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STEREO TURNTABLE SYSTEM

# PS-X3



## Owner's instruction manual

Page 2

Before operating your new Sony turntable, please read this manual completely to become familiar with all its features and capabilities.

Keep this manual handy for future reference.

## FEATURES

- The Crystal Lock System maintains the turntable at an accurate nominal speed under voltage or temperature variations or aging, and shows excellent initial drift and load/speed characteristics.
- With a newly developed BSL (brushless and slotless) Motor having a torque of 1 kg·cm, excellent starting characteristics within a third revolution at 33 1/3 are obtained.
- A servo system, which consists of a turntable with a magnet coated rim and an 8-pole magnetic pick-up head, and the BSL Motor free from torque irregularity, assure minimal wow and flutter and a high signal-to-noise ratio. The turntable attains nominal speed almost immediately after changing from 33 1/3 rpm to 45 rpm or vice versa.
- Acoustic material SBMC (Sony Bulk Mold Compound) is used in the construction of the frame, to reduce outside vibration effects to a minimum.
- Newly developed resilient feet effectively prevent acoustic feedback.
- Arm height can be adjusted for using any kind of cartridge.

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## WARNING

- To prevent fire or shock hazard, do not expose the unit to rain or moisture.
- To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

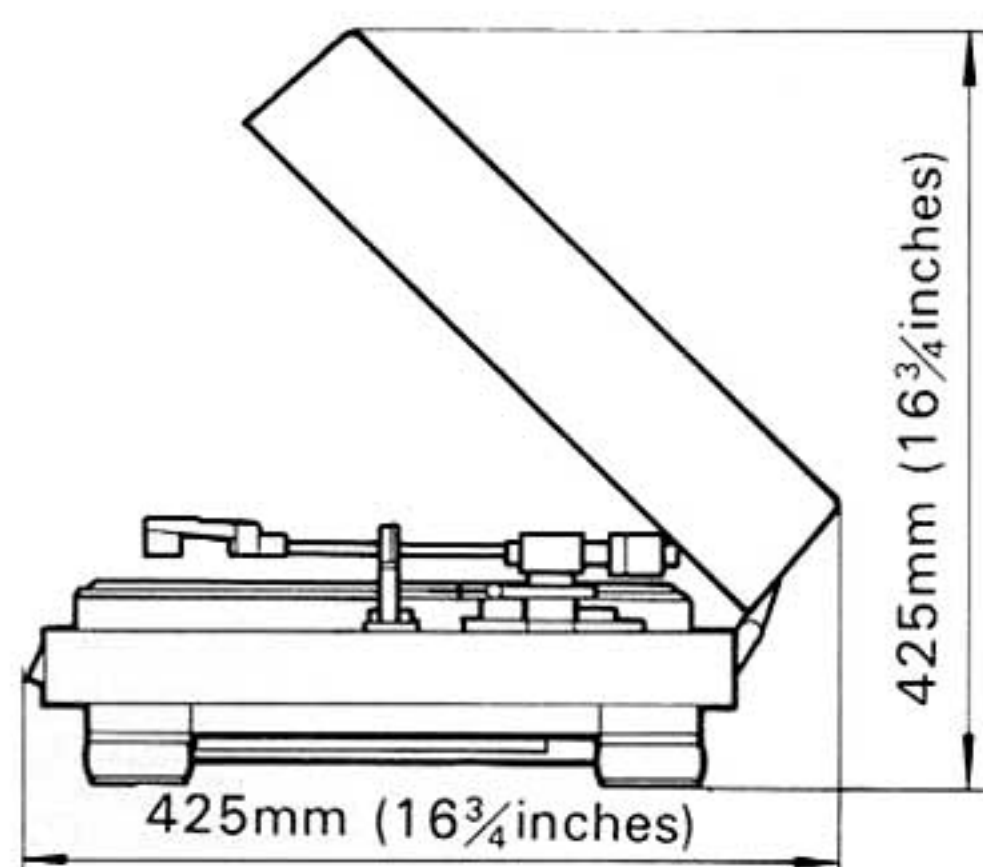


## PRECAUTIONS

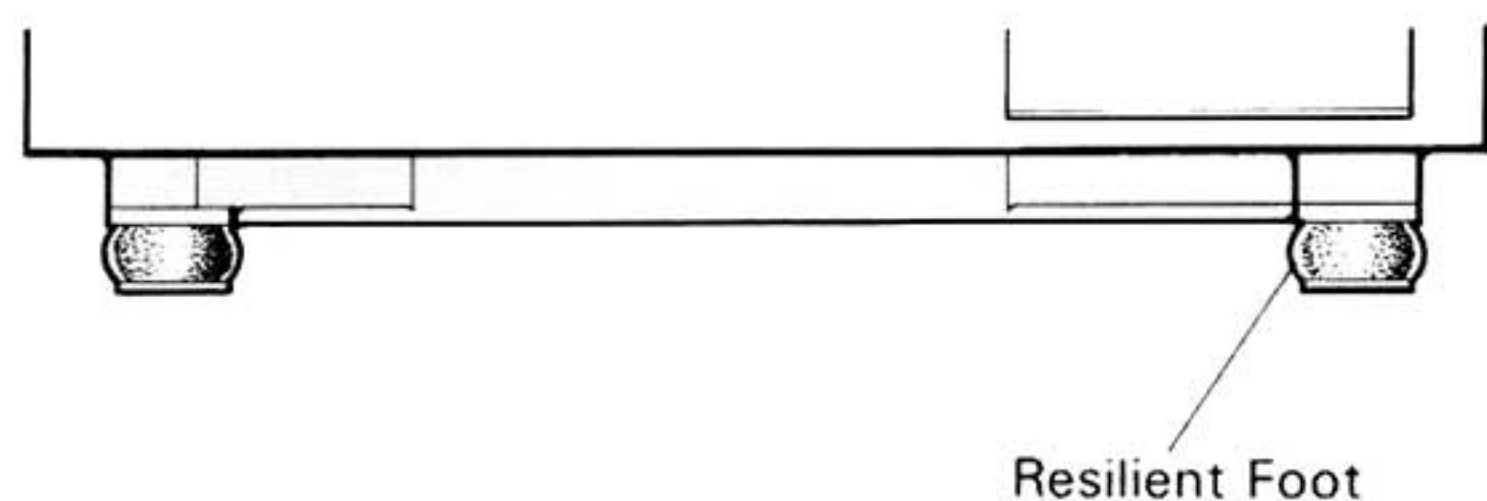
- Check that the operating voltage for your unit is identical with that of your local power supply.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull it out by the cord.

## NOTES ON INSTALLATION

- Place the turntable on a level surface.
- Avoid placing the unit near electrical appliances (such as a television, hair dryer, or fluorescent lamp) which may cause hum or noise.
- Avoid any vibration such as from speakers, slamming of doors, etc.
- Keep the unit away from direct sunlight, extremes of temperature, or excessive dust and moisture.
- Allow 10 cm (4 inches) clearance behind the unit so that the cover can be opened.



- The turntable has resilient feet that isolate the mechanism from external shock and vibration. Use them in locked position, but when placing the turntable on an uneven surface, turn each foot counterclockwise until the unit is level. When turning a foot, take care not to turn it to the end of the thread, or the foot will detach itself. Be sure not to pinch or remove the rubber.

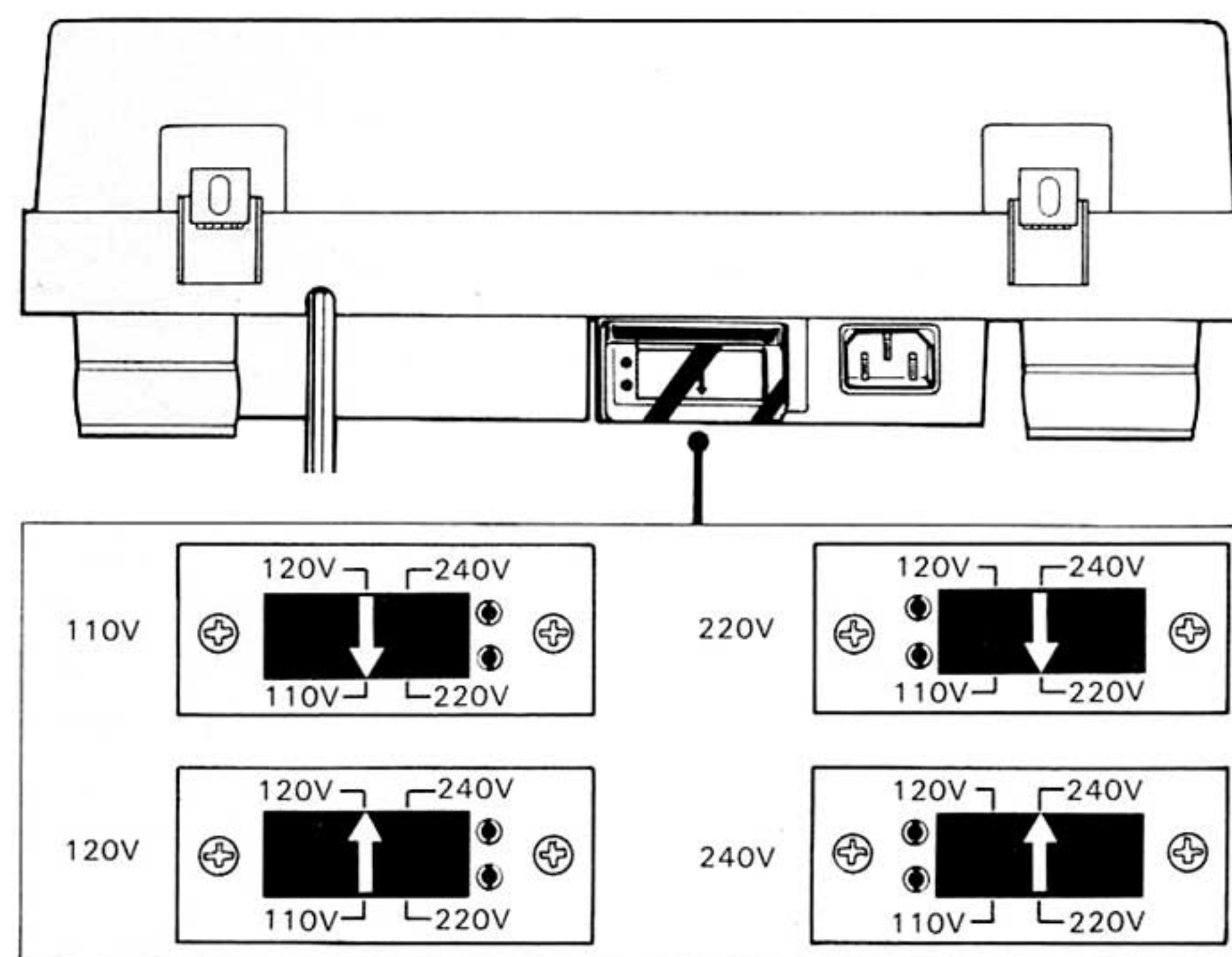


## OPERATING VOLTAGE

Before connecting to the power source, check that the voltage selector is set to your local power supply.

If it is not the same, change the voltage selector setting as follows :

- ① Check that the unit is disconnected from the power supply.
  - ② Remove the cover of the selector.  
Loosen the smaller screw on the cover but do not remove it from the cabinet. Remove the other screw on the cover. Then turn the cover around the smaller screw so that you can unplug the selector.
  - ③ Pull out the voltage selector plug and reinsert it so that the top arrow mark of the plug points to the proper voltage marking.
  - ④ After changing the voltage, reset the cover.
- A line frequency change is not necessary since your turntable system is furnished with a servo-controlled motor.



