

# PHILIPS



OPERATING INSTRUCTIONS

# N 4307



FOUR-TRACK TAPE RECORDER

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## YOUR NEW RECORDER

With this monophonic tape recorder, you are now the possessor of a most ingeniously designed apparatus. You will find that the recorder, despite its many potentialities, is very simple to operate, thanks to the clear arrangement of its controls and connection sockets.

The most important advantages of this recorder are:

- The 4-track system, which enables you to record over the whole length of tape on four different tracks.
- Transistors being employed, the recorder is immediately ready to record or play back.
- Long-play, double-play and triple-play tape may be used. This facility gives you a wide choice regarding the size of reel and type of tape to be used.

### 1001 themes are yours to record

Everyday life, both in the social and occupational spheres, offers an abundance of situations and events suitable for recording.

**Before putting the recorder into operation, read the Operating Instructions carefully. Operation will then be simple and you will realise the countless possibilities the recorder holds for you!**

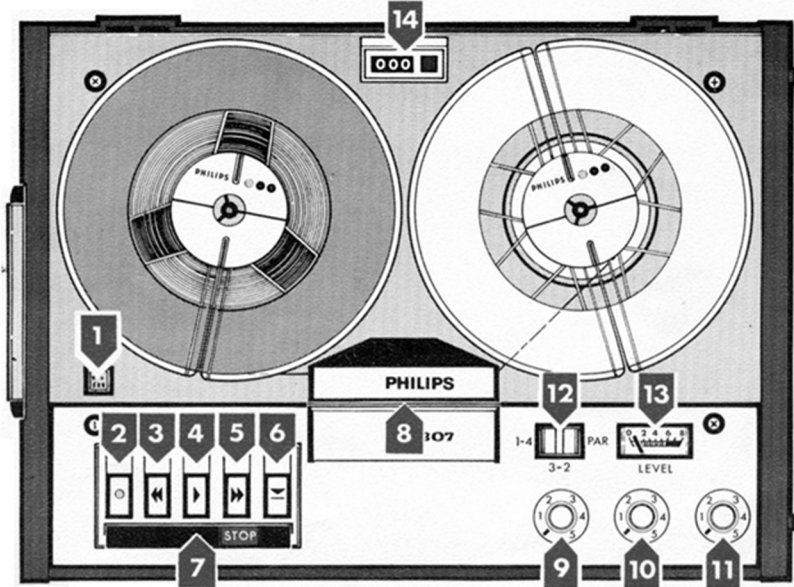


Fig.1

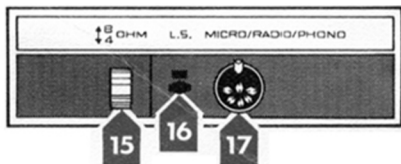


Fig.2

## CONTROLS AND CONNECTION SOCKETS

Fig. 1

- 1 = **Mains switch** - for switching the recorder on and off
- 2 = **Record key** - to be used for recording together with key 4
- 3 = **Rewind key** - for fast rewinding of the tape until the beginning of a recording or the beginning of the tape is reached (stopping is effected with key 7)
- 4 = **Start key** - for starting the tape for recording and playback
- 5 = **Wind key** - for fast winding of the tape until the beginning of a recording or the end of the tape is reached (stopping is effected with key 7)
- 6 = **Pause key** - for short interruptions during recording and playback without the record key 2 and/or start key 4 being released; the pause key cannot be operated during fast winding or rewinding
- 7 = **Stop key** - for terminating recording, playback, fast winding and rewinding
- 8 = **Tape slot**
- 9 = **Recording-level control**
- 10 = **Volume control** - during playback
- 11 = **Tone control** - during playback
- 12 = **Track-selector switch** - for selecting the required track and for connecting the tracks in parallel
- 13 = **Recording-level indicator/on-off indicator** - for checking the recording level
- 14 = **Programme indicator with zero reset button** - for rapidly locating recordings

Fig. 2

- 15 = **Output-impedance switch for external loudspeaker**
- 16 = **Socket for external loudspeaker**
- 17 = **Socket for microphone/radio/recorder player/amplifier/second recorder**

Keys 2, 3, 4, 5 and 6 automatically lock down when depressed. Key 6 is released by pressing it again. All the other keys are released by pressing the stop key 7.

