

MODEL 70

GARRARD ENG. & MFG. CO. LTD.

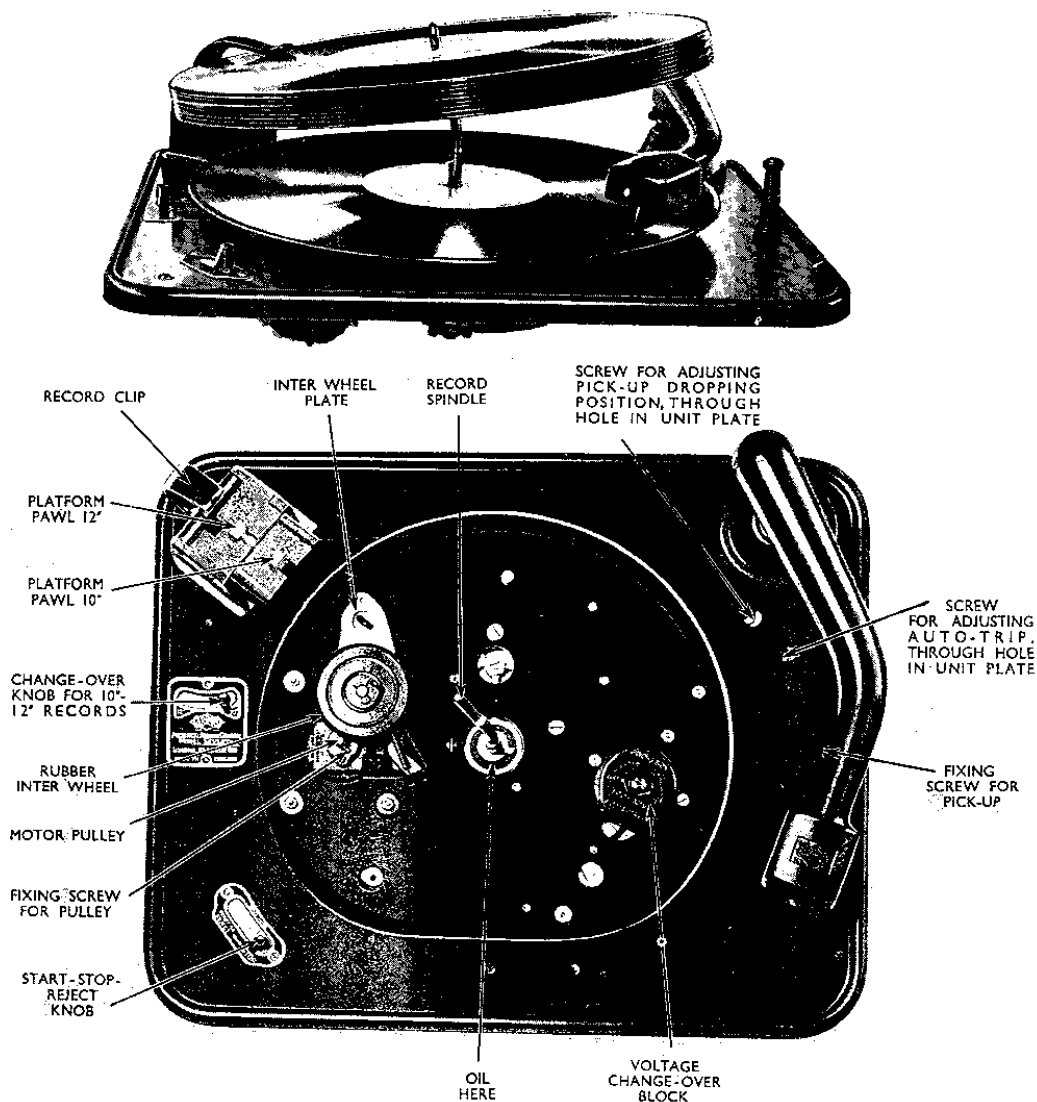


Diagram 1.

