

Garrard

MODEL AP76

instruction manual

Garrard

MODEL AP76 single record playing transcription unit
with facility for automatic play of single records

Garrard Engineering Limited, Swindon, Wiltshire



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introduction

The Garrard Model AP76 is a transcription quality 3-speed (78, 45 and $33\frac{1}{3}$ rev/min) single record playing unit, which features automatic set-down of the pickup arm when required. Operation is controlled by tabs grouped conveniently at the front of the unit.

It is suitable for use with power supplies of 100/130 or 200/250 volts AC and 50Hz or 60Hz, depending on the size

of the motor pulley fitted. Power consumption is approximately 8 watts.

This Garrard unit requires the minimum of attention but, if you need advice not provided by this manual, please contact your dealer or write to our Technical Service Department. Here are brief descriptions of some special features of your unit:—

The Pickup Arm

The tubular arm with its bias compensator (calibrated for spherical and elliptical styli) is counterbalanced by a decoupled weight.

Stylus force is easily set using the built-in gauge.

Almost any modern pickup cartridge requiring a stylus force of 1 gramme or more can be fitted to the slide-in carrier.

The arm can be lowered steadily on to a record, using the fluid-damped 'cue and pause' facility, under either manual or automatic control. It can also be lowered directly by hand. After playing a record the arm will return to its rest and the unit will switch off.

The Turntable

A large diameter turntable with precision-finished, oil-retaining bearings contribute to smooth running and long life.

For minimum record wear, the record spindle rotates with the turntable.

The Motor

The Garrard 4-pole induction motor is resiliently suspended. It drives the turntable at a steady speed by way of a rubber wheel which is protected by being retracted when not in use.

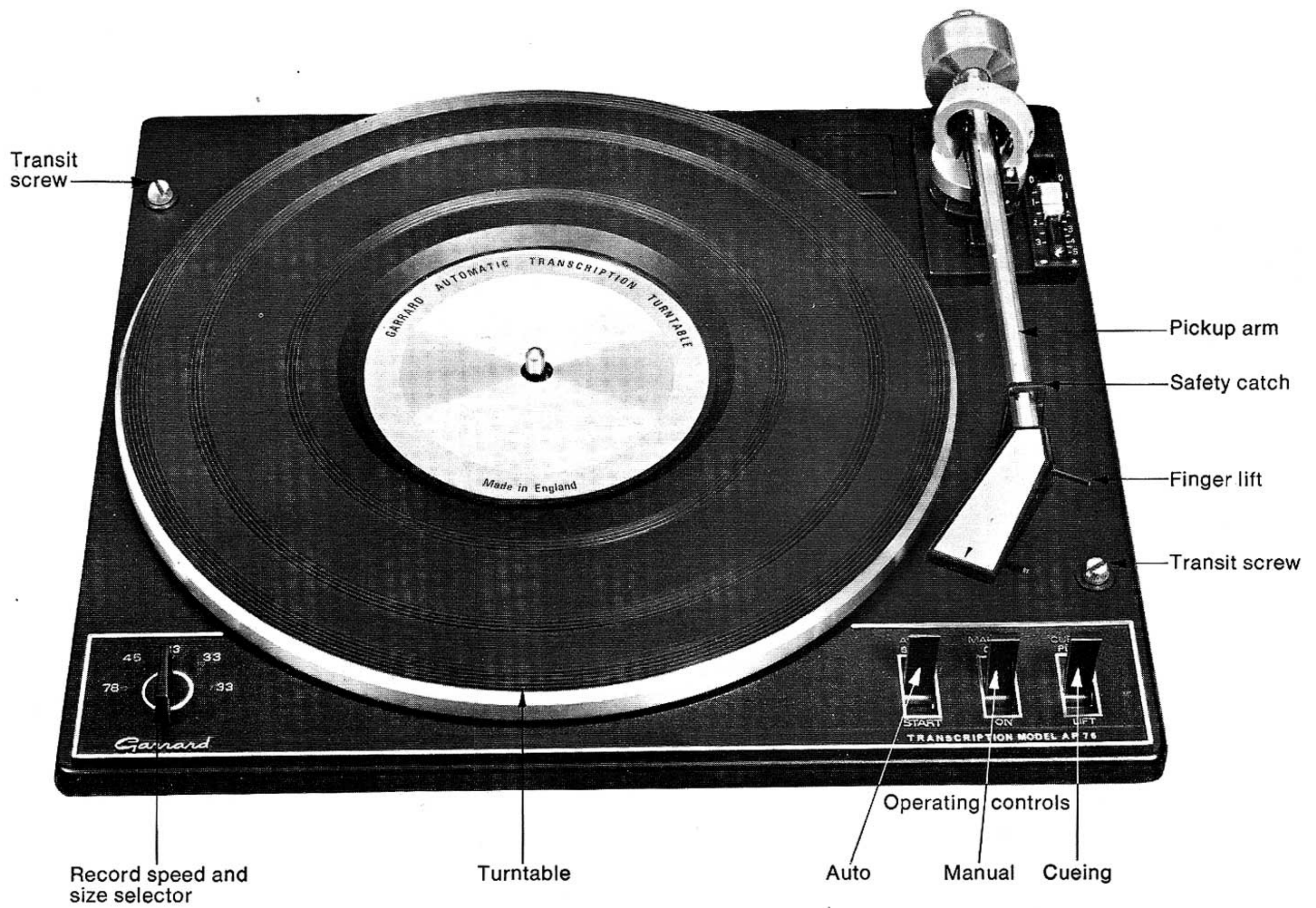


Diagram 1 View of AP76 showing parts referred to in 'Operating Instructions'

instructions for use

Before use:

- 1 Check that both transit screws are turned fully clockwise so that the unit floats freely on its mounting springs.
- 2 Unclip the pickup arm from its rest by releasing the safety catch and remove the stylus guard, if one is fitted.
- 3 All operating control tabs are in the vertical position when the unit is switched off.

(b) Cueing Operation

Move the CUEING control to 'LIFT', align the pickup over the record at the point where it is desired to commence play, then return the control to 'PLAY', when the pickup will be lowered on to the record, or;

(c) Automatic Operation

Check that the record speed and size selector control is set correctly for the record to be played, then move the AUTO control to 'START'. The pickup will automatically lower at the beginning of the record.

operating instructions

- 1 Check that the correct stylus is in position, and that the record speed selector setting is correct for the record to be played. Proceed as follows:—

(a) Manual Operation

Place a record on turntable, move the MANUAL control to 'ON' and place the pickup on the record by means of the finger lift or;

2 Cue and Pause Operation

To raise the pickup from the record during play, move the CUEING control to 'LIFT'. To resume playing, return the control to 'PLAY'.

This facility will be found useful for selecting any passage on a record, or for interrupting play (pausing) without switching off.

The pickup will automatically return to its rest and the unit switch off, after the record has been played.

3 Stop

To stop a record, move the AUTO control to 'STOP' while it is playing. The pickup arm will then return to its rest and the unit switch off.

4 Repeat

A record will be automatically replayed from the beginning if the AUTO control is moved to 'START' while it is playing.

installation

These instructions can be disregarded if the record playing unit is already installed.

1 **Prepare the mounting board**, using the template provided.

2 **Make the following wiring connections:**

(a) **AMPLIFIER:** For stereo reproduction from a stereo cartridge, solder two screened pickup leads to the tags on the back of the audio connector, as shown on diagram 2, or plug two phono leads (optional extras – see Spare Parts List on page 12) into the right-hand channel socket marked R and the left-hand channel socket marked L. For mono reproduction from a mono cartridge, use the right-hand channel only. For mono reproduction from a stereo cartridge, parallel both channels by connecting one short-circuiting wire link between the red and white and another between the black (or blue) and green leads.

caution: Before connecting to an amplifier check that its chassis and wiring are isolated from the power supply. If in doubt, consult your dealer concerning suitable isolating components.

