

# ESTES

## FLYING MODEL ROCKET CATALOG



# 1992

22 ALL NEW KITS  
AND ACCESSORIES



### Pro Series™ Rockets

- Designed especially for the serious rocket enthusiast
- Cluster engine mounts
- Extra-strong body tubes
- Reinforced fins
- Nylon parachutes

#### Impulse™

- Powered by two "D" engines
- 37" (94 cm) tall
- Diameter: 2.5" (63.5 mm)
- Weight: 8.3 oz. (235 g)
- Altitude range over 900 feet (274 meters)
- Engines: D12-S, D12-7

No. 2064 \$44.99



#### Maxi-Force™

- Powered by three "D" engines
- Towering at 50" (127 cm) tall
- Diameter: 2.5" (63.5 mm)
- Weight: 12.3 oz. (348 g)
- Altitude range over 1,000 feet (305 meters)
- Engines: D12-7

No. 2065 \$54.99



#### Patriot™ Missile

- 1/5 scale model of the actual Desert Storm hero
- Powered by a four "D" engine cluster
- 39" (99 cm) tall
- Diameter: 3.0" (76.2 mm)
- Weight: 12.3 oz. (348 g)
- Altitude range over 1,000 feet (305 meters)
- Engines: D12-7

No. 2066 \$59.99



# ALL NEW!



#### Command Control™ Launch Controller

Take control of your Pro Series™ launches with the highest powered Estes launch controller ever!

- Rechargeable ni-cad battery powered for reliable ignitions
- High current capacity wiring on removable spool
- Voltage selector with external capacity
- Requires one or two 7.2 Volt R/C car battery packs - Not Included
- External jack for external battery source
- Internal storage for igniters

No. 2234 \$34.99

#### Power Plex™ Launch Pad

The precision launch system the Pro Series™ deserves!

- Single control for launch trajectory
- Rugged, futuristic design
- Field-ready, no modifications or adjustments needed
- Fold-up design and carry handle for easy transportation
- Includes 1/4" (6 mm) launch rod, but can accept 1/8" (3 mm), 3/16" (5 mm) and 1/4" (6 mm) rods.
- Launch up to a 5 lb. (2.3 kg) rocket

No. 2235 \$59.99



# E2X SERIES

## E-2-X™ Series Precision Build Kits

- The easiest way to build a precision rocket!
- Precision engineered with pre-slotted body tubes for perfect fin alignment.
- Pre-colored plastic: nose cone and body parts - no painting necessary
- Colorful, self-adhesive decals for decorating fun

### Bandit™

- 16½" (42 cm) tall
- Diameter: 1" (2.54 cm)
- Weight: 1.6 oz. (45.5 g)
- Flies to altitudes over 1000 feet (305 meters)
- Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

No. 2060 \$ 8.99



### Rampage™

- 19½" (44 cm) tall
- Diameter: 1" (2.54 cm)
- Weight: 1.8 oz. (50.2 g)
- Flies to altitudes over 1000 feet (305 meters)
- Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

No. 2061 \$ 9.99



### Dagger™

- 22½" (57 cm) tall
- Diameter: 1" (2.54 cm)
- Weight: 1.9 oz. (53.5 g)
- Flies to altitudes over 1000 feet (305 meters)
- Engines: A8-3 (First Flight), B4-4, B6-4, B8-5, C5-3, C6-3, C6-5

No. 2062 \$10.99



### Cato™

- Awesome mid-air disintegration!
- Quick re-assembly for disaster after disaster
- 20" (51 cm) tall
- Diameter: 1.64" (4.2 cm)
- Weight: 4.4 oz. (125 g)
- Engines: B6-0 (First Flight), C6-0

No. 2071 \$10.99



### Bail-Out™

- Action figure bails out of rocket (figure not included)
- 24½" (62 cm) tall
- Diameter: 1.637" (4.2 cm)
- Weight: (without figure) - 3.07 oz. (87 g)  
(with figure) - 3.67 oz. (104.0 g)
- Reaches altitudes over 500 feet (152 meters)
- Engines: B4-2 (First Flight), B6-4, C6-5

No. 2070 \$11.99



**ALL NEW!**

# EXPLORER™ SERIES

## Explorer™ Series

- Unique Designs
- Requires rocket building experience
- Payloads and multi-stages
- Painting required

### Mini-Cobra™

- Super high performance two-stage mini-sport rocket
- 10" (25 cm) tall
- Diameter: 0.544" (13.8 mm)
- Weight: 0.47 oz. (13.2 g)
  - single stage - 0.31 oz. (8.8 g)
- Reaches altitudes of 900 feet (274 meters)
- Engines:
  - single stage - A3-4T (First Flight), A10-3T
  - first stage - A10-0T
  - second stage - 1/2A3-4T

No. 0898 \$ 3.99



### Delta Clipper™

- Reach for the clouds with super-high performance!
- Powerful "D" engine two-stage configuration
- 28" (66 cm) tall
- Reaches altitudes up to 1/2 mile (804 meters)
- Engines:
  - single stage - D12-5, D12-7
  - first stage - D12-0
  - second stage - D12-7

No. 2067 \$12.99



### Scrambler™

#### Egg Lifter Sport Rocket

- Payload Bay carries an egg to altitudes over 300 feet (76 meters)
- 21 1/2" (55 cm) tall
- Weight: 2.51 oz. (71 g)
- Payload diameter of 2" (51 mm)
- Engines:
  - (without egg) - B4-2 (First Flight), B6-2, B8-5, C6-5
  - (with egg) - C5-3

No. 2072 \$10.99



### Grey Hawk™

#### Orbital Interceptor

- Futuristic fighter that operates in low orbit hunting satellites and other spacecraft
- 16 1/2" (42 cm) tall
- Diameter: 1.325" (3.4 cm)
- Weight: 2.1 oz. (60.5 g)
- Reaches altitudes of 900 feet (274 meters)
- Engines: B4-4 (First Flight), A8-3, B6-4, B8-5, C5-3, C6-3, C6-5

No. 2068 \$11.99



MINI-COBRA™

DELTA CLIPPER™

SCRAMBLER™

GREY HAWK™

ALL NEW!

# COLLECTORS SERIES™

## Collector™ Series

- Specifications and details true to original designs
- Excellent models for both display and flight!

### Star Trek® USS Enterprise™

- Flying model of the most famous spaceship in the Galaxy's history
  - 25th Anniversary Commemorative Special Edition
  - Flight Configuration Length: 43.3" (110 cm)
  - Starship Display Length: 17" (43.2 cm)
  - Recovery Probe Length: 30.4" (77.2 cm)
  - Primary Hull Diameter: 7.5" (19 cm)
  - Weight: 3.8 oz. (110 g)
  - Engines: B6-2 (First Flight), C6-3
- No. 1275 \$29.99



### Star Trek® Klingon™ Battle Cruiser

- Flying scale model of the Klingon Battle Cruiser, the chief adversary of the Federation Starship Enterprise
  - 25th Anniversary Commemorative Special Edition
  - Length: 15.5" (39.4 cm)
  - Wing Span: 9.8" (24.9 cm)
  - Weight: 2.5 oz. (70 g)
  - Engines: B4-2 (First Flight), B6-4, C6-5
- No. 1274 \$29.99



### Mars Snooper™

- Limited Edition Flying Model Rocket with display stand and written history
  - Introduced in the Estes line as a fantasy, demonstration rocket.
  - 21¾" (55 cm) tall
  - Diameter: 0.976" (24.8 mm)
  - 2.3 oz. (66 g)
  - Engines: A8-3 (First Flight), B6-4, C6-5
- No. 2063 \$24.99



ALL NEW!

# BETA SERIES

## Beta Series™

- Single Stage
- Simple construction
- Die-cut fins
- Minimal painting

### Mini-Patriot

- Semi-scale model of the Desert Storm hero
- 10" (25 cm) tall
- Diameter: 0.736" (18.7 mm)
- Weight: 0.6 oz. (17.1 g)
- Reaches altitudes over 600 feet (152 meters)
- Engines: A3-4T (First Flight), A10-3T

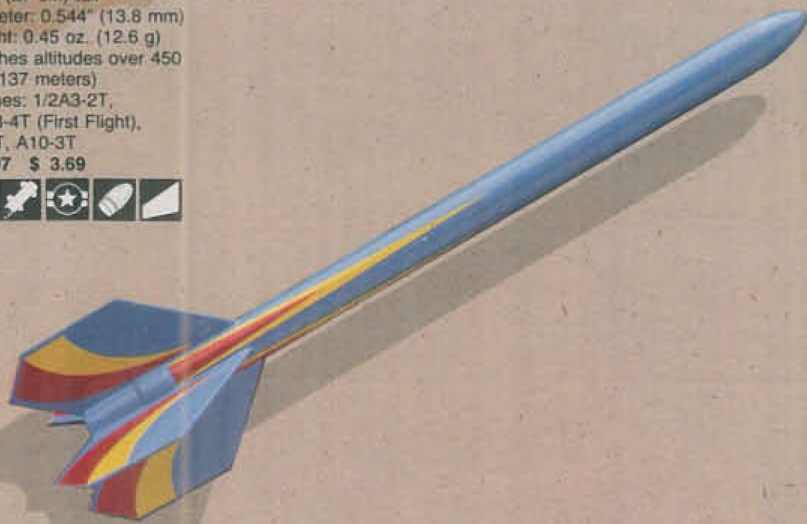
No. 0896 \$ 3.79



### Lumina™

- Flying model rocket kit for the beginning modeler
- 10½" (27 cm) tall
- Diameter: 0.544" (13.8 mm)
- Weight: 0.45 oz. (12.6 g)
- Reaches altitudes over 450 feet (137 meters)
- Engines: 1/2A3-2T, 1/2A3-4T (First Flight), A3-4T, A10-3T

No. 0897 \$ 3.69

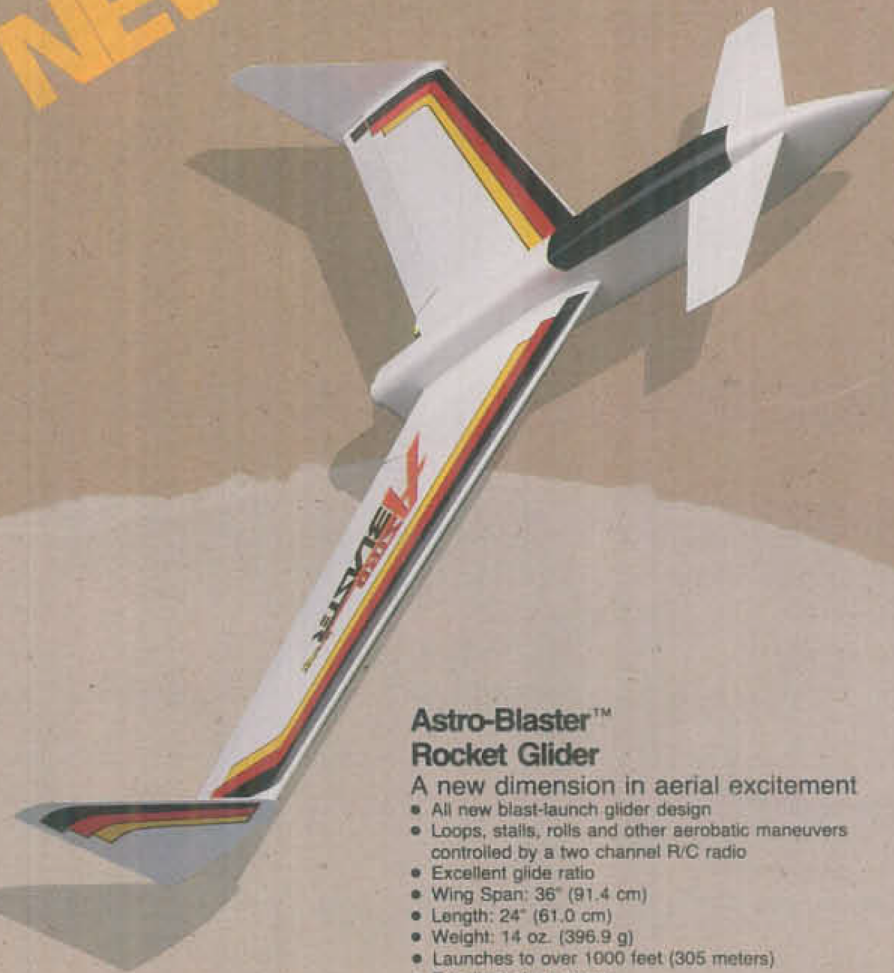


# Challenge series

## Challenge Series™

- Precision, detailed construction and painting
- Scale and R/C
- D and composite engines
- Advanced building techniques

# ALL NEW!



### Astro-Blaster™ Rocket Glider

A new dimension in aerial excitement

- All new blast-launch glider design
- Loops, stalls, rolls and other aerobatic maneuvers controlled by a two channel R/C radio
- Excellent glide ratio
- Wing Span: 36" (91.4 cm)
- Length: 24" (61.0 cm)
- Weight: 14 oz. (396.9 g)
- Launches to over 1000 feet (305 meters)
- Excellent slope soarer
- Engines: D11-P

No. 2073 \$74.99

# ACCESSORIES

**ALL  
NEW!**



## E2™ Launch Controller

Lift off with state-of-the-art technology!

