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COSSOR

INSTRUCTION FOLDER
AND
GUARANTEE

FIVE VALVE
ALL-WAVE
SUPERHET
RECEIVER

MODEL 474.AC

FOR A.C MAINS

A. C. COSSOR LTD.
Cossor House, Highbury Grove, London, N.5. England.
Telephone : Canonbury 1234 (30 lines)
Cables : Amplifiers, London.
Telegrams : Amplifiers, Phone, London
Codes : Bentley's

M. 173678

Installation

del 474 A.C. is simple to operate and the following notes are en to enable the user to obtain the best possible results. The allation is in most cases carried out by the stockist from whom the receiver was purchased, and all the user has to do is to switch on and tune the receiver to the desired station. There are, however, occasions when the user undertakes the installation, in such cases these instructions must be carefully followed.

AERIAL AND EARTH SYSTEMS

Although this receiver is very sensitive, it will give the best performance only when operated with an efficient external aerial and earth system.

INTERNAL AERIAL

A built in plate aerial has been incorporated in this receiver. It will give satisfactory results on local transmission only, for short-wave reception external aerial will be required.

EXTERNAL AERIAL

An efficient external aerial will not only make the reception of more stations possible but will reduce the effects of fading by delivering a signal sufficiently strong to be controlled by the receiver's A.V.C. system, at the same time reducing the amount of background noise. This applies with added force to the reception on the short-wave band.

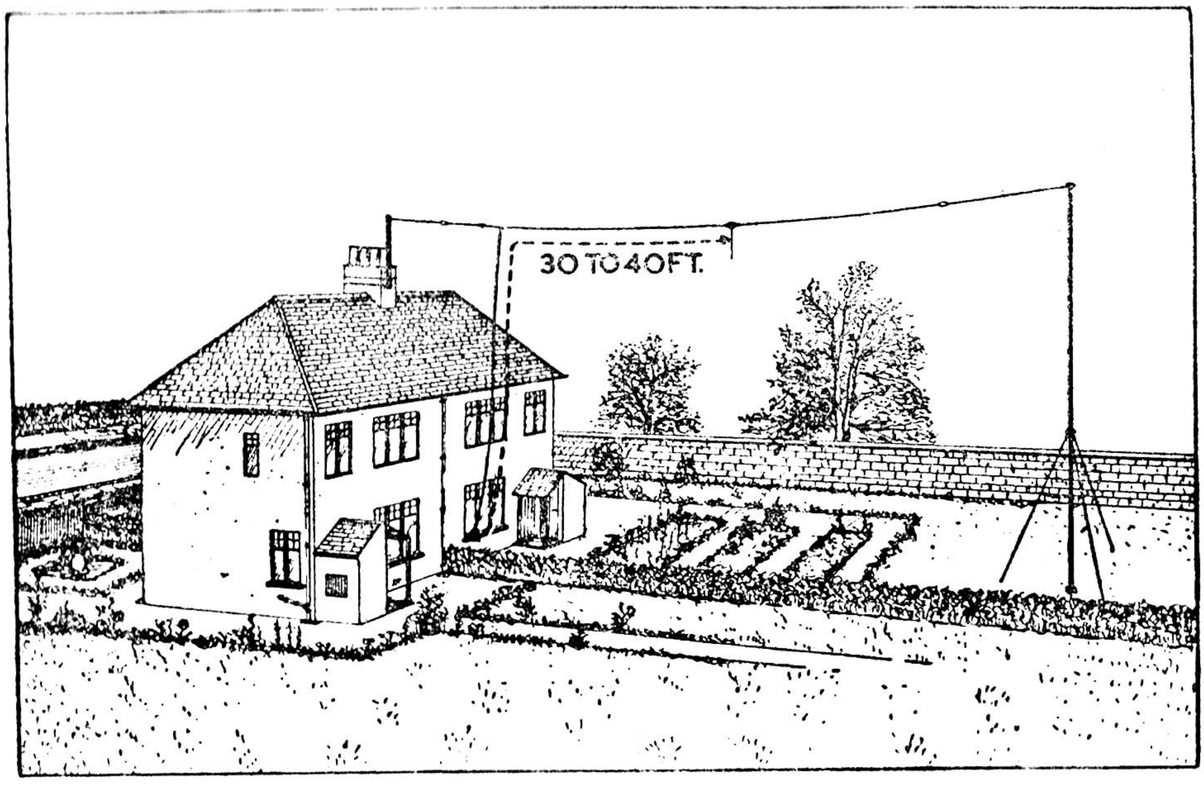
An efficient aerial can be obtained by using either a vertical steel rod 12–18 feet in height or an inverted " L " horizontal aerial (see Fig. 1). For maximum efficiency these aerials should be as high as possible and well clear of surrounding objects, such as trees and buildings. The down lead wire should be run as directly to the set as possible, and kept well clear of walls, ceilings and floors. A separation of at least 18 inches is desirable between the down lead and any metal objects.

