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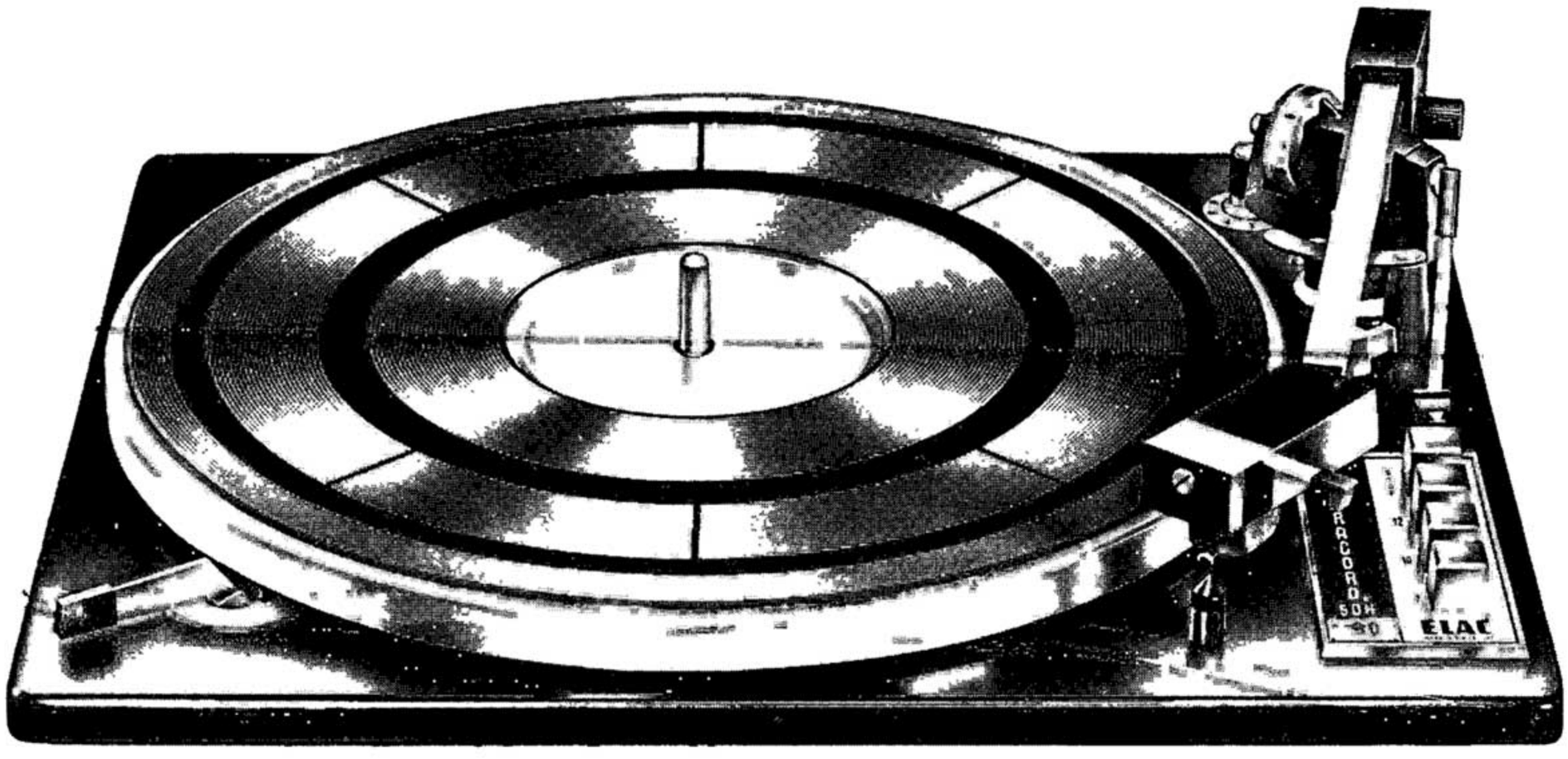
Operating Instructions
Miracord 50 H

ELAC

AUTOMATIC TURNTABLE
AND RECORD CHANGER



INTRODUCTION

Please read this Instruction Book

carefully. It will insure many hours

of fine performance from your Studio Series

Automatic Turntable and Record Changer.

Should further information be required,

it is suggested that you call on

your local MIRACORD dealer, or write to

BENJAMIN ELECTRONIC SOUND CORP.,

40 Smith Street, Farmingdale, N.Y. 11735

Made in West Germany

by ELECTROACUSTIC GmbH · Kiel

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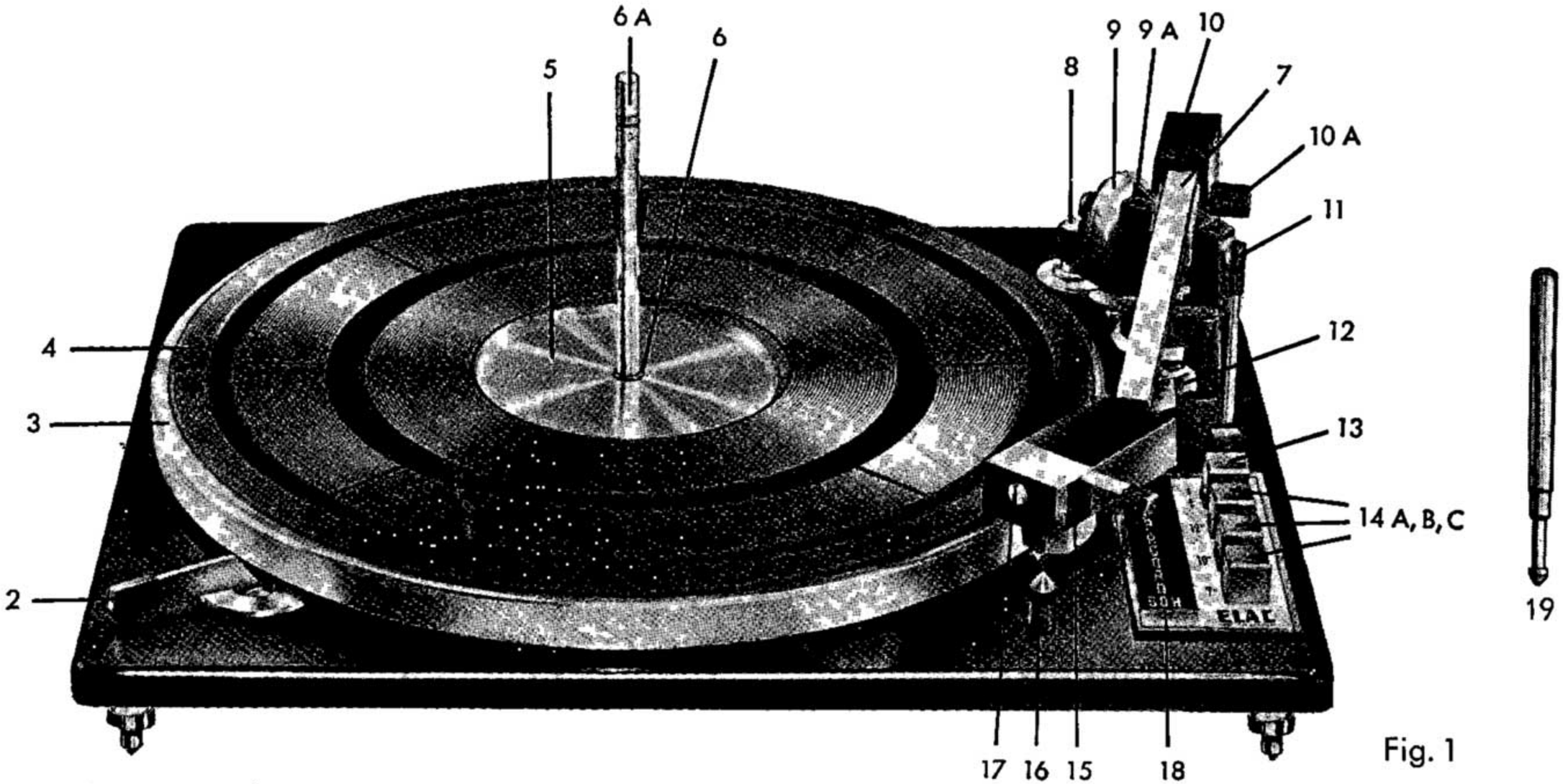

Fig. 1

DESIGN AND OPERATING FEATURES

1. Mounting Assemblies (Spring, cushion and support)
2. Speed Change Lever
3. Turntable
4. Mat
5. Center Plate
6. Spindle Shaft with "Magic Wand" Spindle SA 73 (6 A)
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9. Tracking force adjustment dial

9 A. Balance Hairline Indicator

10. Counterbalance

10 A. Counterbalance vernier adjustment

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19. Single-play Spindle

1. INSTALLING YOUR MIRACORD PW-50 H

1.1

You may support your MIRACORD on a standard base or mounting board designed for this purpose or make your own support in a cabinet or drawer. If you use the standard base or mounting board, the record changer can be easily mounted by slowly lowering the chassis and inserting the springs (in their sound and shock absorbing rubber supports) in the four holes provided. If you make a special support, follow the instructions on the enclosed template (17 452 9280), which gives you the exact size of the cutout necessary as well as the dimensions of the mounting holes.