### For the customers in the United Kingdom

**WARNING :** This apparatus must be earthed at the terminals in your 3-pin plug as follows :

**IMPORTANT :** The wires in this mains lead are coloured in accordance with following code :

Green-and-yellow : Earth (safety earth)

Blue : Neutral

Brown : Live

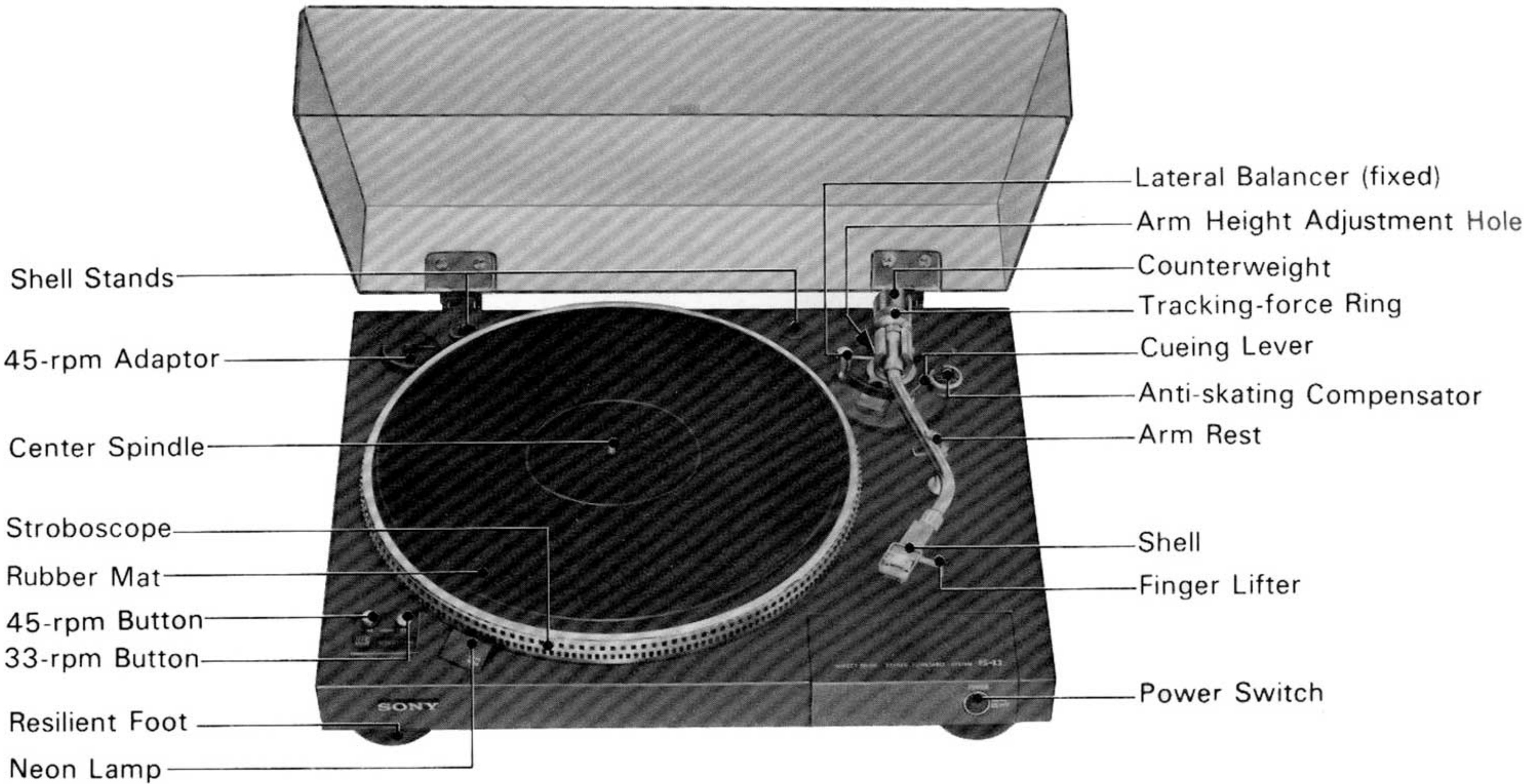
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows :

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



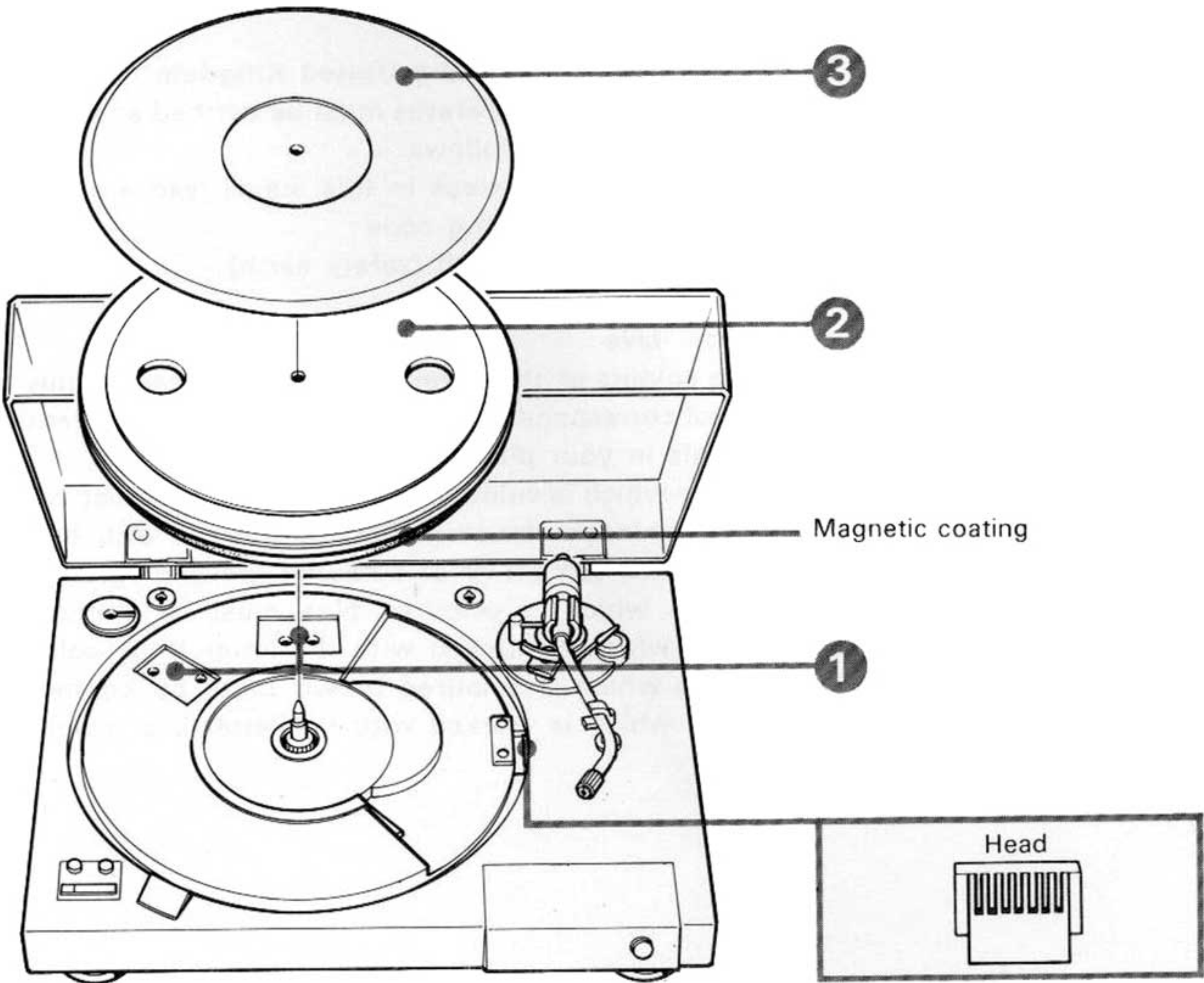
PARTS IDENTIFICATION

The picture below shows the appearance of the assembled turntable.



TURNTABLE ASSEMBLY

Do not connect the power cord or the connecting cords until after finishing the assembly.  
Remove all packing material and clean the cabinet.





## CARTRIDGE INSTALLATION

❶ Remove the red-painted transit screws. Store them in the holes on the label. (These screws will be required when repacking.)

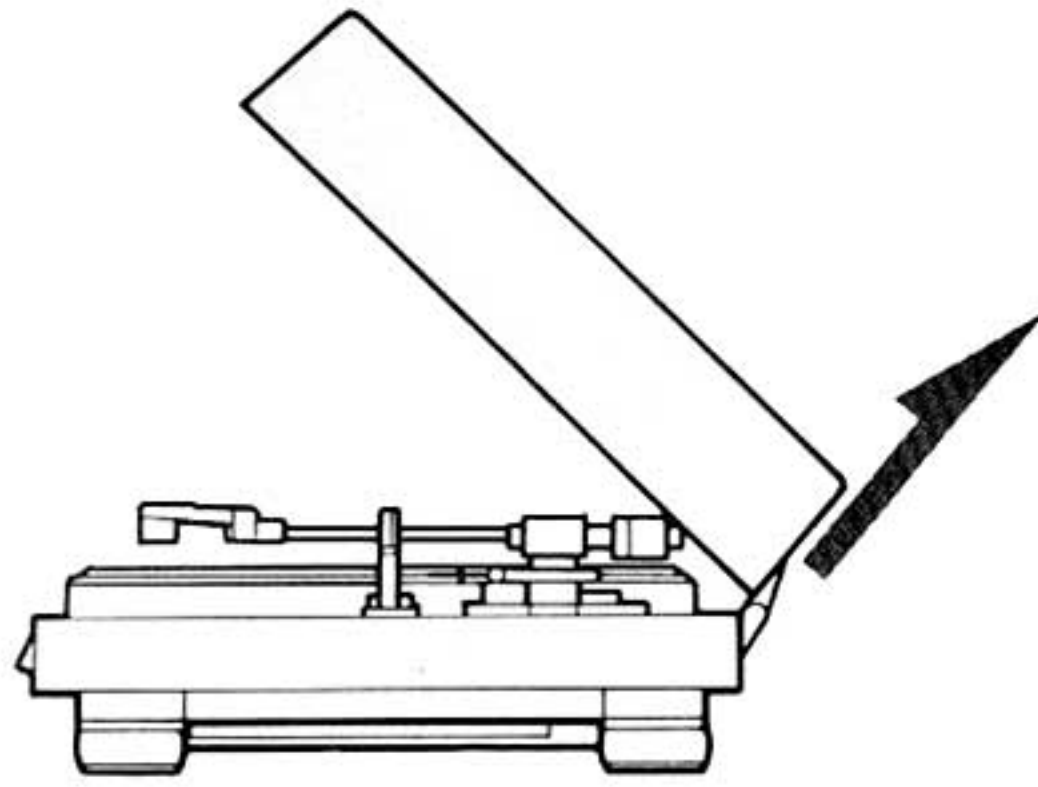
❷ Carefully place the platter on the motor board by matching the center hole and the center spindle.

● Do not touch the magnetic coating with your fingers or damage the magnetic pick-up head.

❸ Place the rubber mat on the platter.

