

## Little Freak 27



**Here you have one of the thoroughly proven, very successful W. Coast Half A radio control airplanes by Dale Root.**

**Dale Root, genial proprietor of Root's Hobby Hut, Oakland, Calif., with his Half A radio control. He called it "Little Freq. #27" which we modified a little to "Freak."**

This Half A R/C stunt ship has all the features of good precision and stunt flying usually found in larger and heavier R/C models. Little Freak "27" travels fast and clean, giving good wind penetration. The incorporation of both rudder and elevator controls allows positive and very snappy flights. Yet it recovers from tight turns and maneuvers as fast as it enters them. It has 300 sq. in. of area and weighs 20 oz. ready to fly. Not too big for a Thermal Hopper engine on a 7/3 propeller.

The good flying characteristics of Little Freak "27" were developed over a period of testing and flying various force setups and airfoils. The semi symmetrical airfoil has a low center of pressure travel which adds greatly to the longitudinal stability of the ship. The thrust line, wing, and stabilizer are nearly on the same line. The wing is close to the C.G. All heavy equipment such as batteries, escapements and receivers are as close to the center of gravity as is practical. These features make for quick maneuvers and quick recovery at a touch of rudder or elevator. Because the greatest weight of the ship is centered about the pivot point or C.G., it takes very little force of the control surfaces to change its flight path, and consequently the stabilizing force of the vertical and

horizontal fins returns it quickly to level flight. So much for why you will have a good safe R/C stunt job.

An Aerotrol receiver of 2 1/2 oz. was used, but any other receiver of a similar weight will work as well. The Twin tube receiver of North American Products is reliable and lightweight. A Bonner Compound escapement is used on the rudder. This escapement in turn will operate the elevator escapement. For elevator escapement, a Citizen Ship PSN, or similar reliable lightweight escapement should be used. When flying you must remember the elevator works in a sequence up neutral down neutral up etc. So if you wish "up" twice, for instance, you must run "down" off after the first "up" to get "up" again when you need it.

The compound escapement is an amazing and reliable bit of precision machinery. It gives you "right" when you want it and "left" when you want it. You obtain elevator by beeping three times rapidly. The controls will follow as fast as you can snap the transmitter button on and off. The ship will respond very rapidly to your signal. If at first you get confused attempting maneuvers with Little Freak "27" don't do anything; as the Cub instructors say, "the ship will come out level and flying safe."

Perhaps taking you through one short flight would be of help when you're ready for the ship's first solo hop. Be sure you check and correct for warps in the wing, stabilizer and rudder. The escapements and controls must not be sticky or sluggish. They should work freely on a practically unwound loop of W rubber. Either R.O.G. or hand launch is safe. When the model has climbed twenty feet or more, beep the transmitter once. This gives right rudder. If you wish a full 360 deg. circle around the transmitter, keep beeping once and holding momentarily. You can get a tight turn or a wide circle depending on the number of beeps you give it. For left turns, do the same, except give two rapid beeps; holding the second beep will give left rudder. Keep the Little Freak "27" heading upwind while you're gaining altitude, but practice right and left turns. This way you'll get used to timing and response of controls.

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When you have 100 ft. or more of altitude try your elevators, three beeps, and see whether you have up or down. The elevators, remember, work in a sequence. (You could check this before take-off with engine running so that "up" is the next elevator control.) Give it "down" elevator into the wind and dive for about 25 ft. this will be about a 60 deg. dive. As soon as you release elevator, beep three times and hold it, giving "up" elevator as the ship levels out of the dive. You'll get two of the quickest and cleanest 10 ft. diameter loops you ever saw. If you want more than two consecutive loops you'll have to "work" the elevator after the first loop. Give it a touch of "up" at the bottom and touch of "down" after it goes over the top for as many loops as you want.

For a wing over, dive 10 ft. to 15 ft. and release control. As it approaches a 45 deg. climb on the pull out, hit right rudder once, and hold, until it goes over in a nice clean arc on the right wingtip. Release rudder and touch it again just as it levels out downwind this will stop any zooming tendency it may have.

For an Immelman, dive downwind for 10 ft. to 15 ft. and release control. As the ship approaches the top of the loop hold right rudder until it rolls over, then release.

For barrel rolls you'll need enough rudder travel, with high airspeed, to overcome the tendency to zoom after a dive. If necessary, increase the rudder movement from 1/4" each way to about 3/8" and you'll have enough. Start your 25 ft. dive about 20 deg. to the left of upwind. As the ship starts the pull out, just as it's level, hit left rudder two beeps and hold it until she rolls completely around. If you hold for only half a turn you'll get a half roll with a half loop, and pull out downwind. This makes a beautiful split "S".

