



A SUBSIDIARY OF DAMON

MODEL ROCKETRY CATALOG 1973



No. 732 25¢



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 cartons. With over 90 rockets now available, a huge assortment of parts and supplies and sophisticated projects 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
Vern Estes



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Penrose, Colorado
LITHO IN U.S.A.



FLYING ESTES MODEL ROCKETS



Engine ejection charge activates to deploy the chute or other recovery system.

Model coasts upward to peak altitude during time delay.

Model rocket drifts safely back to earth.

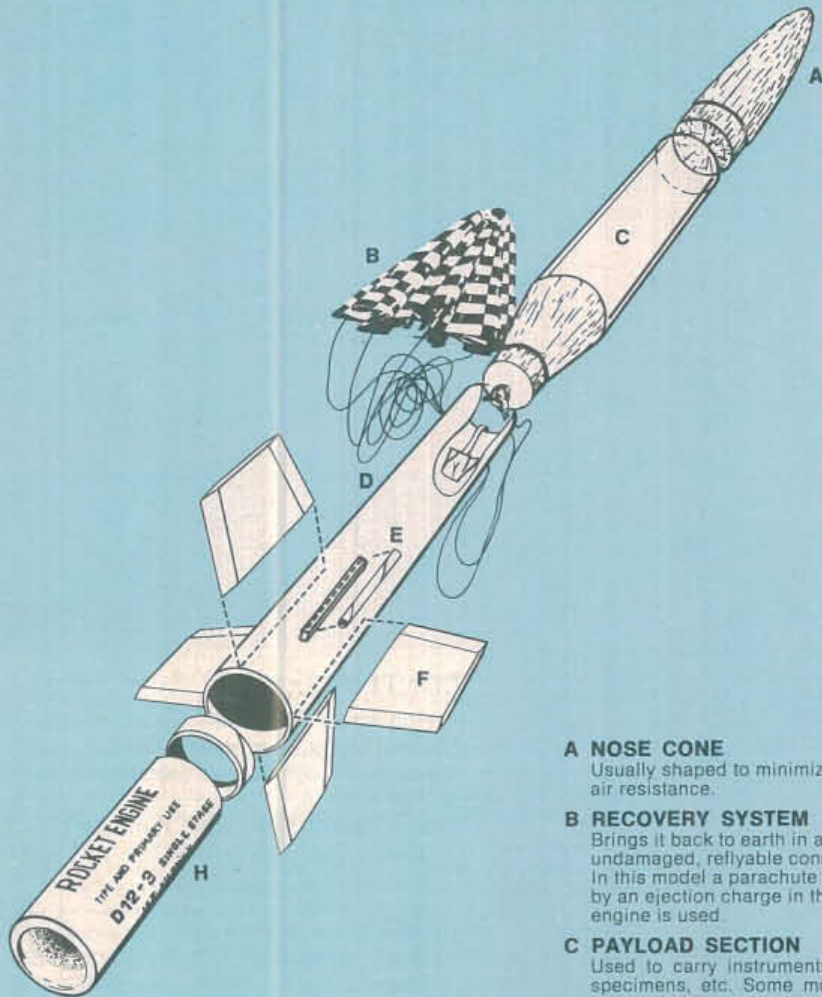
Powered flight.

Gentle landing ready for lift-off again.

Rocket is launched electrically from launch pad.

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- 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.

ROCKET TYPE CODING:

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

*SKILL LEVEL EXPLANATION

- | DESCRIPTION | ** TO BE BUILT BY: |
|-------------------------|------------------------|
| 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	SKILL LEVEL
SOLID PROPELLANT	Aero-HI	MB	14	1
	Alpha	SS	18	
	Alpha III	SS	19	
	Banshee	RTF	8	
	Big Bertha	SS	21	
	Birdie	SS	11	
	EAC Viper	SS	76	
	Galaxy Guppy	G	16	
	Hornet	MB	11	
	Javelin	MB	15	
	Little John	MB	14	
	Mark II	SS	19	
	Mini-Bertha	MB	12	
	Mosquito	MB	10	
	Quasar	SS	39	
	Rogue	MB	14	
	Scout	SS	20	
	Screamer	MB	10	
	Sky Hook	SS	19	
	Star Snoop	G	16	
	Streak	SS	20	
Super Flea	MB	15		
Vampire	RTF	9		
X-15	RTF	8		
X-Ray	SS	21		
SOLID PROPELLANT	Avenger	MS	23	2
	Bandit	SS	25	
	Beta	MS	13	
	Cherokee D	SS	24	
	Cloud Hopper	G	17	
	Cobra	C	24	
	Demon	SS	26	
	Midget	MS	11	
	Missile Toe	G	16	
	Patriot	SS	40	
	Red Max	SS	39	
	Sandhawk	S	31	
	Seros	SS	38	
Sky Shriek	G	17		
Wac Corporal	S	31		
Zoom Broom	G	17		
SOLID PROPELLANT	Aerobee 300	S	32	3
	Apogee II	MS	30	
	Arcas	S	33	
	Constellation	SS	22	
	Delta	MS	51	
	Drifter	SS	22	
Falcon	BG	28	2	
Farside	MS	30		

ENGINE	MODEL NAME	ROCKET TYPE	PAGE	SKILL LEVEL		
SOLID PROPELLANT	Goblin	SS	27	3		
	Gyroc	SS	29			
	Interceptor	SS	38			
	Mini-Bomarc	S	12			
	Omega	MS	30			
	Saturn V (Semi-Scale)	SS	33			
	Scrambler	C	26			
	Shrike	MS	23			
	Sprint	SS	27			
	Sprite	MB	22			
	Star Blazer	MB	13			
	Starship Vega	SS	40			
	V-2	S	31			
	Wolverine	MB	15			
	SOLID PROPELLANT	Bomarc	S		39	4
		Gemini-Titan	S		32	
Honest John		S	34			
Mars Snooper		SS	37			
Nighthawk		BG	29			
SOLID PROPELLANT	Orbital Transport	SS	36	5		
	Sky Dart	BG	28			
	Trident	SS	36			
	Mars Lander	SS	37			
	Mercury Redstone	S	35			
Saturn IB	S	34				
Saturn V	S	35				
COLD PROPELLANT	Shrike Jet Plane	RTF	44	1		
	XS-1	RTF	44			
	Valkyrie I	SS	44		2	
	Valkyrie II	SS	45			
COLD PROPELLANT	Sandpiper	S	45	3		
	Sergeant	S	45			
	Astro-Gnat	BG	46	4		
	Baron	BG	46			
X-13	BG	46				
COLD POWER	Scamp	SS	48	1		
	Honest John	S	48		2	
	Marauder	SS	47			
	Shark	SS	47			
	Teros	SS	48			
	Yankee V	SS	47			

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 A3-4T Safety Certified Mini-Engines
- Recovery Wadding
- Igniters
- Tape Discs

Cat. No. 0701 **ONLY \$12.95**

**Features Everything you need
to lift-off TODAY!**



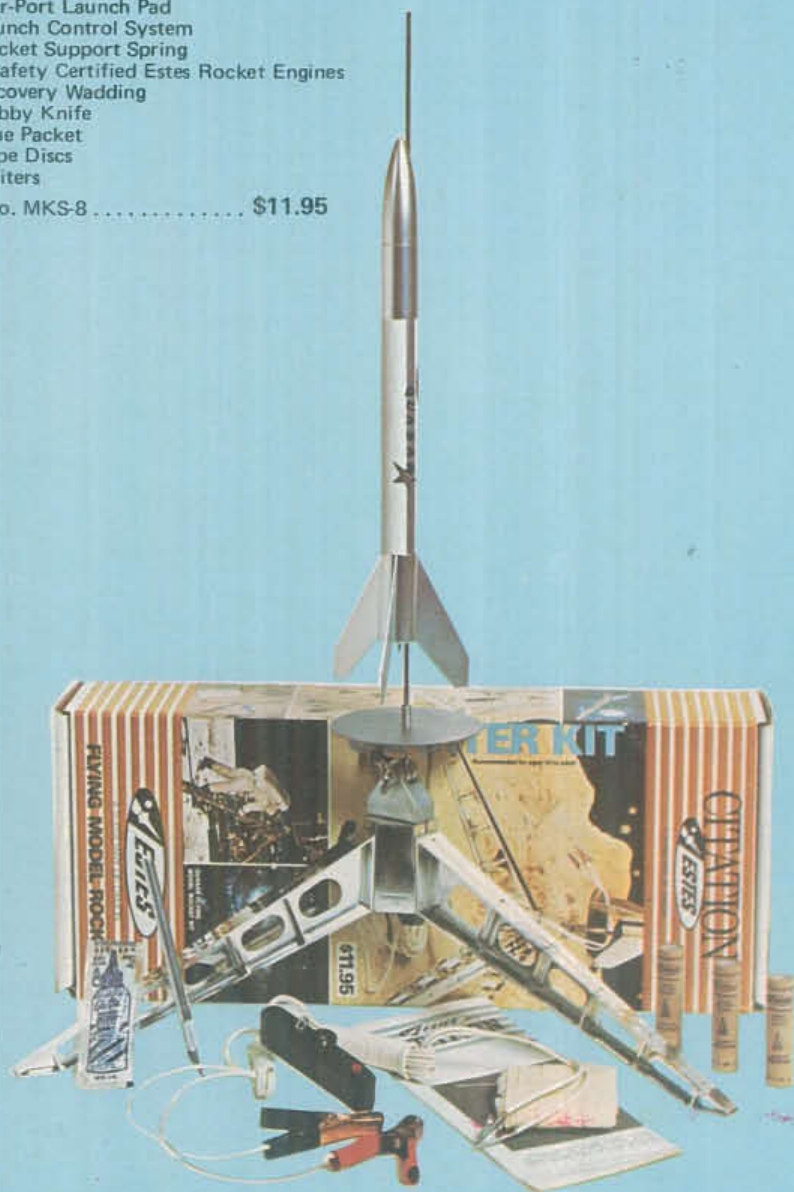
CITATION STARTER KIT

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 metallized 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



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

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



ESTES FIRING LINE

READY TO FLY

Firing Line rockets require no construction. Assemble the parachute and you are 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



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.
Ship. 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



Engines not included

MORE MINI-BRUTES . . .
Mini-Priced, Too.

MOSQUITO

Skill Level 1

Fantastic performance. Featherweight recovery. Balsa and paper construction. Simple spray paint decor.

Specifications

Body Dia. 0.541" (13.73mm)
Length 3.9" (9.9cm)
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. (6.37 gr)
Shipping wt. 6 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



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. (9 gr)
Shipping wt. 5 oz.

Recommended Engines

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

Cat. No. TK-44 \$.69

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. 0.736" (18.7mm)
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 A3-0T (First flight) A3-0T
A10-0T

Cat. No. TK-40 \$1.50

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.

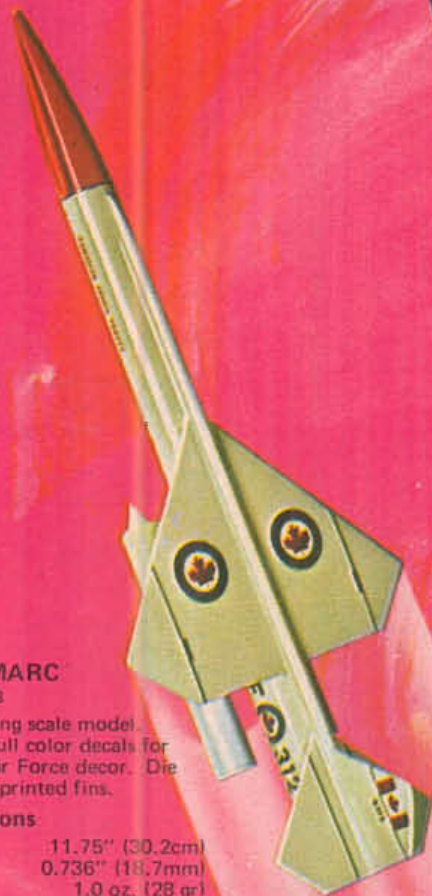
Recommended Engines

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

Cat. No. TK-4 \$1.25

Engines not included

Super soaring, cloud busting Estes Mini-Brutes are the favorites of rocketeers. Blast off to mini-model rocketry fun with single stage, scale, multistage and exotic designed Estes Mini-Brutes.



MINI-BOMARC

Skill Level 3

Famous flying scale model. Authentic full color decals for Canadian Air Force decor. Die cut and pre-printed fins.

Specifications

Length 11.75" (30.2cm)
 Body Dia. 0.736" (18.7mm)
 Weight 1.0 oz. (28 gr)
 Wing Span 4.5" (11.5cm)
 Shipping wt. 5 oz.

Recommended Engines

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

Cat. No. TK-5 \$2.95

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" (25.58cm)
 Body Dia. 0.736" (18.68mm)
 Weight 0.484 oz. (13.71 gr)
 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" (35.0cm)
 Body Dia. 0.736" (18.7mm)
 Weight 0.75 oz. (21.2 gr)
 Shipping wt. 6 oz.

Recommended Engines

UPPER STAGE
 1/4A3-2T A10-3T
 1/2A3-4T
 A3-6T

BOOSTER STAGE

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

Cat. No. TK-45 \$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" (29.2cm)
 Body Dia. 0.736" (18.7mm)
 Weight 0.73 oz. (20.7 gr)
 Shipping wt. 5 oz.

Recommended Engines

1/4A3-2T (First flight)
 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 11.6"
(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)
1/2A3-2T
A3-4T A10-3T
Cat. No. 0817.....\$1.50



ROGUE

Skill Level 1

Sounding research vehicle. A scale-like appearance with authentic decor. Excellent for sport flying has super 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)
1/2A3-2T
A3-4T A10-3T
Cat. No. 0818.....\$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 0.976"
(24.8mm)
Weight 0.875 oz.
(21.2 gr)
Shipping wt. 6 oz.
Recovery 12" Parachute

Recommended Engines

1/2A3-2T (First Flight)
A3-4T A10-3T
Cat. No. 0819.....\$1.75

Engines not included

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"
(31.1 cm)
Body Dia. 0.976"
(24.8mm)
Weight 1.2 oz.
(33.9 gr)
Shipping wt. 10 oz.

