

Garrard Automatic Record Changer



Model R.C. 80



Installation, Operation and Service Instructions

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SPARE PARTS LIST	Inside back cover

The Garrard Model R.C. 80 Automatic Changer is made under the following patents:—

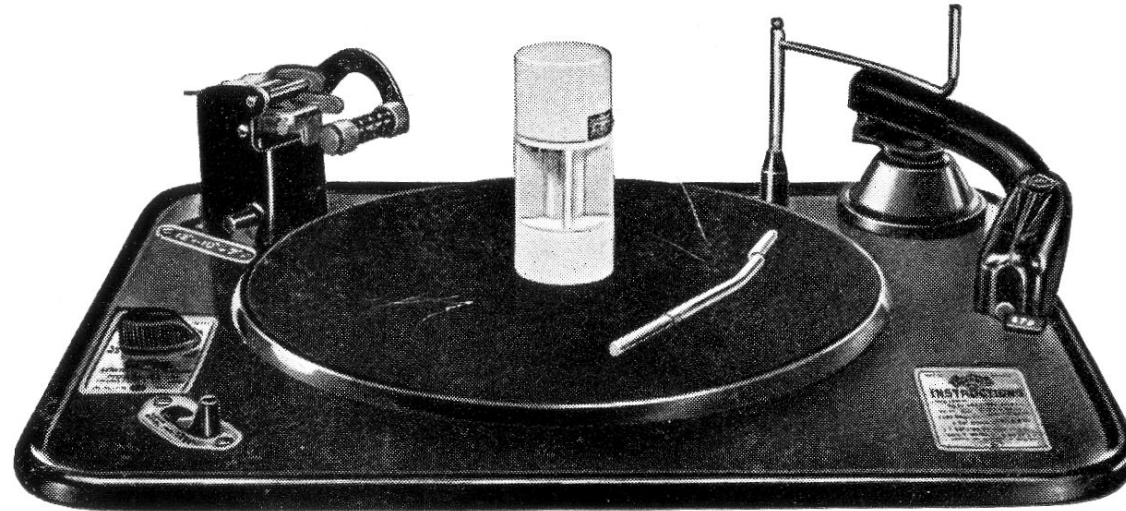
British .. 450966	Germany .. 666677	Sweden .. 88739
607267	Swiss .. 189688	U.S.A. .. 2063199
France . 802949	Italy .. 347645	Canada .. 551634

Other Patents pending.

4391/49	14998/49	22922/49
642/50	643/50	644/50

Provisional Patents.

The Garrard Model RC 80 Record Changer



"GARRARD" Record Changers are simple and reliable in operation. They are thoroughly tested before leaving our Works and will give a long period of satisfactory service.

Instructions for operating the Model R.C. 80 are given in this manual—please follow these instructions carefully. In common with all mechanical devices, however, minor adjustments are sometimes necessary. The Service Instructions included have been compiled to cover practically all the information necessary to ensure efficient operation.

If, after carefully perusing this manual you are still in doubt, our Technical Department will gladly assist you.

NOTE.

Always mention the Model Number, Schedule Number, and type of Pick-up Head fitted when communicating with the company.

Address your inquiries to:—

The Garrard Engineering & Mfg. Co. Ltd.,
Technical Service Dept.,
Newcastle Street,
Swindon, Wilts.

Telephone No.: Swindon 2624—5—6.

If you wish to make inquiries concerning the return of a Unit for repair, or if you wish to order Spare Parts, address your letter to:—

The Garrard Engineering & Mfg. Co. Ltd.,
Service and Spares Dept.,
Okus Road,
Swindon, Wilts.

Telephone No.: Swindon 3405.

The "Garrard" Model R.C.80 Record Changer

OPERATING INSTRUCTIONS

The "GARRARD" Model R.C. 80 Automatic Record Changer will play any number of records up to 10, of any of the following types (not mixed):—

10" or 12"	-	78 r.p.m.
7", 10" or 12"	-	33 $\frac{1}{3}$ r.p.m.
7"	-	45 r.p.m.

To operate the Record Changer proceed in the following order:—

- 1 See that the correct pick-up is in position for the type of record to be played, i.e., one having a standard .002" to .003" radius needle for 78 r.p.m. records, or .001" radius needle for 33 $\frac{1}{3}$ and 45 r.p.m. records. The pick-up head is plugged into the arm and a slight pull is all that is necessary to remove it.
- 2 Place the correct record spindle in position, i.e., stepped sloping spindle for 78 or 33 $\frac{1}{3}$ r.p.m. records, or large spindle for 45 r.p.m. records. (See diagrams 12 and 14).
- 3 Set lever at side of platform to size of record it is desired to play, 7," 10" or 12." Also turn subsidiary platform to forward position if it is desired to play 7" records with small hole. (See diagram 2, 3, 4 and 5.)
- 4 Turn speed control knob to desired speed, 78, 45 or 33 $\frac{1}{3}$ r.p.m.
- 5 Place any number of records up to 10, (not mixed) on record spindle, lower record clip, and switch on by moving the front left hand knob to "Start."

Note: The record clip is not used when playing 7" records.

To reject a record, move the left hand knob to the "Reject" position.

The changer can be switched off by moving the left hand knob to the "Stop" position. If this is done while a record is playing, when switching on again, that record will be automatically rejected and the next record commenced.

