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Technics

QUARTZ

Direct Drive Automatic

Turntable System

81

SL-15

Operating Instructions



This apparatus was produced to "BS800: 1977"

Before operating this product, please read these instructions completely.

Thank you for choosing the SL-15.
For optimum performance and safety, please read these instructions carefully.

Caution for safe use of this apparatus (For UNITED KINGDOM)

Caution

- This apparatus is double insulated, safety earth not required.

Important

- The wires in this 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**.

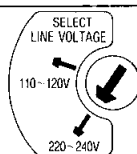
This equipment should be disconnected from the mains when not in use.

Caution:

Make sure that the turntable's AC line-voltage selector is matched to your local voltage before connecting the AC power plug.

If the pre-selected voltage is different from your local voltage, turn the AC line-voltage selector with a screwdriver so that it corresponds to your local voltage.

The AC line-voltage selector is located at the bottom of the base.



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Before use

■ Removing the packing material

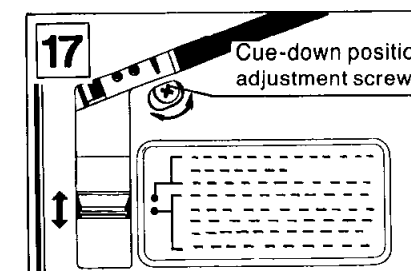
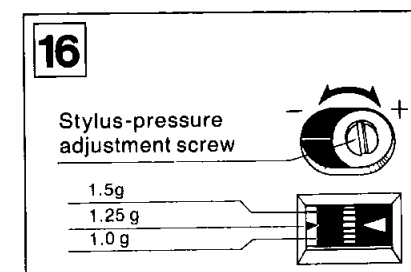
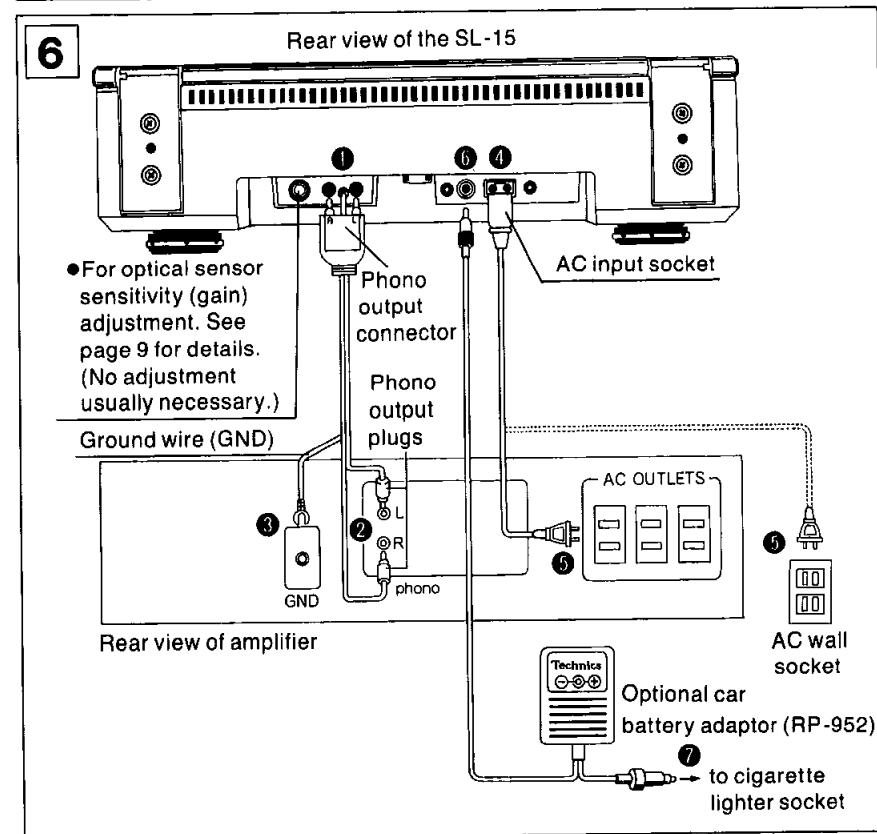
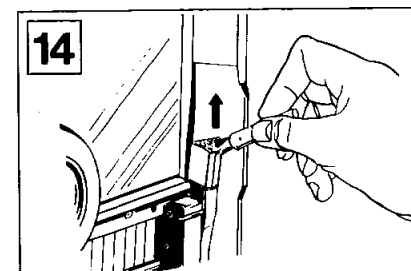
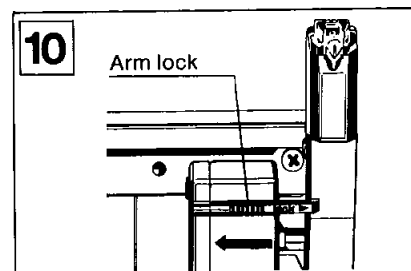
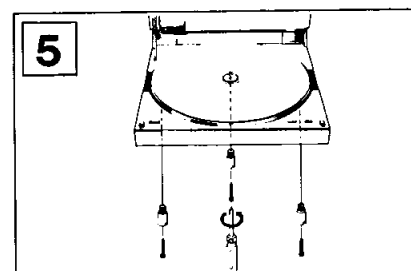
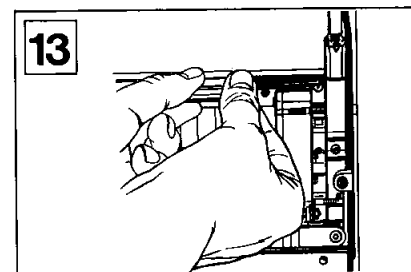
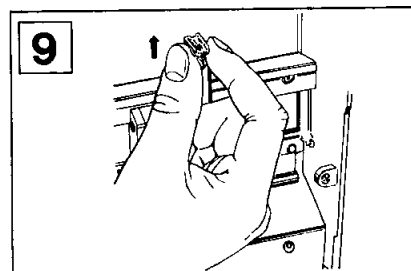
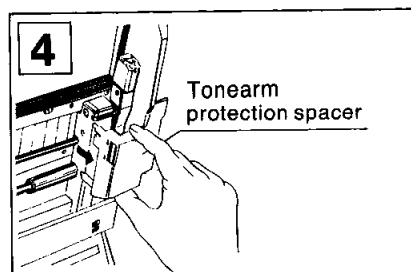
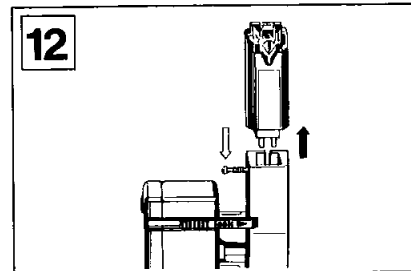
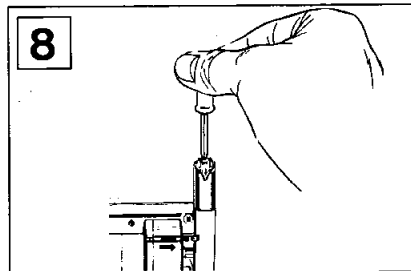
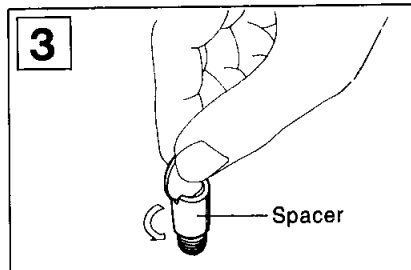
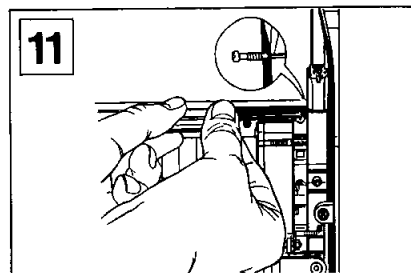
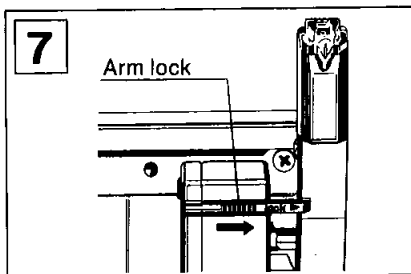
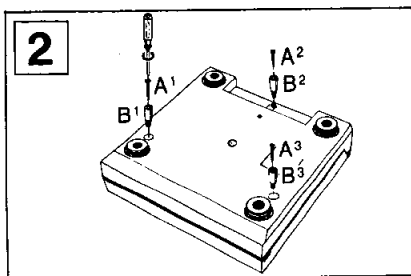
1. Turn the unit upside down and completely unscrew locking screws A1, A2, and A3. (Fig. 2.)
2. Unscrew spacers B1, B2, and B3 (turn counterclockwise). Then remove spacers, along with the screws. (Fig. 3.)
3. Turn the unit right side up and press the two cabinet lock buttons on either side of the upper cabinet to open it.
4. Pull off the tonearm protection spacer. Be careful not to touch the stylus. (Fig. 4.)

