Skill Level 2
Authentic anti-aircraft
misile styling
Scramjet design
Ramjet nose
Fun sports model
Parachute recovery

Specifications
Length: 13"
Diameter: 0.976"
Weight (with engine): 2.01 oz.
Shipping wt.: 18 oz.
Cat. No.: 1105
.... $4.95

Scamp
Skill Level 1
Easy to assemble
Sleek design
Great flights
Roll pattern and fin decals
Parachute recovery

Specifications
Length: 13.75"
Diameter: 0.976"
Weight (with engine): 1.76 oz.
Shipping wt.: 18 oz.
Cat. No.: 1101
.... $4.95

Small Parts Kit
All those items easily lost at the launch pad. Kit includes safety pins, plastic
decals, and launch controller. Cold propellant engines are safety certified and reusable.

Payload Compartment Kit
For parachute storage, or for small payloads if desired. A completely formed,
hard styrofoam nose cone, decorated fibre
tube, aluminum adapter, and assembly tape are included.

Fin Rail and Launch Guide
Rail is used for attaching fins or as a catapult for rocket planes, and may be used in
a sophisticated rail launcher. It interlocks with itself, yet slides freely. Launch guide
is for 1/8" diameter rod launcher.

Rail (2 ft.), Guide (8"), and Contact Adhesive

Remote Electrical Firing Unit
Remote control system adds realism and excitement to your launches. This unit can
be used with cold propellant rockets, on pages 44-45, and 46. See page 42 for more
details.

Remote Unit: plus 6 inches of igniter wire.
(Battery not included)

No. 5113 - Ship. Wt. 7 oz. .... $1.95

Extra Igniter Wire (6 inch piece)
No. 5057 - Ship. Wt. 3 oz. .... $0.25

Rocket Engines
These replacement engines are identical to the engines included in each kit. For strap
on applications, a separator and firing unit are required for use. Engines are high
quality polished aluminum construction with built-in fueling port, safety vent and
100% tested.

V-2 Engine (for Valkyrie-2)
8½ inch body, 4 oz. propellant capacity, with nozzle extension.
No. 5001 - Ship. Wt. 8 oz. .... $4.95

V-1 Engine (for Valkyrie-1)
4½ inch body, 2 oz. propellant capacity, with nozzle extension.
No. 5078 - Ship. Wt. 7 oz. .... $3.95

Multi-stage Adapter Kit
Parts and instructions for in-flight separation and staging of a two stage rocket. Every-
thing is there to combine two rockets into an advanced two-stage rocket. Data-packed
"Multi-Stage" rockets booklet (included) offers many other ideas for staging.

No. 5059 - Ship. Wt. 6 oz. .... $1.00

Multi-stage Rockets Booklet
No. 5109 - Ship. Wt. 3 oz. .... $0.25

Fueling Valve and Hose
For fueling rockets or jet planes. Valve fits either size can of RP-100 Propellant.

No. 5027 - Ship. Wt. 3 oz. .... $0.50

RP-100 Propellant
Unique non-flammable fuel, yet real performance. 15 oz. can provides 3-10 flights for
each Estes cold propellant rocket and jet planes.

No. 5039 - Ship. Wt. 16 oz. .... $1.95

Parachute Material

*Mylar - Fantastical color, strong
film. Non-sticky, free opening without
tack. The ultimate parachute material,
one-fourth the thickness of standard
shades.

No. 43001 - Ship. Wt. 2 oz. .... $0.35

Separator
The separator couples to the engine and releases the parachute at the proper time
in flight. Release time is adjusted by timer discs which cause a delay from the
time fuel is exhausted (burnout) till the
moment the separator releases the para-
chute pipe.

No. 5022 - Ship. Wt. 4 oz. .... $2.95

Cold Power Conversion Kit
Converts Estes Cold Power Model Rocket**
from RP-100 Cold Propellant to standard
Estes Solid Propellant Model Rocket en-
gines (Series 1). Easy to assemble. Light-
weight for maximum performance.

No. 1449 - Ship. Wt. 4 oz. .... $0.49

*DuPont Trademark
**On pp. 47 & 48
The most important model rocket development in years, the Estes CINEROC enables the advanced rocketeer to make moving photographic studies from a vantage point never before possible: the rocket itself!

Fully loaded, the CINEROC weighs only 3 ounces, easily lofted by the Estes "D" engines. The Super-8mm camera is an engineering marvel. The single element 10mm acrylic lens gives the best possible image with the greatest depth of field. You'll see the launch bags and fins of the launch vehicle as clearly as the terrain far below. A semi-slow motion effect is obtained with the CINEROC's exposure rate of 31 frames per second, ideal for studying ignition, booster separation, stability, and parachute opening actions.

An essential part of the CINEROC is the Flight-Pak film cartridge. No threading; just slip it into the camera and you're ready to go.

The photos at the left were taken from CINEROC films and show the clarity and detail possible. You see everything—from lift-off to deployment of the recovery system!

**FLIGHT-PAK MOVIE CARTRIDGE**

**FLIGHT-PAK PROCESSING**

You'll want top quality processing of your Flight-Pak film! After exposure, place the Flight-Pak back in its black plastic bag, package it for safe mailing, enclose $2.00, and send to:

Estes Film Lab
Box 227
Penrose, Colo. 81240

**CAMERA SPECIFICATIONS**

- 10mm focal length lens
- 1/11 - 1/500 sec. shutter, 31 frames per second, 6" to infinity depth of field.
- Takes color film.
- Diameter: 1.75"
- Length: 9.9"
- Fits BT-60 Body Tube

Completely assembled with Flight-Pak loaded with color film, 2 batteries, and 18" parachute.

Shipping weight: 1.5 lbs.

Cat. No. 1-CM-8 (less launch vehicle) $21.95

Cat. No. 1-RC-8 $25.50

Cat. No. 701-FC-8 $4.95

Cat. No. 701-FDP-2 $2.00

**CAMROCK SPECIFICATIONS**

- Length 13.6" (34.6cm)
- Body Dia. 0.976" (24.8mm)
- Weight 1.5 oz. (43 g)

Shipping weight: 6 oz.

Cat. No. K-16 $2.50

**AERIAL PHOTOGRAPHY**

Aerial photography has long been acknowledged for its value in map making, geographical studies, reconnaissance and related research fields. The Camroc aerial camera opens a new field of scientific study to the rocketeer who wants to get a better understanding of the scientific uses of aerial photography. Recommended booster vehicle is the Delta. Other models can be adapted.

In addition to learning principles of camera construction and operation, many challenging aerial photographic projects can be developed.

Study space science reconnaissance techniques the practical way—over familiar terrain with known objects. Map your flight area with Camroc photos. Use photo pairs, which produce a stereoscopic image when properly viewed, to emphasize geological features or determine heights of different objects quite accurately.

Cat. No. 3,537,369

**FILM ONLY**

Precision cut Astropan 400 film discs to fit Camroc film holder. Packaged in light-proof double envelope. Envelope should be opened ONLY IN TOTAL DARKNESS.

Handling and loading instructions included. Shipping weight: 1.5 oz.

Cat. No. NF-6 $6.00

Cat. No. NP-1 $5.95

Cat. No. NFH-4 $4.00

REFUND PLAN ON FILM HOLDERS

Extra film holders for in-the-field changing are available for the Camroc. They come 4 to an order, each preloaded. Film holders may be returned with the film for processing. They are reusable and subject to refund when returned. Shipping weight 2 oz.

Cat. No. FFH-4 $4.99

Negatives - 1 1/8" dia.

Print size: 3" dia.

**EXTRA PRINTS**

You can order additional prints of negatives which have been previously developed. The negatives must be enclosed in a suitable protective package with the order. (Please do not order extra prints without first checking the negative and original print to determine if it is suitable for extra prints).

Cat. No. NP-1 $3.00 ea.

