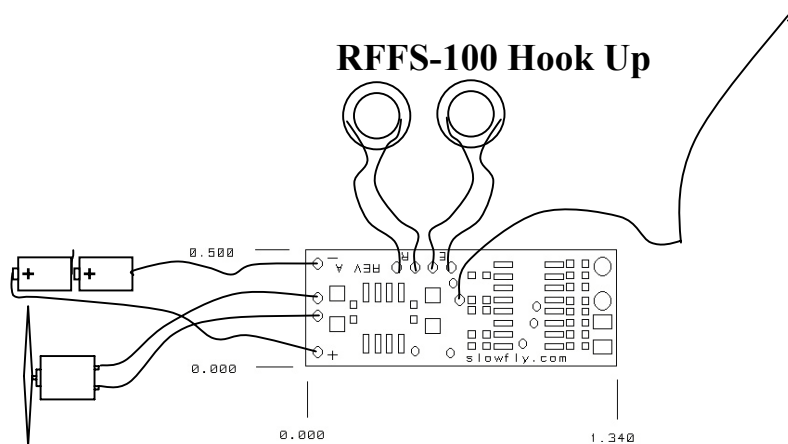


RFFS-100 USER MANUAL

| | |
|------------------|---|
| Voltage Input: | 1.5V to 5.5V. 2 to 4 cells or 1 lithium. |
| Weight: | 1.8 grams. |
| Channels: | Throttle, rudder, and elevator. |
| Receiver Band: | 72 Mhz CH's 11-60 |
| Mode: | FM negative shift. |
| Bandwidth: | +/- 76 KHz. |
| Current Draw: | .015A + motor + micro servos (2 servos at full throw: Amps = Batt. V / 50) |
| ESC Amps: | 1A Max. |
| Servo Coil Ohms: | 25 or greater (Dynamics Unlimited issue: 50 Ohms +/- 5%). |



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



RFFS-100 HANDLING ETIQUETTE

The RFFS-100 is built for extreme lightness. Care must be taken when handling. First, the board is .010" thick. It's still pretty tough but not like .062" circuit boards. Second, the board has no protective covering. Care must be taken not to let a dangling battery wire contact the board other than the battery lead sockets. Also proper etiquette should be observed when handling the RFFS-100 unit. When setting the unconnected unit down, metal surfaces should be touched first. When picking up, metal surfaces should be touched first with one hand before the other touches the unit. When handing the unit to your envious friend, touch him first with one hand before he grabs it out of your other hand. And touch him first before you wrestle it back. After the unit is installed, first contact should be either the batteries, motor, or of the left side of the unit as shown above, at or near the sockets.

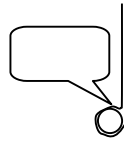
Do not panic! The above dissertation is mostly important in low humidity seasons or locations when static sparks are flying. The board was designed with an embedded ground plane around the circuitry and components on both sides along with very short runs. This makes the RFFS-100 very tough to static discharge but the above information will help you not test it.

WHAT ELSE DO YOU NEED

1. 1/32, 1/16 and 1/8 contest balsa.
2. Kenway KR1-D or KP00 motor and Union 80 prop.
3. Two or three 50 ma/hr batteries (2 cells & KR1D = 6+minutes; 3 cells & KP00 = aerobatics).
4. CA thin glue, thick glue and zip kick.
5. Soldering Iron.
6. Stainless steel tweezers or plastic tweezers (non-magnetic tools).
7. Brass 3/8" tube for cutting actuator holes.

ACTUATORS

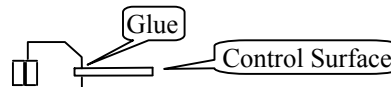
1. **ACTUATOR INSTALLATION.** Once the hinges and control surfaces are in place (before they are attached to the airframe) use a 3/8" diameter brass tube (local hobby supply) sharpened at one end to cut a hole for the actuator. Be sure to have the brass tube centered on the 1/16" gap before cutting. Now carefully cut an extra 1/32" to 1/16" off the control surface side for a clearance gap. Place the actuator in the hole and hold in place with a scrap balsa wedged in the clearance gap. Adjust the actuator position to where it is parallel and centered before gluing in place.
2. **MAGNET INSTALLATION.** Clean the magnet. Strip the insulation off a 1" piece of blue wire. Bend one end to match the curve of the magnet and then a sharp right angle at the end of the curve as below. Apply thick Ca glue on the wire around the magnet, and hit it with the zip kicker.