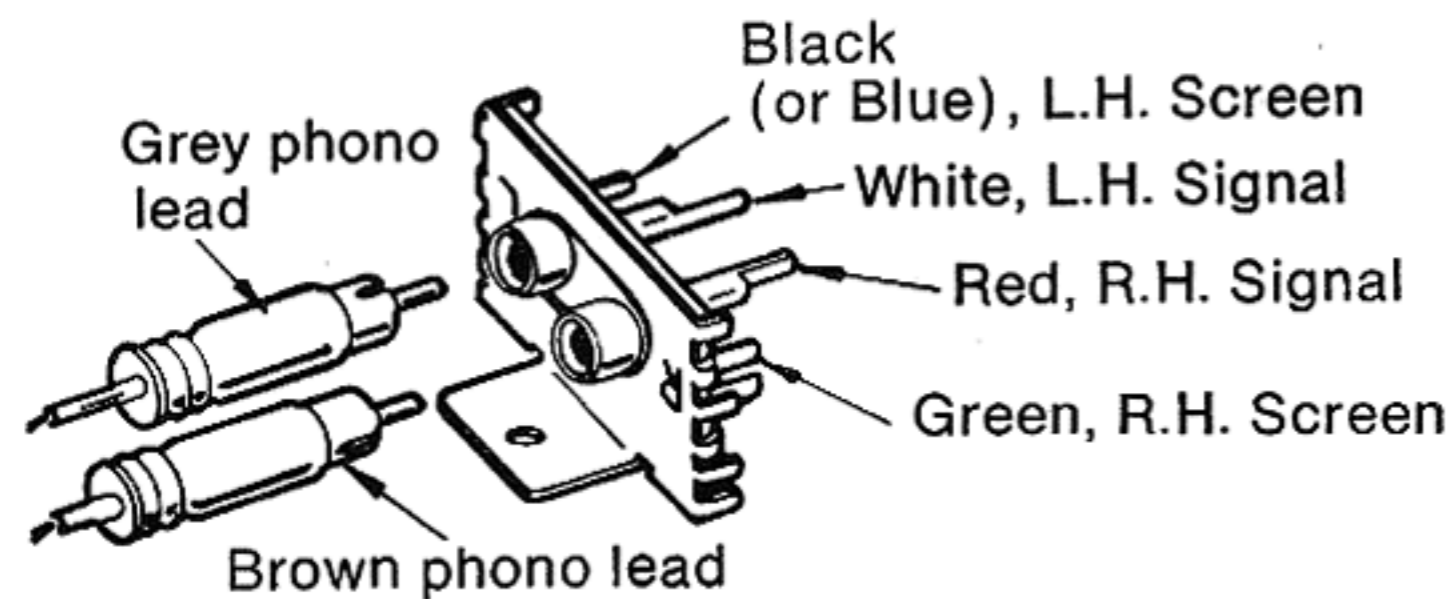


Diagram 2 Pickup lead connections (two methods)

(b) **POWER SUPPLY AND EARTH:** Attach a 3-core flexible power supply lead to the two terminals inside the connecting block (blue wire to screw 'N' and brown wire to screw 'L'), then set the links for the supply voltage as shown on diagram 3.

The green/yellow wire is used for earthing by attaching it securely between the two brass washers on the earth terminal screw (see diagram 4).

note: Power supply voltage and frequency details are shown on the side of the motor.

Both links set for high voltage range Links set for low voltage range

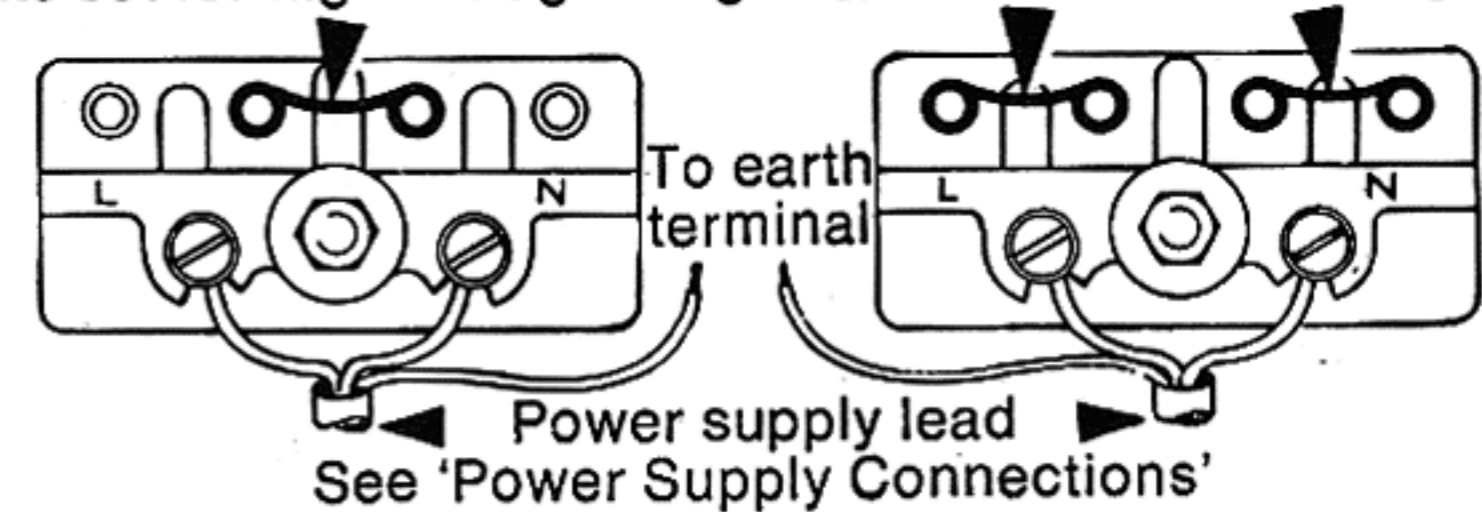


Diagram 3 Power supply lead connecting block

3 **Turn both transit screws fully clockwise.** Check that the spring clips are vertical, then assemble the record playing unit to the mounting board. Transit screws must pass through their holes and the mounting springs (with plastic foam damping pads inside) locate in recesses in the board. Turn both transit screw clips horizontal, check that all leads are clear of obstructions and that the unit floats freely on its mounting springs.

4 **Connect the leads** to amplifier, earth and power supply respectively, leaving them slack. The earth connection can be the third pin in your power supply plug.

5 **Set stylus force** (see 'Adjustments' section).