OPERATING INSTRUCTIONS

The "GARRARD" Model R.C.70 Automatic Record Changer will play any number of records up to ten 10" records or ten 12", not mixed.

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

1. If a permanent needle is not used, lift the pick-up head and insert a needle of the type that will play ten or more records. On some models the pick-up head will turn to facilitate needle changing.
2. Place the record spindle in position, the sloping part leaning toward the record platform. Set the record selector knob to 10" or 12" according to the size of the records it is desired to play, raise the record clip and place any number up to ten records on the record spindle, their lower edge resting on the record platform, then lower the record clip.
3. Move the front left-hand knob to "Start." The motor will commence to run and the changer operate. When the last record has played, the changer will automatically switch off. To remove the records, raise the record clip and withdraw the record spindle.

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, that record will be automatically rejected and the next record commenced when switching on again.

If desired, one record may be repeated any number of times by placing the record on the turntable, setting the Selector Knob to the size of the record, and switching on with no records on the record spindle and the record clip raised.

When it is desired to stop the record, lower the Record Clip and the changer will automatically switch off at the end of the record.

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." The Pick-up Arm will then return to its rest.

When the Changer is fitted with a High Fidelity Pick-up of any type, extra care should be taken to avoid accidental damage to the Pick-up and attention should be given to the following points:—

The Changer should not be switched off, either by the switch on the changer, the switch on the set, or the house switch during its changing cycle as this may lead to the pick-up being lowered on the turntable felt when the changer is next used. If it is suspected that the changer has been switched off in the wrong position, place a 12" record on the turntable before switching on.

Do not use badly warped records, they may not drop and the pick-up would lower on the turntable felt, also badly warped records will give trouble by slipping during playing.

Care should be taken in storing records to prevent contact with dirt and dust which sets up abrasive action and causes rapid wear.

MAINTENANCE.

The motor and intermediate wheel bearings being the oil retaining type will rarely need lubricating. When the need for oil is apparent a few drops of fine machine oil is all that is necessary.

The rubber rim on the intermediate wheel must be kept free of oil.

INSTALLATION

DIMENSIONS.

The Cabinet space required for fitting is 15½ ins. long by 13 ins. wide with 5½ ins clearance above and 2½ ins. clearance below the plate.

loudspeaker and pick-up. Ample clearance should be left between the edges of the unit plate and the cabinet to allow the Record Changer to float freely. Diagram 2 illustrates the assembly of the spring suspension.

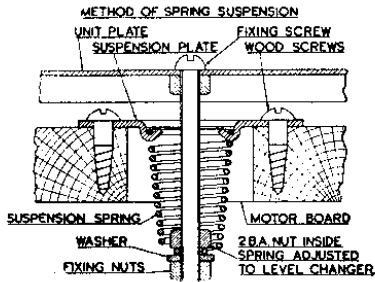


Diagram 2.

In cases where there is no possibility of acoustic feed back occurring, such as where the loud speaker is in a separate cabinet, the spring suspension is not necessary and the changer can be screwed down to the motor board with four of the wood screws supplied for the spring suspension.

Two additional holes will be found in the unit plate; these are for transit fixing screws which should be used to fix the changer rigid to the cabinet during transit and removed on final installation. These are only necessary when using the spring suspension.

If desired, a template for cutting the motor board when fitting the record changer into a cabinet may be obtained on application to The Garrard Engineering & Manufacturing Co. Ltd.

After installation see that the Changer is level by placing a spirit level on a record on the turntable. If not level, adjust by means of the spring suspension fixing nuts. Finally, the nuts and threads of the spring suspension fixing screws should be coated with a locking paint such as shellac varnish to prevent the nuts working loose due to vibration.

FITTING TO CABINET.

The "GARRARD" Model R.C.70 Automatic Record Changer is supplied with spring suspensions to prevent acoustic feed back occurring between the

VOLTAGE.

The "GARRARD" Model R.C.70 Record Changer is suitable for use on 100/130 and 200/250 volts 50 cycles.

A motor driving pulley can be supplied for 40 or 60 cycle mains if desired.