### To remove the dust cover

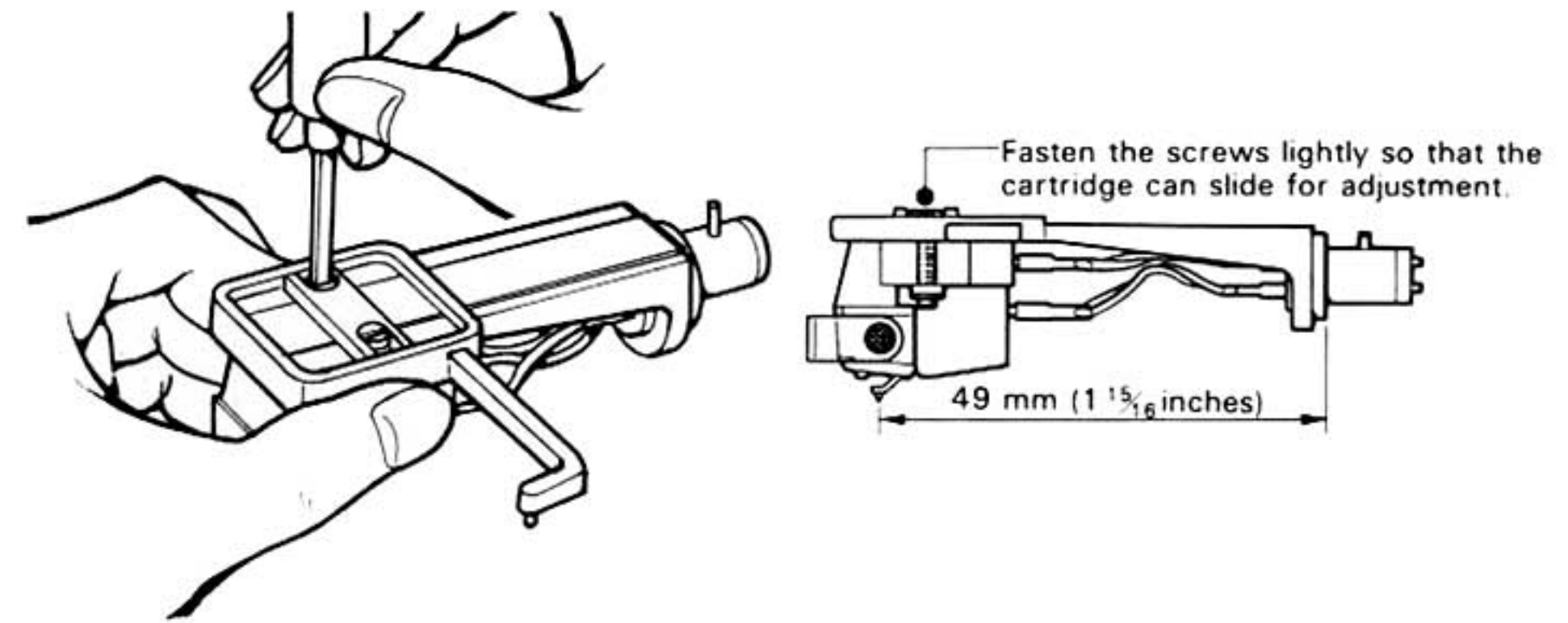
Open the dust cover fully and slide it as illustrated while holding it with both hands.



A cartridge weighing between 2.5 and 9.5 g can be mounted with the supplied shell. Heavier cartridges from 8 to 14.5 g can be mounted using the extra weight (supplied).

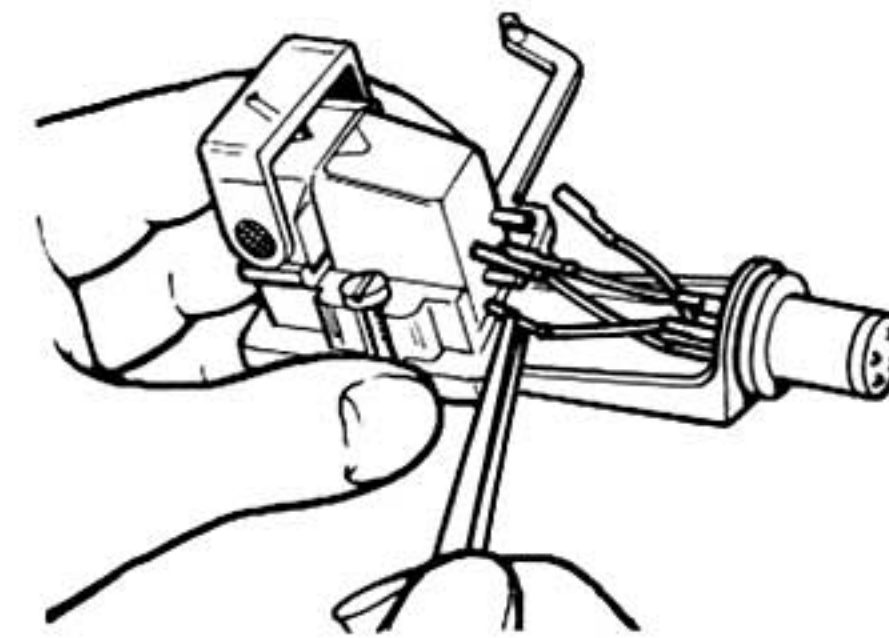
❶ Select the most suitable length of cartridge mounting screws according to the height of your cartridge. (Three pairs of screws of various lengths are supplied.)

❷ Install the cartridge into the shell with the supplied mounting screws so that the distance between the shell end and the stylus tip is 49 mm (1 15/16 inches). The temporary overhang adjustment is then complete. More precise adjustment should be made later.



❸ Connect the lead wires of the shell to the corresponding pins on the cartridge.

Wires	Cartridge pins
White . . . . .	L (left channel signal)
Blue . . . . .	LE or G (left channel ground)
Red . . . . .	R (right channel signal)
Green . . . . .	RE or G (right channel ground)



● Shell stands are provided on the base of the turntable for extra mounted cartridges.



# TONEARM ASSEMBLY AND ADJUSTMENT

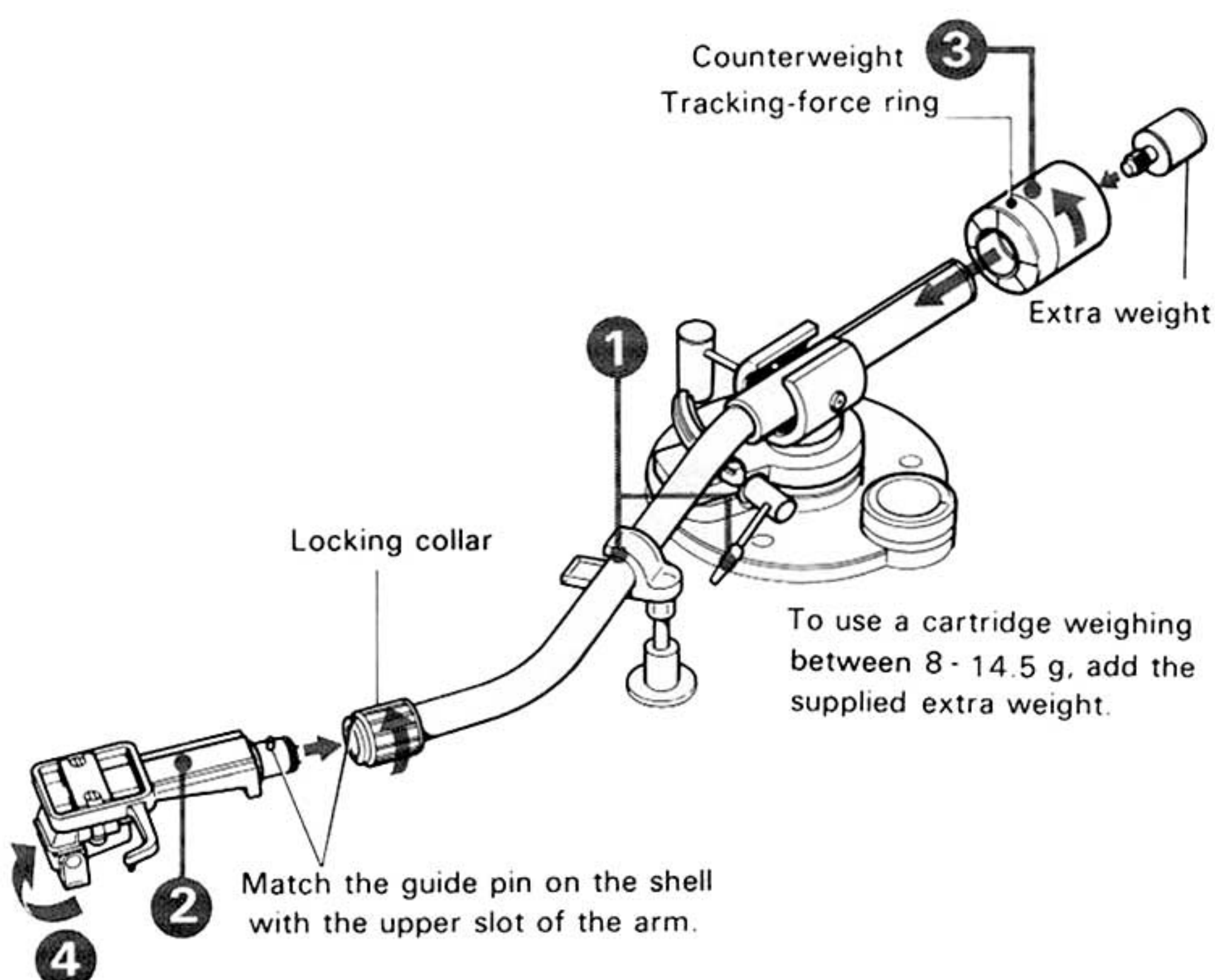
Do not connect the power cord or the connecting cords until the assembly and adjustments are complete.

The following procedures should be performed on a level surface. Be careful not to damage the stylus tip while making adjustments.

When a cartridge is replaced, readjustments are required.

