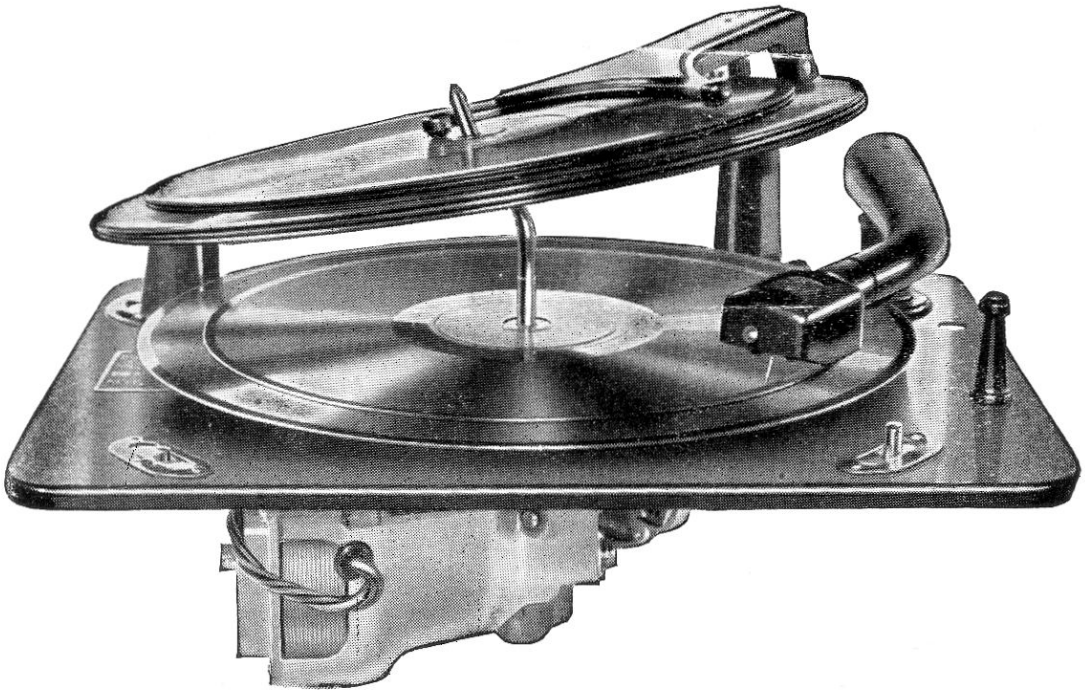
# OPERATING : INSTALLING
AND
# SERVICE INSTRUCTIONS
FOR

# *The* GARRARD

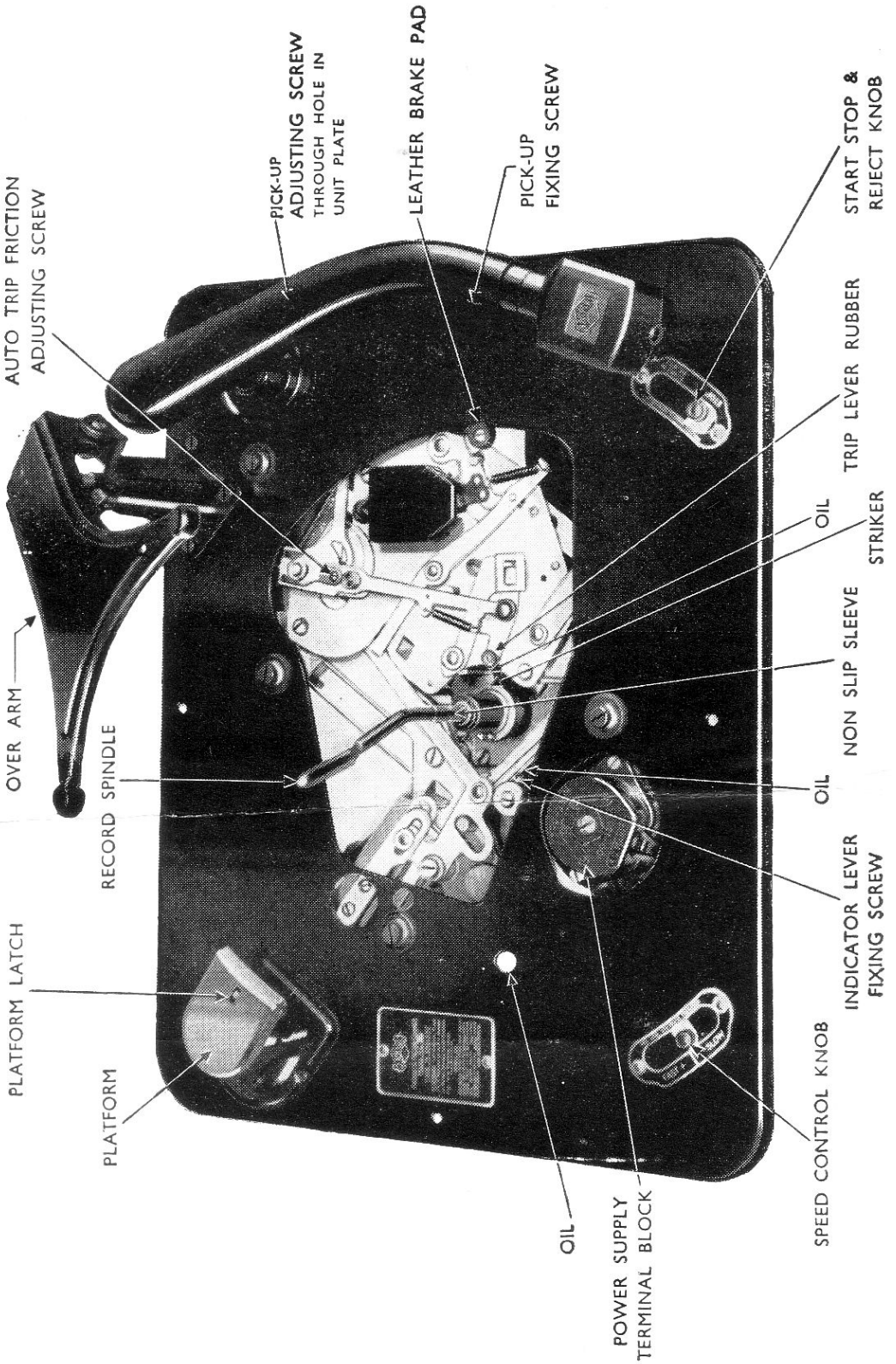
## *Automatic* MIXED
## RECORD CHANGER
### MODEL RC 60



**Types:**

RC 60/D16
RC 60/U16

THE GARRARD ENGINEERING & MANUFACTURING Co. Ltd.
SWINDON : WILTS : ENGLAND



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# THE GARRARD
# MODEL R C 60 MIXED 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.60 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.

## OPERATING INSTRUCTIONS.

The Garrard Model RC 60 Record Changer will play any number of records up to eight 10″ and 12″ mixed in any order.

To operate proceed in the following order:

1. If a permanent needle is not used insert a needle—the type that will play 10 or more records—in the pick-up; turn head to do this.
2. Place the record spindle in position, the sloping part leaning towards the record platform, raise overarm, and place any number up to eight records on the record spindle, their lower edge resting on the record platform, then lower overarm.
3. Move the right hand knob to "start". The motor will start and the changer operate. When the last record has been played the changer will automatically stop.

   To remove records, raise overarm and withdraw the record spindle.

   To reject a record, move the right hand knob to the reject position.

The Record Changer can be stopped by moving the right hand knob to the "stop" position.

Connected to the "start" and "stop" knob is the reject mechanism. If the changer is switched off while playing a record, the reject comes into operation when switching on again, the pick-up returning to its rest position.

