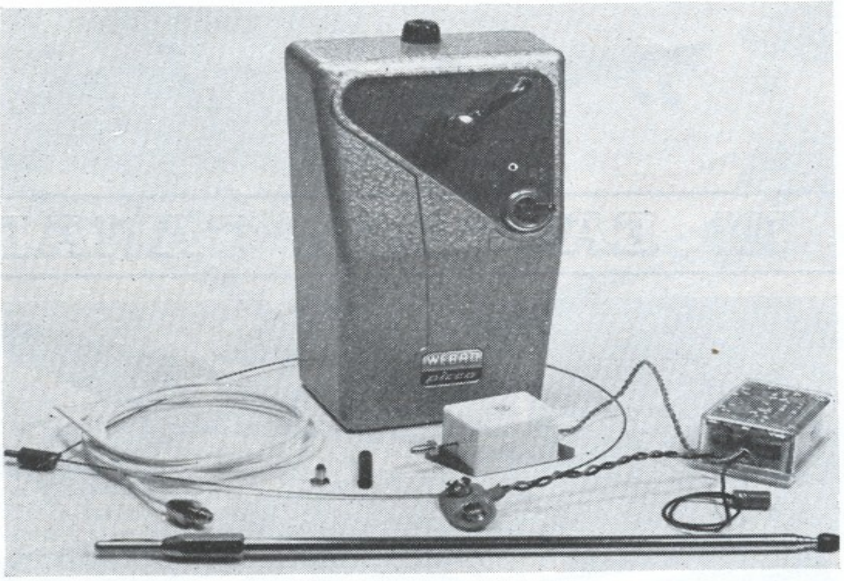

EQUIPMENT ANALYSIS

WEBRA picco

DESCRIBED BY

Peter Chinn

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INSIDE STORY OF THE WORLD'S SMALLEST AND LIGHTEST PRODUCTION SINGLE CHANNEL PULSE PROPORTIONAL SYSTEM

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THE first production version of the Webra "Picco" single-channel pulse-proportional outfit was announced just three years ago at the Nuremberg trade fair. Setting new standards for lightness and compactness, the complete airborne system of receiver, actuator and battery, including all wiring, could be installed for a weight of only 2.7 oz. Hilmar Bentert, of West Berlin, who designed the prototype, had had the system under development since 1962 and had flown it in a number of models of ever diminishing size. The smallest of these had a wing area of approximately 37 sq. in. and spanned less than 10 inches! It was built mainly of expanded polystyrene, and all-up weight was 5.2 oz. A *Cox Pee-Wee* and a wing loading of 20 oz./sq. ft. suggests that the performance was decidedly lively.

The original Picco featured a resin encapsulated 4-transistor relayless receiver weighing only about 0.6 oz. and measuring little more than half an inch square by one inch long. Various improvements, however, have since been made to the system and the latest Piccos use a new temperature stabilized 5-transistor circuit with components assembled between two printed circuit boards and enclosed within a clear plastic case. A more powerful magnetic actuator is also now available. Airborne weight of this lastest version is just a trifle more at 3 oz. including battery.

Transmitter

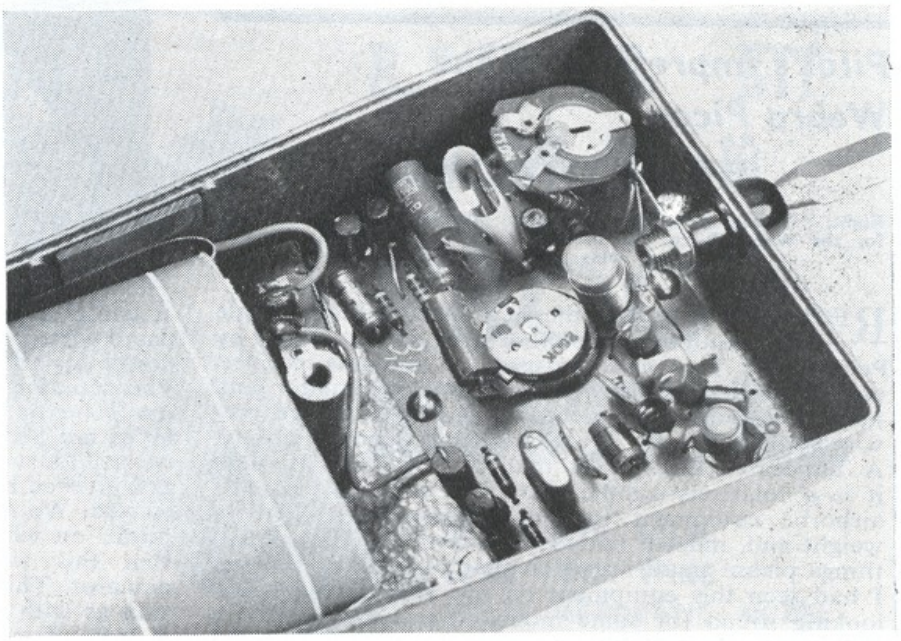
The Picco transmitter is of quite distinctive appearance, being housed in a pressure diecast aluminium case having a blue crackle enamel finish. The case tapers in width from top to bottom to fit comfortably in the left hand and is very strong and rigid. It has a sloping upper front panel with a red triangular face, on which are mounted the on-off ("Ein-Aus") switch and the control lever. The pulsed signal operates through approximately 180 degrees of lever movement, from total interruption on full-left to a continuous signal on full right, but the lever allows for about 30 degrees overrun beyond two points.