Notes:

- When you turn the unit upside down, put it on a rug or soft cloth to avoid marring the cabinet top and display panel.
- Keep all packing material and spacers and screws for use in case you need to ship the unit at some future date.
- To repack, proceed in the reverse order of that described above (4~1).
However, be sure that the tonearm is all the way to the start position (at the outer edge of the platter).
- Note that the tonearm will not return to the start position if you press the power switch during play.
- Do not lock the tonearm when replacing the tonearm protection spacer.
- To secure the turntable for shipment, rotate the platter a little at a time until the three screw holes are lined up with the holes in the bottom of the cabinet. Then screw in the three locking screws and spacers. (Fig. 5.)

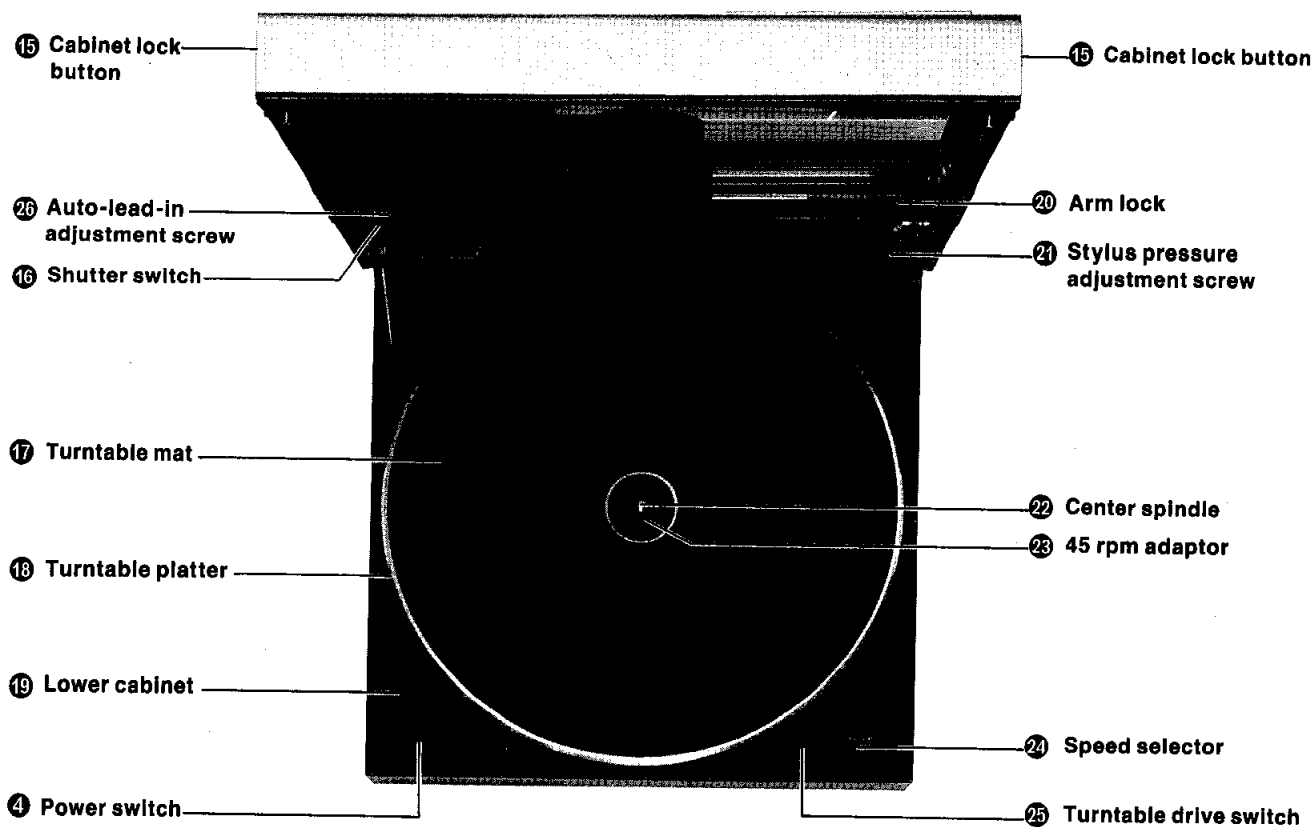
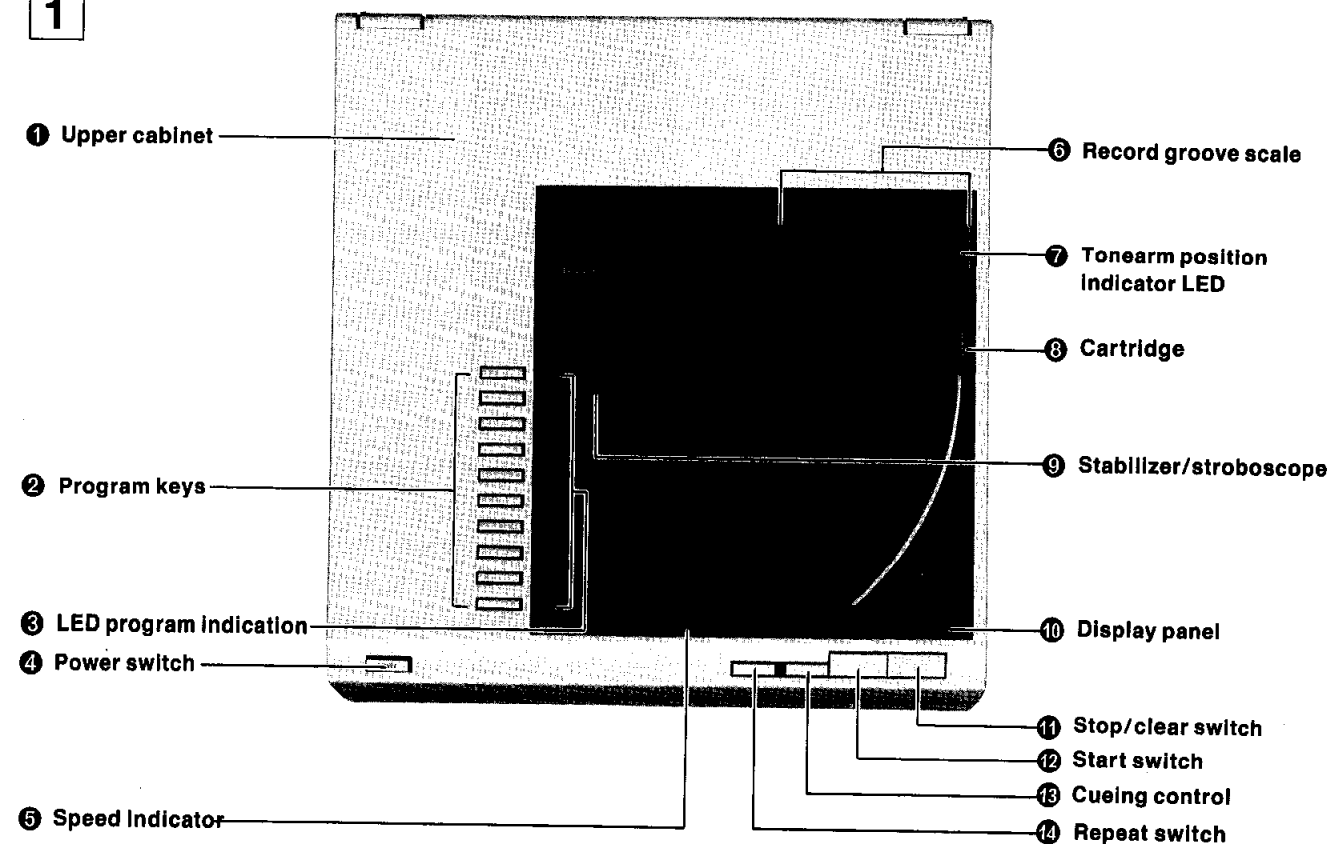
Placement