Recommended Engines

1/2A6-2 B6-4
A8-3 C6-5
B4-4
Use A8-3 for first flights.
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
C6-5
Use 1/2A6-2 for first flights.
Cat. No. K-2.....\$1.25



SKY HOOK

Skill Level 1

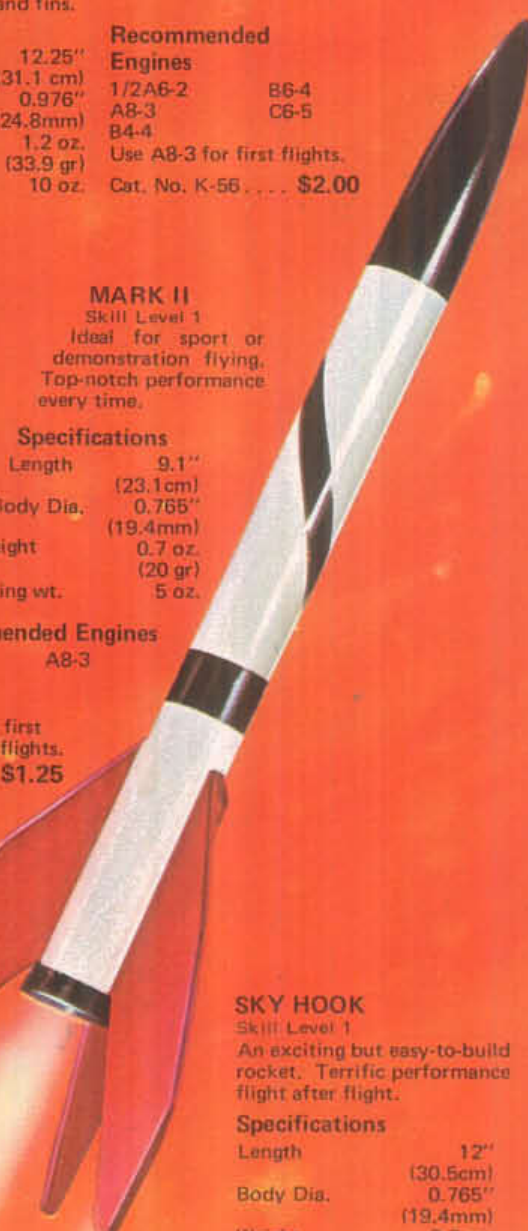
An exciting but easy-to-build rocket. Terrific performance flight after flight.

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 C6-7
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 (1/8 oz. without engine) and wind-cheating design... terrific for contests and records. Feather-weight recovery.

Specifications

Length 5.6"
(14.2cm)
Body Dia. 0.720"
(18.3mm)
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.

Pat. No. 3,114,317

Specifications

Length 7"
(17.8cm)
Body Dia. 0.765"
(19.4mm)
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"
(61cm)
Body Dia. 1.637"
(41.6mm)
Weight 2.2 oz.
(64 gr)
Shipping wt. 11 oz.

Recommended Engines

A8-3 B4-2
B6-2 B6-4
C6-5
Use B6-2 for first flights.
Cat. No. K-23 \$3.25

Engines not included

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"
(42.5cm)
Body Dia. 0.736"
(18.7mm)
Payload Sec. Dia. 0.976"
(24.8mm)
Weight 0.7 oz.
(20 gr)
Shipping wt. 5 oz.

Recommended Engines

1/2A6-2 A8-3
B6-4 B14-5
C6-5
Use A8-3 for first flights.
Cat. No. K-18 \$2.00



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. 0.765" (19.4mm)
Weight 0.3 oz. (9 gr)
Shipping weight 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 tip give a futuristic look. See-through payload section.

Specifications

Length 16.2" (41.4cm)
Body Dia. 0.976" (24.8mm)
Weight 1.0 oz. (28gr)
Shipping wt. 5 oz.

Recommended Engines

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

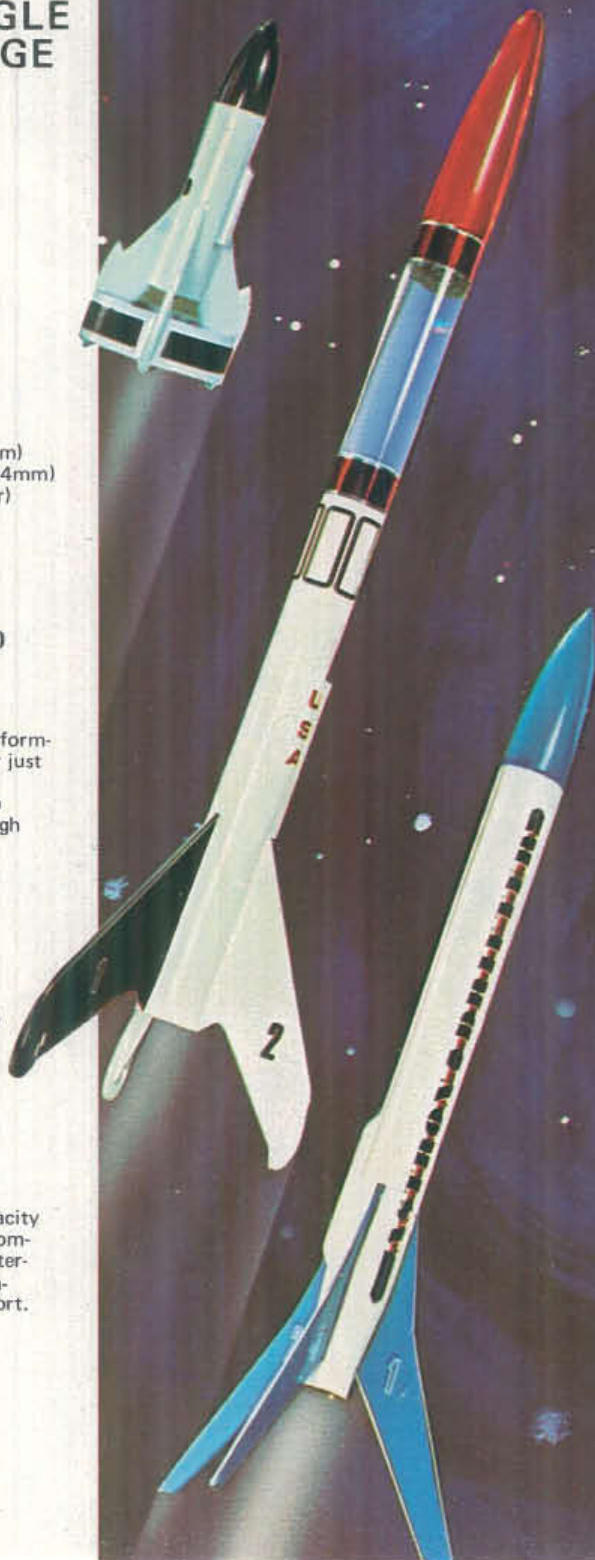
Length 14.3" (36.3cm)
Body Dia. 0.976" (24.8mm)
Weight 1 oz. (28gr)
Shipping wt. 5 oz.

Recommended Engines

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

Cat. No. K-14 \$2.25

22



TWO STAGE ROCKETS

Multi-staging represents the next level of rocketry skills. Demonstrates how real space ships operate. The first stage is always ignited electrically. Second stage ignition occurs automatically upon the burnout of the first stage. All kits come complete, ready-to-build with instructions. Engines not included.

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 29.5" (74.9cm)
Body Dia. 0.976" (24.8mm)
Weight 2.25 oz. (64 gr)
Shipping wt. 11 oz.

Recommended Engines

UPPER STAGE

1/2A6-4
A8-5
B6-4
B6-6 (First flights)
B14-7
C6-7

BOOSTER

A8-0
B6-0 (First flights)
B14-0
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

UPPER STAGE

A8-5
B6-6 (First flights)
C6-7

BOOSTER

A8-0
B6-0 (First flights)
B14-0
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"
(56.5cm)
Body Dia. 1.637"
(41.6mm)
Weight 2.5 oz.
(71 gr)
Shipping wt. 11 oz.

Recommended Engines

Requires 3 identical engines at launch.
A8-3 B6-4
C6-5
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, decal 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.
(37.9 gr)
Shipping wt. 12.5 oz.

Recommended Engines

A8-3 B4-4
B6-4 B14-5
C6-5
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 26.5" (67.3cm)
Body Dia. 1.325" (33.6mm)
Weight 2.75 oz. (78 gr)
Shipping wt. 12.5 oz.

Recommended Engines

D12-7

Also:

B6-4 B14-5 C6-5
(Using EM-2050 Adapter)

Cat. No. K-58

\$4.50



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" (59.7cm)
Body Dia. 1.637" (41.6mm)
Payload Dia. 1.796" (45.6mm)
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

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" (35cm)
Body Dia. 0.976" (24.8mm)
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



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" (36.3cm)
Body Dia. 1.325" (33.6mm)
Weight 2.0 oz. (56.6 gr)
Shipping wt. 7 oz.

Recommended Engines

D-12-7 (or others like A8-3, B6-4 and C6-5, with adapter EM-2050).

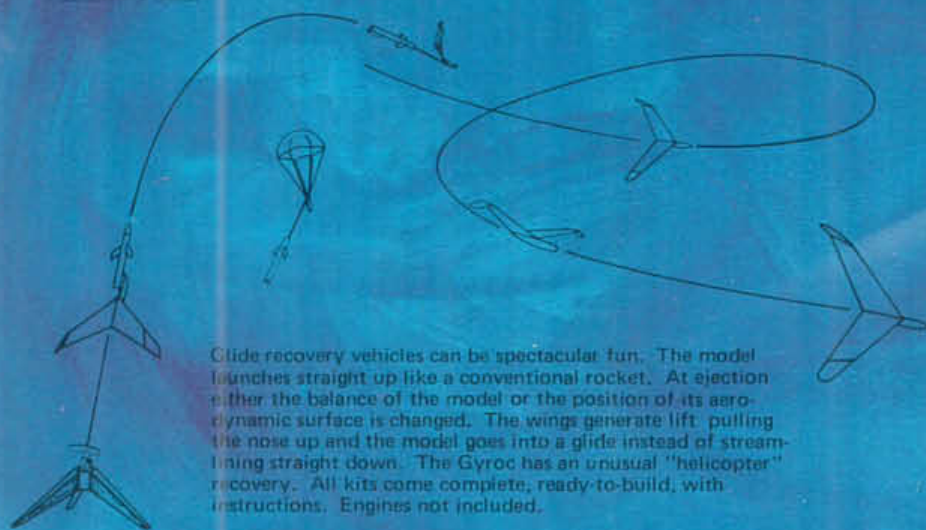
Cat. No. K-55 \$2.75



Engines not included



BOOST GLIDERS



Glide recovery vehicles can be spectacular fun. The model launches straight up like a conventional rocket. At ejection 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.



NIGHTHAWK

Skill Level 4

Revolutionary pop-pod system. Swish! Straight up for hundreds of feet... then pop! The power pod separates and drifts down by parachute... as the glide vehicle circles lazily against the sky. Pat. No. 3,452,471

Specifications

Length	19.75" (50.2cm)
Body Dia.	0.736" (18.7mm)
Wing Span	18.25" (41.3cm)
Weight (Complete)	1.4 oz. (40 gr)
Weight (Glider only)	0.7 oz. (20 gr)
Shipping wt.	9 oz.

Recommended Engines

1/2A6-2	
B4-2	
Cat. No. K-34	\$2.25

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



Specifications

Length	12"
	(30.5cm)
Body Dia.	0.736"
	(18.7mm)
Wing Span	10"
	(25.4cm)
Weight	0.4 oz.
	(11 gr)
Shipping wt.	5 oz.

Recommended Engines

A8-3	B4-2
1/2A6-2	
Use 1/2A6-2 for first flights.	
Cat. No. K-13	\$1.50

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.	.976" (24.8mm)
Weight	1.25 oz. (35.4 gr)
Weight of Glider with Pod	2.5 oz. (70.8 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"
	(24.9cm)
Body Dia.	0.736"
	(18.7mm)
Weight	0.6 oz.
	(17 gr)
Shipping wt.	5 oz.

Recommended Engines

1/2A6-2	A8-3
B6-4	C6-5
Use 1/2A6-2 for first flights.	
Cat. No. K-24	\$1.50



MULTI-STAGE

OMEGA

Skill Level 3

The ultimate in big engine performance blasts off heavy payloads such as the Cineroc movie camera (camera not included). Simplified pop-and-go staging.

Specifications

With Payload Section and nose cone (for use without Cineroc)

Length	30.5"
	(77.5cm)
Body Dia.	1.637"
	(41.8mm)
Weight	4.0 oz.
	(113 gr)
Shipping wt.	15 oz.

Recommended Engines

Booster: D12-0

Upper Stage: D12-7

Single Stage Flights: D12-5

Use D12-5 for first flights.

Cat. No. K-52P \$5.95

Astron APOGEE II

Skill Level 3

Ultimate in 2-stage performance and reliability. See-through (payload section) lets you observe specimens without removing them from the rockets. Includes Tech Report on Multi-Staging.

Pat. No. 3,292,302.

Specifications

Length

Body Dia.

Weight

Shipping wt.

Recommended Engines

UPPER STAGE

1/4A3-4

B4-6

B14-7

1/2A6-4

A8-5

B6-6

C6-7

Use 1/2A6-4 for first flights.

BOOSTER

1/2A6-0

B6-0

C6-0

Use 1/2A6-0 for first flights.

