

To launch your model rocket electronically from a safe distance, consider the 2240 Pro Series II™ Launch Controller. If you are planning to fly a variety of model rocket types and power levels, it will meet all your launch needs — including the Pro Series II models. It is also capable of accomodating cluster engine launches (see below).



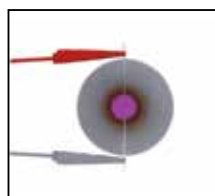
2240 PS II™ Launch Controller

- 2240 Pro Series II Launch Controller
- 30 feet launch cable
- Required set back distance for rocket engines with more than 30 grams propellant
- Audible Continuity
- Easily hear if the starter is connected correctly
- Two hands required for launch
- Even with the Safety Key left in, the rocket will not launch without both buttons pressed
- Requires 6 1.5V "C" size alkaline batteries
- Includes 4 wire leads with micro clips for multi-engine clusters
- Includes JST style plug for alternate battery use (8-10 cell 1000mAh NimH or 3 cell LiPo (11.1V) battery)

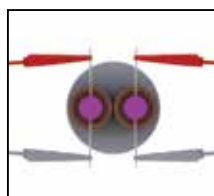
MSRP - \$39.99



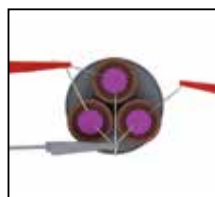
Engine Configuration for a Cluster Launch



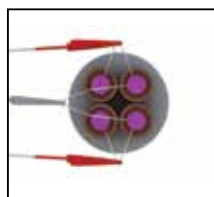
Single Engine Arrangement



Two Engine Cluster Arrangement



Three Engine Cluster Arrangement



Four Engine Cluster Arrangement



9752 Pro Series II™ E2X® Booster

For use with rockets 9706 Ascender™, and 9707 Majestic™
Recommended Engine: F15-0

MSRP - \$9.99



9753 PS II™ 24 mm to 29 mm Engine Adapter Set

MSRP - \$5.99



3172 PS II™ Shock Cord Accessory Pack

3 heavy-duty elastic shock cords; 1/2 in. (13 mm) x 96 in. (243.8 cm)

MSRP - \$10.99



3552 PS II™ Launch Base

- It stands 18 inches off the ground!
- Sturdy enough to launch our biggest Pro Series rockets
- Two-piece 1/4" (6 mm), 5' Launch Rod

MSRP - \$39.99

Paint Your Launch Base the Color of Your Choice!



3556 PS II™ Recovery Wadding

Approximately 216 sheets for larger rockets. Can be used in any Estes® rocket.

MSRP - \$9.99

MODEL ROCKET ENGINE PERFORMANCE CHART

- Delays have a tolerance of plus or minus 10% or one second, whichever is greater.
 - All Estes engines come complete with starters and starter plugs.
- The Estes starter plug makes engine ignition extremely reliable.

Prod. No.	Engine Type	Total Impulse	Time Delay	Est. Max. Lift Wt.	Max Thrust	Thrust Duration	Initial Weight		Propellant Weight	Diameter	Quantity per Pack	Retail Price per Pack			
		N-sec	Sec	oz	g	lbs	Sec	oz	g	mm					
SINGLE STAGE ENGINES															
1502	1/4A3-3T	0.625	3	1.0	28	4.90	1.1	0.25	0.21	5.9	0.05	1.3	13	4	\$10.29
1503	1/2A3-2T	1.25	2	2.0	57	8.30	1.9	0.30	0.23	6.4	0.07	1.9	13	4	\$10.29
1507	A3-4T	2.50	4	2.0	57	6.80	1.5	0.60	0.28	8.0	0.12	3.3	13	4	\$10.29
1511	A10-3T	2.50	3	3.0	85	13.00	2.9	0.80	0.29	8.1	0.12	3.5	13	4	\$10.29
1593	1/2A6-2	1.25	2	2.0	57	8.90	2.0	0.30	0.48	13.6	0.10	2.7	18	3	\$10.29
1598	A8-3	2.50	3	3.0	85	10.70	2.4	0.50	0.55	15.5	0.14	4.1	18	3	\$10.29
1601	B4-2	5.00	2	4.0	113	13.20	3.0	1.10	0.66	18.6	0.27	7.6	18	3	\$10.79
1602	B4-4	5.00	4	3.5	99	13.20	3.0	1.10	0.68	19.2	0.27	7.6	18	3	\$10.79
1605	B6-2	5.00	2	4.5	127	12.10	2.7	0.80	0.61	17.3	0.23	6.5	18	3	\$10.79
1606	B6-4	5.00	4	4.0	113	12.10	2.7	0.80	0.63	17.8	0.23	6.5	18	3	\$10.79
1617	C5-3	10.00	3	8.0	227	20.40	4.6	1.85	0.83	23.6	0.39	11	18	3	\$11.79
1613	C6-3	10.00	3	4.0	113	15.30	3.4	1.60	0.83	23.4	0.43	12.2	18	3	\$11.79
1614	C6-5	10.00	5	4.0	113	15.30	3.4	1.60	0.85	24.0	0.43	12.2	18	3	\$11.79
1522	C11-3	10.00	3	6.0	170	22.10	4.9	0.80	1.13	32.1	0.44	12.4	24	2	\$7.99
1523	C11-5	10.00	5	5.0	142	22.10	4.9	0.80	1.18	33.4	0.44	12.4	24	2	\$7.99
1566	D12-3	20.00	3	14.0	396	32.90	7.4	1.60	1.57	44.5	0.85	24.2	24	2	\$11.99
1567	D12-5	20.00	5	10.0	283	32.90	7.4	1.60	1.61	45.7	0.85	24.2	24	2	\$11.99
1692	E12-4	30.00	4	17.0	482	30.60	6.9	2.70	2.16	61.2	1.3	36.9	24	3	\$23.99
1693	E12-6	29.50	6	14.0	397	29.60	6.7	2.70	2.23	63.2	1.3	36.9	29	3	\$23.99
1651	F15-4	49.61	4	21.0	595	25.26	5.7	3.45	3.59	101.5	2.12	60	29	2	\$26.99
1652	F15-6	49.61	6	17.0	482	25.26	5.7	3.45	3.66	103.7	2.12	60	29	2	\$26.99
1696	E16-4	33.68	4	20.0	566	26.44	5.9	2.09	2.86	81.0	1.41	40	29	2	\$22.99
1697	E16-6	33.68	6	16.0	453	26.44	5.9	2.09	2.92	82.7	1.41	40	29	2	\$22.99

