"EL BRONCO"

by Wally Zober

Top: The "El Bronco" rests on the runway ready for flight. It is a big ship for .60 sized powerplants. Ample in area, roomy. The ship is steady in flight and maneuvers well. At left: set for its first flight with MRC Digital system. Right: Wally and bird, engine cowled, well cooled.

You say you're tired of those little mini airplanes? You say you're tired of hearing your neighbors comment about you, a grown man playing with toy airplanes? Or maybe your teenage son or daughter has hit you with the remark "Hey dad that little airplane you're flying looks like a Teeny Bopper." If you've been clobbered with these cliches, the *"El Bronco"* might be your cup of tea. It's a large airplane, 68" wingspan, and uses a lot of balsa.

The idea for the *"El Bronco"* came about in a strange way. I wanted to do a scale version of a home-built aircraft. To do this you have to be a fast designer and builder. To be fast in both endeavors takes out the hobby aspect and turns it into a job. One job is enough! I do my designing and building for fun and I enjoy it greatly.

Well that's enough philosophy, let's get back to model building. I had picked out two home-built aircraft which I thought would lend themselves to R.C.; but before I had my drawing half complete, both designs were published. "That's the name of the game". I decided to do an original that looked like a home-built. I wanted a low wing tail-dragger type, as they can take off almost anywhere; grass, sand, dirt, concrete or black macadam runways.

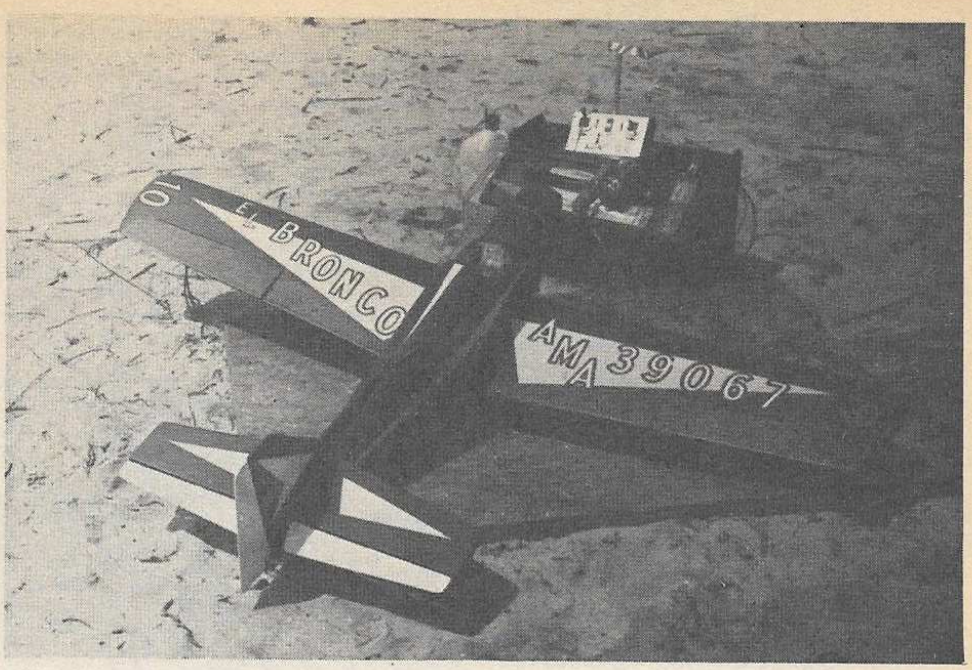
The first flight for the *"El Bronco"* turned out rather uneventful except for the first take-off. I had my wife at the end and to the left of the runway. She had her camera in hand and was all set to take a picture of the first take-off. The plane had to take off in a cross-wind. I gave it full throttle and it started to race down the runway. I had the mixture a little too rich and she began to load up; but not enough to quit. The engine began to sag just as a gust of wind caught it and sent it straight for my wife, who in the true tradition of all great photographers turned and started running for dear life with the *"El Bronco"* chasing her. The second take-off was a lot better and the ship took off beautifully, even in the high wind. On this sand bar we live on called Long Island, a calm day is wind 10 to 15 m.p.h. The day I flew my brainchild for its maiden flight, the winds were 20 to 25 m.p.h. with higher gusts. I still had the engine a little too rich as it didn't peak out the way I would have liked it to. I tried a few maneuvers and the crate responded quickly and easily; loops were large and smooth, rolls were straight and true. It was really fun to fly it.

