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SONY®

STEREO TURNTABLE SYSTEM

PS-X800



OPERATING INSTRUCTIONS

Before operating the unit, please read this manual thoroughly.
This manual should be retained for future reference.

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.

TABLE OF CONTENTS

Features	2
Operating voltage.....	3
Precautions	3
Location and function of controls	4
Turntable assembly	5
Cartridge installation and stylus force adjustment	6
Connection to an amplifier	6
Record playing	7
To begin record play at a particular point	
To stop during play	
To lift up the stylus during play	
To move to a different part of a record while the record is playing	
To repeat play	
Instantaneous start of play (cueing)	8
How the auto record size selection works.....	9
Synchronized play of the turntable and the cassette deck	10
Tips on record handling	11
Maintenance.....	11
Specifications	12
Trouble checks	13

FEATURES**A Sony's unique servo-controlled linear tracking tonearm**

- A linear tracking tonearm is designed to duplicate the movement of the head which cuts the record master.

Compared with a pivoted tonearm, a linear tracking arm has a very small tracking error (which means greatly reduced harmonic distortion) and almost no pressure on the inside wall of the groove (which means improved tracking ability and channel separation). To optimize these advantages, the mechanism which moves the tonearm must be carefully designed. Generally, in conventional linear tracking arms, a sensor monitors tracking error in the stylus movement and when a certain amount of tracking error is detected, the tonearm base moves until the error is reduced to 0°, after which the tonearm base stops. The PS-X800 tonearm solves this problem by moving the tonearm base at a minimum constant speed. The speed of the tonearm base is calculated as the sum of a constant value and the value which is required to reduce the stylus tracking error to zero. As a result, the PS-X800 tonearm base moves at essentially the same speed as that of the cutting head, that is, the speed at which the stylus tip traces the music grooves of a record.

- Instead of using ball bearings which often cause noise, the X800 uses specially-designed resin bearings to assure smooth tonearm base movement.
- The tonearm is moved by the Sony's unique linear torque BSL (Brushless and slotless) motor the same as the one which drives the turntable.

Biotracer electronic tonearm

● The horizontal and vertical movement of the tonearm is monitored by the Biotracer's own sensors, and this information is transmitted to the tonearm by the tonearm's own linear motors to suppress resonance at low frequencies and to obtain the maximum signal-to-noise ratio.

- The tonearm balance and the stylus force are electronically controlled by adjusting current to the linear motor for vertical movement.

Fully automatic system

- Once the STYLUS FORCE knob is set, all the "Feather-touch" function buttons are accessible with dust cover closed.

● Record size is automatically set by a photo sensor system. If no record is on the turntable, the tonearm will not descend but will automatically return to the arm rest.

- The muting system activates when the tonearm is lifted and deactivates after the tonearm lowers onto a record. There is no need to turn down the amplifier volume every time a stylus is placed on a record or when a cartridge is changed.

- The speed and direction of the tonearm movement are easily controlled with the arm direction buttons and the FAST button.

● When the tonearm lowers to the lead-in groove of a record, the cassette deck stand-by mode is released and the record mode assumed. When play finishes, the cassette deck is automatically set first in the record muting mode, then in the pause mode.

This synchronized operation is possible with Sony cassette decks equipped with a four-pin remote control jack which is connected with a Sony RM-65 synchro remote control unit.

PRECAUTIONS

Other main features

- The turntable maintains an accurate and drift-free speed by referring to a frequency generated by a very stable quartz oscillator, and with aid of a speed monitoring system which utilized a magnetic pick-up head and a pulse signal derived from a magnetic coating at the edge to the platter.
- Direct drive system with Sony's unique linear torque BSL (Brushless and slotless) motor which has a high signal-to-noise ratio to virtually eliminate wow and flutter. Its high torque assures quick start to 33 $\frac{1}{3}$ rpm after only a half revolution.
- The square (which is made stronger than a tubular tonearm), and short design tonearm reduces the resonance of the tonearm.
- Resonance is further reduced by the sound-absorbent material laminated underneath the platter.
- The cabinet made from a special inorganic (non-plastic) molded compound with low "Q" and newly developed resilient feet effectively minimize outside vibrations and eliminates acoustic feedback.

OPERATING VOLTAGE

Before connecting the unit to the power source, check that the operating voltage of your unit is the same as the local power line voltage.

The model for European countries (Type 1) operates on 220 V ac. The model for the United Kingdom (Type 2) operates on 240 V ac. The model for other countries (Type 3) operates on either 110-120 or 220-240 V ac. The voltage selector is located on the motor board. If the selector must be reset, disconnect the ac power cord and slide the selector to the desired voltage.

For the Customers in the United Kingdom

Important

The wires in the mains lead 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.

On safety

- Before operating the unit, be sure that the operating voltage of your unit is identical with that of your local power supply.
- Should any solid object or liquid 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 the plug. Never pull the cord itself.

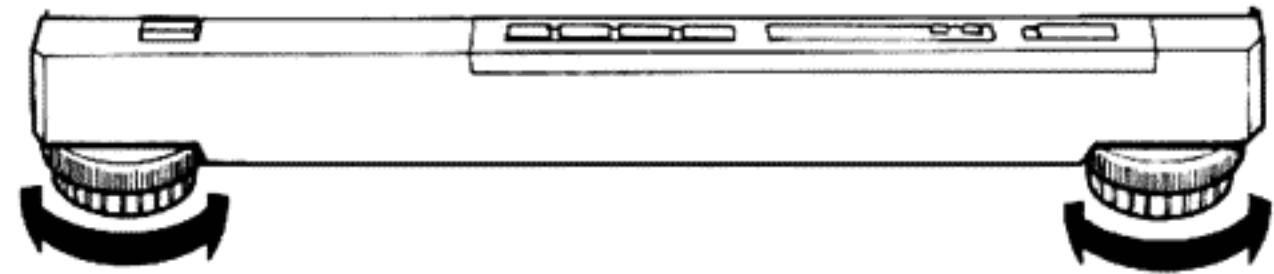
On installation

- 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.
- Place the turntable where it will not be subject to any vibration, such as from speakers, slamming of doors, etc.
- Keep the unit away from direct sunlight, extremes of temperature, and excessive dust and moisture.
- The turntable has resilient feet that isolate the mechanism from external shock and vibration. If the unit has not been placed on a level surface, turn the feet to level the unit.

Level check

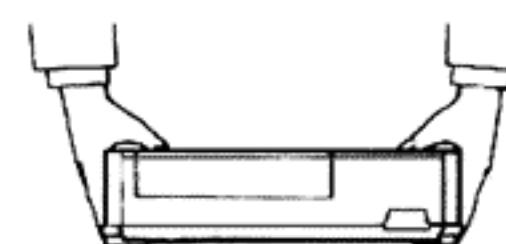
Place the stylus over the record, pressing the \triangleleft button and the FAST button, then lower the stylus onto the record with the \square / \square button. When you raise the stylus by pressing the \square / \square button again, check the stylus tip movement as follows.

- If the stylus tip does not rise straight up but veers to the right, adjust the right feet high.
- If the stylus tip does not rise straight up but veers to the left side, adjust the left feet high.



