

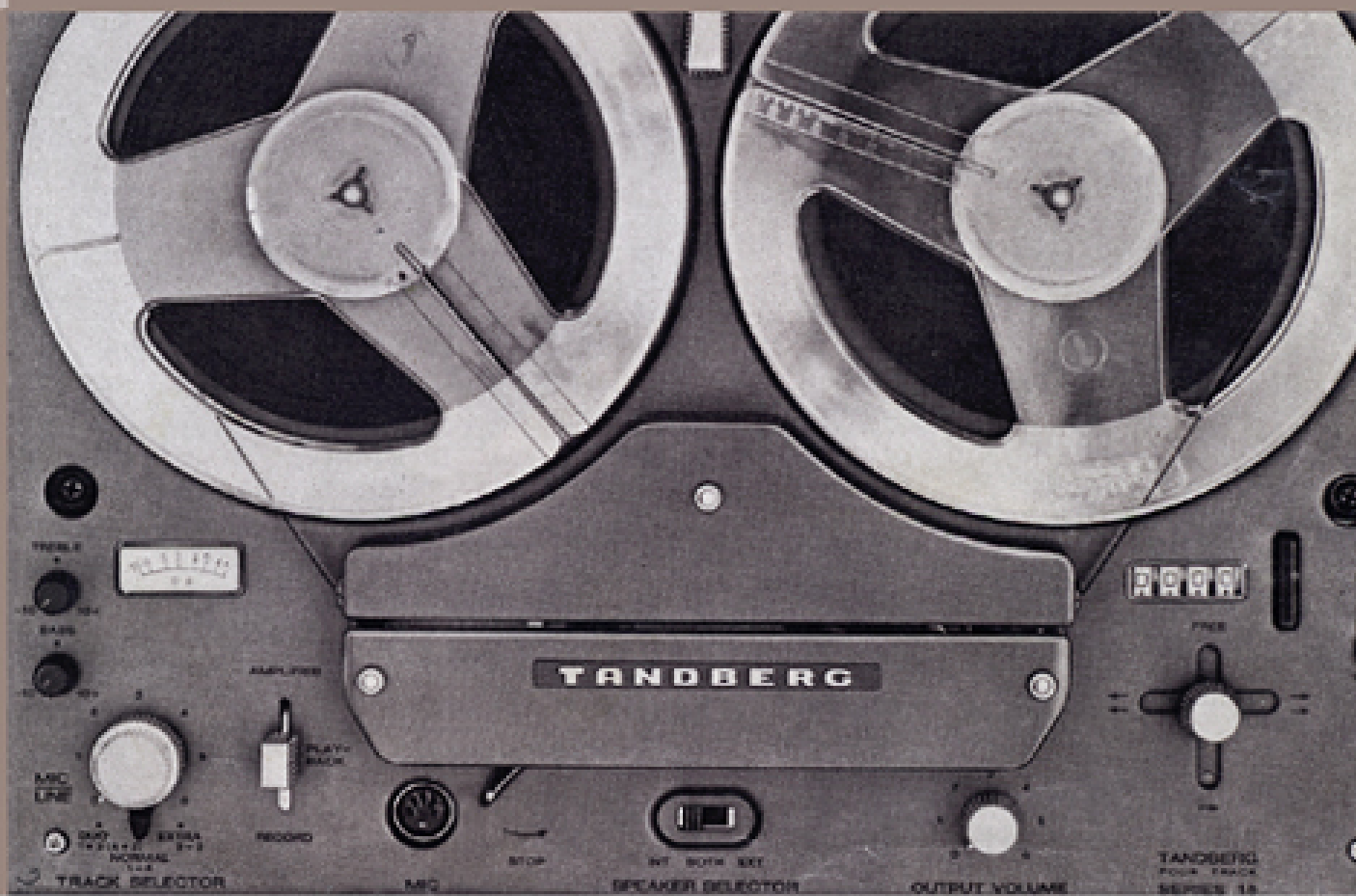
15

TANDBERG

tape recorder series 15

*Instruction
manual*

Tandberg
RADIO



We congratulate you on your new Tape Recorder

You are now the owner of one of the world's finest Tape Recorders. A new source of personal enjoyment and satisfaction is yours for years to come. For many years Tandbergs Radiofabrikk has been among the world's leading producers and exporters of Tape Recorders. In the U.S.A., Great Britain, Sweden and Norway the name Tandberg is synonymous with the finest quality in tape recording. It is recommended that you study this booklet and follow the instructions carefully in order to obtain optimum use and enjoyment from this versatile quality instrument.



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Unpacking

To avoid transport damage, plastic strips are inserted between the top plate and the cabinet. These are easily removed after loosening the four large mounting screws on the top plate. The screws must then be adjusted to give only slight clearance between the cabinet and the top plate.

Mains voltage

The tape recorder operates from the following power sources:

Standard Model: 230 V, 50 Hz.

English Model: 240 V, 50 Hz.

US-Model: 115 V, 60 Hz.

Power consumption: 50 watts.

Record level control from line input.

Record level control from microphone input.

Record level indicator. The pointer is to deflect up to the red area at optimum recording level.

Treble control for use during playback, in monitor and when in use as an amplifier.

Bass control for use during playback, in monitor and when in use as an amplifier.

Track selector. Position DUO: Mixing of track 1 and 3 when side 1 is uppermost, and of track 2 and 4 when side 2 is uppermost. NORMAL: Track 1 is engaged when side 1 is uppermost and track 4 when side 2 is uppermost. EXTRA: Track 3 is engaged when side 1 is uppermost and track 2 when side 2 is uppermost. Only the four track version is furnished with track selector.

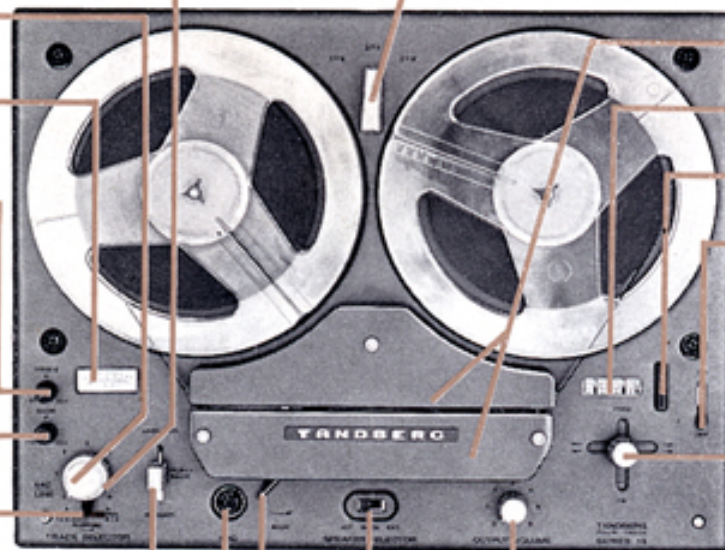
Function selector switch. RECORD: Recording starts when tape motion lever is set to → position. (The switch is locked in position by the tape motion lever.) PLAYBACK: Playback pos. AMPLIFIER: Amplifier pos.