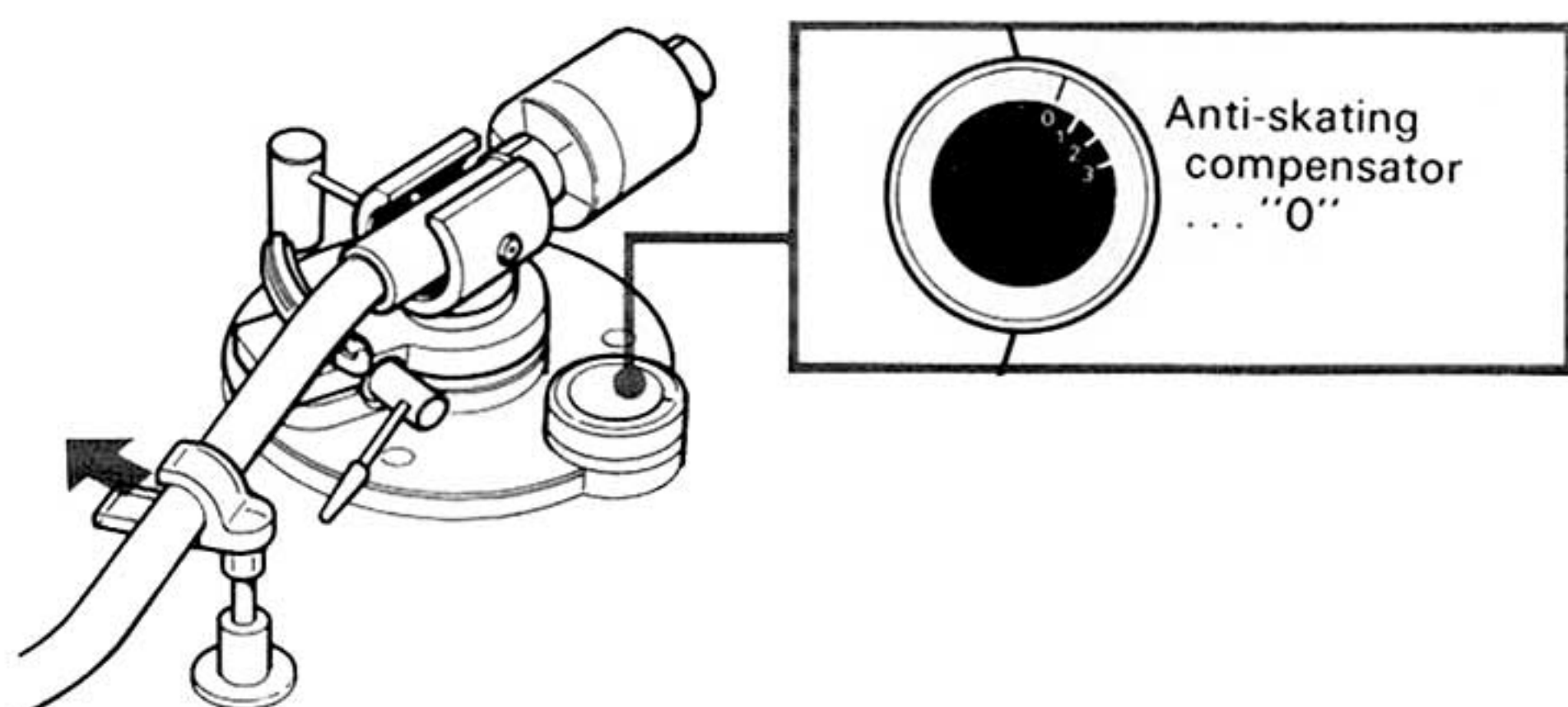
## Preparation

- 1 Secure the Tonearm to the Arm Rest and lower the Cueing Lever.
- 2 Plug the Shell into the Tonearm and turn the Locking Collar counterclockwise until the Shell is firmly locked.
- 3 Insert and turn the Counterweight counterclockwise several turns. (The Tracking-force Ring turns simultaneously.)
- 4 Remove the stylus guard, if fitted.



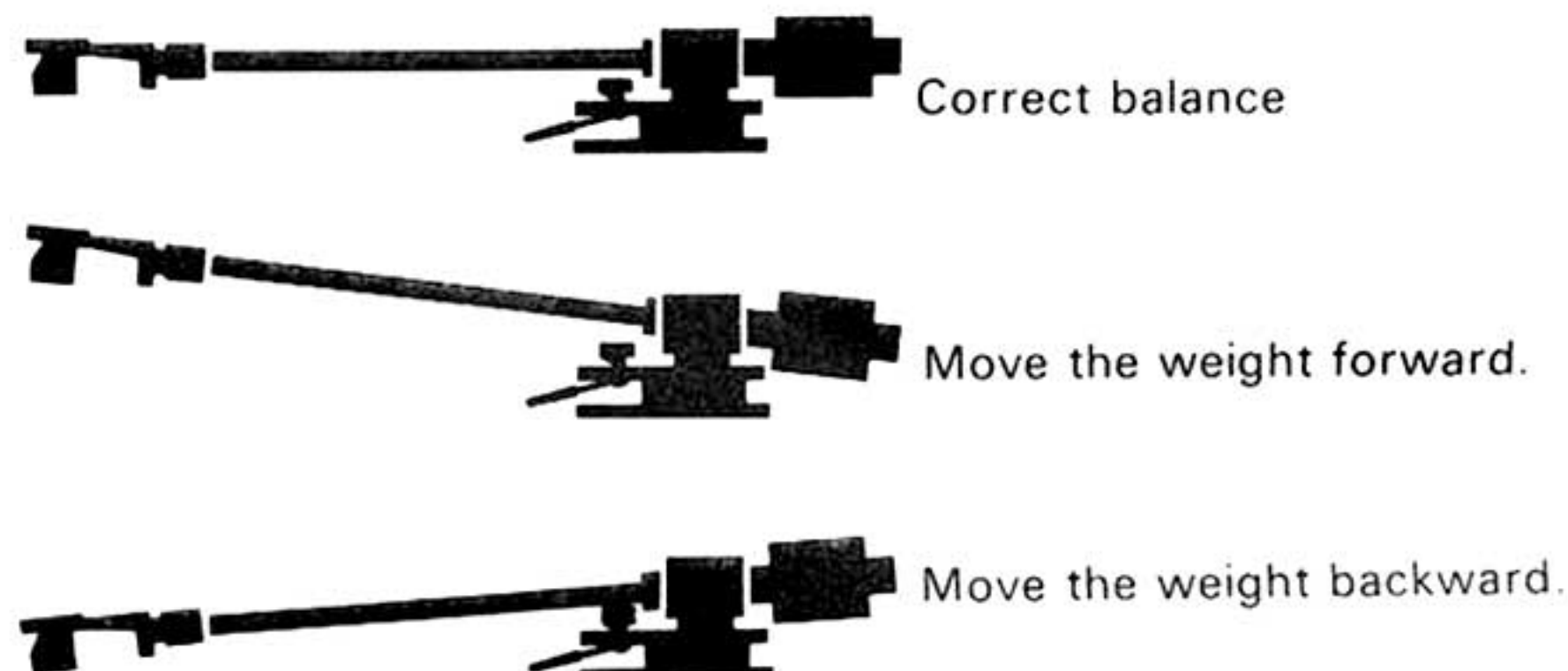
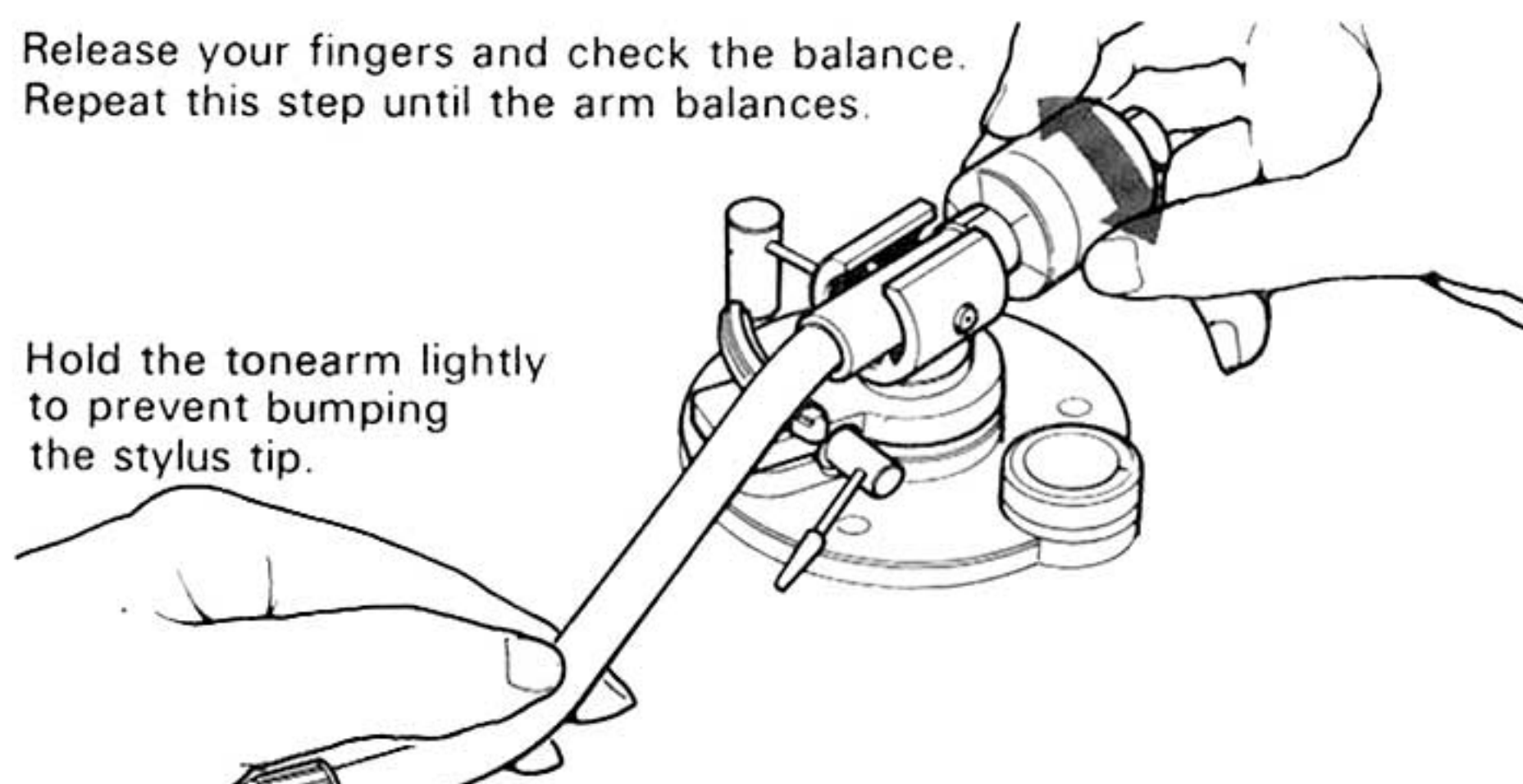
## Longitudinal balance adjustment \*1

- 1 Be sure that the Anti-skating Compensator is set at "0". Release the Tonearm from the Arm Rest.

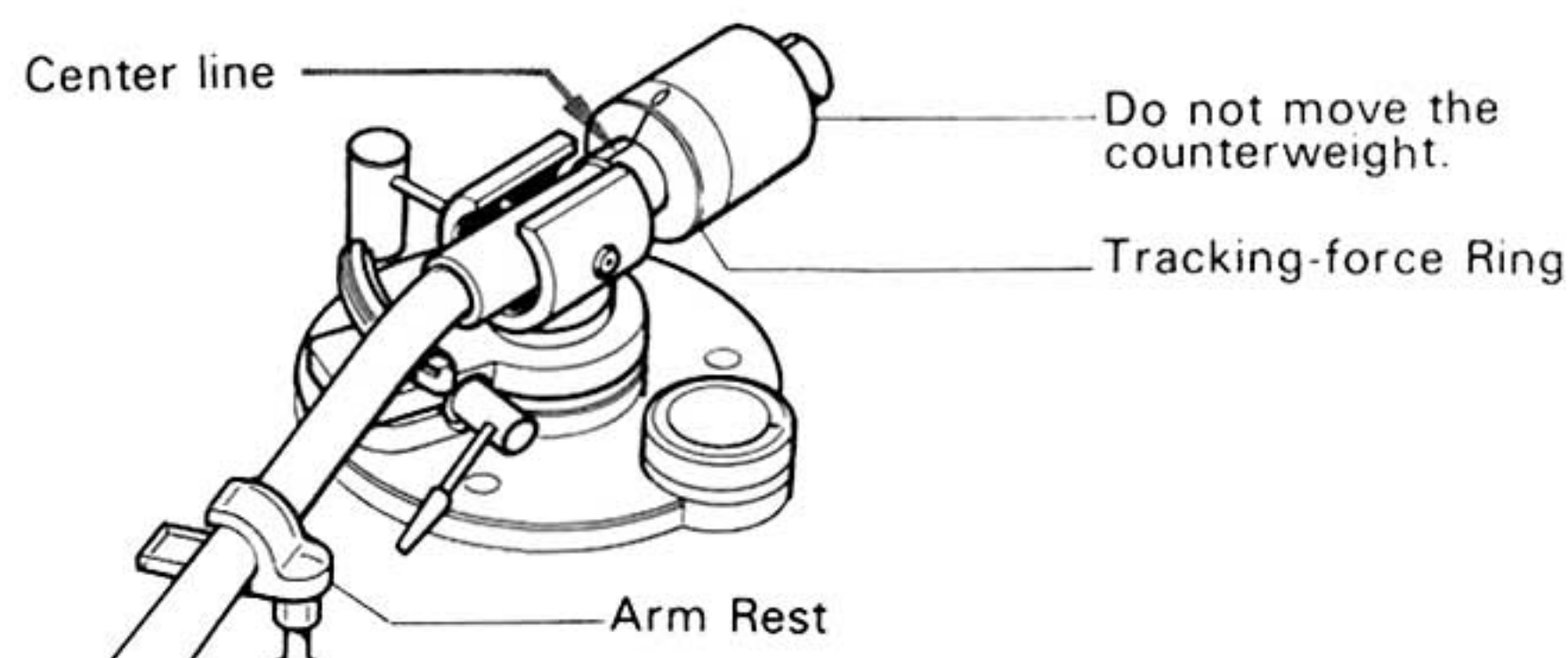


- 2 Turn the Counterweight as required until the Tonearm is in a horizontally balanced position. (The Tracking-force Ring turns simultaneously.)

