



**ELAC**

Instruction Book for  
MIRACORD 10 and 10 H  
Studio Series  
Automatic Turntable  
and Record Changer

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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., 97-03 43rd Ave., Corona 68, N. Y.

Made in Western Germany  
by ELECTROACUSTIC GmbH · Kiel

### What you should know about:

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## UNPACKING

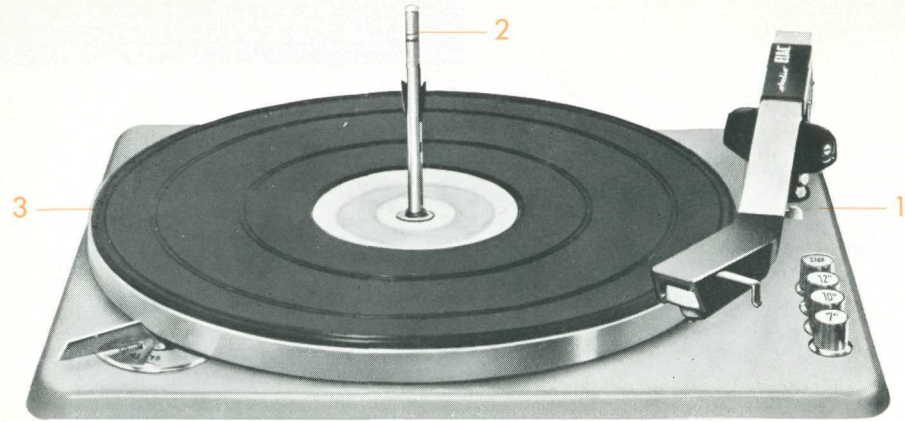
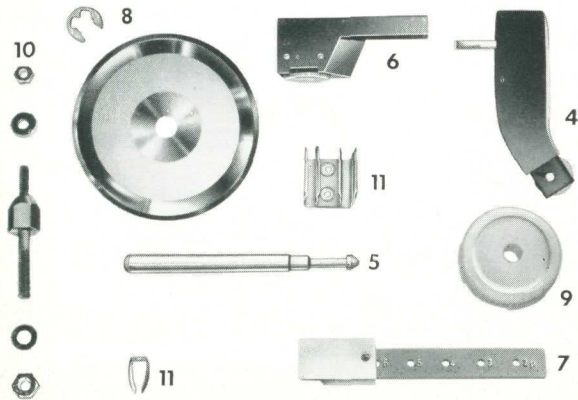


Fig. 1



- 1 Record changer (chassis)
- 2 Record spindle
- 3 Cast turntable
- 4 Plug-in head
- 5 Single-play spindle
- 6 Counterbalance
- 7 Calibrating weight
- 8 Cover plate with washer
- 9 Adapter for 7" records
- 10 Mounting material for record changer
- 11 Clips for mounting parts (2), (5) and (9)

Please unpack and set down the chassis carefully in order to avoid damage to any components of the unit. The original packing should include the following parts shown in Fig. 1.

The chassis (1) with changing mechanism, driving motor and tone arm in final assembly is to be found in the bottom part of the carton. In a special insert above you will find the heavy cast turntable (3) with rubber mat, the plug-in head (4), the magic wand spindle (2) and single-play spindle (5), the tone arm counterbalance (6), the calibrating weight (7), the cover plate (8) with lock washer, the adapter (9) as well as the fastening parts for the chassis (10) and spindles (11).

With MIRACORD 10 H the heavy outer rotor of the hysteresis motor is secured for transport by small wooden blocks which must be removed before putting the changer into operation. With MIRACORD 10, wooden blocks also secure the motor, which must be removed.