- Place the unit in a stable and horizontal position where there is little or no vibration.
- Place the unit away from the speakers so that it will be subject to as little direct sound radiation as possible.
If you try to listen to a radio near the turntable while it is turning, you may hear some interference.
- Do not use or store this unit where it will be exposed to dust, dirt, high humidity or high temperature. Do not place it near heaters.
- Place it in a well ventilated location.
- Do not use under direct sunlight, spotlights, or other extremely bright light sources.
Bright lights may cause misoperation of the optical sensor system and therefore interference with automatic operation. This also applies to flashlights or infrared remote control units brought very close to the turntable.
- Do not place it near or on top of a power amplifier, since power amps radiate much heat.
- Place the turntable away from the power amp to prevent hum.
Hum may be caused by leakage flux from the transformer in the power amplifier (or integrated amp). Therefore, if you notice hum, try moving the turntable to a slightly different location, further away from the amp.
- This unit should not be operated in a moving vehicle.



Parts identification and their functions

1



Parts identification and their functions (Fig. 1)

(Keep page 1 folded out while reading this page.)

① Upper cabinet:

Contains tonearm drive mechanism, automatic selection programming section and controls.

② Program keys:

For automatic selection of up to ten bands.

Simply press the program keys in the order you want the bands played; LEDs will light up beside each key pressed.

The tonearm will first move across to the innermost grooves of the record so the optical sensor can read and memorize the number of bands and their positions.

Then the tonearm will return to the start position.

Bands can be programmed and the program changed as long as the tonearm is in the start position. After the start switch is pressed, the tonearm will proceed to play the bands in the order programmed.

During play you can skip ahead to another of the programmed bands (the ones with lit LEDs) by pressing that band's key. For example, if bands 5, 3, 4, 2, and 1 have been programmed (in that order) and band 5 is being played, you can press key 2 to skip bands 3 and 4 and begin playing band 2. When this happens, the LEDs by keys 5, 3, and 4 will turn off. (LED: Light-Emitting Diode)

③ LED program indication:

When the tonearm is in the start position, LEDs will light for each key pressed (unless it is for a band not on the record). During play, the LED for the band being played will blink on and off. Each band's LED turns off after the band has been played.

④ Power switch [on (▲)/off (■)]:

When you press the switch (▲), the speed indicator, stroboscope, tonearm indicator, and LED illuminator light up.

(There is a second power switch located on the lower cabinet so that you can turn on the unit when the cabinet is opened. This is useful for record cleaning while the turntable is rotating.)

⑤ Speed indicator:

Automatic speed selection and LED indication.

When the power switch is turned on, one of these LEDs turns on to indicate turntable speed. Turntable speed is chosen automatically according to optoelectronic detection of record size. There is, therefore, no need to manually choose turntable speed or record size.

However, in those cases where speed does not correspond to standard record size (a 30 cm (12") 45 rpm record, or 17 cm (7") 33-1/3 rpm record, for example), you must manually select the correct speed by means of the speed selector located on the lower cabinet.

An LED will light for the speed selected.

⑥ Record groove scale (1 mm pitch):

This scale is graduated in 1 mm indications.

Useful for judging tonearm position.

⑦ Tonearm position indicator LED:

When the power switch is turned on, the tonearm LED will light up. LED position corresponds to stylus position on the record surface.

⑧ Cartridge

⑨ Stabilizer/stroboscope:

Holds the record firmly in place.

Around the circumference of the stabilizer is a stroboscope synchronized with the quartz oscillator reference frequency.

⑩ Display panel

⑪ Stop/clear switch:

For fast and slow outward cueing, auto-return, and program cancelling.

When you press the stop/clear switch (for less than one second), an LED (►) lights up momentarily and the tonearm automatically returns to the start position. (During programmed play, the program will be completely cancelled.)

If you keep the switch depressed (for more than one second), the tonearm will move outward (►) toward the edge of the record. Press harder and the tonearm will move faster (►►). (During programmed play, the tonearm will only move back to the beginning of the band being played.)

If you press the cueing control to raise the tonearm, and then press the stop/clear switch intermittently, the arm will move outward in approximately 1 mm steps.

⑫ Start switch:

For beginning play (auto-start, auto-lead-in) and fast and slow inward cueing.

When you press the start switch, an LED (◄) lights up momentarily and the tonearm automatically moves to the record's lead-in groove and the record starts playing.

(If the program keys have been pressed, the tonearm will start from the first band programmed.) If this switch is pressed during play, the tonearm will return to the beginning of the record and begin playing it over again. (If this switch is pressed during programmed play, the tonearm will play the entire program over again after first returning to the start position.)

If you keep the switch depressed, the tonearm moves inward (◄) toward the center of the record. Press harder and the tonearm will move faster (◄◄).

*If the start switch is pressed when there is no record on the platter, the tonearm will move part way over the platter and then return to the start position after detecting that there is no record.