- Dual button launch control
- Built-in storage for the 15' (5 meter) ignition cable
- Four C cells required - Not Included
- Bright red continuity signal
- Features two-hand R/C transmitter styling

No. 2236 \$24.99



## Transroc II™ Transmitting Locator

Sophisticated electronic rocket tracking and finding system!

- Hand-held receiver complete with compass and earphones
- Direction and distance-sensitive locator tone
- Transmitter fits into most rockets
- Receiver uses a 9V battery - Not Included
- Transmitter uses 6V camera battery 4LR44 - Not Included
- Up to a 600 feet (183 meter) range

No. 2237 \$29.99



## HERE'S HOW TO USE YOUR ESTES CATALOG

Information for each rocket kit is provided on the page where the rocket is displayed. This information includes:

- Skill Level number recommends the modeling skill and experience necessary for a rocketeer to successfully construct the kit. Skill Level 1 kits are suggested for beginners, Skill Level 2 kits for experienced rocketeers, Skill Level 3 kits for advanced modelers and Skill Level 4 kits are recommended for the master modeler.
- Kit Name
- Special features and additional kit information including length, diameter and weight.
- Engines lists all recommended engines to fly the rocket. Engines are listed from least to most powerful. (1st Flt.) indicates which engine should be used to become familiar with your rocket's flight profile.
- Product number for kit which should always be used when ordering.
- Price of the kit (or see Price List.) **All prices in this catalog are subject to change without notice.**
- Average Shipping Weight for kits.

Kit Feature Symbols indicate the following kit features:

- |                            |                   |
|----------------------------|-------------------|
| Parachute & Size           | Plastic Nose Cone |
| Streamer Recovery          | Balsa Nose Cone   |
| Die-Cut Balsa Fins         | Kit Decals        |
| Die-Cut Fiber Fins         | Plastic Fin-Unit  |
| Quick-Release Engine Mount |                   |

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**PLEASE NOTE:** Unless otherwise stated, all model rocketry kits in this catalog require assembly. Launch system, engines, launch supplies, glue, batteries, paint, tools, and finishing materials are not included.

## MODEL ROCKETRY IS FUN AND MORE...

You create the model, then... watch it fly! Fly your rocket thousands of feet into the sky. When your recovery system deploys, catch your model...if you can! Invite your friends and family to your next launch. See how much fun a day can be!

Estes model rocketry is a fun and rewarding activity for ages 10 and up. Adult supervision is recommended for those under 12 years of age. It is enjoyed throughout the U.S. and in Australia, Canada, Japan, Mexico, and many European countries. Model rocketry is used as a motivational teaching aid in thousands of schools, colleges, and universities in addition to summer camps and space camps. It is endorsed as a worthwhile educational activity by the Boy Scouts of America, Civil Air Patrol, 4-H, NASA, the U.S. Air Force, the U.S. Army, and the Young Astronaut Program.

Model rocket products comply with the requirements of the U.S. Consumer Product Safety Commission and the launching of model rockets has been exempted from regulation by the Federal Aviation Agency. An American

National Standard has been established for model rocketry by the National Fire Protection Association in NFPA 1122 "Code for Unmanned Rockets." The Model Rocketry Safety Code as established by the National Association of Rocketry is responsible for more than 300 million safe, successful model rocket launches since the beginning of the activity 33 years ago. Estes model rocket engines have been classified as Toy Propellant Devices by the U.S. Department of Transportation and are certified by the N.A.R. to meet the performance standards established by the NFPA.

Estes model rocket engines may be mailed or shipped throughout the U.S. as Flammable Solids per D.O.T. Exemption 7887. Check with your postal authority or shipping agent for the proper packaging and labeling requirements. Regulations differ for shipment outside the U.S., so be sure to check with your travel or transport agent first.

If you have any questions or need further information about Estes model rocketry, please write to the address listed below on our warranty.



## FULL ONE YEAR WARRANTY

Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product, except computer software, which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired or replaced, at Estes' option and at no charge to you, provided it is returned to Estes with proof of purchase. This warranty does not cover incidental or consequential damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the

exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to:

**Estes Industries,  
Customer Service Department,  
Penrose, Colorado 81240.**

## PATRIOT FLYING MODEL ROCKET STARTER SET

**SKILL LEVEL 2** Recommended for the Experienced Modeler. Set includes the scale model Patriot rocket patterned after the Desert Storm hero. Over 21" (53.3 cm) long, the Patriot comes with pre-colored body tubes, pressure sensitive decals and a quick release engine mount. Set includes an assembled Electron Beam® launch controller, Porta-Pad® II Launch Pad and flight supplies for three launches. *Requires 4 AA alkaline batteries, glue, paint, and finishing supplies—Not Included.*

Ship Wt.: 3 lbs. (1.4 kg)  
**ENGINES:** A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5  
**No. 1450**  
**\$23.99**



**BOTH SETS ARE PACKED IN FREE HEAVY DUTY RANGE BOXES**

## METEOR™ FLYING MODEL ROCKET STARTER SET

**SKILL LEVEL 1** Recommended for the Beginning Modeler. The beautiful Meteor™ rocket is featured in this set. Nearly 1½ feet (45.7 cm) tall, the Meteor™ is easy to construct and impressive to fly. Set also contains an electrical launch controller, adjustable tri-pod launch platform, and enough solid-propellant engines, igniters, and recovery wadding for three lift-offs. *Requires 4 AA alkaline batteries, glue, paint, and finishing supplies—Not Included.*

Ship Wt.: 3 lbs. (1.4 kg)  
**ENGINES:** A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5

**No. 1425**  
**\$35.59**



## ALPHA III® FLYING MODEL ROCKET STARTER SET

**SKILL LEVEL 1** Recommended for the Beginning Modeler. Includes easy-to-build Alpha III® model rocket kit. Colored Parts - no painting required! Also includes Porta-Pad® II launch pad with blast deflector plate and 1/8" (3 mm) two-piece launch rod, assembled Electron Beam® launch controller and three NAR certified model rocket engines, recovery wadding and igniters. *Requires 4 AA alkaline batteries, glue, and finishing supplies—Not Included.*

Ship Wt.: 3 lbs. (1.4 kg)  
**ENGINES:** 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.  
**No. 1406**  
**\$25.99**



**BOTH SETS PACKAGED  
IN REUSABLE RANGE  
BOXES!**

## SIZZLER™ FLYING MODEL ROCKET STARTER SET

**SKILL LEVEL 1** Recommended for the Beginning Modeler. Includes the 23 inch (58.4 cm) long Sizzler™ model rocket kit featuring parachute recovery and flights over 900 feet (276 m). Also included are the assembled Electron Beam® Launch Controller, the Porta-Pad® II Launch Pad with blast deflector plate, and 1/8" (3 mm) launch rod. Legs remove easily for compact storage. Flight Pak includes three NAR certified model rocket engines, recovery wadding, and igniters. *Requires 4 AA alkaline batteries, glue, and finishing supplies—Not Included.*

Ship Wt.: 3 lbs. (1.4 kg)  
**ENGINES:** A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

**No. 1432**  
**\$29.99**





## AMERICA™ FLYING MODEL ROCKET STARTER SET

**SKILL LEVEL 1.** Recommended for the Beginning Modeler. Features 15 inch (38 cm) tall America™ rocket with gold-plated nose cone, blue fin unit, white body and adhesive decals. Easy to build, you may fly America™ again and again to heights of 1000 feet (305 m)! Set includes Porta-Pad® II launch pad, assembled Electron Beam® Launch Controller and supplies for your first two sky-high flights plus instructions, safety code, and full one year warranty. All are enclosed in a reusable range box. Additional offers included, too! Requires 4 AA alkaline batteries, glue, and finishing supplies—Not Included.

Ship Wt. 3 lbs. (1361 g)

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 1447

\$23.99



SET  
PACKAGED  
IN  
REUSABLE  
RANGE BOX

## COMPUTER SOFTWARE

### PHYSICS OF MODEL ROCKETRY

Action-Reaction  
Inertia  
Momentum

Acceleration and  
Energy  
Staging

Satellites  
Tech Tip™ on G Forces

No. 9027 \$24.95

### FLIGHT: AERODYNAMICS OF MODEL ROCKETS

Forces on Flying  
Objects  
Aerodynamics

Stability  
Drag

Center of Gravity/  
Center of Pressure

No. 9026 \$44.95

### IN SEARCH OF SPACE: INTRODUCTION TO MODEL ROCKETRY

Model Rocket Flight  
Profile  
Parts of a Model Rocket  
Model Rocket Engines and  
Classification

Model Rocketry Safety Code  
and Reviews  
(+ Bonus Program on  
Multi-Staging and Tech  
Tip™ on Igniters and  
Installation)

No. 9025 \$24.95

### 90 DAY WARRANTY

Programs written by Bob Cannon and Mike Dorflier. ©Copyright Estes Industries, 1986, 1987, 1988. All Rights Reserved. Graphics created with **BLAZING PADDLES** by Baudville. Animation created with **TAKE 1** by Baudville. Apple is a registered trademark of Apple Computer, Inc.

Software products are on 5½ inch (14 cm) disks for use with Apple II series computers. A minimum of 64K of memory is required. A color monitor is recommended.

Avg. Ship. Wt. 8 oz. (226 g)

### ASTROCAD: PERFORMANCE ANALYSIS FOR MODEL ROCKETRY

Written by Michael Gasperi

Apogee Determination  
Drag Prediction  
Performance Prediction  
Flight Simulation  
Aerodynamic Stability

Model Rocket Design  
(two versions)  
Drag Estimation  
Optimum Weight  
Elliptical Fin Design

Apple

No. 9028 \$19.95

IBM PC

No. 9037 \$19.95

### AEROTREK MODEL ROCKET ALTITUDE PREDICTION TOOLKIT

Written by Mike Dorflier

Introduction  
Single Stage  
Two Stage  
Three Stage

Single Stage Cluster  
Incremented Weight  
Designer's Scratchpad  
Lunar Launch

Apple

No. 9033 \$19.95

IBM PC

No. 9034 \$19.95

### MODEL ROCKETRY: THE LAST FRONTIER\*

Highly entertaining and informative, this 15 minute, full-color VHS movie video captures the excitement of model rocketry! William Shatner, Captain Kirk of the Starship Enterprise of Star Trek\*\*, narrates this film and appears in it several times. Great for club and classroom use.  
**No. 2792 \$19.95**

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\*\*©Copyright Paramount Pictures Corporation 1975. All rights reserved.



## Rocketry

## SCIENCE™ KIT

### PERFECT FOR:

- Boy Scout Space Exploration Merit Badge
- School Science Project
- 4-H Aerospace Program
- Young Astronaut Program



Now you can perform unlimited projects and experiments in aeronautics and astronautics with model rocketry. Rocketry Science™ Kit includes:

- 36 Page Project Manual with Easy-to-Follow Text and Illustrations
- Three Display Posters
- Full One Year Warranty
- Multi-Stage Rocket with See-Through Payload Compartment—Over 21 Inches (53.3 cm) Tall
- Remote Electrical Launcher
- Adjustable Heavy-Duty Launch Platform
- Altitude Tracking Device
- Seven Solid Propellant Engines and Supplies for Five Test Flights
- Plus Lots More...

(For additional flights, use regular "A", "B", and "C" Single or Booster and Upper Stage Engines.) Requires glue, paint, two pennies, construction supplies, and 4 AA alkaline batteries for operation—Not Included.

Ship. Wt. 5 lbs. (2.3 kg)

No. 0900 \$32.99



# MODEL ROCKET FLIGHT SEQUENCE



**4** MODEL REACHES PEAK ALTITUDE. EJECTION CHARGE ACTIVATES RECOVERY SYSTEM.

## RECOMMENDED LAUNCH AREA:

ENGINE TYPE	MAXIMUM ALTITUDE		SITE DIAMETER*	
	FEET	METERS	FEET	METERS
1/2A	200	61	50	15
A	400	122	100	30
B	800	244	200	61
C	1,600	488	400	122
D	1,800	549	500	152

\* Minimum Launch Site Dimension for Circular Area is Diameter in Feet, and for Rectangular Area is Shortest Side in Feet.