Where the aerial is erected higher than surrounding objects, a spark gap is a desirable precaution against the effects of lightning.

In the case of the horizontal aerial, the horizontal portion should be 20–40 feet of 7/028 inches stranded copper wire, although the actual length is not critical. The remote end of the horizontal portion should be clear of trees or other obstructions and well insulated from its support. If an aerial is to be erected in a district where there is serious interference due to man-made static, such as that caused by tramways, electric motors or electric discharge lighting, a special all-wave anti-interference aerial may be tried. These aerials have a specially screened down lead, so that pick-up between the down lead and adjacent electric wiring is reduced.

When it is impracticable to erect an aerial system such as those described above, a picture rail aerial is deprecated, particularly because of its susceptibility to interference pick-up, and poor short-wave performance. A small outside aerial will give a much better performance, provided the above remarks on the down lead are observed. It should be mounted as high as possible, even if it is not clear of surrounding objects. It could be either a wire aerial, 10–30 feet long, or a small rod, 6/10 feet long, mounted as high as possible.

The lead-in wire from the aerial installation should be connected by means of the plug provided to the socket marked " A ", the position of which is shown on Fig. 3.



AN INVERTED "L" TYPE AERIAL

Fig. 1

EARTHS

The earth lead should be heavy gauge wire and as short as possible. It is advisable to use an earth tube or copper plate having adequate surface area, penetrating deep into damp ground. A main cold water supply pipe may be used with equal success. GAS PIPES AND TELEPHONE INSTALLATIONS MUST ON NO ACCOUNT BE USED. The earth lead should be connected to the socket marked "E" shown in Fig. 3.

OPERATING INSTRUCTIONS

This receiver is designed for operation on Alternating Current (A.C.) mains supply of 200–250 volts, 40–100 cycles. Details of the mains voltage and the nature of the supply may be ascertained from the local electricity undertaking, should any doubt exist.

When despatched from the works the receiver is adjusted to suit a mains supply of 235/255 volts. An adjustment must be made to the receiver if the supply is not within this voltage range. To do this, first withdraw the supply lead from the mains socket and remove the back of the receiver. It will be seen that the set is divided into two chassis. The voltage-selector plug is located on the mains transformer on the left hand chassis and marked 200-215, 216–234 and 235–250 as portrayed in Fig. 3. These figures indicate the voltage ranges for which the receiver is suitable. Thus if the supply is 210 volts the selector plug must be partially withdrawn and re-inserted in the socket marked 200–215, Should the supply be 220 volts use the 216–234 socket and so on. The average consumption of the receiver is approximately 57 watts.

Two points must be borne in mind at all times. Firstly, the mains supply lead must not be connected to the supply socket while any adjustment is made to the interior of the receiver ; secondly, if the mains transformer has not been correctly adjusted to suit the supply serious damage to the receiver may result.

CONTROLS

The physical position of the following controls is shown in Fig 2.