1.1.1

After placing the mechanism in its support, make sure the record changer is free to move on its springs in all directions. Check the push-button operation to see that no parts bind on the wood board or base and that the lead wires are not drawn so tightly as to restrict the movement of the changer.

1.1.2

If it is necessary to transport or ship your MIRACORD after it has been installed, secure it to the base or mounting board by means of two round head wood screws through the two holes at the front and rear of the chassis plate which are exposed when the turntable is removed. Fibre washers should be used under the head of the screw so that the chassis plate is not marred. Fasten the arm by means of the arm lock (Fig. 1, 12). **The heavy cast turntable should always be packed separately and should never be shipped on the mechanism.**

1.2 Puting on the Turntable

Before putting on the turntable, move lever 21 with its associated spring (Fig. 2) sideways since it may be close to the cone bearing on which the turntable will be mounted. Make sure that the turntable is not placed inadvertently on the idler wheel 22. To do this, place the tone arm on its support and move the movable idler wheel inwards before putting on the turntable. Place the turntable on the cone of the turntable shaft. Do this carefully and gently, since otherwise the ball bearing might be damaged. Finally, put on the rubber mat making sure that the center hole is firmly pressed around the center raised portion of the heavy turntable. Center the metal cover plate on the rubber mat.

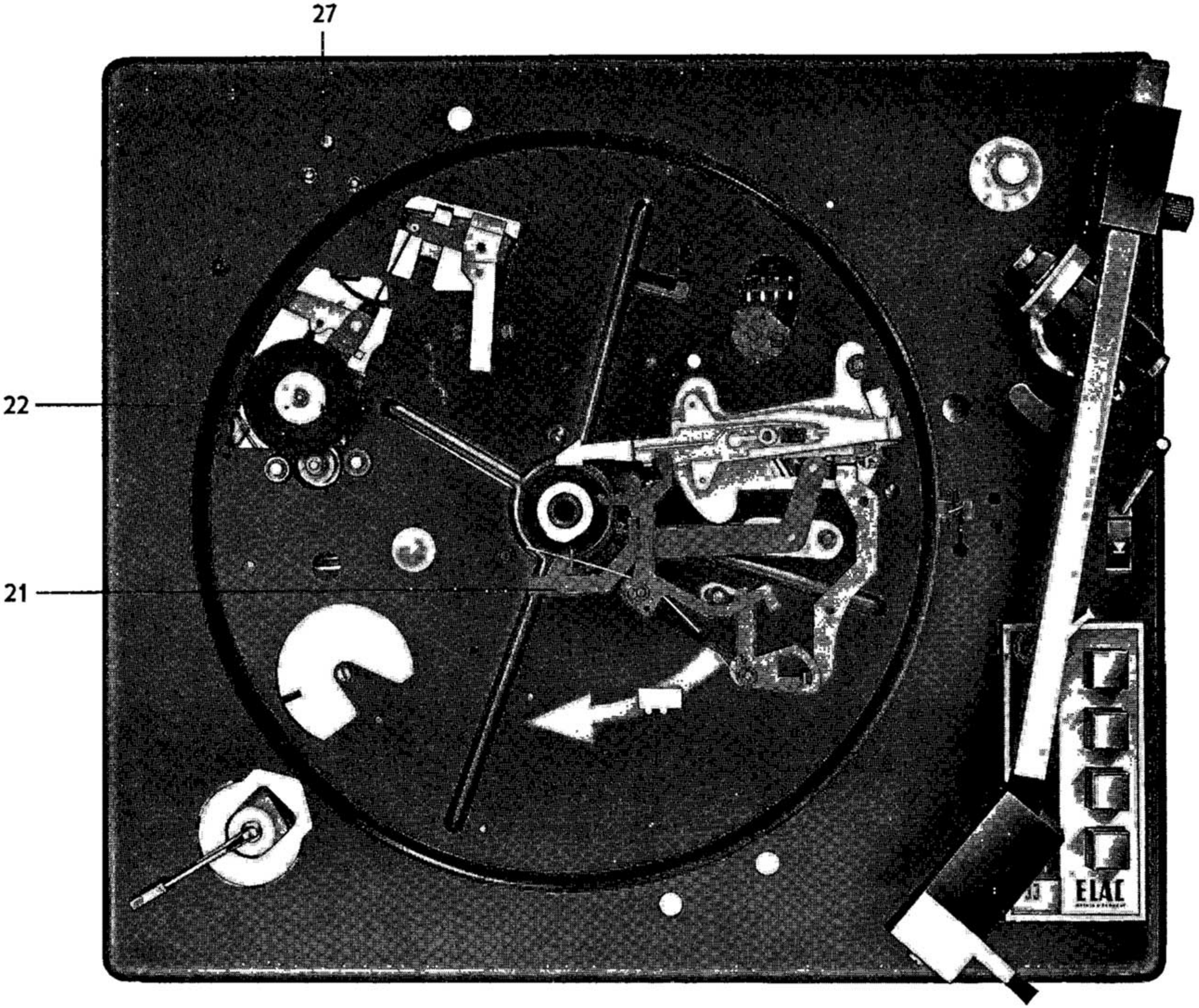


Fig. 2

1.3 Installing your Cartridge

1.3.1

The cartridge insert (Fig. 3) contains a slide with two threaded holes for mounting the cartridge. Some cartridges have their own bracket or holder which may be mounted directly to the hole in the slide. If no special bracket is provided the cartridge may be mounted directly to the slide. The holes in the slide are designed to take any cartridge with standard mounting dimensions.

In mounting the cartridge be sure the stylus protrudes sufficiently below the lower edge of the cartridge insert to properly play either one or a stack of records. If the small spacers supplied do not give enough clearance, use the large spacers enclosed with the cartridge mounting hardware. The final position of the stylus (forward or backward) will be adjusted later.

1.3.2

The respective ground wires for each channel are connected to the terminals marked "0" adjacent to the R and L terminals.

The cartridge insert has four wires and requires no separate or fifth wire connected to ground. The proper connection of these four wires is shown in Fig. 4 (as shown with ELAC STS 344 cartridge). You can connect the ,wires for either mono or stereo reproduction as shown. For stereo reproduction the R (right) channel should be connected to the R (right) pin on your cartridge and similarly the L (left channel) should be connected. For mono reproduction the two channels of a stereo cartridge may be connected in parallel.

1.3.3

After connecting the cartridge to the wire leads in the cartridge insert, it may be inserted in the tone arm. This is simply done by engaging the protruding catch on the tone arm in the groove of the insert and pushing the insert to the rear as far as it will go. When inserting the cartridge insert, be sure to hold it in a horizontal position.

