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N **Technics**



DIRECT DRIVE PLAYER SYSTEM

SL-1100
SL-110

OPERATING INSTRUCTIONS



Nous voulons vous remercier d'avoir choisi la PLATINE TOUREN-DISQUES A ENTRAÎNEMENT DIRECT "SL-1100". Pour obtenir les performances optimales de ce système, nous vous recommandons de lire attentivement le présent mode d'emploi, de façon à l'utiliser convenablement.

IDENTIFICATION DES PIÈCES

FONCTIONNEMENT ET RÔLE DES DIFFÉRENTS ORGANES

(TABLE DE LECTURE)

ALIMENTATION (Voir Fig. 2)

S'assurer que la vis de réglage du voltage indique le voltage local correct.

ATTENTION: S'assurer qu'on a bien réglé la vis de sélection du voltage avant de brancher le cordon d'alimentation secteur.

1 ROTOR (Voir Fig. 1-1)

Le plateau de cet appareil est entraîné directement par le moteur. En conséquence, le rotor—qui est l'élément tournant du moteur—est relié directement au plateau de lecture. L'axe du moteur et celui du plateau sont le même. Pour cette raison, si l'on veut conserver les caractéristiques exceptionnelles de fonctionnement qui figurent dans la spécification, il ne faut jamais exercer un effort extérieur important sur le rotor et sur l'axe du moteur. C'est pourquoi le rotor a été soigneusement calé pour protéger les organes délicats et importants au cours du transport.

N'oubliez pas de retirer soigneusement ces cales **A** et de les mettre de côté en vue d'une nouvelle utilisation pour le cas où l'appareil devrait être encore transporté.

Attention: Le rotor du moteur est construit de telle façon qu'il ne peut être démonté. Ceci contribue à maintenir les performances élevées de l'appareil pendant un temps très long.

N'essayez pas de retirer la garniture qui empêche de démonter le rotor

B

2 LAMPE TÉMOIN (Voir Fig. 1-2)

3 COMMUTATEUR D'ALIMENTATION/SÉLECTEUR DE VITESSE (Voir Fig. 1-3)

Placez le sélecteur de vitesse sur la position choisie (33 ou 45 tours, en fonction de la vitesse prévue pour le disque à reproduire). La lampe témoin s'allumera. Le plateau ne tournera pas tant que vous n'aurez pas appuyé sur le bouton "START".

4 BOUTON DE MISE EN ROUTE DU PLATEAU (START) (Voir Fig. 1-4)

Dès que vous appuyez sur le bouton "START", le plateau se mettra en route.

La puissance de démarrage est importante puisque la vitesse normale est atteinte après un demi tour du plateau à 33 1/3 t/m.

5 BOUTON D'ARRÊT (STOP) (Voir Fig. 1-5)

Lorsque vous désirez arrêter l'appareil, appuyez sur le bouton "STOP". Le plateau continuera de tourner pendant un certain temps en raison de l'importance de la force d'inertie.

6 RÉGLAGE DE VITESSE À PAS VARIABLE (Voir Fig. 1-6)

Il est possible de régler la vitesse de rotation si cela est nécessaire. Le système de réglage à pas variable permet d'ajuster celle-ci dans la limite de $\pm 5\%$.

Choisissez la vitesse de rotation désirée par manœuvre du sélecteur. Le plateau étant éclairé au moyen d'un tube fluorescent courant ou d'un tube au néon, il se peut que vous constatiez un déplacement des marques du disque stroboscopique. Si cela se produit, procédez au réglage de la vitesse jusqu'à ce que les marques demeurent immobiles.

(Pour cette opération, ne pas utiliser une lampe à incandescence).
Votre équipement utilise un moteur spécial à très faible vitesse de rotation, à commutation électronique, qui maintient la vitesse à sa valeur standard.

Les marques stroboscopiques moulées sur le plateau sont différentes selon que le courant d'alimentation est à 50 Hz (Europe) ou à 60 Hz (Etats Unis). Régler la vitesse en fonction des indications portées sur le stroboscope.

⑦ MARQUES STROBOSCOPIQUES (Voir Fig. 1 - ⑦)

⑧ INDICATIONS STROBOSCOPIQUES (Voir Fig. 1 - ⑧)

⑨ VIS DE RÉGLAGE DE LA VITESSE (Voir Fig. 1-⑨)

Si pour une raison quelconque le réglage ne peut être réalisé correctement, utilisez un tournevis ordinaire pour manoeuvrer les vis de réglage (33 ou 45 tm) logées sous le plateau de lecture.

En tournant les vis de réglage dans le sens des aiguilles d'une montre ou en sens inverse, on augmente ou on diminue la vitesse de rotation.

⑩ PRISE DE COURANT ALTERNATIF (Voir Fig. 1-⑩)

Cette prise a été prévue pour votre commodité. Elle pourra être utilisée pour alimenter par exemple une lampe au néon ou un dispositif d'éclairage de la pointe de lecture.

⑪ HUILE SPÉCIALE (Voir Fig. 1-⑪)

Les surfaces de friction de cet appareil ont été finies avec la plus grande précision pour éviter tout miaulement pendant le fonctionnement.

Une huile d'une qualité spéciale a été utilisée pour conserver à l'appareil ses performances élevées. Cette huile forme à la surface des divers organes un film uniforme. Pour cette raison, vous ne devez utiliser que l'huile qui vous est fournie avec l'appareil pour la lubrification de celui-ci.

Avant de mettre l'appareil en route, mettre environ deux gouttes d'huile dans l'orifice (oil hole) prévu à cet effet.

Pour utiliser la burette, décapsuler celle-ci avec l'aiguille.

Après emploi, remettre le capuchon sur la burette pour éviter les fuites ou la pénétration de poussières dans l'huile. La fuite d'huile qui peut se constater autour de l'orifice ou du rotor est la conséquence du transport. Elle est sans influence sur le fonctionnement de l'appareil. Ne jamais utiliser une huile d'un autre type. Pour lubrifier l'appareil, déposer le plateau de lecture et mettre environ 2 gouttes d'huile dans l'orifice indiqué sur la figure.

Une lubrification toutes les 2000 heures de fonctionnement est suffisante.

Deux mille heures correspondent à 5 ans et demi si l'appareil est utilisé pendant une heure change jour ou à 8 mois si l'appareil sert pendant 8 heures par jour.

Cette durée est beaucoup plus importante qu'elle ne l'était pour les anciens moteurs. Ne pas mettre trop d'huile et ne pas en mettre plus souvent qu'il n'est nécessaire.

⑫ ORIFICE DE LUBRIFICATION (Voir Fig. 1 - ⑫)

⑬ BORNES DE SORTIE (Voir Fig. 1 - ⑬ , Fig. 4 - ⑬)

Relier les cordons de pick-up du panneau porte-bras aux bornes de sortie:

Rouge (R)	→ canal droit	R
Blanc (L)	→ canal gauche	L
Noir (section en "U") (E)	→ masse	E

⑭ TROUS DE VIS (Pour le panneau porte bras) (Voir Fig. 1-⑭)

⑮ TAPIS DU PLATEAU (Voir Fig. 1-⑮)

⑯ PLATEAU DE LECTURE (Voir Fig. 1-⑯)

Le plateau de lecture, extra-large (35 cm de ϕ) a un poids de 2 kg. Son moment d'inertie est de 320 kg/cm²

Tous les plateaux sont équilibrés dynamiquement.

⑰ COFFRET DE L'APPAREIL (Voir Fig. 3-⑰)

⑱ CARTER INFÉRIEUR (Voir Fig. 3-⑱)

19 PIEDS ISOLÉS ACOUSTIQUEMENT (Voir Fig. 3-19)

Les pieds sont conçus en vue d'éliminer complètement les vibrations par l'utilisation de matériaux spéciaux incorporés à l'intérieur. Régler la hauteur des pieds de manière à mettre l'appareil de niveau. Ce réglage se fait en faisant tourner les bagues.

20 BORNES DE SORTIE (Voir Fig. 3-20)

Relier les cordons fournis avec cet appareil aux bornes de sortie du tourne-disques et de l'amplificateur en veillant à ne pas mélanger les canaux.

R (Rouge) → canal droit **R**

L (blanc) → canal gauche **L**

E (en "U") → masse pick-up **E**

GND → masse tourne-disques **GND**

21 CORDON D'ALIMENTATION (Voir Fig. 1 - 21)

22 CAPOT ANTIPOUSSIÈRES (Voir Fig. 1 - 22)

23 BRAS DE LECTURE (Voir Fig. 3 - 23, Fig. 4)

Le bras de lecture universel de haute qualité a été spécialement conçu pour ce tourne-disque à entraînement direct. Parmi ses plus remarquables caractéristiques, on peut citer: sa facilité d'utilisation, son mécanisme durable et le réarmement automatique du système de contrôle de la pression de la pointe de lecture. Le réglage de l'équilibre et de la pression exercée par la pointe de lecture se font aisément et rapidement.

(BRAS DE LECTURE)

24 TÊTE DE LECTURE (Voir Fig. 4-24, Fig. 5)

Engager la tête de lecture à l'extrémité du bras et fixer celle-ci solidement en faisant tourner la bague de verrouillage dans le sens de la flèche (voir la figure). Bien relier les conducteurs aux bornes de la cellule en suivant les indications figurant sur la fiche accompagnant cette dernière.

La position de la cellule doit être telle dans la tête de lecture que la distance entre la pointe de lecture et la broche soit de 52 mm (voir la figure)

25 ECROU DE BLOCAGE (Voir Fig. 4-25)

26 DISPOSITIF ANTI-PATINAGE (Voir Fig. 4-26, Fig. 6)

La force de patinage est un effort de friction provoqué par le contact entre la pointe de lecture et le sillon du disque. Cet effort est appliqué latéralement à la pointe de lecture en fonction de la position occupée par le bras de lecture.