Choose a large field away from power lines, tall trees, and low-flying aircraft. The larger the launch area, the better your chance of recovering your rocket. Football fields, parks, and playgrounds are great. This chart shows the smallest recommended launch areas.

MAKE SURE THE LAUNCH AREA IS FREE OF OBSTRUCTIONS, DRY WEEDS, BROWN GRASS, OR HIGHLY FLAMMABLE MATERIALS.



**3** ROCKET CONTINUES TO CLIMB DURING COAST PHASE.



**2** ROCKET ACCELERATES AND GAINS ALTITUDE.



**1** ELECTRICALLY IGNITED ROCKET ENGINE PROVIDES ROCKET LIFT-OFF.



**5** RECOVERY PARACHUTE IS DEPLOYED.



**6** TOUCHDOWN! READY TO LAUNCH AGAIN.

# MODEL ROCKETRY SAFETY CODE

(Effective 10-91)

- Materials**—My model rocket will be made of lightweight materials such as paper, wood, rubber, and plastic suitable for the power used and the performance of my model rocket. I will not use any metal for the nose cone, body, or fins of a model rocket.
- Motors/Engines**—I will use only commercially-made NAR certified model rocket engines in the manner recommended by the manufacturer. I will not alter the model rocket engine, its parts, or its ingredients in any way.
- Recovery**—I will always use a recovery system in my model rocket that will return it safely to the ground so it may be flown again. I will use only flame resistant recovery wadding if required.
- Weight and Power Limits**—My model rocket will weigh no more than 1,500 grams (53 ounces) at liftoff, and its rocket engines will produce no more than 320 Newton-seconds (4.45 Newtons equal 1.0 pound) of total impulse. My model rocket will weigh no more than the engine manufacturer's recommended maximum liftoff weight for the engines used, or I will use engines recommended by the manufacturer for my model rocket.
- Stability**—I will check the stability of my model rocket before its first flight, except when launching a model rocket of already proven stability.
- Payloads**—Except for insects, my model rocket will never carry live animals or a payload that is intended to be flammable, explosive, or harmful.
- Launch Site**—I will launch my model rocket outdoors in a cleared area, free of tall trees, power lines, buildings, and dry brush and grass. My launch site will be at least as large as that recommended in the following table.

## LAUNCH SITE DIMENSIONS

Installed Total Impulse (Newton-Seconds)	Equivalent Engine Type	Minimum Site Dimension	
		(feet)	(meters)
0.00- 1.25	1/4A & 1/2A	50	15
1.26- 2.50	A	100	30
2.51- 5.00	B	200	60
5.01- 10.00	C	400	120
10.01- 20.00	D	500	150
20.01- 40.00	E	1000	300
40.01- 80.00	F	1000	300
80.01- 160.00	G	1000	300
160.01- 320.00	2Gc	1500	450

- Launcher**—I will launch my model rocket from a stable launch device that provides rigid guidance until the model rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so the end of the rod is above eye level or I will cap the end of the rod when

approaching it. I will cap or disassemble my launch rod when not in use, and I will never store it in an upright position. My launcher will have a jet deflector device to prevent the engine exhaust from hitting the ground directly. I will always clear the area around my launch device of brown grass, dry weeds, or other easy-to-burn materials.

- Ignition System**—The system I use to launch my model rocket will be remotely controlled and electrically operated. It will contain a launching switch that will return to "off" when released. The system will contain a removable safety interlock in series with the launch switch. All persons will remain at least 15 feet (5 meters) from the model rocket when I am igniting model rocket engines totalling 30 Newton-seconds or less of total impulse and at least 30 feet (9 meters) from the model rocket when I am igniting model rocket engines totalling more than 30 Newton-seconds of total impulse. I will use only electrical igniters recommended by the engine manufacturer that will ignite model rocket engine(s) within one second of actuation of the launching switch.
- Launch Safety**—I will ensure that people in the launch area are aware of the pending model rocket launch and can see the model rocket's liftoff before I begin my audible five-second countdown. I will not launch a model rocket using it as a weapon. If my model rocket suffers a misfire, I will not allow anyone to approach it or the launcher until I have made certain that the safety interlock has been removed or that the battery has been disconnected from the ignition system. I will wait one minute after a misfire before allowing anyone to approach the launcher.
- Flying Conditions**—I will launch my model rocket only when the wind is less than 20 miles (30 kilometers) an hour. I will not launch my model rocket so it flies into clouds, near aircraft in flight, or in a manner that is hazardous to people or property.
- Pre-Launch Test**—When conducting research activities with unproven model rocket designs or methods I will, when possible, determine the reliability of my model rocket by pre-launch tests. I will conduct the launching of an unproven design in complete isolation from persons not participating in the actual launching.
- Launch Angle**—My launch device will be pointed within 30 degrees of vertical. I will never use model rocket engines to propel any device horizontally.
- Recovery Hazards**—If a model rocket becomes entangled in a power line or other dangerous place, I will not attempt to retrieve it.

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 \_\_\_\_\_

Date \_\_\_\_\_

This is the official Model Rocketry Safety Code of the National Association of Rocketry and the Model Rocket Manufacturers Association.



\*National Association of Rocketry

## SKILL LEVEL 1

*Recommended for the Beginning Modeler.*

### RELIANT™

**SKILL LEVEL 1.** Excellent beginner's model features die-cut fiber fins, two-color decal, quick-release engine mount, flights to 1500 feet (457 m), and recovery via streamer.

Length: 12.5" (31.8 cm) Dia.: 0.736" (18.7 mm) Wt.: 0.62 oz. (17.6 g)

ENGINES: 1/2A6-2 (1st Flt.), A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 1986 \$3.89



### THUNDERHAWK™

**SKILL LEVEL 1.** This lean 22 inch (55.9 cm) long sport flier features simple construction and fun. Five fins means stable flights over 1100 feet (335 m).

Length: 22" (55.9 cm) Dia.: 0.976" (24.8 mm)

Wt.: 1.22 oz. (34.6 g)

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, C6-5.

No. 2002 \$7.49



### YELLOW JACKET™

**SKILL LEVEL 1.** High performance is a top feature of this easy-to-assemble sport flier. Flights over 1200 feet (366 m) high are possible with a "C" engine.

Length: 16.8" (42.7 cm) Dia.: 0.976" (24.8 mm) Wt.: 1.08 oz. (30.6 g)

ENGINES: A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 2008 \$6.79



### ALPHA III™

**SKILL LEVEL 1.** Another great first or second kit. Plastic nose cone and fin assembly make for easy, quick assembly. This rocket will deliver outstanding performance flight-after-flight. Length: 12.25" (31.1 cm) Dia.: 0.976" (24.8 mm) Wt.: 1.2 oz. (34 g)

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 1256 \$8.29



### NINJA™

**SKILL LEVEL 1.** Dark and sleek, this model speeds to heights of 800 feet (244 m) and lands gently via brightly colored streamer.

Length: 10.563" (26.8 cm) Dia.: 0.736" (18.7 mm) Wt.: 0.56 oz. (15.9 g)

ENGINES: 1/2A3-4T (1st Flt.), A3-4T, A10-3T

No. 0882 \$4.99



*Engines, launch system, glue, and finishing supplies not included.*

*Avg. Ship. Wt.: 10 oz. (283 g)*

## SKILL LEVEL 1

Recommended for the Beginning Modeler.

### GNOME™

**SKILL LEVEL 1.** Red nose cone, white body tube, plus green fin unit and launch lugs make this kit a snap to construct. Streamer recovery makes it easy to find after awesome flights over 800 feet (244 m). This could be your favorite rocket! Length: 10.25" (26 cm) Dia.: 0.544" (13.8 mm) Wt.: 0.42 oz. (12 g)

ENGINES: 1/2A3-2T (1st Flt.), 1/2A3-4T, A3-4T, A10-3T.

No. 0886 \$3.89



### YANKEE™

**SKILL LEVEL 1.** Easy-to-build, yet performance that will rival any rocket. Capable of flights over 2000 feet (610 m) with 30 inch (76 cm) long streamer recovery.

Length: 11" (27.9 cm) Dia.: 0.736" (18.7 mm)

Wt.: 0.42 oz. (11.9 g)

ENGINES: 1/2A6-2, A8-3, A8-5 (1st Flt.), B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 1381 \$4.29



### SPARROW™

**SKILL LEVEL 1.** Fun to build and fun to fly, this racy little bird features mini-engine power, fiber fins, three-color decal and break-apart recovery.

Length: 10.75" (27.3 cm) Dia.: 0.544" (13.8 mm) Wt.: 0.39 oz. (11.1 g)

ENGINES: 1/2A3-2T (1st Flt.), A3-4T, A10-3T.

No. 0872 \$3.59



### MOSQUITO™

**SKILL LEVEL 1.** The smallest of all Estes model rockets combines fantastic performance with featherweight recovery. Balsa and paper construction with simple spray paint decor makes for quick-and-easy assembly.

Length: 3.9" (9.9 cm) Dia.: 0.544" (13.8 mm)

Wt.: 0.1 oz. (2.8 g)

ENGINES: 1/2A3-4T (1st Flt.), A10-3T

No. 0801 \$2.49



### ZINGER™

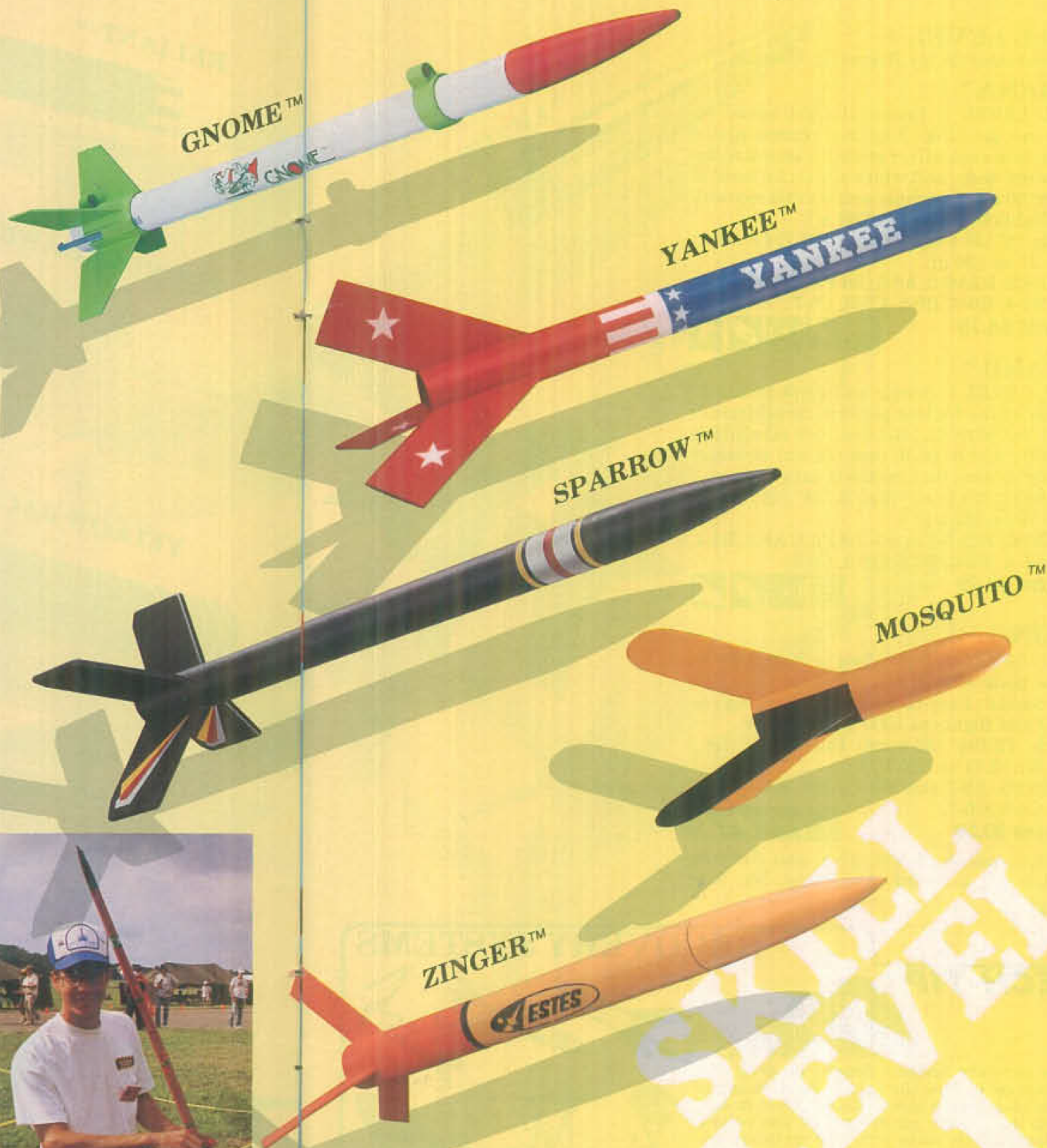
**SKILL LEVEL 1.** This sporty little flier with 18 inch (45 cm) streamer recovery will reach "awesome" altitudes up to 2000 feet (610 m).

