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Technics

by Panasonic

Direct Drive Automatic Turntable System

SL-1950

OPERATING INSTRUCTIONS



Simulated metal base

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

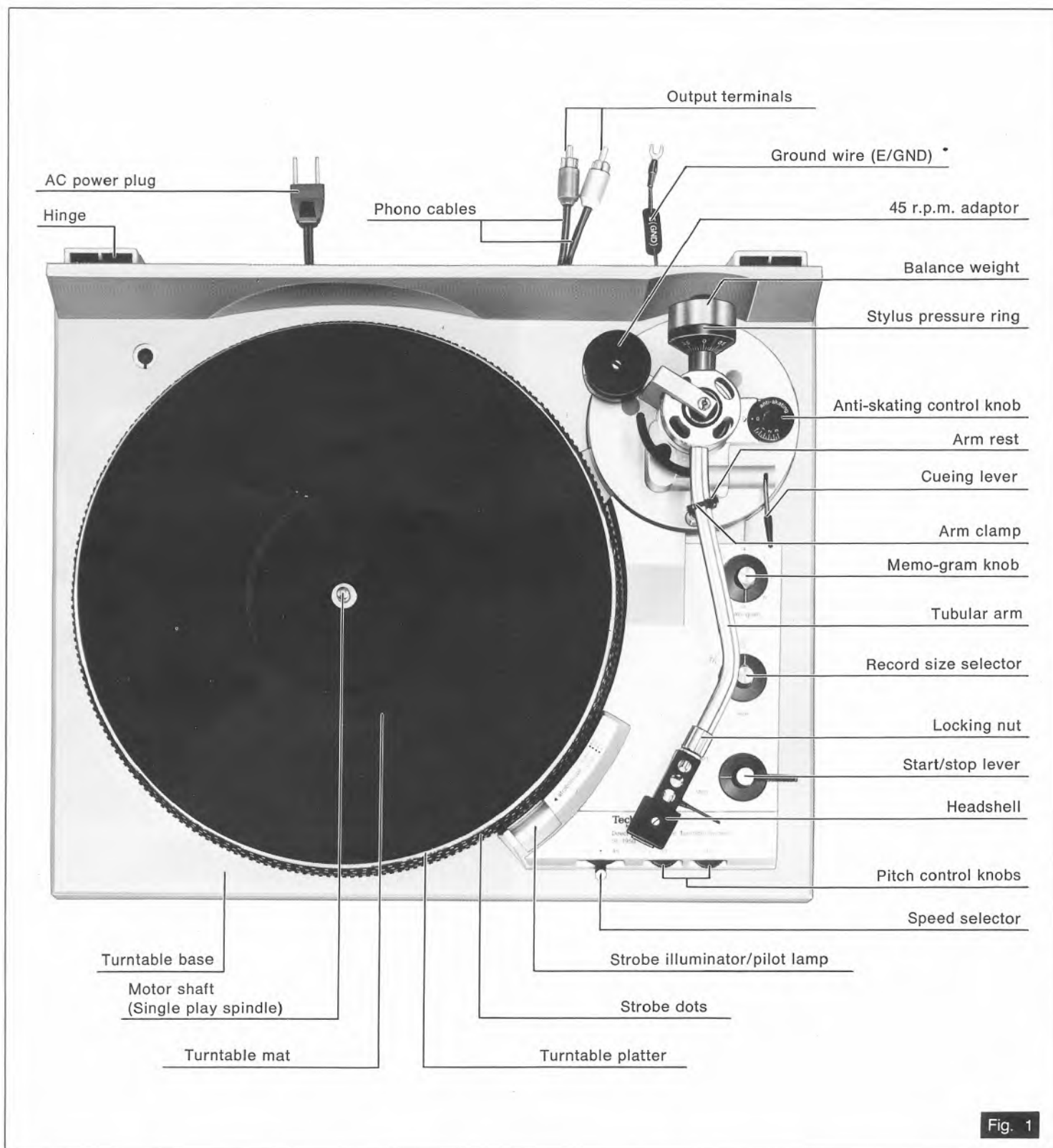
MODEL NUMBER _____

SERIAL NUMBER _____

Before operating this set, please read these instructions completely.

We want to thank you for selecting the SL-1950, Direct Drive Automatic Turntable System. For optimum performance, we recommend that you read these instructions carefully.

Parts identification



“Warning: To prevent fire or shock hazard, do not expose this unit to rain or moisture.”

Assembly and set-up

Caution:

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

① Check the parts.

Turntable unit	1	45 r.p.m. adaptor	
Turntable platter	1	(for multiple play)	1
Turntable mat	1	(for single play)	1
Dust cover	1	Special oil	1
Multiple play spindle	1	Balance weight	1
Single play spindle	1	Headshell	1
		Overhang gauge	1
		Screws for cartridge	4

② Apply two or three drops of oil to the motor shaft using the furnished special oil. (See Fig. 2).

Although the unit has been lubricated before shipping from the factory, apply a few drops of oil to the motor shaft. After that, application of two or three drops of oil once every 2000 hours of operation or so is sufficient. As the time interval is much longer than that for conventional type motors (200–500 hours), do not apply too much oil, nor more frequently than necessary. Never use any other type of oil.



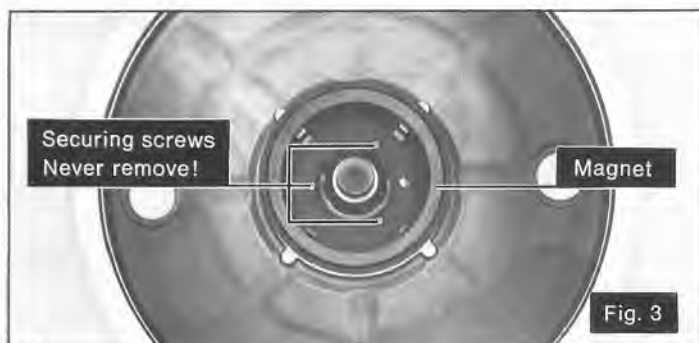
③ Installation of the turntable platter.

① Place the turntable platter on the motor shaft.