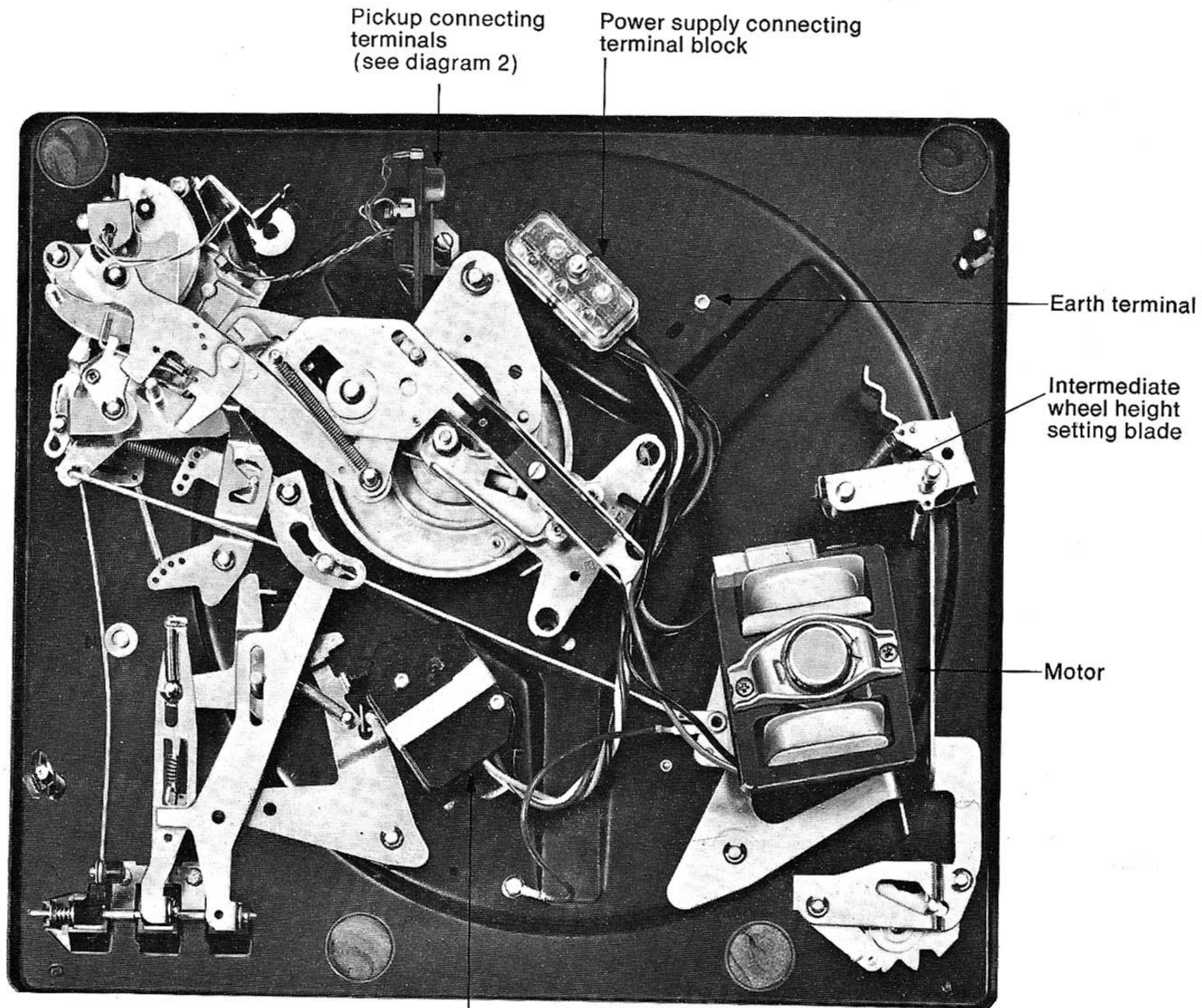
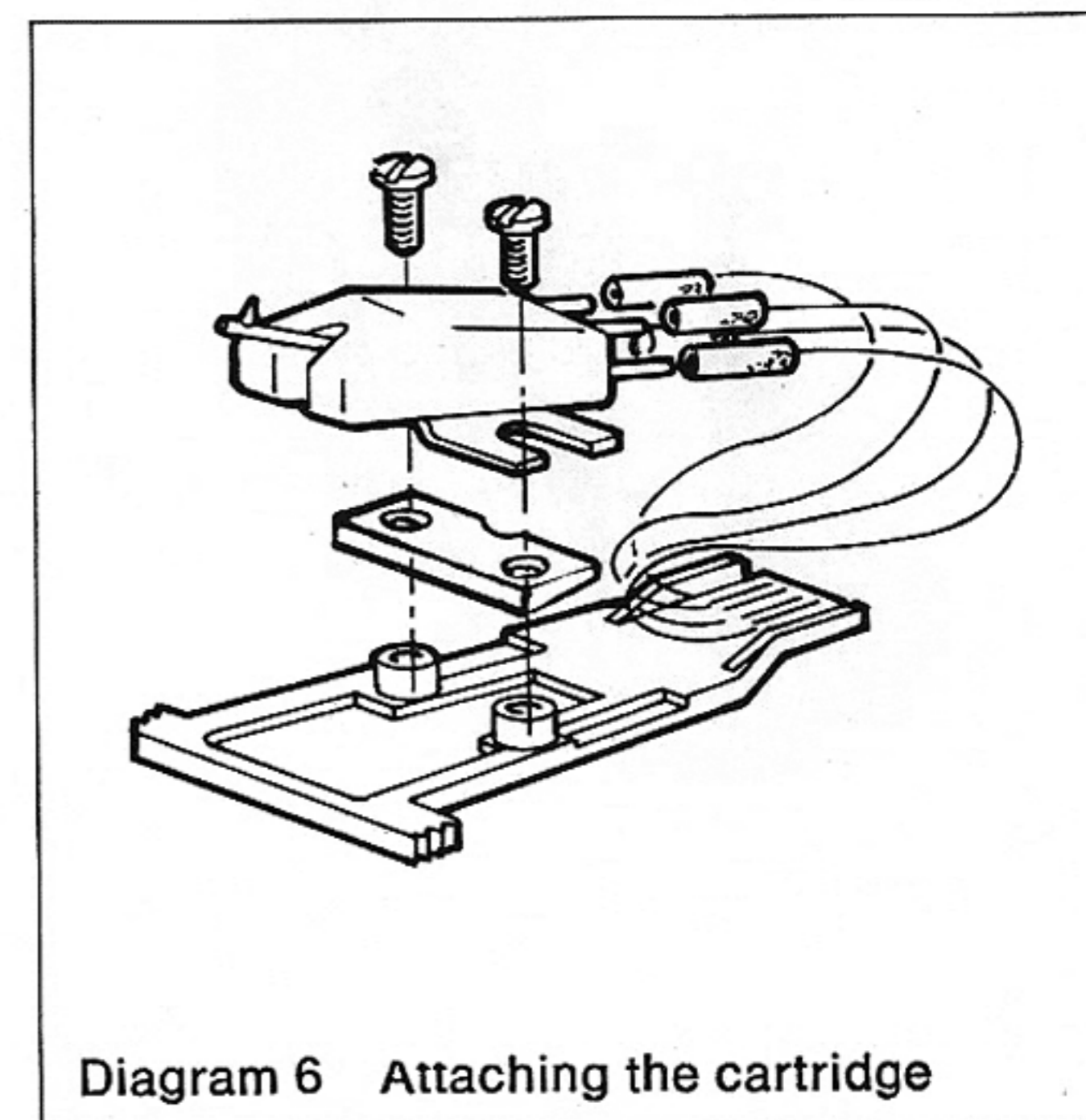
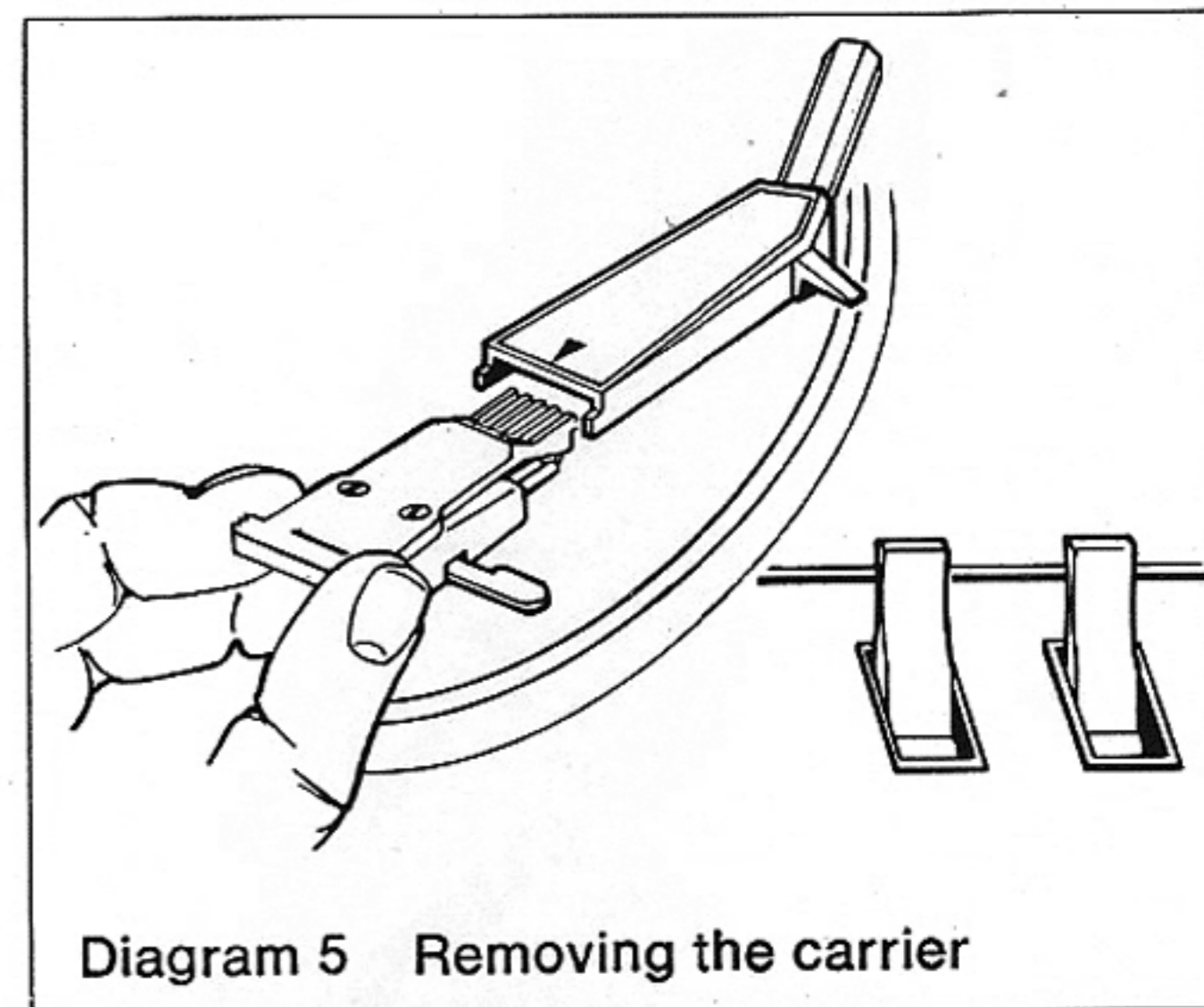