MODEL ROCKET ENGINE PERFORMANCE CHART CONTINUED

Prod. No.	Engine Type	Total Impulse	Time Delay	Est. Max. Lift Wt.	Max Thrust	Thrust Duration	Initial Weight	Propellant Weight	Quantity per Pack	Retail Price per Pack					
UPPER STAGE ENGINES															
1504	1/2A3-4T	1.25	4	1.0	28	8.30	1.9	0.30	0.23	6.6	0.07	1.9	13	4	\$10.29
1599	A8-5	2.50	5	2.0	57	13.30	3.0	0.50	0.55	15.7	0.14	4.1	18	3	\$10.29
1607	B6-6	5.00	6	2.5	71	12.10	2.7	0.80	0.64	18.2	0.23	6.5	18	3	\$10.79
1615	C6-7	10.00	7	2.5	71	15.30	3.4	1.60	0.85	24.3	0.43	12.2	18	3	\$11.79
1524	C11-7	10.00	7	4.0	113	22.10	4.9	0.80	1.19	33.8	0.44	12.4	24	2	\$7.99
1568	D12-7	20.00	7	8.0	226	32.90	7.4	1.60	1.62	46.0	0.85	24.2	24	2	\$11.99
1694	E12-8	29.80	8	12.0	340	31.80	7.1	2.70	2.24	63.5	1.3	36.9	24	3	\$23.99
1653	F15-8	49.61	8	15.0	425	25.26	5.7	3.45	3.69	104.4	2.12	60	29	2	\$26.99
1698	E16-8	33.68	8	14.0	396	26.44	5.9	2.09	2.99	84.7	1.41	40	29	2	\$22.99
BOOSTER STAGE ENGINES															
1510	A10-0T	2.50	NONE	4.0	113	13.00	2.9	0.80	0.24	6.8	0.12	3.5	13	4	\$10.29
1600	A8-0	2.50	NONE	3.0	85	13.30	3.0	0.30	0.47	13.5	0.14	4.1	18	3	\$10.29
1608	B6-0	5.00	NONE	4.0	113	12.10	2.7	0.80	0.55	15.7	0.23	6.5	18	3	\$10.79
1616	C6-0	10.00	NONE	4.0	113	15.30	3.4	1.60	0.76	21.4	0.43	12.2	18	3	\$11.79
1521	C11-0	10.00	NONE	6.0	170	22.10	4.9	0.80	1.03	29.2	0.44	12.4	24	2	\$7.99
1565	D12-0	20.00	NONE	14.0	396	32.90	7.4	1.60	1.43	40.4	0.84	23.8	24	2	\$11.99
1691	E12-0	28.80	NONE	16.0	454	31.30	7.0	2.60	2.05	58.1	1.3	36.9	24	3	\$23.99
1650	F15-0	49.61	NONE	19.0	539	25.26	5.7	3.45	3.32	94.0	2.12	60	29	2	\$26.99
1695	E16-0	33.68	NONE	18.0	509	26.44	5.9	2.09	2.58	73.2	1.41	40	29	2	\$22.99
PLUGGED ENGINES—FOR USE WITH ROCKET-POWERED RACERS & R/C ROCKET GLIDERS															
1505	A10-PT	2.50	NONE	3.0	85	13.00	2.9	0.80	0.26	6.83	0.13	3.5	13	4	\$10.29

The data listed above is from randomly chosen production samples.
NOTE: The "T" designates a mini-engine.

* There are 4 mini-engines per package. All other engines are 2 or 3 per package.

NEW!
FLY HIGH
WITH THE ESTES
SUPER G™
ENGINE



WARNING:
This product can expose you to silica, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

This warning is on all Estes engine packaging.

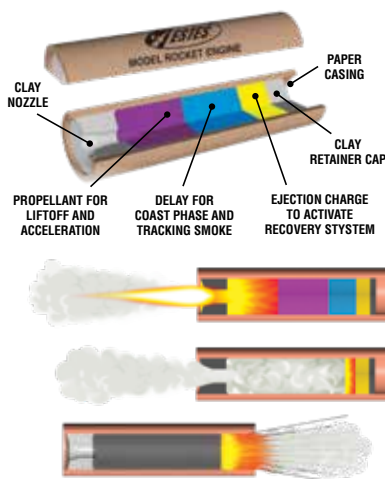
ESTES MODEL ROCKET ENGINES

The famous model rocket engines that made rocketry the great activity it is today! Estes® model rocket engines have been proven consistent and reliable in more than 500 million launches.

- The concept of a factory assembled model rocket engine is the foundation of this scientific and educational activity!
- 3% of all Estes® engines are static-tested at the factory for reliability and adherence to performance specifications.
- All engines comply with the code requirements of the National Fire Protection Association and are certified by the National Association of Rocketry.

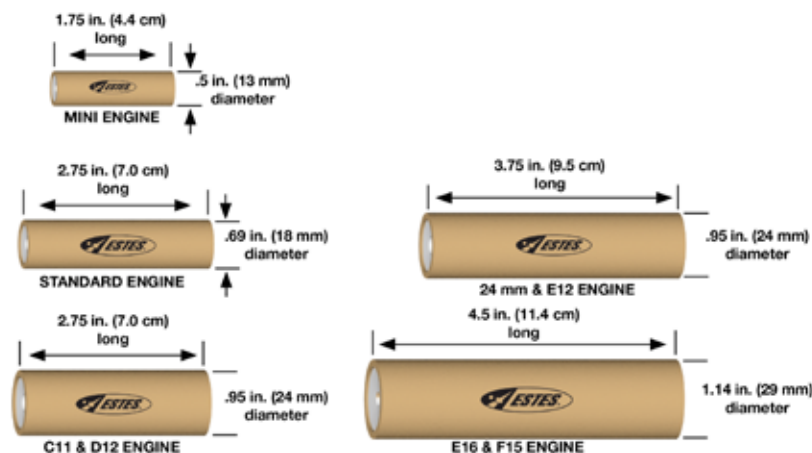
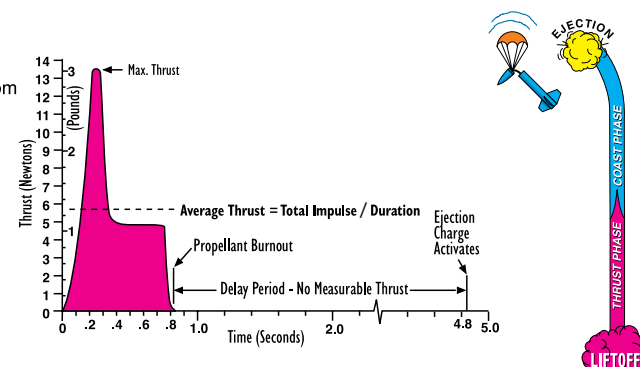
HOW DOES A MODEL ROCKET ENGINE WORK?

- When engine is ignited, it produces thrust and boosts the rocket into the sky
- After propellant is used up, delay is activated, producing tracking smoke allowing rocket to coast.
- After delay, ejection charge is activated, deploying recovery system.



ENGINE TIME/THRUST CURVES

- Time/thrust curves are representative of random production samples
- Graphs are not drawn to the same scale



Each engine type is color coded.

Single Stage - Green

Upper Stage - Purple (Upper stage engines can be used as single stage engines in lightweight rockets.)

Booster - Red (Booster engines contain no delay or ejection charge.)

Plugged - Blue (Plugged engines are used for R/C gliders and contain no delay or ejection charge.)