② Place the turntable mat on the platter.

Note:

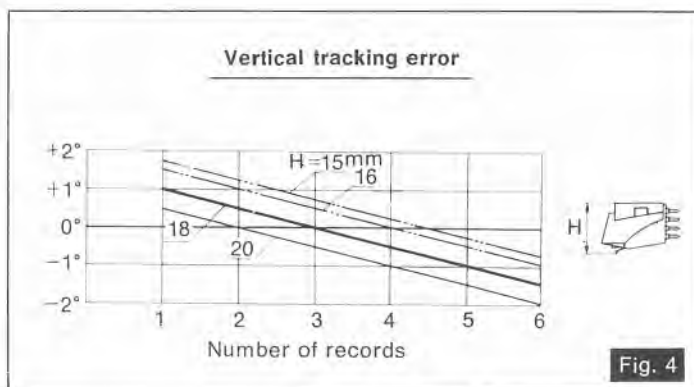
- 1) The rotor is connected to the underside of the turntable platter. (The magnet of the motor is attached to the turntable platter). To maintain optimum performance, extra care should be taken to prevent adhesion of dust or iron filings to the magnet and not to damage the magnet by dropping it.
- 2) Do not remove or loosen the three screws securing the magnet. (See Fig. 3).



④ Installation of the cartridge (optional).

Please refer to the following when installing a cartridge.

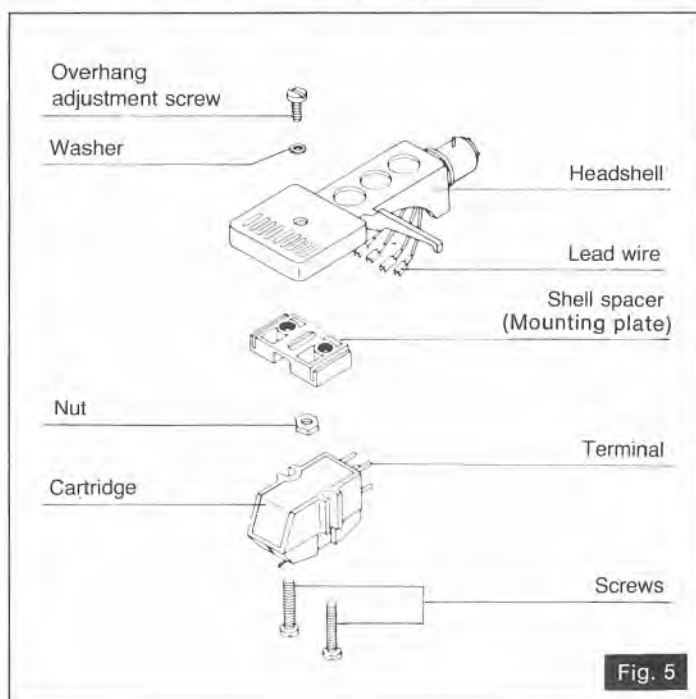
The tonearm of the SL-1950 has been designed to accommodate a wide range of differences in cartridge geometry, so that the majority of phonograph cartridges in use today may be mounted for proper overhang and proper tracking with a stack of up to six records on the platter. However, the owner should check before selecting a cartridge to make sure that it is compatible. Generally, if cartridge height is greater than 20 mm, it will interfere with tracking on the last record of a stack of six, limiting the maximum capacity to five records. If cartridge height, on the other hand, is less than 15 mm spacers should be added to the cartridge mounting plate in the head shell. (See Fig. 4).



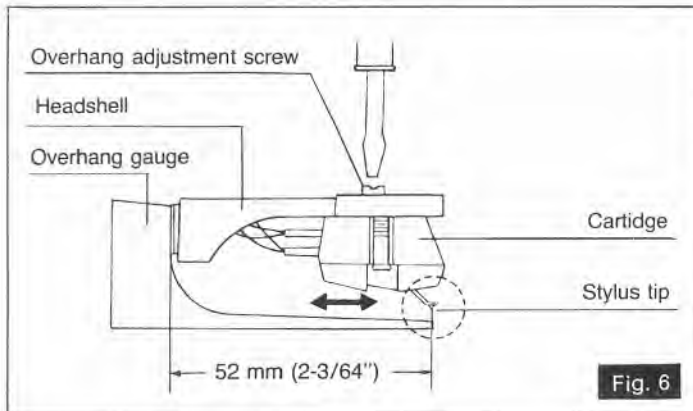
① Connect the lead wires to the cartridge terminals.

White (L +)	Left channel +
Blue (L -)	Left channel -
Red (R +)	Right channel +
Green (R -)	Right channel -

② Install the cartridge to the spacer, and tighten it with screws supplied with the cartridge. (See Fig. 5).



③ Insert the headshell into the gauge. (See Fig. 6).



④ Loosen overhang adjustment screw and move the cartridge forward or backward until the stylus tip lines up with the edge of the gauge.

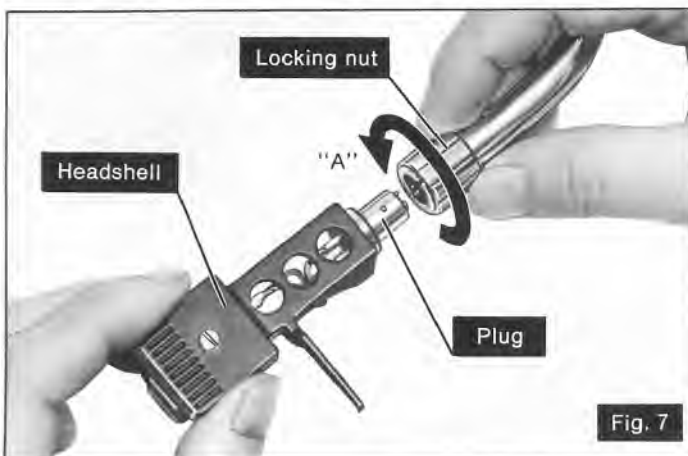
⑤ Tighten adjustment screw without moving the cartridge.

Note:

- 1) Your cartridge is now adjusted for lowest tracking error and minimum distortion.
- 2) This gauge is exclusively designed for this tonearm.

