De Forest Crosley Ltd. (Canadian)

Model: CAMBRIDGE	Chassis:	Year:
Power:	Circuit:	IF:
Tubes:		
Bands:		

Resources

- Radio College Of Canada - ROGERS MAJESTIC 10
- Radio College Of Canada - ROGERS MAJESTIC 13
- Radio College Of Canada - ROGERS MAJESTIC 14

1935-36

THIS CIRCUIT USED IN —

DE FOREST CROSLEY "CAMBRIDGE" AND "OXFORD"

MAJESTIC "ALGONQUIN" AND "IROQUOIS"

ROGERS "B7/30" AND "B7/35"

BATTERY-OPERATED

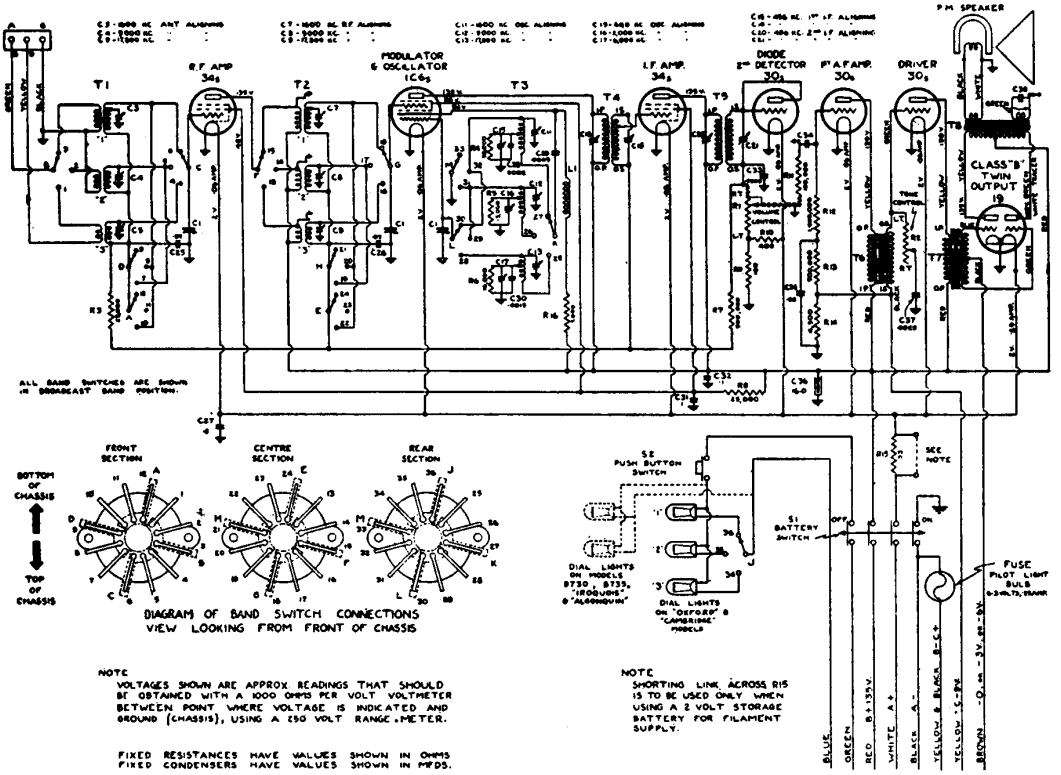


DIAGRAM OF BAND SWITCH CONNECTIONS
VIEW LOOKING FROM FRONT OF CHASSIS

NOTE
VOLTAGES SHOWN ARE APPROX. READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS), USING A 250 VOLT RANGE METER.

FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS
FIXED CONDENSERS HAVE VALUES SHOWN IN MFDS.

NOTE
SHORTING LINK ACROSS R15 IS TO BE USED ONLY WHEN USING A 2 VOLT STORAGE BATTERY FOR FILAMENT SUPPLY.

ALIGNMENT INSTRUCTIONS, LAYOUT, ETC. ON DATA SHEETS. 1364.

COURTESY-

DATA SHEET ROGERS-MAJESTIC-10

CO. LTD.

PRINTED IN CANADA

ALIGNMENT DATA, ETC. FOR THE FOLLOWING 7-TUBE BATTERY-OPERATED MODELS —

DE FOREST CROSLEY CAMBRIDGE AND OXFORD

MAJESTIC ALGONQUIN AND IROQUOIS

ROGERS B7/30 AND B7/35

CIRCUIT ON DATA SHEET. 10

ALIGNMENT

Proper alignment can only be arrived at by the use of proper equipment and procedure. It is, therefore, important that the following recommendations and routines be closely followed wherever the need for re-alignment occurs.