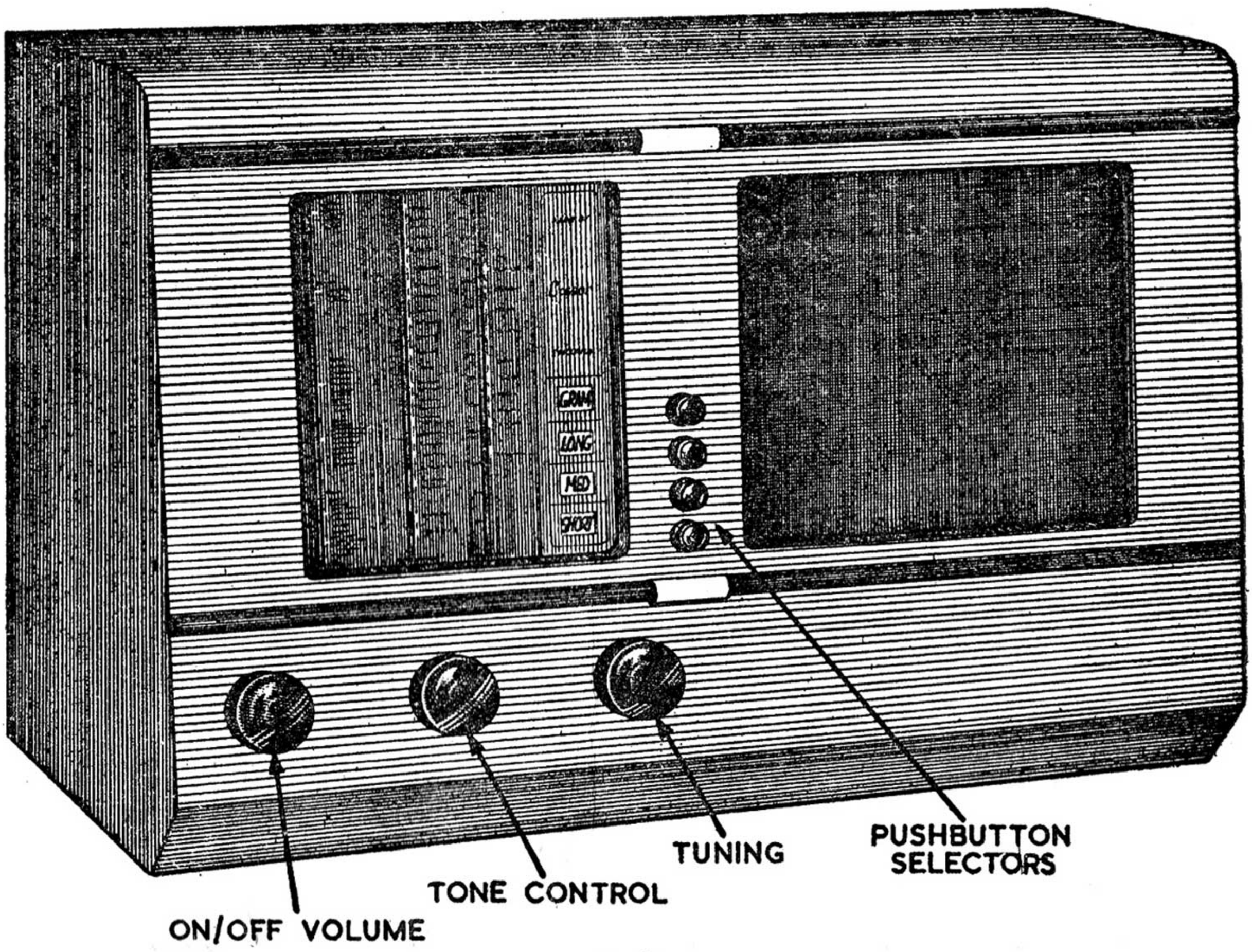


Fig. 2.

WAVE-BAND SELECTION

Located between the dial and loudspeaker apertures are four push button controls. By their operation gramophone reproduction, or the long-, medium- or short-wave band can be selectd. Gramophone reproduction is discussed in a subsequent paragraph.

The long wave-band tunes from 900 to 2100 metres, the medium wave-band from 200 to 540 metres and the short wave-band from 16 to 49 metres. To select one of the three wave-bands, press the appropriate button firmly until it locks into position. Upon pressing a second button in the same manner the first is automatically released. and returns to the original position. If at any time two push buttons are pressed they may be released by pressing a third.