Cat. No. FFH-4 $4.99

Cat. No. N6 $6.00

Cat. No. NP-1 $5.95

Cat. No. NFH-4 $4.00

Cat. No. FFH-4 $4.99

Cat. No. NP-1 $3.00 ea.
ROCKET ENGINES
Quality-tested engines for high-performance flights

The finest engine made... you can depend on it... for every flight application

The design and development of the Estes model rocket engine was the real beginning of the safe, educational and exciting hobby that model rocketry has become.

Today's modern rocket engine is the result of over 14 years of engineering efforts at Estes Industries. Consequently, today's rocketeer has dependable, safety-proven engines to carry on his rocket activities.

The energy-packed, solid propellant Estes model rocket engine is a complete power system for your rocket. It is designed and pre-manufactured to perform all power functions for dependable launch and activation of a recovery system. In one compact package it provides thrust for quick lift-off and acceleration to high altitudes, allows for a timed delay period to reach peak altitude while delivering smoke trail for easy tracking, and supplies ejection power for the parachute or other system for your rocket's safe return to earth.

Reliability proven in over 40 million launchings, Estes engines are manufactured under controlled conditions within exacting tolerance limits. You can count on them for consistent performance from one launch to the next. You'll launch with confidence in contest and exhibition flying.

Six power levels are available in Estes engines. Total impulse is tailored to fit the various NAR-F1A classes. Average thrust, peak thrust and delay times are set up to give the best performance within these classes and to provide the most useful selection of engines for all rocketeers.

Designed for specific launch and flight functions, rocket engines are expendable—not reusable.

ENGINES CODING FOR QUICK-N-EASY IDENTIFICATION

1. Label color indicates recommended use of the engine.
   a. GREEN Single stage rockets
   b. PURPLE Two-stage and multi-stage rockets
   c. RED Booster and intermediate stages of multi-stage models

2. Code designation stamped on the engine gives useful and important information on its performance capabilities.
   a. This portion indicates total impulse or total power produced by the engine.
   b. This portion shows the engine's average thrust in Newtons and helps you choose the right engine for your rocket's flight.
   c. This number gives you the delay in seconds between burnout and ejection charge. Let's you choose the engine with the delay time you want for any flight.

Igniters and complete instructions are included with Estes engines.
### MINI-ENGINE SELECTION CHART

<table>
<thead>
<tr>
<th>Cat. No. and Engine Type</th>
<th>Prices</th>
<th>Time Delay</th>
<th>Max. Lift</th>
<th>Max. Thrust</th>
<th>Initial Weight</th>
<th>Weight Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGLE STAGE ENGINES</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1/4 A0-2T 4 for $1.20</td>
<td>04-1.25</td>
<td>2 sec 2 oz 25 oz 0.28 sec 0.70 oz 0.037 oz</td>
<td></td>
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</tr>
<tr>
<td>1/2 A0-2T 4 for $1.30</td>
<td>04-1.25</td>
<td>2 sec 2 oz 25 oz 0.28 sec 0.70 oz 0.037 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2-2T 4 for $1.40</td>
<td>05-2.30</td>
<td>3 sec 3 oz 30 oz 0.36 sec 0.98 oz 0.062 oz</td>
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<tr>
<td>A3-4T 4 for $1.40</td>
<td>05-2.30</td>
<td>3 sec 3 oz 30 oz 0.36 sec 0.98 oz 0.062 oz</td>
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<tr>
<td>A10-3T 4 for $1.40</td>
<td>05-2.30</td>
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<tr>
<td>1/4 A0-6T 4 for $1.20</td>
<td>04-1.25</td>
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</tr>
<tr>
<td>1/4 A0-8T 4 for $1.20</td>
<td>04-1.25</td>
<td>2 sec 2 oz 25 oz 0.28 sec 0.70 oz 0.037 oz</td>
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</tbody>
</table>

**NOTES:**
Each pack of 4 engines includes 5 igniters (NW-1). Designs for specific launch and flight functions, rocket engines are expendable — not reusable.

1. Pounds-seconds
2. Newton-seconds (Figures shown are maximum)
3. Or single Stage Engines if used in a very light rocket.

### ROCKET ENGINE SELECTION CHART

<table>
<thead>
<tr>
<th>Cat. No. and Engine Type</th>
<th>Prices</th>
<th>Time Delay</th>
<th>Max. Lift</th>
<th>Max. Thrust</th>
<th>Initial Weight Wt.</th>
<th>Weight Wt.</th>
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<tr>
<td>SINGLE STAGE ENGINES</td>
<td>GREEN LABEL</td>
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<td>1/2A2-2 4 for $1.10</td>
<td>04-1.25</td>
<td>2 sec 2 oz 25 oz 0.28 sec 0.70 oz 0.037 oz</td>
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</tr>
<tr>
<td>A8-3 4 for $1.20</td>
<td>05-2.30</td>
<td>3 sec 3 oz 30 oz 0.36 sec 0.98 oz 0.062 oz</td>
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</tr>
<tr>
<td>B4-2 4 for $1.30</td>
<td>05-2.30</td>
<td>5 sec 5 oz 50 oz 0.52 sec 1.30 oz 0.078 oz</td>
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<td></td>
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<tr>
<td>B4-4 4 for $1.30</td>
<td>05-2.30</td>
<td>5 sec 5 oz 50 oz 0.52 sec 1.30 oz 0.078 oz</td>
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<td>B6-4 4 for $1.30</td>
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<td>5 sec 5 oz 50 oz 0.52 sec 1.30 oz 0.078 oz</td>
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<td>B6-4 4 for $1.30</td>
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<tr>
<td>B6-6 4 for $1.30</td>
<td>05-2.30</td>
<td>5 sec 5 oz 50 oz 0.52 sec 1.30 oz 0.078 oz</td>
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<td>5 sec 5 oz 50 oz 0.52 sec 1.30 oz 0.078 oz</td>
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<td>B6-6 4 for $1.30</td>
<td>05-2.30</td>
<td>5 sec 5 oz 50 oz 0.52 sec 1.30 oz 0.078 oz</td>
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</tbody>
</table>

**NOTES:**
Complete instructions and igniters (NW-1) are included with each rocket engine order from Estes. All engines listed on this page are 2.75 in. long and 0.890 in. dia. Shipping weight of each engine is approximately 1.1 oz.

1. Pounds-seconds
2. Newton-seconds (Figures shown are maximum)
3. Or single Stage engines if used in a very light rocket.

**SOLAR IGNITERS:** Add increased reliability at lift-off with Estes "NEW" high performance Solar igniter. This uprated igniter is designed especially for the new ESTES SOLAR LAUNCH CONTROL SYSTEM, FS-10. Features easy engine installation and is suitable for all ESTES rocket engines. Requires only a 6 volt power source.

**MINI-ENGINE ADAPTER**
Fly your short engine (Series III bird with a mini-engine) reduce weight and get higher performance. Heavy duty construction, yet weighs only 0.09 oz.

Cat. No. EM-520 $3.50

**IGNITERS:** Easy to use, the same type as supplied with all Estes Engines. Suitable for ignition systems using 6 volts or more. See engine instructions for installation procedure. (Patent No. 3,363,599). Shipping weight 1 oz. (Not for Solar Launchers).

Cat. No. NWI-1...6 for $0.30

**RECOVERY WADDING:** Gives protection from hot ejection gases for parachutes and streamers. Each package contains approximately 75/4" squares — enough wadding for up to 25 flights. Instructions included in package. Shipping weight 6 oz.

Cat. No. RW-1A......$0.45

**MINI-engine Size 1.75 in. long, and .500 in. dia.**

**NEW!**
Use only with FS-10, Solar Launcher.
MIGHTY 'D' ENGINES

ESTES 'D' POWER FOR HIGH ALTITUDE PERFORMANCE
BIG PAYLOAD LAUNCHES
RECOMMENDED ONLY FOR EXPERIENCED ROCKETEERS!

"D" engines are 2.75 in. long and 0.945 in. diameter.

With the advancement of model rocketry to bigger birds, larger payloads and higher altitude demands, Estes Industries has developed the 'D' engine (Series IV).

The Estes big 'D' provides twice the power of the largest Series I engine. It's the first dependable 'D' engine to provide the consistent high-thrust and total impulse levels necessary for peak performance in its class.