Diagram 4 Underside view of AP76

fitting the pickup cartridge

- 1 Unclip the pickup arm from its rest, hold it about $\frac{1}{2}$ in above the rest with one hand and withdraw the slide-in cartridge carrier with the other, in the manner shown on diagram 5. Hold the arm in the same way when refitting the carrier.
- 2 Secure the cartridge to its carrier using the screws and the cartridge tilting wedge, deeper edge forward (see diagram 6). A weight is available which fits next to the carrier to help balance extra-light cartridges.
- 3 Attach the leads to the cartridge output terminals in accordance with its manufacturer's instructions and the following colour code:
Red to right-hand channel
Green to right-hand channel 'earthy' connection
White to left-hand channel
Blue to left-hand channel 'earthy' connection
If the cartridge has three output pins or tags use the green lead, or the green and blue leads connected together, as common. Insulate and tuck away any unused lead.
If a mono cartridge is fitted, use the right-hand channel wiring only.
note: Do not solder leads directly to the cartridge as the heat could cause severe damage: use the tags supplied with it.
- 4 Replace the slide-in cartridge carrier into the front of the pickup arm and push it until a slight 'click' is felt.
- 5 Check and, if necessary, reset the following in accordance with the instructions under the heading 'Adjustments' on page 9: (a) stylus force, (b) pickup lowering position, (c) pickup lifting height, and (d) pickup lifting height restriction.



adjustments

Stylus Force:

To counterbalance the pickup arm turn the adjusting screw (A) so that the pointer (B) indicates 0 on scale. With the pickup arm off its rest and free to pivot, turn the counterbalance weight (C) until the pickup arm balances with the stylus tip at the height of the top face of one record on the turntable. Return the arm to its rest and secure it with the safety catch. Apply the stylus force recommended by the maker of the cartridge fitted by turning the screw (A) until the pointer shows the required force on the scale. Graduations on the stylus force scale represent 0 to 5 grammes.

Pickup Arm Bias Compensator:

After setting stylus force, slide the bias compensator weight (D) up or down its carrying arm until the calibration line is against the number corresponding to the stylus force in grammes.

In order to satisfy the different operating requirements of cartridges with spherical or elliptical styli, two scales for setting the bias compensator weight are provided.

The scale for cartridges with spherical styli is marked ●, and the scale for elliptical styli is marked ○. Both scales represent grammes of stylus force.

Pickup Lowering Position:

This setting governs the position at which the pickup is lowered automatically on to the record. Turn screw (E) clockwise to move the lowering position inwards or counterclockwise to move it outwards.

Pickup Lifting Height:

This setting governs the height to which the pickup arm rises automatically. There should be $\frac{3}{4}$ in (19mm) between the stylus tip and the top face of a record on the turntable as the pickup returns to its rest. Turn the adjusting screw (F)

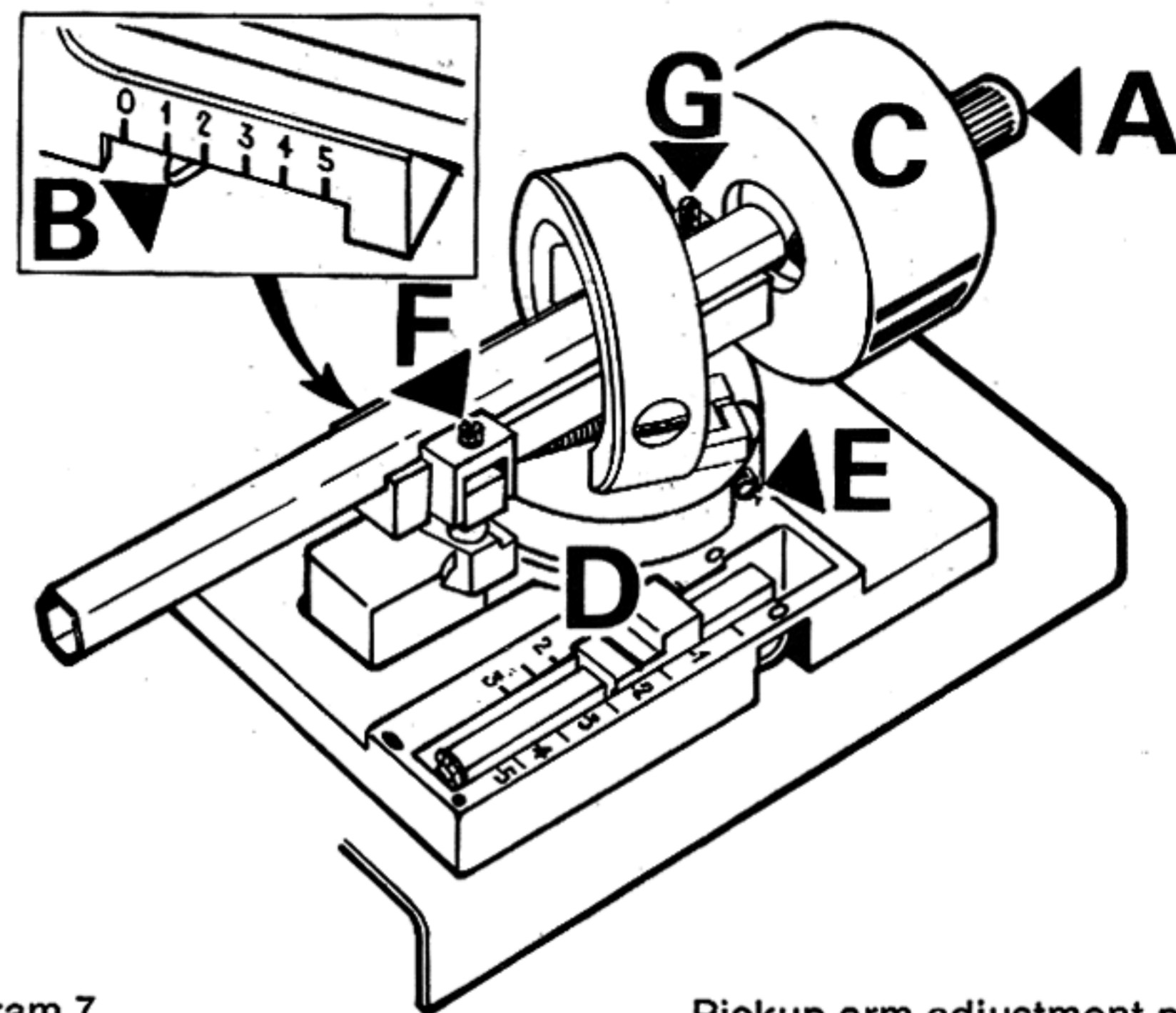


Diagram 7

Pickup arm adjustment points

clockwise to increase or counterclockwise to decrease this height.

