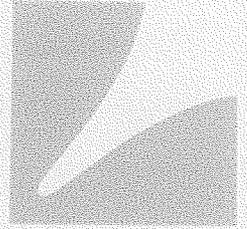


LUX CORPORATION, JAPAN



LOADFREE SPINDLE  
DIRECT-DRIVE TURNTABLE

PD441

OWNER'S MANUAL

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**WARNING:** TO PREVENT FIRE OR SHOCK HAZARD  
DO NOT EXPOSE THIS APPLIANCE TO  
RAIN OR MOISTURE.

## Thank you for purchasing the PD441.

The PD441 is a direct drive quartz-locked turntable, but its most salient feature is its ability to remove all kinds of external load vibration thanks to our exclusive "Load-Free Spindle" system.

Actually, the quartz-lock system is effective only in the suppression of external disturbing load variations ranging from DC to 1Hz, but cannot control those of relatively high frequencies (5 - 10Hz). To reduce them, the flywheel effect of the platter must be utilized. The heavier the platter, the better.

But here arises the problem with respect to the life of the bearing. With the new "Load-Free Spindle" system, the motor itself has the repelling power to float the turntable platter, which makes it possible to reduce the platter's weight on the bearing to about 1/5 of its actual value.

Additionally, the PD441 is made

extremely resistant to howling and acoustic feed-back by means of insulators of a 2-step brake system with lowest resonant frequency, and our ultra heavy chassis of sandwich structure made from 2 thick iron plate and a high-density chip board.

No tonearm is supplied with this unit, and for easy installation of your favorite tonearm a sliding arm-base is provided.

Other features are; a special platter mat to hold the disc firmly, a dust cover of thick acrylic plates, a semi-free-stop type hinge incorporated into the slim chassis to provide a compact appearance, etc.

We recommend that you choose other Hi-Fi components to be used in combination, with care and go through the contents of this owner's manual to make the most of the potential of this turntable.



# Switches & Terminals

## 1) Arm-base

Your favorite tonearm must be afixed to this arm-base.

First, slide the arm-base into the arm-rail putting the fixing lever outwards. Then turn the lever in a clockwise direction (⊙) to fix the base firmly to the turntable.

Conversely, to remove the base, the lever has to be turned in a counter-clockwise direction (⊙), and lifted up. When the lock is released, the arm-base slides along the arm-rail and it is easy to adjust the over-hang.

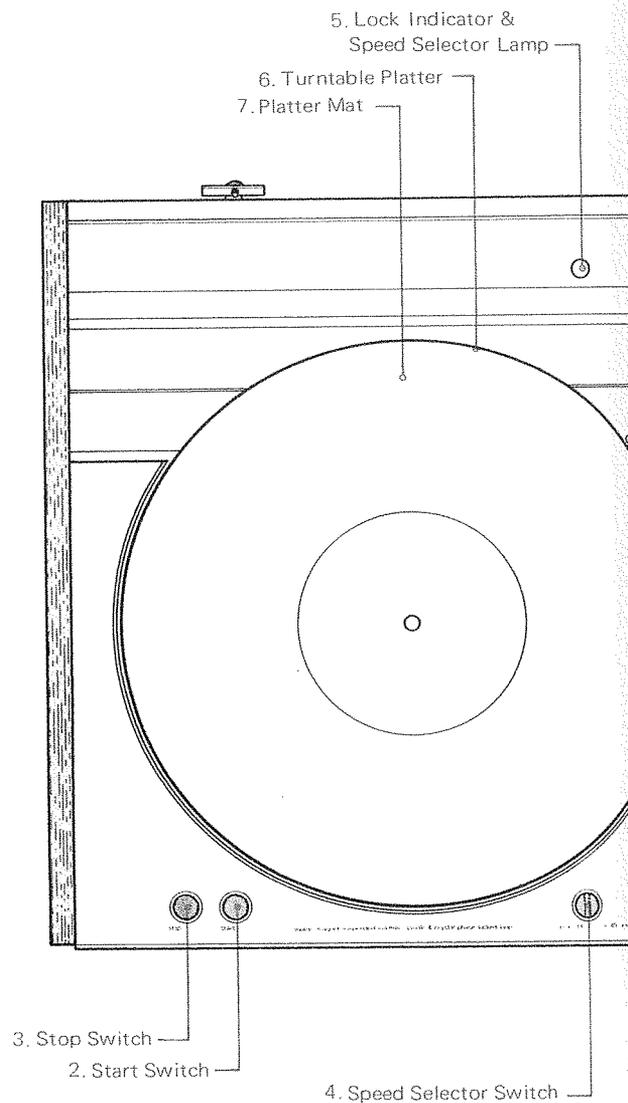
This turntable is provided with the arm-base for the tonearm in general (TP-SG) and an arm-base panel TP-LS.