Il se produit alors un déséquilibre de la pression de contact entre la pointe de lecture et le sillon, ce qui donne naissance à des distorsions, à une détérioration des qualités de reproduction et des caractéristiques de séparation des canaux et à une usure anormale de la pointe de lecture.

Pour ces raisons, il est nécessaire de contre-balancer cet effort en vue de l'annuler.

Cette fonction de compensation est assurée par le mécanisme anti-patinage.

L'effort compensateur exercé par ce dispositif est proportionnel à la pression de la pointe de lecture et il peut par conséquent être réglé en fonction de celle-ci.

Pour procéder à ce réglage, faire tourner le bouton de manière que le chiffre indiqué par la flèche soit le même que celui donné par le dispositif de pesée de la pression exercée par la pointe de lecture (voir la figure)

27 EQUILIBRAGE DU BRAS (Voir Fig. 4-27, Fig. 6)

Ce dispositif est spécialement conçu de manière à faciliter l'obtention d'un équilibre parfait.

Les organes de réglage—comme ceux du dispositif anti-patinage et du système de réglage de la pression de la pointe de lecture—sont situés à la partie supérieure du bras, ce qui facilite les opérations.

Mettre en place le contrepoids qui est rangé dans la boîte d'accessoires derrière le bras.

En faisant tourner le bouton de réglage de la pression de la pointe de lecture dans le sens indiqué par la flèche, mettre le bras en équilibre (il ne doit avoir tendance à pencher ni dans un sens, ni dans l'autre). Lorsque ce réglage est obtenu, tirer le bouton dans le sens indiqué par la flèche. Les graduations reviendront automatiquement à zéro.

Régler la pression de la pointe de lecture en faisant tourner le bouton dans le sens de la flèche en fonction des indications données pour la cellule utilisée.

Si le poids de la cellule est supérieur à 9,5 g, utiliser le contrepoids auxiliaire (Auxiliary weight) qui est emballé dans la boîte d'accessoires (voir la figure)

28 SOCLE DU BRAS (Voir Fig. 3-28)

S'il est nécessaire de régler la hauteur du bras de lecture, desserrer les deux vis puis remonter ou descendre le bras.

29 LEVIER DE RELEVAGE DU BRAS (Voir Fig. 4-29)

Lorsque le bras de lecture a été dégagé du support, placer le levier dans la position **A**  (comme indiqué sur la figure). Le bras se relèvera. Soulever le bras et le placer à l'emplacement voulu au dessus du disque. Mettre alors le levier dans la position **B** . Le bras descendra lentement et la reproduction commencera.

30 DISPOSITIF DE RELEVAGE DU BRAS (Voir Fig. 4-30)

31 SUPPORT DU BRAS (Voir Fig. 4-31)

32 PANNEAU DE MONTAGE DU BRAS (Voir Fig. 4-32)

CHOIX DE L'EMPLACEMENT DE L'APPAREIL

- 1 L'appareil doit être placé sur un support stable et horizontal. Le support ne doit pas être soumis à des vibrations excessives.
- 2 Il doit être placé aussi loin que possible des haut-parleurs et il doit être isolé acoustiquement de ceux-ci.
- 3 L'appareil ne doit pas être placé en un lieu exagérément froid ou exagérément chaud. Il faut notamment éviter de le mettre à côté d'un radiateur.

CARACTERISTIQUES

(TABLE DE LECTURE)

1 PLATEAU DE LECTURE ULTRA-LARGE

Le plateau de lecture, ultra large (35 cm ϕ) a un poids de 2 kg et son moment d'inertie est de 320 kg/cm². Il a été équilibré dynamiquement. Le bord du plateau comporte des marques stroboscopiques qui sont utilisées pour procéder aux réglages de la vitesse de rotation.

2 MOTEUR À ENTRAÎNEMENT DIRECT

L'absence de mécanisme de transmission élimine tout miaulement. En raison de sa faible vitesse de rotation, le moteur n'engendre pas de vibrations. Le bruit de fond est réduit à l'extrême minimum.

3 COMMUTATION ELECTRONIQUE DU MOTEUR À COURANT CONTINU

Le moteur à courant continu n'est pas affecté par les variations de tension de la source d'alimentation. Le couple de démarrage est important: la stabilisation complète de la vitesse se fait en un demi-tour à 33 1/3 t/m. En raison de l'absence de ronflement électro-magnétique, le rapport signal/bruit est excellent. D'autre part, par suite de la

commutation électronique du moteur, le démarrage est extrêmement précis. En outre, on ne constate pas d'instabilité de la vitesse ou de détérioration des balais comme c'est fréquemment le cas avec les moteurs à commutation par balais. On ne constate pas non plus de bruits pulsants ou de bruit de frottement comme c'est le cas lorsque des balais sont utilisés.

④ LA ROTATION DU PLATEAU PEUT ÊTRE ARRÊTÉE À TOUT MOMENT

C'est une caractéristique que l'on ne trouve pas sur les appareils qui sont munis d'une transmission et d'un réducteur par courroie ou par galet.

Sur un tel appareil, si l'on essaie de faire brusquement cesser la rotation du plateau, on provoque rapidement la détérioration de la courroie ou du galet et le rendement s'affaiblit. Avec le moteur de cet appareil, un arrêt brusque ne provoque rien d'autre qu'un léger accroissement de l'intensité dans le moteur, ce qui ne constitue pas réellement un problème.

⑤ STABILISATION ÉLECTRONIQUE DE LA VITESSE DE ROTATION

Cet appareil comporte un dispositif électronique de stabilisation de la vitesse de sorte que cette dernière est remarquablement constante.

⑥ CHANGEMENT DE VITESSE ÉLECTRIQUE

Le changement de vitesse se fait sans dispositif mécanique telle qu'une courroie ou un galet. Par conséquent, il n'y a pas de miaulement ou de changement indésirable de vitesse.

⑦ ABSENCE DE CONSÉQUENCE DES VARIATIONS DE LA TENSION D'ALIMENTATION SUR LA VITESSE DE ROTATION

Ce moteur étant alimenté en courant continu, la vitesse de rotation n'est pas fonction de la fréquence du secteur. L'utilisation d'un stabilisateur du courant continu fait que le fonctionnement de l'appareil n'est pas affecté par les variations de tension, même si celles-ci sont importantes.

⑧ QUASI PERMANENCE DES CARACTÉRISTIQUES DE FONCTIONNEMENT

À la différence des autres appareils, celui-ci ne comporte aucun mécanisme de transmission ou de réduction tel qu'une courroie ou un galet. Le moteur tourne à la même vitesse que le plateau, c'est à dire très lentement.

L'usure des organes est, en conséquence, réduite à un extrême minimum et les excellentes caractéristiques de fonctionnement peuvent être maintenues de façon quasi-permanente.

⑨ LA CONSOMMATION EST SEULEMENT LE CENTIÈME DE CELLE D'UN MOTEUR ORDINAIRE

La puissance nécessaire à l'entraînement du plateau est de 0.1 W seulement, soit le centième de ce qu'elle est dans le cas d'un moteur classique à courant alternatif. La consommation imputable aux circuits électroniques de commande est de 4 W environ.

(BRAS DE LECTURE)

① PANNEAU PORTE BRAS DÉMONTABLE

Le panneau porte-bras peut être déposé après enlèvement de quelques vis pour le cas où on voudrait changer le bras.

② FACILITÉ D'ÉQUILIBRAGE DU BRAS ET DU RÉGLAGE DE LA PRESSION DE LA POINTE DE LECTURE

L'équilibrage du bras peut être réglé très facilement grâce au mouvement très doux d'un engrenage à crémaillère. Lorsque ce réglage est obtenu, il suffit de tirer vers l'extérieur le bouton de réglage et la graduation revient automatiquement à zéro. Ensuite, il est possible d'ajouter la pression nécessaire pour la pointe de lecture, celle-ci se lisant directement sur la graduation du bouton.

③ RELEVAGE DU BRAS

Le dispositif de relevage du bras comporte un amortisseur agissant dans les deux sens, ce qui rend la montée et la descente du bras très douces. La pointe de lecture se pose exactement à l'emplacement désiré.

CARACTERISTIQUES TECHNIQUES

(TABLE DE LECTURE)

Type	Entrainement direct du plateau par le moteur
Plateau	Aluminium matricé. 35 cm de diamètre, moment d'inertie 320 kg·cm ² , poids 2 kg.
Vitesses de rotation	33-1/3 et 45 t/m
Moteur	20 pôles (sur le rotor), 15 pôles (sur le stator). Moteur à vitesse de rotation ultra-lente, à commutation électronique.
Tension d'alimentation	~110/120/220/240V, 50 Hz, 60 Hz, 4 W
Changement de vitesse	Electronique
Réglage de vitesse	Réglage individuel par condensateur variable, réglage dans la limite de ±5%
Miaulement	0,03% WRAMS
Rapport signal/bruit	-50 dB (DINA), -70 dB (DINB)
Temps de stabilisation de la vitesse	1/2 tour à 33-1/3 t/m
Dimensions	51.0 × 39.0 × 19.5 cm (L × P × H)
Poids	13 kg, avec protecteur

(BRAS DE LECTURE)

Type	EPA-110, lecture directe de la pression de la pointe de lecture, équilibrage statique, bras tubulaire avec tête universelle, dispositif anti-patinage.
Longueur efficace	235 mm
Surplomb	14 mm
Erreur d'angle d'attaque du sillon	Inférieure à ±1,75°
Pression de la pointe de lecture	De 0 à 5 g

