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# Technics

QUARTZ Synthesizer  
Direct Drive Turntable

## SP-15

### Operating instructions



The model number of this product may be found on the back of the unit, and the serial number, on the bottom of the unit.

Please note the model and serial numbers of this unit in the space provided and retain this booklet as a permanent record of your purchase to aid identification in the event of theft.

MODEL NUMBER

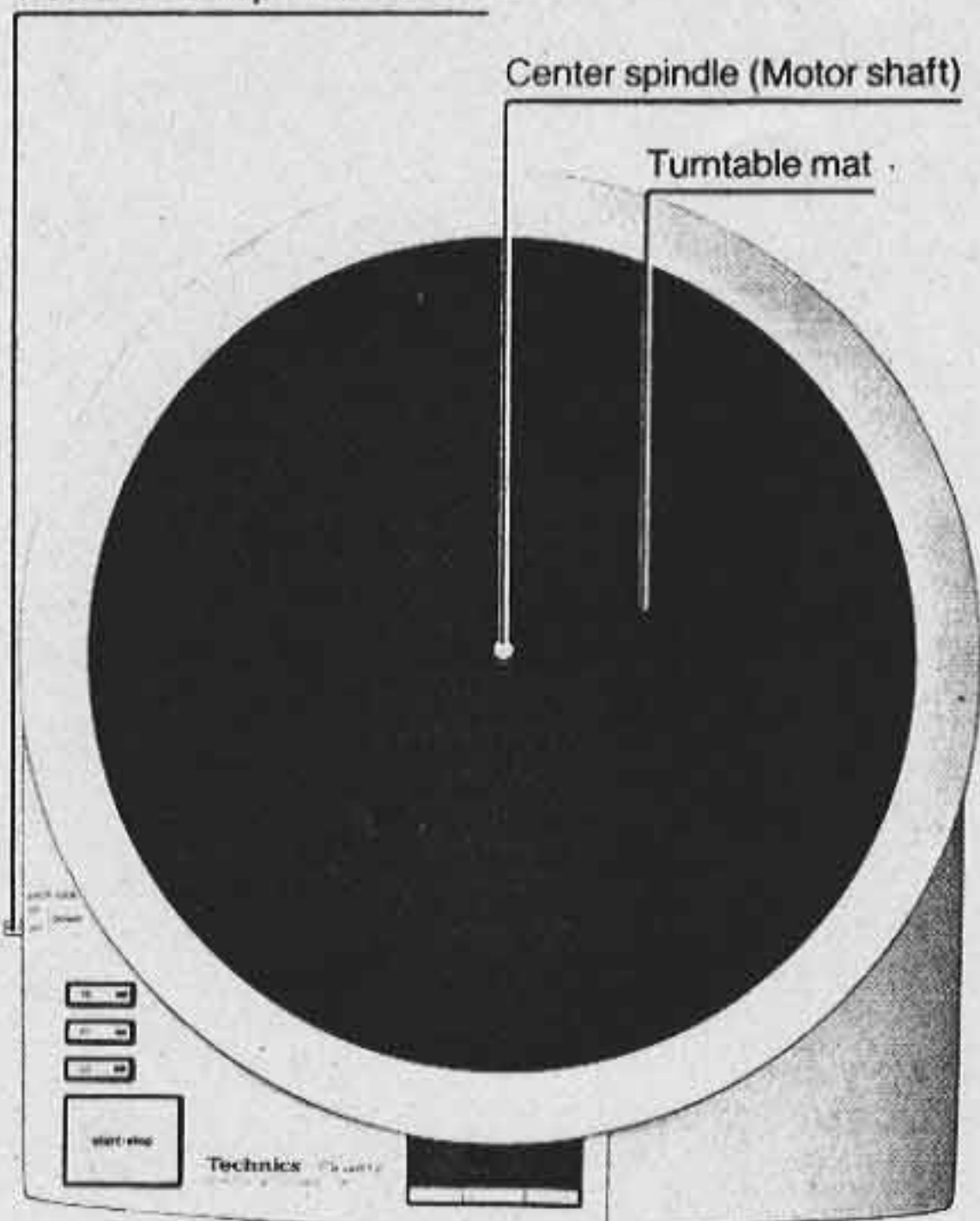
SERIAL NUMBER



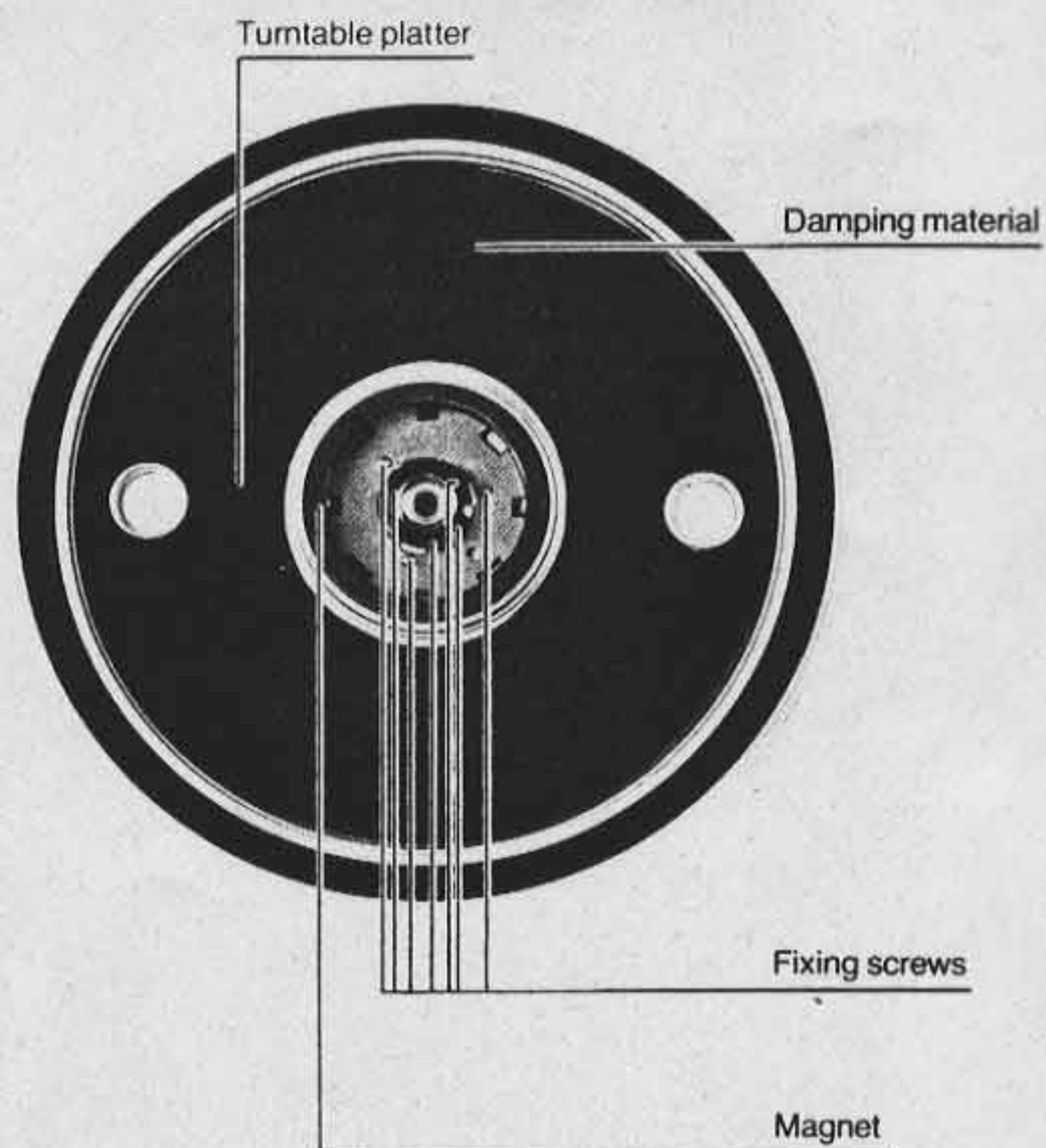
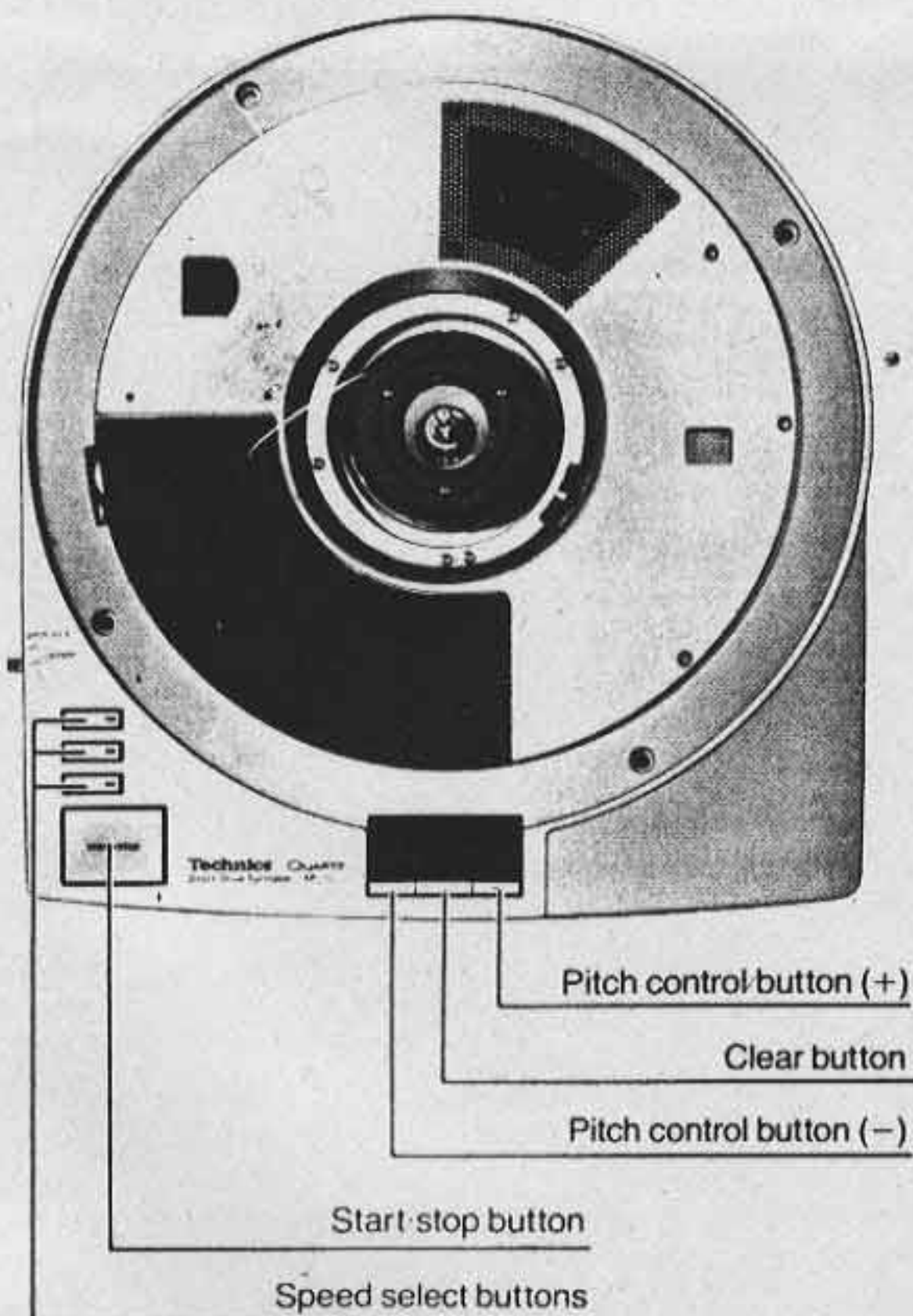
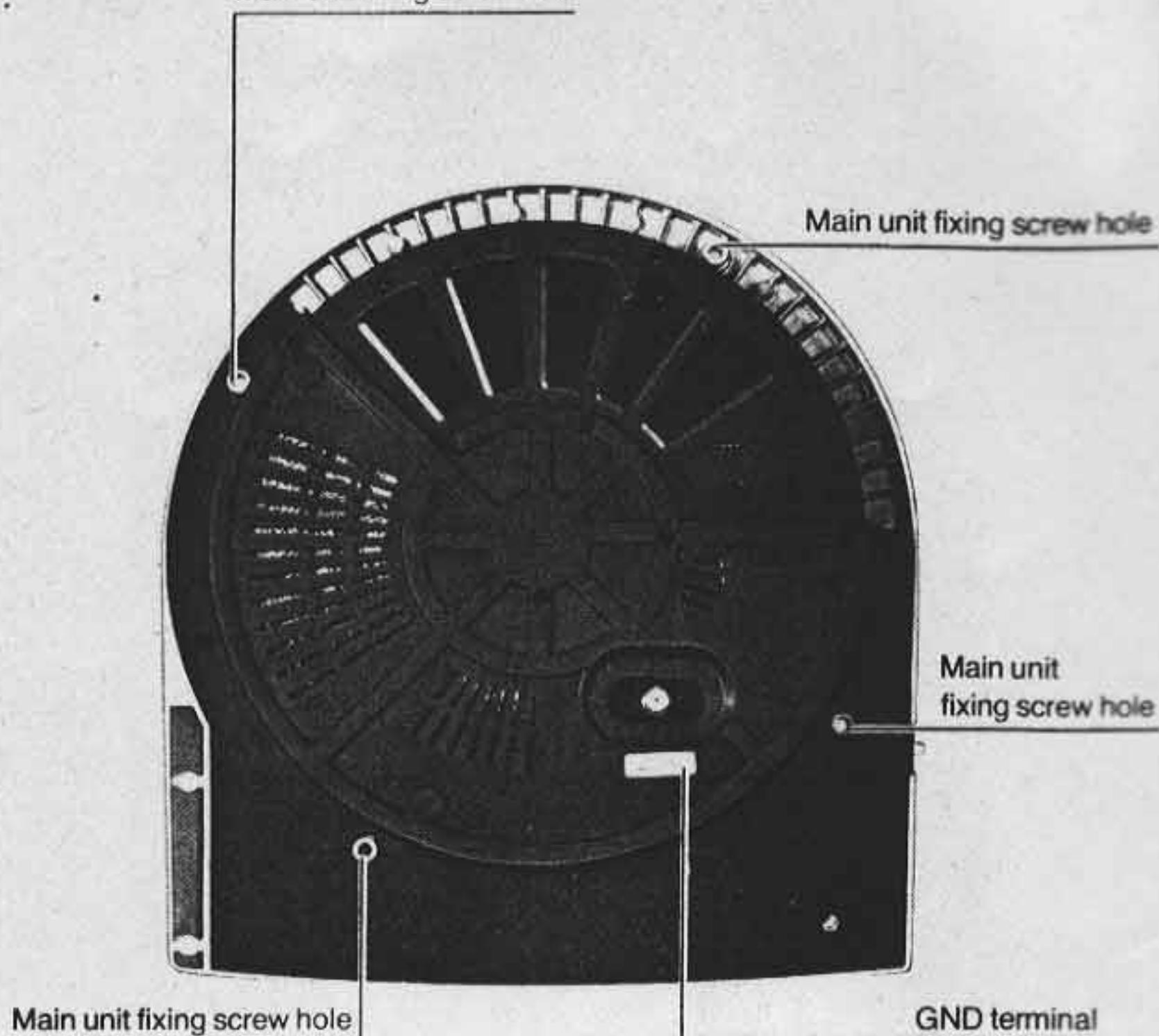
We want to thank you for selecting the SP-15.  
For optimum performance, we recommend that you read these instructions carefully.