NOTE:

Should the record changer be stopped with the pick-up arm not on its rest, the pick-up should not be handled, but the left hand knob moved to "Start," when the pick-up will automatically lift and return to its rest position and stop if no records are on the record spindle.

The pick-up arm will not move from its rest unless one or more records are placed on the record spindle. This is a safety device designed to prevent the pick-up being damaged should the changer be switched on without being loaded with records.

RECORDS.

To obtain the best results from your records and record changer, care should be taken to see that the records are stored so that they keep reasonably flat and clean. Dust or dirt in the record grooves causes abrasive action and shortens the life of the record, whilst badly warped records will give trouble in dropping, poor reproduction, and even damage the pick-up stylus.

INSTALLATION

DIMENSIONS.

The cabinet space required for fitting is $15\frac{1}{2}$ " long x $13\frac{1}{4}$ " wide, with $5\frac{3}{4}$ " clearance above and $3\frac{1}{2}$ " clearance below the plate for the A.C. model. For the D.C. and Universal models an extra depth of $1\frac{1}{2}$ " is required. With a slight alteration to the motor board cut out, the "GARRARD" Model R.C. 80 is a direct replacement for the "GARRARD" Models R.C. 60, 65, 65A, 70 and 70A Record Changers.

FITTING TO CABINET.

First, the motor board should be cut out and drilled as shown on the template enclosed with each changer. If the changer is to replace one of the "GARRARD" Models mentioned above, only the piece marked on the left hand side of the template need be cut out. A small clearance should be left between the edges of the unit plate and the cabinet sides, to allow the record changer to float freely when mounted on its suspension springs.

Having opened the carton, remove the turntable found on the top liner and the box containing the record spindles, then, after disposing of the side liners, carefully lift out the changer by the string loops. A bag containing the fixing screws and spring mountings will be found in one corner of the carton. The spare pick-up head and accessories, if supplied, will be found in a box fixed to the bottom liner. Assemble the spring mountings to the motor board as shown on the template and diagram 1. Next, assemble the long fixing screws to the changer mounting plate, then assemble a nut on each screw leaving $\frac{3}{8}$ " of thread below.

Before placing the changer in position, the final switch off arm at the rear of the changer, which on unpacking will be found in a downward position, should be turned to a vertical position as shown in the illustrations. To do this, loosen the round headed screw at the top of the auto switch spindle, turn the arm to a vertical position and re-tighten the screw.

The changer can now be placed in position on its suspension springs. Still using the string loops for lifting, the changer should be levelled by first fitting the turntable, then placing a spirit level on a record on the turntable, the changer can be adjusted by raising

it and adjusting the lower nuts. When level, the nuts should be assembled under the springs and locked in position with the lock nuts. The string loops may now be removed and the changer connected to the power supply and pick-up to the reproducer.

It is essential to use the spring suspension assemblies on this model changer to prevent extraneous vibration from reaching the unit.

If two record spindles are used, a hole can be drilled in the wooden motor board to take the spindle not in use.

If two "GARRARD" pick-up heads are used, the plastic box in which one of the heads is supplied, can be screwed down into the cabinet to act as a dust free container for the pick-up head not in use.

If the plug-in feature is to be used to change pick-ups, the cheese headed screw under the pick-up arm at rear of pick-up should be removed. This screw should be replaced and tightened up for transit purposes only.

TRANSIT SCREWS.

Two plated wood screws are supplied for use in clamping the record changer rigid to the motor board for transit purposes. The small bakelite washers should be fitted under these screws to prevent marking the mounting plate. These screws should be removed before using the record changer. The position of the screws is shown on template and diagram 11.

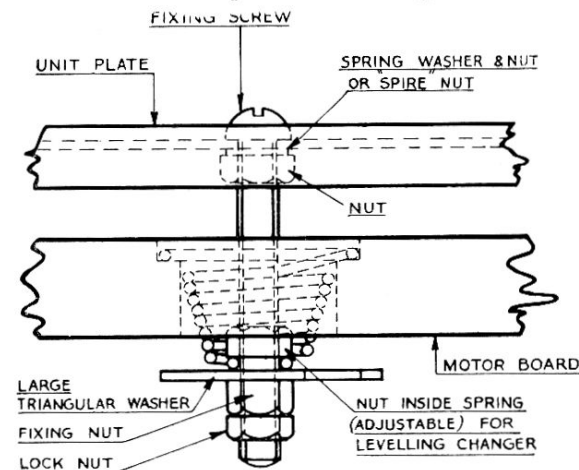
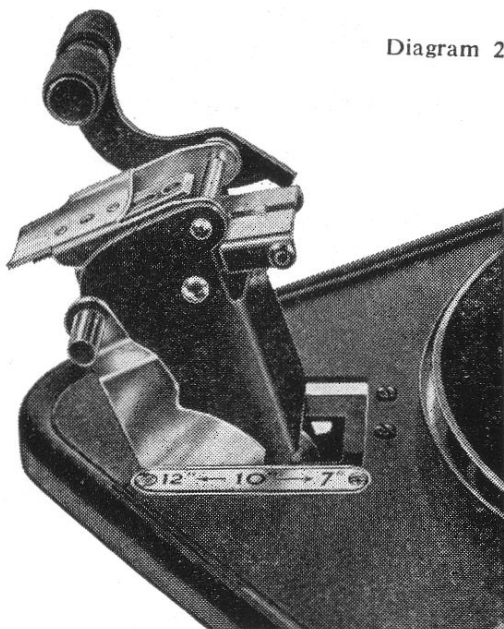