Cat. No. K-5

\$2.00

FARSHIDE

Skill Level 3

Sophisticated 3-stage ultra-high altitude probe. Top stage flies to well over 2,500 feet. Includes Tech Report on staging.

Pat. No. 3,292,302.

Specifications

Length	21.5"	(54.6cm)
Body Dia.	0.976"	(24.8mm)
Weight	2.0 oz.	(57 gr)
Shipping wt.	6 oz.	

Recommended Engines

FIRST STAGE

1/2A6-0 A8-0 B14-0

Use B14-0 for first flights.

SECOND STAGE

1/2A6-0 A8-0 B6-0

B14-0 C6-0

Use 1/2A6-0 for first flights.

TOP STAGE

1/2A6-4 A8-5 B4-6

B6-6 B14-6 C6-7

Use 1/2A6-4 for first flights.

Cat. No. K-12 \$3.25



SCALE MODELS

V-2

Skill Level 3

This is a scale model of the rocket that opened the door to the space age. It was the first to solve the problems of propulsion and guidance.

Specifications

Length	11.2"
	(28.4cm)
Body Dia.	1.325"
	(33.7mm)
Weight	1.4 oz.
	(40 gr)
Shipping wt.	7 oz.

Recommended Engines

1/2A6-2 A8-3

B6-4 B14-5

C6-5

Use B6-4 for first flights.

Cat. No.

K-22

\$3.25



WAC CORPORAL

Skill Level 2

A high flying scale model . . . easy for the novice to build yet interesting for the experienced rocketeer.

Specifications

Length	11.8"
	(30cm)
Body Dia.	0.736"
	(18.7mm)
Weight	.7 oz.
	(20 gr)
Shipping wt.	5 oz.

Recommended Engines

1/2A6-2 A8-3

B6-4 C6-5

Use 1/2A6-2 for first flights.

Cat. No. K-11 \$1.75



SANDHAWK

Skill Level 2

An ultra-detailed 2 1/2" tall scale model. Features all plastic fins, tail assembly, nose cone and payload section. Recovery is dual parachute type.

Specifications

Length	30.1"
	(76.5cm)
Body Dia.	1.325"
	(33.7mm)
Weight	5 oz.
	(14.2 gr)
Shipping wt.	11 oz.

Recommended Engines

B4-2 C6-3 D12-6

Use D12-5 for first flights. Use EM-2050

adapter for other than "D" engines

(adapter not included.)

Cat. No. K-51 \$3.50

Replacement Plastic Parts Kit (SANDHAWK ONLY) Includes tail section, fins, payload section, nose cone and antennae. Cat. No. PRP-51 . . . \$1.35

Engines not included

GEMINI-TITAN

Skill Level 4

This is a semi-scale model of the rocket that took America's first two-man team into orbit. This kit features clear plastic fins for stability. Use 12v car battery and Estes FS-5 Launch Control System for dependable ignition. Includes Tech Report on engine clustering.

Specifications

Length	24.4"
	(62cm)
Body Dia.	2.217"
	(56.3mm)
Weight	3.8 oz.
	(108 gr)
Ship. wt.	1 lb., 3 oz.

Recommended Engines

A8-3	B6-4
C6-5	

Use B6-4 for first flights.
Cat. No. K-21 \$5.95



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	A8-3
B6-4	C6-5

Use A8-3 for first flights.
Cat. No. K-17 \$2.25

Engines not included

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"
	(41.6mm)
Weight	1.9 oz.
	(54 gr)
Shipping wt.	12 oz.

Recommended

Engines

A8-3 (First flights)	B6-4
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.	1.325"
	(33.7mm)
Weight	1.4 oz.
	(40 gr)
Shipping wt.	11 oz.

Recommended

Engines

A8-3 (First flights)	B6-4
C6-5	

Cat. No. K-26

\$2.75

Engines not included

® Registered Trademark of
The Atlantic Research Corporation,
Alexandria, Virginia.

ARCAS®

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"
Body Dia.	0.976"
Weight	1.35 oz.

Cat. No. K-7B \$2.00



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

A8-3	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	A8-3 (First flights)
B4-4	B6-4
C6-5	

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 43 1/2" 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 wt.	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

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

Cat. No. K-41 \$4.50

Engines not included

EXOTIC DESIGNS OF THE FUTURE

Here are the models designed to give Estes rocketeers a look into the future. Parachute recovery. Kits complete with instructions. Engines not included.

ORBITAL TRANSPORT

Skill Level 4

Spectacular flight. Showpiece on the ground. Transport lifts off under rocket power. At ejection the re-entry vehicle separates and glides back to earth.

Specifications

BOOSTER
Length 23" (58.4cm)
Body Dia. 0.976" (24.8mm)
Wing Span 7.9" (20cm)
Weight 2 oz. (57 gr)

RE-ENTRY VEHICLE

Length 8.6" (21.8cm)
Body Dia. 0.736" (18.7mm)
Wing Span 5" (12.7cm)
Weight 0.5 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

Astron TRIDENT

Skill Level 4

Futuristic 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
B14-5
Use B6-2 for first flights.
Cat. No. K-33 \$4.50

MARS LANDER

Skill Level 5

Authentic, futuristic concept in a planetary exploration vehicle. Lands upright on spring-loaded gear after parachute recovery. Highly detailed body panels with colorful decal sheets.

Specifications

Height 12" (30.5cm)
Body Dia. 3.8" (96.5mm)
Landing Gear Span 13.2" (33.5cm)
Weight 3.0 oz. (85 gr)
Shipping wt. 16 oz.

Recommended Engines

B4-2 B6-2 C6-3
Use B4-2 for first flights.

Cat. No. K-43 \$8.95

MARS SNOOPER

Skill Level 4

A truly different model combines unique appearance with reliable performance. Great for show or demonstration flying. Payload 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)
Shipping wt.	8 oz.

Recommended Engines

A8-3	B6-4
A8-5	C6-5
B4-4	

Use A8-3 for first flights.

Cat. No. K-54 \$3.50

Replacement Plastic Parts Kit (Saros)

Includes nose cone, adapter and fin unit.

Cat. No. PRP-54
\$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
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Use B6-4 for first flights.
Cat. No. K-50 \$5.95

Replacement Plastic Parts Kit

Includes nose cone, 2 wing pods and tail cone.

Cat. No. PRP-50 . . . \$1.35

Engines not included



CITATION

DELUXE MODEL ROCKETRY

RED MAX

Skill Level 2

Contemporary, super-fun model. Large stable design gives great sport performance. Big fun "Red Max" decal sheet. Molded plastic nose cone and die cut fins. Parachute recovery (18" chute) for perfect flight after flight.

Specifications

Length	16.25" (41.3cm)
Body Dia.	1.637" (41.6mm)
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-C-2 \$2.95



QUASAR

Skill Level 1

Dramatic but easy-to-build model for beginners. Bright metallized plastic nose cone and fin assembly. Metallized 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.	0.976" (24.8mm)
Weight	1.5 oz. (42 gr)
Shipping wt.	10 oz.

Recommended Engines

A8-3 (First flights)
B4-2
C6-5

Cat. No. KC-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 metallized mylar panels. At apogee, the engine pod is ejected and comes 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
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Cat. No. KC-5 \$5.95

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.

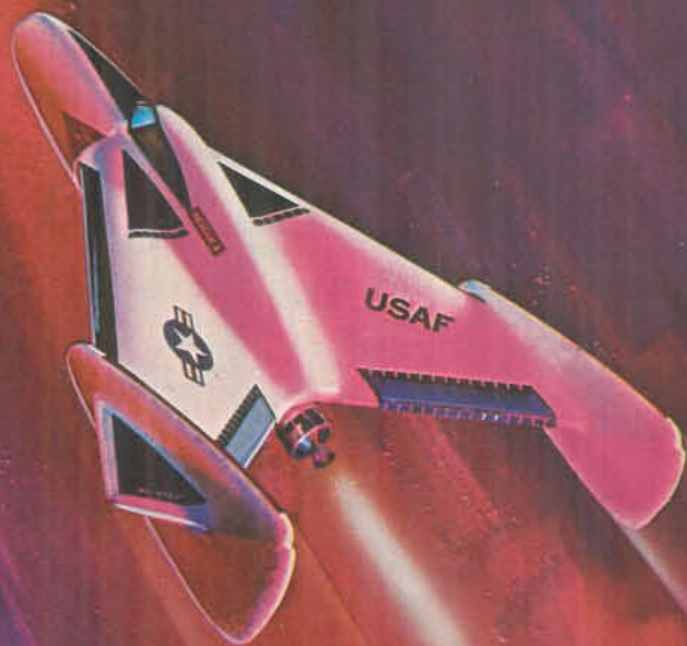
SPECIFICATIONS

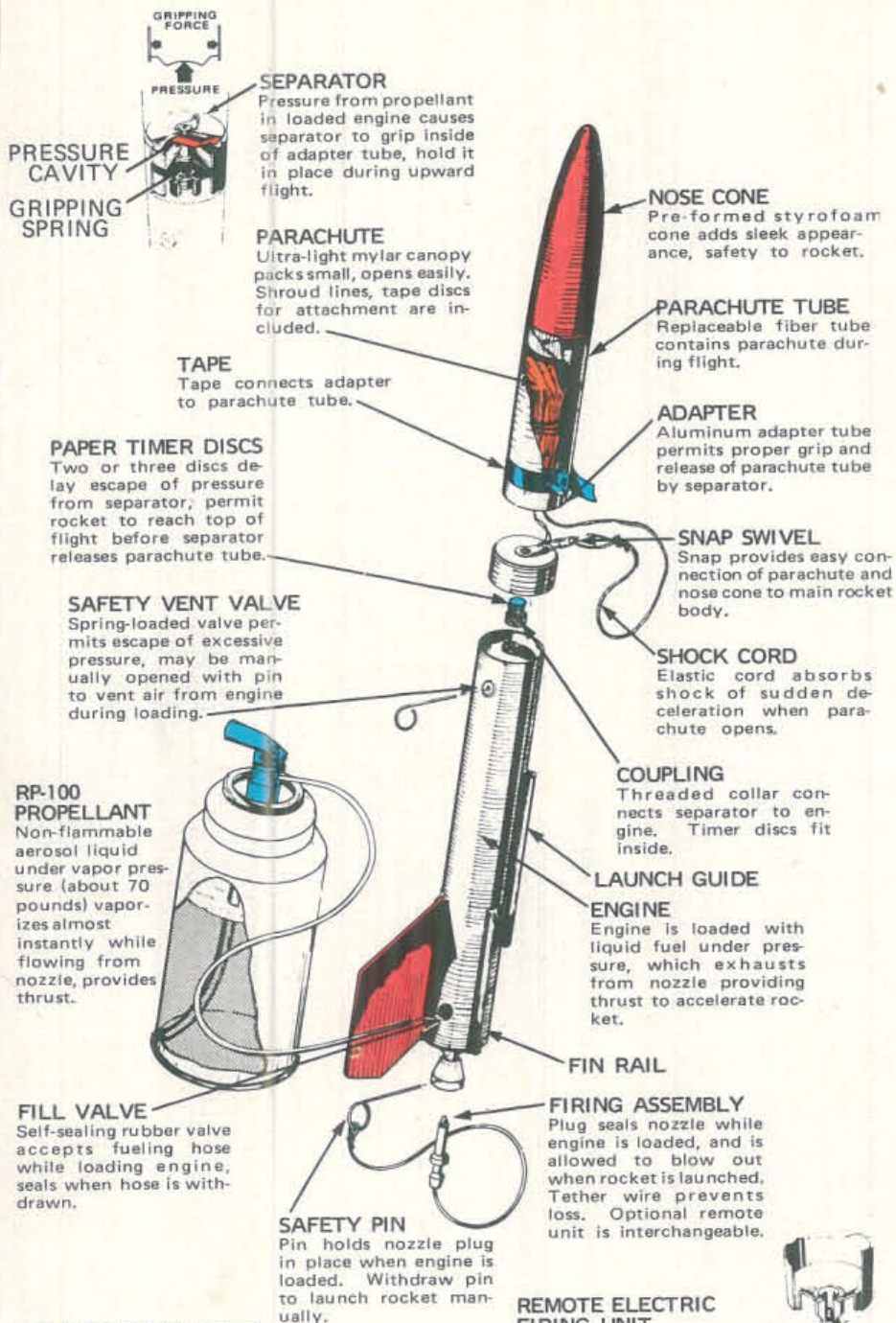
Length 19.5" (49.5cm)
Body Dia. 0.976" (24.8mm)
Weight 1.88 oz. (53 gr)
Shipping wt. 12 oz.

RECOMMENDED ENGINES

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

Engines not included





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 ROD — 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 so 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 unattended. 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.

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 catapults free into aerobic 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!



3 EASY TO BUILD
All parts included. Build in less than a day! Rocket body made of durable aluminum.



2 FASCINATING TO TEST
Only rockets made that allow pre-launch checkout! Test parachute release, timer, separator, thrust . . . indoors or out!



1 FUN TO FUEL
When all systems GO, fuel rocket on launch stand, then vent off excess fuel . . . just like real thing! Unique, non-flammable cold fuel.



Blast-off
EXCITING TO LAUNCH
SWOOSH! Bird lifts skyward in a cloud of exhaust! Powered flight, burn-out, separation, parachute pops, floats rocket back to earth. Launch again and again!

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

VALKYRIE 1 Skill Level 2

Everything you'll need for your first cold propellant lift off.

KIT INCLUDES

- Complete Valkyrie-1 rocket
- Manual firing system
- Launcher
- Cold propellant for 3 launches
- Combined with another Valkyrie to form a two-stage rocket, with the Multistage Adapter Kit, Cat. No. 5060.

SPECIFICATIONS

Length 14"
Body Diameter 1"
Shipping Weight 36 oz.

Cat. No. 5091 \$10.95

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: 500'
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.

