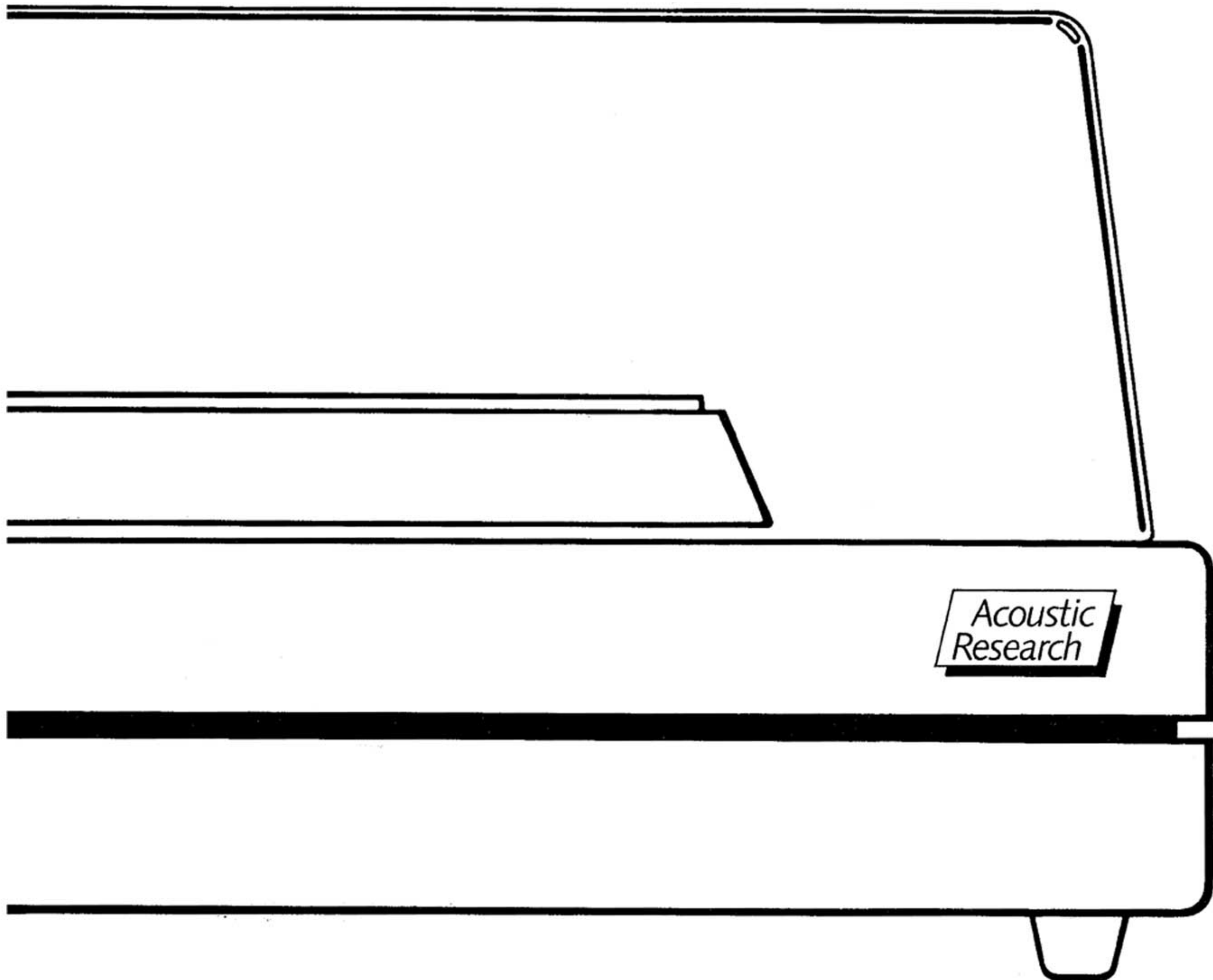




ES-1 Turntable

INSTALLATION MANUAL



SAFETY LABELS

Certain models of the Acoustic Research Turntable will contain warning labels as explained below:



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

TURNTABLES PURCHASED IN THE UNITED KINGDOM WITH A THREE CORE MAINS CABLE

WARNING: THIS APPARATUS MUST BE EARTHED

IMPORTANT. The wires in the mains lead attached to this turntable are coloured in accordance with the following code:

Green and yellow : Earth
Blue : Neutral
Brown : Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol \perp or coloured green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

TURNTABLES PURCHASED IN THE UNITED KINGDOM WITH A TWO CORE MAINS LEAD

IMPORTANT. The wires in the mains lead attached to this turntable are coloured in accordance with the following code:

Blue : Neutral
Brown : Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

Safety Instructions

- 1. Read Instructions** – All the safety and operating instructions should be read before the appliance is operated.
- 2. Retain Instructions** – The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings** – All warnings on the appliance and in the operating instructions should be adhered to.
- 4. Follow Instructions** – All operating and use instructions should be followed.
- 5. Water and Moisture** – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6. Carts and Stands** – The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 7. Ventilation** – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- 8. Heat** – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
- 9. Power Sources** – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 10. Power-Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 11. Cleaning** – The appliance should be cleaned only as recommended by the manufacturer.
- 12. Nonuse Periods** – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 13. Object and Liquid Entry** – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- 14. Damage Requiring Service** – The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
- 15. Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

Congratulations upon your purchase of the Acoustic Research Turntable. This is a precision instrument capable of providing accurate reproduction of recorded music. In order to allow the unit to reach its full performance potential, it is worthwhile to take a few minutes to read this manual prior to setting-up and use.

SETTING-UP INSTRUCTIONS

Your turntable was shipped with several parts packed apart from the main unit and thus a short setting-up procedure is necessary prior to use. It is also important to unpack the unit as described in the following paragraph to ensure that no parts are mislaid.

(A) UNPACKING

The following parts are packed separately within your carton: —

- (1) Dustcover
- (2) Main turntable unit
- (3) Outer platter
- (4) Turntable mat
- (5) Allen wrench $\frac{5}{64}$ inch

plus the following items

if purchased complete with the Acoustic Research Tonearm:— or the following parts if purchased without a tonearm: —

- (6) Tonearm counterbalance weight
- (7) Screwdriver
- (8) Allen wrench 1.5mm
- (9) Cartridge mounting hardware
- (10) Stylus overhang gauge
- (6) Tonearm cable clamps — quantity 2
- (7) Screws for the above

Unpack the above items as follows, referring to the exploded packing diagram given in fig 1: —

