BUILDING INSTRUCTIONS

HIGH POWER ROCKET KIT

EXCEL

Fisher series kit

Kit Specifications:

Designed for TRA and NAR Level One and Level Two certifications, the Excel stands ready to do the job. Designed for an easy build, stable flights and eye-catching looks. This kit also comes with nice upgrades like motor retention hardware, rail buttons, nylon recovery harness and a rip-stop nylon parachute. It also features our unique, super strong fin section components and detailed instructions

Features a kit industry first...Modular fin can construction!

DIAMETER: 3.0"
LENGTH: 36.75" single deploy, 52.68" dual deploy
MOTOR MOUNT: 29mm or 38mm
REC. MOTORS:
29mm*: G80T G104T H128W H180W H238T I200W
(*) H motors or larger recommended for dual deploy version

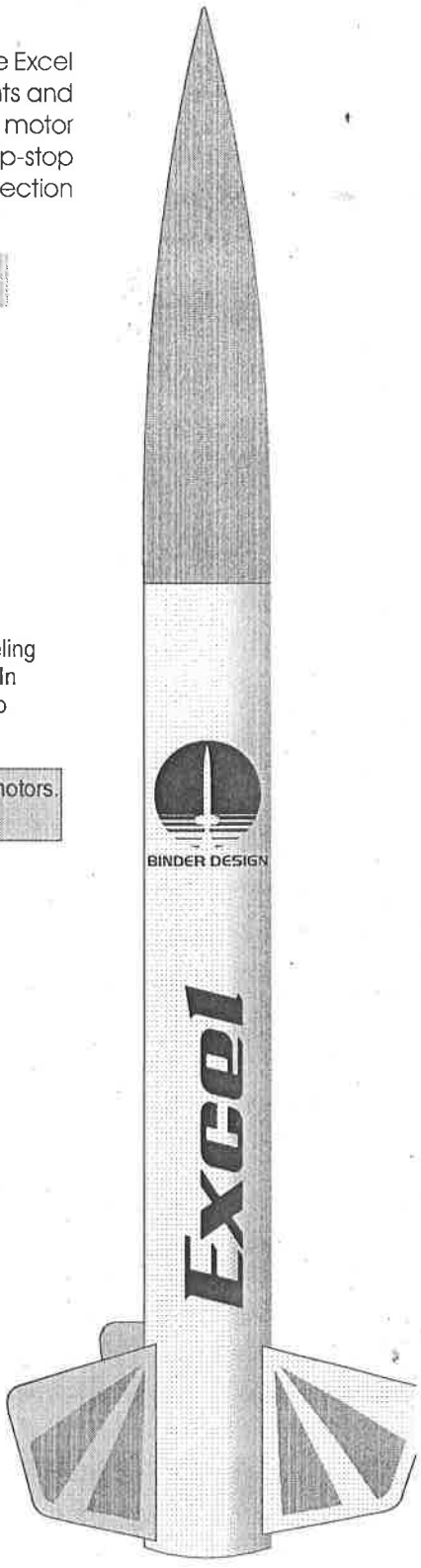
38mm: H242T I161W I211W I300T I195J
I284W I435T** J350W**

(**) Indicates that this model can fly on these high thrust motors if expert modeling techniques are utilized and 30 minute epoxy is used throughout construction. In addition, for flights that may achieve mach speeds, it is highly recommended to reinforce the fins with fiberglass or carbon fiber to minimize fin flutter.

Important: Nose weight may be required for this model to be stable on larger motors. Always check stability margin before flight!

Kit includes cut and sanded 1/4" aircraft quality plywood fins, high strength airframe tube, centering rings, aft thrust ring. high quality hardware package, motor tube, plastic nose cone, computer designed and cut vinyl decals to finish as shown. Includes motor retention!

NOTICE TO BUYER...This model rocket kit is not a toy! It is not recommended for children under age 18, unless used under adult supervision. If not assembled and used properly, it could cause property damage, personal injury, or death. By purchasing this kit, the buyer agrees that neither Binder Design nor the designer of this kit will be responsible for damage occurring through the use of the product and shall be held harmless in any such claims. If the buyer is not prepared to accept full responsibility for the use of this product, buyer should return unopened kit in original condition to place of purchase. Always follow NAR or TRA Safety Codes when using any model rocket products, and use common sense. This model may require FAA waiver for flight. Consult your local rocket club for more information or contact the NAR or TRA.



BINDER DESIGN
www.binderdesign.com

PARTS LIST

1 - 3" Plastic Nose Cone
1 - 3" X 24" Airframe Tube
1 - 29mm or 38mm X 6" Motor Tube

3 - 1/4" Plywood Fins
2 - 3" X 29mm or 38mm Centering Ring
1 - 3" X 29mm or 38mm Aft Thrust Plate
1 - Set Rail Buttons
1 - EZ Motor Retainer

1 - 12' Recovery Harness
1 - Eye Bolt/Washer/Assembly

1 - Excel Instruction Manual
1 - Excel Decal Package
1 - Fin Alignment Guide (last page)

ITEMS NEEDED TO COMPLETE THIS KIT...

Hobby knife, sharp blades
Sandpaper (150, 220, & 400 grit)
Ballpoint pen and straightedge
15 and 30 minute epoxy
Epoxy mixing sticks and cups
Rubbing alcohol
High quality spray paint (Rustoleium white and orange used on prototype model)
24" octagon parachute or larger required for flight (sold separately)

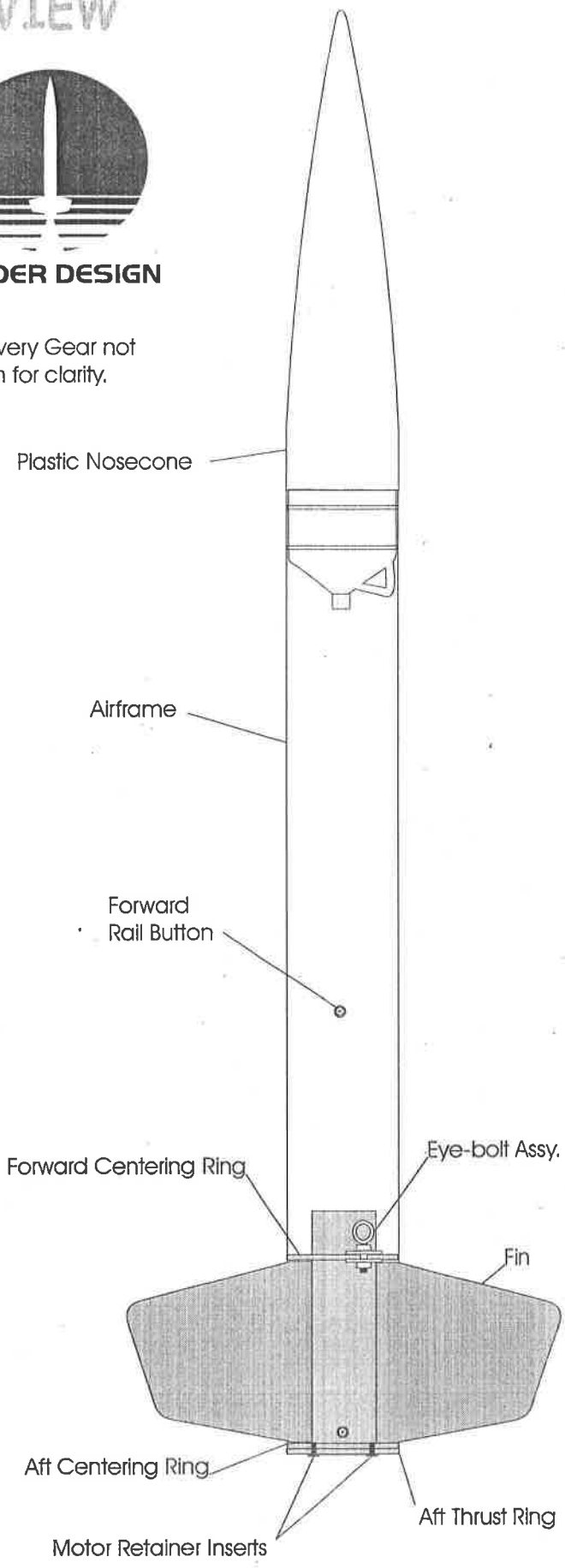
OPTIONAL ITEMS FOR THIS KIT...