The figures in the arrows indicate the connection sockets and controls as referred to in the text.

## CHECK THE MAINS VOLTAGE

It is **essential** to ensure that the recorder is set to the correct voltage before you connect it to the mains.

The recorder can be adjusted to 110 (100-120), 127 (120-130), 220 (200-230) or 240 volts (235-250), 50 c/s. (If required, your dealer can convert the apparatus for operation on 60 c/s).

Place the recorder on its right-hand side and check whether the voltage adaptor in the bottom indicates the local mains voltage (the number opposite the small triangle).

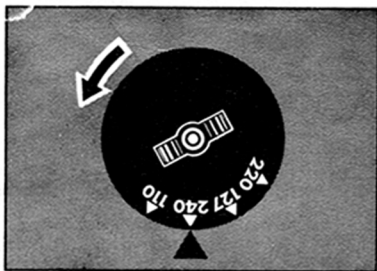


Fig. 3

If necessary, change the setting by turning the voltage adaptor, using a coin, until the required value appears exactly opposite the small triangle (Fig. 3).

## Taking out the mains lead

Open the storage compartment at the bottom of the recorder (Fig. 4) and take the mains lead out.



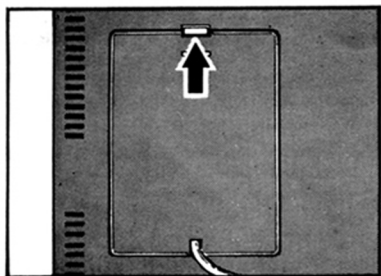


Fig. 4

The mains lead must be connected to a suitable mains plug - if you are in doubt about the correct method of connection, ask your dealer. Connect the recorder to the mains supply.

The plate covering the storage compartment is fitted with an aperture through which the mains lead can pass. The plate can then be replaced if desired. The recorder can now be connected to the mains socket.

**Note:** To ensure adequate ventilation the recorder must be operated on a hard, level surface.

#### REMOVING THE LID

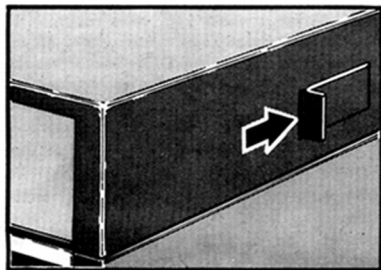


Fig. 5

The left and right-hand sides of the lid are each provided with a catch. The lid is removed by pressing the catches in the direction of the arrow (Fig. 5) and then swinging it back.

Protect the recorder from dust and soiling by keeping the lid on when the apparatus is not in use.

**The recorder must not be operated with the lid on.**

#### SWITCHING ON AND OFF

- Switch on the recorder by depressing the mains switch 1. Recording-level indicator 13 then lights up.
- Switch off the recorder by depressing the mains switch 1 once more. In that case the recording-level indicator 13 extinguishes.

**Before switching off the recorder, always press the stop key 7 so as to release any keys still engaged.**

**Never switch off by simply withdrawing the mains lead from the mains socket, since such action may result in damage to the recorder.**

#### INSERTING THE TAPE

- First of all, press the stop key 7 to release any key which may be engaged.
- Place the full reel of tape on the left-hand reel disc and the empty reel on the right-hand disc. Make sure that both reels are lying completely flat. Note that the full reel must turn anti-clockwise when unwinding.
- Unwind about 12" (30 cm) of tape, hold it taut between both hands, and lower it into the tape slot 8.

