



RAF

## FOR THE SERVICEMAN

### ULTIMATE 5-VALVE RADIOGRAM CONSOLETTÉ MODEL R.A.F.

#### Circuit:

A type 7A8 octode frequency changer is followed by a type 7A7 R.F. pentode employed as an intermediate frequency amplifier which is in turn coupled to a type 7C6 duo diode triode combining the functions of demodulation, a.v.c. rectification and voltage amplification. Resistance coupled to this stage is a type 7C5 beam power amplifier delivering approximately 4.2 watts to a Rola type 8H speaker. A type 6X5GT is employed in the power supply as a full-wave rectifier.

The gramo motor used is a Garrard type AC6 type E and the pickup is a Garrard magnetic type.

#### I.F. Alignment Procedure:

A signal generator modulated 30 per cent. at a frequency of 400 cps is coupled between the control grid of the 7A8 frequency changer and ground by means of a 0.1  $\mu$ f. condenser. I.F. transformer should be adjusted for maximum output by means of the iron cores in the following order, I6, I5, I3, I4. An input of approximately 50  $\mu$ v. should produce an output of 50 milliwatts.

Calibration:

Adjust 1400 kc/s. point by means of trimmer T2 and 600 kc/s point by means of padger T3. Adjust 1000 kc/s point with iron core I2. Intermediate points should be checked and oscillator section of ganged condenser fanned to correct frequency.

#### R.F. Alignment:

A signal generator modulated 30 per cent. at 400 cps is coupled to the antenna and earth leads by means of a standard dummy antenna.

Adjust 1400 kc/s point by means of trimmer T1 and 600 kc/s point by means of iron core I1.

## Beacon Technical Topics No. 20

### UNIVERSAL OUTPUT TRANSFORMERS



BEACON universal output transformers successfully contend with various limitations and give excellent service under conditions usually encountered in practice.

In order to appreciate what an output transformer has to do, let us consider some things influencing its behaviour. (The performance of an output transformer is influenced by a number of factors external to the transformer.)

Firstly, there is the impedance of the signal source. Triode valves and pentode valves behave differently and the transformer must have a high primary inductance to allow for the use of either type of output valve. A pentode valve output stage can give both high and low frequency response quite different from that of a triode output stage although the same output transformer and recommended valve load may be used in each case.

Secondly, we have the load impedance to consider; this may be the same as the internal impedance of the valve or it may be quite different, and it plays an important part in determining both high- and low-frequency performance. The load impedance may change with frequency, a loudspeaker providing a good example of this effect.

Thirdly, the frequency of the applied signal has a considerable bearing upon the performance of a transformer; if too low a frequency is applied, severe iron distortion may be apparent, and if the frequency becomes too high, resonance effects not

only drop the output voltage but cause distortion of the waveshape as well. A poorly designed transformer might exhibit both low- and high-frequency distortion over part of the audio range normally used. Even a good transformer will show distortion effects if it is improperly connected in a circuit or used to couple a load to an unsuitable source.

When using a universal output transformer, it will be found in general that the higher the load impedance requirements of the output stage the poorer will be the overall frequency response of the transformer. If the valve calls for a very low load impedance, then the power handling capability of the transformer may be reduced, because the primary winding current is greatly increased. Similarly, if a number of low-impedance speakers are used in parallel, the secondary winding current may become excessive. The remedy, of course, is to use a transformer with a higher power rating or rearrange the circuit to avoid overloading the transformer. Between the extremes just outlined universal transformers can be relied upon to give very satisfactory service indeed.

**BEACON** make the following types:—

Cat.	Nominal	Overall Dimensions
No.	Rating	
48 S 43	3-watt	2½ in. x 1½ in. x 1½ in. high
48 S 44	6-watt	3½ in. x 2½ in. x 2 in. high
48 S 45	10-watt	3½ in. x 2½ in. x 2½ in. high
48 S 32	20-watt	3½ in. x 2½ in. x 3½ in. high

### B E A C O N   R A D I O   L I M I T E D

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