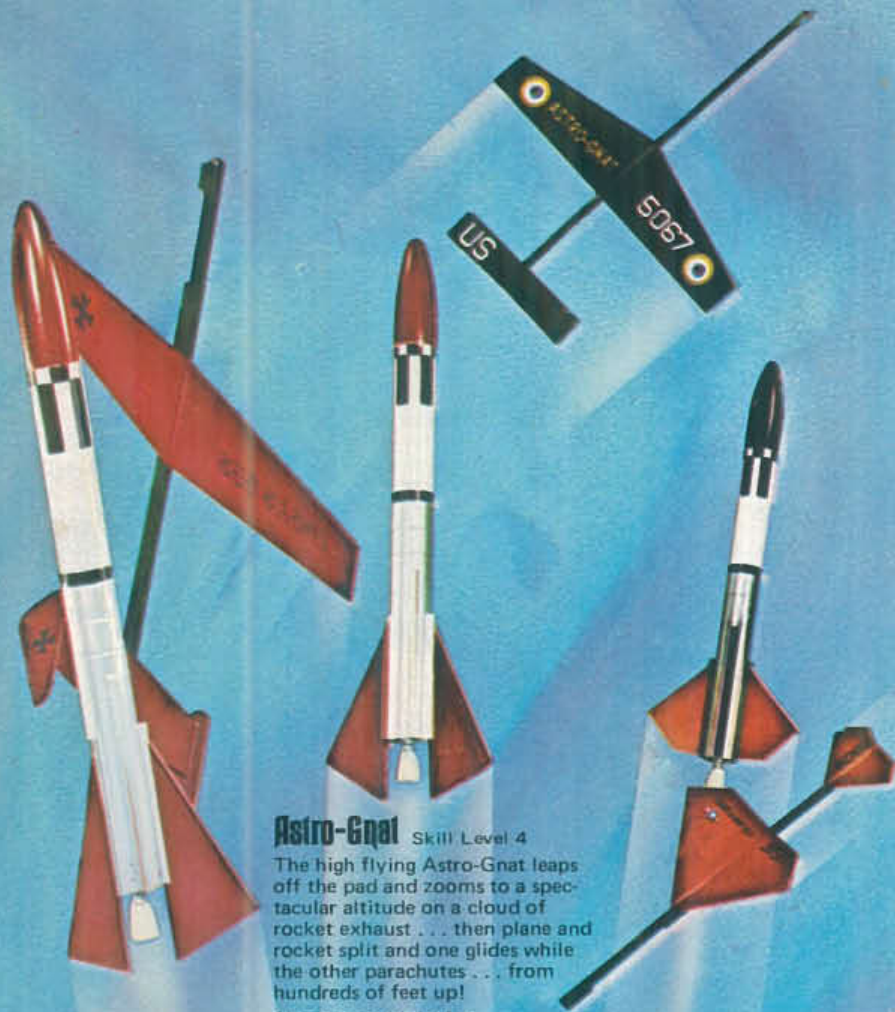
Apply battery voltage to the electrical firing unit, and a cloud of exhaust indicates lift-off. Slowly at first, then faster the Valkyrie climbs, nearly 300 feet per second! Then a coast to apogee, and suddenly the parachute pops for a safe recovery. Everything is here . . . for the most spectacular 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 plane. 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

Astro-Gnat Skill Level 4

The high flying Astro-Gnat 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

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



**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.

YANKEE 5

Skill Level 2
All-American stars and stripes decor
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



SHARK

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

SPECIFICATIONS

Length: 19.5"
Diameter: 0.976"
Weight (with engine) 2.06 oz.
Shipping weight: 32 oz.
Cat. No. 1111 \$7.95

MARAUDER

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

SPECIFICATIONS

Length: 18"
Diameter: 0.976"
Weight (with engine):
Shipping wt.: 32 oz.

Cat. No. 1110 \$7.95

All rockets on this page include:

- * RP-100 - Propellant
- * Launcher
- * Cold Power Converter

All Cold Power rockets include pre-assembled, cold propellant engine, die-cut fins, press-on decals and plastic launch controller. Cold propellant engines are safety certified and reusable.



COLD PROPELLANT ACCESSORIES

TEROS

Skill Level 2
Authentic anti-aircraft missile styling
Scramjet design
U.S.A.F. decor
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

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

SMALL PARTS KIT

All those items easily lost at the launch pad. Kit includes safety pins, plastic nozzle extension, timer discs and coupling.
No. 5058 — Ship. Wt. 3 oz. \$.50

PAYLOAD COMPARTMENT KIT

For parachute stowage, or also for small payloads if desired. A completely formed, hard styrofoam nose cone, decorated fibre tube, aluminum adapter, and assembly tape are included.
No. 5118 — Ship. Wt. 9 oz. \$.50

FIN RAIL AND LAUNCH GUIDE

Rail is used for attaching fins or as catapult rails 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
No. 5120 — Ship. Wt. 4 oz. \$.50

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. \$.25

ROCKET ENGINES

These replacement engines are identical to the engines included in each kit. For strap-on applications, a separator and a 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)

8 1/2 inch body, 4 oz. propellant capacity, with nozzle extension.

No. 5001 — Ship. Wt. 8 oz. \$4.95

V-1 Engine (for Valkyrie-1)

4 1/2 inch body, 2 oz. propellant capacity, with nozzle extension.

No. 5075 — Ship. Wt. 7 oz. \$3.95

MULTI-STAGE ADAPTER KIT

Parts and instructions for in-flight separation and staging of a two-stage rocket. Everything 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.

Multi-Stage Adapter Kit

Parts, instructions, booklet.

No. 5060 — Ship. Wt. 6 oz. \$1.00

Multi-Stage Rockets Booklet

No. 5105 — Ship. Wt. 3 oz. \$.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. \$.50

RP-100 PROPELLANT

Unique non-flammable fuel, yet real performance! 15 oz. can provides 3-10 flights for all Estes cold propellant rockets and jet planes.

No. 5039 — Ship. Wt. 16 oz. \$1.95

PARACHUTE MATERIAL

*MYLAR — Fantastically light, strong film. Non-sticky, free-opening without talcum. The ultimate parachute material, one-fourth the thickness of standard chutes.

Shiny, metallized film, 12 x 12.

No. 43001 — Ship. Wt. 2 oz. \$.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 parachute tube.

Separator with coupling and timer discs.

No. 5002 — 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 engines (Series I). Easy to assemble. Lightweight for maximum performance.

No. 1449 — Ship. Wt. 4 oz. \$.49

*DuPont Trademark

** (on pp. 47 & 48)

Launcher, propellant and convertor not included.



CINEROC MODEL ROCKET MOVIE CAMERA

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 lugs 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

Cartridges contain 10 feet of Super-8mm color film for approximately 40 seconds of projection time. Two PFB-2 batteries (good for one flight) included with each cartridge.

Shipping weight 4 oz.

Cat. No. 701-CFH-8 \$4.95

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

Cat. No. 701-FDP-2 \$2.00



CINEROC



CAMERA SPECIFICATIONS

10mm focal length lens
f/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.
Ship. wt. 1.5 lbs.

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

COMBINATION OFFER

The recommended launch vehicle for the CINEROC is the Astron Omega, a "D" engine bird specially designed to loft the CINEROC. Now order the CINEROC and Omega together. Shipping weight 2 lbs., 4 oz.

Cat. No. 1-RC-8 \$25.50



CAMROC

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 science studies 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 stereoptic image when properly viewed, to emphasize geological features or estimate heights of different objects quite accurately.

Pat. No. 3,537,369

CAMROC SPECIFICATIONS

Lens opening — f/16
Shutter speed — 1/1600 sec.
Focal Length 3" (76mm)
Single exposure film negative 1 1/2" dia. Print 3" dia. Fits body tube BT-50. In kit form with all parts and assembly instructions. Comes with 1 film holder with unexposed film disk for practice loading and experimenting.

Shipping wt. 7.5 oz.
Cat. No. C-1 \$5.95



Astron DELTA

Recommended 2-stage booster for Camroc rocket camera (camera not included). Can be flown either single or two stage. Accommodates all BT-50 size payload sections and nose cones. Advance stage coupling for top dependability. Includes Tech Report TR-2. Nose cone not included.

Pat. No. 3,292,302

Specifications

Length 13.6" (34.5cm)
Body Dia. 0.976" (24.8mm)
Weight 1.5 oz. (43 gr)
Shipping wt. 6 oz.
Cat. No. K-16 \$2.50



FILM ONLY

Precision cut Astroman 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 for \$1.25

DEVELOPING-PRINTING

Film is developed and one glossy print made at 2 times enlargement (3" dia. image). A refund of \$.20 will be made on any negative which will not make a satisfactory print. In this case negative will be returned unprinted. We recommend sending your film for processing in its original container or other totally light-tight container.

Cat. No. Cat. No. FDP-1 \$.50

LOADED FILM HOLDERS

Extra film holders for in-the-field changing are available for the Camroc. They come 4 to an order, each pre-loaded. 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 for \$3.95

REFUND PLAN ON FILM HOLDERS

A refund of \$.15 will be allowed for all film holders returned to us in good re-usable condition. Deduct \$.15 for each holder returned. Unless you specifically request their return, all holders sent us will be automatically retained and credit allowed.



Negative: 1 1/2" dia.
Print size: 3" dia.

EXTRA PRINTS

You can order additional prints of negatives which have been previously developed. The negative(s) 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 \$.30 ea.

Remote sensing and reporting by telemetry are now practical. The TRANSROC (TX-1) is your basic unit. This tiny (1.3 oz. with battery) transmitter requires no FCC license, yet sends back a clear signal with a range of 5 miles while in flight and of hundreds of yards while on the ground. The closer you are to the TRANSROC, the stronger is the signal.

In its basic mode it transmits an intermittent "beep". Any standard walkie-talkie may be used as the receiver to listen to the "beep" or the various sensory information which may be transmitted. Channel 14 is standard but other channels of the 27 MHz. Citizen's Band are available by using the proper transmitter crystal. The basic mode is used for demonstrating the principle of telemetry and for locating your rocket.

Adding the accessory kits to the basic mode requires only a little time and a few small circuit changes for each. In the microphone mode (Microphone Kit TXA-1) the TRANSROC lets you listen to everything from the unique position of the rocket. You can hear the countdown, the lift-off, and stage separation. Such unique sounds as parachute ejection and the weird noises made by the wind and the parachute and the sounds of the recovery crew are heard from on-board the rocket.

The Spin-Rate Telemetering Kit (TXA-2) lets you study the effects of different aerodynamic shapes and unusual fin alignments.

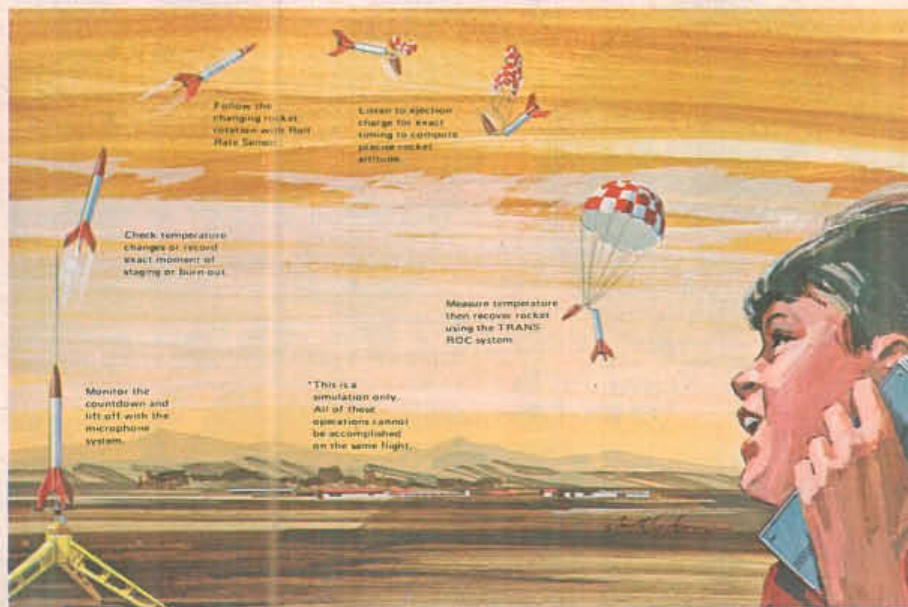
The Temperature Telemetering Kits (TXA-3 and TXA-4) permit you to make temperature versus altitude studies. Spotting temperature inversions for predicting air



TRANSROC TRANSMITTER
TX-1A (assembled and tested) \$21.95
TX-1 (kit form) \$14.95
Accessory Kit-TXA-1 \$ 2.95
Accessory Kit TXA-2 \$ 3.95
Accessory Kit TXA-3 \$ 5.95
Accessory Kit TXA-4 \$ 5.95
Shipping wt. is 6 oz. for each kit.

pollution buildups is fun and a great project for study of the environment.

The TRANSROC opens up a whole new world of scientific research to you. The transmitter can be built in an evening. If you don't have experience in building electronic kits, order the completely assembled and tested TRANSROC TX-1A. THE COMPLETE ROCKETRONICS CATALOG IS AVAILABLE ON REQUEST.



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.

