

SUPERHETS WITH REACTION

By G3XT

THE IDEA OF ADDING A REACTION WINDING to an IF transformer in a superhet seems to be becoming increasingly popular. No wonder—for reaction is one of the few things in radio that really gives you something for nothing! It gives a great increase in signal strength and a marked improvement in selectivity, without adding to the number of valves required or increasing the current consumption of the set.

In fact, it may actually reduce the number of valves needed, by enabling one to dispense with an IF amplifying valve and all its associated components, thus effecting a considerable saving in cost. The reaction may not give quite such good results as an IF valve would, but if one does not mind sacrificing a little volume this is justified by the saving of expense.

Two typical circuit arrangements for adding reaction to a superhet are shown in Figs. 1a and 1b. In both of these it is necessary to add a reaction winding close to the secondary of the IFT (on the opposite side to the primary) and the purpose of this article is to show how this can be done with a minimum of trouble.

Fifty turns of 36 swg enamelled wire will probably be found just right for the additional winding. If you get no reaction, or unstable reaction, you will need to reverse the connections to the reaction coil, just as you would in dealing with an ordinary straight set.

With the older and bulkier types of IFT, such as those found in certain ex-Government units, the primary and secondary windings are arranged side by side and a little distance apart, as shown in Fig. 2. The secondary is perfectly accessible, there is plenty of room in which to add the supplementary winding, and no detailed instructions are necessary.

But if (as is more probable) you are using an up-to-date type of midget IFT, having a tiny screening can (smaller than the lower

half of your thumb) containing the two windings, two silver mica condensers and an iron-cored former, the job becomes extremely tricky and difficult.

The secondary winding is located at the bottom, is surrounded on two sides by the condensers, and the fine-stranded Litz wire ends of the two windings are soldered to thicker wires rising from the corners of the bakelite base. The secondary is therefore completely inaccessible, and it seems as if the only way to put on the new winding is to dismantle the whole transformer.

If you succeed in dismantling, re-assembling and soldering *properly* the Litz wire (the individual wires of which are finer than a hair) without doing any damage, you will be very lucky. Personally, I found it a difficult job, even with a large magnifying glass fixed over the work; and on two occasions I ruined a brand-new IFT through the fine wire end breaking off at the point where it emerges from the inner end of the winding.

After these two disasters, I decided in future to adopt an easy way out of the problem, and in spite of any theoretical objections the experts may think up I found that it worked quite all right in practice!

All I did was to call the primary the secondary, and the secondary the primary! By "swopping over" the windings in this way, the secondary becomes the upper one, which is easily accessible *without* dismantling the whole assembly. All you have to do is to wind, as neatly as possible, the requisite number of turns on the protruding end of the bakelite former, insert two pieces of 18 swg connecting wire as a tight fit through two holes drilled in the bakelite base, and solder the ends of the reaction windings to these. Replace the screening can, and the job is done. Fig. 3 shows the finished arrangement before replacing the screening can.

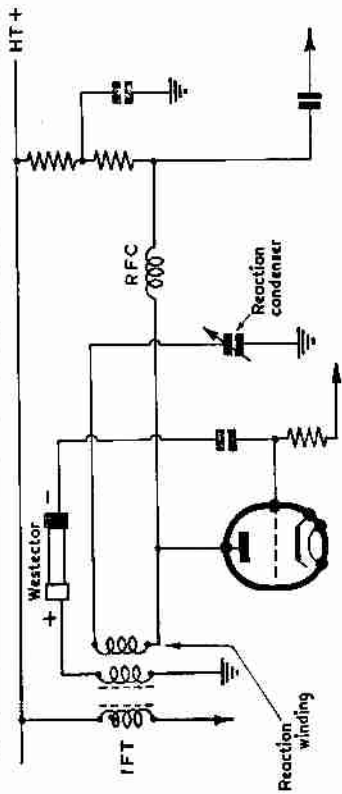


FIG.1(a) A typical circuit arrangement incorporating a reaction winding added to the IFT secondary

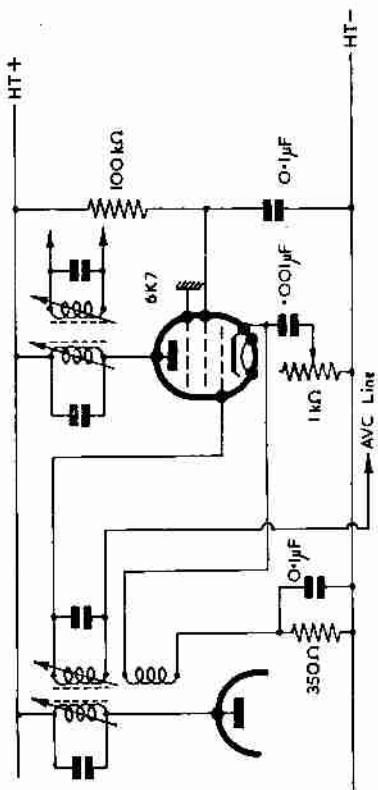


FIG.1(b) Typical circuit arrangement showing reaction applied to an IF stage

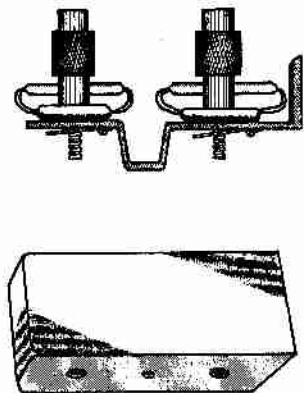


FIG.2. The older bulkier types of IFT such as this, are easy to provide with a reaction winding as both primary and secondary are accessible

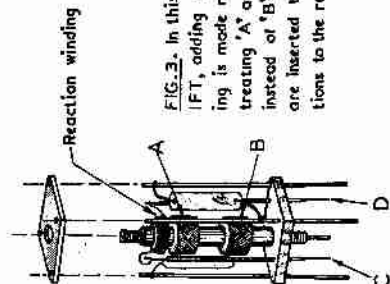


FIG.3. In this typical midget IFT, adding a reaction winding is made much easier by treating 'A' as the secondary instead of 'B'. Wires 'C' & 'D' are inserted to make connections to the reaction coil