On transportation

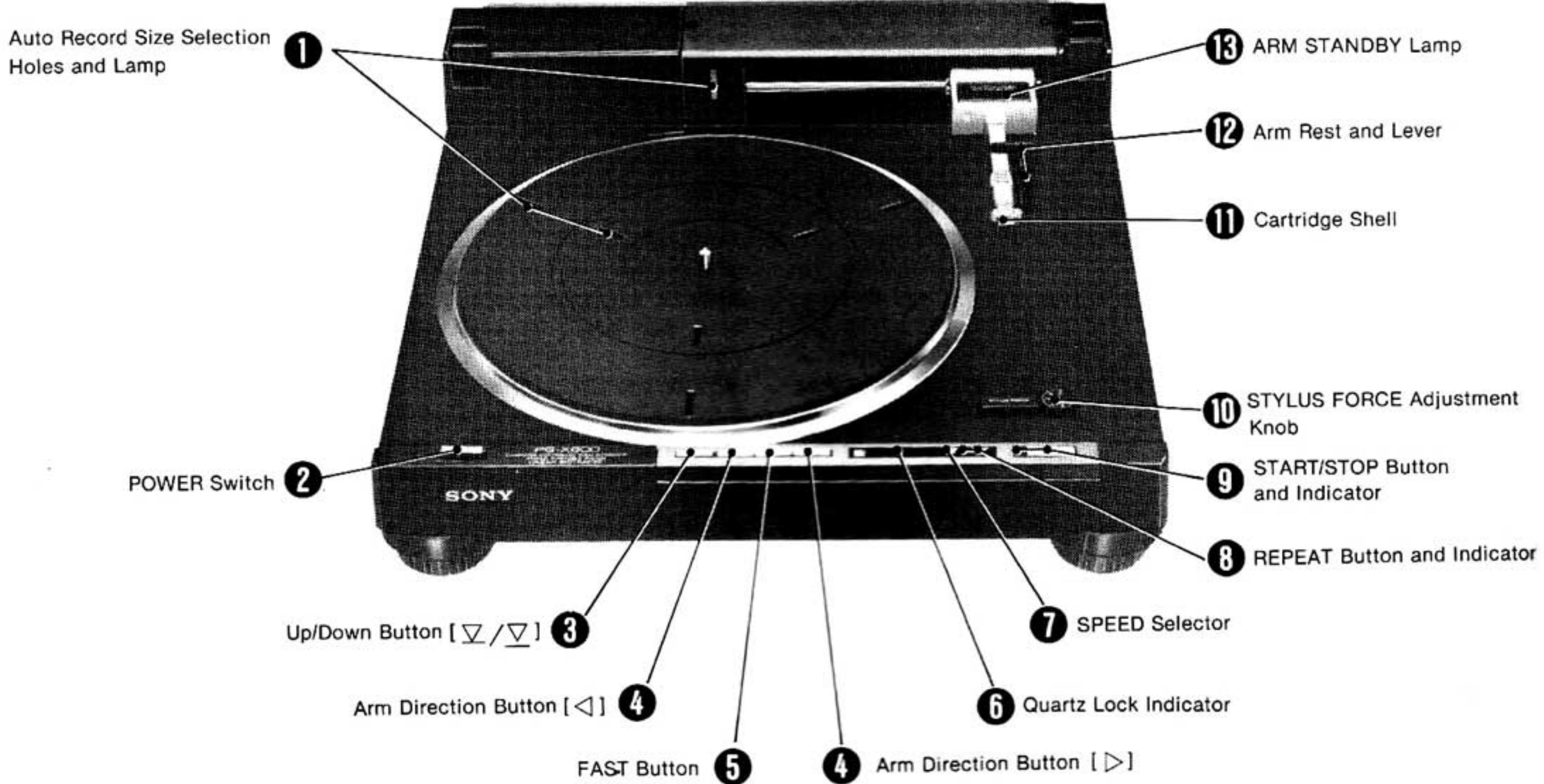
When the unit is being transported, avoid tilting the unit.



On repacking

Do not throw away the carton and packing materials. It is an ideal container in which to transport the unit. When shipping the unit to another location, secure the tonearm to the arm rest and repack it as illustrated on the carton box.

LOCATION AND FUNCTION OF CONTROLS



① Auto Record Size Selection Holes and Lamp

② POWER Switch

Press to turn on the turntable. To turn the turntable off, press it again.

③ Up/Down Button [▽ / △]

This button lifts and lowers the tonearm, and with the tonearm direction buttons, is used for manual operation, even with the dust cover closed.

④ Arm Direction Buttons [◀▶]

To move the tonearm inward, press the \triangleleft button, and to move outward, the \triangleright button. The tonearm is raised and continues to move while the button is pressed. The tonearm will stop when the button is released. For fine adjustments, press and immediately release the appropriate button.

⑤ FAST Button

To move the tonearm fast, press this button with the appropriate arm direction button.

⑥ Quartz Lock Indicator

When the quartz system has locked the turntable at the proper speed, LOCKED appears in this window.

⑦ SPEED Selector

Selects the record speed. When the POWER switch is turned on, the speed is always $33\frac{1}{3}$ rpm unless the selector is pressed to select 45 rpm.

⑧ REPEAT Button and Indicator

Press this button to repeat play. The indicator illuminates and repeat play continues until this button is pressed to stop it. If the START/STOP button is pressed during repeat play, the tonearm returns to the arm rest and repeat play will stop.

⑨ START/STOP Button and Indicator

Press to start the record playing and the indicator illuminates. To stop during play, press it again.

⑩ STYLUS FORCE Adjustment Knob

Stylus force is electronically set by this knob. The stylus force can be changed during record play if so desired.

⑪ Cartridge Shell

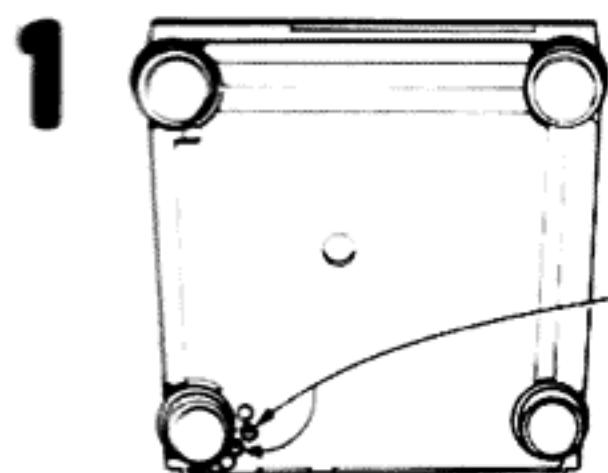
⑫ Arm Rest and Lever

To release the tonearm from the arm rest, depress the lever downward. To secure the tonearm to the arm rest, press the lever upward.

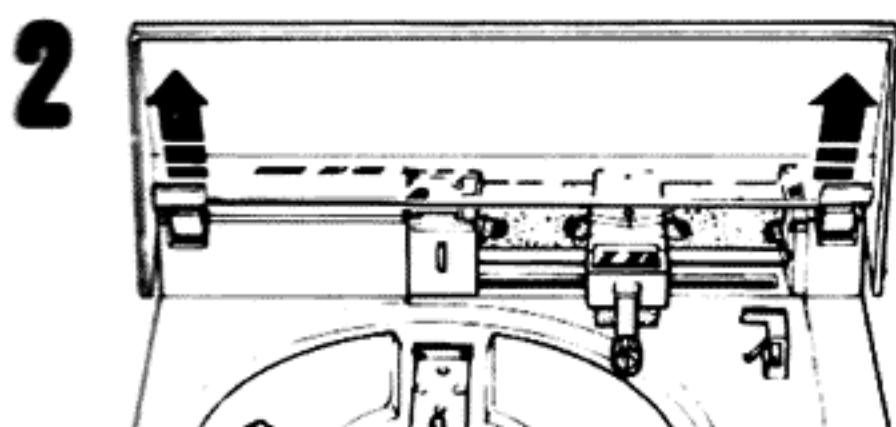
⑬ ARM STANDBY Lamp

During the tonearm balance adjustment, this lamp illuminates to show that even if the arm direction, FAST and START/STOP buttons are depressed, the tonearm will not move.

