INSTALLATION & TUNING INSTRUCTIONS FOR THE ESSCO TWIN HARD TUBE RECEIVER - Model THT-27
THT-50

This receiver is of unique design and is for use with CW signal transmitter in the Citizens Radio Service on 27 MC or the Amatuer 50-54 mc band (Model THT-50). The 27 Mc receiver comes factory tuned to Channel #1 26.995 mc. The 5 other RC channels are easily tuned by resetting of the piston type controls used in the tuning and sensitivity positions. Because of the special "front end" circuitry you will find this receiver to be as easy to tune as a small pocket radio for broadcast reception. Smooth and gradual adjustment of the tuning and sensitivity is made possible by use of "piston" type variable capacitors. The receiver can only lock in full on if you fail to heed the instructions given herein.

The receiver features the use of two "hard" type tubes which makes for economical tube and A & B battery life. Receiver will operate fairly well on other B voltages but best performance is obtained with 45 volt B battery. The standard model is supplied for operation with two series connected Burgess U15 hearing aid type 22½ volt units. Many battery cases are available for this battery along with several pencells for the filament and escapement supply. In large installations where battery size and weight is not a problem the B battery can be the type XX30 Burgess and the A battery may consist one or two C or D cells. In small installations the B battery could be 2 of the Y15 units and the A battery a single pencell. Total A drain is 63 ma. With a .25 ma idle on B voltage this supply can serve for many months of operation.

Tuning adjustments are simple and easily accessible. The channel tuning control is located at left side and the sensitivity control at right side of receiver. Once set these controls need not be changed over long periods. The sensitivity control will require readjustment as the voltage drops below 40 volts. We recomend end of B battery life at near 35 volts. The A cells should be discarded at 1.1 or 1.2 volts. The receiver is not effected by extraneous noises and therefore no bonding of the equipment in the model is required. Antenna length is not critical and can vary in length from 20 to 27 inches. It is possible to use the aluminum case (where used) as the antenna by connecting the antenna lug to one of the 4 corner bolts on the bottom.

Install the set in the model by any preferred method. We suggest tray mounting on the bulkhead of model. A rubber shock pad should be cemented to receiver bottom plate to absorb the shocks of too hard landings. The aluminum case will serve to provide protection to the set on these hard landings. We do not use the fragle printed circuit boards so there is no danger of expensive damage to the receiver components. Provision should be made on the model for the on-off slide swith and meter jack. The DPST type of switch is used to protect filament flashing on the B battery by careless piddlers. Do not at any time make any wiring changes with switch in on position, failure to be careful means expensive tube replacement due to flashovers. NO CONTROL POT IS REQUIRED with this receiver. Do not attempt to use a control pot in series with B battery to readjust the relay. Use sensitivity control instead. All wiring between set and battery case should be made with cable plug and socket provided, the plug is attached to the receiver and socket connected at batteries and escapement. Wiring should be neatly dressed into position to prevent unstable operation. Double check and recheck all connections all your wiring and connections to prevent short circuits and filament burnouts. If space does not allow tray mounting then you should use your own judgement in making the best installation for your model. Keep in mind the requirement for accessibility for the tuning and sensitivity controls. Your receiver has been carefully tuned and adjusted at the factory for average installations. In most cases you will not have to change any of the settings made at the factory.

