



ELEKTRONIK-
MESS- UND
TONSTUDIOTECHNIK

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Instruction Manual

**EMT 938
Broadcast
Disk Reproducer**



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Connections and Preparation for Use

A 1 Unpacking Instructions

- Place the carton in an upright position (as indicated on the carton) and open.
- Remove the dust cover and the accessories. The dust cover is included only when ordered with the unit.
- Remove the upper foam packing insert.
- Remove the Broadcast Disk Reproducer from the lower foam insert. Do not use the tone arm as a handle.

The turntable platter and the rubber mat are located in the lower foam insert. Some units are delivered with a premounted turntable platter. In these units, the turntable platter must be removed in order to release the transport locks.

The unit may now be prepared for operation with the appropriate accessories (tone arm counterweight, etc.).

Important!

Retain all packing materials for possible reshipment of the unit. When repacking, follow the reverse procedure with appropriate care. Do not forget to engage the two transport locks – chassis and motor bearing – and remove the counterweight with the tube end from the tone arm. Tighten the screws firmly.

A 2 Releasing the Transport Locks

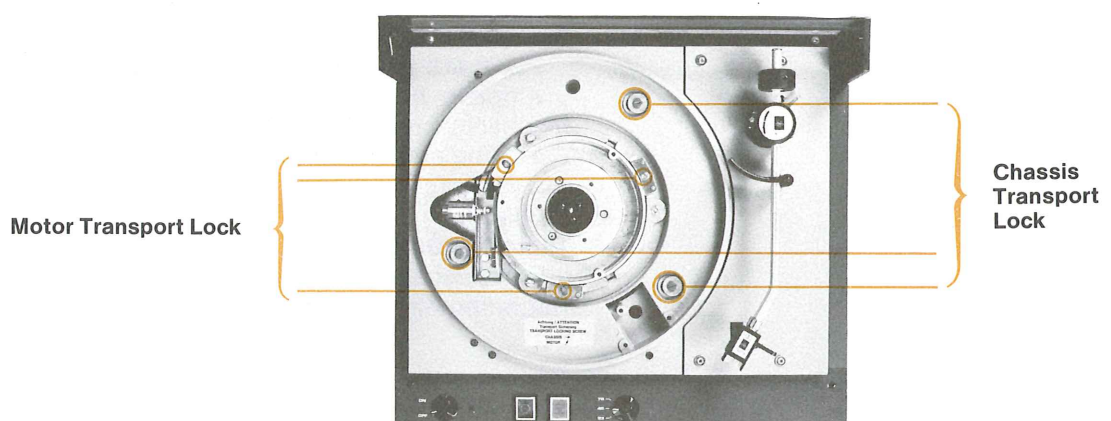
The turntable platter must be removed in order to release the transport locks.

The unit is fitted with two transport locks, which are accessible from above through the opening in the chassis for the turntable platter. The locks stabilize the chassis and protect the lower motor bearing against excessive stress due to axial and radial vibrations.

The motor is secured with three brass-tone strips, which extend into a ring-shaped groove in the rotor.

- Slightly loosen the three associated Allen screws (identified in red).
- Hold the rotor so that it cannot fall onto the lower bearing.
- Pull the three strips out of the groove and lower the rotor onto the bearing (approx. 1 mm).
- Retighten the Allen screws. Make sure that the strips do not touch the rotor, lest they impede the motion of the motor.

The transport lock for the suspended chassis is released by loosening the three large screws (identified in red) in the opening for the turntable platter. These screws must be loosened completely, i.e., turned to the end of travel. The screws remain in the unit. If the unit is to be secured for reshipment, proceed in reverse order. The three strips of the motor lock must be pressed somewhat against the inner wall of the groove to inhibit radial vibrations of the rotor.