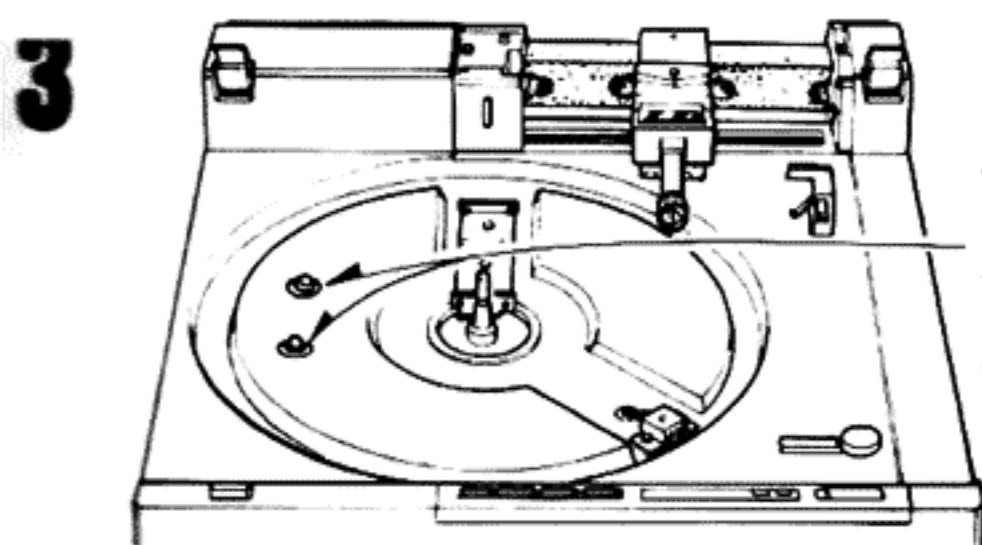
TURNTABLE ASSEMBLY



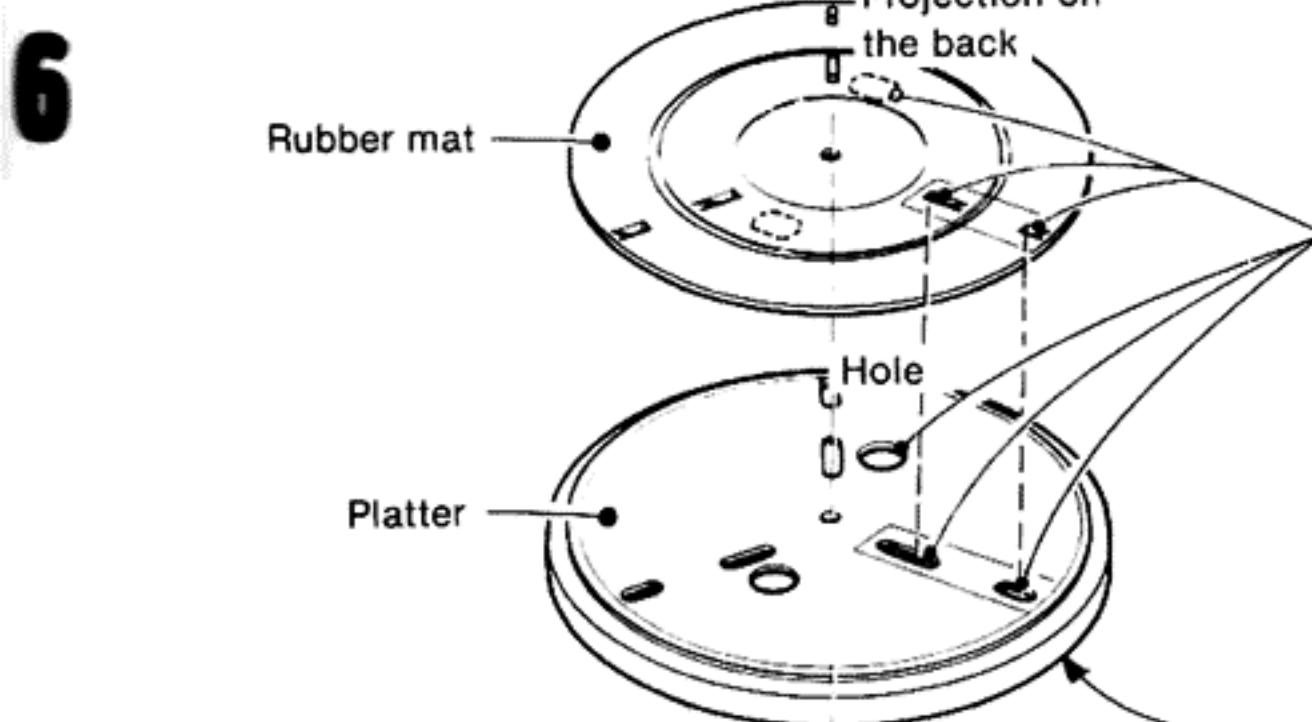
Remove the red-painted transit screws on the bottom panel. Save these screws, since they will be required when repacking.



Open the dust cover fully and slide it upward with both hands.

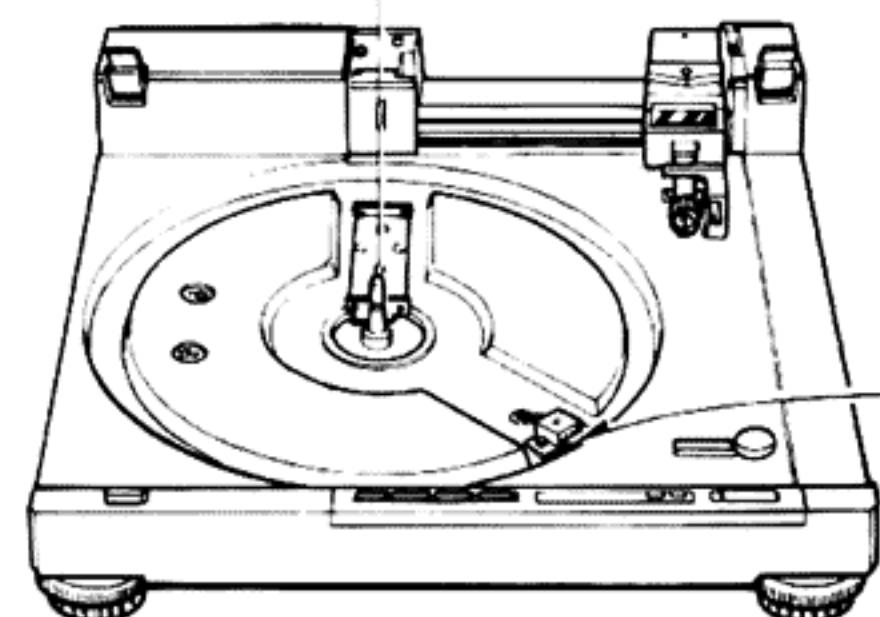


Remove the red-painted transit screws on the motor board. Save these screws, since they will be required when repacking.



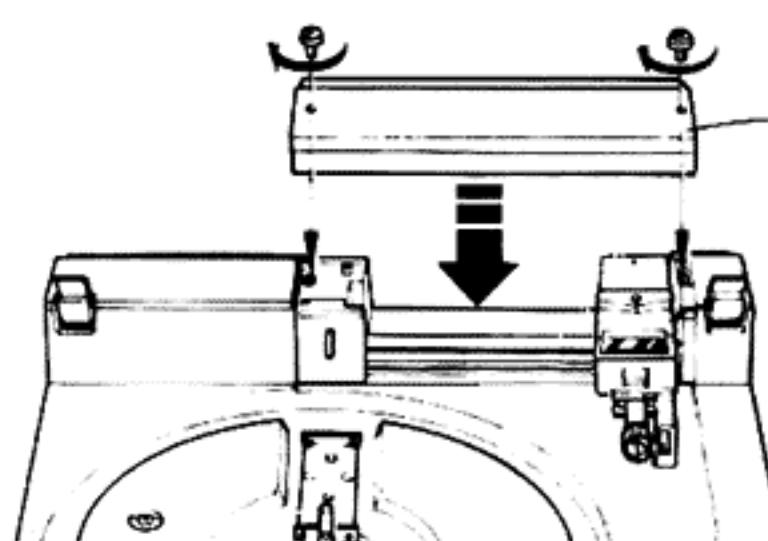
Place the platter and the rubber mat on the motor board by fitting the center hole over the center spindle.

Match the projections on the back of the rubber mat to the circular holes in the platter and align the holes in the rubber mat and the holes in the platter so that a beam from the lamp goes through.



