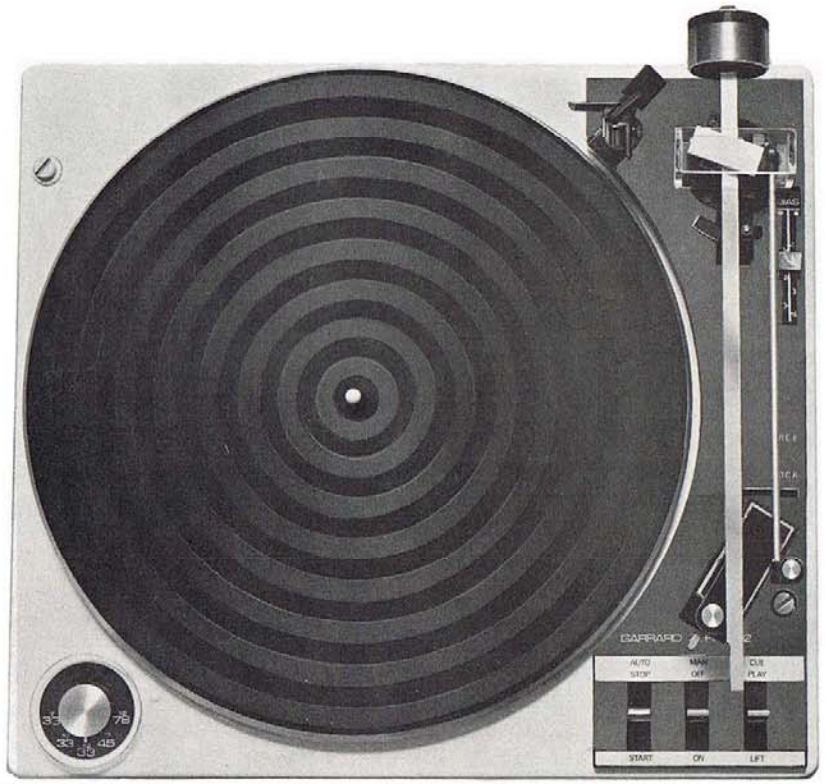
Garrard

ZERO 92

Instruction Manual

Contents



Garrard

ZERO 92

AUTOMATIC TRANSCRIPTION TURNTABLE

Garrard Engineering Limited Newcastle Street Swindon Wiltshire England

Description

INTRODUCTION

The Garrard Zero 92 is a superb three-speed transcription turntable with such special features as

* an ingenious tonearm virtually without tracking error (Patent applied for).
* a long stylus force scale for a high degree of setting accuracy.
* damped lifting and lowering of the tonearm while under manual control and lowering under automatic control.
* a motor with the advantages of both induction and synchronous motors (Patented).
* two-point support for 12in records when stacked for automatic play.
* a tilting arrangement which allows the cartridge to be set in position to give the correct angle for tracking when playing a single record or, alternatively, at the height of three records for automatic play. It is lowered gently by viscous damping.

In addition to manual operation it will automatically play single 7in (17cm), 10in (25cm) and 12in (30cm) records, or a stack of up to six 12in records – the number will depend upon the thickness of the records. Adaptors are available to play records with large centre holes and to play a stack of 7in records.

Naturally, you will be keen to put your turntable into use as soon as possible but, as you realise, it is a precision instrument. For this reason, we strongly advise you to read the instructions before installing or operating it so that you will obtain the full benefit of its many capabilities.

BRIEF TECHNICAL SPECIFICATION

Power Supply Voltage: 110/125V AC. Motors for other voltages are available. See separate leaflet when applicable. Power supply requirements are shown on the motor.

Power Supply Frequency: 50 or 60Hz dependent on the motor pulley fitted.

Power Consumption: Approximately 9 watts.

Speeds: 33⅓, 45 and 78 rev/min.

Motor: A 4-pole induction rotor section to provide high starting torque and a synchronous section for constant running speed. It is magnetically screened and resiliently mounted.

Tonearm (Pickup Arm): The tonearm head pivots laterally as it tracks a record to maintain negligible tracking error. The tonearm anti-skating system is calibrated for both conical (spherical) and elliptical (bi-radial) cartridge styli.

Platter: 11½in (290mm) diameter.

Size: Approximately 14¾in (375mm) wide, 13¼in (335mm) deep and 6¾in (170mm) high. For further details see page 4 and template.

Weight: Approximately 11¼lb (5.1kg).

OPTIONAL EXTRAS

* A mounting base and dust cover.
* A record spindle adaptor Type LRS100 to play up to six records with 1½in (38mm) centre holes automatically.
* A record platform adaptor Type A6 to play up to six 7in diameter records with small centre holes automatically.

The carton contains the following accessories in addition to the Zero 92 with its platter.

1 **A short record spindle for playing single records**
This is fitted by locating it in the centre of the platter and pressing it down into place. Its rotating sleeve turns with the record to minimise wear.

2 **A long record spindle for playing a stack of records automatically**
This is fitted by locating it in the centre of the platter and turning the spindle until it can be pressed down to be held in place by a retaining clip. The spindle can be removed again by a straight upward pull.

3 **A large centre hole record adaptor**
This fits over the single record spindle to enable records with $1\frac{1}{2}$in (38mm) diameter centre holes to be played singly.

4 **A kit of cartridge fixing parts**
This comprises a range of screws of different lengths, and a clear plastic setting gauge for checking the alignment of the cartridge in the tonearm.

5 **A tonearm counterbalance weight**
See below.

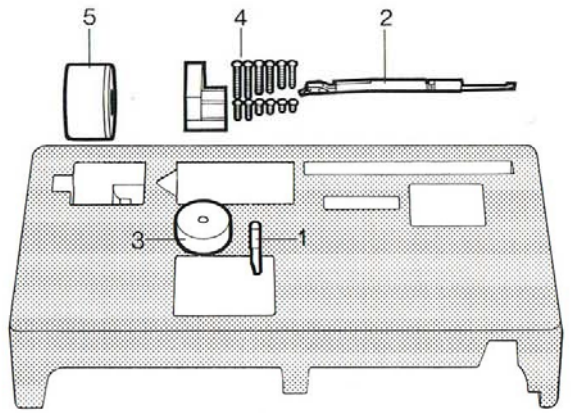


Diagram 1 Accessories in Packing Piece

THE TONEARM COUNTERBALANCE WEIGHT

Screw this on to the rear extension of the tonearm, black section at the back, to secure it until the stylus force is set.