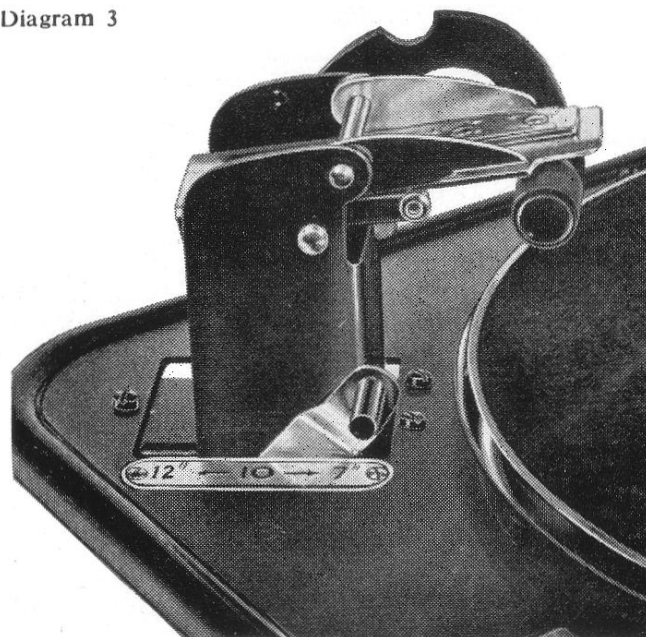
Diagram 1

Diagram 2



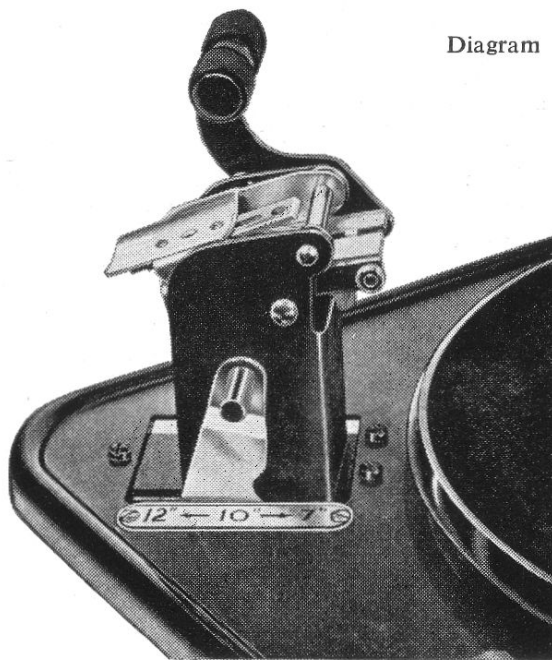
**Record Platform
Set for 12" Records**

Diagram 3



**Record Platform
Set for 7" Records**

Diagram 4



**Record Platform
Set for 10" Records**

Diagram 5



**Record Platform set for 7"—45 r.p.m. Records
using the large Record Spindle**

MAINTENANCE.

The motor and intermediate wheel bearings, being of the oil retaining type, rarely need lubricating. When the need for oil is apparent, remove both the belts and while holding the intermediate wheel out of the way, lubricate the pulley and motor bearings with a medium grade of machine oil. Carefully remove every trace of surplus oil before replacing the belts.

The rubber rim on the intermediate wheel and the two belts must be kept free from oil.

VOLTAGE AND FREQUENCY.

The "GARRARD" Model R.C. 80/A.C. Record Changer is suitable for use on 100/130 and 200/250 volts, at either 40, 50 or 60 cycles according to the motor pulley supplied, and the links on the terminal block should be set to the correct position to correspond with the voltage of the power supply as shown in diagrams 6 and 7. A motor driving pulley can be supplied for 40, 50 or 60 cycle mains as required.

The model R.C. 80/D.C. Record Changer is suitable for use on 100/130 and 200/250 volts direct current only and the links on the terminal block should be set to the correct position to correspond to the voltage of the power supply as shown in diagrams 8 and 9. The speed of the UNIV and D.C. motors is governor controlled and information for adjusting the speed will be found under "Service Adjustments."

The motor must be earthed by connecting a lead from the earthing tag, (located under one of the motor end cover screws) to a good earth connection.

When adapting an A.C./D.C. (Universal) Radio Receiver, Amplifier, or one using an A.C./D.C. Power Pack, for the reproduction of gramophone records, a pick-up transformer, or condensers in series with the pick-up leads should be fitted, otherwise the pick-up circuit becomes alive. Also the leads from the radio set or amplifier to the pick-up should be screened and as short as possible.

The moulded cover on the terminal block is coloured to distinguish the type of motor.

BROWN—Motor for A.C. only.

BLUE—Motor for D.C. only.

GREEN—Low voltage D.C. motor only.

RED—Universal Motor for A.C. or D.C.

LINK CONNECTIONS R.C.80/A.C.

CONNECT LINKS THUS

CONNECT LINKS THUS

FOR 200/250 VOLTS.

FOR 100/130 VOLTS.