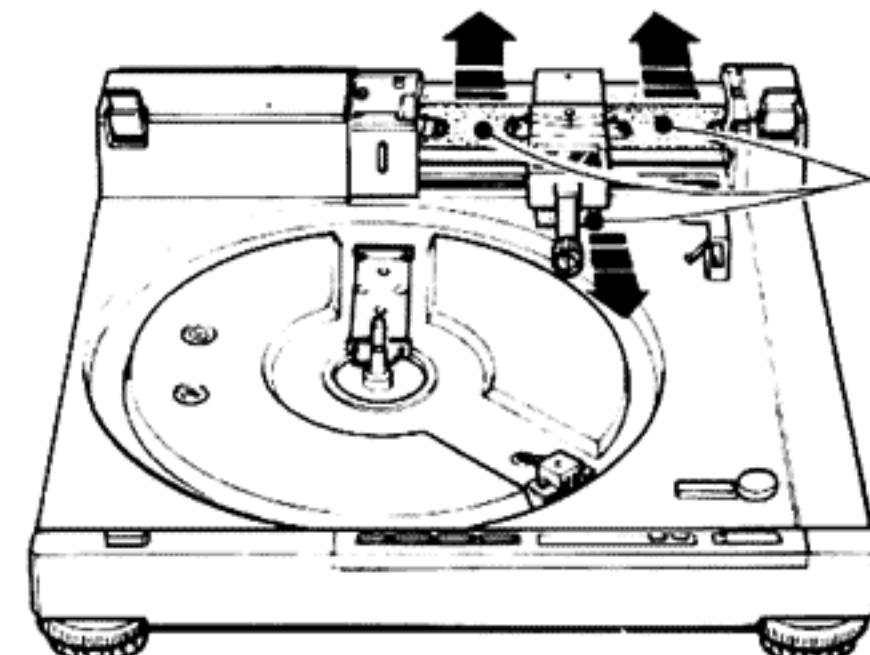
Magnetic coating for servo system is applied on the inside rim of the platter. Do not touch the coating.

Magnetic pick-up head
Do not touch.

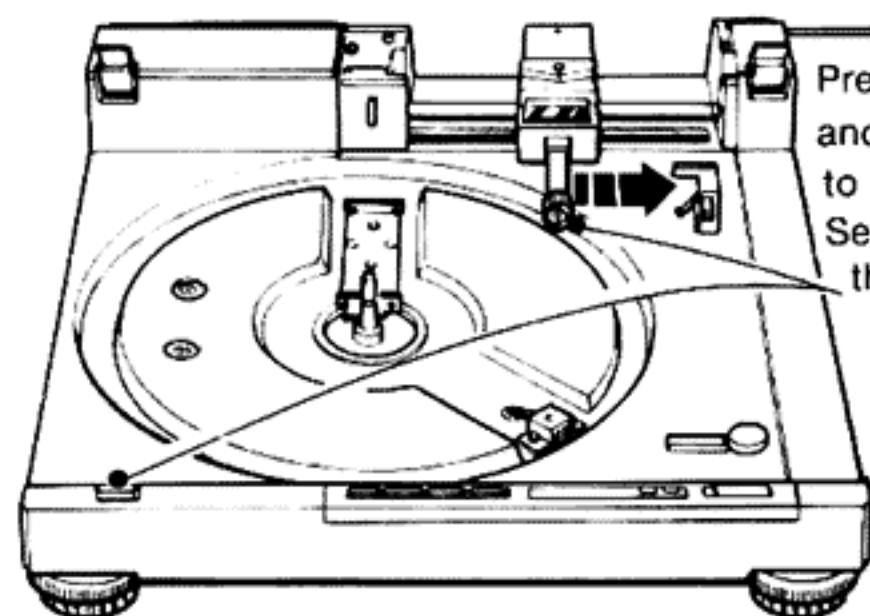


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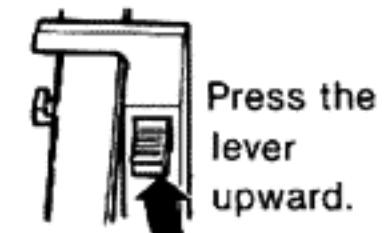
Remove the transit materials in the direction of the arrow.



Connect to an ac outlet.



Press the POWER switch, and the tonearm moves to the arm rest. Secure the tonearm to the arm rest.



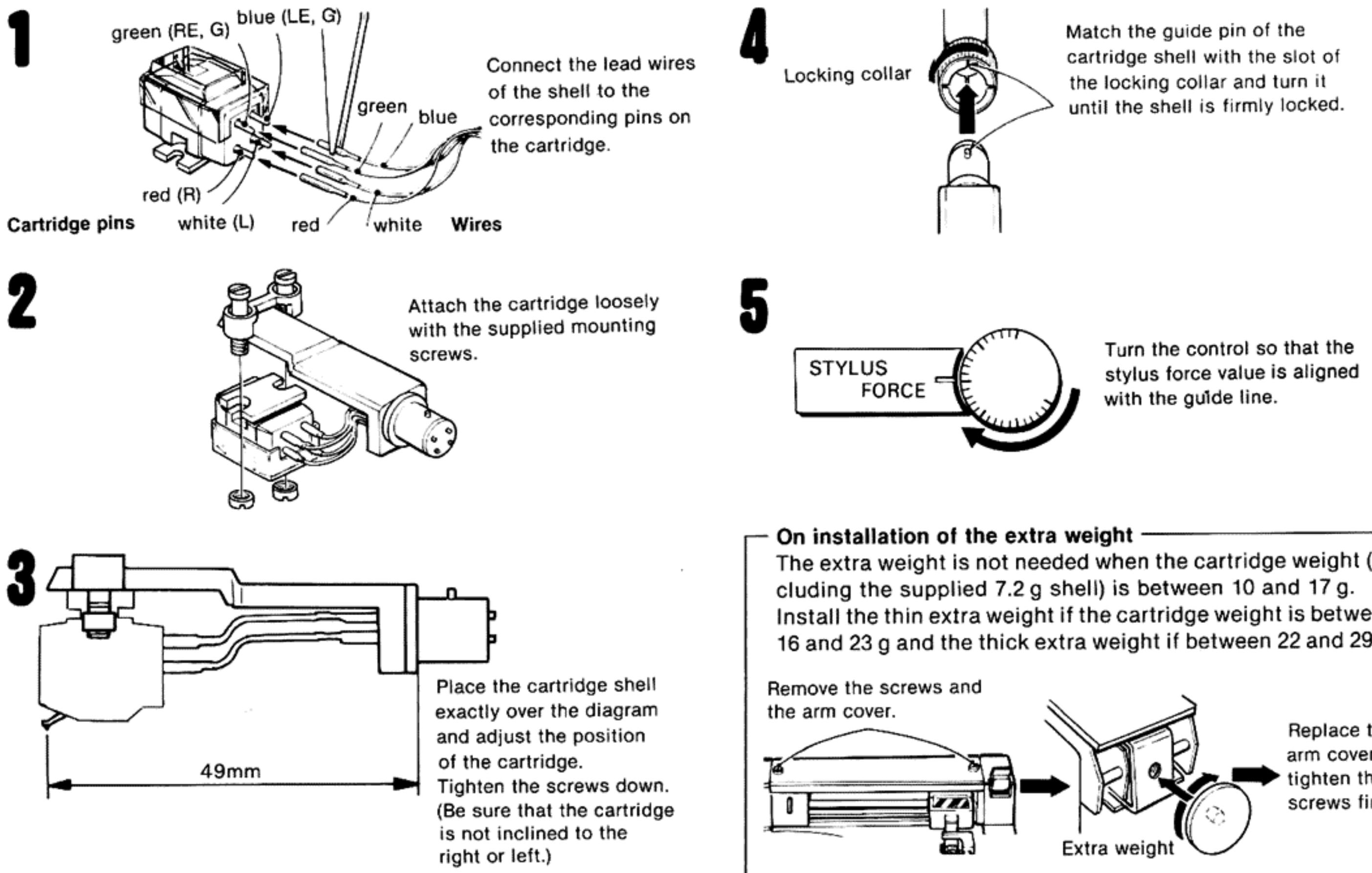
Press the lever upward.