Bend the remaining part of the wire as below.



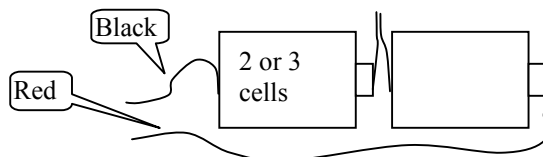
With the magnet centered in actuator push the end of the wire into the control surface. This should hold it in place well enough to glue it with a tiny dab of thick Ca glue on either side of the control surface. **Make sure the flats of the magnets are fore & aft.**



Now make any adjustments to center the magnet in the coil by bending the wire. Be sure to use non-magnetic tools.

MOTOR AND BATTERY PREP

1. **MOTOR.** Cut 2 blue wires about 4.5" for thistles or 3.25" for Lil' Skeeter. Strip 1/4" of insulation off one end and 1/8" off the other. Solder the 1/8" ends to the motor terminals. The 1/4" ends push into the control module at final assembly. For a KP00, replace the heavy wires and cut the plastic tabs off.
2. **BATTERIES.** Cut a red wire about 2.25" for the + terminal and a 1" black for the minus. Strip 1/4" of insulation off one end and 1/8" off the other. Cut the + terminal tab on one battery and the minus terminal on the other battery to where they extend 1/4" beyond their outside diameter. With a hot clean iron tin both sides of the 1/4" part of the tab being careful not to melt the plastic cover on the + end of a battery. If it does melt it may short the battery. Now clean the tip of the iron and solder the two batteries together. Cut the other tabs to about 1/4" or longer if preferred and solder the longer red wire to the + and the short black wire to the minus. The 1/4" ends push into the RFFS-100 at final assembly.



A little additional info:

Be careful connecting the battery. Double-check the polarity before connecting. There is no reverse polarity protection. The red dot on the receiver is positive. There is also a + sign on the board.

To turn the receiver on and off, I just plug the positive wire in and out of the receiver. Just be careful when it's out that it doesn't make some unplanned contact with the receiver in a bad place.

The yellow wire is for the antenna. I recommend going to the local music store and buying a .010" to .013" diameter guitar string and turning it into a 15" whip. You can solder a short piece of the yellow wire to it to plug into the RFFS-100. Be sure to put a small piece of balsa on the end for eye protection.

Glue hint: I put a large drop of Ca glue on a piece of poly plastic (a baggie will do) and then use a piece of wire to transfer from the drop to what is being glued. The best part is when you forget about it and you spend the rest of the day with people asking you why that baggie is stuck to your arm.

IMPORTANT

The RFFS-100's software will automatically detect transmitter types (Hitec/Futaba, JR, or Airtronics). In order for the automatic detection to work it is important that power to the transmitter is on before power is applied to the receiver. The throttle also should be in the off position when the receiver is powered up.