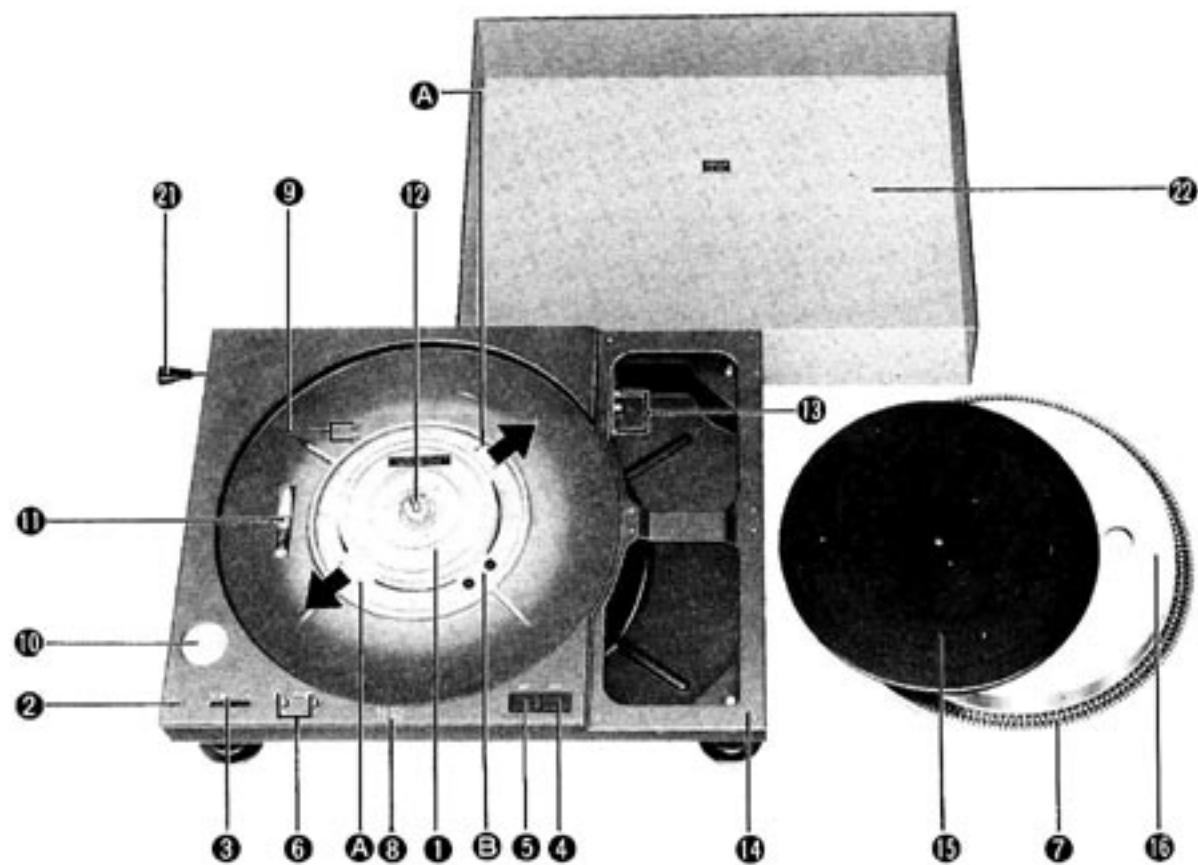


Fig. 1
Abb. 1

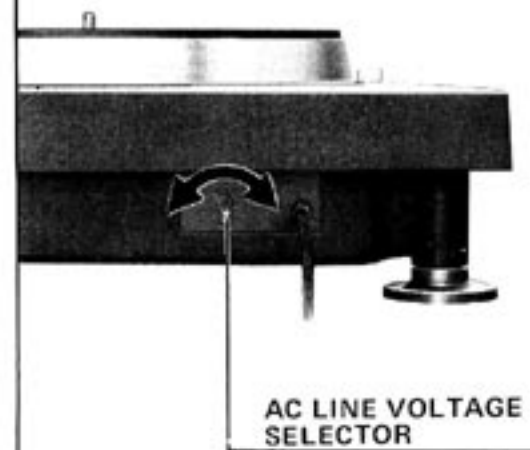


Fig. 2
Abb. 2



Fig. 3
Abb. 3

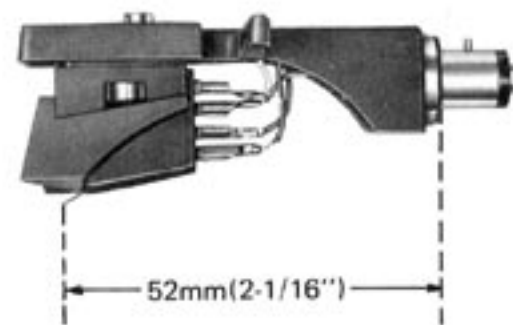


Fig. 5
Abb. 5

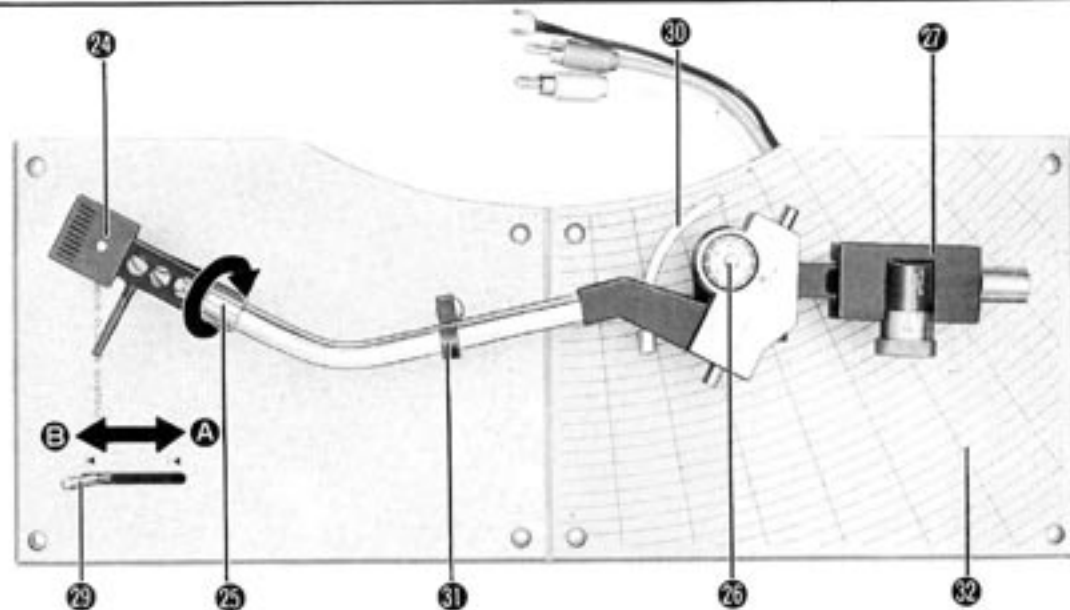


Fig. 4
Abb. 4

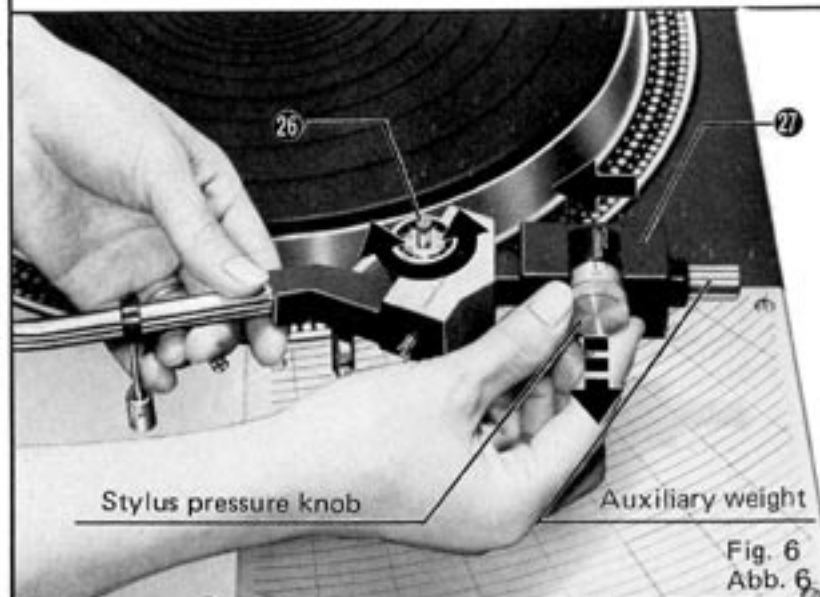


Fig. 6
Abb. 6

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

Technics **by Panasonic**

DIRECT DRIVE PLAYER SYSTEM

SL-1100
SL-110

OPERATING INSTRUCTIONS



NOTICE

We changed the color of the cartridge shell to black because of many audiophile's request. This instruction book shows the former color, please give us your forgiveness.

Read these instructions completely, before operating this set.

This instruction manual covers both SL-1100 and SL-110.

The SL-110 is same with SL-1100 in every aspects, but comes only without tonearm section.

We want to thank you for selecting the DIRECT DRIVE PLAYER SYSTEM.

To receive optimum performance from this set we recommend that you read these operating instructions carefully.

PARTS IDENTIFICATION

OPERATION AND FUNCTION OF CONTROLS

(TURNTABLE SECTION)

❶ ROTOR (See Fig.1- ❶)

This unit uses a direct drive motor. Therefore, the rotor, which is the rotating part of the motor, is connected directly to the turntable platter. The spindle of the motor and the shaft of the turntable platter are the same. For this reason, to maintain the high performance described in the specifications, it is not desirable to apply a large amount of external force to the rotor and the spindle of the motor. The rotor is, therefore, clamped securely to protect the delicate and important parts during transportation.

Be sure to remove these fittings **A** carefully, and save them for future use, as when, for example, the player must again be transported.

NOTE

The rotor of the motor is constructed so that it cannot be removed in order to maintain its high performance for a long time.

Do not attempt to remove the removal prevention fitting **B** for the rotor.

❷ PILOT LAMP (See Fig.1- ❷)

❸ POWER SWITCH/SPEED SELECTOR (See Fig.1- ❸)

Set the "speed selector" to the desired position (33 or 45, depending upon the speed of the record to be played). The pilot lamp will be lighted. The turntable platter will not rotate unless you push the "START" button.