ON/OFF AND VOLUME CONTROL

The left-hand control knob operates the On-Off switch and Volume Control. In a fully anti-clockwise position the receiver is switched off. Upon rotating this control in a clockwise direction a click will be heard ; at the same time, that wavelength scale to which the receiver will tune becomes flood-lit, indicating that the receiver is operating. If the button control selecting gramophone has been pressed the three wavelength scales will be unilluminated. After permitting a short period to allow for the heating of the valves, advance the volume control in a clockwise direction. Tune the required station and adjust the volume control for the desired volume. To switch off the receiver return this control to the fully anti-clockwise position.

TUNING CONTROL

Marked on the vertical tuning dial in three columns are the principal transmitting stations received in this country, in addition to the wavelength in metres covered by each band. A common pointer moving in a vertical plane clearly indicates the wavelength to which the receiver is tuned.

Select the appropriate waveband and rotate the right-hand control knob until the pointer indicates on the dial the required station or wavelength. Turn the control knob slightly to and fro until the station has been correctly tuned. It will be found that on either side of this setting the tone of reproduction becomes very sharp, with no bass response, accompanied by excessive background noise. These two positions must be avoided.

TONE CONTROL

When a station has been correctly tuned and the desired volume obtained, the tone can be adjusted. The tone control, located between the tuning and volume controls, has five positions. Rotating the control clockwise will select the following :—

(1) Full treble cut.
(2) Half treble cut.
(3) Normal.
(4) Bass boost.
(5) Bass and top boost.

Most of the unwanted noises which accompany long distance reception are high-pitched, and by using position 1 or 2 of this control, a reduction of the interference and background noise may be obtained. For local stations select the position which personal preference indicates, which gives the most pleasing result from the type of programme and the volume.

SHORT-WAVE RECEPTION

This receiver is tunable from 16 to 49 metres (18–6 mc/s) on the short wave band. This band will accommodate a large number of stations, the majority of which are commercial morse transmissions which have no programme value. By international agreement short-wave broadcasting is confined to a number of small bands located on the following wavelengths—16, 19, 25, 31, 41 and 49 metres—as indicated on the dial.

Selection of individual transmission is an art which can be quickly mastered, but as it will be found that a dozen or more transmissions will be covered in approximately $\frac{1}{4}$ inch of the pointer's travel, the tuning control should therefore be moved very slowly and carefully, otherwise many transmissions will be missed.

The short wave bands have certain special properties which should be remembered. These may be summarised by saying that the wavelength most suitable for long distance reception increases from noon to midnight. The fundamental difference between the average medium-wave signal and the short-wave signal is that the former utilises a ground-wave and the latter a sky-wave. The ground-wave travels roughly parallel to the ground, whilst the sky-wave travels upwards and away from the transmitting aerial, having to be reflected by a process of refraction in the ion layers that surround the surface of the world. The properties of these layers are changed by the sun, consequently the amount of refraction of the sky-wave will change with night and day and with the seasons of the year. This accounts for the variation in the reception of short-wave signals. Changes of this type are gradual but there are quicker changes that account for the fading which occurs on normal short-wave reception. It will be gathered, therefore, that short-wave reception will vary with the seasons, time and ionispheric conditions.

RECORD REPRODUCTION

Connect screened leads from a good quality high impedance pick-up via the plugs provided into sockets at the rear of the chassis marked

"Gram" and press the top push button. These plugs may be left permanently in position, if desired. The tone and volume controls operate on record reproduction ; the former may be used to reduce record scratch. For optimum results a pick-up having a D.C. resistance of not less than 2000 ohms is recommended. Alternatively, a crystal pick-up may be used provided the filter circuit recommended by the manufacturers is employed.

EXTENSION LOUDSPEAKER

Sockets for an extension loudspeaker are situated at the rear of the chassis. A high grade permanent magnet moving coil loudspeaker, having an impedance of 3 ohms, may be used as a suitable extension unit.

DIAL LIGHTS

Should these require replacement, use a lamp having a rating of 6·5 v. at ·3 amps MES fitting. To facilitate replacement the lamp holders may be withdrawn by rotating half a turn in either direction.

