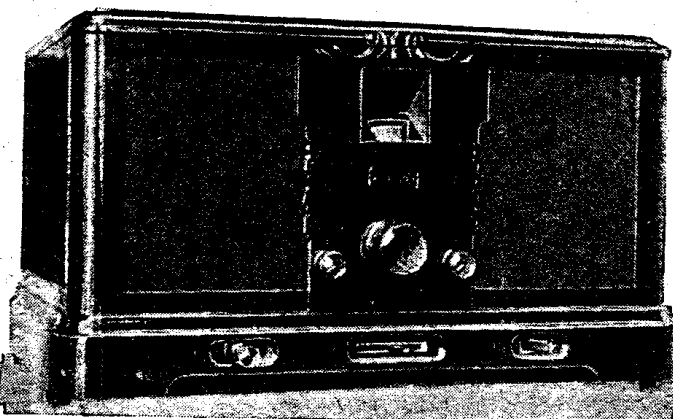


Ekco



MODEL 313

THREE-VALVE MAINS RECEIVER

A Robust Three-valve Mains Receiver with an Excellent All-round Performance.

IN the Ekco Model 313 we have an excellent example of what is probably the most popular type of receiver on the market at the present time, namely, the mains-driven three-valve set with a single screen-grid H.F. stage, detector and pentode output valve.

The set is housed in a moulded case of unique design and the construction of the chassis shows evidence of careful preparation and development. In fact, it is a worthy first product of the new Southend factory of Messrs. E. K. Cole, Ltd.

In general principle the three-valve circuit follows conventional practice, but there are numerous detail refinements of special interest. For instance, the variable aerial coupling, which serves both as a pre-detector volume control and as a means of compromising between range and selectivity, takes the form of variable magnetic coupling between the aerial and tuned grid circuits. The grid coils are single-layer windings on a 1 3/4 in. former and the aerial coupling coils are mounted on a spindle inside the grid coil former. The coupling is varied by rotating the aerial coils through the medium of a simple crank mechanism. The makers claim that this form of coupling produces a negligible change in the tuning of the grid circuit, and our experience with this set indicates that the claim is justified.

The Mains Aerial.

The aerial is connected to the coupling coil through a small fixed series condenser, two alternative values being provided in order that the set may be adjusted to local requirements. A third aerial socket is connected directly to the high-potential end of the grid coil. This is intended for short indoor aerials or the mains aerial provided with the set. The latter takes the form of a third wire bound up with the mains leads, and functions by virtue of its capacity to the mains. To prevent 50-cycle hum when using the mains aerial a small stopping condenser and high resistance shunt are

connected in series with the grid of the H.F. valve. The screen grid potential, in common with the H.T. supply to the detector valve, is taken from a potentiometer resistance connected across the smoothed output from the mains rectifier. The tapping point on the resistance is adjusted at the works before despatch.

The H.T. supply to the anode circuit of the S.G. valve is decoupled, and the H.F. coupling to the detector valve is through the medium of a tuned transformer. The tuning condensers for the transformer secondary and the input circuit to the S.G. valve are ganged, and trimming condensers are connected in parallel with both elements of the condenser. The trimmer on the H.F.

transformer secondary is adjustable from the front of the set, while that on the input circuit is pre-set at the works.

The detector functions as a grid rectifier with zero grid bias. Terminals are arranged in the input to the detector by means of which a gramophone pick-up may be connected with the appropriate negative bias. No switching is provided for the pick-up terminals, so that the pick-up must be entirely disconnected for radio reception, and conversely, the radio circuits should be detuned when reproducing gramophone records.

A reaction coil in the anode circuit of the detector is coupled to the H.F. transformer, the reaction current being controlled by a series variable condenser. On long waves a fixed condenser is automatically switched in parallel with the variable to increase the reaction effect.

The output valve, which is transformer-coupled to the detector, is a P.M.24B pentode with directly heated filament. Its anode circuit contains a tapped choke by means of which the output impedance may be matched to the loud speaker in use.

High-tension current for the set is supplied through a half-wave rectifier, the output from which is smoothed by the usual large-capacity condensers and a choke in