Precision manufacturing capability, experience and quality control at Estes Industries assure superior and consistent performance for Estes 'D' power — the same quality and reliability which have been proven in over 40 million Estes-powered launches.

When flying your rockets with the more powerful 'D' engines give even greater consideration to normal safety precautions. Refer to items 5, 6, 7, 13 and 14 in the safety code on inside back cover.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Engine Type</th>
<th>Price</th>
<th>Total Impulse</th>
<th>Time Delay Max.</th>
<th>Lift Max.</th>
<th>Initial Weight</th>
<th>Propellant Weight</th>
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</thead>
<tbody>
<tr>
<td>D12-3</td>
<td>SINGLE STAGE ENGINES</td>
<td>$2.50</td>
<td>4.48</td>
<td>20.0 3 sec</td>
<td>13 oz. 9 lb.</td>
<td>1.50 sec 1.49</td>
<td>42.2 0.879 24.93</td>
</tr>
<tr>
<td>D12-5</td>
<td>SINGLE STAGE ENGINES</td>
<td>$2.50</td>
<td>4.48</td>
<td>20.0 5 sec</td>
<td>10 oz. 9 lb.</td>
<td>1.50 sec 1.52</td>
<td>43.1 0.879 24.93</td>
</tr>
<tr>
<td>D127</td>
<td>UPPER STAGE ENGINES</td>
<td>$2.50</td>
<td>4.48</td>
<td>20.0 7 sec</td>
<td>8 oz. 9 lb.</td>
<td>1.50 sec 1.65</td>
<td>44.0 0.879 24.93</td>
</tr>
<tr>
<td>D12-0</td>
<td>BOOSTER ENGINE</td>
<td>$2.50</td>
<td>4.48</td>
<td>none</td>
<td>13 oz. 9 lb.</td>
<td>1.48 sec 1.44</td>
<td>40.9 0.879 24.93</td>
</tr>
</tbody>
</table>

ESTES "NEW" SOLAR LAUNCH CONTROL SYSTEM
This futuristically design launch control unit requires only 4 alkaline pen light batteries for power. Advanced shape allows for perfect hand held control. Unit is easily assembled in minutes and features safety key, continuity check lamp, and 15 feet of lightweight launch cable. System is constructed of durable "non-breakable" plastic. "Micro-clips" are presoldered. Use with Estes new solar igniters (NW1-2). (batteries not included). Shipping weight 6 oz.
Cat. No. FS-10 .................. $3.95

COMBINATION OFFER
Includes solar launch control system (FS-10) and Porta Pad launcher (RL-4). Shipping weight 12 oz.
Cat. No. 1450 .................. $6.95

LAUNCH CONTROL SYSTEM: Use with a 12 volt car battery (no need to remove battery from car; just connect the Launch Control System's battery clips to the battery terminals) for any model, including the large birds. If you don't have access to a car battery, use a Ray-O-Vac No. 518 Eveready No. 731, or a Burgess TW-1, available at most hardware stores. Shipping weight 12 oz.
Cat. No. FS-5 .................. $3.75
LAUNCHERS

TILT-A-PAD
Wooden Tripod

This flexible launcher gives you ideal launch control and convenience. Tripod stand permits launching of rockets up to 12 oz. (and adjusts to fit uneven ground). Tilts to compensate for wind direction and speed. Legs fold down for compact storage. Comes in easy to assemble kit form with complete instructions. Shipping weight 2 lbs.
Cat. No. RL-3 ............... $3.95

PORTA-PAD
Plastic Tripod

Space-age designed, the Porta-Pad is rugged enough to take the stress of countless launchings, even with the big Estes "D" engines, yet is lightweight and compact enough for easy carrying and storage. Strong, girder construction, orange plastic legs snap off for storage in field box. Friction grip secures rod firmly (accommodates standard 1/8" rod or heavy-duty 3/16" rod). Tilt adjustment allows you to compensate for wind. For extra versatility, adapt your Porta-Pad for rail launchings (see page 56) by using a separate blast deflector. Cat. No. BD-1 (see Page 59). Shipping weight 1 lb., 8 oz.
Cat. No. RL-4 ............... $3.50

LAUNCH SUPPLIES
and ACCESSORIES

TWO-PIECE ROD

Handy collapsible two-piece rod for portable launchers. Pieces slip together to make a 36" long rod. Base rod has a diameter of 1/8". Shipping weight 6 oz.
Cat. No. RLR-1 ............. .35
Cat. No. MC-1 .............. 2 for $ .35

ADD-ON ROD: Sturdy 1/8" diameter, 18" long launch rod section expands two-piece rod to 53" length, gives extra control of flight path. Shipping weight 6 oz.
Cat. No. RLR-3 ............. $ .25 per section

DELUXE BLAST DEFLECTOR: Durable press steel plate deflects engine blast out and away from launcher. Two inches wide, five inches long. Shipping weight 5 oz.
Cat. No. BD-1 ............. $ .60
Cat. No. BD-2 ............. $ .65

MICRO-CLIPS: Equip your launcher with the best. Spring-loaded solid steel clips connect lead wires to igniters. Easy to clean and highly conductive with flat contact surfaces. Only 1.1 inches long, attach to leads with or without solder. Shipping weight 1 oz.
Cat. No. MC-1 .............. 2 for $ .35

MASKING TAPE: Use to secure engines in models, mask for painting, etc. Strong, flexible, 1/2" wide, comes in 30" rolls. Shipping weight 5 oz.
Cat. No. MT-1 ............. $ .55
Cat. No. LP-2 ............. $1.50

SWIVEL ASSEMBLY: Provides 360° rotation and full tilt adjustments, yet locks in selected position. Handles 1/8" rod, 3/16" rod, and O-rail. Shipping weight 3 oz.
Cat. No. MT-1 ............. $ .55
Cat. No. LP-2 ............. $1.50

ROCKET SUPPORT SPRING

* The perfect rocket stand-off
* A must for all launch pads
* Holds rockets above blast deflector
* Completely adjustable
* Compact
* Keeps micro-clips from touching
Cat. No. RS-125 ........... .35/S .25

BATTERY CLIPS: Ideal for hookup to car batteries, heavy duty clips connect terminals up to 1" in dia. Clips are 3" long, available with black and red insulators. Specify color(s) when ordering. Shipping weight 5 oz.
Cat. No. BC-1 2 for $ .90
Cat. No. BC-2 ............. $ .85

BLAST DEFLECTOR PLATE: Slip-on metal deflector plate fits any launcher using 1/8" rod, protects launch base from rocket blast. Four-inch diameter. Shipping weight 8 oz.
Cat. No. BD-2 ............. $ .65

NICHROME WIRE: Electrical heating wire for model rocket ignition. No. 30 recommended for use with car batteries. No. 32 for use with other power supplies. Shipping weight 1 oz.
Cat. No. NW-30A ........... $ .60
Cat. No. NW-32A ........... $ .50

LEAD WIRE: Flexible size 18 two-conductor insulated wire. Ideal as lead from firing panel to launcher. In 12-foot lengths. Shipping weight 5 oz.
Cat. No. LW-12 .............. $ .85

The recommended electrical system for use with the Tilt-A-Pad and Porta-Pad is the F-5 Launch Control System (see page 57) and a 6- or 12-volt car battery or other power source.