⑥ **Installation of the headshell.** (See Fig. 7).

Insert the headshell into the front end of the tubular arm, and turn the locking nut clockwise (in the direction shown by the arrow "A"), with the headshell firmly held horizontally.



⑦ **Installation of the balance weight.** (See Fig. 9)

Place the balance weight on the rear shaft of the tonearm.

Note:

It may be difficult to place the balance weight to the rear shaft of the tonearm.

Please release the arm clamp and remove the tonearm from the arm rest to provide enough space for inserting the balance weight. (See Fig. 9).

⑧ **Adjustments of the horizontal "0" balance and the stylus pressure.**

Note:

Before adjusting the horizontal "0" balance, check the following items.

- 1) Make sure that the cueing lever is in the lowered position as shown in Fig. 11.
- 2) Make sure that the speed selector is in the "•" neutral position, the balance adjustment is easily made if the turntable platter remains stationary. (See Fig. 1).

- 3) Make sure that the anti-skating control knob is at "0" position. (See Fig. 12).
The tonearm may sway or move slightly in the "0" position which is normal.
- 4) Make sure that the "memo-gram" knob is in the "0" position. (See Fig. 1).
- 5) Make sure that the AC power plug is disconnected from the wall outlet.

① Remove the stylus cover, if your cartridge has one.

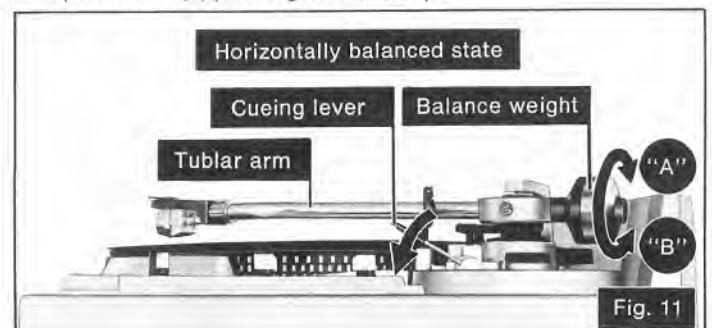
② Release the arm clamp (See Fig. 8) and lift the tonearm from the arm rest to free the tonearm. (See Fig. 10).



Note:

If the tonearm pulls toward the arm rest when the tonearm is held in a free state as in Fig. 10, rotate the turntable platter clockwise about 10 times. This will disengage the automatic mechanism from the tonearm gear, which in rare cases may have moved out of its normal position during transportation.

③ Turn the entire balance weight clockwise (indicated by the arrow "A") or counterclockwise (indicated by the arrow "B") until the tonearm is approximately balanced horizontally. (floats freely.) (See Figs. 10 and 11).



Note:

During the adjustment of the horizontal balance, be careful that the stylus tip of the cartridge does not contact the turntable mat or turntable base.

- ④ After the tonearm is horizontally balanced, temporarily fasten the tonearm to the arm clamp. (See Fig. 12). Hold the balance weight stationary with one hand as shown in Fig. 12 and rotate only the stylus pressure ring to bring the numeral "0" of the ring into alignment with the center line on the tonearm rear shaft. (The adjustment of the horizontal "0" balance is now completed.)

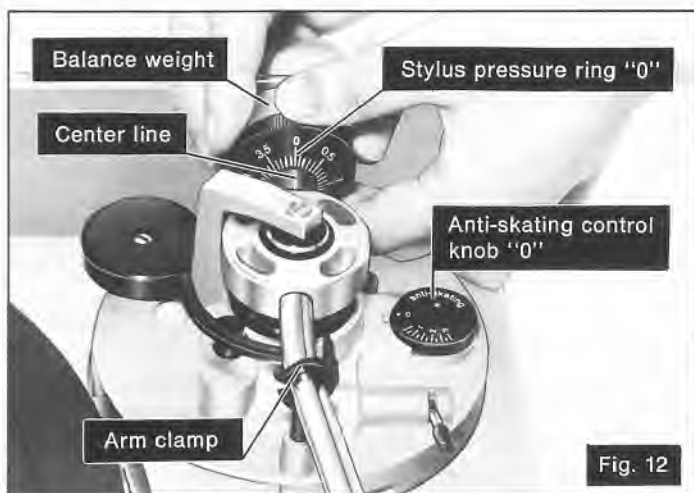


Fig. 12

- ⑤ After adjusting the horizontal "0" balance, turn the balance weight clockwise in the direction of the arrow and align to the correct stylus pressure. (Follow the cartridge manufacturer's recommendation.) (See Fig. 13).

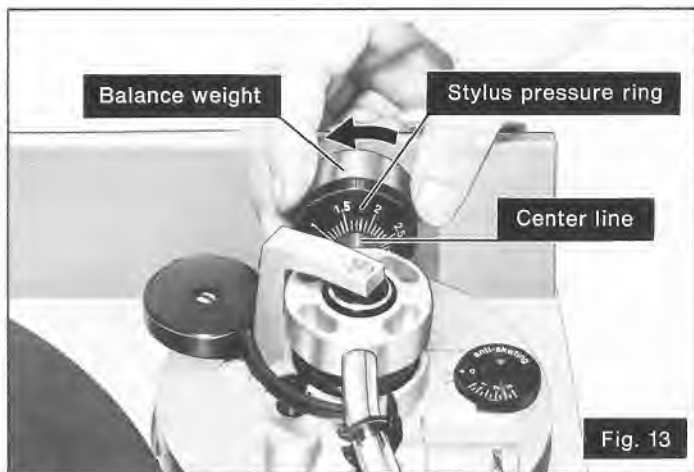


Fig. 13

As the stylus pressure ring moves in step with the balance weight, proper stylus pressure can be selected by directly reading the graduated ring.

Note:

Set the stylus pressure to the maximum recommended value for your cartridge in cases where the record has an extremely high recording level, or where the unit is operated in a room at low temperature or in places in which the unit is subjected to vibrations.

⑧ Anti-skating control.

Set the anti-skating control knob to the same value as the stylus pressure. (See Fig. 14).