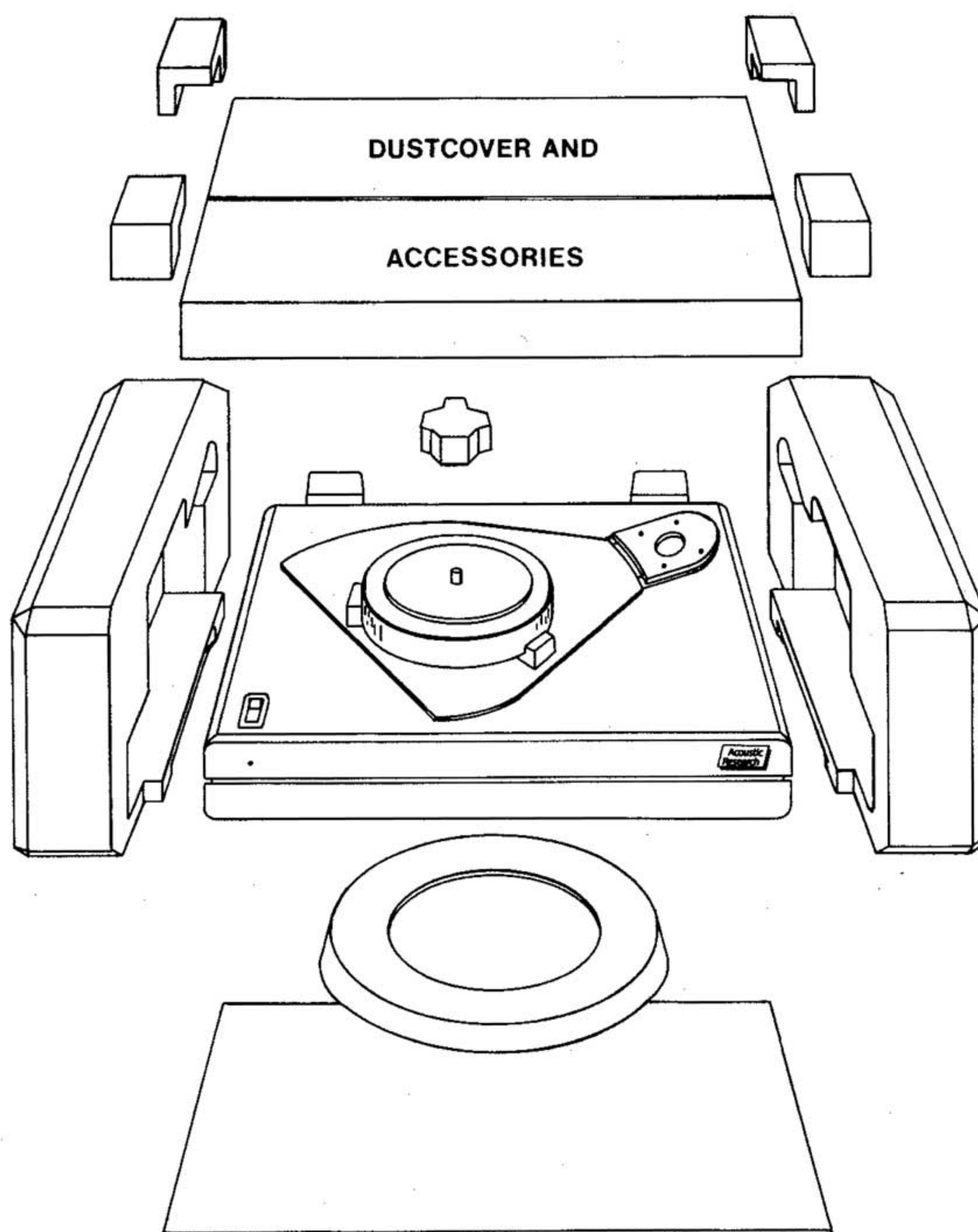


FIG.1

- (1) Remove the dust-cover in its carton together with the four upper styrofoam corner posts by lifting gently upwards.
- (2) Remove the styrofoam star which is seated upon the inner platter. This just lifts off.
- (3) Lift out the main turntable unit together with the two styrofoam end-pads and then gently slide off these end pads. If you purchased your turntable complete with Acoustic Research Tonearm, care should be taken not to damage the arm in this step.
- (4) The outer platter is now left in the main carton and may be removed.
- (5) If you purchased your turntable complete with the Acoustic Research Tonearm, then the tonearm counterweight will be found in a recess on the outer end of the left hand end-pad.
- (6) The other accessories are packed in a small bag taped to the inside of the dust-cover carton.
- (7) REMEMBER TO SAVE ALL PARTS OF THE PACKAGING FOR USE SHOULD THE TURNTABLE EVER NEED SHIPMENT IN THE FUTURE.

(B) SETTING UP OF YOUR ACOUSTIC RESEARCH TURNTABLE

This section and the one following deal with the procedures for setting up an Acoustic Research Turntable purchased complete with the Acoustic Research Tonearm. If you purchased a unit without tonearm and intend to fit another arm of your choice, then ignore these two sections and proceed with section (D)—“FITTING OF ALTERNATIVE TONEARMS.”

- (1) Place your turntable on the surface upon which it is to be used. This surface should be firm and level — check for levelness with a spirit level (not provided) on the top of the turntable base and shim the unit if necessary.
- (2) Remove the three styrofoam packing pieces from under the inner platter. To do this, lift the inner platter about 2 inches — it does not have to be removed from the bearing.
- (3) Unscrew and remove the shipping bolt located on the top-plate between the inner platter and the tonearm mounting board (see fig 2). **SAVE THE BOLT AND NYLON WASHER FOR FUTURE SHIPMENT OF THE TURNTABLE.**
- (4) The belt is shipped on the inner platter. Pull it away from the platter at the point nearest the motor pulley and place it around the motor pulley, checking that the smooth side of the belt is in contact with the pulley and platter. The pulley has two driving diameters — placing the belt on the smaller one will cause the unit to run at $33\frac{1}{3}$ RPM, whilst the larger diameter gives 45 RPM. Placement of the belt is shown in fig 2.

NOTE. Ensure that your hands are free of oil and grease for this step as contamination of the belt with such substances can seriously affect performance.

- (5) Place the outer platter on the inner platter, locating it so that it seats firmly over the step, and place the record mat on top of it.
- (6) Check the horizontal positioning of the tee-bar assembly. This should be positioned such that the tonearm board has an even gap around it and such that the pulley itself is not positioned too close to either the inner platter or to the underside of the outer platter. **THIS PULLEY CLEARANCE IS EXTREMELY IMPORTANT IF YOUR TURNTABLE IS BEING USED WITH A 50Hz SUPPLY AS THE 50Hz PULLEY IS RELATIVELY LARGE.** If the positioning is not correct, then adjustments must be made as described in section (D), parts (1), (2), (8), (9), and (10) ... “FITTING OF ALTERNATIVE TONEARMS.”