The counterbalance weight must be assembled and taken off the tonearm only by a winding action.

Any other method of assembly, such as direct push or pull, may cause permanent deformation of the isolating member in the weight and result in rumble being heard through the speakers.

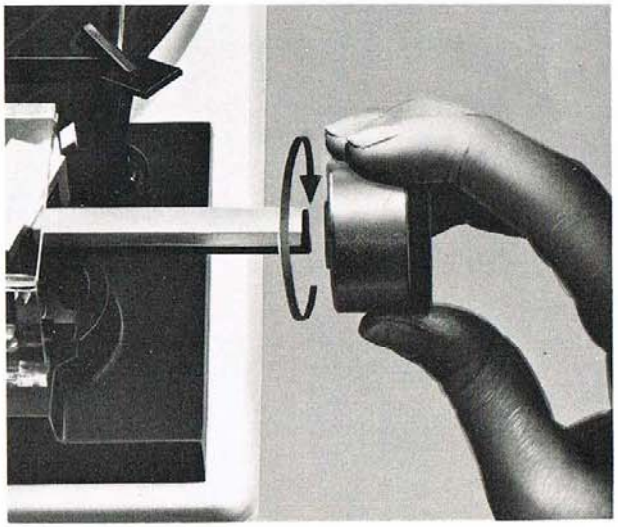


Diagram 2 Fitting Tonearm Counterbalance Weight

INSTALLATION

If the mounting board of the cabinet or base is already prepared for use, disregard section 1 below.

1 Prepare the mounting board in accordance with the instructions on the template.

2 Check that all four damping pads are firmly in place in the mounting springs. Turn both transit screws fully clockwise and transit clips vertical.

3 Thread power supply, ground and phono leads through the cut-out in the mounting board. Make sure that all leads are clear of any moving parts under the unit plate, particularly in the area underneath the tonearm.

4 Place the unit in position on the mounting board, aligning both transit screws with their holes and locating all mounting springs in their recesses. See diagram 3.

5 Press the unit down on its springs, then turn both transit clips to the horizontal playing position. Release the unit.

6 Carry out the cabling instructions on page 5.

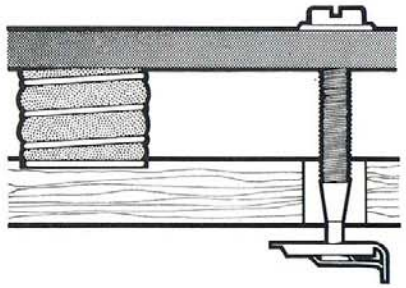


Diagram 3 Unit in playing position

PREPARING THE UNIT FOR TRANSIT IN ITS CABINET OR BASE

1 Lock the tonearm to its rest and fit the stylus guard.

2 Ensure that the tonearm counterbalance weight is securely fitted so that it cannot be dislodged by possible vibration in transit.

3 Ensure that the platter is securely held by its retaining clip.

4 Press the unit down on its mounting springs and turn both transit clips fully counterclockwise to brace it against the mounting board. See diagram 4.

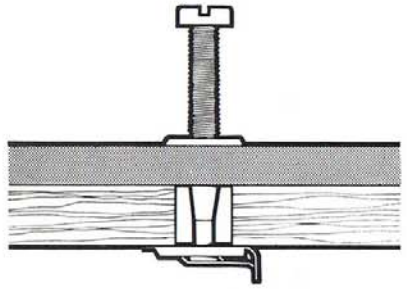


Diagram 4 Unit in transit position

CABLING INSTRUCTIONS

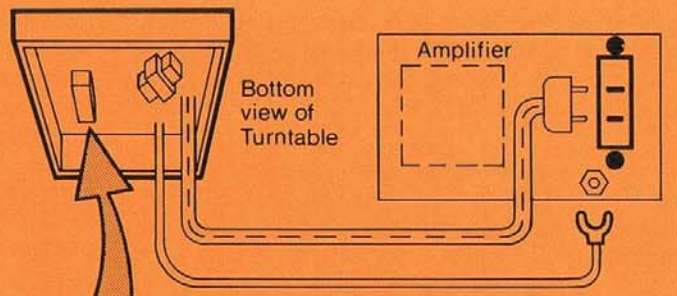
Your Garrard Zero 92 turntable can be used with either mono or stereo sound systems as described below.
Note: R.C.A. type output connectors are used on this turntable.

A.C. POWER SUPPLY AND GROUND CONNECTIONS

The brown AC power supply cable should be plugged into the power outlet on the amplifier or, if this is not provided, into a wall socket. The green (or green and yellow) ground lead should be connected to a ground connection on the amplifier chassis or directly to ground. The amplifier manufacturer's instructions will give more detailed advice.

A.C. Power and Ground Connections

Diagram 5

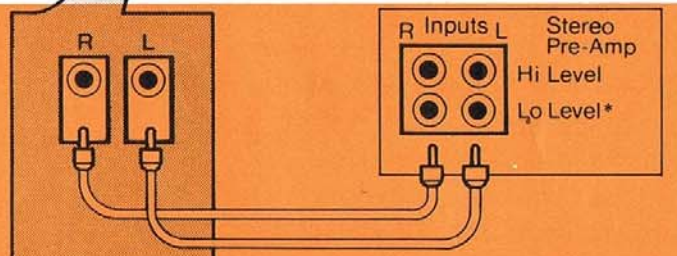


CONNECTING A STEREO CARTRIDGE TO A STEREO AMPLIFIER

Plug both phono leads into the amplifier input sockets as shown in diagram 6. Make certain that the right-hand pickup output channel (R) is connected to the amplifier input feeding the right-hand speaker and that the left-hand output channel (L) is connected to the input feeding the left-hand speaker.