Pickup Lifting Height Restriction:

This setting prevents the pickup arm from rising higher than the pickup lifting height described in the previous paragraph. Turn the adjusting screw (G) clockwise to increase or counterclockwise to decrease restriction.

Motor:

The AP76 has a motor suitable for 100/130 and 200/250 volts AC with a combined voltage changeover and power supply connecting block.

Two interchangeable motor pulleys are available, for 50Hz and 60Hz supplies. (See 'Speed' section).

If the turntable fails to start when the unit is switched on and

adjustments (continued)

the power supply is in order, disconnect the supply, take off the nut holding the cover of the voltage changeover block (see diagram 4) and remove the cover. Check that both wire links and the power supply lead make good contact with the studs and terminal screws respectively.

Speed:

If the turntable runs slow or fast, the motor pulley (see diagram 8) may be incorrect for the power supply frequency. The pulley is identifiable by the diameter of its base: for 50Hz this is smaller than the 78 rev/min step and for 60Hz it is larger. To fit another pulley, remove the turntable (see 'Maintenance'), loosen both small screws in the pulley and lift it off. If it does not lift easily, apply gentle heat to the base of the pulley with a clean soldering iron to expand it. The new pulley may need similar treatment to ensure a perfect fit. Retighten both screws equally.

The intermediate wheel (see diagram 8) should run approximately in the centre of each pulley step and not overhang or rub an adjacent step. To alter the height of the wheel, raise or lower the blue spring steel setting blade (see diagram 4).

Pickup Tracking:

If the pickup fails to track the record, check that radius of the stylus tip is correct for the type of record being played and that it is free from accumulated dust. The stylus should be microscopically examined by your dealer at regular intervals and a new stylus fitted as soon as necessary. Make sure that the stylus force is not lower than 1 gramme or that specified by the manufacturer of the cartridge, whichever is higher, and that the pickup leads are not pulled tight or trapped beneath the unit plate. Check for free movement of the pickup arm and its bias compensator.

maintenance

Before carrying out any adjustment always disconnect the power supply to the unit and protect the pickup stylus; if necessary, move the AUTO control to START and rotate the turntable clockwise by hand to actuate the mechanism.

Lubrication:

When the need is apparent, apply a spot of fine-grade machine oil to the oil-retaining bearings of the motor, turntable and rubber intermediate wheel. When applying oil, take care that none comes into contact with any driving surface, or turntable speed may be affected. Do not oil the cueing mechanism: its movement is controlled by special damping fluid which is sealed in during manufacture.

To remove the Turntable:

The turntable mat may be of the stick-down type in which case its centre disc can be carefully lifted from the location groove in the mat for access to the turntable retaining clip. Alternatively the turntable mat may be held only by a few strips of adhesive tape used for transit purposes and the mat (with its stick-down centre disc) can be removed. Slide off the spring clip retaining the turntable, noting its location for re-assembly, and lift the turntable clear. When refitting the turntable, rotate it clockwise slowly by hand, to move the intermediate wheel aside.

To remove the Slide-in Cartridge Carrier:

Follow the instructions in paragraphs 1 and 5 under the heading 'Fitting the Pickup Cartridge' on page 8.

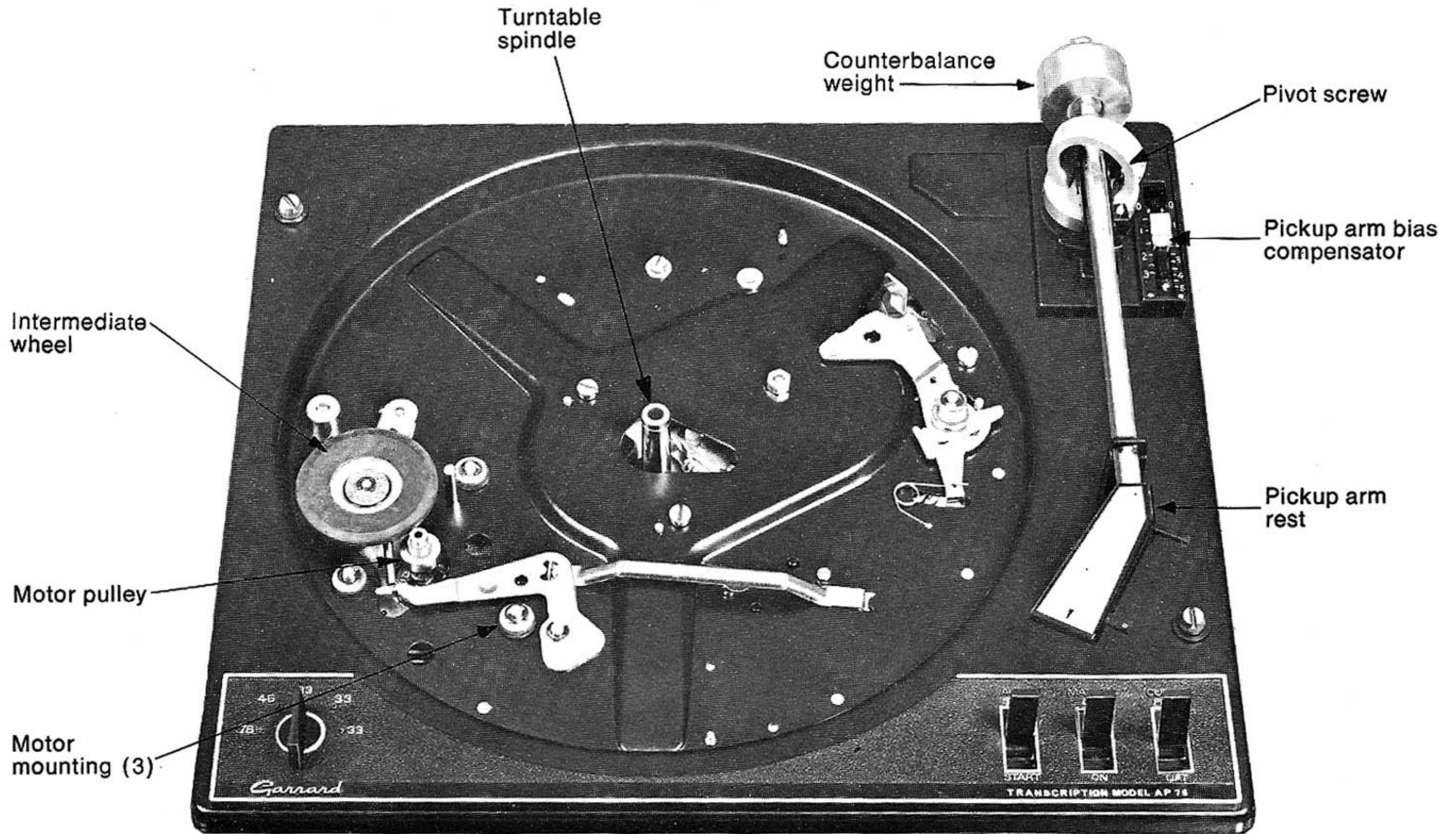


Diagram 8 View of AP76 with turntable removed

spare parts and accessories

For service information or spare parts please contact your Garrard overseas agent or dealer or our Sales Service Department at Kembrey Street, Swindon, Wiltshire. (Telephone: Swindon 6211). When ordering parts please quote Model AP76, the description of the part required, its part number and, if the part is enamelled or moulded, its colour. If the code number on the coloured label beneath the unit plate is also quoted, the correct part will be supplied.

