

Instructions for Use



SABA

**SABAFON
TK 220-S
STEREO**

SABAFON TK 220-S

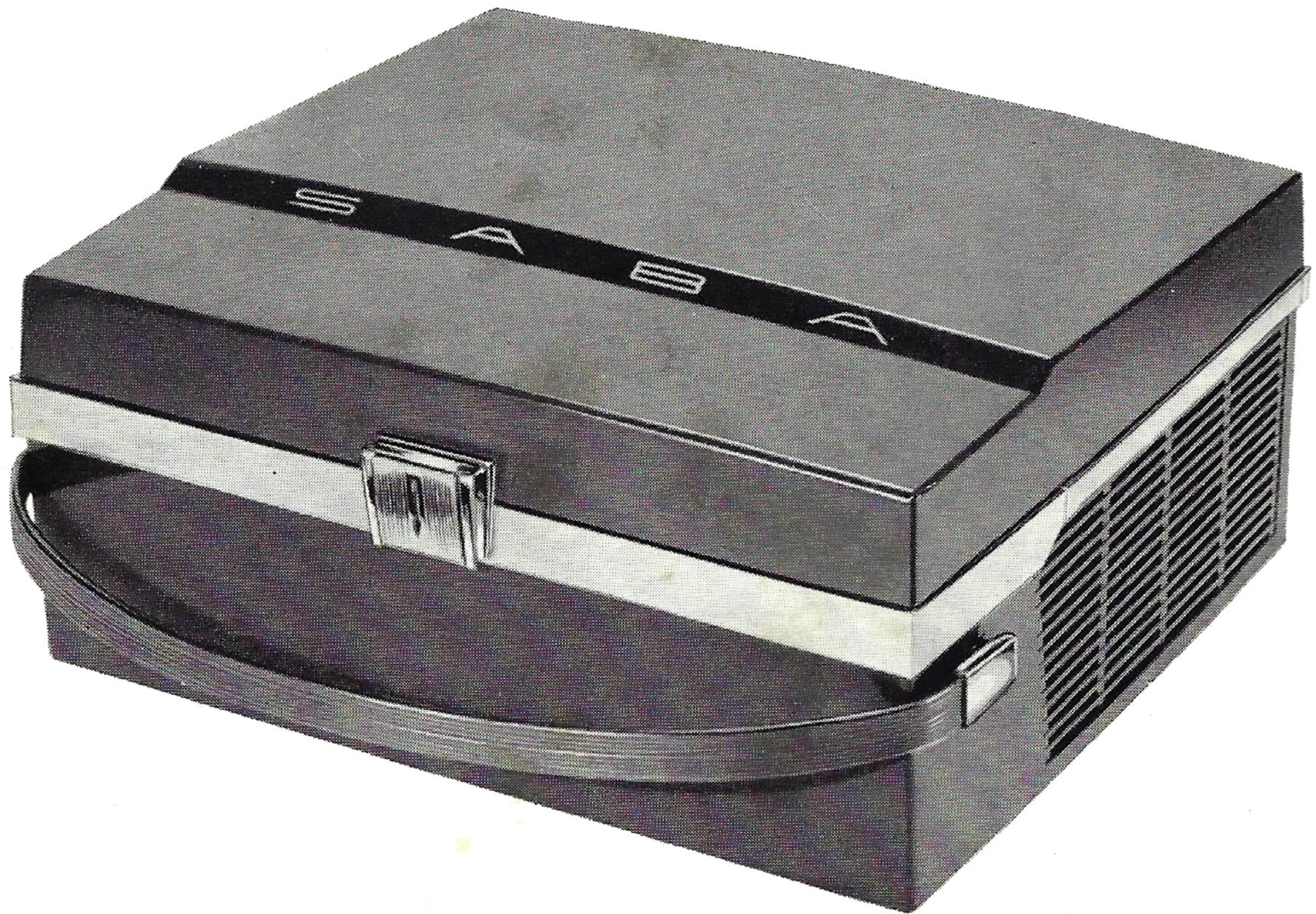


Table of contents

	Page
Photos of tape recorder	2
Power supply	3
Connection sockets	3
The four tracks of the tape	4
Switching keys	5
Putting on the tape reels	6
Tape counter	6
Recording-Playback switch	6
Tape speed/Power switch	7
Recording level control	7
Mixer control	7
Volume control	7
Tone control	7
Microphone recording	7
Radio recording	8
Playing over a record from a disk onto a tape	9
Erasure of records	9
Duo-Track recording	9
Playback	10
Playback of twin track records	10
Mixer device	10
Sound synchronisation of slide and film projectors	11
Playback-Recording technique	11
Synchronous Playback-Recording technique	11
Multi-Playback-Recording technique	12
Care and maintenance	12/13
Technical Data	16

Do take the trouble to read the following operating instructions carefully to get full benefit of the exceptional performance of your new SABAFON TK 220-S. Pull out the last page of this folder and you will be able to look at the photos of the recorder with a short description of its controls while you read the complete description and instructions to get a perfect understanding of the working of the recorder and of its many interesting new modes of use.

Your SABAFON TK 220-S is a four-track recorder providing twice the playing time for a given length of tape. The four-track principle used in this recorder results in an extraordinary versatility: many regular and a great number of new applications, normally restricted to professional recorders of much higher price and more complicated design and operation, become now possible.

The SABAFON TK 220-S is a high-class Hi-Fi tape recorder permitting recordings with two different band speeds; it is provided with a built-in input mixer device a new Playback-Recording technique and many other perfections. It can be used for true stereophonic recording and playback of thrilling realism. The wide audio frequency and dynamic range as well as the constancy of tape speed will enable you to get truly professional results.

Power supply

Before plugging the tape recorder into the wall socket of the power line, check the voltage and line frequency specified on your electricity meter. Your SABAFON TK 220-S is an A. C. operated machine. At the factory it has been set for the line voltage and line frequency specified on the label found on the rear of the case. If necessary, the voltage selector **23** may be adapted by means of a small coin for connection of the recorder to the local line voltage. When setting this switch for another line tension, the proper line fuse has to be inserted as well.

You will find the power cord in a compartment **19** in the rear part of the case. To take it out, push slide trap in an upward direction. If the recorder is to be transported, stow away the cable in this compartment.

Preparing the recorder for use

Place the recorder on a smooth, level table or other surface, so as to avoid blocking the ventilation holes in the bottom panel of the machine. The lock on the front side is opened by pushing the catch in the direction of the arrow. Then tilt the lid backward and lift it off. The lid should never be left on the recorder while it is working as this would prevent the proper ventilation and might cause an overheating of the inner parts. If the recorder should be contained in a special compartment of your radiogram, this compartment should be left open while using the recorder so as to ensure a proper ventilation.

Connection sockets

Microphone I A dynamic microphone of monaural or stereo type is connected to plug socket **12**.

Microphone II For stereo recording, a second monaural microphone may be connected to plug socket **13**. Push the connection plug of Microphone I into the left socket and that of Microphone II into the right socket. If a stereo micro-

phone is connected to this socket, the left and right stereo channels will be reversed.

Phono A phono-pickup (record player) or another tape recorder may be connected to plug socket **14**.

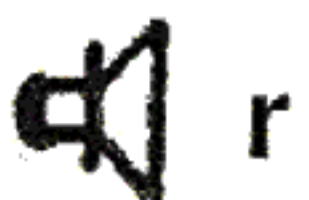
Radio A radio receiver, used for recording and playback, is connected to plug socket **15**.

Remote control If the pedal switch FSch 3 is used as a remote control it should be connected to socket **18**.

A SABA-slide synchronizer or a SABA Regie-Mixer may be connected to the same socket.



An extension loudspeaker (for stereo playback: the left channel speaker) is connected to plug socket **17**.