The need for re-alignment will normally occur following transformer or condenser changes affecting the tuned I. F., R. F. and oscillator circuits. It is also good practice where convenient and possible to periodically re-align various stages of the receiver, not only to overcome gradual process of change which may develop but also to retain the receiver at its maximum peak performance, particularly following tube changes.

The recommended equipment required for re-alignment consists of:

(1) A good signal generator (service oscillator) equipped with a good attenuator and providing modulated fundamental frequencies at 456 kc., 600 kc., 1,600 kc., 2 megacycles, 5 megacycles, 6 megacycles and 17.5 megacycles.

(2) A reliable output meter of the rectifier type with a range of 0-1 volt.

(3) A .0002 microfarad condenser used as a dummy antenna in the broadcast band; a 400 ohm resistor for use as police and short-wave dummy antenna.

(4) Two .05 or .1 microfarad condensers for use during I. F. alignment.

(5) A suitable combination aligning wrench and screw-driver.

With the equipment recommended, re-alignment should be attempted only after the information in the following paragraphs has been read over and the serviceman is familiar with the exact location of the various adjusting screws and nuts. It is recommended that the chassis is removed from the cabinet during re-alignment.

I. F. STAGES

(1) Connect the output meter across the voice coil terminals of the speaker.

(2) Connect the output leads of the signal generator to the control grid cap of the oscillator-modulator tube (type 1C6S) through a .05 or .1 microfarad condenser, allowing the grid lead to remain in position. The band selector switch should be adjusted for broadcast reception during I. F. alignment.

(3) Connect a .05 or .1 microfarad condenser across the plates of the oscillator section of the gang condenser in order to load the oscillator tube and prevent spurious signals from being produced.

(4) Turn the receiver and generator on and adjust the generator to exactly 456 kilocycles. Set the receiver volume control at maximum. Adjust the generator output for a low reading on the output meter scale.

(5) Commencing at the input to the type 30S diode stage, progressively check alignment of C21, C20, C19 and C18 in that order adjusting the condenser nuts for maximum increase in reading of the output meter. As the adjustment is being made, gradually reduce the signal generator output as necessary to avoid possible overloading of any stage. If overloading is permitted to occur, it may result in false aligning peaks. Carefully recheck all adjustments.

R. F. AND OSCILLATOR STAGES

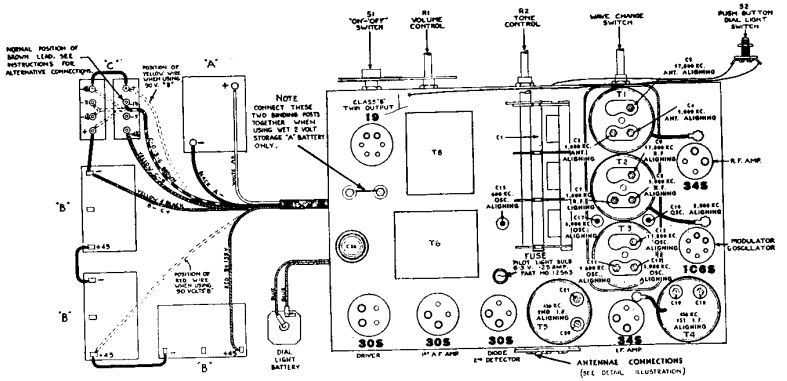
Number One Band (Broadcast Band)

(1) If the receiver under adjustment is equipped for use of either conventional or special short-wave antenna systems, it is necessary that the terminals be properly arranged as for use with a conventional antenna. This means that terminal "A" is used as the input or antenna lead. The center terminal "D" and terminal "G" are to be jumpered together by a short connector and used as the ground connection.

(2) With the generator connected to the antenna (through the .0002 mfd. condenser) and the ground terminals of the receiver, tune the receiver and generator to exactly 1,600 kilocycles. Adjust C11, C7 and C3 in that order for maximum increase in reading of output meter, keeping the generator output at a low value in order that overloading be avoided.

(3) Tune generator to exactly 600 kilocycles, tune in signal on the receiver, then adjust C15 oscillator series padding condenser rocking the tuning control in the usual manner during this adjustment until maximum sensitivity is obtained. If the dial does not log correctly, the pointer should be shifted accordingly.