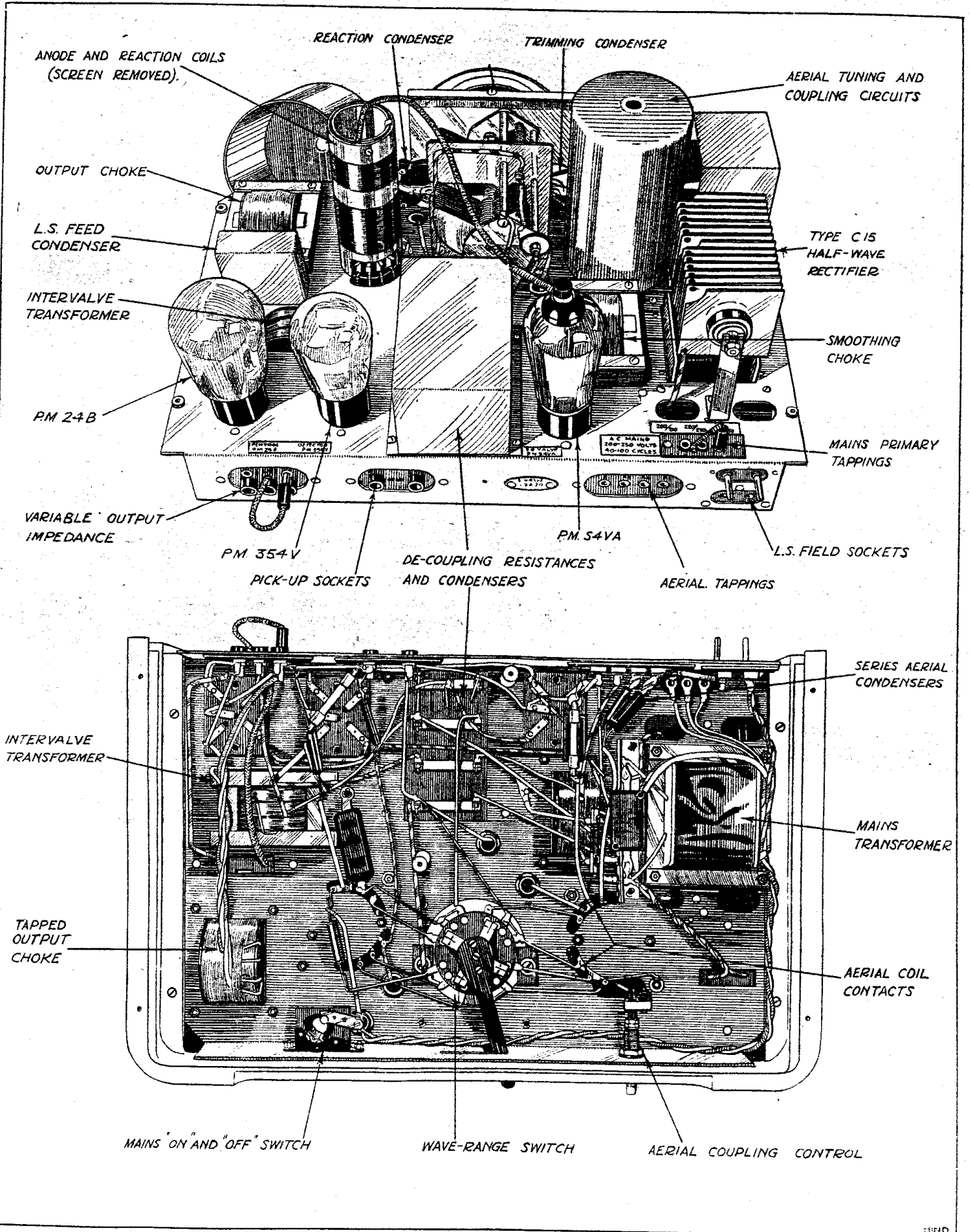
SPECIFICATION.

**CIRCUIT:** Screen-grid H.F. (tuned transformer coupling), leaky grid detector (with reaction), transformer-coupled pentode output valve. Westinghouse half-wave rectifier.

**CONTROLS:** (1) Single-dial ganged tuning. (2) Gang trimming condenser. (3) Wave-range switch. (4) Input volume control (variable magnetic coupling). (5) Reaction. (6) Mains switch.

**SPECIAL FEATURES:** Choice of three output impedances. Terminals for L.S. field current. Sockets for pick-up (no switching). Mains aerial.

Price: £22 10s. "Ekcone" L.S. £4 10s., "Ekcoil" L.S. £11 extra. Makers: E. K. Cole, Ltd., Southend-on-Sea.



The Model 313 A.C. "Ekco" chassis with one screen removed to show H.F. transformer windings.

**Ekco Model 313—Three Valve All-electric.—**

the negative H.T. lead. This arrangement has the advantage that grid bias can be derived from the voltage drop in the D.C. resistance of the choke. In practice the voltage available is increased by a small resistance in series with the choke. The grid bias connections are efficiently decoupled.