### NOTE.

If the Record Changer has been stopped for any reason, with the pick-up arm not on the rest, the arm should not be interfered with but the motor restarted and the arm allowed to return to the rest.

# INSTALLATION.

## DIMENSIONS.

The cabinet space required for fitting is 15½in. long by 13in. wide with 5½in. clearance above and 4½in. clearance below unit plate.

## FITTING TO CABINET.

The "GARRARD" Model R.C.60 Record Changer is supplied with spring mounting to prevent mechanical feed-back occuring between the loud-speaker and the pick-up, and clearance should be left between the unit plate edges and the cabinet to allow the changer to float freely.

A template is supplied with each Record Changer and the instructions on it should be carefully followed.

After installing, 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 mounting fixing screws. Finally, the nuts and threads of the spring mounting fixing screws should be coated with a locking paint such as shellac varnish to prevent the nuts working loose due to vibration.

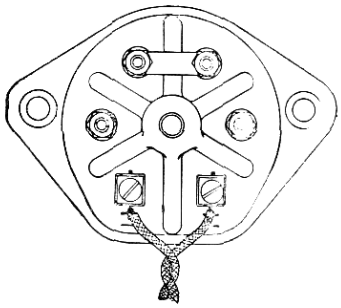
## VOLTAGE.

The "GARRARD" Model R.C.60 Record Changer is supplied in the following types:—

R.C.60/D16 Dual Voltage Range 100/130 and 200/250 volts 40/60 cycles.
R.C.60/U16 Universal Voltage Range 100/130 and 200/250 volts D.C. and A.C. 25/60 cycles.

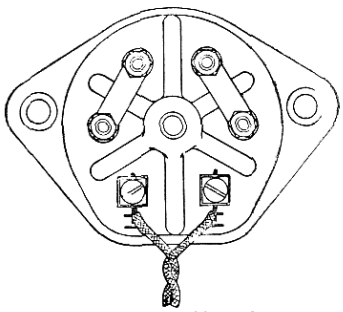
On installation, the links in the terminal block on types D16 and U16 should be set to the correct position to correspond with the voltage of the power supply, as shown in diagrams 2 to 5.

CONNECT BOTH BARS THUS FOR 200/250 VOLTS



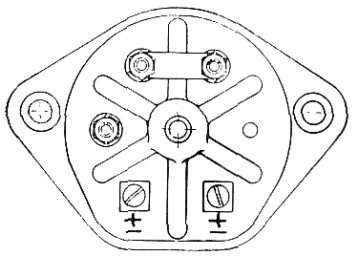

*Dia. 2.*

CONNECT BARS THUS FOR 100/130 VOLTS



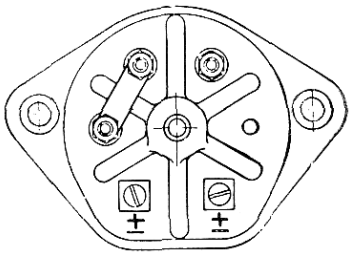

*Dia. 3.*

**Link Connections, RC 60/D 16**



*Dia. 4.*

CONNECT THUS FOR 200/250 VOLTS.



*Dia. 5.*

CONNECT THUS FOR 100/130 VOLTS.

**Link Connections, RC 60/U 16**

On types H16 and L16 connect the leads from the power supply to the terminals, taking care that the voltage is correct for the motor.

A red terminal block cover is fitted to the Universal type (R.C.60/U16).

A brown terminal block cover is fitted to the A.C. types (R.C.60/D16, R.C.60/H16 and R.C.60/L16.)

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 AC/DC (Universal) Radio Receiver, Amplifier or one using a 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 in every case.

# MAINTENANCE.

The motor only requires occasional lubrication at intervals, depending upon the length of time the Record Changer is used. Lift off the turntable and the oil holes (diagram 1) are accessible. A few drops of "GARRARD" or thin lubricating oil are sufficient.

