

■ "I want a transmitter that operates at the full five watts the F.C.C. allows," stated our young friend. We tried to point out that he had been doing fine with the A.T. Annual 1S4 transmitter, which has a modest 1.5 W. going into the tube, and that he had never flown out of range when using it. But to no avail; he was an expert now, and wanted a transmitter fitting his position.

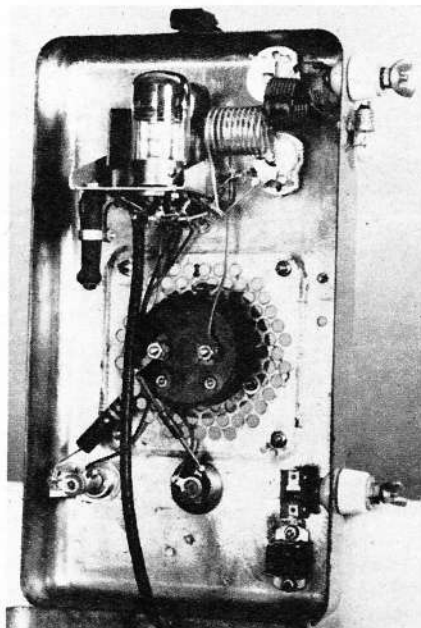
While it is a known fact that even a half watt input will give perfectly reliable operation, if transmitter and receiver are tuned properly, and all the batteries are in good shape, we have to admit that higher power into the transmitter will allow a bit of leeway throughout the system. So we set about to see what could be done.

Our young hotshot did not want to use a rig that was tied to the car battery, for most of the spots where he flies can't be reached by car—you park at the fence and walk another several hundred yards. A self-contained rig it had to be then, but five watts input meant we had to go to 180 V. for the B battery. A little arithmetic showed that five of the normal size 45 V. batteries used in most R/C transmitters came to at least \$7.00, with the A battery at 80 cents or more added to that. A really active flyer, our friend would go through a set quite fast, especially

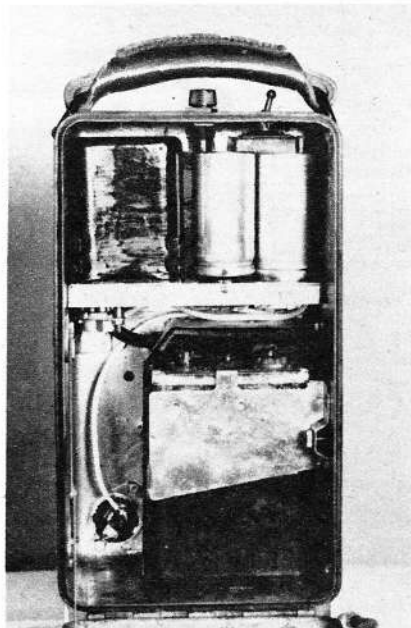
"Mac. II" Hi-Power 5-Watt Transmitter

By HOWARD G. McENTEE, W2SI

Tried everything in radio control? Are you the tinkering type? Any of your models gone AWOL—out of sight, out of control? Full data on "AT" Plan 553.



You're looking at a surplus PE-157 power unit converted to 27.255 by Mr. R/C himself.



Power half of the "Mac II" above. Case hinges on bottom. Built-in current supply for glow plug!

since he is a proportional control addict.

He uses—as do most of the other local flyers—a war surplus 2 V. storage cell for glow engine starting. Now if we could only tie onto that to get our transmitter power. . . . To make a long tale short, we could. Another surplus item, a PE-157 power unit, was discovered, which proved to be a perfect answer. It is fitted in a sturdy steel case measuring 5½" x 6" x 11" high. The one we used comes complete with a vibrator. This power supply has a lot of parts that are not needed for our purposes, so the first job is to take out the chassis and remove from it the parts that will be used. There is a circuit diagram on the inside of the cover, so you can check up on these parts. The ones needed for the R/C transmitter are R3, R4, R5, VB8, T3, C5, C10, CH1, Rect. 1 and Rect. 2, J2, PL-1 and SO-1. All the other parts may be set aside for other uses.