<u>Description</u>	<u>Part No.</u>
Turntable	74823
Mat, for turntable	73308
Spring clip, to retain turntable	00431/028
Slide-in Cartridge Carrier	C2
Pickup arm	74388
Rest, for pickup arm	74425
Counterbalance weight for pickup arm	74402
Pivot screw, for pickup arm	74407
Bias Compensator, for pickup arm	74803

<u>Description</u>	<u>Part No.</u>
Stylus Force Spring, for pickup arm	44440
Intermediate Wheel	58220
Motor Pulley, 50Hz	60874
Motor Pulley, 60Hz	60872
Motor (State Voltage)	60660
Plug-in motor lead, with switch (state number on tape around switch)	60365
Rubber Mountings, for motor (3)	43129

Optional extras

Adaptor for records with a large centre hole	72698
Coaxial Audio Lead 4ft long with 2 phono plugs	
Grey for left-hand channel	59028
Brown for right-hand channel	59029
Wood Mounting Base	WB4 Mk II
Dust cover for Mounting Base (rigid transparent plastic)	SPC4 Mk II

The AP76 can be played with this cover in position.

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Telephone Swindon 5381

Garrard



A Plessey Quality Product

Printed in England

Part No. 74839

Issue 5

REPLACEMENT PICK-UP CARTRIDGES

- 5 MX Mono Crystal Cartridge (Medium Output)
- 7 MX Mono Crystal Cartridge (High Output)
- 2 SX Stereo Crystal Cartridge
- 5 MB Mono Ceramic Cartridge
- 2 SB Stereo Ceramic Cartridge

MOUNTING BRACKETS

In their standard form the Cartridges in this range are fitted with Mounting Brackets to internationally accepted standards and can therefore, be used for general replacement purposes for fitment to most types of Pick-up Arms.

This pack contains spacers, screws, etc. that may be required. To carry out fitment of the Cartridge it should be carefully 'unclipped' from its Mounting Bracket—the Mounting Bracket should then be fitted to the Pick-up Arm. Connect the Pick-up Arm leads to the Cartridge pins and then 'clip' the Cartridge into its Mounting Bracket.

In carrying out this operation care should be taken to avoid damaging the stylus.

IMPORTANT:

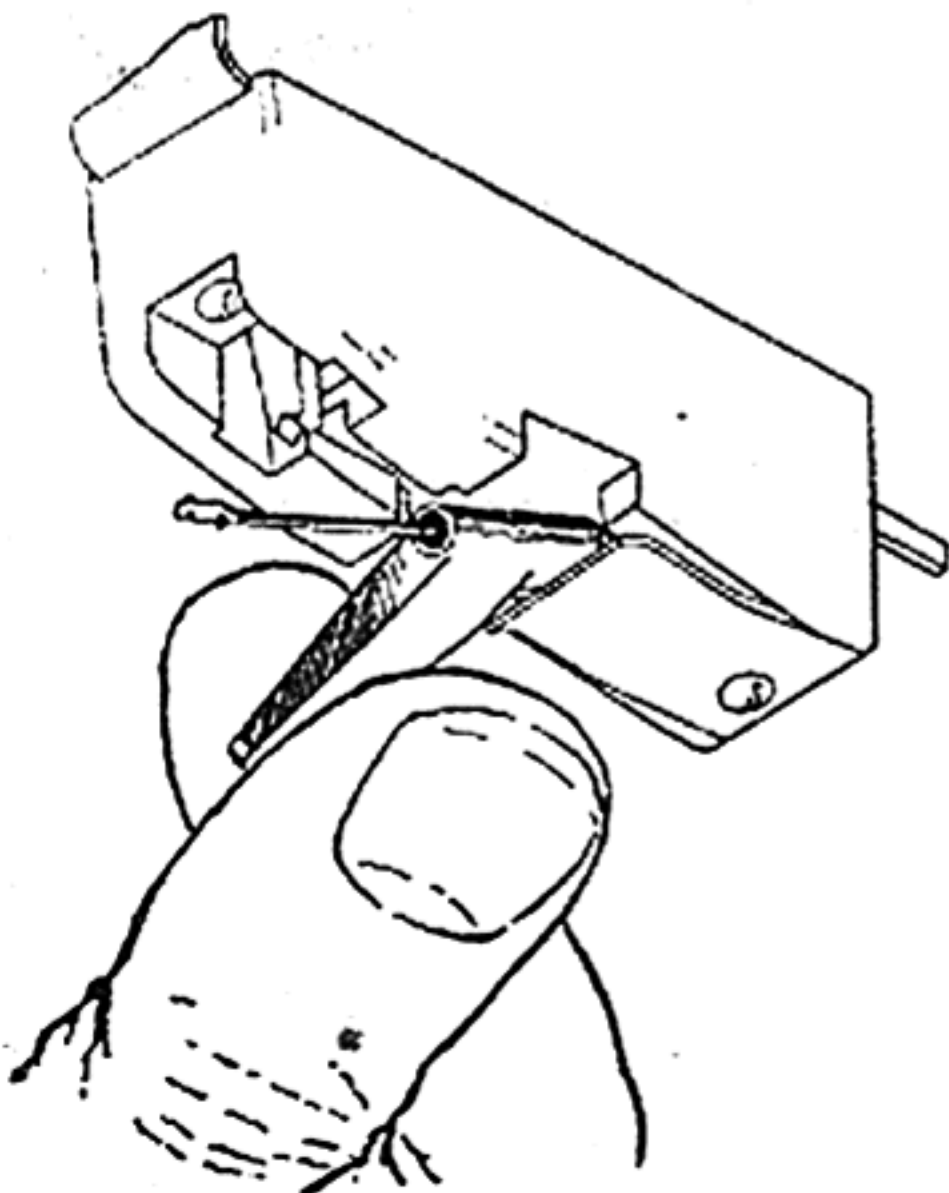
DO NOT SOLDER PICK-UP ARM LEADS DIRECTLY TO THE CARTRIDGE PINS. In most cases, the tags on the leads in the Pick-up Arm will 'slide' directly on to the Cartridge pins but if this is not the case, suitable tags are packed with the Cartridge. These should be soldered to the leads and then connected to the Cartridge.

STYLUS REPLACEMENT

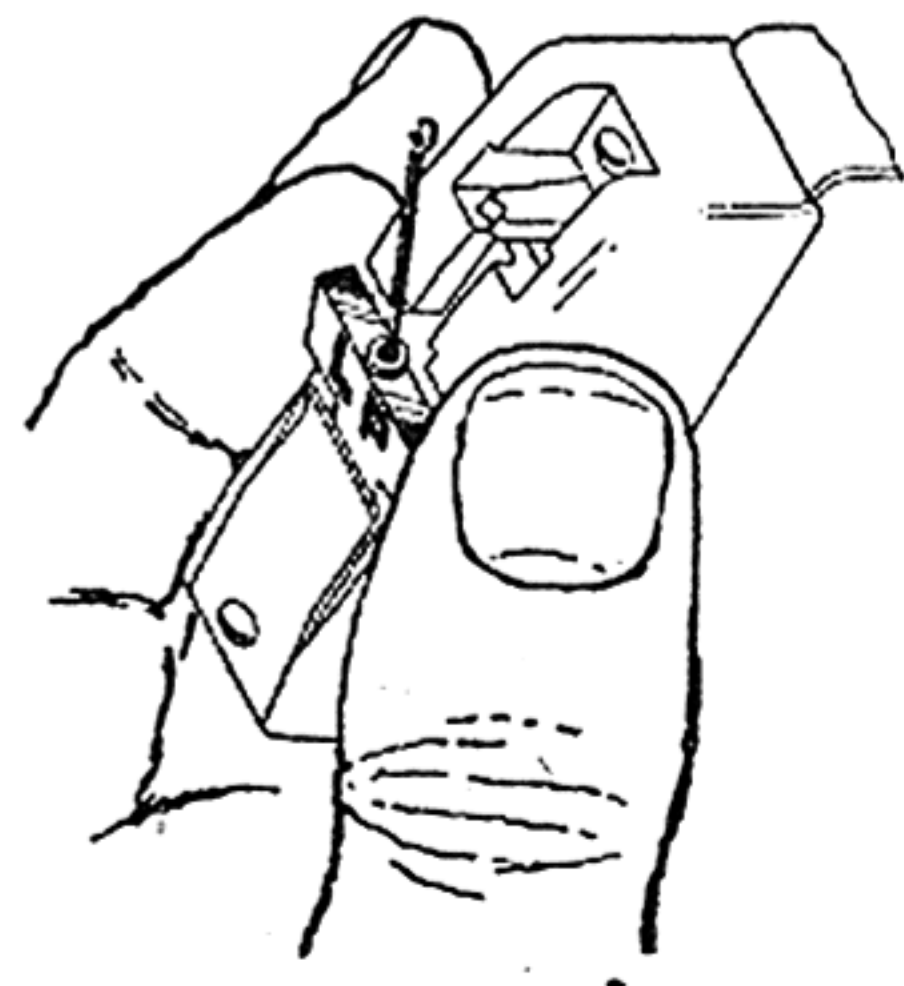
An important feature of the range is the extreme simplicity with which the stylus can be changed—it simply 'clips' into position. This should be carried out as shown in the diagram below ensuring that the stylus carrier is located in the plastic 'driver' member.