Milled Fiber
Autobody Spot Putty (small tube)
Binder Design Dual Deploy Upgrade with Recovery Gear
Electronics for drogue to main deployment.

CUT-AWAY VIEW

BINDER DESIGN

Recovery Gear not shown for clarity.



THANK YOU for purchasing a Binder Design Kit! If at any time you are in doubt during building, please stop and call Binder Design between 9 a.m. And 6 p.m. at the number on the front of these instructions The cost of the phone call could save you the cost of the kit in helping you avoid a major mistake.

Nothing beats experience! That's why we recommend that you seek the assistance of an experienced high power rocket modeler before flying your model for the first time. High power rockets are capable of very high altitudes at near mach speeds and are considered differently by the FAA than smaller rockets you may have flown in the past. Flight of this model may require an FAA waiver.

Designed for the advanced modeler or sport flyer in high power rocketry, the Excel makes a great launch vehicle for Tripoli or NAR certification level one flights. It is also easily set up for altimeter dual deployment with our optional altimeter bay. Includes premium hardware package that includes a Binder Design EZ Motor Retainer and Delrin rail buttons.

We recommend using only heavy duty launch equipment for launching your rockets. Most rocket clubs provide heavy duty launch equipment for larger models. Use a rail launcher that is at least five feet or longer and only launch this model vertically. Know and follow all NAR and Tripoli safety codes in operation of this rocket.

Make sure that you read and throughly understand all instructions before starting assembly! It doesn't take long to build a Binder Design kit, so take your time and enjoy yourself. We've included some helpful hints that will make all of your future building projects easier, stronger and better looking.

Again, Thank you for choosing
A Binder Design Kit!

NOTES: _____

REMEMBER! Build Light! Every ounce you save building this rocket kit will add up to increased performance. When using epoxy, use enough to secure the joint - don't build up too much. Excess epoxy only adds weight, not strength. Because high power rockets are exposed to high levels of stress and extreme temperatures, you will want to use plenty of epoxy around the fin attachment areas and motor tube assembly. We recommend the use of milled fiber added to all epoxy fillets as well as the use of 30 minute epoxy if you plan on flying this model on the higher thrust motors. Contact Binder Design for the purchase of milled fiber.

Getting Started

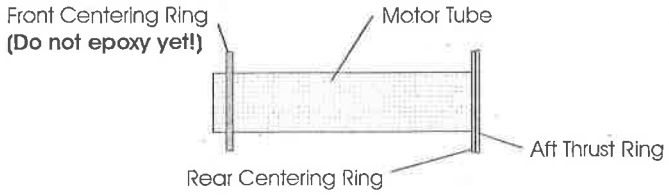
☐ **STEP 1:** Remove all parts from the packaging and inspect them. Familiarize yourself with each part and, if necessary, mark each part so that you can identify it later. **Make sure that you check all packing material for small parts!** If any parts are missing contact us by phone or e-mail and we'll be glad to get you replacements.

Building the Motor Mount Assembly

☐ **STEP 2:** Begin by building the Motor Mount Assembly. Locate the Motor Tube, Centering Rings, and Thrust Ring.

☐ **STEP 3:** Bonding the Aft Thrust Ring. It is the largest of the three rings. Apply epoxy to the motor tube just above one end. Slide the Aft Thrust Ring onto the Motor Tube until it is even with the end of the tube, rotating it to ensure that the epoxy is distributed evenly.
To ensure that the ring sets up square, stand the motor tube with ring on it on a flat surface until the epoxy is cured.

(Fig. 1) CUT AWAY VIEW OF MOTOR MOUNT ASSEMBLY

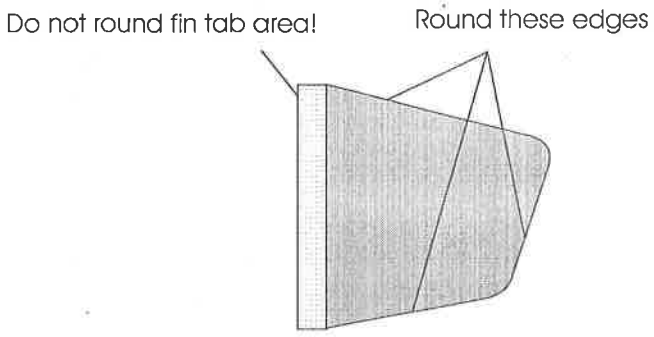


☐ **STEP 4:** After the epoxy on the thrust ring sets up, apply epoxy on the side of the ring that will mate with the rear centering ring, and also on the motor tube just above the thrust ring. Then, slide the rear centering ring down the motor tube until it fits tight against the aft thrust ring. Make sure to clean off any epoxy that squeezes out from between the rings, otherwise it will interfere with the fit later on. Don't epoxy the front centering ring on just yet, we will do this in a later step. While this cures, we'll move on to Fin Beveling.

Beveling Fins

☐ **STEP 5**: Locate the three fins in preparation for beveling. Since this is a sport model, we recommend only rounding the edges of the fins rather than trying to airfoil them. This is easily done with 100 grit sandpaper and a palm sander, but excellent results can be had by hand sanding and patience. Do not bevel the root edge!

(Fig. 2)



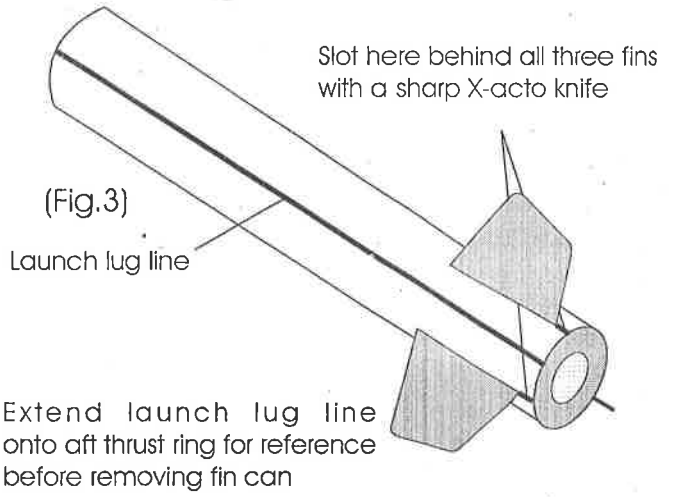
Building the "Fin Can" Assy.