⑬ Cueing control:

Interrupting play.

Pressing the cueing control during play causes the tonearm to rise off the record, and the illuminator will light up. To resume play, press the control again. A muting circuit cuts out noise when the stylus initially contacts or leaves the record surface.

⑭ Repeat switch:

For repeat play.

When the repeat switch is pressed, its LED lights up and the record will be played from start to finish repeatedly. If used with the program keys, the programmed bands will be played repeatedly in the sequence programmed. (The repeat switch may be pressed before or during play.)

Press the repeat switch again to cancel the repeat function. Pressing the stop/clear switch will also cancel the repeat function, as well as cancelling the program and sending the tonearm back to the start position.

Connections (Fig. 6.)

(Make connections in the numerical order shown.)

15 Cabinet lock buttons:

Press the two buttons located on either side of the upper cabinet to open it. When you close the cabinet, there is a clicking sound as the buttons lock the cabinet shut.

16 Shutter switch:

For blocking the optical sensor.

Set this switch to the "●" position before playing 30 cm transparent or colored records.

For ordinary records as well as transparent and colored 17 cm and 25 cm records, be sure to set the switch to the **auto** position.

17 Turntable mat

18 Turntable platter

19 Lower cabinet:

(Contains the turntable drive circuitry.)

The lower cabinet may feel warm during operation, but this has no adverse effect on records or cartridge.

20 Arm lock:

Be sure this lock is released before play.

21 Stylus pressure adjustment screw:

See page 11 for details.

22 Center spindle

23 45 rpm adaptor:

For 45 rpm EPs

Press down lightly on the adaptor while turning counter-clockwise and the adaptor will pop up ready for use. After use, press down and turn clockwise.

24 Speed selector:

In the case of small size 33-1/3 records or larger size 45s, set this selector to the appropriate speed.

25 Turntable drive switch:

For use with a record cleaner.

Turntable will rotate as long as this switch is depressed.

26 Auto-lead-in adjustment screw:

See page 11 for details.

■ Connect the output jacks. (Fig. 6.)

Connect the phono cable (supplied) between the turntable's output jacks and the amplifier (or receiver) phono input jacks.



Notes:

- To avoid hum, be sure to make a secure ground connection between turntable and amplifier or receiver.
- Turn off amplifier or turn volume all the way down when making connections.

■ Connecting the AC power cord. (Fig. 6.)

Connect the AC power cord to the turntable before plugging into an AC wall socket (or accessory outlet on back of amplifier).

Caution:

Do not plug this unit into high voltage outlets intended for heavy duty appliances as this will cause a fire hazard and damage the unit. When removing the AC power cord, always unplug it from the AC wall socket first, before unplugging the other end from the AC input jack on the turntable.

■ DC input jack (for DC power supply) (⊖ ⊕ ⊕): (Fig. 6.)

This unit can be powered by either an AC or DC source. When using DC power from a car battery (via the cigarette lighter) or other source, plug the DC adaptor into this jack. Unplug the AC power cord from the AC input jack on the turntable when using a DC adaptor.

Caution:

This unit takes a DC 12 V power supply. Before plugging in, check the voltage of the adaptor you use.

If the power supply drops below 10 V, the turntable will not operate properly so be sure the battery is completely charged.

The adaptor current capacity should be rated at 800 mA or higher.

Some adaptors have reversed polarity (⊕ ⊖). Using such an adaptor will damage the turntable and may cause dangerous accidents.

If the inside of the plug is ⊖ and the outside ⊕, the adaptor may be used.

If the inside of the plug is ⊕ and the outside ⊖, the adaptor cannot be used.

(Use only Panasonic car adaptor RP-952.)

When you have the car battery adaptor plugged into the car's cigarette lighter, the adaptor's fuse may blow if you allow the adaptor's DC-in plug to touch a metal part of the car. Therefore, always unplug the adaptor from the cigarette lighter when not using it.

The adaptor's fuse may also blow if you allow the turntable cabinet to contact a metal part of the car, so be careful.

Operation

Operation	Effect	Notes
■ Automatic operation		
<p>① Press the lock buttons on both sides of the upper cabinet and open the top gently.</p> <p>② Put a record on the platter.</p> <p>③ Gently close the top.</p> <p>④ Press the power switch to turn on the turntable.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> Steps ① through ④ above apply to all types of operation. </div> <p>⑤ Press the start switch (for no longer than about 1 second).</p> <p>⑥ Press the power switch again to turn off.</p>	<ul style="list-style-type: none"> ● The top will lock shut with a click. ● Speed indicator, tonearm position indicator, illuminator and stroboscope all light up. ● The start LED turns on temporarily as the tonearm moves to the lead-in groove and record size is detected automatically. (This includes automatic speed selection, auto-start and auto-lead-in.) ● The illuminator turns off after the stylus contacts the lead-in grooves. ● If the start switch is pressed (for less than 1 second) during play, the tonearm will go back to the start position and begin playing the record again from the beginning. When this happens, the LED will flash on and off. ● At the end of the record the tonearm will automatically return to the start position. ● Power turns off and speed indicator, tonearm position indicator and stroboscope turn off. 	<ul style="list-style-type: none"> ● Make sure the arm lock is off. ● Make sure the shutter switch is in the correct position. Set to the auto for standard records and 17 cm or 25 cm transparent and colored records. Set to "●" for transparent or colored 30 cm records. (See "Notes and maintenance" section for details.) ● Make sure the speed selector is set to the auto position. (See "Playing non-standard and special records" section for details.) ● Make sure the top is securely locked shut on both sides. ● After turning on the power switch wait about 2 seconds before pressing other controls. ● When, and only when, the tonearm is at the start position, pressing the cueing control will cause automatic operation to begin (in the same way as if the start switch is pressed). ● If no record is on the platter, the tonearm will move over to the center of the record and then return to the start position after detecting the absence of a record. ● If the top is opened during play, the tonearm returns to the start position and all functions (programming, repeat, etc.) are cancelled. ● If the power switch is turned off during play, the tonearm rises above the record and stays at that position. Then when the power is turned on again, the tonearm will return to the start position. ● Unplug unit if it will not be used again for some time.
■ Programming automatic selection		
<p>Follow steps ① through ④ in "Automatic operation" section above.</p> <p>⑤ Press the keys for the bands you want played, in the order you want them played. For example, if you press keys 7→5→3→1 in that order, then . . .</p>	<ul style="list-style-type: none"> ● LEDs will light by the keys pressed. The tonearm will move over the record to the inside and then back out to the start position as the number of bands and their positions are detected. ● (in the example) . . . LEDs 7, 5, 3, and 1 will light up to show that they have been programmed. 	<ul style="list-style-type: none"> ● Before pressing the program keys, check again the order and number of selections on the record to be sure you press the correct keys. ● Programming can only be performed before the start switch is pressed (when the tonearm is in the start position). Programming will not take place if the program keys are pressed during play; nor will the LEDs light. ● Press the stop/clear switch if you need to cancel or change the program. This cancels the entire program. ● Changes within the program can be made before the start button is pressed. Pressing the same button again will cancel it. ● The stop/clear switch can be pressed during play to cancel the program and end play. ● During programmed play, change records only after the tonearm has returned to the start position. Otherwise, the contents of the previous record will not be erased from the memory.