Microphone socket.

Momentary start/stop lever. The record or playback starts or stops instantly by operating the lever.

Recess for mains cord.

EXT. SPKR. DIN-socket and telephone jack for connection of 4 ohm external speaker.



Speed selector. For selection between the speeds 1 $\frac{7}{8}$ " , 3 $\frac{3}{4}$ " and 7 $\frac{1}{2}$ " per sec.

Front and rear headcover. Remove for cleaning of heads and guide posts.

Tape counter. Indicates the position of the tape.

Reset button. Sets the tape counter to zero.

Mains switch. Turns on the power.

Tape motion lever. Central position: Stop. →: Normal forward drive for recording and playback. ⇨: Fast winding. ⇐: Fast rewinding. FREE: For tape threading. Always return the lever to the central position when the tape recorder is not in use.

Playback volume control. Regulates the output volume during playback, in monitor and in amplifier position.

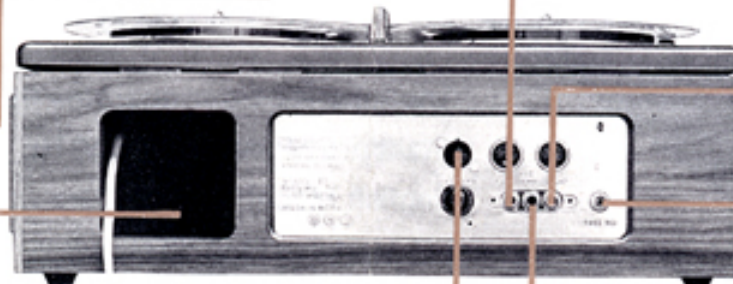
Speaker selector. 3 position switch.

P.UP.socket. For connection to record player with crystal or ceramic pick-up. DIN- and phono-sockets are connected in parallel.

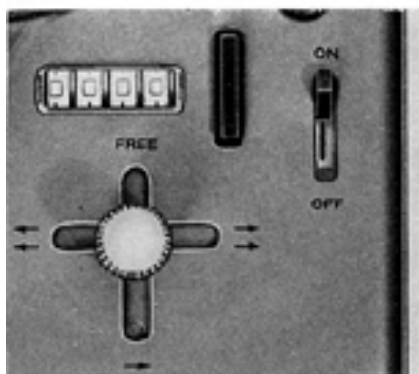
RADIO sockets. For connection to radio. DIN-socket for record and playback.

FREE HD socket. Can be used for connection to Tandberg Tape/Slide Synchronizer 2.

PREAMP socket. For connection to radio or external preamplifier during playback.



Preparations for recording

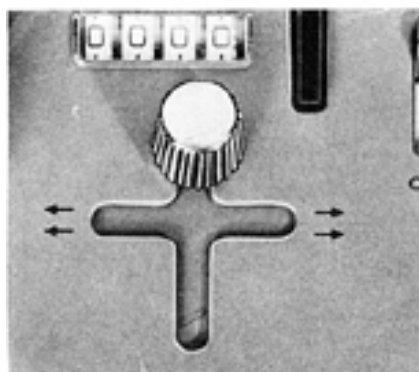


Pull out the mains lead from the recess at the rear of the tape recorder. Plug into a mains socket and switch on.

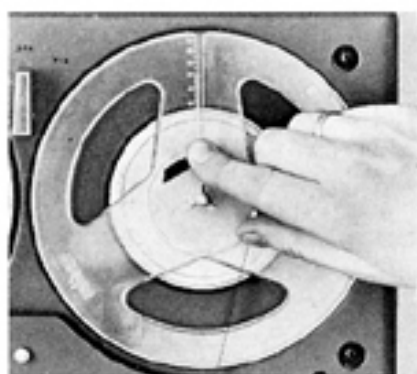
The counter lights up indicating that the tape recorder is now ready for recording or playback.



Cut off the length of sticky tape on the end of new tapes to avoid the risk of depositing adhesive on the heads. Place a full reel on the left hand turntable. Hold the tape taut between forefingers and thumbs and insert it in the tape slot, making sure that the shiny side is towards you.



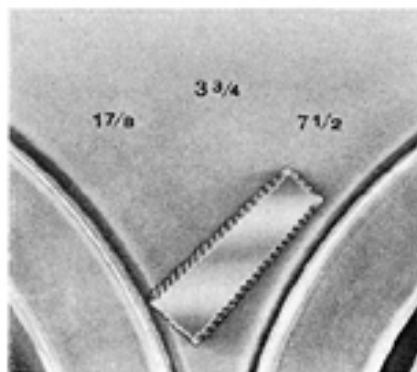
Set the tape motion lever in the FREE position. Both turntables can now be turned freely and independently, facilitating tape threading.



Pull out sufficient tape to enable the end to be inserted in the slot in the empty reel. Hold the tape end in position while turning the reel anti-clockwise until the tape is taut.

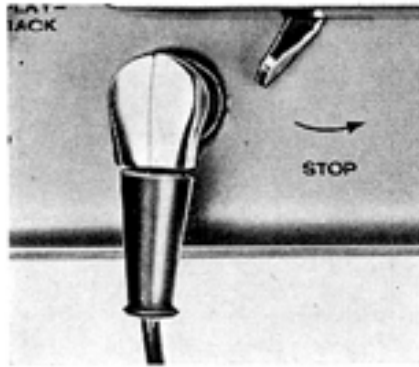


Set the tape counter at zero when starting at the beginning of a tape. The tape counter indicates the number of revolutions of the right hand turntable during recording, playback and fast wind and re-wind. You can therefore always rely on the figure shown on the counter providing you are always using reel with same center diameter.