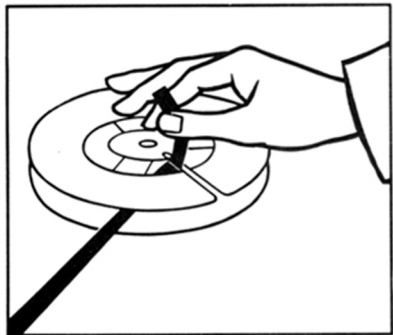


Fig. 6

- Keep the tape taut, draw the beginning through the slit in the upper side of the right-hand reel and against the reel core (Fig. 6).

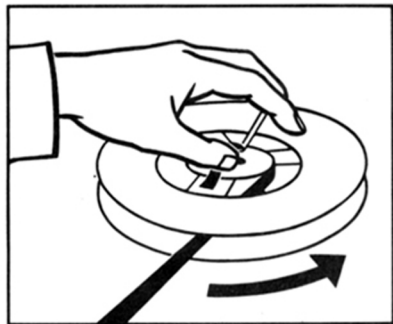


Fig. 7

- Press the free end of the tape against the core of the empty reel and give the reel a few turns anti-clockwise by hand (Fig. 7) until the tape is gripped by the reel. The tape should now lie taut between the two reels.

## PROGRAMME INDICATOR

Immediately after inserting a tape make a habit of setting the programme indicator 14 to "000", by pressing the zero reset button.

Note the reading on the indicator whenever you start a recording. Later, you will be able to locate any of your programmes rapidly by fast winding or rewinding to the same reading. Note this data on the indexing label in the tape storage box.

**N.B.** The programme indicator does not indicate tape length or playing time.

## CONNECTING AND USING THE MICROPHONE

Connect the microphone plug to socket 17. Place the microphone at some distance from the recorder and take care not to put it on the same table, otherwise unwanted motor noise may also be recorded.

Using the microphone, you can record speech, vocal (solo or group) and instrumental music - and many other sounds. When recording speech, best results are obtained if the microphone is addressed from about 12" (30 cm). When recording music, either vocal or instrumental, first make a few test recordings in order to find the best position for the microphone. The acoustics of the room in which the recording is made are important in this connection.

## CONNECTIONS

**N.B.** Never connect your tape recorder to a radio, television receiver or record player etc. employing an AC/DC chassis unless a special tape recorder socket is provided. If in doubt, in the interests of safety, it is essential that you consult your dealer.

Your recorder is supplied with a EL 3768/10 connecting lead, which enables it to record from, and playback through, radios, amplifiers, etc. fitted with a 5-pole DIN tape socket. The EL 3768/10 lead can also be connected to the corresponding socket of another tape recorder, so that tapes can be copied from one machine on to the other. The 3-pin plug of the connecting lead should be inserted in socket 17 of your recorder, and the 5-pin plug inserted in the TAPE or DIODE socket of the radio, amplifier or other tape recorder being used.

**Note 1:** The recording level will not usually be affected by the volume and tone controls on the radio/amplifier.

**Note 2:** Playback through the radio or amplifier will also be possible with this connection.

For use with equipment not having a DIN tape socket, the 5-pin plug of the connecting lead may be replaced by a plug or plugs of the kind required. In this case, one of the wires of the connecting lead (the one wired to pin 1 of the 3-pin plug) is used for the recording signal, and the other (the one wired to pin 3 of the 3-pin plug) is used for the playback signal. The screening of the lead should be used as a common earth wire. When recording or playing back via stereo equipment in this way, it may be necessary to connect both stereo channels together.

Should either the recording or playback signals be found to be too strong, a resistor may be connected in series with the appropriate wire. The value of this resistor must be found experimentally, and in case of difficulty you should consult your dealer. Crystal or ceramic pick-ups may be connected directly to socket 17 with a standard 5-pin DIN plug. Pins 5 and 3 of the plug should be used for the right and left hand channels respectively, and pin 2 for the earth (screening) wire.

