

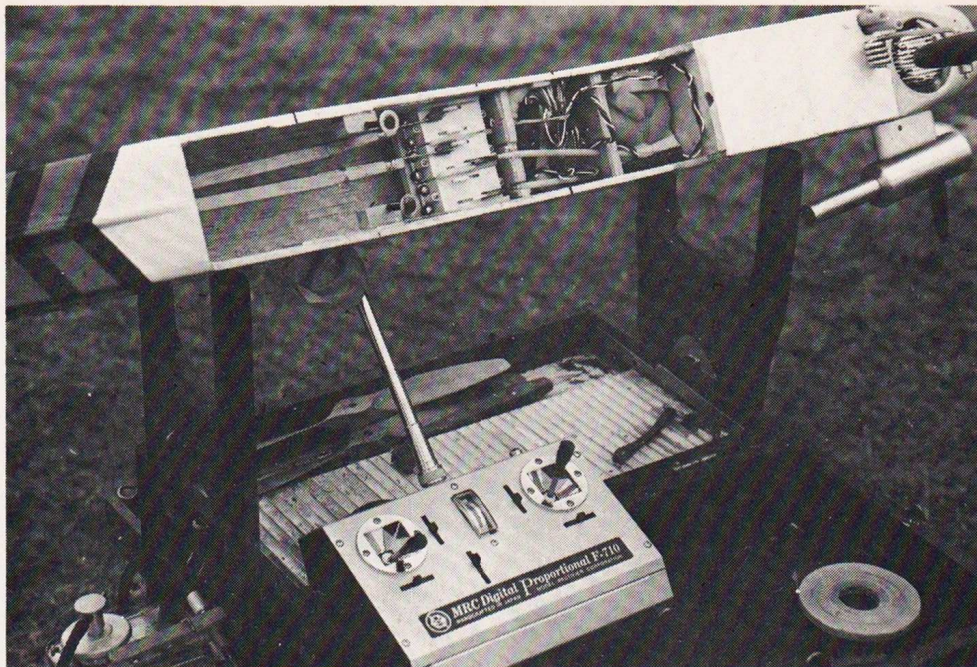
# FIELD AND BENCH

BY DR. JOSEPH MAKOVICH

## Top Flite's Contender

## MRC's F-710 Digital Taipan

## .61 R/C Engine



Tipped maybe, but just to better show innards of the Contender and amount of room

available for all the bits and pieces. Good shot of the F-710 at rest on the field box.

In August of 1969, I was honored to present my first Field and Bench article for M.A.N. Featured was the first model of the MRC 700, a new proportional radio with the distinctive transmitter case and angled antennae. The serial number was #3 and this set was one of the first dozen sent to the United States from Japan. I still have the set and its operation has been flawless. It has been flown in big sixty pattern ships, gliders and in several scale sport types. I have lost count but I am sure at least three to four hundred flights have been made. My policy is when a unit is working so well, hang on to it.

In the electronics world, it is fatal to

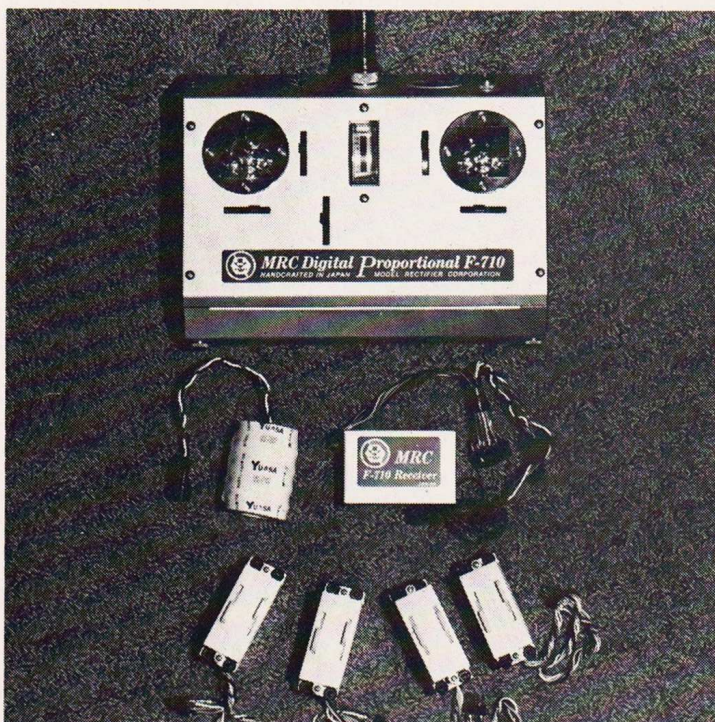
stand still, which brings us to this month's Field and Bench. MRC is now introducing its model 710 proportional radio. Outwardly, the appearance is little changed but internally, new improvements abound.