Stereo - Cartridge Stereo Amp Connection

Diagram 6

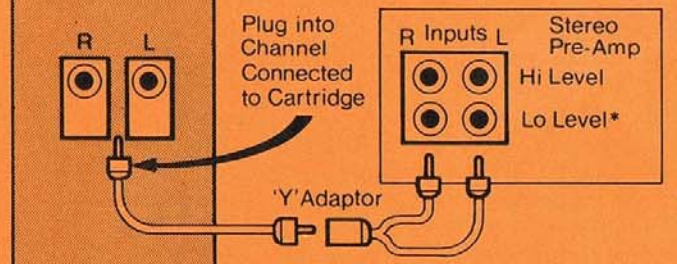


CONNECTING A MONO CARTRIDGE TO A STEREO AMPLIFIER

Plug in the phono lead as shown on diagram 7. Use the right-hand pickup output channel (R) if the red and green leads in the tone-arm cartridge carrier are connected to the cartridge output pins and the left-hand output channel (L) if the white and blue leads are connected to the cartridge. Use the 'Y' adaptor only if the amplifier has no provision for connecting both input channels together in parallel.

Mono Cartridge - Stereo Amp Connection

Diagram 7



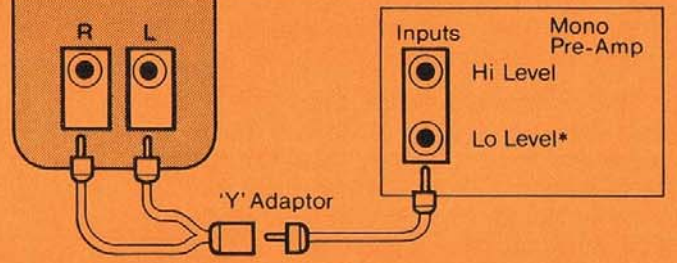
CONNECTING A STEREO CARTRIDGE TO A MONO AMPLIFIER

Plug both phono leads into a 'Y' adaptor as shown in diagram 8, so that the complete output signal from the cartridge will be reproduced through the sound system.

Refer to the amplifier manufacturer's instructions for the selection of amplifier input level for the type of cartridge in use.

Stereo Cartridge - Mono Amp Connections

Diagram 8



FITTING THE PICKUP CARTRIDGE

The fixing screws and cartridge setting gauge provided enable a wide range of high quality cartridges to be fitted in their correct operating position in the carrier.

Great care must be taken when fitting the cartridge since it forms an integral part of the extremely precise tonearm design essential to the exceptional degree of tracking accuracy.

To fit the cartridge proceed as described below:

1 Remove the pickup cartridge carrier.
2 Attach the cartridge to the carrier.
3 Align the cartridge.
4 Connect leads to the cartridge.
5 Refit the carrier.
6 Set stylus force and anti-skating device.

1 REMOVING THE PICKUP CARTRIDGE CARRIER

Support the tonearm elevated over the platter with one hand to avoid strain and withdraw the carrier with the other hand. Turn the carrier over and peel off any adhesive tape used to hold the coloured leads during transit.

When removing the carrier with a cartridge fitted, support the tonearm well clear of the operating controls to avoid risk of damage to the cartridge.

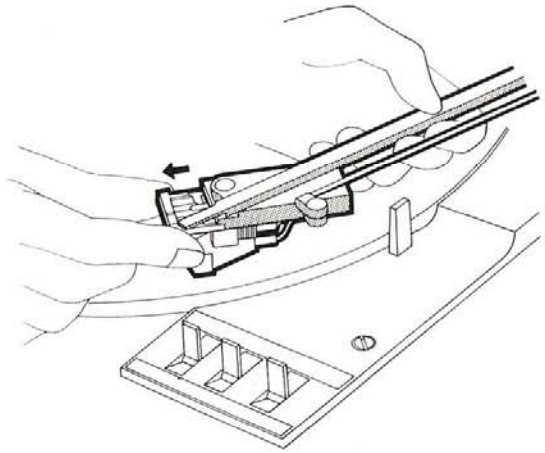


Diagram 9 Removing the Carrier

2 ATTACHING THE CARTRIDGE TO THE CARRIER

(a) Secure the cartridge to the carrier by passing a pair of screws through the cartridge mounting (see 'Note' below), then screwing them into the threaded holes in the locking plate which slides in the channel on the opposite side of the carrier. The screws must not protrude through the far side of the locking plate sufficiently to touch the setting gauge.

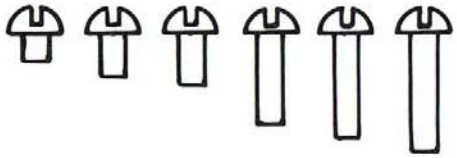
(b) Tighten the screws just sufficiently to hold the cartridge in place.

Note: The charts alongside show the fixing screws recommended for a typical range of cartridges and the actual lengths of the screws for identification. These screws have British Association No. 6 (6 B.A.) threads and are supplied in a set of six pairs of the lengths shown.

Recommended Screw Length

CARTRIDGE (inches)	1/8	3/16	1/4	7/16	1/2	9/16
ADC (All Models)				X		
Decca (London)			X			
Empire 90, 909, 999, and 1000		X				
Ortofon SL-15		X				
Pickering XV-15 V-15, and P Series V-15 Phase IV	X		X			
Shure V15 Type II M91E and M93E M75E, M44E, and M55E	X				X	X

1/8" 3/16" 1/4" 7/16" 1/2" 9/16"



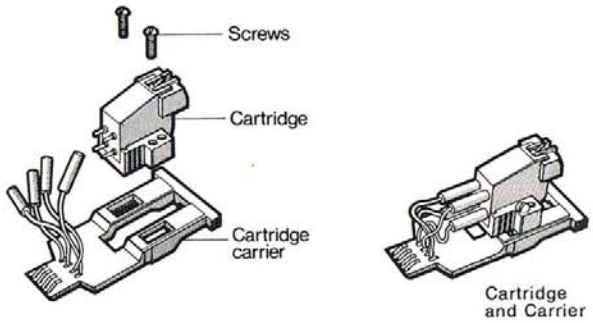


Diagram 10 Assembling the Cartridge and Carrier

3 ALIGNING THE CARTRIDGE

Slide the carrier into the slots in the clear plastic setting gauge. Take care that the stylus does not catch on the gauge as the cartridge enters.