☐ **STEP 6**: After the aft rings are completely cured and the fins have been beveled ,it is time to build the Fin Can Assy. Slide the front centering ring onto the motor tube approx 1/4". Do not epoxy it yet! Now slide the motor tube assembly into the end of the airframe with the slots pre-cut for the fins. Make sure that the front centering ring is forward of the slots when fully inserted. Do not epoxy anything in place yet!

☐ **STEP 7:** Attaching the fins. Apply a thin layer of 15 minute epoxy to the root edge of the first fin and insert it into the slot until it contacts the motor tube. Be sure not to get epoxy on the slots or anywhere else on the airframe tube! The importance of this cannot be over stressed because the fin can will be slid out of the airframe tube in a later step. Just use enough epoxy on the fin root to tack the fin in place. Once the fin is in place, use the Fin Alignment Guide supplied and visually sight down the tube and guide to make sure it is straight. When you are happy with the alignment, set it aside, fin pointing up, until the epoxy cures.

Repeat this procedure for the remaining two fins. Remember to use the Alignment Guide to get them on straight.

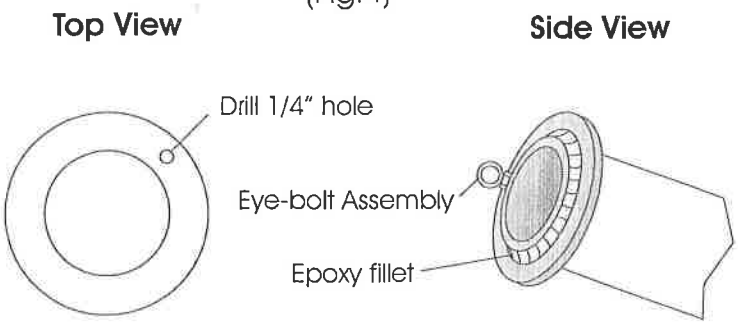
☐ **STEP 8:** Removing the fin can assembly. After the epoxy that is holding the fins on has fully cured, locate your x-acto knife and prepare to cut the airframe tabs that are behind the lower fin tabs as shown in the fig. 3 illustration below.



After the slots have been extended to the end of the airframe tube, and the tabs removed, it is time to slide the fin can out. Before this is done though, use a pen or pencil to extend the launch lug line down onto the aft thrust ring. This will give you a reference point for reassembly to ensure that the fin can is always installed in the correct position. Grasp the tailcone in one hand and the airframe in the other and pull the fin section out. If it does not come easily, you may have been sloppy with the epoxy and gotten a bit in the fin slots. Double check this and cut it loose with a x-acto knife if need be.

☐ **STEP 9:** Attaching the eye-bolt assembly. After the fin can is removed from the airframe tube, carefully remove the upper centering ring that has not been epoxied in place yet. Drill a 1/4" hole in the ring and attach the eye-bolt hardware as shown in the illustrations. Be sure to put some epoxy on the threads to ensure that it won't come loose in the future.

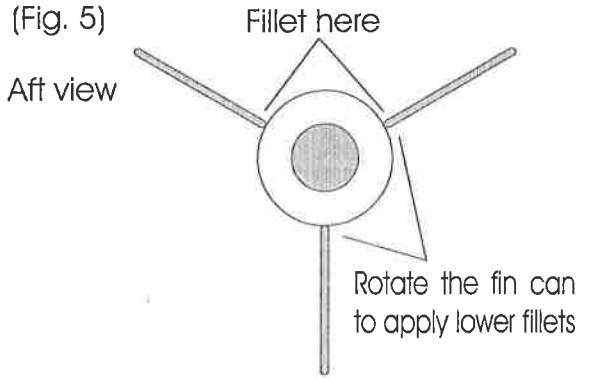
(Fig.4)



☐ **STEP 10:** Attaching the front centering ring. Spread a ring of epoxy on the motor tube just above where the fins end. Also, spread some epoxy on the upper root edges of all three fins. Then, slide the upper centering ring down in a twisting motion until it stops against the top root edges of the fins. Be sure to center the eye-bolt assembly between two fins. Stand the assembly upright and fillet the top of the ring where it meets the motor tube as shown in Fig. 4..

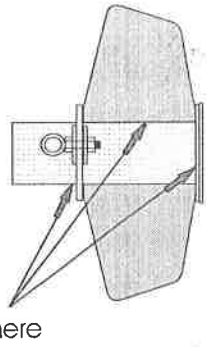
☐ **STEP 11:** Filleting the fin can assembly. Note that until now, the fins are only tacked on to the motor tube, so care must be taken in handling the assembly. This next step will add the strength to the part. Support the fin can assembly on its side with one fin pointing toward the floor and the other two fins pointing up at equal angles as shown in fig. 5. Fig. 6 shows where to apply fillets.

(Fig. 5)



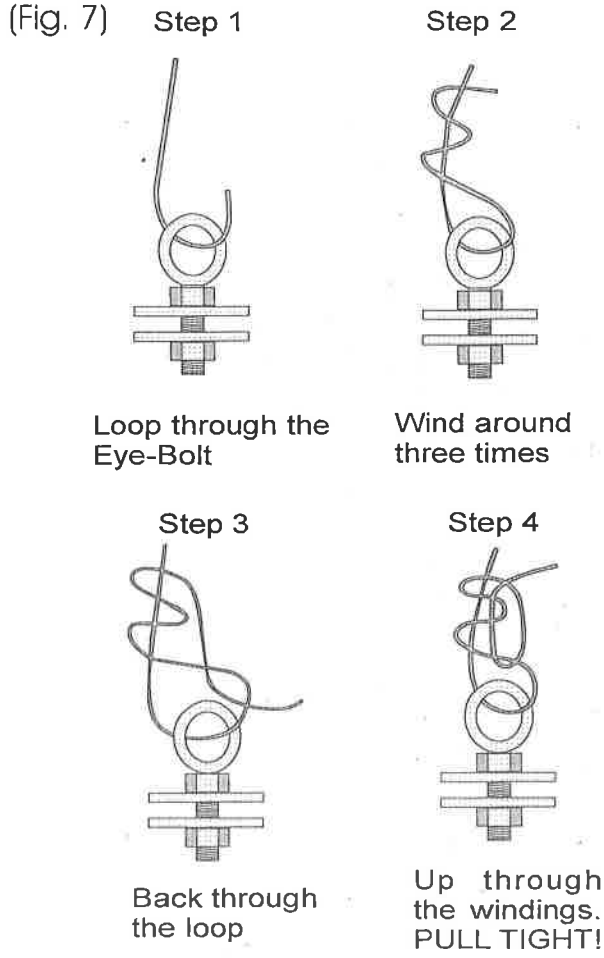
Mix up some 30 minute epoxy with some milled fiber added to it. Fillet the edge of each fin where it meets the motor tube as well as the centering rings. Do the inside edge of two fins at a time, smoothing the joint with a gloved finger. Wait for the epoxy to cure before rotating the fin can to the next set. Be sure to use nitrile or latex gloves when handling epoxy!

(Fig. 6)



☐ **STEP 12:** Attaching the recovery harness. This next step must be done now while it is easy to reach. If you forget, you may be dismayed to find that your arm is either too big or too short to reach down inside the airframe tube to attach it later!

(Fig. 7)



Attach the recovery harness to the Eye-Bolt as shown in Fig. 7. This shows the proper way to tie an attachment point and in many cases, a good knot is stronger than sewn harnesses. When you are satisfied with the knot, soak it in epoxy to set it in place permanently.