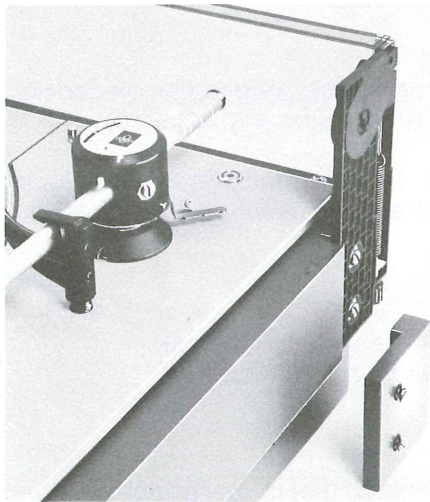


Connections and Preparation for Use

A 3 Turntable Platter

Attach the turntable platter to the rotor of the motor with three screws and place the rubber mat on the platter.

A 4 Dust Cover (Option)



As an option for the EMT 938 Broadcast Disk Reproducer, a clear plastic dust cover is available under order number 9938900 that may be swiveled open to an angle of 60° . The hinges required for the cover are secured to the rear of the turntable with metal plates, and each hinge assembly is fastened with two screws and accompanying washers. Before the dust cover is mounted, the lining angles and the sheet metal strip along the rear of the turntable must be removed. The letters R (right) and L (left) are engraved into the hinges and hinge covers for the purpose of identification.

The rear plastic cover is subsequently mounted and fixed with the two delivered screws.

The dust cover is subsequently inserted into the guide and snapped into place. When the cover is to be removed, the side supports should be pressed slightly inwards. The spring force for holding the dust cover is adjustable with a screw in the hinge shaft.

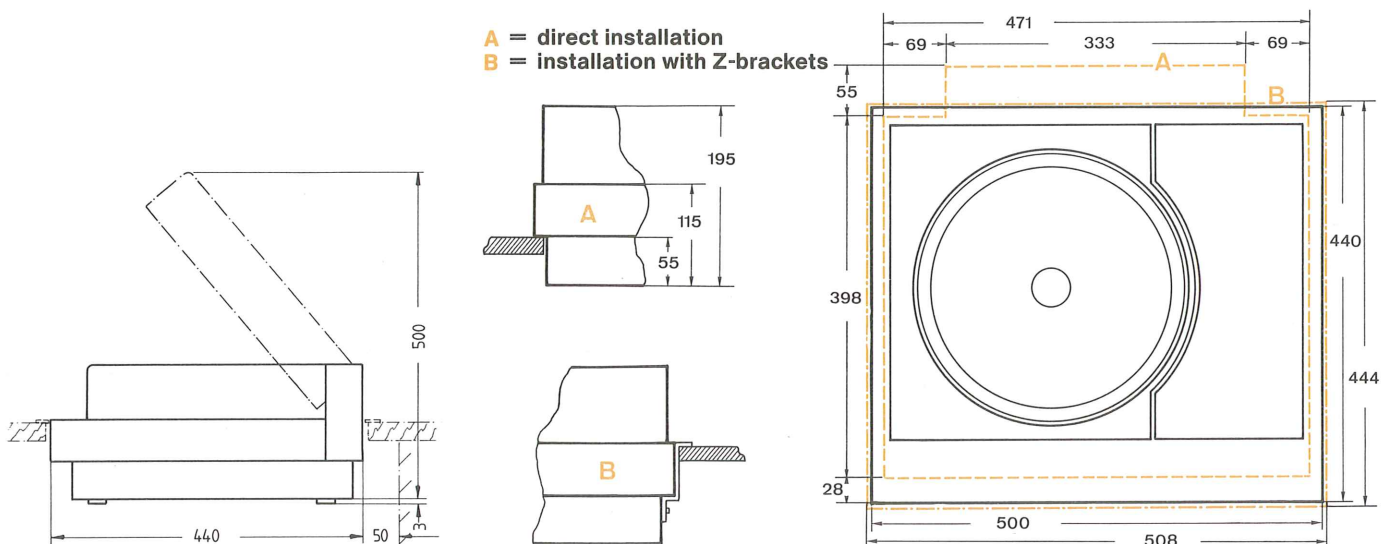
The hinge covers are then pressed onto the hinge. They may be removed by pressing open lightly the side supports.