## Parts identification

Power switch/pitch lock knob



Main unit fixing screw hole



**“Warning: To prevent fire or shock hazard,**



## Before use

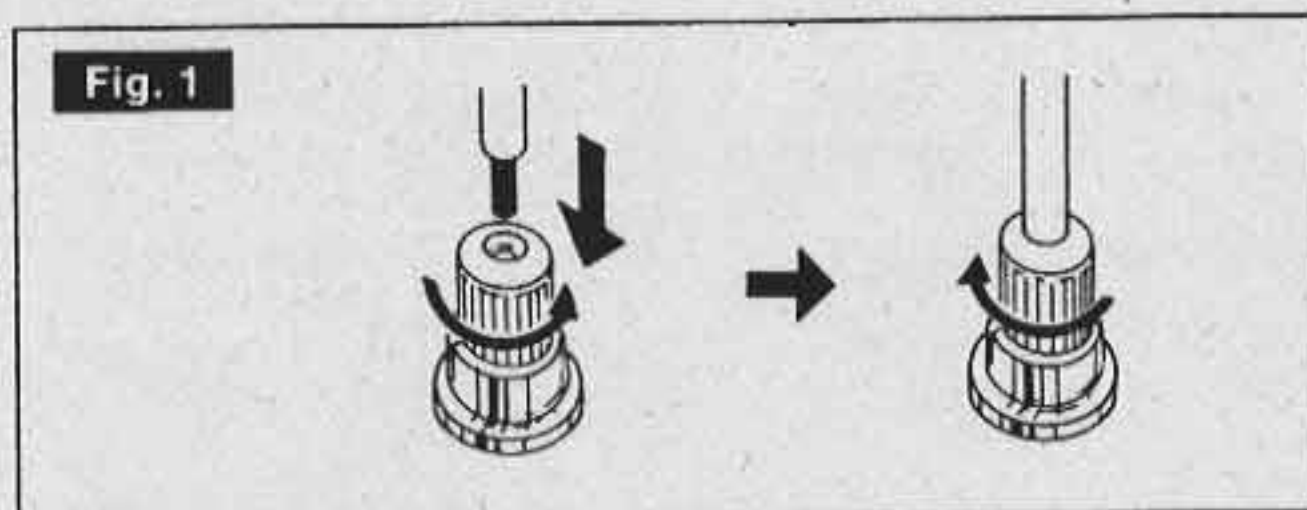
### Caution:

- Never connect the AC power plug before assembly has been completed.
- Attach the dust cover last, so that assembly and adjustments can be made most conveniently.

### Checklist of parts

|                              |   |
|------------------------------|---|
| Turntable unit .....         | 1 |
| Turntable platter .....      | 1 |
| Turntable mat .....          | 1 |
| 45-rpm adaptor .....         | 1 |
| Main unit fixing screw ..... | 4 |
| Ground wire (GND) .....      | 1 |
| Installation diagram .....   | 1 |

### Installation of the ground wire (GND) to the GND terminal. (See Fig. 1.)



### Building your own base or cabinet for this model

SP-15 with a large starting torque of 3 kg-cm (2.61 lb-in) has the superior feature of reaching constant speed in 0.4 second (at 33-1/3 rpm.).

For this reason we recommend that you use durable and heavy material.

The thickness of the base should be more than 3 cm (1-11/64 inch). Also use durable and stable insulators (legs).

We recommend that you purchase the optional turntable base Technics SH-15B1 as the cabinet exclusively for the SP-15. (See Fig. 2.)



### Drill and cut out the base according to the installation diagram

The installation diagram is drawn in 1/1 actual size.

As paper has a tendency to stretch we suggest that you check the diagram before using it as a template. Also check dimensions for printing errors. Check the tonearm mounting position for proper alignment (follow the tonearm manufacturer's specifications).

Also make sure to allow sufficient clearance for power connector and output terminals of the tonearm.

