

MARCONIPHONE 289 RADIOGRAM AND

The chassis in the 289 radiogram is the same as that in the 296 table model dealt with on page 84, and only an abridged version of the report need be given.

The alterations are that in the 289 the visual tuner takes the form of two arrows of light and that the gramophone volume control is mounted on the front of the cabinet as an addition to the set control. The circuit diagram gives this addition as VR4.

In unpacking and installing this receiver engineers should see that the automatic record-changing mechanism is free in its shock-absorbing supports.

The instrument is delivered with the mechanism fixed by three nuts underneath. These should always be slackened sufficiently to allow the changer to float on the rubber supports.

Revealing Mechanism.—Set mechanism for 12-inch records. Remove the spindle and the turntable, the jaw, record-size control knob, and the auto-hand switch lever.

Depress the starting button and rotate spindle clockwise till the upper and lower jaws are in line. Remove the four screws holding the motor-board, and, holding the pick-up as nearly vertical as possible, ease the motor-board upwards.

Adjusting Jaws for 10-in. or 12-in. Records.—This section is operated by the disc 10, which has projections underneath engaging in the toothed quadrant 10E. This actuates the levers 10A, which are engaged with the levers at the lower ends of the jaw-operating mechanisms. As the latter are pushed outwards the top ends are pressed inwards for 10-in. records and vice versa for 12-in.

General Notes.—As engineers are likely to have to examine the mechanism only when faults develop, the following list of possible troubles gives also notes on the operation of the parts involved.

To adjust the apparatus correctly it is necessary to have several test records and a template. The records are TB11, TB14, TC14 and TC19.

The template can be made very easily out of a $\frac{3}{4}$ -in. strip of thin hardwood, as shown in fig. 3. When using this for adjustments it should be fixed on the spindle so that the lines can give an indication of the position the needle would occupy on 10-in. and 12-in. records respectively.

Caution.—Many of the troubles experienced are due to the customer attempting to stop the mechanism during the cycle of operations. This causes an undue strain to be placed on the particular part of the mechanism involved, and may result in weakened springs or mal-adjustment of the regulators.

Do not attempt to arrest the movement of the pick-up.

Do not force the mechanism when it has stuck.

Do not push the starting button when the mechanism is not in use.

Troubles and Remedies.—(1) Record jammed in the jaws. This is usually due to the record being too thick.

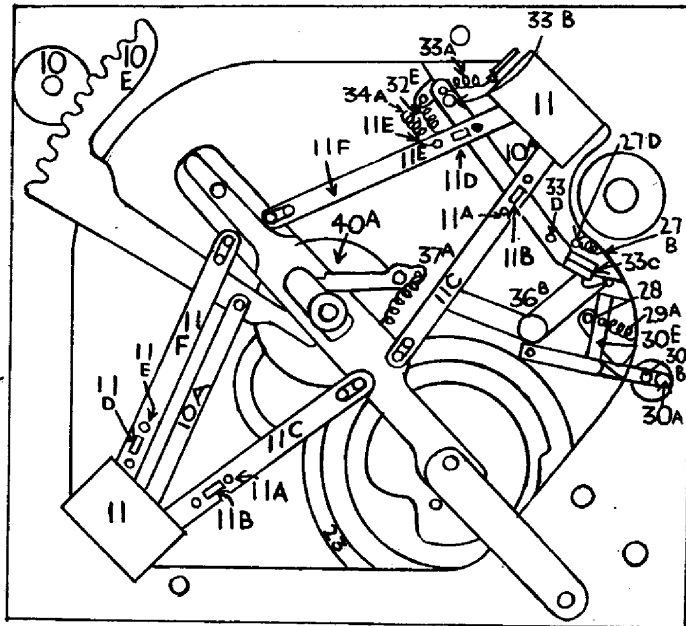
For 10-in. records simply turn the jaw-operating knob towards the 12-in. position gently till the record is freed.

For 12-in. records, rotate the turntable gently *anti-clockwise* till resistance is encountered. This opens the jaws and frees the record. Do not use force.

(2) Pick-up lowered in incorrect position on record. Use records TB11 (E) and TC14.

(a) On both 10-in. and 12-in. records: Remove motor-board, loosen screw 30B (accessible through aperture, see fig. 1), examine spring 29A.

Turn the record jaws to 10-in. and the



"Hand auto-repeat" lever to "Repeat." Turn the mechanism clockwise till the roller at the end of the arm 30 is bearing against the point 24E (not the cam 24A).

Using the template, or record TB11, allow the pick-up to descend and adjust the eccentric 30A so that the needle is in correct position. Tighten 30B again and check the "feed in" and "switching off" on record TB14.

(b) Correct on 10-in. but wrong on 12-in. records. Using record TC14, the outer groove will throw the pick-up off if it is being lowered too near the edge.

Slacken screw 28 (fig. 1) and place descending pick-up on outer line of template. Turn the mechanism till the pick-up is just beginning its descent, and turn the eccentric bush 28 till it touches the lever 30E. Tighten the screw on 28.