### External loudspeaker

Dependant upon the impedance of the external loudspeaker, set switch 15 to either 4 or 8 ohms whichever is the nearest value. Connect the external loudspeaker to socket 16; the internal loudspeaker will be automatically switched off. If your loudspeaker is not fitted with the necessary plug, this can be obtained from your dealer, (code number 264 30041).

### RECORDING

**Note:** When making microphone recordings, you can prevent "howling" by turning the volume control 10 to "0".

— Connect the microphone, radio, amplifier, record player or second recorder to

socket 17. (See "CONNECTIONS", pages 6 and 7.)

— Set the track-selector switch 12 to position "1—4" or "3—2". (See also "THE FOUR TRACKS", page 9.)

Note that recording is not possible with the track-selector switch in the "PAR" position.

- Press the pause key 6.
- First completely depress record key 2. Keep it fully depressed while simultaneously pushing down start key 4.

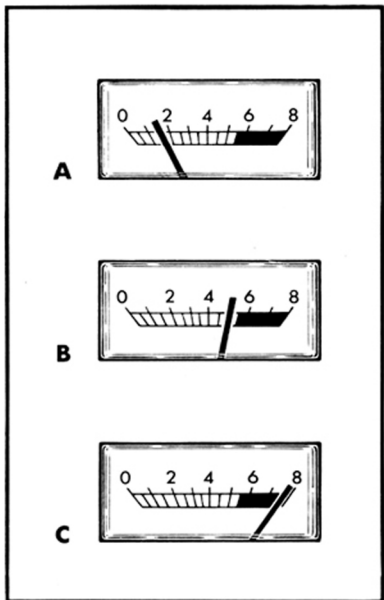


Fig. 8

- Switch on the apparatus connected or speak (sing) into the microphone; then turn recording-level control 9 far enough to the right to ensure that during the loudest passages, the pointer of the recording-level indicator 13 does not quite reach the red segment. (See Fig. 8; A = too low, B = correct, C = too high.)

- Depress and release the pause key 6. The tape is now set in motion and recording is taking place. During recording, check the recording level shown by the indicator 13 from time to time. Increase or decrease the level as necessary, but always do this gradually.
- To interrupt the recording for a short time press in the pause key 6.
- To stop recording press the stop key 7.

**Note:** A new recording automatically erases a previous recording on the same track.

### MONITORING (LISTENING-IN) DURING RECORDING

You can check what is going on the tape by monitoring during recording through the recorder's built-in loudspeaker.

- During recording, control the volume of sound and the tone with controls 10 and 11 respectively. Should "howling" occur when the microphone is used in this way, either move the microphone farther from the loudspeaker or turn the volume down to a suitable level. (If possible, position the microphone behind the loudspeaker.)

### PLAYBACK

#### a. Through the built-in loudspeaker

- Set the track-selector switch 12, depending on which track contains the recording, either to position "1—4" or "3—2".
- Press the start key 4. The tape is now set in motion and the recording is played back.
- Adjust to the correct volume with control 10.
- Adjust the tone as desired with control 11.
- To interrupt playback for a short time press the pause key 6.
- To stop playback press the stop key 7.

#### b. Through an external loudspeaker

- Set switch 15 to 8 or 4 ohms, according to the type of loudspeaker used, and connect the external loudspeaker to socket 16. (See "External loudspeaker", page 7.)
- Then proceed in the way described under a.

#### c. Through a radio or amplifier

- Connect the radio or amplifier to socket 17. (See "CONNECTIONS", pages 6 and 7.)
- Set the radio or amplifier for tape recorder playback. Where connection has been made to the pick-up input of the radio or amplifier, it should be set to "Gramophone" playback.
- Set the track-selector switch 12, depending on which track contains the recording, either to position "1—4" or "3—2".
- Press the start key 4. The tape is now set in motion and the recording is played back.
- Adjust the volume and the tone on the radio or amplifier.
- Turn the volume control 10 to "0" if required, to avoid playback through the loudspeaker of the recorder.
- To interrupt playback for a short time press the pause key 6.
- To stop playback press the stop key 7.

