

# THE R1155 RECEIVER MODIFIED FOR AMATEUR USE

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**N**O doubt many R.A.F. type R1155 receivers have been purchased by members with a view to conversion for use on the amateur bands. In this short article an attempt will be made to describe the method used by the author in tackling the problem.

## Clear out the D.F. Components

The first job is to remove all components which are unessential to the working of the receiver for communication purposes. This includes the B.F.O. box, the rear portion of which (containing the D.F. parts) is literally cut off with a pair of tin snips. After refitting the now much smaller box it will be found that there is sufficient space to accommodate an output transformer of normal size, as shown in Fig. 1. The double triode valve (type BL63) can then be brought into use as an output valve, with the two sections in parallel (as shown in Fig. 2) or push-pull. Alternatively another type, such as the 6V6, could be used.

The switching oscillator transformer fitted below the tuning indicator, can also be be disconnected and removed.

As it was decided to dispense with ranges 4 and 5 (200 to 500 kc/s. and 75 to 200 kc/s.) the absence of the two large aerial coupling coils on top of the chassis left room for a mains transformer and smoothing choke. A rectifier can be fitted in place of one switching oscillator valve.

In order to gain space it will probably be necessary to cut down the functional switch to one wafer but this is quite satisfactory because the "Balance," "Visual" and "Figure of Eight" positions are not used.

A useful aid to improved band-spreading is to modify the condenser gang capacity by removing some of the vanes. This can be done by carefully working out the vanes with a pair of pliers. Halving the number of vanes in each section reduces the capacity to about  $250\mu\text{F}$  which is a useful value.

It will be seen from Fig. 3 that the meter amplitude control has become a tone control, connected in series with a  $0.01\mu\text{F}$  condenser across the output transformer primary. The meter deflection switch is replaced by a toggle switch connected in series with the centre-tap of the H.T. secondary on the mains transformer and this functions as a send-receive switch. The switching-oscillator speed switch is a mains control.

Whilst some constructors may prefer to retain the Jones plug connectors, the writer has a preference for jacks.

## Re-arranging the R.F.

Having removed the comparatively low frequency ranges 4 and 5, the writer decided to elevate range 3 to range 5. This range includes the 1.7 to 2 Mc/s. amateur allocation. Range 2 coils are connected to the original range 4 positions and here again an amateur band (3.5 Mc/s.) is covered. To provide for range 3 the constructor must either rewind surplus coil formers from the old ranges 4 or 5, or make up a completely new set of coils of his own design to suit the 7 Mc/s. amateur band.

The original range 1 coils will be found on range 2 and here the 14 Mc/s. amateur band is spread out by suitable padding capacities.

Range 1 can be made to function on 28 Mc/s. using the remaining coil formers correctly wound, although

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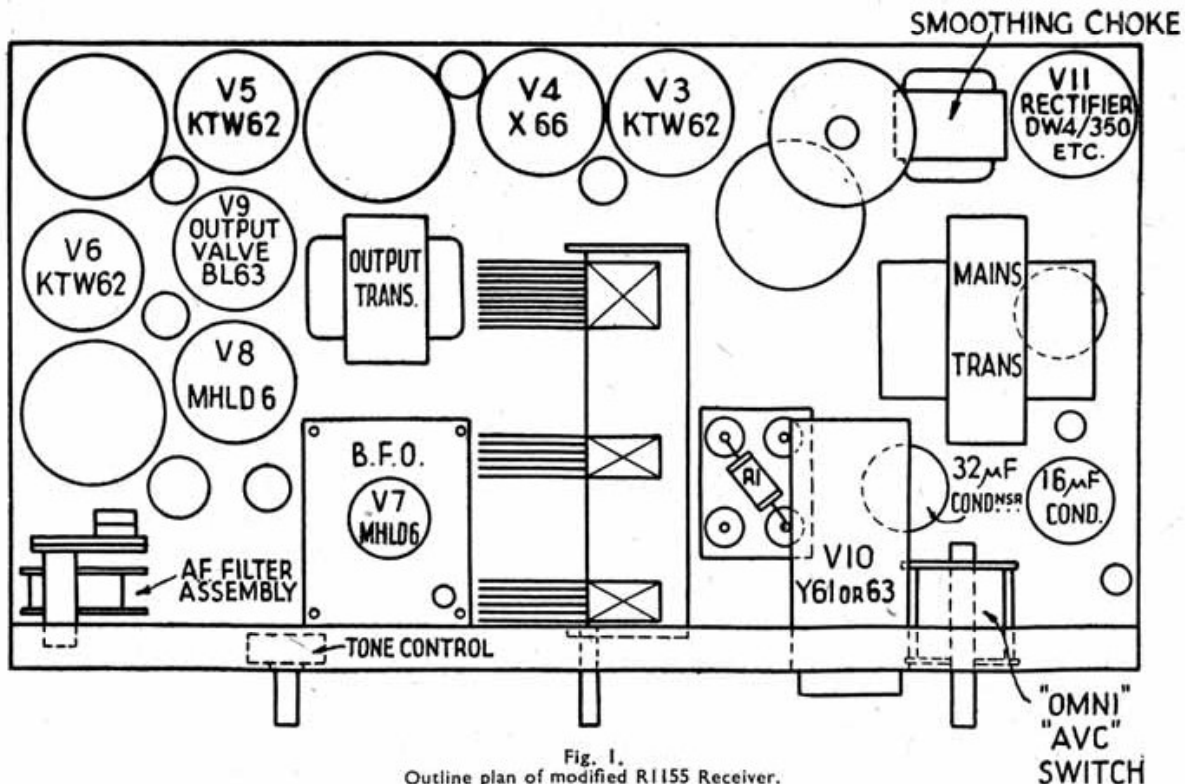