Most tonearms available in the market-place can be afixed by simple change of the panel section of the arm-base. Consult your dealer for an appropriate one. For further details refer to the section "Arm-base and Applicable Tone-arms".

Note that the model for U.S.A. is provided with the arm-base TP-SG and an arm-base panel TP-MT.

## 2) Start Switch

When you depress this switch the Lock-Indicator & Speed Selector Lamp(5) lights up and the platter starts to rotate. In this case, the AC plug on the AC power cord has to be



connected to the AC outlet of other Hi-Fi components or the AC power supply source in your listening room, and the Power Switch(10) has to be turned on.

### 3) Stop Switch

When you press in this switch, the Lock Indicator & Speed Selector Lamp is turned off, the brake circuit starts to function and the platter ceases to move.

### 4) Speed Selector Switch

This switch changes the rotation speed of the platter between 45rpm and 33-1/3rpm.

### 5) Lock Indicator & Speed Selector Lamp

When the Start Switch(2) is depressed, this lamp starts to blink, which shows that the rated rotation speed has not been reached. Then it stops blinking and stays lit showing that the necessary speed is reached and quartz-locked. Stable rotation is maintained free from fluctuation of external conditions such as power voltage, temperature, etc.

This lamp also plays the role of speed selection indicator. For easy identification, it lights up in blue at 33-1/3rpm, and in orange at 45rpm.

### 6) Turntable Platter

A platter of heavy weight is employed (1.6Kg) to obtain a large moment of inertia. The form and thickness of ribs are carefully designed in the light of its solidity, resonance, etc.

### 7) Platter Mat

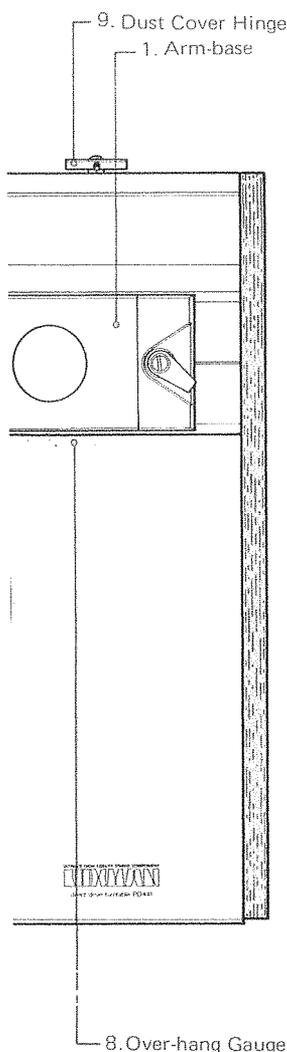
This holds a record disc firmly to unify the platter and disc. With this turntable, a special mat is employed to damp the platter, too.

### 8) Over-hang Gauge

This gauge is a guide for adjustment of over-hang by sliding the arm-base along the arm-rail. 1 scale division corresponds to 2mm in over-hang, and the required over-hang can be easily obtained. For details refer to the section "Adjustment of Over-hang".

### 9) Dust Cover Hinge

The hinge firmly holds the dust cover, which can be fixed by 2 screws. This hinge is incorporated into the thin chassis presenting a totally elegant, slim appearance. Also when the dust cover is closed, its whole weight is applied to the turntable, which is advantageous in respect to prevention of howling together with the semi-free stop system.