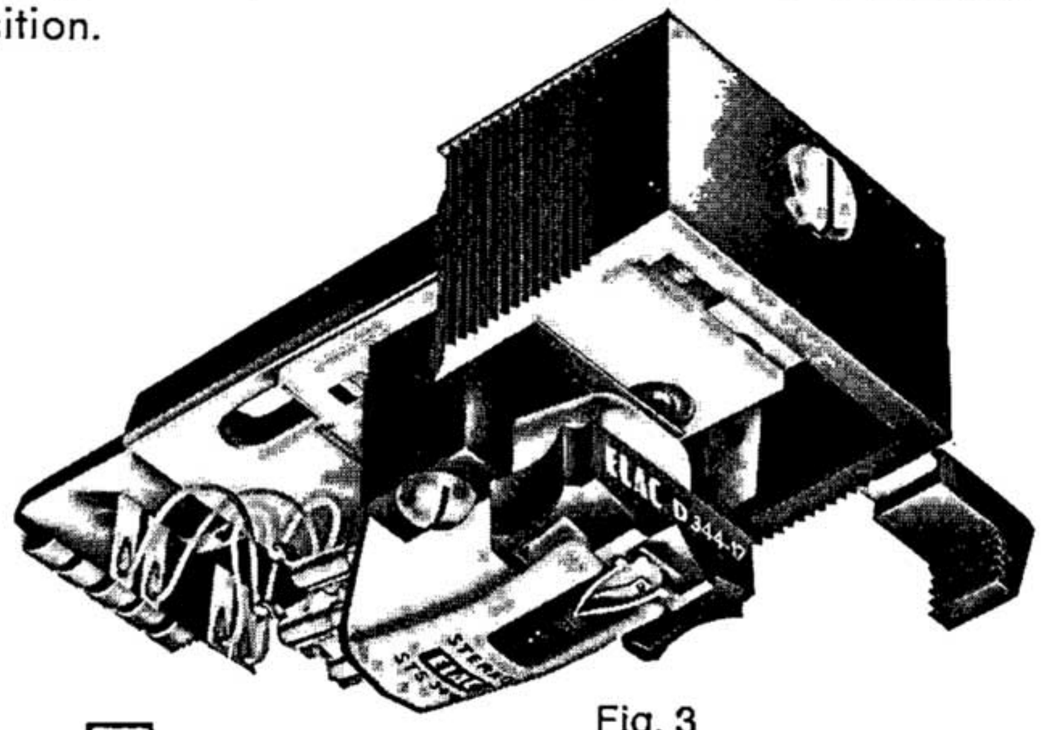


Fig. 3
STS 344-17 mounted in TAS-2 (CR-50) cartridge insert

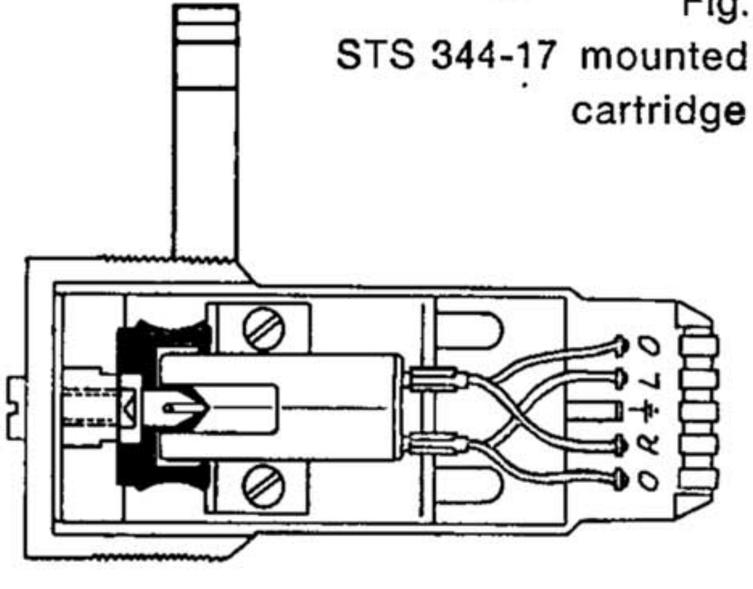


Fig. 4

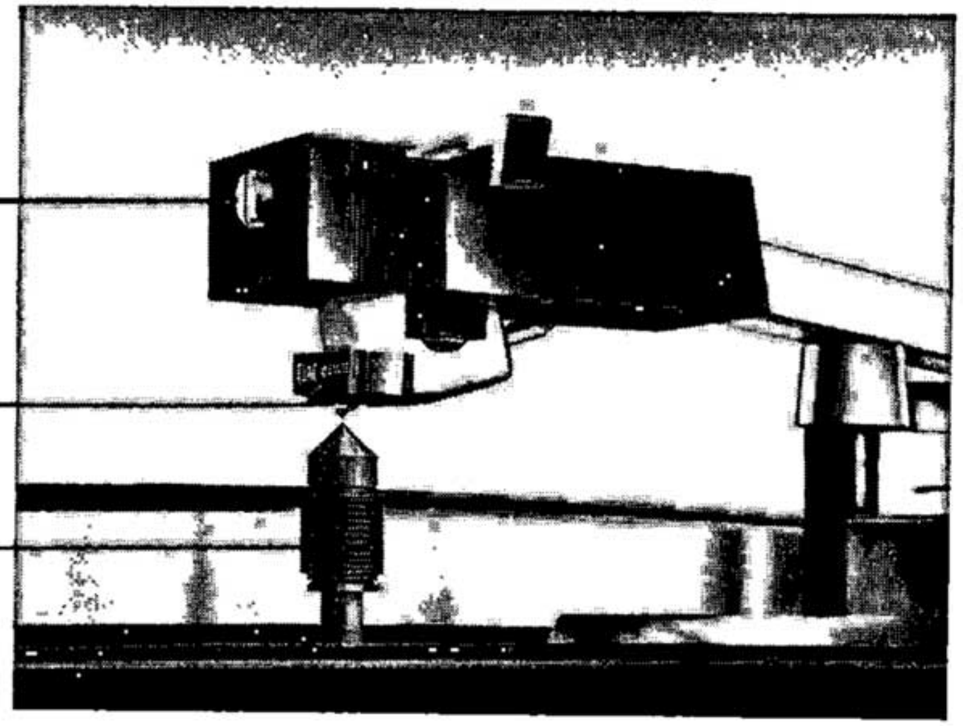


Fig. 5
View from right side

1.3.4

Lateral adjustment of the cartridge

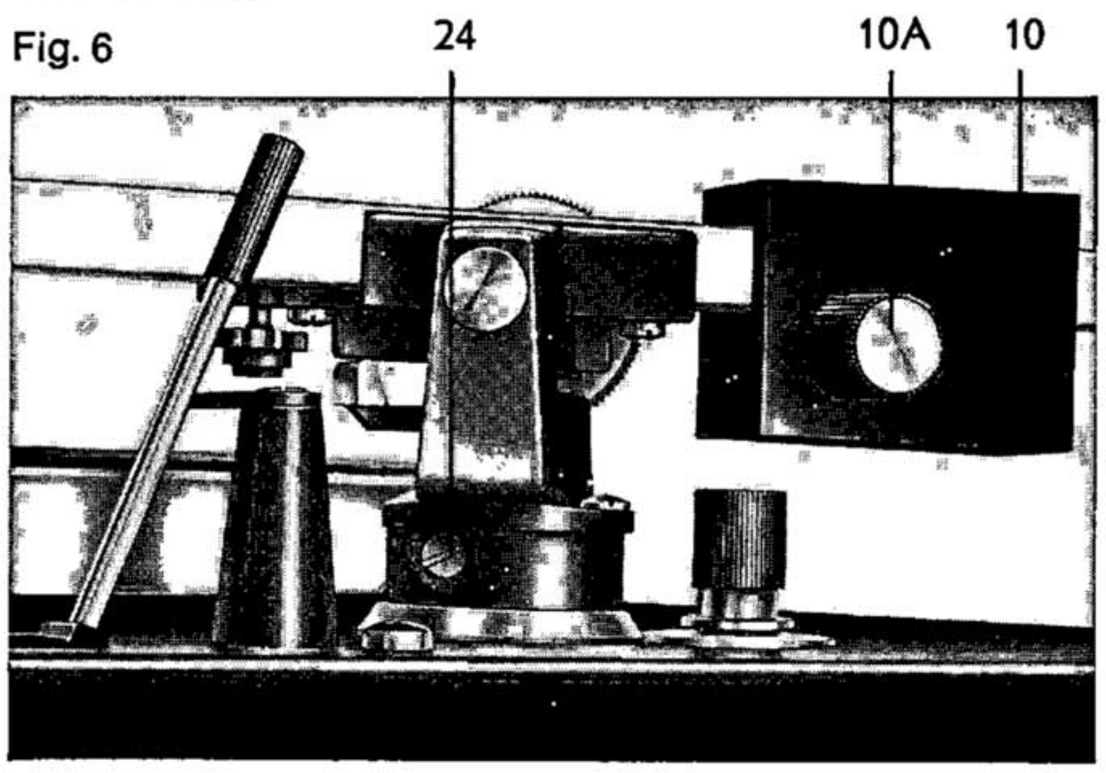
There is an optimum position of the stylus with respect to the tone arm for every mechanism. If this optimum position is not used, tracking error will increase considerably. The MIRACORD PW-50 H is provided with a gauge which enables you to adjust the position of the cartridge after it has been installed and set it in the optimum position. This is done by means of the adjusting screw in the front of the cartridge insert (Fig. 5-17) and the gauge located on the chàssis plate under the cartridge insert (Fig. 5-16). Turning the screw clockwise will move the entire cartridge forward — counter-clockwise turns will move it backward. Set the position by lifting the gauge up to the stylus S itself (Fig. 5). If the stylus does not line up with the tip of the gauge, turn the adjusting screw until it is exactly in position. (For further description and explanation of this feature see Par. 3.3).