Support Equipment

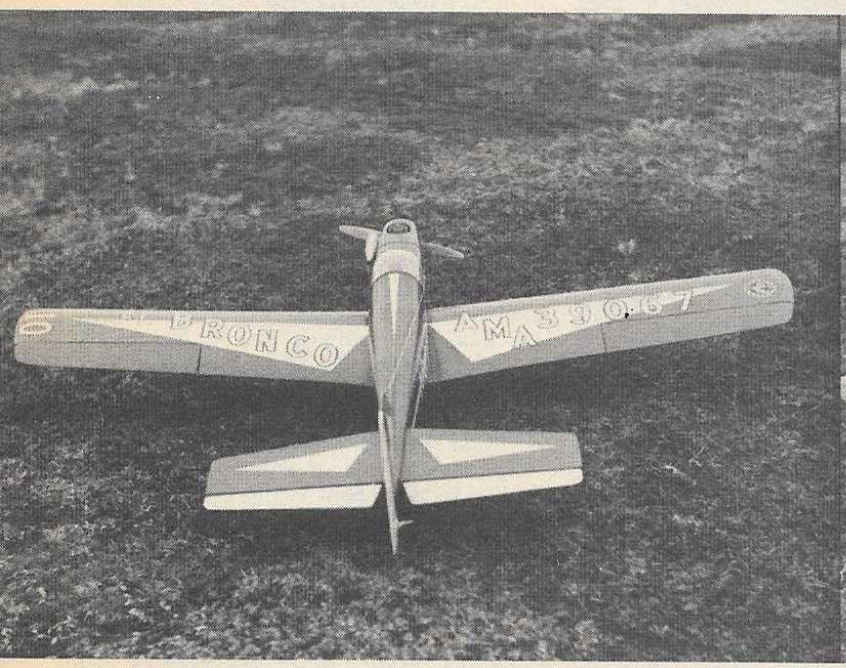
At this point you were probably expecting construction details. That will come a little later. I assure you they will be short as construction articles bore me. Most scratch builders have their own techniques. Back to support equipment. Whether you're dealing with a 747 super jet or mini R.C. aircraft you have to have ground support equipment. The only differences between

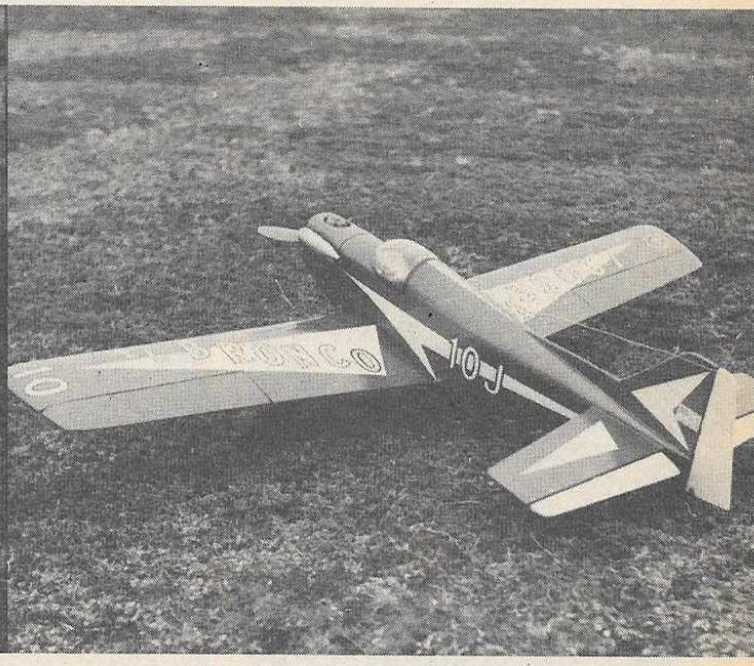
A home-built aircraft look to this big sport beast for the HP .60 engines. Smooth in the air, responsive, stunt-worthy. Flys fine on an MRC-F-700 Digital system. 68" in span, easy to build.