The stylus tip must be vertically above the point at which the lines on the gauge cross. If it is not, move the cartridge until it is correctly aligned.

4 CONNECTING THE CARTRIDGE

When the alignment is satisfactory, tighten both fixing screws, remove the gauge, and connect the insulated leads on the carrier by pushing their tags onto the cartridge output pins. Use the following colour code in conjunction with the cartridge manufacturer's instructions.

Red — Right hand channel signal.
Green — Right hand channel ground
White — Left hand channel signal
Blue — Left hand channel ground

Note: If a cartridge has only three pins or tags, use the green lead, or green and blue joined together. Insulate and tuck away any lead not required.

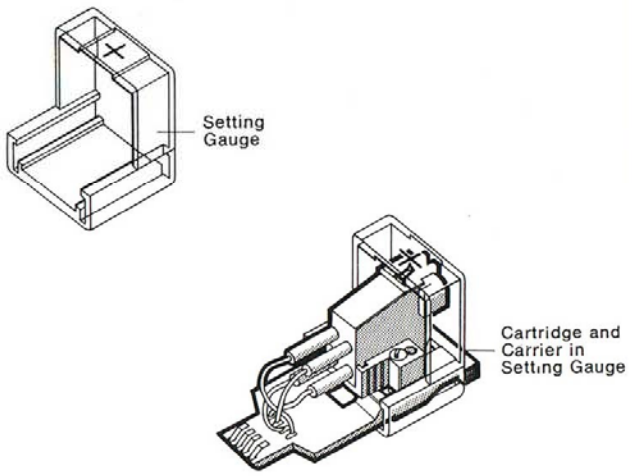


Diagram 11 Aligning the Cartridge

5 REFITTING THE CARRIER

(a) Move the tonearm locking lever to 'Free', support the tonearm over the platter away from the operating controls with one hand, to avoid risk of damage to the cartridge.

(b) Locate the contact portion of the carrier into the guide slot under the rear of the head. The carrier should now be supported by the head and protrude approximately $\frac{1}{4}$in from the front of the head; gently push the carrier into the head. It does not matter whether the cartridge tilting lever (see diagram 17) is at M or A at this stage.

6 STYLUS FORCE AND TONEARM ANTI-SKATING DEVICE

Set these as instructed in the following sections.

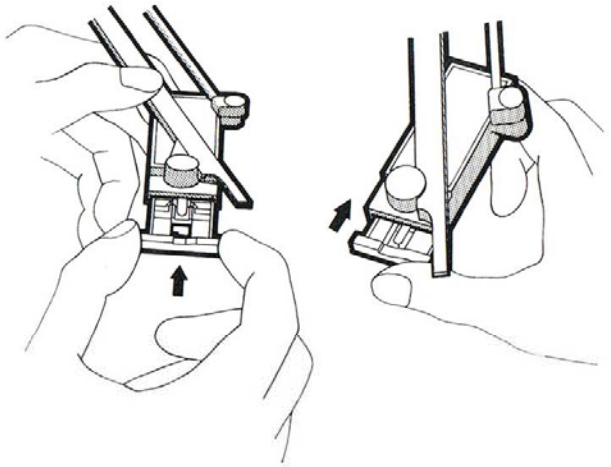


Diagram 12 Refitting the Carrier

SETTING STYLUS FORCE

1 Move the stylus force weight so that its centre line is at 0 on the tonearm. Lift the carrying arm for the anti-skating weight (diagram 14) to the vertical position.

2 With the cartridge fitted, remove the stylus guard and move the tonearm locking lever to FREE and move the tonearm inwards so that it pivots freely. Take care to prevent the stylus from touching the rubber mat.

3 Wind the counterbalance weight backwards or forward until the tonearm is in balance with the stylus tip at the height of the top face on one record on the platter.

4 Return the tonearm to its rest, move the locking lever to LOCK, and lower the anti-skating device.

5 Set the stylus force to that recommended by the cartridge manufacturer by moving the stylus force weight forward until its centre line is at the mark on the tonearm scale representing this force. The scale is calibrated up to 4 grammes in steps of $\frac{1}{4}$ gramme.

6 Fit the stylus guard until the unit is to be used.

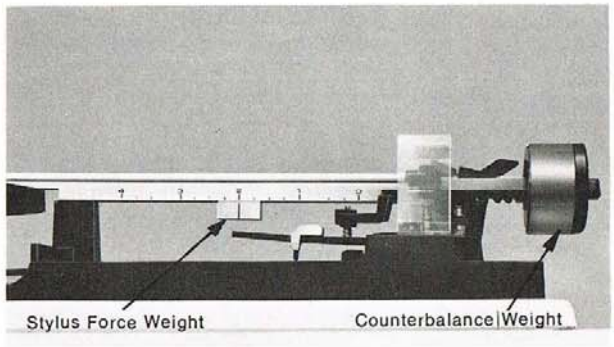


Diagram 13 Setting Stylus Force

TONEARM ANTI-SKATING DEVICE

An anti-skating control is necessary to offset the normal tendency of any tonearm to move (skate) across the record toward the centre. As the record revolves, with the arm tracking, an inward skating force is created, which must be counteracted by an equal bias in the opposite direction. This minimises wear on the inner side of the groove, premature damage to the record, and sound distortion. The skating force is directly related to the stylus force set for the cartridge.

SETTING THE DEVICE

1 **For a cartridge with a spherical stylus tip.** Move the weight along the calibrated carrying arm until the red lines on the weight are at a position on the 'conical' scale corresponding to the stylus force. If, say, 2 grammes stylus force has already been set, move the slider to the figure 2 on the scale, marked with a ● symbol.

2 **For a cartridge with an elliptical stylus tip.** Proceed in the same way, but use the 'elliptical' scale on the arm. This scale is marked with a ⬬ symbol.

