

# RADIO (1936) LIMITED—AUCKLAND

## *Alignment Hints* "RADIO HOUSE"

### BANDSPREAD RADIOS

#### 1941 7 VALVE and 9 VALVE MODELS

##### FOREWORD,

As the Bandspread system of tuning short waves is employed in the above models, some modification of the standard alignment is required.

The following hints are intended as a guide for the serviceman should realignment at any time become necessary.

We must emphasize, however, that all receivers are very carefully aligned in the factory by means of crystal controlled oscillators and no attempt should be made to alter these original settings unless there is very good reason for so doing.

Frequency drift has been reduced to a very low minimum by the use of superior components.

##### INTERMEDIATE FREQUENCY:

This should be adjusted in the conventional manner to exactly 460 kilocycles.

##### BROADCAST R.F. ALIGNMENT:

There is nothing unusual in this. The diagram shows the position of the oscillator, modulator, and R.F. trimmers. The oscillator trimmer is for setting the frequency around 1400 to 1500 k.c. and the other two should be brought in line for maximum response. The B.C. paddler corrects the frequency around 600 k.c.

##### HOW SHORT WAVE BANDSPREAD IS OBTAINED:

Here we are concerned only with the International 16, 19, 25, and 31 metre bands.

For each one of these four S.W. bands there are separate oscillator, modulator and R.F. trimmers. These are shown in the diagram, grouped in banks of four, all the oscillator, all the modulator, and all the R.F. trimmers being grouped together. It will be noticed that the four S.W. oscillator trimmers are of special construction designed to prevent frequency drift. These are adjustable by means of a small screwdriver which should be inserted in the slots in the metal portion of the trimmers. There is only one set of three short wave coils, these being connected in turn to either the 16, 19, 25 or 31 metre trimmers by means of the waveband switch. This one set of coils in conjunction with the respective trimmers (as selected by the switch) provides the main tank circuits.

The main variable tuning condenser is connected to these various tank circuits by means of a condenser network so that a complete rotation of the main gang produces only a slight change in the tank circuit frequency in such

a manner as to sweep across only the 16, 19, 25 or 31 metre-bands and a certain amount of territory to either side. In this manner the station settings are expanded out and band-spreading is effected.

##### Note:

It should be noticed that the condenser network above referred to consists of small anti-drift capacitors of special silvered ceramic construction. These somewhat resemble resistors in appearance. Details will be given in the main circuit diagram.

##### FACTORY ADJUSTMENT OF SHORTWAVE CIRCUITS

In the factory set-up specially constructed crystal controlled oscillators are used for Bandspread shortwave adjustment. These oscillators provide simultaneously four signals all modulated with different audio frequencies. These four signals have Radio Frequencies of 17750, 15250, 11800 and 9600 kilocycles which correspond to central positions in the 16, 19, 25 and 31 metre bands respectively.

As most servicemen will not have equipment of this nature there might be some difficulty in making adjustments to the short wave side with their standard test equipment.

Where suitable apparatus is unobtainable, it is highly desirable that the short wave side be lined by direct listening to short wave stations rather than by means of any test equipment. This requires no more apparatus than a small insulated screwdriver and is very simply done if the method here described is carefully followed.

##### OSCILLATOR/SIGNAL FREQUENCY RATIO

It is important to note here that both these 7-valve and 9-valve bandspread receivers (as well as the junior 5-valve Dual Wave receiver) operate on short waves with the signal frequency higher than the oscillator frequency. That is to say if the signal frequency is 11800 k.c. the oscillator should be running on  $11800 \div 460 = 11340$  k.c.

##### SUGGESTED METHOD FOR SHORT WAVE ALIGNMENT

Connect the set to an aerial, preferably a fairly long one for adjustment purposes.

Turn the waveband switch to the band it is desired to adjust, for the present example, say the 25 metre band.

Consider only the three trimmers, the 25M oscillator, the 25M modulator, and the 25M R.F.