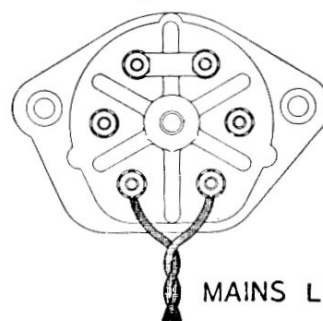


Diagram 6

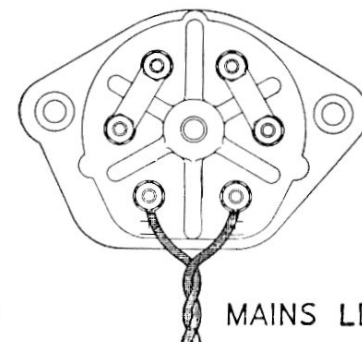


Diagram 7

LINK CONNECTIONS R.C.80/D.C.

CONNECT LINK THUS
FOR 200/250 VOLTS.

CONNECT LINK THUS
FOR 100/130 VOLTS.

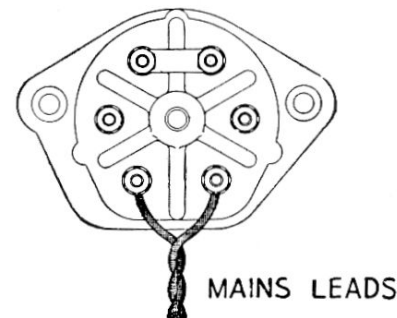


Diagram 8

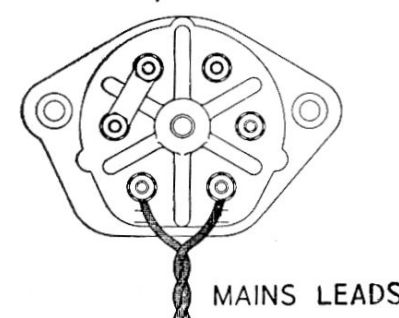
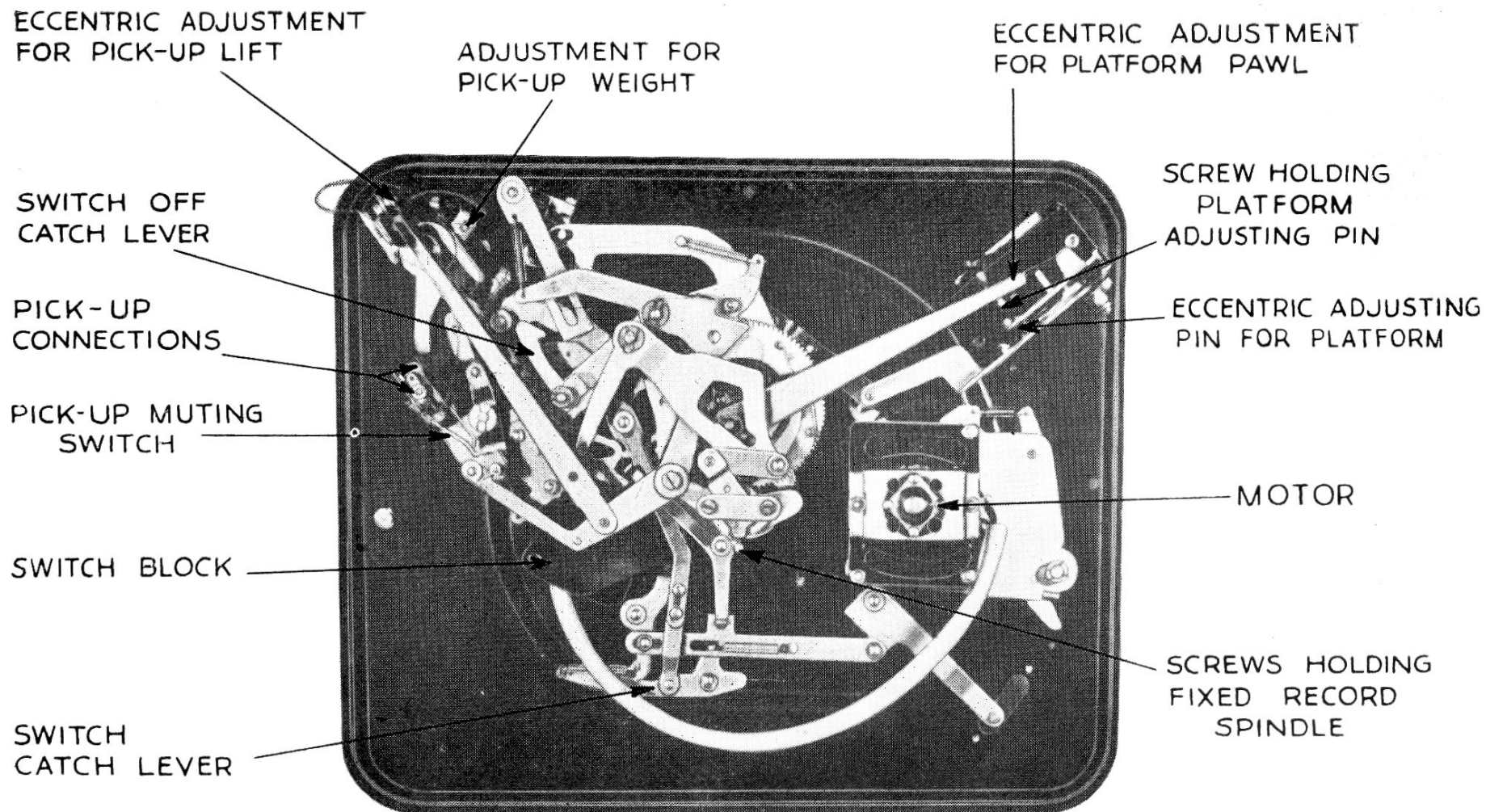


Diagram 9



Underneath View

Diagram 10

SERVICE ADJUSTMENTS

SPEED.