☐ **STEP 13:** Attaching the fin can to the airframe. After all internal fillets are cured, test the fit of the fin can inside of the airframe. Be sure to use the reference mark that you made earlier for proper alignment. Slide it down inside the airframe and make sure that it seats all of the way. When you are happy with the fit, slide it back out and mix some more 30 minute epoxy.

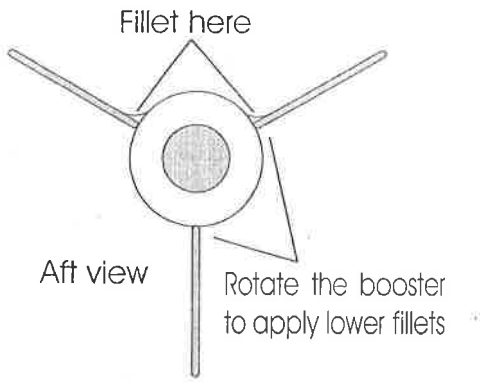
Using a wooden dowel or stick, spread a ring of epoxy on the inside of the airframe tube where the forward centering ring will contact. This will be just forward of the fin slots. Slide the fin can section in, but only about halfway.

Next, apply some epoxy just inside the airframe where the rear centering ring and aft thrust ring will seat. Insert the fin can the rest of the way until it seats firmly. For best results, tie the rear of the airframe firmly with some twine, or use rubber bands or a small bungee cord to hold the airframe tight against the rear centering ring. Then, set the finished booster section upright to cure. This will allow gravity to fillet the centering rings to the airframe tube.

Applying External Fin Fillets

☐ **STEP 14:** Mix some 30 minute epoxy with milled fiber added for strength. Referring to fig. 8, apply external fin fillets, smoothing with a gloved fingertip. This is similar to the internal filleting done on the fin can, except for these fillets will be exposed, so take your time for them to look right. Be sure to fill in the small holes left behind each fin from the slotting. Try not to be sloppy, or you will have lots of sanding to do later. If you get epoxy where it doesn't belong, clean it up before it hardens with isopropyl alcohol. Be sure that one set of fillets is fully cured before rotating the rocket for the next set, otherwise they will sag.

(Fig. 8)



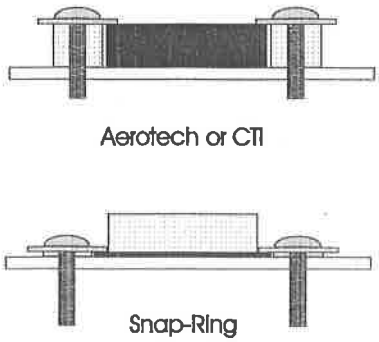
Attaching the rail buttons

☐ **STEP 15:** We prefer to attach the rail buttons before painting since we prefer to bond the base of the button directly to the airframe to give additional support. Make a mark on the launch lug line ½" from the aft end of the tube and another 16" from the aft end of the tube. This is where you will drill holes for the rail button screws. Now follow the mounting instructions that came sub-packed with your rail buttons.

Attaching the EZ Motor Retainer

☐ **STEP 16:** Locate the **EZ Motor Retainer** hardware that came sub-packed with your kit. Follow the instructions carefully, the placement of the inserts is critical for it to work properly on all types of motor hardware as seen in fig.9. After it is installed, don't forget to occasionally lubricate the screw threads in order to keep the corrrosive exhaust products from messing up the threads.

(Fig. 9)



Preparing the Fins for Paint

☐ **STEP 17:** Sealing the fins. Use a good quality sanding sealer on all of the finished fins. Brush on two coats and sand with fine sandpaper (220 grit) after each coat dries.

Finishing

FOREWORD: These next steps will just cover the basics of rocket finishing, but depending on your experience and skills you may wish to take it further by using automotive finishes, even wet sanding and polishing...that's up to you!

☐ **STEP 18:** If you have small holes above the fins from the fins slots, you may fill them with autobody spot putty, available from your local automotive parts store. Sand the epoxy fillets lightly with 220 grit sandpaper so that the paint will adhere easier. It is not necessary to sand the airframe tubing as it is coated with glassine which accepts paint without sanding. Be sure to sand the nose cone because paint adheres poorly to it if left smooth.

☐ **STEP 19:** Wipe down the entire model with a tack cloth and put a light first coat of primer. Let flash dry and apply a second heavier coat. Repeat if needed. Allow primer to dry overnight. Using 220 grit sandpaper, lightly sand the entire rocket. Wipe down with a tack cloth. Now you are ready for the color coats. Be sure to choose a compatible paint for your primer. We suggest sticking with one manufacturer, as different brands of paints are not always compatible with each other. Start with a light coat and let flash dry. Follow up with a second, heavier coat. Let that flash dry for 15 minutes, then apply the third coat heavy enough to "wet out" fully to avoid dull spots. When it is done, don't even think about handling it for at least 24 hours!

NOTES:

Applying Vinyl Graphics

☐ **STEP 20:** Your rocket kit comes with computer cut vinyl graphics. They are supplied in one sheet. Carefully cut around all of the fin decals to separate them from the sheet. Just cut between the decals and don't get too close to the vinyl. They are simple to apply. Decide where the graphics will be located, take measurements if necessary. Refer to the front cover if you are unsure of their placement.

Carefully peel the application tape (the semi-transparent part) away from the backing. **THE VINYL LETTERS WILL COME UP WITH THE APPLICATION TAPE - THIS IS GOOD!**

This also exposes the adhesive on the vinyl, so don't remove the application tape until you are ready to apply the lettering directly to the airframe! Take your time, once you've applied the decals to a surface, they are stuck! Make sure that you line everything up before letting the decal to touch the rocket! The main trick to avoiding bubbles or wrinkles is to allow the center of the decal to touch first and then smoothing it carefully towards the edges. If you take your time, you will be pleased with the results. If you have problems, you can order more decals from Binder Design.

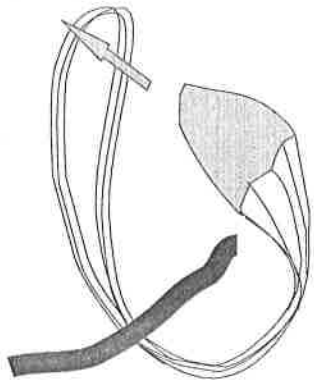
Recovery Attachment

FOREWORD: One of the most important parts of your project is the proper set up of recovery gear. These next few steps will cover the proper rigging of the supplied recovery devices. It may help to look at figs. 11, 12, and 13 (exploded views) on the next pages.

☐ **STEP 21:** Tie the loose end of the recovery harness to the nosecone in the same method that you used to attach it to the eye-bolt inside the rocket. If needed refer to fig. 7 again.

☐ **STEP 22:** See Fig. 11 for this next step. Locate the parachute. Suspend it evenly by the lines. Bundle the lines together in a loop. Slide this loop under the harness about two feet down from the nosecone. Then, pull the parachute through the loop. Pull tight. If you have done it correctly, your parachute will be securely attached to the harness. Your recovery harness is now done.

(Fig. 11)



Gather shroud lines under tubular nylon harness. Carefully loop all lines and pull canopy through. Pull tight!