Release your fingers and check the balance. Repeat this step until the arm balances.



- 3 While holding the Counterweight at the balanced position, separately turn the Tracking-force Ring until the "0" indication meets the center line on the Tonearm. Recheck the balance.



- 4 Secure the Tonearm to the Arm Rest again.



### Tracking-force adjustment \*2

Turn the Counterweight counterclockwise so that the recommended tracking-force figure for your cartridge is aligned with the center line on the Tonearm. The maximum tracking force available is 3 grams.

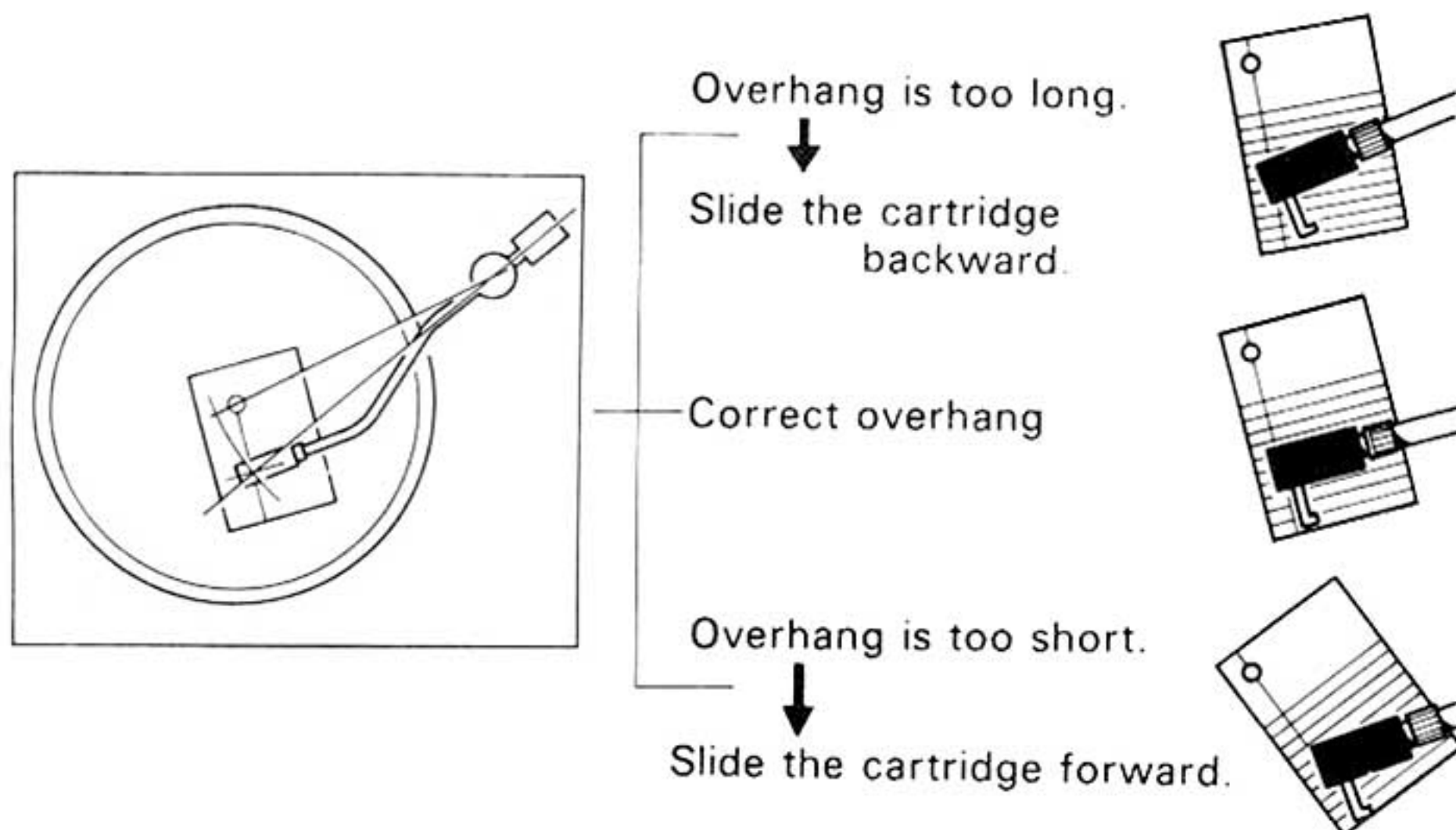
Tracking-force ring will turn at the same time.



### Overhang check \*3

Check that the stylus overhang is set correctly by using the Alignment Protractor supplied.

- 1) Place the hole of the Alignment Protractor over the Center Spindle.
- 2) Bring the Tonearm above the cross point of the two fine lines, and carefully lower the stylus on the cross point with the Cueing Lever.
- 3) Check to see that the Shell is parallel to the thick lines drawn on the Alignment Protractor as shown in the center illustration. If they are parallel, the stylus overhang is set correctly.

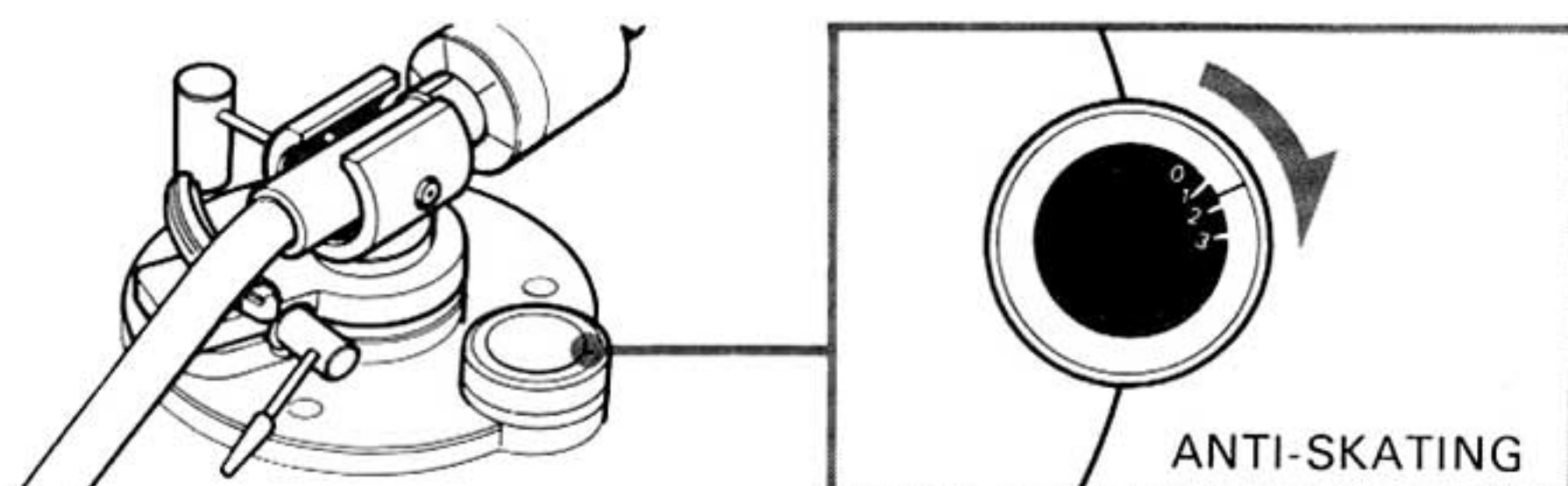


- 4) If the Shell is not parallel, readjust the stylus overhang.

- 1) Loosen the cartridge mounting screws and slide the cartridge in the required direction.
- 2) Re-tighten the screws.
- 3) Recheck the balance and tracking-force adjustments.

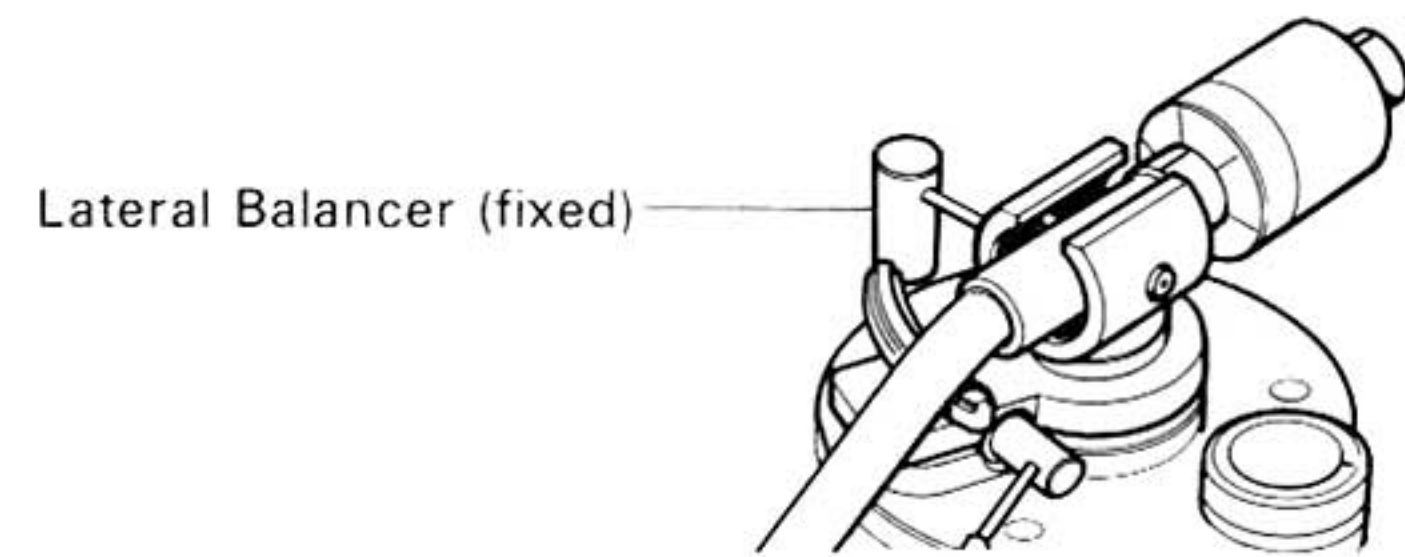
### Anti-skating compensation \*4

Turn the Anti-skating Compensator so that the guide mark is aligned with the tracking-force value used.