The Model R.C. 80/A.C. Motor is arranged to give the desired turntable speed within close tolerances. Should the turntable run excessively fast or slow then the motor pulley should be examined to see if it is the correct one to suit the frequency of the mains supply.

The various motor pulleys are colour finished as follows to distinguish the three types:—

Nickel	-	50 cycles.
Brass	-	60 cycles.
Copper	-	40 cycles.

For use on 25 cycles supply, a special motor and 3 pulleys are required.

The speed of the R.C. 80/D.C. UNIV and low voltage models, is governor controlled, the governor being located at the lower end of the motor and is screwed on to the armature shaft and held in position by a screw through the governor collar. To adjust the speed, loosen the screw in the governor, and turn the governor a very small amount clockwise to increase the speed, or anti-clockwise to reduce it. Tighten the screw before running the motor to check the speed.

SPEED VARIATION.

It is essential that the driving surfaces of the three brass pulleys, the rubber tyred interwheel, and the belts, should be kept absolutely free from all oil or grease. This is the first point which must be checked if the turntable speed varies and the pulleys, belts and interwheels should be cleaned with a dry cloth if contamination with oil is suspected. Another point to check is that the two belts run centrally on their pulleys; should they tend to run off the pulley, try removing the belt and turning it over. If this does not cure the trouble, a new belt should be fitted. Also see that the main spindle has a small amount of end play. To check this, remove the turntable and grip the main spindle firmly lifting it up and down. If no movement is felt, loosen the two screws (diagram 10) which hold the fixed portion of the main spindle, raise the main spindle a very small amount and re-tighten the screws.

NOISE.

Should the drive become noisy, first see that the screw holding the pulley to the motor shaft is not touching the intermediate wheel as it revolves. If it is, raise the pulley which is secured to the shaft by a set screw. If the motor pulley is correct, then lubricate the pulleys as described under "Maintenance."

MOTORS.

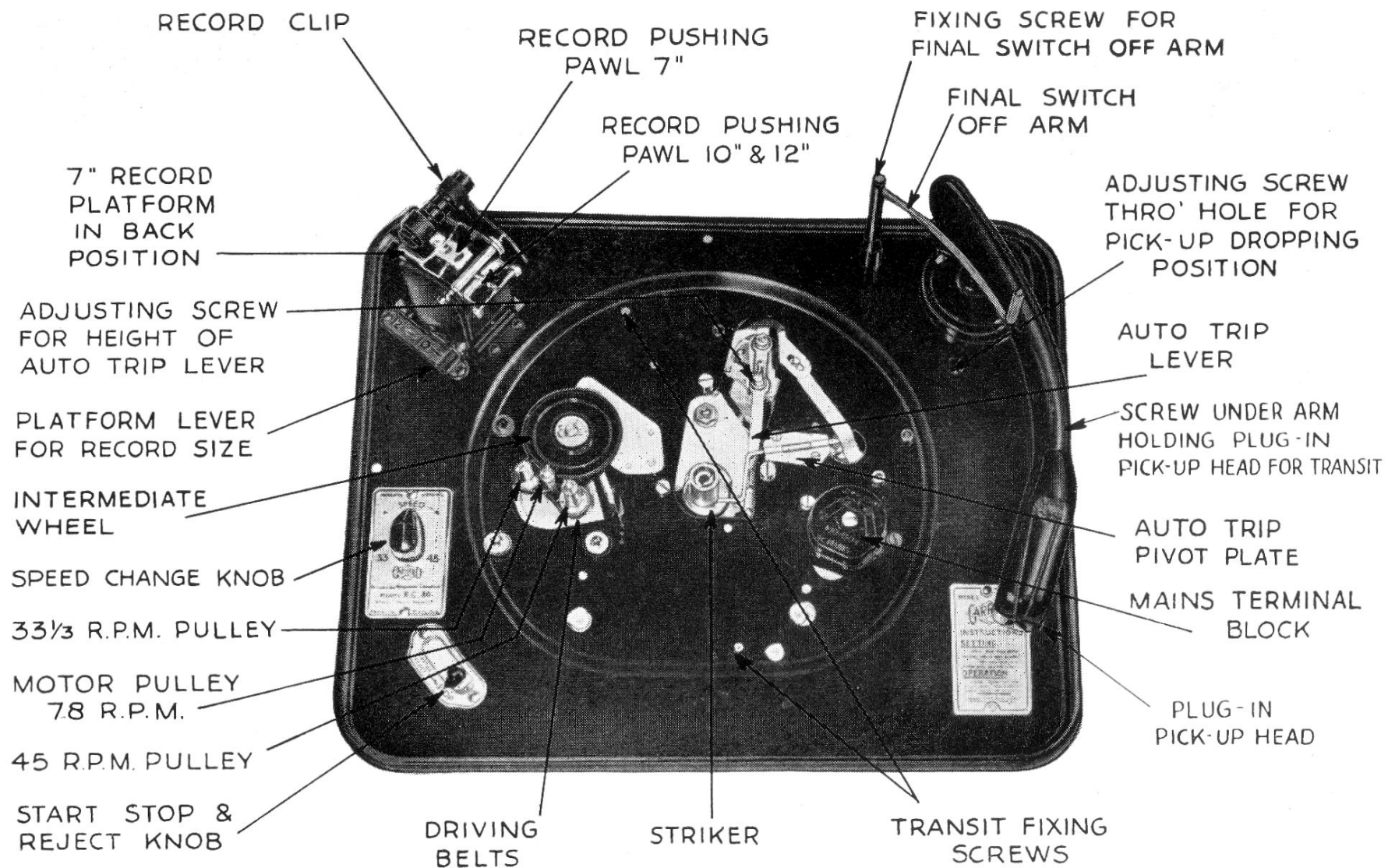
If the motor fails to start when the control knob is turned to "Start," first check the power supply and ascertain if current is reaching the motor terminals. If correct, switch off the mains supply and examine the terminal block and see that the leads and screws are tight, also examine the switch contacts accessible underneath. Clean and adjust if necessary. On the R.C. 80/D.C., UNIV, and low voltage D.C. models examine the motor brushes and make sure they are clean and making good contact with the commutator. Also ensure that they are not sticking in the brush tubes.