The transmitter now is wave soldered for reliability with flux, vapor solvent removed for freedom from corrosion. A new more efficient R.F. circuit has been incorporated which produces greater power at the antenna. The meter now reads true antenna output. This feature is important in that any serious fluctuation from peak power is a warning to land and check the equipment.

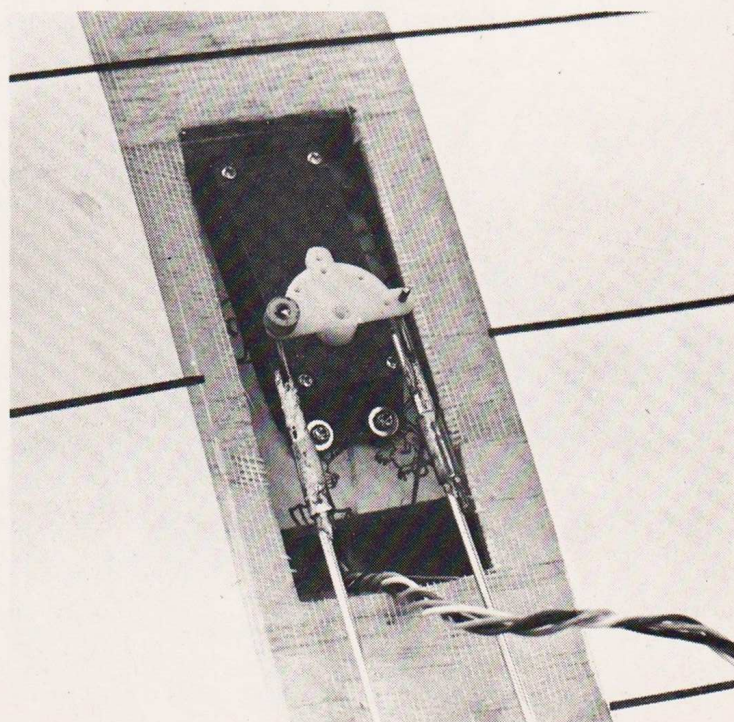
The sticks are a new design with less

“play” and more precise action. All sets come in Mode II; however, by removing a small fan-shaped metal strip, two metal clevises and a coil spring at the base of the left stick, and by transferring them to the right stick, you can convert to Mode I without sending the transmitter back to the factory.

Another feature is the ability to change frequencies should the need arise. The transmitter and receiver crystals are unplugged and a kit with two matched crystals, a frequency flag, and frequency sticker for the case, allow completion of the operation. There are five frequencies available on 27 MHz. This will be of particular interest to race



The complete MRC F-710 package with transmitter, receiver, battery pack and four servos. Author gives full details for each in his report.



Larger servo normally used for retract gears and other similar work services installed in the wing of the Contender. Note trim details.



Snow, muck, mud and fog at Connecticut's famous Sherwood Island is quite apparent in this flight shot. Cold too as witness the gloves.



Frown on Doc's face is due solely to glasses slipping down on his nose. Of course cold and a flooded engine might be another reason.

car enthusiasts. On 72 MHz three frequencies are available with interchangeable crystals, i.e., 72.080, 72.240, 72.400. The two higher frequencies are available on special order, however, crystals cannot be changed without retuning at the factory.