Rockets not included
ELECTRICAL EQUIPMENT
and LAUNCH SUPPLIES

PILOT LIGHT HOLDER:
Adds visual control to launch panel. Holder is steel with 1/8" red plastic jewel, mounts in 7/16" hole. Takes either 6 or 12 volt bulbs, bulbs not included. Shipping weight 4 oz. Cat. No. LH-1 $ .95

8 VOLT BULB: Fits holder No. LH-1. Shipping weight 1 oz. (Type 51.) Cat. No. AL-6 $.20

12 VOLT BULB: Fits holder No. LH-1. Shipping weight 1 oz. (Type 53.) Cat. No. AL-12 $.20

KEY SAFETY SWITCH:
Prevents accidental launching of rockets. SPST, turns on with key, must be turned off to remove key. Mounts in 1/8" hole. One key included. Shipping weight 4 oz. Cat. No. KSW-1A $ 3.00

EXTRA KEY: Cat. No. KSW-TK $ .50

PUSH BUTTON SWITCH:
Heavy duty construction momentary type, SPST, normally open. Excellent for use as a firing switch. Mounts in 1/8" hole. Shipping weight 4 oz. Cat. No. SWM-1 $ 1.25

ROTOR SWITCH:
Twelve position single pole rotary switch - use as selector with firing systems using more than one launcher. Non-shorting, mounts in 3/8" hole. Shipping weight 5 oz. Cat. No. SWR-1 $ 2.25

DIAL PLATE:
Numbered 12 position plate for use with rotatory switch No. SWR-1. Mounts on panel with same nut used to hold switch. Etched aluminum on black background. Shipping weight 1 oz. Cat. No. DP-1 $ .45

LAUNCH RAILS:
Rigid aluminum "C" rails offer countless new possibilities for your launcher designs.
"C" RAIL: 3/8" square (outside). Comes in 18" long sections. Durable aluminum for long life and rust-free service. Use at least 2 sections connected with a joiner (see below) for launch rail. Shipping weight 6 oz. Cat. No. LR-18A $ 2 for $1.50

RAIL JOINER:
Spring clip 2 1/2" long by 1/2" wide, fits inside rail ends, holds two rail sections securely together for assembling launch rails 36" long and longer. Shipping weight 2 oz. Cat. No. RJ-18A $ .40 each

SOLDERING IRON:
25 watt. Develops up to 720°F. Handle remains cool. Replaceable, pointed nickel-plated tip. Use with rosin core solder. Shipping weight 1 lb. Cat. No. SI-1 $4.00

RANGE SPECIALS

ALTISCOPE:
Find out how high it went with Altiscope! Can also be used to find heights of trees, buildings, mountains, poles, etc. Comes in kit form complete with instructions, trig tables, technical report TR-3 on altitude tracking and 2-D altitude computer. Patent No. 3,208,147. Shipping weight 20 oz. Cat. No. A-1 $ 3.95

ALTITUDE COMPUTER:
The new Estes Pocket Size Altitude Computer enable any rocketeer to predict model rocket performance in a matter of seconds. Just move the center slide in a three step procedure for fast accurate results. Three color calculator comes complete with instructions. Cat. No. 9015 $ .75

ASSEMBLY SPECIAL
A Complete Construction and Finishing Set
One convenient package containing all the tools and supplies recommended for assembling, painting, and decorating most model rockets. Ideal for the beginner who doesn't already have modeling equipment. This set helps you build the best models right from the start.

Contents:
1 Bottle White Glue
3 Emery Boards
1 Bottle Sanding Sealer
1 Bottle Silver Dope
1 Bottle White Dope
1 Gold Mine Special Decal
1 United States Decal
3 Sheets Sanding Material
1 Bottle Orange Dope
1 Bottle Black Dope
1 Bottle Dope Thinner
1 Roll Masking Tape
1 X-Acto Knife
18 Sheets Sandpaper
3 Paint Brushes
Shipping Wt. 1.5 lb. Cat. No. CK-3A $6.00 Value Only $4.95

RANGE BOX:
Good-looking, roomy, tough all-metal box. A big 11 1/4" x 5 1/2" x 4", complete with a three compartment tray for small parts. Has full-drawn seamless body, snap catch with eye for padlock. Shipping weight 2 pounds. Cat. No. RB-1 $4.25

LARGE RANGE BOX:
Big enough to hold an Altiscope, a solar launcher and a model or two, this sturdy all steel range box measures 19" x 7 1/4" x 6". Watertight construction protects your supplies, double action latch eliminates spilling, multi-section tray helps keep things organized. Shipping weight 6 pounds. Cat. No. RB-2 $9.95
RECOVERY EQUIPMENT AND SUPPLIES

PARACHUTE KITS: Get the best in parachute recovery! Two color printed plastic 'chutes give maximum visibility - feature easy-to-see pattern. Lightweight, durable and easily folded, these 'chutes are only 0.0075" thick, allowing the most material to be packed into the least body space. Each kit comes complete with 'chute material, tape strips and shroud lines. Shipping weight 2 oz.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Parachute Diameter</th>
<th>Net Weight</th>
<th>Price Each</th>
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<tr>
<td>PK-6</td>
<td>8 inches</td>
<td>.095 oz.</td>
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<td>PK-12</td>
<td>12 inches</td>
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<td>PK-18</td>
<td>18 inches</td>
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<td>$ .45</td>
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<tr>
<td>PK-24</td>
<td>24 inches</td>
<td>.288 oz.</td>
<td>$ .70</td>
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</tbody>
</table>

RECOVERY WADDING: See Page 54

ALUMINIZED PARACHUTE MATERIAL: Extra strong coated polyethylene. 3 feet x 3 feet. 1.25 mil. thick. Perfect for custom chutes. Para wings, etc. Shipping weight 2 oz.
Cat. No. PM-3 ................. 2 for $1.50

SCREW EYES: Specify size when ordering. Shipping weight for 6 eyes 1 oz.
LARGE EYE: 1" long; .04 oz.
Cat. No. SE-1 .................. 6 for $ .30
SMALL EYE: 3/4" long; .03 oz.
Cat. No. SE-2 .................. 6 for $ .30
EXTRA SMALL EYE: 5/8" long; .01 oz.
Cat. No. SE-3 .................. 6 for $ .30

TAPE DISCS: Fasten shroud lines to plastic 'chutes or streamers with these 3/8" pressure sensitive tape discs. Shipping weight for 24 discs, 1 oz.
Cat. No. TD-1 .................. 4 sheets of 6 for $ .40

TAPE STRIPS: For top strength, low bulk and low weight, fasten shroud lines with these 3/4" x 3/4" tape strips, in sheets of 35 strips. Shipping weight 1 oz.
Cat. No. TD-2 .................. 2 sheets of 35 for $ .60

SNAP SWIVELS: For quick changes and reduced tangling in your recovery systems, use these tiny 1" long snap swivels. Net weight .01 oz. Shipping weight for 12 swivels 1 oz.
Cat. No. TA-1 .................. 12 for $ .80

SHOCK CORD: Specify width when ordering. Shipping weight 1 oz.
1/8" wide: Net wt. .039 oz.
Cat. No. SC-1 ................. $ .10
1/4" wide: Net wt. .078 oz.
Cat. No. SC-2 ................. $ .15
Also 36" long for greater stretch on those larger birds.
1/8" wide: Net wt. .078 oz.
Cat. No. SC-3 ................. $ .20

STREAMER MATERIAL: Bright orange, flame resistant crepe paper streamers. In 7½-foot lengths, enough for two to eight streamers. Specify size when ordering. Shipping weight 1 oz.
1" wide - Net wt. .062 oz.
Cat. No. SM-1 ................. 6 for $ .80
2" wide - Net wt. .184 oz.
Cat. No. SM-2 ................. 6 for $ .96

SHROUD LINES: Build reliable, durable custom parachutes with this strong, hard surface shroud line cord. Comes in 72 yard spools. Shipping wt. 5 oz.
Cat. No. SLT-1 ................. $ .50
### BODY TUBES

#### SPIRAL

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<td>$ .30 18&quot;</td>
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<td>.0411&quot;</td>
<td>.013&quot;</td>
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<tr>
<td>BT-20</td>
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<td>.0736&quot;</td>
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<td>.0710&quot;</td>
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<td>.960</td>
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<td>1.655&quot;</td>
<td>1.637&quot;</td>
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<td>.863</td>
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<td>BT-70</td>
<td>$ .90 17.5&quot;</td>
<td>2.175&quot;</td>
<td>2.217&quot;</td>
<td>.021&quot;</td>
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<td>BT-101</td>
<td>$1.75 16.5&quot;</td>
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<td>1.974</td>
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<td>BT-30</td>
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<td>.0726&quot;</td>
<td>.0705&quot;</td>
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#### CLEAR