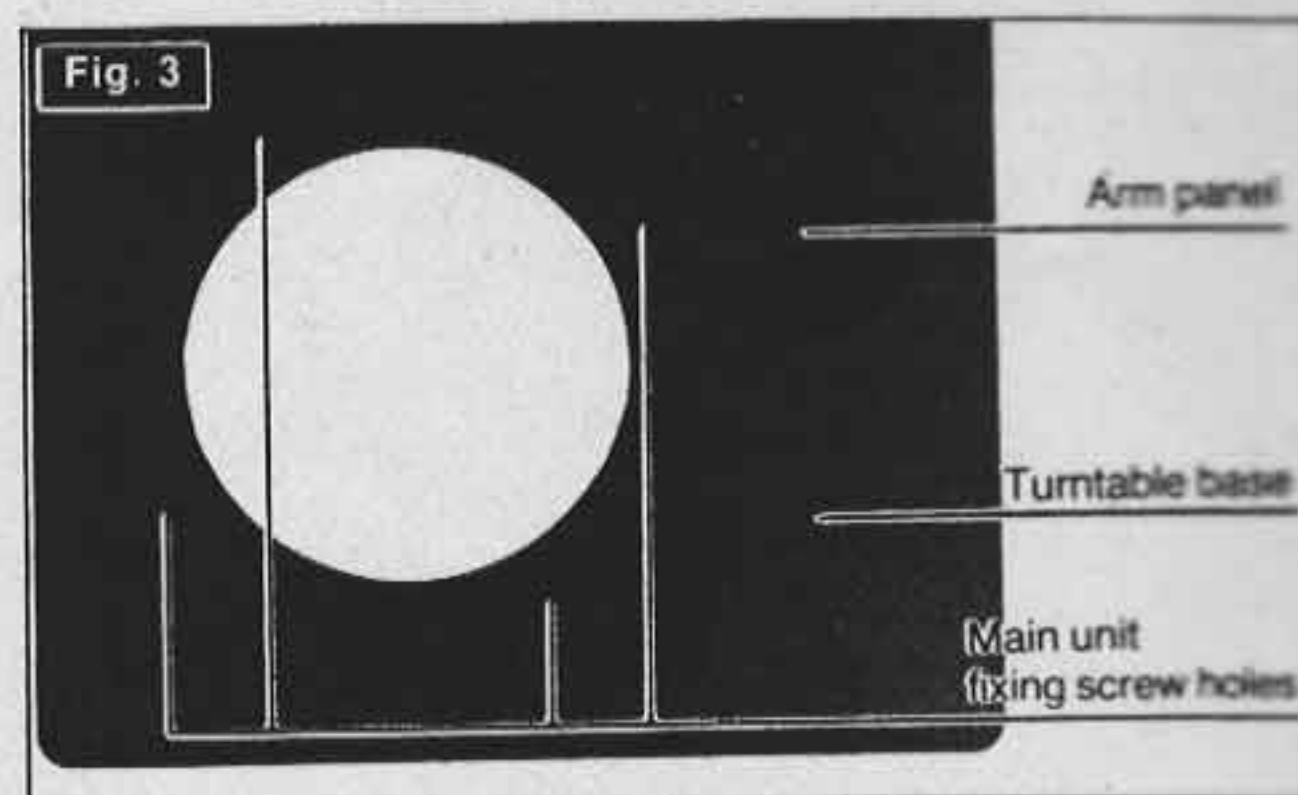
## Assembly and set-up

**Caution:** Use care not to damage the power supply cord and bushing when setting up or installing the turntable into a supporting enclosure.

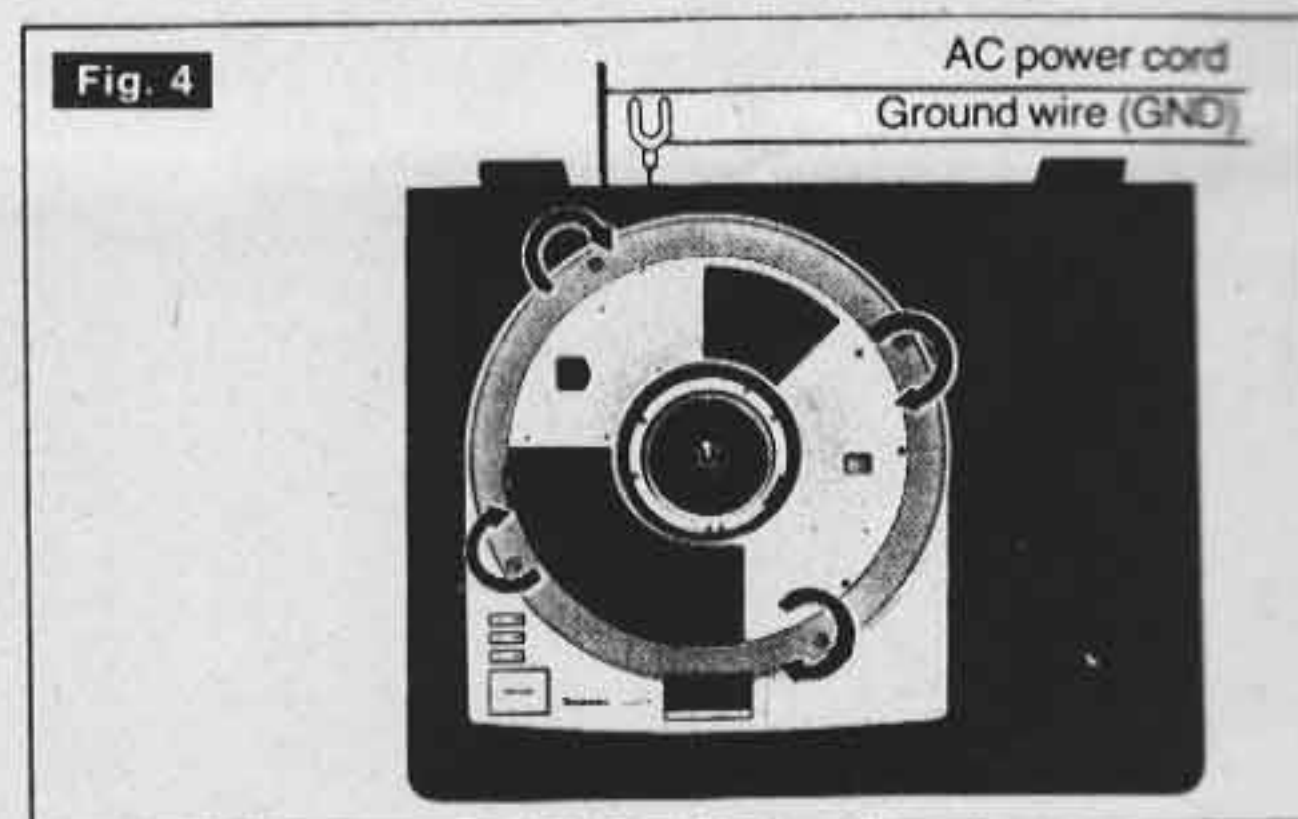
Assembling is explained based on the optional Technics turntable base SH-15B1 for reference in cases where the unit is installed in another cabinet.

SH-15B1 is provided with screw holes (4 places) for mounting SP-15.

1. Install SP-15, with the screw holes aligned.



2. Securely hold at 4 places by the screws supplied with SH-15B1. (See Fig. 4.)



3. Pull out the power cord and ground wire (GND) from under the turntable base.
4. After the above, install the turntable platter and turntable mat.



## Connections

### ■ Connect the AC power plug

Connect the AC power plug to an AC wall socket.  
Connect the ground wire (GND) to "GND" of the amplifier or receiver.

#### Note:

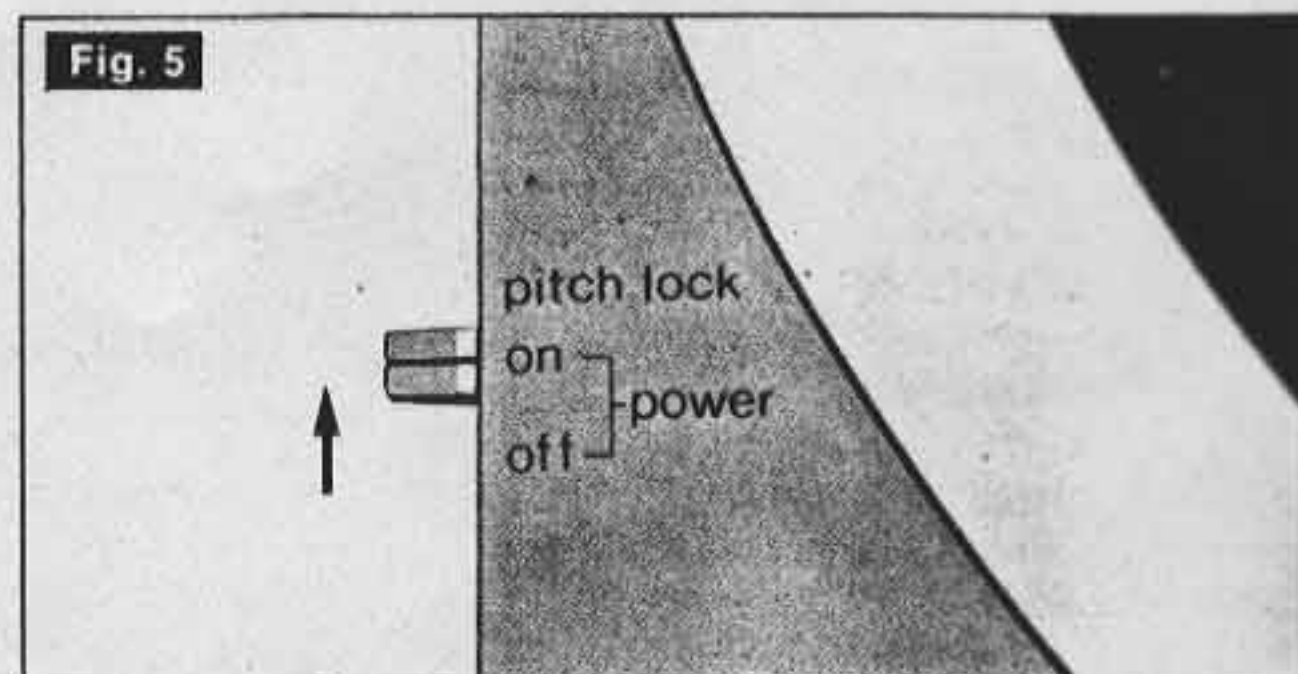
Be sure to connect the ground terminal firmly to the amplifier or receiver. If this connection is not made or is loose, a power source "HUM" will result.