### 10) AC Power Switch

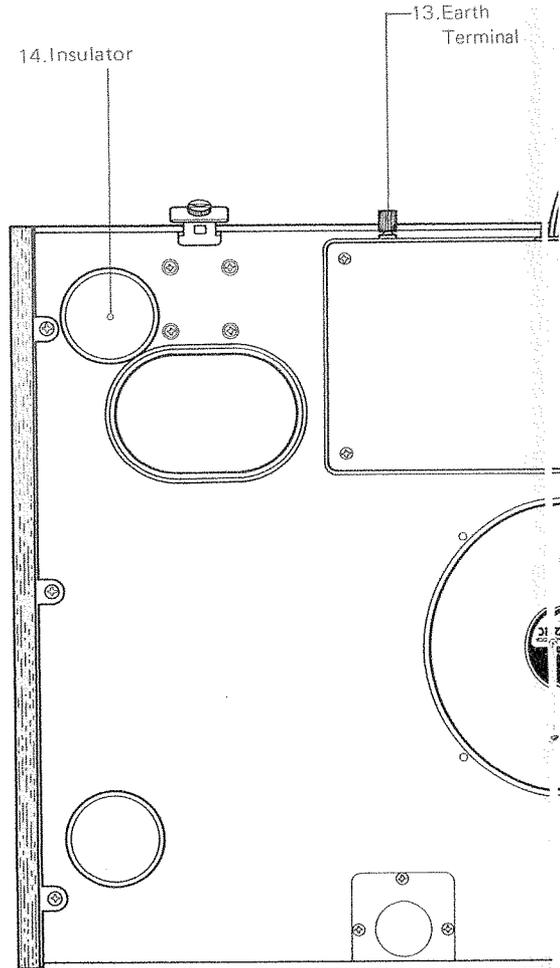
When the Power Cord(15) is plugged into the extra AC outlet of other Hi-Fi components or the AC power socket of your listening room and this switch is set to the marked side, the Pilot Lamp(11) lights up showing the turntable is put into operational condition. If the power cord is connected to the "SWITCHED" AC outlet of other annexed equipment and this switch is turned on, the ON/OFF operation of this turntable is controlled by the power switch of other equipment.

### 11) Pilot Lamp

This interacts with the Power Switch(10) enabling you to confirm if the turntable is in operational condition. This lights up when the Power Switch is turned on.

### 12) Phono Motor

This is to drive the platter and obtain the rated rotation speed. The crystal-controlled, brushless, load-free spindle, DC servo motor ensures stable rotation of the platter against ambient fluctuations. Refer to the section "Motor and its Driving Control System".



### 13) Earth Terminal

Connect this terminal with the earth terminal(GND) of your amp by the attached earth lead wire.

#### Caution:

Hum may be triggered by a ground loop created by connection of the tonearm and this terminal, depending on the tonearm you use. Therefore, before operation check if such earth connection reduces the amount of hum.

### 14) Insulator

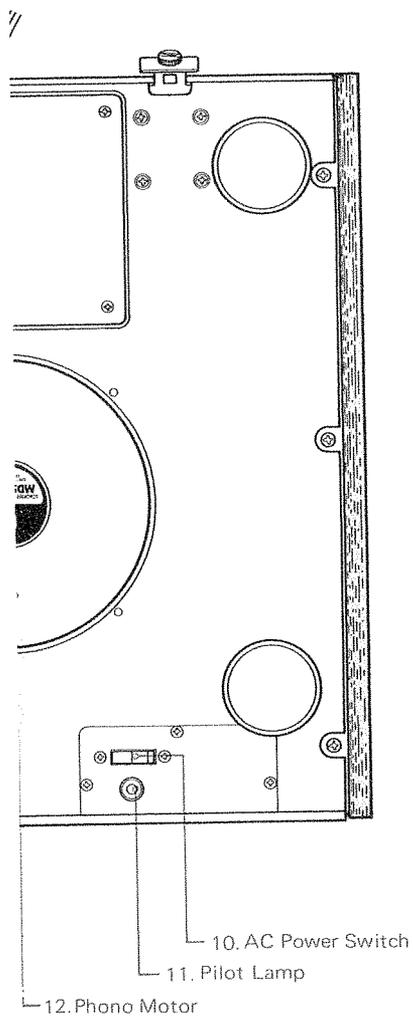
The insulator serves to support the weight of the turntable and at the

same time to absorb external vibration and howling. An exclusive low " $f_0$ " 2-step brake type is employed to effectively deal with both small-amplitude vibration such as howling and large-amplitude vibrations during operation. Also the height of the insulators is adjustable. For further details refer to the section "2-Step Brake Type Insulator".

### 15) AC Power Cord

Connect the AC plug at the end of this cord to the AC power supply socket in your listening room or to an extra AC outlet on your amp.

