



PHILIPS

N 5846

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HIGH FIDELITY **fi** INTERNATIONAL

English

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The illustrations are on a separate sheet.

Français

page 10

Les illustrations se trouvent sur une feuille volante.

Deutsch

Seite 18

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Nederlands

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De afbeeldingen staan op een los blad.

Español

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Las figuras se encuentran en un hoja aparte.

Italiano

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Le illustrazioni si trovano su un foglio separato.

Suomi

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Kuvat ovat irtolehdessä.

Svenska

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Figurerna återfinns på ett separat blad.

Introduction

This recorder has a built-in micro computer with a pulse circuit for recording of inaudible computer coded pulses on the tape. The computer coded pulses are used for numbering your recordings. With such recordings you can select a programme of maximum ten recordings in arbitrary order. The recorder will automatically search and play your selected programme. By noting the counter reading of each recording, you can also programme the recorder later on for automatic search of recordings without computer coded pulses.

It is also possible to repeat a part or the whole programme on a cassette automatically as many times as required.

The recorder has two electronic counter displays, one for the counter reading and the other for the storage reading.

The recorder can be used with ferro, chromium and metal cassettes. To improve the signal-to-noise ratio the recorder is provided with the Dolby* NR (Noise Reduction) system.

* Trademark of Dolby Laboratories.

The mechanism is operated by micro switch buttons; the switch functions are activated by solenoids. The recorder mechanism is equipped with two motors, one of which is a tachometer controlled direct drive capstan motor.

Controls and connection sockets

Figures 1 and 2

- ① socket for stereo headphones
- ② socket for the left channel microphone
- ③ socket for the right channel microphone
- ⑤ switch for MPX- and RIF-filter
- ⑥ on/off switch for Dolby system
- ⑦ dimmer for indicators ②① and ②②
- ⑧ tape selector - equalisation 'eq'
- ⑨ tape selector - bias
- ⑩ lock button for post fading switch
- ⑪ post fading switch
- ⑫ pause button with indicator
- ⑬ recording button with indicator 'rec'
- ⑭ rewind/review button with indicator 'rew'
- ⑮ start button with indicator 'play'
- ⑯ wind/cue button with indicator 'ff'
- ⑰ stop button with indicator
- ⑱ eject key for cassette holder
- ⑲ mains on/off switch
- ⑳ volume controls for headphones
- ㉑ recording level indicator - left channel
- ㉒ recording level indicator - right channel
- ㉓ peak hold button
- ㉔ reset button for peak hold
- ㉕ recording level controls for line in sockets
- ㉖ recording level controls for microphone input sockets
- ㉗ master control for the recording level
- ㉘ speed control for post-fading-erasures
- ㉙ cassette holder
- ㉚ counter/ccs
- ㉛ storage counter
- ㉜ operating panel for ccs system
- ㉝ digit buttons for ccs system
- ㉞ mains voltage selector
- ㉟ socket for remote control
- ㊱ line out socket - left channel
- ㊲ line out socket - right channel
- ㊳ line in socket - left channel
- ㊴ line in socket - right channel
- ㊵ line out volume control - left channel
- ㊶ line out volume control - right channel
- ㊷ monitor socket (DIN out)
- ㊸ line in/out socket (DIN)

The type plate is on the base of the recorder

Note: Do not expose the recorder for any great length of time to excessive heat from heating equipment or direct sunshine.

Connecting the recorder to the mains

Before connecting the recorder to the mains ensure that voltage selector ③④ is set to the local mains supply. If it is not, turn the voltage selector until the correct voltage value is indicated. After this, insert the mains plug in the wall socket.

Important note for users in U.K.

When fitting a mains plug to the mains lead proceed as follows: The wires in the mains lead are coloured in accordance with the following code: Blue = Neutral, Brown = Live. As these colours may not correspond with the colour markings identifying the terminals in your plug proceed as follows:

The Brown wire must be connected to the terminal which is marked with the letter L or coloured Red. The Blue wire must be connected to the terminal which is marked with the letter N or coloured Black.