❹ START BUTTON (See Fig.1- ❹)

Push the "START" button and the turntable platter will rotate. Starting rotation power is large with complete stability of speed reached within one-half rotation at 33-1/3 r.p.m.

❺ STOP BUTTON (See Fig.1- ❺)

Push the "STOP" button when you want to stop the rotation. The turntable platter will continue to rotate for a short time because of its large inertial force.

❻ VARIABLE PITCH CONTROLS (See Fig.1- ❻)

Adjust the "variable pitch controls" if necessary. These are designed to provide adjustment of the selected speed by 10% range.

Select the speed of the turntable platter by setting the "speed selector" to the desired position. The rotating turntable platter when illuminated by conventional fluorescent lamp or by neon lamp may show movement of the marks on the strobo disc, if so, adjust the "variable pitch controls" until the strobo marks are stationary.

After the necessary adjustment has been made, the speed will not change and re-adjustment will not be necessary.

The strobo marks molded around the turntable platter are used to check the correct speed of rotation for 50 Hz (European), and 60 Hz (U.S.A.). Adjust its rotation according to the strobo label.

❼ STROBO MARKS (See Fig.1- ❼)

❽ STROBO LABEL (See Fig.1- ❽)

❾ SPEED ADJUSTMENT SCREWS (See Fig.1- ❾)

If, for any reason, the adjustment cannot be successfully made, use a (—) tip screwdriver to adjust the appropriate speed adjustment screws (33 or 45) located beneath the turntable platter.

Turning the speed adjustment screws to the right or left will increase or decrease the speed respectively.

❿ AC OUTLET **A** (See Fig.1- ❿)

This one is designed with a view to future use, that is for your special convenience such as for neon lamp or stylus illumination light.

⓫ SPECIAL OIL (See Fig.1- ⓫)

The bearing parts of this set are designed with an ultra-precise finish to prevent the generation of "Wow and Flutter".

A special oil has been used to maintain the high-performance efficiency of this set by forming a uniform film of oil over the parts. For this reason, use only the oil included with this set for its lubrication.

Even if there is oil leakage around the oil hole or the rotor, caused during transportation, it will not effect the performance.

Before use, apply about 2 drops of oil into the oil hole.

To lubricate, open the tip of the vessel with a needle. After lubricating, cover the vessel with the cap to prevent the leakage of oil.

Never use any other type of oil. To lubricate, remove the turntable platter and apply about 2 drops of oil into the oil hole.

It is sufficient to lubricate the set once after approximately 2,000 hours of use.

Two thousand hours are equivalent to 5-1/2 years, if the set is used one hour a day, or to 8 months if used 8 hours a day.

This period is much longer than has been necessary on previous, conventional motors. Do not apply too much oil, nor more often than necessary.

⓬ OIL HOLE (See Fig.1- ⓬)

⓭ OUTPUT TERMINALS (See Fig.1- ⓭ , Fig.3- ⓭)

Connect the pickup cords from the arm panel to the output terminals.



⓮ SCREW HOLES (FOR ARM PANEL) (See Fig.1- ⓮)

⓯ TURNTABLE MAT (See Fig.1- ⓯)

⓰ TURNTABLE PLATTER (See Fig.1- ⓰)

The turntable platter is a 35cm (13-25/32") ultra-large diameter 2kg (4.4 lb) weight and has inertial moment of 320kg-cm² (109.5 lb-in²). Each turntable platter is dynamically balanced.

⓱ PLAYER CABINET (See Fig.2- ⓱)

⓲ BOTTOM COVER (See Fig.2- ⓲)

⓳ AUDIO-INSULATED LEGS (See Fig.2- ⓳)

The audio-insulated legs are designed to eliminate vibration entirely by using special materials inside them. Adjust the height and level of the player system by turning the legs.

⓴ OUTPUT TERMINALS (See Fig.2- ⓴)

Connect the pickup cords provided in this set to the player output terminals and connect the same channel to the amplifier.



⓵ AC OUTLET **B** (See Fig.2- ⓵)

⓶ AC POWER CORD (See Fig.1- ⓶)

⓷ DUST COVER (See Fig.1- ⓷)

24 TONEARM (See Fig.2- 24 , Fig.3)

High quality universal tonearm is designed especially for direct drive player system. Most remarkable features of this tonearm are easy operation, durable structure and automatic reset mechanism of stylus pressure control. Therefore, adjustment of zero balance and stylus pressure can be easily and rapidly accomplished.

(TONEARM SECTION)

25 HEAD SHELL (See Fig.3- 25 , Fig.4)

Insert the head shell in the end of the tonearm, and secure firmly by turning the locking nut of the tonearm in the direction of the arrow, as shown in the picture. Be sure to connect the lead wires to the cartridge terminals according to the instructions included with the cartridge. The cartridge should be inserted in the head shell so that the spacing between the stylus tip and the plug is 52mm (2-1/16") as shown in the picture.

26 LOCKING NUT (See Fig.3- 26)

27 ANTI-SKATING FORCE DEVICE (See Fig.3- 27 , Fig.5)

Skating force is that frictional force caused by contact between the tip of the stylus and the record groove, and is applied to the stylus as a side pressure depending upon the relationship of the geometrical position of the tonearm.

This force results in an unbalance of the contact pressure between the stylus tip and each groove wall of the record, an increase of distortion a deterioration of the performance, a decrease of separation characteristics and abnormal wear of the stylus tip and the record grooves. For this reason, it is necessary to compensate this skating force.

The anti-skating force mechanism performs this compensation function. The quantity of anti-skating force is in proportion to the stylus pressure and, therefore, it should be adjusted according to the stylus pressure. Turn the adjustment knob, as shown in the picture, to the same number as stylus pressure scale indicates.

28 BALANCE WEIGHT (See Fig.3- 28 , Fig.5)

This balance weight is especially designed for easy adjustment of zero balance.

In addition, all functions are built-in on the upside of the tonearm such as anti-skating force control and stylus pressure control, therefore, operation is easy. Install the balance weight, which is packed in the parts box, on the rear of the tonearm.

By turning the stylus pressure knob to the arrow, as shown in the picture, adjust the zero balance. (that is floating the tonearm free.) After adjustment, pull the outside of the stylus pressure knob in the direction of the arrow, then the scale will be reset automatically to the zero position.

Adjust the stylus pressure by turning the stylus pressure knob to the arrow in the picture according to the stylus pressure of the cartridge which you use.

If the cartridge weight is beyond 9.5g, use the auxiliary weight, then the tonearm accepts any cartridge whose weight is from 9 to 15.5g.

29 ARM BASE (See Fig.2- 29)

If it is necessary to adjust the height of the tonearm, loosen two screws and move the tonearm up or down.

30 CUEING LEVER (See Fig.3- 30)

After separating the tonearm from the arm rest, and then moving the cueing lever toward **A**  position (as shown in the picture), the tonearm will raise. Hold the tonearm and place the tip of the stylus above the groove of the record from which you desire to play. When the cueing lever is moved to the **B**  position, the tone arm will descend slowly and the performance will begin.

31 ARM LIFT (See Fig.3- 31)

32 ARM REST (See Fig.3- 32)

33 ARM PANEL (See Fig.3- 33)

SPECIFICATIONS

(TURNTABLE SECTION)

Type	Direct drive player system
Turntable platter	Aluminium die-cast; 35cm (13-25/32") diameter 320 kg-cm ² (109.5 lb-in ²) inertial moment, 2 kg (4.4 lb) weight
Turntable speeds	33-1/3 and 45 r.p.m.
Motor	20 - 15 poles ultra low-speed electronically commutated brushless DC motor
Power supply	AC 120V 60Hz,
Power change method	4W
Speed change method	Electronic change
Variable pitch control	Individual adjustment by variable resistor, 10% adjustment range
Wow and flutter	0.03% WRMS
Rumble	-50 dB (DIN A) -70 dB (DIN B)
Build-up time	1/2 rotation at 33-1/3 r.p.m.
Dimensions	51.0 x 39.0 x 19.5 cm (W x D x H) (20-1/16" x 15-3/8" x 7-11/16")
Weight	13.0 kg (28.7 lb) with dust cover

(TONEARM SECTION)

Type	EPA-110 Directly reading stylus pressure adjustment, static-balance type, universal head shell, anti-skating force device
Effective length	235 mm (9-1/4")
Overhang	14mm (9/16")
Tracking error angle	Within $\pm 1.75^\circ$
Stylus pressure	0 - 5 g

Specifications, designs and other details are subject to change, without prior notice.