Photos by Wally Zober

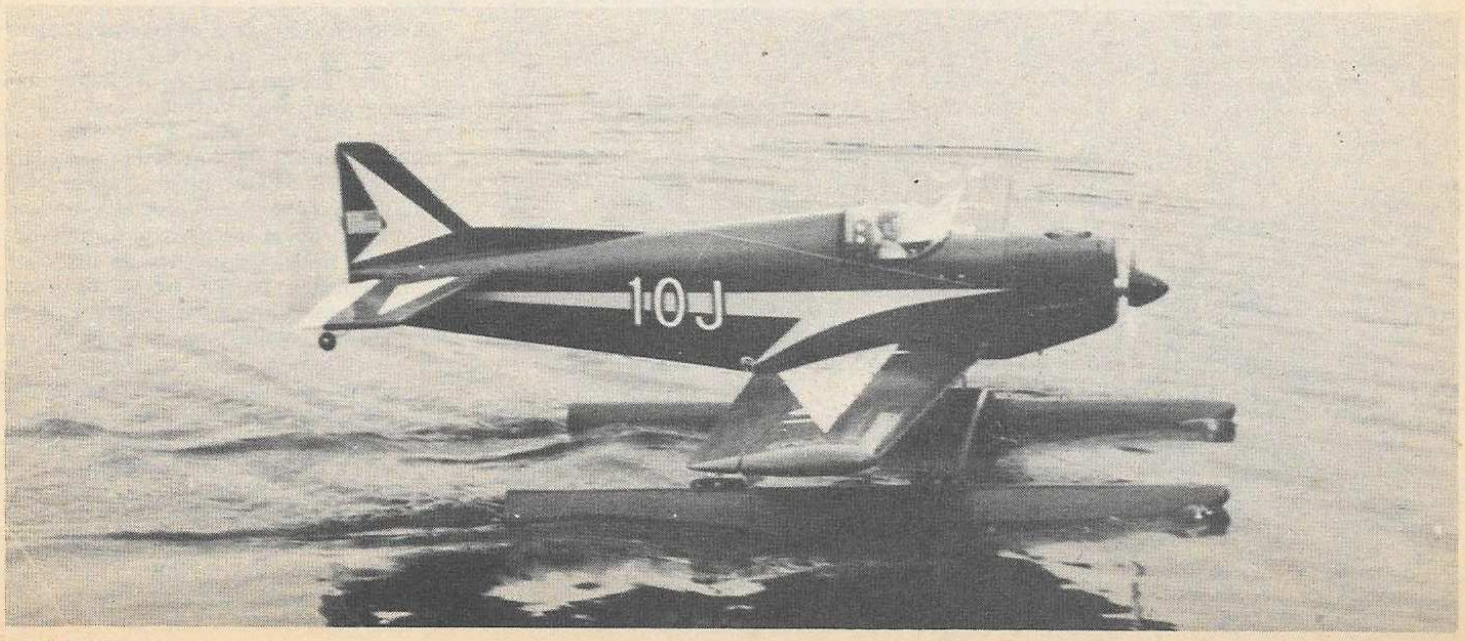


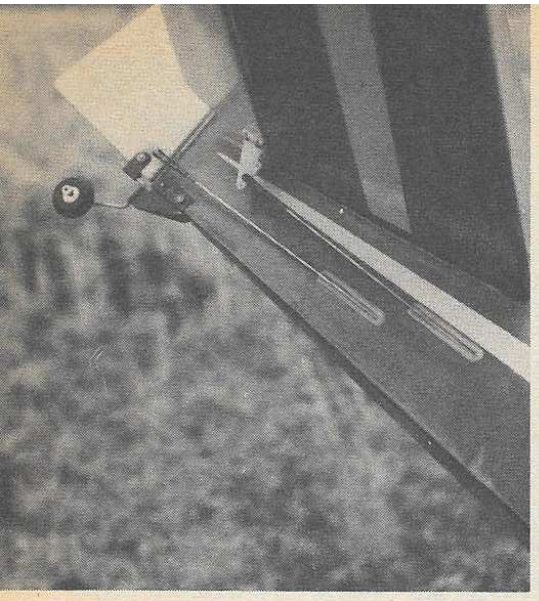
"El Bronco" uses up your surplus lumber supplies, but it's a rugged and durable framework for the trouble. If you've a yen to experiment, this ship has the room for gadgetry and cameras aboard and the power to haul it. The ship has been extensively test flown, displays no bad habits. Plan details all tapered ribs.





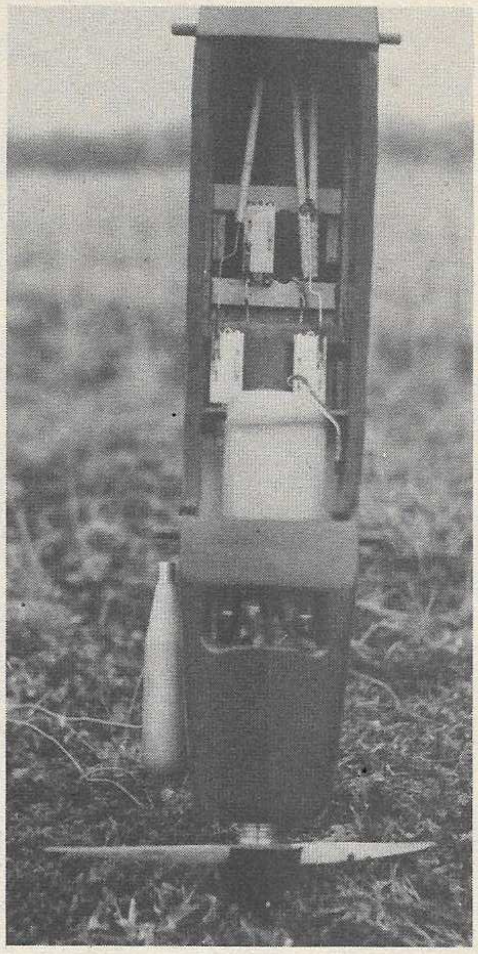