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<td>$.30 8&quot;</td>
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<td>.736&quot;</td>
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<td>.056</td>
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<td>PST-50S</td>
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<td>.950&quot;</td>
<td>.976&quot;</td>
<td>.011&quot;</td>
<td>.110</td>
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<td>1.595&quot;</td>
<td>1.037&quot;</td>
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<td>PST-65R</td>
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<td>1.750&quot;</td>
<td>1.796&quot;</td>
<td>.023&quot;</td>
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#### PAYLOAD SECTIONS

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<tbody>
<tr>
<td>PS-20A</td>
<td>$.90 Clear Plastic</td>
<td>BT-20 .710&quot; 3&quot; 4.00&quot;</td>
<td>.16 1</td>
</tr>
<tr>
<td>PS-20C</td>
<td>$.95 Clear Plastic</td>
<td>BT-20 .960&quot; 3&quot; 7.00&quot;</td>
<td>.40 4</td>
</tr>
<tr>
<td>PS-30S</td>
<td>$.75 Regular Tube</td>
<td>BT-30 .725&quot; 2&quot; 3.75&quot;</td>
<td>.24 1</td>
</tr>
<tr>
<td>PS-50A</td>
<td>$.95 Clear Plastic</td>
<td>BT-50 .960&quot; 3&quot; 8.50&quot;</td>
<td>.39 4</td>
</tr>
<tr>
<td>PS-50C</td>
<td>$.95 Clear Plastic</td>
<td>BT-50 .960&quot; 3&quot; 10.50&quot;</td>
<td>.10 1</td>
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<tr>
<td>PS-50E</td>
<td>$1.85 Clear Plastic</td>
<td>BT-50 1.75&quot; 4&quot; 10.50&quot;</td>
<td>.10 1</td>
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<tr>
<td>PS-51B</td>
<td>$.50 Regular Tube</td>
<td>BT-51 .128&quot; 3&quot; 7.63&quot;</td>
<td>.53 1</td>
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<tr>
<td>PS-51C</td>
<td>$.50 Clear Plastic</td>
<td>BT-51 .128&quot; 3&quot; 10.50&quot;</td>
<td>.10 1</td>
</tr>
</tbody>
</table>

### NOSE CONES

#### Nose Cone Dimensions

Listed in columns 1, 2, and 3.

#### DESCRIPTION

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Price</th>
<th>Dimensions</th>
<th>Average Weight</th>
<th>Ship. Weight</th>
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<tbody>
<tr>
<td>BT-5</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.013 oz.</td>
</tr>
<tr>
<td>BT-10</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.020 oz.</td>
</tr>
<tr>
<td>BT-20</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.016 oz.</td>
</tr>
<tr>
<td>BT-30</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.039 oz.</td>
</tr>
<tr>
<td>BT-40</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.052 oz.</td>
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<tr>
<td>BT-50</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.075 oz.</td>
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<tr>
<td>BT-60</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.098 oz.</td>
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<tr>
<td>BT-70</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.121 oz.</td>
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<tr>
<td>BT-80</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.144 oz.</td>
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<tr>
<td>BT-90</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.167 oz.</td>
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<td>BT-100</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.190 oz.</td>
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<td>BT-150</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.213 oz.</td>
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<td>BT-200</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.236 oz.</td>
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<tr>
<td>BT-300</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.259 oz.</td>
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<tr>
<td>BT-400</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.282 oz.</td>
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<td>BT-500</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.305 oz.</td>
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<td>BT-600</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.328 oz.</td>
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<td>BT-700</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.351 oz.</td>
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<tr>
<td>BT-800</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.374 oz.</td>
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<tr>
<td>BT-900</td>
<td>$ .25</td>
<td>3/4&quot;</td>
<td>1/4&quot;</td>
<td>.397 oz.</td>
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</tbody>
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**Notes:**
- Payload Sections include nose cone, body tube, adapter or bulk head.
ENGINÉ MOUNTS

<table>
<thead>
<tr>
<th>Engine Type</th>
<th>Name</th>
<th>Fits</th>
<th>Net Weight Oz.</th>
<th>Shipping Weight Oz.</th>
<th>Cat. No.</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>For Series I &amp; II</td>
<td>EH-2050</td>
<td>BT-50</td>
<td>0.1</td>
<td>5</td>
<td>EH-2050</td>
<td>$0.40</td>
</tr>
<tr>
<td>Engines - A, B, &amp; C</td>
<td>EH-2055</td>
<td>BT-55</td>
<td>0.14</td>
<td>5</td>
<td>EH-2055</td>
<td>$0.40</td>
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<tr>
<td>&amp; D Type</td>
<td>EH-2060</td>
<td>BT-60</td>
<td>0.17</td>
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<td>EH-2060</td>
<td>$0.40</td>
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<tr>
<td>0.68&quot; x 2.75&quot;</td>
<td>EM-5063</td>
<td>Saturn V</td>
<td>0.4</td>
<td>5</td>
<td>EM-5063</td>
<td>$0.60</td>
</tr>
<tr>
<td>For Series IV</td>
<td>EM-520</td>
<td>BT-20</td>
<td>0.09</td>
<td>5</td>
<td>EM-520</td>
<td>$0.35</td>
</tr>
<tr>
<td>Engines 5.5&quot; x 1.75&quot;</td>
<td>EM-2050</td>
<td>BT-50</td>
<td>0.19</td>
<td>5</td>
<td>EM-2050</td>
<td>$0.45</td>
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<tr>
<td>Special Purpose</td>
<td>EM-2060</td>
<td>BT-50</td>
<td>0.19</td>
<td>5</td>
<td>EM-2060</td>
<td>$0.45</td>
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<tr>
<td>Quick Change</td>
<td>EM-5063</td>
<td>Saturn V</td>
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<td>5</td>
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<td>Saturn V</td>
<td>0.4</td>
<td>5</td>
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<tr>
<td>Engine to Series I</td>
<td>EM-5063</td>
<td>Saturn V</td>
<td>0.4</td>
<td>5</td>
<td>EM-5063</td>
<td>$0.60</td>
</tr>
</tbody>
</table>
& II Engines

High performance Estes engine mounts for your original design. All engine mounts feature easy-to-assemble instructions and light weight components.

NOSE BLOCKS

Use these top quality featherweight balsa nose blocks in payload sections and anywhere else a solid bulkhead is required. Precision turned for exact fit in body tubes.

<table>
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<tbody>
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<td>NB-20</td>
<td>$0.30</td>
<td>0.710&quot;</td>
<td>1/2&quot;</td>
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<td>7/8&quot;</td>
<td>BT-90</td>
<td>$0.190 4</td>
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BALSÁ ADAPTERS

Adapters give flexibility for rocket design. Switch from one size body tube to another for payload capsules, parachute compartments, propulsion sections, etc. Adapters fitting BT-20 can be built up with masking tape to fit BT-30. Any adapter can be hollowed to make a passage for ejection gases. All adapters have at least 1/2" mating surface on each end.

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Price Each</th>
<th>Material Tubes</th>
<th>Length</th>
<th>Taper Length</th>
<th>Weight Net Ship.</th>
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<td>$0.30</td>
<td>BT-5 to BT-20</td>
<td>1.75&quot;</td>
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<td>TA-550</td>
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<td>BT-20 to BT-50</td>
<td>2.25&quot;</td>
<td>1.0&quot;</td>
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<td>TA-2050A</td>
<td>$0.35</td>
<td>BT-20 to BT-50</td>
<td>2.25&quot;</td>
<td>1.0&quot;</td>
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<td>$0.45</td>
<td>BT-20 to BT-50</td>
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<td>2.25&quot;</td>
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<td>$0.60 4</td>
</tr>
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</table>

STAGE COUPLERS

For multi-staging, joining body tubes, positioning adapter rings, etc. Make perfect guides for cutting body tubes and sanding cut edges of body tubes, too. Shipping weight for all is 3 oz. each.