**RECORDS** should be reasonably flat and clean to obtain good reproduction. Care should be taken in storing to prevent contact with dirt and dust which sets up abrasive action and causes rapid wear.

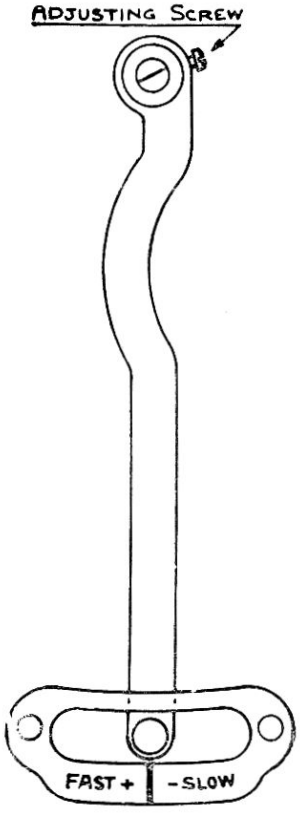
# SERVICE ADJUSTMENTS.

## SPEED SETTING.

Due to the wide voltage range of the motors it may be necessary on some power supplies to make a slight re-adjustment of the speed indicator lever so that the speed of the turntable corresponds with that shown on the indicator scale.

To set the speed on alternating current power supply, 40/60 cycles, use the "GARRARD" Stroboscopic Speed Indicator enclosed with each Record Changer. To set speed on direct current power supply the turntable speed should be checked with a watch. Set speed so that turntable revolves at 78 r.p.m., remove the turntable and carefully loosen the screw holding the indicator lever to the vertical brake shaft, move the indicator lever to the centre position on the indicator plate and tighten up the screw. The speed should now be correct.

**NOTE.** One side of the stroboscopic speed indicator is designed for use in adjusting speed on a 50 cycle, and the other side a 60 cycle power supply.




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 examine the terminal block and see that the leads and screws are tight; also examine the switch contacts, 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, first see that the voltage change-over links are set correctly to correspond with the voltage of the power supply.

To check the motor windings insert a milliameter in either motor lead. The maximum current consumption should not exceed:—

R.C.60/D16

200/250 volts 0.11 amp.
100/130 volts 0.22 amp.
110 volts 60 cycles 0.24 amp.

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

Wavy or watery reproduction from records is often due to dry governor pads. These should be lubricated by saturating the felt pads with oil.

To cure governor rattle, put a little thick oil on the shaft where the governor sleeve slides.

## RC 60/U 16 MOTOR.

Periodical examination of the carbon brushes should be made. If they are allowed to become dirty or worn, brush noise will occur. The brushes can be cleaned by lightly scraping the contact surface with a pen-knife. It is essential that the brushes be replaced in the same holder and the same way round New brushes are 9/16in. long under the springs. When worn down to 3/8in. they should be replaced. To remove the brushes, unscrew the brush caps and the brushes can be withdrawn.

## REMOVING MOTOR.

If the motor has to be removed from the Record Changer, disconnect the switch leads from the switch and remove the clips holding the leads, then remove the motor fixing screws and the motor can be withdrawn.

## PICK-UP DROPPING POSITION.

The pick-up arm has been finely adjusted so that the needle comes on to 10in. records in a 9⅝in. diameter circle and 12in. records in a 11⅝in. 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—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 removing the screw in the collar at the bottom of the pick-up arm lifting spindle and turning

the collar, whilst holding the spindle. Replace screw and tighten after adjustment.

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 satisfactory operation of the Record Changer depends upon the operation of the auto. trip. Occasional adjustment of the auto. trip friction spring may, therefore, be necessary.

If, at the end of a record, the auto. trip does not operate—that is, the pick-up remains at the end of a record—first see that the record has a run off groove in its centre, as only records with run off grooves can be played automatically on Record Changers. If the record is in order, increase the tension of the friction spring by turning the friction adjusting screw (on diagram 1) in a counter-clockwise direction; about half a turn is all that should be necessary. This screw is accessible on removing the turntable.