Set the speed selector switch at the required speed. $7\frac{1}{2}$ " per sec. provides the best sound quality, while $17\frac{1}{2}$ " per sec. gives longest playing time. See the technical specifications on page 15.

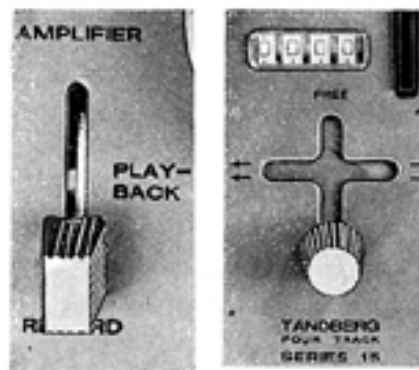
Microphone recording



Push the microphone jack plug into the socket marked MIC, making sure it is fully home. This does not disconnect any programme which may be connected to one of the input sockets at the rear of the tape recorder. Apply a low impedance, dynamic microphone (Tandberg TM4).



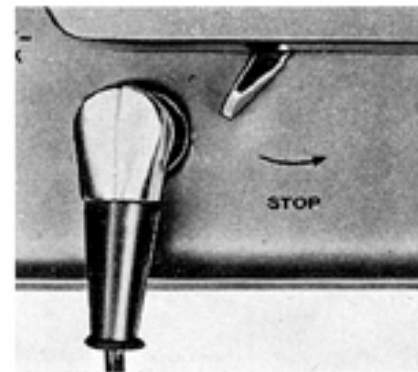
The 4 track model is equipped with a track selector switch. Turn this to NORMAL 1-4. The remaining positions are described further on.



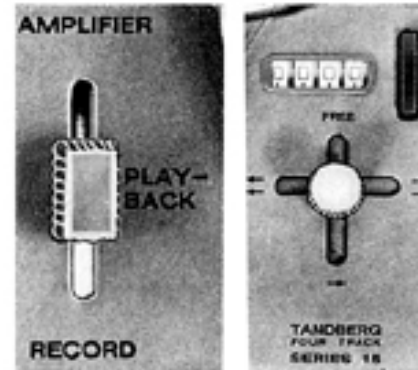
Push the start/stop lever over to the right to the STOP position. Set the function selector switch at RECORD and hold it in this position while moving the tape motion lever to →. The indicator will light up when the function selector switch is set at RECORD.



Turn up the upper volume control marked MIC until the indicator pointer is deflected up to the red area when you speak into the microphone.

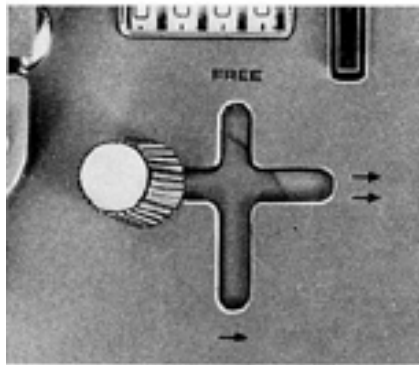


To start recording, move the start/stop lever to the left. This lever can also be used for instantaneous starts and stops during recording. The tape stops when the lever is moved in the direction of the arrow and starts instantaneously when the lever is moved back again.



To stop recording, move the tape motion lever back to the neutral position. The function selector switch will then automatically spring back to the playback position.

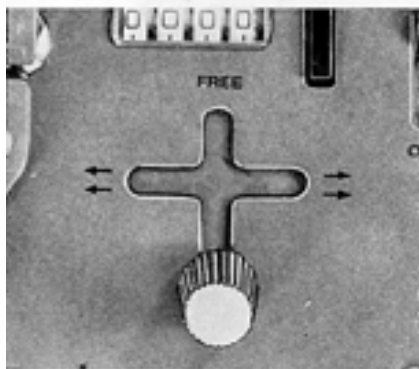
Playback through internal speaker



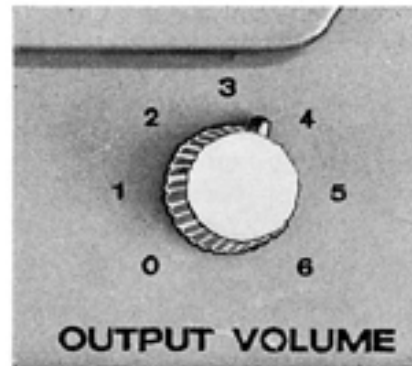
Rewind the tape to the position where recording started by moving the tape motion lever to the ← position. Stop rewinding when the tape counter shows the correct position by moving the tape motion lever to the neutral position.



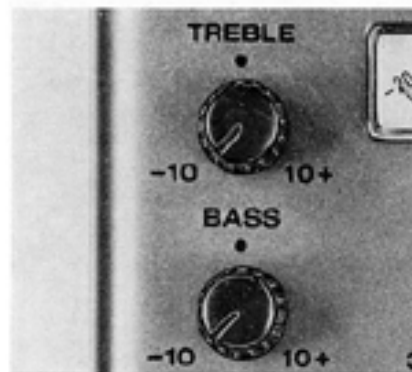
Set the speaker selector switch at INT, thereby connecting the tape recorder's internal speaker.



Start up normal forward drive by moving the tape motion lever to →.



Adjust the volume by means of the volume control marked OUTPUT VOLUME.

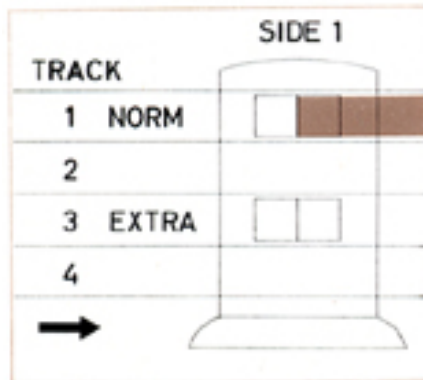


Both bass and treble can be varied continuously 10 dB either way. There are separate BASS and TREBLE controls which function during monitor playback and when the tape recorder is used as an amplifier. The controls do not operate during recording.

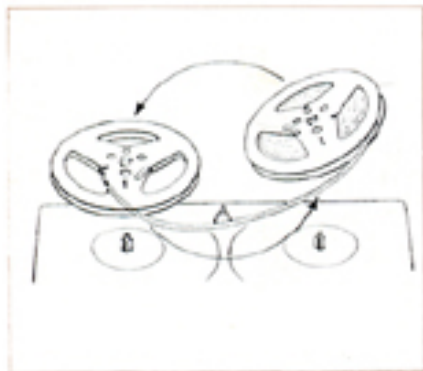


The start/stop lever can be used for short pauses during playback. When playback is finished, move the tape motion lever back to the neutral position.