1.4 Installing the Counterbalance and Balancing the Arm

1.4.1

The counterbalance (Fig. 6-10) is installed by sliding it on to the rear of the tone arm as far as it will go. Then move it further by using the vernier adjusting knob 10 A (Fig. 6). The adjusting knob on the counterbalance should be on the right side and should be used to move the counterbalance forward and backward for either fine or coarse adjustments. The ratio of knob turns relative to movement of the counterbalance is designed to provide extremely accurate and precise adjustment of the arm balance.

Fig. 6



1.4.2

Arm Lock

The arm may be locked in position for transport or to prevent accidental damage. A positive locked device is provided with clear indication of locking (red) and the unlocked (green) positions (Fig. 7-12). If by chance an operating button is depressed while the arm is locked, a unique mechanism prevents damage to the mechanism while the changer automatically recycles and stops.

1.4.3

Balancing the arm (Arm lock [Fig. 7-12] in open [green] position)

After the cartridge has been installed and finally positioned, and the counterbalance has been inserted as above, you are ready to balance the arm. This is done with the stylus force adjustment dial (Fig. 7-9) set at zero. The hairline marking on the arm bearing (Fig. 7-9A) must now be lined up with the zero mark. Move the counterbalance backward or forward by means of the adjusting knob until the tone arm is in perfect balance.

1.5 Setting Tracking Force

This force, which is the pressure the stylus exerts on the record, is easily set on your MIRACORD PW-50 H by means of a direct reading dial (Fig. 8-9). It can be set for a minimum of ½ gram to 6 grams. Select the gram pressure recommended by the cartridge manufacturer. Then set the tracking force desired by turning the dial to the proper reading opposite the hairline on the bearing (Fig. 8-9A). (The literature supplied with your cartridge will give the recommended force.)