If you want a fast dive over on her back, do a three-quarter loop and hold down elevator. She'll dive about 10 deg. past the vertical and like a bomb. You'll swear the Wingtips touched each other on the pull out! Remember that in any maneuver you do, you can get clean near level pull out by giving a touch of rudder as it passes the bottom of the dive.

Upside down flying is not so easy as other maneuvers because of the wing dihedral. However, it is accomplished by doing a big half loop to maintain speed, starting downwind. Just before the ship goes over the top, give "down" elevator and hold it there. If you're directly into the wind it will hold upside down flight for 25 ft. or more. If you use less dihedral to improve this maneuver, you're on your own! You'll lose your good stability for level flight, and the quick recoveries from all other maneuvers.

When the engine quits, Little Freak "27" will have a steady slow sinking glide, into the wind or downwind. If you're overshooting the landing you can still turn close to the ground without worry of a severe drop off, or a stall after the turn. I've circled the landing spot on the 100 ft. mark and landed cross wind with success.

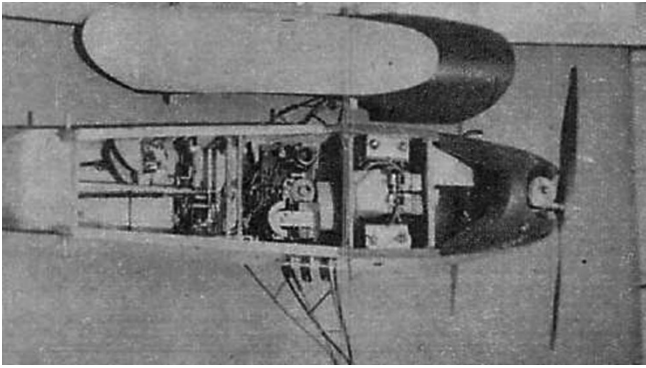
Before your next flight, wind those escapement rubbers, because you'll use up a lot of knots before landing again. I've found that Jasco rubber lube, or a similar lubricant, prolongs escapement rubber life and elasticity by several days of flying.

Complete building details are available on the full size plans.



**Full size plans for quick construction of this simplified design are available. Send self-addressed, stamped envelope to Air Trails for plan data on this and other models in Annual.**

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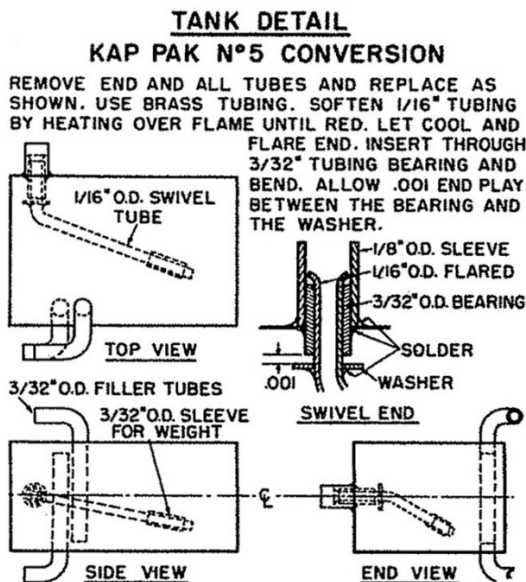


**Control Department:** Dale uses the Super Aerotrol as developed by Berkeley Models. A Bonner compound escapement is the other key item. For his power friend Root utilized a Thermal Hopper.

For planking the fuselage top, behind the wing to the tail, select a good white bendable 1/32" sheet. After it is cut to the approximate size, steam it to shape over the good ole tea-kettle. It will fit very easily this way.

Shape the fuselage wing hatch from three soft 1" planks or one large soft block. After it's shaped and sanded to fit, then hollow out to 1/8" thick and cut out to fit over the wing center section. Use four small aluminum tabs projecting 3/8" from the bottom of the block, 1" in from the leading and trailing edges of the wing cut out. The wing rubbers will hold this on. Use three 5" loops of 1/8" rubber on each side. Cover the entire fuselage with silk for strength.

The foam rubber, from powder puffs, works very well for shock mounting the receiver and relay. The receiver won't fly around on rough landings with foam rubber, as it will with rubber bands.



**Construction:** The wood selection is very important for Half A R/C ships. The purpose of selecting wood is to get the most strength where needed with hard balsa, using softer, lighter woods for non-structural parts like planking and forming blocks.

Assemble the fuselage by first gluing the 1/8" x 3/16" longerons and uprights in place onto the inside surface of the sides. Also glue the 1/16" balsa sheet nose doublers onto the sides. After this sub-assembly is dry, use the conventional method of joining them by using the spacers) formers and firewall. Leave the bottom planking off until the tail surfaces, landing gear and torque tubes are in place.