

FLYING MODEL ROCKET

CATALOG



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 |
|  Fiber Fins |  Plastic Fin-Unit |
|  Quick-Release Engine Mount | |

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Model Rocketry Is An Internationally Recognized Hobby With An Unparalleled Safety Record.

Estes Model Rocket Engines Are NAR Certified*

*Engines tested by the National Association of Rocketry met performance standards of NFPA 1122 and the NAR.

Estes Model Rocket Engines Have Been Tested And Approved By:

- United States Government
- Truesdail Laboratories, Inc.
- Governments of West Germany, France, Great Britain, and Canada

Estes Model Rocketry Products Meet The Standards And Requirements Established By:

- National Fire Protection Association
- U.S. Consumer Product Safety Commission
- U.S. Food & Drug Administration
- U.S. Department of Transportation

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

Model rocketry is a rewarding hobby for ages 10 through adult. Adult supervision recommended for those under 12 years of age.

- Federal Aviation Administration
- U.S. Postal Service
- American Insurance Association
- International Air Transport Association
- International Maritimes Organization
- Air Line Pilots Association
- Canadian Association of Rocketry
- Cub Scouts of America
- Boy Scouts of America
- U.S.A.F.-J.R.O.T.C.
- NASA
- Colleges, Universities, Elem., Middle, Jr. High, & High Schools
- Future Astronaut Training Program
- Hundreds of Camp and Recreation Programs

Model Rocketry Is Endorsed As A Safe And Rewarding Hobby By:

- United Parcel Service
- YMCAs
- USAF
- National 4-H Clubs
- Civil Air Patrol



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.

RASCAL™ FLYING MODEL ROCKET STARTER SET

SKILL LEVEL 1 Recommended for the Beginning Modeler. Set includes the brawny Rascal™ rocket, over 13½ inches tall with a 12 inch parachute and balsa fins; an Electron Beam™ remote electrical launch controller; a heavy-duty, adjustable Porta Pad® II launch pad; a beginner's booklet; and launch supplies for three different flights hundreds of feet into the sky. Requires 4 AA alkaline batteries, glue, paint, and finishing supplies-Not Included.

Ship Wt.: 3 lbs.

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

No. 1424

\$33.99



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 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.

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

No. 1425

\$33.29



MODEL ROCKET FLIGHT SEQUENCE

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

RECOMMENDED LAUNCH AREA:

ENGINES	SITE DIAMETER	MAXIMUM ALTITUDE
1/2A	50 Feet	200 Feet
A	100 Feet	400 Feet
B	200 Feet	800 Feet
C	400 Feet	1600 Feet
D	500 Feet	1800 Feet

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.

5 RECOVERY PARACHUTE IS DEPLOYED.

6 TOUCHDOWN! READY TO LAUNCH AGAIN.

3 ROCKET CONTINUES TO CLIMB DURING COAST PHASE.

2 ROCKET ACCELERATES AND GAINS ALTITUDE.

1 ELECTRICALLY IGNITED ROCKET ENGINE PROVIDES ROCKET LIFT-OFF.



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" x 36" two-piece launch rod, assembled Electron Beam™ launch controller and three NAR certified model rocket engines, recovery wadding and igniters. *Requires 4 alkaline AA batteries, glue and finishing supplies-Not Included.*

Ship. Wt. 3 lbs.

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



STARTER SET COMES IN REUSABLE RANGE BOX

MAGNUM™ A FLYING MODEL ROCKET OUTFIT ESPECIALLY FOR MATURE MODELERS

SKILL LEVEL 2 Recommended for the *Experienced Modeler*. Outfit features Magnum™, a big challenging two-stage rocket with clear payload bay and 24 inch 'chute recovery. Launch to altitudes approaching 1/4 mile! Also included is a heavy duty Porta Pad® II Launch Pad with 3/16 inch dia. Maxi™ Rod, Electron Beam™ Launch Controller, plus powerful D12-0 and C6-7 staging engines. A mid-range B6-4 is included for single stage flight. Outfit comes in a heavy-duty reusable range box with handle. *Requires 4 AA alkaline batteries, adhesives, paint, and construction supplies-Not Included.* Ship Wt.: 3 lbs.

ENGINES: Single Stage B4-4, B6-4, B8-5, C6-5 or First Stage D12-0 Second Stage A8-5, B4-6, B6-6, C6-7

No. 1422
\$39.29



NAR* MODEL ROCKETRY SAFETY CODE (EFF. 1-1-87)

- Construction**—My model rockets will be made of lightweight materials such as paper, wood, rubber, and plastic, without any metal as structural parts.
- Engines**—I will use only pre-loaded factory-made NAR Certified model rocket engines in the manner recommended by the manufacturer. I will not alter or dismantle model rocket engines or their ingredients in any way or attempt to reload these engines.
- Recovery**—I will always use a recovery system in my rockets that will return them safely to the ground so that they may be flown again. I will use only flame-resistant recovery wadding in my rockets.
- Weight Limits**—My model rocket will weigh no more than 1500 grams (53 oz.) at lift-off, and the engines will contain a total of no more than 125 grams (4.4 oz.) of propellant. My model rockets will weigh no more than the engine manufacturer's recommended maximum lift-off weight for the engines used or will use the engines recommended by the manufacturer for my rocket.
- Stability**—I will check the stability of my model rockets before their first flight, except when launching models of already proven stability.
- Payloads**—My model rockets will never carry live animals or payloads that are intended to be flammable or explosive.
- Launch Area**—I will launch my model rockets outdoors in a cleared area, free of tall trees, power lines, and buildings. I will ensure that people in the vicinity are aware of the pending rocket launch and are in a position to see the rocket's lift-off before I begin my audible 5-second countdown.
- Launcher**—I will launch my model rockets from a rod or other device which provides rigid guidance until the rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so that the end of the rod is above eye level or will cap the end of the launch rod when approaching it. I will cap or disassemble my launch rod when not in use and will never store it in an upright position. The launch device will have a jet deflector 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, and other easy-to-burn materials.
- Ignition System**—The system I use to launch my model rockets will be remotely controlled and electrically operated and will contain a launching switch that will return to "off" when released. The system will contain a removable safety interlock in series with this firing switch. When launching, all persons will remain at least 15 feet away from any model rocket when igniting engines totalling 30 N-sec of total impulse or less and at least 30 feet when igniting engines totalling more than 30 N-sec total impulse. I will use only electrical igniters which will ignite my rocket engine within one second of actuation of the launching switch.
- Launch Safety**—I will not let anyone approach a model rocket on a launcher until I have made sure that the safety interlock has been removed or the battery has been disconnected from the launcher. In the event of a misfire, I will wait one minute before allowing anyone to approach the launcher.
- Flying Conditions**—I will launch my model rocket only when the wind is less than 20 miles per hour, and under conditions where the model will not fly into clouds, fly near aircraft in flight, or be hazardous to people or property.
- 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 launching.
- Launch Angle**—I will not launch rockets so their flight path will carry them against targets. 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.

Signature _____



*National Association of Rocketry



SIZZLER™ FLYING MODEL ROCKET STARTER SET

SKILL LEVEL 1 Recommended for the Beginning Modeler. Includes the 23 inch long Sizzler™ model rocket kit featuring parachute recovery and flights over 900 feet. Also included are the assembled Electron Beam™ Launch Controller and Porta-Pad® II Launch Pad with blast deflector plate, and 1/8" x 36" 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.

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

No. 1432

\$29.99



BOTH SETS PACKAGED IN REUSABLE RANGE BOXES!

SPACE SHUTTLE™ FLYING MODEL ROCKET STARTER SET

SKILL LEVEL 2 Recommended for the Experienced Modeler. Set includes beautiful scale model of America's space transport vehicle. All Space Shuttle names are included on the kit decal. Also included is the assembled Electron Beam™ launch controller, Porta-Pad® II launch pad, and three engines, plus igniters and wadding.

Over 10 inches high, the Space Shuttle™ can be launched to altitudes of 500 feet. The model returns to Earth via 18 inch parachute recovery.

Requires white glue, plastic cement, paint, finishing supplies, and 4 AA size alkaline batteries for operation. Not Included. Ship. Wt.: 2 lbs.

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

B6-4, B8-5, C6-5

No. 1441 \$32.69



IMPORTANT-CAUTION
The Lunar™ Launch Pad is Recommended For Rockets No More Than 16 Inches Long, or For Rockets With Body Tubes No Larger Than One Inch in Diameter. Rockets Should Weigh No More Than 1.5 Ounces Without Engines. Rockets Should Use Mini or Regular Size Engines Only, Not "D".
The Lunar™ Launch Pad Should Be Used in Moderate (0-5mph) Breeze Conditions Only.

SKILL LEVEL 1 Screaming Eagle™ rocket kit includes red plastic nose cone, blue plastic fin unit, and white body tube plus flights over 1200 feet and 12" parachute recovery. Set also features unassembled Electron Beam™ launcher, Lunar™ launch pad and enough engines, wadding, and igniters for three exciting flights. *Requires 4 alkaline AA batteries, plastic cement, and glue-Not Included.*

Ship Wt.: 2 lbs.

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. 1417

\$20.69



SCREAMING EAGLE™ FLYING MODEL ROCKET STARTER SET

VAGABOND™ FLYING MODEL ROCKET STARTER SET

SKILL LEVEL 1 Recommended for the Beginning Modeler. Great way to get started in model rocketry. Vagabond™ model rocket stands over 16 inches tall when finished, can be launched to heights over 1000 feet and lands gently with a 12 inch parachute. Set also includes Porta Pad® II Launch Pad, unassembled Electron Beam™ Launch Controller, plus three NAR certified model rocket engines, igniters, and recovery wadding. Complete instructions, Mini Alpha Book, Safety Code and Warranty also included. *Requires 4 AA alkaline batteries, glue, paint, and finishing supplies-Not Included.*

Ship Wt.: 2 lbs.