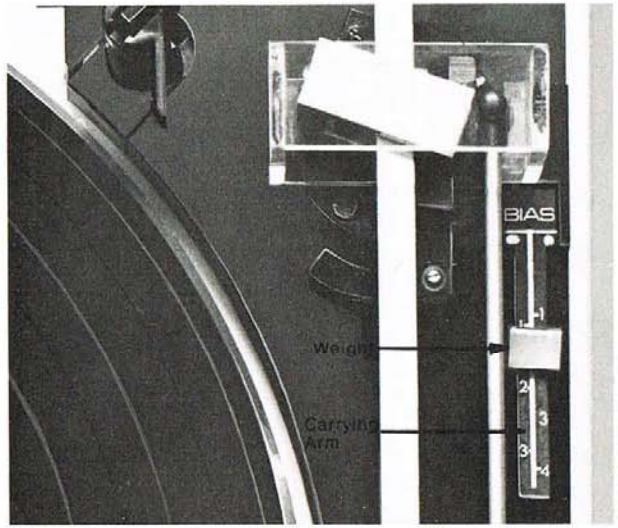


Diagram 14 Setting Tonearm Anti-Skating Device

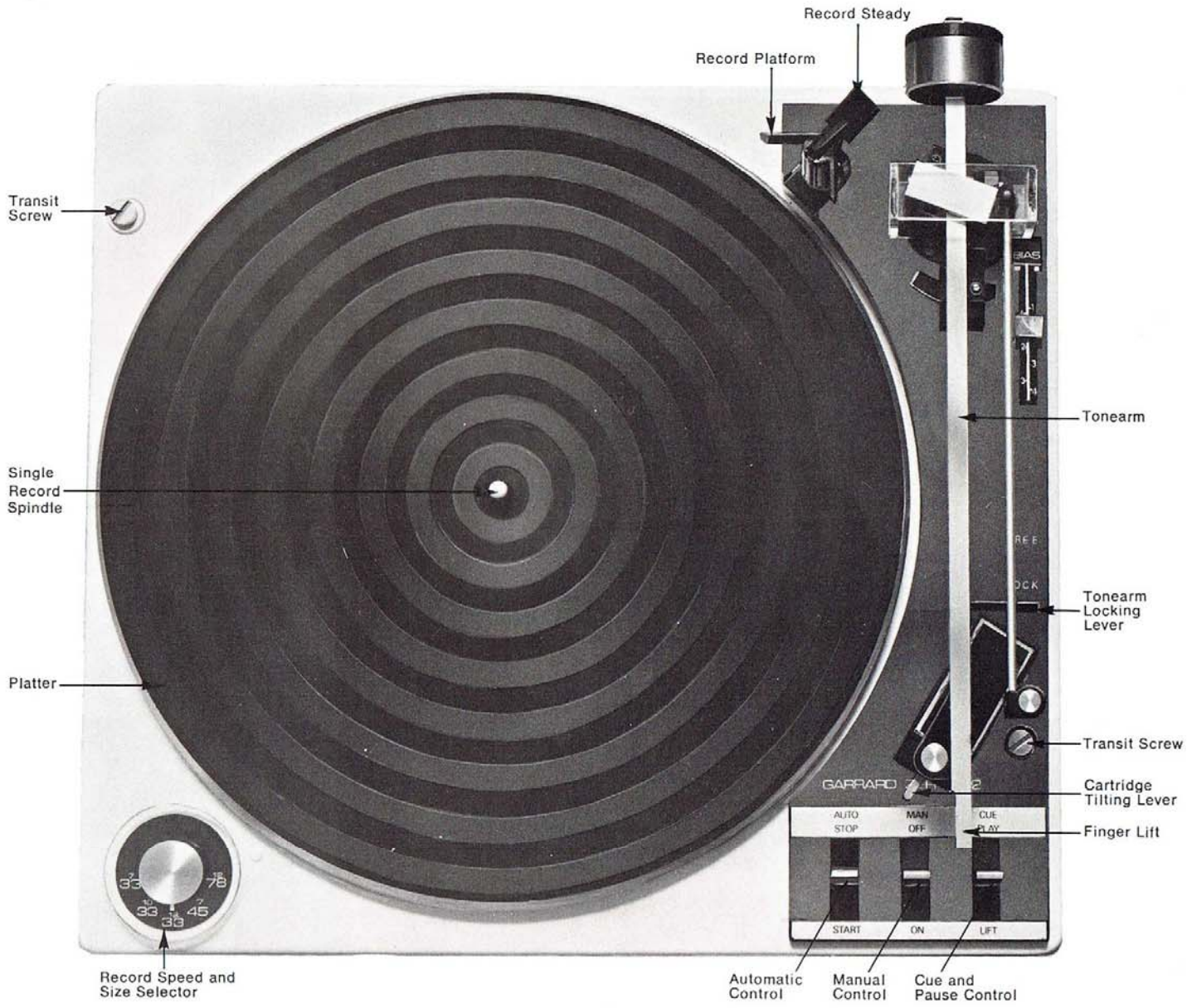


Diagram 15 Operating Features

GENERAL ADVICE

1 Keep the cartridge stylus clean and replace it when worn. Your dealer will give further advice on this.

2 Store and clean records as their manufacturers recommend. Do not leave records on the turntable for long periods after use.

3 Do not switch on unless there is at least one record on the turntable.

4 Do not hold or turn the platter counterclockwise.

5 Always allow the unit to switch itself off, or switch it off manually by one of the operating controls. If the power supply is disconnected during play, the rubber intermediate wheel will remain under pressure and may be deformed after a length of time in this condition.

6 If the cartridge has more than one stylus, make sure that the correct one is presented for the record to be played.

PREPARING THE UNIT FOR USE AFTER TRANSIT

Remove the stylus guard, if one is fitted.

1 Turn both transit screws fully clockwise so that the unit floats freely on its spring mountings.

2 Move the tonearm locking lever to FREE.

3 Check that all three operating tabs are upright.

Reverse instructions 1, 2 and 3 before the unit is transported again.