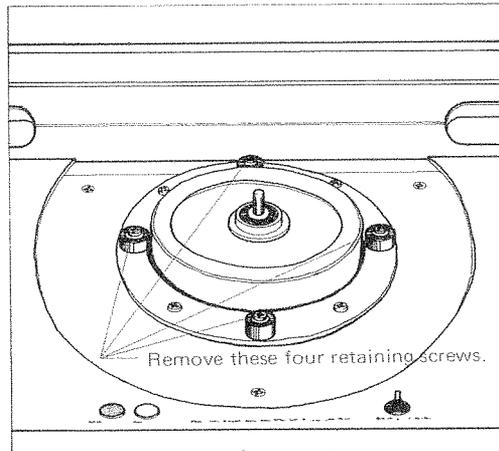
-15. AC Power Cord



# How to Assemble

## 1) To Remove Retaining Screws from Phono Motor

The phono motor is firmly fixed by 8 screws. Among them 4 clamping screws with spacer and washer have to be removed by a posi-drive screw driver, since they are for protection of the phono motor from shocks during transportation. But never undo those screws without rubber spacer. Be sure to keep the undone screws, washers and spacers for possible reshipment in the future.

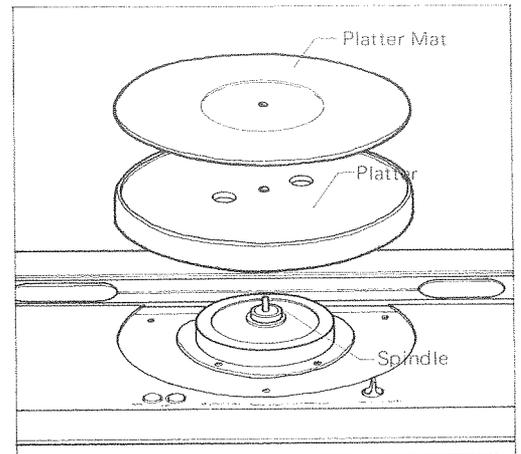


## 2) To Position Platter and Phono Mat

The platter and phono mat are contained at the bottom of the packing carton. Take off the mat from the platter, and insert the platter with care into the center shaft of the phono motor, holding it by the fingers through 2 holes. Now turn the platter manually to check if correct setting is completed.

### Caution:

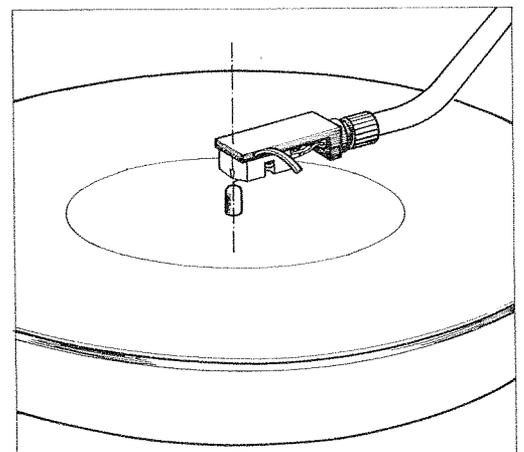
Be careful during this procedure, as the platter is heavy in weight and rough handling may impair the motor shaft or even the entire turntable.



## 3) To Fix Arm-base and to Adjust Overhang

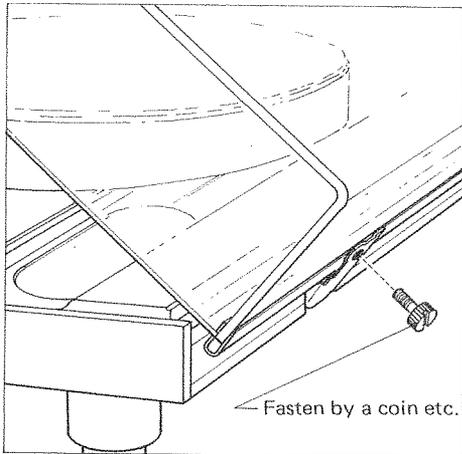
The arm-base has to be fixed to the arm-rail with its lever faced outwards as per the drawing (P. 2-3). Be sure about this direction. Refer to the picture of the turntable (P. 1). To lock the arm-base to the turntable, turn the lever in a clockwise direction, while a counter-clockwise turn releases the lock so that the base can slide along the arm-rail.

Adjustment of overhang can be done by sliding the arm-base. As per the drawing, slide the arm-base so that the stylus tip of the cartridge reaches the center spindle of the platter. Then read the calibration mark on the turntable shown by the white line of the arm-base. This is the "0" point of overhang. Each calibration mark equals 2mm in terms of overhang. According to the specified overhang figure of the tonearm, slide the arm-base towards the platter and adjustment of overhang can be done easily. Then turn the lever of the arm-base in a clockwise direction to firmly lock the arm-base.