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

No. 1423

\$27.95



EASY TO BUILD

SKILL LEVEL 1

Recommended for the Beginning Modeler.



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" Dia. 0.976" Wt. 1.2 oz.

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

\$6.99



GNOME™

GNOME™

SKILL LEVEL 1 Red nose cone, white body tube, plus green fin unit and launch lugs make this kit a snap to construct. And streamer recovery makes it easy to find after awesome flights over 800 feet. This could be your favorite rocket! Length: 10.25" Dia. 0.544" Wt. 0.42 oz.

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

No. 0886

\$3.19



Engines, launch systems, and adhesives are not included. Avg. Ship. Wt. 10 oz.

TECH TIP™



LAUNCH CONTROLLERS

Battery-powered launch controllers provide the electricity necessary to heat the igniter for model rocket engine ignition. Removing the safety key disables the launch controller so the rocket cannot be launched accidentally. Insert the safety key **only** after the rocket is prepped, the micro-clips attached to the igniter in the engine, everyone has left the launch pad area, and you are ready for countdown. The continuity or arming light should glow after the safety key is inserted. At zero on the countdown, press and hold the launch button depressed until the rocket lifts off.

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, and recovery via streamer.

Length 12.5" Dia. 0.736" Wt. 0.62 oz.

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 \$3.19



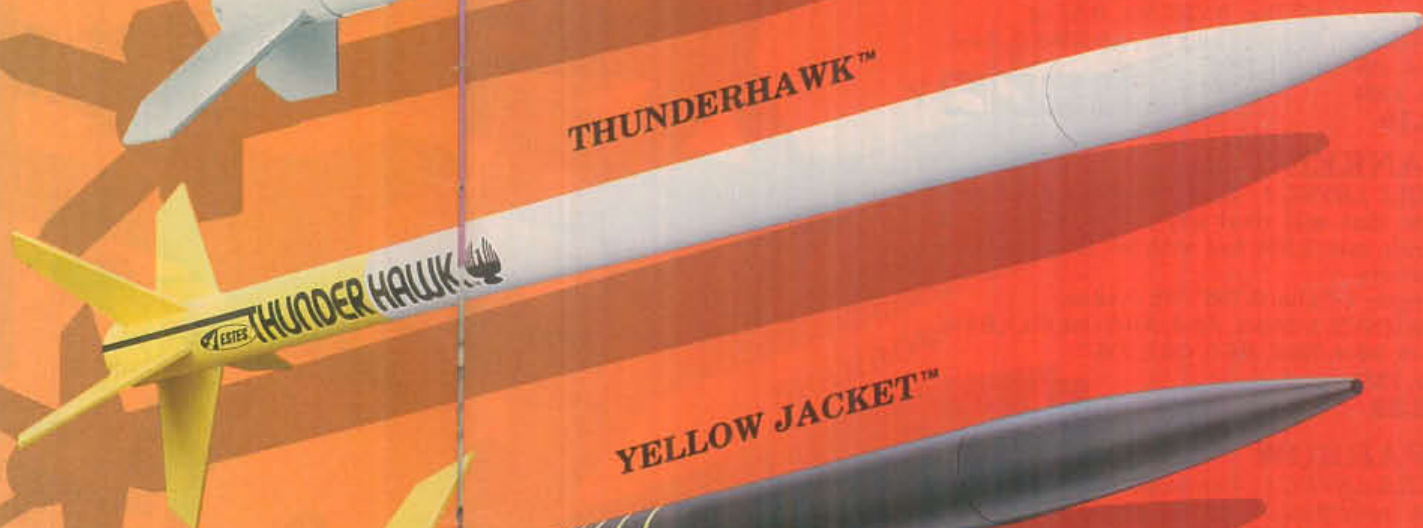
THUNDERHAWK™

SKILL LEVEL 1 This lean 22 inch long sport flier features simple construction and fun. Five fins mean stable flights over 1100 feet.

Length: 22" Dia. 0.976" Wt. 1.22 oz.

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

No. 2002 \$6.29



YELLOW JACKET™

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

Length: 16.8" Dia. 0.976" Wt. 1.08 oz.

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

No. 2008 \$5.79



ASTRO™

SKILL LEVEL 1 Over 1 foot tall, this super flier can reach 1000 feet. With fast assembly and streamer recovery, Astro™ is fun to fly over and over.

Length: 12.75" Dia. 0.736" Wt. 0.79 oz.

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

No. 1937 \$3.59



NINJA™

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

Length: 10.563" Dia. 0.736" Wt. 0.56 oz.

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

No. 0882 \$4.19



Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 10 oz.

TECH-TIP™



**IGNITER
INSTALLATION**

Separate igniters by cutting the tape but do not remove it. Place the igniter deep inside the engine so it is touching the propellant. Use masking tape to firmly secure the igniter in place. The igniter must be touching the propellant when the electricity heats the igniter to cause ignition. Attach clean micro-clips as close to the igniter's center as possible. To avoid a short-circuit the micro-clips and igniter leads must not touch one another or any other metal. If igniter burns in two without igniting the engine, disarm controller, wait one minute and replace the igniter.

SKILL LEVEL 1

Recommended for the Beginning Modeler.

BLUE STAR™

SKILL LEVEL 1 Out of sight flights are easy with this little performer. Kit includes plastic nose cone and die-cut fins. A streamer provides gentle landings from flights up to 1000 feet.

Length: 11.55" Dia. 0.736" Wt. 0.57 oz.

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

No. 1991

\$3.19



YANKEE™

SKILL LEVEL 1 Easy-to-build, yet performance that will rival any rocket. Capable of flights over 2,000 feet with 30" long streamer recovery.

Length: 11" Dia. 0.736" Wt. 0.42 oz.

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

\$3.59



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" Dia. 0.541" Wt. 0.39 oz.

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

No. 0872

\$2.99



MOSQUITO™

SKILL LEVEL 1 The smallest of all Mini-Brutes combines fantastic performance with feather-weight recovery. Balsa and paper construction with simple spray paint decor makes for quick-and-easy assembly.

Length: 3.9" Dia. 0.541" Wt. 0.1 oz.

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

No. 0801

\$1.99



ZINGER™

SKILL LEVEL 1 This sporty little flier with 18" streamer recovery will reach "awesome" altitudes up to 2000 feet.

Length: 10.25" Dia. 0.736" Wt. 0.3 oz.

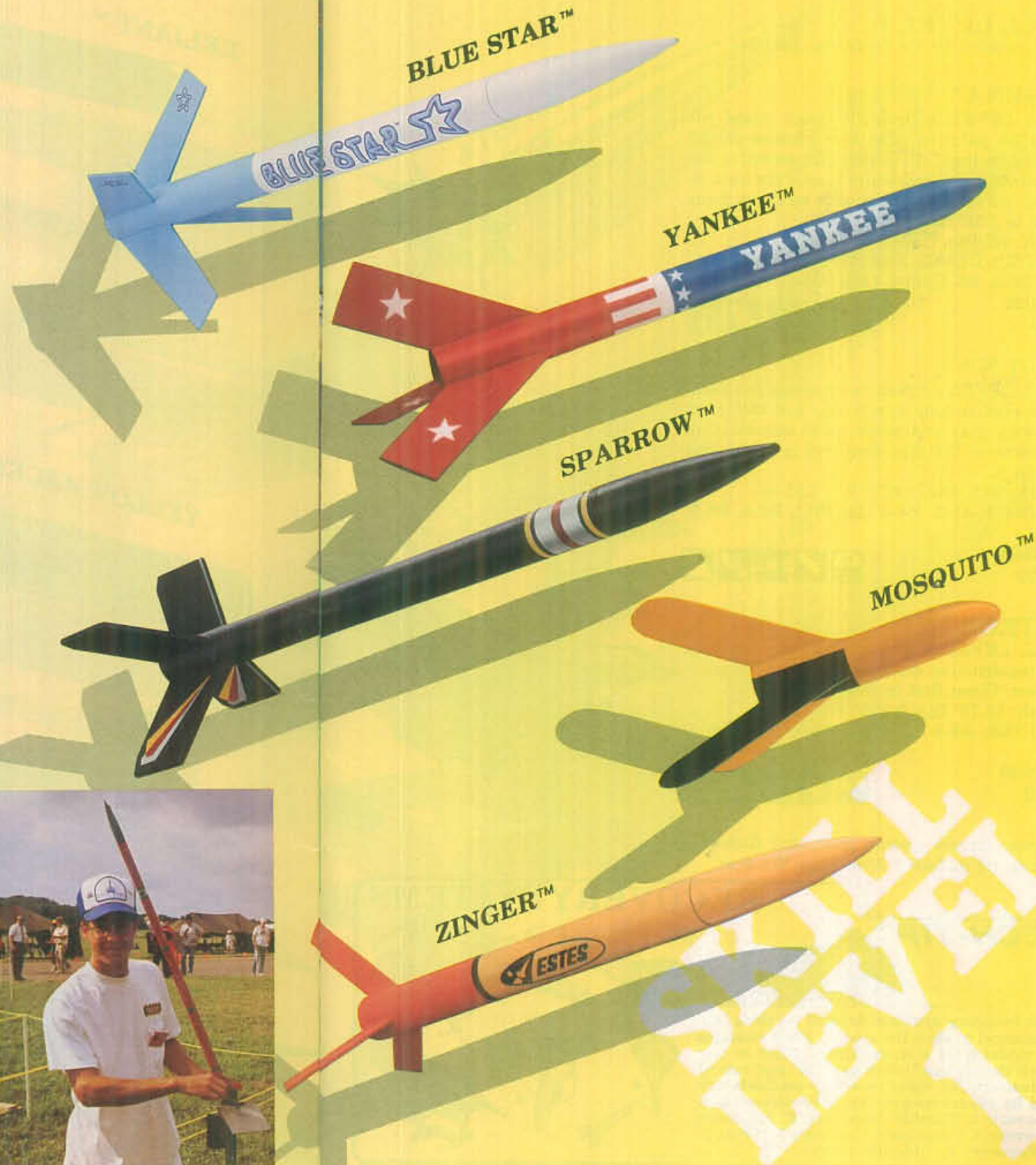
ENGINES: A8-5 (1st Flt.), B4-6, B6-6, C6-7.