The "Switch Catch Lever" (diagram 10) should also be checked to see that it is engaging when the knob is moved to "Start." If it fails to engage, adjustment is provided on the link which operates it to allow it to drop into engagement with the switch lever and hold it in position.

If a thick oil has been used to lubricate the motor bearings, the motor will appear weak or will not start. It will then be necessary to dismantle the motor and clean away all traces of the thick oil. It is, therefore, essential to lubricate the motor bearings with a good quality thin oil.

Should the motor get too hot, see that the voltage changeover links are set correctly to correspond with the voltage of the power supply. If correct, check the motor windings by inserting an A.C. milli-ammeter in either motor lead.

The maximum current consumption of the R.C. 80/A.C. should not exceed 0.26 amp. on 100/130 volts, 50/60 cycles, or 0.13 amp. on 200/250 volts 50/60 cycles. On the R.C. 80/UNIV, the current should not exceed 0.14 amp. A.C. and 0.18 amp. D.C. on 100/130 volts,



View with Turntable Removed

Diagram 11

or 0.2 amp. A.C. and 0.25 amp. D.C. on 200/250 volts. On the R.C. 80/D.C. the current should not exceed 0.18 amp. on 100/130 volts or 0.25 amp. on 200/250 volts. On the low voltage 12 volt model, the current should not exceed 1.1 amps, or the 6 volt model 2 amps.

If readings in excess of the above figures are obtained, the motor unit should be returned for examination.

To remove the motor, first make sure the electricity supply is disconnected, then remove the insulated plate on the underside of the terminal block and the two terminal block fixing screws will now be accessible, after removal the terminal block will be released and will be attached only to the motor leads. The speed indicator knob should also be removed.

Next, while supporting the motor underneath, unscrew the nuts on the three suspension screws which secure the motor to the unit plate. Before finally removing the motor and its mounting plate away from the unit plate, make a careful note of the sequence of steel and rubber washers on each suspension screw in order to re-assemble correctly when re-fitting the motor.

PICK-UP.

Two types of needle are necessary for playing the different types of record and a needle having a point radius of .0025" is required for the standard 78 r.p.m. records, and one with a point radius of .001" is required for the fine groove 33 $\frac{1}{3}$ and 45 r.p.m. records. To obviate needle changing either two plug-in pick-up heads or a turnover type of pick-up having two styli can be used. Care should be taken that the correct radius needle is used for the type of record to be played.

Should another type of pick-up be used other than that supplied with the unit, some adjustment for the difference in pick-up weight may be required.

The pick-up weight adjusting screw is located under the unit plate at the rear of the pick-up arm as indicated on Diagram 10 and to adjust the pick-up weight, the knurled knob should be turned to give either an increase or decrease in spring tension. Alternately the screw head at the top of the knurled knob is

accessible by inserting a screwdriver through the slot at rear of the pick-up arm base. The maximum recommended weight for long playing records is 10 to 12 grammes.

Should trouble be experienced with the reproduction from the pick-ups, the head should be returned for examination to the manufacturer whose name or trade mark appears on the cartridge.

Crystal cartridges must not be opened or the manufacturers will disclaim all responsibility.

Note: A continuity test cannot be carried out on Crystal Pick-ups with an ohmmeter.

Should there be a tendency for the pick-up to track incorrectly, especially on the first record, check the pick-up weight and adjust as explained above if found lighter than 10 to 12 grammes.

If the pick-up does not run into the record grooves after alighting on the record edge, see that the record changer is level by placing a spirit level on a record on the turntable. Also make sure that the flexible wire leading to the pick-up is not twisted or held in such a manner as to prevent the free movement of the pick-up arm; also see that the associated levers are free.

CAUTION.

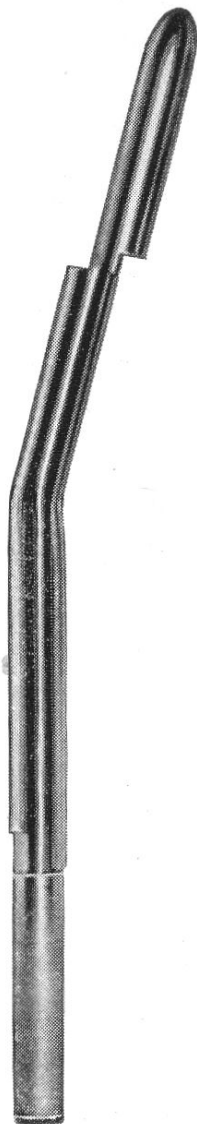
When making any adjustments to the Pick-up Arm it should NEVER on any account be forced into position. If the turntable is turned by hand it should NOT be turned backwards.