#### 4) To Attach Dust Cover

The dust cover is detachable with 2 screws. Attachment has to be done with the dust cover open. The hinge is kept open by means of a spring. Fix the dust cover to the hinge by 2 screws as per the drawing. Fasten the screw by a (-) driver or a coin. Detachment can be done in the reverse way.



# Features

## 1) Phono Motor & Drive/Control System

The PD441 employs a slotless, flat, DC servo motor that offers a small amount of torque ripple from theoretical viewpoint as well. It is so designed as to obtain an even torque regardless of the rotor position thanks to the brushless structure with hall elements which detects the rotor position.

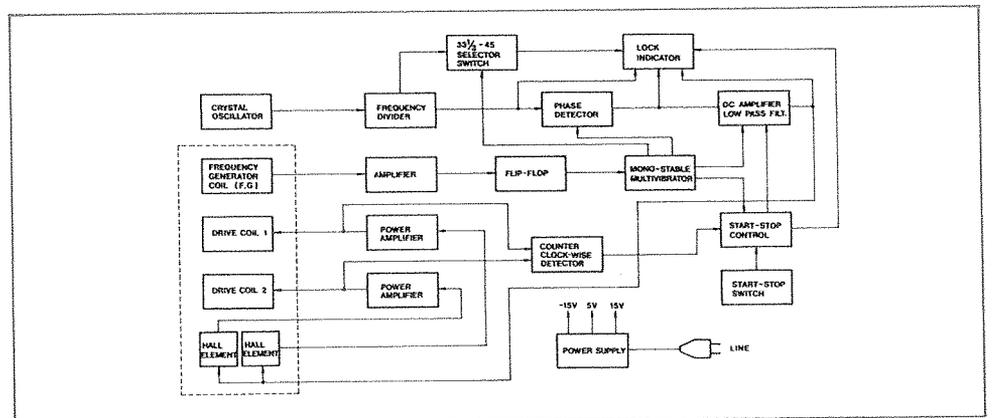
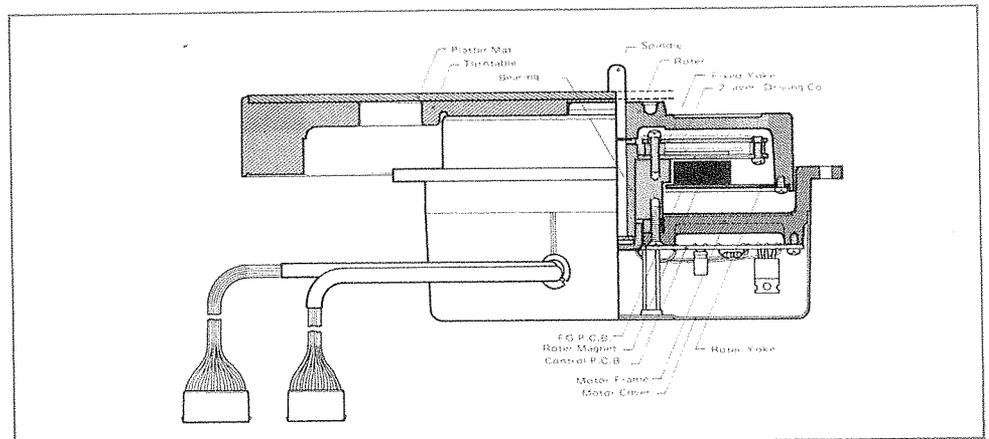
### [Control Circuit]

In addition to conventional speed control by means of a frequency generator circuit, a so called "Quartz Lock" system is employed utilizing a P.L.L. system with a high-precision crystal oscillator. Therefore, the open loop gain in DC area becomes infinite, which helps suppress external load variations in low frequencies. Also, the rotation speed is locked to the oscillating frequency of a crystal, and unconditional, stable rotation speed is ensured — almost immune to fluctuation of external conditions such as time, temperature, etc.

## [Load-Free Spindle System]

The "Quartz-Lock" system is effective in the suppression of external disturbing load variation from DC area to 1Hz. To reduce those load variations of relatively higher frequencies (5–10Hz), the fly-wheel effect of the platter is effective. The heavier the platter and consequently the larger its moment of inertia, the more advantageous.