No. 1917

\$2.99



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



SKILL LEVEL 1

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 parachute assures safe recovery from flights to 1200 feet.

Length: 15" Dia. 0.976" Wt. 1.27 oz.

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

\$7.49



RAVEN™

SKILL LEVEL 1 Pressure-sensitive foil decal is featured on this nearly two foot tall sport bird with gray and black paint scheme. Can be flown over 600 feet. Recovery is via 12 inch parachute.

Length: 26.5" Dia. 1.637" Wt. 2.51 oz.

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

No. 2029

\$11.59



METEOR™

SKILL LEVEL 1 Big, sleek rocket features easy construction and impressive flights up to 800 feet. Great first or second rocket.

Length: 16.75" Dia. 1.325" Wt. 1.38 oz.

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

No. 2025

\$7.39



Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 9 oz.

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

SKILL LEVEL 1

Recommended for the Beginning Modeler.

LIBERTY™

SKILL LEVEL 1 Sport flier features red plastic nose cone and fin unit, plus huge patriotic kit decal. A 12 inch parachute returns it to Earth slow and easy from altitudes of 1000 feet or more. Length 16" Dia. 0.976" Wt. 1.38 oz.

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

No. 1989 \$4.89



LASER™

SKILL LEVEL 1 Super flier featuring fast assembly and high-tech appearance reaches altitudes of 1000 feet and returns safely via streamer recovery.

Length: 12.25" Dia. 0.736" Wt. 0.79 oz.

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

No. 1938 \$3.59



SKINNY MINI™

SKILL LEVEL 1 Long and lean, this mini-engine sport flier is almost 2½ feet tall. A 30" streamer provides gentle descents for flights over 700 feet.

Length: 29.4" Dia. 0.541" Wt. 0.53 oz.

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

No. 0880 \$4.19



WIZARD™

SKILL LEVEL 1 Simple and quick-to-assemble. One of the highest performing vehicles in Estes' fleet with its 1,600 foot altitude capability and huge 30" streamer recovery system that makes it easy-to-track.

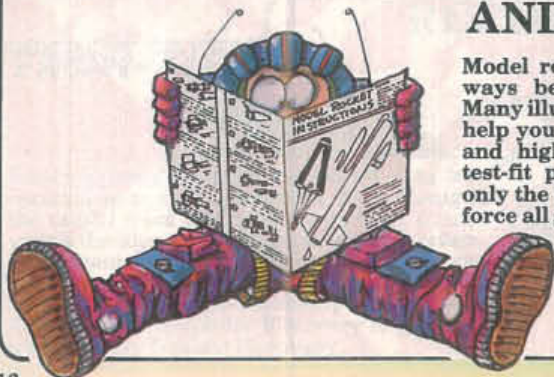
Length: 12" Dia. 0.736" Wt. 0.79 oz.

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 \$3.59



TECH-TIP™



CONSTRUCTION AND FINISHING

Model rocket kit instructions should always be read and followed carefully. Many illustrations and tips are included to help you build a more attractive, durable and higher-flying rocket. Measure and test-fit parts before applying glue. Use only the type of glue recommended. Reinforce all glue joints. Apply several coats of sanding sealer to fill balsa wood pores, sanding each layer till it is smooth. Spray on two or three light coats of paint for a smooth, even finish on your rocket.

Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 9 oz.

SKILL LEVEL 1

SKILL LEVEL 1

Recommended for the Beginning Modeler.

FIREHAWK™

SKILL LEVEL 1 Over 2½ feet tall this "Golden Bird" will soar to heights over 500 feet. An 18 inch parachute assures smooth landings. Length: 31.5" Dia. 1.637" Wt. 3.0 oz.

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

No. 2014

\$10.99



MINI MEAN MACHINE™

SKILL LEVEL 1 Mini-powered version of our huge Mean Machine™ kit. Over 38 inches long and capable of flights over 700 feet.

Length: 38.5" Dia. 0.736" Wt. 1.06 oz.

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

No. 0865

\$7.19



SIZZLER™

SKILL LEVEL 1 High performance design for flights over 900 feet. A long bird that's great for demonstrations. Length: 23.5" Dia. 0.976" Wt. 1.41 oz.

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

No. 1906

\$7.19



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" Dia. 0.976" Wt. 0.8 oz.

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

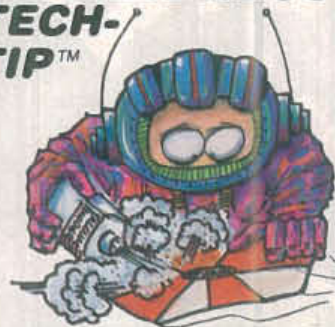
No. 1225

\$5.79



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.

Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 10 oz.

SKILL LEVEL 1

SKILL LEVEL 1

Recommended for the Beginning Modeler.

LANCER™

SKILL LEVEL 1 Watch this racy sport flier leap to altitudes of 800 feet and descend beneath a brightly colored parachute. Plastic fin unit makes assembly quick so you can get outside to launch faster. Length: 18" Dia. 0.976" Wt. 1.31 oz.

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. 1993

\$5.39



DASHER™

SKILL LEVEL 1 Superb sport flier features 1000 foot flights and forward swept fins. Parachute recovery and a quick-release engine mount will make this one of your favorite flying models. Length: 16.875" Dia. 0.976" Wt. 0.92 oz.

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

No. 1992

\$5.39



JAVELIN™

SKILL LEVEL 1 Big, big performance delivers sky-high flights over 1700 feet with a powerful "C" engine. Recovery via 12 inch streamer keeps wind drift to a minimum. Length: 11.5" Dia. 0.736" Wt. 0.57 oz.

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

No. 2005

\$3.99



TECH-TIP™

ALTITUDE TRACKING

One way of figuring how high your rocket flies is by triangulation. Measure the distance between tracker and launch pad and the angle between horizontal and your model's peak altitude. Then using a table of tangents figure your rocket's altitude.

Estes' AltiTrak™ makes it even easier!

Ex. Tangent of 45° angle is 1.0 x 100' distance = 100' altitude.

BLAZER™

SKILL LEVEL 1 Excellent beginner's model features die-cut fiber fins, red decal, streamer recovery and 1000 foot flights with a "C" engine. No painting required! Length: 12.75" Dia. 0.736" Wt. 0.71 oz.

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

No. 1956

\$3.59



SKILL LEVEL 1

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

Avg. Ship. Wt. 10 oz.

SKILL LEVEL 1

Recommended for the Beginning Modeler.

LEPRECHAUN™

SKILL LEVEL 1 Building this kit is easy. Painting it is fun. Launch it to 900 feet. The streamer brings it back safely flight after flight. Length: 10.25" Dia. 0.544" Wt. 0.42 oz. ENGINES: 1/2A3-4T (1st Flt.), A3-4T.

No. 0887

\$3.19



LEPRECHAUN™

Leprechaun™

MICRON™

MICRON™

SKILL LEVEL 1 This little rocket has all the extras. Powered by mini engines, Micron™ delivers great flights and returns to Earth via streamer recovery. Length: 8.25" Dia. 0.736" Wt. 0.50 oz.

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

No. 0876

\$3.95



BIG BERTHA™

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

Length: 24" Dia. 1.637" Wt. 2.2 oz.

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

No. 1948

\$8.19



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! Length: 12.125" Dia. 0.736" Wt. 0.71 oz.

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

No. 1949

\$2.99



MEANIE™

SKILL LEVEL 1 Super performer features solid red paint scheme and white decal. Flies to 400 feet with an "A" engine and returns with a 12 inch streamer.

Length: 6.75" Dia. 0.976" Wt. .49 oz.

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

No. 0877

\$4.59



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

Avg. Ship. Wt. 10 oz.



SKILL LEVEL 1

Recommended for the Beginning Modeler.

RASCAL™

SKILL LEVEL 1 Over one foot tall and brawny with flights to 800 feet, this model is sure to be a hit at rocket demonstrations. Kit features plastic nose cone, kit decal, 12 inch parachute, and 3/32" balsa fin stock.

Length: 13.6" Dia. 1.637" Wt. 1.5 oz.

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

No. 2021

\$8.69



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" Dia. 0.763" Wt. .389 oz.

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

No. 0878

\$3.89



CAJUN™

SKILL LEVEL 1 Nearly 1½ feet tall, Cajun™ is easy to construct and will deliver flights to altitudes over 1200 feet. A silver foil pressure sensitive decal adds a finishing highlight to this model with blue and purple paint scheme.

Length: 17.06" Dia. 0.976" Wt. 1.07 oz.

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

No. 2028

\$6.39



ARMY HAWK™

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

Length: 25" Dia. 1.637" Wt. 2.65 oz.

Fin Span: 6.5"

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

C5-3, C6-3

No. 2031

\$10.89



Engines, launch system, glue, and finishing supplies not included. Avg. Ship Wt. 10 oz.



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.