4 track recording (model 15-4)



On the 4 track model, programmes can be recorded on four separate tracks equally spaced across the width of the tape. During the first recording on page 6 the track selector was set at NORMAL 1-4. The upper recording head was then in operation and recording took place on track 1.



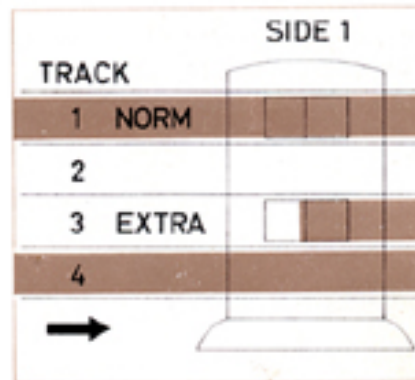
When the first run is finished and the left hand reel is empty, reverse both reels and tape so that side 2 is uppermost.



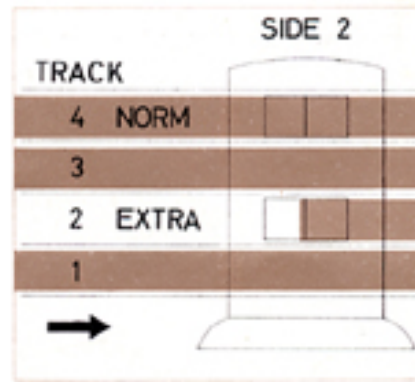
The upper recording head now operates on track 4, and recording can take place on this track.



When the whole tape has been run through, recording on track 4, reverse reels and tape as before so that side 1 is now uppermost. Set the track selector at EXTRA 3-2.

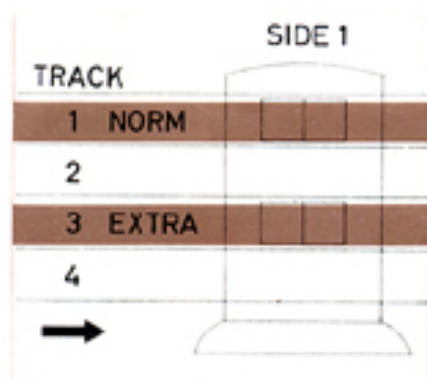


The upper recording head is now disconnected and the lower head in operation so that recording can take place on track 3.

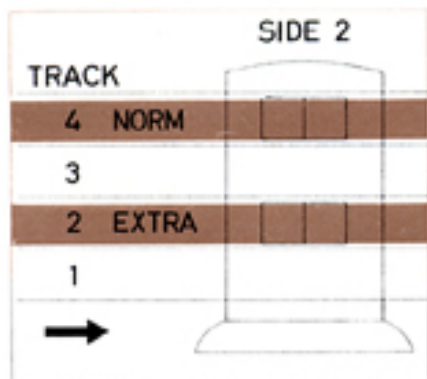


After the tape has been run right through, reverse reels and tape once more so that recording can now take place on the remaining track, no. 2. The track selector switch is locked in position by the tape motion lever during recording. This eliminates the possibility of accidentally switching tracks while the tape is in motion and thereby possibly erasing earlier recorded programmes.

4 track playback



The track selector switch may be operated during playback. When side 1 is uppermost it is possible to select between programmes on track 1 (NORMAL 1-4) and track 3 (EXTRA 3-2).

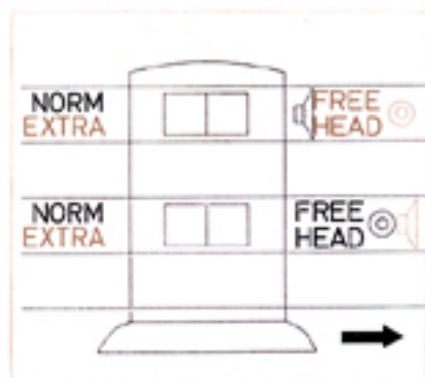


When side 2 is uppermost it is possible to select between programmes on track 4 (NORMAL 1-4) and track 2 (EXTRA 3-2).



When the track selector switch is set at DUO 1+3 (4+2), two programmes are played simultaneously, i.e. programmes on tracks 1 and 3 when side 1 is uppermost and tracks 4 and 2 when side 2 is uppermost. Both programmes are fed to one speaker (mono). Various effects can thus be achieved such as background music to speech and mono playback of stereo tape. The DUO position is for playback only.

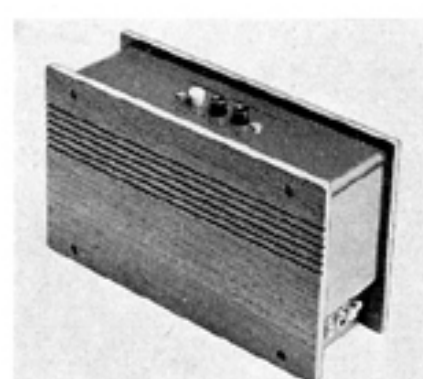
Free head



The head which is not in operation during playback, is automatically connected to the FREE HEAD output socket. When the track selector is set at NORMAL 1-4 and side 1 of the tape is uppermost, track 1 feeds the programme to the speaker while track 3 feeds to FREE HEAD. In position EXTRA 3-2, track 1 feeds to FREE HEAD while track 3 is fed to the speaker. The sequence is the same for tracks 4 and 2 respectively when side 2 is uppermost.

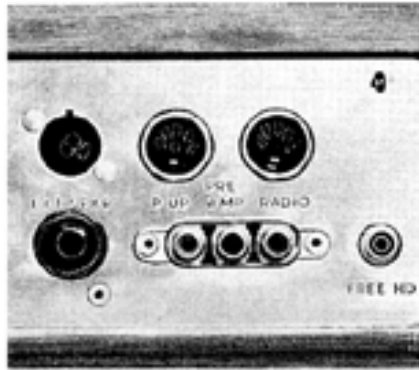


As the signals through FREE HEAD are not amplified, an auxiliary amplifier is necessary for playback through this connection. A separate amplifier makes it possible to play back stereo tape with stereo effect, but for correct sound reproduction the amplifier should be equalized.