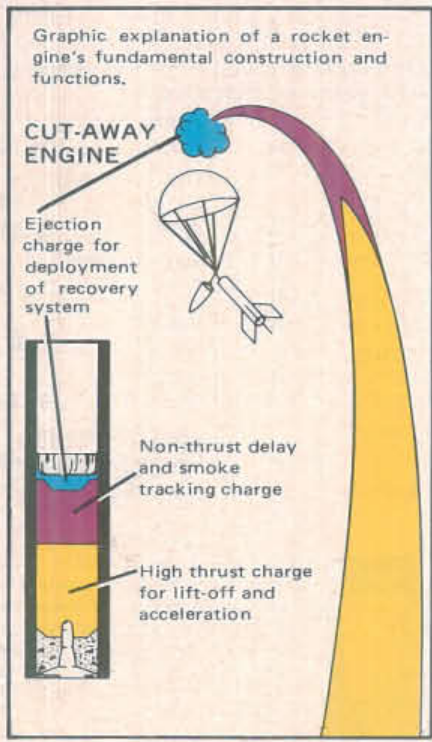
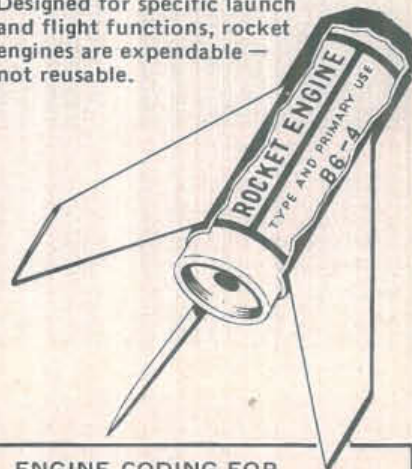
The energy-packed, solid propellant Estes model rocket engine is a complete power system for your rocket. It is designed and pre-manufactured to perform all power functions for dependable launch and activation of a recovery system. In one compact package it provides thrust for quick lift-off and acceleration 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 launches, 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-FAI 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.



ENGINE CODING FOR QUICK-N-EASY IDENTIFICATION

1. Label color indicates recommended use of the engine.

- a. GREEN Single stage rockets
- b. PURPLE Top 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. Lets 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

Cat. No. and Engine Type	Prices	Total Impulse		Time Max.	Initial Weight	Propellant Weight
		lb-sec	1 n-sec	Delay Lift		
SINGLE STAGE ENGINES						
1/4 A3-2T 4 for	\$1.20	0.14	0.625	2 sec 1 oz.	23 oz.	0.18 sec 0.173 4.9 0.031 0.88
1/2 A3-2T 4 for	\$1.30	0.28	1.25	2 sec 2 oz.	28 oz.	0.36 sec 0.198 5.6 0.062 1.75
A3-2T 4 for	\$1.40	0.56	2.50	2 sec 3 oz.	28 oz.	0.86 sec 0.254 7.2 0.124 3.50
A3-4T 4 for	\$1.40	0.56	2.50	4 sec 2 oz.	28 oz.	0.86 sec 0.268 7.6 0.124 3.50
A10-3T 4 for	\$1.40	0.56	2.50	3 sec 5 oz.	48 oz.	0.26 sec 0.277 7.9 0.133 3.78
UPPER STAGE ENGINES ³						
1/4 A3-4T 4 for	\$1.20	0.14	0.625	4 sec 1 oz.	23 oz.	0.18 sec 0.187 5.3 0.031 0.88
1/2 A3-4T 4 for	\$1.30	0.28	1.25	4 sec 1 oz.	28 oz.	0.36 sec 0.212 6.0 0.062 1.75
A3-6T 4 for	\$1.40	0.56	2.50	6 sec 1 oz.	28 oz.	0.86 sec 0.282 8.0 0.124 3.50
BOOSTER ENGINES						
1/2 A3-0T 4 for	\$1.30	0.28	1.25	none	3 oz.	28 oz. 0.36 sec 0.166 4.7 0.062 1.75
A3-0T 4 for	\$1.40	0.56	2.50	none	3 oz.	28 oz. 0.86 sec 0.226 6.4 0.124 3.50
A10-0T 4 for	\$1.40	0.56	2.50	none	5 oz.	48 oz. 0.26 sec 0.235 6.7 0.133 3.70

NOTES:

Each pack of 4 engines includes 5 igniters (NWI-1). Designed 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 very light rocket.

Mini-engine Size 1.75 in. long, and .500 in. dia.

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
35c



Here are all the parts you'll need to design and build your own Mini-Brute Kit.

Fin Stock:	Adapter Ring:
BFS-20 3/\$.40	AR-520 3/\$.20
BFS-20L 3/\$.55	Balsa Tube Adapter:
Nose Cones:	TA-520 \$.30
BNC-5V \$.25	TA-550 \$.35
BNC-5E \$.25	Stage Coupler:
BNC-5S \$.25	JT-5C \$.15
BNC-5W \$.40	Parachute:
BNC-5AW \$.35	PK-8 \$.35
Body Tubes:	Small Parts:
BT-5-18" long \$.30	Screw-Eye SE-3 . 6/.30
BT-5P-5.1" long \$.15	Nose Cone Weights:
Engine Block:	NCW-4 20/\$.40
EB-5B 3/\$.20	Engine Holder:
Engine Holder:	EH-3 3/\$.60

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. 3,363,559). Shipping weight 1 oz. (Not for Solar launcher.)
Cat. No. NWI-1 6 for \$.30



RECOVERY WADDING: Gives protection from hot ejection gases for parachutes and streamers. Each package contains approximately 75 4 1/2" squares — enough wadding for up to 25 flights. Instructions included in package. Shipping weight 6 oz.
Cat. No. RP-1A \$.45

ROCKET ENGINE SELECTION CHART

Cat. No. Engine Type	Prices	Total Impulse		Time Max.	Initial Weight	Propellant Weight
		lb-sec	1 n-sec	Delay Lift		
SINGLE STAGE ENGINES						
GREEN LABEL						
1/2A6-2	\$1.10	0.28	1.25	2 sec 2.5 oz.	46 oz.	0.20 sec 0.53 15.0 0.055 1.56
A8-3	\$1.20	0.56	2.50	3 sec 4.0 oz.	48 oz.	0.32 sec 0.57 16.2 0.110 3.12
B4-2	\$1.30	1.12	5.00	2 sec 4.0 oz.	48 oz.	1.20 sec 0.70 19.8 0.294 8.33
B4-4	\$1.30	1.12	5.00	4 sec 3.5 oz.	48 oz.	1.20 sec 0.74 21.0 0.294 8.33
B6-2	\$1.30	1.12	5.00	2 sec 4.5 oz.	48 oz.	0.83 sec 0.68 19.3 0.220 6.24
B6-4	\$1.30	1.12	5.00	4 sec 4.0 oz.	48 oz.	0.83 sec 0.78 22.1 0.220 6.24
B14-5*	\$1.50	1.12	5.00	5 sec 5.0 oz.	7 lb.	0.35 sec 0.69 19.6 0.220 6.24
C6-3	\$1.50	2.25	10.00	3 sec 4.0 oz.	48 oz.	1.70 sec 0.88 24.9 0.440 12.48
C6-5	\$1.50	2.25	10.00	5 sec 4.0 oz.	48 oz.	1.70 sec 0.91 25.8 0.440 12.48
UPPER STAGE ENGINES ³						
PURPLE OR BLUE LABEL						
1/2A6-4	\$1.10	0.28	1.25	4 sec 1.0 oz.	46 oz.	0.20 sec 0.54 15.3 0.055 1.56
A8-5	\$1.20	0.56	2.50	5 sec 2.0 oz.	48 oz.	0.32 sec 0.62 17.6 0.110 3.12
B4-6	\$1.30	1.12	5.00	6 sec 1.5 oz.	48 oz.	1.20 sec 0.78 22.1 0.294 8.33
B6-6	\$1.30	1.12	5.00	6 sec 2.0 oz.	48 oz.	0.83 sec 0.71 20.1 0.220 6.24
B14-7*	\$1.50	1.12	5.00	7 sec 2.5 oz.	7 lb.	0.35 sec 0.73 20.7 0.220 6.24
C6-7	\$1.50	2.25	10.00	7 sec 2.5 oz.	48 oz.	1.70 sec 0.95 26.9 0.440 12.48
BOOSTER ENGINES						
RED LABEL						
1/2A6-0	\$1.10	0.28	1.25	none	4.0 oz.	46 oz. 0.18 sec 0.48 13.6 0.055 1.56
A8-0	\$1.20	0.56	2.50	none	4.0 oz.	48 oz. 0.30 sec 0.51 14.2 0.110 3.12
B6-0	\$1.30	1.12	5.00	none	4.0 oz.	48 oz. 0.80 sec 0.58 16.4 0.220 6.24
B14-0*	\$1.50	1.12	5.00	none	6.0 oz.	7 lb. 0.35 sec 0.61 17.3 0.220 6.24
C6-0	\$1.50	2.25	10.00	none	4.0 oz.	48 oz. 1.68 sec 0.80 22.7 0.440 12.48

*Series II Engines

NOTES:

Complete instructions and igniters (NWI-1) are included with each rocket engine order from Estes. All engines listed on this page are 2.75 in. long and 0.690 in. dia. Shipping weight of each engine is approximately 1 1/3 oz.

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



Use only with FS-10, Solar Launcher.

SOLAR IGNITERS: Add increased reliability at lift-off with Estes "NEW" high performance Solar Igniter. This updated 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.

Shipping weight 1 oz.
Cat. No. NWI-2 6 for \$.30

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.

Cat. No. Engine	Prices 3 for Type	Total Impulse lb-sec ¹	Delay n-sec ²	Time Max. Delay (±1%)	Max. Lift Wt.	Max. Thrust	Thrust Duration	Initial Weight Oz.	Propellant Weight G.	Propellant Weight Oz.	G.
SINGLE STAGE ENGINES											
D12-3	\$2.50	4.48	20.0	3 sec	13oz.	9 lb.	1.50 sec	1.49	42.2	0.879	24.93
D12-5	\$2.50	4.48	20.0	5 sec	10oz.	9 lb.	1.50 sec	1.52	43.1	0.879	24.93
UPPER STAGE ENGINES³											
D12-7	\$2.50	4.48	20.0	7 sec	8oz.	9 lb.	1.50 sec	1.55	44.0	0.879	24.93
BOOSTER ENGINE											
D12-0	\$2.50	4.48	20.0	none	13oz.	9 lb.	1.48 sec	1.44	40.9	0.879	24.93

ESTES 'D' ENGINE ROCKETS:

SATURN V	Cat. No. K-36	OMEGA	Cat. No. K-52
CHEROKEE D	Cat. No. K-47	GOBLIN	Cat. No. K-55
SANDHAWK	Cat. No. K-51	DEMON	Cat. No. K-58

NOTES:

Complete instructions and igniters (NWI-1) are included with each rocket engine ordered from Estes. Shipping weight of each engine is approximately 2 1/3 oz.

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



A SUBSIDIARY OF DAMON

LAUNCH CONTROL SYSTEMS



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 (NWI-2). (batteries not included). Shipping weight 8 oz.

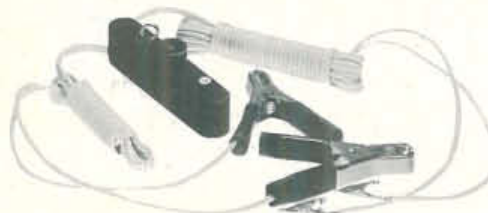


Cat. No. FS-10 \$3.95

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. 918 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 60) by using a separate blast deflector No. BD-1 (see Page 59). Shipping weight 1 lb., 8 oz.

Cat. No. RL-4 \$3.50



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



Rockets not included



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



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

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 pressed 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

BLAST DEFLECTOR PLATE: Slip-on metal deflector plate fits any launcher using 1/8" rod, protects launcher base from rocket blast. Four-inch diameter. Shipping weight 5 oz.

Cat. No. BD-2 \$.65



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



SWIVEL ASSEMBLY: Provides 360° rotation and full tilt adjustments, yet locks in selected position. Handles 1/8" rod, 3/16" rod, and C-rail. Shipping weight 3/4 oz.

Cat. No. LP-2 \$1.50



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.

No. 30, 15-FOOT ROLL:

Cat. No. NW-30A... \$.60

No. 32, 15-FOOT ROLL:

Cat. No. NW-32A... \$.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 : 3/\$.25



BATTERY CLIPS: Ideal for hookup to car batteries, heavy duty clips connect to 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



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



ELECTRICAL EQUIPMENT and LAUNCH SUPPLIES



PILOT LIGHT HOLDER: Adds visual control to launch panel. Holder is steel with 1/2" red plastic jewel, mounts in 7/16" hole. Takes either 6 or 12 volt bulbs, bulb not included. Shipping weight 4 oz.
Cat. No. LH-1 \$.95



6 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

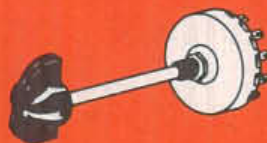


KEY SAFETY SWITCH: Prevents accidental launching of rockets. SPST, turns on with key, must be turned off to remove key. Mounts in 1/2" hole. One key included. Shipping weight 4 oz.
Cat. No. KSW-1A \$3.00
EXTRA KEY:
Cat. No. KSW-1K \$.50



PUSH BUTTON SWITCH: Heavy duty construction momentary type, SPST, normally open. Excellent for use as a firing switch. Mounts in 3/8" hole. Shipping weight 4 oz.
Cat. No. SWM-1 \$1.25

ROTARY SWITCH: Twelve position single pole rotary switch — use as a 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 rotary 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



SOLDERING IRON: 25 watt. Develops up to 720°F. Handle remains cool. Replaceable, pretinned nickel-plated tip. Use with rosin core solder. Shipping weight 1 lb.

Cat. No. SI-1 \$4.00



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.

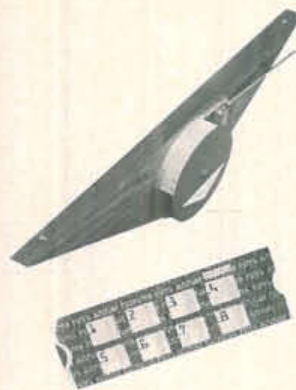
Cat. No. LR-18A 2 for \$1.50

RAIL JOINER: Spring clip 2" long by 1/4" 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



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 1/2" 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.