Operation

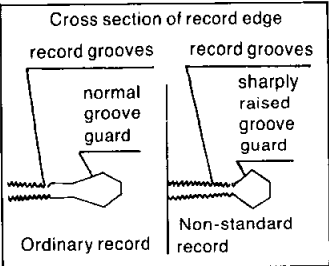
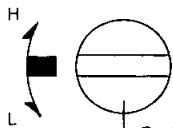
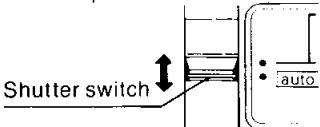
(continued)

Operation	Effect	Notes
<p>⑥ Press the start switch.</p>	<ul style="list-style-type: none"> ●The tonearm plays the bands programmed in the order the keys were pressed. (7→5→3→1, in the example). ●During play, the LED for the band being played will flash on and off. ●After a band has been played, its LED will turn off. ●After all bands are played, the tonearm returns to the start position. 	<div style="border: 1px solid black; padding: 5px;"> <p>If problems occur during programmed play, refer to page 9 for details: "Playing non-standard and special records".</p> </div>
■ Repeat play		
<p>Follow steps ① through ④ in "Automatic operation" section.</p> <p>⑤ Press the repeat switch.</p> <p>⑥ Press the start switch.</p>	<ul style="list-style-type: none"> ●The repeat indicator LED will light up and the record will be played repeatedly. ●Repeat play will continue until the repeat switch is pressed again. 	<ul style="list-style-type: none"> ●The repeat switch may be pressed before or during play. ●Press the stop/clear switch (for less than 1 second) to cancel repeat play and send the tonearm back to the start position.
■ Program repeat		
<p>Follow steps ① through ④ in "Automatic operation" section.</p> <p>⑤ Press the repeat switch after programming.</p> <p>⑥ Press the start switch.</p>	<ul style="list-style-type: none"> ●The repeat indicator LED lights and the program will be played repeatedly. ●The program will be played repeatedly until the repeat switch is pressed again. 	<ul style="list-style-type: none"> ●The repeat switch may be pressed during play. Note that all bands programmed will be played repeatedly (not just the ones remaining when the repeat switch is pressed). ●When only one band is programmed and the repeat switch is pressed, the tonearm will go directly from the end to the beginning of the band (without going all the way back to the start position). This "quick repeat" function is especially useful when playing 17 cm and 25 cm records having only one band. ●Press the repeat switch again to cancel repeat operation. ●Press the stop/clear switch (for less than 1 second) to stop play as well as cancel repeat operation and clear the program.
■ Search		
<p>(Moving the tonearm inward and outward, fast and slow)</p> <ul style="list-style-type: none"> ●If you press continuously... ●If you press hard continuously... ●If you then press intermittently (after pressing continuously for more than 1 second)... ●When you stop pressing... ●Press the cueing control. 	<ul style="list-style-type: none"> ●One LED will light, the tonearm will rise above the record surface and move inward or outward. ●Two LEDs will light and the tonearm will move quickly inward or outward. ●The tonearm will move inward or outward in small steps. ●The tonearm will stop. ●The tonearm will descend onto the record surface and begin playing the record. 	<ul style="list-style-type: none"> ●Note that operation depends on how these switches are pressed. If the start switch is pressed for less than 1 second, play begins. If the stop/clear switch is pressed for less than 1 second, all functions are cancelled. ●The search function can only be used to move the tonearm between the innermost and outermost (lead-in) grooves of the record being played. Therefore, search cannot be used to return the tonearm to the start position when a 17 cm or 25 cm record is on the platter. To return the tonearm to the start position, first press the cueing control to lower the tonearm onto the record. Then press the stop/clear switch for less than 1 second.

Operation	Effect	Notes
■ Program in-band search		
<ul style="list-style-type: none"> ● Operation is the same as for "Search" except that the tonearm will not move outside of the band being played. 		<ul style="list-style-type: none"> ● Search cueing is only possible within the band being played (as long as the turntable is being used with the program keys for automatic selection).
■ Program skip		
<ul style="list-style-type: none"> ● During programmed play, press the program key of the programmed band you want to skip to. For example, if bands 6, 5, 3, 1, and 4 are programmed in that order and band 6 is being played, you can skip bands 5 and 3 by pressing program key 1. 	<ul style="list-style-type: none"> ● In this example, the tonearm will stop playing band 6 and will skip bands 5 and 3. Instead, it will begin playing band 1, after which it will play band 4. ● The 5 and 3 LEDs will turn off. 	
■ Program in-band repeat		
<ul style="list-style-type: none"> ● When you want to start play again from the beginning of the programmed band being played, press that band's program key (the one with the flashing LED). 	<ul style="list-style-type: none"> ● The tonearm will go back to the beginning of the band that was being played and will begin playing it again. For example, if band 5 is being played (its LED is flashing) and you press the 5 key, the tonearm will go back to the beginning of band 5 and begin playing it again. 	
■ Playing 45 rpm EPs (large center-hole)		
<ul style="list-style-type: none"> ● Press lightly on the adaptor and turn counterclockwise. 	<ul style="list-style-type: none"> ● The adaptor will pop up. Speed and size selection are automatic so operate the turntable as usual, referring to the operating instructions as necessary. 	
■ Playing 45 rpm LPs and 33-1/3 rpm singles (17 cm)		
<ul style="list-style-type: none"> ● Open the top and set the speed selector to the correct position (33 or 45). 	<ul style="list-style-type: none"> ● In this case, speed is not selected automatically. ● However, record size is still detected automatically, so operate the turntable as usual, referring to the operating instructions as necessary. 	<ul style="list-style-type: none"> ● Remember to set the selector to the "auto" position after playing non-standard records. Otherwise, other records will also be played at the manually selected speed and automatic speed selection will not take place.
■ Temporary interruption of play		
<ul style="list-style-type: none"> ● Press the cueing control to interrupt play. ● Press again to resume play. 	<ul style="list-style-type: none"> ● The tonearm will rise above the record surface and the illuminator will light up. ● The tonearm will be lowered back onto the record surface and the illuminator will turn "off". 	<ul style="list-style-type: none"> ● The illuminator lights up when the tonearm is cued up. ● The illuminator goes out when the tonearm is cued down.
■ Stopping play		
<ul style="list-style-type: none"> ● Press the stop/clear switch (for less than 1 second). 	<ul style="list-style-type: none"> ● The tonearm will rise and return to the start position and the turntable will stop. 	<ul style="list-style-type: none"> ● Pressing the stop/clear switch will only cause play to stop if the switch is pressed for less than 1 second during play (when the stylus is in the grooves). Otherwise (when the tonearm is above the record surface), search operation will take place.

■ Playing non-standard and special records

Programmed play is not recommended for the following kinds of records, since the tonearm may not operate properly. This is not a malfunction of the turntable. Should problems occur, refer to the chart below and play the record automatically or with the assistance of the search function.