On installation, 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 3 and 4.

The links are set for operating on the 200/250 volts range when the changer leaves the factory, and need only be altered if it is required for use on the 100/130 volt range.

CONNECT BOTH BARS THUS FOR 200/250 VOLTS.

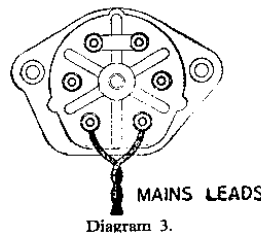


Diagram 3.

CONNECT BARS THUS FOR 100/130 VOLTS.

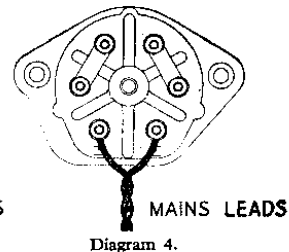


Diagram 4.

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

When adapting an A.C./D.C. (Universal) Radio Receiver, Amplifier or one using a 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 as short as possible.

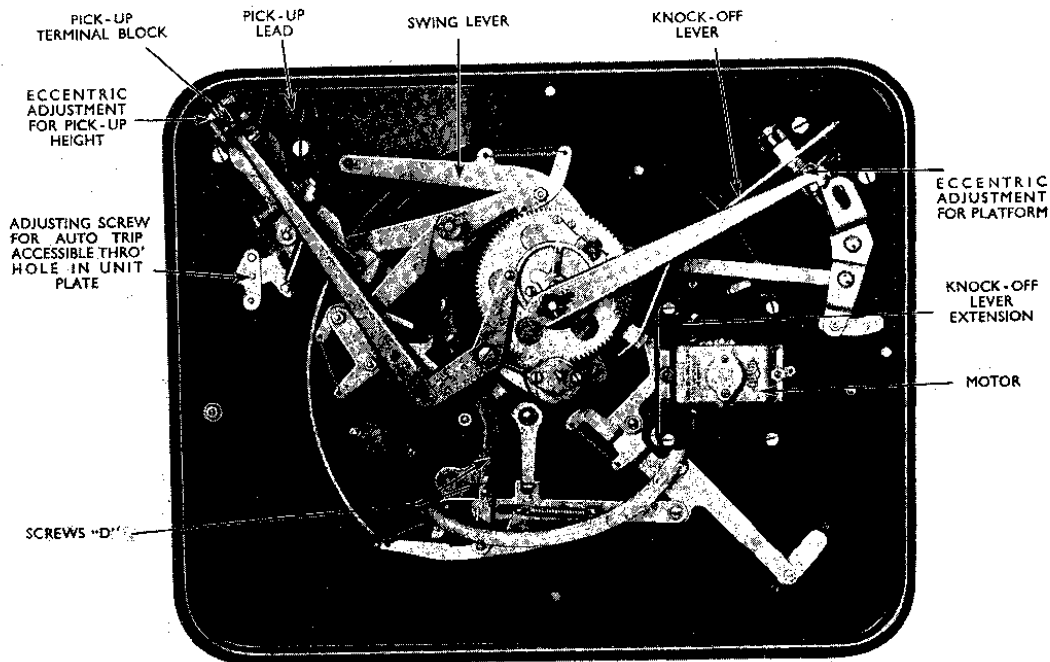


Diagram 5.

SERVICE ADJUSTMENTS

SPEED.

No adjustment for speed is provided on this model, there being no governor, and the motor being of the constant speed induction type, maintains the turntable at 78 r.p.m.

It is essential that the driving surface of the small brass pulley on the motor spindle, the rubber tyred pulley and the drum of the turntable, be kept absolutely free from all oil or grease. If the speed should become slow or varying, this is the first point that should be checked, and the pulley drum and intermediate wheel should be cleaned with a rag and a few spots of petrol or lighter fuel.

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.

Next disconnect 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.

If a thick oil has been used to lubricate the motor bearings the motor will appear weak or will not start. It will 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 change over 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 should not exceed 100/130 volts, 50 cycles, 0.26 amp., 200/250 volts, 50 cycles, 0.13 amp.