Using the test record TC14, turn the mechanism clockwise to make sure that the adjustment is correct. Also check "feed in" and "switch off" on record TC19.

(3) Pick-up does not lower centrally on rest: Set lever to "Auto" and turn mechanism to point where the pick-up is beginning to descend at end of cycle. Slacken two screws 33D on the arm and adjust the stop 33C so that it is in contact with pin 27D.

(4) Pick-up is either raised so high that it touches records lying on jaws or is not lowered far enough to reach record.

First make sure that the spindle is not riding on the centre pin, and when making the adjustment for this insert a $\frac{21}{32}$ -in. needle properly into pick-up. Use 10-in. records.

Place several records on the jaws and rotate mechanism till one record is between the jaws and pick-up is moving outwards. Adjust so that the pick-up head just clears the record by adjusting the supporting screw near the back of the pick-up arm, and, when finished, tighten the lock-nut. When the pick-up is not lowered sufficiently far, the needle may miss the first grooves of the record.

(5) Records do not drop, or more than one drop at a time: Set jaws to 12-in. and place spindle in position and slacken four screws 11A. Press starting button and turn the large gear-wheel clockwise till the rest plates of the jaws are fully open. Slacken the four

(Continued on next page.)

Fig. 1.—The key diagram to those parts of the Marconiphone K3 automatic record changer which are actually visible when the turntable has been removed.

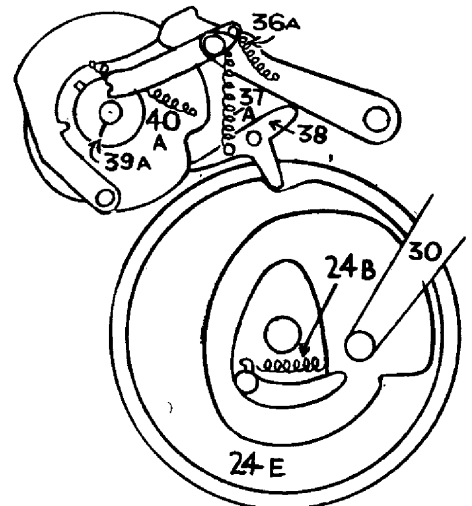


Fig. 2.—Refer to this diagram in conjunction with the note on page 133 when the pick-up fails to rest in the groove.

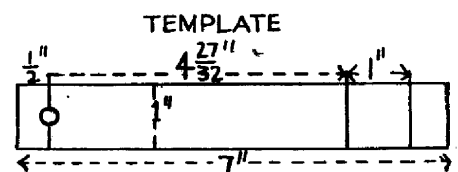


Fig. 3.—A template made to these dimensions is invaluable when servicing the K3 mechanism. Special records, obtainable from the Marconiphone Co., Ltd., are also required.

K3 RECORD CHANGER

screws 11E and adjust the knurled rollers 11D till the rest plate (bottom) just clears the record and adjust so that the jaws at each side release the record simultaneously. Tighten the four screws on the lever arms.

Set the jaws to 10 in. and, using record TB11 lying on rest plates, adjust the separator (top) plates by repeating adjustment on lever arms 11C for clearance of separator plates.

(6) Records drop sideways: First see that records are good—that is, centre holes are not worn, have not rough edges, and are truly circular.

If records are good, repeat dropping several times and note which side drops first. Adjust the rest plates for that side as in No. 5.

(7) Mechanism jams during operating cycle. Set jaws to 12 in. Slacken screw 33B and bring mechanism to rest position.

Adjust distance between the shoe 33 C and the flat side of pin 27 D to 1-16 in. Tighten screw 33 B and make sure that the guard passes at back of the flat on pin 27 D when lever is set to "hand."

(8) Needle slides over first groove of record or does not "throw in." See that motor board is level, and that needle is not worn.

Examine the spring 24B. If this is too strong it will cause the needle to jump over the first groove and if too weak will not "throw in." Before altering the tension of

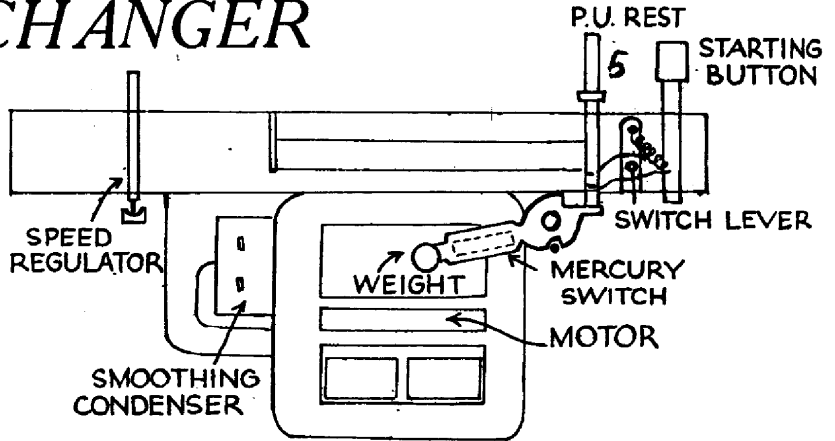


Fig. 4—A side view of the Marconiphone changer mechanism showing how the mercury switch is operated by the pick-up rest.

the spring (by stretching gently) see that the cam is not gummed up with sticky oil.