B = TOTAL IMPULSE

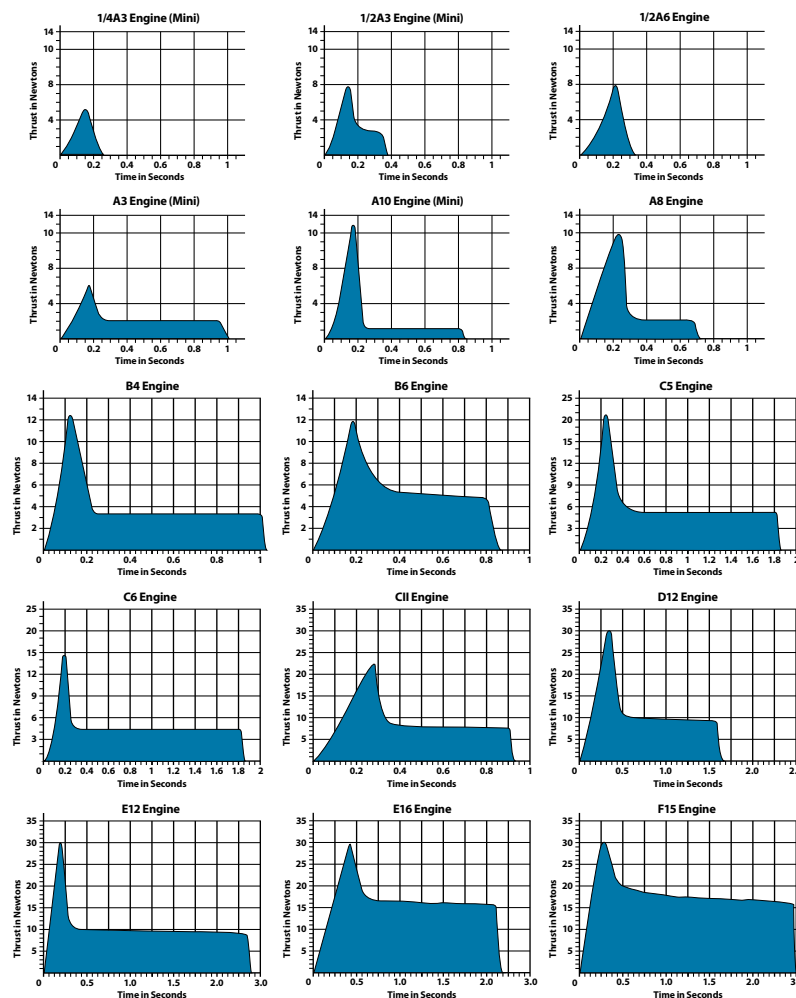
This letter is the total power (in Newton-seconds) produced by the engine. Each succeeding letter has up to twice the total power as the previous letter. (Example: "B" engines have up to twice the power of "A" engines, which results in approximately twice the altitude the rocket will reach.)

6 = AVERAGE THRUST

This number shows the engine's average push or how fast the engine powers the rocket to go. The higher the number, the faster the speed. It is measured in Newtons (4.45 Newtons = 1 lb.).

4 = TIME DELAY

This number gives you the time delay in seconds between the end of the thrust phase and ignition of the ejection charge. Engine types ending in "0" have no time delay or ejection and are used for booster stages and special purposes only. Engines ending in "P" have no time delay or ejection charge and the forward end is plugged.



Take Your Rocketry Hobby to the Next Level With Estes®

Building Supplies

The key to any successful rocket launch, whether it's a full-size rocket or a flying model rocket, is the accuracy with which the rocket is assembled. To accomplish this task, full-size rocket companies utilize many assembly jigs and fixtures to ensure accurate alignment of critical components. Here at Estes®, we do our best to provide our rocketeer customers with useful jigs, fixtures, and templates for accurate alignment and assembly of our model rocket kits. In addition, we have a variety of useful tools and accessories that can make your model rocket building experience truly enjoyable. And equally important, the accuracy these tools provide will assure that your rocket performs at its ultimate potential.

The Estes® model rocket starter is the basic ignition device used to start the combustion process in the rocket engine. Starters are placed inside of all Estes® model rocket engines.

2302 Estes®

Model Rocket Starters

Easy-to-use Estes® starters in a convenient six pack. It's always good to have spares.

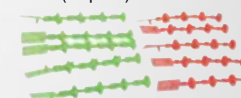
MSRP - \$5.49

Estes® starter plugs are used to safely secure your model rocket starters to your Estes® engines during ignition. Different colored starter plugs are designed to accommodate different sized engines. They are a convenient way to ensure the success of your rocket launches; they are reusable.

2250 Estes® Plugs for Mini Engines -

1/4A3, 1/2A3, A3, and A10 (20 pack)

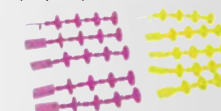
MSRP - \$5.99



2251 Estes® Plugs for Standard Engines -

1/2A6, A8, B4, B6, and C6 (20 pack)

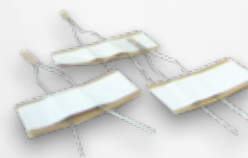
MSRP - \$5.99



2252 Estes® Plugs for Large Engines - C11,

D12, E9, E12, E16 and F15 (20 pack)

MSRP - \$5.99



Shock cords hold the parts of a model rocket together once they separate during the ejection phase. The shock cord is made of an elastic material to help absorb the shock placed upon the rocket when the parachute ejects, then opens — creating drag during the recovery phase. Shock cord mounts fasten the shock cord to the inside of the rocket's body tube.

2278 Shock Cords & Mounts Pack

Includes three 1/8 in. x 36 in. (3 mm x 914 mm) and one 1/4 in. x 36 in. (6 mm x 914 mm) rubber shock cords (enough for four shock cords). Includes shock cord mounts and instructions.

MSRP - \$5.99

Model rocket recovery wadding is placed inside the rocket to protect the parachute from intense heat during the rocket's ejection stage. All Estes® recovery wadding is flame resistant, ensuring the safety of your rocket flights. Crumple sheets lightly, insert wadding into rocket making sure it touches the body tube walls and then insert the recovery system!

2274 Estes® Recovery Wadding

Flame-resistant wadding protects recovery system. Required in most Estes rockets. Contains approximately 72 squares — enough for about 18-25 flights!

MSRP - \$5.49

Recovery Parachutes (plastic)

2268 9 in. (22.9 cm)
MSRP - \$3.49

2262 6 in. (15.2 cm)
MSRP - \$2.99

2264 12 in. (30.5 cm)
MSRP - \$3.99

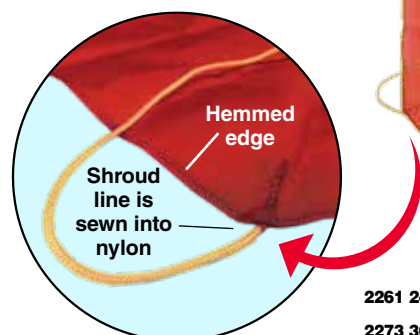
2265 15 in. (38.1 cm)
MSRP - \$4.49

2267 18 in. (45.7 cm)
MSRP - \$4.99

2271 24 in. (61 cm)
MSRP - \$5.49

All Parachutes are Fully-Assembled

Sturdy sewn fabric chutes for your biggest, heaviest rockets.



2261 24 in. (61 cm) Nylon Parachute MSRP - \$12.99

2273 30 in. (76.2 cm) Nylon Parachute MSRP - \$16.99

Launch equipment is what you'll need to safely and successfully launch your rocket time after time. The essentials are: launch base, launch rod, blast plate and launch controller. Different sized launch bases and launch rods are used to accommodate different sized rockets.

With the 2230 E Launch Controller, you will need longer cable when igniting E and F engines. Longer cable will accommodate any size of Estes® engines.

2222 Porta-Pad® II and Electron Beam® Launch Controller

Quick assembly - no glue or tools required! Launch rod angle is adjustable. Comes complete with blast deflector, standoff, two-piece 1/8 in. (3 mm) launch rod and safety cap. Can accommodate a 3/16 in. (5 mm) Maxi™ launch rod - not included. Launch controller comes assembled with safety key and 15 ft. (4.6 m) of cable. Requires 4 new 1.5V AA alkaline batteries - not included.