Several of my fellow fliers have on occasion burned out their charging circuits. The MRC 710 features a charging circuit with a transformer, and a fuse in the circuit. Should a short occur in a battery pack, the fuse prevents burnout, the transformer is a safeguard to protect you from a severe shock.

Lastly, a new guarded off-on switch precludes accidental operation.

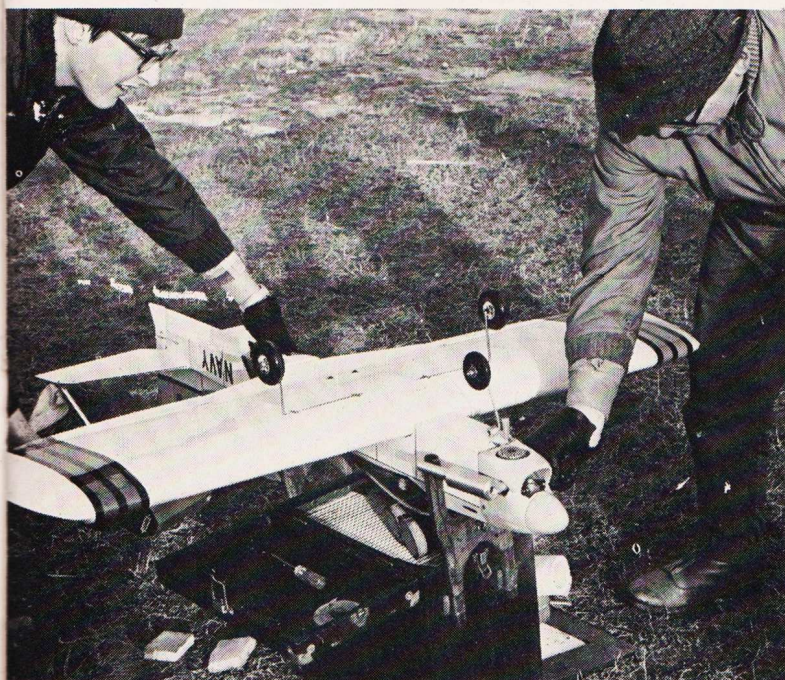
Included in the package is a plastic envelope in which are servo trays, screws and a pair of short plastic sticks which can be substituted for the long sticks provided.

The receiver is the same size, measuring 1½" x 2½" x ¾". However, again internal improvements include the decoder section which contains two integrated circuits, the receiver board is also wave soldered, and careful statistical research on returned sets has resulted in the replacement of several components with more vibration resistant parts. This kind of engineering has made MRC proportional radios not only more reliable but fewer sets are returned

for service.

The servos have been improved by the addition of a new motor which is more powerful and has more positive brush contacts for longer life and reliability. The original servo cases were ABS plastic and did suffer from lug fracture; the new cases are polycarbonate, a sturdier material.

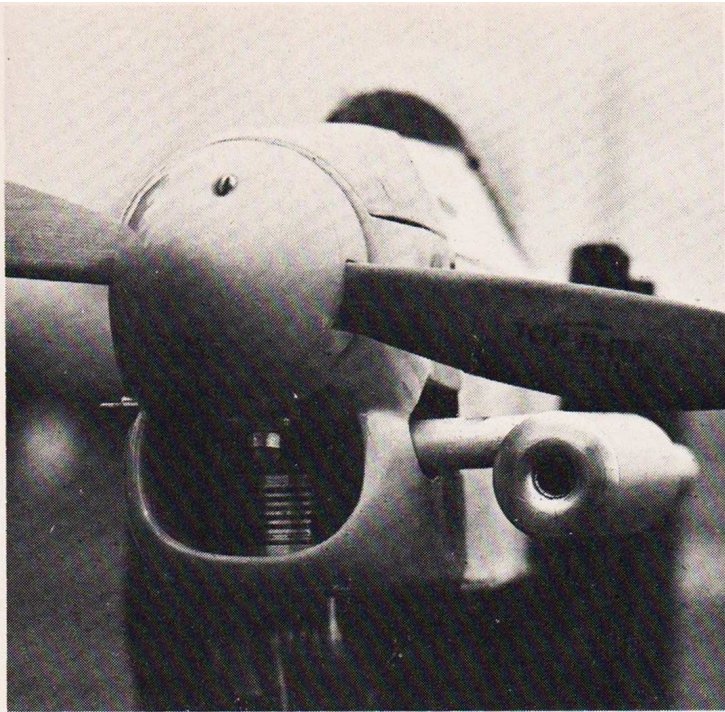
The servo amplifier has an additional stage of amplification to improve resolution. This simply stated means that with this new feature and the new sticks, the slightest movement produces immediate response to command, i.e. no dead spots. A further benefit is an even