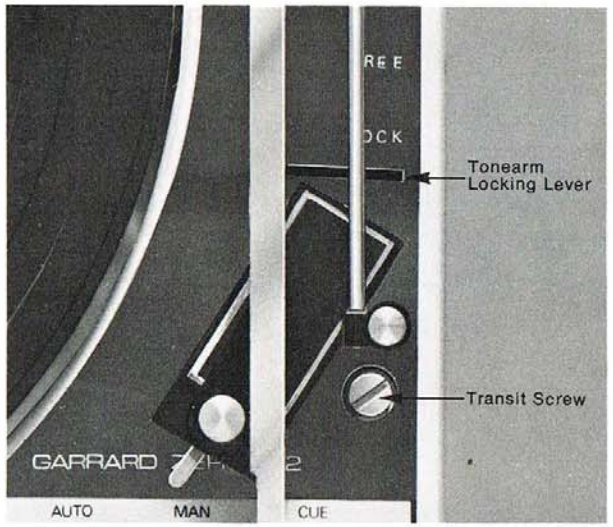


Diagram 16 Transit Screw and Locking Lever

INSTRUCTIONS FOR USE

To play a single record manually

1 Fit the short, single record spindle into the centre of the platter and turn the spindle until it can be pressed down into place.

2 Place a record on the platter, using the adaptor provided if the record has a large centre hole.

3 Set the record speed selector to $33\frac{1}{3}$, 45 or 78 rev/min as required by the record to be played, and the cartridge tilting lever to M.

4 Move the manual operating control tab fully to ON.

5 (a) Lower the tonearm onto the record by hand lifting it at the front of the arm
– or –
(b) Move the cueing control tab to LIFT, then place the tonearm over any desired point on the record and return the control tab towards PLAY to lower the tonearm gently.

After playing the record the tonearm will return to its rest and the unit will switch off.

To play a single record automatically

1 Fit the short, single record spindle and place the record on the platter, using the adaptor provided if the record has a large centre hole.

2 Set the record speed and size selector for the record to be played. For example, 33 12 for a $33\frac{1}{3}$ rev/min 12in record.

3 Set the cartridge tilting lever to M.

4 Move the automatic operating control fully to START and hold it there for a second or two before releasing it. After playing the record the tonearm will return to its rest and the unit will switch off.

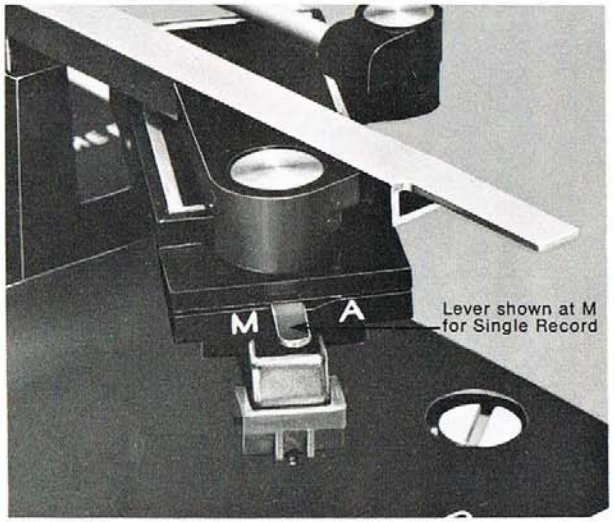


Diagram 17 Cartridge Tilting Lever

To play a stack of records automatically

1 Fit the long automatic record spindle into the centre of the platter and turn the spindle until it can be pressed down to be held in place.

2 (a) **12in records** – load up to six records on to the step of the spindle with the edge of the stack resting on the record platform. Pull the record steady upwards then inwards and release it to return to the top of the records to stabilise them.

(b) **7in records with large centre holes.** Place the LRS100 large record spindle (available from your dealer as an optional extra) over the automatic record spindle and load a stack of up to six 7in records level onto its step.

(c) **7in records with small centre holes.** Use the Garrard Type A6 record platform adaptor. This is an optional extra and is supplied complete with instructions for use.

3 Set the record speed and size selector for the records to be played. For example, set 33 12 for 33⅓ rev/min 12in records.

4 Set the cartridge tilting lever to A.

5 Move the automatic operating control tab fully to START and hold it there for a second or two before releasing it. When the records have all been played the tonearm will return to its rest and the unit will switch off.

6 To unload the records – lift them clear of the record spindle, even if they are to be replayed immediately. When using the LRS100 spindle lift the records with the fingers of both hands while pressing down on the top of the spindle with the thumbs.

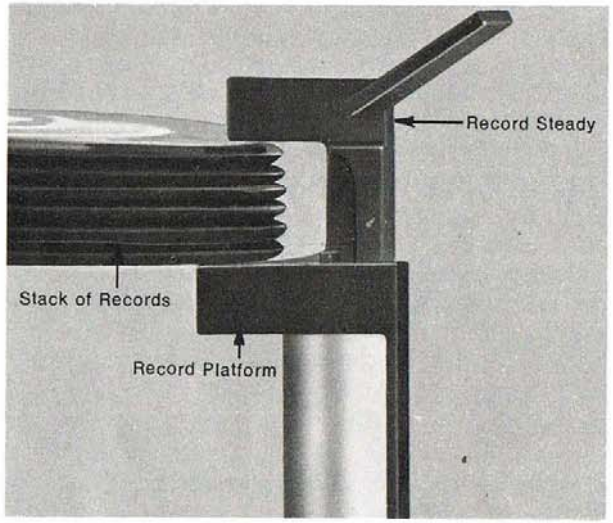


Diagram 18 12in Records on Platform

ADDITIONAL USES OF THE CONTROLS

Cue and Pause

The tonearm can be raised while a record is playing by moving the cue control tab to LIFT, and lowered again by moving it back to PLAY.

This feature is particularly useful for repeating or passing over any passage of music, and to interrupt play (pause) for a short time without switching off.

Repeat

A single record being played automatically, or the last record of a stack, can be replayed by moving the automatic control tab to START before the tonearm lifts at the end of the record.

Reject

Any record of a stack (except the last), can be rejected by moving the automatic control tab to START. To reject a single record or the last of a stack move the tab to STOP.

Stop

While playing a single record, or the last record of a stack, moving the automatic control tab to STOP will return the tonearm to its rest and switch off.

While playing a stack of records this will cause the next record to be lowered before switching off.

To lower the next record and play it, move the control tab to START.