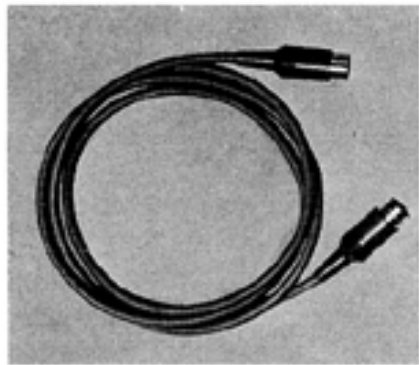


On the model 15, the FREE HEAD output may be used in conjunction with the Tandberg Tape/Slide Synchroniser 2. A commentary to your slides can be recorded and with the help of the synchroniser the slides are changed as required by means of inaudible impulses from the tape. See the separate instructions for the Tandberg Tape/Slide Synchroniser 2.

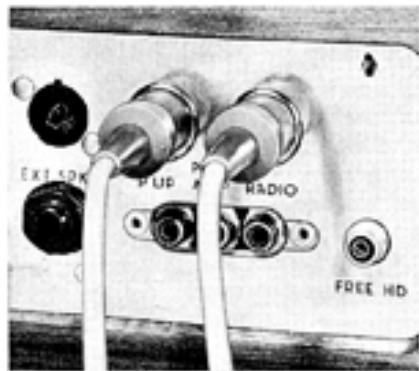
Connecting external equipment



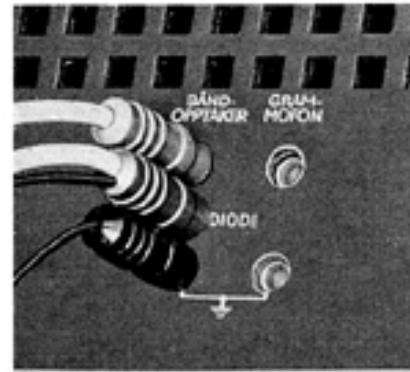
Input and output sockets for recording and playback are located at the rear of the tape recorder.



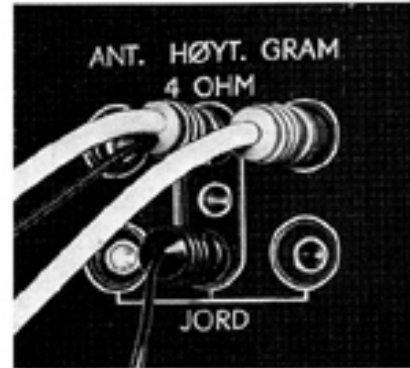
A DIN plug equipped cable is supplied as standard accessory with every TB 15. This lead is for radio or external amplifier connection. When connecting to radio with this lead both record and playback is obtained via the cable. If the external equipment is not furnished with DIN-sockets, the phono sockets should be applied.



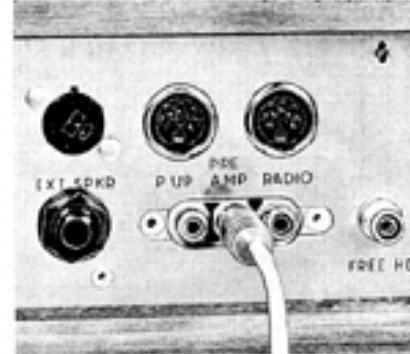
For recording from and playback through a radio set, plug the DIN cable into the RADIO socket. For direct recording from a record player equipped with crystal or ceramic pick-up, plug the DIN cable from the record player to the P.UP socket. If phono plugs are used, plug these into the phono sockets marked RADIO and P.UP respectively.



If the radio is equipped with sockets for banana plugs only, an adapter "phono-banana" has to be used. When the radio is equipped with diode output and input for tape recorder, one banana plug must be connected to the TAPE RECORDER socket. The phono-plugs are connected to the tape recorder sockets marked RADIO and PRE. AMP., respectively. Black connector to earth.

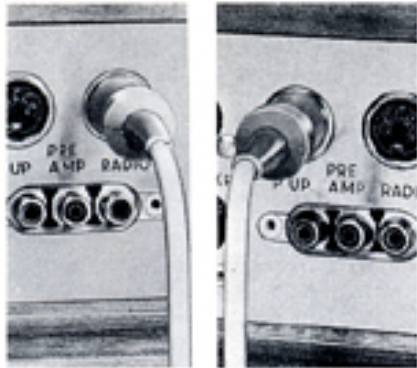


On older radio sets which are not equipped with DIODE or TAPE RECORDER sockets, plug the banana plug to the EXTRA SPEAKER socket and the phono plug at the other end of the cable to the RADIO phono socket on the tape recorder. Connect a cable from the P.UP socket on the tape recorder to the GRAM socket on the radio. Connect the black lead to earth.

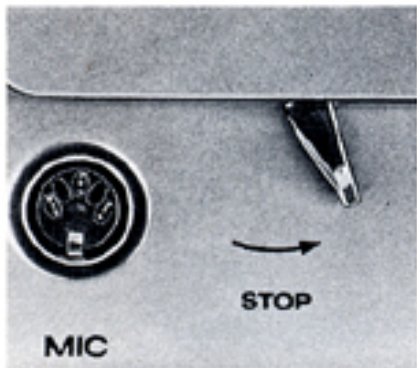


For playback through an external amplifier, connect the phono plug to the PRE. AMP output socket. Signals are fed to the PRE. AMP socket when the tape recorder is set at PLAYBACK or AMPLIFIER.

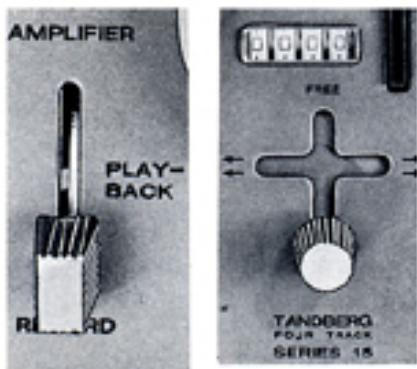
Recording from radio or record player



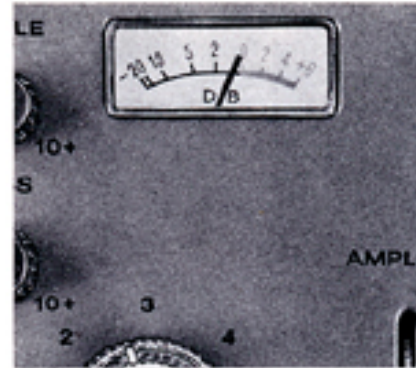
In order to record from radio, connect the DIN cable to the RADIO socket. When recording from a record player, connect the DIN cable from the record player to the P.U.P. socket.