☐ **STEP 23:** Now for an important test. Lay the parts out on the floor and make sure that when the recovery harness is fully extended, that the parachute is pulled completely free of the payload tube. If it does not, move the parachute further up on the harness until it does. Failure to do this step can result in the parachute not being pulled from the tube at ejection causing severe damage to your rocket!

☐

STEP 24: To pack the parachute, lay it out flat folded in half. Fold it in half again. Starting from the top, loosely roll the parachute up toward the shroud lines around the rolled parachute. MAKE SURE SHROUD LINES ARE NOT ALLOWED TO TANGLE AROUND THE PARACHUTE OR EACH OTHER! Loosely pack the recovery harness into the recovery section and place the packed parachute on top of them. Insert the booster section into the recovery section.

NOTES:

Preparing for Flight

After you get to the flying field, you will need to re-check the packing of the recovery gear and add wadding or flame resistant chute protector(s). These are not supplied. Contact Binder Design for "Heat Pack" brand wadding. Be generous with your wadding and pack your recovery gear carefully to prevent scorching of your premium parachutes. NOTHING BEATS EXPERIENCE! If this is the first time you have prepped a high power rocket, consult someone in your local club to assist you.

Your rocket should now be ready to fly. Your first few flights should be reserved for testing the construction of your model. Remember this important advice.....GET THE HELP OF AN EXPERIENCED HIGH POWER MODELER!! There are many little tricks that you will learn about high power rockets that can only be gained by watching those who have experienced this great sport. You've made a significant investment in your model and will most likely spend a good amount of cash for your motors. Naturally, you'd like everything to go perfectly, or at least have your investment returned to you unharmed. Contact a local club and attend a launch for your model's first flights.

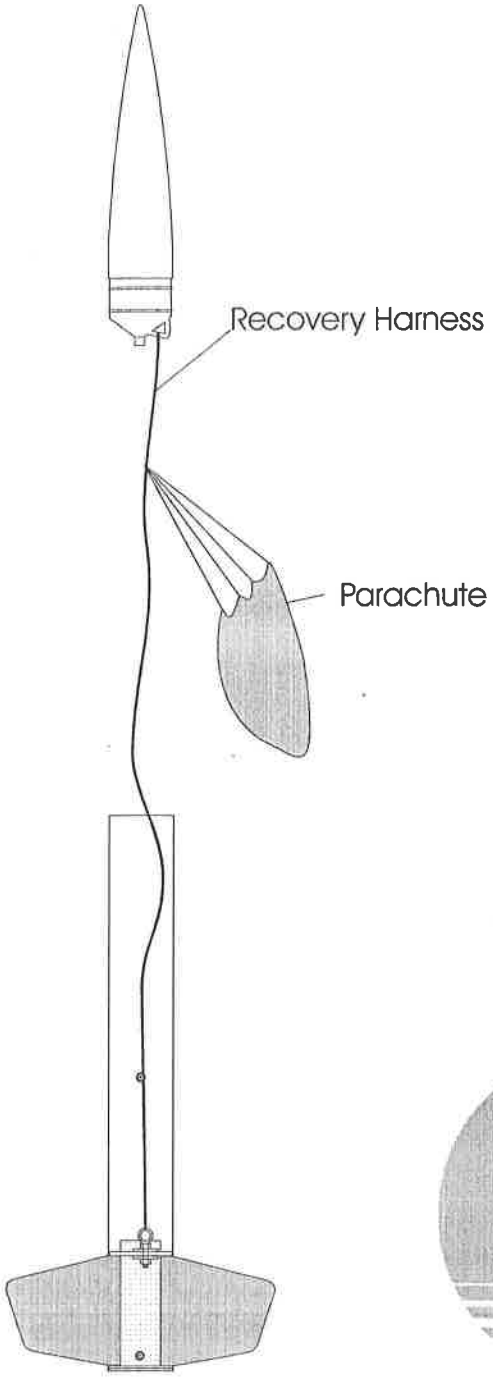
We recommend a high thrust H motor or a mid thrust I motor for your first flight. If this rocket comes with a 54mm motor tube, you will need to adapt down to 38mm with an adapter if you plan on flying the smaller diameter motors. You can use a kraft paper or phenolic adapter, or the SLIMLINE adapter. Contact Binder Design for purchase of the adapter.

After your motor is built and installed, check the packing of the recovery gear and the fit of the nosecone or couplers. You should have a snug fit of the parts, but not so tight that it cannot be separated by the ejection charge. Do not install the igniter until your rocket is on the launch pad!

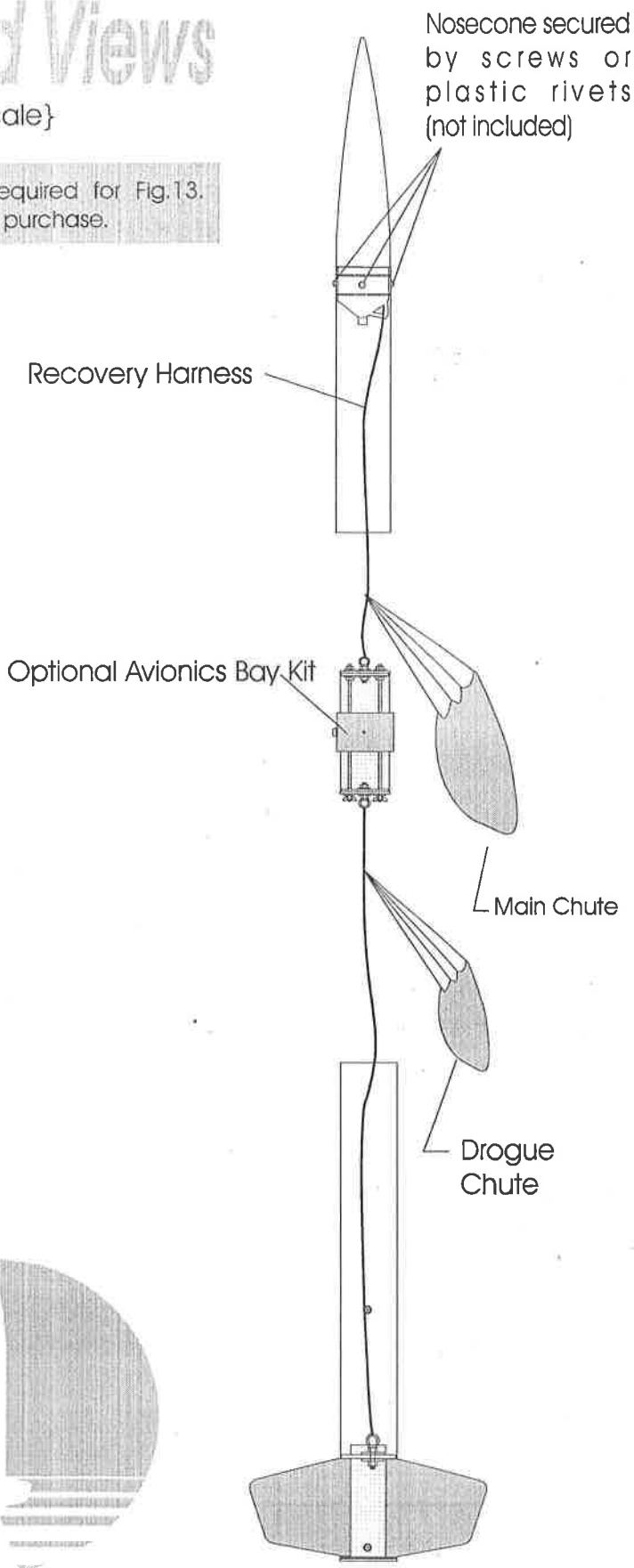
Exploded Views

{Not to Scale}

Dual Deployment Kit required for Fig. 13.
Contact Binder Design to purchase.