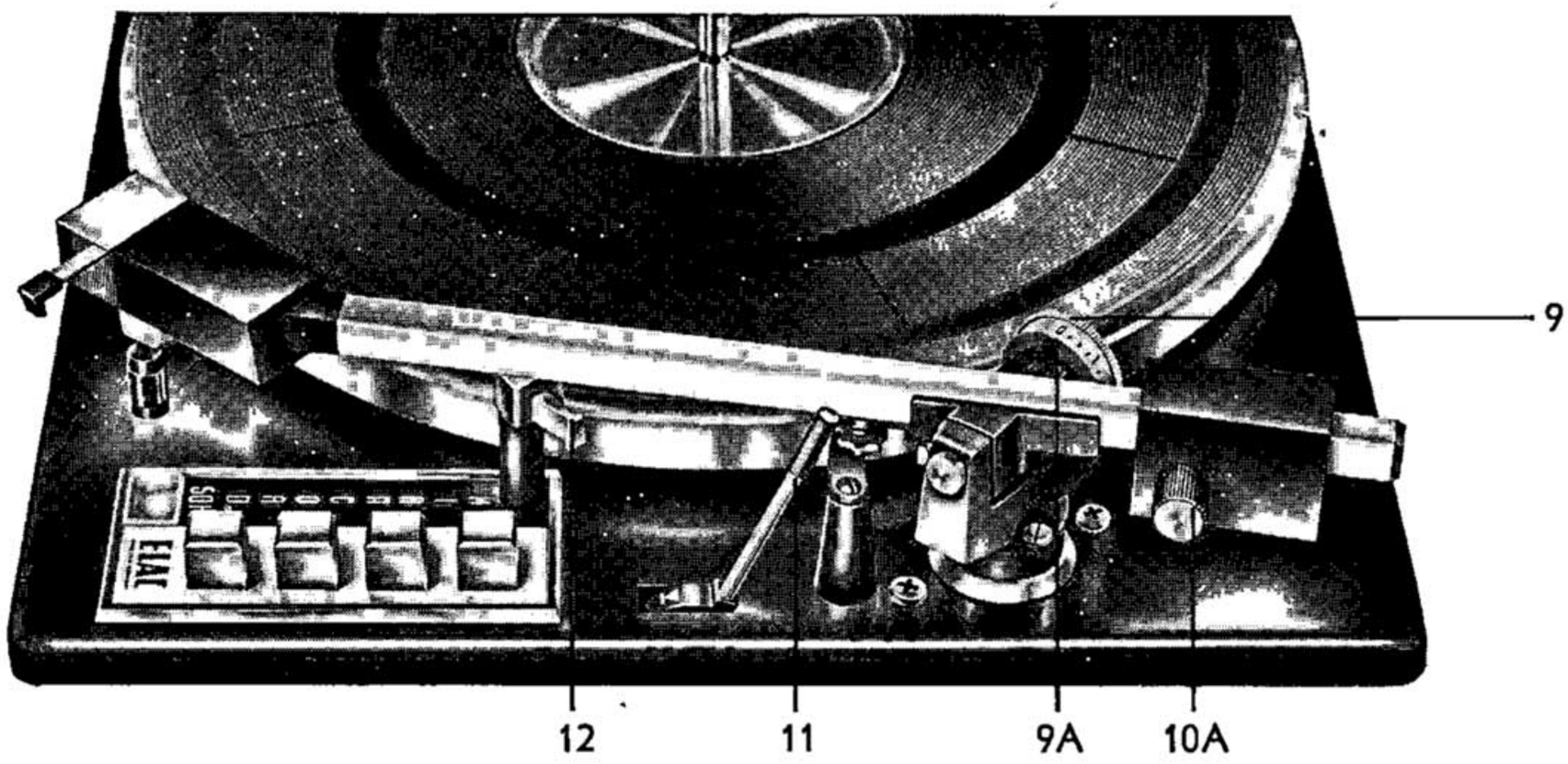


Fig. 7

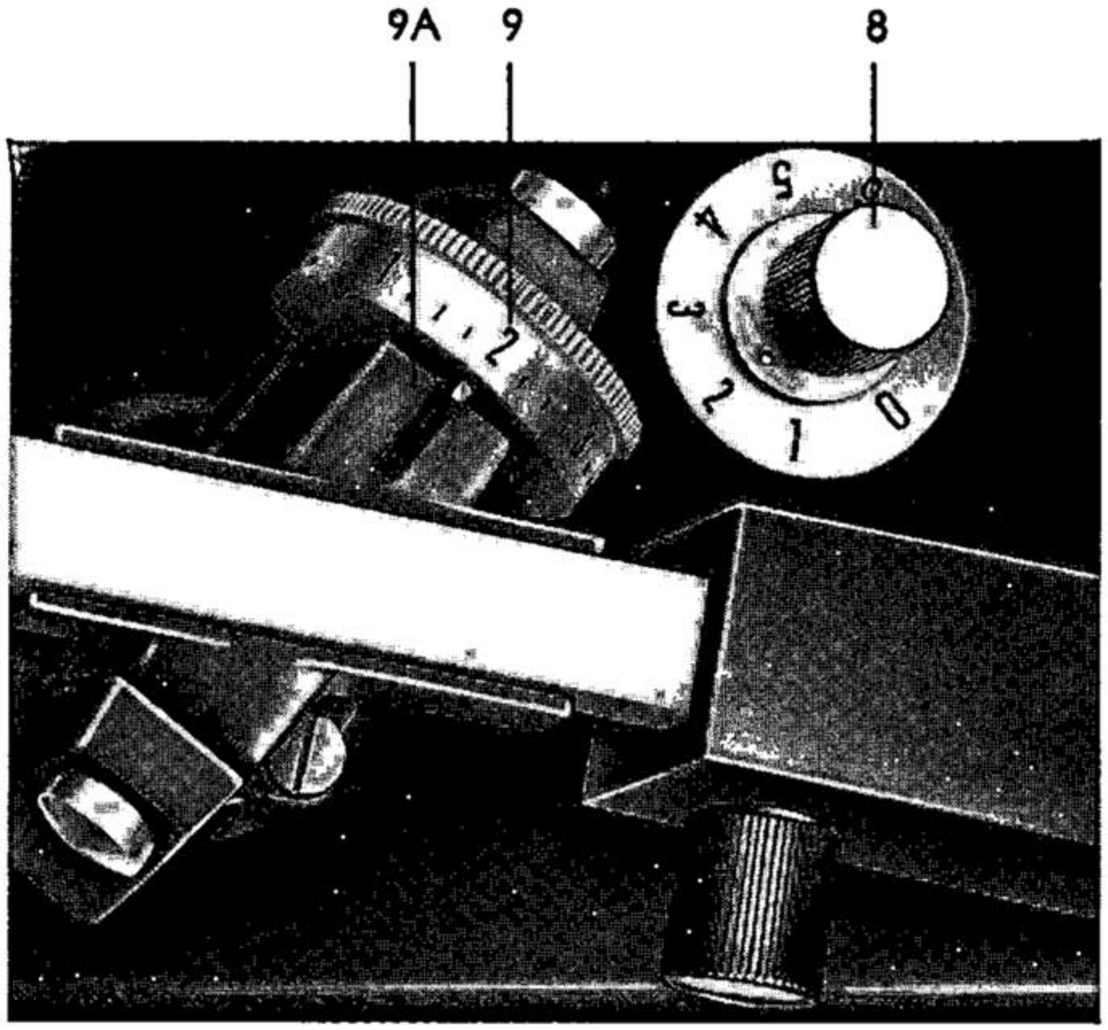


Fig. 8

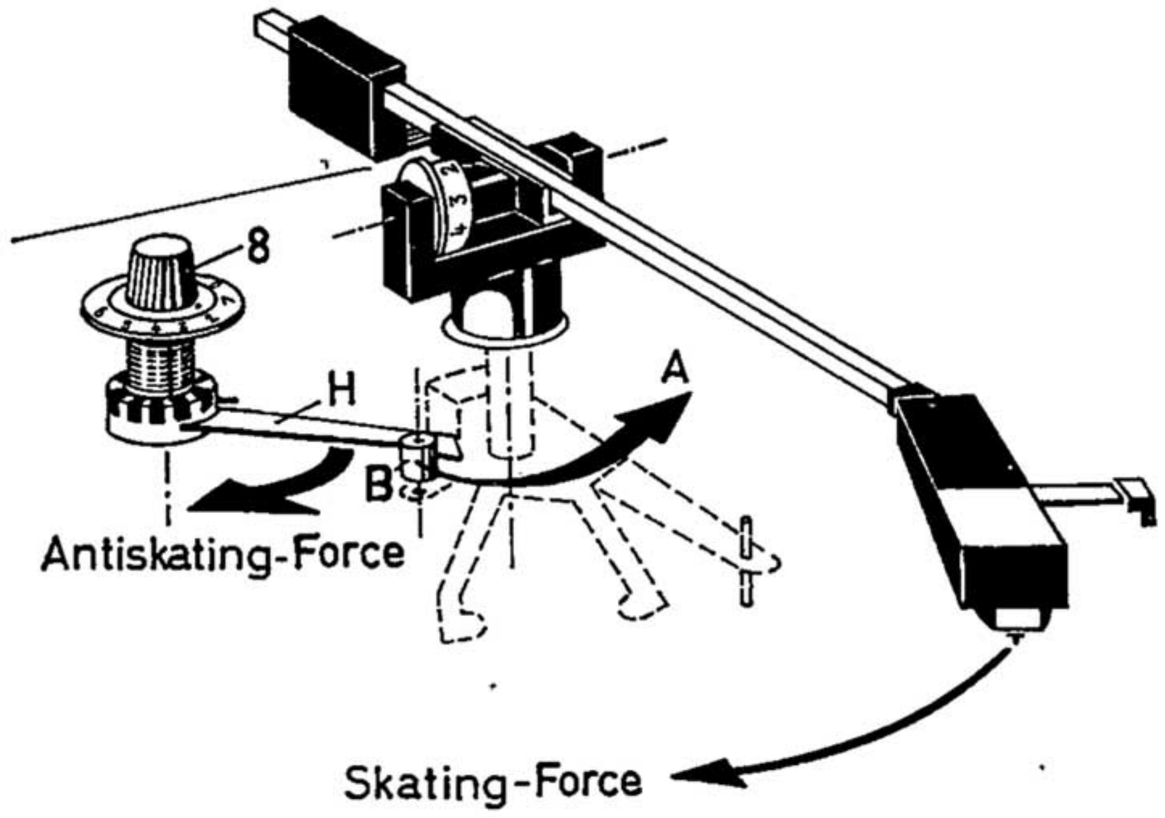


Fig. 9

1.6 Anti-Skating Mechanism

Your MIRACORD PW-50 H incorporates a device (Fig. 8-8) to counteract the side force exerted on the stylus as it moves toward the center of the record. While this force is extremely small, it can cause the needle to "skate" toward the center of the record at very low stylus forces, or introduce a very slight distortion due to unequal stylus pressure on the wall of the record groove.

1.6.1

Fig. 9 shows the operation of the anti-skating mechanism. The skating force exerted on the stylus is balanced by a counteracting force A. The value of the counteracting force can be varied by tightening a rotary spring with the aid of knob 8 and is transferred via a lever H to the bolt B on the tone arm shaft.

1.6.2

As revealed by thorough tests the force exerted on the stylus toward the center depends on the value of the stylus force. The anti-skating mechanism is designed in

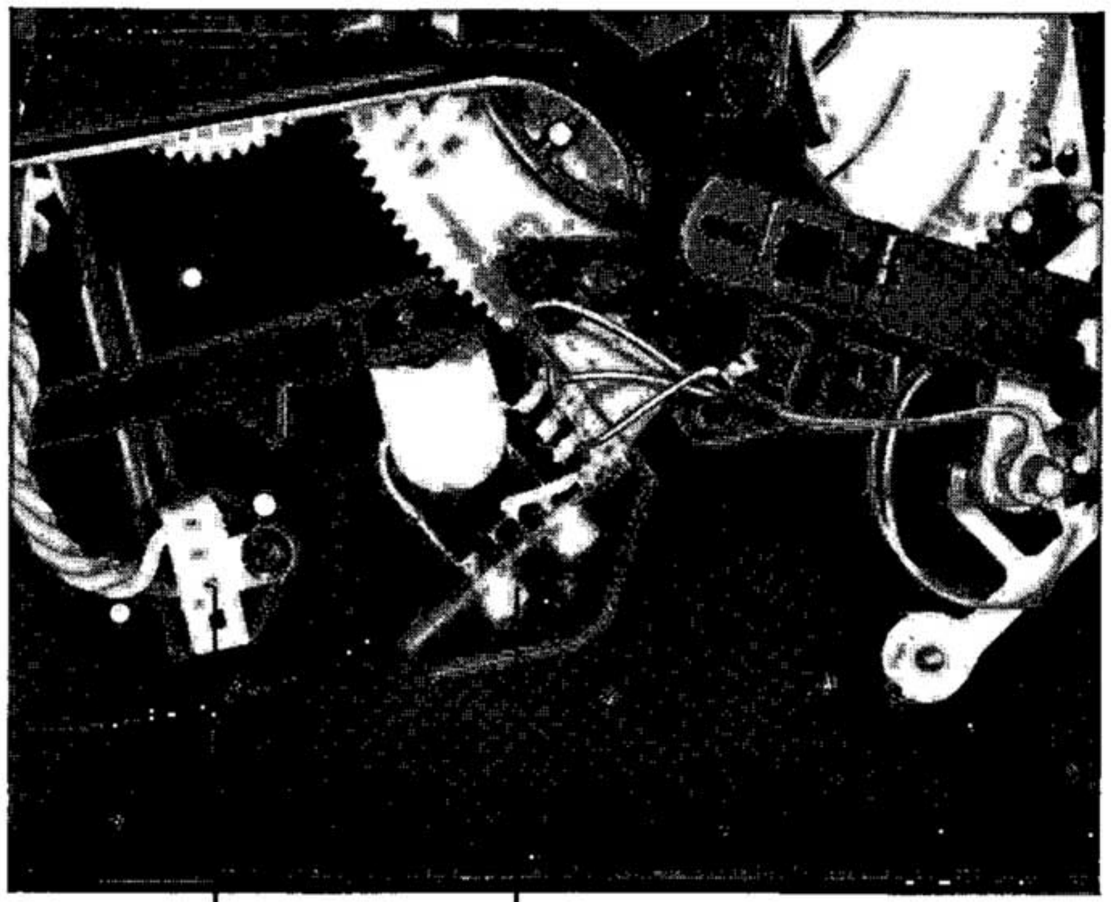


Fig. 10

such a way that the skating force is compensated if the anti-skating knob (Fig. 8-8) is adjusted to the exact setting of the stylus force. For example: With 2 g stylus force set red point on knob 8 to position 2.

1.6.3

After determining the proper setting of the anti-skating dial, adjust knob (Fig. 8-8) to this setting. The anti-skating mechanism will automatically compensate for the force acting on the stylus toward the center and insure optimum sound reproduction.

1.7 Audio Connections

A dual audio lead is packed with your MIRACORD PW-50 H. It contains plugs at each end — one pair plugs into the sockets under the chassis (Fig. 10-25) and the other ends are plugged into the phono input sockets of your amplifier or receiver. Observe polarity by using the same color plug for both the left channel of the changer (L) and the left channel of the amplifier, and similarly for the right channel (R). If more than one set of input sockets are provided, consult your amplifier instruction book for the proper pair to use.