MSRP - \$29.99

Sold Separately
2215 Porta-Pad® II Launch Pad
MSRP - \$21.99

Sold Separately
2220 Electron Beam® Launch Controller
MSRP - \$24.99

2230 E Launch Controller

Comes assembled with safety key and 30 ft. (9.7 m) of cable. Requires 4 new 1.5V AA alkaline batteries - not included.

MSRP - \$32.99

2243 Estes® 1/8 in. (3 mm) Two-Piece Launch Rod

Replacement rod ideal for most rockets.

MSRP - \$6.99

2244 Estes® 3/16 in. (5 mm) Two-Piece Maxi™ Launch Rod

Launch rod with extra strength and length for larger rockets.

MSRP - \$11.99



38206 1/4 in. (6 mm) Two-Piece Launch Rod

Screws together. For use with the 2238 Porta-Pad® E Launch Pad and PS II™ Launch Pad.

MSRP - \$16.99

2238 Porta-Pad® E Launch Pad

Quick assembly - no glue or tools required. Launch rod angle is adjustable. Includes a three-piece 1/4 in. (6 mm) launch rod, but can accommodate a 3/16 in. (5 mm) Maxi™ launch rod - not included.

MSRP - \$30.99

2241 Blast Deflector Plate

Replaces that worn-out deflector. For use with 2215 Porta-Pad® II

MSRP - \$5.99



Now you can make exact, easy measurements when attending to your fleet of Estes® model rockets. Tube marking guides and fin alignment tools help make your hobby rocket endeavors fast, efficient and fun! These are must-have items for the advanced model rocket enthusiast.

**A Set of
3 Different
Building
Tools!**

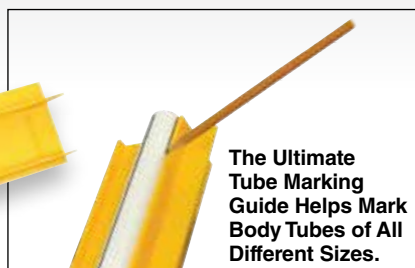
2227 Tube Marking Guide

The tube marking guide is an easy way to mark your fin and launch lug placement. The marking guide is a must for any rocket builder!

MSRP - \$12.99



The Tube Marking Guide Allows for Accurate and Consistent Fin Placement When Building Your Rocket.



The Ultimate Tube Marking Guide Helps Mark Body Tubes of All Different Sizes.

2228 Ultimate™ Tube Marking Guide

Accurately mark your body tubes for a variety of rocket-assembly purposes.

MSRP - \$11.99



2315 Tube Cutting Guides

Assorted sizes: BT-5, BT-20, BT-50, BT-55, and BT-60 (hobby knife not included).

MSRP - \$11.99

2231 Fin Alignment Guide

Fast and accurate fin alignment for three- or four-finned rockets.

MSRP - \$21.99



Never Misalign Your Rocket Fins Again!

Model rockets are constructed using various essential parts. Nose cones streamline a rocket's ascent. Nose cone weights help stabilize a rocket's trajectory. Payloads allow the rocketeer to view their cargo.

With Estes model rocket parts, you can build, launch, repair and create using any of the items listed here!



3180 Clay Nose Cone Weights

MSRP - \$5.99



3175 BT-5 through BT-55 Centering Ring Assortment

MSRP - \$5.99

NOSE CONE ASSORTMENTS
Each package of nose cones may contain a variety of shapes. Some are one piece, others two piece. All have eyelets for shock cord and shroud line attachments.



3160 NC-5 Nose Cone Assortment (5 pack) **MSRP - \$5.49**

3161 NC-20 Nose Cone Assortment (4 pack) **MSRP - \$5.49**

3162 NC-50 Nose Cone Assortment (5 pack) **MSRP - \$8.99**

3163 NC-55 Nose Cone Assortment (4 pack) **MSRP - \$7.99**

3164 NC-56 Nose Cone Assortment (4 pack) **MSRP - \$7.99**

3165 NC-60A Nose Cone Assortment (3 pack) **MSRP - \$8.99**

3168 NC-80B Nose Cone (1 Pack) **MSRP - \$4.49**

3173 Sci-Fi Nose Cone Assortment (5 pack) **MSRP - \$16.99**



3171 Clear Payload Assortment

MSRP - \$17.99

Estes® BODY TUBE PACKS

High quality spiral wound paper tubes. Use tube couplers to connect tubes of the same diameter. Outer diameters listed. (not all body tube sizes shown)

3084 • BT-5 • 0.54 in./14 mm diameter • 18 in./45.7 cm long (4 pack)
MSRP - \$7.49

3085 • BT-20 • 0.74 in./19 mm diameter • 18 in./45.7 cm long (4 pack)
MSRP - \$8.49

3086 • BT-50 • 0.98 in./25 mm diameter • 18 in./45.7 cm long (3 pack)
MSRP - \$8.49

3087 • BT-55 • 1.33 in./34 mm diameter • 18 in./45.7 cm long (3 pack)
MSRP - \$8.99

3089 • BT-60 • 1.64 in./42 mm diameter • 18 in./45.7 cm long (3 pack)
MSRP - \$9.49

3090 • BT-80 • 2.60 in./66 mm diameter • 14.2 in./36 cm long (2 pack)
MSRP - \$8.99





3176 Estes® Tube Couplers
for BT-5, BT-20, BT-50 (2 each)
MSRP - \$3.99



3177 Estes® Tube Couplers
for BT-55, BT-60 (2 each)
MSRP - \$5.49

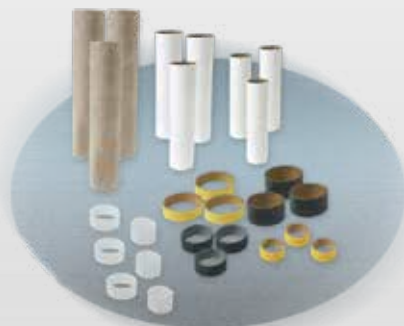


3178 Estes® Tube Couplers
for BT-80 (2 each)
MSRP - \$4.99



3196 Estes® Tube Coupler Assortment Pack
Includes two couplers for BT-55, BT-56 and BT-60; One for BT-80.
MSRP - \$6.99

3179 2x Sets Laser Cut Centering Rings and 2x Sets Shroud Templates
MSRP - \$8.49



3181 Engine Mount Parts Assortment
Engine mounts for mini-engines, standard engines, and D engines. (3 each)
MSRP - \$8.49



3158 Standard Engine Mount Kit
Fits BT-50, BT-55 and BT-60 tubes. Can also be used to make a conversion mount for lightweight D powered rockets.
MSRP - \$7.49



3159 D and E12 Engine Mount Kit
Heavy duty engine mounts for D and E12 engines. Fits BT-55, BT-60 and BT-80 tubes.
MSRP - \$10.99

3143 Engine Hook Accessory Pack
Hooks fit mini engines (two), regular and D engines (three) and E12 engines (two).
MSRP - \$5.49



9750 Pro Series II™ Engine Retainer Set 29mm (2 sets)
MSRP - \$8.99



9751 Engine Retainer Set 24mm (2 sets)
MSRP - \$7.99



3187 Engine Retainer Set 18mm (3 sets)
MSRP - \$6.99



2316 Mini to Standard Engine Adapters
Two simple steps transform a mini-engine into a standard size. Insert a mini-engine into the adapter, and insert the adapter into a rocket. 3 adapters per pack. Reusable. (Engines not included).
MSRP - \$5.99



2317 Standard to D Engine Adapters
Two simple steps transform a standard engine into a D size. Insert a standard engine into the adapter, and insert the adapter into a rocket. 3 adapters per pack. Reusable. (Engines not included).
MSRP - \$5.99



2320 Launch Lug Pack
Contains 4 each: 1/8 in. x 2 3/8 in. (3 mm x 60 mm), 1/8 in. x 1 1/4 in. (3 mm x 32 mm), 3/16 in. x 2 in. (5 x 51 mm) and 1/4 in. x 1 in. (6 mm x 25 mm) launch lugs.
MSRP - \$5.99



3170 Waterslide Decal Set
MSRP - \$12.99

The Estes® Model Rocket Cradle holds rockets in a horizontal fashion.