(Fig. 12) STOCK CONFIGURATION

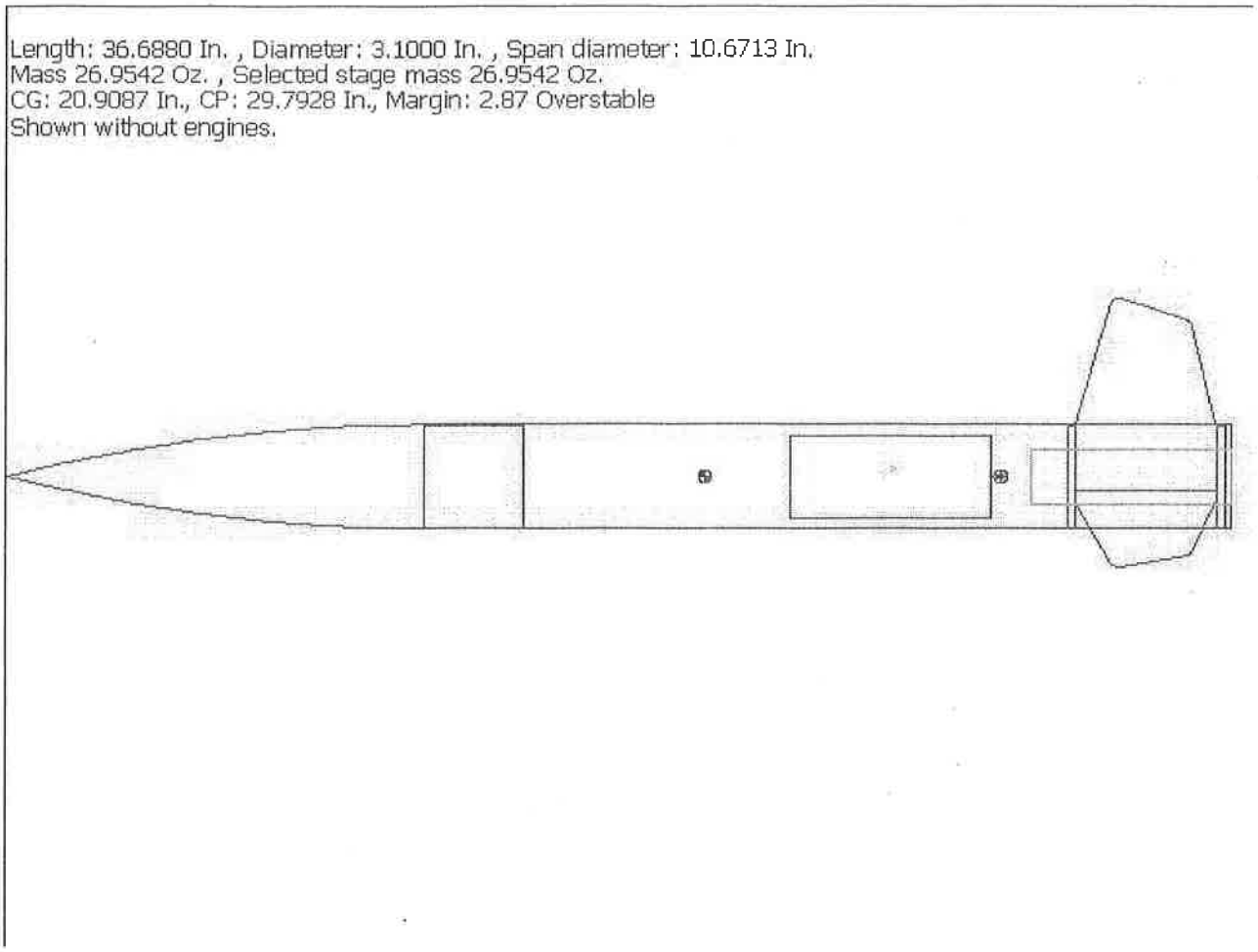


(Fig. 13) ADVANCED CONFIGURATION

BINDER DESIGN

Rocksim CP Data

Used by permission of APOGEE COMPONENTS



At Binder Design, we use Rocksim software to help design our models. This ensures a stable model, and gives performance data on the most popular motors. You can download the demo version of the program at http://apogeerockets.com or purchase the newest full version. Above is a screen capture of the stability data for the Excel. Note the location of the center of pressure or CP. It shows that the CP is 29.79" from nose tip. The center of gravity or CG is also shown. Keep in mind that the shown CG above is with no motor loaded.

Make a mark or use the CP decal provided at 29.79" from the nose tip. For ease of marking, you can round that to 29.75" That is your model's CP.

Before flight, you will need to balance the fully loaded rocket to determine the CG. The CG should always be at least one body diameter IN FRONT of the CP. In this case it is 4". The general rule for safety margin is 1 ½ calibers ahead of the CP. In this case that would mean that you want the CG to be at least 6" in front of the CP to ensure a stable flight. If it is not, you will need to add nose weight, or use a smaller, lighter motor.

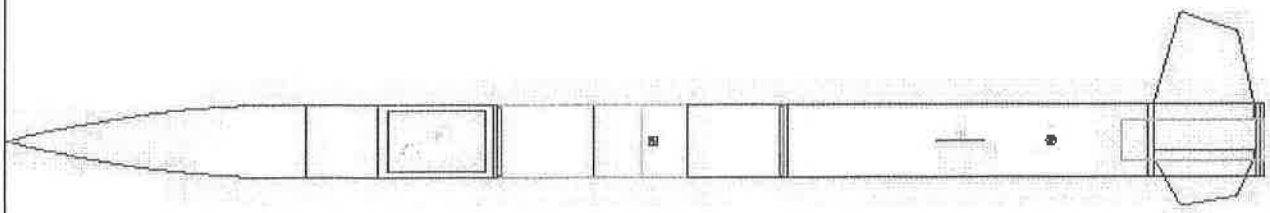
A note on wadding. If you are using one of our baffle systems and motor ejection only, you don't need wadding. If you are using our Avionics Bay with electronic deployment, you will need to use wadding or chute protectors to keep your recovery gear from being scorched by hot ejection charge gasses. Biodegradable flame retardant wadding is available from Binder Design.

ENJOY!

Rocksim CP Data

Used by permission of APOGEE COMPONENTS

Length: 52.6880 In. , Diameter: 3.1000 In. , Span diameter: 10.6713 In.
Mass 38.3519 Oz. , Selected stage mass 38.3519 Oz.
CG: 27.0494 In., CP: 43.7298 In., Margin: 5.38 Overstable
Shown without engines.



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ENJOY!