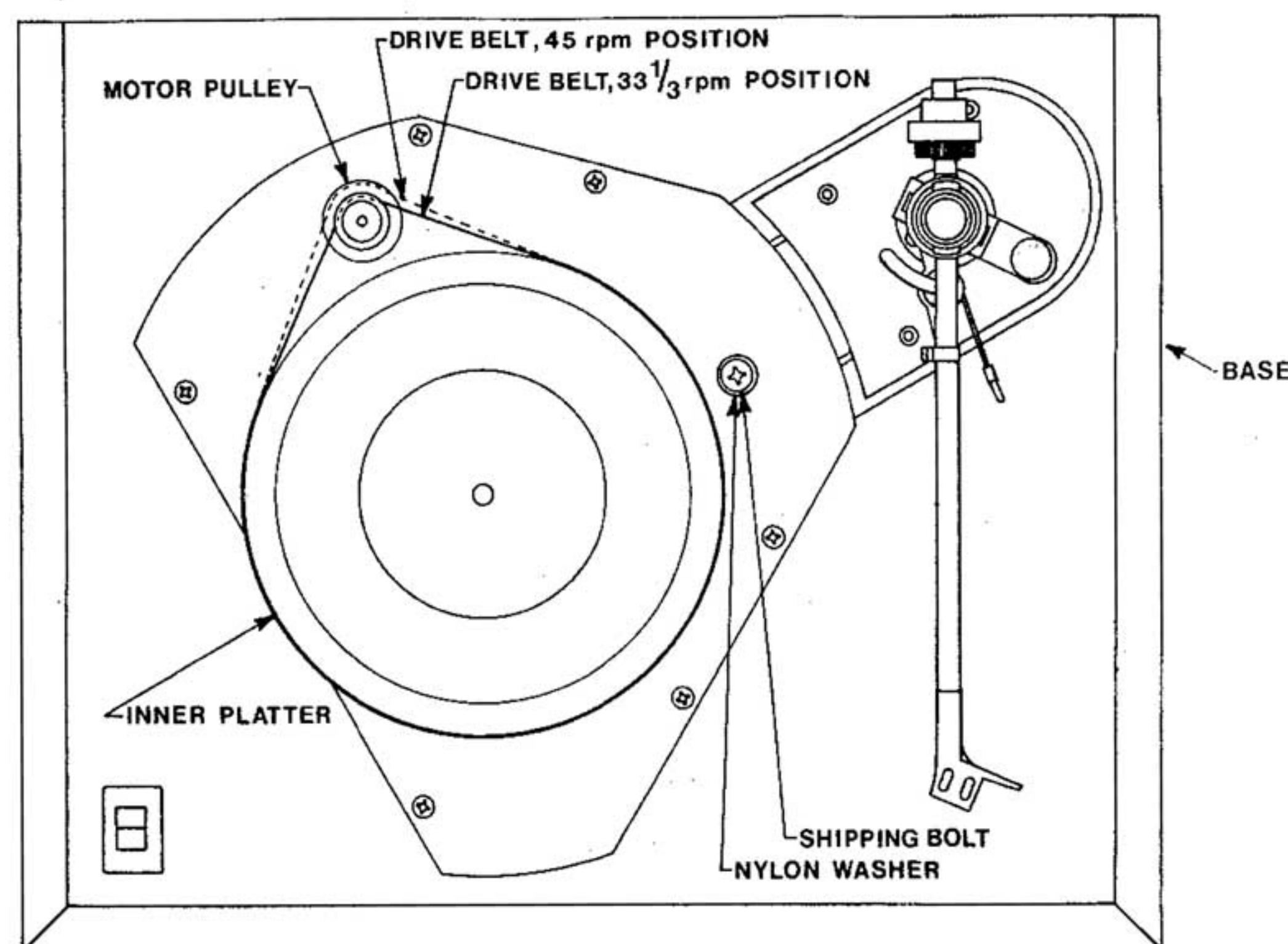


FIG. 2

(C) SETTING UP OF YOUR ACOUSTIC RESEARCH TONEARM

- (1) Mount the cartridge of your choice in the headshell. Follow the manufacturer's instructions in doing this and use either hardware supplied with the cartridge or that supplied with this turntable. The wiring in the headshell is color coded as follows: Right channel: red +, green -. Left channel: white +, blue -.
- (2) Mount the counterweight onto the rear of the tonearm. This is achieved by holding the weight by the large diameter and pushing it onto the rear of the tonearm (with the white numbers to the front) whilst rotating it in an anti-clockwise direction when viewed from the front.
- (3) Set the tracking force to about 1 gram. To do this, the arm first must be set to zero tracking force. Set the bias compensation control (fig 3) to zero, release the arm from the arm-rest, and then rotate the large-diameter counterweight until the arm floats freely in a horizontal position. The arm is now balanced to zero. Without moving the counterweight itself, now rotate the knurled calibrated dial relative to the counterweight until "0" is next to the white line on the tonearm. Now rotate the whole counterweight together with the calibrated dial in an anti-clockwise direction using the large diameter again until "1" is against the white line. The tracking force is now set to 1 gram.