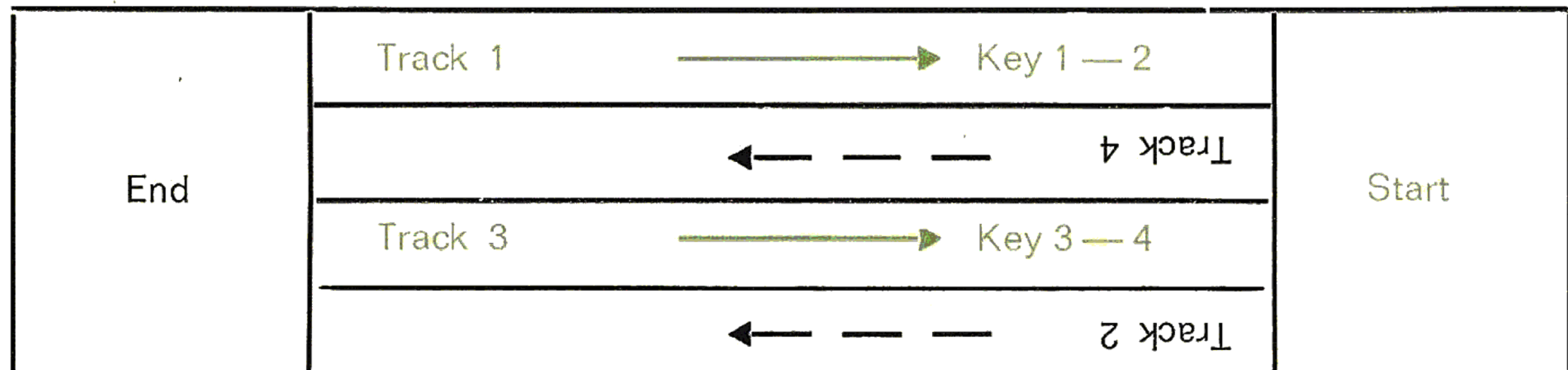


A midget stereo earphone HZS 15 may be connected to the same socket. An extension loudspeaker (for stereo playback: the right channel speaker) or the second plug of the stereo earphone are connected to plug socket **16**. When pushing the pins of the connection plug into the middle and right contacts, the corresponding built-in speakers are disconnected. On the other hand, with the pins pushed into the middle and left contacts, the built-in speakers will be working simultaneously.

The four tracks of the tape

Monaural
1st and 3rd runs of tape

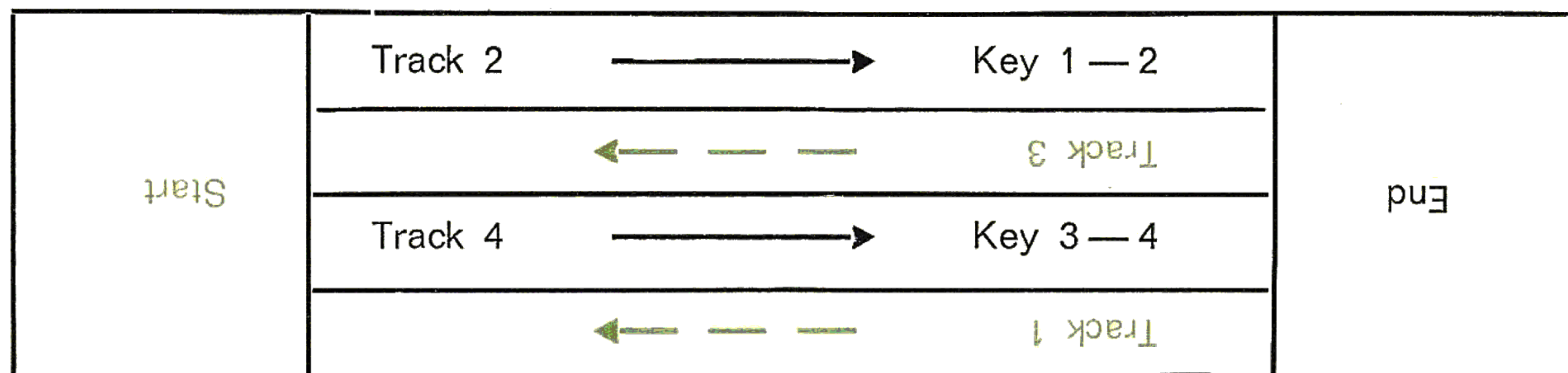
Stereophonic
1st run of tape



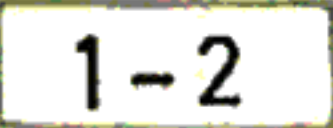
Direction of tape travel →

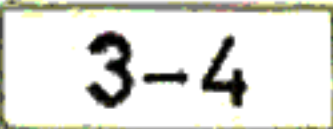
Monaural
2nd and 4th runs (reel reversed)

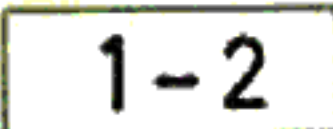
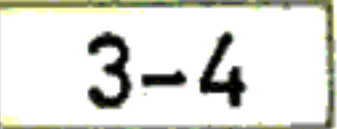
Stereophonic
2nd run (reel reversed)










The switching keys


 This key is depressed for recording on the first track or playing back the record made on this track. After the tape has been wound from start to end from the feeding reel onto the take-up reel, the now full reel is taken from the right-hand turntable and put on the lefthand one. In this manner the reel is reversed so that recording or playback are continued on the 2nd track.


 This key is pressed for recording on the 3rd track or playing back a record made on this track (in the same direction as before on track 1). When all the tape has again been wound onto the take-up reel, it is taken off and placed on the left-hand turntable. Recording and playback can then be continued on the 4th track (in the same direction as before on track 2).


For stereo recording and playback, both keys  and  are pressed. Both recording and playback are then effected simultaneously on the two tracks 1 and 3. When all the tape has been wound onto the take-up reel, it is taken off and placed on the left-hand turntable. Thus it is reversed for stereophonic recording on tracks 2 and 4 or playback of the records on these tracks.


 Set switch  at  and press this key for reproduction. To start the recording procedure, this key and key  has to be pressed at the same time. Before starting to record, the switch  must be set at **R** or **Q** or, for recordings using the playback technique at **Pb**.

 This is the locking key preventing the operation of a recording key. To start the record, both this key and the key  must be pressed simultaneously.

 Press this key for fast rewind: The tape will then travel with increased speed from right to left.

 Press this key for fast forward wind. The tape will then be moved with increased speed left to right.

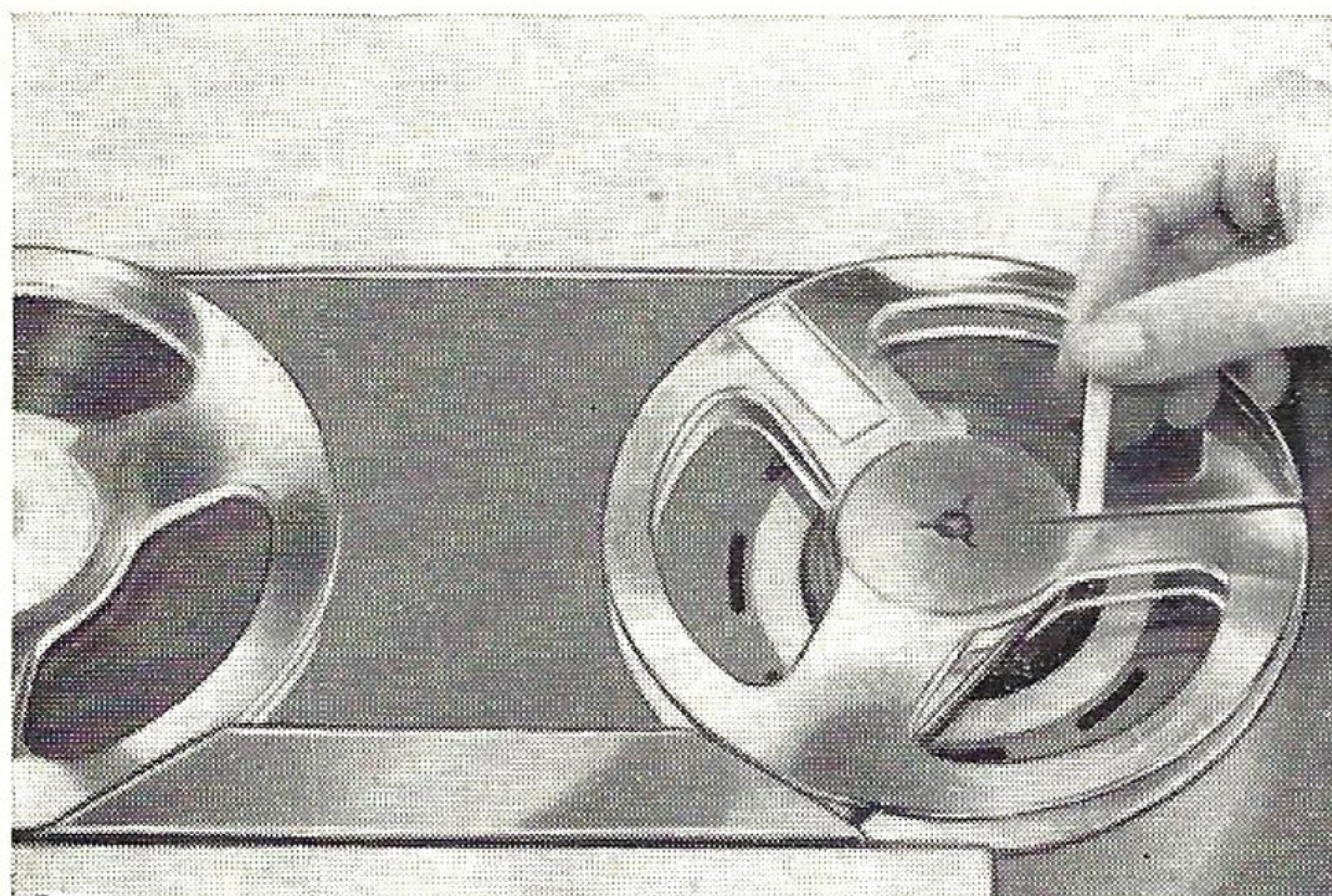
 When pressing this key, tape travel will be stopped immediately and the selected mode of operation will come to an end. Before starting the recorder again, it must be set for the intended mode of operation. If the motor has been switched off at the end of the tape by the switch-off metal tape, this key must be pressed, before the motor can be started again for a new run.