It is advisable to replace the Stylus periodically in order to obtain the best results from your records and to avoid the possibility of damage. The Stylus code number is shown on the turnover lever.

TURNOVER STYLUS
(LP-Stereo/78)



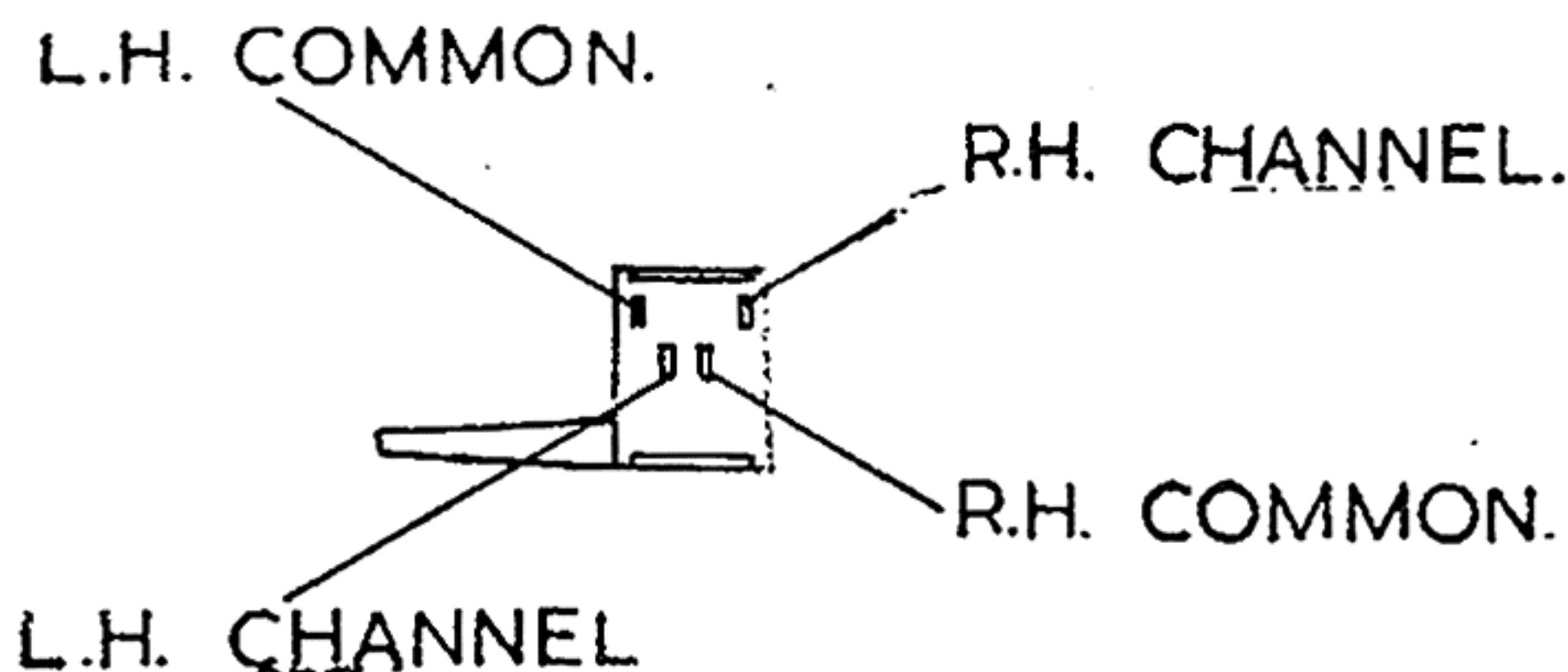
SINGLE STYLUS
(LP-Stereo)



TECHNICAL SPECIFICATIONS

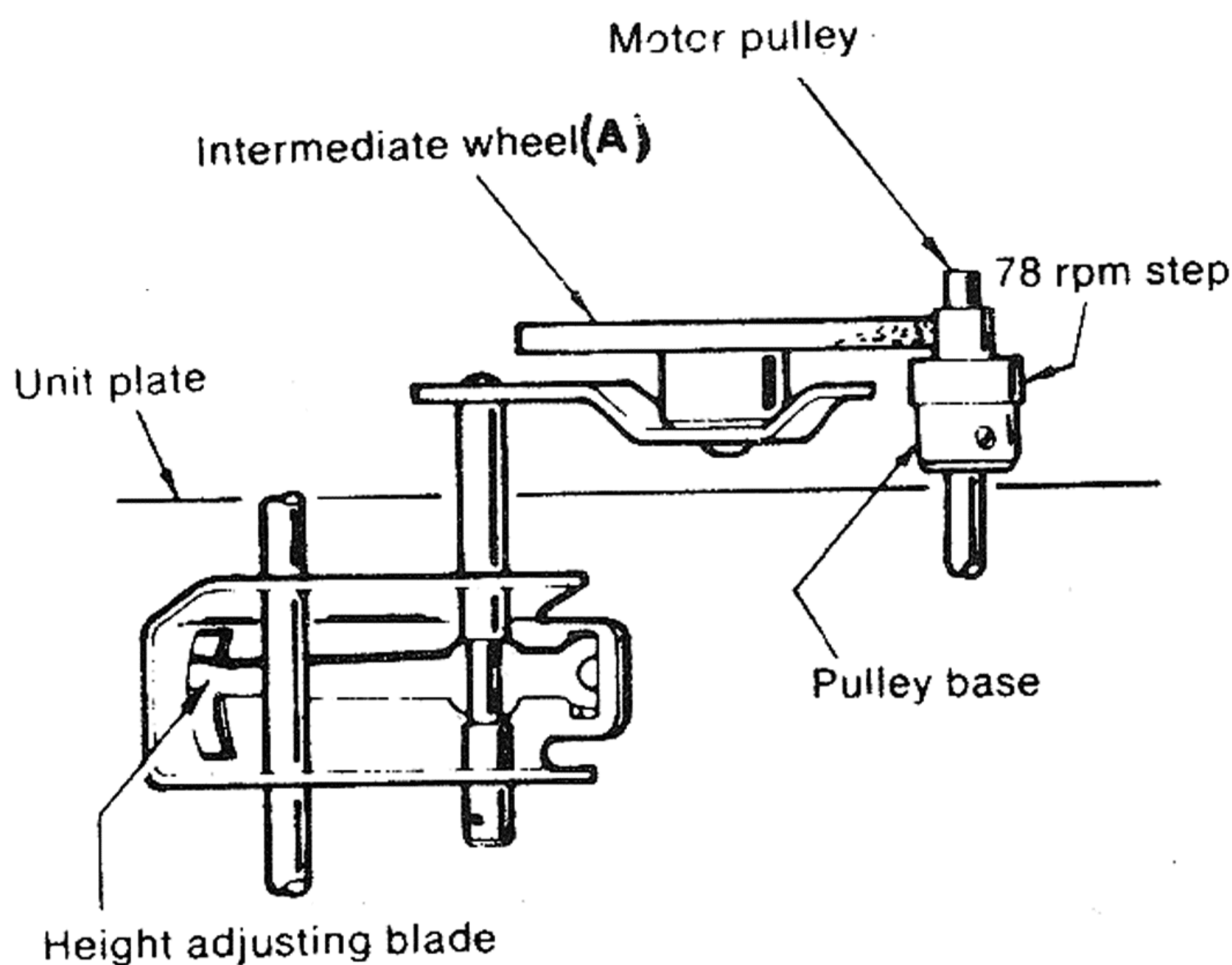
Mono Crystal 5 MX (Medium Output)	Nominal Output: 350 m/v-1.2 cm/sec. Frequency response: 30-12,000 c.p.s. Tracking weight: 3/5 grams. Lateral compliance: 2.0×10^{-6} cm/dyne Load: 1 meg/100 Pfd.
Mono Crystal 7 MX (High Output)	Nominal Output: 550 m/v-1.2 cm/sec. Frequency response: 30-12,000 c.p.s. Tracking weight: 5/7 grams. Lateral compliance: 1.2×10^{-6} cm/dyne Load: 1 meg/100 Pfd.
Mono Ceramic 5 MB	Nominal Output: 210 m/v-1.2 cm/sec. Frequency response: 30-12,000 c.p.s. Tracking weight: 3/5 grams. Lateral compliance: 1.5×10^{-6} cm/dyne Load: 1 meg/100 Pfd.
Stereo Crystal 2 SX	Nominal Output: 190 m/v-1.0 cm/sec. Channel Separation: Minimum 15 db at 1 kc Frequency Response: 30-12,000 c.p.s. Tracking Weight: 3/6 grams. Lateral Compliance: 2.5×10^{-6} cm/dyne Vertical Compliance: 1.7×10^{-6} cm/dyne Load: 1 meg/100 Pfd.
Stereo Ceramic 2 SB	Nominal Output: 80 m/v-1.0 cm/sec. Channel Separation: Minimum 15 db at 1 kc Frequency Response: 30-12,000 c.p.s. Tracking Weight: 3/5 grams. Lateral Compliance: 3.5×10^{-6} cm/dyne Vertical Compliance: 3.5×10^{-6} cm/dyne Load: 1 meg/100 Pfd.