Proudly Display Your Rockets!

In the world of hobby rocketry, models become more than mere ships — they become works of art that must be treated as such! Proudly display the rocket that you meticulously constructed, adorned and flew using your bare hands and brawny brain!

The rocket display cradle holds your rocket in a horizontal fashion while the display stands hold your rockets upright for the whole world to see!

2293 Estes® Model Rocket Cradle

Multiple ways to use:
Assembly, display or transportation to the field.

MSRP - \$8.49

2290 Estes® Model Rocket Display Stand

For 13 mm engines. (3 pack)

MSRP - \$7.49

2292 Estes® Model Rocket Display Stand

For 24 mm engines. (3 pack)

MSRP - \$7.49

2291 Estes® Model Rocket Display Stand

For 18 mm engines. (3 pack)

MSRP - \$7.49

Estes® Rocket Display Stands come in various sizes and hold different sized rockets upright.

Challenge Your Imagination!



Contains 100+ parts. Design and build the rockets of your dreams!

Experiment with your own designs. Includes enough parts to build at least 8 complete rockets. Just add imagination.

1980 Designer's Special™
MSRP - \$86.99

Designs shown are for inspiration only and may include other imaginative parts not included in your Designer's Special.



How High Did It Fly?

Altitrak™: Part of the fun in launching a model rocket is knowing how high it goes. The Estes® AltiTrak is a favorite, easy-to-use rocketry tool that provides fairly accurate measurements of flight altitudes.

The process uses good old reliable trigonometry, and it requires creating an invisible right triangle. A right triangle is any triangle that has a 90-degree angle (also called a right angle). The three points of this invisible triangle are the launch pad, the person who tracks the rocket's altitude with the AltiTrak, and the point in the sky where the rocket reaches peak altitude (apogee).

The AltiTrak works like a protractor, providing the angle between the base line and the triangle's hypotenuse (a big math word for the straight line between the person using the AltiTrak and the rocket when it's at peak altitude). If you measure the base line as given in the instructions (500 feet), the AltiTrak also provides your rocket's altitude. The AltiTrak is great for students' science experiments and for teachers' math lessons!

RIGHT
90°
ANGLE

2232 Altitrak™

Measure altitude with this easy to use device. Follow the rocket in the sights to apogee, and release the trigger to lock the reading.

MSRP - \$21.99

Altimeter: Another method for measuring the altitude without the need for a helper is by using an electronic altimeter. These onboard electronic devices can attach to the nose cone or be inserted into a payload bay. Altimeters incorporate a highly sensitive barometric sensor and an electronic triggering logic that provides maximum altitude at apogee. The Estes® 2246 Electronic Altimeter provides a direct LCD readout and can record heights in one-foot increments up to 10,000 feet (+/- 3 feet) and can store up to 10 launches in the unit's memory. The Estes® Altimeter weighs about ½ oz. and is slightly over 5/8 in. in diameter.



2246 Estes® Altimeter

Record up to 10 flights. LCD display, battery included.

MSRP - \$39.99

The
Hand-Held
Altitrak™
Quickly Tells
How High
Your Rocket
Flies!

HYPOTENUSE

Track
Your
Rocket's
Altitude!



The
Altitrak™
Measures
This Angle.

BASELINE



Altimeter

The Altimeter hooks onto the nose cone of your rocket and is inserted into the body tube right above the parachute. As your rocket climbs in altitude, the Altimeter digitally calculates the maximum height attained.

HEIGHT
1,200'
1,100'
1,000'
900'
800'
700'
600'
500'
400'
300'
200'
100'
0'



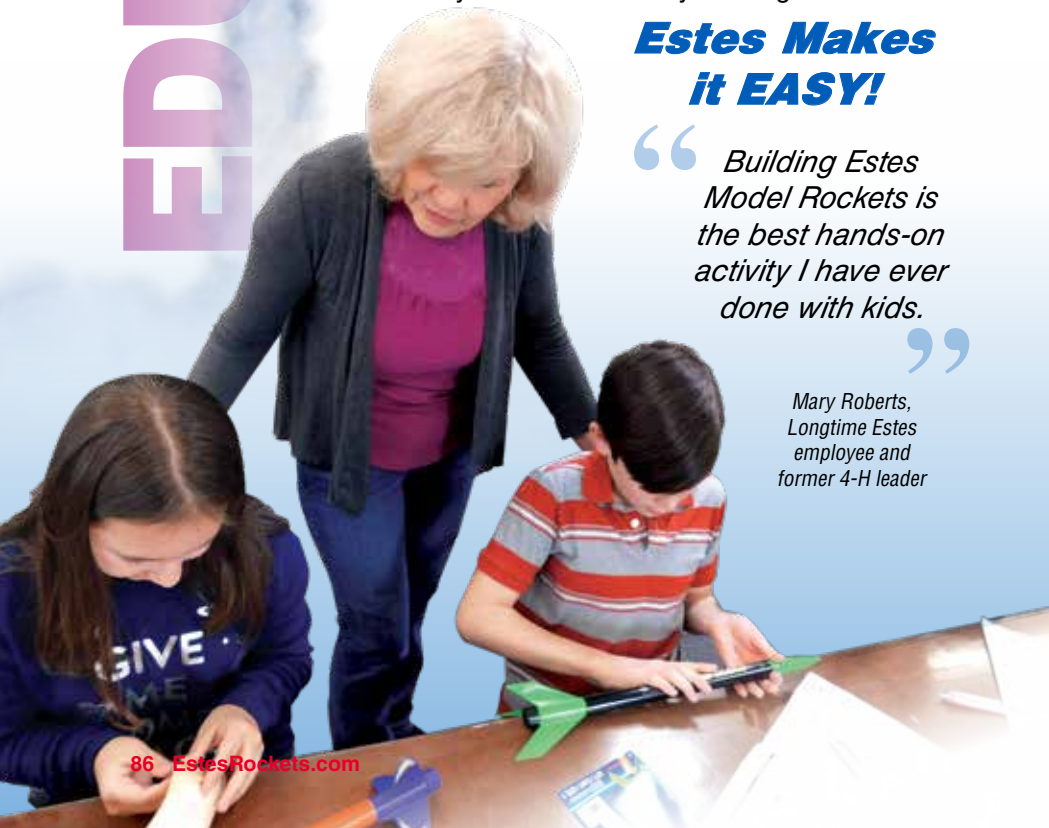
EXPLORE IT, ENGINEER IT, LAUNCH IT!

Inspiring students, young and old – that's the focus of Estes Education! Log onto: EstesRockets.com/education to find everything you need for your classroom or youth organization.

Estes Makes it EASY!