 If this key is pressed downward to its first rest position, all functions will remain as they are, as long as the key is held in this position, but the tape will be stopped. If the key is pressed further down to the stop, it will be locked in this position, until it is pressed again to release the lock. This instantaneous stop of tape travel is effective both for recording and playback.

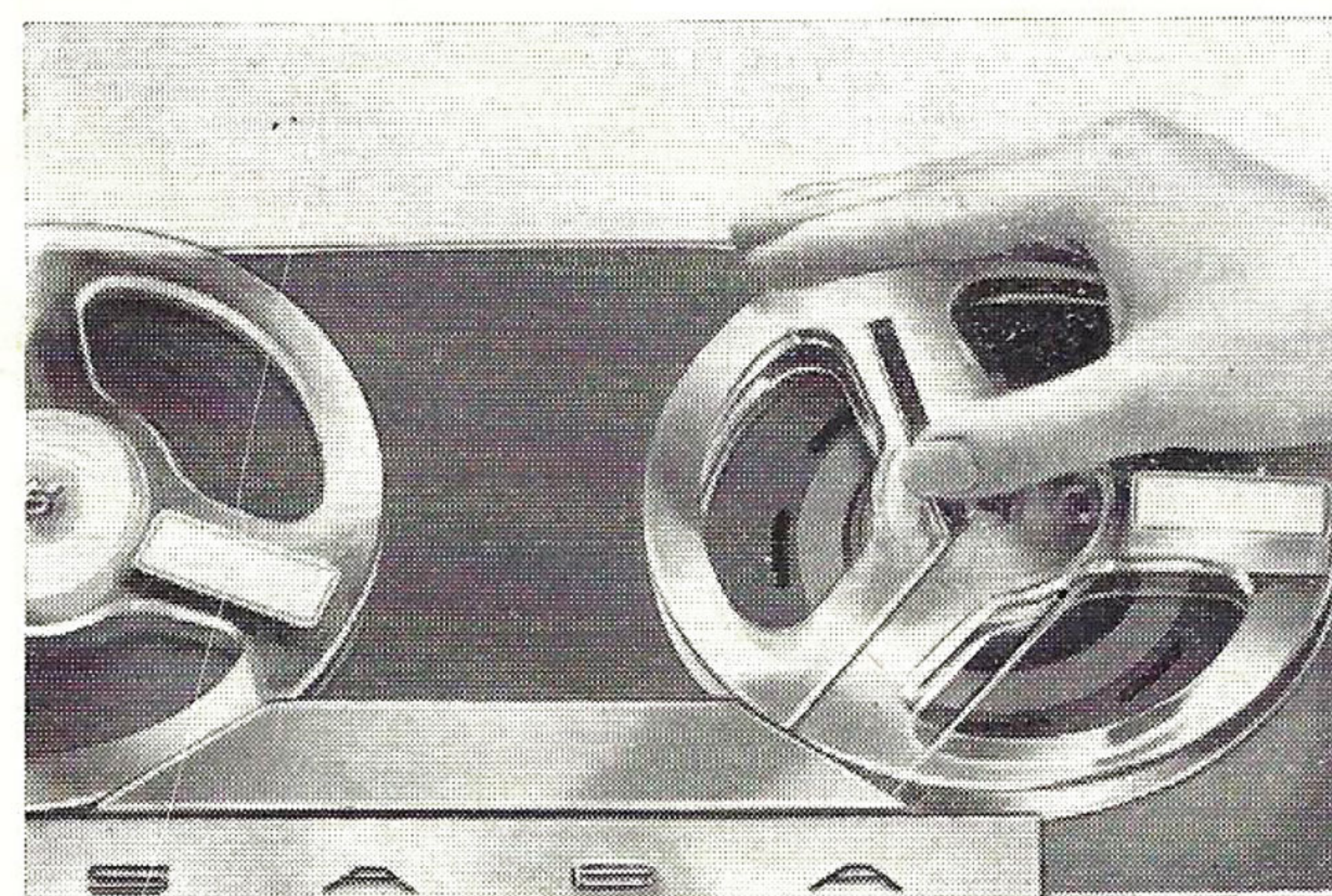
Putting on the tape reels



Wind approximately 20 ins. of tape from the full supply reel, before placing this reel on the left-hand turntable. Then stretching it with both hands, let the tape drop vertically into the tape guide slot (the bright side of the tape toward the front).



Pull the free end of the tape through the slot in the upper flange of the reel, allowing it to project about $\frac{1}{2}$ to 1 in. from the slot. The projecting end of the tape is then held, while the reel is turned once or twice to wind the tape securely onto the core of the reel.




When using small reels of only 3 ins. in diameter, wind the tape on the reel almost to the end of the metal switching tape, inserted between the coloured starting tape and the actual magnetic tape. The switching metal tape takes care of the automatic stop of tape travel at the end of the tape.

Tape counter

The tape counter with zero setting control facilitates the fast and easy relocation of any desired part of the record. Before starting the tape, the counter should be set to zero by pressing key **9**. Make a note of the figures indicating the beginning and the end of each record on the tape box.

Recording-Playback switch

For playback this switch **2** should be set with the  symbol in the top position. If you want to make a radio recording, the switch should be set at **R** and if you intend a micro-

phone record, it should be set at **A**. Playing over from a disk onto a tape is possible with the switch in either one of these two positions. Use the input mixer control **1** for this purpose. With the switch in position **Pb** for the playback-recording or the multi-playback-recording techniques, recording may take place on one record, while playing back the record on another track.

