



CALIBRATING SW RECEIVERS

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WITH the Short Wave Bands becoming more crowded every year it becomes increasingly necessary for the listener to be able to determine the frequency to which his receiver is tuned. Conversely, if the receiver is accurately calibrated the listener is able to tune to a desired frequency to listen for a particular station.

spread control with a reasonable scale. The first part of the article, therefore, deals with adding a suitable bandspread control to a receiver which is lacking in this respect.

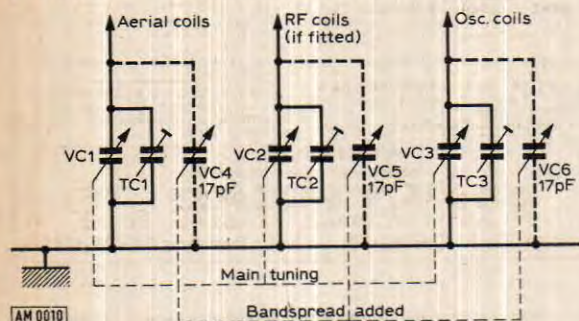


Fig. 1 Circuit showing the bandspread ganged capacitor added to the existing circuit.

ADDING BANDSPREAD

The addition of a bandspread control to a receiver which does not have this facility is probably the most effective, yet simple, method of improving the performance of the set. The total cost is little more than £1 so the project is well within the means of the average listener.

All superhet receivers have a main tuning control which is either a two or three gang variable capacitor. This is shown as VC1/VC2/VC3 in Fig. 1. The bandspread control required for the project is a two or three gang (depending upon the number of gangs of the main tuning) miniature variable capacitor each section having a capacitance of approximately 15 to 20pF. The most suitable type is that often used for the tuning of v.h.f. receivers, usually having a capacitance of 17pF per section.

The bandspread control is represented by VC4/VC5/VC6 in Fig 1. Each section of the bandspread

The latter part of this article deals with a method of receiver calibration which costs less than a pound. The only requirement is that the receiver has a band-

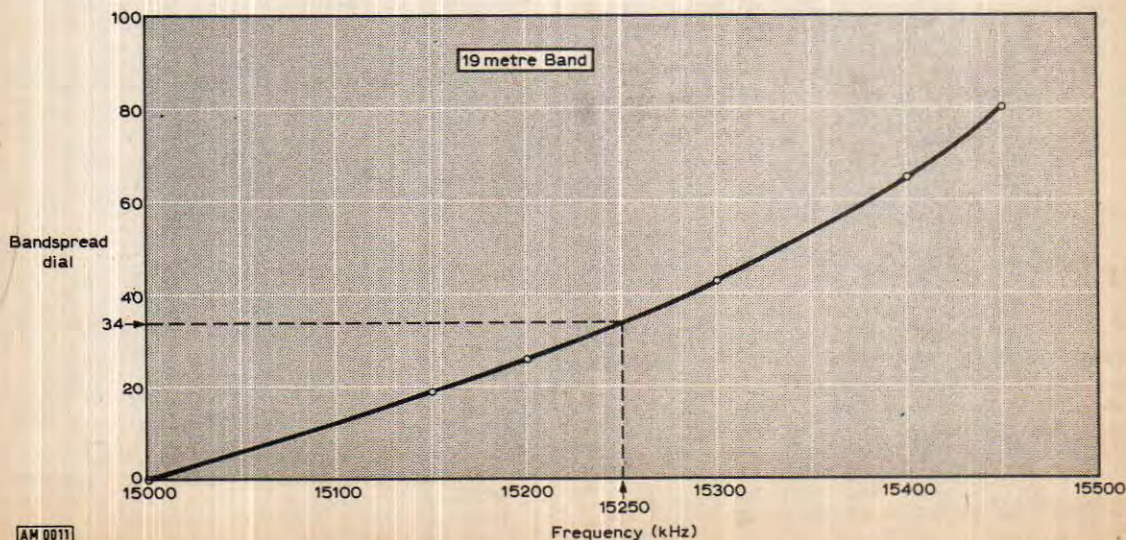


Fig. 2 A typical calibration chart produced by the method described in the article.

capacitor is wired in parallel with a section of the main tuning control. The new control should be mounted as near as possible to the existing variable capacitor with the wiring as short and straight as possible. In order to retain the previous calibration of the receiver, the bandsread control should be half closed and the trimmers TC1/TC2/TC3 unscrewed slightly to compensate for the additional capacitance of the bandsread control.

BANDSPREAD CONTROL

The bandsread control should be fitted with a knob which has a 0 to 100 scale; the larger the knob that can be accommodated on the receiver the better the tuning performance will be. A knob with integral slow motion is better still.

CALIBRATION

The lowest cost method of calibrating a receiver is by drawing calibration charts for the various frequency ranges of interest, using the bandsread control. The best graph paper to use is that which has each large division sub-divided into ten smaller divisions. A separate chart should be drawn for each band but some of the wider bands will require two charts as the bandsread control will not cover the entire band with one setting of the main tuning.

The main tuning is adjusted so that the bandsread will cover the band being calibrated. This position of the main tuning is noted by sticking a piece of tape on the dial or by reference to the receiver's logging scale if one is fitted. As an example, the author's receiver was calibrated on the 19 metre band, being fitted with a 0-100 logging scale, and with the main tuning set at 37 the bandsread control covered the whole band.

The next stage is to do some concentrated listening on the band, trying to hear those stations of which the frequency is known and plotting these on a graph similar to Fig. 2. The stations heard by the author were as follows:

Station	Frequency	Bandsread Setting
WWV	15000 kHz	0
Radio Cairo	15150 kHz	19
RSA, S. Africa	15200 kHz	26
VOA, Tangier	15300 kHz	43
RAI, Rome	15400 kHz	65
Radio Moscow	15450 kHz	80

When all these points have been plotted a smooth curve is drawn between them giving the result shown in Fig. 2. This procedure is repeated for all the bands required by the listener.

The method of calibration by plotting frequencies is tedious but, once done, the graph can be used again and again very simply. One of the basic ideas behind the article was that the minimum of expense was involved. The reader will have to spend some time drawing up the graphs but will have spent very little money.

The use of a crystal calibrator would, of course, speed up the process of drawing the charts. The The 3-range Crystal Marker by R. F. Graham was published in the February 1973 issue of PW and this is ideal for the job, being both simple and inexpensive.

USING THE CHARTS

It is possible to use the charts by simply returning the main tuning to the marked position from which the chart was drawn. This is not very accurate however, and the following method is recommended. When returning to a given band a search is made for one particular station the frequency of which is known, say 15250 kHz. Reference to the graph shows that this should appear at 34 on the bandsread scale. Both the main tuning and the bandsread are then adjusted until the station appears at this bandsread setting. The controls are now set for accurate listening on the band.

Having set up the receiver it is possible to use a chart in two ways. First, it is possible to determine the frequency of a station which has been tuned in by converting the bandsread reading to frequency, secondly, it is possible to tune to any particular frequency, to look for a station, by determining the correct bandsread setting for that frequency and adjusting the control accordingly. ■

PRACTICAL WIRELESS

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