Fig. 1.  
Outline plan of modified R1155 Receiver.

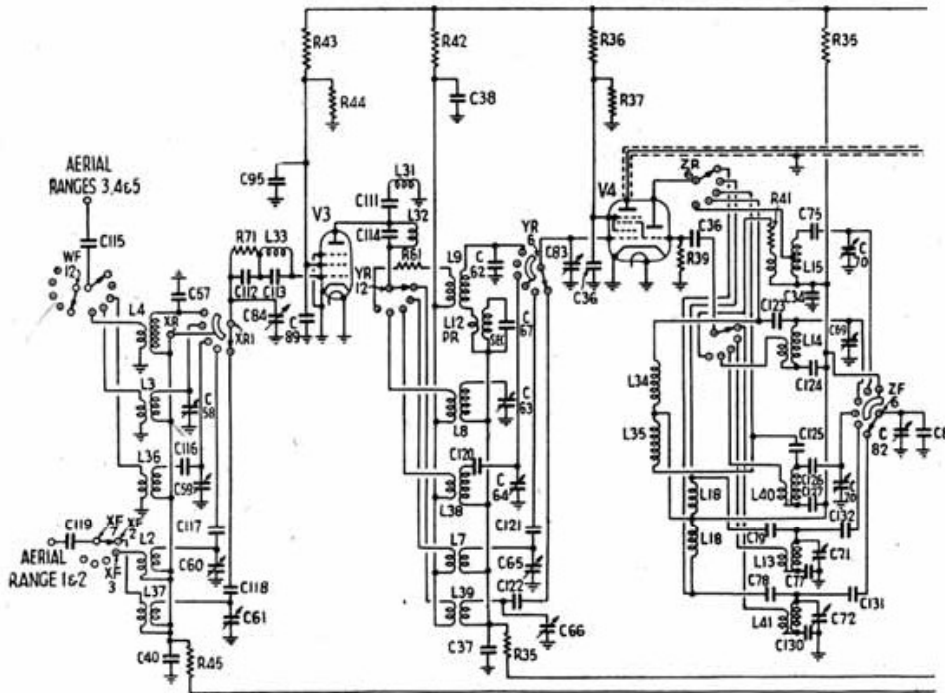
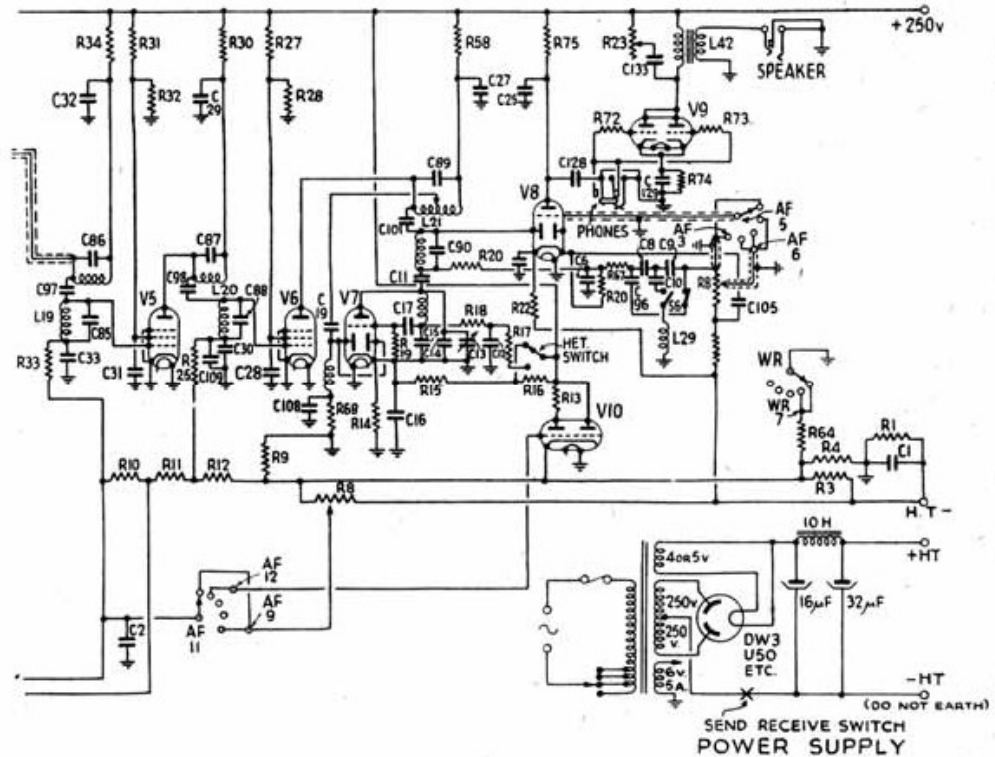