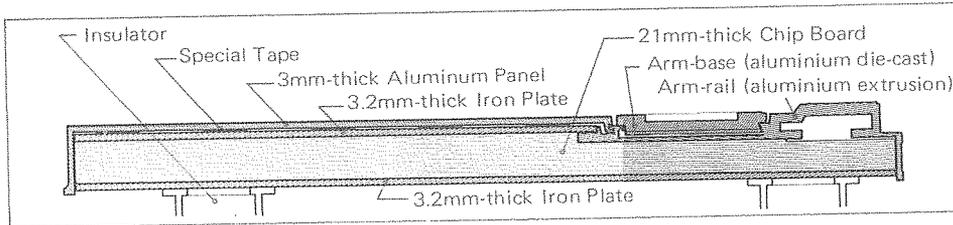
But coupled to these advantages are such problems as shorter life of the bearing, and longer rise and decay time. Our exclusive "Load-Free Spindle" made it possible to solve these problems. The phono motor itself offers the repelling power to the spindle to float the platter unlike conventional magnet-float system. Actually, the weight applied the spindle is reduced to about 1/5 of that of the platter, and the friction at the spindle is lessened. The driving current of the motor is small, and such characteristics as S/N ratio and Wow & Flutter are improved as well.



## 2) Structure of Chassis

An ultra heavy chassis of sandwich structure is composed of 2 pcs. of thick iron plate and a high-density chip board. The total weight comes up to 17Kg. The iron plate itself is heavy in weight but susceptible

to resonance, and therefore a high-density chip board is inserted between the 2 iron plates which absorbs resonance. Thus, an ideal solid and resonance-proof chassis is created for a disc player.



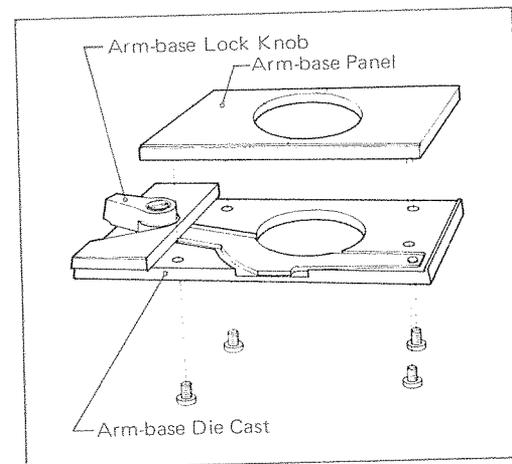
## 3) Arm-base and Applicable Tonearms

The arm-base consists of the arm-base panel and die-cast arm-base. The arm-base panel is fixed to the die-cast arm-base by 4 screws, and by removing the screws it is possible to change the panel. This turntable is supplied with the arm-base with the panel TP-SG

for the tonearm in general and an extra panel TP-LS. If you want to use other tonearms, consult your dealer for an appropriate panel. The following list shows the correlation between the panel types and applicable tonearms.

Note the model for U.S.A. is provided with the arm-base with the panel TP-SG and an extra panel TP-MT.

NAME	SUITABLE TONEARMS	ACCESSORIES
<b>TP-SG</b> (for general use)	DENON DA305, DA307, DA303, FR54 FR FR54 GRACE G940, G840F, G707, G545F, Σ 709F, G945 ADC LMF-1, LMF-2 AUDIOCRAFT AC300C, EXCEL SOUND ES801	<ul style="list-style-type: none"> <li>• Washer to fix tonearms</li> <li>• Arm Rest</li> </ul>
<b>TP-MT</b> (for tonearms whose arm-base is fixed by 3 screws)	STAX UA-7, FR64, FR64S FR FR64, FR64S GRACE G704, G714 MICRO MA505, ORTOFON RMG212, SAEC WE308, WE308SX	<ul style="list-style-type: none"> <li>• Washer to fix tonearms</li> <li>• Arm Rest</li> <li>• Screws (2)</li> </ul>
<b>TP-LH</b> (for tonearms of larger arm-base shaft)	VICTOR UA7045, TECHNICS EPA100 AUDIO-CRAFT AC 300/II, 3000	<ul style="list-style-type: none"> <li>• Arm Rest</li> </ul>
<b>TP-LS</b> (for SME only)	SME SME3009SII, SME3009SIII	<ul style="list-style-type: none"> <li>• Screws to fix tonearm base. *</li> </ul>
<b>TD-X</b>	Arm-base die-cast	<ul style="list-style-type: none"> <li>• Fixing screws</li> </ul>