Caution

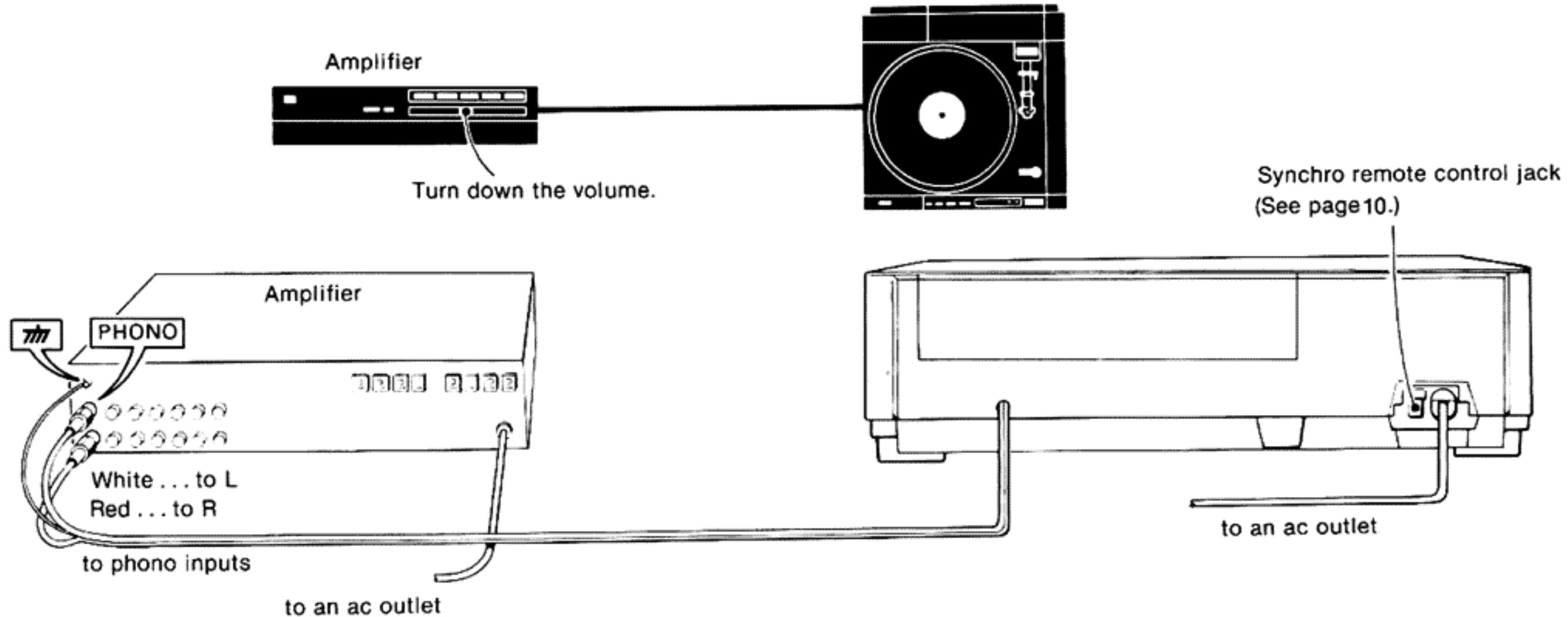
If the tonearm does not move even if the POWER switch is depressed, lightly grasp the end of the tonearm and push it towards the arm rest.



CARTRIDGE INSTALLATION AND STYLUS FORCE ADJUSTMENT



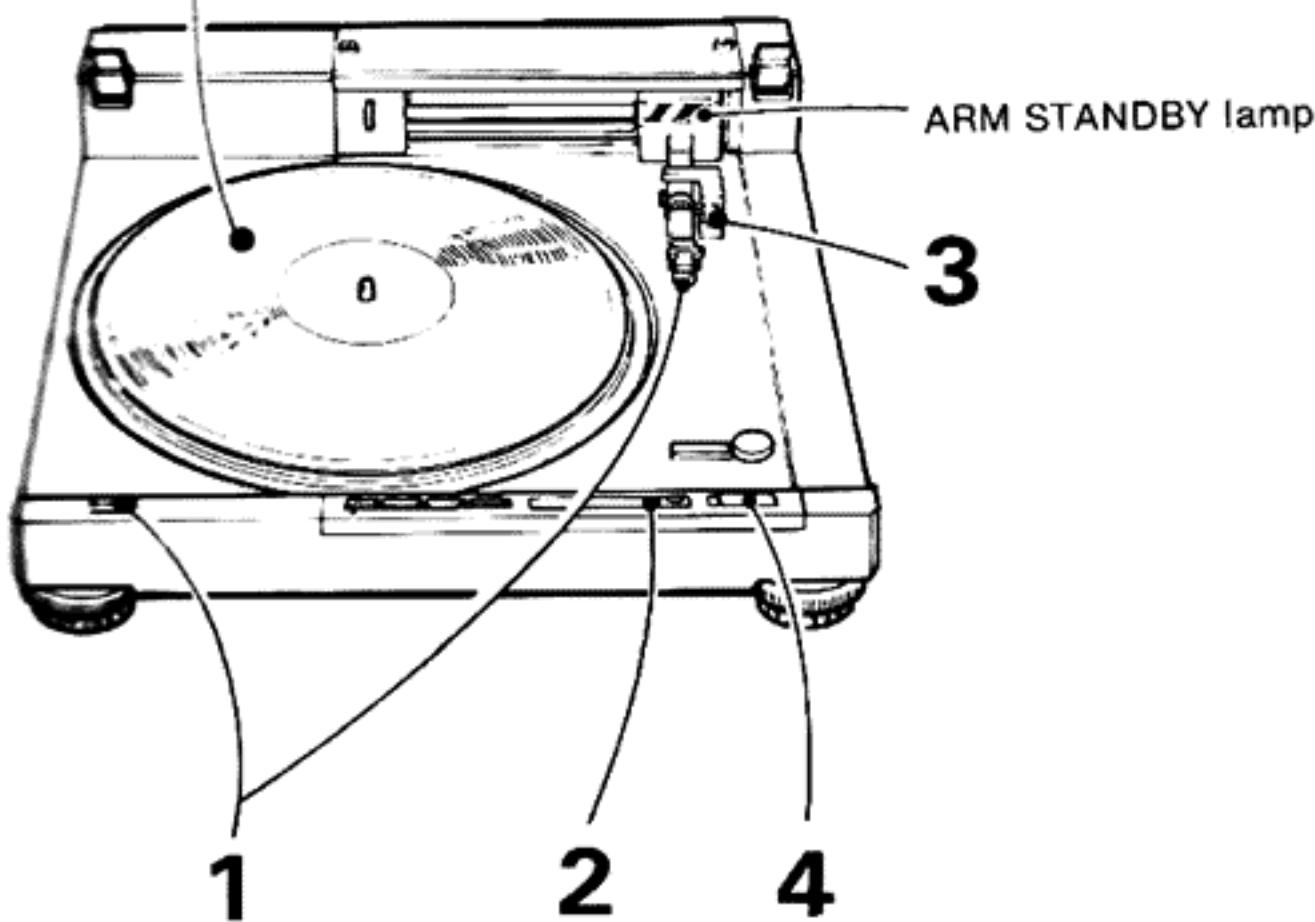
CONNECTION TO AN AMPLIFIER



PLAYING—Auto play

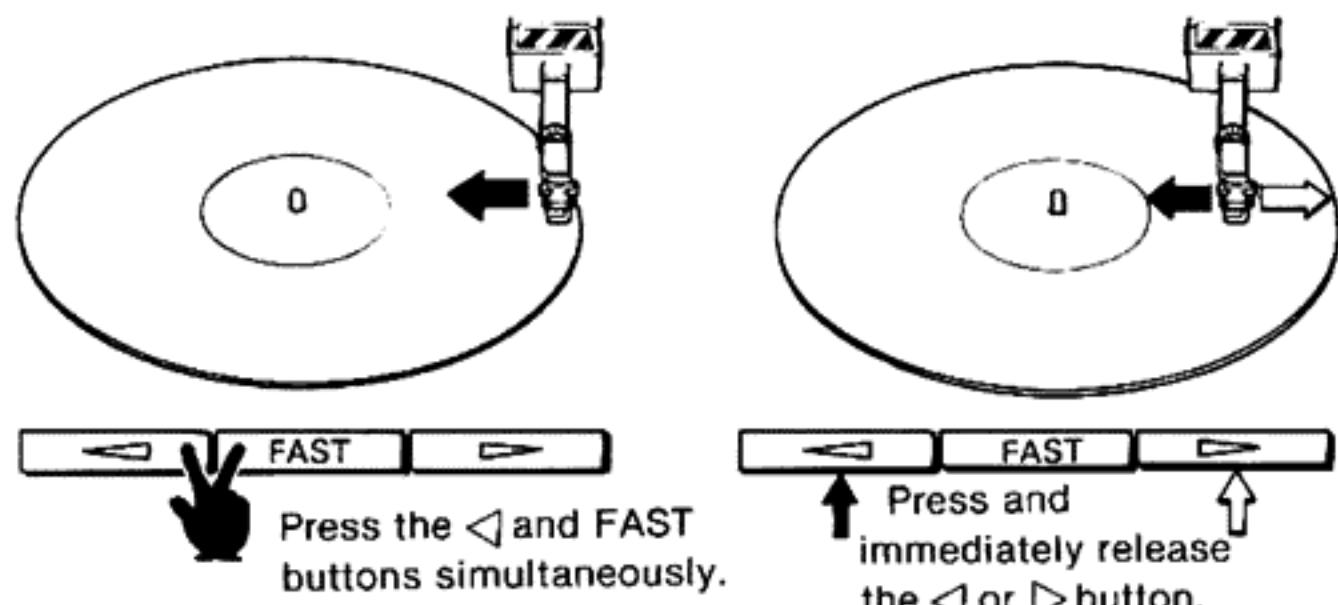
Record

- Transparent records cannot be played with this automatic playing procedure. See page 9.
- Use the 45-rpm adaptor for the 45-rpm record.