#### d. Through headphones

- Insert the plug of the LBB 9901 or LBB 9902 headphones in the 5-pole socket connector of the 4822 321 20263 adapter cable.
- Insert the plug with the red sleeve of the adapter cable in the socket connector of the plug with the yellow sleeve.
- Insert the plug with the yellow sleeve in socket 16 of the recorder; the internal loudspeaker of the recorder is then automatically switched off.
- Then proceed in the way described under a.

## ERASING WITHOUT RECORDING

Any recording you make with your recorder automatically erases any previous recording on the particular section of the track you are recording on.

But a recording can also be erased without a new recording being added. To do this, proceed in the usual way, but turn the recording-level control 9 to "0".

It is obvious that only one track can be erased at a time.

## THE FOUR TRACKS

The recorder employs the four-track system. This means that, on every tape, recordings can be made on each of the four tracks, the length of each of which is equal to the full length of the tape. The simplest procedure to adopt in utilising this facility is as follows:

- With the full reel of tape on the left-hand side, set the track-selector switch 12 to position "1—4". Recording in this case will be on track 1.
- Take off the full right-hand reel, turn it upside down and again place it on the left-hand side. Recording will now be on track 4.
- Again remove the full right-hand reel, turn it upside down and place it on the left-hand side. But now set the track-selector switch 12 to position "3—2". Recording will now be on track 3.
- As before, but for the last time, remove the full right-hand reel, turn it upside down and place it on the left-hand side. Recording will now be on track 2.

Recordings made on a twin-track recorder can be played back without difficulty on your recorder with the track-selector switch 12 of your apparatus set to position "1—4".

Recordings made on your recorder on tracks 1 and 4 can be played back on a twin-track apparatus provided that tracks 2 and 3 contain no recording covering the same stretch of tape as the desired recordings on tracks 1 and 4. Erase tracks 2 and 3 as necessary. (See "ERASING WITHOUT RECORDING".)

## PARALLEL-TRACK REPRODUCTION

By setting the track-selector switch 12 to the "PAR" position, it is possible for you to play back the recordings on tracks 1 and 3 (or tracks 2 and 4) simultaneously. This may be useful in composing special programmes (e.g. music and speech).

Here is an example of how to record and play back a programme of this nature:

- Set the track-selector switch 12 to position "1—4" and record music on track 1.
- Press the rewind key 3 and wind the tape back until the programme indicator 14 again shows the start of the recording.
- Set the track-selector switch 12 to position "3—2" and make a speech recording on track 3.
- Press the rewind key 3 once more, winding the tape back until the programme indicator 14 again shows the start of both recordings.
- Set the track-selector switch 12 to position "PAR".
- Now play back. The music and speech recordings will be heard together.

## USING THE RECORDER AS AN AMPLIFIER

The recorder can also be used as an amplifier in reproducing gramophone records or microphone signals. The procedure in such cases is as follows:

- Connect the record player or the microphone to socket 17.
- Ensure that the track-selector switch 12 is not in the "PAR" position.
- Press the record key 2.
- Turn recording-level control 9 far enough to the right to ensure that, during the loudest passages, the pointer of the recording-level indicator 13 does not quite reach the red segment.
- Adjust the volume as desired with control 10, and the tone with control 11. Should "howling" occur when the microphone is used in this way, either move the microphone further from the loudspeaker or turn the volume down to a

suitable level. (If possible, position the microphone behind the loudspeaker.)

- To stop amplification, depress the stop key 7.

## SPLICING THE TAPE

The need to join two sections of tape as a result of the tape breaking will practically never occur. It may well be, however, that you will wish to delete part of a recording or that, in making a composite programme, parts of different recordings must be joined together. Before cutting a tape, remember that it may contain four sound tracks and that recordings on all four tracks will be affected by the cut.