“Building Estes Model Rockets is the best hands-on activity I have ever done with kids.”

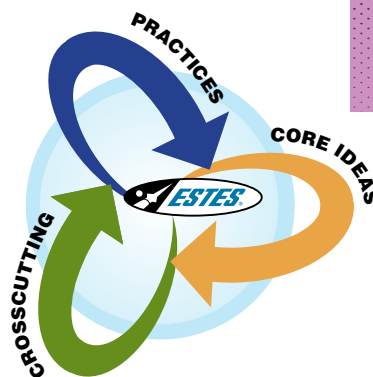
Mary Roberts,
Longtime Estes
employee and
former 4-H leader



TEACHING WITH ESTES® ROCKETRY IS REAL-WORLD STEM

Estes Curriculum & Lesson Plans Include:

- NGSS standards
- 3-D Practices, Core Ideas, Crosscutting
 - **Engage:** Interact with STEM curriculum with proven methods.
 - **Explore:** Use authentic materials to engineer and experience the model rocket phenomenon with crosscutting adventures.
 - **Explain:** Students gather data and summarize experiences by interpreting results and communicating possible improvements, successes and challenges.
 - **Elaborate:** Take the students' understanding to the next level, digging deeper, reaching higher, applying concepts in self-directed learning.
 - **Evaluate:** Students evaluate their engineering design process and scientific explorations relating to real-world applications.



FREE ONLINE RESOURCES

At: EstesRockets.com/education you can find useful information about:

■ Classroom Activities

- Close reading
- Close reading
- Games

■ Model Rocket Basics for:

- Youth Groups
- Homeschooling
- Enrichment

■ How to Choose a Launch Site

■ Videos, Animation, and More!



SPECIAL BULK PACKS FOR EDUCATORS

Estes® offers 12-piece rocket bulk packs especially for educators and youth group leaders. (rocket engines, recovery wadding, starters and engine plugs are sold separately.)



HOW TO CHOOSE THE RIGHT ROCKET FOR YOUR GROUP

Consider these four things when making your plan:

Age

Younger kids (Grades 5-8) need simpler to assemble rockets. They're not quite ready for the challenge of gluing on individual fins yet, so choose one of our kits with a one-piece plastic fin unit and fewer assembly steps. Older kids do a better job of reading, understanding and following assembly instructions. They will have the eye-hand skills to glue wood fins to the body tube.

Staff

Conducting a build session with 30 kids yourself is a challenge. We recommend you get helpers for both your build session and on your launch. Short on adult volunteers? Recruit kids from higher grade levels.

Time

Do you have a single session to both build and fly the rocket? Consider the amount of time needed for glue to dry and how much time it will take to prep the rockets before launch.

Flying Field Size

Recovery method (parachute or streamer), engine size (A, B, C) and wind all play a role in what rocket is best suited for the size field you may have. You can't make your field bigger, but you can choose the right size rocket to fly on it!

Parachutes drift farther and come down slower, so you'll need a bigger field.

Streamers have very little drift and mostly come down within a small radius of your launch pad.

Rocket engines double in power with each succeeding engine letter. For example: B engines effectively fly your rocket twice as high as A engines.

Educator

Bulk Packs!

These are Our Easiest-to-Build Rockets!



Streamer Recovery

GNOME™ Bulk Pack

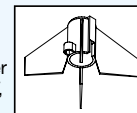
MSRP – \$69.99

1749 Gnome™

Length: 10.3 in. (26.2 cm)

Recovery: 12 in. (30.5 cm) Streamer

Recommended Engines: 1/4A3-3T, 1/2A3-2T, 1/2A3-4T, A3-4T, A10-3T



One-piece molded fin unit.



INCLUDES
12
ROCKETS!



Parachute Recovery

ALPHA III® Bulk Pack

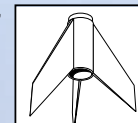
MSRP – \$129.99

1751 Alpha III®

Length: 12.1 in. (30.7 cm)

Recovery: 12 in. (30.5 cm) Parachute

Recommended Engines: 1/2A6-2, A8-3, A8-5, B4-4, B6-4, B6-6, C6-5, C6-7



One-piece molded fin unit.



INCLUDES
12
ROCKETS!



Parachute Recovery

GENERIC E2X® Bulk Pack

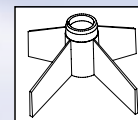
MSRP – \$114.99

1764 Generic E2X®

Length: 13.5 in. (34.3 cm)

Recovery: 12 in. (30.5 cm) Parachute

Recommended Engines: 1/2A6-2, A8-3, A8-5, B4-4, B6-4, B6-6, C6-5, C6-7



One-piece molded fin unit.



INCLUDES
12
ROCKETS!



Parachute or
Streamer Recovery

AVG Bulk Pack

MSRP – \$89.99

1753 AVG

Recovery: Streamer or Parachute
Recommended Engines: 1/2A6-2,
A8-3, A8-5, B4-4, B6-4, B6-6,
C6-5, C6-7



INCLUDES
12
ROCKETS!

Assorted bulk pack includes
3 styles of rockets!



4 Alphas 4 Vikings 4 Generic E2X

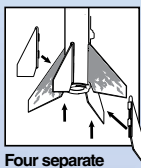


Firestreak SST™ Bulk Pack

MSRP – \$104.99

1794 Firestreak SST™

Quick Snap – No gluing!
Length: 10.2 in. (25.9 cm)
Recovery: 12 in. (30.5 cm)
Streamer
Recommended Engines:
1/2A3-2T, 1/2A3-4T,
A3-4T, A10-3T



Four separate
molded fins that
snap into body tube.



INCLUDES
12
ROCKETS!



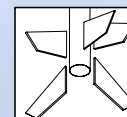
Streamer
Recovery

Viking™ Bulk Pack

MSRP – \$84.99

1755 Viking™

Length: 12.1 in. (30.7 cm)
Recovery: 18 in. (45.7 cm)
Streamer
Recommended Engines:
1/2A6-2, A8-3, A8-5, B4-4,
B6-4, B6-6, C6-5, C6-7
w/Engine Adapter
(sold separately) - A10-3T



Cardstock fins
that glue onto
body tube in
48 possible
configurations.



INCLUDES
12
ROCKETS!



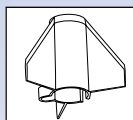
Streamer
Recovery

UP Aerospace™ SpaceLoft™ Bulk Pack

MSRP – \$69.99

1793 UP Aerospace™

SpaceLoft™
Length: 11 in. (27.9 cm)
Recovery: 12 in. (30.5 cm)
Streamer
Recommended Engines:
1/4A3-3T, 1/2A3-2T,
1/2A3-4T, A3-4T, A10-3T



One-piece
molded fin unit.



INCLUDES
12
ROCKETS!



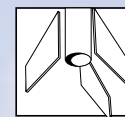
Parachute
Recovery

Alpha® Bulk Pack

MSRP – \$129.99

1756 Alpha®

Length: 12.3 in. (31.2 cm)
Recovery:
12 in. (30.5 cm) Parachute
Recommended Engines:
A8-3 for first launch;
1/2A6-2, A8-5, B4-4,
B6-4, B6-6, C6-5, C6-7



Three balsa fins
that glue onto
body tube.



INCLUDES
12
ROCKETS!

These rockets are more challenging to build!

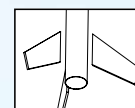
They can be built in two hours or less. Fins must be glued to the body tube and this requires dry time before launch. Painting and finishing will take more time.