Note: This apparatus must be protected by a 3 Amp Fuse if a 13 Amp plug is used or if any other type of plug is used by a 5 Amp Fuse either in the plug or adaptor or at the distribution board. If in doubt consult a qualified electrician.

Switching on and off

- Switching on: Press mains switch ⑲, the recording level indicators ②① and ②② and the cassette holder ②⑨ will now light up.
- Switching off: Press mains switch ⑲ again.

Compact cassettes

● With compact cassettes you can make stereo and mono recordings. At any time, the cassette can either be turned over and the other side used, or it can be replaced.

● Both ends of the tape are attached by a length of non-magnetic leader tape to the reel hubs. It is therefore necessary when starting at the very beginning of the tape to allow cassette to wind on for about seven seconds before starting to record.

● You can prevent the accidental erasure of recordings as follows:

Having made the recording, take a sharp object and break out the little flap at the left-hand corner at the back of the cassette (Fig. 3). With the cassette in the recorder at any time thereafter, no recordings can be made on the side concerned.

● You can render this safeguard ineffective by covering the aperture now existing with a piece of adhesive tape.

● Musicassettes are compact cassettes containing prerecorded music. They are safeguarded against accidental erasure.

● Protect your cassettes against dust by returning each to its box after use. Store the cassettes at room temperature, away from the sun and out of magnetic fields generated by magnets and transformers of recorders, radios, television sets, loudspeaker enclosures etc.

Inserting and removing the cassette

● Inserting: Press eject key ⑱; the damped cassette holder ②⑨ will now open. With the full reel on the left-hand side, slide the cassette fully into the holder as shown in Fig. 4. Close the cassette holder. Stop indicator ⑰ now lights.

● Removing: Press eject key ⑱; the cassette holder ②⑨ will open and the cassette can be removed.

Note: Eject key ⑱ also serves as a stop key.

Adjustment for type of tape in use

In the magnetic recording and playback of sound, it is necessary to employ a certain standardized frequency correction, known as equalisation.

Also, during the recording process it is necessary to apply the correct bias (pre-magnetisation) according to the type of tape in use.

During recording, switch ⑨ must be set according to the type of tape. Switch ⑨ adjusts both the recording equalisation and the bias.

During playback, switch ⑧ must also be set according to the type of tape. Switch ⑧ adjusts only the playback equalisation. The correct equalisation for a particular cassette will normally be indicated on the cassette, and is expressed in microseconds e.g. EQ-120 μ s.

Note: Do not confuse the figure for equalisation with that of the playing time of the cassette e.g. C-120 means 2×60 min. playing time.

- When using 'Ferro' or 'Super Ferro' cassettes, the tape selectors ⑧ and ⑨ must be set to the upper position.

- When using 'Chromium' cassettes, the tape selectors ⑧ and ⑨ must be set to the central position.

- 'Ferro-Chromium' cassettes may be used for *playback* when tape selector ⑧ is set to the central or lower position.

Note: When using 'Ferro-Chromium' cassettes for *recording* on this recorder you will not receive optimum results. Therefore we advise you to use for your recordings only the following tape types: Metal cassettes, Chromium cassettes, Ferro or Super Ferro cassettes.

- When using Metal cassettes, the tape selectors ⑧ and ⑨ must be set to the lower position.

Counter with CCS-system (computer coded search)

Use as a normal counter

With the mains switched on and a cassette inserted, the count indicator ④ will light.

Counter ③ shows 000. Storage counter ③1 shows nothing at all. *You may now use the set exactly in the same way as any other recorder with a counter.*

Note: The counter does not directly indicate tape length or playing time of a cassette.

Further details will be found in the chapter 'CCS-system' and on the separate sheet with figures and reminder instructions.

Automatic stop

For convenience and to safeguard both the recorder and the tape, the apparatus is equipped with an automatic stop system. The automatic stop operates when the tape in the cassette has reached its end and also if the mains supply fails or if the mains switch is inadvertently switched off when the tape is in motion.

The automatic stop functions during recording, playback and fast winding or rewinding, but *not* during the select programme and/or repeat function.