For your splicing use special PHILIPS splicing tape and proceed as follows:

- Cut out the section of tape for deletion or use elsewhere.
- Bring together the ends to be joined, arranging them so that they overlap.
- Cut completely through both ends together. (An oblique joint passes undetected by the ear!)
- Now bring the two ends carefully together. The insensitive side of the tape, which faces towards you when in the recorder, should be uppermost.
- Join the ends by sticking a piece of splicing tape (about 1" (2 cm) long) along the length of the sound tape. Finish by cutting away any splicing tape protruding beyond the edges of the sound tape.

**Note:** Splicing is greatly simplified with the PHILIPS Tape-Splicing Kit SK 10.

## MAINTENANCE

Your tape recorder is an apparatus functioning at a very high level of accuracy. Despite this, you will find that the recorder requires no special attention in the way of maintenance. After every 50 hours of operation, however, you should remove the dust which has accumulated on and around the heads. By doing this you ensure that treble reproduction is not impaired.

For this purpose press the sides of the head cover in front of tape slot 8 and lift the cover from the recorder. But before doing this, make sure that the recorder is disconnected from the mains supply and that none of the keys are depressed.

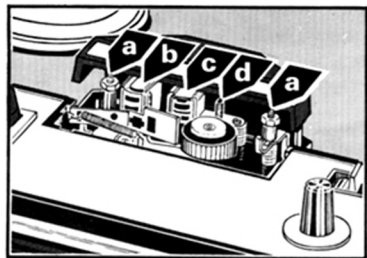


Fig. 9

Use a soft, non-fluffy cloth or soft brush without a metal band and clean the following parts (Fig. 9): the tape guides a, the front of the heads b and c and the capstan d.

To remove obstinate dust from these parts, use a cloth moistened with methylated spirit or pure alcohol. Never use other cleaning fluids and never touch the parts with sharp or metal objects which may cause damage or have undesirable magnetic influences on them.

**The driving mechanism must not be lubricated!**

Make sure that all parts are dry before replacing the cover plate.

**Note:** Cleaning can also be done by using our cleaning tape, type 811/CT.

It is recommended to have your recorder examined by your dealer at regular intervals — once yearly, perhaps or after each five hundred hours of operation. The apparatus can then be tested, cleaned and, if necessary, adjusted and any parts unduly worn can be replaced in good time. Here, as elsewhere, prevention is better than cure!



## STORING YOUR TAPES

Always return a tape to its box immediately after use. There, it is protected from dust and dirt and is easy to carry about.

Tapes are best stored at ordinary room temperature (but not in the sun or close to a fire or heater). Nor should they be placed close to a loudspeaker or transformer.

## GUARANTEE CARD

Ensure that a guarantee card is supplied to you with the recorder. The tear-off portion of the card should be returned, as addressed, within seven days. The remainder should be retained for production to the dealer in event of the recorder requiring service. Please see that the entries on the card are complete and correct.

## ACCESSORIES

(obtainable from your dealer)

A range of accessories is available to enable you to exploit the potentialities of your recorder to the full.

The range comprises:

- A range of PHILIPS general purpose **microphones**. The microphone supplied is type **N 8207** or **N 8212**.
- **Long-play, double-play** and **triple-play tape**, in a variety of lengths. You can thus buy more or less just the right amount of tape for your needs.
- **Tape-Splicing Kit, SK 10**, containing **leader tape in various colours, splicing tape, special knife** and **self-adhesive labels**. For use when compiling edited programmes.
- **Connection/extension cable, 4822 321 20211** for connection of two microphones and/or for extending the microphone cable.
- **Synchroniser, N 6400**, for synchronising speech and music with slide shows.