The EMT 938 Broadcast Disk Reproducer may also be delivered with a lift-off cover, order number 938 PC.

A 5 Installation in Cabinets or Tables

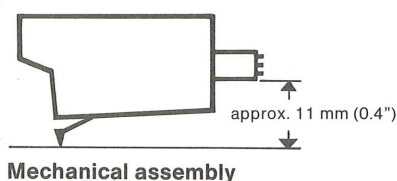
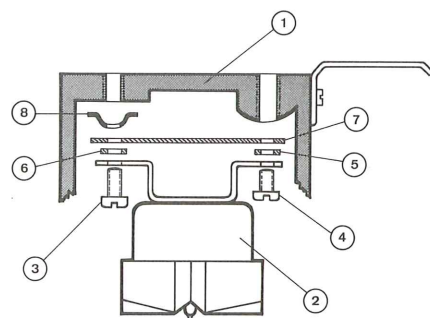
The EMT 938 Broadcast Disk Reproducer is delivered in a base that may serve as a tabletop cabinet. The external contours of the base allow the turntable to be used as a free-standing unit or to be recess-mounted in an appropriate counter cutout (line A in the diagram) without additional installation elements. If the unit is to be mounted deeper so that the upper surface is flush with the countertop, a set of Z-brackets is required, order number 9938901. The two flat iron strips included are employed for covering the cutout slit at the front and the rear of the unit.

The dimensions for counter installation are provided in the diagram. With the dust cover fully opened, the EMT 938 Broadcast Disk Reproducer is 503 mm high.



Connections and Preparation for Use

A 6 Mounting a Pickup Cartridge into an EMT Cartridge Shell



Under the catalog number 9938 120, the EMT 938 Broadcast Disk Reproducer is delivered with an empty EMT cartridge shell, including the hardware necessary for mounting the pickup cartridge selected.

- | | | |
|--------|--|---|
| Pos. 1 | cartridge shell | |
| 3 | screw, M 2.6 x 5.5 | } EMT accessories |
| 4 | screw, M 2.6 x 5 | |
| 5,6 | spacing washers, 2.6 ø | |
| 8 | bronze spring | |
| 2 | pickup cartridge
(with 1/2" mounting bracket) | |
| 7 | plastic strip | accessory, depending on cartridge
(not necessarily required) |

The distance of 11 mm is achieved with an appropriate number of spacing washers. The height of the tone arm should be checked and adjusted, if necessary; see page 7.

Electrical connections:

red : right channel (a)
green : right channel (b)

white : left channel (a)
blue : left channel (b)

Important!

The cartridge circuit must remain balanced, that is, any bridge between one of the connecting pins and the cartridge body must be removed to prevent hum loops.

Under some conditions, it may be necessary to provide an electrical connection between the shielding body of the cartridge and the cartridge shell using one or two of the mounting screws.

A 7 Dynamic and Magnetic Pickup Cartridges

Nearly every commercial pickup cartridge with standard 1/2" mounting centers may be mounted into the empty pickup shell delivered with the EMT 938 Broadcast Disk Reproducer under order number 9938 120. The input impedance of the amplifier installed in this version complies with the international standard of 47 kOhms. As is the case for all other EMT turntables, the EMT 938 Broadcast Disk Reproducer is also available in a version (order number 9938 110) for use with the EMT TSD 15 Studio Pickup Cartridge. A plug-in active impedance transformer (preamplifier) provides proper matching for the moving coil cartridge. This impedance transformer is inserted onto the Amplifier Board between the tone arm cable connector and the amplifier. (See also the EMT 938 Block Diagram.) The bottom cover of the turntable must be removed for this purpose; the Amplifier Board may be swung out after the two screws have been removed.