## Placement

- Place the unit in a stable and horizontal position, where there is little or no vibration.
- Locate the unit as far away from the speakers as possible and isolate the unit from sound radiation from them.
- Do not place the unit where it is exposed to direct sun, dust, moisture or heat.
- Keep it in a well ventilated place.
- When a radio is placed too close to the turntable and is played while the turntable is in operation, interference with AM reception may result.

## How to operate

1. Set the Power switch/pitch lock knob to the "on" position. (See Fig. 5.)



The revolutions are indicated at 33 (33-1/3 rpm.) of the speed selector knob and digital speed indicator. (Fig. 6.)

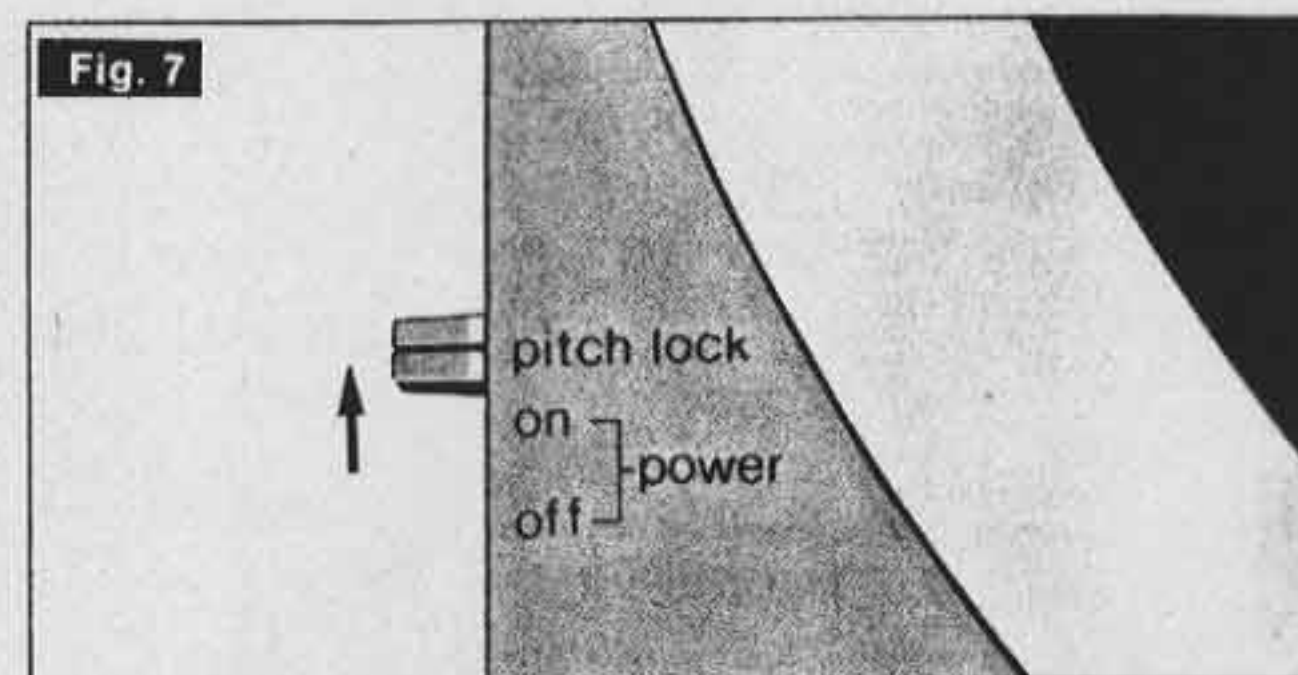


Upon setting the power switch/pitch lock knob to "on", the speed is changed over to 33-1/3 rpm. at all times.

If the record to be played is other than a 33-1/3 rpm., depress the speed select button to suit the phono disc to be played.

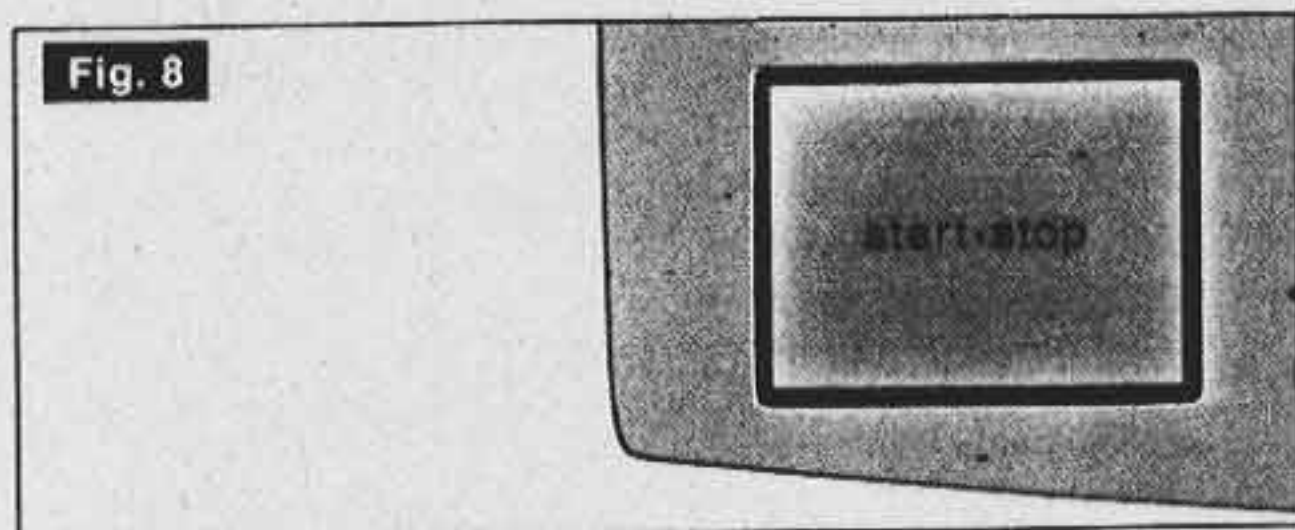
When the power switch/pitch lock knob is set to "pitch lock", the pitch control button and speed select button are locked so as not to be actuated even if the buttons are accidentally touched during playing. (See Fig. 7.)