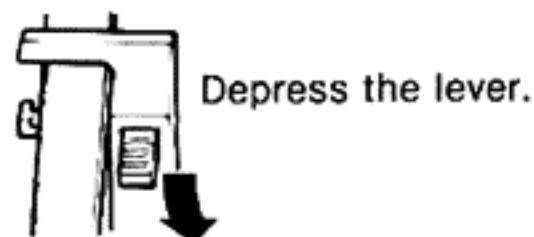
TO BEGIN RECORD PLAY AT A PARTICULAR POINT

- ① Remove the stylus cover and depress the POWER switch (ON).
- ② Press the SPEED selector to play a 45-rpm record. (Press the selector again for a 33 1/3 rpm record.)
- ③ Release the arm rest cramp.
- ④ The ARM STANDBY lamp is turned off when the tonearm balance adjustment is finished.
- ⑤ Move the tonearm over the record, pressing the \triangleleft button and the FAST button. For fine adjustments, press and immediately release the \triangleleft button or the \triangleright button or push the tonearm slightly.



- ⑥ Press the START/STOP button, and the record playing will begin.

- 1 Remove the stylus cover and depress the POWER switch (ON).
- 2 Press the SPEED selector to play a 45-rpm record. (Press this again for a 33 1/3 rpm record.)
- 3 Depress the lever and release the cramp of the arm rest. The ARM STANDBY lamp is turned off when the tonearm balance adjustment is finished.



- 4 Press the START/STOP button and the record playing will begin.

When the tonearm reaches the end of the record, the turntable will stop and the tonearm will automatically return to the arm rest. Secure the tonearm to the arm rest and turn the POWER switch off.

— tonearm auto-balance adjustment —

It is critically important for good sound reproduction that the stylus traces the record groove accurately and with the proper stylus force. To do this, the tonearm must first be balanced so that the proper stylus force can be applied. The Sony PS-X800 turntable automatically adjusts the tonearm balance electronically when the power is turned on or the START/STOP button is pressed with the tonearm secured to the arm rest. And every time the record playing is finished, the tonearm balance is automatically adjusted again.

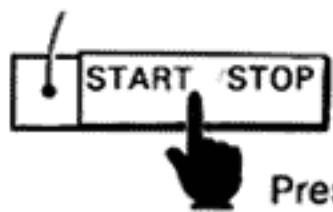
The ARM STANDBY lamp illuminates when tonearm balance is being adjusted.

When the cartridge shell (or cartridge) is replaced, secure the tonearm to the arm rest and turn the POWER switch off. To adjust the balance of the new cartridge shell (or cartridge), remove the stylus cover and turn the POWER switch on. When the ARM STANDBY lamp turns off, the adjustment is complete.

INSTANTANEOUS START OF PLAY

TO STOP DURING PLAY

The indicator is turned off.



The turntable will stop rotating and the tonearm will return to the arm rest.

TO LIFT UP THE STYLUS DURING PLAY



The stylus is lifted from a record.
(The turntable is rotating.)

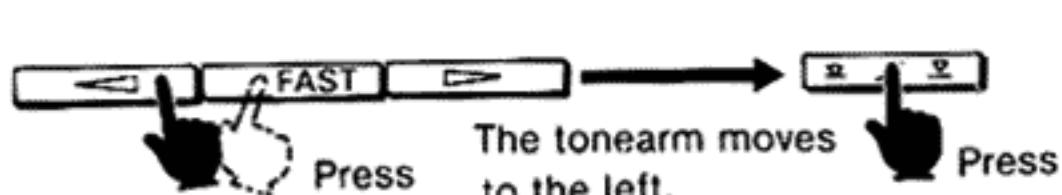
To start the play



The stylus lowers onto the record
and the playing starts.

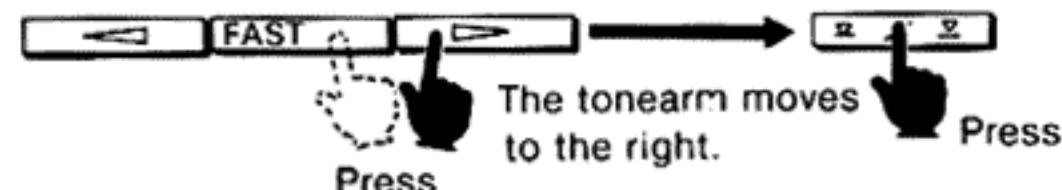
TO MOVE TO A DIFFERENT PART OF A RECORD WHILE THE RECORD IS PLAYING

To play a selection ahead



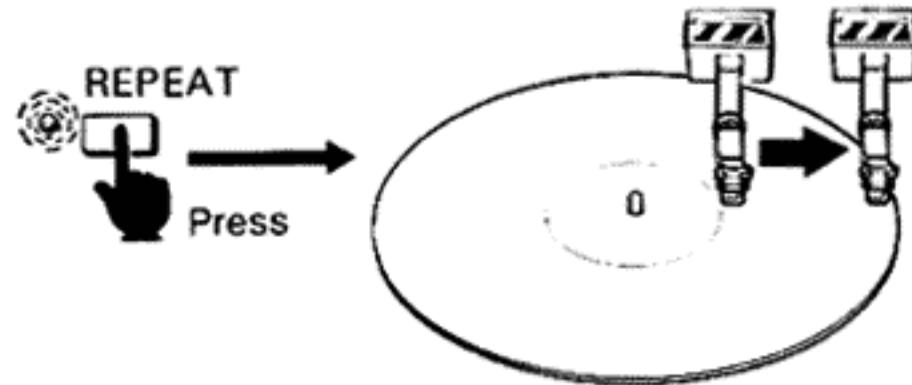
The stylus lowers
onto the record
and the playing starts.

To play a selection back



The stylus lowers
onto the record
and the playing starts.

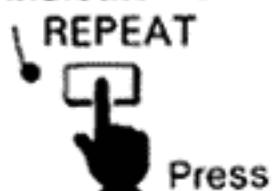
TO REPEAT PLAY



The tonearm returns
from the end of the
record to the start
and continues repeat
play.

To stop repeat play

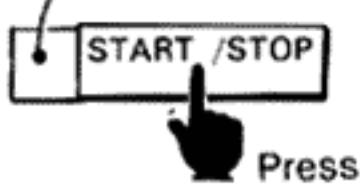
The indicator is turned off.



After the record is played, the tonearm will
return to the arm rest.

To stop during repeat play

The indicator is turned off.



When the START/STOP button is pressed,
the tonearm will return to the arm rest.

Owing to the powerful starting torque of the turntable, instantaneous start on a record is possible.

Preparation

Amplifier: set to a normal listening level.
Turntable: place a record, turn the POWER switch on and select the correct record speed.