It makes a good sport flying ship and a trainer for pattern competition. The fuselage will take any radio equipment going and big fat fists and tools to boot. Keep the tail surfaces on the light side and balance as per the plan C.G. indications. Below: "El Bronco" tries its sea legs on the icy waters.



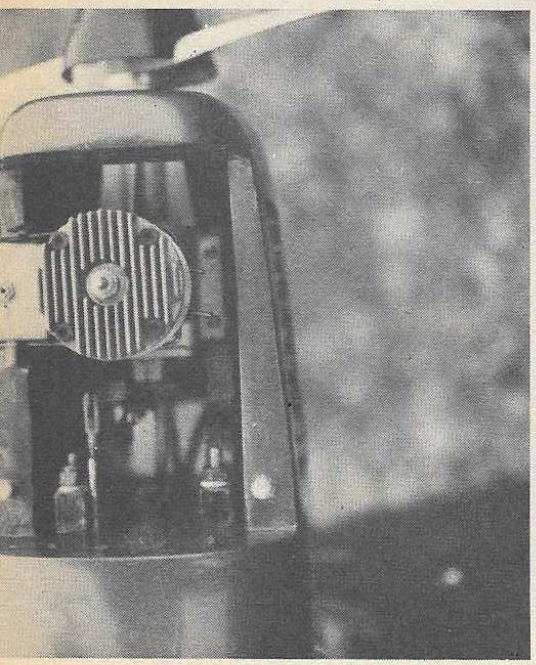


The aft end fittings are all available at well stocked dealers. Tailwheel follows nicely with rudder motion. Pushrods exit the fuselage via molded plastic fairleads. Neat, free of binds.