Therefore, for selecting the speeds or operating the pitch control, first set the power switch/pitch lock knob to the position "on".



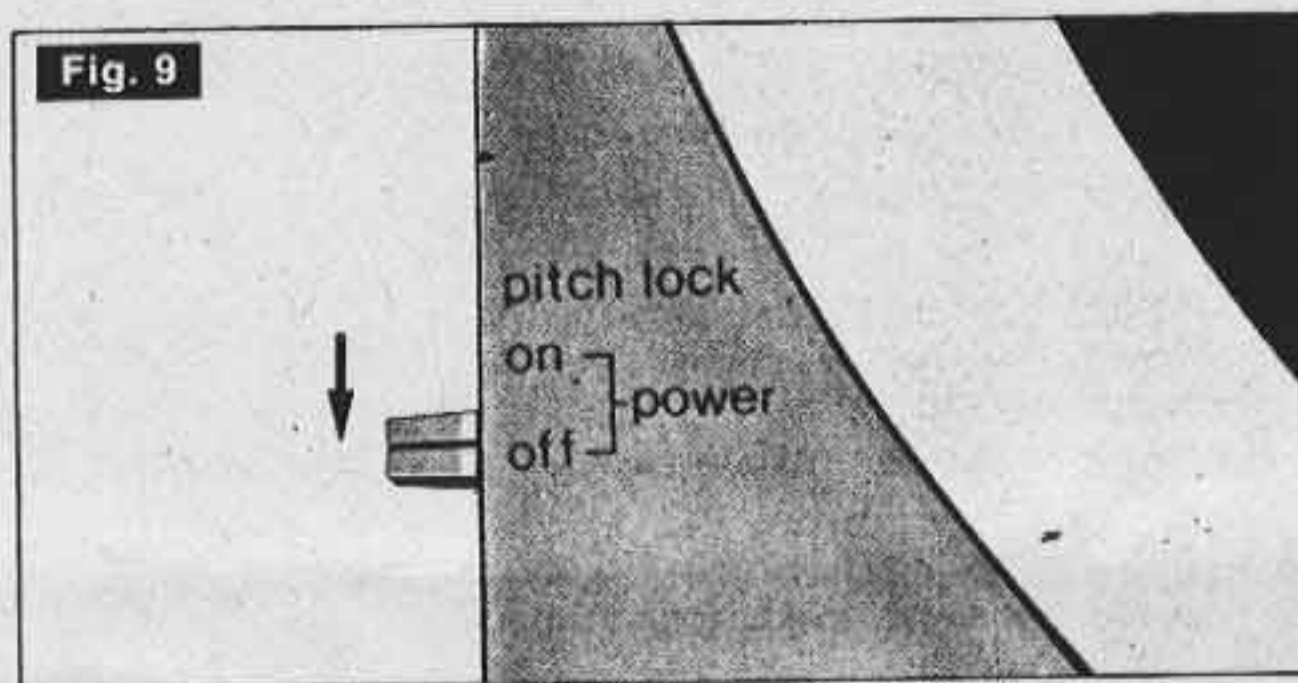


- Place a record on the turntable mat.  
Push the start • stop button. (See Fig. 8.)  
The turntable platter will begin to rotate and reach its constant rotation speed 0.4 sec. (33-1/3 rpm.).



- Upon completion of playing, depress the start • stop button.  
The turntable is instantly (0.4 second) stopped by the double brake system.

- After that, set the power switch/pitch lock knob to "off". (See Fig. 9.)



#### ■ Pitch control (turntable speed fine adjustment).

The Quartz Synthesizer system is being employed for the first time in the world. A high degree of pitch control accuracy over a wide range ( $\pm 9.9\%$ ) in 0.1% increments can be obtained with the quartz perfectly locked.

The pitch control is continuously variable up to  $\pm 9.9\%$ .

The pitch variations which are clearly indicated by the LED digital indicator provide you with accurate and easy selection.

The pitch control can be selected in increments of 0.1% which is below the threshold of human perception. (See Fig. 10.)



The pitch control also enables you to accurately and precisely tune musical instruments by varying the pitch slightly, to obtain a different musical note from the record. (See Fig. 11.)

For a half-tone change:

+5.9% (#)

-5.6% (b)



Another feature of the variable pitch control over a wide range of  $\pm 9.9\%$  is that it makes singing along with a melody easy for a chorus, or for playing a record for accompaniment only. (See Fig. 12.)



By pressing the clear button which is located between the "+" and "-" pitch buttons, you can quickly return the set to normal playing speed. (See Fig. 13.)





## Notes and maintenance

- **Be extremely careful about handling the turntable platter.**  
(See Fig. 14.)

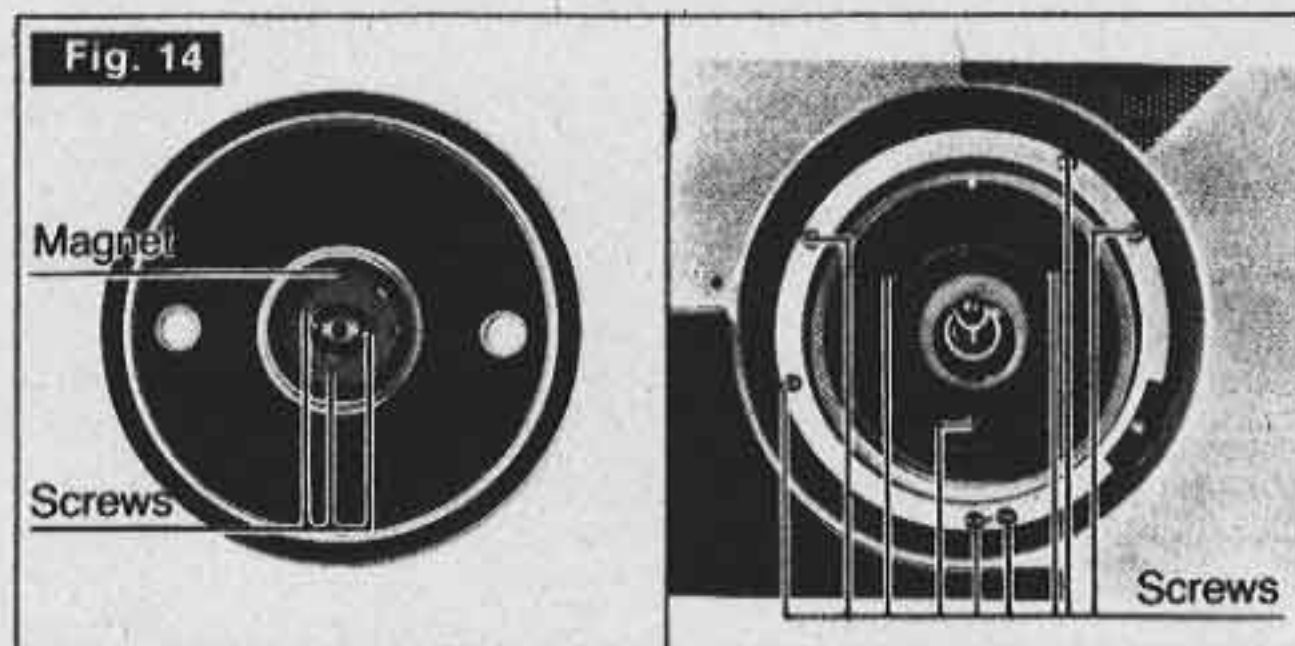
The magnet is attached to the underside of the turntable platter. For handling, extra care should be taken to prevent adhesion of dust or iron filings to the magnet, and to not damage the magnet by accidentally dropping it from a high position.

