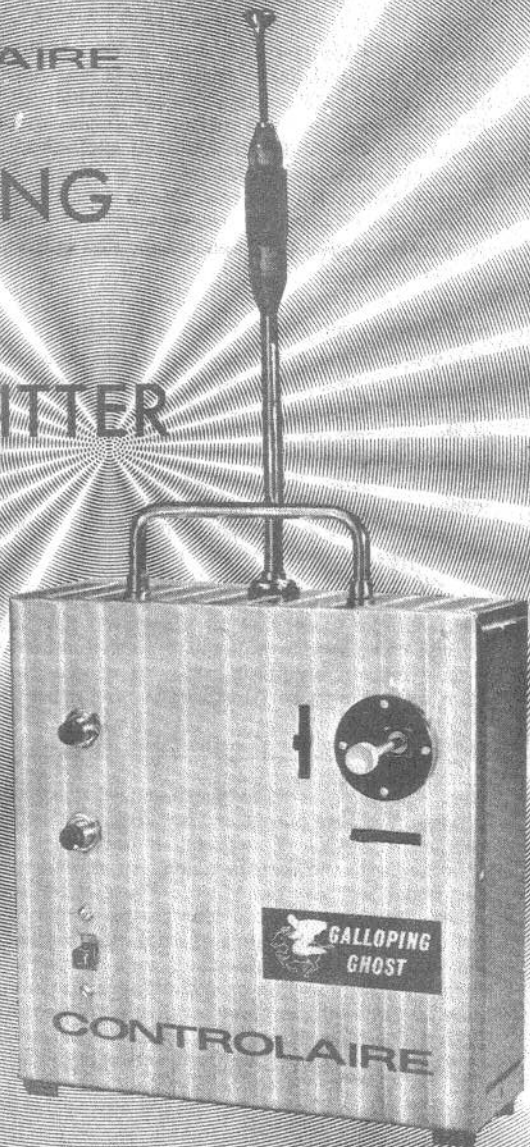




GALLOPING GHOST TRANSMITTER



OPERATION MANUAL

Controlaire Electronics Division

WORLD ENGINES
INCORPORATED

5980 ROSSASH AVE.

CINCINNATI, OHIO 45238

SPECIFICATIONS

- 9 Volt Operation (Burgess D-6, Eveready No. 276 or equivalent)
- 47 Ma. average battery drain with pulser operating
- Power input to RF section --- 330 milliwatts
- Radiated power ... 210 milliwatts (unmodulated carrier)
- Modulation --- 97 % with 1000 cps audio tone
- Pulse rate effected by control stick --- 5 to 12 1/2 pps plus electronic trim (adjustable neutral rate & rate change)
- Pulse width effected by control steck --- 60/40 to 40/60 tone to carrier ratios plus electronic trim (adjustable neutral ratio and ratio change)

