This is likely under standby conditions in a multimode transmitter or transceiver.

The Solution

Whilst it is feasible to run, say, 220-volt equipment from a 250-volt supply through a variable voltage transformer, such components are bulky and expensive. Fortunately, a much simpler and entirely satisfactory solution can be achieved using a small heater transformer, as shown in the diagram. The secondary current rating of the transformer must equal or exceed the current required by the equipment to be supplied. This is not usually stated in the maker's specification, rather the maximum power consumption is given. To take a typical example of a 350 watts device at 230 volts, the current rating should be at least 350 divided by 230 equals 1·52 Amps. A two-ampere rating would be quite suitable.

As drawn, the output could be either 12·6 volts higher or lower than the line voltage depending upon the phase relationship of the primary and secondary windings. Should the output voltage be higher than the line value, the situation can be reversed by switching both S2 *and* S3. For straight-through operation, either S2 or S3 but *not* both should be switched. Obviously this is a two-way device. Either it can be used to operate 230 volt gear off 240 volt mains or it can be used to boost low, continental supply voltages to suit U.K. equipment.

Naturally, this principle can be extended to give finer control in 6·3 volt steps by using a centre-tapped secondary in which case S3 would need to be a three way switch, as shown dotted.

Limitations

It is suggested that this technique be limited to cope with ±10% voltage variations and that adjustments be made before switching on the equipment to be supplied. To operate 110 volt, American gear from 240 volt mains, an autotransformer should be used. It hardly needs mentioning that for safety reasons, this little device should be housed in a properly insulated box and good quality switches used.

BREAK-IN FOR THE CODAR AT-5

EFFECTIVE ADD-ON UNIT

A. P. KERFORD-BYRNES (G6AB)

THERE must be many amateurs who use the AT5 transmitter, either at the home QTH or mobile. After a time they may get a bit frustrated because break-in can not be used, and when one is monitoring the transmitted signal, the beat of the oscillator, running all the time, can prove rather distracting.

It was therefore decided to build a little add-on unit which would enable transmission without having to listen to the continuous note of the oscillator, and with which break-in could be used.

A 2-oz. tobacco tin was salvaged from the shelves. It was the type which has a detachable lid rather than a hinged lid. This was to form the "cabinet" for the break-in unit. The components used were a reed relay (obtainable from *G.W.M. Radio*), two twin-connector blocks, a single-pole toggle switch and a standard jack socket. A couple of rubber grommets are also required to lead the wires out of the tin.

The relay was bolted to a small block of wood which was then fixed to the bottom of the tin. The connector block was also fitted to the bottom of the tin, with the key jack socket and toggle switch mounted on the side. These items were connected as shown in the circuit diagram. (It may be found easier to wire up all the components before mounting them in the tin.)

The reason for a standard type of keying-jack socket being used was that all transmitting gear at this QTH is fitted with similar socketry for keying, but the miniature type of jack socket may be used if desired. Two holes are drilled in the sides of the tin and the two rubber grommets are fixed therein. One pair of outgoing wires from the relay coil is made long enough to reach the key-jack socket on the AT5, and this pair is terminated with a miniature jack plug. The other two wires are connected to the twin connector block, and made long enough to pass through a small hole which is drilled in the rear chassis drop of the PSU of the Codar. This pair of wires is terminated with another twin connector block under the chassis of the PSU. The lead beneath the chassis of the PSU of the AT5—which runs from pin 5 of the OA2 stabiliser to pin 7 at the output socket,

