Apogee Components

PEAK OF FLIGHT

NEWSLETTER

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Build A "Spool Spinner" Rocket

Cover Photo: LOC Onyx rocket kit. Get it now at: www.ApogeeRockets.com/Rocket_Kits/Skill_Level_3_Kits/Onyx

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How To build and Experiment with "Spool Spinners"

By Joseph Peklicz

{Editor's Note: I don't usually print plans from other modelers. But this one was a bit unusual, and I know a lot of modelers like to fly spool rockets. This rocket also spins horizontally as it descends, which is something that is not done often. I call these rockets magnus rotors, and I talk about them in my book Model Rocket Design and Construction. This plan is something that I didn't think about when I wrote my book, so I decided to publish it.}

I saw a high power flight of someone using a wooden spool that cable is wound around used in the cable industry. Some people even use them for tables! A parachute was taped to the top of the spool for recovery. I thought it was really neat because it flew stable. I began to think of how to recover the spool differently. How about attaching tubes to the core of the spool to induce a horizontal spin? I went about building a small model to see if the idea would work.

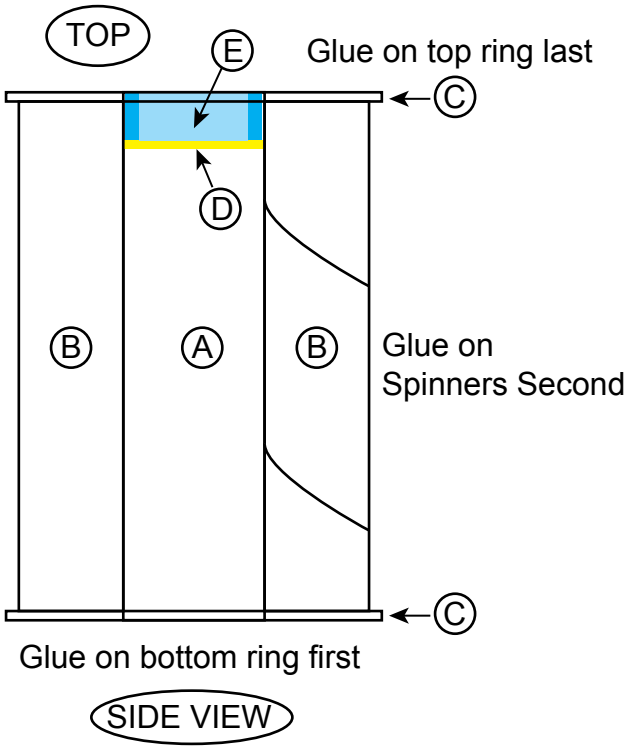
Paint tips: After the model is dry, smear glue around

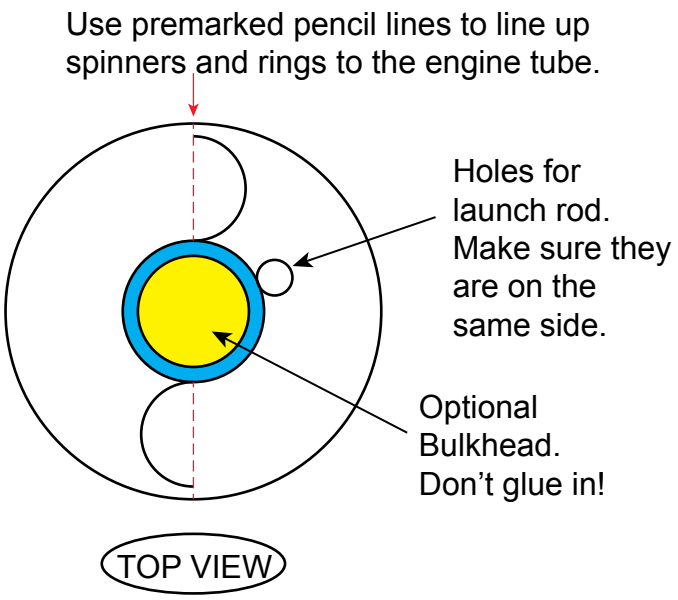
"SPOOL SPINNER"

Recommended Engines: A8-3, B4-2, B6-2, C6-3
Fly using 18mm engines. Fit the engine loosely. It pops out at apogee to allow for a longer duration recovery. Insert bulkhead! For club launches, remove bulkhead and tape engine in securely. Use a 3/16 launch rod.