(9) Mechanism fails to work when turntable revolves (with auto or repeat position of lever):—Examine the spring 34 A. This controls the lever which engages the mechanism.

(10) Mechanism fails to repeat. Examine spring 32E.

(11) Mechanism repeats when lever is turned to "auto." Examine the spring at the base of the jaw pillars. A defect in this would prevent the jaws opening.

(12) Pick-up lifts when needle enters first

groove:—Spring 37A (Fig. 2) is defective.

(13) Motor switches off before the changing cycle, which brings the pick-up into the rest position, is completed:—

Test with only one record on the turntable. This fault may cause a clattering or loud click when the starting button is pressed and will involve holding down the starting plunger till the cycle is completed.

Adjust the mercury switch by slackening the nut on 5 (Fig. 4) and turning the plunger clockwise. Lock the nut again when the correct position has been obtained.

(14) Knocking or clicking from mechanism during last part of record:—This is due to too great a pressure on the arm by the special spring washer 36B.

Remove the washer and bend the legs to make it slightly thinner.

Oiling Mechanism.—The rubbing parts of the mechanism require lubricating very infrequently, but when it becomes gummed up each bearing member should be wiped with a clean cloth and oiled with a good quality light machine oil.

CONDENSERS

| C. | Purpose. | Mfd. |
|----|---|--------|
| 1 | Aerial coupling to suppressor coils ... | .0005 |
| 2 | Tuning suppressor coil L4 ... | .002 |
| 3 | V1 grid condenser ... | .0003 |
| 4 | Decoupling H.T. to V1 and V2 ... | 1 |
| 5 | V1 cathode ... | 1 |
| 6 | V1 osc. grid ... | .0001 |
| 7 | Decoupling V1 and V2 screens ... | 1 |
| 8 | Decoupling V1 osc. anode ... | .1 |
| 9 | V2 cathode ... | 1 |
| 10 | Feed to A.V.C. anode ... | .00005 |
| 11 | H.F. by-pass from rect. diode anode ... | .0002 |
| 12 | Decoupling A.V.C. ... | .1 |
| 13 | Across tuning indicator ... | 25 el. |
| 14 | H.F. by-pass ... | .0001 |
| 15 | In series with V.C. ... | .5 |
| 16 | Series with P.U. lead ... | 1 |
| 17 | V3 cathode ... | 3 |
| 18 | V3 anode decoupling ... | 2 |
| 19 | Filter coupling to L.F. transformer ... | .1 |
| 20 | Tuning correction filter ... | .001 |
| 21 | Decoupling V4 grid ... | .5 |
| 22 | Artificial load on L.S. trans. ... | .7 |
| 23 | H.T. smoothing ... | 8 el. |
| 24 | H.T. smoothing ... | 8 el. |
| 25 | Mains aerial ... | .0003 |

RESISTANCES

| R. | Purpose. | Ohms. |
|----|--|----------|
| 1 | V1 grid leak ... | 1 meg. |
| 2 | V1 cathode bias ... | 1,000 |
| 3 | V1 osc. grid leak ... | 50,000 |
| 4 | Part of screen ptr. ... | 23,000 |
| 5 | Part of screen ptr. ... | 23,000 |
| 6 | Part of screen ptr. ... | 50,000 |
| 7 | Fixed cathode bias V2 ... | 230 |
| 8 | H.F. stopper in L.F. feed from diode ... | 50,000 |
| 9 | Diode load and V3 grid leak ... | .23 meg. |
| 10 | Decoupling A.V.C. ... | 1 meg. |
| 11 | Across P.U. leads ... | 100,000 |
| 12 | V3 cathode for amplified A.V.C. ... | 23,000 |
| 13 | V3 anode decoupling ... | 23,000 |
| 14 | L.F. coupling V3 ... | 50,000 |
| 15 | A.V.C. diode anode load ... | .5 meg. |
| 16 | V4 grid decoupling ... | .23 meg. |
| 17 | Bias resist for V4 and A.V.C. ... | 500 |
| — | L.S. field ... | 2,000 |
| — | P. of output transformer ... | 50 |
| — | P. of L.F. transformer ... | 750 |
| — | S. of L.F. transformer ... | 8000 |

VALVE READINGS

| VC max, no signal and static suppressor knob in. | | | | |
|--|----------------|----------------|--------|------|
| V. | Type. | Electrode. | Volts. | M.A. |
| 1 | MX40 ... | anode ... | 200 | 1 |
| | | screen ... | 70 | — |
| | | osc. anode ... | 90 | 2 |
| 2 | VMS4B met. ... | anode ... | 200 | 3 |
| | | screen ... | 70 | — |
| 3 | MHD4 ... | anode ... | 70 | 1.7 |
| 4 | PX4 ... | anode ... | 210 | 43 |

A five-valve including rectifier superhet circuit is employed in the chassis of the 289. A directly-heated triode output valve contributes to the high quality of the reproduction.