## PUTTING THE UNIT INTO OPERATION

### 2.1 Mounting the chassis

The wooden mounting board, on which the chassis will be mounted, should have a thickness of  $\frac{1}{2}$ " to  $\frac{3}{4}$ ". For cutting out the space required for the record changer and drilling the holes for fastening the chassis, use the template included with this manual. All dimensions and check measures should be strictly followed. The edges of the cutout must be perfectly smooth. Having completed the mounting board, insert the chassis from above so that the cylindrical lugs of the chassis springs (5) rest in the holes (K). (See enclosed template). Make sure that the record changer is free to move in all directions on the springs and that there are no protruding

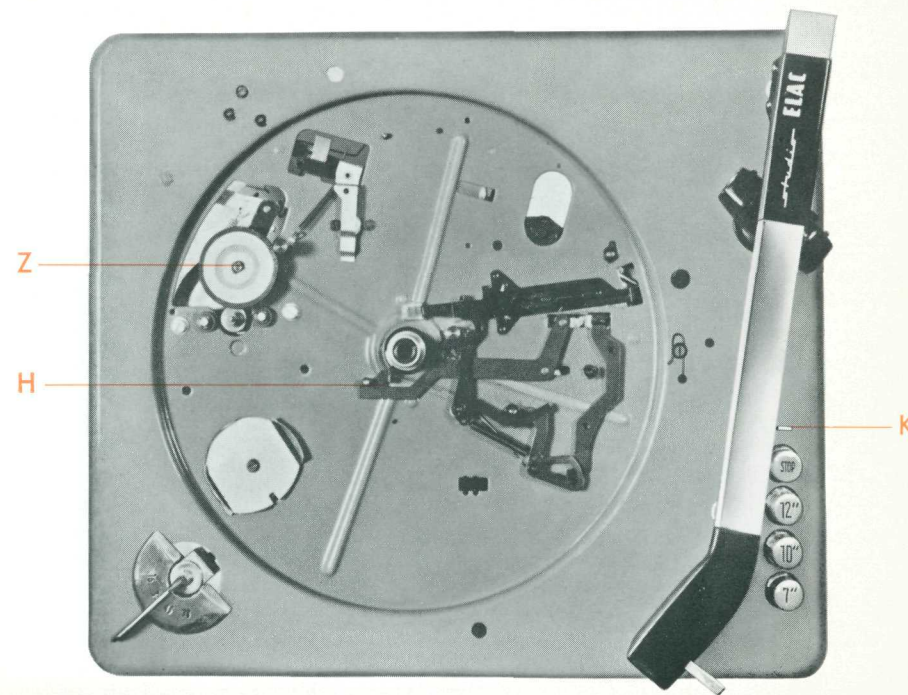
parts which are likely to hamper the motion of the mechanism and the lead wires. If the record changer will be shipped after installation it will be necessary to secure the chassis to the mounting board by means of the two bolts furnished (H) which fit in corresponding holes (L). Put one fibre washer (3) on each of the threaded bolts (H) and secure with the self-locking hexagon nuts (4). The turntable should always be shipped separate from the changer to prevent damage. Before putting the unit into operation after shipment, make sure that the threaded bolts (H) are removed.

### 2.2 Putting on the turntable (Fig. 2)

After transporting, place the turntable on the cone of the turntable axis. Do this carefully and gently, since otherwise the ball bearing might be damaged. Before putting on the turntable, move lever H with a wire spring (Fig. 2), seated next to the cone sideways, and make sure that the

turntable is not placed inadvertently on the idler wheel (Z). To do this, place the tone arm on its support and direct the movable idler wheel inwards before putting on the turntable. Finally put on the rubber mat and the center cover plate and lock with washer (part 8 in Fig. 1).

Fig. 2



### 2.3 Connection to line

A 2-wire mains lead is connected to the provided bakelite insulator (part L in Fig. 13). The unit is only prepared for connection to 220/240 volts AC, 50 cps.

### 2.4 Plug-in head and connection of the cartridge

Plug tone arm head TAK 4 (part A in Fig. 3) in the tone arm (B). Fasten it to the tone arm by turning the knurled nut (C). Push the counterbalance (D) in the same manner into the rear end of the tone arm.

### 2.5 Stylus force

Now adjust the stylus force. It can be regulated optimally to a value between 2 and 6 grams. For this purpose slide the calibrating weight (Fig. 1, part 7), delivered with the unit, into the rear end of the tone arm (Fig. 4). It is calibrated in grams. Insert the calibrating weight to the desired

value and bring the tone arm into a balanced horizontal position by moving the counterbalance. Subsequently clamp counterbalance with the aid of the knurled screw C and pull out the calibrating weight.