Fig. 14

⑨ Installation of the dust cover. (See Fig. 15).**Note:**

Opening or closing of the dust cover during play should be avoided. Since this may not only cause vibrations, but also result in skipping of the stylus.

If you must open it during play it should be done as gently as possible

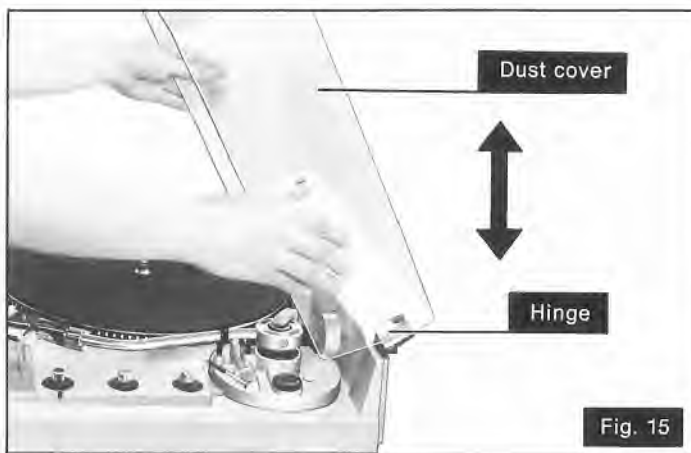


Fig. 15

⑩ Placement.

1. Use the unit in a stable and horizontal position, where there is little or no vibration.
2. Use the unit as far away from the speakers as possible to isolate the unit from sound radiation from them.
3. Do not place the unit where it is exposed to direct sun, dust, moisture or heat.
4. Keep it in a well-ventilated place.

⑪ Connect the AC power plug.

Connect the AC power plug to the AC socket.

In cases where the AC power plug is connected to the outlet (AC outlet) of the amplifier or receiver make sure that the wattage indicated on the outlet meets the turntable's requirements before connecting the power plug.

⑫ Connect the output terminals.

Output terminals		Amplifier or Receiver	
L (White)	→	L	Channel
R (Red)	→	R	Channel
E (Spade lug)	→	GND	

Note:

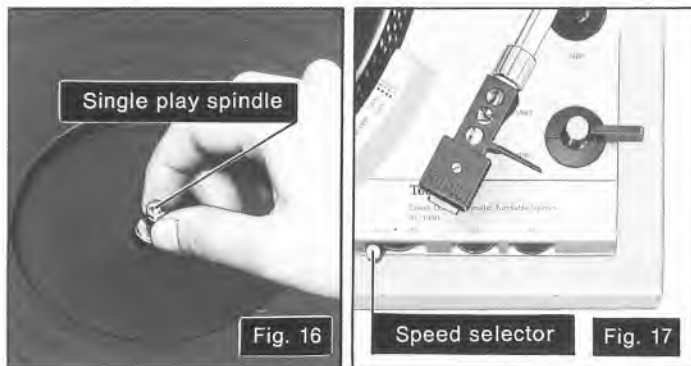
Be sure to connect the ground terminal firmly to the amplifier or receiver. If this connection is not made or is loose, a power source "HUM" will result.

How to play

Single play

Manual play of a record

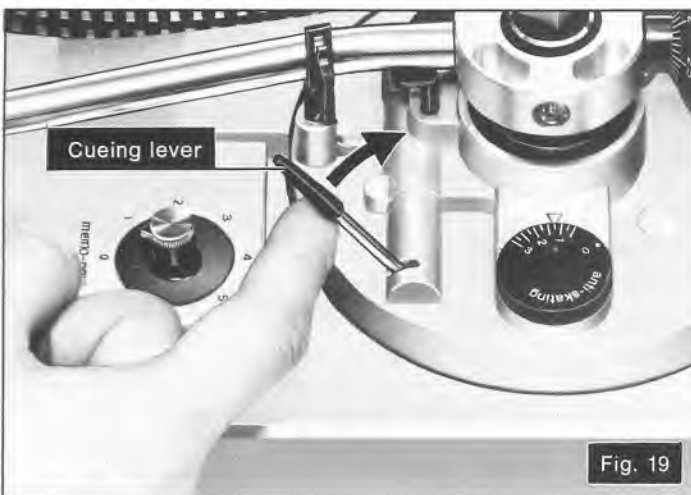
- 1 Install the single play spindle to the motor shaft. (See Fig. 16).



- 2 Set the speed selector to the desired record speed. (See Fig. 17).
- 3 Make sure that the "memo-gram" knob is set to the "0" position. (See Fig. 18).



- 4 Release the arm clamp and lift the cueing lever. (See Fig. 19).



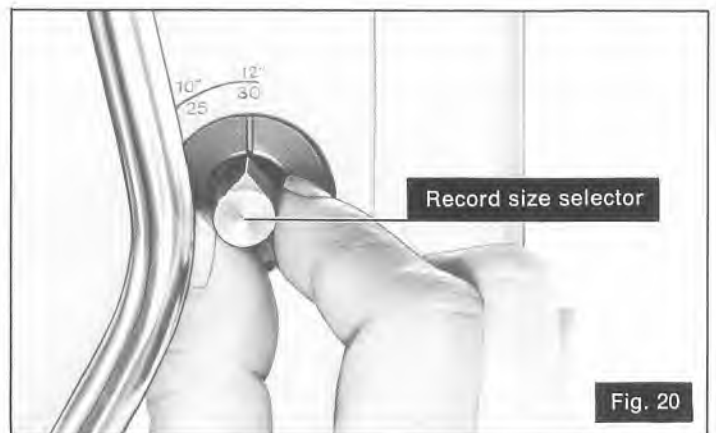
- 5 Move the tonearm over the record and then lower the cueing lever. The tonearm will descend slowly onto the record and play will begin.
- 6 When finished playing the tonearm will automatically return to the arm rest (auto-return) the power will shut off, and the turntable platter will stop rotation. (The turntable platter will rotate for a short time due to its own inertia.)