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Price Each</th>
<th>Outside Diameter</th>
<th>Inside Diameter</th>
<th>Length</th>
<th>Fills</th>
<th>Average Weight</th>
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<tr>
<td>JT-5C</td>
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<td>0.513&quot;</td>
<td>0.455&quot;</td>
<td>¾&quot; BT-5</td>
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<td>0.708&quot;</td>
<td>0.550&quot;</td>
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<td>JT-30C</td>
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<td>0.650&quot;</td>
<td>¾&quot; BT-30</td>
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<td>JT-50C</td>
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<td>0.949&quot;</td>
<td>0.820&quot;</td>
<td>1&quot; BT-50</td>
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<td>JT-65C</td>
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<td>1.26&quot;</td>
<td>1.13&quot;</td>
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<td>JT-70C</td>
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<td>1.59&quot;</td>
<td>1.55&quot;</td>
<td>1½&quot; BT-60</td>
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<td>JT-70A</td>
<td>$0.25</td>
<td>2.175&quot;</td>
<td>2.115&quot;</td>
<td>1½&quot; BT-70</td>
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<td>$1.40 oz.</td>
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CENTERING RINGS
For centering a BT-20 body tube with a BT-50. Greater strength makes for use with high thrust engines. Weight per pair .285 oz. Shipping weight 3 oz.
Cat. No. AR-2060 10 for $.55
To center a BT-50 tube in a BT-55 body tube. Extra strong for "D" engine mounts. Weight 0.062 oz. each. Shipping weight 2 oz.
Cat. No. AR-5055 4 for $.35

Add still another dimension to rocket design. Easy to use paper adapters, are perfect for making transitions between tube sizes for countless designs.
MULTI-PURPOSE SET — Includes a total of 20 rings for positioning BT-5 in BT-20, BT-5, BT-20, BT-30 in BT-50 and NT-5, BT-20, and BT-50 in BT-50. Also three universal tapered shrouds and instructions. Shipping weight 2 oz.
Cat. No. TA-1 1.40
20-50 RINGS — 20 rings for centering and mounting BT-20 in BT-50. Shipping weight 2 oz.
Cat. No. RA-2050 20-55 RINGS — 10 rings for centering and mounting BT-20 in BT-55. Shipping weight 2 oz.
Cat. No. RA-2055 20-60 RINGS — 10 rings for centering and mounting BT-20 in BT-60. Shipping weight 2 oz.
Cat. No. RA-2060 30 per set

FIN STOCK
Top quality balsa sheeting for making fins for model rockets. For maximum strength, grain of wood should follow the leading edge of the fin. Read FINS in Vol. 3, No. 3 of the MODEL ROCKET NEWS for more information.

FIN PATTERNS
Popular fin designs, all tried and proven, printed full size on heavy index stock. Simply cut out and trace around pattern to transfer design to balsa. A must for the model rocket designer. Shipping weight 1 oz.

CUTOMIZING MATERIALS AND SUPPLIES
Launchers Special
Perfect starter assortment for starting your own "R & D" program. Over 74 pieces — at an excellent savings! Packed in reusable Range Box.

Contents:
Nose Cones
1 PCN-60L 1 SM-1
1 PCN-30D 2 TD-2
1 PCN-30M 1 SLT-1
1 PCN-20A 6 SC-1
1 PCN-20B 1 SC-2
1 PCN-20N 6 SE-2
1 PCN-10A Miscellaneous
1 PCN-10B 1 JT-60C
1 PCN-10H 1 NB-30
1 PCN-10R 1 NB-20
1 PCN-10T 1 EB-2060
2 BT-10H 1 TA-2060
2 BT-20 1 TA-1
1 BT-50 3 NCD-1
1 Fin Material 2 LL-2C
1 BFS-10 3 EB-20A
1 BFS-20 3 EB-30A
1 BFS-30 3 NCW-1
1 BFS-40 1 NCS-2
1 Recovery Equipment 1 D-6
1 PK-8A 1 BK-22
1 PK-12A 1 PP-2
1 PK-18A 1 PP-3
1 PK-24A
15.00 Value ONLY
Cat. No. ES-300

Shipping wt. 2 lbs. 9.95

Lift-Off Assortment
For building an all-purpose rocket fleet. Lift-off to more rocket building enjoyment with this special-value assortment.

Contents:
Nose Cones
1 BNC-30C 1 SLT-1
1 BNC-30D 5 SE-2
1 BNC-30E 1 BNC-20A
1 BNC-30M 1 BNC-20B
1 BNC-30N 1 BNC-20N
1 Body Tubes 1 BK-22
1 5 BT-30 1 PP-2
5 5 LL-2A
5 5 EB-30A
Fin Stock
3 BFS-20
2 BFS-30

Recovery Equipment
1 PK-8A
2 PK-12A
1 SM-1
1 TD-2
5 SC-1

7.00 Value ONLY
Cat. No. ES-200

Shipping wt. 1 lb, 10 oz.

PAPER ADAPTERS

FINN STOCK

FIN PATTERNS

FINN PATTERNS

FINN PATTERNS

FINN PATTERNS

FIN PATTERNS

FIN PATTERNS

FIN PATTERNS
MODELING TOOLS

KNIFE AND TOOL SET: Contains small, medium and heavy-duty knives and an entire assortment of blades, gouges, routers, and punches. Has planer, 1″ sander, spokeshear and balsa stripper. In wooden box, complete with see-through cover and fitted plastic tray insert that holds and shows every tool. Shipping weight 2 lbs.

Cat. No. KNS-84 $13.95 each

KNIFE CHEST: Small, medium and heavy-duty knives plus 9 assorted extra blades — one for practically every cutting job. In a handy, natural finish wood chest. Shipping weight 1 lb., 8 oz.

Cat. No. KNS-82 $4.95

DOUBLE KNIFE SET: Nos. 1 & 2 knives with 10 extra extra blades. On plastic base with removable plastic Visi-Dome cover. Shipping weight 8 oz.

Cat. No. 2674 $2.75

HEAVY DUTY KNIFE: Set of one 4 1/2″ long and #4 plastic handle with metal chuck and one general purpose knife blade similar to #4. Shipping weight 6 oz.

Cat. No. KNS-4 $1.25 each

PRECISION KNIFE SET: Includes one 4 1/4″ long no. 1 aluminum handle and 6 assorted blades. Recommended for precision work. Shipping weight 2 oz.

Cat. No. 2673 $0.95 each

RETRACTABLE PUSH-BUTTON KNIFE: Positive-lock when open. Ideal for frisket work, retouching, stencil, etching. All-metal, right as a ballpoint pen; easy to carry. Shipping wt., 3 oz.

Cat. No. 2672 $2.95

UTILITY KNIFE: Includes 5 3/8″ long #3 steel handle and one #3E general purpose blade. Shipping weight 3 oz.

Cat. No. KNS-3 $0.35 each

RAZOR SAW: Fits #4 handle, 1 1/8″ wide x 5″ long. Use razor saw blade for cutting balsa and body tubes. Shipping weight 6 oz.

Cat. No. KN8-4F $0.50 each

TWEEZERS: For 1,001 uses in handling small parts, attaching shock cords, etc. Steel, 3″ long, 1/8″ jaw. Shipping weight 2 oz.

Cat. No. T-1 $0.25 each

WHETSTONE: Keep knife blades extra sharp for easy cutting. Pocket size, 3 1/4″ x 3/4″ x 3/8″. Use with oil for best results.