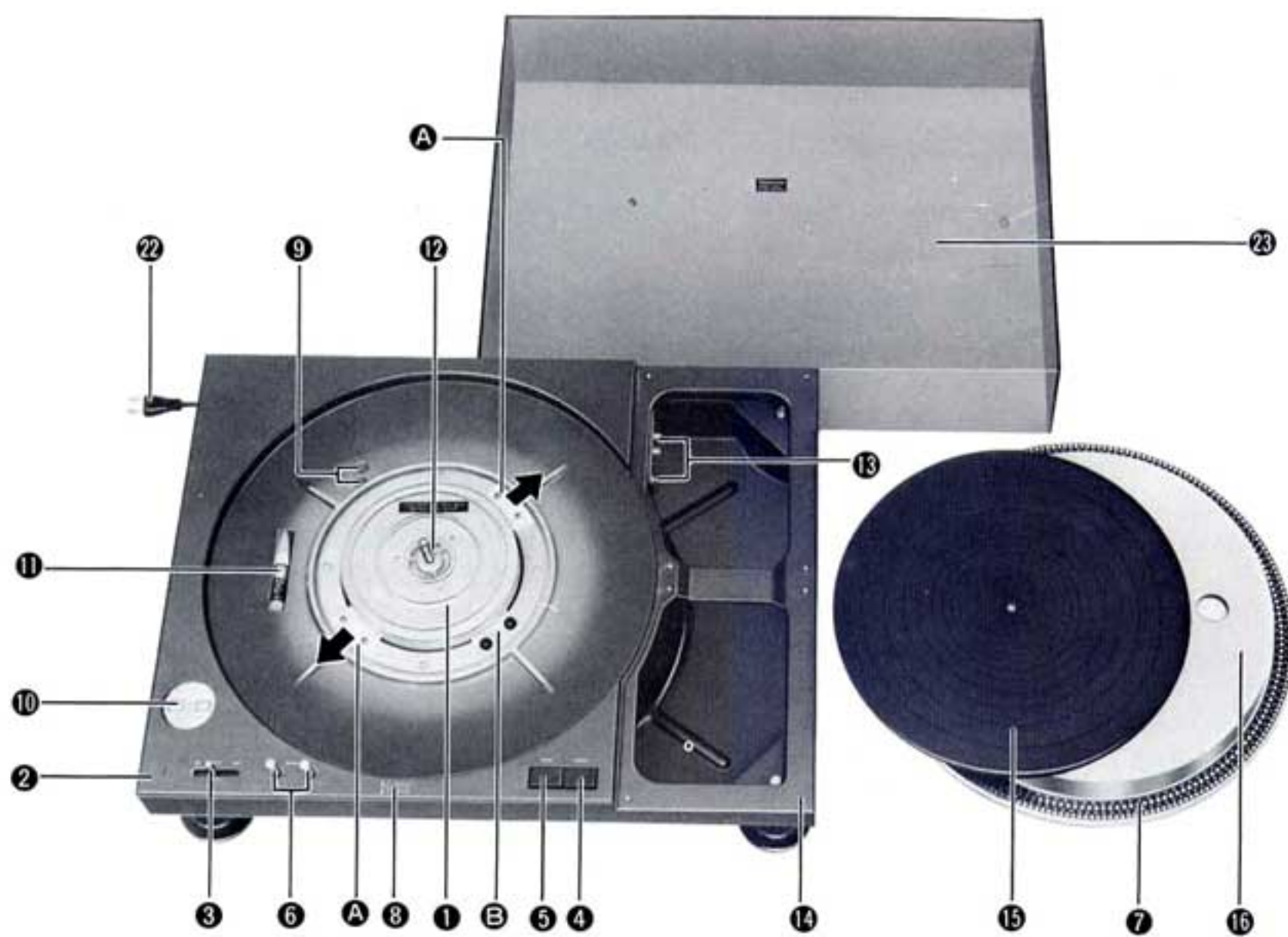


Fig 1



Fig 2

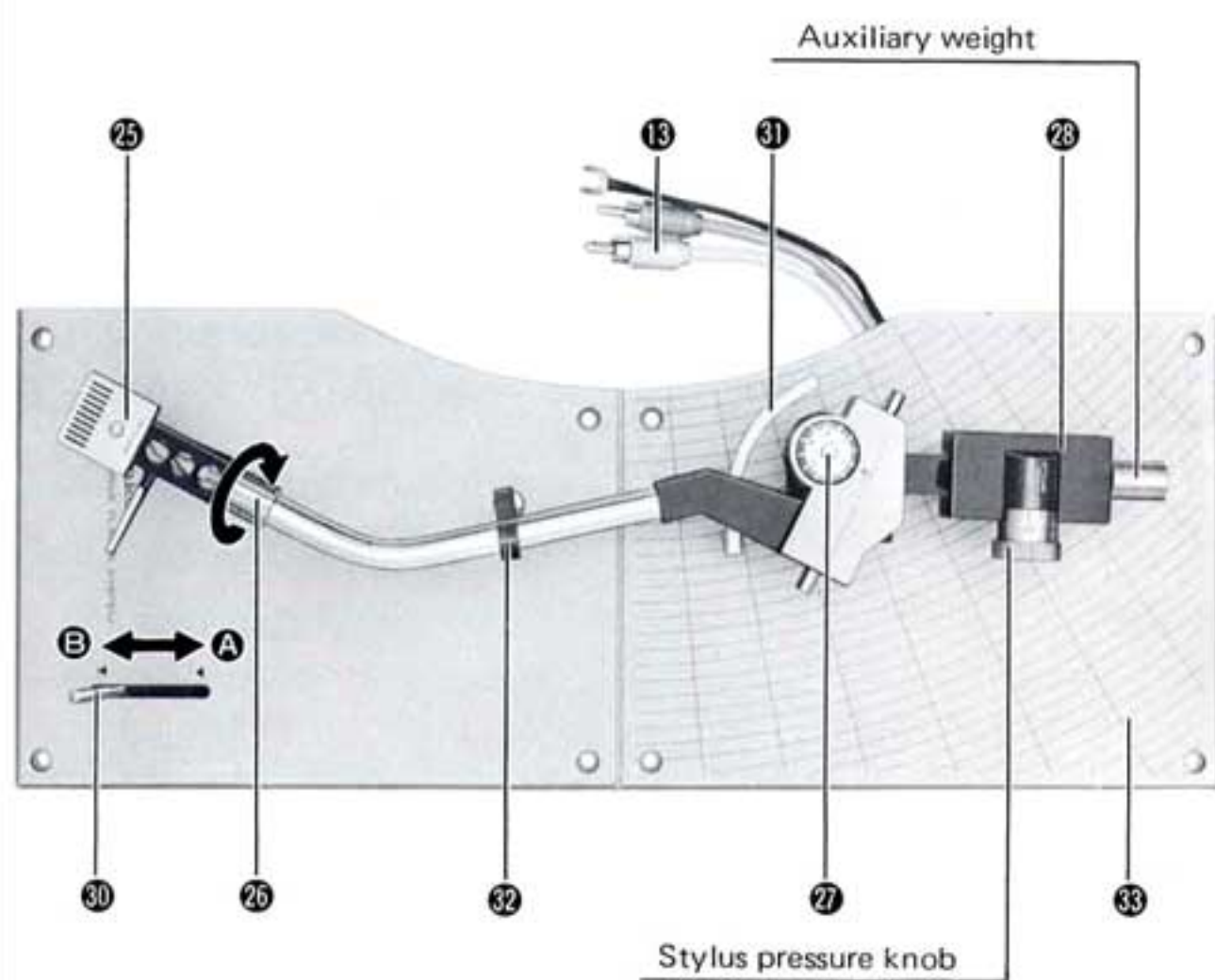


Fig 3

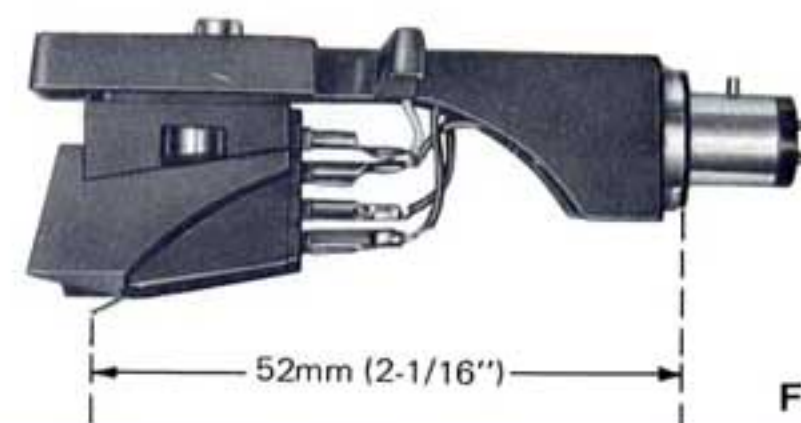


Fig 4

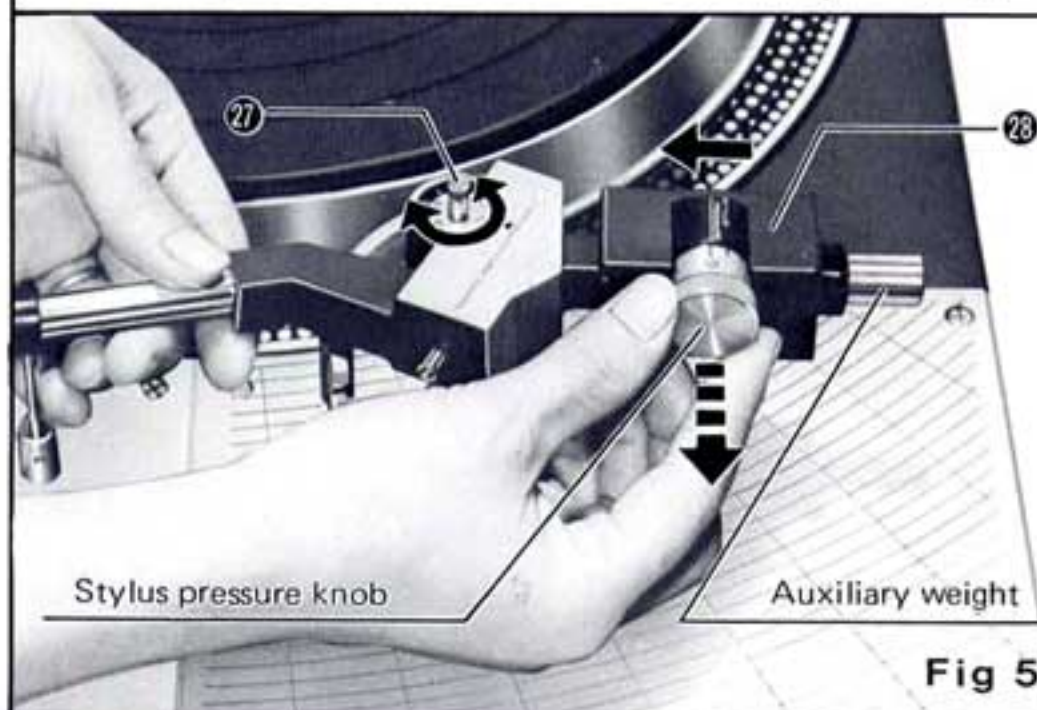


Fig 5

FEATURES

(TURNTABLE SECTION)

❶ 35 CM (13-25/32") ULTRA-LARGE DIAMETER TURNTABLE PLATER

35cm (13-25/32") ultra-large diameter, and 2kg (4.4 lb) heavy weight turntable platter has an inertial moment of 320 kg-cm² (109.5 lb-in²) and the turntable platter has been dynamically balanced.