Operation

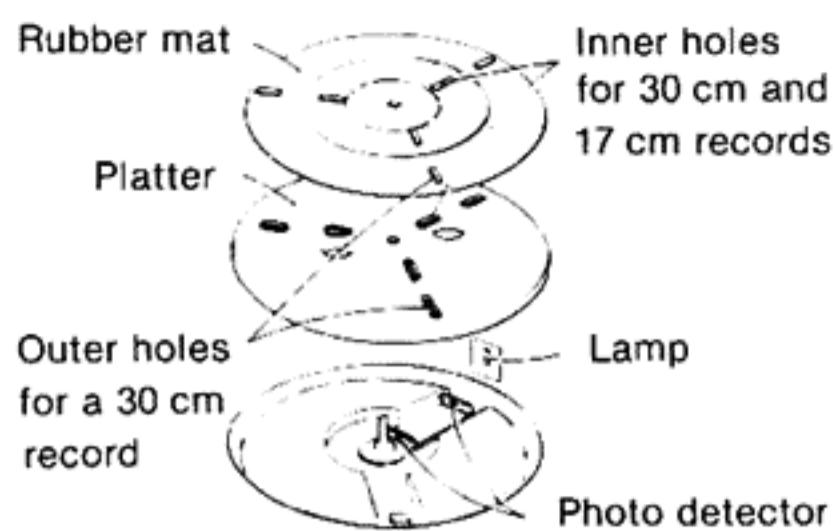
- Move the tonearm over the lead-in groove of the desired music with the \triangleleft or \triangleright button (and the FAST button).
- Lower the tonearm onto the record with the \square / \square button.
- Rotate the turntable slowly by hand and at the starting groove of the music, it begins to be heard. Reset the stylus at the point just before the starting of the music by rotating the turntable by hand in the opposite direction a little. The starting point is now found.
- From the point indicated in the illustration below, rotate the turntable by hand slowly in the opposite direction up to the center position. (The rotation corresponds to the turntable starting torque.)

⑤ Press the START/STOP button. The music starts to play instantaneously.

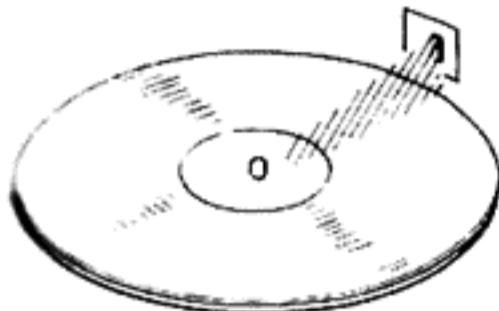
8

HOW THE AUTO RECORD SIZE SELECTION WORKS

By pressing the START/STOP button, the tonearm goes automatically into the lead-in groove of whether 30 cm or 17 cm. A beam from the lamp is transmitted through the holes provided on the rubber mat and the platter to the photo detector which activates the auto record size selection.

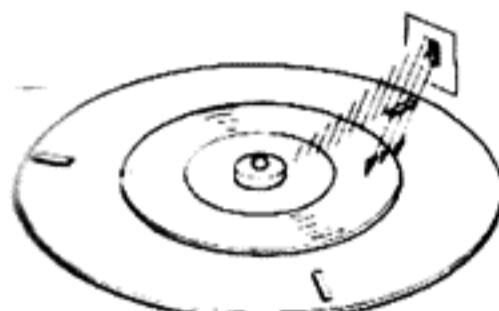


When a 30 cm record is to be played,



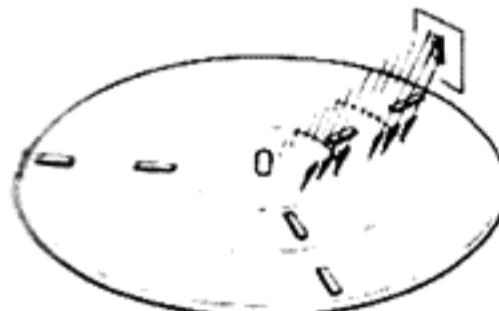
both inner and outer holes are covered so no beam is transmitted to the photo detector.

When a 17 cm record is to be played,



the inner holes are covered so a beam is transmitted through the outer holes to the photo detector.

When there is no record on the platter,



a beam is transmitted through both the inner and outer holes to the photo detector. Even if the START/STOP button is pressed mistakenly, the tonearm does not lower but return to the arm rest.

When a 25 cm record is to be played,



the tonearm lowers to the same point if a 17 cm record were on the platter, since only the inner holes are covered. To play a 25 cm record, move the tonearm over the record and lower the tonearm to the lead-in groove by pressing the $\nabla/\underline{\nabla}$ button then press the START/STOP button.

When a transparent record is to be played,



a beam passes through both the inner and outer holes to the detector so the tonearm does not lower on a record. To play a transparent record, lower the tonearm to the lead-in groove by pressing the $\nabla/\underline{\nabla}$ button and press the START/STOP button.

When a warped record is to be played,



if the record is badly warped, a beam may pass through the holes to the detector and cause malfunction of the auto record size selection.

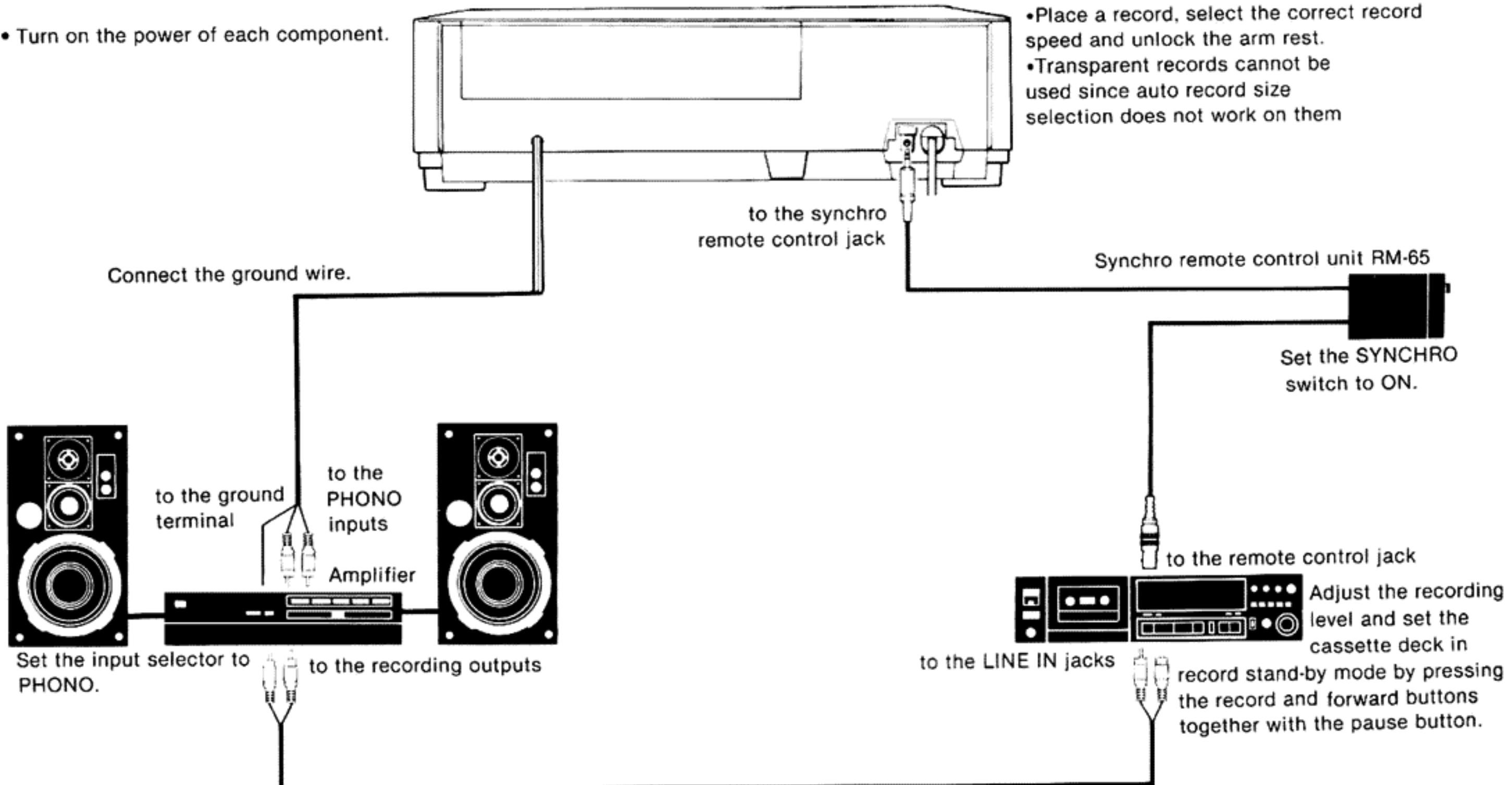
SYNCHRONIZED PLAY OF THE TURNTABLE AND THE CASSETTE DECK

—With an RM-65 synchro remote control unit connected

Record recording starts only when the START/STOP button is pressed. When the tonearm lowers to the record, the tape deck goes into the record mode and, when the tonearm is lifted up, the deck goes into the auto record muting mode for four seconds, then into the pause mode.