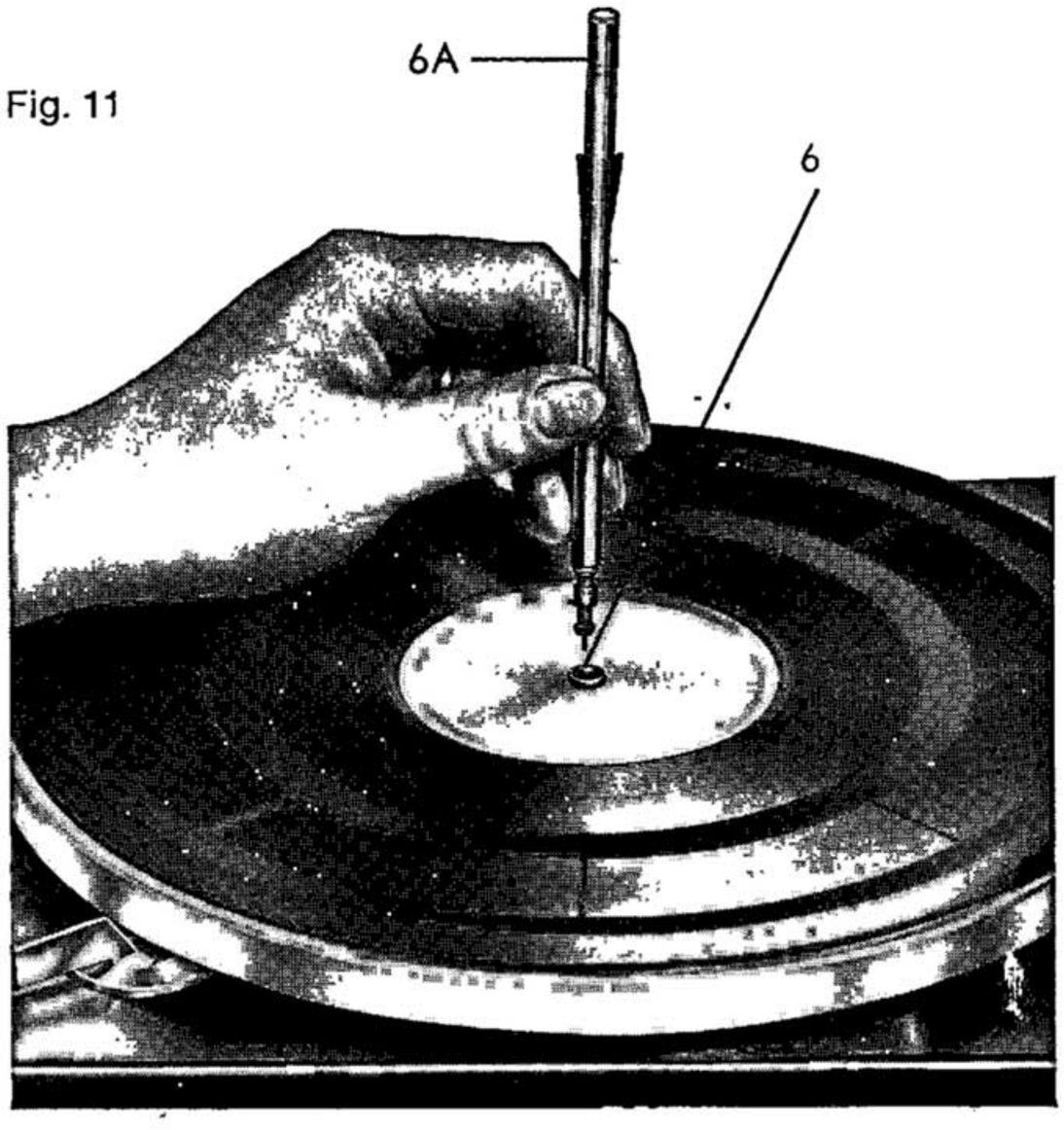
1.8 Line Cord

Your A.C. line cord is provided with a special quick disconnect socket. It will only connect one way. Plug the white socket on the end of the line cord into the matching socket under the record changer chassis (Fig. 10-26). The MIRACORD PW-50 H is now ready for operation and may be plugged into the A.C. outlet.
The unit is wired for 110—125 V AC 60 Cycles.

CAUTION:

The heavy outer rotor of the hysteresis motor is secured for shipment by 2 plastic wedges. Be sure to remove these wedges before plugging the unit into the power socket.

Fig. 11



2.1

Although there are four different modes of operating your MIRACORD, depressing a single button is all that is necessary most of the time. These four modes are described in detail below, but before playing a record set the speed as described below, and release the arm by switching the arm lock to the green position.

2.1.1 Speed

Your MIRACORD PW-50 H is designed to operate at all four speeds (78, 45, 33⅓, and 16⅔ RPM). The speed is set with the lever at the extreme left (Fig. 1-2) and the speed selected is shown in the illuminated window (Fig. 1-18). It will only be illuminated when power is applied to the motor.

Note: The hysteresis motor of the MIRACORD PW-50 H is designed to provide extremely accurate rotation of the turntable at the speed selected regardless of the line voltage, so that no further adjustment for speed is necessary.

2.2 Mode 1. Record Changer Operation

Use long "Magic Wand" Spindle (6 A) and insert the pointed end in the hollow center (6) of the turntable (Fig. 11-6). Automatic play is possible for either 7", 10" or 12" records. Up to 10 records of the same size can be played in sequence. (For automatic play of

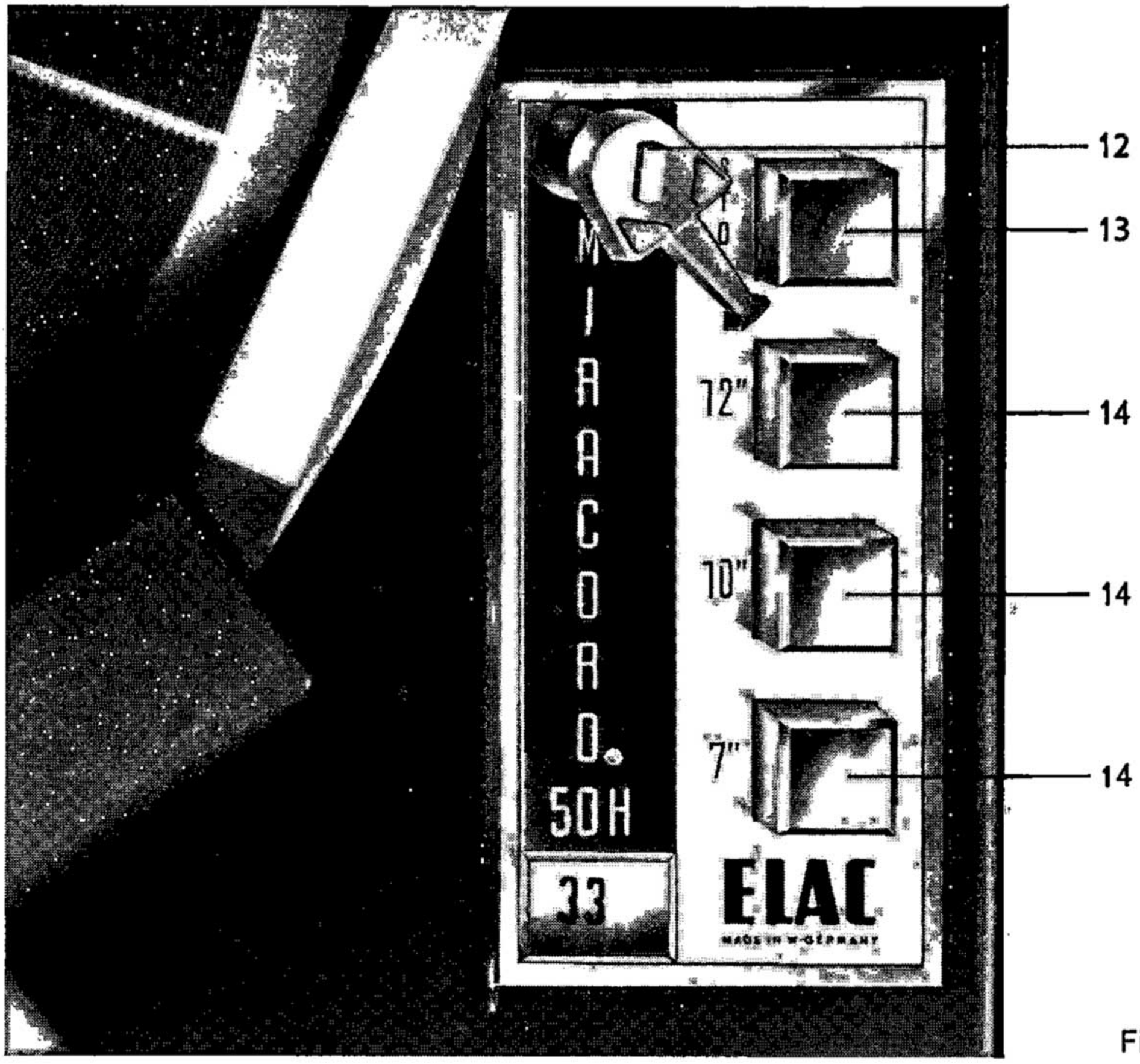


Fig. 12

7" records with a large center hole, use accessory automatic spindle SA-383 [Fig. 13].) To start the record changer, lightly depress the button (Fig. 12-14) corresponding to the diameter of the records being played (i.e. for 12" records use the button marked 12). After the button is pushed, the turntable will start turning, the first record will drop, and the arm will lift and lower the stylus gently onto the lead-in groove of the record. At the conclusion of the first record the arm will lift and return to the rest, the next record will drop, and the cycle will be repeated. At the conclusion of the last record in the stack, the arm will lift and return to the rest and the mechanism will shut off, while a brake (Fig. 2-27) is applied to stop the turntable.