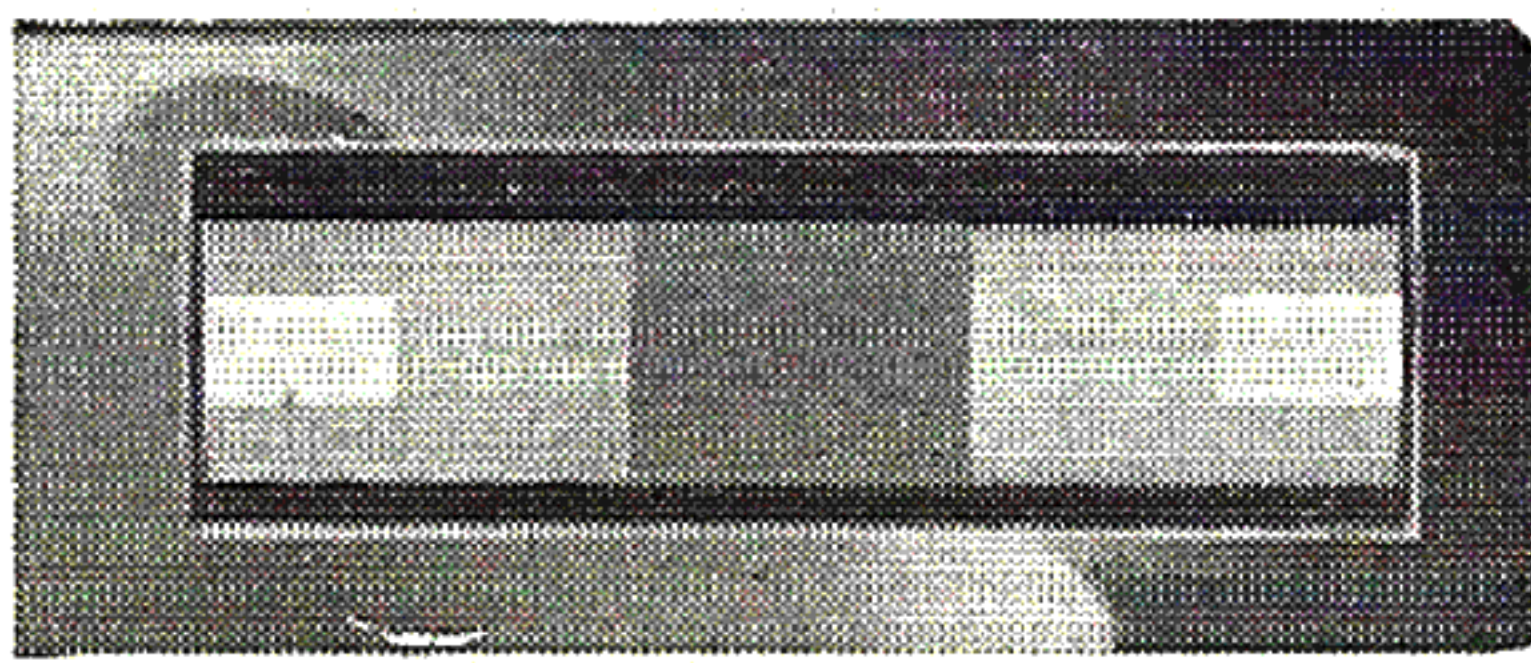
Power switch and tape speed selector

The recorder is switched on by turning the lever **7**. This control at the same time serves as a tape speed selector. With the switch standing in position I, the tape will travel at the regular speed of $3\frac{3}{4}$ i. p. s., which is preferred for recordings of average tone quality (speech, dictations, dance music etc.), and with the switch in position II, the tape will travel at the speed of $7\frac{1}{2}$ i. p. s. recommended for recordings of professional studio quality.

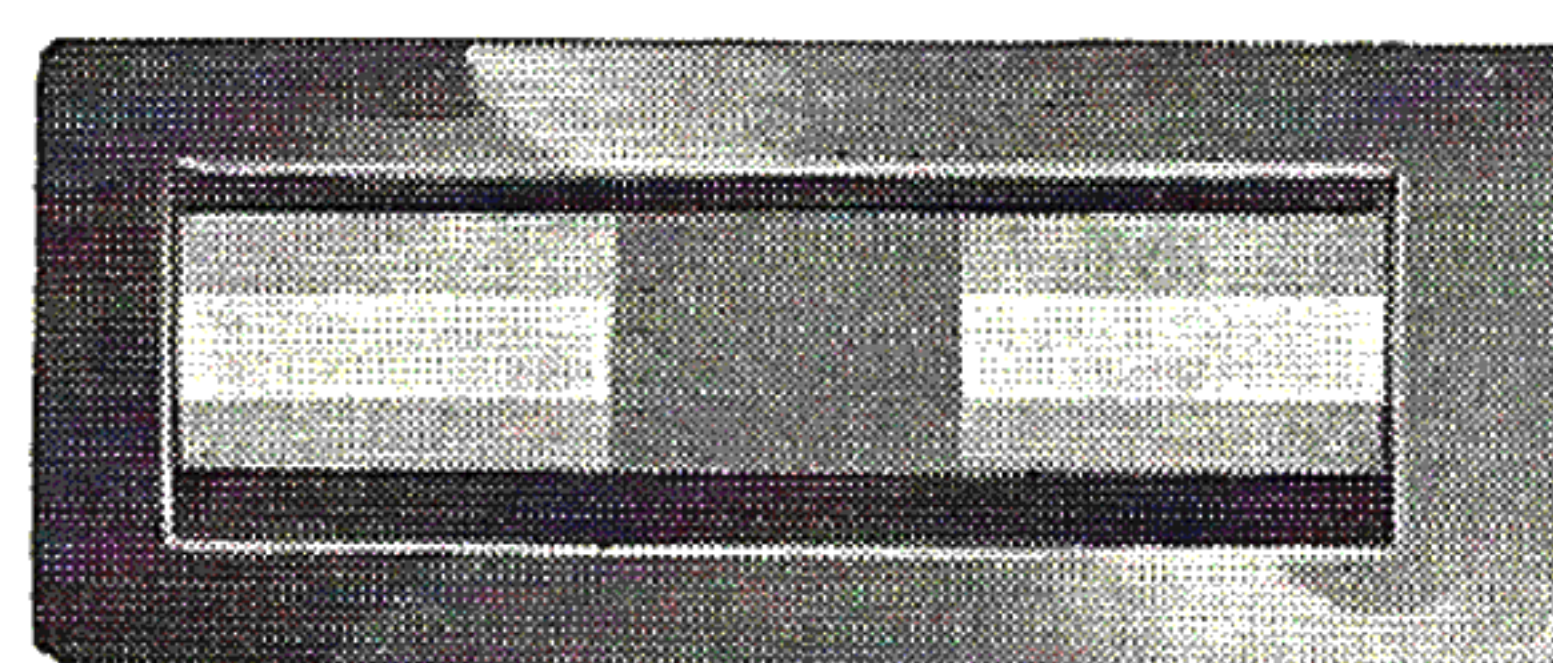
The speed of tape travel should be changed only while the key **STOP** is pressed. Before pulling out mains plug push the key **STOP** and turn the lever **7** to "OFF".

Recording level control

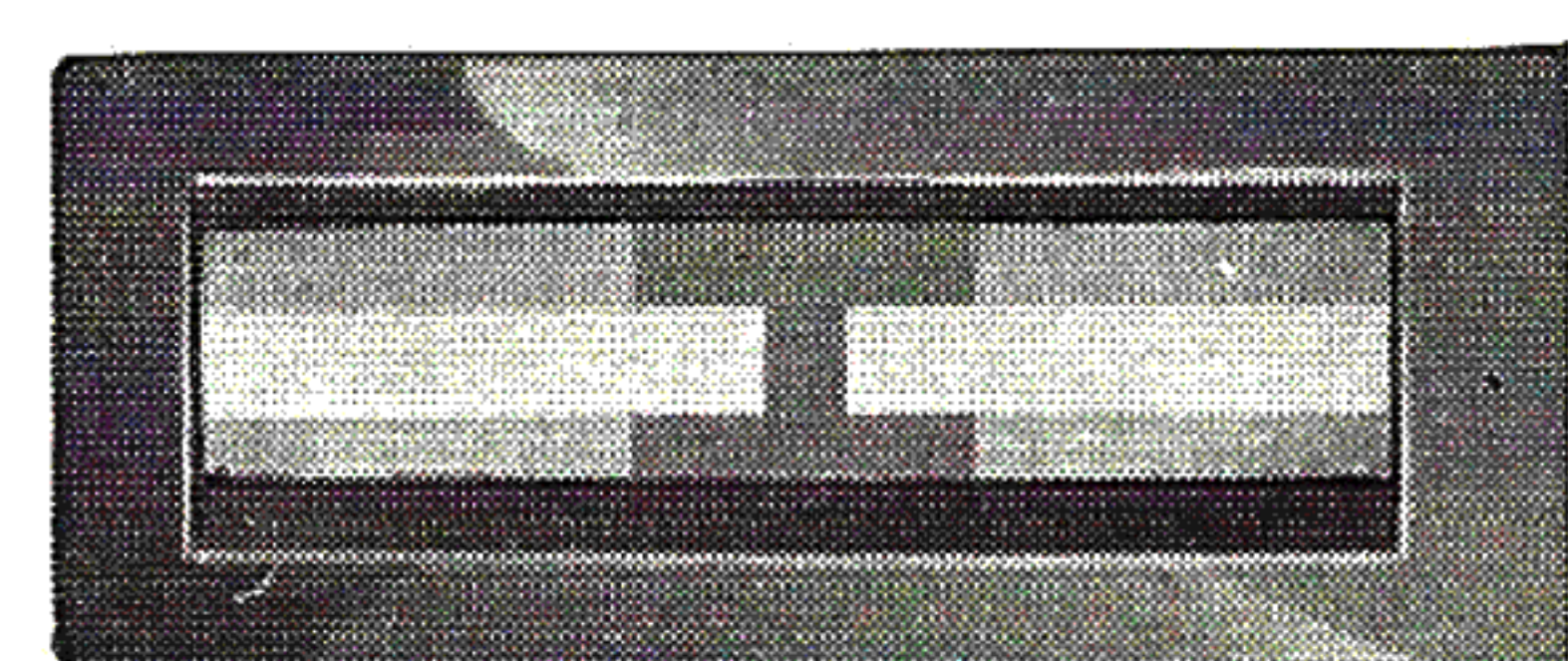
Before starting a record, the modulation should be adjusted by means of knob **11** so as to obtain the maximum or preferred undistorted sound intensity. In case of the maximum sound intensity occurring in the item to be recorded, the light bands of the recording level indicator **4** should just touch the borders of the central marking field of the valve.