Note:

- 1 When the tonearm is moved towards the record, the power is turned on and the turntable platter will start rotating. (If the speed selector is positioned at "•", the turntable will not rotate, although the strobe illuminator is lit.)
- 2 If "memo-gram" knob is in a position other than "0", play will be repeated by the number of times set, therefore, be sure to keep the "memo-gram" knob in the "0" position. (See to Fig. 18).

Automatic play of a record

- 1 Set the speed selector knob in the same manner as in manual play and release the arm clamp.
- 2 Set the record size selector knob to the diameter of the record (7" (17 cm), 10" (25 cm) or 12" (30 cm)) you wish to play. (See Fig. 20).



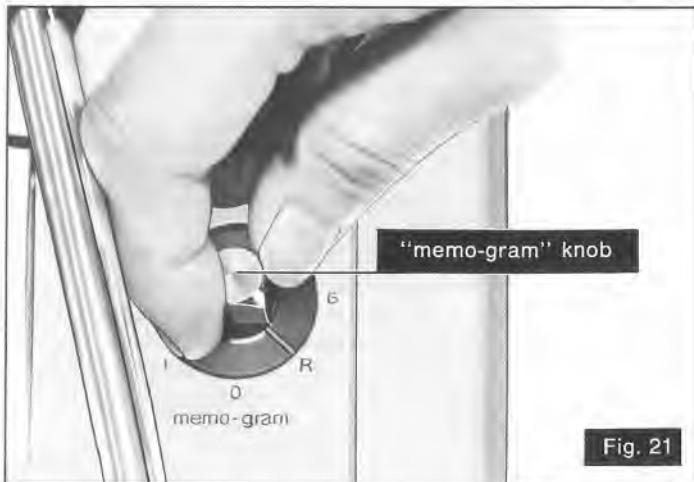
- 3 Make sure that the "memo-gram" knob is set to the "0" position. (See Fig. 18).

- 4 Release the arm clamp and pull the start/stop lever. The tonearm will then move automatically over the lead-in groove and descend slowly to the record. (Auto start).
- 5 When play has finished, the tonearm will automatically return to the arm rest (auto-return) the power will shut off and the turntable platter will stop rotation.

Repeat play of a record

This unit employs a unique function. The "memo-gram". You can play a record repeatedly from one to six times or continuously by setting this knob to the desired position.

- 1 Set the speed selector and record size selector in the same manner as in automatic play.
- 2 Set the "memo-gram" knob to the desired number you wish to play. (See Fig. 21) "R" position enables you to repeat play continuously.



Note:

- The "memo-gram" knob may be turned either clockwise or counter-clockwise except during automatic start, or automatic return cycle.

How to suspend play

- For temporary interruption of play, raise the cueing lever, and the stylus tip of the cartridge will be lifted from the record.
- If you want to suspend play, push the start/stop lever. The tonearm automatically returns to the arm rest, the power supply will shut off, and the turntable stops rotating.

Multiple play

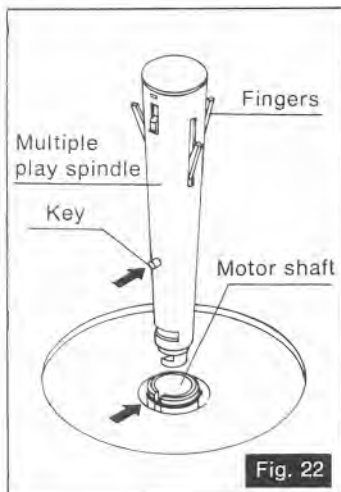
Automatic play for up to 6 records

This unit employs a unique umbrella type of spindle which can stack as many as six records of the same size. You can select the number of the records (or repeat play of the last record) with the "memo-gram" knob.

- 1 Insert the multiple play spindle, aligning the key on its base with the slot of the motor shaft. (See Figs 22 and 23).

Then pushing downward rotate it clockwise until it stops.

To remove the spindle, push it down, turn counterclockwise until it feels loose and lift upwards.

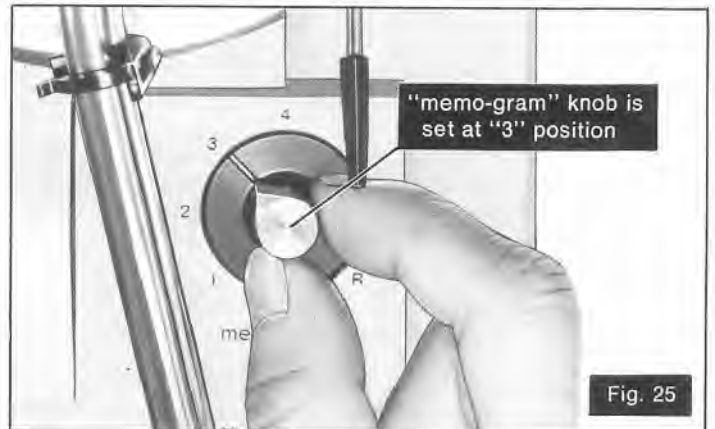


Note:

When the automatic mechanism is in operation or engaged never insert or remove the multiple play spindle.

- 2 Stack records of the same size on the fingers of the multiple play spindle.

- 3 Count the number of records stacked, and set the "memo-gram" knob to the number corresponding to the records; i.e., when you stack three records, set the "memo-gram" knob to the "3" position. (See Figs. 24 and 25).



- 4 Make sure that the record size selector and speed selector are set to the proper position, and also lower the cueing lever.

Then follow the same procedure as for the automatic (auto-start) play.

If you want to suspend play, push the start/stop lever. The tonearm automatically returns to the arm rest, the power supply will shut off, and the turntable stops rotating.

If the stop lever is pushed while there are still records on the spindle the next record will drop.

Play will continue until the "memo-gram" knob reaches "0" or is set to "0".

For multiple play plus repeat play

Set the "memo-gram" knob to the "R" position for multiple play, and you can play the last record repeatedly (repeat).

When you play a 45 r.p.m. record with a large center hole

- In the case of "single play". Place the 45 r.p.m. adaptor for single play on the single play spindle.
- In case of "multiple play", insert the 45 r.p.m. multiple play adaptor into the motor shaft, in the same manner as the regular multiple play spindle. (Refer to Figs. 22 and 23).