Do not remove the turntable platter more than necessary.

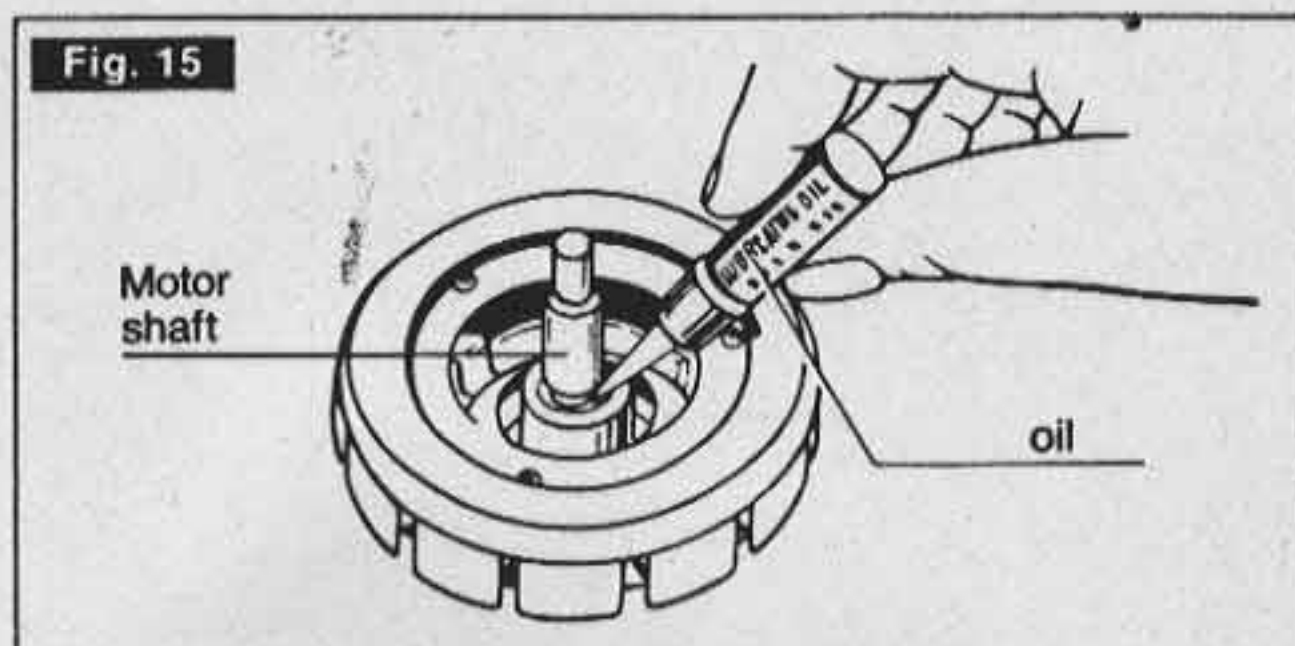
Should the turntable platter be removed by necessity be sure to first disconnect the power plug.

Do not remove the screws on the underside of the turntable platter and motor portion.

Should these screws be loosened, the rated performance of the unit cannot be guaranteed.



- **Wipe the unit with a soft, dry cloth.**  
Never use any cleaners containing alcohol, benzene or thinner. Use of a chemical dust cloth should also be avoided.
- **Lubrication**  
Apply 2 or 3 drops of oil once after every 2000 hours of operation. (See Fig. 15.)  
This time interval is much longer than that of conventional type motors (200—500 hours).  
Please purchase Technics original oil (Part number is SFWO 010.)



## For longer and safer use of this unit

In order to receive the best service from this unit, and for the safest operation, carefully read the following information.

- **Power source**  
**It is very dangerous to use this unit at a voltage which is different from the rated voltage.**  
There is danger of combustion if the unit is connected to a power source which is different from the rated voltage.  
Be very careful concerning this point.  
**Direct current cannot be used.**  
There are some places, such as ships, where direct current is used as the power source. Before connecting the unit, confirm the power source.
- **Connection of power cord**  
**Wet hands are dangerous.**  
Be sure to never touch the power cord with wet hands because there is danger of electric shock. This is true, of course, of all electric equipment.  
**Do not pull the power cord.**  
Never pull the power cord to disconnect it. Always pull the plug only.
- **Location of unit**  
Choose a place which is not in direct sunlight.  
Select a place which will assure good ventilation.
- **Never place heating equipment nearby.**  
Be sure to keep stoves and other sources of heat away from this unit, because heat radiated by such equipment may cause deformation of plastic parts or damage the cabinet, or, at worst, cause a fire.
- **Especially for families with children**  
**Take care that no small items, such as metal objects, are put inside this unit.**  
In addition, children should be especially warned not to put anything into the ventilation holes, such as toys or a screwdriver because these things may cause an electric shock or result in a malfunction of the unit.
- **If water spills on the unit**  
If water should happen to spill on the unit, from an overturned vase for example, there is danger of fire or electric shock. Disconnect the power plug from the electric outlet immediately, and contact the store from which the unit was purchased.
- **Reconstruction can cause accidents**  
Absolutely never try to remodel, reconstruct or repair this unit yourself. Do not attempt to touch any internal parts because to do so may result in an electric shock or other accident.
- **Be sure the power is off.**  
After you have finished using this unit, check once more to be sure that the power is off. If the unit is left with the power on for a long period of time, it may not only be damaged, thus shortening its useful life, but may also lead to a dangerous accident.



## Features

### ■ Quartz synthesizer system that for the first time in the world has made it possible to achieve a digital pitch control of $\pm 9.9\%$ in 0.1% increments

In conventional quartz players the quartz reference was in effect only within strictly limited ranges: whenever vernier speed change was required, the quartz circuit had to be switched off. In the Technics SP-15, we took the lead by locking the quartz, thus making it possible to effect a high degree of pitch control accuracy over a range as wide as  $\pm 9.9\%$  in 0.1% increments, which is below the threshold of human perception.

Moreover, the pitch control, coupled with the clear digital indicator, enables you to accurately and precisely tune with musical instruments, vary pitch slightly for obtaining a musical note from a record or alter tones by a half-note.

### ■ Oversized turntable that cuts off and absorbs external vibrations.

Based on analyses of the turntable vibration modes and vibrations in the sound range, a special viscoelastic material is applied to the reverse surface of the turntable platter for deadening.

The deadening material is applied to the undersurface and outer periphery of the turntable platter, with the rubber turntable mat on the surface settled into the turntable platter. This design is superior in acoustic characteristics even at high sound levels through elimination of turntable resonance and absorption of external vibration.

