#### CONTROLAIRE MTT-10 & UTT-10A

### 6 METER - REVISION

The purpose of this paper is to describe changes made to 27 megacycle equipment to convert its operation to 6 meters. Frequencies available are either 52 or 53 megacycles. As to operating information, we are supplying the 27mc operating instructions. All information contained therein applies except for those changes noted in this revision.

- 1. Notice the revised 6 meter circuit diagram. In the area of the RF oscillator and RF amplifier there have been some circuit changes for 6 meter operation. You may compare the two diagrams if you desire, to note the changes. With reference to the tone signal oscillators and the modulator, these remain the same.
- No center loaded antenna is used. For 6 meter operation a full 1/4
  wave straight antenna is employed. Its length is approximately 51".
- 3. Notice the absence of the sub-antenna as described in the 27 mc instructions. It is not needed due to the revised circuitry. With main antenna removed the transmitter will still emit a controlled weak signal from the grommet hole in the top of the case. For receiver tuning or sensitivity check purposes point the top of the case toward receiver antenna. You should get proper operation up to a 2' distance. If not, consider the receiver out of tune or insensitive but correct before flying.
- Factory assembled transmitters have had the RF tuning adjusted and sealed. They should remain in tune indefinitely. As to tuning procedure, it will be presented in its entirety because some owners of 27 mc units may elect to convert from information contained in the circuit diagram. It is not recommended that the beginner attempt this but, by token of those having a proper license for operation, they should have the knowledge to make the conversion. To adjust RF tuning start by first adjusting the oscillator trimmer to minimum capacitance and amplifier trimmer to half capacitance. With a 100 ma meter installed in plus battery lead, turn transmitter on and note reading. By reason of the preadjustment to the trimmers, the RF section should not be operative and the current flow on meter should be about 20 ma. This is the idle current of the transmitter. note meter and with insulated tuning tool start adjusting oscillator trimmer toward maximum capacitance. At one point the current should rise abruptly to about 35 to 45 ma. This indicates the oscillator has started to operate. From this point and as a matter of proper oscillator loading continue to increase capacitance until an additional 3 to 5 ma of current is added to the initial jump point. This should complete the proper adjustment to oscillator trimmer. To adjust RF amplifier either adjust trimmer for point of maximum reading on field strength meter or minimum flow on milliamp meter. They both will coincide.

# REVISION PARTS REQUIRED AND PRICE LIST

		Price Ea.	
1	ea.	. 3rd Overtone Crystal (52 or 53 megacycle) \$ 5.95	11/11/2
2	ea.	. 2N-708 Transistors 2.10	14.42
1	ea.	. Oscillator Coil- Ll	
1	ea.	RF Amplifier Coil - L5	
1	ea.	. 4.5 to 25 mmfd Trimmer Capacitor	
1	ea.	. 51" Collapsible Antenna 3.95	
3	ea.	01 mf Disc Condenser	
1	ea.	. 15 mmfd Disc Condenser	
1.	ea.	. 12 UH R.F. Choke	
1	ea.	. 15K Ohm Resistor	
Co	mple	lete Kit of all parts 14.98	
r'a	ctoi	ory conversion including parts, labor, guarantee 19.98 Net	

#### SH-20 RECEIVER

#### 6 METER REVISION

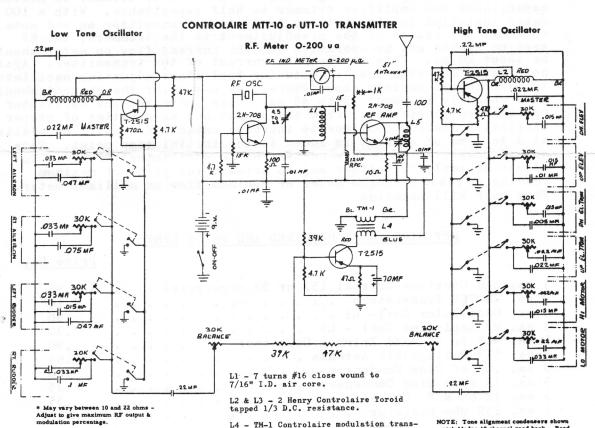
The purpose of this paper is to describe the changes made to convert 27 mc receivers to 52 or 53 mc operation. The changes only effect the value of certain componants with basic circuitry remaining the same. Operating information remains identical in concept to that presented in the 27 mc operating instructions. The following information describes these changes.

Refer to the 27 mc circuit diagram and make the following changes in componant values.

- Change antenna coil from 17<sup>1</sup>/<sub>4</sub> turns to 10<sup>1</sup>/<sub>4</sub> turns of No. 30 enameled wire close wound on 3/16" 0.D. form. The coil tap remains the same at 2<sup>1</sup>/<sub>4</sub> turns from bottom end of coil. This in effect is the removal of 7 turns from the top end of the 27 mc coil.
- 2. Change 18 mmfd condenser across antenna coil to be 10.5 mmfd.
- 3. Change 18 mmfd antenna coupling condenser to be 4 or 6 mmfd.
- 4. Change RFC choke in local oscillator from 12 uh to 3 uh.
- 5. Change crystal to 3rd overtone type, HC-25 case design, to either 52 or 53 mc operation. Notice, since crystal frequency is actually 455 kc below receiver operating frequency, a 51.545 kc is used for 52 mc and 52.545 is used for 53 mc. Controlaire receiver crystals are marked basic frequency on the side and receiver operating frequency on the top.
- All other circuit componant values remain the same as presented for 27 mc receivers.

Tune, adjust and operate receiver as per same concept as presented in 27 mc instructions.

## REVISION PARTS, PRICE LIST



\* Adjust to give full scale meter read-

L4 - TM-1 Controlaire modulation transformer, primary 500 ohm, secondary 200 ohms.

L5 - 4 turns #16 close wound to 7/16" I.D. air core.

NOTE: Tone alignment condensers shown match Medco 10 channel reed bank. Reed frequency of 350 to 650 C.P.S.