Dolby System

The Dolby system operates both during recording and playback. In the course of recording with the Dolby system, the high tones are recorded with additional amplification during quiet passages. If the Dolby system is switched on during playback, the high tones have their volume reduced again to their normal level. The advantage of this is that any tape noise is also reduced to a lower level. Cassettes and musicassettes recorded with the Dolby system must therefore be played back with the Dolby system switched on, otherwise the high tones will be accentuated. During playback of normally recorded cassettes, the Dolby system must be switched off. It is advisable therefore to mark the cassettes accordingly when they have been recorded using the Dolby system. The Dolby system is switched on and off with switch ⑥.

Connections

In addition to DIN sockets, this recorder is equipped with phono sockets. Equipment fitted with DIN connection sockets can be connected to the recorder using lead 4822 321 20207 (EL 3768/14) supplied.

For the connection of equipment and accessories fitted with other than DIN plugs or sockets, adaptor leads and plugs are available from your dealer. In the interests of safety, consult your dealer if you wish to connect equipment not having a recorder connection socket (e.g. a TV-set).

- Socket ①: output for stereo headphones (8-600 Ohm or electret headphones).

- Socket ②: input for the left channel microphone when making

stereo recordings.

- Socket ③: input for the right channel microphone when making stereo recordings or for mono (both channels) recordings when no microphone is connected to socket ②.

- Socket ③6: line output socket, left channel.

- Socket ③7: line output socket, right channel.

- Socket ④2: monitor socket.

The sockets ③6, ③7 and/or ④2 may be connected to the recorder input sockets of a radio or amplifier etc. for playback of recordings or for monitoring during recording.

- Socket ③8: line input socket, left channel.

- Socket ③9: line input socket, right channel.

The line input sockets may be used for recording from a tuner, amplifier, second recorder etc.

- Socket ④3: combined DIN input/output socket for recording or playback via the recorder socket of a receiver, amplifier, music-centre or second recorder.

Note: No output signal is given from socket ④3 when recording via sockets ② and ③ or ③8 and ③9.

- Socket ③5: remote control socket. May be used to control all tape transport functions, corresponding to operation with buttons ⑫ up to ⑰ inclusive.

Use of microphones

For microphone recording in stereo you can connect two microphones, one to socket ② and the other to socket ③. For mono recordings you can, if desired, connect only one microphone to socket ③. For stereo recordings the microphone for the left channel must face the left and that for the right channel the right of the sound source.

Introduction to recording

The recording of radio programmes and copying of gramophone records is permissible only insofar as copyright or other rights of third parties are not thereby infringed.

Note for users in U.K.

Recording and playback of material may require consent. See Copyright Act 1956 and The Performers' Protection Acts 1958 to 1972.

- The strength at which the sound is recorded onto the tape determines the quality of the sound obtainable on playback. If the recording level, as this is called, is too low, too much noise (hiss) will be heard on playback. If the recording level is too high, distortion will be heard on playback. The recording level can be set prior to commencement of recording, but, should circumstances rule this out, the level may also be adjusted during recording.

- The recording level is adjusted with the controls ②5, ②6 and ②7. The controls ②5 are used to set the correct level of the line input sockets ③8, ③9 and ④3. The controls ②6 are used to set the level of the microphone input sockets ② and ③.

Control ②7 is a master control for the total recording level.

- For mixed recordings, first set control ②7 approximately half-way and adjust the mixing ratio between microphone signal and line input signal with the controls ②5 and ②6. If necessary, adjust further with control ②7.

Note: You can check the mixing ratio with headphones or with an amplifier connected to monitor-socket ④2.

See also 'Monitoring during recording'.

- For microphone recordings control ②5 is set at 'min' and ②6 at 'max'. Further adjustments with control ②7.

- For recordings via the line input sockets control ②6 is set at 'max' and ②5 at 'min'.

Further adjustments with control ②7.

- During recording, any previous recording on the same part of the tape is automatically erased. You can, however, erase a recording without adding a new one by keeping recording level controls ②5, ②6 and ②7 at '0' as you record.