PICK-UP DROPPING POSITION.

The pick-up arm dropping position is factory adjusted for optimum accuracy. Should any minor adjustment be required rotate the screw accessible through the top plate as shown in diagram 11. Adjustment must be made only when the pick-up arm is in the rest position.

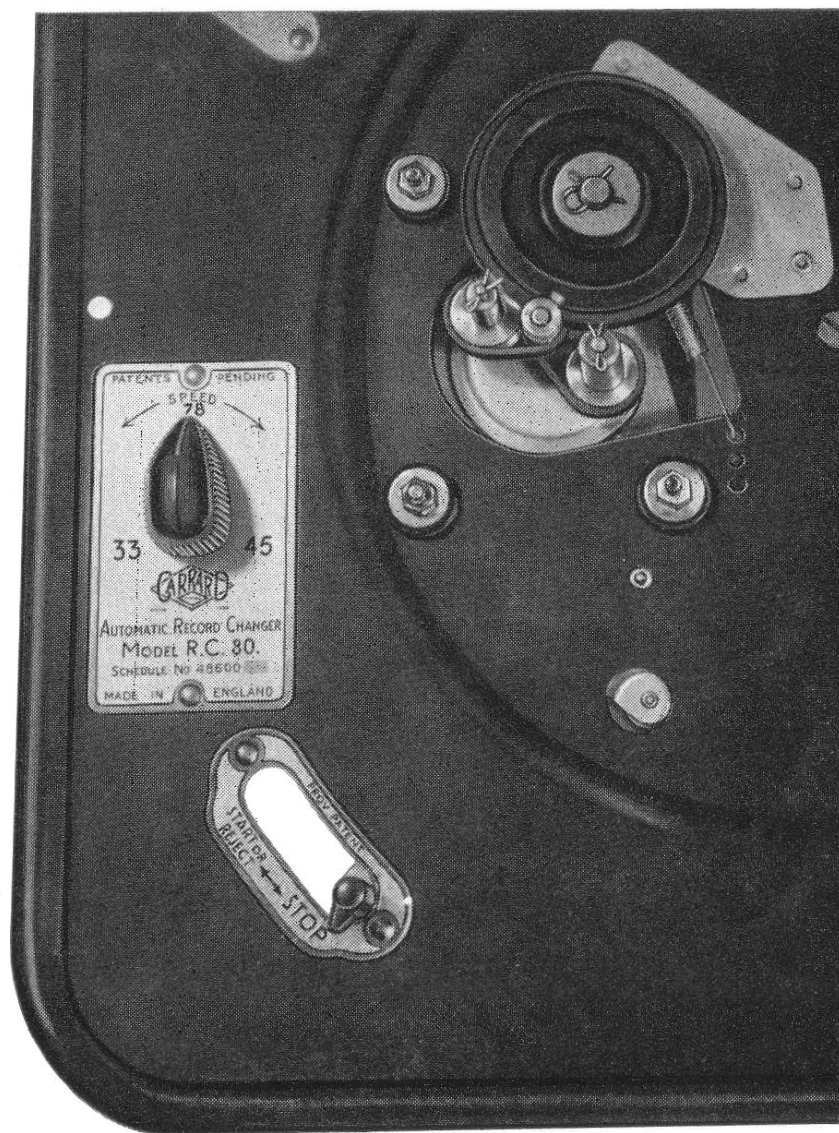
PICK-UP LIFT.

If desired, the amount the pick-up lifts can be adjusted by loosening the nut securing the "Eccentric Adjustment for Pick-up Height" (diagram 10), and adjusting the eccentric pivot with a screw driver in the slot at back. Finally, re-tighten the nut.



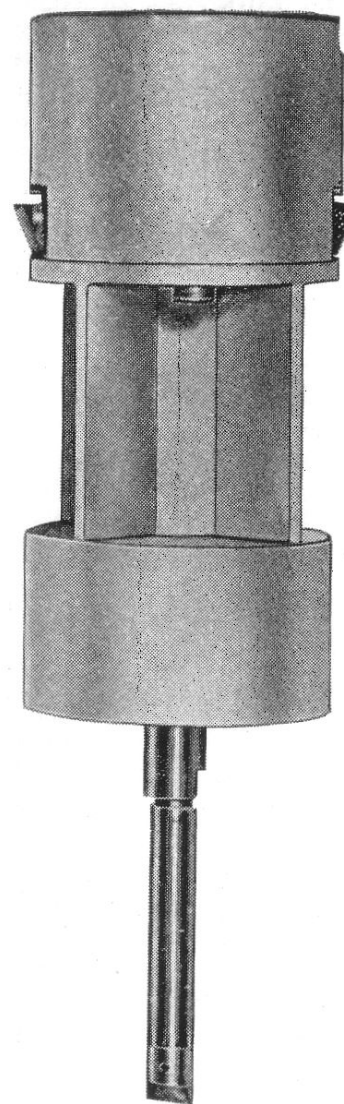
**Record Spindle
for 78 & 33½ r.p.m.
Records**

Diagram 12



View of Drive with Turntable Removed

Diagram 13



**Record Spindle
for 45 r.p.m.
Records**

Diagram 14

PICK-UP MUTING SWITCH.