Around the turntable platter are strobo marks which are used to check its speed.

❷ DIRECT DRIVE MOTOR

There is no "wow" or "flutter" caused by transmission mechanism. There is no vibration because this motor has no high-speed rotation mechanism. The rumble is extremely low.

❸ ELECTRONIC COMMUTATOR BRUSHLESS DC MOTOR

The DC motor is not affected by fluctuations of the power supply frequency. Starting rotation power is large, with complete stability of speed reached within one-half rotation at 33-1/3 r.p.m. Since there is no electro-magnetic hum, the signal to noise ratio (rumble) is excellent. And, because the motor includes an electronic commutator, starting is perfectly accurate. There is, therefore, no speed instability or brush deterioration as is often noted in brush commutators, no pulse noise generated by brush sparking and no sound caused by rubbing of brushes.

❹ ROTATION OF THE TURNTABLE PLATTER CAN BE STOPPED AT ANY TIME

This is a feature which is not found in players which have speed reduction and transmissions devices such as a belt or idler.

If such stopping is attempted on ordinary players, the belt or idler will soon deteriorate and efficiency soon becomes poor. In this player system, such stopping causes no problem other than a slight increase of the motor current, which is not really a problem.

❺ ELECTRONIC STABILIZATION CONTROL

Because this set includes special circuitry to stabilize the speed electrically, speed stability is extremely good.

❻ ELECTRICAL SPEED CHANGE

There is no mechanism to change the position of the belt or idler. There is, therefore, no "wow" or unwanted speed change.

❼ NO EFFECT FROM FLUCTUATIONS OF POWER SUPPLY FREQUENCY OR VOLTAGE

Since the motor is the DC type, the rotation speed does not depend on the power supply frequency. And, because a DC-stabilizer is used, the set is not affected by changes of the power supply voltage, even if the fluctuation is large.

❽ SEMI-PERMANENT HIGH PERFORMANCE

Unlike previous players, there is no reduction or transmission mechanism, such as a belt or idler.

The motor rotates the turntable platter directly, at an ultra-low speed. Wear of parts is therefore, reduced to the extreme minimum and high-performance efficiency can be maintained semi-permanently.

❾ POWER CONSUMPTION IS 1/100TH THAT OF ORDINARY MOTORS

Motor power consumption is only 0.1W, which is less than 1/100th that of a conventional AC motor. (There is a power consumption of about 4W, in addition to the drive, on other electronic circuitry).

(TONEARM SECTION)

❶ DETACHABLE ARM PANEL

Arm panel can be detached by unscrewing just in case you might decide to change the tonearm.

❷ EASY BALANCING AND STYLUS PRESSURE CONTROL

By a smooth rack-and-pinion type movement, the balance weight can be adjusted easily. After adjusting the balance, pull the outside of the stylus pressure knob outward, and the scale will be reset automatically to the zero position. Now you can add the amount of stylus pressure you desire by directly reading the scale.

❸ FEATURE-TOUCH CUEING

Feather-touch cueing is viscous-damped in both directions for gentle decent and ascent. The tonearm will be set down exactly on the spot you desire.

PLACEMENT OF PLAYER

- ❶ Use the player system in a stable and horizontal position, where there is little or no vibration.
- ❷ Use the player system as far away from the speakers as possible and isolate the player system from sound radiation from them.
- ❸ Avoid placing the player excessively hot or cold places, particularly near heaters.

AUXILIARY PARTS

- | | |
|------------------------|----------------------------|
| • DUST COVER.....❶ | • SPECIAL OIL❶ |
| • PICKUP CORDS.....❶ | • SCREWS (for cartridge) ❹ |
| • (—) TIP DRIVER.....❶ | • AUXILIARY WEIGHT..❶ |
| • ADAPTOR❶ | |

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Matsushita Electric of Hawaii, Inc.
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Hawaii 96817

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

Technics **by Panasonic**

DIRECT DRIVE PLAYER SYSTEM

SL-1100
SL-110

OPERATING INSTRUCTIONS



NOTICE

We changed the color of the cartridge shell to black because of many audiophile's request. This instruction book shows the former color, please give us your forgiveness.

Read these instructions completely, before operating this set.

This instruction manual covers both SL-1100 and SL-110.

The SL-110 is same with SL-1100 in every aspects, but comes only without tonearm section.

We want to thank you for selecting the DIRECT DRIVE PLAYER SYSTEM.

To receive optimum performance from this set we recommend that you read these operating instructions carefully.

PARTS IDENTIFICATION

OPERATION AND FUNCTION OF CONTROLS

(TURNTABLE SECTION)

❶ ROTOR (See Fig.1- ❶)

This unit uses a direct drive motor. Therefore, the rotor, which is the rotating part of the motor, is connected directly to the turntable platter. The spindle of the motor and the shaft of the turntable platter are the same. For this reason, to maintain the high performance described in the specifications, it is not desirable to apply a large amount of external force to the rotor and the spindle of the motor. The rotor is, therefore, clamped securely to protect the delicate and important parts during transportation.

Be sure to remove these fittings **A** carefully, and save them for future use, as when, for example, the player must again be transported.

NOTE

The rotor of the motor is constructed so that it cannot be removed in order to maintain its high performance for a long time.

Do not attempt to remove the removal prevention fitting **B** for the rotor.

❷ PILOT LAMP (See Fig.1- ❷)

❸ POWER SWITCH/SPEED SELECTOR (See Fig.1- ❸)

Set the "speed selector" to the desired position (33 or 45, depending upon the speed of the record to be played). The pilot lamp will be lighted. The turntable platter will not rotate unless you push the "START" button.

❹ START BUTTON (See Fig.1- ❹)

Push the "START" button and the turntable platter will rotate. Starting rotation power is large with complete stability of speed reached within one-half rotation at 33-1/3 r.p.m.

❺ STOP BUTTON (See Fig.1- ❺)

Push the "STOP" button when you want to stop the rotation. The turntable platter will continue to rotate for a short time because of its large inertial force.

❻ VARIABLE PITCH CONTROLS (See Fig.1- ❻)

Adjust the "variable pitch controls" if necessary. These are designed to provide adjustment of the selected speed by 10% range.

Select the speed of the turntable platter by setting the "speed selector" to the desired position. The rotating turntable platter when illuminated by conventional fluorescent lamp or by neon lamp may show movement of the marks on the strobo disc, if so, adjust the "variable pitch controls" until the strobo marks are stationary.

After the necessary adjustment has been made, the speed will not change and re-adjustment will not be necessary.

The strobo marks molded around the turntable platter are used to check the correct speed of rotation for 50 Hz (European), and 60 Hz (U.S.A.). Adjust its rotation according to the strobo label.

❼ STROBO MARKS (See Fig.1- ❼)

❽ STROBO LABEL (See Fig.1- ❽)

❾ SPEED ADJUSTMENT SCREWS (See Fig.1- ❾)

If, for any reason, the adjustment cannot be successfully made, use a (-) tip screwdriver to adjust the appropriate speed adjustment screws (33 or 45) located beneath the turntable platter.

Turning the speed adjustment screws to the right or left will increase or decrease the speed respectively.

❿ AC OUTLET **A** (See Fig.1- ❿)

This one is designed with a view to future use, that is for your special convenience such as for neon lamp or stylus illumination light.

⓫ SPECIAL OIL (See Fig.1- ⓫)

The bearing parts of this set are designed with an ultra-precise finish to prevent the generation of "Wow and Flutter".

A special oil has been used to maintain the high-performance efficiency of this set by forming a uniform film of oil over the parts. For this reason, use only the oil included with this set for its lubrication.

Even if there is oil leakage around the oil hole or the rotor, caused during transportation, it will not effect the performance.

Before use, apply about 2 drops of oil into the oil hole.

To lubricate, open the tip of the vessel with a needle. After lubricating, cover the vessel with the cap to prevent the leakage of oil.

Never use any other type of oil. To lubricate, remove the turntable platter and apply about 2 drops of oil into the oil hole.

It is sufficient to lubricate the set once after approximately 2,000 hours of use.

Two thousand hours are equivalent to 5-1/2 years, if the set is used one hour a day, or to 8 months if used 8 hours a day.

This period is much longer than has been necessary on previous, conventional motors. Do not apply too much oil, nor more often than necessary.

⓬ OIL HOLE (See Fig.1- ⓬)

⓭ OUTPUT TERMINALS (See Fig.1- ⓭ , Fig.3- ⓭)

Connect the pickup cords from the arm panel to the output terminals.

RED (R)	→	R Channel
WHITE (L)	→	L Channel
BLACK (U shaped)	→	E or GND (Pickup Earth)

⓮ SCREW HOLES (FOR ARM PANEL) (See Fig.1- ⓮)

⓯ TURNTABLE MAT (See Fig.1- ⓯)

⓰ TURNTABLE PLATTER (See Fig.1- ⓰)

The turntable platter is a 35cm (13-25/32") ultra-large diameter 2kg (4.4 lb) weight and has inertial moment of 320kg-cm² (109.5 lb-in²). Each turntable platter is dynamically balanced.

⓱ PLAYER CABINET (See Fig.2- ⓱)

⓲ BOTTOM COVER (See Fig.2- ⓲)

⓳ AUDIO-INSULATED LEGS (See Fig.2- ⓳)

The audio-insulated legs are designed to eliminate vibration entirely by using special materials inside them. Adjust the height and level of the player system by turning the legs.

⓴ OUTPUT TERMINALS (See Fig.2- ⓴)

Connect the pickup cords provided in this set to the player output terminals and connect the same channel to the amplifier.