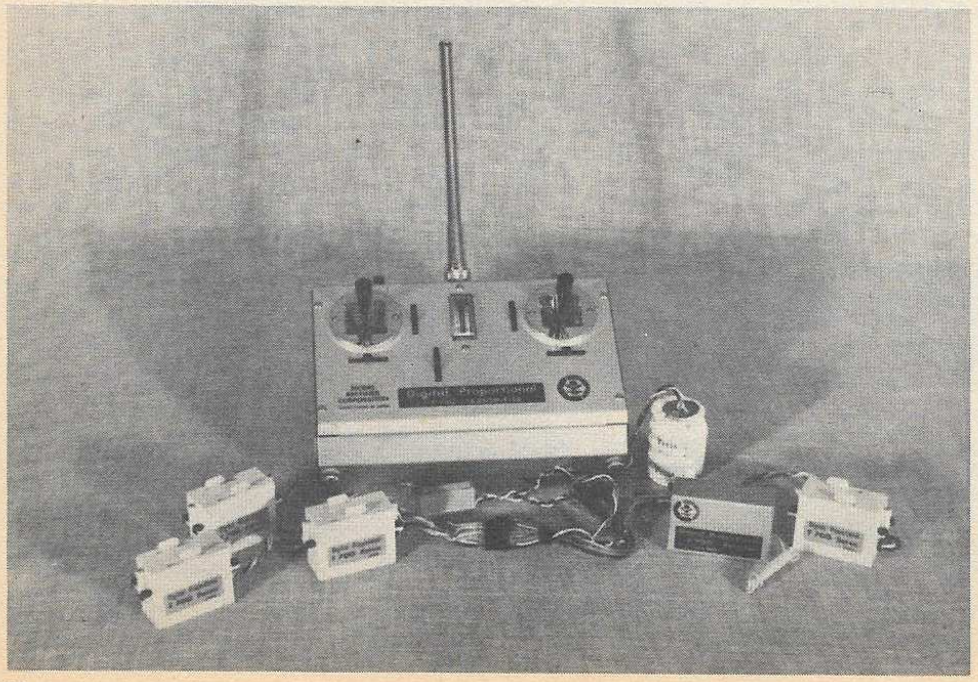
Below: May this be the only time that spinner meets the sod. An HP .61 in nose with muffler visible. Cowl cooling duct, fuel tank, receiver and powerpack is next, serves and pushrod aft.



The HP-61 finds ample room in the cowled nose. Mounting brackets are bolted firmly to firewall. Air cooling louvers drawn off engine heat as air exists out at base of firewall.



MRC's Digital Proportional system used in the "El Bronco" functioned well in all respects. The angled transmitter antenna is comfortable.



the ground support equipment is the 747 and the mini aircraft is size, cost and quantity. With our type aircraft you can limit the ground support equipment to a fuel bulb, chicken stick, starting battery, transmitter, tool box etc. If however, you choose to be a little more sophisticated about your R.C. flying, there are many fine products on the market today to get you into the air flying much faster.

Your most important piece of ground support equipment is your transmitter. I used the new Model Rectifier Corp. Digital Proportional rig the 5 channel MRC F-700. I've been flying this rig for the last three months through some of the coldest and dampest days of winter. The rig has never let me down. The transmitter is extremely comfortable for the flyer to hold. The antenna angles up from the top of the transmitter instead of straight out. This provides for more effective radiation pattern. The transmitter is light in weight, I won't go into detail on the engineering aspects as this has been covered already in several product reports. The transmitter sticks are of the closed type, trim knobs are located in their standard positions for dual stick units. The fifth channel control is located to the left and below the output meter. This unit has a charging light built on the outside of the transmitter. The airborne system for the MRC F-700 consists of four servos, switch, harness and battery pack. All up-flying weight is about 15 ounces. The airborne battery pack is a 450 MAH nicad. The receiver is enclosed in a metal case and weighs 1.8 ozs. The servos are quite small 1.5" x 2.25" x .83" and weigh 1.8 ozs. These servos are powerful and the manufacturing qualities of this MRC-F-700 system seems to be excellent.

