

4. Adjust the turntable speed by means of the regulator so that the correct playing speed is obtained.

5. Carefully lower the needle on to the smooth edge of the rotating record and gently push the pick-up towards the centre of the turntable until the needle engages with the first groove in the record. When the needle reaches the last (inner) groove of the record the tracking arm will actuate the auto-switch and brake, thereby stopping the motor.

To stop the motor by hand, move the control lever on the auto-switch slightly to the left.

6. Adjust the volume of reproduction by rotating the control knob of the volume control, which will be found on the motor board immediately in front of the turntable.

Do not forget to switch off the electric supply from the Radio Gramophone by means of the "on and off" switch when radio reception or electrical reproduction is discontinued.

LOGGING AND IDENTIFYING STATIONS.

Under favourable conditions of reception a number of British and Continental Broadcasting Stations will be received, and many listeners will wish to make a permanent record of the setting of the tuning dials at which such stations come in.

A simple log may be prepared by ruling five columns on a sheet of paper, or in the pages of a pocket-book, and recording the various particulars under the headings as shown below :—

Station		Wavelength in metres	Aerial Tuning Dial	H.F. Tuning Dial
London	Regional	356.3	55 *	55 *

* These readings are only given as examples and are not necessarily correct for every receiver.

This method of preparing a station log, while being simple, does not provide for identification of unknown stations.

Those who experience difficulty in this direction should prepare tuning charts or curves, based upon dial readings obtained with their own receivers in respect of stations whose wavelengths and identities are known (see fig. 6).

It will be seen that the chart contains two curves, one in respect of aerial tuning and the other for the H.F. tuning. Tuning charts should be prepared for both long and short wave-ranges, both when the aerial is connected to Aerial Sockets Nos. 1 and 2. Separate curves for the two aerial connections can be plotted on one chart for each of the two wave-ranges, so that only two charts will be required; or, if preferred, four separate charts, each containing only one curve for aerial tuning, can be made.

First, procure a few sheets of squared paper (graph paper). This will be divided into very much smaller squares than those shown in the accompanying diagram (fig. 6), but for the sake of clearness these have been omitted from our drawing. Graph paper with millimetre squares will be most convenient.

Kolster-Brandes Radio Gramophone

For operation off A.C. Electric Supply Mains

Model K.B. 250 : 100-120 volts A.C. } 40-60 cycles.
Model K.B. 251 : 200-250 volts A.C. }



SETTING UP THE RADIO GRAMOPHONE FOR USE.

CAUTION—Although the installation and operation of the K.B. 250 and K.B. 251 Radio Gramophones may be conducted with perfect safety providing the instructions are followed in detail, it is pointed out that certain parts of the circuits are at high voltage when the set is connected to the mains. On no account must any part of the interior of the set or mains unit be touched when the electric supply is connected to the Radio Gramophone or the operator may receive a disagreeable or dangerous electric shock.

The back of the cabinet cannot be removed without first disconnecting the electric supply. The user is warned against re-making this connection when the back of the cabinet is open.

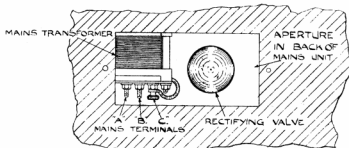


Fig. 2.

To prepare the K.B. 250 and K.B. 251 Radio Gramophones for the reception of broadcast programmes, proceed as follows:—

1. Remove the back of the cabinet by pulling the two small knobs near the top edge of the rear grille.
2. Unscrew the two screws which secure the aperture cover to the mains unit (see fig. 1) and remove the cover.
3. Adjust the connections to the Mains Power Transformer to suit the voltage of the supply mains. It will be seen that there are three terminal screws fitted to the underside of the Mains Transformer and on one of these is a milled terminal nut (see fig. 2). The flexible lead fitted with an eyelet which is temporarily secured by the milled terminal nut should be connected to the correct terminal screw to suit the voltage of the supply mains in accordance with the following table (see also fig. 2):—

Model.	Mains Voltage.		
K.B. 250	100 v.	105-110 v.	115-120 v.
K.B. 251	200 v.	210-225 v.	230-250 v.
Connect to Terminal ...	" A "	" B "	" C "

4. Insert the H.T. Rectifying Valve (Philips 506K) in the holder in the Mains Unit, which is accessible through the aperture at the rear (see fig. 2).

5. Insert the receiving valves.* Three valves are supplied for use in the positions indicated in the table below and these should be inserted in the correct holders (see fig. 1).