A detachable, five-section, telescopic aerial plugs into a socket in the top of the case. Access to the case interior is via a removable sheet duralumin back plate finished to match the case and fixed with a single central screw. This screws into a cast-in spigot in the case which also serves to separate the battery compartment from the receiver chassis. The latter features a five-transistor crystal controlled circuit with all components, except the on-off switch, mounted on the printed circuit board which is located behind the sloping front panel of the case. The lower part of the case houses the power supply, which consists of two 4½-volt flat type torch batteries arranged in series.

Receiver and Actuator

As already mentioned, the receiver is enclosed in a transparent case. This consists of a 39.5 x 31.1 x 21.5 mm. box with 42.2 x 33.7 x 6.5 mm. lid. Receiver components are all assembled on one of two P.C. boards. These are then mounted one above the other, with components sandwiched between, by means of brass pillars at the four corners, before being inserted into the outer case. Access to a tuning slug is provided through a hole in the case and another hole admits all leadout wires. These consist of 3-inch battery leads, 5½ inch actuator leads and a 6-inch aerial feed. The battery leads terminate in a polarised connector to suit the recommended PP3 battery. This supplies both receiver and actuator which are permanently

Left: the complete Picco outfit showing the latest temperature stabilized receiver and improved magnetic actuator.



Right: the inside of the Picco transmitter. Circuit is crystal controlled on 27.125 Mc/s and operates from two 4½ volt torch batteries.

wired to together. No switch is provided. The aerial lead terminates in a socket into which a whip aerial, of .032 in. steel wire, is plugged.

The magnetic actuator is mounted on a flat base with two mounting holes and is factory-sealed in a white plastic case. The drive spindle oscillates through approximately 30 degrees each side of neutral and terminates in a soldered-on nipple. A similar fitting is provided for fixing to the rudder torque-rod and a short length of rubber tube is supplied whereby a flexible coupling can be made between the two.

Manufacturer

The Picco is manufactured by Fein und Modell Technik, Berlin 36, Oranienstrasse 6, West Germany, who are well-known for the Webra model diesel and glowplug engines they have been producing for the past fifteen years.

British Importer

Model Aircraft (Bournemouth) Ltd., Norwood Place, Bournemouth, Hants.

Price £34 3. 9.

Physical & Technical Data

Transmitter

Size: 6 x 3¼ x 2¼ in.
Construction: Diecast aluminium case with removable rear cover, Crackle enamel finish.
Weight: 19 oz. including batteries.
Aerial: 30 in. extended, 7½ in. retracted.
Power Supply: 9 volts. Two 4½ v. flat flashlight batteries (e.g. Ever-Ready 1289 or Exide F.40).
Tone Frequency: 3400 c.p.s.

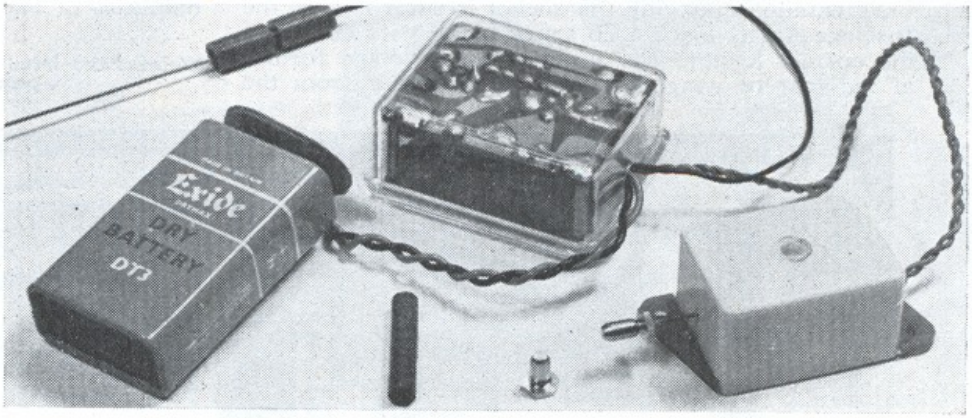
Receiver

Size: 1.66 x 1.33 x 0.93 in.
Construction: Transparent plastic case with sealed lid.
Weight: 1.1 oz.
Aerial: 26 in.
Power Supply: 9 volts (e.g. Ever-Ready PP3 or Exide DT3).

Actuator

Size: 1.66 x 0.88 x 0.80 in. including mounting lugs.
Weight: 0.9 oz.
Output Drive: Semi-rotary through approximately 60 degrees.
Power Supply: via receiver.