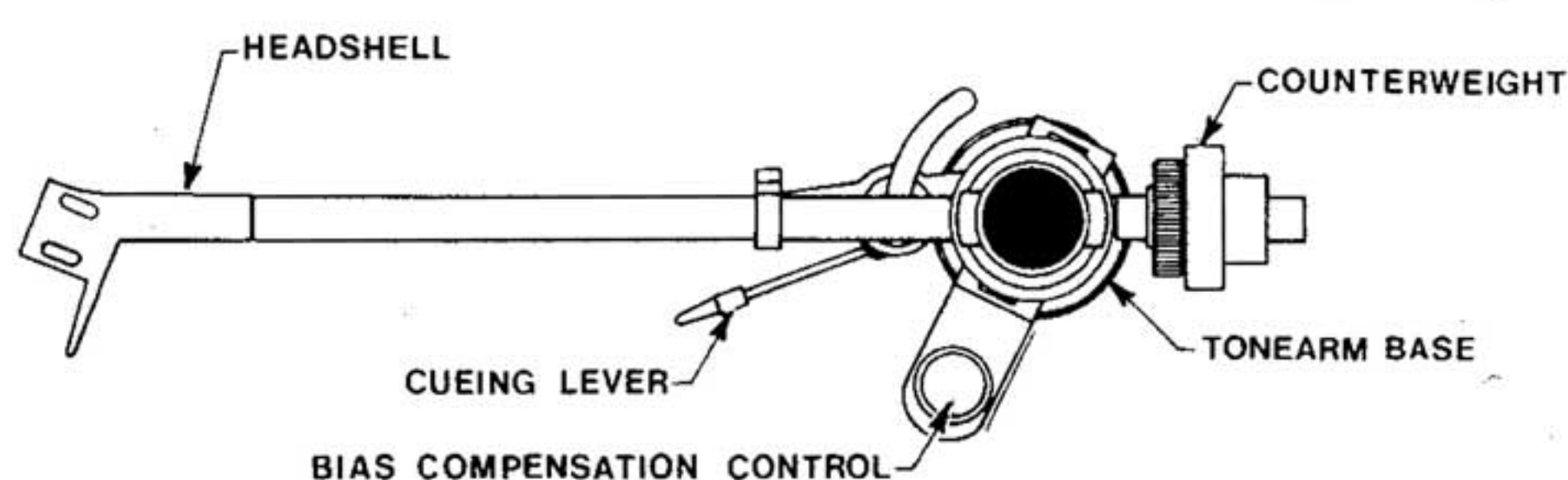


FIG. 3

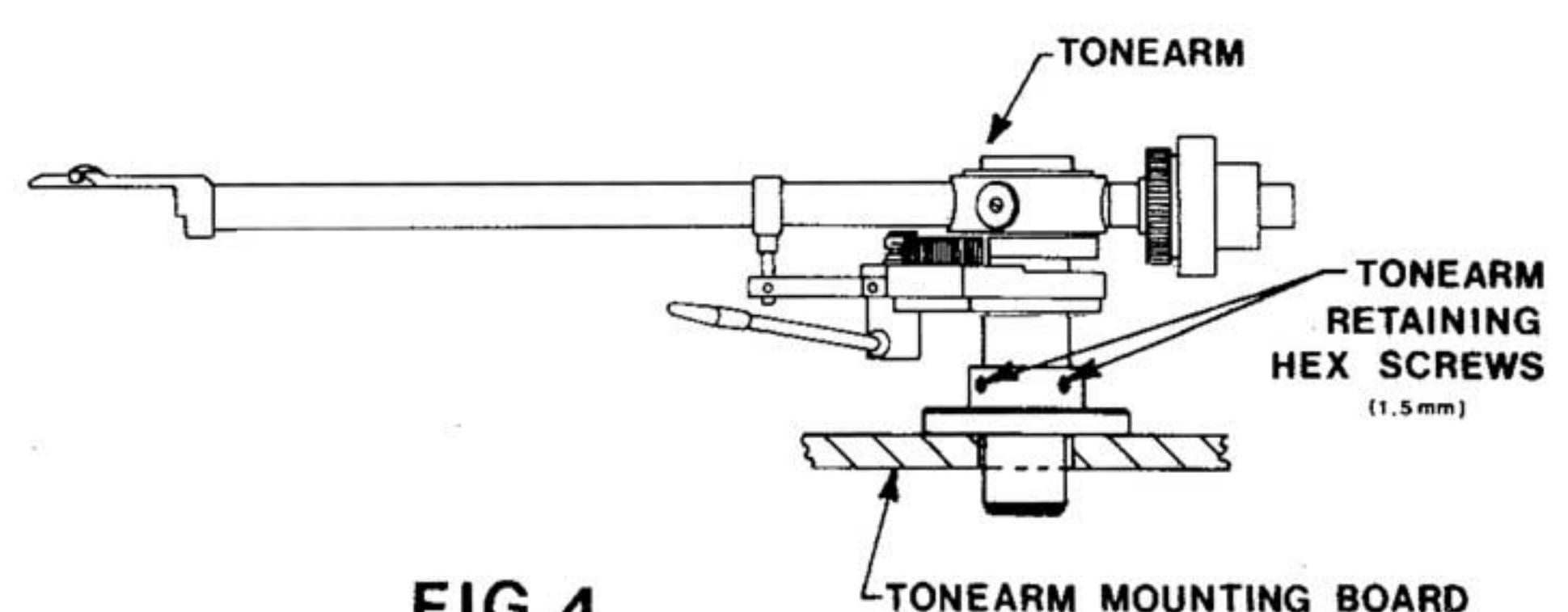


FIG. 4

- (4) Adjust the tonearm so that it is parallel to the record surface when playing. Place a record on the platter and lower the tonearm onto the record. Check whether the arm is parallel to the record by viewing it at record level. If it is not parallel, place the arm back in the arm-rest and loosen the two 1.5mm allen screws in the arm base (fig 4) with the allen wrench supplied. The arm height may now be adjusted, the allen screws lightly tightened, and the position re-checked with the stylus on the record. Once the correct height is obtained, the two allen screws should be firmly tightened.