- To suppress the annoying whistle tone which may occur when recording stereo radio transmissions, this recorder is provided with a pilot-tone suppression filter. When recording such

programmes, you can switch on this filter by setting MPX-switch (5) to the upper position.

● As well as the FM pilot-tone suppression filter, switch (5) is also used for a RIF circuit (Radio Interference Filter). This filter suppresses whistles which may occur when recording broadcasts in the medium or long wave band. Such whistles may occur particularly when the recorder is stacked with other components of a HiFi chain, i.e. above or below a tuner or tuner/amplifier. The RIF circuit operates in both positions of switch (5); if whistle does occur, set the switch to the other position.

Monitoring during recording

You can check what is going onto the tape by monitoring during recording either through an amplifier connected to the sockets (36) and (37) or (42) or through headphones connected to socket (1). Adjust the volume for the headphones with the controls (20). Monitoring through headphones is a particular advantage when making microphone recordings, since it averts the danger of the microphones picking up sound from the loudspeakers and thus causing acoustic feedback, which is heard as a whistling or howling noise.

Recording

- Connect the sound source from which you wish to record to the appropriate socket.
- Insert a cassette.
- Set the tape selector switches (8) and (9) to the correct position.
- Switch on the Dolby system, if desired.
- Press recording button (13). The corresponding indicator will then light.
- Allow the equipment connected to play, or speak or sing into the microphone and adjust the recording level with the controls (23, 26) and/or (27) in such a way that, during the loudest passages, the bars of the recording level indicators (21) and (22) deflect just to the '0' level of the scale.
- When pressing 'peak hold' button (23) the recording level indicators (21) and (22) will not only show the instantaneous reading of the recording level, but also the highest peak level over 0 dB, which will light continuously.
- When pressing reset button (24) the peak indication will disappear. A new peak over 0 dB will again light continuously.
- Reduce the recording level, if peaks over +3 dB occur over a longer period in your recording.
- When 'peak hold' button (23) is released, the recording level indicators (21) and (22) will only show the instantaneous reading.
- The light intensity of the recording level indicators (21) and (22) can be adjusted with dimmer control (7).
- Differences in the recording level between the left and right channels can be corrected by setting the two knobs of controls (25) and (26) to different positions.
- Now start recording by pressing start button (15).
- Check the recording level from time to time and readjust it, gradually, if necessary.
- For brief interruptions, press pause button (12). To resume recording, press start button (15) again.
- To stop, press stop button (17).

Adjustable output levels

The output levels from the recorder are adjustable in order to match the recorder playback volume to that of the other input sources connected to the amplifier. The output level can be adjusted with the controls (40) (left channel) and (41) (right channel). *Note:* When adjusting the output level, the levels of sockets (36), (37), (42) and (43) are adjusted simultaneously.

Playback

The recordings made can be reproduced through headphones and/or through an amplifier /speaker system.

- Connect the headphones or amplifier to the appropriate socket (see 'Connections').
- Set the amplifier for tape playback.
- Insert a recorded cassette and adjust the tape type concerned

with switch (8) (and (9) if you are going to record on the same cassette).

- Switch on the Dolby system, if necessary.
- Press start button (15).
- Adjust the volume for the headphones with the controls (20) or, when playing back via an amplifier, adjust volume, balance and tone with the amplifier controls.
- For brief interruptions, press pause button (12). To resume playback, press start button (15) again.
- To stop, press stop button (17).

N.B.: During playback, the indicators (21) and (22) will deflect in the same manner as the did during recording.

Depending on the kind of tape in the cassette which is used, the deflection during playback may differ from the deflection when the same part was recorded.

This has no influence on the quality of the sound.

See also 'Monitoring during recording'.

Fast winding, cue and review

Fast winding or rewinding may be undertaken in either of two ways as follows:

- Starting from the stop-position (when indicator (17) lights): Press rewind button (14) or wind button (16). The corresponding indicator 'rew' (14) or 'ff' (16) will then light. To stop fast winding or rewinding, press stop button (17).

- Fast winding (cue) or rewinding (review) is also possible during recording or playback:

In this case the review button (14) or cue button (16) must be pressed in and when either is released, the recorder automatically reverts to playback. If the recorder was in position recording before the review button (14) or cue button (16) was pressed, the recording button (13) will be disengaged.