Note:

- Before you operate the start/stop lever, make sure that the "memo-gram" knob is set at the "0" position.

If this knob is set at any position other than "0", the repeat play is continued by the number of times indicated, even if you push the start/stop lever.

Note and Maintenance

- ❶ Records having sizes other than 7", 10" and 12" (17 cm, 25 cm and 30 cm) should be played manually.

- This unit is adjusted based on the standard dimensions specified for records. Therefore, use the unit manually for records other than standard sizes.

• **Note:**

Warped or especially thin or thick record should be played manually only.

If such records are used for multiple play operation 2 records may drop simultaneously, or the record may not drop at all.

- ❷ Never turn the "memo-gram" knob or touch the tonearm during automatic cycle. (Auto-start, auto-stop or change cycle) Wait until the tonearm has returned to the arm rest, or has descended to the record and resumed play.

- ❸ In the case of multiple play, be sure to use records of the same size.

- ❹ Use the cueing lever only for single play operation (play one record only).

- ❺ When using other headshells, make sure about the headshell configuration. (See Fig. 26.)

When you use other headshells having high fingerlift handles, the handle portion of the headshell may strike the underside of the stacked record (in multiple play) while the tonearm is in auto-start auto-return motions. Therefore, use of such a headshell should be avoided.

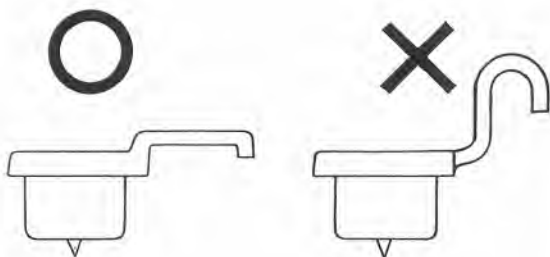


Fig. 26

- ❻ Dust and dirt from stylus tip or records should be carefully removed.

Dust and dirt on stylus tip, or record may not only result in deterioration of tone quality, but cause undue wear of the record and the stylus tip itself.

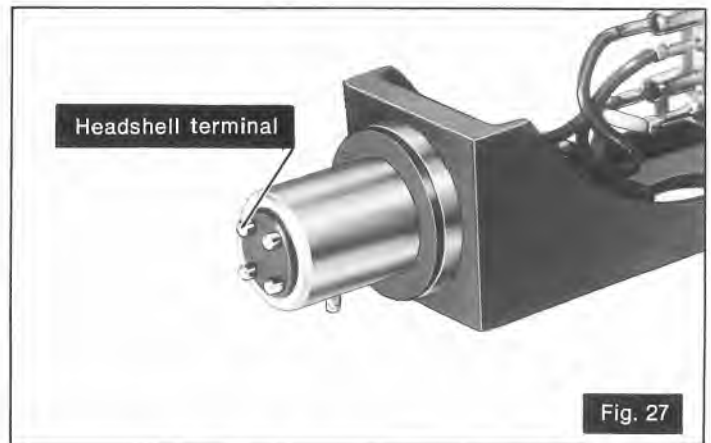
Special stylus tip brushes and record cleaners can be purchased in most electronic supply houses.

- ❼ Before detaching or attaching the headshell, be sure to turn the power of the amplifier or receiver OFF.

Detaching or attaching of the headshell, with the volume control turned up, may cause damage to the speakers.

- ❸ Wipe the headshell terminals from time to time. (See Fig. 27).

Dust and dirt the headshell terminals may result in increased "HUM" noise or intermittent sound. Use a soft dry cloth to clean the headshell terminals.



- ❹ When finished playing, be sure to secure the tonearm with the arm clamp.

After finished playing, if the unit is not to be used for some time, care should be taken to secure the tonearm to protect the stylus tip.

For the same reason, the stylus cover should also be attached.

- ❺ Wipe the dust cover and turntable base with a soft, dry cloth.

Never use any cleaners containing alcohol, benzine or thinner. Use of a chemical dust cloth and the like should also be avoided. Be sure that the dust cover is not exposed to insecticide spray.

To remove stubborn finger prints or grease spots detach the dust cover and disconnect the AC power plug and use a soft cloth dampened with a mild soap and water solution.

- ❻ Extra care should be taken in handling the turntable platter.

The turntable platter has a rotor (the magnet of the motor) directly connected to it. Therefore, the turntable platter should not be removed from the motor shaft unnecessarily. Since Should it become necessary to remove the turntable platter, be sure to pull the AC power plug out of the socket.

Adjustment

① Adjustment of the arm lift height. (See Figs. 28 and 29).

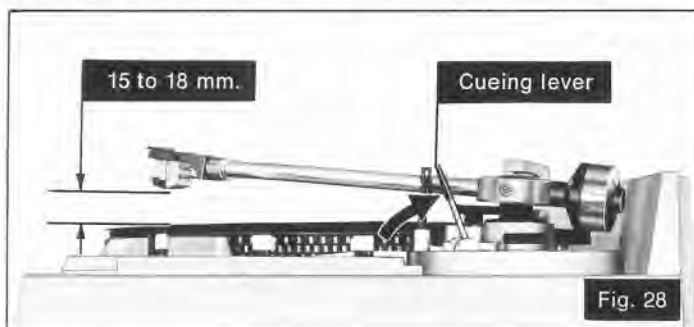
The arm lift height (distance between the stylus tip and record surface when cueing lever is raised) has been adjusted at the factory before shipping to approximately 15 to 18 mm. If the clearance becomes too narrow or too wide because of the physical size of the different cartridges on the market, turn the adjustment screw clockwise or counterclockwise, while pushing the arm lift down.

Clockwise rotation

—distance between the record and stylus tip is reduced.