A pick-up muting switch is connected across the pick-up to short circuit the pick-up except when the changer is in the playing position. It is important to note that no sound will be obtained from the pick-up by flicking the needle when the pick-up is on its rest. The muting switch contacts should be closed except when the changer is in its playing position. Should this switch fail to operate, clean the contact faces, and ensure that they make and break according to the position of the changer mechanism.

AUTO TRIP MECHANISM.

The auto trip mechanism is the velocity type and is of a special design to be very light and sensitive in operation. It is set to commence operation when the needle reaches a $2\frac{7}{8}$ " radius. The trip operates by the auto trip lever being raised by a small cam attached to the main spindle when the pick-up arm runs in on the record run off groove. The auto trip lever, on being lifted, pushes a small cranked rod which engages the clutch.

If the auto trip fails to operate, it may be caused by the auto trip lever being too low and it should be raised by giving the auto trip lever adjusting screw (diagram 11) about half a turn in a clockwise direction.

RECORD PLATFORM ADJUSTMENT.

When despatched from our Works, the record platform is set to accommodate records of average dimensions. Occasionally, however, records may be found outside the normal limits. If necessary, therefore, the platform may be adjusted to take them. To adjust the platform position, loosen the screw in the platform pivot collar (diagram 10) accessible from underneath the changer, rotate the pin by means of the slot in the end, until the platform is in the required position, then re-tighten the screw. The end of this pin is eccentric, and it is this eccentric which adjusts the platform position. Before finally tightening the screw after

adjusting this pin, see that a small clearance, about $1/64$ " is left between the eccentric shoulder and the side of the platform support.

Separate adjustment is provided for the platform pawl, and, to set the platform pawl, first set the platform lever in the 10" position and operate the changer until the pawl is in its forward position. It should then be flush with the edge of the record platform. If it is not, the nut locking the eccentric adjustment for platform (diagram 10) should be loosened and the eccentric adjustment turned until the setting is correct, then retighten the locking nut. The pawl position should now be correct for all sizes of record.

RECORD DROPPING.

If the changer fails to drop any records other than the 45 r.p.m. type having a large centre hole, first make sure that the records are not badly warped. If they are reasonably flat, the record platform setting should be checked and adjustments made if necessary. Also check the record spindle by laying it on the template (diagram 15) to see that it is not bent out of position.

Should records fail to drop correctly when using the large diameter record spindle, replace this spindle with the sloping one and see that it leans towards the record platform and is exactly in line with it. If this spindle is out of position it should be set correctly by loosening the two screws (diagram 10) holding the fixed part of the main spindle in position, turning the record spindle until it leans towards the centre of the record platform and tightening up the screws. After tightening the screws, see that the main spindle has a small amount of end play by first removing the turntable and gripping the main spindle firmly, lift it up and down. If no end play is felt, adjust as described under "Speed variation" on page 7. On fitting the large spindle the records should then drop correctly.

AUTO SWITCH.

When the last record on the record spindle drops on to the turntable, it allows the final switch off arm to

move inwards far enough to switch the changer off. When any records are on the spindle, the arm does not move in far enough to allow this to happen. Should the changer fail to stop automatically, check the following points:—

- 1 That the auto switch arm is in vertical position as shown in the illustration and that its fixing screw is tight.
- 2 See that the split lever holding the spindle underneath the mounting plate is also tight—it is at this

point that a slight adjustment may be made to the position of the knock-off lever should it for any reason be forced out of position.

- 3 The auto switch catch lever (diagram 10) has a friction pivot and if this should become very free it may fail to hold the catch pin when it should engage. If this is so, remove the split pin at the catch lever pivot and stretch the friction spring a small amount, replacing the washer and split pin.

TEMPLATE FOR R.C. 80 RECORD SPINDLE.

Should the sloping record spindle be accidentally bent out of position through being dropped or other reasons, the record dropping will be affected. If trouble is experienced with erratic record dropping, lay the record spindle on the template and check that it conforms to the shape thereof.



Template for Record Spindle

SPARE PARTS LIST FOR R.C.80

The Schedule Number printed on the name plate of the Record Changer is changed whenever a non-interchangeable variation is introduced into the mechanism. It is therefore essential when ordering spare parts to quote the Schedule Number of the Record Changer as well as the reference number of the part required.

Name of Part	Ref. No.	Name of Part	Ref. No.
Record Spindle (Small)	B.48741	Motor Pulley (40 cycles)	A.49329
Record Spindle (Large)	B.48480	Pulley (45 r.p.m.)	A.48858
Turntable	B.48743	Pulley (33 1/3 r.p.m.)	A.48861
Turntable Cover	A.47060	Cover for Change Over Block	B.45473
Pick-up Arm, with Bracket	B.48940	Screw for Cover	A.40045
Inter Wheel with Rubber Ring	A.46524	Switch Contact Spring with Bracket	A.47874
Rubber Belt	A.48581	Switch Contact Spring with Bracket	B.47876
Motor Pulley (50 cycles)	A.48595	Rotor Spindle with Rotor	A.48592
Motor Pulley (60 cycles)	A.48594	Garrard Multi-Purpose Plug-In Pick-up Case with accessories	C.48892

Garrard
Gramophone Equipment
for
Quality Reproduction