(4) Tune the receiver and generator to 1,600 kilocycles and compensate by re-adjusting C11, C7 and C3 in that order for any change that may have been introduced by adjustment of C15 or error in logging caused by shifting the dial pointer.



TOP VIEW OF CHASSIS FOR 7-TUBE MODEL.

R. F. AND OSCILLATOR STAGES

Number Two Band (Police-Amateur Band)

This band covers a frequency range of approximately 1,700 kilocycles to five megacycles.

(1) Adjust the wave-change switch for operation at No. 2 band. Signal generator output lead should be connected to the antenna terminal previously indicated through the 400 ohm resistor, located at the terminal panel. The signal generator and receiver should be adjusted in tune at exactly five megacycles (5,000 kc.).

(2) Adjust aligning condensers C12, C8 and C4 in that order for maximum increase in reading of output meter, reducing signal generator output as necessary to prevent overloading.

(3) Adjust receiver and generator in tune at exactly two megacycles (2,000 kc.) and adjust series tracker C16 rocking the tuning control in the usual manner during this adjustment until maximum sensitivity is obtained.

When adjusting C16, a check should be made to insure that 1,700 kilocycles is reached at the extreme low frequency end of the No. 2 band.

(4) Tune generator and oscillator to exactly five megacycles and recheck C12, C8 and C4 compensating for any change that may have taken place through the adjustment of the series tracker C16. Check for image response by increasing generator output, and leaving frequency fixed; image should be located by tuning receiver 912 kc/s lower in frequency. If it appears 912 kc/s higher in frequency, the wrong oscillator peak has been chosen, the one requiring the least capacity being the correct one.

Number 3 Band (Short-Wave Band)

This band covers International short-wave broadcasting between the limits of six and nineteen megacycles.

(1) With signal generator connected to the receiver terminals as for police band operation, the band switch being in the short-wave position, adjust signal generator and receiver in tune at 17.5 megacycles. Adjust aligning condenser C13, C9 and C5 in that order for maximum increase in reading of output meter. During adjustment of the interstage trimmer C9 it is absolutely essential to rock the tuning

CONTINUED ON DATA SHEET. 14

COURTESY ROGERS - MAJESTIC - 13 CO. LTD.
DATA SHEET
PRINTED IN CANADA

CONTINUED FROM DATA SHEET 13

control slightly to avoid interlocking between the input to the modulator and the oscillator stage. The tuning control should be rocked as for a series padder adjustment.

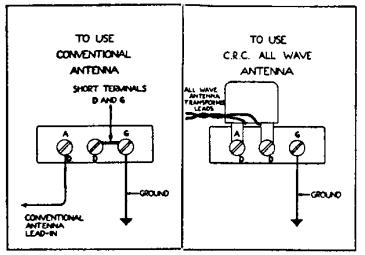
(2) Adjust signal generator and receiver in tune at exactly six megacycles and adjust C17, the oscillator series tracking condenser, rocking the tuning control in the usual manner during this adjustment.

(3) Retune signal generator and receiver to exactly 17.5 megacycles and recheck adjustment of C13, C9 and C5 in that order compensating for any changes that may have developed through adjustment of C17, again rocking the gang while adjusting the interstage trimmer. After alignment of the short-wave band, the image response at 17.5 mcs. should be checked by increasing generator output, leaving frequency fixed, then tuning the receiver 912 kc/s lower in frequency, where the image should be located, if the proper oscillator peak has been chosen. If not, the image will appear 912 kc/s higher, indicating that the wrong oscillator peak has been chosen, and re-alignment is necessary.

The foregoing is a complete routine covering alignment of the seven tube battery chassis. In conclusion it is necessary to point out that rechecking of all adjustments is very important.

As the various bands are entirely separate as regards the tuned circuit, it is possible to re-align any one band without the necessity of re-adjusting the other. It is best to align the broadcast band first, as it is sometimes necessary to shift the pointer for logging purposes. The importance of keeping the signal generator output at a low value during re-alignment, cannot be over-emphasized.