R (RED)	→	R Channel
L (WHITE)	→	L Channel
E (U shaped)	→	E or GND

⓵ AC OUTLET **B** (See Fig.2- ⓵)

⓶ AC POWER CORD (See Fig.1- ⓶)

⓷ DUST COVER (See Fig.1- ⓷)

24 TONEARM (See Fig.2- 24 , Fig.3)

High quality universal tonearm is designed especially for direct drive player system. Most remarkable features of this tonearm are easy operation, durable structure and automatic reset mechanism of stylus pressure control. Therefore, adjustment of zero balance and stylus pressure can be easily and rapidly accomplished.

(TONEARM SECTION)

25 HEAD SHELL (See Fig.3- 25 , Fig.4)

Insert the head shell in the end of the tonearm, and secure firmly by turning the locking nut of the tonearm in the direction of the arrow, as shown in the picture. Be sure to connect the lead wires to the cartridge terminals according to the instructions included with the cartridge. The cartridge should be inserted in the head shell so that the spacing between the stylus tip and the plug is 52mm (2-1/16") as shown in the picture.

26 LOCKING NUT (See Fig.3- 26)

27 ANTI-SKATING FORCE DEVICE (See Fig.3- 27 , Fig.5)

Skating force is that frictional force caused by contact between the tip of the stylus and the record groove, and is applied to the stylus as a side pressure depending upon the relationship of the geometrical position of the tonearm.

This force results in an unbalance of the contact pressure between the stylus tip and each groove wall of the record, an increase of distortion a deterioration of the performance, a decrease of separation characteristics and abnormal wear of the stylus tip and the record grooves. For this reason, it is necessary to compensate this skating force.

The anti-skating force mechanism performs this compensation function. The quantity of anti-skating force is in proportion to the stylus pressure and, therefore, it should be adjusted according to the stylus pressure. Turn the adjustment knob, as shown in the picture, to the same number as stylus pressure scale indicates.

28 BALANCE WEIGHT (See Fig.3- 28 , Fig.5)

This balance weight is especially designed for easy adjustment of zero balance.

In addition, all functions are built-in on the upside of the tonearm such as anti-skating force control and stylus pressure control, therefore, operation is easy. Install the balance weight, which is packed in the parts box, on the rear of the tonearm.

By turning the stylus pressure knob to the arrow, as shown in the picture, adjust the zero balance. (that is floating the tonearm free.) After adjustment, pull the outside of the stylus pressure knob in the direction of the arrow, then the scale will be reset automatically to the zero position.

Adjust the stylus pressure by turning the stylus pressure knob to the arrow in the picture according to the stylus pressure of the cartridge which you use.

If the cartridge weight is beyond 9.5g, use the auxiliary weight, then the tonearm accepts any cartridge whose weight is from 9 to 15.5g.

29 ARM BASE (See Fig.2- 29)

If it is necessary to adjust the height of the tonearm, loosen two screws and move the tonearm up or down.

30 CUEING LEVER (See Fig.3- 30)

After separating the tonearm from the arm rest, and then moving the cueing lever toward **A**  position (as shown in the picture), the tonearm will raise. Hold the tonearm and place the tip of the stylus above the groove of the record from which you desire to play. When the cueing lever is moved to the **B**  position, the tone arm will descend slowly and the performance will begin.

31 ARM LIFT (See Fig.3- 31)

32 ARM REST (See Fig.3- 32)

33 ARM PANEL (See Fig.3- 33)

SPECIFICATIONS

(TURNTABLE SECTION)

Type	Direct drive player system
Turntable platter	Aluminium die-cast; 35cm (13-25/32") diameter 320 kg-cm ² (109.5 lb-in ²) inertial moment, 2 kg (4.4 lb) weight
Turntable speeds	33-1/3 and 45 r.p.m.
Motor	20 - 15 poles ultra low-speed electronically commutated brushless DC motor
Power supply	AC 120V 60Hz,
Power change method	4W
Speed change method	Electronic change
Variable pitch control	Individual adjustment by variable resistor, 10% adjustment range
Wow and flutter	0.03% WRMS
Rumble	-50 dB (DIN A) -70 dB (DIN B)
Build-up time	1/2 rotation at 33-1/3 r.p.m.
Dimensions	51.0 x 39.0 x 19.5 cm (W x D x H) (20-1/16" x 15-3/8" x 7-11/16")
Weight	13.0 kg (28.7 lb) with dust cover

(TONEARM SECTION)

Type	EPA-110 Directly reading stylus pressure adjustment, static-balance type, universal head shell, anti-skating force device
Effective length	235 mm (9-1/4")
Overhang	14mm (9/16")
Tracking error angle	Within $\pm 1.75^\circ$
Stylus pressure	0 - 5 g

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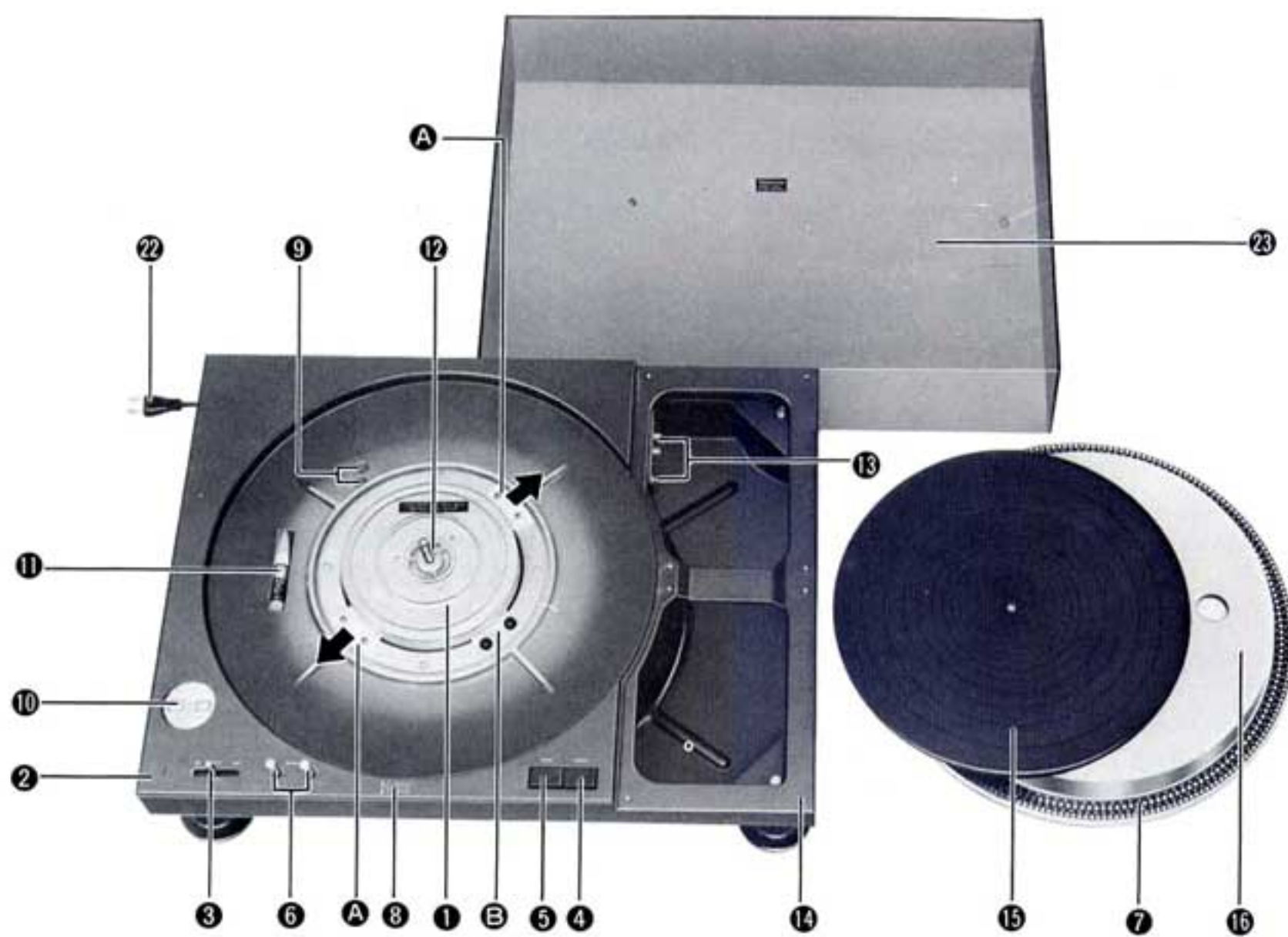


