



# Make: Rockets: Down-to-Earth Rocket Science

*By Mike Westerfield*

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**Make: Rockets: Down-to-Earth Rocket Science** By Mike Westerfield

Make: Rockets, Down to Earth Rocket Science, is for all the science geeks who look at the moon and try to figure out where Neil Armstrong walked, watch in awe as rockets lift off, and want to fly their own model rockets.

Starting from the ground up you how to build all sorts of rockets and associated equipment with clear, step-by-step directions. It's easy to skip the more detailed material, but when you are ready, Make: Rockets will help you rise to new heights with detailed coverage of the math and science behind building, flying and tracking rockets.

You will learn:

- \* How to safely build and fly solid propellant, water and air powered rockets.
- \* All the techniques needed to build model rockets, launchers and trackers.
- \* How to recover rockets by parachute, streamer, glider, helicopter recovery and more.
- \* How to fly payloads like cameras, altimeters and the ever popular egg lofters!
- \* How to pick the right motor and parachute for any rocket or payload.
- \* Aerodynamic principles for designing stable, low drag rockets that slip through the air--including one rocket that can hit 500 mph!
- \* How to use free rocket simulators to figure out about how high a rocket will go before you fly it.
- \* How to track the rocket and figure out how high and fast it really went.

If you are a hobbyist just getting started with rocketry, a teacher or parent looking for ways to get kids interested in math and science, or an advanced rocketeer who wants a deep understanding of the science and math behind rocket flight, this book is for you.

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## Editorial Review

### Review

*"What a great introduction to model rocketry. I am amazed at the variety of projects, from soda straws to competitive, multi-stage solid propellant. MAKE: Rockets has something for everyone. This book is a must for any enthusiast. Entertaining and educational, this book is a blast."*

--Dr. KENNETH MORELAND, computer software research and development

*"With painstaking detail, Mike built and tested every model in the book. His meticulous research and development will be appreciated by both beginner and expert rocketeers. MAKE: Rockets is a perfect book for individuals, science classes, maker camps, and scouts."*

--RICK SCHERTLE, co-founder, AirRocketWorks.com

*"MAKE: Rockets, by Mike Westerfield, is an excellent introductory guide to all types of rocketry, covering the basic principles of rocketry from simple hands-on experiments to detailed how-to instructions for building your own rockets and even instructions to build his cleverly designed rocket launchers of all types. If you are interested in learning more about model rocketry, MAKE: Rockets is the ideal hands-on guide."*

--KEITH VIOLETTE, mechanical designer/inventor, DEKA Research and Development

*"This book is a must-have for anyone interested in model rocketry. It is engaging and fun to read, providing a wealth of information from the very basics to the somewhat technical. Whether it is your first launch or your 1000th, you will find this book useful and enlightening."*

--KEVIN RYAN, software engineer, National Radio Astronomy Observatory

### From the Author

This book is all about learning by doing. You'll get instructions showing exactly how to build over a dozen rockets, launchers and trackers. Along the way, you will need some parts. As you buy the book, here are a few things to consider:

Most of the solid-propellant rockets in the book can be build from parts in the Estes Designer Special. Amazon has a good price on this collection of parts. You can also buy individual parts from various model rocket suppliers.

There are a few parts you will need for some of the later rockets that are not in the Estes Designer Special. You may want to wait to browse through the book before getting them, but if you're anxious to get started, hunt down the following parts. If you aren't sure what they are, wait a bit. The book will fill you in.

1. One or two BT-60 to BT-70 balsa transitions. (One each for the egg loft and a general purpose payload bay.)
2. One or two BT-70 balsa nose cones. (One each for the egg loft and a general purpose payload bay.)
3. A BT-60 to BT-80 balsa transition and a BT-80 balsa nose cone for the camera payload.
4. A small camera such as the Y-2000.

5. Two extra BT-60 body tubes for payload boosters, a BT-70 body tube for the egg loft and general purpose payload bay, and a BT-80 for the camera payload.

6. Two extra BT-20 nose cones. I used blunt balsa ones for the glider and helicopter recovery rocket, but you can substitute.

For the launcher, you will need a keyless drill chuck and a 1/2-20 thread and a 3" long 1/2-20 bolt, as well as a 12 volt cigarette lighter plug and socket for the 12 volt external power connection. (You can build the launchers without these parts, or even retro fit them later.)

Most of these parts are available right here on Amazon. You might as well get that free shipping! All other parts are usually easy to find locally.

One member of the local rocket club decided I wrote this book to have an excuse to build a lot of rockets, launchers and trackers. I asked him not to spill my secrets to my wife. I hope you'll keep it quiet too, and that you have as much fun building them as I did!

#### About the Author

Mike has a deep interest in science and technology that shows up in his work and hobbies. Educated in physics and a programmer by profession, Mike started his career in the Air Force as the resident physicist on a classified satellite program.

He sold his car to get the money needed to buy an Apple II computer and started writing assemblers and compilers.

He has developed numerous compilers and interpreters, including APW, which Apple Computer shipped to developers for the Apple II GS. He has worked on plasma physics simulations for Z-pinch machines, disease surveillance programs credited with saving lives of hurricane Katrina refugees, and advanced military simulations that protect our nations most critical assets.

Mike currently runs the Byte Works, an independent software publishing and consulting firm specializing in scientific and technical programming, Bluetooth LE technology, iOS development and cross-platform Java development. He lives with his wife in Albuquerque, New Mexico, where you will find him programming, flying rockets with the Albuquerque Rocket Society, and teaching scuba diving.

## Users Review

#### From reader reviews:

#### Joan Jackson:

In this 21st millennium, people become competitive in every single way. By being competitive today, people have to do something to make them survive, being in the middle of often the crowded place and notice by surrounding. One thing that occasionally many people have underestimated that for a while is reading. Yes, by reading a e-book your ability to survive raise then having chance to endure than other is high. To suit your needs who want to start reading a new book, we give you this Make: Rockets: Down-to-Earth Rocket Science book as basic and daily reading reserve. Why, because this book is usually more than just a book.

**Adrian Kester:**

This Make: Rockets: Down-to-Earth Rocket Science is great publication for you because the content and that is full of information for you who have always deal with world and have to make decision every minute. This kind of book reveal it data accurately using great plan word or we can say no rambling sentences in it. So if you are read the idea hurriedly you can have whole information in it. Doesn't mean it only will give you straight forward sentences but challenging core information with wonderful delivering sentences. Having Make: Rockets: Down-to-Earth Rocket Science in your hand like obtaining the world in your arm, facts in it is not ridiculous one particular. We can say that no publication that offer you world with ten or fifteen moment right but this e-book already do that. So , this is certainly good reading book. Hi Mr. and Mrs. active do you still doubt this?

**Richard Freed:**

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**Betty Johnston:**

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