Move the start/stop lever to the right in the stop position.



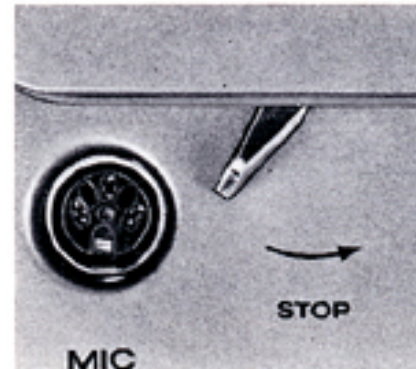
Set the function selector switch at RECORD and the tape motion lever at →.



Adjust the radio volume control to a level slightly higher than normal listening level. On modern sets with diode outputs, the signals to the tape recorder are independent of the volume and tone controls. On some sets the signal level at the diode output is very low. This will be indicated by insufficient deflection on the indicator.

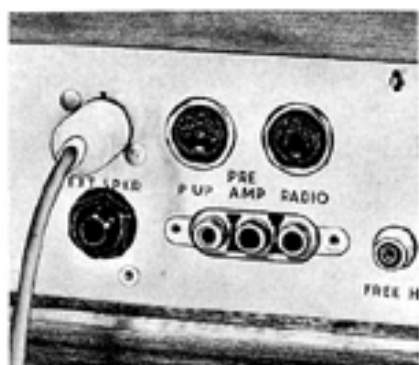


At low signals use the RADIO socket and at high signals use the P.U.P. socket. Adjust the LINE volume control to approx. 3-4. The indicator pointer should now deflect up to the red area at the strongest signals.



Move the start/stop lever to the left to commence recording. The procedure is now the same as for microphone recording. Use the start/stop lever for short stops and move the tape motion lever back to the neutral position when recording is finished.

Playback through external equipment



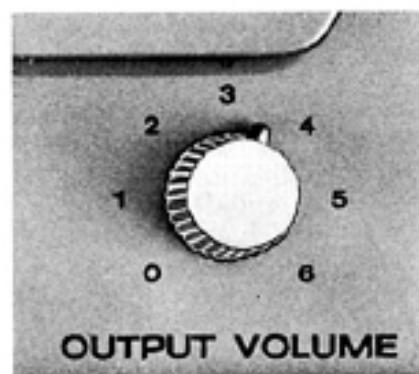
External speakers (4 ohms) may be plugged into the DIN or phono sockets marked EXT.SPKR. The outputs are controlled by the speaker selector switch.



For playback through external equipment only, set the speaker selector at EXT, thereby disconnecting the internal speaker.

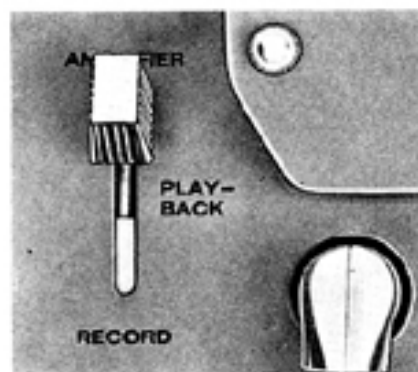


For playback through both external equipment and internal speaker, set the speaker selector at BOTH. The remaining procedure is the same as described on page 7.



The volume of playback through auxiliary speakers is adjusted by the OUTPUT VOLUME control on the tape recorder. When playing back through a radio, use the radio volume control for adjustment of the output level.

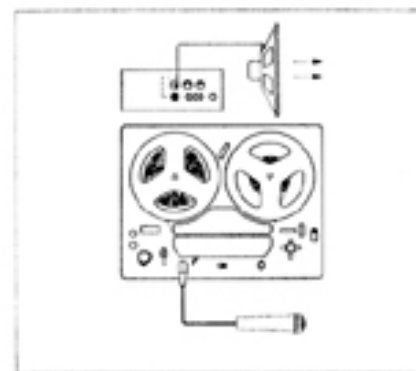
Tape recorder as an amplifier



By setting the function selector switch at AMP., the tape recorder can be used as a regular amplifier for lectures, speeches etc. The recording equipment is then disconnected. One auxiliary speaker should be used, connected up as described on page 12.

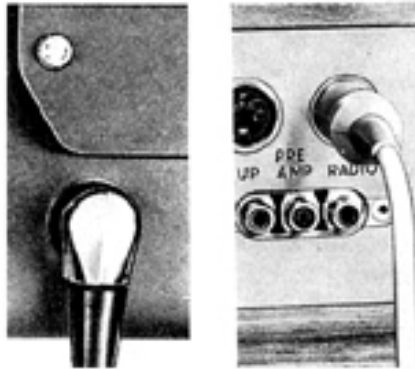


The microphone should be positioned about 8 to 12 inches from the mouth and the chosen distance should not vary unduly. This can be achieved by hanging the microphone around the neck on a cord, or placing it in its stand on a table in front of you.

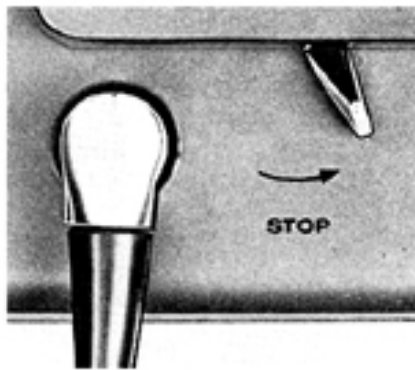


When the speaker and microphone are in the same room, do not turn up the OUTPUT VOLUME control to such a pitch as to induce howling through acoustic feed-back. A further increase in volume can be achieved either by decreasing the distance between microphone and sound source or increasing the distance between microphone and speaker and turning up the OUTPUT VOLUME control.