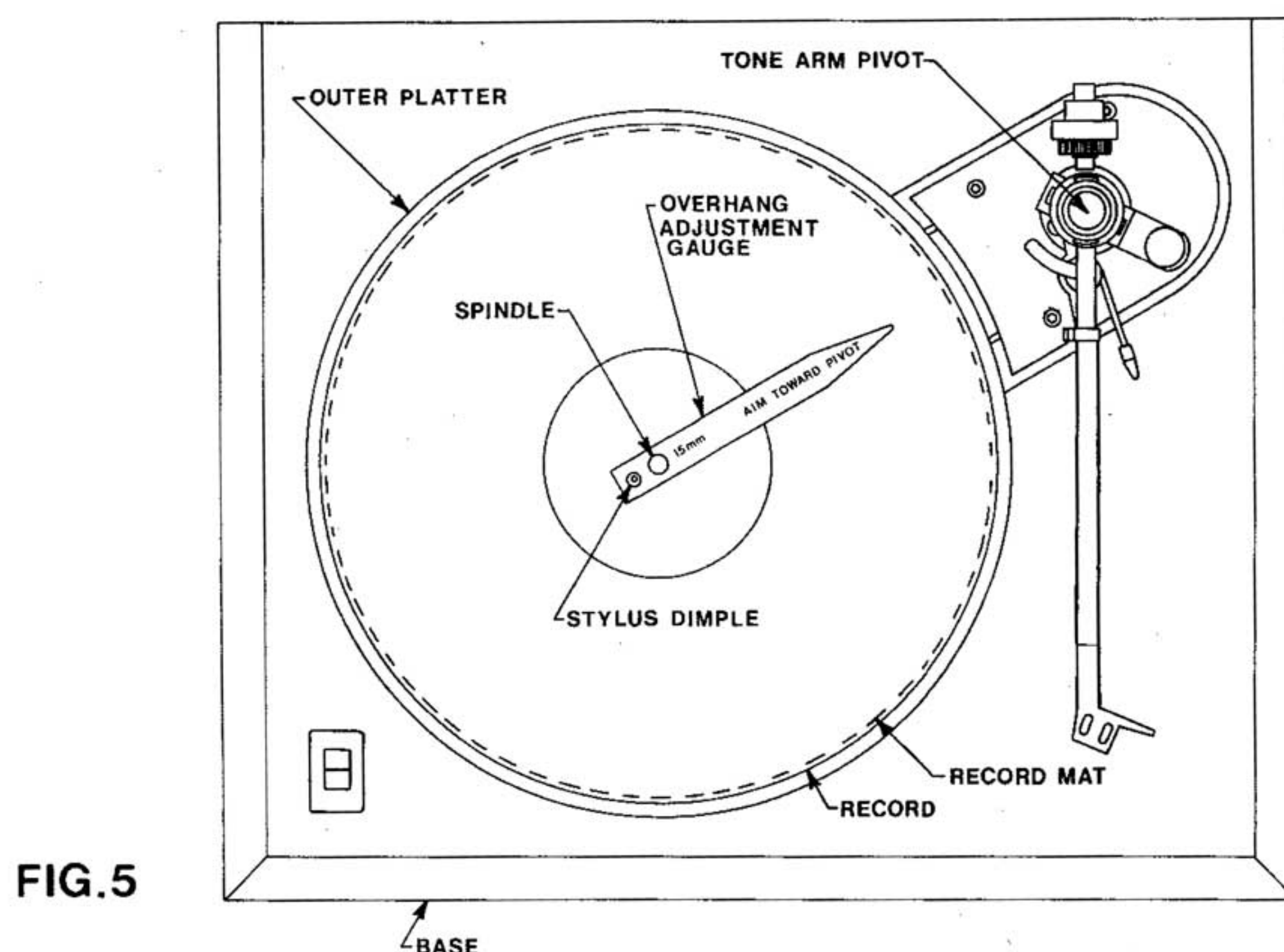


FIG. 5

- (5) Set the stylus overhang to 15mm. The clear plastic overhang gauge provided in the accessories is used in this step. Place the hole in the gauge over the turntable spindle and aim the pointed end of the gauge towards the pivot of the tonearm (fig 5). Loosen the screws holding the cartridge in the headshell and adjust the position of the cartridge backwards or forwards until the stylus point sits in the dimple in the raised portion of the gauge. It may be necessary to slacken slightly the 1.5mm allen screws in the tonearm base and rotate the entire tonearm temporarily in order to seat the stylus point as described above. **CAUTION—CARE MUST BE TAKEN NOT TO DAMAGE THE STYLUS ASSEMBLY WHILST MAKING THESE ADJUSTMENTS.** When the stylus is in this position with the cartridge body parallel to the straight edge of the headshell, gently place the arm back in the arm-rest without disturbing the cartridge setting and tighten the cartridge retaining screws firmly. Finally, recheck the cartridge position with the gauge to ensure that nothing moved, recheck that the arm is parallel to the record, and then rotate the arm to its correct position (if it was moved) and firmly tighten the screws in the arm base.
- (6) Rebalance the arm to zero and set the tracking force recommended by the cartridge manufacturer using the steps outlined in section (4).
- (7) Set the bias compensation force (fig 3). The dial should be turned to the tracking force set in section (7).

Your Acoustic Research Turntable with Acoustic Research Tonearm is now ready for connection to your receiver or amplifier and for use. Instructions for this are given in section (E).

(D) FITTING OF ALTERNATIVE TONEARMS

If you purchased your Acoustic Research Turntable without a tonearm it will have been supplied with a blank tonearm mounting board. This is made of a wood compound and can be drilled and cut for the mounting of a wide variety of tonearms. Before purchasing an arm