A bit more relaxed in this photo - Doc normally turns plane upside down to start inverted engine. Chris Gaal holds while engine rev's.



He's not checking the C.G. simply turning it over before setting it down on the deck. Doc did an extremely nice job of adding trim decals.



Power end of the Contender shows inverted Taipan .61, B & N muffler. See he can smile, he should as the flying session ended satisfactorily.

veteran modeler and engine manufacturer of many years, and has developed a line of engines ranging from an .09 glow and Diesel, .15 glow and Diesel to the .61 R.C. which powers this month's Field and Bench Top Flite Contender.

The engine is a new 1970 model and appears completely different from the former models. The motor mounts are huskier, the exhaust port is larger and the by-pass is a very large rounded rectangular shape. This engine is equipped with a Kavan carburetor. The workmanship is excellent, the exterior crankcase is a sand finish, with machined fins and head. The crankshaft rides in twin ball bearings and features an unusual prop shaft. The crankshaft ends at the drive washer, with the propeller shaft threading into the crankshaft. This feature protects the engine from a bent crankshaft in a severe crash; the prop shaft may be bent but it is expendable and easily replaced. The cylinder liner is hardened steel, ground and honed for long life, the piston has two rings. Now, how does it run? Being mounted in an inverted position often makes an engine difficult to start. However, the Taipan 61 after a prime and four turns of the needle valve, bursts into a roar after three flips. I ran it rich for ten minutes at half throttle, opening it up to the top end for short intervals; then I dropped it to idle, which, was a bit fast. Two turns of the motor control clevis and a turn out of the air bleed produced a nice steady idle. The older Taipan 61 was reviewed by M.A.N. and found to be a mild performer. This new 61 is a new breed of "Kangaroo" and will hold its own with the current top 61's in popular use today. A B&N muffler was fitted to comply with our flight site regulations.

greater temperature stability. A model aircraft, left in the hot sun can develop internal temperatures of 130° - 140°, this can effect centering. MRC's servos are still very precise at high temperatures. In New England, winter temperatures can be very cold, flying in twenty degree temperatures is about as much as I can take. However, cold has little or no effect on servo performance. The servo amplifier now is mounted on two P.C. boards instead of one as in the 700. This has been incorporated into the design, as it was found to be more crash resistant. Foam pads also cushion the amplifier, something else unique to MRC.

A new slightly larger rotary servo is available. It has larger more rugged gears and is designed for use in retract gears, race cars and boats. In the Contender, I decided to mount it as my aileron servo. It is just as fast as the linear servos. The linear servos weigh 2.1 oz. while the rotary servo weight is 2.4 ozs.

MRC has produced a fine proportional radio. It is a marriage of American engineering and Japanese workmanship. Quality control is very stringent. Each unit is checked in Japan before shipment and again in Edison, New Jersey, before reaching dealers. This extra care makes MRC the proportional with one of the lowest reject rates (i.e. returned by purchaser). Looking at other electronic products selling in the United States, Japan has captured a sizeable portion of this market, thus the old stigma "Made in Japan" no longer applies.