The next piece of support equipment I'd like to talk about is the Penford Auto-Start 70 model M-1 using a 12 volt motorcycle battery. Once you've tried an electric starter you won't be able to go back to broken fingers and/or the chicken stick. I've used my starter winter and summer. It's one piece of equipment I would not like to be without. It is also a handy tool for breaking in a new engine in your basement without smoking up the place. Lubricate the engine well and run it with the starter.

Another handy piece of ground support equipment is the Andy Wright Electric Fuel Pump. It was designed for filling and emptying your R.C. Aircraft and it does this exceptionally well. It operates on 1-1/2 to 4 volt supply. For my power plant I used the HP .61 RC engine. This is a top quality high power and precision engine, with several novel features in two stroke power unit development. It has the modified Schnuerle-type porting for optimum gas flow into combustion chamber. Schnuerle-porting makes for a high volumetric efficiency and minimum gas glow losses due to friction. The multi-speed carburetor on the R.C. version of the HP engine is of an original design, which gives accurately metered fuel flow throughout the speed range.

Construction

As I stated earlier in the article I will not go into step by step construction. The experienced modeler and/or scratch build-

Lifting off, the ship climbs out fast, tracks steady and true. These larger ships give just a bit more time for you to think, though when you err, you pay in glue. It's fun to fly it.

Wally's Rand Starter cranks up the HP engine for another go-around. These taildragger types do well on rougher fields such as this one, but they require a little more technique to master.

er shouldn't have any problems building the "El Bronco."

Fuselage

The fuselage sides are cut from 1/8" x 6" x 48" medium-hard balsa sheets. Two sheets are required. If you can get a piece of Mylar drafting sheet, trace off the fuselage outline. Do this very carefully and make sure that you hold the two degrees (2°) positive incidence for stabilizer and three degrees (3°) positive incidence for wing. The Mylar will make a very accurate template that can be used many times. Cut out two sheets and match them for accuracy. Glue in 1/4" x 45° longerons and all diagonals. Glue in 3/8" x 1" x 13-1/8" medium hard balsa servo rails and add plywood doubler (1/16" thick) to inside of the fuselage between B2A and Fl firewall. Don't forget to cut out wing rib outline. The rest of the fuselage is assembled in the standard manner. Line up all bulkheads, make sure they are square. Add bottom sheet 1/4" sheet medium-hard balsa, capstrip top of fuselage with 3/32" x 1/4" strip balsa.

Wing Construction

The main spars of the wing are made from 1/4" x 1/2" x 36" spruce (four required), two (2) per wing panel top and bottom. All ribs are cut from 3/32" sheet balsa and capped with 3/32" x 1/4" strip balsa. Wing leading edge is 1/2" x 1" hard balsa. Leading edge and trailing edge are covered with 3/32" x 4" in sheet balsa top and bottom. Ailerons are of the barndoor type. They are a little harder to build; but I find them more effective than strip ailerons.

Stabilizer and Elevator Construction

Stabilizer is built up from 1/8" x 1/4" balsa strip and covered top and bottoms with 1/16" x 4" medium balsa sheet (contest grade). It is light and you'll find there is less chance of building in a warp. Elevator is cut from 3/8" hard balsa sheet, (2 required)

Rudder & Dorsal Fin Construction

Rudder construction is same as stabilizer. Rudder & dorsal fin are made from 3/8" hard balsa sheet.

Landing Gear

Landing gear and landing gear block can be purchased from any hobby shop. I used B.K. model blocks and wire landing gear.

Finish

Use Sig balsa filler to cover any surface defects. Two coats of clear dope followed by two coats of talcum mixed with clear. Use about a 1/2 teaspoon of talcum per ounce of dope. Keep dope thin and sand lightly between coats. Cover with Silron. I usually wet the Silron before doping. Apply two additional coats of clear, sand lightly and spray color on. One word of caution—I used metallic maroon, make sure that you have enough paint. If you are buying quart cans mix all of them together and stir well. I didn't do this and I ran out of paint half way through and had to purchase another quart which did not match. Build it light and you should have a nice flying plane.