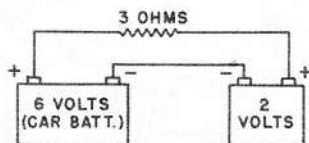
The storage cell is held in a rubber shock absorber, with a metal clamp over it. A little rubber tube slips over the cell vent to carry all fumes to the outside of the case. Since the original chassis forms part of the battery-holding arrangement, the necessary portion was hacksawed off and the remainder discarded. A little aluminum chassis was bent up from 1/16" thick sheet aluminum to carry the power supply parts. It is held in the case with four

As the cell was also to be used for engine starting, a heavy-duty two-prong socket was installed in the large hole in the rear of the case; the starter leads terminate in an ordinary household utility plug.

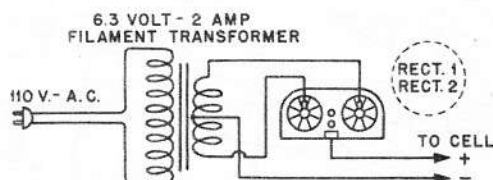
tom which does not allow it to sit squarely on any flat surface, so side plates and a new base were made from 3/32" aluminum. The base plate is 8" square and increases the capacity of the transmitter to ground, making it easier to load the antenna. It also makes the outfit more stable when the antenna is extended. The case was in good shape mechanically, but the paint was shab-

When questioned on this wild color, we always point to the time we saw a spectator stumble over an R/C transmitter sitting in the grass with the antenna down; the guy said he didn't see it. No one can say that about *this* outfit!

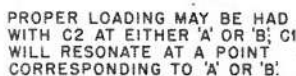
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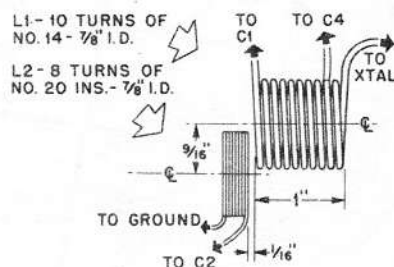
CHARGING FROM CAR BATTERY



CHARGING FROM POWER LINE



CONDENSER TUNING



L₁ AND L₂ DETAILS

Diagram of a vacuum tube radio receiver circuit. The circuit includes a 2-volt battery, a 100Ω resistor (R4), a 150Ω resistor (R3), a 100Ω resistor (R5), a variable capacitor (C1), a 40 MF capacitor (C2), a 40 MF capacitor (C3), a 40 MF capacitor (C4), a 40 MF capacitor (C5), a 40 MF capacitor (C6), a 40 MF capacitor (C7), a 40 MF capacitor (C8), a 40 MF capacitor (C9), a 40 MF capacitor (C10), a 40 MF capacitor (C11), a 40 MF capacitor (C12), a 40 MF capacitor (C13), a 40 MF capacitor (C14), a 40 MF capacitor (C15), a 40 MF capacitor (C16), a 40 MF capacitor (C17), a 40 MF capacitor (C18), a 40 MF capacitor (C19), a 40 MF capacitor (C20), a 40 MF capacitor (C21), a 40 MF capacitor (C22), a 40 MF capacitor (C23), a 40 MF capacitor (C24), a 40 MF capacitor (C25), a 40 MF capacitor (C26), a 40 MF capacitor (C27), a 40 MF capacitor (C28), a 40 MF capacitor (C29), a 40 MF capacitor (C30), a 40 MF capacitor (C31), a 40 MF capacitor (C32), a 40 MF capacitor (C33), a 40 MF capacitor (C34), a 40 MF capacitor (C35), a 40 MF capacitor (C36), a 40 MF capacitor (C37), a 40 MF capacitor (C38), a 40 MF capacitor (C39), a 40 MF capacitor (C40), a 40 MF capacitor (C41), a 40 MF capacitor (C42), a 40 MF capacitor (C43), a 40 MF capacitor (C44), a 40 MF capacitor (C45), a 40 MF capacitor (C46), a 40 MF capacitor (C47), a 40 MF capacitor (C48), a 40 MF capacitor (C49), a 40 MF capacitor (C50), a 40 MF capacitor (C51), a 40 MF capacitor (C52), a 40 MF capacitor (C53), a 40 MF capacitor (C54), a 40 MF capacitor (C55), a 40 MF capacitor (C56), a 40 MF capacitor (C57), a 40 MF capacitor (C58), a 40 MF capacitor (C59), a 40 MF capacitor (C60), a 40 MF capacitor (C61), a 40 MF capacitor (C62), a 40 MF capacitor (C63), a 40 MF capacitor (C64), a 40 MF capacitor (C65), a 40 MF capacitor (C66), a 40 MF capacitor (C67), a 40 MF capacitor (C68), a 40 MF capacitor (C69), a 40 MF capacitor (C70), a 40 MF capacitor (C71), a 40 MF capacitor (C72), a 40 MF capacitor (C73), a 40 MF capacitor (C74), a 40 MF capacitor (C75), a 40 MF capacitor (C76), a 40 MF capacitor (C77), a 40 MF capacitor (C78), a 40 MF capacitor (C79), a 40 MF capacitor (C80), a 40 MF capacitor (C81), a 40 MF capacitor (C82), a 40 MF capacitor (C83), a 40 MF capacitor (C84), a 40 MF capacitor (C85), a 40 MF capacitor (C86), a 40 MF capacitor (C87), a 40 MF capacitor (C88), a 40 MF capacitor (C89), a 40 MF capacitor (C90), a 40 MF capacitor (C91), a 40 MF capacitor (C92), a 40 MF capacitor (C93), a 40 MF capacitor (C94), a 40 MF capacitor (C95), a 40 MF capacitor (C96), a 40 MF capacitor (C97), a 40 MF capacitor (C98), a 40 MF capacitor (C99), a 40 MF capacitor (C100).