Post-fading

It is possible, *during playback*, to fade-out and fade-in undesired applause, announcements or other parts of a recording. Caution should be taken when using post-fading switch (11), since incorrect use can spoil the recording.

Note: Computer codes (see CCS-System) may also be erased when using post-fading switch (11). It is therefore recommended to gain experience using an old or unimportant recording.

With control (28) you can adjust *how quickly* the fade-out and fade-in will be effected, see Fig. 5: control at 'max time' and Fig. 6: control (28) at 'min time'.

- Play the tape and take note of the start and duration in seconds of the part to be faded-out.
- Rewind the tape to a point before the fade-out is required and press start button (15).
- First push lock button (10) to the left and keep it in that position and, as the selected part of the recording approaches, push post-fading switch (11) downwards. (You may now release button (10).) The sound will now fade away. When releasing switch (11) the sound will return. However, take the delay into account, which can be adjusted with control (29), to a maximum of 4 seconds.

CCS-System (Computer Coded Search)

Operating panel (32) (Fig. 11)

- (44) repeat on/off switch button with indicator for the automatic repeat function
- (45) start button, for starting a select programme
- (46) select button, for compiling a select programme
- (47) count button with indicator, for use as a normal counter
- (48) store button with indicator, for use of the counter memory
- (49) computer coded search button with indicator
- (50) store button with indicator, for use of the CCS memory
- (51) clear button
- (52) enter button

Use as a normal tape counter ('count' (47))

- | Action | Result |
|--------------------------------|---|
| ● Insert a cassette, mains on, | ● (30) will light □ □ □, (47) will light. |

Zero reset of counter 30 (Fig. 12)

Action

- Press 51
- Press 52

Result

- 30 will flash 000
- 30 will light 000 continuously.

Presetting counter 30 (Fig. 13)

Action

- Press 51
- Press 33 e.g. 3, 8 and 7
- Press 52

Result

- 30 will flash 000
- 30 will flash 387
- 30 will light 387 continuously.

Switching to count mode if one of 48, 49 or 50 lights (Fig. 13)

Action

- Press button 47

Result

- Indicator 47 will light.

if indicator 46 lights

- Press button 46.
- Press button 47.

- Indicator 49 will light.
- Indicator 47 will light.

Counter memory ('store' 48; Fig. 14)

Use for automatic search of a known counter 30 reading

Action

- Insert a cassette, mains on.
- Press button 48.
- Preset 31: Press 51.
- Press 33 e.g. 4, 2 and 1.
- Press 52.
- Press 'play' 15 or 'ff' 16.

Result

- 30 will light 000, 47 will light.
- Indicator 48 will light, 47 goes out, 31 will light 000
- 31 will flash 000
- 31 will flash 421
- 31 will light 421 continuously.
- Tape starts or winds, 30 000 changes to 421, the tape stops, 31 and 48 go out, 47 will light.

Use for tape-end warning during recording (Fig. 15)

Action

- Insert a cassette, e.g. C-60 'Metal', mains on.
- Press button 48.
- Preset 31: Press 51.
- Press 33 5, 0 and 0.
- Press 52.
- Press 'rec' 13 and then 'play' 15.

Result

- 30 will light 000, 47 will light.
- Indicator 48 will light, 47 goes out, 31 will light 000
- 31 will flash 000
- 31 will flash 500
- 31 will light 500 continuously.
- Recording starts. About 3 min. before end of tape 30 will reach 500 and 31 starts flashing at 500

Note: When using C-60 'Metal' cassettes, set 31 to 500
When using other C-60 cassettes, set 31 to 450
When using C-90 cassettes, set 31 to 675
When using C-120 cassettes, set 31 to 900

Computer coded search (ccs 49; Fig. 16)

Recording of a computer code before a recording

Action

- Insert a cassette, mains on.
 - Press 'rec' 13.
 - Press button 49.
 - Press 51.
 - Press 33 1.
 - Press 52.
- Result
- 30 will light 000, 47 will light.
 - Indicator 13 will light.
 - Indicator 49 will light and 30 will light 00
 - 30 will flash 00
 - 30 will flash 01
 - 30 goes out. The computer code is now recorded on the tape. After 5.5 seconds the

tape stops. Indicators 'pause' 12 and 'rec' 13 will light and 30 will light 01

- Now make the first recording (number 1) by pressing 'play' 15.