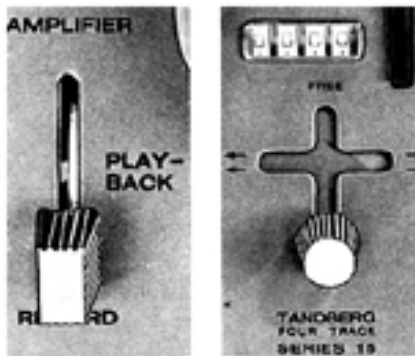
Mixing



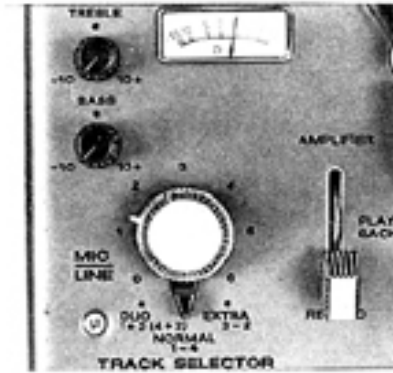
Connect the microphone to the tape recorder and the DIN plug from the programme source to the RADIO or P. UP socket. The tape recorder is now set for recording two mixed programmes, one from the microphone input and the other from line input.



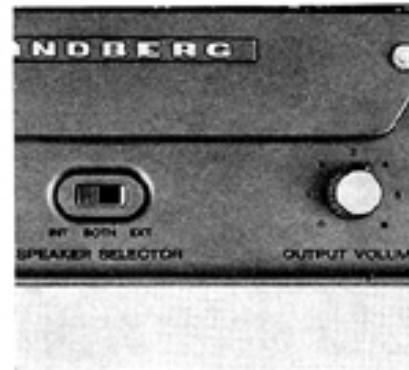
Move the start/stop lever to the right to the STOP position.



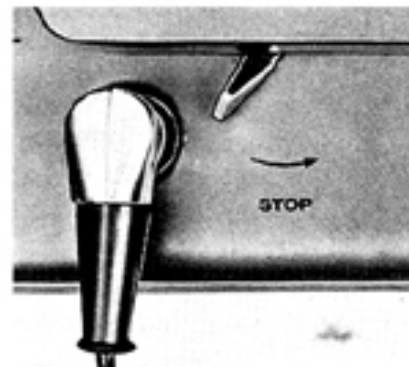
Set the function selector switch at RECORD and the tape motion lever at →.



Set the track selector switch at NORMAL 1-4 and adjust the volume levels of the programmes which are to be mixed by means of the MIC and LINE controls. The indicator pointer should deflect up to the red area at the strongest signals.



The two programmes can be monitored through the internal speaker or through external equipment. Use the OUTPUT VOLUME control to adjust programme volume through the speaker. When the required mixing ratio between the two programmes has been achieved, turn the OUTPUT VOLUME control back to 0 to prevent acoustic feed-back between speaker and microphone.



Move the start/stop lever to the left to start the tape and record the mixed programme. Use the start/stop lever for short stops and move the tape motion lever back to the neutral position when recording is finished.

Monitoring

A programme may be monitored during recording by playing through the speaker at the same time as recording takes place. Adjust the volume through the speaker by means of the OUTPUT VOLUME control. If there is any acoustic feed-back at the speaker during microphone recording, the OUTPUT VOLUME control will have to be turned down until this stops.

Public address

A pre-recorded programme can be played back at the same time as the tape recorder is used as a microphone amplifier by moving the function selector switch to AMP. position, and the enclosed patch cord is plugged from the terminal marked PRE AMP. to the terminal marked P.UP. The level of the played back programme from the tape is controlled by the volume control LINE, while the microphone level is adjusted by the volume control MIC. The programmes are mixed and fed to the loudspeaker. The level of the mixed programme is adjusted by the volume control marked OUTPUT VOLUME. This function can for instance be used when background music is added to commentaries.

The public address function can also be used for language studies. The pre-recorded programme (master programme) is played back either through loudspeaker or through headphones.

The master programme is repeated by the student in the pauses (audio active). The student response is not recorded on the tape.

Erasing

Previous recordings will automatically be erased when taking up a new recording on the same track. Before recording, therefore, make certain that the tape does not contain programmes you wish to keep.

When the tape motion lever is moved from → to the neutral position, the function selector switch automatically springs back to the PLAYBACK position, thereby eliminating the possibility of accidental erasing. To erase a programme without recording, run the tape through with the function selector switch in the RECORD position and the volume controls at zero.

Cleaning heads and guide posts

The heads and guide posts should be cleaned at regular intervals, and any film on the guide posts should be removed.

Unscrew and remove the front and rear covers. Wrap a clean piece of flannel around a small stick and dampen with purified petrol (gasoline). Do NOT use acetone or trichlorethylene as these can cause damage. Clean the heads and guide posts and replace the covers.

Note: The adjusting screws on the heads must on no account be disturbed.

ACCESSORIES

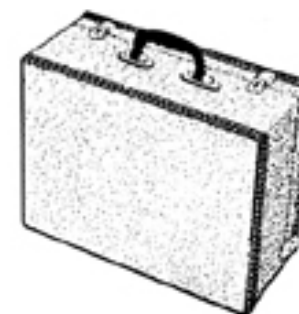


MICROPHONE TM4

This dynamic microphone is designed especially for use in conjunction with Tandberg Tape Recorders. Tandberg TM4 is a high quality omnidirectional microphone, suitable for making high fidelity recordings of both speech and music.

Tandberg TM4 Handy is supplied with a small handy table stand and a string so it may be hung around the neck.

Tandberg TM4 Complete is supplied with a detachable, adjustable stand made of unbreakable plastic material together with a string so it may be hung around the neck. There is also enclosed a hood for shielding of wind at outdoor recordings. The microphone is baled in a robust, unbreakable plastic case.



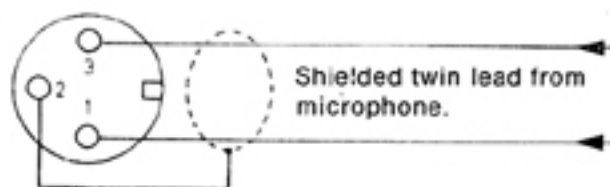
CASE

An attractive, practical and durable carrying case is available for the cabinet model TB15. Weight: 5 lbs.

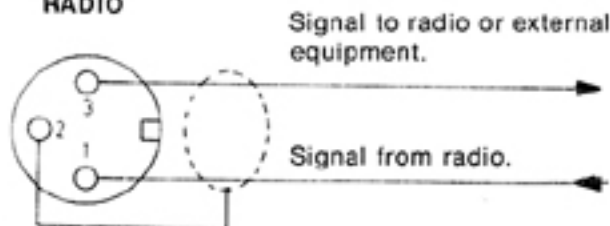
MATING PLUGS FOR THE SOCKETS MARKED MIC, RADIO AND P.UP.

NOTE. THE PLUGS ARE SEEN FROM THE WIRING SIDE.