Labels in the diagram include: BROWN, BLACK, RED, YEL., BLUE, BARE WIRE, X, Y, RED-YEL., SW1, 2 VOLTS, FOR GLOW PLUG LEADS, C5, .004 MF., CH1, 40 MF., C10, B+, A-, SO1, A+.

Notes: X AND Y ARE LOW-VOLTAGE TAPS; GREEN, YELLOW-GREEN LEADS ARE NOT USED.

POWER SUPPLY CIRCUIT

AND V2 ARE
6B6 TUBES (ALSO
KNOWN AS 1299).

TOP ANTENNA
INSULATOR

V1

V2

L1

C2 50 MMF

L2

C1 15 MMF

R1 47K Ω

XTAL

R2 2.2K Ω

C3 .001 MF

C4 .001 MF

TAP

(0-50 MA.)

MA

TEST SWITCH SW2

KEY JACK

J2

R6 47K Ω

P.L.

R7 1 Ω

PL1

TRANSMITTER CIRCUIT

"Mac II"

(Continued from page 35)

was to decide what tube setup could be used to generate the necessary RF power. Since this was to be a deluxe rig, we spent some time investigating MOPA arrangements (this means master oscillator, power amplifier—the usual single tube and crystal being the oscillator). They worked, but we came up against the sad fact that the tube companies haven't

AIR TRAILS

done too well by us in the line of good 1.5 V. filament amplifier tubes. None of the usual tubes which will handle 5 watts input, will operate without neutralization. This is just an added nuisance, so we returned to the crystal oscillator.

Further construction details will be found on the "AT" full-size plan.

Parts List

V1, V2—3D6/1299 tubes. C1—throughout 15 mmf. trimmer condenser. C2—50 mmf. trimmer condenser. C3, C4—.001 mf. mica or ceramic condensers. R1—47,000 ohm $\frac{1}{2}$ W. carbon resistor. R2—2,200 ohm $\frac{1}{2}$ W. carbon resistor. R6—47,000 ohm, 2 W car-

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Great News for All Modelers!

Beginning with the June Issue:

SPECIAL RADIO CONTROL SECTION

bon. R7—1 ohm, 1 W. wirewound resistor. Meter—0-50 ma., 2" diameter. P.L.—2 V. pilot lamp and socket. Xtal—27.255 mc. crystal. 1—socket for preceding. 2—octal sockets. 1—two prong socket (for glow plug leads). 2—Antenna insulators. 1—Antenna, 10 ft. long. 1—Surplus PE-157 power supply with vibrator (Fair Radio Sales, Lima, O., \$4.95). 1—Surplus Willard BB-54 2 V. storage cell (\$2.95 at same concern). SW2—SPST toggle switch. SW2—Heavy duty DPST toggle switch (both sides connected in parallel).

Plug, and keying leads as desired.

Condenser knobs and one dial.

Parts on circuit diagram that are circled come in PE 157; part numbers are those to be found on circuit diagram in power supply case. Kit of parts for everything needed except power supply and storage cell may be had from several of our advertisers; some advertisers have all the needed equipment.