An angular piece with white field is mounted on the preamplifier board. This field appears in a small hole on the lower front right-hand side of the unit, thereby serving as an optical check for installation of the preamplifier (left picture).



White point visible: active impedance transformer (preamplifier) is plugged in.



No white point visible: unit switched to 47 kOhm input impedance.

Connections and Preparation for Use

A 8 Tone Arm Adjustments Mounting the Counterweight

The counterweight with tube piece is mounted with a central screw on the rear of the tone arm. The constricted portion of the plastic sleeve must lie at the rear.

Adjustment of Balance and Tracking Force

Insert the cartridge into the tone arm and tighten the bayonet connector. Set the tracking force adjustment lever to "0". Lower the tone arm lift and turn the counterweight on the threaded tube end until the stylus tip balances exactly in the plane of the record. Fix the counterweight in this position by gently tightening the Allen screw.

Set the tracking force adjustment lever to "2.5" (a tracking force of 25 mN, or 2.5 grams) for T-Series cartridges, or to the force specified by the cartridge manufacturer.

Tone Arm Height

The height of the tone arm is adjusted with the two Allen screws in the pedestal flange at the base of the tone arm.

The horizontal bearing should lie 35 mm above the chassis. To determine the correct height, place the trapezoidal gauge on the chassis. The tone arm height is adjusted correctly when the point ("EMT 938") lies exactly at the middle of the bearing adjustment screw.

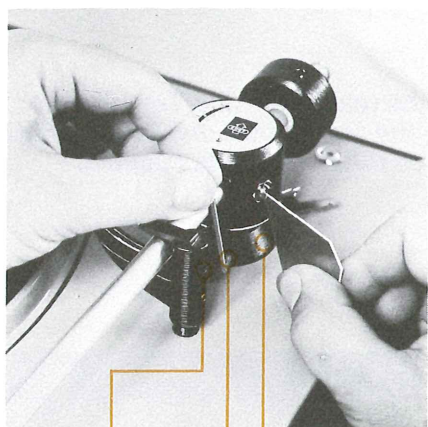
Tone Arm Lift Platform

The height of the tone arm lift platform may be corrected, if necessary, by changing its position on the lifting shaft. The Allen screw on the platform is to be loosened for this purpose (see photo).

The opening angle of the tone arm clasp is adjusted with the upper screw on the platform.