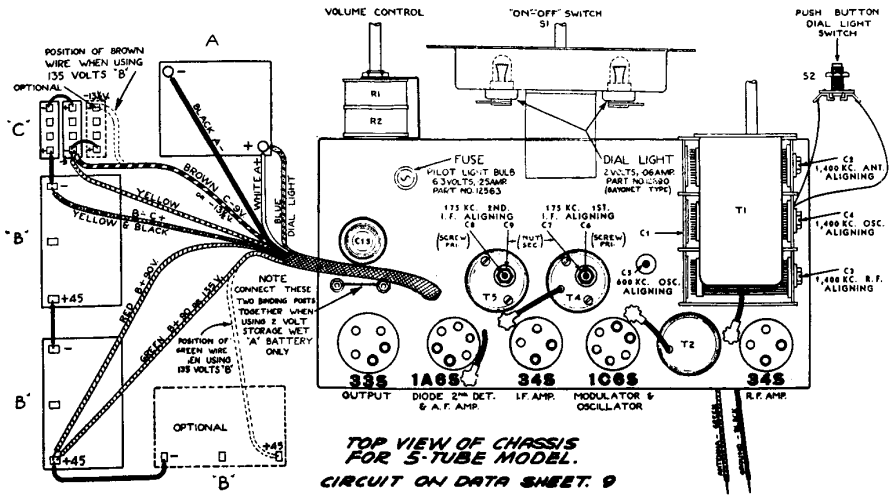
RIGHT — SHOWING CONNECTION OF CONVENTIONAL OR CANDN. RADIO CORP. DOUBLET ALL-WAVE ANTENNAE TO 7-TUBE BATTERY-OPERATED CHASSIS.



It is always good practice before starting re-alignment to allow the receiver to operate for a period of from fifteen minutes to one-half hour before adjustment is attempted. This permits the various circuit elements that might be subject to change through temperature variation, to stabilize and permit of a much more complete and lasting adjustment.

ALIGNMENT DATA, ETC. FOR THE FOLLOWING 5-TUBE BATTERY-OPERATED MODELS—

DE FOREST CROSLEY B510 AND B515
MAJESTIC HURON AND CHIPPEWA
ROGERS ETON AND HARROW



TOP VIEW OF CHASSIS FOR 5-TUBE MODEL.

CIRCUIT ON DATA SHEET 9

ALIGNMENT

Periodically it may be necessary or desirable to re-align the R. F., oscillator and I. F. stages of these receivers.

Such alignment may be in order, following changes affecting the I. F., R. F. or oscillator coils or tube changes affecting those stages.

When alignment is necessary, it should only be carried out with proper equipment, as it is, of course, a very important adjustment. A serviceman attempting aligning adjustments should be equipped with a proper output indicator, a satisfactory aligning wrench and screw-driver and a good service oscillator or signal generator capable of supplying fundamental frequencies at 175 kilocycles, 600 and 1,400 kilocycles. Procedure of alignment follows:

(1) Connect the output lead of service oscillator to the control grid cap of the type 1A6S oscillator-modulator tube, allowing the control grid clip to remain in position.

(2) Short the plates of the oscillator section of the gang condenser.

(3) With the service oscillator or signal generator tuned to exactly 175 kilocycles, align in order C9, C8, C7 and C6. As these adjustments are being made, it is particularly important that the output of the signal generator be kept at a low value in order to avoid possible overload of the second detector or output tube. Such overloads if allowed to develop may result in false readings of the output indicator or meter. As the receiver is brought into alignment, the sensitivity will tend, of course, to increase and a gradual reduction of the signal generator output should be made in order to prevent overloading.

(4) Connect output lead of service oscillator to green antenna wire of receiver and ground signal generator to the black wire of the receiver. Remove short on oscillator section of gang condenser. Rotate the gang condenser to full-in position and adjust tuning indicator so that pointer indicates exactly 535 kilocycles.

(5) Adjust service oscillator to exactly 1,400 kilocycles and adjust the receiver tuning so that dial pointer indicates exactly 1,400 kilocycles. Align oscillator, parallel pad C4, interstage condenser C3 and antenna condenser C2 for maximum sensitivity.

(6) Tune generator to exactly 600 kc/s. and adjust receiver (without regard for dial calibration) to the generator frequency.

(7) Adjust 600 kc/s. series pad (C5) (without regard for dial calibration) for maximum sensitivity rocking tuning control in the usual manner during this adjustment.

(8) If after this adjustment the dial calibration is incorrect, loosen dial pointer screw and reset pointer to exactly 600 kc/s.

(9) Tune generator to exactly 1,400 kc/s. and adjust receiver in tune. If calibration is incorrect, adjust oscillator parallel condenser (C4) to correct dial calibration, then carefully align antenna (C2) and interstage (C3) trimmers. Recheck C2, C3, C4 in that order for maximum sensitivity. When adjusting these condensers use as little capacity as possible.