Length: 10.25" (26 cm) Dia.: 0.736" (18.7 mm)

Wt.: 0.3 oz. (8.5 g)

ENGINES: A8-5 (1st Flt.), B4-6, B6-6, C6-7.

No. 1917 \$3.59



Engines, launch system, glue, and finishing supplies not included.  
Avg. Ship. Wt. 6 oz. (170 g).

## SKILL LEVEL 1

*Recommended for the Beginning Modeler.*

### ATHENA™

**SKILL LEVEL 1.** Beautiful sport model requires no painting. Features chrome-plated plastic nose cone, silver pressure-sensitive decals, white body, and white plastic fin unit. A 12 inch (30 cm) parachute assures safe recovery from flights to 1200 feet (366 m).

Length: 15" (38.1 cm) Dia.: 0.976" (24.8 mm)

Wt.: 1.27 oz. (36 g)

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 2026 \$8.79



### WIZARD™

**SKILL LEVEL 1.** Simple and quick-to-assemble. One of the highest performing vehicles in Estes' fleet with its 1600 foot (488 m) altitude capability and huge 30 inch (76 cm) streamer recovery system that makes it easy-to-track.

Length: 12" (30.5 cm) Dia.: 0.736" (18.7 mm)

Wt.: 0.79 oz. (22.4 g)

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 1292 \$4.29



### VIKING™

**SKILL LEVEL 1.** Great first or second model can be built with 3, 4 or 5 die-cut fiber fins. You decide! Easy-to-build, no painting required and flights to 1000 feet (305 m)!

Length: 12.125" (30.8 cm) Dia.: 0.736" (18.7 mm) Wt.: 0.71 oz. (20.1 g)

ENGINES: A8-3 (1st Flt.), A8-5, B4-4, B6-4, B8-5, C6-5, C6-7.

No. 1949 \$3.59



*Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 9 oz. (255 g)*



# SKILL LEVEL 1

## RECOVERY SYSTEMS

### TECH-TIP™



Most recovery systems depend on drag (air resistance) to slow the rocket. Each changes the model from a streamlined object to one which the air can "catch against" and retard its descent. Six main recovery methods are used by model rocketeers: 1. Featherweight Recovery 2. Tumble Recovery 3. Streamer Recovery 4. Parachute Recovery 5. Helicopter Recovery 6. Glide Recovery.



## SKILL LEVEL 1

Recommended for the Beginning Modeler.

### AMERICA™

**SKILL LEVEL 1.** Patriotic sport flier features a gold-plated nose cone, blue plastic fin unit, white body tube, and pressure-sensitive decals. Build it in minutes, then fly it to 1178 feet (359 m) and watch it descend beneath a 12 inch (30 cm) parachute.

Length: 15" (38.1 cm) Dia.: 0.976" (24.8 mm)

Wt.: 1.27 oz. (36 g)

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

No. 2042 \$9.19



### SPACE RACER™

**SKILL LEVEL 1.** "Winner of the Interplanetary Governor's Cup", this racy model will fly to 1744 feet (532 m) with a C engine.

Length: 12.625" (32.1 cm) Dia.: 0.736" (18.7 mm) Wt.: 0.73 oz. (20.8 g)

ENGINES: 1/2A6-2 (1st Flt.), A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C5-3, C6-3, C6-5, C6-7.

No. 2039 \$3.79



### RED ALERT™

**SKILL LEVEL 1.** Sharp looks and high-performance flights to 960 feet (293 m). Kit includes a holographic decal.

Length: 9.25" (23.5 cm) Dia.: 0.544" (13.8 mm)

Wt.: .32 oz. (9.1 g)

ENGINES: 1/2A3-4T (1st Flt.), A3-4T, A10-3T.

No. 0893 \$3.79



### ALPHA™

**SKILL LEVEL 1.** The ideal kit for your first or second rocket. Swept-fin design makes it a really great performer. Features red, white, or blue plastic nose cone, red and blue decal, and balsa fins.

Length: 12.25" (31.1 cm) Dia.: 0.976" (24.8 mm) Wt.: 0.8 oz. (22.6 g)

ENGINES: 1/2A6-2, A8-3 (1st Flt.), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, C6-7.

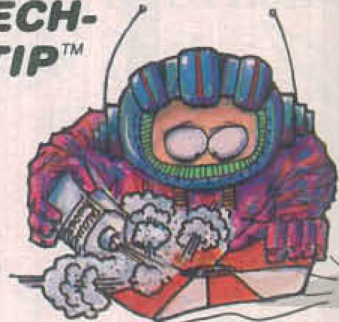
No. 1225 \$6.79



Engines, launch system,  
glue, and finishing  
supplies not included.

Avg. Ship. Wt. 10 oz. (283 g)

## ROCKET RECOVERY TECH-TIP™



In parachute and streamer models, loosely crumple the recommended amount (about 2½ times the body (tube dia.) of flame-resistant recovery wadding in your rocket's body tube to protect the recovery system from the engine's hot gases.

Lightly dust parachutes with talcum powder to prevent sticking. Fold parachutes to form a spike, fold again, and wrap loosely with shroud lines. Fold streamers in half, then roll up. Place parachute or streamer in body tube above wadding. Put nose cone and coiled shock cord into body tube. Wadding, parachute or streamer, and nose cone must not fit tightly. The engine's ejection charge must deploy the recovery system to return your model safely.



## SKILL LEVEL 1

*Recommended for the Beginning Modeler.*

### SCOUT™ III

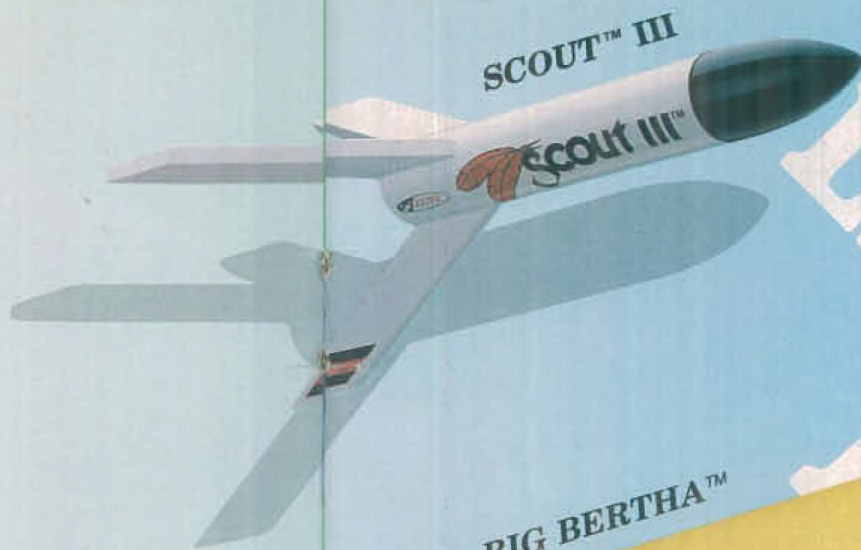
**SKILL LEVEL 1.** Updated version of first Estes rocket features pre-cut balsa fins, balsa nose cone, mini-engine power, and break-apart recovery.

Length: 7.5" (19.1 cm) Dia.: 0.763" (19.4 mm)

Wt.: 0.39 oz. (11 g)

ENGINES: 1/2A3-4T (1st Flt.), A3-4T, A10-3T.

No. 0878 \$4.59



### BIG BERTHA™

**SKILL LEVEL 1.** Big and burly with dramatic lift-offs, awesome flights, and huge 18 inch (45 cm) parachute recovery, this two foot (61 cm) tall model is everyone's favorite. Includes gigantic decal and die-cut fins.

Length: 24" (61 cm) Dia.: 1.637" (41.6 mm)

Wt.: 2.2 oz. (62.3 g)

ENGINES: A8-3, B4-2, B4-4, B6-2 (1st Flt.),

B6-4, B8-5, C6-5.

No. 1948 \$9.69



### ARMY HAWK™

**SKILL LEVEL 1.** Over two feet (61 cm) tall, this rocket is a semi-scale model of the US Army's Air Defense Hawk Missile. Launch to altitudes of 575 feet (175 m). The Army Hawk™ returns to Earth under a big 18 inch (45 cm) parachute.

Length: 25" (63.5 cm) Dia.: 1.637" (41.6 mm)

Wt.: 2.65 oz. (75 g) Fin Span: 6.5" (16.5 cm)

ENGINES: B4-2, B6-2 (1st Flt.), B6-4, B8-5, C5-3, C6-3.

No. 2031 \$11.99



### TECH-TIP™



### LAUNCH PADS

Launch pads serve many uses. The launch rod guides the rocket's first few feet of flight until the rocket is moving fast enough for the fins to provide guidance. The blast plate deflects the engine's hot gases away from the launch pad and the ground. The safety cap is always kept on the rod except during actual launch to prevent injuries. Some launch pads tilt to direct the rocket into the wind so the wind will return it. Never tilt the rod more than 30° from vertical. Don't launch if it's too windy. Some launch pads also accommodate Maxi™ Rods (#2244) for giant models.

*Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 10 oz. (283 g)*

## SKILL LEVEL 2

*Recommended for the Experienced Modeler.*

### WARP II™

**SKILL LEVEL 2.** Over two feet (61 cm) tall, this two-stage rocket features a big see-through cargo compartment. Launch an experimental payload to an altitude of 1000 feet (305 m) and retrieve it with an 18 inch (45 cm) parachute.

Length: 24.625" (62.5 cm) Dia.: 1.637" (41.6 mm) Wt. without payload: 2.83 oz. (80.1 g)

ENGINES: Single Stage A8-3, B4-4 (1st Flt.), B6-4, B8-5, C6-5 or

First Stage B6-0 (1st Flt.), C6-0

Second Stage A8-5 (1st Flt.), B4-6, B6-6, C6-7.

No. 2022 \$15.19



### SUPERNOVA™

**SKILL LEVEL 2.** With this sleek model you can launch payloads up to 1800 feet (549 m) or more. Launch it single stage or add another stage for greater altitude. See-through cargo area allows greater observation. Payloads are assured safe recovery via 12 inch (30 cm) parachute.

Length: 27" (68.6 cm) Dia.: 0.976" (24.8 mm)

Wt. without payload: 1.7 oz. (48.1 g)

ENGINES: Single Stage A8-3, B4-4 (1st Flt.), B6-4, B8-5, C6-5 or

First Stage B6-0 (1st Flt.), C6-0

Second Stage A8-5 (1st Flt.), B4-6, B6-6, C6-7.

No. 2011 \$10.59



### BULL PUP 12D™

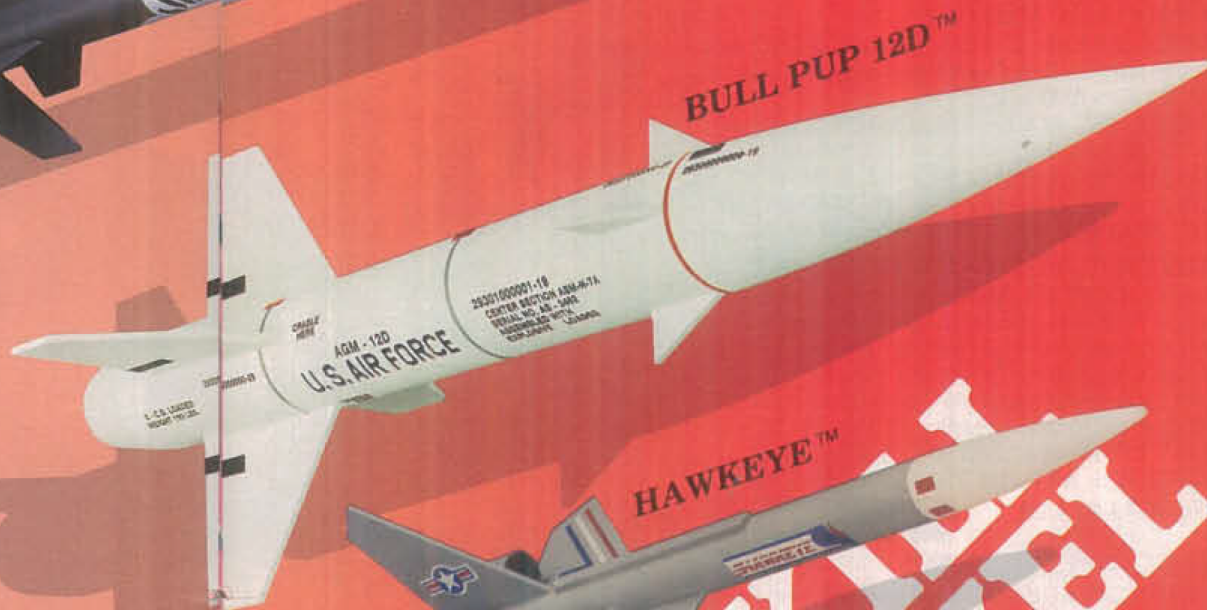
**SKILL LEVEL 2.** Scaled down version of U.S. Air Force air-to-ground missile features three-color decal, 800 foot (243 m) flights and recovery via 12 inch (30 cm) chute.