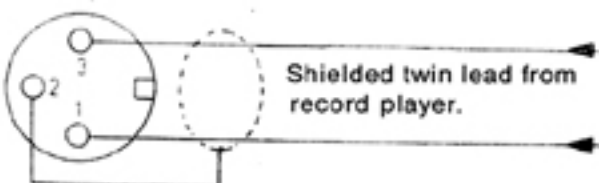
MIC



RADIO



P.UP



Technical specifications

Mains voltage:

Standard model: 230 Volts, 50 Hz.

US-model: 115 Volts, 60 Hz.

English model: 240 Volts, 50 Hz.

Consumption: Maximum 50 watts.

Tape: Maximum reel diameter 7".

Use best quality tape.

Tape speeds: 7 $\frac{1}{2}$ " , 3 $\frac{3}{4}$ " and 1 $\frac{7}{8}$ " per sec.

Speed tolerance: \pm 1,5 % absolute tolerance.

Playing time: 1200 ft. tape gives the following playing times:

	2 track	4 track
7 $\frac{1}{2}$ " per sec.:	2 x 32 mins.	4 x 32 mins.
3 $\frac{3}{4}$ " per sec.:	2 x 64 mins.	4 x 64 mins.
1 $\frac{7}{8}$ " per sec.:	2 x 128 mins.	4 x 128 mins.

Fast winding and rewinding: Approx. 1 $\frac{2}{3}$ mins. in either direction for 1200 ft. tape, without subjecting tape heads to wear.

Transistors: 20.

Erase and bias signal: 85.5 kHz. Less than 0.5 % distortion.

Inputs: Microphone input for low impedance dynamic microphone.

200 ohms unbalanced (3 pin DIN socket). Sensitivity: 0,1 mV. 2 line inputs: PICK UP input 1 Mohm, sensitivity at 400 Hz, 100 mV. RADIO input, 100 kohms sensitivity at 400 Hz, 10 mV. Dynamic range on all inputs + 40 dB.

Noise level:

Measured according to DIN-standard 45511-H, and at tape speed 7 $\frac{1}{2}$ " per. sec:

4 track model: 58 dB.

2 track model: 60 dB.

Corresponding figure under linear conditions: 56 dB.

Output power: 10 watts.

Playback amplifier output: Impedance 5 Kohms. 0.75 V output voltage when amplifier is not under load, this level being independent of all switch and control positions during playback.

Frequency response:

7 $\frac{1}{2}$ " per sec. 30-20.000 Hz (\pm 2 dB 40-16.000 Hz)

3 $\frac{3}{4}$ " per sec. 30-13.000 Hz (\pm 2 dB 50- 9.000 Hz)

1 $\frac{7}{8}$ " per sec. 30- 7.000 Hz (\pm 2 dB 60- 4.500 Hz)

Amplifier: \pm 3 dB 30-16.000 Hz.

Wow:

7 $\frac{1}{2}$ " per sec.: Better than 0.1 %

3 $\frac{3}{4}$ " per sec.: Better than 0.15 %

1 $\frac{7}{8}$ " per sec.: Better than 0.35 %

Bass control: Bass tone can be adjusted \pm 10 dB at 60 Hz during playback through amplifier or monitoring.

Treble control: Treble tone can be adjusted \pm 10 dB at 8 kHz during playback through amplifier or monitoring.

Speaker: 7" x 4" internal speaker. To obtain maximum output power, 10 watts, external speaker of 4 ohms impedance has to be used.

Dimensions:

Length: 15 $\frac{1}{8}$ "

Depth: 11 $\frac{3}{4}$ "

Height: 6 $\frac{3}{4}$ "

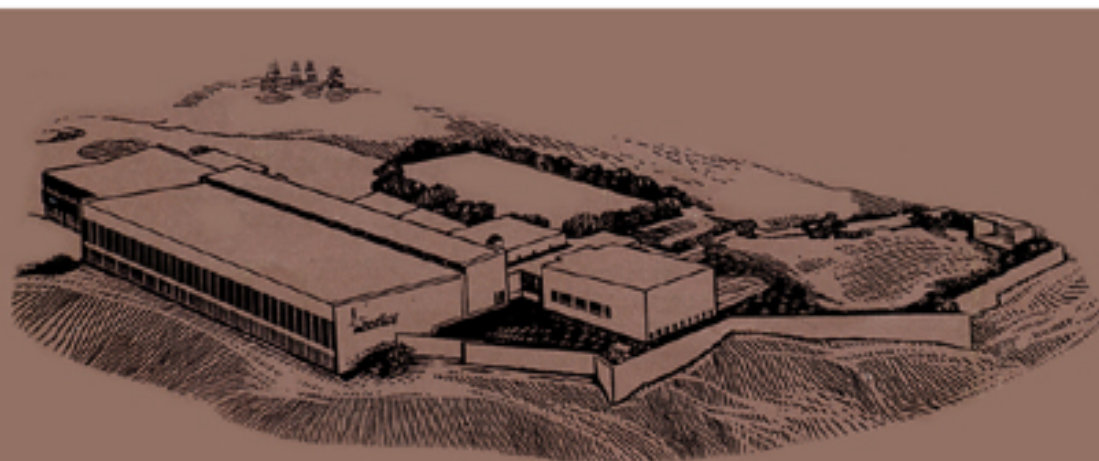
Weight: 19 lbs in cabinet.



Tandbergs Radiofabrikk A/S, Kjelsås.

TANDBERGS RADIOFABRIKK A/S

KJELSÅSVEIEN 161 — OSLO — NORWAY



Tandbergs Radiofabrikk A/S, division Kjeller.

Tandberg
RADIO

TANDBERG has a world wide reputation for quality. This quality finds its source in every phase of production. Continuous research, perfect construction plus incessant testing of components and finished products are prerequisites for high level quality. But it is of primary importance that the demand for quality begins with the people who work at Tandberg. TANDBERGS RADIOFABRIKK A/S has 1300 employees in the Oslo area alone. The positive effort and skill which these people have given has been decisive in maintaining and extending Tandberg's reputation. Therefore great emphasis is placed on creating and maintaining an ideal working atmosphere. Even the architectural design of the plant and its location in this typical Norwegian setting has been carried out with maximum consideration given to creating a pleasant and friendly atmosphere. Tandberg working conditions and social benefits are unique in the world.

DEALER:

583b-6-68. Part no. 250390.

Petlitz.