- Recording number 1 starts.

Before the start of the next recording, a second computer code can be recorded in the same way as number 1, described above. The second computer code may be prepared during the recording of the first song:

Action

- Press 51.
- Press 33 2.
- Wait until the end of the song.
- Press 52.

Result

- 30 will flash 00
- 30 will flash 02

- Computer code 2 is now recorded. After 5.5 seconds 30 will light 02

- You may now start the second recording by pressing 'play' 15.

Notes:

- In order to be able to use the ccs-store and the select programme later on, you must number the recordings in a rising sequence.
- On each side of a cassette you can record 50 computer coded recordings. You may also record code 51, which is the highest code to be recorded. This code may be used when recordings fill only a part of the cassette. Code 51 is then recorded after the last song. If code 51 passes pulse head 8 (Fig. 7) afterwards during playback, the recorder switches automatically to fast forward wind until the end of the tape.
- When using the ccs system 49 and/or select programme 46, the normal tape counter reading is invisible, but the counter circuit operates in the normal way. When switching to count 47 the actual counter reading will appear at 30. In the same way the actual computer code number will appear when switching from count 47 or store 48 to ccs 49 and/or select 46.

Computer memory ('ccs'-store' 50; Fig. 17)

Use for automatic search of a computer coded recording

Action

- Insert a cassette, mains on.
- Press button 50.
- Preset 31: Press 51.
- Press 33 e.g. 1 and 2
- Press 52.
- Press 'rew' 14, 'ff' 16 or 'play' 15.

Result

- 30 will light 000, 47 will light.
- Indicator 50 will light.
- 31 will flash 00
- 31 will flash 12
- 31 will light 12 continuously.
- The recorder will automatically search code 12 (provided that code 12 is on the tape), then the tape stops, indicator 50 goes out and indicator 49 will light. 31 goes out and 30 will light 12

Select programme 46 (Fig. 18)

Action

- Insert a cassette, mains on
- Press button 46.
- Press 51.
- Make your first selection, e.g. 23 by pressing 33 2 and 3.

Result

- 30 will light 000, 47 will light.
- Indicators 46 and 49 will light, 30 will light 00 and 31 1.00
- 31 will light 1.00 of which 00 will flash.
- 31 will light 1.23 of which 2 and 3 will flash.

- Press 52.

● 23 is stored and 31 will light 2.00 i.e. clear for the second selection:

- Press 51 etc.

Notes:

- In the same way you can make a selection of maximal ten recordings. When your 10th selection is recording number 13, for example, 31 will light 0.13
- You may select less than ten recordings or more times the same recording.
- To check the selected programme, press 52 ten times. 31 will then show your selections numbered consecutively.

Start of a select programme (Fig. 19)

Action	Result
● Press 45.	● The select programme is played automatically.
- For brief interruptions:	● The tape stops.
● Press 'pause' 12.	
- To resume the programme:	● The programme is continued.
● Press 'play' 15.	

Notes:

- When pressing 45 instead of 'play' 15, the select programme will start over again from the beginning.
- The buttons 13, 14, 16 and 17 are inoperative during the select programme.

Stopping the select programme

Action	Result
● Press button 46.	● Indicator 46 goes out; 49 will still light.

Automatic repeat ('repeat' 44; Fig. 20)

Action	Result
- Switching on:	● Indicator 44 will light.
● Press button 44.	
- Switching off:	● Indicator 44 goes out.
● Press button 44 again.	

'Repeat' 44 with 'count' 47 or 'ccs' 49 (Fig. 21)

At the end of the cassette the tape rewinds automatically and the recorder starts again at playback.