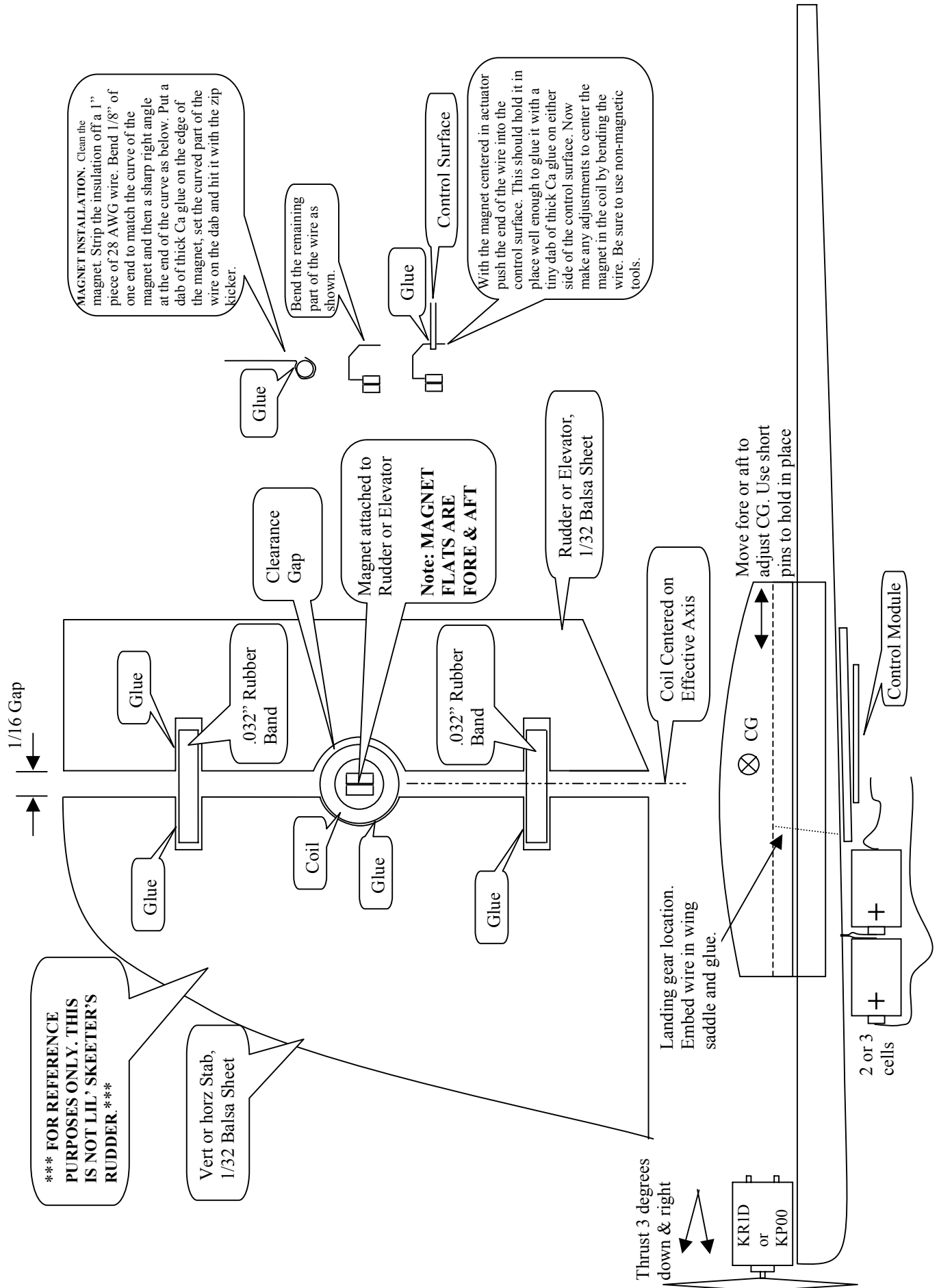
THINGS THAT MAKE IT WORK

- The coils must absolutely be centered on the effective axis.
- Keep the glue off where the rubber hinges bend.
- Keep at least a 1/16-inch space for the rubber hinge to bend.
- Magnet flat sides should be fore and aft.

Have Fun,

DWE

www.smallrc.com



***** FOR REFERENCE PURPOSES ONLY. THIS IS NOT LIL' SKEETER'S RUDDER.*****

Vert or horz Stab, 1/32 Balsa Sheet

MAGNET INSTALLATION. Clean the magnet. Strip the insulation off a 1" piece of 28 AWG wire. Bend 1/8" of one end to match the curve of the magnet and then a sharp right angle at the end of the curve as below. Put a dab of thick Ca glue on the edge of the magnet, set the curved part of the wire on the dab and hit it with the zip kicker.

Bend the remaining part of the wire as shown.

With the magnet centered in actuator push the end of the wire into the control surface. This should hold it in place well enough to glue it with a tiny dab of thick Ca glue on either side of the control surface. Now make any adjustments to center the magnet in the coil by bending the wire. Be sure to use non-magnetic tools.

Note: MAGNET FLATS ARE FORE & AFT

Thrust 3 degrees down & right

Move fore or aft to adjust CG. Use short pins to hold in place

2 or 3 cells

Control Module

Landing gear location. Embed wire in wing saddle and glue.