Length: 15.625" (39.7 cm) Dia.: 1.325"

(33.7 mm) Wt.: 1.8 oz. (50.9 g)

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 1972 \$7.69



### HAWKEYE™

**SKILL LEVEL 2.** Military styling, fiber fins, and three-color decal make this a fine addition to any model rocket collection. Mini-engine flights are out-of-sight!

Length: 8.5" (21.6 cm) Dia.: 0.544" (13.8 mm)

Wt.: 0.42 oz. (11.9 g)

ENGINES: 1/2A3-2T (1st Flt.), A3-4T, A10-3T

No. 0873 \$3.59



*Engines, launch system, glue, and finishing supplies not included.*

Avg. Ship. Wt. 12 oz. (340 g)

SKILL LEVEL 2



## SKILL LEVEL 2

Recommended for the Experienced Modeler.

### TORNADO™

**SKILL LEVEL 2.** Recovery with a new twist from flights to 1700 feet (518 m)! When the engine's ejection charge is activated, Tornado™ separates into two sections, each employing spinning helicopter recovery.

Length: 9.5" (24.1 cm) Dia.: 0.736" (18.7 mm)

Wt.: 0.49 oz. (13.9 g)

ENGINES: 1/2A6-2 (1st Flt.), A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5.

No. 2004 \$4.19



### SOLAR WARRIOR™

**SKILL LEVEL 2.** Build this colorful model then watch your creation fly to 375 feet (114 m) or more!

Length: 12.625" (32.1 cm) Dia.: 0.750"

(19.1 mm) Wt.: 0.67 oz. (19 g)

ENGINES: A3-4T (1st Flt.), A10-3T.

No. 0895 \$4.29



### PHOTON PROBE™

**SKILL LEVEL 2.** Large model of futuristic probe may be flown again and again to heights of 720 feet (220 m).

Length: 23" (58.4 cm) Dia.: 1.325" (33.7 mm)

Wt.: 2.40 oz. (68 g)

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 2043 \$10.99



### BETA LAUNCH VEHICLE™

**SKILL LEVEL 2.** Model resembles a commercial lift vehicle and features a removable plastic engine nozzle for display. A cargo section is great for "secret" payloads. For flights to 600 feet (183 m), a "twist-on" clear plastic fin unit is also included. Length: 24.375" (61.9 cm)

Dia.: 1.637" (41.6 mm) Wt.: 2.63 oz. (74.4 g)

ENGINES: A8-3 (1st Flt.), B6-4, B8-5, C6-5

No. 2054 \$14.19



### HELIO\*COPTER™

**SKILL LEVEL 2.** Launch this large, racy-looking rocket to altitudes of 800 feet (244 m) and watch the excitement! The nose cone separates, flips over, and three bright red propeller blades spread and begin whirling faster and faster to assure the nose cone's safe recovery. A 12 inch (30 cm) parachute is ejected and the rocket body begins a gentle descent. Length: 25.4" (64.5 cm)

Dia.: 1.346" (34.2 mm) Wt.: 2.89 oz. (81.8 g)

ENGINES: C6-3 (1st Flt.), C6-5

No. 1995 \$10.99



Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 11 oz. (311 g)



## SKILL LEVEL 2

*Recommended for the Experienced Modeler.*

### HORNET™

**SKILL LEVEL 2.** Camouflage paint scheme and missile semblance give this sport model a military look. Over 17 inches (43 cm) tall, it may be flown over 1200 feet (366 m) with a "C" engine. Landings are by a 12 inch (30 cm) parachute.

Length: 17.75" (45.1 cm) Dia.: 0.976" (24.8 mm) Wt.: 1.17 oz. (33.1 g)

ENGINES: A8-3, B4-4 (1st Flt.), B6-4, B8-5, C5-3, C6-5.

No. 2030 \$7.19



### SENTINEL™

**SKILL LEVEL 2.** Air-to-air missile decor lends a scale appearance to this large model. Powerful lift-offs add realism and the model's weight requires a big 18 inch (45 cm) parachute for reliable recovery.

Length: 27.625" (70.2 cm) Dia.: 1.637" (41.6 mm) Wt.: 2.7 oz. (76.4 g)

ENGINES: A8-3, B4-4 (1st Flt.), B6-4, C6-3, C6-5.

No. 1987 \$10.99



### IRIS™

**SKILL LEVEL 2.** The Iris sounding rocket was produced in the early 1960's by Atlantic Research Corporation. Estes' 1/13 scale model features a two-piece body to simplify painting, flights to 850 feet (259 m), and recovery via 30 inch (76 cm) streamer.

Length: 17.125" (43.5 cm) Dia.: 0.976" (24.8 mm) Wt.: 1.13 oz. (32 g)

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 2007 \$6.49



### SDI SATELLITE™

**SKILL LEVEL 2.** In the future, satellites using powerful particle beam technology, capable of destroying the most sophisticated weaponry, may be an important part of our strategic defense. Estes' model includes plastic "satellite" parts, die-cut balsa "solar panels", "orbital" flights to 250 feet (76 m), and recovery via 12 inch (30 cm) parachute.

Length: 13" (33 cm) Dia.: 2.75" (69.9 mm) Wt.: 2.47 oz. (70 g)

ENGINES: B4-2 (1st Flt.), B4-4, B6-2, B6-4, B8-5, C5-3, C6-3, C6-5.

No. 2003 \$10.99



34

*Engines, launch system, glue, and finishing supplies not included.*  
Avg. Ship. Wt. 12 oz. (340 g)



## SKILL LEVEL 2

*Recommended for the Experienced Modeler.*

### PRIME NUMBER

#### EXPLORER™

**SKILL LEVEL 2.** This is a probe deployed with special receivers to discover the source of a mysterious repeating signal consisting of the first five prime numbers - 1, 2, 3, 5, and 7. It is hoped the signals are being sent by intelligent life forms. Estimated maximum altitudes are in excess of 216 feet (66 m).

Length: 18.5" (47 cm) Dia.: 1.325" (33.7 mm)

Wt.: 1.9 oz. (53.9 g)

ENGINES: A3-4T (1st Flt.), A10-3T.

No. 0891 \$8.99



#### PHOTON DISRUPTOR™

**SKILL LEVEL 2.** Scale model of a 21st century Star Fleet defense missile. Our model may be launched to altitudes of 750 feet (229 m).

Length: 24.563" (62.4 cm) Dia.: 1.325"

(33.7 mm) Wt.: 2.42 oz. (68.5 g)

ENGINES: A8-3, B4-4 (1st Flt.), B6-4, B8-5, C6-5.

No. 2052 \$11.59



#### MAGNUM™

**SKILL LEVEL 2.** Big, challenging rocket with clear payload bay for cargo features a "D" powered booster stage and regular engine upper stage. Launch to altitudes approaching 1/4 mile (402 m). Rocket and cargo return safely with giant 24 inch (60 cm) parachute. A 3/16 inch (5 mm) dia. Maxi™ Rod (#2244) is required for launch.

Length: 34.625" (87.9 cm)

Dia.: 1.637" (41.6 mm)

Wt. without payload: 4.17 oz. (118 g)

ENGINES: Single Stage B4-4,

B6-4 (1st Flt.), B8-5, C6-5

Upper Stage A8-5 (1st Flt.), B4-6,

B6-6, C6-7

Booster Stage D12-0

No. 2032

\$19.89



# SKILL LEVEL 2

*Engines, launch system, glue, and finishing supplies not included.*  
Avg. Ship. Wt. 10 oz. (283 g)

## SKILL LEVEL 2

Recommended for the Experienced Modeler.

### PATRIOT™ MISSILE

**SKILL LEVEL 2** This 1/10 semi-scale model of the Desert Storm hero features authentic detailing and flies to altitudes of 600 feet (183 meters). This kit includes a free technical data sheet containing information on the U.S. anti-missile missile, Patriot.

Length: 21.25" (54 cm) Dia.: 1.6" (40.6 mm)

Weight: 1.95 oz. (55.3 g)

ENGINES: A8-3 (First Flight), B4-4, B6-4, B8-5, C6-5

No. 2056 \$9.99



### NOVA PAYLOADER™

**SKILL LEVEL 2.** Cargo carrier contains clear payload bay. Great for experiments and science projects. Flies to altitudes over 1000 feet (305 m) high, deploys 12 inch (30 cm) recovery parachute, and descends slowly to the ground, ready to carry your next payload aloft.

Length: 21.125" (53.7 cm) Dia.: 0.976"

(24.8 mm) Wt.: 1.33 oz. (37.6 g)

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 1960 \$8.49



### MEAN MACHINE™

**SKILL LEVEL 2.** Tallest rocket in the Estes fleet. "D" engine powered for spectacular flights over 800 feet (244 m). Over 6 feet (183 cm) long with giant 24 inch (60 cm) chute. Easy-to-assemble for a really great looking bird. Uses 3/16 inch (5 mm) launch rod.

Length: 78.75" (200 cm) Dia.: 1.637"

(41.6 mm) Wt.: 5.8 oz. (164 g)

ENGINES: D12-5.

No. 1295 \$19.19



### SUPER BIG BERTHA™

**SKILL LEVEL 2.** A really big Big Bertha™! Over 3 feet (91 cm) tall and more than 8 inches (20 cm) around, you'll need a "D" engine to lift it. An 18 inch (45 cm) parachute brings it back gently. You'll love to fly this model over and over. A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for launch.

Length: 36.5" (92.7 cm) Dia.: 2.56" (65 mm)

Wt.: 6 oz. (169.8 g)

ENGINES: D12-3 (1st Flt.), D12-5.

No. 2018 \$24.29



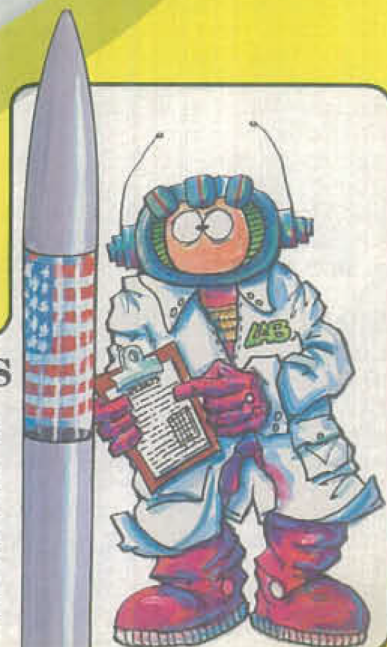
*Engines, launch system, glue, and finishing supplies not included.*

Avg. Ship. Wt.  
16 oz. (453 g)



### TECH-TIP™ PAYLOADS

Some model rockets have a special section used to carry cargo. This cargo or "payload" can be a camera, such as AstroCam® 110, to take aerial photos of your launch site. For competition, try launching a raw egg and retrieving it-UNBROKEN! Please do **not** launch mice, gerbils, and other rodents as the tremendous acceleration and g forces of model rocket flight could be very frightening and harmful to them.



### SKILL LEVEL 3

*Recommended for the Advanced Modeler.*

#### STAR RIDER™

**SKILL LEVEL 3.** This messenger of the star systems incorporates a circular navigational system. Your model will fly over 1100 feet (335 m) high and return to Earth under a 12 inch (30 cm) parachute.

Length: 16.062" (40.8 cm) Dia.: 0.976" (24.8 mm) Wt.: 1.7 oz. (48.1 g)

ENGINES: A8-3, B4-4 (1st Flt.), B6-4, B8-5, C6-5.

No. 2010 \$9.19



#### SOLAR SAILER II™

**SKILL LEVEL 3.** In celebration of the forthcoming International Space Year (1992), solar sail designs from six nations will race to Mars in the Columbus 500 Space Sail Cup. The sails will be powered by solar photon flow. Estes' ISY commemorative model looks like a futuristic space station with big 18 inch (45 cm) "solar sail" parachute. Send it sailing to heights of 800 feet (244 m).

Length: 28.5" (72.4 cm) Dia.: 0.976" (24.8 mm) Wt.: 1.84 oz. (52 g)

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 2044 \$12.69



#### HERCULES™

**SKILL LEVEL 3.** Clear payload section highlights this two-stager. Sleek design that can be flown as a single or two-stage model. Flights over 2500 feet (762 m)!