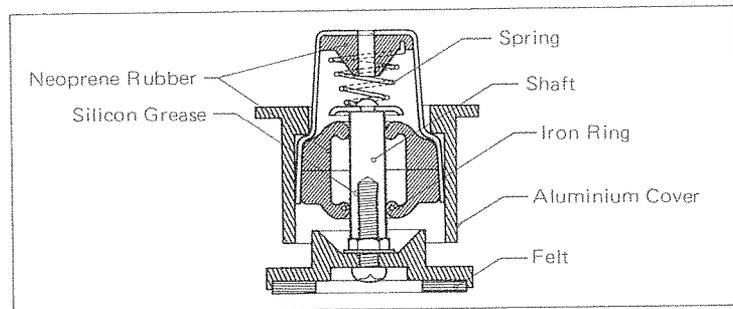
#### 4) 2-Step Brake Insulator

Speaking about an insulator, the lower the " $f_0$ " (minimum resonance frequency) and the higher the Q (sharpness of resonance), the better the cut-off characteristics. If Q is simply made higher, however, the turntable becomes unstable against vibrations of large amplitude in the vicinity of " $f_0$ ". A new 2-step brake insulator was developed to solve these incompatible problems.

The neoprene rubber supporting the shaft of the insulator works against vibrations of small amplitude which cause acoustic feedback, realizing good cut-off characteristics. Vibrations of large amplitude are effectively

dealt with by the spring and viscous brake of neoprene rubber with silicon grease. Now both the cut-off characteristics and operational stability are made compatible.

Also the height is adjustable with this insulator. The turntable is delivered with the least height on the insulator. If the mounting location has an unevenness or slant, adjust the height so that the turntable may be placed evenly. The height increases as the insulator is turned in a counter-clockwise direction (viewed from the bottom of the turntable). Adjustment is possible over a range of 10mm.



#### 5) Dust Cover & Semi-Free Stop Hinge

The dust cover is made of 4mm thick acrylic plate, totalling 1.6Kg in weight. Therefore, it is extremely resistant to howling and acoustic feedback. Also the hinge for the dust cover is strong enough to support the heavy dust cover and merges into the slim, elegant appearance of this turntable. The dust cover is detachable with 2 screws. The semi-free-stop type hinge makes it possible to give the total weight of the dust cover to the turntable when shut off, which is advantageous in respect to howling. Rough handling of the dust cover may apply an unnatural force to the hinge and dust cover, resulting in rattling. Careful operation is recommended.

#### 6) Phono Mat

Exhaustive study was applied to the platter mat as well, and its surface is specially treated to ensure the closest contact between the mat and your precious discs. The high-density rubber damps not only the disc but the platter itself.

# Specifications

## [PHONO MOTOR SECTION]

Driving System: Direct Drive System  
Motor: Crystal Control, Load-Free-Spindle System, Flat Brushless DC Servo Motor  
Turntable Platter: 30cm(12") aluminium die-cast 2.5kg  
Rotation: 33-1/3, 45rpm (2-speed)  
S/N Ratio: No less than 75dB  
Wow & Flutter: No more than 0.025% W.R.M.S.  
Torque: 1kg.cm  
Temperature characteristics: below 0.00003%/C°  
Turning accuracy: 0.002%

## [ADDITIONAL FEATURES]

Acrylic Resin  
Cover: 4mm-thick (1.6") detachable with semi free-stop hinge 1.6kg(5.5 lbs.)  
Insulator: Low "f<sub>0</sub>", 2-step brake type by means of spring, rubber and grease; Height adjustable (adjustable range: 10mm(1/3"))  
Lock Indicator: 33-1/3rpm; Blue, 45rpm; Orange  
Arm Base: detachable, die-cast

## [OTHERS]

Power Requirement: AC 120/220/240W, 50/60Hz  
Power Consumption: 16W  
Dimensions: 474(W) x 160(H) x 393(D)mm  
Weight: Net 17kg (37.4 lbs); Gross 19.5kgs (42.9 lbs.)  
(18-11/16" x 6-5/16" x 15-7/16")

