

Questions and Answers



"P.J.K." (Palmerston North) encloses a sketch of a push-pull amplifier, and asks if it would be suitable for a gramophone amplifier.

A.: Yes, quite. The resistance in the anode of the detector should be about 100,000 ohms, and that in the grid circuit of the first amplifying valve about 250,000 ohms. The intervening condenser should have a capacity of about .01 mfd. You will probably find that a 201A valve in the second audio will be quite sufficient.

"W.R.B." (Palmerston North) states that he cannot get American stations on his five-valve receiver, although he can get the New Zealand ones at good strength. He has a new 45-volt B battery, and asks—

1. Would the set be damaged by connecting the two 45-volt batteries and running 90 volts through the set?

A.: No, not under ordinary circumstances, but it is unwise to put the full 90 volts on any valve but the last, or at the most on the audio valves; 67½ should be applied to the radio valves, and 45 on to the detector. If you intend to connect the old 45 battery with the new one, our advice is to make fresh resolutions. It is most unwise to connect the new battery and an old one together for the sake of obtaining the extra voltage. When the battery drops slightly in voltage the re-

sistance due to defective cells increases greatly, and the actual inefficiency of the battery is very much greater than it appears.

2. Would reception be improved by the addition of another 4½-volt C battery?

A.: This depends upon your circuit. Trace out the grid bias negative wire, and see if it connects with one valve only. If it does, and you are using anything but a 201A in the last stage, you can safely increase the bias to 9. If the grid circuit of the audio valve preceding the last valve is connected to the grid circuit of the last valve, you will have to disconnect these two wires, and put in a separate tapping for the first audio valve. This should be 3 or 4½ volts, according to the plate voltage.

3. Would reception be improved if I fitted a fixed condenser between the aerial and the set, and how much do these cost?

A.: Reception would not be improved. The function of the condenser is to effectively shorten the aerial and is used usually to sharpen selectivity. Note: We cannot assure you that by increasing the plate voltage and putting extra bias on the last valve that you will get American stations. We can state, however, that the sensitivity and tone of your receiver will be improved, and if you have already had four American stations on the telephones you may be able to get them on the speaker now.

"L.B." (Auckland) wishes to know how to excite the field coil from the A.C. mains.

A.: "Pentode" is now revising the description of the dynamic cone which proved so successful, and when this is complete we shall publish with the details for transformers to work from the A.C. mains.

"E.R.W." (Island Bay) proposes to construct the silk diaphragm speaker and wishes to make slight alterations in order to make a cabinet speaker of it. His questions are:—

1. Will substituting hard wood for the O.B. rimu be detrimental?—No.

2. Will the addition of a back of stout ply wood affect the performance?

A.: Unless the back is left open or covered with gauze, it will result in a booming effect. At the least, bore many holes in the back, to allow the sound waves to escape.

3. Will the addition of feet affect performance?—No.

4. It appears from the article that the silk is really tacked to the frame. Is this all the precautions that are necessary for silk is flimsy material?

A.: Use fine tacks with wide heads and put them very close together.

5. What would be the effect of altering the size of the frame to 20in. by 20in.?

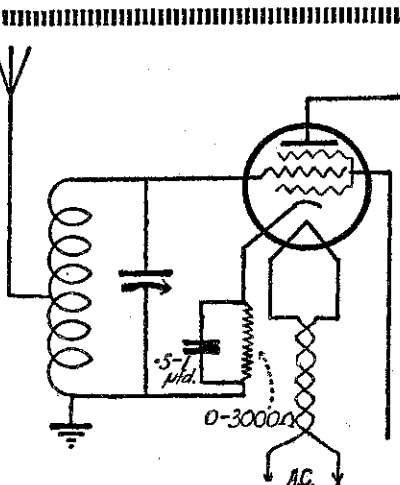
A.: It is very difficult to say definitely, but we should imagine it would have practically no effect.

"H.M.M." (Southland) states that he cannot get good results from a 2-valve transformer coupled amplifier when connected to a single valve set. Both amplifier and set use PM4 valves.

A.: You should be using PM4D or PM3 as detector and PM3 as first audio. Be quite certain you have adequate bias on the last stage valve, and that the transformers are of low ratio and good quality.