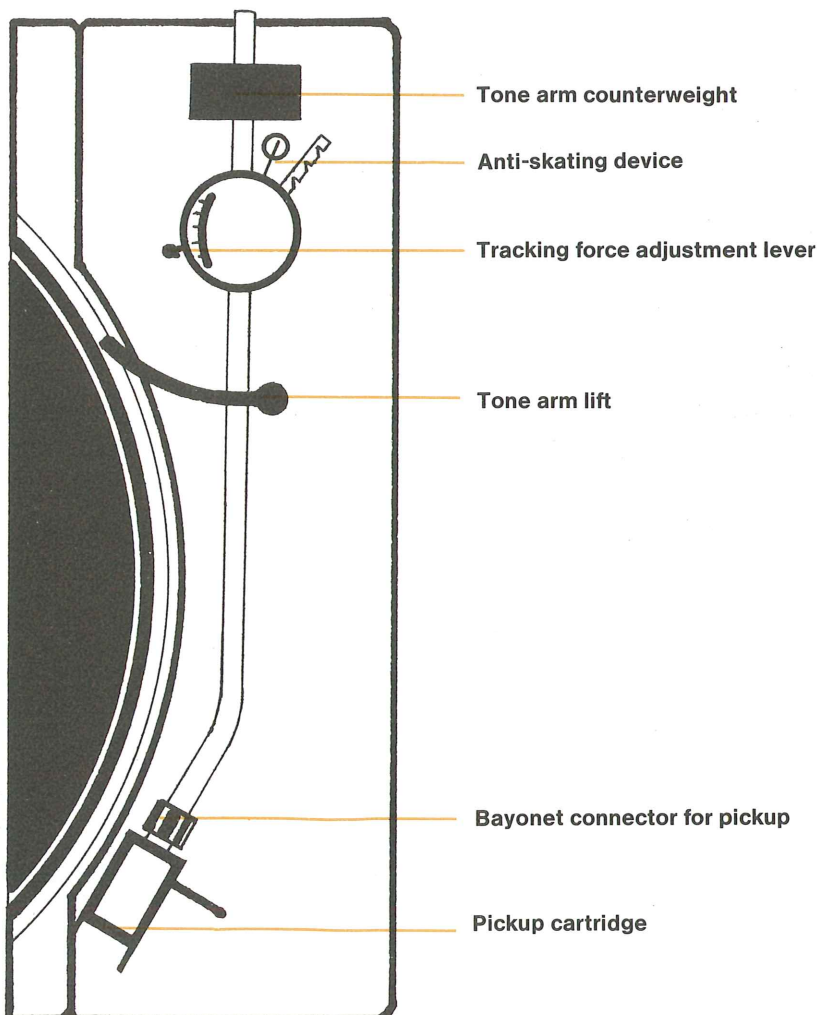
EMT 929 Tone Arm

(Dust cover and bracket not shown)



Allen screw in pedestal flange (underneath the cover)

Allen Screw for changing the height of the tone arm lift platform



Connections and Preparation for Use

Anti-Skating Device

An undesirable force, known as skating force, is produced with any pickup arm due to the tracking angle and the friction between the stylus and the record. The magnitude of this force is about 1/10 of the tracking force employed, and it causes the pickup stylus to be pressed rather unidirectionally against the inner, left-hand groove wall. The tracking force on the right-hand wall is therefore somewhat lower than on the left.

The EMT 929 Tone Arm employs an anti-skating device which consists of a small weight attached to a nylon thread, acting upon the tone arm over a lever arm to produce the required counterforce.

Mounting the Anti-Skating Weight

Lower the anti-skating weight with nylon thread through the hole in the turntable chassis. The small clear plastic disk will prevent the weight from falling through. Feed the nylon thread into the wire eyelet, and hang the loop at the end onto the middle notch of the lever.

This setting is correct for the nominal tracking force of the TSD 15 pickup cartridge of 25 mN (2.5 grams). The inner notch corresponds to a tracking force of 20 mN (2 grams), the outer notch to a force of 30 mN (3 grams).

A 9 Mains Power Connection

Each unit is set at the factory to the mains voltage specified with the order. The set voltage is visibly indicated on the selector on the rear of the chassis. The unit may be switched to a mains voltage range of either 100 - 120 V or 200 - 240 V.

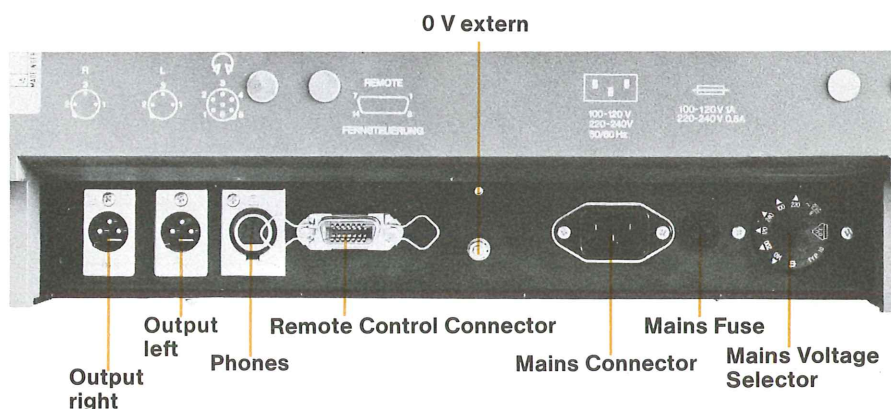
For 100 - 120 V, a 1 A slow-blow mains fuse is required; for 200 - 240 V, a 0.5 A slow-blow fuse. The specified mains frequency is 50 - 60 Hz.