COMPUTER SOFTWARE

PHYSICS OF MODEL ROCKETRY

Action-Reaction	Acceleration and	Satellites
Inertia	Energy	Tech Tip™ on G Forces
Momentum	Staging	

No. 9027 \$24.95

FLIGHT: AERODYNAMICS OF MODEL ROCKETS

Forces on Flying	Stability	Center of Gravity/ Center of Pressure
Objects	Drag	
Aerodynamics		

No. 9026 \$44.95

IN SEARCH OF SPACE: INTRODUCTION TO MODEL ROCKETRY

Model Rocket Flight Profile	Model Rocketry Safety Code and Reviews
Parts of a Model Rocket	(+ Bonus Program on Multi-Staging and Tech Tip™ on Igniters and Installation)
Model Rocket Engines and Classification	

No. 9025 \$24.95

90 DAY WARRANTY

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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 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.

ASTROCAD: PERFORMANCE ANALYSIS FOR MODEL ROCKETRY

Written by Michael Gasperi

Apogee Determination	Model Rocket Design
Drag Prediction	(two versions)
Performance Prediction	Drag Estimation
Flight Simulation	Optimum Weight
Aerodynamic Stability	Elliptical Fin Design

No. 9028 \$19.95

AEROTREK MODEL ROCKET ALTITUDE PREDICTION TOOLKIT

Written by Mike Dorfler

Introduction	Single Stage Cluster
Single Stage	Incremented Weight
Two Stage	Designer's Scratchpad
Three Stage	Lunar Launch

No. 9033 \$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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SKILL
LEVEL 2

TAKE REAL
HIGH ALTITUDE
PHOTOS!

Actual "AstroCam" 110 Photos
courtesy Art Nestor, Zelenople,
PA



ASTRO CAM™ 110 AERIAL CAMERA WITH DELTA II™ LAUNCH VEHICLE

SKILL LEVEL 2 Experience the excitement of taking color photographs from hundreds of feet in the sky. Astro Cam™ 110's 1/500th second shutter speed is activated at ejection just prior to parachute deployment. Features include easy-assembly, acrylic lens, plastic housing, glass first surface mirror, and high performance design. Easy to operate and shoots one full-color 110 photo per flight. Delta II™ features white body tube and pre-colored plastic fin-unit for stability. No painting required. Uses Kodak Kodacolor 110 color print film, ASA 400, or equivalent-Not Included. Film and developing are available locally. Camera not sold separately. Use Delta II™ as launch vehicle. Other launch vehicles are not recommended. Specifications - Camera with Launch Vehicle: Length: 19.1" Dia. 1.34" Fin Span 4.75" Wt. 3.75 oz. Camera Specifications: Length: 6.5" Dia. 1.39" Wt. 1.36 oz. (without film). Wt. 1.76 oz. (with film) (Engines, launch system, film, glue and finishing supplies not included.) Ship. Wt. 14 oz.

ENGINES: C6-7 (1st Flt.)



No. 1327 \$33.29

SKILL LEVEL 2

Recommended for the Experienced Modeler.

WARP II™

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

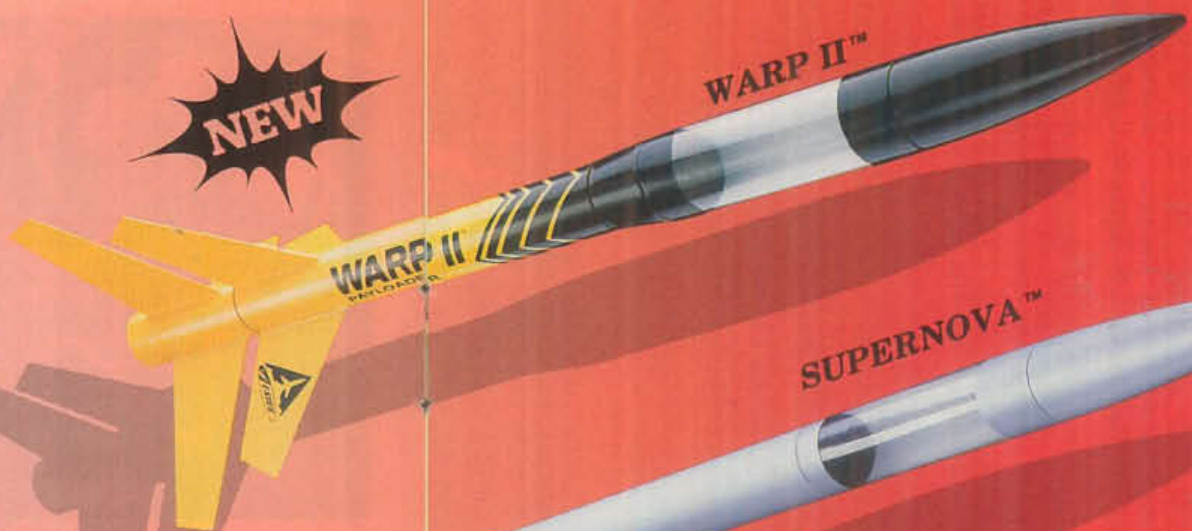
Length: 24.625" Dia. 1.637" Wt. without Payload 2.83 oz.

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

\$12.89



SUPERNOVA™

SKILL LEVEL 2 With this sleek model you can launch payloads up to 1800 feet 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 parachute. Length: 27"

Dia. 0.976" Wt. 1.7 oz. without payload

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

\$8.99



BULL PUP 12D™

SKILL LEVEL 2 Scaled down version of U.S. Air Force air-to-ground missile features three-color decal, 800 foot flights and recovery via 12" chute. Length: 15.625" Dia. 1.325"

Wt. 1.8 oz.

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

No. 1972

\$6.49



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" Dia. 0.541" Wt. 0.42 oz.

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

No. 0873

\$2.99



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

Avg. Ship. Wt. 12 oz.



SKILL LEVEL 2

SKILL LEVEL 2

Recommended for the Experienced Modeler.

MINI TRI PAK™

SKILL LEVEL 2 Three unique rocket kits in one package - for one low price! Includes:

STAR SEEKER™

Interstellar speeder for short hops between galaxies. Mini-power boosts it near 1500 feet. The model breaks apart into two connected pieces for safe recovery.

Length: 6.9" Dia. 0.5" Wt. 0.26 oz.

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



STING RAY™

Two-stage mini performance. Out-of-sight flights to 2500 feet! Length: 8.4" Dia. 0.5" Wt. 0.33 oz.

ENGINES: First Stage: A10-0T (1st Flt.)

Second Stage: 1/2A3-2T (1st Flt.),

1/2A3-4T, A3-4T, A10-3T.



S.C.R.A.M.™

Military styled surface-to-air missile. Flights over 1000 feet. Break-apart recovery. Length: 7.3" Dia. 0.5" Wt. 0.29 oz.

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



MINI TRI PAK™

No. 0866

\$7.19

TORNADO™

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

Length: 9.5" Dia. 0.736" Wt. 0.49 oz.

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

No. 2004

\$3.49



HELIO*COPTER™ SKILL LEVEL 2

Launch this large, racy-looking rocket to altitudes over 800 feet 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 parachute is ejected and the rocket body begins a gentle descent. Length: 25.4" Dia. 1.346" Wt. 2.89 oz.

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

No. 1995

\$9.29



STAR SEEKER™



STING RAY™



S.C.R.A.M.™



TORNADO™



HELIO*COPTER™



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

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 tall, it may be flown over 1200 feet with a "C" engine. Landings are by 12 inch parachute.

Length: 17.75" Dia. 0.976" Wt. 1.17 oz.

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

No. 2030

\$5.99



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 parachute for reliable recovery.

Length: 27.625" Dia. 1.637" Wt. 2.7 oz.

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

No. 1987

\$9.29



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 and recovery via 30" streamer.

Length 17.125" Dia. 0.976" Wt. 1.13 oz.

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

No. 2007

\$5.49



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, and recovery via 12 inch parachute. Length 13" Dia. 2.75" Wt. 2.47 oz.

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

No. 2003

\$9.29



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

Avg. Ship. Wt. 12 oz.

32



SKILL LEVEL 2

Recommended for the Experienced Modeler.

CALYPSO™

SKILL LEVEL 2 Swept fins, boat tail, and ogive nose cone make this model an aerodynamic super flier. A 30 inch streamer assures safe landings from flights over 1000 feet with a "C" engine.

Length 16.5" Dia. 0.976" Wt. 0.99 oz.

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

No. 2006

\$5.49



VOYAGER II™

SKILL LEVEL 2 Resembles an experimental NASA aircraft. Perhaps this one will travel beyond the Earth on voyages not yet planned. Your model will produce test flights over 700 feet and return to Earth via an 18 inch parachute recovery system.

Length 17.25" Dia. 1.325" Wt. 1.68 oz.

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

No. 2000

\$7.19



RAIN MAKER™

SKILL LEVEL 2 Resembles a staged sounding rocket like those used in the 50's and 60's for cloud-seeding experiments. Flights over 600 feet are possible and recovery is via 12 inch parachute.

Length 23.625" Dia. 1.325" Wt. 1.48 oz.

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

No. 2009

\$6.95



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. Rocket and cargo return safely with giant 24 inch parachute. A 3/16" dia. Maxi™ Rod (#2244) is required for launch.

Length: 34.625" Dia. 1.637" Wt. without Payload 4.17 oz.

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

\$17.99



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

Avg. Ship. Wt. 10 oz.

NEW
SKILL LEVEL 2

SKILL LEVEL 2

Recommended for the Experienced Modeler.

ATA-31™

SKILL LEVEL 2 This scale-like rocket resembles an air to air missile right down to the decals. Launch it to 1200 feet and watch it descend under a brightly colored 12 inch parachute.

Length: 16.75" Dia. 0.976" Wt. 0.99 oz.