Fig. 2. Circuit of modified R1155 Receiver.



the practice is not to be recommended. It is better to wind self-supporting low-loss coils, the design for which must be worked out by the individual constructor as no details, regarding diameter, number of turns, etc., are available.

**Power Supply**

The normal H.T. current consumption of the R1155 is about 70 mA and this will be increased by another 25 to 35 mA according to the type of output valve used. An H.T. secondary winding capable of supplying 220 to 250 volts at 100 mA D.C. would be suitable. The smoothing arrangements illustrated have been found adequate, although smaller capacities with a

larger inductance choke would, no doubt, be in order. The difficulty lies in the limited amount of space available; a really big choke would not fit in.

**Hints and Kinks**

It is essential *not* to earth the H.T. negative as this will cut out the R.F. gain control. The value of R1 is also important as it affects the proper operation of this control. The voltage drop across R1 should be in the region of 30 to 42 volts and the original value of 2,000 ohms will be found to be too high. If the biasing resistor and condenser in the output stage are connected between the cathode and H.T. negative, R1 will require no alteration.

Before fitting the receiver casing it will be necessary to cut louvres or drill holes at the top right hand side, where the power pack is situated, in order to dissipate the heat. A series of holes should also be drilled along the back of the case at the bottom to allow an adequate influx of cold air.

The theoretical diagram, which is laid out in a similar manner to the official diagram but with the D.F. wiring omitted, should be of assistance to those who have obtained the standard circuit sheet.

It is realised that a great deal has been left to the amateur who is converting his R1155 and, perhaps, it is more fun that way. If there are, however, any points to be cleared up the author will do his best to supply the information.

The following is a list of components not originally fitted to the R1155 of which exact details can be given :

L34 and 35	Denco R.F. chokes Type R.F.C.5.
R72 and 73	1,000 ohms, .25 watt.
R74	500 ohms, .5 watt. (To suit BL63 valve.)
R75	.1 Megohm, .25 watt.
C115	500 $\mu$ F silvered mica condenser.
C117, 121, 132	300 $\mu$ F silvered mica condenser.
C119	100 $\mu$ F silvered mica condenser.
C123, 125	15 $\mu$ F ceramic condenser.
C124	1,670 $\mu$ F silvered mica condenser. (Originally C77, Range 2.)
C128	.01 $\mu$ F silvered mica condenser.
C129	25 $\mu$ F, 25 volts electrolytic condenser.

Note.—In the circuit diagram (Fig. 2) the lead from the right-hand side of C128 is shown connected to the 2nd instead of the 3rd spring of the 'phones jack, reading from the left.