'Repeat' 44 with 'store' 48 (Fig. 22 and 23)

The cassette will be repeated automatically in one of two possible ways:

- A loop between the beginning of the cassette and a chosen counter 31 reading (Fig. 22):

Action	Result
● Insert a cassette, mains on.	● 30 will light 000, 47 will light.
● Press button 48.	● Indicator 48 will light, 47 goes out, 31 will light 000
● Preset 31: Press 51	● 31 will flash 000
● Press 33, e.g. 4, 2 and 1.	● 31 will flash 421
● Press 52.	● 31 will light 421 continuously.
● Press button 44.	● Indicator 44 will light.
● Press 'play' 15.	● Playback starts. When 30 reaches the same reading as 31, i.e. 421, the tape rewinds. At the beginning of the cassette playback starts again etc.

- A loop between a chosen counter 31 reading and the end of the cassette (Fig. 23):

Action	Result
● Insert a cassette, mains on.	● 30 will light 000, 47 will light.

- Press 'ff' 16.
- Press 'stop' 17 when 30 will light e.g. 125.
- Press button 48.

- Preset 31: Press 51.
- Press 33 e.g. 1, 2 and 3.
- Press 52.

- Press button 44.
- Press 'play' 15.

- The tape winds.

- Indicator 48 will light, 47 goes out, 31 will light 000
- 31 will flash 000
- 31 will flash 123
- 31 will light 123 continuously.
- Indicator 44 will light.
- Playback starts. At the end of the cassette the tape rewinds until 30 reaches the same reading as 31, i.e. 123. Then playback starts again automatically etc.

'Repeat' 44 with 'store' 50 (Fig. 24 and 25)

The cassette will be repeated automatically in one of two possible ways:

- A loop between the beginning of the cassette and a chosen computer code number, to be preset at counter 31 (Fig. 24):

Action	Result
● Insert a cassette, mains on.	● 30 will light 000, 47 will light.
● Press button 50.	● Indicator 50 will light.
● Preset 31: Press 51.	● 31 will flash 00
● Press 33, e.g. 1 and 2.	● 31 will flash 12
● Press 52.	● 31 will light 12 continuously.
● Press button 44.	● Indicator 44 will light.
● Press 'play' 15.	● The recorder starts at playback. As soon as 30 reads the same as 31, i.e. 12, the tape rewinds. At the beginning of the cassette playback starts again etc.

- A loop between a chosen computer code number, to be preset at counter 31, and the end of the cassette (Fig. 25):

Action	Result
● Insert a cassette, mains on.	● 30 will light 000, 47 will light.
● Press button 50.	● Indicator 50 will light.
● Press 'ff' 16.	● The tape winds.
● Press 'stop' 17 when 30 will light e.g. 13.	
● Preset 31: Press 51.	● 31 will flash 00
● Press 33, e.g. 1 and 2.	● 31 will flash 12
● Press 52.	● 31 will light 12 continuously.
● Press button 44.	● Indicator 44 will light.
● Press 'play' 15.	● Playback starts. At the end of the cassette the tape rewinds until 30 reaches the same reading as 31, i.e. 12. Then playback starts again automatically etc.

Note: When using the 'repeat' function, the buttons 'pause' 12, 'rew' 14, 'ff' 16 and 'stop' 17 may be operated in the normal way.

'Repeat' 44 with 'select' 46 (Fig. 26)

The select programme will be repeated continuously until one of the buttons 'repeat' 44 or 'select' 46 is pressed. For brief interruptions: Press 'pause' 12. To resume playback: Press 'play' 15.

Maintenance

It is advisable to remove at regular intervals the dust and dirt which has collected on the heads. This should be done after say, every 50 hours of operation or, on average, once a month. For this purpose we recommend our special cleaning cassette, type

811/CCT, which is played through once as an ordinary cassette with the recorder set for playback.

The heads may also be cleaned however using a soft cloth or a cotton bud. To clean in this way proceed as follows:

- Ensure that the recorder is disconnected from the mains.
- Press eject key (18).
- Moisten the cloth or cotton bud with a little alcohol or proprietary cleaning spirit.
- Now clean the fronts of the heads (A), (B) and (C) (Fig. 7). Allow the heads to dry.
- Then take a second cotton bud or cloth and moisten it with water.