Parts List:
A). BT-20 Engine Tube
B.) BT-5 Halves (spinners)
C.) Spool Rings
D.) Bulkhead (optional)
E.) Thrust rings to fit BT-20

Wood Glue is recommended for construction





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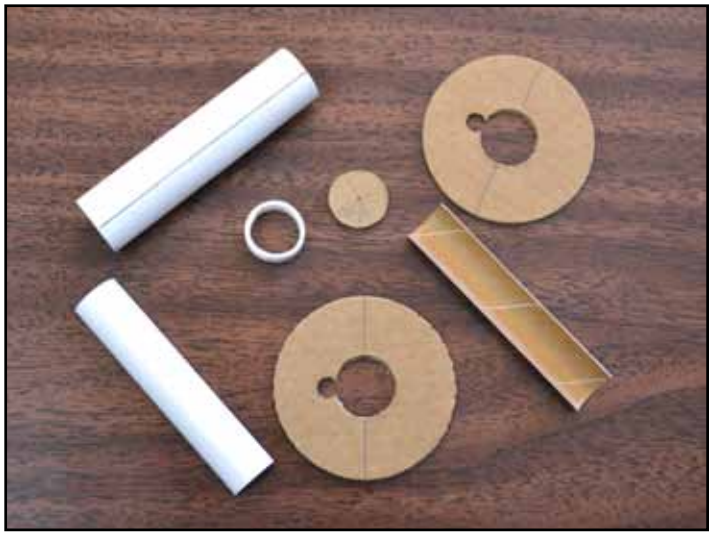

Photo 1: Parts of a Spool Spinner are easy and cheap to create.

the cardboard rings and inside the spinner halves. Prime model using flat white spray paint. A bright fluorescent paint is recommended to make it easier to find in the grass. Also, you can paint one side flat black so the spinning action can be observed more clearly.

Spool spinners are very easy to build. This article is geared towards A/B/C size motors, but it might work with larger ones as well.

First, select a motor size. The engine tube will be cut to the same length as the motor is long. For the two rings, you can use cardboard, just make sure it's good and flat. Then you'll need a tube. It will have to be cut in half lengthwise. Here's where you can experiment. You need at least two half tubes to impart a horizontal spin for recovery. Make sure the tubes will fit inside the ring's diameter. Cut a hole in the rings for the engine mount tube to go through. No launch lug is needed, you can use a 1/4" hole punch or just

Photo 2: Spool spinners of various sizes.

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How To Build "Spool Spinners"

slit squares for the launch rod to fit through. Make pencil lines for where the spinner tubes will be placed.

You can use two, three, or even four spinner tubes (halves). Use a thrust ring on the top of the core engine tube. I use super glue to tack the spinner tubes in place. Then, wood glue fillet around them. You could probably get by just using super glue. If you desire a slower recovery descent, put in a cardboard bulkhead under the thrust ring, which will make the motor pop out. NAR has restrictions on popping motors out, so don't do that at a sanctioned launch.

Some examples of experiments you can try as shown in Photo 2 on page 3 (as annotated):

Photo 3: Multi-stage Spool Spinners.

Photo 4 & 5: Nested and multi-stage Spool Spinners.