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

No. 2024

\$6.19



MEGA SIZZ'™

SKILL LEVEL 2 Huge sport flier lifts-off the pad with a mighty roar to climb over 1000 feet in seconds. Great decals, a quick-release engine mount, and an 18 inch parachute make this a very sharp model. A 3/16" Maxi™ Rod (#2244) is required for launch. Length: 34.25"

Dia. 1.637" Wt. 3.18 oz.

ENGINE: D12-5.

No. 1998

\$10.89



MEAN MACHINE™

SKILL LEVEL 2 Tallest rocket in the Estes fleet. "D" engine powered for spectacular flights over 800 feet. Over 6 feet long with giant 24" chute. Easy-to-assemble for a really great looking bird. Uses 3/16" launch rod.

Length: 78.75" Dia. 1.637" Wt. 5.8 oz.

ENGINE: D12-5

No. 1295

\$16.29



SUPER BIG BERTHA™

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

Length: 36.5" Dia. 2.56" Wt. 6 oz.

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

No. 2018

\$21.99



Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 16 oz.



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 2

Recommended for the Experienced Modeler.

EGGSPRESS™

SKILL LEVEL 2 Egg lofting sport rocket is great for contests, science fair projects, and "Eggsperiments"! This heavy duty vehicle can be flown with or without an "Eggload". The cargo bay is so big you can launch a large egg in it. And...there's an 18 inch parachute for "Eggstra" soft landings. However, if the 'chute doesn't open the Yolk's on you!

Length: 21.5" Payload Dia. 2" Wt. 2.51 oz.

ENGINES: Without Egg B4-2 (1st Flt.), B6-2, B8-5, C6-5. With Egg C5-3 ONLY!

No. 1996

\$9.29



SILVER STREAK™

SKILL LEVEL 2 Over 18 inches tall, this sport model streaks off the pad to 900 feet heights. The shiny silver nose cone, pressure-sensitive foil decal, and fluorescent red paint scheme make tracking this rocket a cinch. A 12 inch parachute provides a slow descent.

Length: 18.5" Dia. 0.976" Wt. 1.1 oz.

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

No. 2027

\$7.79



NOVA PAYLOADER™

SKILL LEVEL 2 Cargo carrier contains clear payload bay. Great for experiments and science projects. Flies to altitudes over 1000 feet high, deploys 12" recovery parachute, and descends slowly to the ground, ready to carry your next payload aloft. Length: 21.125" Dia. 0.976" Wt. 1.33 oz.

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

No. 1960

\$7.19



STARBIRD™

SKILL LEVEL 2 This sleek, interstellar spaceship traverses the galaxy, seeking, observing, and exploring the farthest reaches. Our model flies over 1100 feet and descends gently to Earth via 12" parachute.

Length: 19.5" Dia. 0.976" Wt. 1 oz.

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

No. 1954

\$5.79



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

Avg. Ship. Wt. 12 oz.



SKILL LEVEL 2

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 high and return to Earth under a 12 inch parachute. Length 16.062" Dia. 0.976" Wt. 1.7 oz.

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

No. 2010

\$7.79



ARGOSY™

SKILL LEVEL 3 Galactic deterrent of ever-threatening invasions, this strike fighter is equipped with laser weaponry, time warp drive and deionizing technology. Invisible on all known scanners, Argosy™ can strike and evade retaliation easily. Launch your model to 900 feet. Landings are smooth with a 12" parachute!

Length: 18.5" Dia. 0.976" Wt. 1.43 oz.

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

No. 1988

\$5.99



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 2,500 feet!

Length 21.6" Dia. 0.976" Wt. 1.84 oz.

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

\$9.29



STRIKE FIGHTER™

SKILL LEVEL 3 Aerospace rocket plane is sleekly designed for multiple mach-speeds and strike fighting capability. Model includes see-through canopy, plastic nose cone, pre-cut balsa wood fins, and a quick-release engine mount. An 18 inch parachute assures great landings from flights to 500 feet. Length 14.75" Wing Span 8.75" Dia. 1.325" Wt. 2.37 oz.

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

No. 2015

\$10.99



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



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 high in six seconds.

Length 25" Dia. 1.637" Wt. 2.58 oz.

ENGINE: B4-4, B6-4, C6-5

No. 2013

\$9.99



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 2,600 feet.

A 3/16" Maxi™ Rod (#2244) is required for launch.

Length: 41" Dia. 0.976" Wt. 2.08 oz.

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

\$9.29



S.W.A.T.™

SKILL LEVEL 3 Huge hypersonic fighter model features camouflage decor scheme, flights over 400 feet, and a big 18 inch parachute. A 3/16" Maxi™ Rod is required for launch.

Length: 34" Fin Span: 8.75" Dia. 1.637"

Wt. 4.06 oz.

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

No. 2017

\$16.99



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 525 feet and watch it return to Earth with an 18 inch parachute recovery system.

Length: 17.75" Dia. 2.6" Wt. 3.51 oz.

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

No. 2038

\$12.29



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

Avg. Ship. Wt. 12 oz.



SKILL LEVEL 3

Recommended for the Advanced Modeler.

SR-71 BLACKBIRD™

SKILL LEVEL 3 Our nation's super high-altitude reconnaissance plane flies at ultrasound speeds. So high-tech nearly all information about this plane is classified. The Estes scale model features the same state-of-the-art appearance. Over 1½ feet long SR-71 Blackbird™ flies to 900 foot altitudes and lands via 18" parachute. Length: 19" Dia. 0.976" Wt. 3.2 oz.

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

No. 1942

\$12.89



STEALTH™

SKILL LEVEL 3 Radar invisible fighter from the future closes in on its opponents from seemingly nowhere. Outfitted with laser weaponry it seeks and destroys in ultimate silence. Our model can reach altitudes up to 900 feet. Length: 16.25" Dia. 1.125" Wt. 2.3 oz.

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

No. 1929

\$8.19



NATIONAL AEROSPACE PLANE™

SKILL LEVEL 3 This model is based on a design concept of the proposed U.S. intercontinental space flight plane. Take-offs and landings would be like those of conventional jet planes. However, speeds and altitudes would increase dramatically making these planes capable of sub-orbital flights. Our model will fly to 500 feet.

Length: 26.5" Dia. 1.637" Wt. 3.46 oz.

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

No. 2037

\$13.49



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. A 3/16" Maxi™ Rod (#2244) is required for launch.

Length: 30" Dia. 2.60" Wt. 6.6 oz.

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

No. 1380

\$16.29



Photo Courtesy Lockheed-California Company

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

SKILL LEVEL 3

Recommended for the Advanced Modeler.

TRIDENT™ II

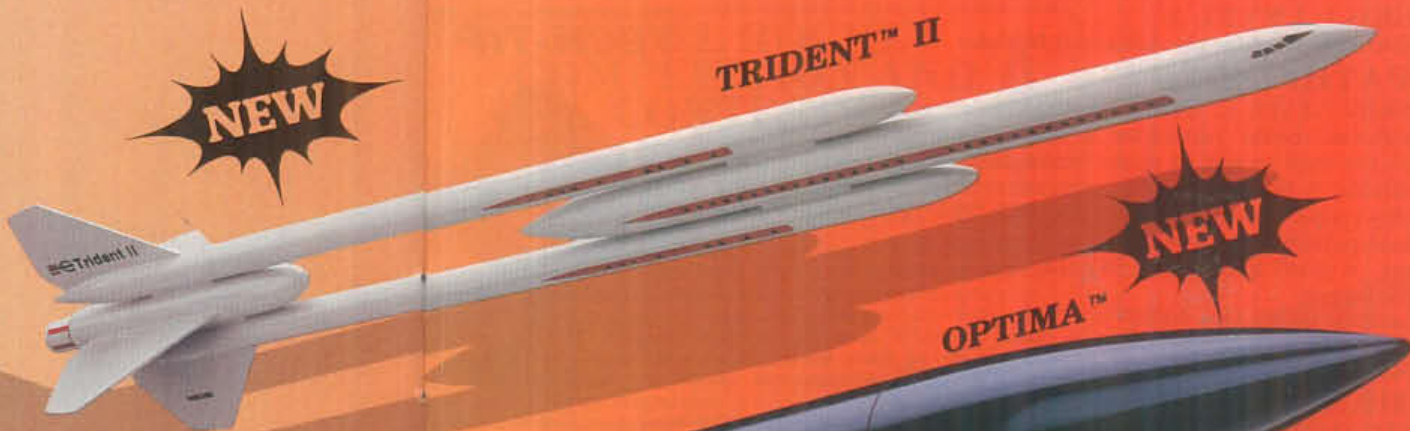
SKILL LEVEL 3 Up-to-date version of classic Estes Trident™ rocket first introduced in 1968. Long, and sleek this beauty utilizes seven balsa nose cones in its construction and features a unique ejection system. Estimated maximum altitude is 475 feet.

Length: 30.5" Dia. 0.976" Wt. 2.61 oz.

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

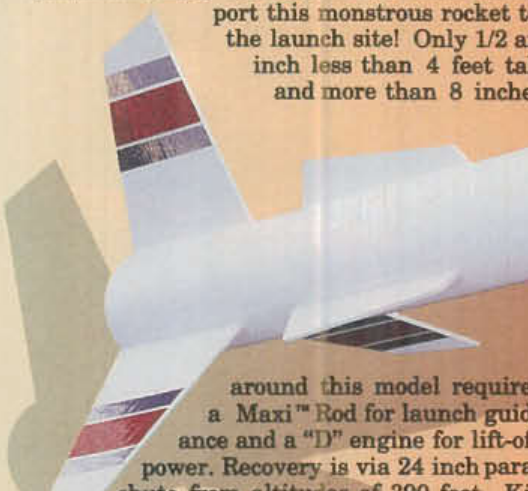
No. 2033

\$17.49



OPTIMA™

SKILL LEVEL 3 You may want a van to transport this monstrous rocket to the launch site! Only 1/2 an inch less than 4 feet tall and more than 8 inches



around this model requires a Maxi™ Rod for launch guidance and a "D" engine for lift-off power. Recovery is via 24 inch parachute from altitudes of 390 feet. Kit includes chrome and metal-flake pressure sensitive decals, plus a large water-transfer kit decal.