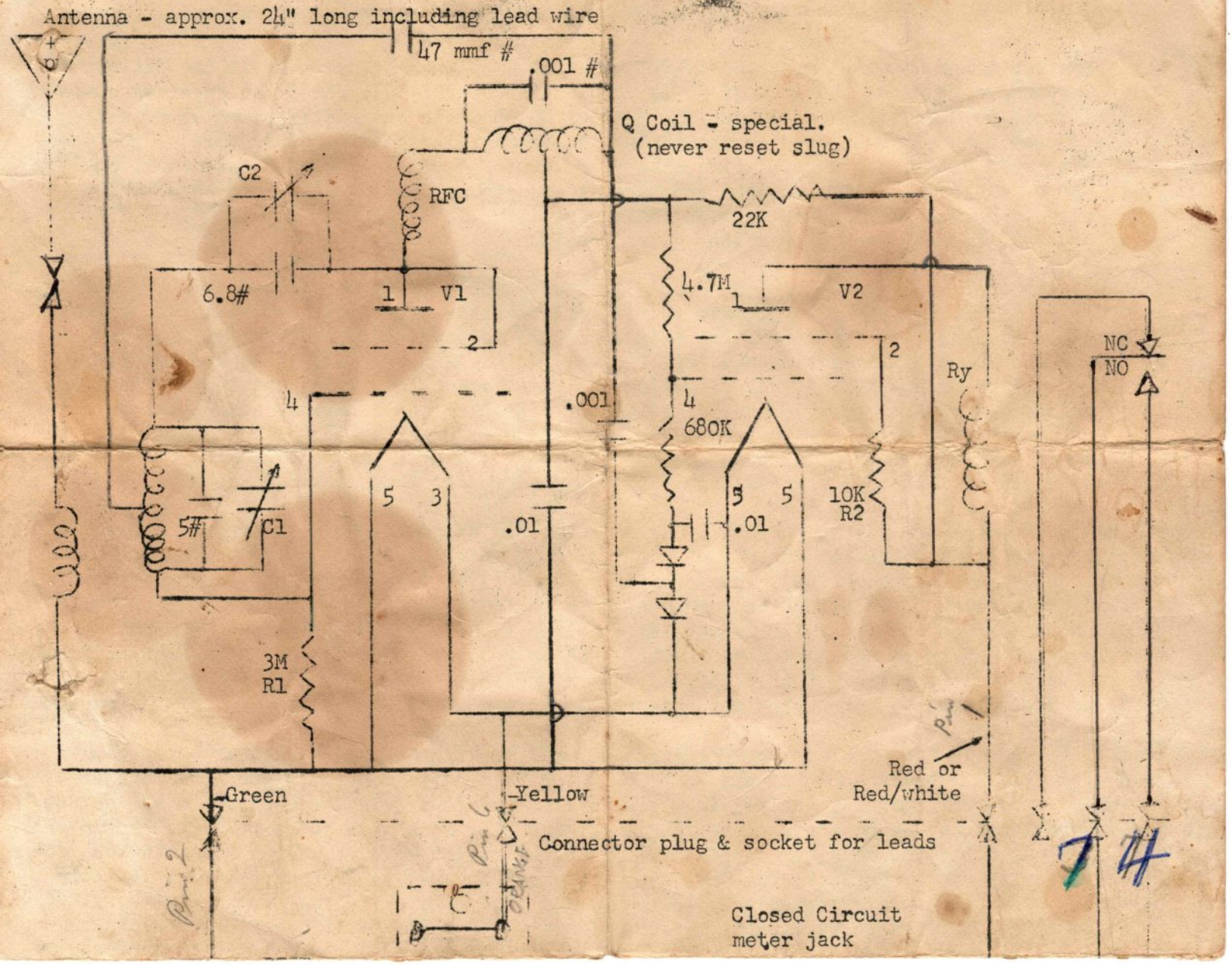
Tuning procedure:

Plug a 0-5 ma meter into the metering jack. Place swich in ON position. If meter shows idle current of approx. .25 ma turn on XMTR and operate keyer. Current should rise to approx. 5 ma. Touch up tuning control by use of a plastic tuning wand to obtain highest reading of the meter (with XMTR keyed). On release of the keyer switch the receiver plate current should drop to the .25 ma value. If the current does not drop sharply with keyer OFF you should turn the sensitivity control to the left until the current drops to the minumum value.(The keyer still OFF). If XMTR signal did not cause the current rise to the 5 ma value turn the sensitivity control slowly to the right (clockwise) with XMTR keyer in OFF position. You will note that the meter reading will rise sharply to a maximum reading and CCW adjustment of the sensitivity control will cause the current to drop again. Best operation position of

will note that the meter reading will rise sharply to a maximum reading and DOW adjustment of the sensitivity control will cause the current to drop again. Best operation position of this control is at point where a distance check with the XMTR signal will cause the snappy rise and drop as described above while model is held off the ground.

Make these adjustments with care and retune the tuning control to obtain maximum current reading with signal from XMTR. Reliability of the receiver depends on the correct settings of the two controls and you should spend the time required to familiarize yourself with the adjustments. It may sometimes be necesary to reduce the sensitivity setting to obtain the correct operation when the test meter is unplugged from the test jack. You will soon find that the adjustments described are simpler to make then to describe. Keep in mind that clock wise rotation of the sensitivity control increases the receiver sensitivity and counter CW decreases sensitivity. The use of a special circuit and the piston type control serves to spread the adjustment over a broad range of this control. Never attempt to fly your model unless the receiver reacts as described, any fly-aways can be blamed on failure to observe the simple procedure described. The range of the receiver can be several miles with correct receiver settings and a XMTR of average power.

Tuning of the 50 MC model is the same as described for the 27 MC model. Antenna length should be about 12 in. The 50 MC set idles at .4 to .5 ma at which point you will note a slight flutter in the idle current. This is the best position to set sensitivity control. You will find the ESSCO THT to be the "hottest" receiver ever for the 50-54 MC band.