Connection of Pick-up leads to the Stereo Crystal and Stereo Ceramic Cartridges should be carried out as shown in the diagram below.



Garrard

Setting Intermediate Wheel



Check that the rubber intermediate wheel (A) runs in the centre of the appropriate pulley step and is not rubbing the side of the adjacent step. If necessary adjust the intermediate wheel height setting blade. This blue spring steel blade adjusts the position of the spindle on which the rubber intermediate wheel (A) is mounted. See diagram.

RUMBLE - ITS MAIN CAUSES AND HINTS ON ELIMINATING IT.

Rumble is caused by random unwanted vibrations originating mainly in the turntable driving system and occurs at frequencies below 500 cycles/second. It is transmitted to the pickup and thence to the speaker through the pickup arm and/or turntable spindle and is, in the worst cases, directly audible. In our own record playing equipment rumble has been reduced to the minimum by attention to such details as accuracy of dimension and finish of the oil-retaining bearings and mechanical insulation of the motor from the unit plate. Stereo pickups are more likely to reproduce rumble than mono pickups as they are sensitive to vertical as well as lateral vibrations.

Possible causes of rumble are given below, together with cures where these are not obvious;-

1) Lack of lubrication after long use, in the motor bearings (especially the top), Intermediate Wheel and Turntable Spindle Bearings. It is recommended that a spot or two of high-grade sewing machine oil should occasionally be applied to the motor bearings and a thicker grade of oil to the turntable spindle bearings, especially if rumble or mechanical noise becomes apparent. Wipe off all surplus oil to avoid contaminating the rubber driving wheel.

2) Hardening of rubber motor suspensions after several years of use possibly accelerated by the proximity of heat from a power amplifier located in the cabinet beneath the motor. Replacements are easily fitted.

Occasionally with the latest type of motor suspension, rumble will be caused if the motor has been pulled or shaken down in transit so that it is no longer suspended correctly in the rubber suspensions. This can be checked by observing the spring clips fitted to the top of the motor supporting studs above the rubber suspensions. The under face of these clips should be quite clear of the top face of the washers as their sole purpose is to prevent the motor dropping right out of the unit in the event of the unit being roughly handled or dropped etc. If the clips are resting on the grommets, push the motor up from underneath so that the recess in the studs engage correctly inside the rubber grommets and the clips stand clear. Try gripping the motor body in the hand and giving it a twisting motion in both directions as far as the grommets will allow. This often improves the suspension by disturbing the set of rubber grommets. If, owing to very rough handling or age, the rubber grommets are incapable of supporting the motor and the clips cannot be made to clear, obtain a new set of grommets from our Service Department stating the model number and the code number of the unit when ordering.

3) The rubber tyre of the intermediate wheel may have perished with age, a glazed appearance with fine cracks across the driving surface is evidence of this. If this is the case it should be replaced. Should the appearance of the intermediate wheel be satisfactory, carefully wipe its periphery with a clean damp rag to remove all traces of adhering dust. Also clean the motor pulley. Check that the side face of the intermediate wheel is not rubbing against the edge of one of the steps of the motor pulley. In this case the fixing screws should be slackened and the motor pulley raised or lowered so that the intermediate wheel runs in the centre of the

appropriate step. Check the screws holding the stepped pulley to the motor shaft, they should be equally tight, should one be much tighter than the other this could distort the pulley and cause rumble.

With the two-pole motor which has a non-adjustable pulley provision is made for adjusting the height of the intermediate wheel.

4) Transit screws not slackened, or if wood screws removed as directed. Check that the spring clips on the underside of the transit screws clear the underside of the mounting board when the screws are in their released position. If they are not clear recess the underside of the board.

5) Heavy power supply leads pulling the motor unit out of position so that the rotor is not running vertically or the suspensions are affected. Make sure that the leads are slack and that the motor unit is not touching any adjacent parts of the cabinet, amplifier, etc.

6) Resonance of the pickup arm, cabinet, amplifier, speaker enclosure and listening room acoustics may raise to an audible level the slightest residual noise inherent in even the best record playing equipment. It should be stressed that disappointing results may be obtained when an inexpensive record player is used in conjunction with equipment with a wide frequency response, particularly at the low frequency end. If trouble due to room resonance is suspected re-positioning the speaker enclosure or enclosures may lead to a marked improvement. Placing the speaker on a thick carpet or resilient pad can also be tried.

7) Transit damage must always be considered since units which leave the factory in perfect condition may be roughly handled before they reach the final user. A severe blow may upset the accurately balanced rotor, and this would almost certainly cause motor vibration and rumble. Any sign of damage should be immediately reported to your dealer.

8) The loudspeakers may be mounted too close to the reproducer, and feedback from the loudspeakers to the turntable may be taking place. Often when a unit is on the verge of feedback the resulting noise can be mistaken for rumble.

9) Rumble can be caused by dirt in the turntable thrust bearing. This bearing will be found immediately underneath the turntable, or on some models, at the lower end of the turntable spindle. Thoroughly clean the bearing and re-lubricate, if the bearing is resting upon a plastic washer make sure this is cleaned and replaced as found.

10) It has been noticed that some records have traces of recorded rumble, and, of course, this will be heard in any combination of equipment with a good low frequency response. Under some circumstances it is possible to confuse hum, which is of electrical origin, with rumble when a record is being played. However, it will be found that rumble is only noticeable when the pickup touches the record, whilst hum is present all the time or tends to increase gradually as the pickup approaches the centre of the record. See that the motor is earthed.

We hope that the foregoing notes have proved to be of assistance to you, but in case of difficulty your dealer should be consulted, and if necessary, asked to examine your complete equipment. As a last resort, he may recommend that the Garrard unit is returned to our Service Department here at Kembrey St., Swindon for expert attention.