Playback will not be loud enough and too noisy, if the signal level is too low.



Proper adjustment of the recording signal level control.



Overmodulation. Reproduction will be distorted.

Mixer control

The mixer knob **1** is used, when playing a record over from a disk record onto a tape, or when blending in a sound source to be mixed with another one. When making multi-playback-records, this knob is also used for playing a record over from one track onto another.

Volume control

Knob **10** is used as a volume control for playback and for monitoring when recording.

Tone control

Key **3** is used for alternative treble lift or drop. The key is released by pushing it backward and letting it go.

Microphone recording

Connect the microphone to socket **12**. Set switch **2** at **A** and use knob **11** as recording signal level control to get a perfect record. Select the desired tape track by

pressing either key **1-2** or **3-4** . To start the recording procedure, press the locking key **▶** and the starting key **▶** simultaneously. If the microphone and the loudspeaker are used in the same room, an acoustic feedback may occur (causing a ringing or howling noise). In such case, turn down the volume control **10** .

The proper distance between sound source and microphone is of great importance. It is not possible to state the best distance for all cases, as conditions will vary within wide limits and the room might have bad acoustical properties. Make some trial records to determine the distance to be chosen in order to get satisfactory results.

Under normal conditions, the best reproduction of speech will be obtained if the microphone is placed about 12 — 20 ins. away from the mouth of the speaker. For recording music or singing, the distance must be increased so as to get the best results. The SABA microphone type S-D 11/200 B has a selector switch "Voice-Music", which is used to choose the frequency response according to the kind of performance to be recorded.

For stereophonic records, a second microphone should be connected to the plug-in socket **13** or a stereo microphone to the sockets **12** or **13** .

The SABA stereo microphones D 88/200 and D 77/200 are composed of two microphone cartridges placed at an angle to each other so that they will pick up the sound waves in just the same manner as a pair of human ears. To obtain the best possible stereophonic effect, the stereo microphone should be arranged in such a manner that its front side (carrying the SABA trade mark) faces the centre point of the sound source to be recorded. The two systems of the stereo microphone D 77/200 can be taken apart in the middle, so that the two microphone cartridges can be used separately, f. i. to get a wider base for the stereophonic sound pickup. Each of the microphone systems may also be rotated so as to increase the sound pickup angle. The normal angular position (90°) is marked by red dots.

Radio recording



Any A. C.-operated radio receiver can be used in conjunction with your SABAFON for recording radio programmes on tape. Most modern radio sets have a standard plug-in socket for the connection of a tape recorder by means of a corresponding standard plug connector. In case your radio receiver should not yet be provided with such a socket, ask your radio dealer to fit one in the rear apron of the chassis of your radio.

The use of this standard connection offers the great advantage of the record not being influenced by the settings of the sound and tone controls of the radio receiver. The required complete connection cable will be supplied by your radio dealer.

With the described connection you may even make a record while the sound volume of the radio receiver is turned off.

If your radio receiver should have a three-point socket, use a SABA radio connection cable RVK 1, and, if it should be provided with a five-point socket, choose a SABA radio connection cable RVK 2.


One of the standard plugs of the connection cable should be pushed into the socket "Radio" **15** of the recorder. The other standard plug is pushed into the tape recorder socket at rear of radio. The connection cable permits both recording and playback. For

a radio recording, first tune the receiver for the best possible reception of the desired programme. FM radio programmes are preferable because of their better tone quality with less interfering noise. Set the switch ② at R, select the desired track by pressing either the key 1-2 or 3-4 and adjust the control knob ⑪ to obtain the best recording signal level. To start the recording procedure, press the locking key  and the starting key  at the same time.

For stereo recording, press both keys 1-2 and 3-4. FM Stereo radio recording will become possible when a transmitter within your reach will begin with the emission of stereo radio programmes and, of course, if you own a radio capable of receiving such emissions.

Playing over a record from a disk onto a tape

Push the standard plug of the record player into the socket ⑭ of the recorder. Set switch ② at R or Q, turn control ⑪ off and set knob ① to obtain the proper recording signal level. Select a track for monaural recording or press both track selector keys for a stereophonic record.

The record player may also be used in its normal operating condition, connected to the radio receiver. Playing over a record from a disk onto a tape is then effected by means of the cable connecting the radio set with your SABAFON. In this case, press the phono-pickup key  of the radio receiver.

Erasure








A record on a track selected for recording is automatically erased before the new one is made, so that you may use either a blank tape or a tape with a record on it if such record may be erased. If you want to efface the record on a tape, without making a new record, simply set the switch ② at R or Q, turn off controls ① and ⑪ and let the tape travel through the tape guiding slot, passing in front of the magnet heads. The former record will thus be erased and no new record will be made on the now blank tape.


Duo-track recording

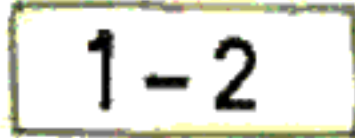
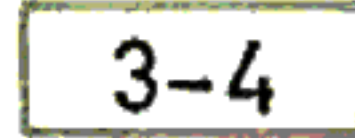
The stereo equipment of your SABAFON TK 220-S renders possible a new recording technique for monaural records. You are in a position to make records on two tracks simultaneously and to play them back in the same way. In this manner, you will obtain perfect records, even when using older tape of comparatively poor quality.


If you own a radio receiver for stereophonic reproduction, provided with a five-prong plug socket for a stereo tape recorder, you simply have to press the two keys 1-2 and 3-4 at the same time to make parallel records on two of the four tracks of the tape. If your radio receiver only has a three-point socket for a normal tape recorder and if you are using microphones designed for monaural sound pickup, the Duo-track connection cable DSK 1 must be used for the connection of the tape recorder to the plug-in socket of the radio set. This cable is obtainable through your radio dealer. For simultaneous playback, press the two keys 1-2 and 3-4 at the same time, as before.

Playback

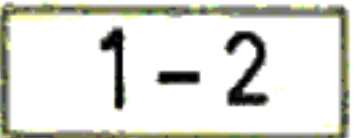
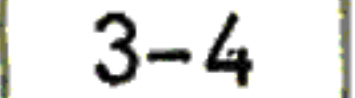
Press the key  for fast rewind of the tape until the figure marking the beginning of the record you are looking for, appears on the counter of the tape position indicator. Then press the key . For playback, set switch  at  and press start key . The tape will start travelling and you will hear the reproduction of the recorded tape. The volume is controlled by rotating knob , the tonality by key .

You may use your radio receiver for the reproduction of the recorded tape connecting it with the tape recorder by means of the SABA radio connection cable, supplied for this purpose, in the same manner as described for radio recording. When using the radio receiver for tape playback, tone and sound volume are, of course, adjusted by means of the corresponding control knobs of the radio set. For tape playback press the phono-pickup key  of the receiver.