PREPARING TRANSMITTER FOR USE

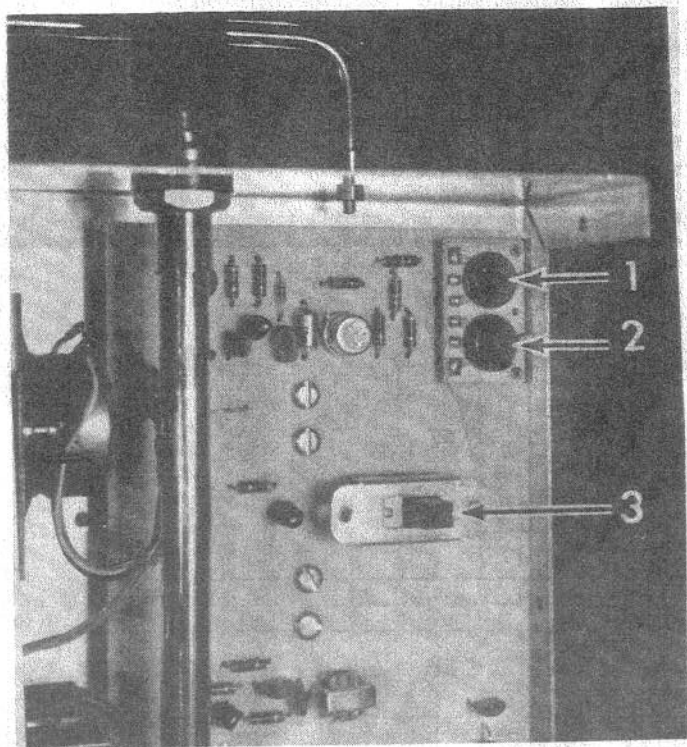
The 9 volt dry cell battery fits in the case beneath the stick assembly; it is a good practice to cut a couple of cardboard spacers to fit beside the battery to prevent damage from the case screws. Note on the photo of the interior of the transmitter, the slide switch marked "3"; this switch turns off the pulser enabling the transmitter to be used for escapement flying. When the switch is moved to the right, pulsed tone is transmitted; with the switch in the left position, solid carrier is transmitted with the tone signal controlled by the upper pushbutton on the front panel. The slide switch on the front panel controls the transmitter power in either mode of operation with "up" being "on". Note the case assembly screws and the stick assembly allen wrench taped to the inside of the case. It is suggested that after stick adjustment the wrench be retaped to the case for convenience and to prevent loss since it is a metric size (1.5 mm). In an emergency a one-sixteenth inch allen wrench may be filed slightly and made to fit.

TUNING (only to be accomplished by persons having 1st or 2nd class F.C.C. license)

The RF portions of factory assembled transmitters have been tuned for maximum stable output and barring physical damage should remain in tune indefinitely. If retuning is necessary, place a 0-100 Ma. meter in series with the battery and using an insulated tuning wand, back the slug about half way out of the RF oscillator coil. Assuming the pulser is off, the meter should indicate less than 10 Ma. Screw the slug in and note the point where the current suddenly jumps to about 40 Ma. and turn the slug another full turn or more to preload the oscillator. Turn the power switch on and off several times to check that the oscillator starts each time; increase the preload as necessary until it does. Keying the tone button will cause a variation in the meter reading of several Ma. A sensitive field strength meter or a regen tone monitor may be used to perform this operation with equal success. This is the only adjustment in the RF portion as the power amplifier is fixed.

PULSER ADJUSTMENT

Factory assembled transmitters have been adjusted to match the rate and width change requirements of the World Engines Ghost Actuator. Final adjustment of any pulse system must be done with the particular components to be used since variations exist even among receivers and actuators of the same brand. Initially, set the two trim levers on the front panel in neutral, put your entire system in operation and



observe your actuator action. Loosen the setscrews clamping the stick bales to the pot shafts, rotate the pot shafts until the actuator is pulsing at neutral in both the rudder and elevator modes and retighten the set screws. Move the control stick to its left and right extremes; if the actuator does not have enough throw to suit you, rotate the rudder sensitivity pot (marked "1" in the photo) a slight amount clockwise. Similarly, if the actuator tends to cycle thru at the stick extremes, rotate the sensitivity pot counter-clockwise. You may notice the rudder neutral shift slightly during this operation, if so, readjust the stick assembly to correct the condition. The rudder sensitivity pot will normally be set near the middle of its rotation. The elevator sensitivity pot (marked "2" in the photo) is set in the same manner but rotating the pot clockwise decreases the elevator throw controlled by the stick. It will be noticed that adjustment of this pot strongly effects the neutral pulse rate which must be corrected at the stick assembly. The elevator sensitivity pot is normally set near its counter clockwise stop. Correct pulser adjustment results in good control action with no cycling-thru of the actuator when extreme rudder command is given with full up elevator. Once you become familiar with the action of the sensitivity pots, it is a simple matter to match the transmitter output to the requirements of the various actuators and rate-decoder systems on the market.