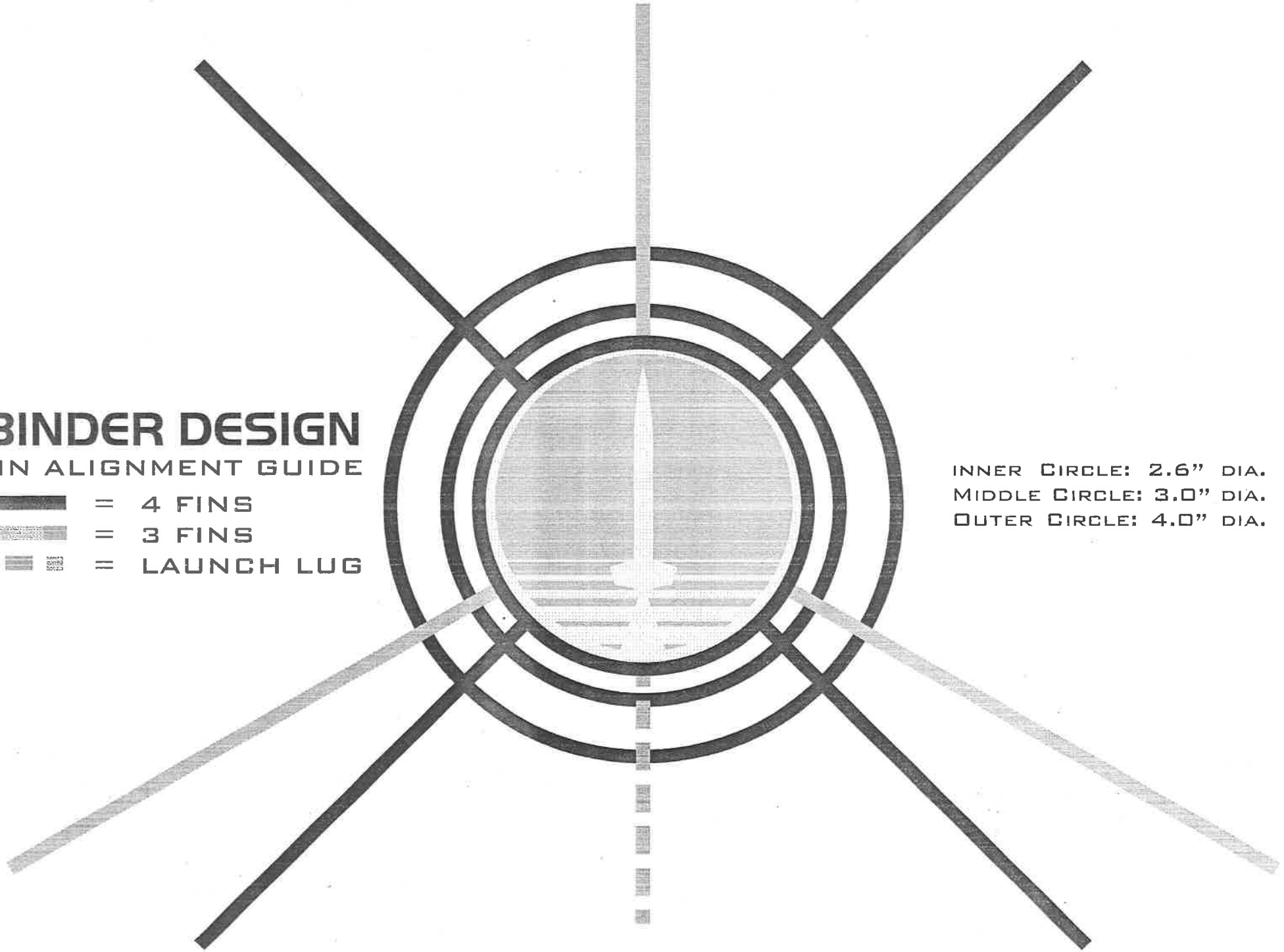
BINDER DESIGN

FIN ALIGNMENT GUIDE

= 4 FINS

= 3 FINS

= LAUNCH LUG



INNER CIRCLE: 2.6" DIA.
MIDDLE CIRCLE: 3.0" DIA.
OUTER CIRCLE: 4.0" DIA.

"EZ MOTOR RETAINER" INSTRUCTIONS

Finally, a simple, affordable motor retainer that can be installed on new rockets or retrofit to already built rockets. Retains Aerotech, CTI, and snap-ring style hardware!

BINDER DESIGN

Contents:

2 Threaded Inserts
2 Stainless Screws
2 Short Nylon Spacers
2 Tall Nylon Spacers
2 Washers

Needed:

Pencil or Pen
Straightedge
Center Punch
Drill
15/64" Drill Bit
5/32" Hex Key
3/32" Hex Key

Important!: The EZ Motor Retainer is designed to work on rockets with the motor tube flush with the back centering ring. If your motor tube extends past the aft ring, you will need to trim it flush with the aft ring.

Preparation: Locate all of the parts and set them aside where they won't get lost. If you are missing anything, please contact Binder Design for replacement.

Marking for drilling: First, using your straightedge, draw a line across the aft centering ring, centered across the motor tube, **but not in line with any of the fins.** See Fig.1

Locate one of the metal washers and note that one side of it is clipped.

Now, slide a motor casing into the motor mount tube partway, and slide the clipped part of the washer against the casing, intersecting the line you just drew. Refer to Fig. 2 Mark by drawing a circle where the center of the washer hole intersects the straight line you drew earlier.

Repeat this step for the other side.

Drilling: Use a center punch or awl to make sure the drill bit does not wander when you start drilling the hole. After you've used the center punch, drill the centering ring all of the way through with your 15/64" drill bit. Take your time and make sure you are not drilling at an angle!

Installing Inserts: Using your 5/32" hex key, thread the inserts into the ring. Go slow and make sure they are going in straight. Screw them in until they are flush with the back of the ring. **Do not over-seat!**

Using your Retainer: Refer to Figs. 3 & 4. The short nylon spacers are used with snap ring hardware, the tall nylon spacers are used with Aerotech and CTI hardware. When securing snap ring hardware, the clipped part of the washer catches behind the external thrust ring on the motor. When securing Aerotech and CTI hardware, the round part of the washer catches behind the aft closure of the motor. Be sure to use the right spacers for the job!

Fig.1

Aft view

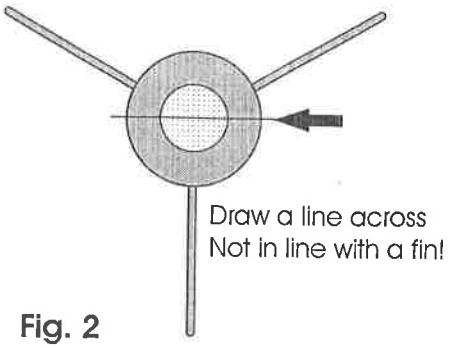
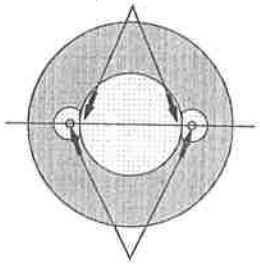


Fig. 2

Align clipped part of washer with motor mount. Slide washer against partially installed motor casing