Record	Problems	Solution
<ul style="list-style-type: none"> ●Records with extremely narrow lead-in grooves between bands. ●Records with extremely wide groove pitch. ●Records with extremely short bands. ●Badly warped or eccentric records (where the center hole is off center). ●Records with color printing on the groove area. ●17 cm records having sharply raised "groove guard" design at the outer edge of the record.  <ul style="list-style-type: none"> ●Records having non-standard lead-out grooves at the end of the record. For example, lead-out groove pitch may be very narrow if the record grooves extend very close to the label. ●Dusty, dirty or damaged records. 	<ol style="list-style-type: none"> 1. The stylus cues down before the programmed band's lead-in groove. 2. The stylus cues down inside the band or cues up before the band has finished. 3. The tonearm skips a programmed band. 4. The tonearm moves to the center of the record, then returns to the start position and all the program indicator LEDs turn off. 5. The tonearm goes to the center of the record, cues down into the lead-out grooves, then returns to the start position. 	<ul style="list-style-type: none"> ●Do not use the programming keys. Instead, play the record automatically, or with the assistance of the search function. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>About the optical sensor sensitivity (gain) selector.</p> <p>The sensitivity of the optical sensor which detects the number of bands on the record and their positions has been factory adjusted for optimum performance. However, by switching the sensitivity selector to the H or L position, programmed play of some special records is possible. Always return the selector to the center position to play ordinary records.</p> <ul style="list-style-type: none"> ●For programmed play of records having very narrow lead-in grooves between bands: Turn the selector all the way to the H position. ●To play records having very wide groove pitch: Turn the selector all the way to the L position.  <p>Optical sensor sensitivity selector Located on rear panel.</p> </div>
<ul style="list-style-type: none"> ●Records that are transparent, colored or translucent black—any record that does not completely block light. ●Transparent or colored records, sonosheets—any record that has a highly reflective surface (which may include some black records). (Programmed play is not possible with such records.) 	<ul style="list-style-type: none"> ●The tonearm goes to the center of the record, then returns to the start position and all the program indicator LEDs turn off. 	<ul style="list-style-type: none"> ●Open the upper cabinet and set the shutter switch to the "J" position.  <p>Shutter switch</p> <p>At the "J" position, the shutter switch blocks the optical sensor.</p> <ul style="list-style-type: none"> ●Automatic operation, search and repeat play operations remain the same as usual. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> ●Set to the auto position to play ordinary records and transparent and colored 17 cm records. ●Always return the shutter switch to the auto position after playing a record. If the shutter switch is in the wrong position, the stylus may come down outside the record, thus ruining the stylus. </div> <ul style="list-style-type: none"> ●When using search to play record sizes smaller than 30 cm, be sure to keep the start button pressed down until the stylus tip is over the record grooves. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Caution:</p> <p>If you press the start switch for less than about 1-second, then the stylus will come down outside of the record, thus damaging the stylus.</p> </div>

Stylus and cartridge replacement

■ Stylus replacement

The replacement stylus for this cartridge is **EPS-P205ED3**.

This unit is equipped with an elliptical diamond stylus. The life of the stylus varies according to the conditions of use.

Noise or scratchiness may indicate a worn or damaged stylus. To prevent damage to your records, the stylus should be replaced at the first sign of wear.

You will have easier access to the stylus with the tonearm moved toward the center.

Therefore, follow the instructions below.

1. Press the lock buttons to release the upper cabinet. Then open the top gently.
2. Slide the arm lock into place. When the tonearm is locked, it cannot be lowered onto the record or platter, so there is no danger of accidentally harming the stylus tip. (Fig. 7.)
3. Gently shut the upper cabinet.
4. Turn on (**■**) the power switch.
5. Hold down the start switch until the tonearm moves over to about the 25 cm position.
6. Turn off (**■**) the power switch.

Note:

If you open the top before turning off the power switch, the tonearm will return to the start position. Turn off the power switch before opening the top.

7. Press the lock buttons, and open the top.
8. Use the accessory screwdriver to loosen the stylus mounting screw. Remove the old stylus and replace it with the new one, being careful not to touch the stylus tip. Be sure to push all the way in so the stylus assembly is securely in place. Finally tighten the stylus mounting screw. (Figs. 8 and 9.)

Note:

Be sure you have the amplifier volume knob turned down all the way to avoid amplification of shock noise produced when handling the stylus.

9. Slide the arm lock back to its original position. (Fig. 10.)

■ Cartridge replacement

Although this unit comes equipped with a high performance MM cartridge as standard equipment, it is also possible to use any other plug-in connector type hi-fi cartridge.

Read the instructions that came with the new cartridge.

1. Press the lock buttons to release the upper cabinet. Then open the top gently.
2. Slide the arm lock to lock the tonearm.

Note:

As with the stylus replacement procedure, it is easier to change or replace the cartridge with the tonearm moved toward the center of the turntable.

(Refer to stylus replacement instructions 3, 4, 5, 6, 7.)

3. Use the accessory screwdriver (large) to loosen the cartridge mounting screw. (As shown in the illustration, loosen the screw until it hangs free.) (Fig. 11.)

Note:

Be sure you have the amplifier volume knob turned down all the way to avoid amplification of shock noise produced when handling the cartridge.

4. Being careful not to touch the stylus tip, remove the cartridge.
5. Line up the new cartridge's connector pins with the tonearm connector and insert firmly into place. (Fig. 12.)
6. Turn on (**■**) the power switch. The tonearm will return to the start position. Finally, tighten the cartridge mounting screw. (Fig. 13.)
7. Slide the arm lock back to its original position.

Notes and maintenance

- **Make sure the power switch is off before unplugging or plugging in the AC cord.**

- **Auto-return operation will not function if you press the power switch while a record is being played.**

The tonearm will rise above the record surface but stay where it is.

Therefore, if you then press the switch again to turn it on, the tonearm will go back to the start position.

- **Be sure to remove all dirt and dust from the stylus tip and the record.**

The cartridge stylus is an extremely delicate and precisely manufactured device designed for picking up the subtle nuances of the record grooves. Therefore, be very careful not to touch it or push on it or apply excessive force in any way.

The stylus tip can not retain proper groove contact when it is dirty. This causes bad sound reproduction and excess wear on the stylus tip and grooves. Therefore, use the accessory brush to remove dust and dirt by brushing upward. (Fig. 14.)

Also, use a good record cleaner to remove dust and dirt from the grooves. (Fig. 15.)

Technics DISC PROTEC SH-50C1 is recommended to improve performance and extend stylus and record life.

- **Wipe the display panel and cabinet with a soft, dry cloth.**

Never use volatile cleaners such as alcohol, benzine or thinner.

Do not use chemically treated dust cloths. Do not expose the panel to insecticide spray.

To remove stubborn spots, first pull out the AC plug.

Then wipe the panel with a soft cloth slightly moistened with a mild soap and water solution.

Do not wipe the panel during play, or the tonearm may be attracted toward the upper cabinet due to the generation of static electricity.

- **Open the upper cabinet gently.**

- **Always be sure the cabinet is closed tightly.**

If the cabinet is not locked, the stylus tip will not maintain optimum contact with the record grooves. Also, open and close the cabinet carefully.

Check again before starting play.

- **Do not open the upper cabinet unless the lower cabinet is supported (when using the unit upright or on its side).**

Also, hold onto the upper cabinet when you open it when using the unit on its side or upright.

If the cabinet is allowed to open suddenly, it may cause damage.

- **Adjust the stylus pressure in the following cases.**

Stylus pressure is normally set to 1.25 grams but may be raised or lowered by ± 0.25 grams.