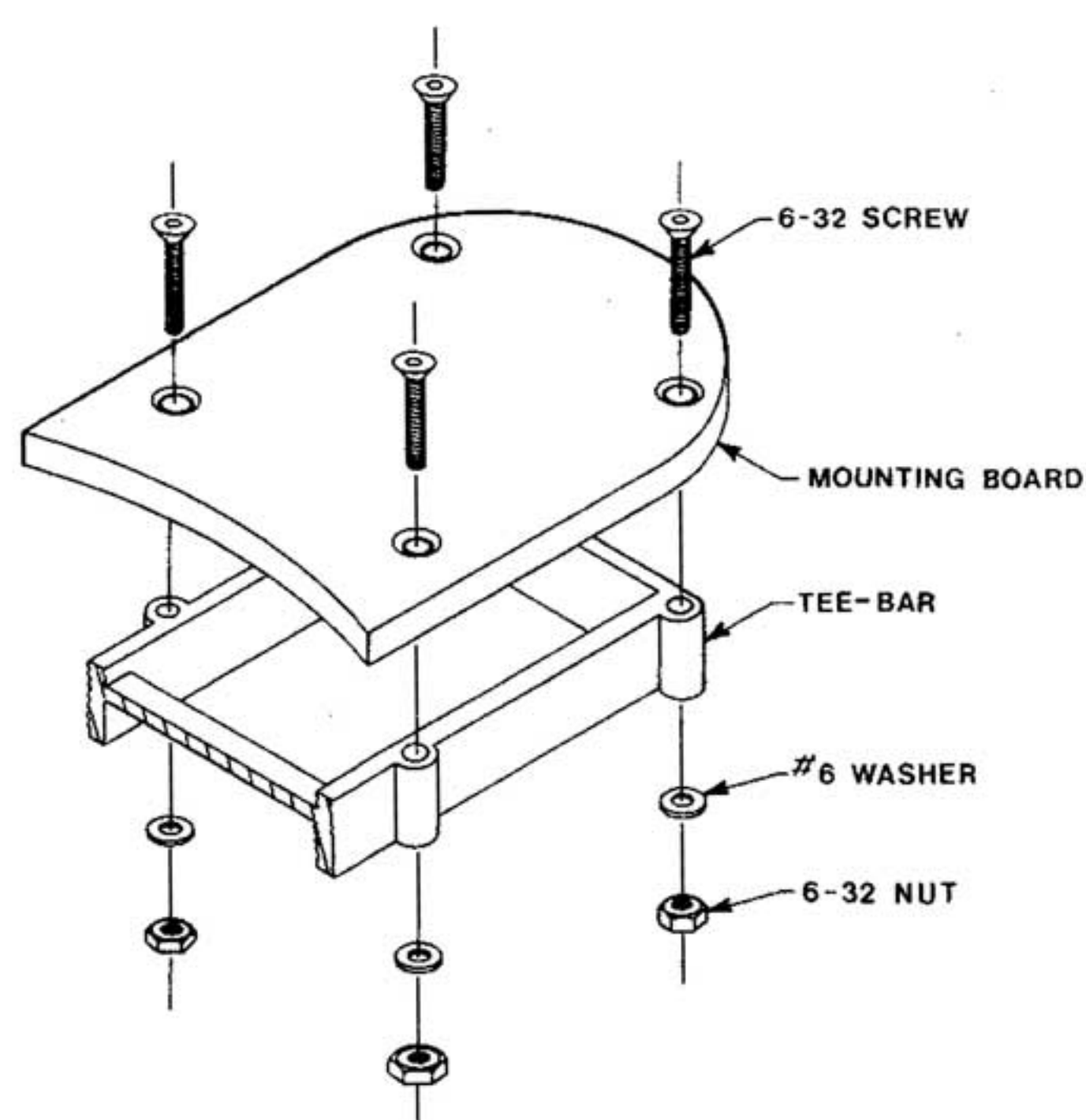


FIG. 6

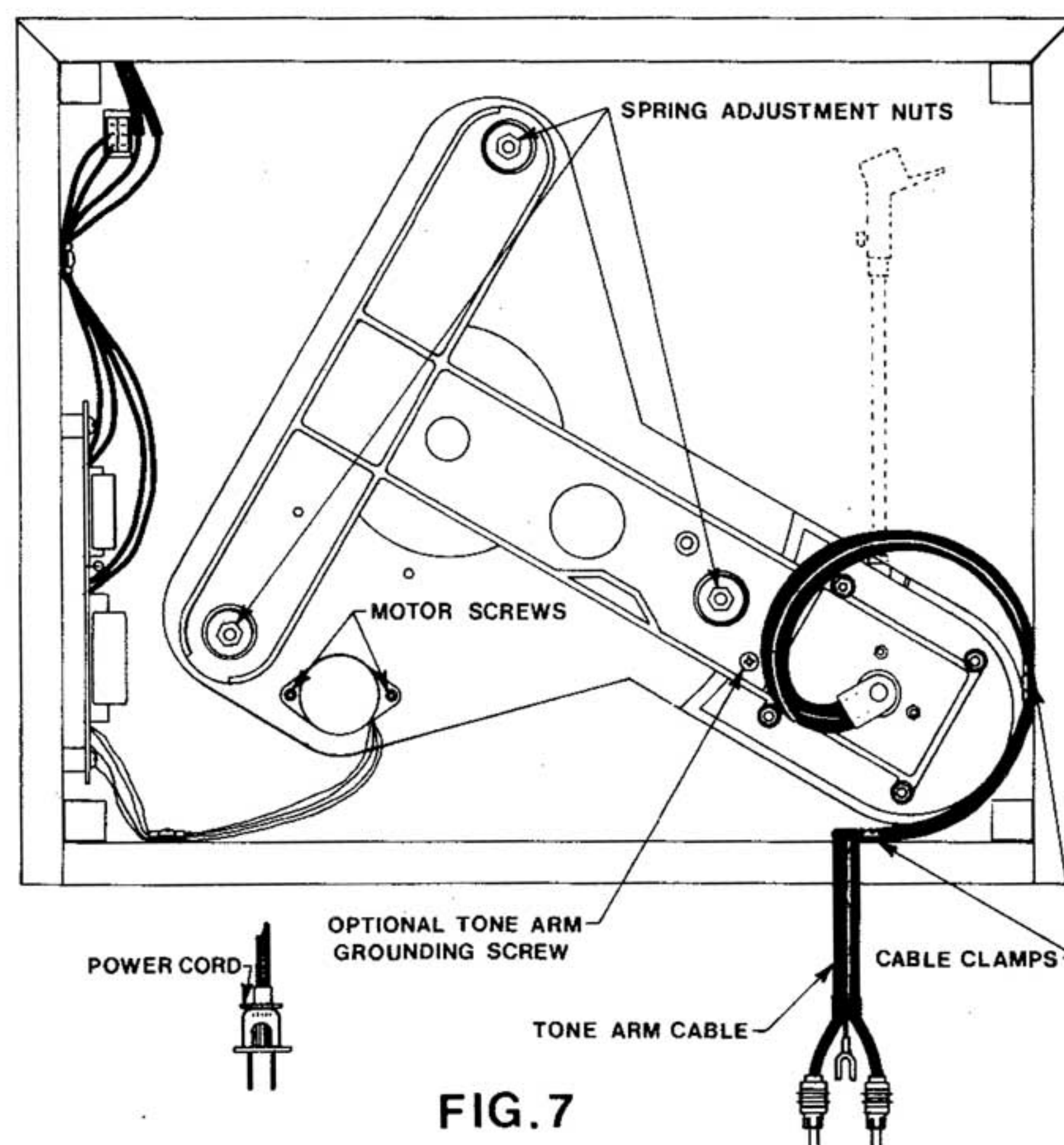


FIG. 7

check with your dealer that it is dimensionally suitable for the Acoustic Research Turntable. Read the following instructions carefully and, if you feel that the procedure is too complicated, we suggest that you obtain professional assistance:—

- (1) Make sure that the line cord is NOT CONNECTED to the wall socket and then remove the bottom cover to the base. The cover is held on by the four feet which can be removed by undoing the four phillips-head screws in the feet. Hold the turntable upright on one end to do this and at the same time hold the inner platter in position as this should not be allowed to slide out of the bearing.
- (2) Support the turntable base 6 to 12 inches above a table or similar surface such that access is given to the inside. This can be achieved with books under each end, ensuring that the base is firmly seated and that the upper surface of the base is perfectly level. Use a spirit level (not supplied) to ensure a level surface.
- (3) Using the instructions and/or template(s) supplied with your tonearm mark all the holes that will be needed on the tonearm mounting board and then remove the board. The board is held in place by four allen screws which pass through the tee bar and are held with four nuts and washers (fig 6). The $\frac{5}{64}$ inch allen wrench supplied in the accessories fits the screws.
- (4) Drill and/or cut the board as required.
- (5) The tonearm may now be mounted on the board and the board replaced, ensuring that the four allen screws are tightened securely. Set up the tonearm following the manufacturer's instructions.
- (6) The tonearm cables can now be installed. The cable(s) are held by the two clamps and screws provided in the accessories which should be screwed into the interior side or underside of the base. The cable should be positioned with as much free cable as possible between the tonearm base and the clamps to allow free movement of the suspended tee-bar. This free cable should not touch any part of the tee-bar, base, or bottom cover. One way of achieving this is shown in fig 7, although different tonearms and cables will require different layouts to achieve the free movement and a degree of experimentation is necessary. It may be found that your tonearm has a very deep base that would make the cable touch the bottom cover. This can be overcome by cutting a clearance hole in that cover to allow the cable loop to fall below the cover level (the feet give an extra clearance of about $\frac{1}{2}$ inch if this is done).
- (7) Next the turntable itself should be made operational as covered in section (B).
- (8) The suspension should now be adjusted. Ensure that the drive belt, outer platter, turntable mat and a record are in place for this step. The (tee-bar — platter — tonearm) subsystem is levelled using the three nuts under the springs on the underside of the deck (fig 7). These should be turned until the outer platter is sitting with its outer edge approximately $\frac{1}{4}$ inch above the top surface of the base. The precise dimension is not important but it is critical that it be absolutely constant all around the perimeter of the platter as this ensures that the playing surface is level.
- (9) Check the horizontal positioning of the tee-bar assembly. This should be positioned such that the tonearm board has an even gap around it and such that the pulley itself is not positioned too close to either the inner platter or to the underside of the outer platter. **THIS PULLEY CLEARANCE IS EXTREMELY IMPORTANT IF YOUR TURNTABLE IS BEING USED WITH A 50Hz SUPPLY AS THE 50Hz PULLEY IS RELATIVELY LARGE.** If the positioning is not correct, it can be adjusted by rotating one or more springs whilst keeping the nuts from turning with them.
- (10) Remove the record, mat, and outer platter and replace the bottom cover and feet.