When the changer operates before the end of a record or a bumping or tapping noise is audible, first examine the trip lever rubber and, if worn, give it a half turn to present a new surface to the striker. If badly worn, renew. If trip lever rubber is in good condition then reduce the tension of the friction spring by giving the auto trip friction adjusting screw (diagram 1) 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 control the platform movement are two adjustable links, each fitted with two screws. One link, with its pivot at the bottom of the platform lever, controls the platform lift, whilst the other controls the distance the platform moves inward.

It is this latter link which may be adjusted to accept records differing from the normal in diameter. To do this, loosen the screw further away from the platform and remove the other screw.

Now refit this screw in an adjacent hole according to the adjustment required. Moving the screw to a hole nearer the platform lengthens the link and increases the inward movement of the platform. By moving the screw in the opposite direction the link is shortened and the outward movement of the platform increased. The permissible adjustment is one hole in either side of existing position of the screw.

## PICK-UP.

"GARRARD" Magnetic types of pick-up 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 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 pick-up proceed as follows:—Remove the pick-up cover, and by viewing the front of the pick-up, examine 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.

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 the plate.

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

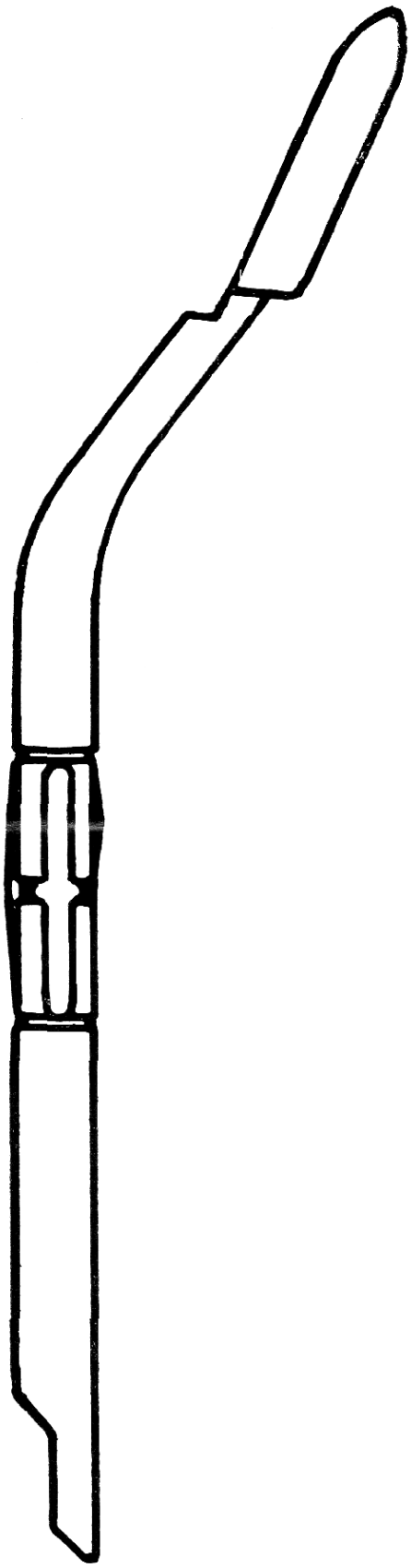
The top damping rubber tends to perish in time. It should, therefore, be replaced whenever it appears that the needle stiffness has increased, otherwise excessive record wear may occur.

Distortion can be caused by dirt or foreign matter in the gap between the pole pieces. To remedy, remove the adjusting plate and damping rubber and clean gap

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.