Note: To add records while the record changer is in automatic operation, be sure that at least one record is still on the "Magic Wand" Spindle. If there is no record on the spindle and an additional record is placed on the arm to the spindle, the mechanism will drop this record but will not play it. It will be necessary to depress the appropriate button again to play this record.

2.2.1

To remove the records after the last record has dropped and has been played, remove the "Magic Wand" Spindle from the shaft by lifting it up vertically and then remove the stack of records. This prevents undue wear on the center hole of the records.

2.3 Mode 2. Automatic Single Record Operation

Use short spindle (Fig. 1-19) (inserted point down). An individual record can be played automatically (without handling the arm) by using the small spindle and placing the record on the turntable, then lightly depress the button corresponding to the size of the record. The turntable will start rotating, the arm will lift, and the stylus will be gently lowered onto the lead-in groove of the record. At the conclusion of the record the arm will lift and return to the arm rest. The mechanism will shut off and the brake will be actuated.

2.4 Mode 3: Manual Operation — Single Record

Use short spindle (point down). Manual operation of the MIRACORD PW-50 H ist a very simple operation. Place the record on the short spindle as in 2.3 above, then lift the arm by means of the finger-grip and place it on the desired groove of the record. As soon as the arm is lifted the turntable will start rotating and the unit is ready to play. At the end of the record the arm will lift and return to rest and the mechanism will shut off, and the brake will be actuated.

Note: As in all modes of operation, the arm may be lifted off the record at any time and returned to the rest or placed on another groove of the record without disturbing the mechanism.

2.5 Mode 4: Automatic Repeat Mode — Single Record

Use short spindle **(inserted point up).** A record of any size can be played over and over again by inserting the short spindle with the point up. The mechanism must be started by depressing the button corresponding to the size of the record being played. At the conclusion of the record the arm will lift and return to the start of the record and replay it. This will continue until the "Stop" button is depressed or the arm is lifted off the record manually and returned to the rest.

3.1 Cueing Device (Lever Fig. 7-11)

Frequently it is desired to play a specific band of a record. This can be very simply accomplished with the Cueing Device (Fig. 7-11). This mechanism consists of a platform which supports the tone arm and stylus a short distance above the record when the Cueing Lever is moved forward (▼). When the arm is moved by hand to the desired position so that the stylus is directly over the band to be played, moving the lever back will lower the stylus very slowly and gently onto the record (▼). The arm can be lifted off the arm rest either by depressing the appropriate button (Par. 2.3) or by hand (Par. 2.4). The lever can be moved forward at any time, and will lift the stylus off the record and hold it at that point until moved by hand or by moving the lever back again. Do not move the cueing lever forward when the arm is locked.

3.2 Stylus Position Adjustment

A very slight difference in the position of the stylus with respect to the tone arm bearing can result in a large increase in the error introduced in tracking. This is due to the fact that the arm is in a different position with respect to the record at the beginning of the record and at the end of the record. There is an optimum position which is determined by the geometry of the mechanism, depending on the length of the tone arm, the distance from the center of the record, etc. This optimum position has been carefully calculated for your MIRACORD PW-50 H. A gauge (Fig. 5-16) has been provided locating the exact point the stylus should be at for this optimum setting. To provide a means of moving the cartridge and stylus back and forth, a special mechanism has been built into the cartridge insert. The adjusting screw (Fig. 5-17). moves the cartridge forward and backward laterally along the arm. When the stylus is positioned directly above the gauge, it is in its optimum position.

3.3 Stop Button (Fig. 12-13).

You will notice a fourth button on the chassis directly above the three operating buttons which are marked with the record size. This button is marked "Stop" and is used to interrupt the playing of a record or stack of records at any time. When depressing during play, it will lift the arm off the record and return it to the arm rest and shut off the mechanism. To resume play, you can depress the stop button again, and the record already on the turntable will be replayed. To drop the next record, it is necessary to depress the appropriate operating button.

3.4 The "Magic Wand" Spindle

This type of spindle was originally introduced by MIRACORD in 1952 and has now been adopted by other record changer manufacturers. The original MIRACORD

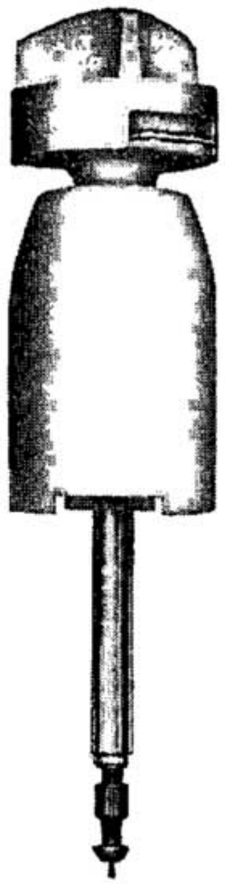


Fig. 13
SA 383 (optional equipment)

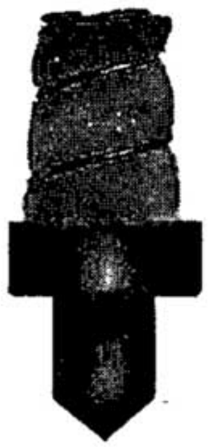


Fig. 14

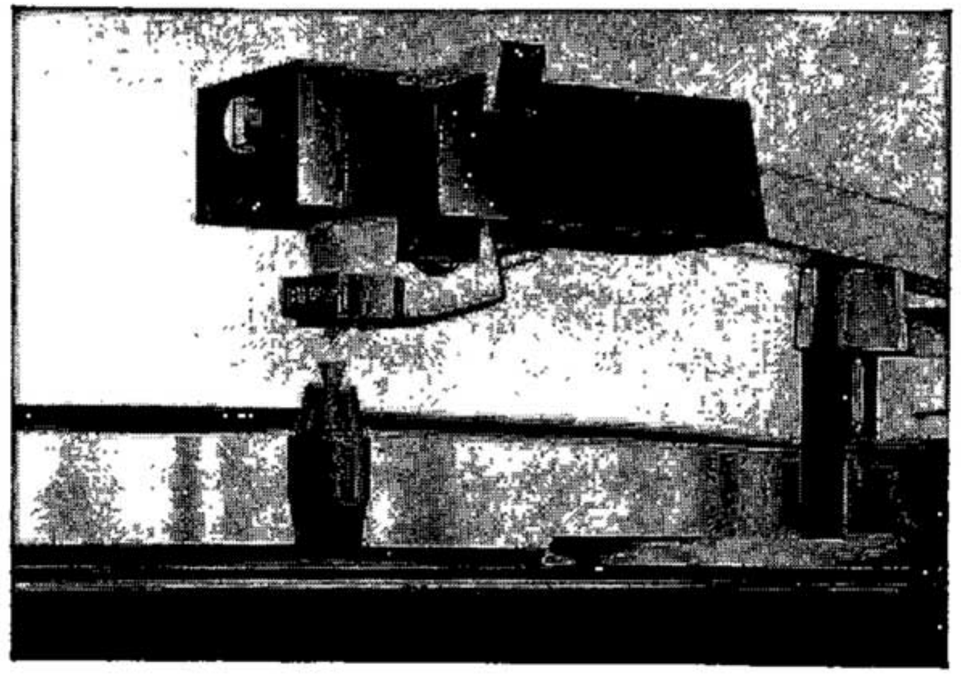


Fig. 15

spindle, trade-marked as the "Magic Wand" has been continually improved and your Fig. 1-19 spindle in the PW-50 H is the latest and most advanced version of this unique mechanism. It supports your records in three places and provides for the most gentle dropping action ever devised for a record changer.