Length: 47.5" Dia. 2.6" Wt. 8.3 oz.

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

No. 2035

\$33.69



DEEP SPACE TRANSPORT™

SKILL LEVEL 3 Futuristic model of an interplanetary passenger transport modified with external power pods for deep space travel. Double deck forward passenger area provides necessary additional living space. Kit features a large colorful decal, unique tri-body design, and launches to 350 feet.

Length: 26.5" Dia. 1.325" Wt. 3.75 oz.

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

No. 2034

\$15.89



Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 15 oz.

SKILL LEVEL 3

Recommended for the Advanced Modeler.

PATHFINDER™

SKILL LEVEL 3 Over 3½ feet tall, this magnificent model resembles a real sounding rocket used in testing upper atmospheric conditions. A big 'D' engine is required to launch this rocket to altitudes over 800 feet. Two 12 inch parachutes are necessary to ensure recovery. A 3/16" Maxi™ Rod (#2244) is required for launch.

Length: 42.25" Dia. 1.637" Wt. 3.18 oz.

ENGINE: D12-5.

No. 1997

\$10.39



CORSAIR™

SKILL LEVEL 3 Exiled to distant outlying planets, the galaxy's privateers fly their spaceships throughout the star systems, preying on slower freightliners. Dark and sleek, Corsair's design has evolved from the necessity to outmaneuver vengeful victims. The model features swept-wing design, flights to 700 feet, and descent via 12 inch parachute.

Length: 12.35" Dia. 0.976" Wt. 1.59 oz.

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

No. 1999

\$6.49



RAM JET™

SKILL LEVEL 3 This ducted jet rocket is launched from the air for long range use in the upper atmosphere. Lifting off to 800 feet, Ram-jet™ is recovered via 12 inch parachute system.

Length: 15.25" Dia. 1.325" Wt. 1.24 oz.

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

No. 1994

\$5.39



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.



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

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 will make this large exotic rocket one of your favorites. A 3/16 inch diameter Maxi™ Rod is required for launch.

Length: 36.625" Dia. 1.637" Wt. 5.4 oz.

ENGINE: D12-3

No. 2036 \$28.59



GEO SAT LV™

SKILL LEVEL 4 Heavy-lift launch vehicle for large satellite payloads. Kit features simulated strap-on solid rocket boosters, see-through payload section with a highly detailed visible satellite, and an 18" parachute for reliable recovery. Realistic decor and 2 feet 4 inches of rocket make lift-offs impressive.

Length: 28" Dia. 1.637" Wt. 4.3 oz.

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

No. 1977 \$14.69



BLACK BRANT II™

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

Used by the Canadian Armament Research and Development Establishment for upper atmosphere research studies, Black Brant IIs were fired mostly in Canada's Northlands, carrying up to 150 pounds of payload to altitudes of 100 statute miles.

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.

Length 24.875" Dia. 1.325" Wt. 2.29 oz.

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

No. 1958 \$9.79



EXPLORER AQUARIUS™

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

Length: 21.75" Dia. 2.75" Wt. 4.2 oz.

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

No. 2016 \$16.99



Engines, launch system, glue, and finishing supplies not included.
Avg. Ship. Wt. 15 oz.

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.

The Shuttle is comprised of the following three main units:

- Two solid rocket boosters (SRB's) which have a sea level thrust of 2,600,000 pounds each.
- The orbiter which is 121' long with a wing span of 79' weighs about 150,000 pounds without fuel. It has a payload bay 60' long and 15' in diameter. Payload capacity is 65,000 pounds.
- The external tank (ET) is 154' long and 28.6' in diameter. At lift-off the tank contains 1,550,000 pounds of liquid hydrogen and oxygen. These are in separate compartments of the tank and are fed to the orbiter's three main rocket engines which have a thrust of 470,000 pounds each. The tank is not reusable.

Maximum altitude of the Space Shuttle is 600 miles.

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" 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" Dia. 2.04" Orbiter Length 9.0" Orbiter Wingspan 7.1" Wt. 4.37 oz. ENGINES: C5-3 (1st Flt.), C6-3.

No. 1284

\$21.29



Photo and STS DATA Courtesy of NASA



"G.H. Stine Archives, used with permission."

MERCURY REDSTONE™

Between 1953 and 1958 Redstone had proven to be a reliable flight vehicle. Therefore, it was selected as the vehicle to carry the first American into sub-orbital flight. On May 5, 1961, Redstone lifted the Mercury capsule "Freedom 7" with Alan Shepard, Jr. inside to an altitude of 116.5 statute miles and traveled 302.8 miles down-range. The flight lasted 15 minutes and 22 seconds. Mercury-Redstone stood 83 feet tall, weighed (with fuel) 66,000 lbs. and delivered 78,000 lbs. of thrust.

SKILL LEVEL 4 Historical 1/35 scale model of the Redstone sub-orbital rocket used to launch Alan Shepard into space flight May 5, 1961. Authentic detailing includes large decal and injection molded Mercury capsule and tower. Rocket and capsule each return to Earth via 12" chute recovery. Length: 28.75" Dia. 2.04" Wt. 3.0 oz.

ENGINE: C5-3 ONLY

No. 1921

\$15.29



52



MERCURY REDSTONE™



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

Avg. Ship. Wt. 12 oz.

SKILL LEVEL 4

53

SKILL LEVEL 4

Recommended for the Master Modeler

TITAN III[™]

SKILL LEVEL 4 Big and exciting, this challenging rocket is a 1/73rd scale model of Martin Marietta's Titan III. Plastic engine display nozzles and balsa wood stabilizing flight fins are included. Both are removable. A 3/16" Maxi[™] Rod is required for flight.

Length: 28" Dia. 2.22" Wt. 6.0 oz.

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

No. 2019

\$25.99



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.

The first stage of the Saturn V generated 7,500,000 pounds of thrust with its cluster of five F-1 engines burning kerosene and liquid oxygen. The second stage was powered by five J-2 engines producing a total of 1,000,000 pounds of thrust. The third stage used one J-2 engine to provide 200,000 pounds of thrust. The third stage engine had a restart capability.

The Saturn V permitted weights of up to 280,000 pounds to be placed in Earth orbit. The Saturn V launched the nearly 100,000 pound Apollo 11 spacecraft into lunar trajectory which resulted in the first manned lunar landing in July 1969. The Apollo-Saturn V was 363 feet tall and weighed 6,000,000 lbs. fully fueled.

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 43 1/4 inches tall and lifts off to more than 100 feet with one powerful D12-3. The bottom section is lowered gently with two huge 24 inch parachutes and the upper section is recovered via special recovery harness and 18 inch 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" Maxi[™] Rod (#2244) is required for launch. Length 43.25" Dia. 3.938" Wt. 10.2 oz.

ENGINE: D12-3 ONLY

No. 2001

\$52.29



Photo courtesy NASA and Martin Marietta



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

Engines, launch system, glue, and finishing supplies not included. Avg. Ship. Wt. 18 oz.



Photo and information courtesy of NASA

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.

No. 2301 \$1.89

RECOVERY WADDING:

Provides protection from hot ejection gases for parachutes and streamers. Each package contains approximately 75 4½" squares—enough wadding for up to 25 flights. Instructions for installation are included on each package. Ship Wt. 6 oz.

No. 2274 \$1.89

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.

No. 1672 \$23.89



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 shown 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-two 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

REGULAR ENGINES

SINGLE STAGE ENGINES GREEN LABEL

Prod. No.	Engine Type	Prices 3 for	Total Impulse		Time Delay (±15%)	Max. Lift Wt.	Max. Thrust	Thrust Duration	Initial Weight		Propellant Weight	
			lb-sec (1)	N-sec (2)					Oz.	G.	Oz.	G.
1593	1/2A6-2*	\$3.30	0.28	1.25	2 sec.	2.5 oz.	46 oz.	0.20 sec.	0.53	15.0	0.055	1.56
1598	A8-3	\$3.45	0.56	2.50	3 sec.	4.0 oz.	48 oz.	0.32 sec.	0.57	16.2	0.110	3.12
1601	B4-2	\$3.45	1.12	5.00	2 sec.	4.0 oz.	48 oz.	1.20 sec.	0.70	19.8	0.294	8.33
1602	B4-4	\$3.45	1.12	5.00	4 sec.	3.5 oz.	48 oz.	1.20 sec.	0.74	21.0	0.294	8.33
1605	B6-2	\$3.45	1.12	5.00	2 sec.	4.5 oz.	48 oz.	0.83 sec.	0.68	19.3	0.220	6.24
1606	B6-4	\$3.45	1.12	5.00	4 sec.	4.0 oz.	48 oz.	0.83 sec.	0.71	20.1	0.220	6.24
1620	B8-5*	\$3.45	1.12	5.00	5 sec.	5.0 oz.	5 lb.	0.60 sec.	0.68	19.3	0.220	6.24
1617	C5-3*	\$3.70	2.25	10.00	3 sec.	8.0 oz.	5 lb.	2.10 sec.	0.90	25.5	0.450	12.70
1613	C6-3	\$3.95	2.25	10.00	3 sec.	4.0 oz.	48 oz.	1.70 sec.	0.88	24.9	0.440	12.48
1614	C6-5	\$3.95	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 or single stage engine if used in a very light rocket PURPLE LABEL

1599	A8-5	\$3.45	0.56	2.50	5 sec.	2.0 oz.	48 oz.	0.32 sec.	0.62	17.6	0.110	3.12
1604	B4-6	\$3.45	1.12	5.00	6 sec.	1.5 oz.	48 oz.	1.20 sec.	0.78	22.1	0.294	8.33
1607	B6-6	\$3.45	1.12	5.00	6 sec.	2.0 oz.	48 oz.	0.83 sec.	0.78	22.1	0.220	6.24
1615	C6-7	\$3.95	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

1608	B6-0	\$3.45	1.12	5.00	none	4.0 oz.	48 oz.	0.80 sec.	0.58	16.4	0.220	6.24
1616	C6-0	\$3.70	2.25	10.00	none	4.0 oz.	48 oz.	1.68 sec.	0.80	22.7	0.440	12.48

Regular engines are 2.75 in. long and 0.690 in. dia. Ship Wt. of each package of engines is approximately 4 oz.