Cat. No.	Parachute Diameter	Net Weight	Price Each
PK-8	8 inches	.035 oz.	\$.35
PK-12	12 inches	.078 oz.	\$.40
PK-18	18 inches	.144 oz.	\$.45
PK-24	24 inches	.298 oz.	\$.70

RECOVERY WADDING: See Page 54

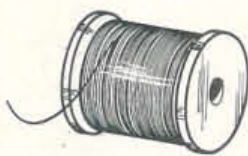
ALUMINIZED PARACHUTE MATERIAL: Extra strong coated polyethylene. 3 feet x 3 feet, 1.25 mil, thick. Perfect for custom chutes, Para wings, ect. Shipping weight 2 oz.
Cat. No. PM-3 2 for \$1.50



SHOCK CORD: Specify width when ordering. Shipping weight 1 oz.
1/8" wide: Net wt. 0.039 oz.,
Cat. No. SC-1 \$.10
1/4" wide: Net wt. 0.078 oz.,
Cat. No. SC-2 \$.15
Also 36" long for greater stretch on those larger birds.
1/8" wide: Net wt. 0.078 oz.,
Cat. No. SC-3 \$.20



STREAMER MATERIAL: Bright orange, flame resistant crepe paper streamers. In 7 1/2-foot lengths, enough for two to eight streamers. Specify size when ordering. Shipping weight 1 oz.
1" wide — Net wt. .092 oz.
Cat. No. SM-1 6 for \$.80
2" wide — Net wt. .184 oz.
Cat. No. SM-2 6 for \$.95



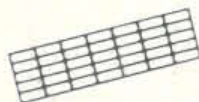
SHROUD LINES: Build reliable, durable custom parachutes with this strong, hard surface shroud line cord. Comes in 72 yard spools. Shipping wt. 5 oz.
Cat. No. SLT-1 ... \$.50



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 3/4" 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 1/4" x 3/4" tape strips, in sheets of 35 strips. Shipping weight 1 oz.
Cat. No. TD-2 2 sheets of 35 for \$.60

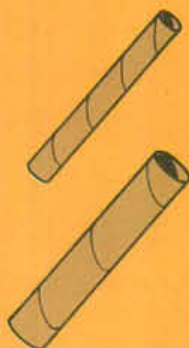


SNAP SWIVELS: For quick changes and reduced tangling in your recovery systems, use these 'tiny 1" long snap swivels. Net weight .01 oz. Shipping weight for 12 swivels 1 oz.
Cat. No. TA-1 12 for \$.80



BODY TUBES

SPIRAL



Cat. No.	Price Each	Length	Inside Diameter	Outside Diameter	Wall Thickness	Wt. in Ounces	
						Net	Ship.
Spiral-Wound Paper Tube, for nose sections and strap-on payloads							
BT-5	\$.30	18"	0.515"	0.541"	0.013"	.219	11
Spiral-Wound Paper Tube, for competition and sport models							
BT-20	\$.30	18"	0.710"	0.736"	0.013"	.288	11
BT-20B	\$.15	8.65"	0.710"	0.736"	0.013"	.138	4
BT-20J	\$.10	2.75"	0.710"	0.736"	0.013"	.044	4
Spiral-Wound Paper Tube, for sport and high performance payload models							
BT-50	\$.40	18"	0.950"	0.976"	0.013"	.378	11
BT-50W	\$.30	9.5"	0.950"	0.976"	0.013"	.200	5
Spiral-Wound Paper Tube, for sport and demonstration models							
BT-55	\$.65	18"	1.283"	1.325"	0.021"	.672	11
Spiral-Wound Paper Tube, for sport and demonstration models							
BT-60	\$.70	18"	1.595"	1.637"	0.021"	.960	11
BT-60D	\$.50	11"	1.595"	1.637"	0.021"	.583	11
Spiral-Wound Paper Tube, for monster models and tail rings							
BT-70	\$.90	17.5"	2.175"	2.217"	0.021"	1.300	14
Spiral-Wound Paper Tube, for general purpose models							
BT-101	\$1.75	16.5"	3.896"	3.938"	0.021"	1.974	16

PARALLEL



Cat. No.	Price Each	Length	Inside Diameter	Outside Diameter	Wall Thickness	Wt. in Ounces	
						Net	Ship.
Parallel-Wound Paper Tube, for sport models							
BT-30	\$.30	9"	0.725"	0.765"	0.021"	.270	4

CLEAR



Cat. No.	Price Each	Length	Inside Diameter	Outside Diameter	Wall Thickness	Wt. in Ounces	
						Net	Ship.
Clear Plastic Tubes, for payload sections							
PST-20	\$.30	8"	0.710"	0.736"	0.013"	.168	4
PST-20J	\$.15	2.75"	0.710"	0.736"	0.013"	.058	4
PST-50S	\$.25	4"	0.950"	0.976"	0.013"	.110	4
PST-60R	\$.50	5"	1.595"	1.637"	0.021"	.350	6
PST-65R	\$.55	5"	1.750"	1.796"	0.023"	.450	6
Mylar Plastic Tube, for feather weight models							
BT-10	\$.30	9"	0.710"	0.720"	0.005"	.088	4

PAYLOAD SECTIONS

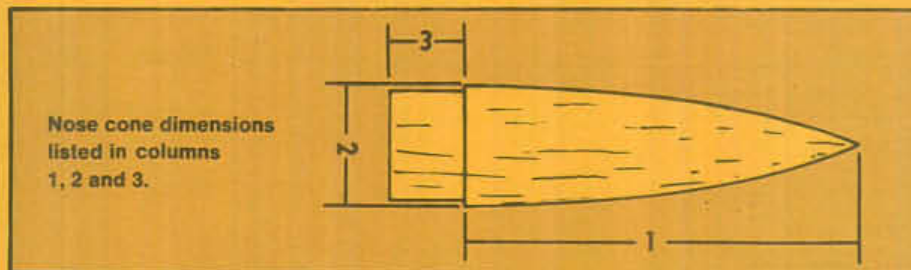


Cat. No.	Price Each	Body Mat'l.	Fits	Inside Dia.	Inside Length	Overall Length	Wt. in Ounces	
							Net	Ship.
PS-20A	\$.90	Clear Plastic	BT-20	.710"	2"	4.00"	.16	1
PS-20C	\$.95	Clear Plastic	BT-20	.950"	3"	7.00"	.40	4
PS-30B	\$.75	Regular Tube	BT-30	.725"	2"	3.75"	.24	1
PS-50A	\$.95	Clear Plastic	BT-50	.950"	3"	6.50"	.39	4
PS-50C	\$1.95	Clear Plastic	BT-50	1.59"	4"	10.50"	1.00	11
PS-50E	\$1.85	Clear Plastic	BT-50	1.75"	4"	10.50"	1.10	11
PS-55B	\$1.50	Regular Tube	BT-55	1.28"	3"	7.63"	.53	11
PS-60A	\$1.90	Clear Plastic	BT-60	1.59"	4"	9.50"	.98	11
PS-60C	\$1.90	Clear Plastic	BT-60	1.75"	4"	9.50"	1.00	11

Notes:

Payload Sections include nose cone, body tube, adapter or bulk head.

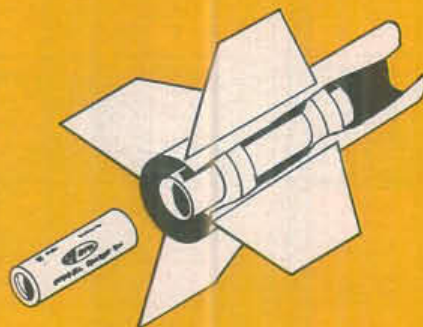
NOSE CONES



DESCRIPTION	No.	Catalog No.	Price Each	Dimensions			Average Weight	Ship. Weight
				1	2	3		
	1	BNC-5V	\$.25	3/4"	0.541"	1/4"	0.013 oz.	1 oz.
	2	BNC-5E	\$.25	1-3/8"	0.541"	1/4"	0.020 oz.	1 oz.
	3	BNC-5S	\$.25	1-1/2"	0.541"	1/4"	0.016 oz.	1 oz.
	4	BNC-5W	\$.40	2-7/8"	0.541"	1/4"	0.039 oz.	2 oz.
	5	BNC-10A	\$.25	13/16"	0.728"	1/4"	0.03 oz.	1 oz.
	6	BNC-10B	\$.30	1-11/16"	0.728"	5/16"	0.05 oz.	1 oz.
	7	BNC-20A	\$.25	13/16"	0.736"	1/4"	0.03 oz.	1 oz.
	8	BNC-20P	\$.40	1-5/16"	0.900"	7/16"	0.07 oz.	4 oz.
	9	BNC-20B	\$.30	1-11/16"	0.736"	5/16"	0.05 oz.	1 oz.
	10	BNC-20R	\$.40	2-3/4"	0.736"	3/8"	0.07 oz.	2 oz.
	11	BNC-20N	\$.45	2-3/4"	0.736"	1/2"	0.08 oz.	2 oz.
	12	BNC-30C	\$.30	3/4"	0.767"	3/8"	0.04 oz.	1 oz.
	13	BNC-30D	\$.35	1-1/2"	0.767"	3/8"	0.06 oz.	1 oz.
	14	BNC-30M	\$.40	1-1/2"	0.767"	1/2"	0.06 oz.	1 oz.
	15	BNC-30E	\$.45	2-3/16"	0.767"	7/16"	0.07 oz.	1 oz.
	16	BNC-30N	\$.50	2-3/4"	0.767"	1/2"	0.08 oz.	2 oz.
		17	BNC-50J	\$.40	1-3/8"	0.976"	1/2"	0.08 oz.
18		BNC-50K	\$.50	2-3/4"	0.976"	1/2"	0.13 oz.	4 oz.
19		BNC-50X	\$.65	3-1/4"	0.976"	1/2"	0.15 oz.	4 oz.
20		BNC-50AD	\$.75	4-1/16"	1.300"	1/2"	0.25 oz.	6 oz.
21		BNC-50Y	\$.80	4-3/8"	0.976"	3/8"	0.16 oz.	6 oz.
		22	BNC-55AA	\$.80	3-1/8"	1.325"	1/2"	0.15 oz.
	23	BNC-55F	\$.85	3-7/8"	1.325"	1/2"	0.19 oz.	4 oz.
	24	BNC-55AC	\$.95	5-3/8"	1.325"	3/8"	0.32 oz.	6 oz.
	25	BNC-55AO	\$.90	5"	1.325"	3/4"	0.43 oz.	4 oz.
		26	BNC-60AB	\$.80	2-5/8"	1.637"	3/8"	0.23 oz.
27		BNC-60T	\$.80	2-7/8"	1.637"	1/2"	0.17 oz.	4 oz.
28		BNC-60L	\$.80	3-1/8"	1.637"	5/8"	0.34 oz.	4 oz.
29		BNC-60AH	\$1.50	7-1/4"	1.637"	7/8"	1.0 oz.	6 oz.
		30	BNC-65L	\$.85	3-1/4"	1.796"	1/2"	0.41 oz.
	31	BNC-70AJ	\$1.50	4-1/4"	2.217"	1"	0.85 oz.	6 oz.
	32	BTC-55Z	\$1.00	3"	1.325"	1/2"	0.25 oz.	4 oz.

1 (With pre-drilled hole)

Engine Type	Name	Fits	Net Weight Oz.	Shipping Weight Oz.	Cat. No.	Price
For Series I & II Engines—A, B, & C type 0.69" x 2.75"	EH-2050	BT-50	0.1	5	EH-2050	\$.40
	EH-2055	BT-55	0.14	5	EH-2055	.40
	EH-2060	BT-60	0.17	5	EH-2060	.40
For Series IV Engines D type 0.945" x 2.75"	EM-5063	Saturn V	0.4	5	EM-5063	.60
For T Series Mini-Engines .5" x 1.75"	EM-520	BT-20	0.09	5	EM-520	.35
Special Purpose Quick-Change Conversion Mount From Series IV Engine to Series I & II Engines	EM-2050	BT-50	0.19	5	EM-2050	.45

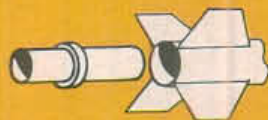


High performance Estes engine mounts for your original design. All engine mounts feature easy-to-assemble instructions and light weight components.

ENGINE BLOCKS



Used for positioning the engine in the rocket. Provides a hollow bulkhead for the engine to develop thrust against, as well as an opening for gases to pass for normal ejection.



Catalog No.	Price 3 for	Outside Dia.	Inside Dia.	Length	Fits	Weight oz. Net Ship.
EB-20A	\$.20	.708"	.65"	1/4"	BT-20	.009 1
EB-20B	\$.20	.708"	.65"	1/8"	BT-20	.005 1
EB-30A	\$.20	.724"	.65"	1/4"	BT-30	.010 1

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.

Catalog No.	Price Each	Outside Diameter	Length	Fits	Weight oz. Net Ship.
NB-20	\$.30	.710"	3/4"	BT-20	.014 1
NB-30	\$.35	.725"	3/4"	BT-30	.014 1
NB-50	\$.40	.950"	1"	BT-50	.040 4
NB-55	\$.45	1.283"	1 1/4"	BT-55	.115 4
NB-60	\$.50	1.595"	1 1/2"	BT-60	.190 4

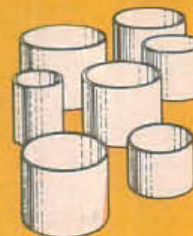
BALSA ADAPTERS



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 1/8" mating surface on each end.