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, underneath the plate will be disclosed the nuts on the screws securing the terminal block to the unit plate—these should be unscrewed and the screws lifted out. The terminal block will then be free from the unit plate and only attached to the motor leads.

Next, while supporting the motor underneath, unscrew the nuts on the three suspension screws, which secure the motor to the unit plate. Before drawing the motor away from the unit plate, make a careful note of the sequence of steel and rubber washers on each suspension screw in order to reassemble correctly when refitting the motor. This is important as the height of the motor in relation to the intermediate wheel is critical.

PICK-UP DROPPING POSITION.

The Pick-up Arm has been finely adjusted so that the needle comes on to 10 in. records in a $9\frac{3}{8}$ in. diameter circle and 12 in. records in a $11\frac{3}{8}$ in. diameter circle. These positions were arrived at after checking a very wide selection of records of various makes.

There may be a few records where the record track starts further away from the centre (i.e., nearer the edge), and in these exceptional cases the needle may alight on the record a few grooves from the start of the record. If the pick-up dropping position were set for these exceptional records it would not be suitable for average records.

Should the dropping position of the pick-up require adjustment, the pick-up adjusting screw—accessible through a hole in the unit plate, see Diagram 1, should be turned with the changer in its start position, that is, with the pick-up arm on its rest.

The pick-up adjusting screw should be turned either to the right or left, according to requirements. A quarter of a turn in either direction will give you the maximum adjustment. After adjustment, switch on, check the dropping position and re-adjust if necessary.

PICK-UP HEIGHT.

If desired the pick-up height can be adjusted by loosening the nut securing the "Eccentric adjustment for pick-up height," Diagram 5, and adjust the eccentric pivot with screwdriver in slot at back. Finally retighten locking nut.

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.

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.

AUTO TRIP MECHANISM.

The auto trip mechanism is set to operate when the needle reaches a $1\frac{1}{8}$ in. radius, or if it oscillates in an eccentric groove.

Occasionally records having a smaller or larger radius at the end of the playing grooves, are encountered. If it is desired to adjust the mechanism to take these exceptional records, the screw visible through hole in unit plate (Diagram 1) should be adjusted.

To make the trip operate earlier for larger radius records loosen the screw, and holding the pick-up arm steady, move the screw a shade towards the turntable. To make the trip operate later for small radius records, move the screw away from the turntable.

After each adjustment check with record, and re-adjust if necessary. Finally retighten the screw.

It is emphasised that this screw should be moved a barely visible amount at each adjustment.

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 set the platform, the nut locking the "Eccentric adjustment" for Platform, Diagram 5, should be loosened, and with the mechanism set for 12 inch records, the pick-up arm in the playing position, and the largest 12 inch record available loaded on the platform, turn the "Eccentric Adjustment" until there is a gap of not more than $\frac{1}{8}$ " between the edge of the record and the front edge of the platform pawl. Finally retighten the locking nut.

If the changer fails to drop either 10" or 12" records, the above adjustment should be carried out.

AUTO STOP.

When the last record on the platform drops on to the turntable, it allows the record clip to fall and this unlocks the auto stop which should switch off the motor at the end of the record. If when the last record has been played and the record clip has fallen the mechanism does not automatically stop, the following procedure should be carried out.

1. Compare the underside of the record changer with diagram in the Service Manual and find the "Swing Lever" and the "Knock-off Lever." Note that in the upper edge of the knock-off lever there is a step. With the record clip lowered and the needle removed from the pick-up head, start the changer with a hand on the turntable, slow it down to the slowest possible speed at which the mechanism will operate. Move the control lever to the "Reject" position. The swing lever should now move outwards until it engages the step on the knock-off lever and should remain engaged until the record changer switches off. If the swing lever does not engage the step but passes over it, proceed as at (a) to correct. If the swing lever engages in the step, set as at (b) following.