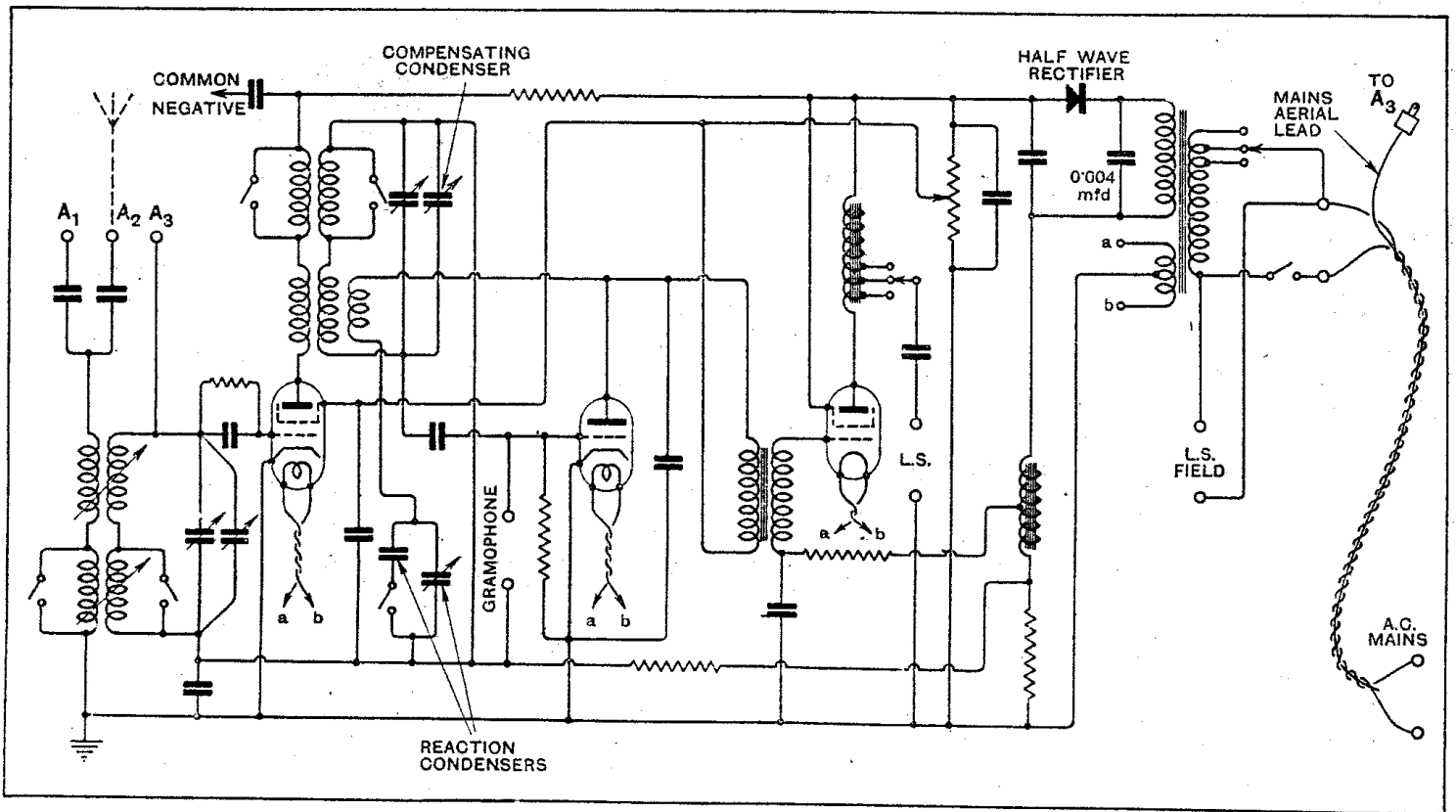
In connection with the mains supply to the set, it is interesting to note that sockets are provided for energising the field winding of a moving-coil loud speaker, thus obviating the necessity of duplicating connections to the supply point. Incidentally, the mains supply leads are detachable from the set, so that all risk of shocks is provided against if the plug is removed from the receiver before making adjustments.

Tested at a distance of only five miles from Brookmans Park and making use of an outdoor aerial 50 feet

of the aerial coupling and reaction controls, London Regional could be confined to a band from 310 to 365 metres, and the National transmitter from 210 to 280 metres. The fact that three foreign stations could be received between the two transmitters at a distance of five miles is an excellent testimonial to the selectivity on medium waves.

The long waves provided eight stations in addition to 5XX, the selectivity being just sufficient to isolate Königswusterhausen and more than sufficient to separate 5XX from Eiffel Tower and Radio Paris.

The mains aerial is surprisingly efficient and enabled eight foreign stations to be received on medium waves and four on long at good loud speaker strength. The selectivity, on the other hand, is by no means so good as with an outdoor aerial, and it was found to be impossible to separate the London transmitters at five miles.



Circuit diagram of the "Ekco" Model 313 A.C. mains receiver.

in length, Langenberg and three other Continental stations on medium waves were received at good loud speaker strength in broad daylight. This in itself is convincing proof of the sensitivity of the H.F. portion of the circuit, and the performance after dark adds further confirmation. With both regional transmitters working, 27 foreign stations were received on the medium wave band. Of these 15 were at good programme strength, and in the case of four of these the volume control had to be used to prevent overloading the loud speaker. On Sunday evening, before the commencement of the B.B.C. transmissions, an additional 17 stations were received, 13 at programme strength and three requiring the volume control, bringing the total medium-wave score up to 44, an exceptional performance for a three-valve set. By making careful use

A further test in Central London was more successful, however, and either station could be limited to a band approximately 20 metres in width.

We are unable to find any fault with the quality of reproduction, which is in keeping with the high standard of performance in other respects. Some mains hum was noticeable, however, during intervals in the transmission, but was not sufficiently serious to merit condemnation.

Finally, a word of praise is due to the instruction booklet issued with the set. This applies to both A.C. and D.C. models, and, in addition to very lucid instructions for setting up and operating the set, gives a logical sequence of tests for tracing minor faults.

The price of the A.C. Model 313 is £22 10s., and the makers are Messrs. E. K. Cole, Ltd., Southend-on-Sea.