Wizard™ Bulk Pack

MSRP – \$79.99

1754 Wizard™

Length: 12 in. (30.5 cm)
Recovery: 18 in. (45.7 cm)
Streamer
Recommended Engines:
1/2A6-2, A8-3, A8-5, B4-4,
B6-4, B6-6, C6-5, C6-7
w/Engine Adapter
(sold separately) - A10-3T



Three balsa fins that
glue onto body tube.



INCLUDES
12
ROCKETS!



Green Eggs™ Bulk Pack

MSRP - \$199.99

NEW!



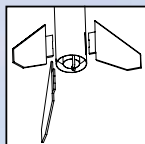
1718 Green Eggs™

An egg lofting rocket designed for the unique needs of teachers and youth group leaders. Features laser cut balsa fins with tabs that fit into pre-cut slots in the body tube. This makes it easier for your students to get their fins aligned correctly AND it greatly increases the fin/body tube glue joint so the fins don't break off easily upon the hard landing with an egg. Uses our "mighty" C11 rocket engines to safely lift the extra weight of an egg and keep it well within an average school yard for safe recovery.

Length: 23.6 in. (59.9 cm)
Recovery: 18 in. (45.7 cm) Parachute
Recommended Engines:
w/egg: C11-3, D12-3
w/out egg: C11-5, D12-5



INCLUDES
12
ROCKETS!



Three balsa fins
that glue onto
body tube.

I'm Bug Rogers!
With the Loadstar II Bulk
Pack you can command me and
my insectronaut friends on
countless off-world
adventures!



**The Loadstar II™ Comes
With A Clear Payload and
Engine Booster which
Can Achieve Spectacular
Heights!**

Loadstar II™ Bulk Pack

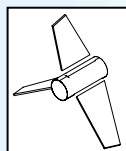
MSRP - \$169.99

1760 Loadstar II™

Length: 23.3 in. (59.2 cm)
Recovery: 18 in. (45.7 cm) Parachute
Recommended Engines:
Rocket Only: B4-4, B6-4, C6-5
Two Stages:
Rocket: A8-5, B6-4, B6-6, C6-7
Booster: B6-0, C6-0



INCLUDES
12
ROCKETS!



Three balsa fins
(six including
booster) that glue
onto body tube.

MODEL ROCKET ENGINE BULK PACKS

Every launch requires engines, recovery wadding, starters and plugs. These convenient engine bulk packs include enough of each for 24 launches. Choose from a variety of engine sizes. We advise using the smallest recommended engine for first launches.

- 1781** A8-3 Engines (24); 30 starters; 24 plugs; 72 sheets wadding **MSRP - \$71.99**
- 1783** B6-4 Engines (24); 30 starters; 24 plugs; 72 sheets wadding..... **MSRP - \$72.99**
- 1784** B6-0 & B6-6 Engines (12 each); 30 starters; 24 plugs; 72 sheets wadding.. **MSRP - \$80.59**
- 1788** 1/2A3-4T Engines (24); 30 starters; 24 plus wadding **MSRP - \$57.79**
- 1789** C6-5 Engines (24); 30 starters; 24 plugs; 72 sheets wadding..... **MSRP - \$84.99**
- 1672** Blast-Off® Flight Pack A8-3, B6-4, C6-3, C6-5 engines (6 each); 30 starters; 28 plugs; 72 sheets wadding **MSRP - \$69.99**



Get more
Blast-Off® for
Your Bulk Pack
Pricing!



1672 Blast-Off® Flight Pack

A8-3, B6-4, C6-3, C6-5 engines (6 each); 30 starters; 28 plugs; 72 squares of wadding

THE LIFETIME LAUNCH SYSTEM IS DESIGNED FOR TEACHERS

(Includes Controller & Launch Pad)



Pro Series II Launch Controller

Pro Series II™ Launch Controller

- **30 ft. (9.1 m) launch cable**
 - Students get a better launch view.
- **Audible Continuity**
 - Students can easily hear if the starter is connected correctly.
- **Two hands required for launch**
 - Even with the safety key left in, the rocket will not launch without both buttons pressed.
- **Requires 6 "C" size alkaline batteries**

Lifetime Launch System

- **It stands 18 inches off the ground!**
 - Students can easily see the starter wires and make a good connection.
- **Tiltable**
 - Students can make last-minute adjustments to the launch angle.
- **2 Two-piece Launch Rods 1/8 in. (3 mm) and 3/16 in. (5 mm)**
 - The rod stores inside a pad leg.

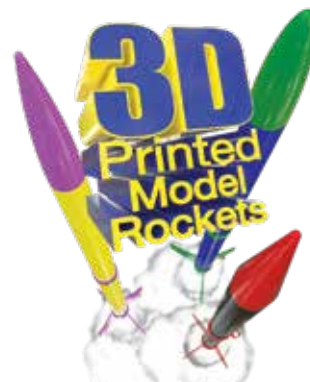
Designed to withstand the rigors of multiple use, the launch pad and launch controller are the best Estes® has ever made!

Paint Your Launch Base the Color of Your Choice!

* The Lifetime Launch System comes with a lifetime limited warranty available to read at estesrockets.com/lifetime-launch-system-warranty.

**2310
Estes® Lifetime
Launch System
MSRP - \$79.99**

BRING NEXT GENERATION SCIENCE INTO YOUR CLASSROOM

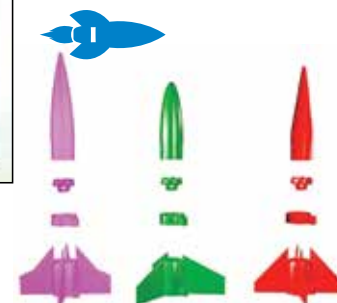


That's right, 3D printed model rockets. Buy the Orbis™ bulk pack and download the .stl files from the Estes® website to print your 3D plastic parts. Then you are ready to build your rocket! Our parts that you purchase + your parts that you grow = a great learning experience and lots of fun! Nine different designs and simple straightforward assembly! Build 12 rockets!



Students actively engage in scientific and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields.

1706 Orbis 3D Bulk Pack
Length: 10 - 12 in. (25.4 - 30.5 cm)
Recovery: 9 in. (22.9 cm) Parachute
Projected Altitude: 400 ft. (122 m)
Recommended Engines: A8-3, B4-4, B6-4, C6-5
MSRP - \$59.99