Make.	Screened Grid H.F. Valve.	Detector.	Pentode Output Valve.
Mazda	AC/SG.	AC/HL	—
Mullard	—	—	PM24A

6. Connect the flexible lead to the terminal on the top of the Screened Grid Valve, as shown in fig. 1

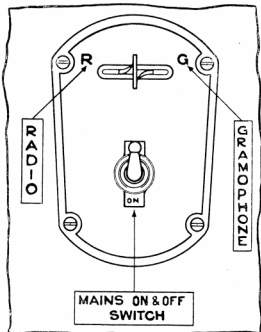


Fig. 3.

* After close technical co-operation between the members of the Radio Manufacturers' Association and the British Radio Valve Manufacturers' Association, our sets have been designed and tested for use with Radio Valves manufactured by members of the British Radio Valve Manufacturers' Association, who mark their valves with the monogram B.V.A., which is a guarantee of quality and British origin. No responsibility can be accepted for the performance of our sets if Radio Valves other than those recommended by us are employed.

7. Replace the aperture cover on the Mains Unit and replace the back of the cabinet

8. A length of connecting cable fitted with the Mains Connecting Socket and an electric lampholder adapter is supplied. The adapter should now be plugged into the nearest electric lampholder and to complete the connections from the electric supply mains to the radio gramophone, the Mains Connecting Socket should be plugged on to the two contact pins which protrude through the aperture at the back of the cabinet (see fig. 1.)

9. Connect the aerial and earth lead-in wires to the two plugs supplied and insert the plugs into the sockets marked "Aerial 1" and "Earth" respectively, which will be found on the terminal panel at the right hand lower corner of the back of the cabinet (see fig. 1).

10. On the motor-board is mounted the indicator of the voltage switch for the electric gramophone motor. An engraved metal plate shows the various positions of the indicator for different ranges of mains voltages from 100 to 250 volts A.C. In the case of the KB-250 Radio-gramophone it will not be necessary to adjust the indicator as it is set at Position 5 (100-120 volts A.C.) before the instrument leaves the factory and this position is correct for the complete range of voltages covered by the model referred to.

In the case of model KB-251 the voltage switch indicator should be set in one of the following two positions according to the voltage of the supply mains:—

200-220 volts A.C. ... Position No. 2 (180-220 volts).
 220-250 volts A.C. 1 (220-250 volts).

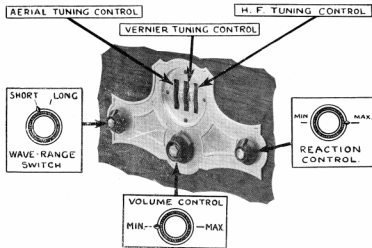


Fig. 4.

11. An automatic combined switch and brake is mounted on the motor-board immediately to the left of the tracking arm (see fig. 5) and operates so that when the needle reaches the end of each record the electric current is automatically switched off from the motor and the brake applied, thus stopping the gramophone turntable.

NOTE—The brake plunger, with other accessories, is packed separately. Before placing the turntable on the motor spindle the brake plunger should

be inserted, with the leather stud uppermost, in the bushed hole in the motor-board immediately in front of the auto-switch.

The length of the brake plunger is adjusted correctly at the factory but should wear of the leather brake stud necessitate subsequent adjustment, the screw in the base of the plunger should be given a turn or so (anti-clockwise) to lengthen the plunger.

OPERATION OF THE RADIO RECEIVER.

The operation of the receiver is quite simple and excellent results can be obtained, even by those who have had no previous experience of the handling of radio receivers, after acquiring a little practice in manipulating the tuning controls. Until the owner is familiar with the operation of the set it is advisable to proceed in the following manner:—

1. Set the "Radio-Gramophone" switch, which will be found at the right hand side of the cabinet, at that end of the slot nearest the front of the cabinet as indicated by the letter "R" (Radio) engraved on the metal escutcheon plate (see fig. 3).

2. Switch on the current to the receiver by depressing the knob of the "on and off" switch at the right hand side of the receiver as shown in fig. 3. A short period should be allowed for the indirectly heated A.C. valves to attain the correct operating temperature before attempting to receive signals.

3. Adjust the radio volume control to the position for maximum volume (see fig. 4).

4. Set the wave range switch to the correct position for operation on the "short" or "long" wavelength range according to the wavelength of the station it is desired to receive. The wave-ranges covered by the radio receiver are as follows:—

Range.	Aerial Socket, No. 1.	Aerial Socket, No. 2.
Short	190-560 metres	185-560 metres
Long	1,180-1,975 metres	910-1,975 metres

The positions of the wave-range switch for "short" and "long" ranges are shown in fig. 4.

5. Rotate the reaction control in a clockwise direction until the set is almost on the verge of oscillation, when it will be in the most sensitive condition for reception.