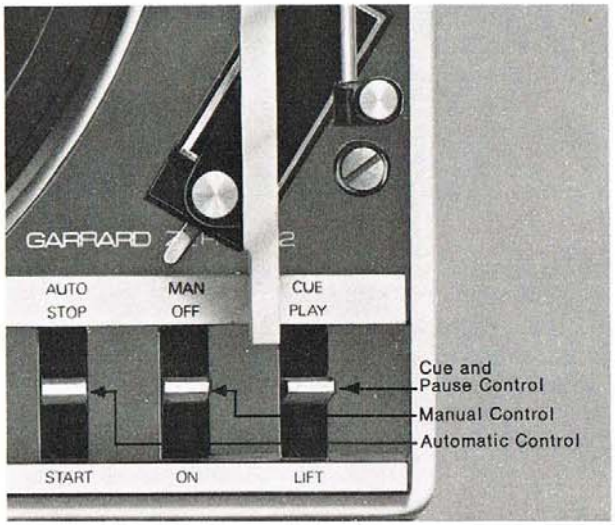


Diagram 19 Controls

LUBRICATION

The bearings of the intermediate wheel and motor are of oil-retaining material and rarely require lubrication. However, when the need is apparent, remove the platter and apply a light oil, of the type used on sewing machines, to the points mentioned below.

TO REMOVE THE PLATTER

Pull out the record spindle, carefully lever up the inside edge of the rubber mat and prise out the plastic centre disc with a small screwdriver. With the same tool, pull off the wire retaining clip (noting its position for reassembly) and lift off the platter by applying equal pressure on opposite sides.

When refitting the platter, turn it clockwise for one revolution as soon as it is on the spindle in order to ease the rubber intermediate wheel back into its proper place.

INTERMEDIATE WHEEL BEARING

Remove the spring clip, plastic washer, intermediate wheel and fibre washer to clean the spindle and bearing before applying a thin smear of oil to their running surfaces and reassembling in reverse order. Make sure that the wheel is pulled freely against the motor pulley when the manual operating control is moved to ON and that it is fully released again when the control is moved to OFF.

Oil must not come into contact with the rubber surface of the wheel.

MOTOR BEARING

Run a drop or two of oil down a long sewing needle (or similar object) onto the motor spindle below the pulley so that it will flow into the top bearing of the motor. This bearing is out of sight below the motor mounting plate. Oil must not come into contact with the motor pulley.

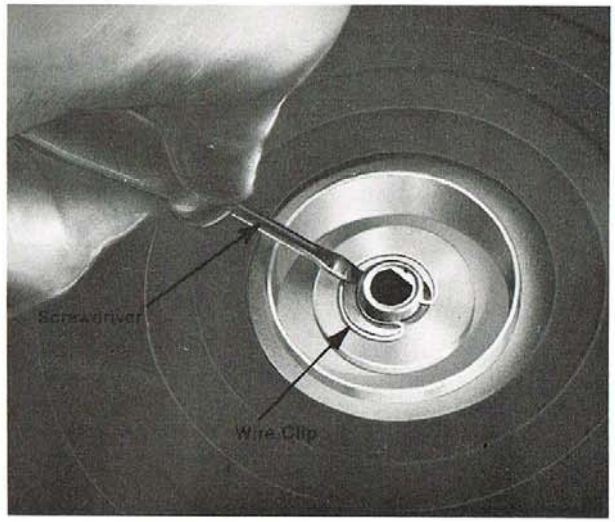


Diagram 20 Removing Platter Retaining Clip

PLATTER BEARING

Apply a thin smear of oil to the inside surface of the platter bearing. Oil must not come into contact with the driving rim.

PLATTER SPINDLE BEARINGS

Apply a thin smear of oil to the spindle and a drop or two of oil to the ball race.

CLEANING

Cartridge Stylus

Keep the cartridge clean by periodically removing its carrier (see page 6) and blowing any accumulated dust off the stylus tip or by gently stroking it away with a very soft brush. Always brush from the back towards the front of the stylus to avoid the risk of bending it.

Platter Mat

Clean this with a soft brush when necessary.

Platter Drive Mechanism

After a long period of use it may be found worthwhile to wipe the driving surfaces of the motor pulley, intermediate wheel and platter rim with a clean lint-free cloth.

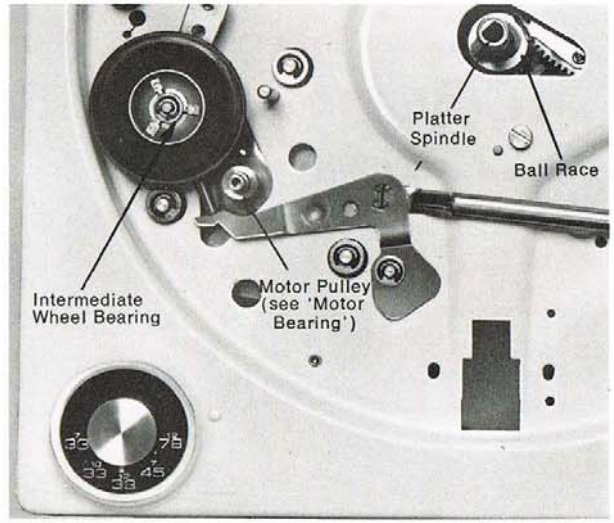


Diagram 21 Lubrication Points

Symptom	Probable cause	Remedy
Unit fails to start.	No power supply to motor.	Check that power supply is in order. Check lead connections. If necessary, clean switch blades and connections. Make certain that the plug-in motor leads are secure.
Speed consistently fast or slow.	Incorrect motor pulley.	Pulley for 60 Hertz power supply is plain brass. A 50 Hertz pulley has a groove in its base.
Speed variation (Wow or Flutter)	Warped record when playing a stack. Grease or oil on driving surfaces. Drive mechanism requires lubrication.	Play singly or stick a small square of adhesive tape on record label to improve drive. Wipe with a clean lint-free cloth. Lubricate in accordance with instructions (page 12).
No sound.	Incorrect or defective cabling. Defective pickup cartridge.	Check cabling to instructions on pages 5 and 7. Replace cartridge.
Low humming sound.	Ground lead disconnected.	Check cabling.
Distorted sound.	Worn, damaged or incorrect stylus. Dust on records or stylus affected by fluff. Cartridge out of position.	Replace stylus. Check stylus force. Handle and clean records as recommended by the makers. Carefully remove any dust or fluff build-up from around the stylus. Check its position with setting gauge (page 7).
Tonearm lowers in incorrect position.	Pickup stylus out of position. Lowering mechanism out of adjustment.	Reset or replace stylus. Adjust lowering position in accordance with instructions (page 14).
Tonearm lifts too high or not high enough.	Tonearm lifting height out of adjustment.	Adjust height in accordance with instructions (page 14).
Tonearm will not lower onto record at any time.	Stylus force too low.	Adjust settings of counterbalance weight and pickup stylus force in accordance with instructions (page 8).
Tonearm will not lower for automatic use after manual play.	Cue control is at 'LIFT'.	Move control back to 'PLAY'.
Tonearm will not rise from its rest.	Tonearm height restrictor out of adjustment. Arm locked to its rest.	Adjust according to instructions (page 14). Move locking lever to 'FREE'.