Catalog No.	Price Each	Mates Tubes	Length	Taper Length	Weight oz. Net Ship.
TA-520	\$.30	BT-5 to BT-20	1.75"	0.75"	0.04 1
TA-550	\$.35	BT-5 to BT-50	2.2"	1.0"	0.06 4
TA-2050A	\$.35	BT-20 to BT-50	2.0"	1.0"	0.11 4
TA-2055	\$.45	BT-20 to BT-55	2.5"	1.5"	0.22 4
TA-2060	\$1.00	BT-20 to BT-60	3.0"	2.0"	0.20 4
TA-5055	\$.60	BT-50 to BT-55	2.0"	1.0"	0.60 4
TA-5060	\$1.20	BT-50 to BT-60	3.0"	2.0"	0.23 4
TA-5065	\$.70	BT-50 to PST-65	3.0"	2.0"	0.26 4
TA-5560	\$.65	BT-55 to BT-60	2.2"	1.0"	0.25 4
TA-5565	\$.65	BT-55 to PST-65	2.7"	1.5"	0.38 4
TA-6065	\$.60	BT-60 to PST-65	2.0"	0.5"	0.23 4
TA-6070	\$1.10	BT-60 to BT-70	2.7"	1.5"	0.65 4

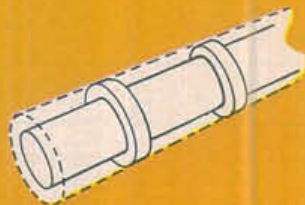
STAGE COUPLERS



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.

Catalog No.	Price Each	Outside Diameter	Inside Diameter	Length	Fits	Average Weight
JT-5C	\$.15	.513"	.455"	3/4"	BT-5	.020 oz.
JT-20C	\$.15	.708"	.650"	3/4"	BT-20	.027 oz.
JT-30C	\$.10	.724"	.650"	3/4"	BT-30	.030 oz.
JT-50C	\$.20	.949"	.920"	1"	BT-50	.051 oz.
JT-55C	\$.20	1.28"	1.25"	1.3"	BT-55	.088 oz.
JT-60C	\$.20	1.59"	1.55"	1 1/2"	BT-60	.124 oz.
JT-70A	\$.25	2.175"	2.115"	1 1/4"	BT-70	.140 oz.

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-2050 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

PAPER ADAPTERS



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 BT-5, BT-20, and BT-50 in BT-60. Also three universal tapered shrouds and instructions. Shipping weight 2 oz.

Cat. No. TA-1 \$.40

20-50 RINGS — 20 rings for centering and mounting BT-20 in BT-50. Shipping weight 2 oz.

Cat. No. RA-2050 \$.30 per set

20-55 RINGS — 10 rings for centering and mounting BT-20 in BT-55. Shipping weight 2 oz.

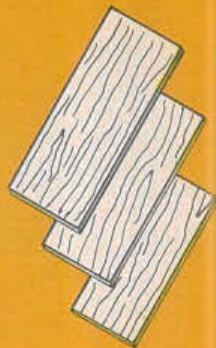
Cat. No. RA-2055 \$.30 per set

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 fin. Read FINS in Vol. 3, No. 3 of the MODEL ROCKET NEWS for more information.



Catalog No.	Price	Dimensions (In Inches)	Weight oz. Net Ship.	Major Use
BFS-10	3 for \$.50	1/32x3x9	.065 4	High Performance
BFS-20	3 for \$.40	1/16x3x9	.130 4	High Performance
BFS-20L	3 for \$.55	1/16x3x12	.173 6	High Performance
BFS-20B	2 for \$.10	1/16x1/2x6	.015 2	Glider Elevon
BFS-30	3 for \$.45	3/32x3x9	.150 4	Sport Models
BFS-30L	3 for \$.60	3/32x3x12	.200 6	Sport Models
BFS-40	3 for \$.55	1/8x3x9	.200 4	Cluster Rockets
BFS-40L	3 for \$.70	1/8x3x12	.265 6	Glider Wings
BFS-30W	\$.75 each	4x18	.50 16	Boost Glider

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.

SHEET No. 2 (14 patterns) Catalog No.—PP-2 \$.25

SHEET No. 3 (15 patterns) Catalog No.—PP-3 \$.25



CUSTOMIZING 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 PNC-60L
1 BNC-30D
1 BNC-30M
1 BNC-20A
1 BNC-20B
1 BNC-20N
1 BNC-10A
1 BNC-10B

1 SM-1
2 TD-2
1 SLT-1
6 SC-1
1 SC-2
9 SE-2

Body Tubes

2 BT-10H
2 BT-20
2 BT-30
1 BT-60

Miscellaneous

1 JT-60C
1 NB-30
1 NB-20
1 EH-2060
1 TA-2060
1 TA-1
3 NCD-1
3 LL-2C
3 EB-20A
3 EB-30A
3 NCW-1
1 NCS-1
1 NCS-2
1 D-5
1 BK-22
1 PP-2
1 PP-3

Fin Material

1 BFS-10
2 BFS-20
3 BFS-30
2 BFS-40

Recovery Equipment

1 PK-8A
2 PK-12A
1 PK-18A
1 PK-24A

\$15.00 Value

Shipping wt. 2 lbs.

ONLY

Cat. No. ES-300 **\$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 BNC-30D
1 BNC-30E
1 BNC-30M
1 BNC-30N

1 SLT-1
5 SE-2

Miscellaneous

1 BK-22
1 PP-2
1 PP-3
5 LL-2A
5 EB-30A

Body Tubes

5 BT-30

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

Shipping wt. 1 lb., 10 oz.

ONLY

Cat. No. ES-200 **\$4.95**





MODELING TOOLS

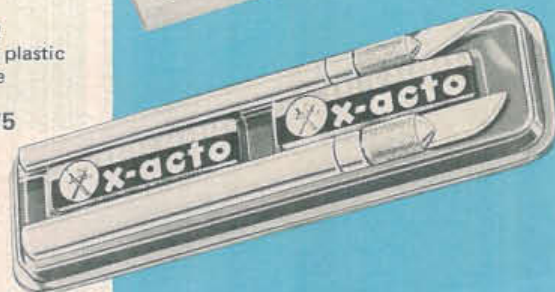
KNIFE AND TOOL SET: Contains small, medium and heavy-duty knives and an entire assortment of blades, gouges, routers, and punches. Has planer, 1" sander, spokeshave and balsa stripper. In wooden box, complete with see-through cover and fitted plastic tray insert that holds and shows every tool. Shipping weight 2 lbs.
Cat. No. KNS-84 \$13.95 each



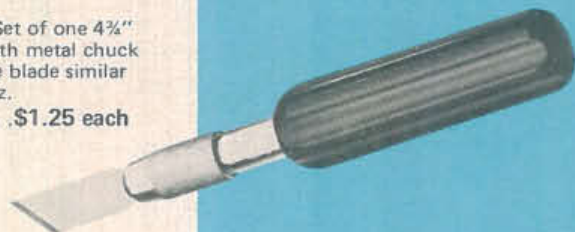
KNIFE CHEST: Small, medium and heavy-duty knives plus 9 assorted extra blades — one for practically every cutting job. In a handy, natural finish wood chest. Shipping weight 1 lb., 8 oz.
Cat. No. KNS-82 \$4.95



DOUBLE KNIFE SET: Nos. 1 & 2 knives with 10 extra asstd. 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 1/4" long and #4 plastic handle with metal chuck and one general purpose knife blade similar to #4G. 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 5 assorted blades. Recommended for precision work. Shipping weight 2 oz.
Cat. No. 2673 \$.65 each



RETRACTABLE PUSH-BUTTON

KNIFE: Positive-lock when open. Ideal for frisket work, retouching, stencil, etching. All-metal; light 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 \$.35 each



RAZOR SAW: Fits #4 handle. 1" wide x 5" long. Use razor saw blade for cutting balsa and body tube. Shipping weight 6 oz.

Cat. No. KNB-4F \$.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 \$.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 \$.50





ASTROSEAL balsa filler: Gives smooth surface for dope or enamel application. Sand between coats. Four ounce jar. 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 swept fins and other parts exposed to hot exhaust gases. 1 1/2 ounce bottle. Shipping weight 6 oz.

Cat. No. AP-1 \$.65



FLUORESCENT SPRAY PAINT: The brightest colors anywhere. Glowing, high visibility paint in 6 oz. spray cans, dries in minutes. Cerise Red, Yellow Orange, Red Orange and Green. Specify colors when ordering. Shipping weight 16 oz.

Cat. No. FP-1 \$1.40



ENAMEL SPRAY PAINT: Top quality enamel in 5 oz. spray cans dries in minutes. Use indoors and outdoors. Not fluorescent. True Blue, Bright Silver, Bright Gold, Cherry Red, Glossy White, Glossy Black, Flat White, Ultra Flat Black. Specify colors when ordering. Shipping weight 16 oz. each.

Cat. No. EP-1 \$1.20



CLEAR SPRAY: Crystal clear spray coating goes on clear — stays clear. Gives extra gloss to enamel finishes, protects decals and decorations, makes fluorescent finishes smooth, durable and glossy. 5 oz. spray can. Shipping weight 16 oz.

Cat. No. EP-2 \$1.20



BUTYRATE DOPE: Brushes on smoothly, easily. 1 oz. bottles. Insignia Red, International Orange, Dark Green, Gloss Black, Insignia White, True Blue, Sky Blue, Aircraft Gray, Orange Yellow, Silver, Gold, and Clear. Specify colors when ordering. Shipping weight 4 oz.

Cat. No. BRD-1 \$.25



SANDING SEALER: Fills small holes in balsa, paper and other porous materials, provides a smooth surface for paint or dope. In 1 oz. bottles. Shipping weight 4 oz.

Cat. No. SS-1 \$.35



THINNER: For diluting dope, sanding sealer and Astroseal and for brush cleaning. Completely colorless — won't interfere with the drying action of the dope. Comes in 1 ounce bottles. Shipping weight 4 oz.

Cat. No. BDT-1 \$.25



WHITE GLUE: Sets fast, gives super strong joints with wood, paper, cloth and other porous materials. In 2 ounce plastic squeeze bottle. Shipping weight 6 oz.

Cat. No. WG-1 \$.75



BODY PUTTY: Fill cracks, holes, grain marks in balsa parts, make smooth fin-body joints. In 21 cc tube. Shipping weight 5 oz.

Cat. No. FM-1 \$.50



FINISHING WAX: For the high gloss finish and low drag. Recommended for use on enamel and butyrate finishes only. In 2 ounce jar. Shipping weight 5 oz.

Cat. No. FW-2 \$1.00



SANDING MATERIAL: Special mylar plastic backed abrasive sheet can be used over and over again. Extra fine 320 grit in easy to handle 2 1/2" x 2 1/2" sheets. Shipping weight 1 oz.

Cat. No. SP-320 6 for \$.50



SANDPAPER: Shape and smooth model rocket parts. Available in three grades. 3" x 3" sheets. Specify grade when ordering. Shipping weight 1 ounce for 6 sheets.

12 Sheets Medium —

Cat. No. SPM-2 \$.40

12 Sheets Fine —

Cat. No. SPF-2 \$.40

12 Sheets Extra Fine —

Cat. No. SPEF-2 \$.50

36 Sheets Assorted (6 each)

Cat. No. SPA-2 \$.80



PAINT BRUSHES: Two #1 brush for extra fine work, two #4 brush for normal work and two #6 brush for covering large areas rapidly. Sets of six only. Shipping weight 2 oz.

Cat. No. PB-3 \$1.00



STYRENE CEMENT: BOTTLE — for cementing plastic to plastic. Shipping weight 3 oz.

Cat. No. PC-1 \$.29

TUBE — for cementing plastic to other materials. Shipping weight 1 1/2 oz.

Cat. No. PC-2 \$.15



Deluxe Decals for roll pattern and fins. Red, white, orange and black 4" x 9" sheet.

Cat. No. D-13 50¢ each



Kit Name Decals for your favorite models. Red, white, yellow and black 3-1/2" x 9-1/4" sheet.

Cat. No. D-11 25¢ each



Gold Mine Special: Decals for lettering, vents, hatches, etc. Red, white, and black 3-1/2" x 9-1/4" sheet.

Cat. No. D-5 25¢ each



Multi-Purpose Decals featuring a variety of favorite markings. Printed black on clear 3" x 4-1/2" sheet.

Cat. No. KD-45 15¢ each



1/8" Checkerboards for colorful roll patterns. 4-1/4" x 10" sheet. Available in red, black, gold or white. Specify color when ordering.

Cat. No. D-7 25¢ 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 25¢ each



Patriot Decal. Features American Eagle roll pattern plus big USA lettering. Gold, black and white 6" x 7-1/2" sheet.

Cat. No. KD-M3B 35¢ each



Kit Name Decals for your favorite models. 4" x 8-1/4" sheet. Available in black or white. Specify color when ordering.

Cat. No. D-6 25¢ each



Red, white and blue stars and stripes for fins and roll patterns. 6" x 12" sheet.

Cat. No. KD-M3A 75¢ each



Futuristic Starship Vega Decals for fins and roll patterns. Red, black and white 5" x 12" sheet.

Cat. No. KD-M4A 45¢ each



Orbital Transport Decals for fins and body tube decor. Red, black and yellow 4-1/4" x 11" sheet.

Cat. No. KD-42 60¢ each



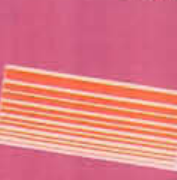
Red Max fun decals. Black and white skull and cross bones, iron crosses and other crazy markings. 5" x 11-1/2" sheet.

Cat. No. KD-M2 35¢ each



Interceptor Decals. Futuristic USAF red, white, blue and black fin and body tube decor. 4-1/2" x 12-1/2" sheet.

Cat. No. KD-50A 60¢ each



Color Stripes for body tubes and fins. 4-1/4" x 10" sheet with ten stripes 1/32" through 1/2" wide and 9-1/2" long. Available in red, black or yellow. Specify color when ordering.

Cat. No. D-9 25¢ each



Model markings for roll patterns, lettering, numbering, etc. Printed in black on 4" x 9" clear backing.

Cat. No. D-12 25¢ each



1/4" Letters and Numbers to identify your models. Available in black or white. Specify color when ordering.