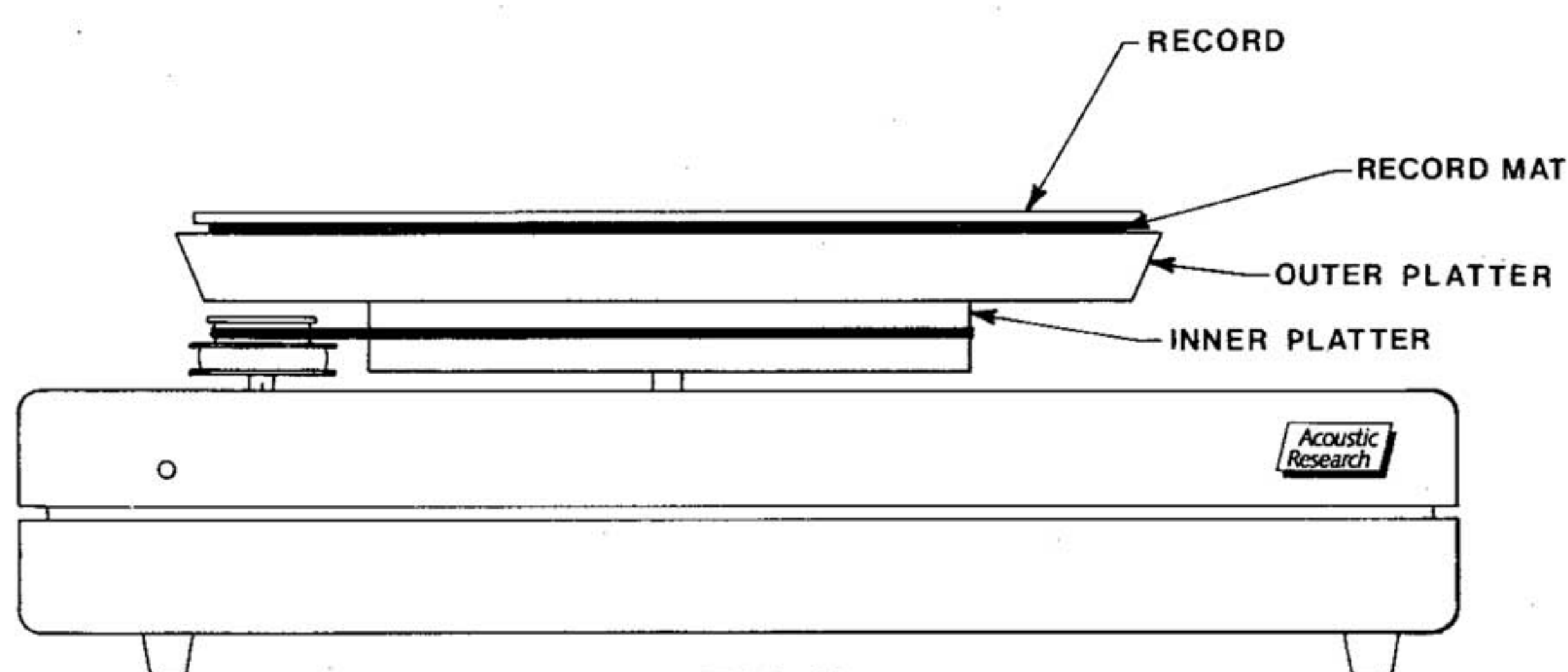


FIG. 8

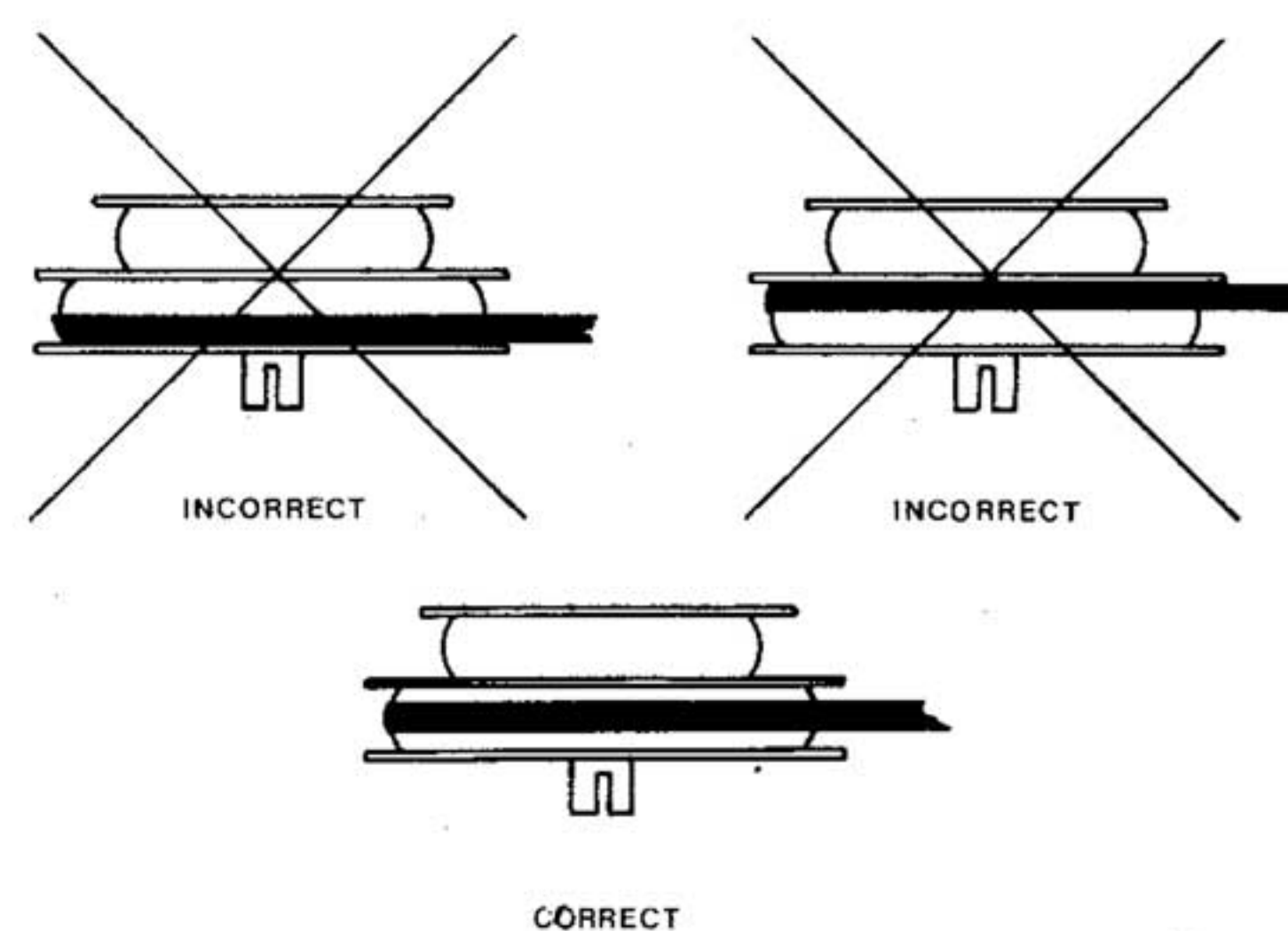


FIG. 9

- (11) Place the outer platter UPSIDE-DOWN on the inner platter and put the mat and record on top of it. The drive belt and pulley is now visible (fig 8). Connect the line cord to the outlet and switch on the turntable. The drive belt should run on the crown of the pulley and not rub against either flange (fig 9). If this is not so, unplug the line cord, remove the bottom cover again and shim the motor to correct matters. The motor may be loosened by the two screws shown in fig 7 and then shimmed with piece(s) of paper before retightening the screws. If the belt rubbed the bottom of the pulley, then the side away from the platter will need shimming and vice-versa. **IN ORDER TO AVOID THE POSSIBILITY OF ELECTRIC SHOCK, REMEMBER TO ALWAYS MAKE SUCH ADJUSTMENTS WITH THE POWER CORD DISCONNECTED AND DO NOT RE-CONNECT IT UNTIL THE BOTTOM COVER HAS BEEN REPLACED.**

Your Acoustic Research Turntable is now ready for connection to your receiver or amplifier and for use.