Cat. No. W-1 $0.50 each
FINISHING SUPPLIES

ASTRO SEAL: Balsa filler.
Gives smooth surface for dope or enamel application.
Sanding perfectly done.
Spreads very easily.
Fills small holes in balsa, paper and other porous materials.
Provide a smooth surface for finishing or dope.
1 oz. bottle.
Shipping weight 7 oz.
Cat. No. SS-2 $1.00

HEAT RESISTANT PAINT: Protects exposed rocket parts from heat damage up to 1000° Bright metallic finish.
Recommended for petals and other parts exposed to heat exhaust gases.
1/2 ounce bottle. Shipping weight 6 oz.
Cat. No. AP-1 $0.65

WHITE GLUE: Sets fast.
Gives super strong joints with wood, paper, cloth and other porous materials.
In 2 ounce plastic squeeze bottles. Shipping weight 6 oz.
Cat. No. WD-1 $0.50

BODY PUTTY: Fills cracks, holes, grain marks in balsa parts.
Make strong body joints.
In 2 oz. tube. Shipping weight 5 oz.
Cat. No. BP-1 $0.75

FINISHING WAX: For the high gloss finish and low drag.
Recommended for use on enamels and butylar finishes only.
In 2 ounce jar. Shipping weight 5 oz.
Cat. No. FW-1 $1.00

SANDING MATERIAL: Special mylar plastic backed abrasive sheet can be used on any brand of Black, fine 320 grit in easy to handle 2 1/4 x 2 1/2 sheets.
Shipping weight: 1 oz. each.
Cat. No. SP-320 $0.50

CLEAR SPRAY: Clear plastic coating goes on clear.
Stays clear.
Gives extra gloss to enamel finishes.
Protects decals and decorations.
Makes fluorescent finishes smooth, durable and glossy.
6 oz. spray can.
Shipping weight 16 oz.
Cat. No. EP-1 $1.20

BUTYRATE DOPE: Brushes on smoothly, easily.
1 oz. bottle.
Inigo Red, International Orange, Dark Green, Insignia White.
Sky Blue, Aircraft Gray, Orange Yellow, Gold, and Clear.
Specify colors when ordering.
Shipping weight 4 oz.
Cat. No. BRD-1 $0.25

STYRENE CEMENT: Bottle for cementing plastic to plastic.
Shipping weight 3 oz.
Cat. No. PC-1 $0.25

TUBE FOR CEMENTING PLASTIC TO OTHER MATERIALS.
Shipping weight 15 oz.
Cat. No. PC-2 $0.15

DECALS

Deluxe Decals for roll pattern and fins. Red, white, and orange in 4" x 9" sheets.
Cat. No. D-13 50d each

Kit Name Decals for your favorite models, red, white, yellow and black 3-1/2" x 4-1/2" sheet.
Cat. No. D-11 25d each

Gold Mine Special Decals for lettering, vents, hatches, etc. Red, white, and black 3-1/2" x 4-1/2" sheet.
Cat. No. D-9 25d each

Multi-Purpose Decals featuring a variety of favorite markings. Printed black on clear 2" x 4-1/2" sheet.
Cat. No. KD-45 15d each

1/3" Checkerboards for color roll patterns, 4-1/4" x 10" sheet. Available in red, black, and yellow. Specify color when ordering.
Cat. No. D-7 25d each

3/8" Checkerboards for authentic roll patterns, 4-1/4" x 10" sheet. Available in red, black, white, or gold. Specify color when ordering.
Cat. No. D-8 25d each

Patriot Decal, features American eagle roll pattern plus USAF lettering. Gold, black and white 6" x 7-1/2" sheet.
Cat. No. KD-M38 35d each

Kit Name Decals for your favorite models, 4" x 8-1/4" sheet. Available in black, white, or gold. Specify color when ordering.
Cat. No. D-6 25d each

Red, white and blue stars and stripes for fins and body patterns, 50-1/4 x 12" sheet.
Cat. No. KD-M3A75s 75d each

Futuristic Starship Vega decals for fins and roll patterns. Red, black and white 8" x 12" sheet.
Cat. No. KD-M4A 45d each

Orbital Transport decals for fins and body tube decor. Red, black and golden 4-1/4 x 11" sheet.
Cat. No. KD-42 60d each

Model decals for roll patterns, lettering, numbering, etc. Printed in black on 4" x 9" clear backing.
Cat. No. D-12 25d each

1/4" Letters and Numbers to identify your models. Available in black or white. Specify color when ordering.
Cat. No. D-4 15d each

3/8" Letters and Numbers for authentic markings. Available in black or white. Specify color when ordering.
Cat. No. D-3 15d each

STARS and BARS sheet of twelve 1-1/4" red, white and blue USAF emblems, 2-7/16" sheet.
Cat. No. D-11 15d each

STARS and BARS sheet of two 1-3/4" red, white and blue USAF emblems, plus other markings, 3-1/4" x 4-1/2" sheet.
Cat. No. D-2 15d each

DECORATING TAPE:
Black: Thin, tough pressure sensitive tape is perfect for struts, fins and other decoration. Only .0018" thick, in rolls 1/2 inch wide and 144 inches long. Shipping wt. 6 oz.
Cat. No. DT-1- .30 each
All decals shipping wt. 2 oz.
ACCESSORIES AND SUPPLIES

1 1/4" long: Cat. No. LL-2A 12 for $.50
23/8" long: Cat. No. LL-2B 10 for $.50
5" long: Cat. No. LL-2C 6 for $.60
8" long: Cat. No. LL-2D 4 for $.60

WIND METER: Rugged, pocket-size instrument for determining wind velocity. Indispensible to the serious rocketeer for studying wind effects on rocket and parachute performance. Shipping weight 1 oz. Cat. No. WM-1 $4.95

FOAM PADDING: Protect payload specimens, pad payload capsules with plastic foam. Pieces are 6" x 6" x 1/4". Can be cut and secured in place with white glue. Net weight 0.08 oz. Shipping weight 1 oz. Cat. No. PSP-1 3 for $.70

NYLON SCREWS: Extra light, high strength screws for eleven adjustment on boost-glider. 1/4" long, 1/16" thread diameter. Read TR-4 for information on gliders and their design. Shipping weight 1 oz. Cat. No. AS-1 6 for $.70

PAYLOAD: How high can your rocket lift an ounce of lead? This 1 oz payload weight, 1/4" in diameter, is used in some altitude competition events. Shipping wt. 2 oz. Cat. No. PL-1 2 for $1.00

REINFORCING: Reinforce Joints, attach shock cords. 3" x 12" sheets of gauge. Cat. No. GR-2 6 for $.60

STYROFOAM BALLS: Featherweight 3" diameter styrofoam balls for "odd ball" designs. Use glue for best results in attaching lugs, antennas, stabilizers, etc. Weight 0.2 oz. Shipping weight 5 oz. Cat. No. SB-3 2 for $.70

DOWELS: Extra strong, lightweight, seasoned maple dowels. Shipping weight 5 oz. 1/8" x 1/8". 1/12" x 1/12". Cat. No. WD-1 8 for $.40

ENGINE HOLDER: Flat spring steel design gives easy installation and low drag. Recommended for sport and demonstration models built from BT-20 and BT-30. The engine holder is 2.8" long, 0.11" wide and only 0.025" thick. Mount in on the model with glue and glue as shown on page 74. Net weight 0.032 oz. Shipping weight 1 oz. Cat. No. EH-2 3 for $.60

WEIGHTS: Balance rockets for stability.
11/16" dia. center hole. Weight: 0.12 oz. each. Shipment wt. 1 oz. Cat. No. NCW-1 6 for $.60

ENGINE HEADERS: Flexible lead strips. 3" x 1/4" x 0.022". Weight: 0.085 oz. each. Shipping weight 1 oz. Cat. No. NCW-3 10 for $.60

ENVIRONMENTAL DRAG OF MODEL ROCKETS: All factors that influence drag are explained, and practical examples of ways to minimize drag are given. Cat. No. TM-11 $1.00

TECHNICAL REPORTS

ROCKET STABILITY: Easy-to-read report explaining how rockets are designed to fly properly and including a full-scale launch test to assure rocket stability. Cat. No. TR-1 $ .25

MULTI-STAGING: A complete easy-to-understand report providing the information needed for designing, building, and flying multi-stage rockets. Cat. No. TR-2 $ .25

ALTITUDE TRACKING: The classic work on simple altitude tracking for model rocketeers with easy-to-understand computation. Cat. No. TR-3 $ .25

REAR ENGINE BOOST GLIDERS: Basic information covering design, construction, and operation of rear engine boost gliders. Cat. No. TR-4 $ .25