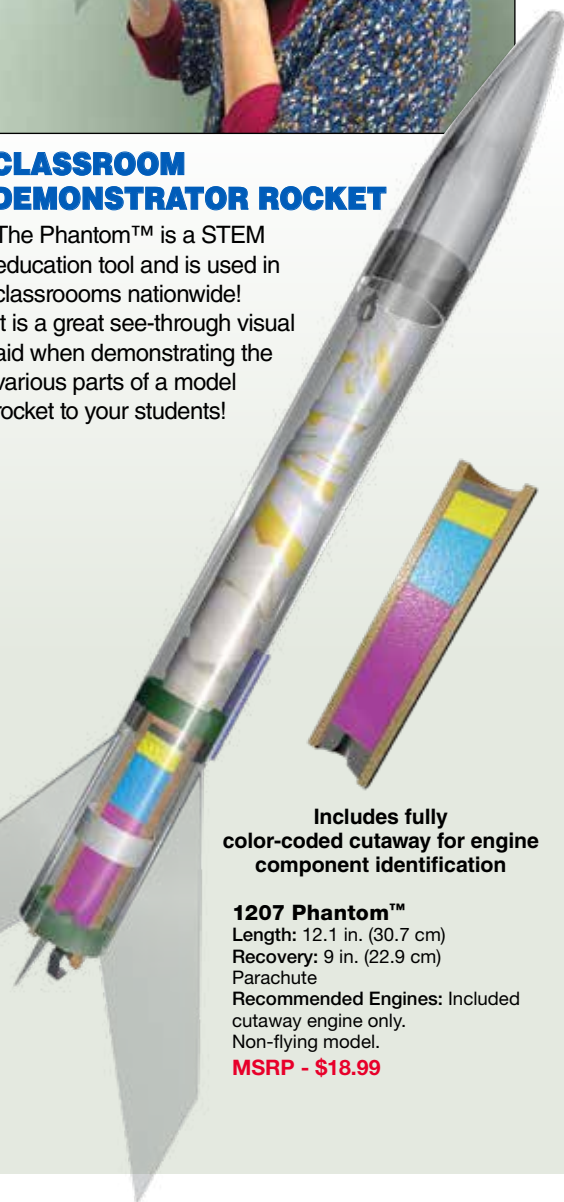
Students 3D print These Parts!

PHANTOM



CLASSROOM DEMONSTRATOR ROCKET

The Phantom™ is a STEM education tool and is used in classrooms nationwide! It is a great see-through visual aid when demonstrating the various parts of a model rocket to your students!



Includes fully color-coded cutaway for engine component identification

1207 Phantom™

Length: 12.1 in. (30.7 cm)

Recovery: 9 in. (22.9 cm)

Parachute

Recommended Engines: Included cutaway engine only. Non-flying model.

MSRP - \$18.99



Official Rockets and Engine Supplier for Space Camp!

SPACE CAMP • AVIATION CHALLENGE • SPACE CAMP ROBOTICS • U.S. CYBER CAMP

SPACE CAMP

Which student today will pioneer deep space exploration tomorrow?

Begin training today! Space Camp programs are available for individuals and groups. Visit spacecamp.com to learn more.

f t y i SpaceCampUSA

Equipped with his five senses, man explores the universe around him and calls the adventure Science.
- Edwin Powell Hubble

5302 Rocket Science Starter Set

Discover the fun of science! Build the rocket, launch with one of the three included engines, and observe as a reaction occurs to make the rocket soar! Launch again with a different size engine and measure the difference in altitude.



**Perfect
for
Science
Fairs!**

5302 ROCKET SCIENCE STARTER SET INCLUDES:

- 1 Rocket
- 1 Porta-Pad® II Launch Pad
- 1 Electron Beam® Launch Controller
- 1 12 in. (30.5 cm) Parachute
- 1 Shock Cord
- 1 each A8-3, B6-4, C6-5 Model Rocket Engine
- 4 Starters
- 8 Plugs
- 12 Sheets of Recovery Wadding
- 1 Altitude Tracker

Length: 12.8 in. (32.5 cm)
Recovery: 12 in. (30.5 cm) Parachute
Projected Altitude: 1100 ft. (335 m)
Recommended Engines: 1/2A6-2, A8-3,
B4-4, B6-4, B6-6, C6-5, C6-7

MSRP - \$34.99



National Association of Rocketry
MODEL ROCKET SAFETY CODE
 (Basic Version, Eff. August 2012)



1. Materials. I will use only lightweight, non-metal parts for the nose, body, and fins of my rocket.

2. Motors. I will use only certified, commercially-made model rocket motors, and will not tamper with these motors or use them for any purposes except those recommended by the manufacturer.

3. Ignition System. I will launch my rockets with an electrical launch system and electrical motor igniters. My launch system will have a safety interlock in series with the launch switch, and will use a launch switch that returns to the "off" position when released.

4. Misfires. If my rocket does not launch when I press the button of my electrical launch system, I will remove the launcher's safety interlock or disconnect its battery, and will wait 60 seconds after the last launch attempt before allowing anyone to approach the rocket.

5. Launch Safety. I will use a countdown before launch, and will ensure that everyone is paying attention and is a safe distance of at least 15 feet away when I launch rockets with D motors or smaller, and 30 feet when I launch larger rockets. If I am uncertain about the safety or stability of an untested rocket, I will check the stability before flight and will fly it only after warning spectators and clearing them away to a safe distance. When conducting a simultaneous launch of more than ten rockets I will observe a safe distance of 1.5 times the maximum expected altitude of any launched rocket.

6. Launcher. I will launch my rocket from a launch rod, tower, or rail that is pointed to within 30 degrees of the vertical to ensure that the rocket flies nearly straight up, and I will use a blast deflector to prevent the motor's exhaust from hitting the ground. To prevent accidental eye injury, I will place launchers so that the end of the launch rod

is above eye level or will cap the end of the rod when it is not in use.

7. Size. My model rocket will not weigh more than 1500 grams (53 ounces) at liftoff and will not contain more than 125 grams (4.4 ounces) of propellant or 320 N-sec (71.9 pound-seconds) of total impulse.

8. Flight Safety. I will not launch my rocket at targets, into clouds, or near airplanes, and will not put any flammable or explosive payload in my rocket.

9. Launch Site. I will launch my rocket outdoors, in an open area at least as large as shown in the accompanying table, and in safe weather conditions with wind speeds no greater than 20 miles per hour. I will ensure that there is no dry grass close to the launch pad, and that the launch site does not present risk of grass fires.

LAUNCH SITE DIMENSIONS

Installed Total Impulse (N-sec)	Equivalent Motor Type	Minimum Site Dimensions (ft.)
0.00-1.25	1/4A, 1/2A	50
1.26-2.50	A	100
2.51-5.00	B	200
5.01-10.00	C	400
10.01-20.00	D	500
20.01-40.00	E	1000
40.01-80.00	F	1000
80.01-160.00	G	1000
160.01-320.00	Two Gs	1500

10. Recovery System. I will use a recovery system such as a streamer or parachute in my rocket so that it returns safely and undamaged and can be flown again, and I will use only flame-resistant or fireproof recovery system wadding in my rocket.

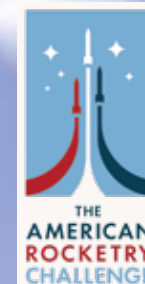
11. Recovery Safety. I will not attempt to recover my rocket from power lines, tall trees, or other dangerous places.
www.nar.org



**A proud Sponsor
 of The American
 Rocketry Challenge**



The American Rocketry Challenge (TARC) is the world's largest rocket contest with nearly 5,000 students nationwide competing each year. The contest gives middle and high school students the opportunity to design, build and launch model rockets and hands-on experience solving engineering problems.



rocketcontest.org



aia-aerospace.org



Our Return Policy

YOU'RE COVERED WITH THE ESTES FULL ONE-YEAR WARRANTY

Your Estes® model rocket product is warranted against defects in materials or workmanship for one year from the date of the original purchase. If this Estes® product, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period, it will be repaired or replaced, at Estes' option and at no charge to you.

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 products. 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 contact us at EstesRockets.com or by mail at Estes Industries, LLC, Customer Service Department, 1295 H Street, Penrose, Colorado 81240-9698.

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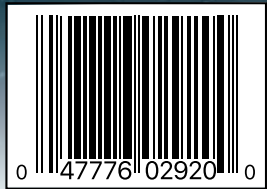
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