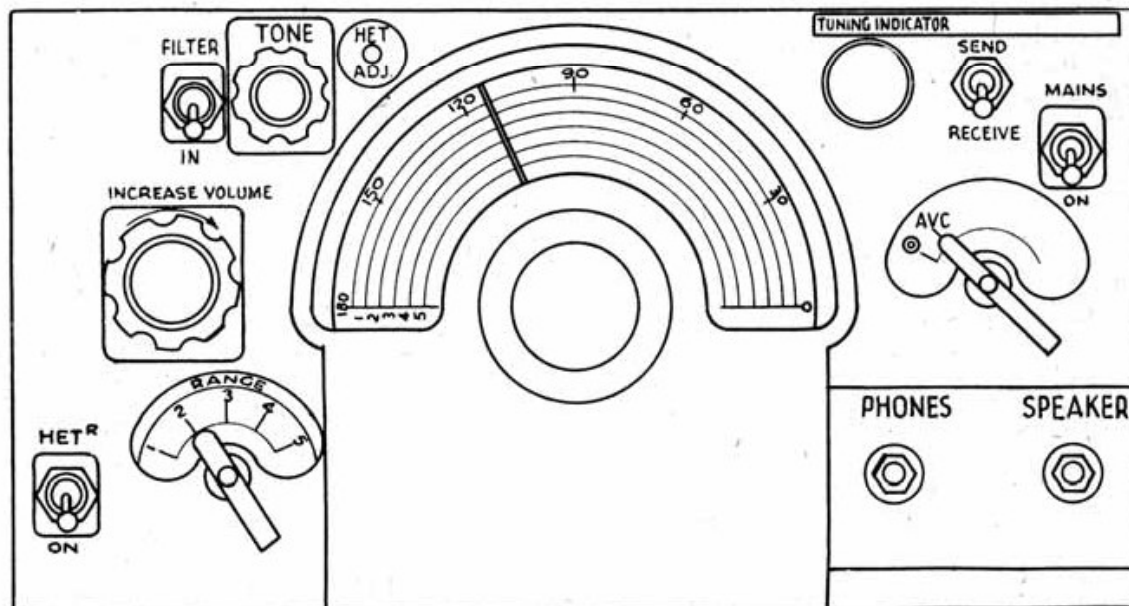


Fig. 3.  
Front elevation of modified R1155 Receiver.

#### Remainder of 7 & 14 Mc/s Bands Released

As all members know the Society has, for months past, been pressing for the early release of the remainder of the 7 and 14 Mc/s. bands, in fact as far back as July we proposed that November 1, 1946, be set as the target date. In accordance with accepted practice this proposal was sent by the W/T Board to other administrations for their views. As recently as November 1 the G.P.O. Board informed the Society that whilst the W/T Board were prepared to authorise the release at once, other Governments had not signified agreement. Later, that day, the U.S. Government, through F.C.C., issued an order authorising the release of the remainder of the two bands.

It would seem that the U.S. Government, after rejecting the W/T Board suggestion and thereby causing other Administrations to follow suit, suddenly changed its mind without notifying other Governments.

We deeply deplore the inconvenience which has been caused but must emphasise once again that it was the R.S.G.B. that pressed for the release to take place on November 1, 1946.

After the fiasco created by the U.S. Government, the G.P.O. announced that both bands were released as from November 6th, 1946.

#### The R.S.G.B. Bulletin.

For some time past the Council has been considering ways and means for providing members with a larger BULLETIN, but unfortunately this is not possible at present owing to the enlarged circulation brought about by a greatly increased membership.

An alternative would be to produce a supplementary periodical and with this in mind the Secretary was requested to consult the Society's printers. The following is a copy of the report which he presented to the Council at its last meeting :

"I have discussed with our printers the suggestion that the Society should produce a new periodical, and am advised that for a circulation of 15,000 copies, the size would be 8 pp. and 4 pp. covers for a quarterly or 12 pp. without covers. If publication was made every 4 months the size could be increased to 12 pp. and 4 pp. covers, or 16 pp. without covers. The Paper Order dealing with new publications states clearly that the weight of paper used for a new publication must not exceed 8 cwts. in any 4 monthly period."

In view of this information the Council resolved that no useful purpose would be served by attempting to produce a second publication at present.

The Council much regrets that the Society is being penalised because its membership has increased.