Pilot's Impression ..... on next page

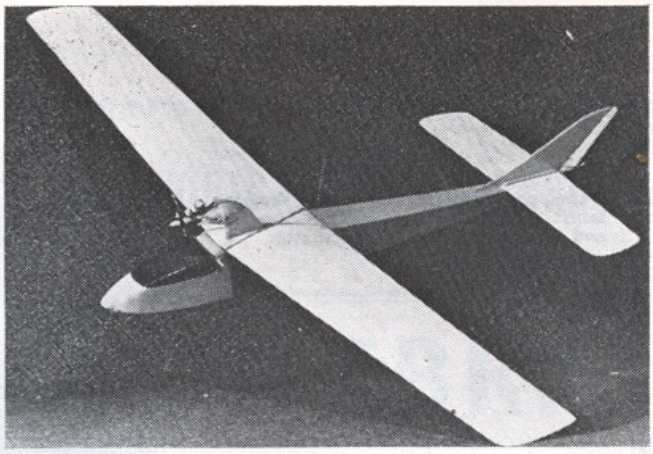


Total airborne weight of the Picco system is only three ozs. A single DT3 9-volt battery supplies both receiver and actuator.

. . . in the air.

Pilot's impression of the Webra Picco

BY BUTTON MAN



Right: "Picconinny", Button Man's purpose built test vehicle for the Webra Picco. 36 in. span model has all sheet structure including wings. Cox .010 power.

RECEIVED a set of the new Webra Picco single channel equipment the other week, kindly loaned by Peter Chinn. This outfit consists of a relayless receiver, of double deck construction, magnetic actuator and pulse transmitter. The receiver and actuator are pre-wired with a clip for 9v. PP3 common battery supply. A noticeable absence is that of a switch although it is a relatively simple matter to wire one in. The airborne equipment is very compact and light in weight and, indeed, intended for small models. Small things please small minds so they say and as soon as I had seen this equipment on the Wednesday, I was looking round for some model to install it in. With nothing really suitable available I decided to build a small powered sailplane type model for testing the gear. The 'plane was designed on the Thursday, built on the Friday and flown on the Saturday, which is not bad going even in these days of prefabrication etc. Of course the fuel proofer was not completely dry but patience was limited and it was hoped to fly it the next day at the Airtech rally—and we did. This 36 in. all sheet model is powered by a *Cox Tee Dee .010* kindly loaned by Vince Redfern—well the balsa wood was mine—and this provides ample power. It is a real delight to fly and very suitable for small field flying. Obviously it is not the model for windy days but ideal for those balmy summer evenings when you can recline in the deck chair as the "Picconinny" (just thought of that name) sails overhead. Should there be any thermals about you will probably be able to stay up for quite a while. The proportional rudder obtainable from the magnetic actuator gives excellent smooth turns and the high mounted engine prevents too much 'ballooning' as she turns into wind under power. Altogether a most enjoyable and relaxing experience flying this one—an ideal antedote to the twin engine variety.

The radio equipment has performed perfectly to date with no adjustments required of any sort. A vertical plug-in whip aerial is supplied with the outfit but this was not used on the Picconinny as it would have entailed epoxying the socket irremovably to the fuselage. In its place a 20 s.w.g. piano wire aerial, of the correct length, was sewn to the fuselage former at the rear of wing. Equally, the corrector from the actuator to the torque rod was not used, normally a piano wire rod is used but I substituted a piece of $\frac{1}{8}$ in. dowel for this connected by a piece of rubber tube. The actuator is simplicity itself to install, two screws into some hard balsa blocks, and the receiver and batteries are packed in foam rubber. Should you decide not to fit a switch, then the battery must be clipped on and inserted before the wings can be put on and engine started. We made the mistake of switching the transmitter on when preparing for the first flight thinking that this would reduce the consumption of the actuator. This proved to be an entirely false assumption as with no signal (full left rudder) there is only a drain of a few milliamps. With full signal on about 70 milliamps is drawn and when pulsing at a mean neutral rudder position the consumption reduces to 37 milliamps. So, keep the transmitter off until you are ready to fly.

The transmitter handles very nicely and the dangling ground plane from the bottom of the case does not get in the way. Movement of the control knob on the transmitter exceeds 90° in each direction and for the last 20° or so gives full left and right rudder respectively. Throughout the intermediate positions rudder control appears to be progressive in action and this method of rudder only control has much to commend it.

It is a habit of mine, when launching *and* flying a model, to keep the transmitter aerial retracted during the launch—this is the result of the swamping of some receivers with the transmitter aerial fully extended. Now, although there was no sign of swamping with the 'Picco' outfit, I launched the model on one occasion and with it climbing away pulled the top of the aerial to extend it. The aerial is only held into the case with a spring clip and the whole aerial came out in my hand, fortunately it went back into its socket easily and no harm was done. It is worth remembering this point—you may not be so lucky in replacing it. All told the Webra 'Picco' is a delightful small S/C outfit and increases the probabilities of backyard flying.

Webra Picco installation in "Picconinny", showing receiver well protected and magentic actuator.