Fig. 3

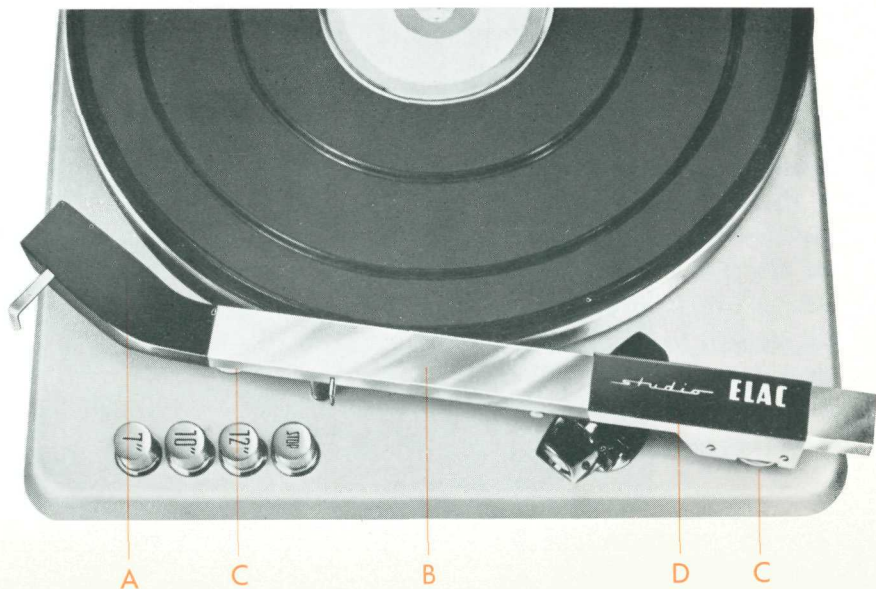


Fig. 4





## 2.6 Tone arm height and tone arm landing point (Fig. 5)

These adjustments have already been made at the factory with a cartridge, however, they may change when using a different type of cartridge. Therefore, they must be checked and, if necessary, readjusted in the following way:

a) Remove the rubber mat from the turntable and adjust the tone arm height by

means of the set screw (M) after loosening the locking nut on the setscrew by turning clockwise, the tone arm will be raised and vice versa. Adjust the tone arm height with the cartridge installed until the tip of the needle is slightly below or just touching the raised portion of the metal turntable. After this adjustment tighten the locking nut on the setscrew.

Fig. 5

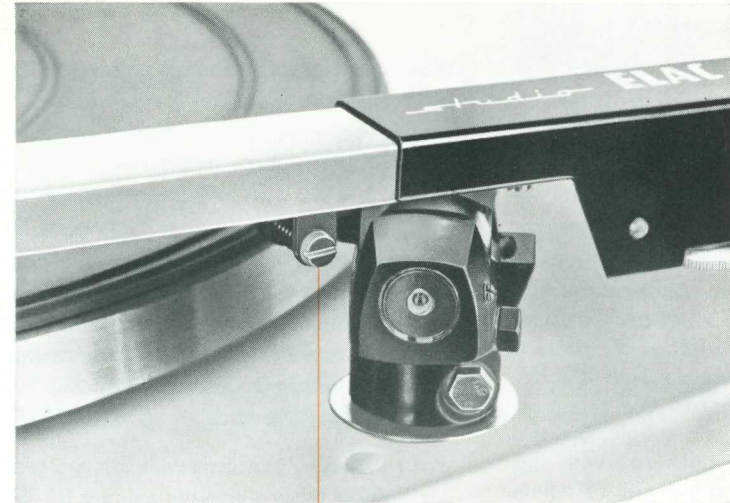


Fig. 6

b) For adjusting the landing point of the needle, place a 7", 10" or 12" record on the turntable and—after having connected the unit to line and set the desired speed on the speed selector switch—put the record changer into operation by depressing the corresponding start button (7" or 10" or 12"). Now the turntable will start running, the tone arm will raise from its support and swing inwards and lower itself according to the selected record size.

Please observe the lowering, if necessary, correct the landing point of the tone arm in the starting groove by turning the cylindrical screw (S, Fig. 6) on the side of the tone arm socket. It is only necessary to adjust the landing point for one size of record.

The unit is now ready for operation and can be connected with the pickup leads to the amplifier.