It may be necessary to increase stylus pressure when playing records cut at high levels, or when room temperature is low, or when the unit easily picks up external vibrations. This will help prevent distortion and groove-skipping.

In such cases, turn the screw clockwise (+) so the dial scale shows the desired stylus pressure, as indicated in the illustration. (Fig. 16.)

Note:

Do not turn the stylus-pressure adjustment screw further than the set limits (1.5 g~1.0 g).

- **Stylus cue-down position for programmed play has been correctly aligned at the factory. However, should realignment become necessary, follow the directions below.**

The adjustment screw is above the shutter switch (on the underside of the cabinet top).

● During programmed play, if the stylus tends to come down too far out, turn the screw clockwise. (Fig. 17.)

● If it comes down too far in, turn the screw counter-clockwise. Adjustment is only possible for bands 2 through 10. The first band position cannot be changed.

- **Neither programmed play, nor automatic operation are suitable for playing record sizes other than 17 cm, 25 cm and 30 cm. Use search to play non-standard size records.**

Troubleshooting guide

Problems	Causes	Solutions
■ Unit does not turn on when power switch is pressed (no power). The speed indicator, tonearm indicator, LED illuminator, and stroboscope do not light up.	<ul style="list-style-type: none"> ● Power cord not plugged in. ● The amp is not turned on. (This applies when the unit is plugged into amp's "switched" AC outlet.) 	<ul style="list-style-type: none"> ● Check all connections. ● Turn on amp.
■ Power switch is turned on but there is no sound (during record play).	<ul style="list-style-type: none"> ● Packing screws and spacers have not been removed. ● Speaker cords are disconnected. ● Phono output cords are disconnected from amp's phono input jacks. ● Phono output cords are disconnected from the SL-15 phono output jacks. ● Amp's tape monitor switch is set to "tape" position. ● Amp's input source selector is set to "tuner" or "aux". ● Amp's speaker selector is at "off" position. ● Amp's volume is turned all the way down. 	<ul style="list-style-type: none"> ● Remove packing material. ● Connect speaker cables. Check correct polarity (+ and -). ● Connect phono output cords. Check correct L and R connections. ● Make connection secure. ● Set to "source" when not playing tapes. ● Set to "phono". ● Set to "main" or "remote". ● Turn up volume
■ Auto-play does not begin when start switch is pressed.	<ul style="list-style-type: none"> ● The tonearm is locked. 	<ul style="list-style-type: none"> ● Unlock the tonearm.
■ The stylus does not cue down into the lead-in groove during auto-play.	<ul style="list-style-type: none"> ● The record size is not standard (17, 25, 30 cm). 	<ul style="list-style-type: none"> ● Use the search function to move the tonearm to the correct position.
■ Even though there is no record on the turntable, the stylus is still lowered onto the platter when the start switch is pressed.	<ul style="list-style-type: none"> ● The shutter switch is at the "•" position. 	<ul style="list-style-type: none"> ● Set to the "auto" position (unless playing 30 cm transparent or colored records).
■ Tonearm does not automatically return to the start position at the end of record.	<ul style="list-style-type: none"> ● Record does not conform to industry standard dimensions. 	<ul style="list-style-type: none"> ● Press the stop/clear switch.
■ Auto-return occurs during record play.	<ul style="list-style-type: none"> ● A voltage drop in the AC mains supply due to lightning of other damage. This is not an indication of damage to the turntable. 	<ul style="list-style-type: none"> ● This is the same as normal auto-return, so press the start switch to begin record play again.
■ There is a hum.	<ul style="list-style-type: none"> ● Ground is not connected. ● The turntable is too close to the amplifier. 	<ul style="list-style-type: none"> ● Connect to amp's GND terminal. ● Try reversing the AC power plug in the wall socket. ● Place the turntable further away from the power amp (or integrated amp).
■ Record sounds scratchy and/or muffled.	<ul style="list-style-type: none"> ● Record is scratched or damaged. ● Record is dusty or dirty. ● Stylus tip is dusty. ● Stylus tip is worn. 	<ul style="list-style-type: none"> ● Adjust amp's tone controls to cut out high-range noise. ● Use a record cleaner to remove dust and dirt from grooves. ● Use the accessory brush to clean stylus tip. ● If there is still noise when a good new record is played, you should replace the cartridge or stylus.
■ Stylus skips grooves.	<ul style="list-style-type: none"> ● Cabinet is not locked shut. ● Record is warped. ● Turntable is placed where it easily picks up vibrations. ● Dust or dirt is on the stylus tip. 	<ul style="list-style-type: none"> ● Check to see that there is not anything stuck between upper and lower halves of cabinet. Shut cabinet all the way so you hear a distinct clicking sound. ● Check for warps and try another record. ● Set the turntable in a position where it will be less susceptible to external vibrations. ● Set the stylus pressure to 1.5 g. ● Clean stylus tip with accessory brush.

Troubleshooting guide

(continued)

Problems	Causes	Solutions
■ Volume is too low.	● Amp muting is on.	● Set to 0 dB or off.
■ During programmed play, the tonearm sometimes comes down too far in or out.	● Record groove eccentricity.	● Adjust stylus cue-down position if this happens consistently and the stylus is always either too far in or too far out.
■ Programmed play doesn't work right.	● The record is "special" (dirty, warped, non-standard, etc.)	● Use automatic operation along with search, as necessary. ● For details, see page 9, "Playing non-standard and special records".

Features

1. High performance direct-drive in compact record jacket size for space saving convenience.

The SL-15 has locking upper and lower precision aluminum diecast cabinet halves. In the upper cabinet is the linear tracking tonearm, its servo-control drive system, the programmable automatic selection system's optical sensor and microcomputer. In the lower cabinet is Technics' original integral rotor-platter direct-drive motor and servo-control drive circuitry.

2. Just put on a record and press the start switch.

Thanks to the optical sensor and microcomputer, both record size and record speed are detected automatically so all you have to do is press the start switch to begin play. At the end of the record, the tonearm automatically rises and returns to the start position.

3. Remarkably simple basic operation with programmable play of up to ten bands with repeat.

Although basic operation of the SL-15 is remarkably simple, convenient automatic band selection programming and repeat functions are also possible. Programming keys are located right on the top of the turntable. (See the "Operation" section for details.)

4. Dynamic balanced linear tracking tonearm employs optical sensor and deflection angle detection for extremely stable and accurate tracking.

The linear tracking tonearm moves across the record surface in the same way as the cutter head used to make the record in the first place. Therefore there is virtually no tracking error or skating force.

Located by the stylus is an optical sensor that detects tracking conditions by means of deflection angle. Based on this information, tonearm movement is controlled so as to maintain optimum tracking at all times. Because the tonearm is dynamically balanced, the turntable can be played flat or leaned at an angle.

5. A precision coreless DC motor is used for tonearm drive to assure quiet and accurate control.

The coreless DC motor and low friction slide bearing assure extremely precise tonearm movement.

A 4-point pivot bearing gimbal suspension developed by Technics reduces friction and raises sensitivity while contributing to smooth tracing ability.