*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.	Max. Thrust	Thrust Duration	Initial Weight		Propellant Weight	
			lb-sec (1)	N-sec (2)					Oz.	G.	Oz.	G.
1666	D12-3	\$6.30	4.48	20.0	3 sec.	14 oz.	9 lb.	1.70 sec.	1.49	42.2	0.879	24.93
1667	D12-5	\$6.30	4.48	20.0	5 sec.	10 oz.	9 lb.	1.70 sec.	1.52	43.1	0.879	24.93

UPPER STAGE ENGINES PURPLE LABEL

1668	D12-7	\$6.30	4.48	20.0	7 sec.	8 oz.	9 lb.	1.70 sec.	1.55	44.0	0.879	24.93
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BOOSTER ENGINES RED LABEL

1665	D12-0	\$6.30	4.48	20.0	none	14 oz.	9 lb.	1.70 sec.	1.44	40.9	0.879	24.93
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"D" engines are 2.75 in. long and 0.945 in. dia. Ship Wt. of each package of "D" engines is approximately 6½ oz.

MINI ENGINES

SINGLE STAGE ENGINES GREEN LABEL

Prod. No.	Engine Type	Prices 4 for	Total Impulse		Time Delay (±15%)	Max. Lift Wt.	Max. Thrust	Thrust Duration	Initial Weight		Propellant Weight	
			lb-sec (1)	N-sec (2)					Oz.	G.	Oz.	G.
1503	1/2A3-2T	\$3.45	0.28	1.25	2 sec.	2 oz.	28 oz.	0.36 sec.	0.198	5.6	0.062	1.75
1507	A3-4T	\$3.60	0.56	2.50	4 sec.	2 oz.	28 oz.	0.86 sec.	0.268	7.6	0.124	3.50
1511	A10-3T	\$3.60	0.56	2.50	3 sec.	5 oz.	48 oz.	0.26 sec.	0.277	7.9	0.133	3.78

UPPER STAGE ENGINES PURPLE LABEL

1504	1/2A3-4T	\$3.45	0.28	1.25	4 sec.	1 oz.	28 oz.	0.36 sec.	0.212	6.0	0.062	1.75
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BOOSTER ENGINES RED LABEL

1510	A10-0T	\$3.60	0.56	2.50	none	5 oz.	48 oz.	0.26 sec.	0.235	6.7	0.133	3.70
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Mini-Engines are 1.75 in. long and .500 in. dia. Ship Wt. of each package of mini-engines is approximately 2½ oz.

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

(1) Pound-seconds (Figures shown are optimum.)

(2) Newton-seconds* (Figures shown are optimum.)

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

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 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" Width: 1.5" Depth: 1.25"

Ship. Wt. 8 oz.
No. 2220 \$15.79



**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 36 inch by 1/8 inch 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.
No. 2215 \$12.89



PORTA-PAD® II

3/16" DIA. MAXI™ ROD
Ship Wt. 12 oz. No. 2244 \$4.69

1/8" DIA. TWO PIECE LAUNCH ROD
Ship Wt. 6 oz. No. 2243 \$3.59

LAUNCH ROD SAFETY CAP with
UNIVERSAL SAFETY KEY
Ship Wt. 4 oz. No. 2205 \$1.10

MICRO-CLIPS (2 per pkg)
Ship Wt. 1 oz. No. 2247 \$1.39

BLAST DEFLECTOR PLATE
Ship Wt. 5 oz. No. 2241 \$2.49

BATTERY CLIPS (2 per pkg)
Ship Wt. 5 oz. No. 2245 \$2.05

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.

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

1 PK-10
2 PK-12
1 PK-18
1 PK-24

Recovery Equipment

3 Shock Cord 1/8" x 18"
1 Shock Cord 1/8" x 36"
1 Shock Cord 1/4" x 36"
1 Streamer Material 1" x 30"
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 (2-3/8" long)
1 Alpha Book of Model Rocketry
1 Fin Pattern Sheet No. 2
1 Fin Pattern Sheet No. 3

No. 1463

\$30.99



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.



Sandpaper	Universal Safety Key	1/4" Shroud Line
Screw Eyes	Reclosable Pouch	Tape Discs
White Glue	Recovery Wedding	Launch Lugs
Launch Rod	12" Parachute	Shock Cord Mounts
Safety Cap	1/8" and 1/4" Shock Cords	

No. 2233

\$4.69

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. Adjusts quickly with plastic fin position clips. Ship. Wt. 3 lbs.

No. 2231

\$13.99

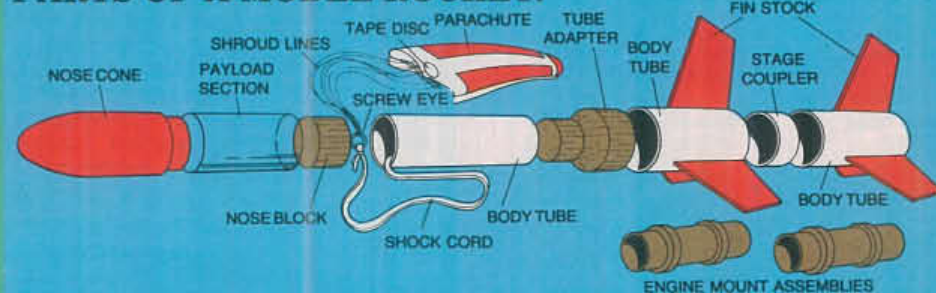
ALTITRAK™ ALTITUDE FINDER

Track your rocket to the top of its flight and instantly lock-in its altitude on the AltTrak 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.

No. 2232

\$12.99

PARTS OF A MODEL ROCKET:



Model rocket kits are constructed of light-weight materials such as balsa wood, paper tubes, and plastic as shown in this diagram. Nearly all matching Estes parts have the same series description number and are interchangeable. For instance a body tube BT-20 will mate with a balsa nose cone BNC-20B. A balsa adapter TA-2060 will adapt a BT-20 to a BT-60. An AR-2050 will center a BT-20 in a BT-50. When ordering parts use both the product number and the description.

BODY TUBES

Spiral wound paper

Prod. No.	Description	Price Each	Length	Inside Diameter	Outside Diameter	Wall Thickness	Weight in Oz. Net.	Ship.
30302	BT-5	\$1.80	18"	0.515"	0.541"	0.013"	219	11
30316	BT-20	\$2.05	18"	0.710"	0.736"	0.013"	288	11
30352	BT-50	\$2.05	18"	0.950"	0.976"	0.013"	378	11
30382	BT-55	\$2.35	18"	1.283"	1.325"	0.021"	672	11
30396	BT-60	\$2.55	18"	1.595"	1.637"	0.021"	960	11
30424	BT-70	\$3.15	17.5"	2.175"	2.217"	0.021"	1,300	14
30433	BT-80KD	\$2.90	14.2"	2.560"	2.600"	0.021"	637	11
30449	BT-101SV	\$5.25	24.7"	3.896"	3.938"	0.021"	2,873	16

NOSE CONES

Nose cone dimensions listed in columns 1, 2, and 3.



Shape	No.	Prod. No.	Description	Price Each	Dimensions			Average Weight	Ship. Wt.
			BNC-Balsa PNC-Plastic		1	2	3		
	1	70216	BNC-5V	\$1.80	3/4"	0.541"	1/4"	0.013 oz.	1 oz.
	2	70212	BNC-5E	\$1.80	1-3/8"	0.541"	1/4"	0.020 oz.	1 oz.
	3	70214	BNC-5S	\$1.80	1-1/2"	0.541"	1/4"	0.016 oz.	1 oz.
	4	70218	BNC-5W	\$2.05	2-7/8"	0.541"	1/4"	0.039 oz.	2 oz.
	5	70230	BNC-20B	\$1.95	1-11/16"	0.736"	5/16"	0.05 oz.	1 oz.
	6	70240	BNC-20R	\$2.05	2-3/4"	0.736"	3/8"	0.07 oz.	2 oz.
	7	70225	BNC-20AM	\$2.00	2-1/2"	0.736"	1/2"	0.06 oz.	2 oz.
	8	70241	BNC-20Y	\$1.90	1"	0.736"	3/8"	0.02 oz.	1 oz.
	9	70256	BNC-50J	\$2.05	1-3/8"	0.976"	1/2"	0.08 oz.	4 oz.
	10	70262	BNC-50K	\$2.25	2-3/4"	0.976"	1/2"	0.13 oz.	4 oz.
	10	71028	PNC-50KA	\$1.95	2-3/4"	0.976"	1/2"	0.13 oz.	4 oz.
	11	71001	PNC-50SP	\$2.70	5-11/16"	0.976"	1/2"	0.25 oz.	6 oz.
	12	70265	BNC-50Y	\$2.70	4-3/8"	0.976"	3/8"	0.16 oz.	6 oz.
	13	71070	PNC-55AC	\$3.15	5-3/8"	1.325"	3/8"	0.32 oz.	6 oz.
	14	71038	PNC-55D	\$3.15	3-3/4"	1.325"	3/4"	0.36 oz.	4 oz.
	15	71020	PNC-60MS	\$2.75	3-1/8"	1.637"	5/8"	0.39 oz.	4 oz.
	16	71043	PNC-60AH	\$3.95	6-5/8"	1.637"	7/8"	1.0 oz.	6 oz.
	17	70300	BNC-70AJ	\$4.40	4-1/4"	2.217"	1"	0.85 oz.	6 oz.
	18	71035	PNC-80K	\$4.10	8-1/8"	2.555"	1-5/8"	1.68 oz.	8 oz.
	19	72060	PNC-80BB	\$4.10	4"	2.600"	2-1/8"	1.18 oz.	8 oz.