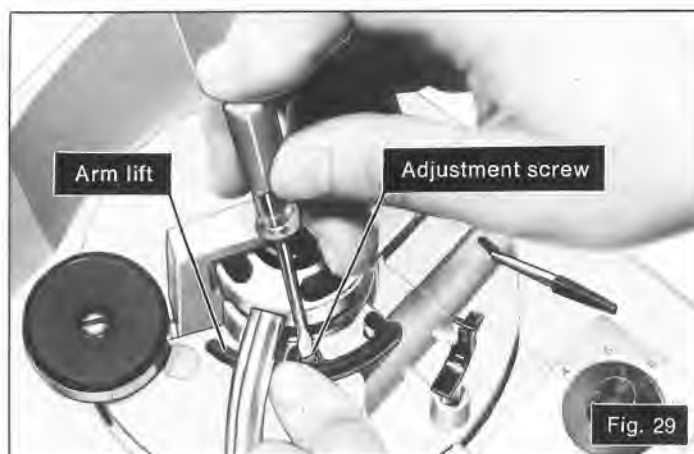
Counterclockwise rotation

—distance between the record and stylus tip increases.



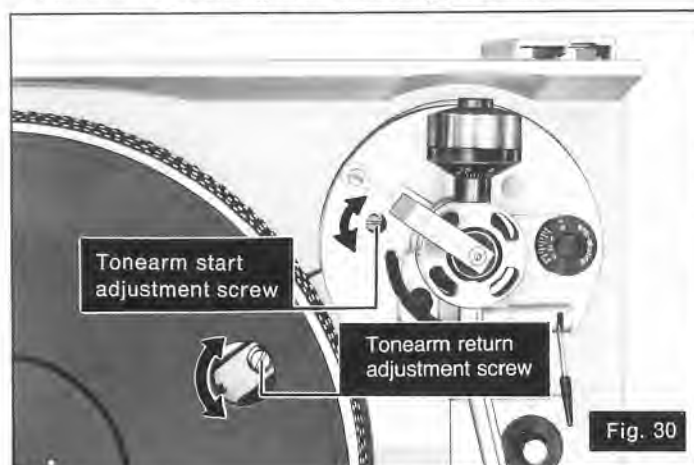
Note:

As the adjusting screw has a hexagon head, be sure to make the adjustment while depressing the arm lift, and be sure that the hexagon head retracts correctly into the arm lift when released.



② Adjustments for automatic start and automatic return positions. (See Fig. 30).

Should the tonearm not set down at the correct points, make adjustments according to the following procedures.



Adjustment for automatic start position

(Remove the rubber cap.)

In cases where the stylus tip sets down outside of the record

—Move clockwise.

In cases where the stylus tip sets down on the recorded groove

—Move counterclockwise.

Adjustment for automatic return position

(Remove the turntable mat.)

In cases where the tonearm tends to return before the playing has finished

—Move clockwise.

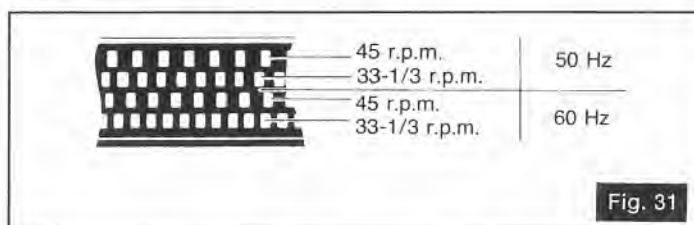
In cases where the tonearm fails to return after the last groove of the record

—Move counterclockwise.

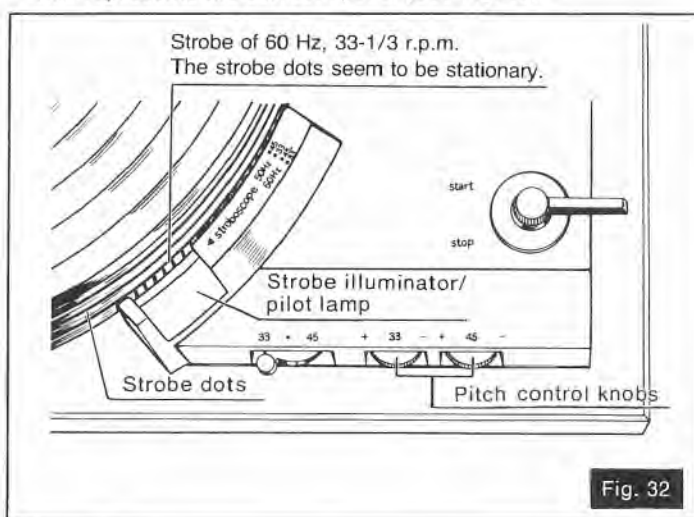
③ Speed adjustment (with pitch control knobs)

(See Figs. 31 and 32)

Strobe dots are set on the tapered rim of the turntable platter according to the power frequency and the speed of the records. Make adjustment, referring to strobe dot indication. (See Fig. 31).



- ① Set the speed selector to the speed to be adjusted. (See Fig. 32).
- ② Release the arm clamp and raise the cueing lever.
- ③ Move the tonearm slightly towards the turntable platter until the strobe illuminator/pilot lamp will light up, and the turntable platter will rotate.
- ④ While turning the pitch control knobs either to the "+" side or "-" side, adjust that the strobe dots of the turntable platter look as if they were stationary. This represents the correct speed. (See Fig. 32).



"+" direction

The speed of the turntable platter will increase. Rotate if the strobe dots seem to be "falling back"; i.e. seem to be moving counterclockwise. When the dots appear to be stationary, turntable speed is accurate.

"-" direction

The speed of the turntable platter will decrease. Rotate if the dots seem to be "running ahead"; i.e. seem to be moving clockwise, until they appear stationary.

Note:

Strobe dot pattern

The strobe illuminator/pilot lamp of this unit employs the standard commercial power source. The frequency of such power source, when actually measured, has a fluctuation of about 0.2%. As such a fluctuation of the power source affects the strobe illuminator, the strobe dot pattern also seems to fluctuate to a certain extent. But the unit is not affected by the fluctuations of the power source, since a D.C. motor is employed.

Features

Turntable section

- **High performance automatic turntable system** which enables you to enjoy 6 fundamental operations.

The "memo-gram" function unique to Technics which enables you to enjoy manual play, auto-start, auto-return, auto-stop, repeated performance from 1 to 6 times and continuously performance, and, in addition, multiple play, capable of playing 1 to 6 records continuously. All these features will make your "audio life" happier.