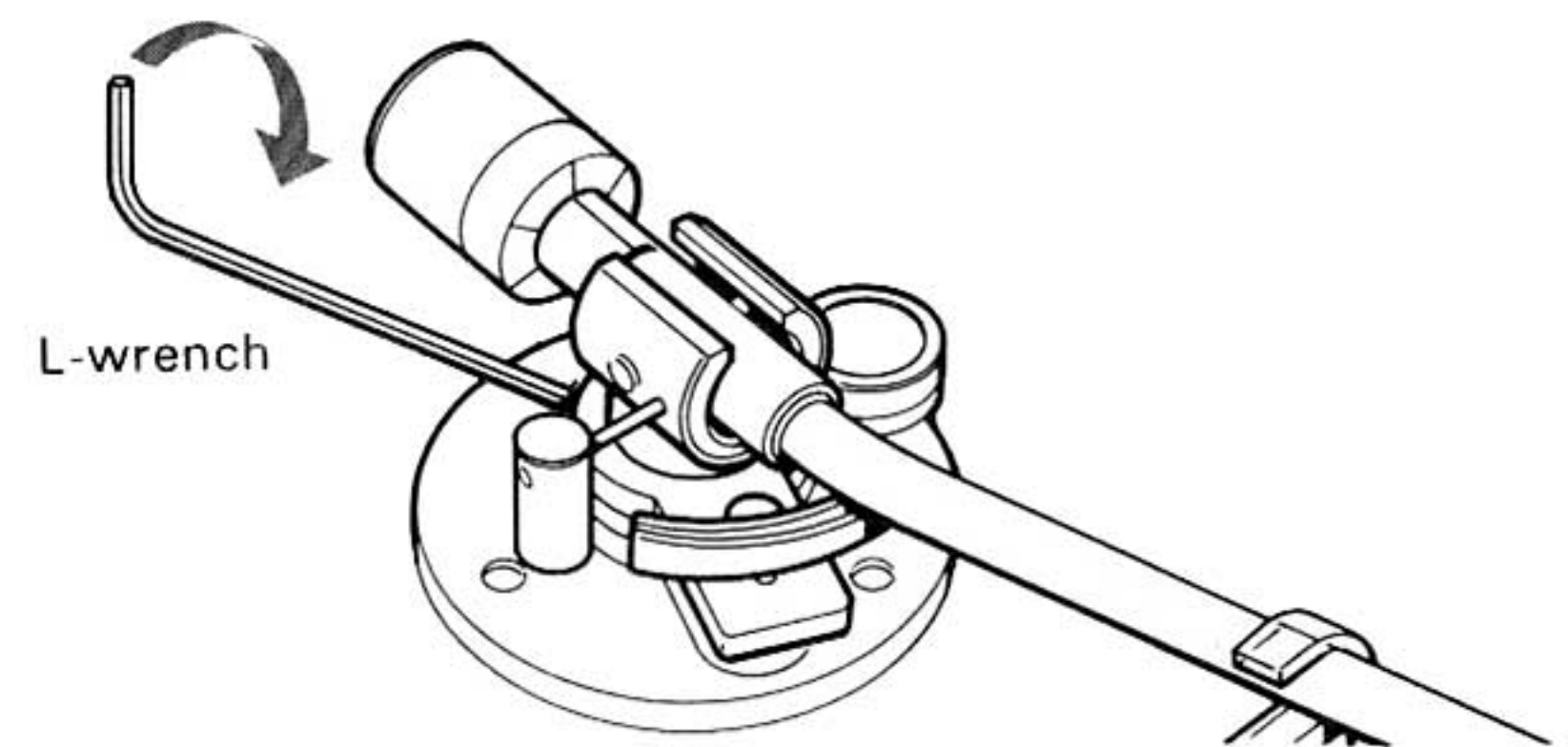
### Lateral balance adjustment \*5

This is fixed, and requires no adjustment.

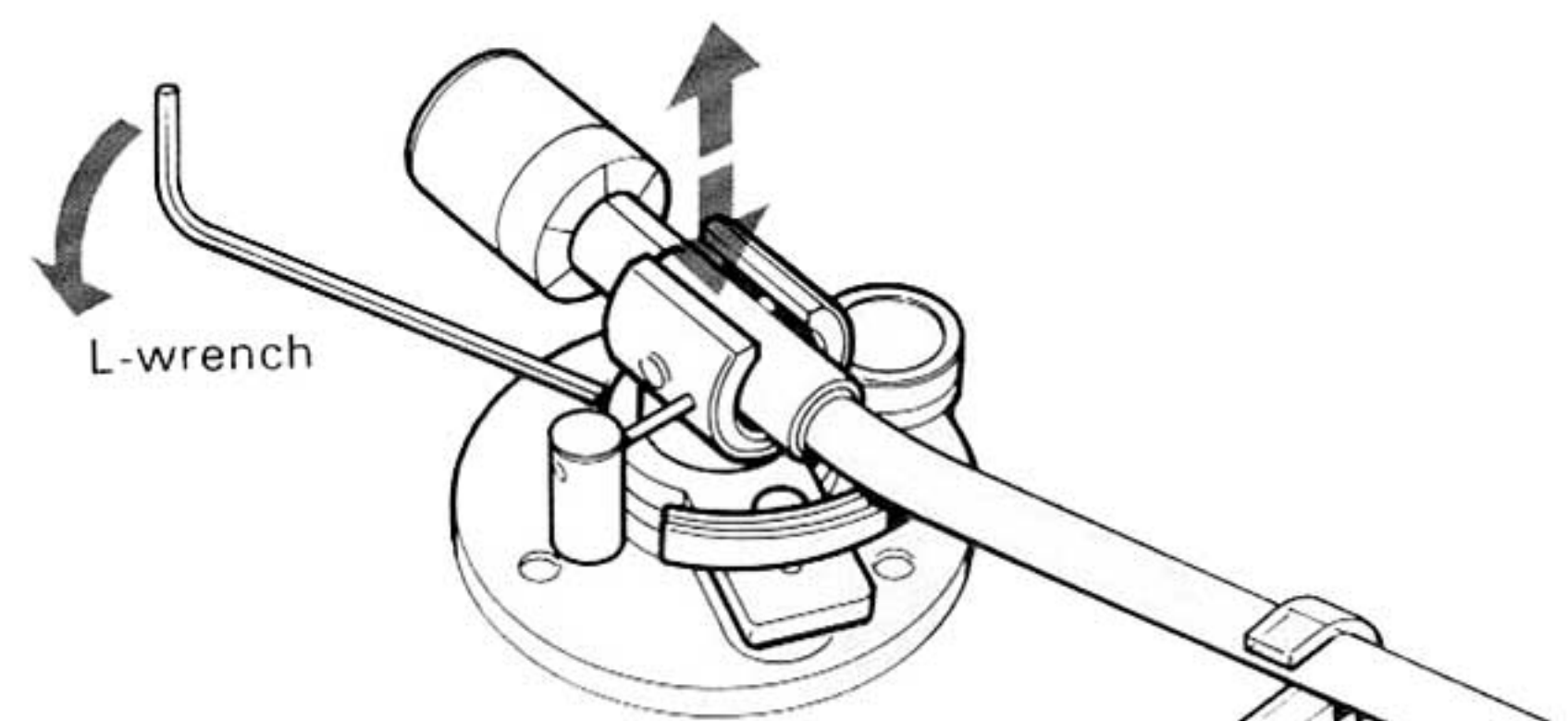


### Arm height adjustment

- 1) Place a record on the turntable.
- 2) Lift the Cueing Lever up and use the Finger Lifter to bring the Tonearm above the record.
- 3) Lower the Cueing Lever toward you. The stylus will be lowered onto the record. Check to see that the Tonearm is parallel to the surface of the record.
- 4) Lift the Cueing Lever up and return the Tonearm to the Arm Rest.
- 5) In case that the Tonearm is not parallel to the surface of the record, proceed as follows:
  - 1) Remove the dust cover and insert the L-wrench (supplied) into the Arm Height Adjustment Hole located at the side of the arm base.
  - 2) Turn the L-wrench counterclockwise and loosen the screw.



- 3) Adjust the arm height by sliding the arm pivot up and down, and fasten the screw lightly with the L-wrench.



- 4) Repeat these steps until the Tonearm is parallel to the record. Then tighten the screw.

After the adjustments are complete, install the stylus guard.



## CONNECTIONS

### \* 1 Longitudinal balance adjustment

While playing the record, the weight of the tonearm is supported by the arm pivot and only tracking force is applied to the stylus tip. To accomplish this, the tonearm must first be balanced horizontally, with the tracking force indicator set at "0".

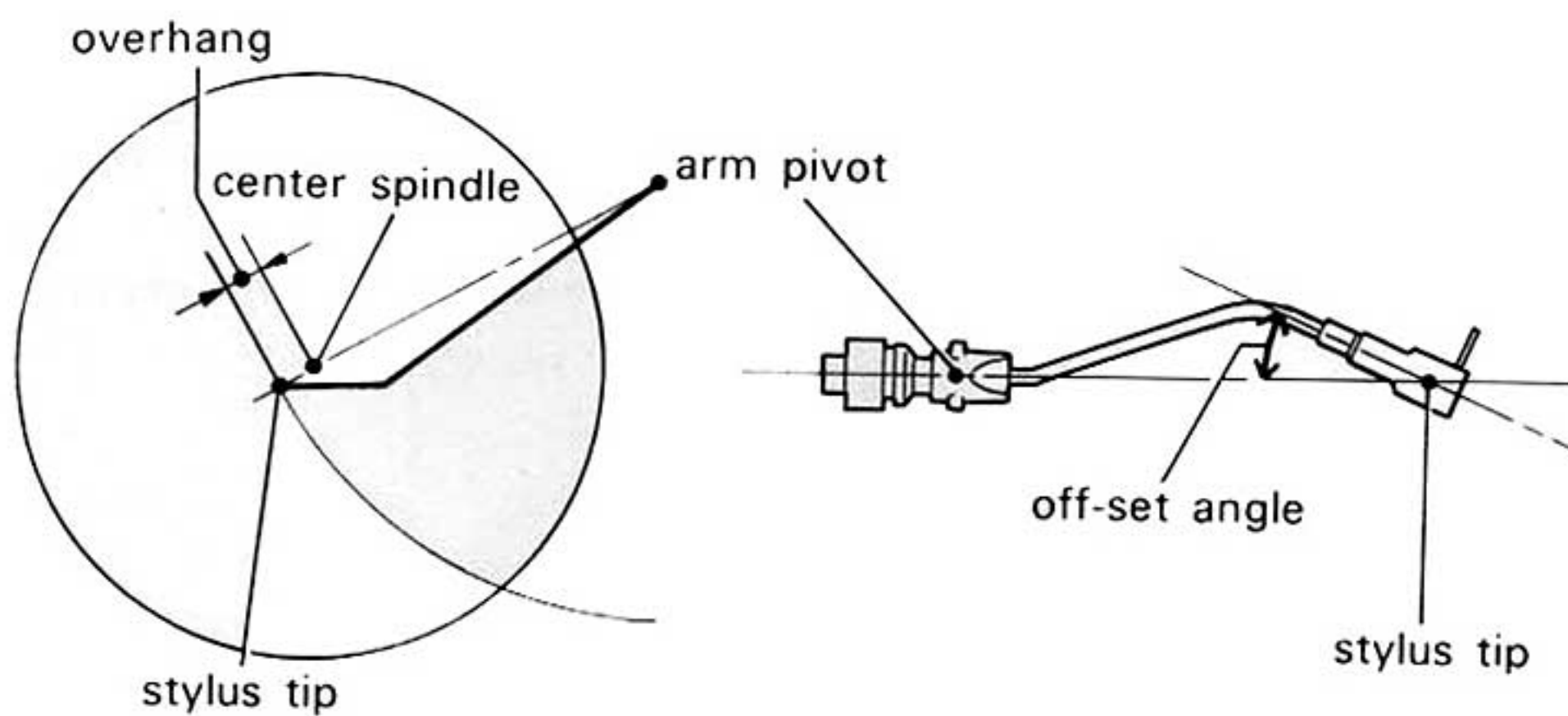
### \* 2 Tracking force

After the longitudinal balance adjustment, apply the recommended tracking force weight so that the stylus tip will trace the music groove accurately.