3.5 Freely Supported Chassis Suspension

The chassis rests on four soft cone shaped springs with plastic cups (Fig. 14) which have the important function of preventing acoustic feedback between the loudspeakers and the cartridge. The springs are packed with foam rubber in order to cancel oscillations caused by vibrations. The copper-plated spring, seated close to the push-buttons underneath the chassis is stronger than the three others so that the chassis rests in horizontal position. When shipping the unit, the installed chassis must be secured by additional screws to prevent it from moving sideways. Further details are to be found in the enclosed mounting board template.

3.6 Stylus Brush

The brush supplied as a standard accessory is used for the automatic removal of dust from the stylus. After the fitting and adjustment of the stylus as described in Section 1.33, the brush is placed on the setting gauge 16 and the latter is drawn out of the chassis plate just far enough to permit the stylus tip to be lowered into the soft bristles when the arm comes to rest. Note that if the brush is set too high, damage to the stylus may result.

4. MAINTENANCE

4.1

Your Studio Series MIRACORD is designed by the factory to require practically no lubrication during its life. Neither the motor nor turntable bearings should be lubricated, since they are provided with proper long life lubricants at the factory. Under extraordinary conditions where your unit has been subjected to extremes of dust and dryness, it is suggested that you have your local MIRACORD dealer service the unit.

Great care should be used any time the turntable is lifted off the mechanism and the idler wheel (Fig. 2—22) is exposed, to prevent oil or grease from reaching the rubber rim or inside rim of the turntable. If the idler wheel is noisy for any reason, a small drop of light machine oil may be carefully placed on the idler wheel bearing. Be sure to wipe off any excess oil from the rim with alcohol.

4.2

The needle of the pickup cartridge must always be free of dust. Diamond styli can be used for about 1000 hours of playing. However, despite their hardness, they abrade gradually. Worn needles impair sound reproduction and damage record grooves. The needle should be replaced in due time. A defective needle should be replaced immediately.

5. SERVICE

Should your MIRACORD PW-50 H require servicing, it is suggested that you call on your local MIRACORD dealer or ask him for the address of the nearest MIRACORD Service Station. If shipping the unit is required it is important to use the original carton with the corresponding inserts to avoid shipping damage. The following hints are applicable for minor repairs:

SYMPTON	CAUSE	REMEDY
Turntable does not start, when 7", 10" or 12" button is depressed.	1. No voltage at motor.	See that unit is plugged into live AC outlet.
	2. Line switch defective.	Replace line switch.
	3. Motor defective.	Replace motor.
Arm skips across record.	Defective stylus.	Replace stylus.
Distorted sound.	1. Defective stylus.	Replace stylus.
	2. Improper setting of stylus force.	Consult manufacturer's recommendation for correct stylus force and adjust unit to this value. See Par. 2.5.
Uneven speed.	1. Oil or grease on idler tire.	Clean rim turntable and idler tire with alcohol.
	2. Defective idler tire.	Replace idler wheel.
No sound from speaker.	1. Defective cartridge.	Replace cartridge.
	2. Defective output leads.	Replace output leads.
	3. Improper connection to amplifier or preamp.	Check input leads to amplifier or preamp making sure that proper electrical connection is achieved.

5.1 Stylus Landing Position on Lead-in Groove of Record

This adjustment has already been made at the factory with an ELAC cartridge. If you have installed a different type of cartridge, a readjustment may be necessary. Connect the unit to A.C. power source (see Par. 1.8), set the desired speed of the turntable with the speed change lever (Fig. 1-2) and place a 7", 10" or 12" record on the turntable. Release the arm lock (Fig. 11-12) by switching to the green position. Start the record changer by depressing the corresponding start button (7", 10" or 12"). The turntable will start to rotate, the tone arm will lift off its support and swing inwards and lower itself into the starting groove of the record. If necessary, correct the landing point of the stylus by turning slotted screw (24) (Fig. 6) on the tone arm socket. Turning screw clockwise moves the landing point outward, counter-clockwise — inward.

6. ACCESSORIES

It is recommended that the fine Magnetic Stereo Cartridges made by ELAC be used with your Studio Series Record Changer.

STEREOTWIN STS 344-17 (Fig. 16)
COMPATIBLE MONO/STEREO with extra diamond stylus for twice the performance life.

For playing monophonic records as well as stereo, the 344 is without peer. This compatibly-designed, moving magnet cartridge features a .7 mil diamond stylus for high vertical and horizontal compliance with side separation across the entire audio spectrum.

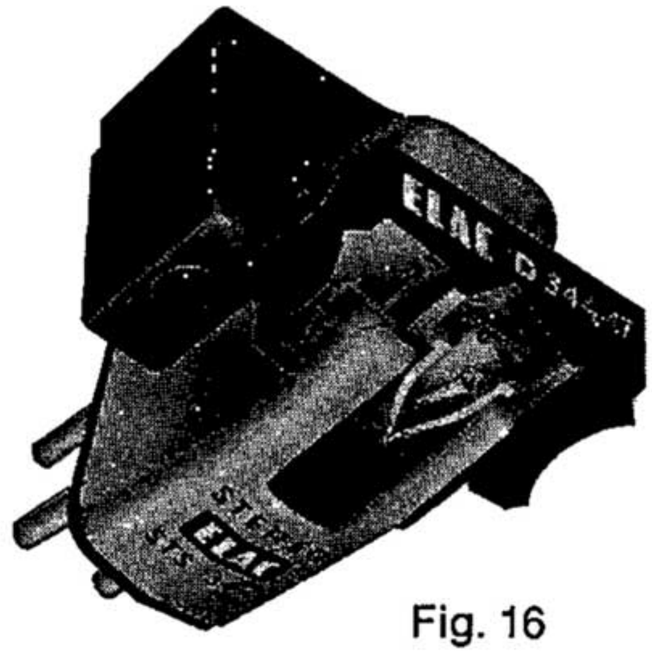


Fig. 16

STS 344-E — Cartridge with elliptical needle.

STEREOTWIN STS 444-12
STEREO PROFESSIONAL

The new 444 is a professional moving magnet cartridge for stereophonic records only. A .5 mil diamond stylus and featherweight high compliance tracking gives this Stereotwin an unmatched performance profile for the audiophile who demands maximum performance every time.

STS 444-E — Cartridge with elliptical needle.

SPECIFICATIONS

	ELAC STS 444-12	ELAC STS 444-E	ELAC STS 344-17	ELAC STS 344-E
Color of Cartridge	Chrome	Chrome	white	white
Stylus	ELAC D 444-12	ELAC D 444-E	ELAC D 344-17	ELAC D 344-E
Color of needle	black	black	white	white
Radius af Diamond	.5 mil	.25/.8 mil (biradial)	.7 mil	.25/.8 mil (biradial)
Frequency Range	10...24 000 cps	10...24 000 cps	20...22 000 cps	20...22 000 cps
Stylus Force	0.75...1.5 gms	0.75...1.5 gms	1...2 gms	1...2 gms
Sensitivity on each Channel at 1 000 cps	10 mV/10 cm/s	10 mV/10 cm/s	10 mV/10 cm/s	10 mV/10 cm/s
Sensitivity Difference on both Channels at 1 000 cps	< 1.5 db	< 1.5 db	< 1.5 db	< 1.5 db
Cross-Talk-Damping at 1 000 cps at 10 000 cps	26 db 17 db	26 db 17 db	24 db	24 db
Inductance per Channel	320 mh	320 mh	320 mh	320 mh
Recommended Terminal Impedance	47 kohm	47 kohm	47 kohm	47 kohm
Trackability *		at 0.75 g/100 cps > 3.8 cm/s		at 1 g/100 cps > 3.8 cm/s
Static Compliance	33 · 10^{-6} cm/dyne	33 · 10^{-6} cm/dyne	25 · 10^{-6} cm/dyne	25 · 10^{-6} cm/dyne
Vertical Tracking Angle	15°	15°	15°	15°

* Trackability means that with the indicated stylus force and frequency velocities exceeding 3.8 cm/s correspondent to 60 µm can still be trackend accurately. However, such high amplitudes are not existing with stereo records.

Fig. 17

MIRACORD 50 H on Power Control Base PCB-50 WX

Fig. 18

MIRACORD 50 H on Recessed Base RB-2A with Dust Cover DC-3

7. WARRANTY

The rear cover of the Instruction Book also contains the card for your one year warranty for your MIRACORD Automatic Turntable and Record Changer. This card must be mailed within 15 days of purchase by the original owner.