- **Umbrella spindle of excellent performance.**

A simple pipe of 7 mmø at a first glance.

The superior mechanism design and excellent workmanship of Technics have been concentrated on this pipe to constitute the highly reliable automatic mechanism by making the best use of superior know-how obtained through production of auto-mechanisms during the past many years.

- **Integral rotor-platter structure**

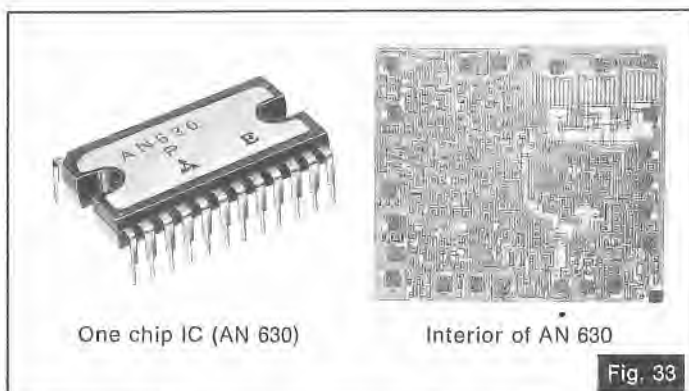
First to introduce the direct-drive system for turntables, Technics has now taken this remarkable advance one step further with the development of the Integral Rotor-Platter structure. This latest Technics breakthrough combines the turntable platter and the rotor of the motor in one piece, reducing the number of moving parts to just one, to further simplify turntable construction and at the same time raise performance standards. Simplified design and construction make possible more precise and accurate speed, greater reliability, and more attractive styling; and most important, measurable performance that is unequalled among turntables with other drive systems.

- **Dependable one chip IC.** (See Fig. 33).

The direct-drive motor of the SL-1950 is controlled by a "one-chip" IC which performs the functions of up to 321 individual transistor, diode and resistor elements. With this IC brain, the motor control circuit supplies precisely the correct amount of drive current to the motor to maintain the proper speed under all conditions.

This "one-chip" control system contains a number of refinements which assure unvarying rotational speed, free from "lag" in corrective response. Rotation stability is unaffected by changes in temperature or long playing times, and the IC permits quick response to sudden transients in load.

We take pride in the fact that the one chip IC (AN630) represents the world's largest degree of integration in a bipolar linear IC.



- **Hi-fidelity performance with rumble (signal to noise ratio) of -70 dB (DIN45539B), wow and flutter of 0.03% (W.R.M.S.).**

The ultra-low speed brushless DC motor employed in this unit has an extremely low power consumption of about 0.1 W. The high performance of the Direct Drive motor is due to the newly developed heavy weight base and to the utilization of the one chip IC of the B.FG* system.

*B.FG stands for "Back Electromotive Force Frequency Generator".

Tonearm section

- **Highly sensitive universal tonearm.**

For the finest tracking sensitivity, the tonearm rests in a gimbal suspension equipped with two pairs of low friction pivot bearings. Gimbal suspension and low tonearm mass mean that accurate tracking is possible at tracking forces as low as 0.25 grams. With enhanced rotational sensitivity of 7 mg, the tonearm is allowed free, gyroscopic movement to ensure flawless balance during tracking. The longer-than-usual effective tonearm length (9-1/16" or 230 mm, stylus to pivot) contributes to the arm's low tracking error, and this in turn facilitates the design of the anti-skating control for precise and reliable tracking. With this design, a single precise anti-skating scale counteracts side thrust for all types of styli.

- **Viscous damped cueing.**

Feather-touch cueing device is viscous-damped for gentle descent. The tonearm will set down exactly on the groove you desired by using the cueing lever, thus protecting the stylus tip from damage.

- **Diecast aluminum headshell.**

The precision-crafted, low-mass head shell is of die-cast aluminum and employs the universal-type 4-pin connector. Gold-plated contacts prevent hum and other problems.

The easy insertion adjustment for exact stylus overhang permitted by the design avoids the problems of slide-in type headshells.

- **Anti-skating control.**

A single precise, anti-skating scale counteracts skating force for all types of styli, eliminating the need for more than one such calibrated scale. It is a great convenience for real audio fans.

- **Low-capacitance phono cables.**

To avoid high-frequency loss, low-capacitance phono cables are used.

Specifications

General

Power supply	AC 120 V, 50 or 60 Hz
Power consumption	6.5 W
Dimensions	17.5 × 43.0 × 35.2 cm
(H × W × D)	6-15/16 × 16-15/16 × 13-7/8 inches)
Weight	7.5 kg (16.5 lbs.)
Turntable section	
Type	Direct Drive Automatic Turntable System, Automatic start, Automatic return, Automatic shut-off, "memo-gram" knob, Repeat play and Manual play
Drive method	Direct Drive
Motor	Back Eletromotive Force Frequency Generator servo DC motor employing one chip IC
Turntable platter	Aluminum die-cast, 31 cm (12-1/8")
Turntable speeds	33-1/3 and 45 r.p.m.
Pitch controls	Individual adjustment controls, 10% adjustment range
Wow and flutter	0.03% W.R.M.S. (JIS C5521) ±0.042% Weighted zero to peak (DIN 45507)
Rumble	-70 dB (DIN 45539B) -50 dB (DIN 45539A)

Tonearm section

Type	Universal tubular arm, static-balanced type
Effective length	230 mm (9-1/16")
Overhang	15 mm (19/32")
Friction	Within 7 mg (horizontally and vertically)
Tracking error angle	Within +3° $\left(\begin{array}{l} \text{at the point of 145} \\ \text{mm (5-45/64") from} \\ \text{the center} \end{array} \right)$ Within +1° $\left(\begin{array}{l} \text{at the point of 55 mm} \\ \text{(2-3/16") from the} \\ \text{center} \end{array} \right)$
Offset angle	21.5°
Adjustable stylus pressure	
range	0 to 3 g (stylus pressure direct reading type)
Cartridge weight range	5.5 to 9.5 g
Headshell weight	9.5 g

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