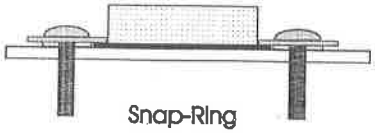


Mark the center of each washer

Fig. 3

Aerotech or CTI

Fig. 4



Snap-Ring

BINDER DESIGN

BINDER DESIGN 3.0" AVIONICS BAY KIT

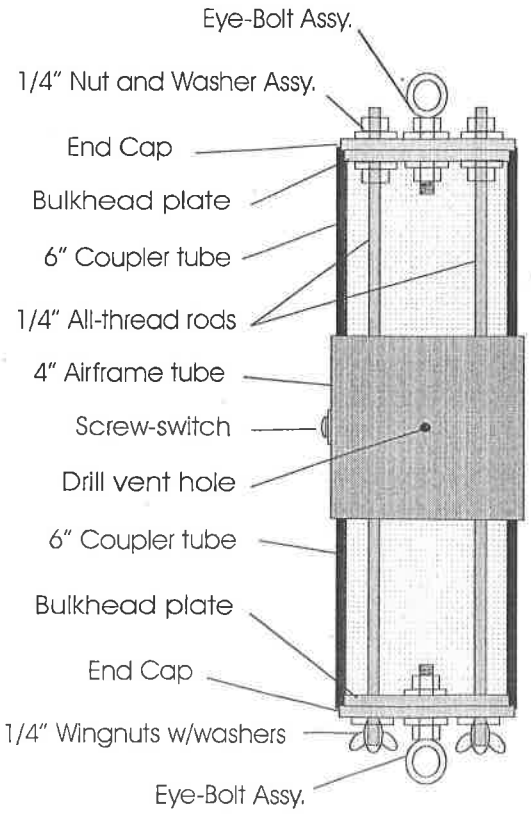
A full 12" long for mounting of altimeters, timers, transmitters etc. Features a 4" long section of airframe for mounting of switches and provides the perfect place for drilling of vent holes. Stepped end-caps minimize the chance of ejection gas leakage into the bay interior. Comes complete with screw-switch for remote arming!

PARTS LIST:

2 - 6" long airframe couplers
1 - 4" long section of 3.0" airframe
2 - drilled end caps
2 - drilled bulkhead plates
2 - all-thread sections
2 - eye-bolts
8 - 1/4" nuts
10 - washers
4 - wing-nuts
1 - screw switch with arming decal

NOTICE TO BUYER...This kit is not a toy! It is not recommended for children under age 18, unless used under adult supervision. If not assembled and used properly, it could cause property damage, personal injury, or death. By purchasing this kit, the buyer agrees that Binder Design nor the designer of this kit is not responsible for damage occurring through the use of the product and shall be held harmless in any such claims. If the buyer is not prepared to accept full responsibility for the use of this product, buyer should return unopened kit in original condition to place of purchase. Always follow NAR or TRA Safety Codes when using any model rocket products, and use common sense. This model may require FAA waiver for flight. Consult your local rocket club for more information or contact the NAR or TRA.

CUT AWAY VIEW



INSTRUCTIONS:

☐ Mark both couplers 2" from one end. Apply epoxy to the inside of the 4" long section of airframe and slide the couplers into the airframe up to the marks until they bottom out against each other inside the tube.

☐ Locate both sets of end caps and bulkhead plates. Note that the bulkhead plates are smaller and help to center the end caps over the opening. Apply epoxy between the end-caps and bulkhead plates and clamp until dry. Make sure that all holes line up perfectly and be sure not to get excess epoxy where the end-caps will mate with the bay tube.

☐ Locate both eye-bolt assemblies. Install them as shown in the cut away view. Make sure that the smaller bulkheads face the bottom of the eye-bolts. Be sure to use some epoxy or thread-locker on the threads before tightening.

☐ Install the All-thread rods to the end cap with the nuts and washers as shown in the cut away view. Again, apply epoxy or thread locker to the threads for a permanent installation. Do not apply epoxy to the ends that the wing nuts will be installed on!

☐ Epoxy the two washers to the outside of the other end cap to ensure that they won't get lost in the flying field. Test fit all components after the epoxy is completely dry.

Note that there are two extra wing nuts included. They are for securing your electronics in the bay. Most flyers prefer to mount their electronics to a thin sheet of plywood or G-10 fiberglass sheet that has a length of brass or aluminum tubing mounted to the backside with epoxy. This then slides over the all-thread rod and is secured with a wingnut.

Drill a vent hole if you plan on using barometric based avionics. Use the size bit recommended by your electronics supplier.

Switch Installation Instructions:

Drilling and mounting:

Mark where you want to place the hole for the switch, making sure on smaller diameter airframes that the back of the switch will not hit against your altimeter mounting. When you are pleased with the placement, drill a 3/8" hole through the airframe, and or coupler. Test fit the switch and make sure that there is clearance between the back of the switch and your electronics mount. If you are pleased with the placement, mix up a batch of epoxy and epoxy the switch in the hole. After your model is painted, affix the arming decal to your airframe by peeling off the application tape. The decal will come up with the tape. Line up carefully and press the decal into position, smoothing out the bubbles. Remove the tape and the decal will remain affixed to your rocket.

Attaching to your electronics:

If you have an altimeter with terminals to attach to a remote arming switch, just strip 1/8" off of the end of each wire, tin the ends, and connect to your electronics. If your altimeter does not have a separate terminal for a remote arming switch, you have to wire the switch on the positive lead of the battery. This is done by splicing the switch leads between the battery positive lead, and the altimeter's positive terminal. Be sure to use solder and shrink tubing on the splices.

Switch operation:

The switch closes the circuit by turning the screw clockwise, and opens the circuit by turning counter-clockwise. Be aware that the contact may be intermittent when the screw first closes the circuit, but as it is tightened the circuit becomes complete.

Final finishing:

Harden the ends of the Avionics bay with some thin set CA to make it more durable as well as keep the tubes from fraying or unraveling at the ends. Doing this ensures that your altimeter bay will last a long time. Make sure to sand the roughness off the ends of the tubes after this step and check the fit of the end caps.

Setting up for deployment charges:

The method that we use at Binder Design is the 1.5 gram mounted charge holders available from Dog House Rocketry. They are the easiest way to set your rocket up for altimeter based deployment. One of our 4" diameter rockets usually takes 1.0 to 1.5 grams of black powder depending on the length of the tube.

After the black powder is added, use a bit of flame proof wadding to fill the remainder of the cap in order to keep the electric match in contact with the black powder. Tape the charge wells securely with masking tape, locking the prepared charge inside. Now you are ready to finish prepping your rocket for flight.

ENJOY!

BINDER DESIGN
SCREW SWITCH

A robust screw activated switch, featuring fully soldered connections, stranded wire, strain relief and ferrule ends. Includes vinyl arming decal.

Installation Instructions:

Drilling and mounting:
Mark where you want to place the hole for the switch, making sure on smaller diameter airframes that the back of the screw will not hit against your altimeter mounting. When you are pleased with the placement, drill a 3/8" hole through the airframe, and or coupler. Test fit the switch and make sure that there is clearance between the back of the switch and your electronics mount. If you are pleased with the placement, mix up a batch of epoxy and epoxy the switch in the hole. After your model is painted, affix the arming decal to your airframe by peeling off the application tape. The decal will come up with the tape. Line up carefully and press the decal into position, smoothing out the bubbles. Remove the tape and the decal will remain affixed to your rocket.

Attaching to your electronics:
If you have an altimeter with terminals to attach to a remote arming switch, just attach the ferrules to your altimeter's switch terminals. If your altimeter does not have separate terminals for a remote arming switch, you have to wire the switch on the positive lead of the battery. This is done by cutting off the ferrules and splicing the switch leads between the battery positive lead and the altimeter's positive terminal. Be sure to use solder and shrink tubing on the splices.

Switch operation:
The switch closes the circuit by turning the screw clockwise, and opens the circuit by turning counter-clockwise. Be aware that the contact may be intermittent when the screw first closes the circuit, but as it is tightened the circuit is completed.