# Explanation about Tonearm-base for the PD444/441

NAME	SUITABLE TONEARMS	ACCESSORIES
<b>TP-SG</b> (for general use)	DENON DA305, DA307, DA303, DA302 FR FR54 GRACE G940, G840F, G707, G545F, G860F, G860FB, G960, G565F, Σ 709F, G945 ADC LMF-1, LMF-2 AUDIOCRAFT AC300C, AC400C EXCEL SOUND ES801	<ul style="list-style-type: none"> <li>• Washer to fix tonearms</li> <li>• Arm Rest</li> </ul>
<b>TP-MT</b> (for tonearms whose arm-base is fixed by 3 screws)	STAX UA-7, UA-70 FR FR64, FR64S GRACE G704, G714 MICRO MA505, MA505L ORTOFON RMG212, RMG309 SAEC WE308, WE308SX	<ul style="list-style-type: none"> <li>• Washer to fix tonearms</li> <li>• Arm Rest</li> <li>• Screws (2)</li> </ul>
<b>TP-LH</b> (for tonearms of larger arm-base shaft)	FR FR66S VICTOR UA7045, UA7082 TECHNICS EPA100 AUDIO-CRAFT AC 300/II, 400/II, 3000 4000	<ul style="list-style-type: none"> <li>• Arm Rest</li> </ul>
<b>TP-LS</b> (for SME only)	SME SME3009SII, SME3012, SME3009SIII	<ul style="list-style-type: none"> <li>• Screws to fix tonearm base. *</li> </ul>
<b>TD-X</b>	Arm-base die-cast	<ul style="list-style-type: none"> <li>• Fixing screws</li> </ul>

\* Be sure to use those screws provided with the TP-LS when the SME tonearm is mounted on it, since the screws of SME original do not fit the TP-LS.

This arm-base panel and die-cast arm-base are prepared for mounting the tonearm in your possession. Check the following list to determine whether or not the tonearm you own conforms to the arm-base panel supplied with turntable.  
To mount the tonearm to the arm-base, be careful not to scratch the panel-face of the arm-base.

**1. Changing the arm-base panel**  
Remove the screws fixing the arm-base panel to the die-cast arm-base. (If you purchase the die-cast arm-base (TD-X) separately, there's no need for this step.)  
Then, fix the arm-base panel you purchased to the die-cast arm-base with the same 4 screws.

**2. Mounting the Tonearm**  
Mount the tonearm to the arm-base completed by the step (1), following the instruction manual supplied with your tonearm. With the TP-SG and TP-MT, fixing washers are provided. They are supplied for such cases in which the hole of the die-cast arm-base is too large to mount the tonearm in.

**Caution:**  
The TP-MT has 6 radial notches. Use 3 of them according to the direction of the tonearm.

- The inside force cancellor of some tonearms does not function when installed in the position for the longer tonearm (left side) with the PD444. In this case, put the tonearm a little outwards (counter-clockwise), and use the arm-rest provided, because the arm-rest attached to the tonearm cannot be used.

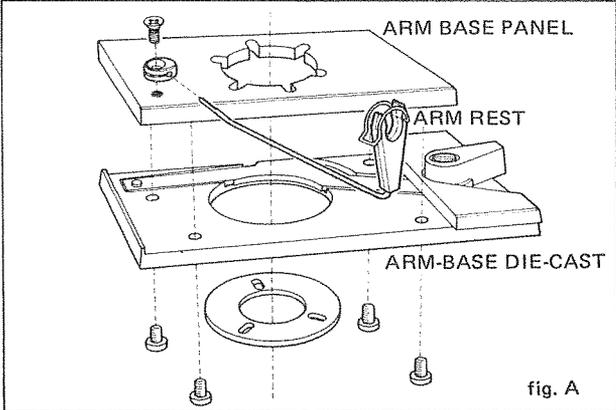
- The arm-lifter of the SME3009/SII with a cartridge of low height would touch the fixing nut. In this case, remove the fixing nut and use the nut provided with the arm-base (TP-LS).

- Adjustment is necessary when you use the Stax UA-7 or UA-70 (longer type) tonearm. For details refer to the special instruction.

**3. Mounting the Arm-rest**  
Insert the arm-rest bar into the arm-rest base, and fix it to the arm-base with the screw provided.

With the PD441 and PD444 in the position for a standard tonearm (right side), adjust the arm-rest on the arm-base in accordance with fig. A.

In the position for a longer tonearm (left side) of the PD444, turn the arm-rest base by 90 degrees in a clockwise direction.



**The Stax UA-7, UA-70**  
After mounting, adjust the direction of the tonearm in the following way:

1. First, place the head-shell at the contour edge of the turntable. The inside-force cancellor has to be put into function. (fig. 1)
2. Loosen the screw and turn the black arm-lifter base in a clockwise direction. (fig. 2)  
Caution: Be careful so that the black arm-lifter base does not fall down.
3. Adjustment has to be done by turning the black arm-lifter base so that the inside-force cancellor's roller arm becomes perpendicular as per the dotted line. (fig. 3)
4. Confirm that the head-shell can reach the innermost groove of a disc, and then fix the arm-lifter base by tightening the screw. (fig. 2)