Fig 1



Fig 2

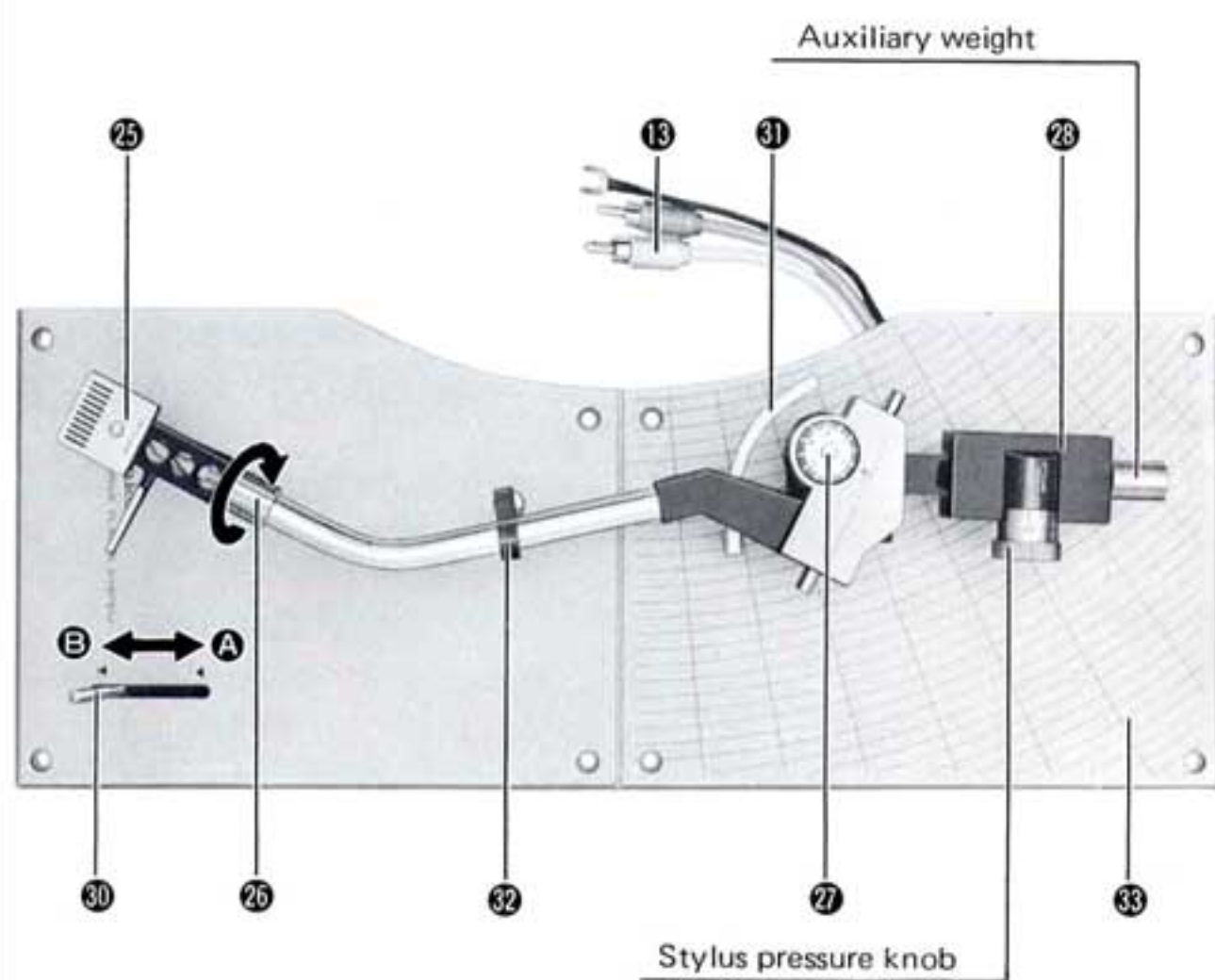


Fig 3

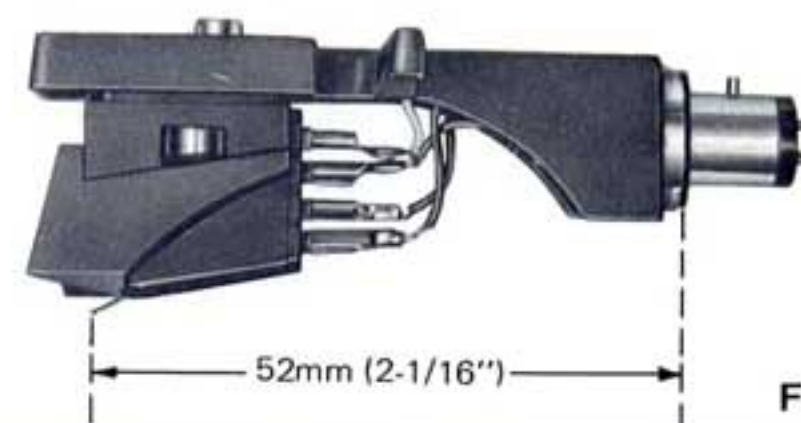


Fig 4

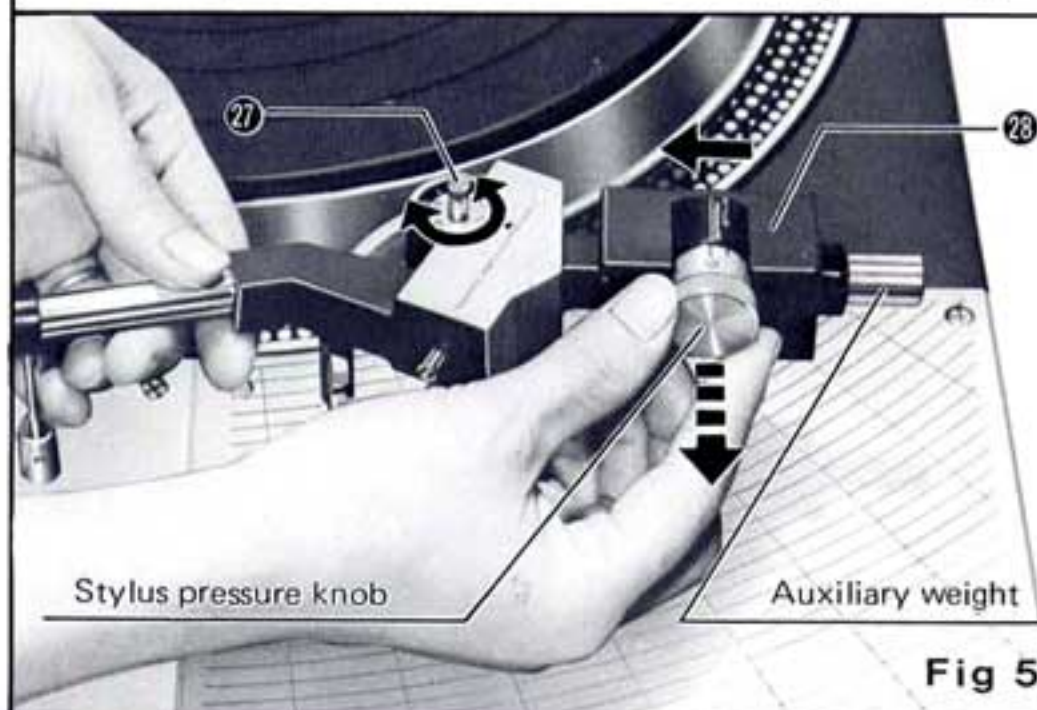


Fig 5

FEATURES

(TURNTABLE SECTION)

❶ 35 CM (13-25/32") ULTRA-LARGE DIAMETER TURNTABLE PLATER

35cm (13-25/32") ultra-large diameter, and 2kg (4.4 lb) heavy weight turntable platter has an inertial moment of 320 kg-cm² (109.5 lb-in²) and the turntable platter has been dynamically balanced.

Around the turntable platter are strobo marks which are used to check its speed.

❷ DIRECT DRIVE MOTOR

There is no "wow" or "flutter" caused by transmission mechanism. There is no vibration because this motor has no high-speed rotation mechanism. The rumble is extremely low.

❸ ELECTRONIC COMMUTATOR BRUSHLESS DC MOTOR

The DC motor is not affected by fluctuations of the power supply frequency. Starting rotation power is large, with complete stability of speed reached within one-half rotation at 33-1/3 r.p.m. Since there is no electro-magnetic hum, the signal to noise ratio (rumble) is excellent. And, because the motor includes an electronic commutator, starting is perfectly accurate. There is, therefore, no speed instability or brush deterioration as is often noted in brush commutators, no pulse noise generated by brush sparking and no sound caused by rubbing of brushes.

❹ ROTATION OF THE TURNTABLE PLATTER CAN BE STOPPED AT ANY TIME

This is a feature which is not found in players which have speed reduction and transmissions devices such as a belt or idler.

If such stopping is attempted on ordinary players, the belt or idler will soon deteriorate and efficiency soon becomes poor. In this player system, such stopping causes no problem other than a slight increase of the motor current, which is not really a problem.

❺ ELECTRONIC STABILIZATION CONTROL

Because this set includes special circuitry to stabilize the speed electrically, speed stability is extremely good.

❻ ELECTRICAL SPEED CHANGE

There is no mechanism to change the position of the belt or idler. There is, therefore, no "wow" or unwanted speed change.

❼ NO EFFECT FROM FLUCTUATIONS OF POWER SUPPLY FREQUENCY OR VOLTAGE

Since the motor is the DC type, the rotation speed does not depend on the power supply frequency. And, because a DC-stabilizer is used, the set is not affected by changes of the power supply voltage, even if the fluctuation is large.

❽ SEMI-PERMANENT HIGH PERFORMANCE

Unlike previous players, there is no reduction or transmission mechanism, such as a belt or idler.

The motor rotates the turntable platter directly, at an ultra-low speed. Wear of parts is therefore, reduced to the extreme minimum and high-performance efficiency can be maintained semi-permanently.

❾ POWER CONSUMPTION IS 1/100TH THAT OF ORDINARY MOTORS

Motor power consumption is only 0.1W, which is less than 1/100th that of a conventional AC motor. (There is a power consumption of about 4W, in addition to the drive, on other electronic circuitry).

(TONEARM SECTION)

❶ DETACHABLE ARM PANEL

Arm panel can be detached by unscrewing just in case you might decide to change the tonearm.

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By a smooth rack-and-pinion type movement, the balance weight can be adjusted easily. After adjusting the balance, pull the outside of the stylus pressure knob outward, and the scale will be reset automatically to the zero position. Now you can add the amount of stylus pressure you desire by directly reading the scale.

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PLACEMENT OF PLAYER

- ❶ Use the player system in a stable and horizontal position, where there is little or no vibration.
- ❷ Use the player system as far away from the speakers as possible and isolate the player system from sound radiation from them.
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AUXILIARY PARTS

- | | |
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| • DUST COVER.....❶ | • SPECIAL OIL❶ |
| • PICKUP CORDS.....❶ | • SCREWS (for cartridge) ❹ |
| • (—) TIP DRIVER.....❶ | • AUXILIARY WEIGHT..❶ |
| • ADAPTOR❶ | |

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