MIRACORD 10 can be used as record changer and as an automatic turntable with the speeds of 16, 33, 45 and 78 r.p.m. set by the lever on the left of the chassis. Automatic play is possible with 7", 10" and 12" diameter records. For changing records with a small center hole, use the magic wand spindle, delivered with the unit, which is to be inserted with its pointed end in the hollow turntable axis. Only records of equal diameter (that means 7" or 10" or 12" records) can be stacked on the record spindle, since the automatic control of the landing point of the stylus is regulated by actuating the corresponding start button on the right of the chassis. For this reason the unit is provided with a special start button for each record size. When depressing the button, the line switch is actuated simultaneously and the drive gear for the turntable is brought in operating position.

The maximum loading capacity of the record spindle is indicated by a colored

mark engraved at the top end. It is possible, however, to add records with the player running, provided that the total height the stack is permitted to assume has not been reached when commencing the play (up to 10 records).

For changing 7" records with a large center hole, a thick automatic spindle SA 383 can be furnished on special request, which will be inserted instead of the magic wand spindle (Fig. 11).

Depressing the stop button while a record is being played will bring the record changer or automatic player to a standstill, that means, the tone arm raises from the record, turns to its extreme right and places itself on the support. The idler wheel thereby is automatically lifted off the turntable and motor axis. When continuing the record play by actuating the start button, the next record of the stack will be released by the spindle.

### 3.1 Record changer

- a) Insert the pointed end of record spindle in the hollow turntable axis (Fig. 7).
- b) Place records on top arms (do not exceed the colored mark).
- c) Set the speed (Fig. 8).
- d) Release tone arm lock (part K in Fig. 2).
- e) Depress the start button relative to record size (Fig. 9). At the same moment the line switch is actuated and the drive switched on. Consequently, the bottom record of the stack is released, the tone arm swings inwards and lowers onto the record.
- f) Having played the first record, the next record is automatically dropped after the tone arm swings to its extreme right. The tone arm then swings inwards and lands on the new record.
- g) Having played the last record, the unit switches off automatically and the tone arm returns to its support.
- h) The MIRACORD can be stopped at any time during the play by depressing the stop button (Fig. 9). The tone arm then raises, turns to the extreme right and places itself on the support.



Fig. 7

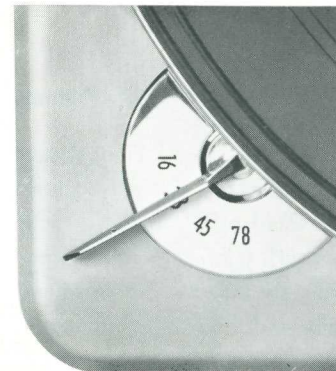


Fig. 8



Fig. 9



3.2 When using the unit as an automatic turntable, place the record on the turntable and center it by inserting the pointed end of the single-play spindle (part 5 Fig. 2). When the start button for the respective record size is depressed, the tone arm raises and moves to the starting groove of the record and then lowers. When the record has been played to finish, the arm is raised and returned to its support, the line switch shuts off and the idler wheel is disengaged. In this mode the play can also be interrupted at any time by depressing the stop button.

To play single bands or certain sections of a record, the tone arm may be lifted off its support by hand and placed gently into the desired groove. In this mode the unit will also switch off automatically and the tone arm return to its support when the record has played to completion.

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3.3 The changer will automatically keep playing if you insert the single-play spindle upside down in the hollow turntable axis. Thus by depressing the start button, the tone arm is actuated and will repeatedly play the same record. The continuous play can be interrupted by depressing the stop button.

### 3.4 Automatic shut-off

Final shut-off occurs automatically having played the last record of the stack or the single record, or by depressing the stop button. The line switch is shut off and the idler wheel lifted off the motor axis. Simultaneously a brake becomes effective which cuts down the running of the turntable.