Cassette deck which can be used with your turntable for this special synchronized operation are those Sony models which are equipped with a 4-pin remote control jack. An RM-65 synchro remote control unit (optional) is required to connect the turntable and the cassette deck.

- Turn on the power of each component.



RECORDING

Desired action	Turtable operation	Synchronized operation of the cassette deck
To record from the beginning of a record...	Press the START/STOP button.	When the tonearm lowers to the record, the pause mode is released and recording begins.
To lift up the tonearm to move to a different point on a record...	Press the \triangle / \square button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
To record from a point some way into the record...	Bring the tonearm over the desired point and press the START/STOP button.	When the tonearm lowers to the record, the pause mode is released and recording begins.
To stop recording during record play...	Press the START/STOP button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
When record play ends...	The tonearm returns automatically to the arm rest.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.

TIPS ON RECORD HANDLING

- Before playing, clean the record with a record cleaner or soft cloth. If a spray cleaner is used, make sure that it has dried completely before playing the record. Playing the record before the cleaner 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 do not touch the grooves. Fingerprints on the record surface may encourage an accumulation of dust, resulting in impaired tone.
- Use a commercially available anti-static spray to neutralize the static electricity on a record.
- Avoid exposing a record to direct sunlight or sources of heat, such as a hot-air duct.
- Store your records vertically. They should not be compressed.

MAINTENANCE

Before playing a record, clean the stylus with a soft brush. Brush the stylus from back to front. Never attempt to clean the stylus with your finger tip. If a fluid stylus cleaner is used, make sure not to moisten the stylus too much.

Cabinet

Clean the cabinet and dust cover periodically with a soft dry cloth. If the stains are difficult to remove, use a cloth moistened with a mild detergent solution. Do not use solvents such as alcohol, benzine or thinner, since they will damage the finish.

Rubber mat

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

Lubrication

The turntable requires no periodic lubrication. The motor shaft is lubricated at the factory for the life of the turntable.

SPECIFICATIONS

Turtable

Platter	32 cm (12 $\frac{5}{8}$ in.), aluminum-alloy diecast
Motor	Linear torque BSL (brushless and slotless) motor
Drive system	Direct drive
Control system	Quartz lock control, magnedisc servo control system
Speed	33 $\frac{1}{3}$ rpm, 45 rpm
Starting characteristics	Comes to nominal speed within a half revolution (33 $\frac{1}{3}$ rpm)
Wow and flutter	0.015% (WRMS)* 0.025% (WRMS) ±0.03% (DIN)
Signal-to-noise ratio	78 dB (DIN-B)
Load characteristics	0% up to 150 g stylus force (at lead-in groove of a record)
Speed deviation	Within 0.003%
Automatic system	Lead-in, return, reject, repeat, record size selection, zero balance

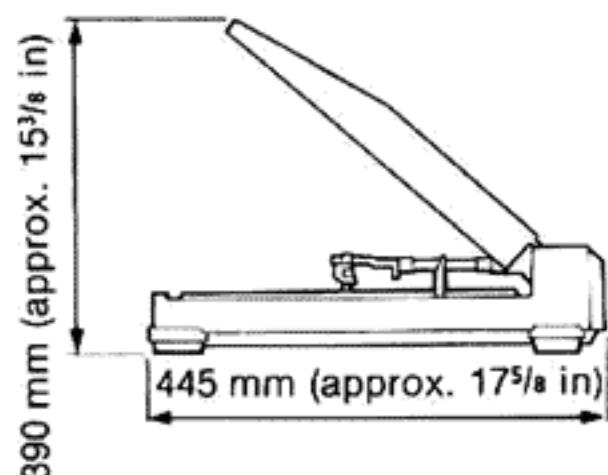
Tonearm

Type	Electronic tonearm, linear tracking
Pivot-to-stylus length	180 mm (7 $\frac{1}{8}$ in.)
Overall arm length	246 mm (9 $\frac{3}{4}$ in.)
Tracking error	±0.05°
Stylus force adjustment range	0.5 – 3.0 g (electronic adjustment)
Cartridge shell weight	7.2 g
Cartridge weight range (including a cartridge shell)	
	10 – 17 g
	16 – 23 g (with thin extra weight)
	22 – 29 g (with thick extra weight)

General

Power requirements	Type 1: 220 V ac Type 2: 240 V ac Type 3: 110 – 120 or 220 – 240 V ac adjustable 50/60 Hz
Power consumption	45 W
Dimensions	Approx. 440 × 120 × 445 mm (w/h/d) (17 $\frac{3}{8}$ × 4 $\frac{3}{4}$ × 17 $\frac{5}{8}$ in.) including projecting parts and controls

With the dust cover opened



Weight	Approx. 11.6 kg (25 lbs 10 oz), net Approx. 13.0 kg (28 lbs 10 oz), in shipping carton
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Supplied accessories

45-rpm adaptor (1)
Extra weight (2)
Cartridge shell (1)

While the information given is correct 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.

Note

Appliance conforms with EEC Directive 76/889 regarding interference suppression.

* This new measuring method concerns only the turntable assembly, including the platter. It excludes wow and flutter caused by the tonearm, the cartridge, or the record. Measured by obtaining signal from magnetic pick-up head.

ROUBLE CHECKS

The following trouble checks will help you correct most common problems encountered with a turntable system. Should any problem persist after you have made these checks, consult your

nearest Sony service facility.

Before proceeding with these trouble checks, first refer to the connections on page 6 and the operating procedures on page 7.

TROUBLES	CAUSES	WHAT TO DO
The tonearm does not lower on the record but returns to the arm rest.	Transparent record Warped record	> Play the record manually.
The ARM STANDBY lamp does not go out.	The cartridge and the cartridge shell are too heavy (or too light.) The tonearm is secured to the arm rest.	— Check the cartridge (including the cartridge shell) weight. — Release the arm rest cramp.
The tonearm always lowers on the point for 30 cm records.	A rubber mat other than the one supplied being used. Incorrect placement of the supplied rubber mat	— Use the supplied rubber mat. — Align the holes in the rubber mat with the holes of the platter.
Auto return does not operate at the end of play.	A record with shallow return grooves being played by a cartridge with low tracking force	— Apply more tracking-force.
Impaired tone quality	Improper tracking-force Dusty stylus Worn stylus	— Apply proper tracking-force (See page 6.) — Clean the stylus with a soft brush from back to front. — The stylus life is approx. 400 hours. Replace with a new stylus.
No audio from one channel	Loose connection of phono cord Loose attachment of the cartridge shell to the tonearm Dirty cartridge shell terminals.	— Connect the cord firmly. — Fix the shell to the tonearm firmly. — Clean the terminals with a soft dry cloth.
Steady low-pitched humming sound	Ground wire is not connected to the amplifier.	— Connect the ground wire to the amplifier.
Groove skipping ; tonearm skating ; tonearm not advancing.	Improper tracking force Turntable not level Defective record	— Apply proper tracking-force. (See page 6.) — Place the turntable on a level surface. —
Loud rumble or low-frequency howl*	The turntable is subjected to external vibration. The turntable is placed too near the speaker.	— Place the turntable on a solid surface free from external vibration. — Locate the turntable as far away from the speaker as possible.

* This is called "acoustic feedback" and is caused when vibrations from the speakers are transmitted through the air or via solid objects (such as the shelves, the cabinet, the floor, etc.) to the turntable, where it is picked up by stylus, amplified and reproduced through the speakers once again.