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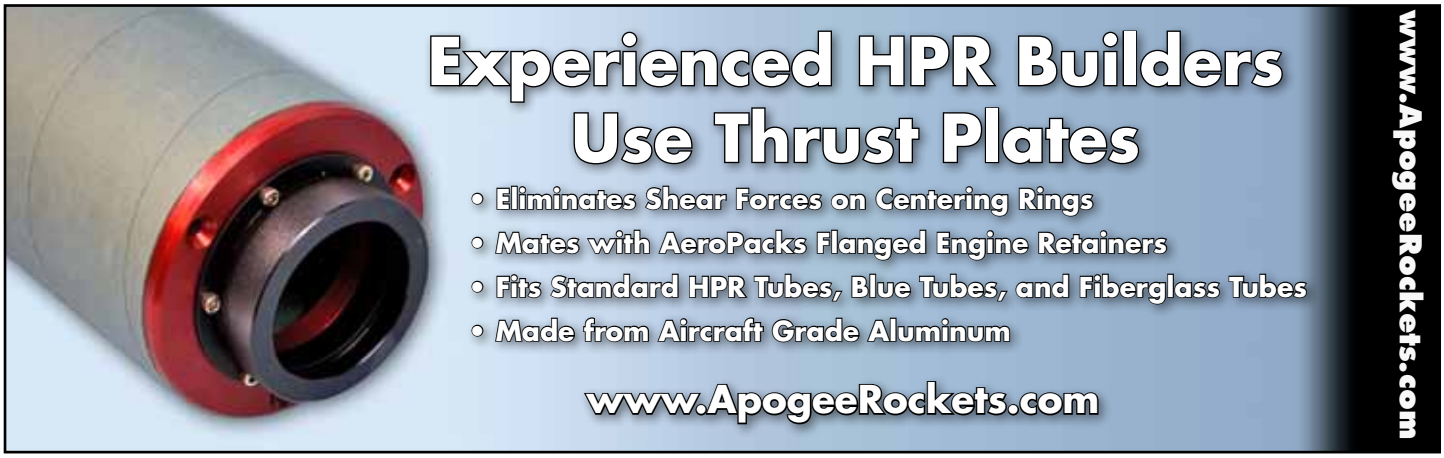

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How To Build "Spool Spinners"

A: A 13mm two spinner model
B: An 18mm two spinner model
C: A 24mm two spinner model
D: An 18mm three spinner model
E. An 18 mm four spinner model

Photo 3 shows multi-stage versions of the Spool Spinner concept: (A) a two staged 18mm three spinner model, (B) a four staged 18mm three spinner model, and (C) a four spinner 18mm booster with a sport scale North Korean UNHA model. Note that the holes are carved into the rings to allow air to bass through on this one.

Photos 4 and 5 show a small spool spinner nested in a larger spool, called the "Big Birther" spool spinner. It's D12 powered. A smaller spool spinner, which I named the "Baby Birther" is housed inside the BT-80 core tube. A D12 motor is also inserted into the "Baby Birther."

The nice thing is that no wadding is needed. The ejection charge pushes the "Baby Birther" out of the "Big Birther" and they both spin back separately. This one is really something to see.

Photo 6: The A.S.L.S. rocket.

The bigger the spool spinner, the more slowly the spin and fall. You can paint halves different colors and watch the colors make a whole different color. Paint hypnotizing spirals, etc.

Finally, Photos 6 and 7 show the A.S.L.S (Aerial Silo Launch System). It houses an internally launched spool spinner.

The arrow shows the 18mm boosted/staged spool spinner. The tube to the right fits over it. The fruit cup nose cone fits loosely so the spool spinner can easily blast through it. The nose recovers by a streamer. The rocket is powered by a D12-0 booster engine. The Spool Spinner is powered by any 18mm motor.

These are just some of examples of experiments you can do with "Spool Spinners." I'd suggest using Foam Core for the bigger ones. Whatever ring material you use, make sure it's good and flat. A warped ring will throw it off kilter. The skies the limit. See what you can come up with. You'll be rewarded with a really different recovery rocket. Hey, they're good for small fields too! I fly mine at the local baseball field, and have never lost one yet.

Photo 7: The Aerial Silo Launch System taken apart to show the Spool Spinner second stage.