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.

Prod. No.	Description	Price 3 for	Dimensions (In Inches)	Weight in Oz. Net.	Ship.	Major Use
32102	BFS-20	\$1.90	1/16x3x9	130	4	High Performance
32106	BFS-20L	\$2.15	1/16x3x12	173	6	High Performance
32108	BFS-30	\$1.95	3/32x3x9	150	4	Sport Models
32110	BFS-30L	\$2.20	3/32x3x12	200	6	Sport Models
32116	BFS-40	\$2.00	1/8x3x9	200	4	Cluster Rockets
32118	BFS-40L	\$2.20	1/8x3x12	265	6	Glider Wings

ENGINE MOUNTS

Use Estes high performance engine mounts for your original designs. All engine mounts feature easy-to-assemble instructions and light weight components. Avg. Ship. Wt. 5 oz.

Engine Type	Prod. No.	Description	Price	Fits	Net Weight Oz.
For Regular Engines—A, B, & C type 0.69" x 2.75"	3150	EH-2050	\$2.00	BT-50	0.1
	3151	EH-2055	\$2.00	BT-55	0.14
	3152	EH-2060	\$2.00	BT-60	0.17
For "T" Mini-Engines .5" x 1.75"	3153	EM-520	\$1.95	BT-20	0.09
Special Purpose Quick-Change Conversion Mount—From "D" Engines to Regular Engines	3154	EM-2050	\$2.05	BT-50	0.19
For "D" type Engines 0.945" x 2.75"	3156	EM-5055/60	\$2.85	BT-55 or BT-60	0.3

ENGINE BLOCKS

Prod. No.	Description	Price 3 for	Outside Dia.	Inside Dia.	Length	Fits	Weight in Oz. Net.	Ship.
3131	EB-20A	\$1.65	.708"	.65"	1/4"	BT-20	.009	1

BALSA ADAPTERS

Switch from one size body tube to another for payload capsules, parachute compartments, etc. Can be hollowed to make a passage for ejection gases. All adapters have at least 1/2" mating surface on each end.

Prod. No.	Description	Price Each	Mates Tubes	Length	Taper Length	Weight in Oz. Net.	Ship.
70002	TA-520	\$1.95	BT-5 to BT-20	1.75"	0.75"	0.04	1
70004	TA-550	\$2.05	BT-5 to BT-50	2.2"	1.0"	0.06	4
70006	TA-2050	\$1.80	BT-20 to BT-50	3.0"	2.0"	0.15	4
70010	TA-2055	\$2.20	BT-20 to BT-55	2.5"	1.5"	0.22	4
70012	TA-2060	\$3.15	BT-20 to BT-60	3.0"	2.0"	0.20	4
70014	TA-5055	\$3.15	BT-50 to BT-55	2.0"	1.0"	0.60	4
70016	TA-5060	\$3.75	BT-50 to BT-60	3.0"	2.0"	0.23	4
70028	TA-5560	\$3.85	BT-55 to BT-60	2.2"	1.0"	0.25	4
70034	TA-6070	\$3.55	BT-60 to BT-70	2.7"	1.5"	0.65	4

STAGE COUPLERS

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

Prod. No.	Description	Price Each	Outside Diameter	Inside Diameter	Length	Fits	Average Weight
30252	JT-5C	\$1.20	0.513"	0.455"	3/4"	BT-5	.020 oz.
30254	JT-20C	\$1.20	0.708"	0.650"	3/4"	BT-20	.027 oz.
30260	JT-50C	\$1.20	0.949"	0.920"	1"	BT-50	.051 oz.
30262	JT-55C	\$1.20	1.28"	1.25"	1.3"	BT-55	.088 oz.
30266	JT-60C	\$1.20	1.59"	1.55"	1-1/2"	BT-60	.124 oz.
30270	JT-70A	\$1.80	2.175"	2.115"	1-1/4"	BT-70	.140 oz.
30274	JT-80C	\$1.80	2.552"	2.502"	1"	BT-80	.102 oz.
30280	JT-101SV	\$1.80	3.888"	3.848"	1-3/8"	BT-101	.184 oz.

NOSE BLOCKS

Use balsa nose blocks in payload sections and anywhere else a solid bulkhead is required.

Prod. No.	Description	Price Each	Outside Diameter	Length	Fits	Weight in Oz. Net.	Ship.
70152	NB-20	\$1.40	0.710"	3/4"	BT-20	.014	1
70158	NB-50	\$1.65	0.950"	1"	BT-50	.040	4



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. Ship Wt. 2 oz.

Prod. No.	Description	Parachute Diameter	Price Each
2262	PK-10	10 inches	\$1.99
2264	PK-12	12 inches	\$1.99
2267	PK-18	18 inches	\$2.49
2271	PK-24	24 inches	\$2.49

TAPE DISCS: Fasten shroud lines to plastic parachutes or streamers with these 3/4" dia. pressure sensitive Tape Discs. In sheets of 6 discs. (4 sheets per pkg.) Ship Wt. 1 oz.
No. 2294 \$1.80

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. Ship. Wt. 1 oz.
1" wide: Net Wt. 0.092 oz.
No. 2341 \$3.10
2" wide: Net Wt. 0.184 oz.
No. 2343 \$3.35

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

LARGE EYE:
1" long: 0.04 oz.
No. 2280 \$1.70

SMALL EYE:
3/4" long: 0.03 oz.
No. 2279 \$1.60

EXTRA SMALL EYE:
5/8" long: 0.01 oz.
No. 2281 \$1.35

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. ea. (4 per pkg.) Ship Wt. 2 oz.
No. 3102 \$1.95

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. (10 per pkg.) Ship Wt. 2 oz.
No. 3100 \$2.30

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" launch rod. Ship Wt. 1 oz.

1 1/4" long (12 per pkg.) 2 3/8" long (10 per pkg.)
No. 2321 \$2.00 No. 2322 \$2.20

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.
No. 85013 \$2.05

62

SHOCK CORD: Specify width when ordering. Ship. Wt. 1 oz. 1/8" wide: Net Wt. 0.039 oz.
No. 2276 \$1.05
1/4" wide: Net Wt. 0.078 oz.
No. 2277 \$1.15

Also 36" long for greater stretch on those larger birds. 1/8" wide: Net Wt. 0.078 oz.
No. 85744 \$1.20

SHROUD LINES: Build reliable, durable, custom parachutes with this strong, hard surface shroud line cord. Comes in 70 yard spools. Ship. Wt. 5 oz.
No. 2340 \$1.80

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 12 strips. (6 sheets per pkg.) Ship. Wt. 1 oz.
No. 38412 \$2.05

SNAP SWIVELS: For quick changes and reduced tangling in your recovery systems, use these tiny 1" long snap swivels. Net Wt. 0.01 oz. (12 per pkg.) Ship Wt. 1 oz.
No. 2292 \$2.30

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.

For Regular and "D" engines.
No. 3140 \$2.30

For Mini-Engines
No. 3142 \$2.00

RA-2050 RINGS: 20 rings for centering and mounting BT-20 in BT-50. (20 per pkg.) Ship Wt. 2 oz.
No. 3110 \$1.80

RA-2055 RINGS: 10 rings for centering and mounting BT-20 in BT-55. (10 per pkg.) Ship Wt. 2 oz.
No. 3111 1.85

RA-2060 RINGS: 10 rings for centering and mounting BT-20 in BT-60. (10 per pkg.) Ship Wt. 2 oz.
No. 3113 \$1.95

MAXI™ ROD LAUNCH LUG: 2" long, fits 3/16" diameter launch rod. (4 per pkg.)
No. 2328 \$1.80

DOWELS: Extra-strong lightweight seasoned maple dowels. (8 per pkg.) Ship Wt. 5 oz.
1/8" x 18" 1/12" x 12"
No. 3190 \$1.65 No. 3191 \$1.65

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Static see-through rocket with 10" recovery parachute, engine mount, and cut-away C6-5 model rocket engine. Ideal for demonstrations, science fairs and exhibits. Length: 12.6" Dia. 0.976" Wt. 1.35 oz. Ship. Wt. 3 oz.

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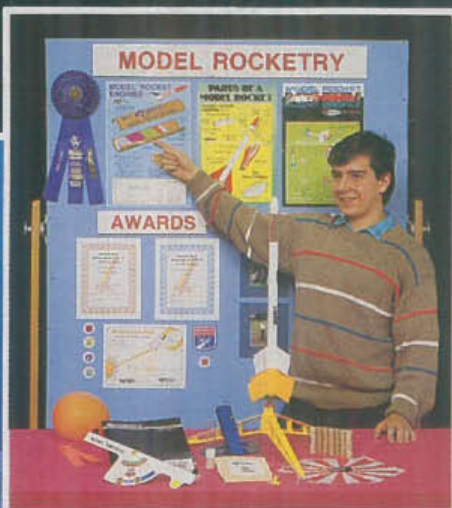
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