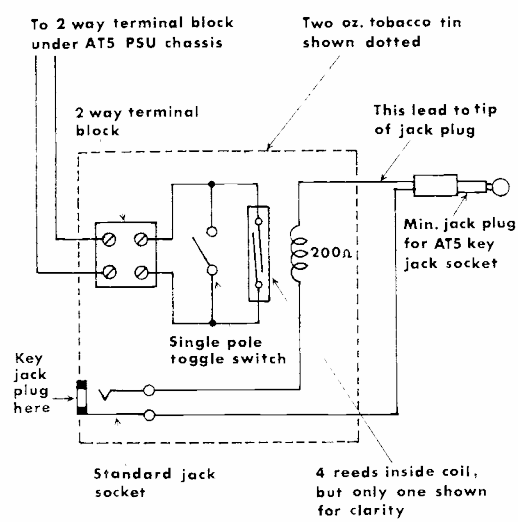
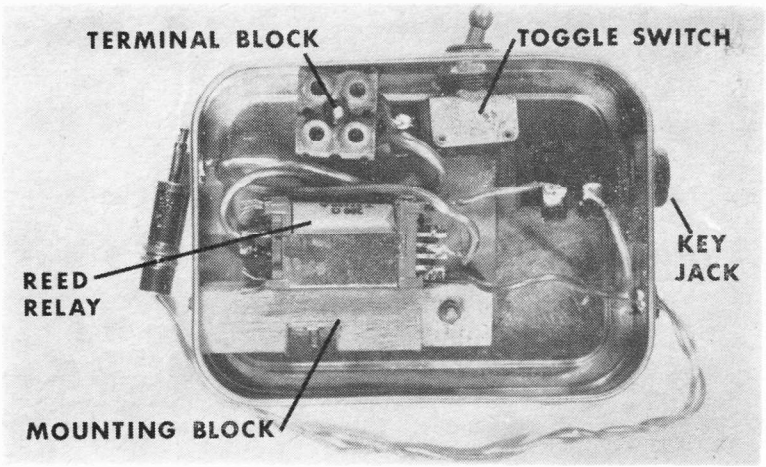


Fig. 1

Q 599

Parts required for the unit discussed in the text: Small tobacco tin (detachable lid); reed relay, 4-pole (G.W.M. Radio, Ltd.); two 2-pole terminal blocks; single-pole toggle or slide switch; standard key-jack socket; rubber grommets.



The unit as constructed by G6AB and described in his article.

carrying the stabilised HT supply to the output socket—is then cut. The two wires under the chassis which are terminated in the twin terminal block under the PSU chassis are in turn connected to the two cut ends. In the author's case the wire which was cut was the blue insulated one, though this may not apply to all these PSU's.

Netting

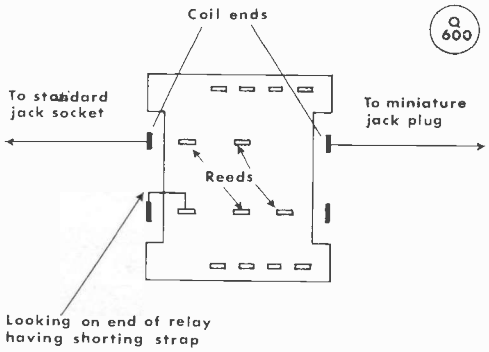
It will now be observed that the cutting of this wire has destroyed the netting facilities previously available, and that is the reason for the single-pole toggle switch in the tobacco tin. This is joined up across the twin terminal box in the add-on unit, and when put in the closed position, will restore HT supplies to the oscillator if the "Net, Standby, Transmit" switch is put to "Transmit," enabling netting to be done without putting the carrier on the air.

Construction

The circuit diagram shows the connections to the components and the photograph can be used as a guide to the layout. The original keying jack plug, the coil of the relay, and the extra jack socket are wired in series, which puts the 200-ohm coil of the relay in the cathode circuit of the PA when the key is closed.

Break-in working can now be easily accomplished by providing a separate aerial for the receiver and keying the AT5 through the add-on unit, though at G6AB the transmitter aerial is used as this is changed over from "receive" to "send" by another relay, operated by an additional contact on the key.

The relay used here has actually got four separate normally-open gold-plated contacts, vacuum sealed in a glass tube, inside the 200-ohm coil. When the coil is energised by the cathode current of the PA valve all four contacts close. If the constructor wishes, all four reeds



Connections of four pole reed relays

can be strapped in parallel to share the load (though each one is rated to carry 500 mA!). Alternatively, one of the reeds can be used to apply an earth to the station receiver when the key is closed, in which case it is recommended that the two-pole terminal block in the add-on unit be replaced by a four-pole and the extra pair of wires run to the aerial and earth terminals of the receiver.

Operation

In conclusion, for the benefit of CW operators who have not yet used break-in, it is most satisfying to be able to monitor one's own transmission and at the same time to listen between the dots and dashes and hear immediately if any QRM should appear on the channel, or if the station with whom one is in contact has any difficulty in receiving one's signal. He can stop your transmission at any time by just pressing his key or sending a string of dots. Break-in thus leads to better operating.

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