Antenna - approx. 24" long including lead wire
47 mmf #
.001 #
Q Coil - special.
(never reset slug)
C2
RFC
22K
6.8#
1
V1
2
4.7M
1
V2
2
4
.001
4
680K
NC
NO
Ry
5
3
.01
5
5
.01
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C1
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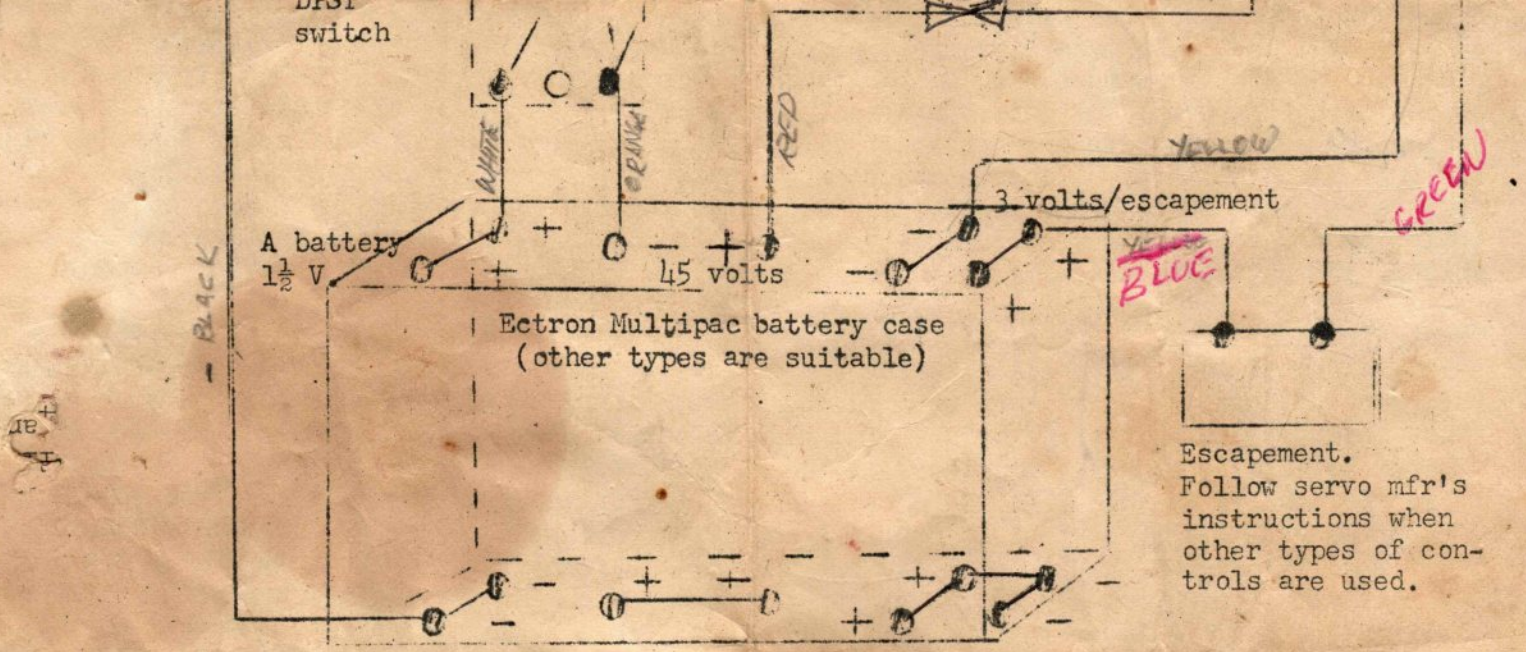
R1
Red or
Red/white
Green
Yellow
Connector plug & socket for leads
Closed Circuit
meter jack



NOTES:
On 27 mc models V1 is type 6007 tube, V2 is CK521AX or 1AG4. On 50 mc models V1 is type 5676, V2 is CK521AX or 1AG4. On 50 mc R1 is 4.7 megohm and R2 is shorted out.
Best operation is with 45 volt B battery. A 30 volt B battery may be used on 27 mc models. The resistor R2 should be shorted out when 30 volts is used.
Standard models use the Essco RBM relay with 5000 ohm coil. The MICRO GEM is also supplied if specified. No arc suppressors are required with the RBM relay. Suppressors should be used with relays that do not have paladium contacts, such as the RBM.
Condensers marked# are silver mica, used for stability and non-drift tuning.
Leadout wires are provided for normally closed contact of relay for use with servos/actuators.
The antenna lead must not be bundled with other wires, run direct to antenna.

The tuning control C1 is at left side of receiver. C2 is sensitivity control at right side and is marked with red paint. Clock-wise rotation of tuning control decreases frequency (lowers). Clock-wise rotation of sensitivity control increases sensitivity. The piston type controls will allow you to easily set them to proper position for reliable long range operation. The gradual in and out rotation makes it easy to find the correct spot. Sets are tuned at the factory to the new RC channel, 26.995 mc and can be easily reset to other channels by CCW rotation.