Cat. No. D-4 15¢ each



3/8" Letters and Numbers for authentic markings. Available in black or white. Specify color when ordering.

Cat. No. D-3 15¢ each



STARS and BARS sheet of twelve 1-1/4" red, white and blue USAF emblems. 2-1/2" x 4-3/4" sheet.

Cat. No. D-1 15¢ each



STARS and BARS sheet of two 2-1/8" and two 1-3/4" red, white and blue USAF emblems plus other markings. 3-1/4" x 4-1/4" sheet.

Cat. No. D-2 15¢ each



DECORATING TAPE, black: Thin, tough pressure sensitive tape is perfect for stripes, bars and other decoration. Only .0015" thick, in rolls 1/2 inch wide and 144 inches long. Shipping wt. 5 oz.

Cat. No. DT-1-5 30¢ each

All Decals shipping wt. 2 oz.



LAUNCH LUGS: Super strength laminated launch lugs feature mylar plastic core for durability, paper outer layer for easy gluing. Inside diameter 5/32", fit 1/8" rod. Shipping wt. 1 oz.

1 1/4" long: Cat. No. LL-2A
12 for \$.50

2 3/8" 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



NYLON SCREWS: Extra light, high strength screws for elevon adjustment on boost-gliders. 1/2" 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



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



WEIGHTS: Balance rockets for stability.

ROUND LEAD WEIGHTS — 11/16" dia., center hole. Weight: 0.12 oz. each. Shipping wt.: 1 oz. Cat. No. NCW-1
6 for \$.60

BALANCING WEIGHTS — Flexible lead strips. 3" x 1/4" x 0.02". Weight: 0.085 oz. each. Shipping weight: 1 oz. Cat. No. NCW-3
10 for \$.60



WIND METER: Rugged, pocket-size instrument for determining wind velocity. Indispensable to the serious rocketeer for studying wind effects on rocket and parachute performance. Shipping weight 5 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



REINFORCING: Reinforce fin joints, attach shock cords. 3" x 12" sheets of gauze. Cat. No. GR-2
6 for \$.60
3" x 9" self-adhesive treated paper
Cat. No. PRM-1
6 for \$.45



GLUE GUN: Handles all makes of glue and cement. Conserves glue, speeds assembly. Shipping weight 1 1/2 oz. Cat. No. GG-1
\$1.50



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, 0.1" wide and only 0.025" thick. Mount in on the model with gauze and glue as shown on page 74. Net weight 0.032 oz. Shipping weight 1 oz. Cat. No. EH-2
3 for \$.60

ROCKET STABILITY: Easy-to-read report explaining how rockets are designed to fly properly and including a before-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 payloads. Cat. No. TR-6 \$.25

FRONT ENGINE BOOST-GLIDERS: Valuable information on designing, building, and flying front engine boost-gliders. Cat. No. TR-7 \$.25

MODEL ROCKETRY 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

ALTITUDE 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 new hobby. Cat. No. 2820 \$.50

MODEL ROCKET 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

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

ESTES MODEL ROCKET 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 ROCKETRY: 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 active clubs. Cat. No. BK-19 \$.50

MODEL ROCKETRY TECHNICAL MANUAL: Information regarding: finishing, stability, tracking, recovery systems, staging, clustering, boost-gliders. Cat. No. BK-21 \$.25

MODEL ROCKET ENGINES: Large time-thrust curves suitable for use in displays, plus other data. Cat. No. TN-1 \$.25

MODEL ROCKET ENGINE PERFORMANCE: Technical information. Includes formulas for calculating engine performance. Cat. No. TN-2 \$.25

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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.

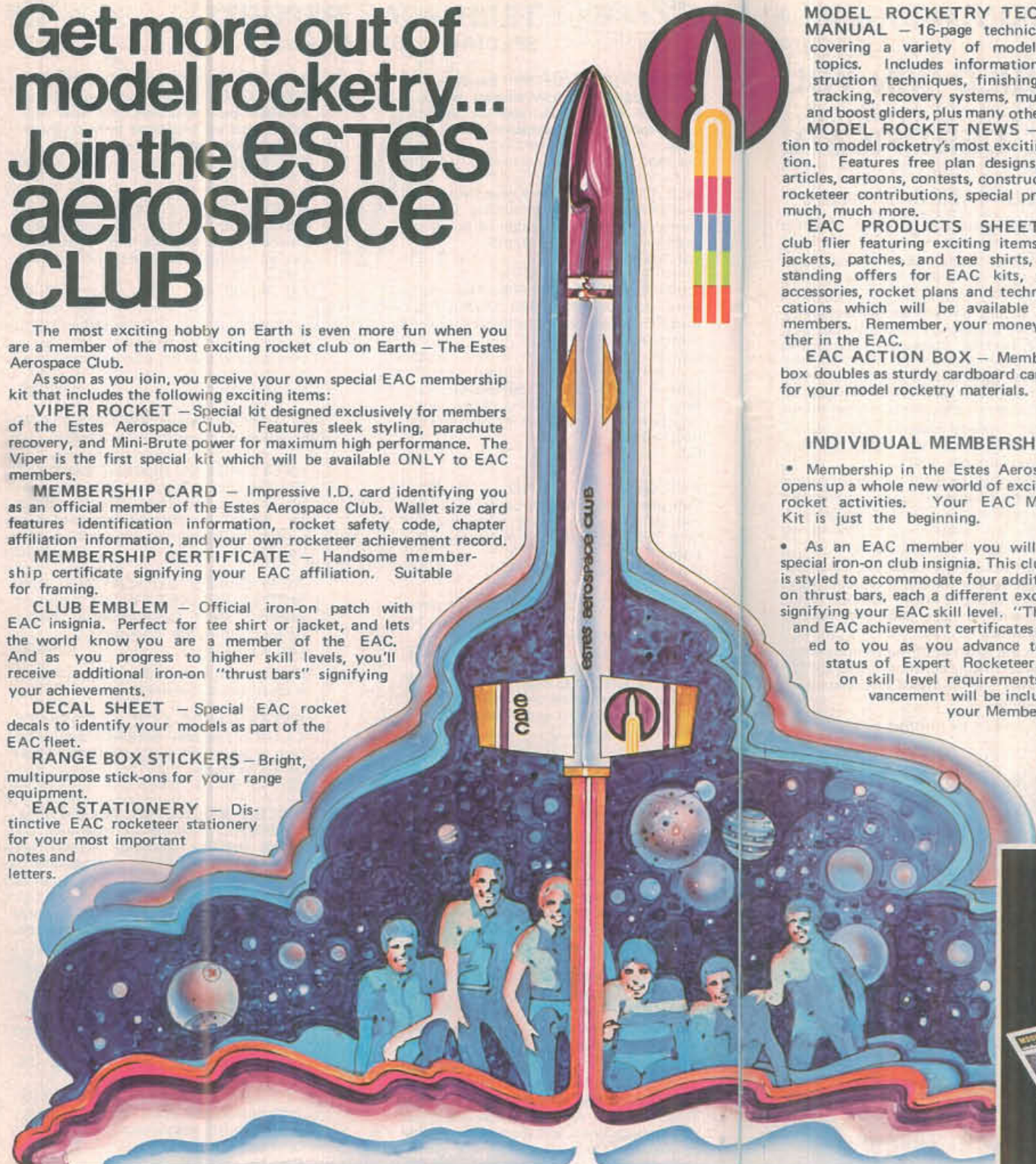
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RANGE BOX STICKERS — Bright, multipurpose stick-ons for your range equipment.

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MODEL ROCKETRY TECHNICAL MANUAL — 16-page technical manual covering a variety of model rocketry topics. Includes information on construction techniques, finishing, stability, 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 flier 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. "Thrust 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 it is 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 booklets, and past MRNs 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.



**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!!!



DESIGN OF THE MONTH RULES

1. All entries become the property of Estes Industries; no entries can be returned.
2. Employees of Estes Industries and members of their immediate families are not eligible to enter.
3. Designs should be sent to the Design of the Month Editor, Estes Industries, Inc., Box 227, Penrose, Colorado 81240. However, all plans sent to us which are not specifically addressed to another contest or department will be automatically placed in the Design of the Month Competition.
4. Any type of model rocketry design can be entered (rockets, boost-gliders, launching or recovery devices, etc.)
5. All designs reaching Estes Industries during the calendar month will be entered in that month's competition. (Date of receipt, not postmark, will determine the month in which a design will be judged).
6. If two or more exceptional entries are received during any month, the judges may, at their discretion, make identical first-place awards or give additional special merit awards.

Each month the designer of the winning entry will receive a certificate entitling him to \$50.00 in merchandise and an award certificate suitable for framing.

Award winners will be notified by mail.

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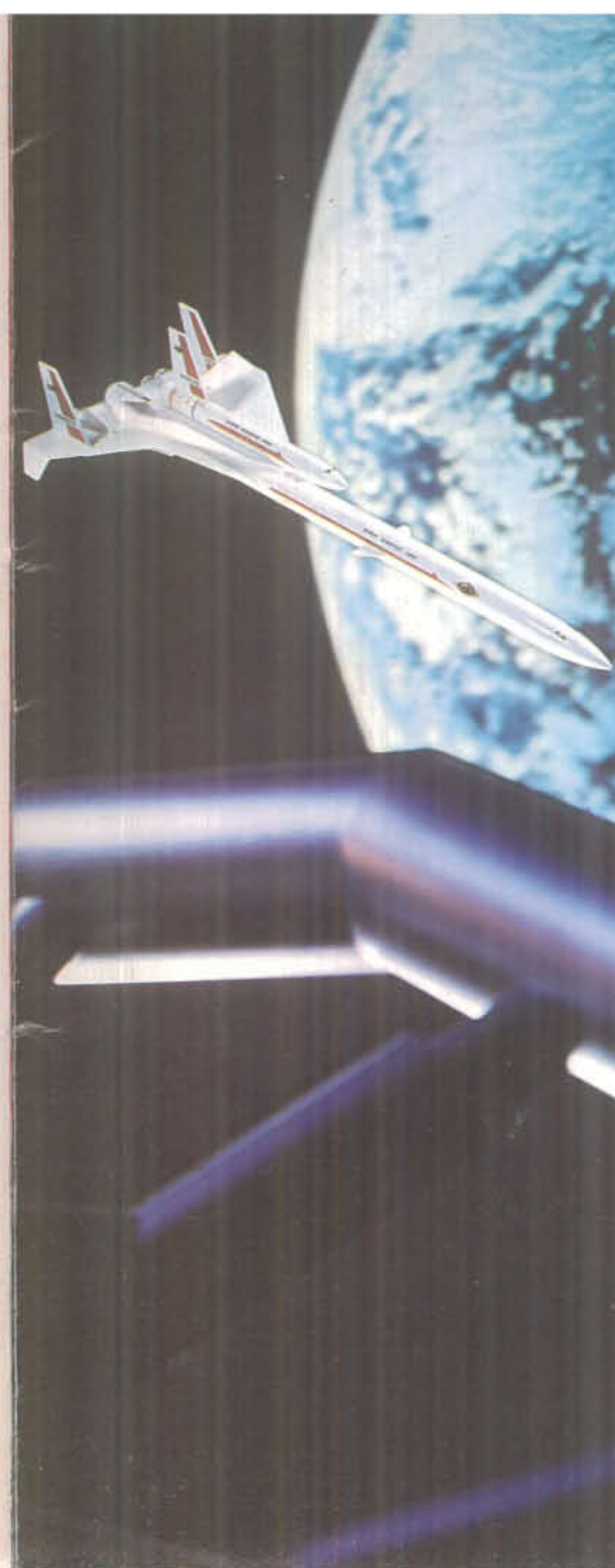
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Model Rocketry Safety Code

- Construction** — My model rockets will be made of lightweight materials such as paper, wood, plastic and rubber, without any metal as structural parts.
- Engines** — I will use only pre-loaded factory made model rocket engines in the manner recommended by the manufacturer. I will not change in any way nor attempt to reload these engines.
- Recovery** — I will always use a recovery system in my model rockets that will return them safely to the ground so that they may be flown again.
- Weight Limits** — My model rocket will weigh no more than 453 grams (16 ozs.) at liftoff, and the engines will contain no more than 113 grams (4 oz.) of propellant.
- Stability** — I will check the stability of my model rockets before their first flight, except when launching models of already proven stability.
- Launching System** — The system I use to launch my model rockets must be remotely controlled and electrically operated, and will contain a switch that will return to "off" when released. I will remain at least 10 feet away from any rocket that is being launched.
- Launch Safety** — I will not let anyone approach a model rocket on a launcher until I have made sure that either the safety interlock key has been removed or the battery has been disconnected from my launcher.
- 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.
- Launch Area** — My model rockets will always be launched from a cleared area, free of any easy to burn materials, and I will only use non-flammable recovery wadding in my rockets.
- Jet Deflector** — My launcher will have a jet deflector device to prevent the engine exhaust from hitting the ground directly.
- Launch Rod** — 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.
- Power Lines** — I will never attempt to recover my rocket from a power line or other dangerous places.
- Launch Targets & Angle** — I will not launch rockets so their flight path will carry them against targets on the ground, and will never use an explosive warhead nor a payload that is intended to be flammable. My launching device will always be pointed within 30 degrees of vertical.
- Pre-Launch Test** — When conducting research activities with unproven designs or methods, I will, when possible, determine their reliability through pre-launch tests. I will conduct launchings of unproven designs in complete isolation from persons not participating in the actual launchings. Revised 2/4/70

As a member of the Estes Model Rocketry Program, I promise to faithfully follow all rules of safe conduct as established in the above code.

Signed
This Solid Propellant Model Rocketry Safety Code
Approved by The National Association of Rocketry
the Hobby Industry Association of America

DELUXE RANGE OPERATIONS OUTFIT

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- * 26" tall Patriot Rocket
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- * Launch Controller with safety interlock key and continuity check lamp.

PLUS

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