Do not let the set oscillate, or not only will it be impossible to obtain clear reception, but interference may be caused to other nearby receivers. Oscillation will easily be recognised by the fact that when rotating the tuning controls a series of high pitched whistling notes will be heard instead of speech and music, or if the set is just on the "threshold" of oscillation the received signals will be harsh and distorted and speech will be quite unintelligible.

If the set oscillates this should be stopped immediately by rotating the reaction control in an anti-clockwise direction.

GRAMOPHONE ELECTRICAL REPRODUCTION.

6. Now rotate the aerial and H.F. tuning controls (see fig. 4) slowly and in the same direction until the desired station is heard. Both dials should be kept roughly in step, i.e., at approximately the same readings, during this operation, and it is advisable to advance one dial steadily in a given direction, at the same time imparting to the other a to-and-fro motion, so that the tuning of the two circuits is bound to agree at certain positions of both dials.

7. Having successfully located the required station, carefully adjust the vernier control and the aerial control until the strength of signal is brought to a maximum. Should the set commence to oscillate while adjusting the coarse or vernier tuning controls, reduce reaction to bring the instrument into a stable condition.

8. When receiving from nearby or powerful stations it will often be found that ample volume can be obtained without taking full advantage of reaction. If signals are too strong retard reaction until the desired volume is obtained, but if volume is not decreased sufficiently even with minimum reaction a further reduction can be effected by rotating the volume control in an anti-clockwise direction, i.e., towards the "minimum" position until the required strength of reproduction is obtained.

Improving Selectivity to avoid or reduce Interference. If it is found that a greater degree of selectivity is required than is obtainable, when the aerial is connected to the socket marked "Aerial 1," in order to minimise or eliminate interference from a station other than the one from which it is desired to receive, plug the aerial into the socket marked "Aerial 2." This may reduce signal strength slightly, but by careful tuning and judicious use of reaction it should be possible to obtain very much clearer reception, which will amply compensate for any slight loss of volume.

When using aerial socket No. 2, it will be found that a given station will be received at a higher reading on the aerial tuning scale than when aerial socket No. 1 is used.

A further method of improving selectivity which will sometimes be found to be effective when the use of aerial socket No. 2 does not give the desired results, and particularly when interference is caused by a fairly powerful station situated fairly near to the receiver, is to decrease volume by rotating the volume control in an anti-clockwise direction and to increase signal strength by means of the reaction control. This enables fullest advantage to be taken of reaction effects without overloading the output valve or loudspeaker, and thereby enables the set to be operated in the most selective condition.

Closing Down after Reception. When it is wished to discontinue reception, simply switch off the electric supply by raising the knob of the "on and off" switch at the side of the cabinet (Fig. 3).

When the receiver is not in use the earthing switch should be left in the position which connects the aerial directly to earth.

MOVING COIL SPEAKER.

The moving coil speaker incorporates an output transformer which is mounted in the metal base. This transformer provides for three different ratios and it will be seen that a short flexible lead is connected to a terminal marked "31 to 1," this being the correct ratio for the output transformer when the type of output valve specified, viz., 1M24A, is employed. This connection must not be altered or the quality and volume of reproduction will be impaired.

In order to change over from Radio to Gramophone reproduction, it is only necessary to alter the position of the "Radio Gramophone" switch at the right hand side of the cabinet so that the knob is at that end of the slot indicated by the letter "G" (Gramophone).

The method of electrically reproducing gramophone recordings is very much the same as in the case of ordinary mechanical types of gramophones and the correct procedure is as follows:—

1. Take a gramophone needle and place it in the needle-holder on the pick-up and tighten firmly in position by means of the milled set screw. Excessive force will not be necessary to tighten the needle but it is essential that the needle should be held firmly in the holder otherwise the reproduction will be distorted and the record may be damaged.
2. Set the auto-switch by placing the point of the gramophone needle in the last or inner groove of the record, the turntable being stationary. The lever attached to the auto-switch should then be placed so that it touches the side of the tracking arm as shown in fig. 5. Then raise the needle from the record and swing the tracking arm clear of the turntable.
3. Start the motor by depressing the control button on the auto-switch so that the latter locks in the "on" position.

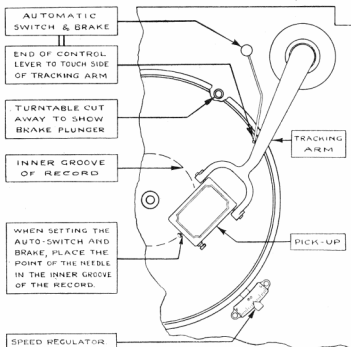


Fig. 5.