(E) USE OF YOUR ACOUSTIC RESEARCH TURNTABLE

- (1) Connection. Your Acoustic Research Turntable is connected to your amplifier or receiver using the phono cables attached to it (if complete with the Acoustic Research Tonearm) or those that came with the arm of your choice. Units purchased with the Acoustic Research Tonearm also have a single wire attached to the phono cables which may be attached to the grounding screw on your receiver or amplifier. This will normally ensure that no problems with hum are experienced.
- (2) Hinged dust-cover. The dust-cover supplied with your turntable fits directly into the two hinges on the rear of the unit. It is a friction fit and is merely slid into place. It should be positioned such that the long slanting edge is to the front of the unit.

- (3) Playing a record. To turn on your Acoustic Research Turntable, the on/off switch is located at the front left of the base. If your unit was supplied with the Acoustic Research Tonearm, then this may be lowered onto the record by using the damped lowering mechanism, the control for which is the straight lever to the right front of the tonearm bearing (see fig 3).
- (4) Speed change. Your Acoustic Research Turntable will play at either 33 $\frac{1}{3}$ RPM or at 45 RPM. Speed change is effected by switching off the unit, removing the outer platter and then moving the belt to the correct diameter on the drive pulley. The small diameter is 33 $\frac{1}{3}$ RPM, the large diameter is 45 RPM. It may be helpful when changing to 45 RPM to also carefully relocate the belt on the inner platter such that it is in the lower position needed for that speed.

(F) MAINTENANCE

- (1) Cleaning the belt. If any oily substance should get on the drive belt, remove the belt and clean it with tissue soaked in methyl alcohol (wood alcohol); RUBBING ALCOHOL SHOULD NOT BE USED. The pulley and inner platter surfaces on which the belt rides should also be wiped clean with alcohol. After the belt is cleaned, dust it with ordinary talcum powder — this is important! Without the talcum powder, the turntable will not start properly. We suggest that you clean and powder the belt once each year.
- (2) Lubrication. The main turntable bearing should be lubricated once a year. SAE 30 oil (without additives) is needed for this. Remove the outer platter and drive belt and then lift the inner platter straight up about 2 inches (it is not necessary to take the platter out of the bearing) and put a few drops of oil on the spindle. Do not use excessive oil — only a little should be needed to top up the bearing housing. Also take care not to get any oil on the belt, motor pulley, or inner platter edge.
- (3) Cleaning the dust-cover. Any non-abrasive liquid detergent or window cleaner may be used sparingly. Do not, however, use any solvent-based cleaners.

The Acoustic Research Turntable Full 3 Year Warranty

Warranty Coverage

Acoustic Research warrants that the Acoustic Research Turntable (excluding tone arm) shall be free of defects in materials and workmanship for a period of 3 years from date of purchase. Acoustic Research warrants that the Acoustic Research tone arm shall be free of defects in materials and workmanship for a period of 1 year from date of purchase. This warranty covers parts, repair labor and surface freight to and from the factory or nearest Authorized Service Center. New packaging, if needed, is also free.

Legal Rights

This warranty gives you specific legal rights and you may have other rights which vary from state to state. The liability of Acoustic Research will be limited to the purchase price of the product, and they will not be liable for any incidental or consequential damages. **Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.**

Exceptions and Exclusions

The Acoustic Research Turntable full warranty does not cover damages caused by abuse, misuse, accidents or improper wiring.

To Obtain Warranty Service

In order to obtain warranty service, address written notice of the supposed defect to Teledyne Acoustic Research, 330 Turnpike Street, Canton, Massachusetts 02021. Include a COPY (not the original) of your bill of sale with your letter. Alternatively, you may contact a local or convenient Authorized Service Agency directly. A list of all Service Agencies authorized to perform in-warranty service on Acoustic Research Products is packed with your turntable. This list is also available on request from Acoustic Research.

NOTE: Acoustic Research reserves the right to change the equipment described herein without notice.

TURNTABLE SPECIFICATIONS

DRIVE SYSTEM:	ONE STEP BELT DRIVE
MOTOR:	24 POLE SYNCHRONOUS MOTOR, 300 RPM
SPEEDS:	33 $\frac{1}{3}$ AND 45 RPM
TURNTABLE PLATTER:	1.8 KGM (3.9 LB)
PLATTER BEARING:	CLOSE TOLERANCE PRECISION HONED JOURNAL AND SHAFT SLEEVE BEARING AND JEWELLED THRUST BEARING POLISHED TO OPTICAL STANDARDS.
SUSPENSION:	DAMPED 3 POINT SPRUNG SUSPENSION OF A DIE-CAST TEE-BAR WHICH ACTS AS A DECOUPLED CHASSIS FOR PLATTER AND TONEARM
WOW AND FLUTTER:	(DIN 45507) .04%
RUMBLE:	(DIN 45539 B WEIGHTED) — 78dB
MAINS VOLTAGE:	110–120V 60HZ or 220–240V 50HZ
POWER CONSUMPTION:	9 WATTS

THE ACOUSTIC RESEARCH TONEARM

EFFECTIVE LENGTH:	229 MM
OVERHANG:	15 MM
FRICTION:	< 20 MG HORIZONTAL < 20 MG VERTICAL
EFFECTIVE MASS:	14.5 GM
CARTRIDGE WEIGHT RANGE:	3–9 GM
STYLUS PRESSURE RANGE:	0–3 GM
LEAD + ARM CAPACITANCE:	85 PF
HEADSHELL:	CAST ALUMINUM

DIMENSIONS

WIDTH * DEPTH :	462 * 387 MM (18 $\frac{3}{16}$ * 15 $\frac{1}{4}$ INCHES)
HEIGHT COVER CLOSED:	179 MM (7 INCHES)
HEIGHT (COVER OPEN):	432 MM (17 INCHES)
WEIGHT:	8.2 KG (18 LB)

Specifications subject to change without notice.

TELEDYNE ACOUSTIC RESEARCH

330 TURNPIKE STREET, CANTON, MASSACHUSETTS 02021 U.S.A.
HIGH STREET, HOUGHTON REGIS, DUNSTABLE, BEDFORDSHIRE LU5 5QJ, ENGLAND