### \* 3 Overhang

In record playing, because of the pivoted design of the tonearm, the stylus tip can be perfectly tangent to the music groove at only one point of the record. At all other portions of the record, there is a slight deviation of the stylus from tangency. This is called the tracking error, and introduces minute errors in the amplitude and timing of the reproduced signal as compared to the original, and other forms of distortion which may be introduced depending on the cartridge and stylus design.

Tracking error is minimized by the selection of an optimum "off-set" angle and "overhang" distance. Overhang is the distance between the stylus tip and the center spindle. This overhang adjustment is made at the time of installing a particular cartridge, while the off-set angle is fixed by the manufacturer of the tonearm.



### \* 4 Anti-skating compensation

While the record is being played, the frictional force between the record groove and the stylus produces a force that tends to drive the tonearm toward the center of the record. The anti-skating compensation cancels the above mentioned force, and is applied in accordance with the tracking force.

Incorrect anti-skating compensation results in sound distortion and uneven wear on both the stylus and the record.

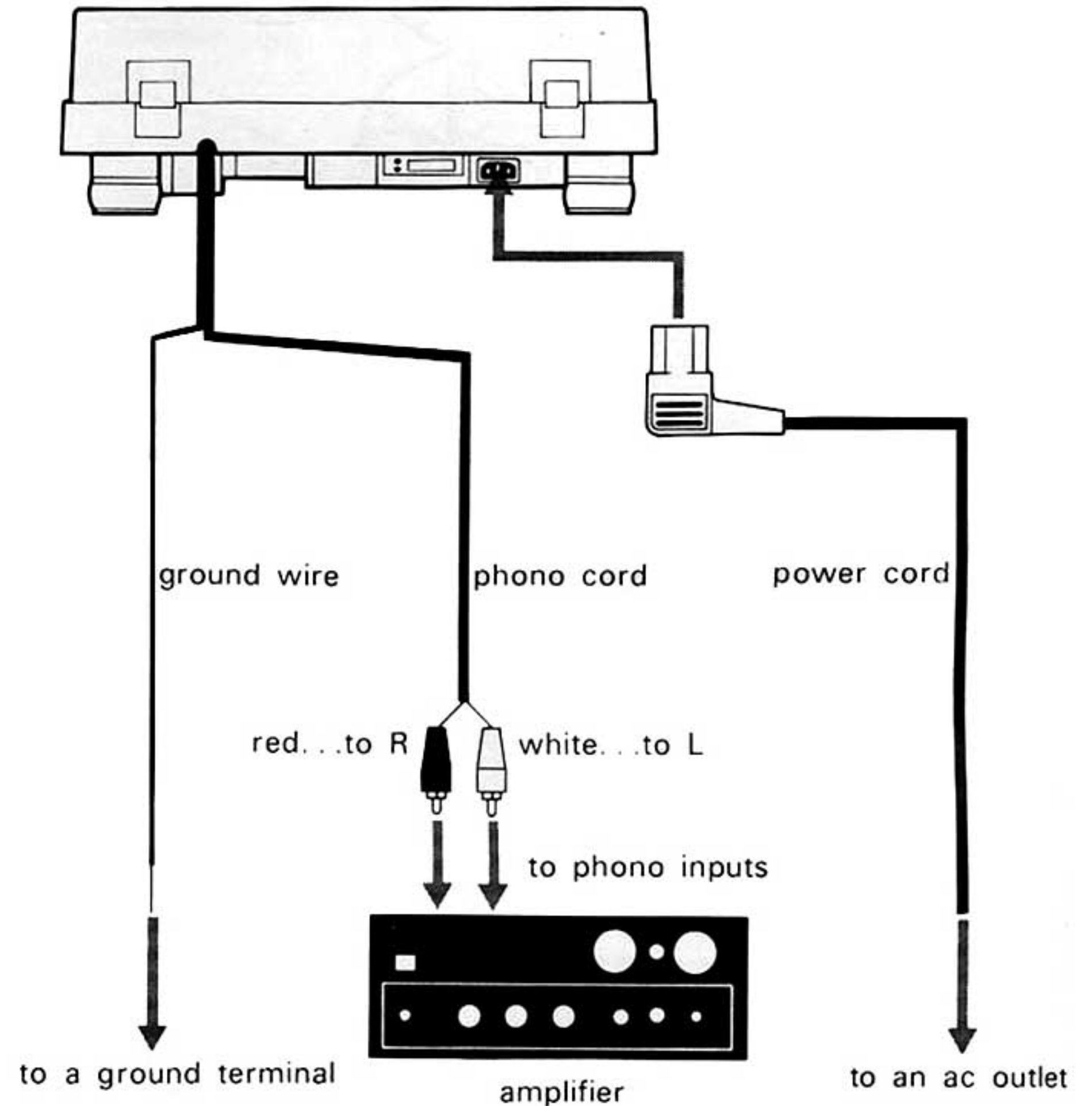
### \* 5 Lateral balance

A lateral balance (fixed) is provided to prevent the Tonearm from moving inward or outward.

● When connecting the detachable power cord, first connect it to the ac input jack of the turntable and then to an external ac outlet.

● Check that the phono cord and power cord are not caught under any foot of the cabinet.

● Leave a little slack in the connecting cord to allow for inadvertent shock or vibration.



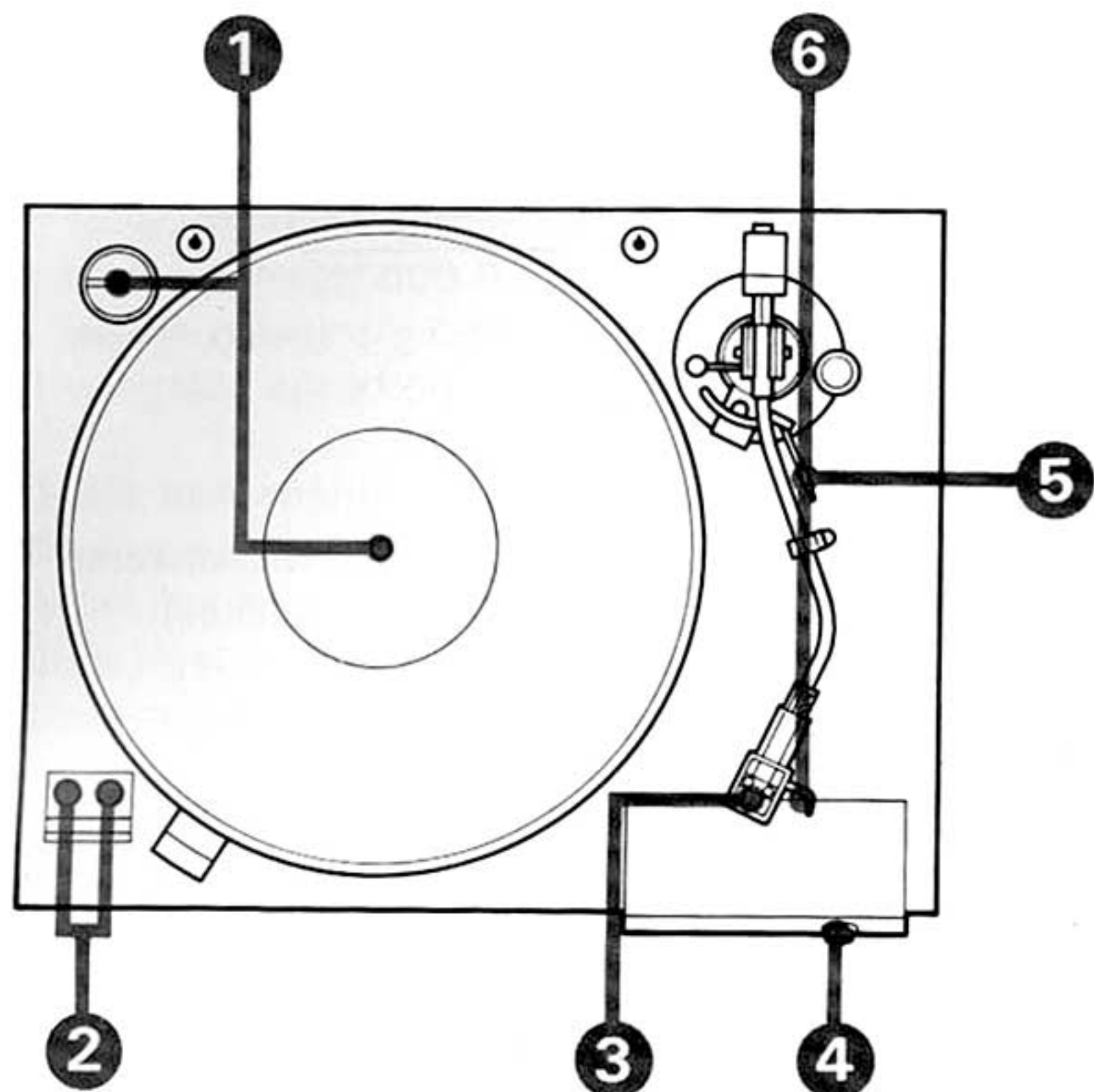


## RECORD PLAYING

### Amplifier setting

- Lower the amplifier volume and set the input selector to PHONO. Turn on the amplifier.
- After the Tonearm has lowered onto the record, adjust the volume and tone of the amplifier.

Follow in sequence the numbered operations of the diagram.



- 1 Place a record on the turntable.  
For 17 cm (7-inch) records, put the supplied 45-rpm adaptor over the center spindle.
- 2 Push either the "33" or "45"-rpm Button according to the record speed.
- 3 Remove the stylus guard while keeping the Tonearm on the Arm Rest.
- 4 Push the POWER Switch. The turntable will begin rotating.
- 5 Lift the Cueing Lever up.
- 6 Bring the Tonearm above the record and lower the Cueing Lever toward you. The Tonearm will be lowered onto the record and the playing will begin.