6. MM cartridge with pure boron pipe cantilever and excellent physical characteristics for faithful sound reproduction.

7. Other advanced features:

- Technics' original integral rotor-platter structure combines motor rotor and platter for more stable performance.
- Full cycle detection FG servo with quartz phase locked control assures unbeatable rotational accuracy.
- Record groove scale and tonearm LED indicator on outside of upper cabinet make it easy to check on tonearm position.
- Record stabilizer and stroboscope built-in.
- 45 rpm adaptor is located in turntable platter for pop-up convenience.
- Can be run on either AC or DC (12 V) current. DC adaptor optionally available for car battery use.

Specifications

■ General

Power supply:	~110–120/220–240 V, 50 Hz or 60 Hz DC 12 V (DC input jack)
Power consumption:	20 W (AC) 6 W (DC)
Dimensions (W×H×D):	31.5×8.8×31.5 cm (12-1/2"×3-1/2"×12-1/2") (With the cabinet top open to maximum position: 31.5×38.5×31.5 cm, (12-1/2"×15-5/32"×12-1/2"))
Weight:	6.6 kg (14.3 lb.)

■ Turntable section

Type:	Quartz-phase-locked control direct-drive automatic turntable ●Automatic operation ●Programmable band selection ●Repeat play ●Program repeat ●2-speed inward/outward search ●Program skip ●Program in-band repeat ●Auto start/Auto lead-in ●Auto return ●Auto stop ●Repeat play ●Auto speed select ●Auto size select ●Record presence detection
Drive method:	Direct drive
Motor:	Brushless DC motor
Drive control method:	Quartz-phase-locked control
Turntable platter:	Aluminum diecast Diameter 30 cm (12 inches)
Turntable speeds:	33-1/3 rpm and 45 rpm Auto speed select (Manual selection possible)
Speed deviation:	Within ±0.002%
Wow and flutter:	0.012% WRMS* 0.025% WRMS (JIS C5521) ±0.035% peak (IEC 98A weighted)
Rumble:	–56 dB (IEC 98A Unweighted) –78 dB (IEC 98A Weighted)

*This rating refers to turntable assembly alone, excluding effects of record, cartridge or tonearm, but including platter. Measured by obtaining signal from built-in frequency generator of motor assembly.

■ Tonearm section

Type:	Dynamic balanced type Linear tracking tonearm 4-pivot gimbal suspension
Effective mass:	9 g (including cartridge)
Tracking error angle:	Within ±0.1°
Resonance frequency:	12 Hz
Tonearm drive motor:	Coreless DC motor

■ Cartridge section

Model No.:	EPC-P205CMK3
Type:	Moving magnet stereo cartridge Disc-shaped magnet One point suspension system All "HPF" core, precision ground finish
Magnet circuit:	Pure boron pipe
Cantilever:	TTDD (Technics Temperature Defense Damper)
Magnet:	Samarium-cobalt (Sm-Co) (BH) max. = 30 MC·Oe
Frequency response:	5 Hz–80 kHz 15 Hz–60 kHz ±3 dB 20 Hz–15 kHz ±0.5 dB
Temperature characteristics (5°C–35°C)	±0.5 dB (10 kHz) (0 dB at 1 kHz, 20°C) ±2 dB (20 kHz) (0 dB at 1 kHz, 20°C)
Output voltage:	2.0 mV (1 kHz), 5 cm/s. zero to peak, lateral velocity (5.7 mV 1 kHz 10 cm/s. zero to peak, 45° velocity, DIN 45 500)
Channel separation:	More than 25 dB (1 kHz) More than 20 dB (10 kHz)
Channel balance:	Within 0.7 dB (1 kHz)
Compliance:	12×10 ⁻⁶ cm/dyne (100 Hz, dynamic)
Vertical tracking angle:	20°
DC resistance:	500Ω
Inductance:	240 mH
Impedance:	1.6 kΩ (1 kHz)
Recommended load resistance:	47 kΩ–100 kΩ
Recommended load capacitance:	Less than 200 pF
Stylus tip:	0.2×0.7 mil (5×18μm) Elliptical diamond stylus
Effective moving mass:	0.149 mg
Stylus pressure range:	1.25±0.25 g (12.5±2.5 mN)
Weight:	6 g (cartridge only)
Replacement stylus:	EPS-P205ED3

■ Accessories supplied:

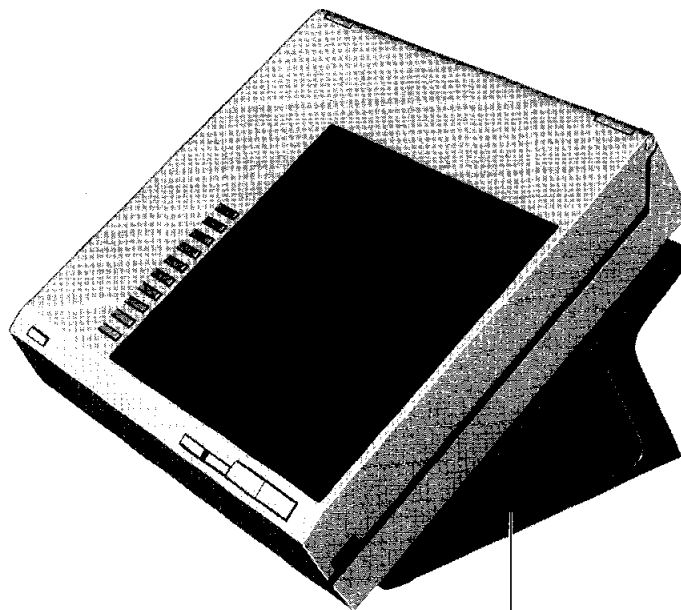
Stylus cleaning brush	1
Screwdriver (large)	1
Screwdriver (small)	1

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

Quick Reference Chart for Start and Stop/Clear Switch Operation

Switch pressed Cueing up/down	Start Switch				Stop/Clear Switch			
	Pressed momentarily (less than one second)	Pressed intermittently	Pressed continuously		Pressed momentarily (less than one second)	Pressed intermittently	Pressed continuously	
			Lightly ◀ ◀	Hard ◀ ◀ ◀			Lightly ▶ ▶	Hard ▶ ▶ ▶
Cueing up (▼)	_____	Tonearm moves inward in approx. 1 mm steps.	Tonearm moves inward.	Moves faster.	_____	Tonearm moves outward in approx. 1 mm steps.	Tonearm moves outward	Moves faster.
Cueing down (▼)	Tonearm rises and returns to start position and begins play again.	_____	Tonearm rises and moves inward.	Tonearm rises and moves faster.	Auto-return (reject)	_____	Tonearm rises and moves outward.	Tonearm rises and moves faster.
Cueing up (▼) (during programmed play)	_____	Tonearm moves toward end of band being played in approx. 1 mm steps.	Tonearm moves to end of band being played.	Tonearm moves to end of band being played.	_____	Tonearm moves toward beginning of band being played in approx. 1 mm steps.	Tonearm moves to beginning of band being played.	Tonearm moves to beginning of band being played.
Cueing down (▼) (during programmed play)	Tonearm returns to first band in programmed sequence and begins play.	_____	Tonearm moves to end of band being played.	Tonearm moves to end of band being played.	Tonearm returns to start position, program is cancelled and turntable stops.	_____	Tonearm moves to beginning of band being played.	Tonearm moves to beginning of band being played.

Optional turntable stand SH-B10



SH-B10

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.

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).

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