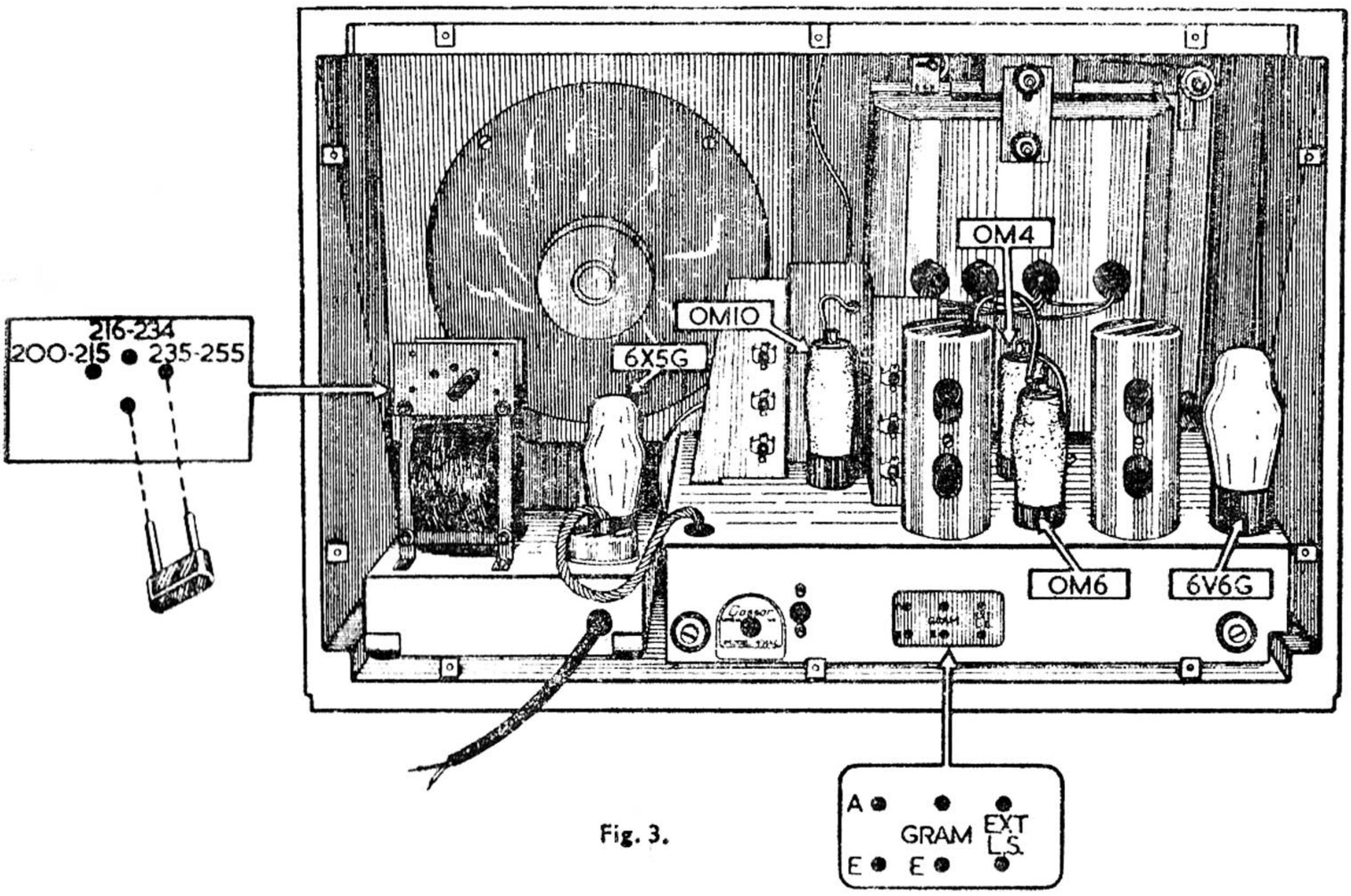


Fig. 3.