BUILDING A WIND TUNNEL: Full plans and information for building and using a wind tunnel with data on both hand-powered and motorized versions. Cat. No. TR-5 $ .25

CLUSTER TECHNIQUES: The complete report on clustering engines to launch larger rockets. Cat. No. TR-6 $ .25

MODEL ROCKETY STUDY GUIDE: A planned sequence of activities to guide anyone toward becoming an expert model rocketeer. Cat. No. TR-8 $ .75

DESIGNING STABLE ROCKETS: Based on standard engineering practices, this report presents a method of designing rockets for proper stability on paper before any construction work is done. Cat. No. TR-9 $ .25

ALTIMETER PREDICTION CHARTS: Explains a relatively simple method by which aerodynamic drag and other atmospheric effects can be taken into account in predicting rocket peak altitude. Cat. No. TR-10 $1.00

AERODYNAMIC DRAG OF MODEL ROCKETS: All factors that influence drag are explained, and practical examples of ways to minimize drag are given. Cat. No. TR-11 $1.00

THE ALPHA BOOK OF MODEL ROCKETRY: The things you will want to know before, during, and after your first flights are explained to help you get the most fun from your hobby. Cat. No. 2820 $ .50

MODEL ROCKETY LAUNCH SYSTEMS: An easy-to-understand booklet covering basic electrical theory, launcher design, multiple launchers, and electrical math. Cat. No. BK-12 $ .25

SPACE AGE TECHNOLOGY: A comprehensive mini-text for use in aerospace education, science, and industrial arts classes. Cat. No. BK-14 $1.00

"Teacher's Manual" (Cat. No. BK-14 TM) is available to educators for $1.00.

ESTES MODEL ROCKETY CONTEST GUIDE: Great for planning model rocket contests and meets. Features rules for exciting competitive events plus suggestions for contest organization. Cat. No. BK-17 $ .50

AEROSPACE EDUCATION AND MODEL ROCKETY: An excellent teacher's guide for introducing model rocketry into the classroom. Cat. No. BK-18 $1.00

Single copies free to educators requesting it on school stationery.

ESTES GUIDE FOR AEROSPACE CLUBS: Features complete details for club organization and activities. A must for club leaders. Cat. No. BK-19 $ .50


MODEL ROCKETY ENGINES: Large thrust-curve suitable for use in displays, plus other data. Cat. No. TN-1 $ .25

MODEL ROCKETY ENGINE PERFORMANCE: Technical information includes formulas for calculating engine performance. Cat. No. TN-2 $ .25

IS THAT PARACHUTE TOO BIG? Information on model rocket recovery systems with suggestions on modifying parachutes. Cat. No. TN-3 $ .75
Get more out of model rocketry...

Join the ESTES AEROSPACE CLUB

The most exciting hobby on Earth is even more fun when you are a member of the most exciting rocket club on Earth — The Estes Aerospace Club.

As soon as you join, you receive your own special EAC membership kit that includes the following exciting items:

- **VIPER ROCKET** — Special kit designed exclusively for members of the Estes Aerospace Club. Features sleek styling, parachute recovery, and Mini-Brute power for maximum high performance. The Viper is the first special kit which will be available ONLY to EAC members.

- **MEMBERSHIP CARD** — Impressive I.D. card identifying you as an official member of the Estes Aerospace Club. Wallet size card features identification information, rocket safety code, chapter affiliation information, and your own rocketeer achievement record.

- **MEMBERSHIP CERTIFICATE** — Handsome membership certificate signifying your EAC affiliation. Suitable for framing.

- **CLUB EMBLEM** — Official iron-on patch with EAC insignia. Perfect for the shirt or jacket, and lets the world know you are a member of the EAC. And as you progress to higher skill levels, you’ll receive additional iron-on “thruster bars” signifying your achievements.

- **DECAL SHEET** — Special EAC rocket decals to identify your models as part of the EAC fleet.

- **EAC BOX STICKERS** — Bright, multipurpose stick-ons for your range equipment.

- **EAC STATIONERY** — Distinctive EAC rocketeer stationery for your most important notes and letters.

**MODEL ROCKETRY TECHNICAL MANUAL** — 16-page technical manual covering a variety of model rocketry topics. Includes information on construction techniques, finishing, stabilization, tracking, recovery systems, multi-staging, and boost gliders, plus many other subjects.

**MODEL ROCKET NEWS** — Subscription to model rocketry's most exciting publication. Features free plan designs, technical articles, cartoons, contests, construction hints, rocketeer contributions, special projects, and much, much more.

**EAC PRODUCTS SHEET** — Special club flyer featuring exciting items like club jackets, patches, and tee shirts, plus outstanding offers for EAC kits, parts and accessories, rocket plans and technical publications which will be available ONLY to members. Remember, your money flies further in the EAC.

**EAC ACTION BOX** — Membership kit box doubles as sturdy cardboard carrying case for your model rocketry materials.

**INDIVIDUAL MEMBERSHIP KIT**

- Membership in the Estes Aerospace Club opens up a whole new world of exciting model rocket activities. Your EAC Membership Kit is just the beginning.

- As an EAC member you will receive a special iron-on club insignia. This club emblem is styled to accommodate four additional iron-on thrust bars, each a different exciting color signifying your EAC skill level. “Thruster bars” and EAC achievement certificates are awarded to you as you advance toward the status of Expert Rocketeer. (Details on skill level requirements and advancement will be included with your Membership Kit).

- You’ll be eligible to participate in special projects and exciting contests open only to EAC members — many of them involving valuable prizes.

- As an official EAC club member you will be eligible for exclusive kits and special product offers.

- You’ll have the opportunity to be selected as a member of the EAC Advisory Board which will suggest new product ideas to Estes Industries. EAC Advisory Board members may be asked to test fly new rocket designs and comment directly to Estes engineers.

- You’ll be the first to receive the latest information on new products, technical reports, rocket plans, special projects, and major EAC model rocketry events as soon as they are available.

- Further details on all these exciting programs and club services will be included with your EAC Membership Kit.

- Your EAC membership will remain in effect for as long as you remain an active Estes rocketeer. In addition, the Estes Aerospace Club also offers a chapter membership program for existing rocket clubs and for rocketeers who wish to join together to form a local chapter of the EAC. (Additional information on chapter membership will be included with your EAC Membership Kit.)

- All this plus additional free goodies such as model rocketry post cards, safety codes, posters, space books, and past MRN adds up to the biggest value available in model rocketry.

- Your club membership costs less than the total value of materials in the membership kit alone.

- EAC membership Only $2.00

- Join Now! Become an EAC Rocketeer today!!

- Simply check the EAC membership box on your catalog order form and include $2.00.
DESIGN OF THE MONTH
YOUR DESIGN COULD WIN YOU A $50 MERCHANDISE CERTIFICATE

NEW CONTEST EVERY MONTH
Here's a contest for every rocketeer. Put your creative skill of original design to the test with Estes Model rocket parts. Just follow the rules to the right.

SEND AS MANY ENTRIES AS YOU LIKE!
Entries will be judged on practicality, originality, neatness, completeness, and clarity. Plans do not have to be flight tested and proven. However, a proven design is more apt to win.

Designs should be new, original, and different, but they also need to be workable. The goal is to develop something new that other rocketeers can build and use successfully, too.

Please do not send the actual model as it cannot be returned.
Your design entry should include a parts list and any instruction or diagrams you feel would be helpful.

Photos are not required, but pictures of your completed design will be appreciated.

GOOD LUCK!!!
DELUXE RANGE OPERATIONS OUTFIT

Take advantage of the tremendous savings with this fantastic 16 piece outfit which includes:

* Quasar Rocket
* 26" tall Patriot Rocket
* Metalized Starport Launch Pad
* Launch Controller with safety interlock key and continuity check lamp.

PLUS . . .

6 high performance safety certified engines
Recovery Wadding
Igniters
Hobby Knife
Glue Pack
Field Operations Box
"Alpha Book of Model Rocketry"

Cat. No. 1460
A $17.00 value for only $14.95

Estes Industries
Monrovia, Colorado 81240