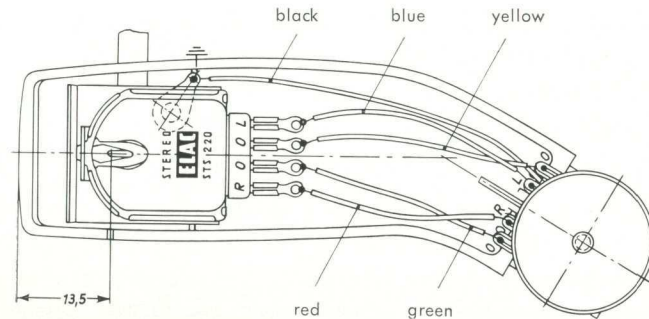
## 4. Drive

MIRACORD 10 H ist driven by a hysteresis synchronous motor with outer rotor which generates the auxiliary phase with the aid of a condenser. The rotation speed of the motor and thus the speed of the turntable is directly dependent on the line frequency. MIRACORD 10 is driven by a 4-pole single-phase asynchronous motor with short-circuit rotor and auxiliary phase, the speed of which in a wide range is not dependent on line voltage fluctuations. The self-lubricating bearings need no maintenance.

## 4.1 Connections of cartridge

The plug-in head and the tone arm lead have 4 wires and need not be connected to ground. That means, all required connections: separate connection of both channels to the amplifier inputs, connection in parallel or connection in series of the two channels can be made. When installing a pickup cartridge, observe the correct polarity of the connection lead.

Fig. 10



Right-hand channel:  
Hot conductor – red  
cold conductor – green.

Left-hand channel:  
Hot conductor – blue  
cold conductor – yellow.

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The shielding of the cartridge is connected by a black lead to ground connection in the pickup head. When using a mounting bracket, make sure this lead is on top of its bracket.

Fig. 10 illustrates the plug-in head with the installed stereo magnetic cartridge ELAC STS 220. It is also possible to mount a different type of cartridge, provided that it has standard dimensions. If its height is less than  $\frac{5}{8}$ " , the underside should be bal-

anced by spacer bolts or washers. When mounting, please note that the needle point of the cartridge is seated within the marking in the plug-in head, that means, at a distance of  $\frac{17}{32}$ " from the front edge of the plug-in head.

4.2 Having installed the cartridge, an exact adjustment of the tone arm height, stylus force and landing point according to Paragraph 2.5 and 2.6 of this Manual is necessary.

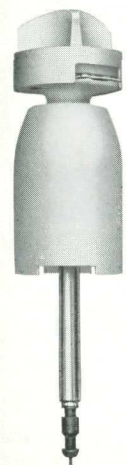


Fig. 11

#### 4.3 Large center hole records

For changing records with a large center hole, the record spindle SA 383 (Fig. 11) is required. To play single records with a large center hole, put the adapter on top of the single-play spindle.

## MAINTENANCE

5.1 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 Z (Fig. 2) 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.

5.2 The needle of the pickup cartridge must always be free from dust. Diamond styli can be used for about 1000 hours of playing. However, despite their hardness, they abrade gradually. Worn needles impair the sound reproduction and damage the grooves. The needle should be replaced in due time, in any case if even with a new record the high frequencies are not properly reproduced.

## CARTRIDGES AND ACCESSORIES

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

**STEREOTWIN STS 220 – COMPATIBLE MONO/STEREO** with extra diamond stylus for twice the performance life.

For playing monophonic records as well as stereo, the 220 is without peer. This compatibly-designed, moving magnet cartridge features a .7 mil diamond stylus for high vertical and horizontal compliance with wide separation across the entire audio spectrum.

**STEREOTWIN STS 310 – STEREO PROFESSIONAL**

The new 310 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.

### SPECIFICATIONS

Frequency Range: 20 . . . 20,000 cps	Sensitivity Difference on Both Channels at 1000 cps: max. 2db	Inductance per Channel: 650 mh	Static Compliance: $5.1 \times 10^{-6}$ cm/dyne
Frequency Response at 1000 cps: between 20 cps . . . 10 kcp $\pm$ 2db between 1 kcps . . . 15 kcps max. 5db	Cross-Talk Damping at 1000 cps: 24 db	Recommended Terminal Impedance: 33 . . . 51 kohm	Effective Mass on Stylus: approx. 1.9 mgm
Sensitivity on Each Channel at 1000 cps: 20 (mv/10 cm/sec) eff	Impedance: approx. 1000 ohm per Channel	Intermodulation: 3 % at 6 cm/sec	Radius of Diamond Stylus Tip: STS 220–0.70 mil STS 310–0.50 mil

### ACCESSORIES for STUDIO & STUDIO-H Models

16 Wood Base, oiled walnut · Mounting Board · Automatic 45 RPM spindle · Plug-in Head

B 2 – 454 USA