Length: 21.6" (54.9 cm) Dia.: 0.976" (24.8 mm) Wt.: 1.84 oz. (52.1 g)

ENGINES:

Single Stage: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

Upper Stage: A8-5 (1st Flt.), B6-6, B8-5, C6-7

First Stage: B6-0 (1st Flt.), C6-0

No. 1377 \$10.99



#### STRIKE FIGHTER™

**SKILL LEVEL 3.** Aerospace rocket plane is sleekly designed for multiple mach-speeds and strike fighting capability. Model includes see-through canopy. An 18 inch (45 cm) parachute assures great landings from flights to 500 feet (152 m).

Length: 14.75" (37.5 cm) Wing Span: 8.75" (22.2 cm) Dia: 1.325" (33.7 mm) Wt.: 2.37 oz. (67.1 g)

ENGINES: B4-4 (1st Flt.), B6-4, C6-3.

No. 2015 \$12.99



*Engines, launch system, glue, and finishing supplies not included.*  
Avg. Ship. Wt. 12 oz. (340 g)



# SKILL LEVEL 3

### SKILL LEVEL 3

*Recommended for the Advanced Modeler.*

#### RECRUITER™

**SKILL LEVEL 3.** First line defensive MIRV interceptor. Estes' model features flights over 550 feet (168 m) high in six seconds.

Length: 25" (63.5 cm) Dia.: 1.637" (41.6 mm)

Wt.: 2.58 oz. (73 g)

ENGINES: B4-4, B6-4, C6-5.

No. 2013 \$11.79



#### COMANCHE-3™

**SKILL LEVEL 3.** Big three-stager with mighty "D" powered booster. Can be flown in single, two-stage or three-stage configurations. Incredible flights over 2600 feet (792 m). A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for launch.

Length: 41" (104.1 cm) Dia.: 0.976" (24.8 mm)

Wt.: 2.08 oz. (58.9 g)

ENGINES:

Single Stage: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

Upper Stage: A8-5 (1st Flt.), B4-6, B6-6, C6-7.

Second Stage: B6-0 (1st Flt.), C6-0.

First Stage: D12-0.

No. 1382 \$10.99



#### S.W.A.T.™

**SKILL LEVEL 3.** Huge hypersonic fighter model features camouflage decor scheme, flights over 400 feet (122 m), and a big 18 inch (45 cm) parachute. A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for launch.

Length: 34" (86.4 cm) Fin Span: 8.75"

(22.2 cm) Dia.: 1.637" (41.6 mm) Wt.: 4.06 oz.

(114.9 g)

ENGINES: C6-3 (1st Flt.), C6-5.

No. 2017 \$18.99



#### ALIEN SPACE PROBE™

**SKILL LEVEL 3.** Designed to resemble a landing craft used in the exploration of planets, moons, and asteroids, this rocket delivers excitement! Fly it to heights of 325 feet (99 m) and watch it return to Earth with an 18 inch (45 cm) parachute recovery system.

Length: 17.75" (45.1 cm) Dia.: 2.6" (66 mm)

Wt.: 3.51 oz. (99.3 g)

ENGINES: B4-2 (1st Flt.), B6-2, C5-3, C6-3.

No. 2038 \$14.49



*Engines, launch system, glue, and finishing supplies not included.  
Avg. Ship. Wt. 12 oz. (340 g)*



### SKILL LEVEL 3

*Recommended for the Advanced Modeler.*

#### SR-71 BLACKBIRD™

**SKILL LEVEL 3.** Our nation's super high-altitude reconnaissance plane flew at ultrasound speeds. So high-tech, nearly all information about this plane is classified. Our model features the same state-of-the-art appearance. SR-71 Blackbird™ flies to 900 foot (274 m) altitudes.

Length: 19" (48.3 cm) Dia.: 0.976" (24.8 mm)

Wt.: 3.2 oz. (90.6 g)

ENGINES: B4-2 (1st Flt.), B6-2, B6-4, B8-5, C6-5.

No. 1942 \$14.99



#### OPTIMA™

**SKILL LEVEL 3.** You may want a van to transport this monstrous rocket to the launch site! Only 1/2 inch (13 mm) less than 4 feet (122 cm) tall and more than 8 inches (20 cm) around, this model requires a Maxi™ Rod (#2244)



for launch guidance and a "D" engine for lift-off power. Recovery is via 24 inch (60 cm) parachute from altitudes of 390 feet (119 m). Kit includes chrome and metal-flake

pressure sensitive decals, plus a large water-transfer kit decal.

Length: 47.5 (120.7 cm) Dia.: 2.6" (66 mm)

Wt.: 8.3 oz. (234.9 g)

ENGINES: D12-3 (1st Flt.), D12-5.

No. 2035 \$37.99



#### PHOENIX™

**SKILL LEVEL 3.** Big semi-scale model of the famous Phoenix air-to-air supersonic missile. Impressive in the air and on display. Single "D" powered engine provides a slow, realistic lift-off and flights over 600 feet (183 m). A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for launch.

Length: 30" (76.2 cm) Dia.: 2.6" (66 mm)

Wt.: 6.6 oz. (186.8 g)

ENGINES: D12-3 (1st Flt.), D12-5.

No. 1380 \$19.19



*Engines, launch system, glue, and finishing supplies not included.  
Avg. Ship. Wt. 12 oz. (340 g)*

## SKILL LEVEL 3

Recommended for the Advanced Modeler.

### SOLAR PROBE™

**SKILL LEVEL 3.** Concept model of a solar-powered asteroid probe. The probe would be used to investigate the presence and quantity of minerals for possible mining. Altitudes of 650 feet (198 m) are possible with a "C" engine. Length: 20.125" (51.1 cm) Dia.: 1.637" (41.6 mm) Wt.: 1.82 oz. (51.5 g)  
ENGINES: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5.

No. 2051 \$8.79



### LITTLE JOE II™

**SKILL LEVEL 3.** 1/100th scale model of launch vehicle used to test the Apollo Capsule escape system. After successful testing of the escape system, the Apollo capsules and escape rocket were used in the manned flights of the Saturn Space Program. Our model flies to heights of 425 feet (130 m).

Length: 10.5" (26.7 cm) Dia.: 1.54" (39.1 mm)

Wt.: 1.02 oz. (29 g)

ENGINES: A3-4T (1st Flt.), A10-3T.

No. 0892 \$11.99



### BLACK HAWK™

### BLACK HAWK™

**SKILL LEVEL 3.** Stealth fighter from the 21st Century comes complete with black "drogue" parachute. Twin booms and a unique ejection ducting system make this a great model to display and fly. Estimated maximum altitudes are 800 feet (244 m).

Length: 15.313" (38.9 cm) Dia.: 0.976" (24.8 mm) Wing Span: 8.125" (20.6 cm) Wt.: 2.67 oz. (75.5 g)

ENGINES: A8-3 (1st Flt.), B4-4, B6-4, C6-5.

No. 2053 \$11.99



Engines, launch system, glue, and finishing supplies not included.  
Avg. Ship. Wt. 12 oz. (340 g)

# SKILL LEVEL 3



## SKILL LEVEL 4

Recommended for the Master Modeler.

### SUPER VEGA™

**SKILL LEVEL 4.** Slow, thrilling lift-offs to heights beyond 250 feet (76 m) will make this large exotic rocket one of your favorites. A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for launch.

Length: 36.625" (93 cm) Dia.: 1.637" (41.6 mm) Wt.: 5.4 oz. (152.8 g)

ENGINE: D12-3

No. 2036 \$31.99



### BLACK BRANT II™

An outgrowth of Black Brant I Program, Black Brant II's payload capacity was increased to 6.2 cu. ft. (.17 cu. m) by changing the nose cone's shape. The airframe (17.2" [43.7 cm] dia. x 27' 8" [8.4 m] tall) was stabilized by 3 fixed fins. Total fin span was 39" (99.1 cm). The motor delivered 16,000 lbs. (7.26 metric tons) of thrust over a 25 second burn time. Total vehicle weight with propellant was 2,642 lbs. (11.98 kg). First flight was October, 1960.

Used by the Canadian Armament Research and Development Establishment for upper atmosphere research studies, Black Brant II's were fired mostly in Canada's Northlands, carrying up to 150 lbs. (68 kg) of payload to altitudes of 100 statute miles (161 km).

**SKILL LEVEL 4.** Beautiful model of Canadian sounding rocket features a 1 to 13 scale ratio. This powerful D-engine model can fly well over 1200 feet (366 m).

Length: 24.875" (63.2 cm) Dia.: 1.325" (33.7 mm) Wt.: 2.29 oz. (64.8 g)

ENGINES: D12-5 (1st Flt.), D12-7.

No. 1958 \$10.99



### EXPLORER AQUARIUS™

**SKILL LEVEL 4.** Futuristic craft used in the exploration of distant star systems. Almost two feet (61 cm) long, this model will test your construction skills. It's beautiful on display and in flight. Includes removable plastic display engine nozzle. A 3/16" (5 mm) Maxi™ Rod (#2244) is required for flight.

Length: 21.75" (55.2 cm) Dia.: 2.75" (69.9 mm) Wt.: 4.2 oz. (118.9 g)

ENGINES: D12-3 (1st Flt.), D12-5.

No. 2016 \$18.99



Engines, launch system, glue, and finishing supplies not included.

Avg. Ship. Wt. 15 oz. (425 g)

48



### TECH-TIP™



### MODEL ROCKET COMPETITION AND CONTESTS



Contests are fun. See whose rocket flies the highest or stays in the air the longest. Find out who has the best looking model or whose scale model is most precise. Who can cause their rocket to land via parachute where they want it to land?

These contests are fun and educational. Compete with your friends or classmates. If you wish to compete in local, national, or international events or set a national or world record, you should join the **National Association of Rocketry**, 1311 Edgewood Drive, Altoona, WI 54720. Your membership includes many benefits such as discounts, insurance, and a monthly subscription to **American Spacemodeling Magazine**.

## SKILL LEVEL 4

Recommended for the Master Modeler.

### SPACE SHUTTLE™

On a standard mission, the Orbiter will remain in orbit for 7 days, return to the Earth, land like an airplane, and be readied for another flight in 14 days. It can deploy and retrieve satellites and can place deep-space vehicles in their initial low-Earth orbit.

**SKILL LEVEL 4.** Dramatic 1/162 scale reproduction of America's premiere space vehicle. Designed as a reusable near space transportation system with satellite deployment and retrieval capability. Delivers really spectacular flights. Semi-scale orbiter employs glide recovery just like the real thing while boosters and external tank return via 18 inch (45 cm) parachute recovery. Our model features special stabilizer fins for atmospheric flight which remove easily for display. Kit components include injection molded, vacuformed plastic and die-cut parts. Incredible display model with authentic NASA decor.

Shuttle Length: 13.6" (34.5 cm) Dia.: 2.04" (51.8 mm) Orbiter Length: 9" (22.9 cm) Orbiter Wingspan: 7.1" (18 cm) Wt.: 4.37 oz. (124 g) ENGINES: C5-3 (1st Flt.), C6-3.

No. 1284 \$23.99



Photo and STS DATA Courtesy of NASA

### SATURN 1B™

An integral part of the Saturn Space Program, the Saturn 1B's first stage was composed of 8 H-1 engines creating thrust of over 1½ million pounds (680 metric tons). The second stage power was supplied by one J-2 engine with 200,000 pounds (90.7 metric tons) of thrust. The Saturn 1B could place 40,000 pounds (18 metric tons) in low-Earth orbit. Saturn 1B flights were used to test the launch vehicle, Apollo spacecraft's systems and the Apollo spacecraft's heat shields for re-entry capability.

**SKILL LEVEL 4.** 1/100th scale model of the predecessor of the mighty Saturn V. Our model includes high-relief plastic body wraps, plastic tank shroud, Apollo capsule, and engine display nozzles. It also features special sub-assembly painting procedures. Recovery from launches to 425 feet (130 m) are accomplished when the main stages are lowered under an 18 inch (45 cm) parachute and the upper stage and Apollo capsule are lowered via a 12 inch (30 cm) parachute attached to a special recovery harness. A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for launch.

Length: 26.5" (67.3 cm) Dia.: 2.618" (66.5 cm)

Wt.: 5.33 oz. (151 g)

ENGINE: D12-5

No. 2048 \$39.89



50



Engines, launch system, glue, and finishing supplies not included.

Avg. Ship. Wt. 12 oz. (340 g)

## SKILL LEVEL 4

Recommended for the Master Modeler

### TITAN IIIE™

**SKILL LEVEL 4.** Big and exciting, this challenging rocket is a 1/73rd scale model of Martin Marietta's Titan IIIE. Plastic engine display nozzles and balsa wood stabilizing flight fins are included. Both are removable. A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for flight.