ADJUSTMENTS

All adjustments are set during manufacture, except stylus force, and should only need to be reset in exceptional circumstances.

Setting checks will be simplified if the power supply is switched off, the automatic operating control moved fully to START and the platter rotated clockwise by hand so that the tonearm moves slowly and can be stopped in a convenient position for measurement.

TONEARM LOWERING POSITION

A minor adjustment may be necessary to make certain that the stylus tip lands inside the raised rim of the groove guard to be found on many records. While the tonearm is on its rest, use a small screwdriver to turn the adjusting screw A clockwise to move the lowering position inward and counterclockwise to move it outward.

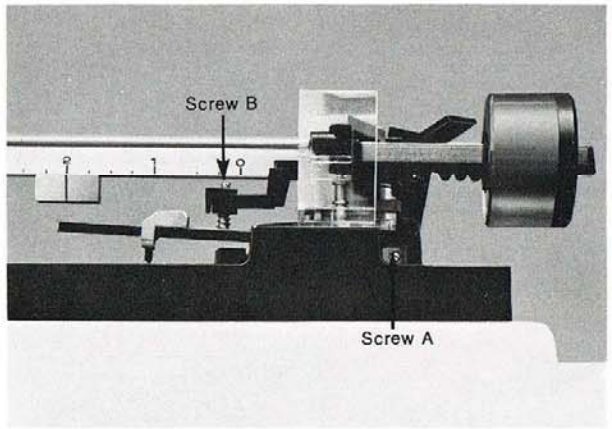


Diagram 22 Tonearm Adjusting Screws

TONEARM LIFTING HEIGHT

When the tonearm returns to its rest after rising at the end of a record, the top of the finger lift should be $1\frac{13}{16}$in (46mm) above the top face of one record on the platter.

If lifting height is to be increased, first turn screw C counterclockwise to reduce restriction.

Turn the adjusting screw B (diagram 22) clockwise to increase and counterclockwise to reduce lifting height.

Finally, check the setting of tonearm lifting height restriction.

TONEARM LIFTING HEIGHT RESTRICTION

The restrictor should prevent the tonearm from rising more than $\frac{1}{16}$in (1.5mm) higher than the setting referred to in the previous paragraph.

Use a small screwdriver to turn the adjusting screw C (diagram 23) clockwise to increase and counterclockwise to reduce restriction.

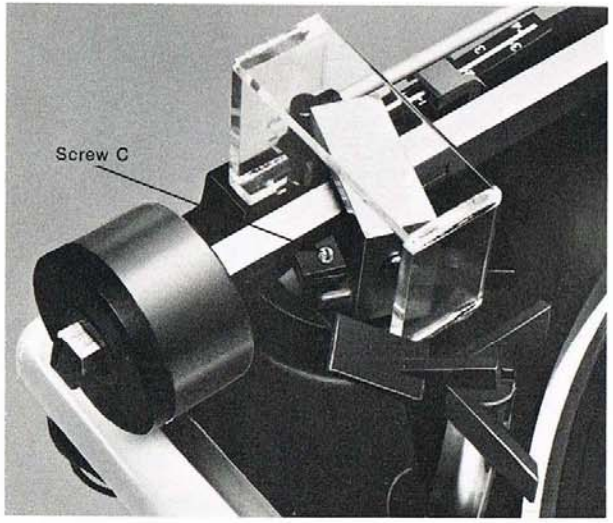


Diagram 23 Tonearm Height Restrictor

When ordering spare parts, for positive identification of your unit please quote all the information printed on the paper label underneath the unit plate or on the outside of the packing carton. Also the part number (if listed) and the colour, or voltage and power supply frequency where appropriate.

Please address service and spares enquiries to your dealer or, in case of difficulty, to the Garrard agent in your country.

The address of the Garrard Sales Service Department in the United Kingdom is Kembrey Street, Swindon, Wiltshire SN2 6BP, England. Their telephone number is Swindon 6211.

SELECTED SPARE PARTS LIST

Description of Part	Part Number
Automatic Record Spindle	72340
Single Record Spindle	74773
Large Centre Hole Record Adaptor ...	72698
Tonearm Counterbalance Weight ...	76640
Slide-in Cartridge Carrier, Type C.3A	75149
Kit of Parts to fix Pickup Cartridge	59048/091
Setting Gauge for Cartridge	75291
Platter Retaining Clip	43857
Platter complete with Mat	76642
Intermediate Wheel	75625
Damping Pad for Mounting Spring ...	71084
Synchronous Motor (state voltage) ...	60810
Motor Pulley (60Hz)	60847
Motor Pulley (50Hz)	60848
Transit Screw (2 per set)	77177
Clip for Transit Screw (2 per set) ...	43855

FITTING A NEW MOTOR PULLEY

In order to ensure concentricity of the pulley on the motor spindle, these are a close fit. If this results in the pulley being difficult to lift off after both fixing screws have been slackened, gently heat the base of the pulley with a clean soldering iron for a short time. This will expand the pulley sufficiently to assist its removal. The new pulley can be heated in the same way, or by placing it on an electric hot-plate for a few minutes, to assist assembly. Retighten both fixing screws equally. The pulley should be pressed onto the motor spindle until the intermediate wheel runs on the centre of each pulley step.

Printed in England Part No. 77238 Issue 3

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