A 10 Grounding Connections

The grounding wire of the mains power cable is permanently connected to the chassis of the turntable. The voltage potential "0 V extern" (\perp ext., the shield potential of the audio cables) is also connected at the factory to the chassis. This connection may be removed if required to prevent disturbances ("hum loops") due to electromagnetic fields. To separate the connection, remove the connecting collar at pin 1 of the 3-pin audio connector and push onto the insulated pin. (See also the block diagram on page 16). The pin and the connecting collar are easily accessible after the bottom plate has been removed.

A 11 Audio Connectors

The audio connectors are located on the rear of the unit. The pin connections of the mating connectors for the line outputs and for the head-phone/monitor outputs are indicated on the audio block diagram.

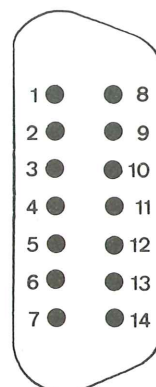


Connections and Preparation for Use

A 12 Remote Control Connector

Pin connections:

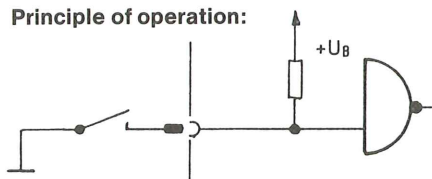
1. Lift - remote
2. Mono (0 V)/Stereo
3. + 20 V (Lamps)
4. 0 Volt
5. Vario (0 V)/Quartz
6. Start Lamp
7. Lift Lamp
8. Start/Stop - remote
9. Fader Start/Stop
10. Vario Potentiometer (cw)
11. Vario Potentiometer (Wiper)
12. Vario Potentiometer (ccw)
13. -
14. -



See also the Interface/Oscillator schematic diagram on page 24.

Remote Control and Indicator Lamps

Principle of operation:

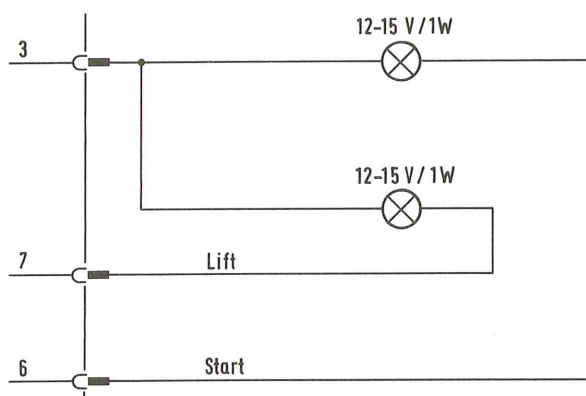


The remote control connections are designed for activation of a function with 0 V.

Example:

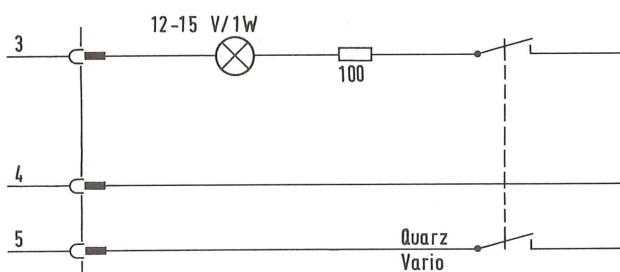
Pin 2 at 0 V: the unit operates monophonically.
Unused or open inputs are pulled up to + 12 V through a resistor.

If the momentary operating state of the turntable is to be indicated at a remote location such as the mixing console, indicator lamps for the Start, Stop, and Lift functions can be connected to the corresponding remote control pins.



