

coupled the first stage to the next one. The transformer will consist of a separate primary of about 20 turns on a slightly smaller former placed inside the low potential end. One side would go to the plate of the valve and the other to B+. This would be by-passed with the condenser shown.

2. By neutralising the s.g. valve would all carrier waves, etc., be eliminated?

A.: No, it is not worth while neutralising the s.g. valve. It is perfectly stable without any extra aids.

N.D.B. (Tologa Bay): I have built the Outspan Five and now want a short-wave set to use with it. I am inclined toward a d.c. version of the super het. adapter. Would A409 or A415 do as detector with A409 as oscillator?

A.: Either A409 or A415 will be suitable for the first detector with A409 for oscillator.

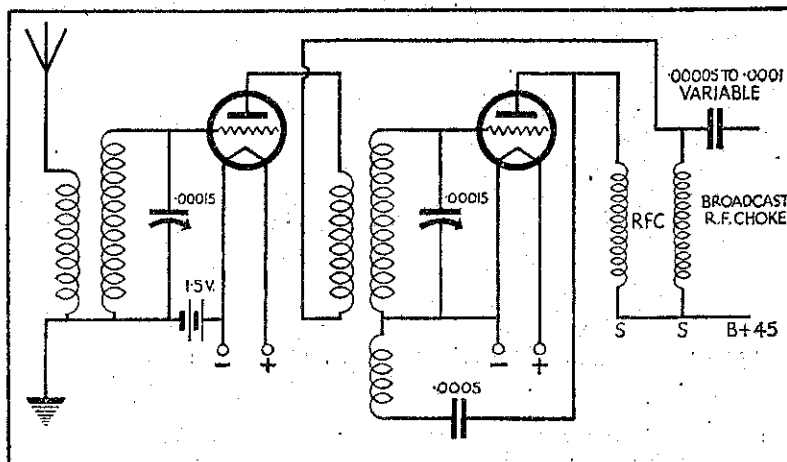
2. Is C3 fixed or variable? It is called a tuning condenser.

A.: C3 is a .0005 mfd. fixed condenser.

3. Are L5 and C4 required when the Outspan follows.

A.: L5 and C4 are not required when the adapter is used in a set having a tuned input stage, such as the Outspan. Do not short the output of the adapter right out, as you have done in the diagram. The inclusion of L5 and C4 will always improve the selectivity of the set, but if they are to be omitted the connections will be as is shown in the accompanying diagram.

4. Is the negative return in both cases best, and would the ordinary grid leak work as well with a plus or potentiometer return?



Theoretical sketch of superheterodyne short-wave battery adapter.
The coils will be as before.

A.: A grid detector may be used if desired instead of a plate bend detector. The grid return should then be to A+, or, better still, to the slider area of a potentiometer connected across the "A" battery.

5. The two stages of s.g. do not appear to give the lift they should. For efficient working with the s.g. valve should there not be more turns on the primary of the following coil?

A.: You could experiment with a large number of turns. The numbers we gave were as high as we found practicable.

Beyond that the set begins to become unstable. Have the s.g. valve tested and we presume you have tried varying the screen voltage.

6. Is it safe to go up as high as 180 volts on the plate? You give it in the "Guide," but the directions with the valve give 150 maximum.

A.: Valves are rapidly improved and we have given the specifications of the latest valves imported by Philips. Yours is probably a little older.

ION (Christchurch): I have obtained improved results with the Loftin Four by paying particular attention to the output stage using radio frequency choke between the primary of the output transformer and the plate of the 245 valve and the B+ supply. I have taken the leads to the speaker in metal armoured flex, but I cannot adjust the trimmer to the optimum position without squealing. If the earth connections to the shields on transformer and loudspeaker is broken the set begins to squeal. I have not tried a choke in the plate lead of the detector or r.f. valve. I have reduced the primary turns without avail. The sensitivity of the set is quite equal to a well-known a.c. set using the same number of s.g. valves.

A.: Try, as you suggest, chokes in the plate leads of the r.f. valve and a separate earth for the shielding and the aerial coil itself. Run the plate and grid leads of the amplifier in earthed armoured flex. Have you adhered to the layout carefully, as if this is not followed instability must result? From the rough sketch you have sent us it appears that you have the 245 valve and the power pack too close together. The radio portion must, as shown in our diagram, be kept well away from the amplifier.