- **Headphones, LBB 9901** or **LBB 9902**, for listening to a programme without others hearing; to be used with **adapter cable 4822 321 20263**, for connecting the headphones to the socket for loudspeaker enclosure.
  - **Continuous Tape Reel, EL 1907/52 (CE 10)**, for uninterrupted repetition of a taped programme. Used in department stores, supermarkets, etc.
  - **External Loudspeaker**. Details of the PHILIPS range are available from the dealer.
  - **Cleaning tape, 811/CT**.
  - **Connecting Cables:**
    - EL 3768/10**, Recording/Playback lead with 3-pin DIN plug at one end and 5-pin DIN plug at the other.
    - 4822 321 20202**, Recording/Playback lead with 3-pin DIN plug at one end and three loose cores at the other.
    - EL 3768/14**, Recording/Playback lead with 5-pin DIN plugs at both ends.
  - **Plugs:**
    - 2-pin DIN external loudspeaker plug (code number 264 30041);
    - 5-pin 180° DIN plug microphone/radio/gramophone (code number 264 40023).
- Important:** When ordering accessories from your dealer, please state the type number of your recorder.

## PLAYING TIME OF THE TAPE

The playing time of a tape depends on the diameter of the reel and the type of tape. It goes without saying, that you can only be sure of a good sound quality if you use tape of excellent quality. PHILIPS tapes, which satisfy the highest requirements and are available in different types and lengths, are recommended.

In the table below you will find the playing time for any possible combination. With the help of this table you can e.g. calculate the best length of tape to buy for the recording of a programme of known duration. (It is a wise precaution, of course, if you allow for a few minutes extra playing time.)

Type of tape	Diameter of reel	Playing time
Long-play tape	3"	4 x 11 mins.
	4"	4 x 24 mins.
	5"	4 x 48 mins.
	5¾"	4 x 64 mins.
	7"	4 x 96 mins.
Double-play tape	3"	4 x 16 mins.
	4"	4 x 32 mins.
	5"	4 x 64 mins.
	5¾"	4 x 96 mins.
	7"	4 x 128 mins.
Triple-play tape	3"	4 x 24 mins.
	4"	4 x 48 mins.
	5"	4 x 96 mins.

## TECHNICAL DATA

### (subject to alteration)

- Switchable for operation on 110, 127, 220 and 240 volts (approx. 10% variation, 50 c/s, AC). Dealers can convert the recorder for operation on 60 c/s.
- Four-track system.
- Tape speed: 3¾"/sec. (9.5 cm/sec.).
- Frequency response: 60-14,000 c/s according to DIN and within 6 dB.
- Wow and flutter:  $\leq \pm 0.25\%$  (according to DIN).
- Takes reels from 3-7" (8-18 cm) in diameter.
- Maximum playing time: 4 x 2 hours, using 7"-(18 cm) reel, double-play tape.
- Fast winding: 1200 ft (360 m) tape within 3 minutes.
- Output amplifier with 2.5 W continuous power  $\pm 1$  dB.
- Consumption: approx. 40 W.
- Inputs (socket 17):  
radio/microphone (pins 1 and 4 are in parallel) 0.2 mV/2 k ohms (with lead EL 3768/03 approx. 100 mV/1 M ohm); record player without amplifier fitted with 5-pole plug (pins 3 and 5) 100 mV/1 M ohm;  
pin 2 = common earth (screening).
- Outputs:  
diode (pins 3 and 5, pin 2 = earth screening)  $> 750$  mV/20 k ohms;  
loudspeaker 4-8 ohms.
- Dimensions: 16½" x 11¾" x 5⅞" (420 x 300 x 140 mm).
- Weight: approx. 17 lbs (7.5 kg).
- Suitable for the tropics.

**Note:** With the EL 3768/03 lead a low sensitivity input of approx. 200 mV/1.5 M<sub>Ω</sub> ohm between the RED and BLACK (EARTH) connections and an output of 0.5 V/20 k ohms between the WHITE and BLACK (EARTH) connections are provided.