- (a) Load two records on the platform spindle in the usual way. Lower the record clip and start the changer. The first record will now drop on to the turntable leaving one remaining on the platform. Again, with the hand operating as a brake to slow down the turntable, move the control lever to the "Reject" position. The tip of the step on the knock-off lever should now clear the surface of the swing lever in its outward movement by $1/64$ ". If this dimension is incorrect, stop the changer when the swing lever is directly over the step in the knock-off lever. The knock-off lever is divided into two parts which are held together by a screw

and a rivet. Loosen the screw to adjust the height of the lever until the 1/64" clearance is obtained, then retighten the screw. Finally re-check the changer with the record clip lowered to ensure that the swing lever engages the step. Should the auto stop still fail to operate, set as at (b) below.

- (b) Loosen the screws at D (Diagram 5) and bring the two parts of the lever together in order to shorten slightly the effective length and retighten the screws. Check and repeat the adjustment if necessary until changer operates correctly.

PICK-UP.

"GARRARD" Magnetic types of pick-ups are interchangeable with the Crystal type or vice-versa without alteration to the pick-up arm on these Record Changers, provided the pick-up is fitted in a "GARRARD" head.

All "GARRARD" pick-up heads are of the plug-in type, connections being made by two plugs and sockets at the back of the pick-up head.

To remove the pick-up head, unscrew the pick-up fixing screw, withdraw the pick-up, easing the pick-up lead under the arm, and remove the two plug connections from back of pick-up.

If reproduction ceases, or becomes distorted when fitted with a "GARRARD" standard magnetic pick-up, first make sure that the amplifier is in order. Should this be found satisfactory, a slight adjustment to the pick-up may be necessary or the damping rubber may need renewing.

To examine the pick-up proceed as follows:—

Unscrew the two screws located underneath the Base Plate of the Pick-up Head, when the plate carrying the pick-up unit can be removed from the cover. Be careful not to loosen or disturb the two screws located one each side of the needle holder on the inclined portion of the base plate, otherwise the adjustment of the pole pieces will be upset. By viewing the pick-up unit from the front, examine the armature to see that it is in the centre of the gap between the pole pieces.

If it is touching one of the pole pieces, it must be re-centred.

To do this, loosen the two screws holding the adjusting plate, sliding the latter until the armature is in the centre, then tighten the screws.



Diagram 6.

If the armature will not retain its centre position, it will be necessary to renew the damping rubber. This can be done by removing the adjusting plate, replacing the rubber and re-assembling of the plate.

Adjust the plate until the armature is centred before tightening the screws.

The top damping rubber tends to perish in time. It should, therefore, be replaced whenever it appears that the needle stiffness has increased, otherwise excessive record wear may occur.

The pick-up coil winding can be checked for continuity with an ohmmeter.

If a Crystal or High Fidelity pick-up is suspect, the pick-up head should be returned for examination. A continuity test cannot be carried out on Crystal pick-ups with an ohmmeter.

Crystal Cartridges or High Fidelity Pick-ups must not be opened or the manufacturers will disclaim all responsibility.

TEMPLATE FOR RC 70 RECORD SPINDLE.

Should the 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.

SPARE PARTS LIST FOR RC 70

Name of Part.	Ref. No.	Name of Part.	Ref. No.
Record Spindle	A.47408	Pulley (50 cycles)	A.47216
Turntable	B.46744	Pulley (60 cycles)	A.47226
Turntable Cover	A.45395	Cover for Change Over Block	B.45473
Main Spindle Unit	A.46509	Screw for Cover	A.40045
Pick-up Arm	B.47654	P.U. Needle Screw	A.40048
Record Clip	A.46582	Trip Pawl	A.47273
Pick-up Spindle Unit	A.46584	Spring for Trip Pawl	A.41602
Pick-up Lead	A.47786	Switch Contact Spring	A.41597
Platform Housing	A.46572	Pick-up Top Damping Rubber	A.45303
Platform	B.46564	Rotor Spindle with Rotor	A.47168
Inter Wheel Unit	A.46529		