2. In the meantime I am constructing the super het. adapter described in the "Guide." I do not see any mention of the value of the tuning condensers C1, C2. As I want to use .0025 condensers to make .0001 condenser, is it safe to take the number of turns for the detector coil from the list in the "R.R."?

A.: The tuning condensers specified for the super het. are .0001 and .00014. You can quite well use .00025 tuning condensers without any change in the coil, but you will find that best results will be obtained by using only the lower part of the tuning range of the condenser. The tuning, particularly of the oscillator, will be very sharp indeed, and you will receive the same station on two different sets of coils. If you make the adjustment in the number of turns referred to this difficulty should be overcome.

3. Would a .25 mfd. condenser be suitable for the values C3 and C5, and is the tuning circuit L5C4 necessary in connecting the adapter to the Loftin Four?

A.: C3 should be a .0005 mfd. fixed condenser. C5 a fixed condenser .0001 mfd. or smaller, or a 'midget' variable may be

used. The tuned circuit L5C4 is not absolutely essential with the set employing a tuned input such as the Loftin Four, although it is of advantage in improving selectivity. The Loftin Four has insufficient r.f. amplification to give really satisfactory results with a super het. adapter. Furthermore, you may have trouble with instability.

W.A.R. (Martinborough): I have constructed the super het. adapter, or rather a battery version of it, taking the grid return to "A-." Could you give the necessary modification for battery operation?

A.: You appear to be working along the right lines in returning the grid to the potentiometer in the d.c. In the absence of the potentiometer the return should be made to A+. The 1875 k.c. coil is designed to cover the 160 metres band where there is very little to be heard.

2. The parts are not named in the "Guide." What is C3?

A.: They have since been published and appear in the second edition of the "Guide." C3 is a .0005 mfd. fixed condenser.

3. Is the choke a shortwave or broadcast?

A.: It should be shortwave, but a good broadcast one will usually operate satisfactorily.

4. Should a super het. howl when brought into resonance? If not, why does it do this and how can be suppressed?

A.: A super heterodyne should never howl unless the receiver is oscillating. This trouble can almost invariably be cured by the adjustment of the B voltage on the oscillator and the detector. Reduce these progressively until the howl ceases. Where a potentiometer is used for the grid return adjustment, of this will often result in a cure.

5. Could the windings L2, L3, and L4 be made more clear?

A.: Since the 80 metre coil is operating so well copy the connections exactly

Data for Moving Coil Speaker Voice Coil

Valve or Impedance.	Turns for H.R. Coil.	Turns for 25-1 Step-down Transformer
2500 ohms	1000	50
2750	1300	55
3500	1650	65
5000	2100	105

for the coils for the other band. The coupling coil L2 sometimes requires variation when an oscillator valve having an unusually high or low output is used. Try varying the number of turns on this.

M.G.H. (Gisborne): Using 26 d.s.c. for the secondaries and 32 for the primaries, what would be the coil specifications for the Outspan using 2in. formers with .0005 condensers?

A.: This information has been published in the "Radio Guide."

You will require 72 turns on the secondary with about 25 on the primary and 35 regeneration.

2. Would it be better to use .00035 condensers to control the detector coil?

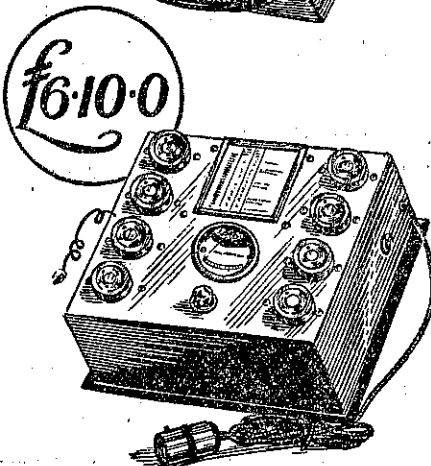
A.: It is unnecessary. You could use all three condensers the same.

3. Would .0002 reaction condenser be suitable for .0005 condensers?—Yes.

4. By mounting a detector coil in the valve base could I use a detector and two audio for shortwave?

A.: Yes, providing you used a high-grade broadcast choke.

5. My first audio valve gets fairly hot. I am using M4 in both first and second audio stages.



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