2. What is the correct method of wiring the set to the amplifier?

A.: The plate lead of the detector is taken to the P terminal of the first transformer, while B+ of the transformer is taken to about 45 volts. A choke may be connected between P of the valve socket and P of the transformer, and if the one valve set uses reaction, there will be a condenser across the primary and P of the valve will be connected first to the rotating coil. If of the condenser control reaction type, the wiring will vary according to the circuit you are using. Use about 45 volts on the detector, 67 on the first audio, and 90 on the second audio.



A correspondent has complained of his aerial tuning being broad when changing over to A.C. Screen-grid. The above diagram shows how this might be improved by the application of grid bias.

"PLUM" (Auckland) states that his four-valve set will work on three valves only. It distorts on distant stations when working on the four. The volume control does not make any difference on the local station, but makes distant stations bubble.

A.: You have not stated exactly what you mean when you say "it will not work on four valves." It appears it does work on four valves, but poorly. Your transformer may not be a good one, or there may be some mistake in the wiring of the last stage. If you are using an eliminator, it appears that it cannot supply sufficient current for the set. Try reversing the connections to the primary of the last transformer, and increase the grid bias (or decrease it according to the amount of bias you have on); the particular valve you are using requires about 9 volts when using 90 volts, and about 12 volts when using 135 volts. Regarding the volume control, we cannot give you any advice because you have not stated the type of control it is.

"W.E.A." (Auckland) has a crystal set and two-valve amplifier, and when he turns on the electric light, a noise like an aeroplane is heard.

A.: Probably the switch is defective, and you should call in an electrician to examine it. The contacts may not be making a good connection.

"H.C.C." (Pelorus Sound) asks where Condor valves can be purchased.

A.: Try John Chambers and Son, Wellington.

"SPARKS" (Christchurch) asks for the particulars of valve-base coils for "Round-the-World" Two. He is referred to the inquiry of the above correspondent.

"E.P." (Norsewood) wishes to know the number of turns for A609 and A635.

A.: A609 requires 15 for a 3-inch former, about 20 for a 2-inch former. A635 requires about 30 for a 3-inch former and 36 for 37 or a 2-inch. We would advise you to use A609 in preference to A635.

2. I am using a Phasatrol. Have the primary turns to be adjusted because of this?—No.

3. I do not have a volume control, but have put two 80 ohm rheostats in the filament lead between the detector in high frequency valves. Could you suggest a better panel control?

A.: The best volume control consists of 500,000 ohms potentiometer shunted across the aerial coil. It is used as a rheostat, the third terminal being neglected.

4. When I connect a horn speaker to my set there is no hum, but when I connect up a linen diaphragm speaker there is one. Why?

A.: The hum is likely to be 60 cycle note, which cannot be reproduced by a horn speaker.

5. When I turn the audio rheostat on too far the set begins to bubble badly.

A.: It seems that you are overloading the eliminator, as it is rated to give only 120 volts and about 20 milliamperes. The only satisfactory cure is to use valves with less plate consumption or to buy another eliminator. If the eliminator is not at fault reversing the connections to the primary of the last transformer, inserting a grid leak of about ½ megohm. in series with the last valve may have some effect.

"MOI WHARE" (Feilding) asks if the unit 66R is a "Blue Spot" obtainable from Fear and Co.

A.: Yes. If Fear and Co. do not stock it, try the Rodger Importing Co., Christchurch.

2. Would the enclosed piece of material be suitable to surround the cone, to attach it to the baffle?—Yes.

3. Would it be possible to organise a purchasing department for country constructors who cannot obtain parts they want?

A.: It would involve more organisation than it would be worth. The big city firms are always prepared to deal with mail orders from the country, and the right components can always be obtained from them.

"SELECTIVITY" (Wellington) encloses a diagram of a super-hetrodyne and asks if it will be better than a neutrodyne of the same number of valves.

A.: The super-hetrodyne has to be used with a loop antenna, and because of this it loses much of its sensitivity. The hetrodyne set submitted appears to be a good one, but we think the neutrodyne would be better.

2. Could you advise me of expert super-hetrodyne builders in Wellington?

A.: Try Collier and Beale.

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