Length: 28" (71.1 cm) Dia.: 2.22" (56.4 mm)

Wt.: 6 oz. (169.8 g)

ENGINES: D12-3 (1st Flt.), D12-5

No. 2019 \$28.99



Photo courtesy NASA and Martin Marietta

### SATURN V™

Engineers at the Army Ballistic Missile Agency in Huntsville, AL in 1957 proposed a large rocket named Juno V. In 1958, the project was approved. NASA was activated that same year. In 1959, the project was renamed Saturn and transferred to NASA. First successful flight of the Saturn V was on November 9, 1967.

Eleven times a Saturn V carried men to the moon. Six of these missions included a landing on the lunar surface. All returned safely.

**SKILL LEVEL 4.** This is the finest 1/100 scale model rocket of the Mighty Saturn V™ ever designed. Keith Niskern, designer of the first and most famous Saturn V™ model, has completely redesigned and refined the model.

Scaled from official NASA drawings, the finished model is 43¼ inches (109.9 cm) tall and lifts off to more than 100 feet (30.5 m) with one powerful D12-3. The bottom section is lowered gently with two huge 24 inch (60 cm) parachutes and the upper section is recovered via special recovery harness and 18 inch (45 cm) parachute.

The internal structure has been redone to ease assembly and assure safer and more realistic recoveries. The balsa fins have been moderately overscaled for stable flight. No fin extensions or other alterations are required.

Improved and amplified detailing includes an Apollo capsule, escape tower, and main engine display nozzles which remove easily for flight. Truly a magnificent scale reproduction. A 3/16 inch (5 mm) Maxi™ Rod (#2244) is required for launch.

Length: 43.25" (109.9 cm) Dia.: 3.938" (100 mm) Wt.: 10.2 oz. (288.7 g)

ENGINE: D12-3 ONLY!

No. 2001

\$49.89

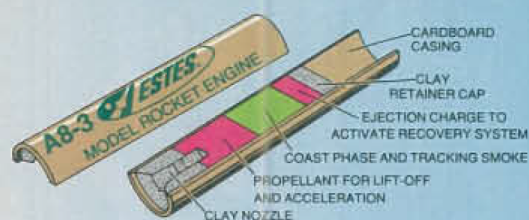


Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 12 oz. (340 g)



Photo and information courtesy of NASA

# MODEL ROCKET ENGINES



Estes model rocket engines have been proven consistent and reliable in more than **300,000,000** launches



**A** Letter indicates total impulse or total power produced by the engine. Each succeeding "letter" has twice the power of the previous letter. (Example: "B" engines have twice the power of "A" engines, etc.)

**8** Number shows the engine's average thrust in newtons or the average push exerted by the engine (4.45 newtons = 1 lb.)

**3** Number of seconds between the end of thrusting and the ejection charge.

**Average thrust** = newton-seconds divided by thrust duration.

Estes model rocket kits use the three sizes of engines shown here. Kits with recommended engines ending with the letter "T" use mini-engines. Kits where "D" engines are recommended use the large "D" size. All other kits use the regular size engines.

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

Thirty-four years of Estes engineering has produced today's safety-proven model rocket engine.

Manufactured under strict, quality-controlled conditions within exacting tolerance limits (*More than 3% of all Estes engines are static-tested*). Estes engines comply with the codes of the National Fire Protection Association and are certified by the National Association of Rocketry.

# MODEL ROCKET ENGINES

## MINI ENGINES

### SINGLE STAGE ENGINES (GREEN LABEL)

Prod. No.	Engine Type	Prices 3 for	Total Impulse		Time Delay (±15%)	Max. Lift Wt. oz./g	Max. Thrust oz./g	Thrust Duration	Initial Weight		Propellant Weight	
			lb-sec. <sup>1</sup>	N-sec. <sup>2</sup>					oz.	g	oz.	g
1503	1/2A3-2T	\$3.89	0.28	1.25	2 sec.	2/ 56.6	28/ 792.4	0.36 sec.	0.198	5.6	0.062	1.75
1507	A3-4T	\$3.89	0.56	2.50	4 sec.	2/ 56.6	28/ 792.4	0.86 sec.	0.268	7.6	0.124	3.50
1511	A10-3T	\$3.89	0.56	2.50	3 sec.	5/141.5	48/1358.4	0.26 sec.	0.277	7.9	0.133	3.78

### UPPER STAGE ENGINES (PURPLE LABEL)

1504	1/2A3-4T	\$3.89	0.28	1.25	4 sec.	1/ 28.3	28/ 792.4	0.36 sec.	0.212	6.0	0.062	1.75
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### BOOSTER ENGINES (RED LABEL)

1510	A10-0T	\$3.89	0.56	2.50	none	5/141.5	48/1358.4	0.26 sec.	0.235	6.7	0.133	3.70
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Mini-engines are 1.75 in. (4.4 cm) long and 0.500 in. (12.7 mm) dia. Ship Wt. of each package of mini-engines is approximately 2 1/2 oz. (70.8 g)

Complete instructions, igniters, and igniter plugs are included with each package of Estes model rocket engines.

<sup>1</sup>Pound-seconds (Figures shown are optimum.)

<sup>2</sup>Newton-seconds\* (Figures shown are optimum.)

\* A Newton is the measurement of force required to move one kilogram of mass one meter per second per second. Avg. thrust is Newtons x thrust duration = Newton-seconds. Newton-seconds ÷ by 4.45 = Pound-seconds.

# MODEL ROCKET ENGINES

## REGULAR ENGINES

### SINGLE STAGE ENGINES (GREEN LABEL)

Prod. No.	Engine Type	Prices 3 for	Total Impulse		Time Delay (±15%)	Max. Lift Wt. oz./g	Max. Thrust oz./g	Thrust Duration	Initial Weight		Propellant Weight	
			lb-sec. <sup>1</sup>	N-sec. <sup>2</sup>					oz.	g	oz.	g
1593	1/2A6-2*	\$3.89	0.28	1.25	2 sec.	2.5/ 70.8	46/1301.8	0.20 sec.	0.53	15.0	0.055	1.66
1598	A8-3	\$3.89	0.56	2.50	3 sec.	4.0/113.2	48/1358.4	0.32 sec.	0.57	16.2	0.110	3.12
1601	B4-2	\$3.99	1.12	5.00	2 sec.	4.0/113.2	48/1358.4	1.20 sec.	0.70	19.8	0.294	8.33
1602	B4-4	\$3.99	1.12	5.00	4 sec.	3.5/ 99.1	48/1358.4	1.20 sec.	0.74	21.0	0.294	8.33
1605	B6-2	\$3.99	1.12	5.00	2 sec.	4.5/127.4	48/1358.4	0.83 sec.	0.68	19.3	0.220	6.24
1606	B6-4	\$3.99	1.12	5.00	4 sec.	4.0/113.2	48/1358.4	0.83 sec.	0.71	20.1	0.220	6.24
1620	B8-5*	\$3.99	1.12	5.00	5 sec.	5.0/141.5	80/2264.0	0.60 sec.	0.68	19.3	0.220	6.24
1617	C5-3*	\$4.69	2.25	10.00	3 sec.	8.0/226.4	80/2264.0	2.10 sec.	0.90	25.5	0.450	12.70
1613	C6-3	\$4.69	2.25	10.00	3 sec.	4.0/113.2	48/1358.4	1.70 sec.	0.88	24.9	0.440	12.48
1614	C6-5	\$4.69	2.25	10.00	5 sec.	4.0/113.2	48/1358.4	1.70 sec.	0.91	25.8	0.440	12.48

### UPPER STAGE ENGINES or single stage engine if used in a very light rocket (PURPLE LABEL)

1599	A8-5	\$3.89	0.56	2.50	5 sec.	2.0/ 56.6	48/1358.4	0.32 sec.	0.62	17.6	0.110	3.12
1604	B4-6	\$3.99	1.12	5.00	6 sec.	1.5/ 42.5	48/1358.4	1.20 sec.	0.78	22.1	0.294	8.33
1607	B6-6	\$3.99	1.12	5.00	6 sec.	2.0/ 56.6	48/1358.4	0.83 sec.	0.78	22.1	0.220	6.24
1615	C6-7	\$4.69	2.25	10.00	7 sec.	2.5/ 70.8	48/1358.4	1.70 sec.	0.95	26.9	0.440	12.48

### BOOSTER ENGINES (RED LABEL)

1608	B6-0	\$3.99	1.12	5.00	none	4.0/113.2	48/1358.4	0.80 sec.	0.58	16.4	0.220	6.24
1616	C6-0	\$4.69	2.25	10.00	none	4.0/113.2	48/1358.4	1.68 sec.	0.80	22.7	0.440	12.48

Regular engines are 2.75 in. (7 cm) long and 0.690 in. (17.5 mm) dia. Ship Wt. of each package of engines is approximately 4 oz. (113.3 g)

\*Series II engines have semi-core-burning grain with large propellant burning area for high initial thrust with short thrust duration.

## MIGHTY 'D' ENGINES

### SINGLE STAGE ENGINES (GREEN LABEL)

Prod. No.	Engine Type	Prices 3 for	Total Impulse		Time Delay (±15%)	Max. Lift Wt. oz./g	Max. Thrust oz./g	Thrust Duration	Initial Weight		Propellant Weight	
			lb-sec. <sup>1</sup>	N-sec. <sup>2</sup>					oz.	g	oz.	g
1666	D12-3	\$6.99	4.48	20.00	3 sec.	14/396.2	144/4075.2	1.70 sec.	01.49	42.2	0.879	24.93
1667	D12-5	\$6.99	4.48	20.00	5 sec.	10/283.0	144/4075.2	1.70 sec.	1.52	43.1	0.879	24.93

### UPPER STAGE ENGINES (PURPLE LABEL)

1668	D12-7	\$6.99	4.48	20.00	7 sec.	8/226.4	144/4075.2	1.70 sec.	1.55	44.0	0.879	24.93
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### BOOSTER ENGINES (RED LABEL)

1665	D12-0	\$6.99	4.48	20.00	none	14/396.2	144/4075.2	1.70 sec.	1.44	40.9	0.879	24.93
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### PLUGGED ENGINES for use with the Astro-Blaster (YELLOW LABEL)

1669	D11-P	\$6.99	4.48	20.00	none	14/396.2	98.9/2803.2	1.82 sec.	1.55	44.0	0.879	24.93
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"D" engines are 2.75 in. (7 cm) long and 0.945 in. (24 mm) dia. Ship Wt. of each package of "D" engines is approximately 6 1/2 oz. (184 g)

Complete instructions, igniters, and igniter plugs are included with each package of Estes model rocket engines.

<sup>1</sup>Pound-seconds (Figures shown are optimum.)

<sup>2</sup>Newton-seconds\* (Figures shown are optimum.)

\* A Newton is the measurement of force required to move one kilogram of mass one meter per second per second. Avg. thrust is Newtons x thrust duration = Newton-seconds. Newton-seconds ÷ by 4.45 = Pound-seconds.

**IGNITERS:** Add increased reliability at lift-off with Estes Igniters. Feature easy engine installation and are suitable for all Estes launch control systems. Unique four element design makes them the most dependable igniters made. (Six per pkg.)

Ship Wt. 1 oz. (28 g)

No. 2301 \$2.29

### RECOVERY WADDING:

Provides protection from hot ejection gases for parachutes and streamers. Each package contains approximately 75 4½ inch (11.4 cm) squares—enough wadding for up to 25 flights. Instructions for installation are included on each package.

Ship Wt. 6 oz. (170 g)

No. 2274 \$2.29

### BLAST-OFF™ FLIGHT PAK:

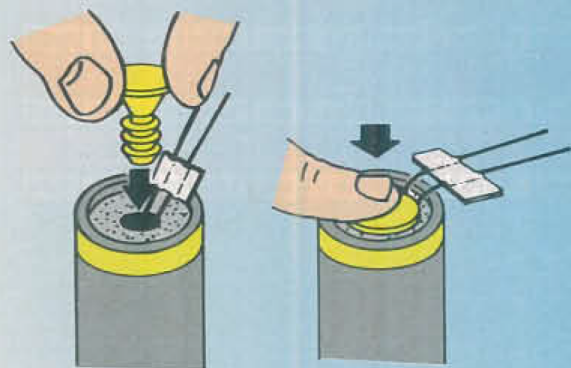
Ideal engine assortment. Features 24 of the most popular Estes model rocket engines, plus igniters and recovery wadding. Priced at an excellent savings. Includes six each A8-3, B6-4, C6-5, and C6-7 high performance model rocket engines, one pkg. recovery wadding, and 30 igniters.

Ship Wt. 1 lb. 8 oz. (679 g)

No. 1672 \$26.99

### IGNITER PLUGS

- For consistently reliable and safe ignitions, igniter plugs securely hold the igniter into the nozzle of the engine.
- Igniter plugs are available for all of Estes regular engines.