Moreover, the oversized aluminum die-cast turntable platter, 33.9 cm (13-11/32") in diameter, is heavy with 2.7 kg (5.9 lb.) of its own weight, with a moment of inertia of 380 kg·cm<sup>2</sup> (130 lb·in<sup>2</sup>) for large heavy weight class design.

### ■ Vibration damping structure by the precision aluminum die-cast cabinet and TNRC.

The acoustical characteristics of the player system are inevitably affected by the turntable platter and cabinet employed. The SP-15 adopts an aluminum die-cast cabinet superior in strength, with high processing accuracy, and the new acoustic material TNRC excellent in acoustical properties. Through cutting-off and absorption of external vibrations, the unit is designed for improved acoustic characteristics, with susceptibility to feedback minimized.

### ■ Electronic circuits of more than 3,000 discrete elements concentrated into 4 ICs

The 4 kinds of IC, i.e., Synthesizer pitch control CMOS LSI (MN 6042), Frequency dividing IC employing I<sup>2</sup>L, ECL (DN 860), phase speed control IC (AN 660) and Driving IC (AN 640) into which high density electronic circuits of more than 3,000 discrete elements have been compressed have made it possible to produce this high precision quartz turntable.

### ■ Quartz Controlled Rotation Accuracy

The SP-15 utilizes the oscillation of a quartz crystal as a reference signal or source. This oscillation is not affected by temperature change or power fluctuations. By synchronizing the rotation of the turntable platter accurately to the reference signal, speed drift of the unit is held within  $\pm 0.002\%$ .

### ■ Technics' unique motor construction in which the rotor of the motor is integrally formed with the turntable

### ■ High torque motor of 3 kg·cm with starting time of 0.4 second is capable of instant speed change-over (at 33-1/3 rpm.).

### ■ With the double braking system of the electronic brake and mechanical brake, the turntable stops instantly (0.4 second) upon depression of the start · stop button (at 33-1/3 rpm.)

### ■ High performance with wow and flutter of only 0.025% (JIS C5521) and rumble of -78 dB (IEC 98A Weighted).

### ■ Pitch lock mechanism capable of locking the speed selection and pitch control operation

Malfunction caused by accidental touching of the operating portion during playing, can be prevented.

### ■ Highly efficient pulse power supply circuit is employed for the DC power source

Since DC voltage is obtained by oscillating high frequency (20 kHz) through direct rectification of AC power supply for voltage conversion at the pulse transformer, there is no leakage of the commercial power source frequency.

### ■ Stable and positive mechanism that can stand frequent commercial use, etc. and a switch section with point contacts.

3 speeds of 33-1/3, 45 and 78.26 rpm. are employed, taking into account commercial and broadcast use.

## Specifications

### General

|                            |  |
|----------------------------|--|
| Power supply:              | 120 V, 50 or 60 Hz   |
| Power consumption:         | 11 W   |
| Dimensions:<br>(W × H × D) | 34.9 × 9.3 × 37.2 cm<br>(13-3/4 × 3-21/32 × 14-41/64 inches) |
| Weight:                    | 6.2 kg (13.7 lb)   |

### Turntable section

|  |   |
|--|---|
| Type:                                    | Quartz synthesizer pitch control,<br>Direct drive                               |
| Drive method:                            | Direct Drive  |
| Motor:                                   | Brushless DC motor  |
| Drive control method:                    | Quartz-phase-locked control   |
| Turntable platter:                       | Aluminum die-cast, diameter 33.9 cm<br>(13-11/32 inches) weight 2.7 kg (5.9 lb) |
| Moment of inertia:                       | 380 kg·cm <sup>2</sup> (130 lb·in <sup>2</sup> )                                |
| Turntable speeds:                        | 33-1/3, 45 and 78.26 rpm  |
| Turntable speed<br>fine adjustment:      | Adjustable up to $\pm 9.9\%$ in 0.1%<br>increments by digital indication        |
| Starting torque:                         | 3 kg·cm (2.61 lb·in)  |
| Build-up time:                           | 0.4 sec. to 33-1/3 rpm  |
| Braking time:                            | 0.4 sec from 33-1/3 rpm   |
| Braking system:                          | Electrical and Mechanical braking   |
| Speed fluctuation due<br>to load torque: | 0% within 2.5 kg·cm (2.2 lb·in)   |
| Speed drift:                             | Within $\pm 0.002\%$  |
| Wow and flutter:                         | 0.025% WRMS (JIS C5521)<br>$\pm 0.035\%$ peak (IEC 98A Weighted)                |
| Rumble:                                  | -56 dB (IEC 98A Unweighted)<br>-78 dB (IEC 98A Weighted)                        |

Weight and dimensions shown are approximate.  
Specifications subject to change without notice.



## SUGGESTIONS FOR SAFETY

Before using this unit, be sure to read applicable items of the operating instructions and these safety suggestions carefully; and afterwards keep them handy for future reference. Take special care to follow the warnings indicated on the unit itself as well as in the operating instructions.

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**1. Avoid places where there is water or humidity.**

Do not use this unit near a bathtub, washbasin, swimming pool, or the like. Damp basements should also be avoided.

**2. Don't allow water or any foreign object to get inside this unit.**

Don't place small metal objects or anything containing liquid on or near the unit.

**3. Avoid placement of the unit where it will be exposed to the direct rays of the sun, or where ventilation is inadequate.**

Don't place this unit in a bookcase or between cabinets, unless proper ventilation is provided, or where curtains or furniture may obstruct the ventilation holes.

**4. Place this unit away from heat-emitting appliances.**

Never place this unit on or near a radiator, heat register, stove, or any other heat-emitting equipment. (Including Amplifiers).

**5. Placement**

Place the unit on a stable, vibration-free, level shelf or stand.

**6. Use of a cart or stand**

When deciding on a cart or stand, be sure to use only with the cart or stand recommended by the manufacturer.

**7. Wall or ceiling installation.**

If the unit is to be mounted on a wall or ceiling, be sure to do so only as recommended by the manufacturer.

**8. Check the voltage rating of this unit before connecting the unit to a power source.**

Be sure to connect the unit only to the type of power source indicated in the operating instructions, or as indicated on the unit itself.

**9. Care of the power cord and plug**

- Take care that the cord is not bent sharply (especially near its connection to the unit or near the plug), that nothing is placed on it, and that it is not pinched, crushed or frayed. Never take hold of the plug or cord if your hand is wet, and always be sure to grasp the plug body when connecting or disconnecting it.

**10. If the unit will not be used for an extended period of time:**

Be sure to disconnect the power cord from the wall outlet.

**11. Maintenance**

Refer to the operating instructions for details.

**12. Never attempt repairs yourself:**

- (a) If the power cord or plug is damaged.
- (b) If a foreign object has fallen or liquid has spilled into it.
- (c) If the unit is exposed to rain.
- (d) If the unit does not function normally, or if operation shows a distinct change in performance.
- (e) If the unit has been dropped and the cabinet or chassis are damaged . . . etc.

Unplug the power cord and have it checked by a qualified technician (or the dealer from whom the unit was purchased or the nearest service center).

**13. Repairs**

Except for adjustments explained in the operating instructions, do not attempt any repairs yourself. Be sure to request service from a qualified technician (or your dealer or nearest service center).