The voltage drop on the lamps is approx. 12 V in this circuit.

For the indication of Vario/Quartz switching, the following connection scheme may be employed.



Connections and Preparation for Use

Start/Stop, Faderstart

Pin 8 of the remote control connector is provided for the Start/Stop function. The pin connection lies parallel to the button on the operating panel. The unit may also be remotely controlled by the end contact of a channel fader (Fader Start/Stop). If the fader end contact is normally closed, the programming plug on the Interface/Oscillator Board must be inserted into the NC position; if the contact is normally open, the NO position must be used.

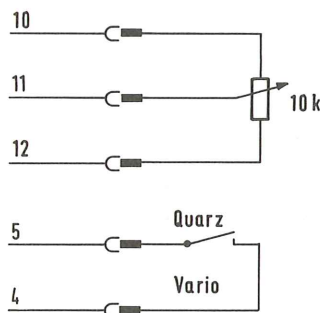
The Interface/Oscillator Board is accessible after the operating panel has been removed. For this purpose, remove the two screws (see the photo on page 15) and loosen the two outer screws accessible from underneath the unit. Observe that the power switch is rigidly mounted.

Lift

The Lift function can be activated with a switch between pins 1 and 4 of the remote control connector.

Variable Speed

Circuit diagram for Vario Operation:



If variable speed operation is desired, pin 5 of the remote control connector must be connected to ground. The selected speed may then be varied by approx. $\pm 25\%$ with a potentiometer at pins 10, 11, and 12. Pin 10 should be connected to the full-clockwise terminal and pin 12 to the full-counterclockwise terminal.

A 13 Level

The unit is adjusted to the program levels given in the control report, in general to $+6\text{ dB} \hat{=} 1.55\text{ V}$. The corresponding test record exhibits a full modulation level of $\hat{v} = 10\text{ cm/s}$ at 1 kHz (e.g., DIN 45 544 Test Record). The levels at 315 Hz and $\hat{v} = 5.42\text{ cm/s}$ correspond to the full modulation level cited above.

The level adjustments may easily be made from below at the front of the unit with the screws labeled L and R.

A 14 Muting

The line outputs are muted during the Start and Stop phases. This muting function may be defeated by opening a Dip-Fix switch on the Amplifier Board; see page 31.

Transport locks released? (See A 2, page 4.)
Mains voltage selector in correct position? (See A 9, page 8.)
Tone arm adjusted? (See A 8, page 7.)



B 1 Switch Functions

Power Switch



Located at the front of the unit on the left.

Start/Stop



Pressing the button starts platter rotation (the indicator lamp illuminates); pressing again stops the platter (the lamp is extinguished).

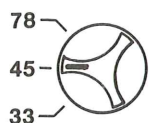
The LED (SYNC) at the edge of the platter is lit when the platter has reached nominal speed.

Tone Arm Lift



Pressing the button lowers the tone arm (the indicator lamp illuminates); pressing again lifts the arm.

Speed Selector



Front right.

The adapter at the middle of the turntable platter can be turned to lock into the upper or lower position. It is to be locked into the lower position for records with a small center hole.

B 2 Cueing to a desired position (e.g., the beginning of modulation)

Position the raised tone arm over the desired point on the record and lower the arm. The cueing position can be found easily by rotating the turntable back and forth by hand. The cueing signal (mono or stereo) can be monitored continuously at the Phones jack. The level may be adjusted with three potentiometers on the amplifier board; see page 30.

When the point has been found, hold a finger on the edge of the platter at the black point corresponding to the selected speed and rotate the platter in a counterclockwise direction to the black point near the pickup cartridge.

The rotational distance corresponds to the acceleration time needed for the platter to attain the selected speed. During this time, the line outputs are muted; see page 10 and page 30.

The record itself should not be touched when rotating back and forth. For the purpose of manual cueing, the edge of the turntable platter extends approximately 24 mm beyond the record.