Press either key  or  for track selection. For stereo reproduction press both these keys at the same time. The stereophonic effect may be improved by placing the radio receiver in a corner of the room so that the sound waves are reflected at an angle from the walls. Another way to improve the realism of stereo listening is the use of one or more supplementary stereo loudspeakers in an appropriate arrangement for symmetrical sound distribution.




You may also use a radio-phono table model or radiogram with a twin channel stereo amplifier for stereo playback. Such a set will have a five-point socket for the connection of a stereo tape recorder. One of the standard plugs of the radio connection cable is pushed into the socket "RADIO" of the recorder. Press the phono-pickup key  of the radio receiver and its "STEREO" key.

Playback of normal twin track records

Your SABAFON TK 220-S may also be used to play back normal twin track records, made on another tape recorder, provided that the records are perfectly modulated and that they have been made on dust-free tape of superior quality. For the playback of records made according to international standards, press key  and for the playback of records made according to the former German standards, press key .

Mixer device

The two controls  and  are used to mix the inputs "Microphone" or "Radio" with the input "Phono". A record player or another tape recorder may be connected at the input socket "Phono".

If the spoken text is to be mixed with a musical item, the input signal level of the music should be diminished gradually by rotating the mixer control  correspondingly. Then knob  is rotated to obtain the best signal level for the record and the text spoken into the microphone. At the end of the text knob  is rotated to lower the signal level until it stands at the initial mark. In this manner you will get a smooth blending from one sound source to another. It is recommended to make a plan of the intended mixing procedure

so as to get desired blending effect. If you want to mix the sound coming from more than two different sound sources, use an additional SABA-Regie-Mixer.

Sound synchronisation of slide and film projectors (Dubbing)

The coupling device for sound synchronization supplied with your projector may be connected to your SABAFON. Make certain that the projector speed is perfectly synchronized with the tape speed of the recorder. This is necessary to get a reliable and satisfactory synchronization of sound and picture, especially a perfect synchronism of speech or singing and the lip motions of the speaker or performer.

A slide projector with remote picture changing control can be operated automatically by means of your SABAFON in conjunction with a SABA slide synchronizer. The use of the slide synchronizer is quite easy. Push the plug connector into the plug socket **18** of the recorder. No additional sound head being required, there will be no difficult adjustments and no undesirable influence on the tape speed.

The synchronized text for a series of picture slides is recorded on the selected tape track. For each slide change a control signal may be recorded at any desired spot of a track destined for this purpose. When showing a series of picture slides, the sound is reproduced by your SABAFON and the slide changing device is operated automatically by means of the SABA slide synchronizer.

Playback-Recording technique

You may also wish to use your SABAFON TK 220-S for the separate recording of music and speech on two different tracks and for the simultaneous playback of these tracks. For playback, press both keys **1-2** and **3-4**.

You might f. i. record background music for a mute film on track 1. In synchronism with the film speed of the projector, the spoken text is then recorded on track 3 (while the tape is travelling in the same direction). You may also record any desired studio effects on the same track, adjusting the mixing ratio by means of the input mixer control **1**. In case of a mistake while speaking the text, the recording on track 1 will not be wasted, as would be the case if recording the mixed sound items on one and the same track. You simply rewind the tape and correct the text by re-recording it.

Synchronous Playback-Recording technique

Trick records made in professional studios, f. i. such of an artist singing several parts or of the performance of a musician playing several instruments at the same time may inspire you with a wish to do likewise.

Your SABAFON TK 220-S renders such trick records possible without using an additional tape recorder. The first voice is recorded on track 1, pressing key **1-2**. Thereupon, the tape is rewound, the switch **2** is set at **Pb** and the second voice is then recorded on track 3, pressing key **3-4**. For this purpose, the control **1** must be turned off. You may listen to the playback of the first voice, while recording the second voice, if you connect a SABA stereo earphone HZS 15 to sockets **16** and **17**. The SABAFON will, this time, record the second voice in synchronism with the first voice. To play back

this trick record, both the keys **1-2** and **3-4** are pressed and the switch **2** is set at **Pb**. If you should not get a perfectly synchronized record of the second voice, the recording may be repeated without erasing the record on track 1. So as not to overshoot the starting point for the second voice and to start the record with the right tone, it is recommended to record some of the first notes of the second voice, before starting the record of the first voice. By timing the length of the pause, you will then be able to determine the right moment for the inset of the second voice with great accuracy. The auxiliary record on track 1, used for this purpose, may be erased after the trick record has been completed. A trick record of this type can, of course, also be made on tracks 2 and 4, if the reel has been reversed.

In the same manner you may also record a musical accompaniment on track 1 and the voice of the speaker or singer or a solo instrument on track 3 which are then played back simultaneously in perfect synchronism.

Multi-Playback-Recording technique

Your SABAFON TK 220-S has a unique built-in multi-playback-recording device which permits the synchronization of more than two records. When the first record has been completed, the switch **2** is set at **Pb** and the second record is made on another track. By means of the mixer control **1**, you may then play over the first record from one track onto another one, blending it in with the proper ratio of loudness. Now you have both records on the same track and you can then make a third record on the track with the first record which, of course, is automatically erased. The mixer control **1** may be used for mixing this third record with the first and second ones.

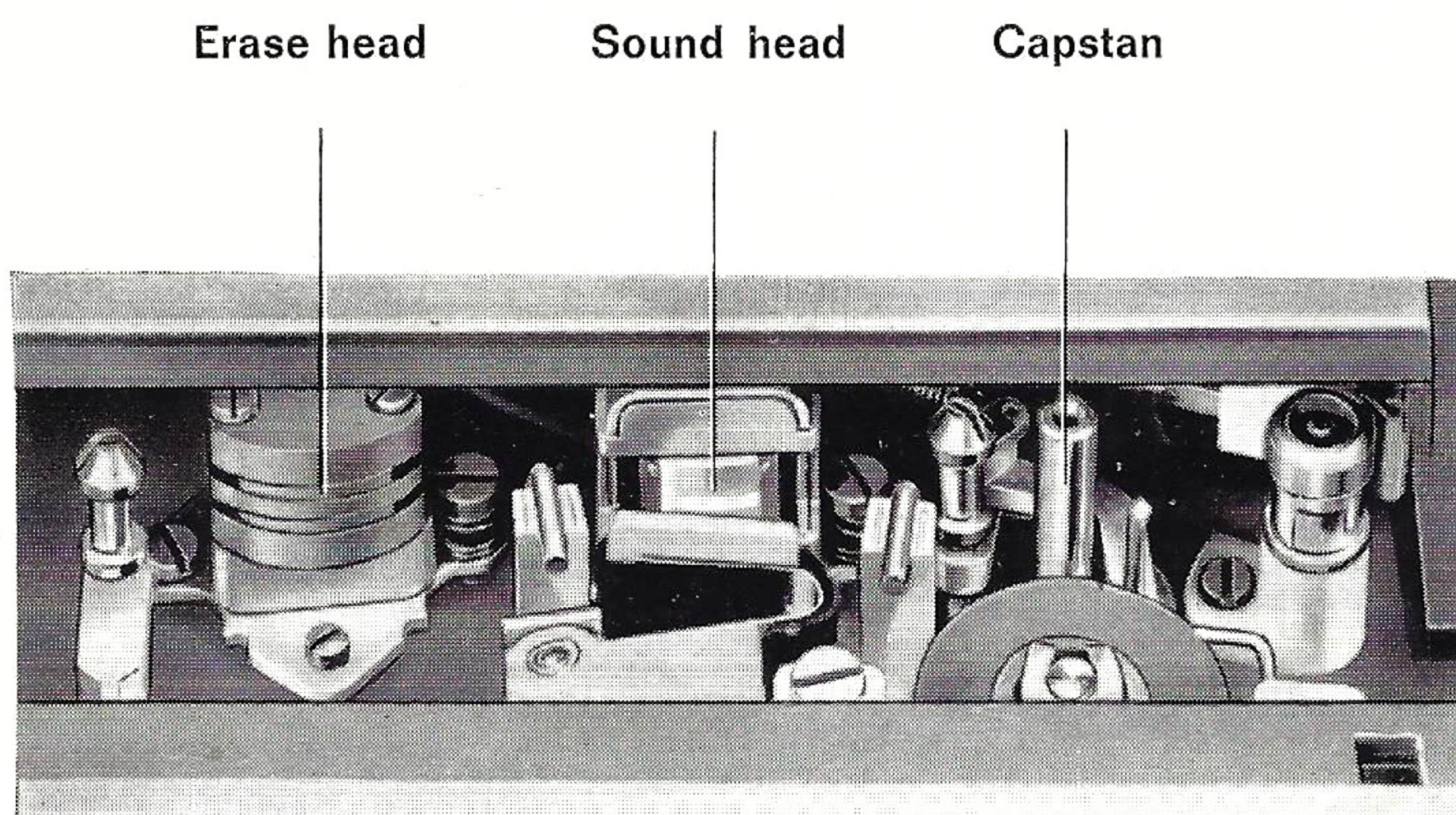
The playing over of one record onto another track and the recording of the third item may be monitored by means of the loudspeakers or of the stereo headphone. The playing-over procedure may be repeated several times but, of course, with a certain limitation with regard to the transmitted range. If you are making multi-playback-records, the accompaniments should always be recorded first so that the recording of the solo voice or of the obligatory instrument is the last procedure.