Aristo-Craft Miniatures of N. Y. C. imports the Australian made Taipan engines. They are products of Gordon Burford & Co. Pty. Ltd. of Henley Beach, S. Australia. Gordon Burford is a

Top Flite's new Contender kit is a quality product of a well known manufacturer. Designed by Dave Platt and engineered by Sid Axelrod, this model reflects the expertise of these men. All parts are of quality balsa, full sheet sides and crisp cutting. The fuselage is easily and rapidly fabricated, with exploded views of each sequence to help the new enthusiast. The plan shows either upright or inverted engine, and provides separate firewalls for your choice.

The wing span is 54" with 650 sq. in. of area. It has a massive balsa leading edge and thick rib section. The wing is without dihedral, thus a flat wing makes for rapid true construction. Rudder and stab are die cut and go together in no time. The cowling provided is rough cut balsa. I use a one inch wire brush wheel on an electric drill to hollow it out. Try it, it works well and is very quick.

The wing has a unique feature; the trailing edge from center to aileron, is called a flap. It supports a grooved basswood strip in which the aileron horn wire travels to attach to the aileron. This is one of the most clever ideas I have seen in sometime. All parts fit very well, and an experienced builder will get this plane out of the box and flying in the advertised eight hours or a bit more. The model is covered with white super MonoKote, and trimmed with red, black and yellow trim MonoKote.

To demonstrate the completeness of the plans, an illustration shows how to cut the super MonoKote to cover the model with minimum waste. The kit includes a generous supply of hardware, formed nose and main gear and an excellent fitting canopy. The weight should be kept down by faithfully

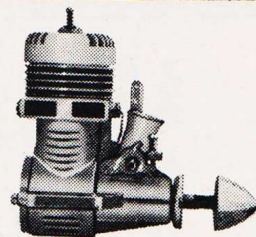
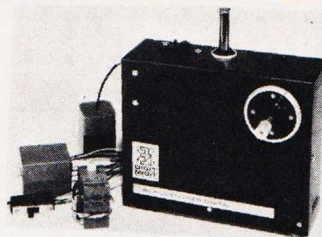
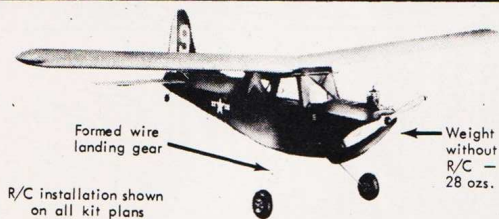
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FLY 3 CH. TOMORROW

warmed enough to melt some snow, and on Saturday, December 19th, the sun broke through the overcast sky for a brief time. The field was a mud mire with puddles, patches of snow and soggy grass. Al Novotnik took the static photos; then the Contender was fueled, checked for range, and in short order the engine was fired up. We picked as clear a spot as possible and opened the Taipan up; the plane plowed through the mud, water, hit a patch of ice and was airborne. (We thank the Lord for little blessings.)

It is most unusual for a plane to be in perfect trim but the Contender flew with all trim buttons centered, no adjustments were necessary. Hands off, it flew straight and level. It is not a sensitive craft, the controls when moved, produced smooth responses. The Taipan ran beautifully, nice and steady through loops, rolls, horizontal eights and idled nicely for the low passes we made for the photographer. Toward the end of the

flight the engine leaned a bit too much so we brought her down. The plane was a muddy mess but had performed admirably. It flies fast at top throttle but is nice and slow on approaches thanks to its thick wing section. With a smaller engine, i.e., a forty-five, it should be excellent for the novice. One problem developed which could have been a disaster; one wind hold down block came loose. The cold must have affected the epoxy. I intend to secure the block with a screw and epoxy to insure that there will be no recurrence.

The plan also omits planking on the top turtledeck. It is necessary to carry the planking back beyond the canopy to have a surface to glue it to the model. I planked the entire length of the fuselage with 3/32 sheet. This is to be corrected in subsequent kits according to Top Flite management.

## Field and Bench

following the instructions. Average weight is four and one half pounds. Mine weighs five pounds even. I have a feeling the Contender is a kit that will become popular and be with us for many years.

Next we must fly the Contender but it is December and there have been two early snowstorms. Fortunately, the weather has

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