### To return the Tonearm to the Arm Rest

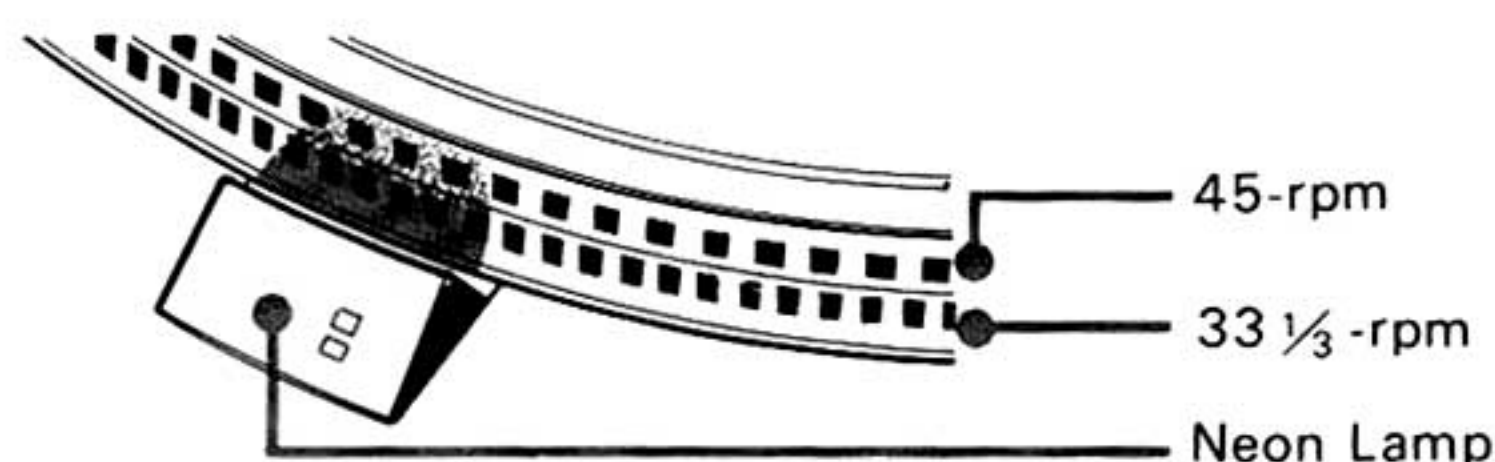
After playing or to stop during play, lift the Cueing Lever up and bring the Tonearm to the Arm Rest.

To stop the turntable, push the POWER Switch.

### Stroboscope and neon lamp

The Crystal Lock System assures precise turntable speed. This is verified by viewing the neon lamp stroboscope pattern, which will appear stationary at the correct speed. The upper line is for 45 rpm and the lower for 33 1/3 rpm.

- Always view the stroboscope with the light of the neon lamp provided, not with the light of a fluorescent lamp. This is because the neon lamp is energized by a 120-Hz pulse from the built-in crystal oscillator and assures precise speed indication regardless of any line-frequency deviation.



## TIPS ON RECORD HANDLING

### Before playing

- Clean the stylus, using a soft brush (stylus brush, artist's paint brush, etc). Brush the stylus from back to front. Never attempt to clean the stylus with your finger tip.
- For routine cleaning of records, the use of a barely damp soft cloth (gauze, etc.) or a fluid type cleaner will be effective. If a spray type record cleaner is used, make sure that the cleaner has dried completely before playing the records. Playing the record before the fluid has dried may damage the record. It is a good idea to clean the record again before putting it away.
- Handle a record by its edges and don't touch the music grooves. Finger prints on the record surface may induce an accumulation of dust, resulting in impaired tone.

### When record playing

- It is recommended that you reduce the amplifier volume before you lower the tonearm onto the record.
- While the turntable is energized, don't attempt to stop or reverse the turntable by hand.
- During play, be sure to close the dust cover. Don't place anything on the dust cover.
- While playing, never attempt to move the turntable or touch the tonearm.

### After playing

- Avoid exposing records to any source of heat, such as direct sunlight, a hot-air duct, etc. Store records vertically without applying any pressure or inclining to either side. This will minimize any warpage.
- When not using the turntable, close the dust cover.

### Other precautions

- Don't put anything but records on a turntable.
- Don't place anything but the spare cartridges and 45-rpm adaptor on the turntable deck.



## MAINTENANCE

- Clean the cabinet and dust cover periodically with a soft dry cloth. Do not use solvents such as alcohol, benzine or thinner, since they will damage the finish.

- When the rubber mat becomes dirty, wipe it gently with a soft cloth slightly dampened with water.

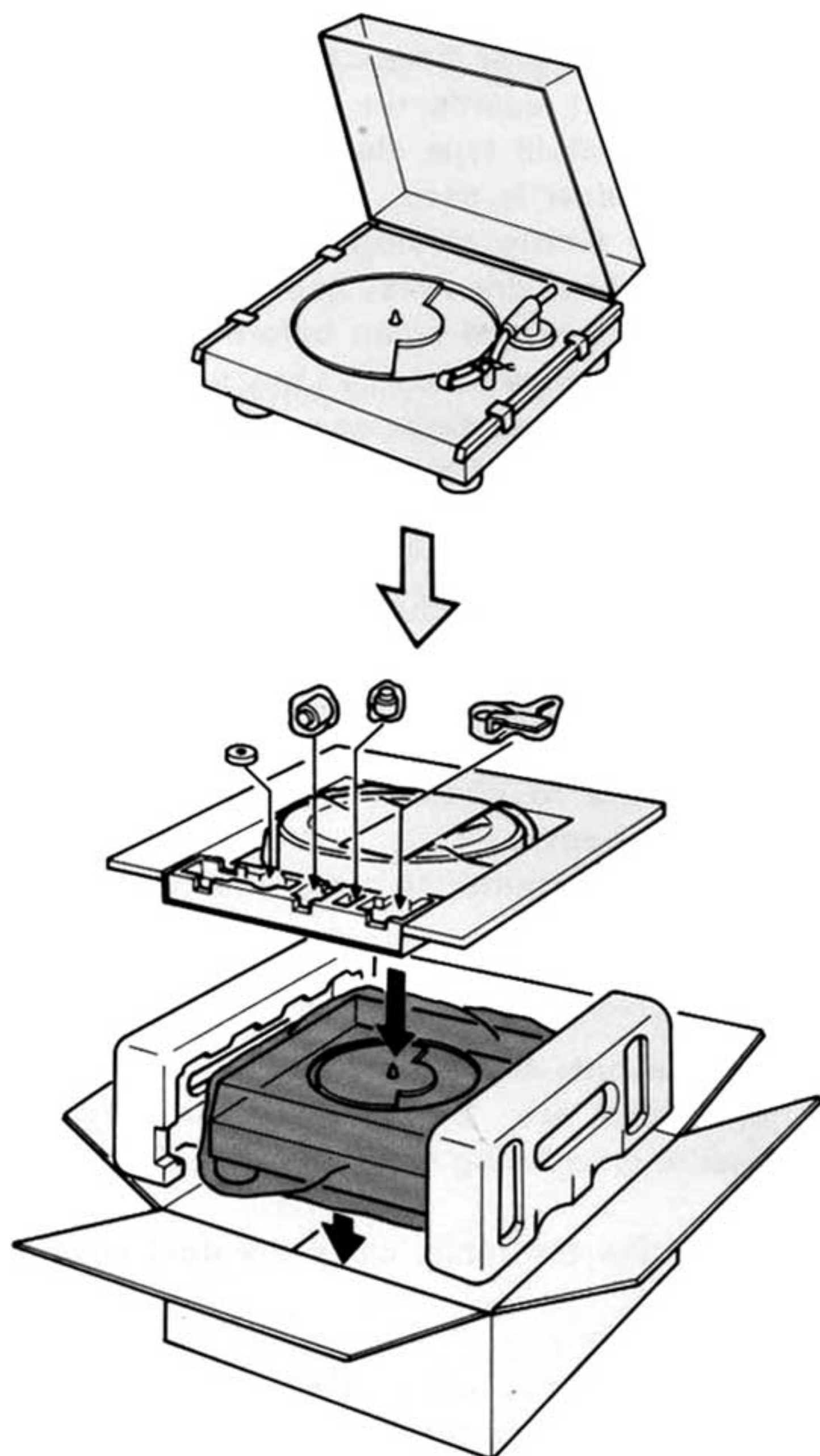
- No lubrication is required for this turntable. The motor shaft is factory lubricated for the life of the turntable.

## REPACKING FOR SHIPMENT

The original shipping carton and packing material (which we asked you to save) is the ideal container for use in shipping the unit for repair work, or to another location. To secure the maximum protection, it must be repacked in this material precisely as before. The proper repacking procedure is shown in the illustration.

- Clip the tonearm to the arm rest and bind it there with a tape.

- Fasten the transit screws in their original position by referring to the illustration of "TURNTABLE ASSEMBLY" to secure the inside parts to the cabinet. Turn the screws fully clockwise.



## SPECIFICATIONS

<b>Turntable</b>	
Platter	Manual player 31.7 cm (12 1/2 inches) aluminum-alloy diecast
Motor	DC servo-controlled motor (brushless and slotless)
Drive System	Direct drive, crystal lock control system
Speed	33 1/3 rpm, 45 rpm
Starting characteristics	Comes to nominal speed within a third revolution (33 1/3 rpm)
Wow and flutter	±0.045% (DIN) 0.025% (WRMS)
Signal-to-noise ratio	73 dB (DIN-B)
Initial drift	Within 0.0003%
Load characteristics	0% at 150 g tracking force
Speed deviation	Within 0.003%
<b>Tonearm</b>	
Type	Statically balanced, universal pivot
Pivot to stylus length	216.5 mm (8 1/2 inches)
Overall arm length	300 mm (11 7/8 inches)
Overhang	16.5 mm (21/32 inch)
Tracking error	+3°, -1°
Tracking-force adjustment range	0-3 g
Shell weight	10.5 g
Cartridge weight range	2.5-9.5 g 8-14.5 g (with extra weight)
<b>General</b>	
Power requirements	110, 120, 220, 240 V AC~ adjustable, 50/60 Hz
Power consumption	12 W
Dimensions	Approx. 445 × 150 × 375 mm (w/h/d) (17 1/2 × 5 7/8 × 14 3/4 inches) including projecting parts and controls
Weight	Approx. 10.2 kg, net (22 lbs 8 oz) Approx. 11.9 kg, in shipping carton (26 lbs 4 oz)
Supplied accessories	45-rpm adaptor Extra weight Alignment protractor Cartridge mounting screws (3 pairs) Shell L-wrench for arm height adjustment

Whilst the information given is true at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications.

We would ask you to check with your appointed Sony dealer if clarification on any point is required.



## TROUBLE CHECKS

The following chart will help correct most problems which may occur with the unit. If the problem persists after you have made these checks, consult your Sony Service Station or Sony dealer.

### **Impaired tone quality**

- Turntable not level
- Unit incorrectly placed on or near a speaker
- Dusty stylus
- Worn stylus or defective record (The stylus life is approx. 400 hours of playing time.)
- Incorrect cartridge installation
- Improper tonearm balance
- Improper tracking force
- Improper setting of the Anti-skating Compensator
- Improper turntable speed

### **No audio from one channel**

- Loose attachment of the shell to the tonearm
- Loose connection of phono cord
- Low volume level setting for one channel of the amplifier
- Incorrect connection of the shell lead wires

### **Groove skipping, Tonearm tends to skate out, Tonearm does not advance (record repeats)**

- Turntable not level
- Defective record
- External vibrations
- Improper tracking force
- Improper setting of the Anti-skating Compensator

### **Steady low-pitched sound (hum)**

- Loose ground wire connection to the amplifier
- Loose connection between the shell and the tonearm
- Incorrect connection of the shell lead wires
- Transit screws not removed

### **Loud rumble or low-frequency "howl" which occurs when playing a record at high sound levels (acoustic feedback\*)**

- Put the turntable on a sturdy surface.
- Put the turntable as far away from the speakers as possible.
- If the above does not rectify the problem, try commercially available acoustic insulators designed to be put between the feet and shelf.

\* Acoustic feedback: The vibration of speakers is transmitted through the air or via solid objects (shelves, cabinets, floor, etc.) to the turntable, picked up by the cartridge stylus, amplified, and again reproduced through the speakers.