The following is a list of engine size and respective color of the igniter plug. Engines will be color-coded to match the plug color.

#### Engine Type and Color

A3	- ORANGE
A10	- GREEN
A8; B4	- YELLOW
B6; C6	- MAGENTA
B8; C5	- BLUE
D12	- WHITE



## LAUNCH EQUIPMENT

### ELECTRON BEAM® LAUNCH CONTROLLER

Completely assembled, the Electron Beam® features safety key, continuity light, launch button, and snap-open battery compartment, plus 17 feet (518 cm) of launch wire with micro-clips. It is easy to hold in your hand and carry in your launch box. Requires only 4 AA alkaline batteries—Not Included. Use only with Estes Igniters (#2301).

Length: 6.75" (17.1 cm) Width: 1.5" (38 mm) Depth: 1.25" (31.8 mm)

Ship Wt. 8 oz. (226 g)

No. 2220 \$17.99



**ELECTRON  
BEAM®**

### PORTA-PAD® II LAUNCH PAD

Sturdy launch pad may be used with any Estes launch controller to launch any Estes rocket. You'll love the easy set-up for launching and quick take-down for carrying and storage. Bright, easy-to-see pad features stable design. Adjustment for air direction cannot be tilted more than 30° from vertical. Easy to adjust, no tools required. Other features include a steel blast deflector plate and a 32 inch (81 cm) by 1/8 inch (3 mm) diameter two-piece launch rod. Pad also accommodates the Estes Maxi™ Rod (#2244) to launch your really large Estes models—Not Included. Bright yellow launch rod safety cap provides good visibility and protection. The stand-off holds most Estes rockets above the blast plate allowing reliable igniter connections. A safety key for your Estes controller is also included. Use the enclosed cord to attach it to the safety cap. You'll always know just where it is!

Ship. Wt. 24 oz. (680 g)

No. 2215 \$14.99



**PORTA-PAD® II**

#### 3/16" (5 mm) DIA. MAXI™ ROD

Ship Wt. 12 oz. (340 g) No. 2244 \$5.59

#### 1/8" (3 mm) DIA. TWO PIECE LAUNCH ROD

Ship Wt. 6 oz. (170 g) No. 2243 \$4.29

#### LAUNCH ROD SAFETY CAP with UNIVERSAL SAFETY CAP

Ship Wt. 4 oz. (113 g) No. 2205 \$1.39

#### MICRO-CLIPS (2 per pkg.)

Ship Wt. 1 oz. (28 g) No. 2247 \$1.69

#### BLAST DEFLECTOR PLATE

Ship Wt. 5 oz. (142 g) No. 2241 \$2.99

#### BATTERY CLIPS (2 per pkg.)

Ship Wt. 5 oz. (142 g) No. 2245 \$2.39



## DESIGNER'S SPECIAL

Ideal parts assortment for the creative rocketeer. Develop your own R & D program. Over 75 pieces at an excellent savings! Ship. Wt. 2 lbs. (0.91 kg)

### Body Tubes

- 2 BT-5
- 2 BT-20
- 2 BT-50
- 1 BT-55
- 1 BT-60

### Nose Cones

- 1 BNC-5E
- 1 BNC-5S
- 1 BNC-20B
- 1 BNC-20R
- 1 PNC-50KA
- 1 PNC-50YR
- 1 PNC-55AC
- 1 PNC-60MS

### Fin Material

- 2 BFS-20
- 2 BFS-30
- 2 BFS-40

### Parachutes

- 3 PK-12
- 1 PK-18
- 1 PK-24

### Recovery Equipment

- 3 Shock Cord 1/8" x 18" (3 mm x 46 cm)
- 1 Shock Cord 1/8" x 36" (3 mm x 91 cm)
- 1 Shock Cord 1/4" x 18" (6 mm x 46 cm)
- 1 Streamer Material 1" x 30" (25 mm x 76 cm)
- 6 Screw Eyes

### Miscellaneous

- 3 Engine Blocks (EB-20A)
- 3 Engine Holders (EH-3)
- 3 Engine Holders (EH-2)
- 1 Engine Mount (EH-2050)
- 1 Engine Mount (EH-2060)
- 1 Nose Block (NB-20)
- 1 Nose Block (NB-50)
- 1 Stage Coupler (JT-55C)
- 1 Stage Coupler (JT-60C)
- 1 Balsa Adapter (TA-2050A)
- 1 Multi-Purpose Paper Adapter Set (TA-1)
- 12 Launch Lugs (2 3/4" (6 cm) long)
- 1 Alpha Book of Model Rocketry
- 1 Fin Pattern Sheet No. 2
- 1 Fin Pattern Sheet No. 3



No. 1463

\$35.29

## EMERGENCY REPAIR KIT

A must for every range box. Features many essential materials for "on-the-spot" repair of your model rockets Ship. Wt. 8 oz. (226 g)



- Sandpaper
- Screw Eyes
- White Glue
- Launch Rod
- Safety Cap
- Universal Safety Key
- Recloseable Pouch
- Recovery Wadding
- 12" (30 cm) Parachute
- 1/8" (3 mm) and 1/4" (6 mm) Shock Cords
- 144" (366 cm) Shroud Line
- Tape Discs
- Launch Lugs
- Shock Cord Mounts

No. 2233 \$5.59



## ALTITRAK™ ALTITUDE FINDER

Track your rocket to the top of its flight and instantly lock-in its altitude on the Altitrak™ altitude finder. Displays exact model rocket altitude on metric scale—no guessing! (Conversion table included for feet). A precision instrument made of durable plastic. Easy-to-assemble and looks like futuristic laser pistol. How high did it go? Now you'll know! Ship. Wt. 15 oz. (425 g)

No. 2232

\$15.29

## FIN ALIGNMENT GUIDE™

Position and glue fins quickly and easily. Fits body tubes up to BT-101. Designed for either 3 or 4 finned rockets, aligning fins at 90° or 120° to each other. Easily assembled with slip-together plastic parts. Adjust quickly with plastic fin position clips. Ship. Wt. 3 lbs. (1358 g)

No. 2231 \$16.49

60



## PARACHUTE KITS

Get the best in parachute recovery! Two-color printed plastic 'chutes give maximum visibility with easy track design. Lightweight, durable, and easily folded. These 'chutes are very thin, allowing the most material to be packed into the least body space. Each kit comes complete

with 'chute material, tape discs, and shroud lines. Each weighs less than .3 oz. (8.5 g). Ship Wt. 2 oz. (57 g)

Prod. No.	Description	Parachute Diameter in. / cm	Price Each
2254	PK-12	12/30.5	\$2.49
2257	PK-18	18/45.7	\$3.99
2271	PK-24	24/61.0	\$2.99
SOLAR CHUTE			
2272	PK-18	18/45.7	\$2.79

**TAPE DISCS:** Fasten shroud lines to plastic parachutes or streamers with these 3/4" (19.1 mm) dia. pressure sensitive tape discs. In sheets of 6 discs. (4 sheets per pkg.) Ship. Wt. 1 oz. (28 g)

No. 2294 \$2.10

**STREAMER MATERIAL:** Bright orange, flame-resistant crepe paper streamers. In 7 1/2 foot (228.6 cm) lengths, enough for two to eight streamers. Specify size when ordering. Ship. Wt. 1 oz. (28 g)

1" (25.4 mm) wide: Net Wt. 0.092 oz. (2.7 g) No. 2341 \$3.62

2" (50.8 mm) wide: Net Wt. 0.184 oz. (5.2 g) No. 2343 \$3.91

**SCREW EYES:** Specify size when ordering. (6 per pkg.) Ship. Wt. 1 oz. (28 g)

**LARGE EYE:** 1" (25.4 mm) long: 0.04 oz. (1.1 g) No. 2280 \$1.98

**SMALL EYE:** 3/4" (19.1 mm) long: 0.03 oz. (0.9 g) No. 2279 \$1.87

**EXTRA SMALL EYE:** 5/8" (15.9 mm) long: 0.01 oz. (0.3 g) No. 2281 \$1.58

**AR-5055 CENTERING RINGS:** For centering a BT-50 body tube within a BT-55. Extra strong for "D" engine mounts. Weight 0.062 oz. (1.8 g) ea. (4 per pkg.) Ship. Wt. 2 oz. (57 g) No. 3102 \$2.28

**AR-2050 CENTERING RINGS:** For centering a BT-20 body tube within a BT-50. Greater strength makes for use with high thrust engines. Weight per pair 0.285 oz. (8.1 g) (10 per pkg.) Ship. Wt. 2 oz. (57 g) No. 3100 \$2.68

**LAUNCH LUGS:** Super-strength laminated launch lugs feature mylar plastic core for durability, paper outer layer for easy gluing. Inside diameter 5/32" (4.0 mm) fit 1/8" (3.2 mm) launch rod. Ship. Wt. 1 oz. (28 g) 1 1/4" (31.8 mm) long (12 per pkg.) No. 2321 \$2.33

2 3/8" (60.3 mm) long (10 per pkg.) No. 2322 \$2.57

**MAXI™ ROD LAUNCH LUG:** 2" (50.8 mm) long, fits 3/16" (4.8 mm) diameter launch rod. (4 per pkg.) No. 2328 \$2.10

**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. Ship. Wt. 2 oz. (57 g) No. 85013 \$2.40

**SHOCK CORD:** Specify width when ordering. Ship. Wt. 1 oz. (28 g)

1/8" (3.2 mm) wide: Net Wt. 0.039 oz. (1.1 g) No. 2276 \$1.23

1/4" (6.4 mm) wide: Net Wt. 0.078 oz. (2.2 g) No. 2277 \$1.35

Also 36" (91 cm) long for greater stretch on those larger birds. 1/8" (3.2 mm) wide: Net Wt. 0.078 oz. (2.2 g) No. 85744 \$1.40

**SHROUD LINES:** Build reliable, durable, custom parachutes with this strong, hard surface shroud line cord. Comes in 70 yard (64 m) spools. Ship. Wt. 5 oz. (142 g) No. 2340 \$2.10

**TAPE STRIPS:** For top strength, low bulk and low weight, fasten shroud lines with these 1/4" (6.4 mm) x 3/4" (19.1 mm) tape strips, in sheets of 12 strips. (6 sheets per pkg.) Ship. Wt. 1 oz. (28 g) No. 38412 \$2.40

**SNAP SWIVELS:** For quick changes and reduced tangling in your recovery systems, use these tiny 1" (25.4 mm) long snap swivels. Net Wt. 0.01 oz. (0.3 g) (12 per pkg.) Ship. Wt. 1 oz. (28 g) No. 2292 \$2.68

**ENGINE HOLDER:** Flat spring steel design gives easy installation and low drag. Recommended for sport and demonstration models. (3 per pkg.) Ship. Wt. 1 oz. (28 g) For Regular and "D" engines. No. 3140 \$2.68

For Mini-Engines No. 3142 \$2.33

**RA-2050 RINGS:** 20 rings for centering and mounting BT-20 in BT-50. (20 per pkg.) Ship. Wt. 2 oz. (57 g) No. 3110 \$2.10

**RA-2055 RINGS:** 10 rings for centering and mounting BT-20 in BT-55. (10 per pkg.) Ship. Wt. 2 oz. (57 g) No. 3111 \$2.16

**RA-2060 RINGS:** 10 rings for centering and mounting BT-20 in BT-60. (10 per pkg.) Ship. Wt. 2 oz. (57 g) No. 3113 \$2.28

**DOWELS:** Extra-strong lightweight seasoned maple dowels. (8 per pkg.) Ship. Wt. 5 oz. (142 g) 1/8" (3.2 mm) x 18" (457 mm) No. 3190 \$1.93

1/12" (2.1 mm) x 12" (304.8 mm) No. 3191 \$1.93

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# JOIN THE MOST FUN MODEL ROCKET CLUB ON EARTH!

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The Estes Space Program™ is designed to provide you with maximum fun while you fly your rockets and perfect your rocketry skills.

Active members who continue earning Achievement Awards will receive each issue of Model Rocket News Magazine.

Your membership package includes the high-flying Yankee Clipper™ (17.5 inches - 44.5 cm long). This rocket is not available to non-members.

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Full details on how to earn your Achievement Awards (10 now available) are included in your membership package.

Ship. Wt. 4 oz.(133 g) No. 1443 \$10.19

## Phantom™

Static see-through rocket with 12" (30 cm) recovery parachute, engine mount, and cut-away C6-5 model rocket engine. Ideal for demonstrations, science fairs, and exhibits.  
Length 12.6" (32 cm) Dia. 0.978" (24.8 mm)  
Wt. 1.35 oz. (38 g) Ship. Wt. 3 oz. (85 g)



No. 1207

**\$6.79**

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