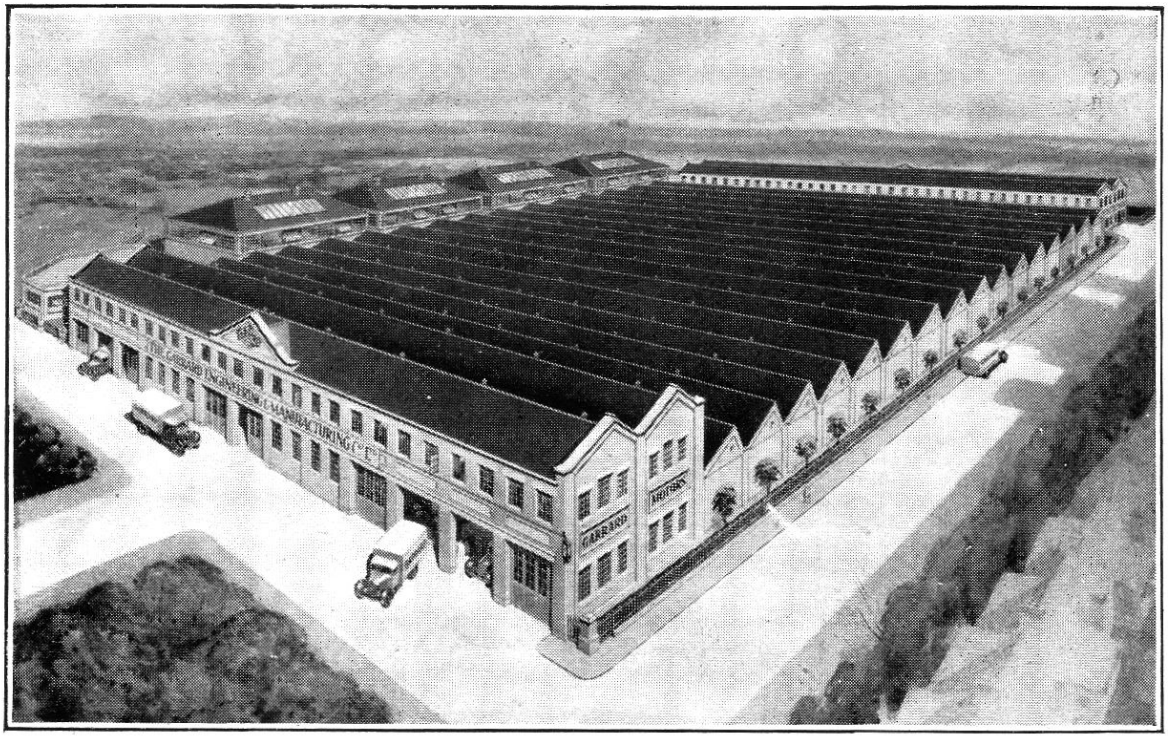
## TEMPLATE FOR RC 60 RECORD SPINDLE.

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 template and check that it conforms to the shape thereof.

# SPARE PARTS FOR R.C.60.

When ordering spare parts, please quote the schedule number printed on the instruction plate of the Record Changer, and the Reference number of the part required.

| *Name of Part.* | *Ref. No.* |
|---|---|
| Record Spindle | A.45380 |
| Turntable | A.45390 |
| Turntable Cover | A.45395 |
| Main Spindle with Fibre Gear | A.45348 |
| Pick-up Arm | B.45127 |
| Overarm Bracket | B.45115 |
| Pick-up Arm Bracket | B.45131 |
| Pick-up Lead | A.45140 |
| Platform Bracket | B.45148 |
| Platform | A.45150 |
| Governor Spring | A.41520 |
| Motor Stator Coils. D.16. | A.45687D. |
| Motor Stator Coils. L.16. | A.45427L. |
| Motor Stator Coils. H.16. | A.45427H. |
| Motor Field Coils. U.16. | A.45868 |
| Motor Resistance complete U.16. | A.45869 |
| Spring Trip Lever | A.41512 |
| Auto Trip Friction Spring | A.41513 |
| Switch Contact Spring | A.41514 |
| Pick-up Top Damping Rubber | A.45303 |
| Rotor Spindle with Rotor | A.45337 |



THE GARRARD FACTORY

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