Care and maintenance

All rotating parts of your SABAFON TK 220-S are provided with self-lubricating bearings of a porous sinter metal. They should, therefore, never be lubricated. This would only lead to trouble in the drive mechanism of the recorder. Deposits of particles of the magnetic coating of the tape and of dirt or dust on the magnet heads, sound shaft etc. will impair the quality of the records made on the machine and cause a loss of sound volume. These parts should, therefore, be cleaned from time to time. For this cleaning proceed as follows:

1. Push the cover **5** of the tape guide mechanism from the back on the left and right side of same in a forward direction and lift off the cover vertically.
2. If much dirt should have collected on the heads etc., use a wooden tooth pick or the like for the removal of the deposit. Never use a metal tool for this purpose!

3. The felt strip, found in the paper bag containing the safety fuses should be soaked in alcohol.
4. The power switch of the SABAFON is turned on.
5. The felt strip is pressed against the capstan until it is perfectly clean.
6. Switch off. Use the felt strip, soaked in alcohol, to rub off the residues of tape dust sticking on the magnetic heads.

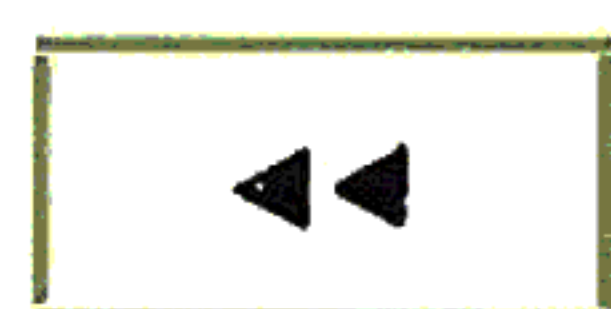


When making use of the four-track recording technique, each track has a width of not more than about $\frac{3}{32}$ ". This small width of the track will explain the fact that dust and dirt and even the smallest unevenness on the surface of the tape will cause a perceptible disturbance of the four-track recording procedure and might even cause a short interruption of the sound reproduction.

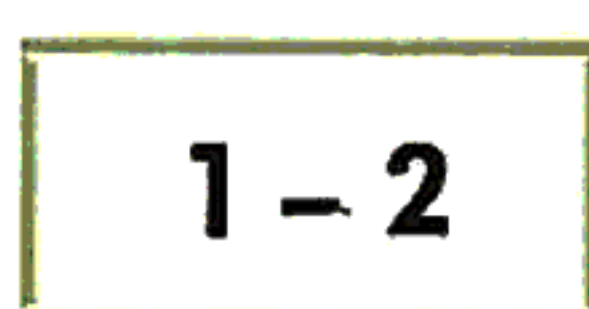
Thus you will only get full benefit of the exceptional quality of your SABAFON if you use the very best brands of magnetic tape made for the four-track recording process. These tapes should be as flexible as possible and their recording surface should be perfectly smooth. Always remember that your precious records must be protected against dust and dirt and that they should never be creased.

Your tape recorder has a built-in tape cleaning device which removes the dust from the tape while it is running through the tape guide slot for fast rewind. If you want to clean the tape simply let it run through the guide slot forward and backward with increased speed for fast wind and rewind.

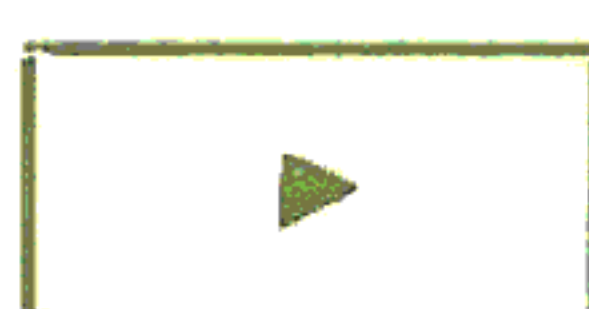
After a long period of service, it is recommended to clean the tapes according to the special instructions issued by the makers of the tape.



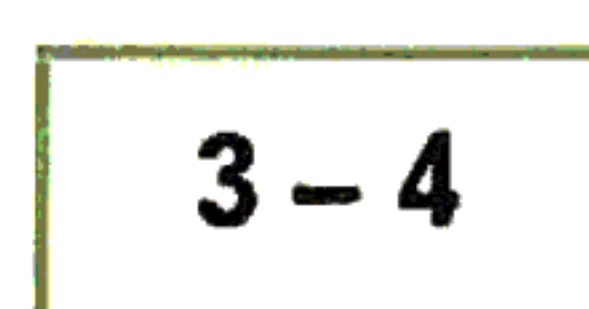
Fast rewind



Track 1 - 2



Start



Track 3 - 4



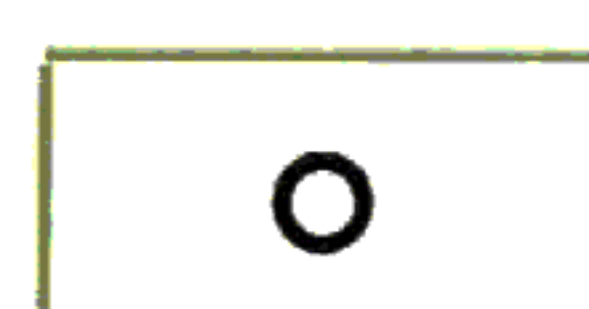
Fast forward



Recording lock



Stop



Instant stop

1 Mixer/Multi-playback control

2 Recording/playback switch

Playback

R Radio recording

Microphone recording

Pb Playback-recording

3 Tone selector key

4 Recording level indicator

5 Tape guide cover

6 Tape reel

7 Speed/Power switch

8 Empty take-up reel

9 Zero setting key of counter

10 Volume control

11 Recording level control

Connection sockets:

12 Microphone I

13 Microphone II

14 Phono

15 Radio

16 Loudspeaker, right-hand

17 Loudspeaker, left-hand

18 Remote control

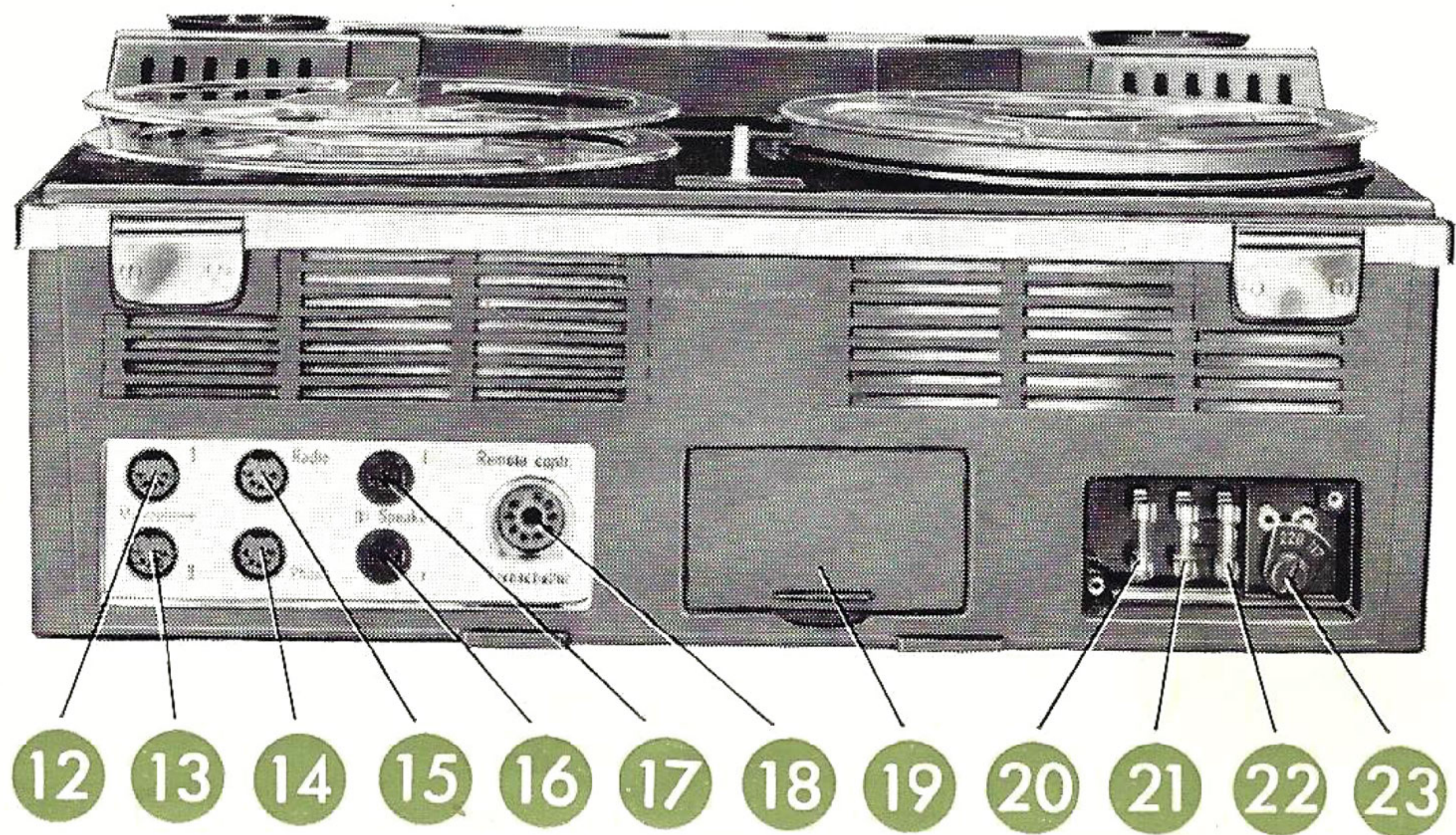
19 Compartment for cable

20 Low voltage fuse

21 Mains fuse 127 v.

22 Mains fuse 220 v.

23 Voltage selector



Technical Data

Power supply	AC, 50 c/s convertible to 60 c/s
Mains voltage	220/127 volts
Power consumption	approx. 65 watts
Fuses	mains 220 volts: 0.4 amp. delayed 127 volts: 0.8 amp. delayed low-voltage: 0.6 amp. delayed
Tubes	3 x ECC 83, ELL 80, EM 84 a
Transistors	2 x AC 107
Rectifiers	B 250 C 100, B 30 C 600, 2 x E 25 C 5
Tape speeds	$7\frac{1}{2}$ " / s } by selection $3\frac{3}{4}$ " / s }
Tape reels	double-flanged, up to 7" diam.
Tracks	four-track system
Running time	4 x 1 h at $7\frac{1}{2}$ " / s. (2400 ft double-play) 4 x 2 h at $3\frac{3}{4}$ " / s. (2400 ft double-play)
Frequency range	40 — 20 000 c/s at $7\frac{1}{2}$ " / s 40 — 16 000 c/s at $3\frac{3}{4}$ " / s
Heads	1 quarter-track stereo erasing head. 1 quarter-track stereo rec./rep. head
Premagnetization	high frequency, approx. 55 Kc/s
Erase attenuation	≥ 65 dB
Rewind time	approx. 5 min for 2400 ft
Wow and flutter	$\pm 0.15\%$ at $7\frac{1}{2}$ " / s $\pm 0.25\%$ at $3\frac{3}{4}$ " / s
Tape position indicator	tape counter with zero setting
Inputs	Microphone 0.1 mv at 200 ohms Radio 10 mv at 100 K-ohms Phono 200 mv at 1 M-ohm
Input level indicator	magic strip EM 84 a
Dynamic range	≥ 60 db (with aural filter)
Signal-to-noise ratio	≥ 48 dB
Radio output	approx. 1 volt
Audio output	5 watts
Loudspeakers	2 perm.-mag. 6" x $3\frac{1}{2}$ "
Loudspeaker connection	extension speaker: 4 — 6 ohms magnetic headphones: 1 000 ohms
Additional connection facilities	for pedal switch F Sch 3 for SABA slide synchronizer for SABA Regie-Mixer
Weight	approx. $28\frac{1}{2}$ lbs.
Dimensions of case	$16\frac{1}{2}$ " x 15" x $7\frac{1}{2}$ " (width x depth x height)

Subject to alterations

SABA - GENERAL AGENCIES

Belgien	Fr. Drion	Bruxelles III 96, Av. Albert Giraud
Chile	Wagner, Stein y Cia. S. A. C.	Santiago de Chile Agustinas 1022
Dänemark	Elton Ing. A. Henriksen	København F Dronning Olgas vej 20-22
Finnland	Oy Arnold Brink AB	Helsinki Postbox 395
Frankreich	Agence Générale de Distribution	Paris 16^e 7, Avenue de la Grande Armée
Holland	SABA-Nederland N. V.	De Bilt Utrechtseweg 340
Italien	SABA-Italia S. p. A.	Milano Via Privata Perugia 8
Jugoslawien	Cefra, Export - Import GmbH	München 15 Sonnenstraße 12/IV Tel. 55 59 85/86
Kanada	Eberdt Company	Montreal 10 7709 St. Lawrence Blvd.
Luxemburg	A. Loschetter & Fils	Luxembourg 41, Boulevard Prince Henri
Norwegen	NEBB Norsk Elektrisk & Brown Boveri	Oslo Postbox 429
Österreich	Werksvertretung Hans Kocourek	Wien VII Mariahilferstraße 62
Portugal	SIDA, Ltda.	Lisboa Rua de S. Nicolau, 44/48
Schweden	Harald Wällgren A. B.	Göteborg Postbox 21 24
	Harald Wällgren A. B. Stockholmsfilialen	Vällingby Postbox 22
Schweiz	Werder & Schmid AG.	Lenzburg/AG Bahnhofstraße
Spanien	Malagarriga & Cia. S. L.	Barcelona 2 Plaza Cataluña, 21
USA	SABA Lone Pine Electronic Products Corporation	Camden 2, N. J. Parkade Building 519 Federal Street

SABA

S E R V I C E — O R G A N I S A T I O N

SABA

SABA-VERKAUFSFILIALEN

Düsseldorf	Tussmannstraße 89/91	Tel. 49 19 15
Essen	Alfredstraße 148	4 03 54/55
Saarbrücken 2	Am Torhaus 54 a	4 54 54 / 55
Stuttgart-W	Senefelderstraße 46 - 48	6 63 22 / 62 49 85

SABA-WERKSVERTRETUNGEN

Berlin SW 61	Tempelhofer Ufer 10	18 10 60 / 69
Bremen	Langenstraße 96	31 08 81 - 3
Frankfurt/Main	Bürgerstraße 27	33 15 75 / 33 53 21
Freiburg/Breisgau	Zähringerstraße 38	4 48 95
Hamburg 1	Pulverteich 31 - 37	24 64 51
Hannover	Alemannstraße 4	66 76 41 / 42
Kassel	Gießbergstraße 18	1 59 70
Koblenz	Rizzastraße 28	3 20 98
Köln	Neue Maastrichterstraße 12 - 14	52 20 71 - 4
Mannheim	D 7, 1	2 25 58
München 15	Paul-Heyse-Straße 31 a	53 01 26
Münster/Westfalen	Südstraße	4 13 47
Nürnberg	Heideloffstraße 23 — 25	4 56 51 / 52
Ravensburg/Württ.	Hindenburgstraße 36	47 22/23
Regensburg	Luitpoldstraße 18	59 23 / 2 31 12

SABA

S E R V I C E — O R G A N I S A T I O N

SABA