Coil Centered on Effective Axis

Rudder or Elevator, 1/32 Balsa Sheet

Magnet attached to Rudder or Elevator

Clearance Gap

.032" Rubber Band

.032" Rubber Band

1/16 Gap

Glue

Coil

Glue

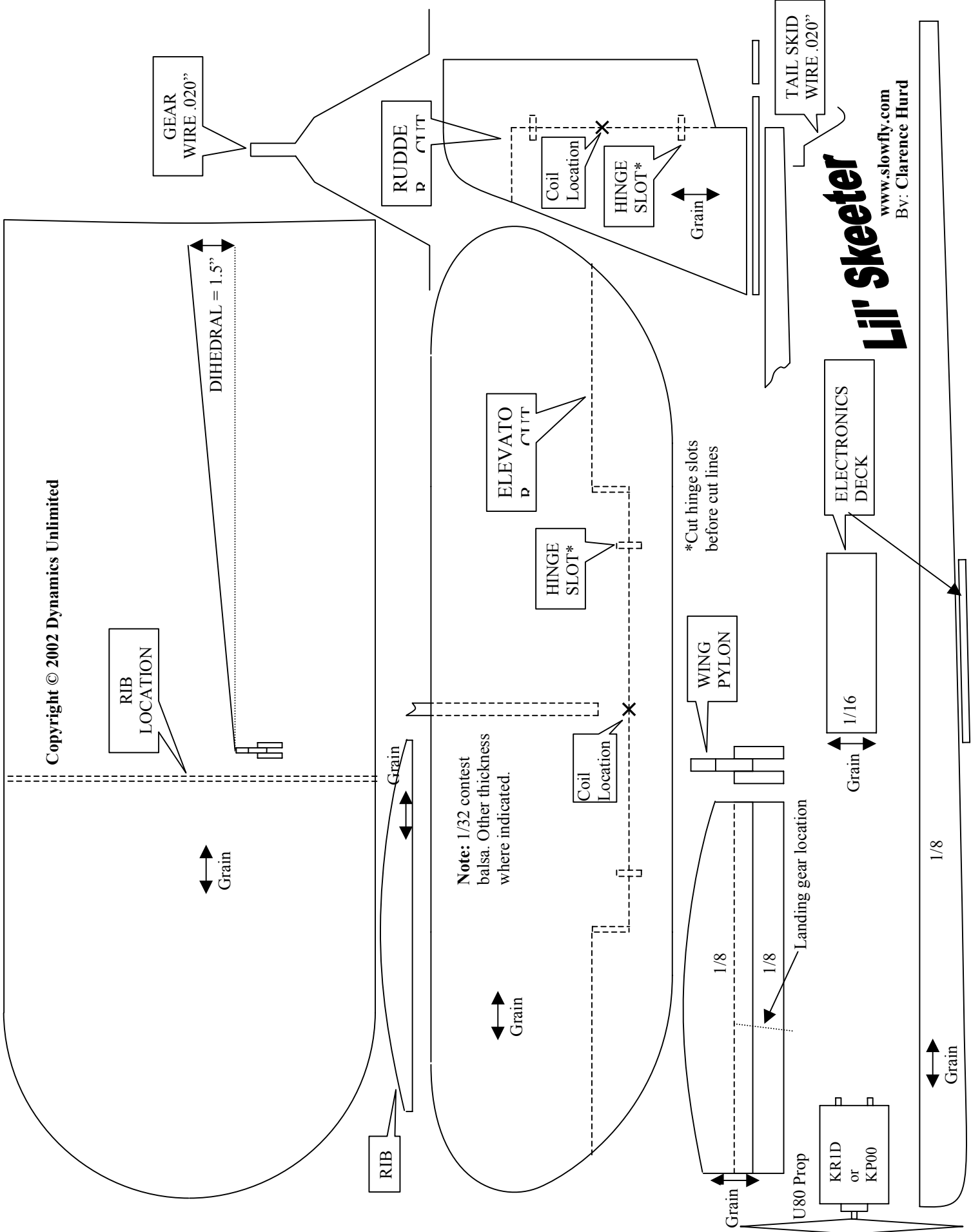
Glue

Glue

Glue

Control Surface

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GEAR WIRE .020"

RUDDER CUT

Coil Location

HINGE SLOT*

TAIL SKID WIRE .020"

RIB LOCATION

DIHEDRAL = 1.5"

ELEVATOR CUT

HINGE SLOT*

*Cut hinge slots before cut lines

WING PYLON

ELECTRONICS DECK

RIB

Note: 1/32 contest balsa. Other thickness where indicated.

Coil Location

1/8

1/8

Landing gear location

1/16

KR1D or KP00

U80 Prop

1/8

Lil' Skeeter

www.slowfly.com
By: Clarence Hurd