VALVES

The position of each of the five Cossor valves is shown in Fig. 3. The metal clips attached to the leads and connected to valves, type OM.10, OM.6 and OM.4, should be firmly in position. The rubber bands securing valves, type 6V6G and 6X5G are fitted to ensure safety in transit.

The valves employed in this receiver are :—

OM.10	...	Triode hexode frequency changer.
OM.6	...	Varimu high-frequency pentode.
OM.4	...	Double diode triode.
6V6G	...	Beamed tetrode output.
6X5G	...	Full-wave rectifier.

THE RECEIVER HAS BEEN DESIGNED FOR USE WITH COSSOR VALVES AS SPECIFIED, AND NO RESPONSIBILITY CAN BE ACCEPTED IF VALVES OTHER THAN THESE ARE USED.

Guarantee (*Radio Receivers*)

We A. C. Cossor Ltd. guarantee subject to the following terms to repair or at our option to exchange free of charge any defective parts which fail in this Radio Receiver within 12 months from the date of purchase.

1. This guarantee is applicable to parts manufactured by A. C. Cossor Ltd. Accessories such as batteries and electric bulbs are covered only by such guarantee as is given by the manufacturers of those components. Cossor valves are subject to the separate terms and conditions as set out below.

2. The purchase must be registered within 7 days on the enclosed Guarantee Registration Card in the name of the user and is not thereafter transferable. This card will not be acknowledged.

3. Damage caused by unauthorised alteration or substitution of non-standard parts by incorrect installation, by accident, misuse or neglect, usage otherwise than in accordance with the operating instructions or any third party or consequential damage or loss is not covered by this Guarantee.

4. The Guarantee will apply only if the radio receiver is bought from an authorised Cossor Stockist at full list price; or, in the case of a hire purchase agreement, providing that instalments have been paid as they become due.

5. Any claim under this Guarantee should be made through the Cossor Stockist from whom the radio receiver was purchased. In exceptional cases this may be impossible and the claim should then be made to the nearest Cossor Depot stating the reason why it was not made through the original vendor.

6. Labour entailed in the fitting of any new part supplied under this Guarantee will be chargeable to the customer.

7. The Cossor Stockist will be entitled to make a charge for the collection and delivery of the radio receiver from or to his customer's address. In the event of the radio receiver being returned to A. C. Cossor Ltd. the customer will be required to pay carriage in one direction. Goods are normally despatched "owner's risk" and A. C. Cossor Ltd. are unable to accept any liability for loss or damage in transit in either direction.

8. This Guarantee cannot be varied by any person or Company other than A. C. Cossor Ltd.

Guarantee for Cossor Valves.

B.V.A. valves are guaranteed by their manufacturers for a period of three months from the date of purchase. This Guarantee is only given in respect of faulty workmanship and material and does not cover misuse or consequential damage.

Claims under the Guarantee will only be considered if the valve is returned to the valve manufacturer accompanied by a form of application for examination obtained from and properly completed in conjunction with the radio dealer from whom the valve was purchased, supported by proof of the date of purchase.

This Guarantee is conditional upon the full list price having been paid and upon the manufacturer's identification or other marks not having been removed or tampered with.

This GUARANTEE must be produced if service is required either on the receiver or on the valves supplied with it.

NOTE.—This Guarantee should be held by the purchaser.

Model No. **474.AC** SERIAL NO. .....

NAME OF PURCHASER .....

ADDRESS .....

.....

.....

.....

PURCHASED FROM .....

.....

.....

DATE OF PURCHASE .....

Date of posting Guarantee Register Card

.....

The above particulars should always be quoted in any correspondence relating to this Receiver.

COSSOR SERVICE DEPOTS

LONDON

Argall Avenue, Lea Bridge, Leyton, E.10 ..... Tel. LEYton 5555

BRISTOL

10, St. James Barton ..... Tel. Bristol 26930

GLASGOW

199 St. Vincent Street, C.2 ..... Tel. Central 4446

NORTHERN SERVICE DEPOT

Wren Mill, Chadderton Nr. Oldham, Lancs. ..... Tel. Main (Oldham) 3266

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