- Wipe off the heads (A), (B) and (C), and then dry them.

Note: The capstan is covered with a special protective coating. Because of this, the capstan and the pressure roller must *not* be cleaned with alcohol or cleaning spirit, see mark X in Fig. 7. You may if necessary, clean the capstan (C) with *dry* filter paper as it is used for coffee filters (Fig. 8).

- Never use any other cleaning agents and do not touch the heads or the capstan with sharp or metal objects.

Allow all parts to dry before reconnecting the recorder to the mains.

- The transparent cover of the cassette holder (29) may be cleaned using a soft cloth as shown in Fig. 9 and 10.

- Do not lubricate the apparatus!

It is recommended to have the recorder checked by a qualified service engineer about once a year.

Technical data

(Subject to alteration)

- Switchable for mains voltages of 110, 127, 220 and 240 V.
- Suitable without switching for 50 and 60 Hz A.C.
- Power consumption: approx. 20 W.
- Frequency range when using:
 - metal cassettes (DIN 45 500): 30-20,000 Hz;
 - chromium cassettes (DIN 45 500): 30-18,000 Hz;
 - ferro cassettes (DIN 45 511): 30-18,000 Hz.
- With metal tape versus chromium reference tape C 401 R the Dynamic Range is improved:
 - Max. output level at 315 Hz: + 3 dB;
 - Saturation level at 10 kHz: + 7 dB;
 - Saturation level at 16 kHz: + 10 dB.
- Signal-to-noise ratio, without Dolby system, when using:
 - metal cassettes: > 57 dB (DIN);
 - chromium cassettes: > 56 dB (DIN);
 - ferro cassettes: > 55 dB (DIN).
- With metal tape versus chromium reference tape C 401 R the signal-to-noise ratio (with A-filter) is improved:
 - at 315 Hz: + 1 dB;
 - at 10 kHz: + 5 dB;
 - at 16 kHz: + 8 dB.
- Wow and flutter: < 0.1% (DIN).
- Fast wind time per side for a C-60 cassette: < 85 s.
- Improvement of the signal-to-noise ratio using the Dolby system: > 8.5 dB, according to CCIR. (Dolby Noise Reduction circuit made under license from Dolby Laboratories.)
- Dimensions:
(w × h × d): 482 × 150 × 300 mm.
- Socket (1), headphones: impedance 8-600 Ω or electret headphones.
- Sockets (2) and (3), microphones:
 - input sensitivity: 0.4 mV/47 kΩ.
- Sockets (36) and (37), line out: 0-1 V adjustable, load impedance > 50 kΩ.
- Sockets (38) and (39), line in:
 - input sensitivity: 60 mV/300 kΩ.
- Socket (42), monitor (DIN): 0-1 V adjustable, load impedance > 50 kΩ (pins 3 and 5).
- Socket (43), line in/out:

- input sensitivity: 0.4 mV/2 kΩ (pins 1 and 4) or 200 mV/1 MΩ (pins 3 and 5);
- adjustable output level: 0-1 V, load impedance > 50 kΩ (pins 3 and 5; no output during recording).

Optional accessories

(Subject to change without notice)

Note: Some accessories may not be available in all countries.

- C-60, C-90 and C-120, 'Ferro' Compact Cassettes with playing times of 2 × 30, 2 × 45 and 2 × 60 min. respectively.
- C-60 and C-90, 'Super Ferro' Compact Cassettes with playing times of 2 × 30 and 2 × 45 min. respectively.
- C-60 and C-90, 'Metal' Compact Cassettes with playing times of 2 × 30 and 2 × 45 min. respectively.
- 811/CCT, cleaning cassette, for cleaning the magnetic heads.
- N8310/02, omnidirectional electret HiFi microphone with jack plug and detachable table stand, fitted with windshield, adaptor for floor stand with 3/8" Whitworth thread and supplied with storage cassette. Sensitivity 3 mV/Pa, frequency range 20-20,000 Hz (-6 dB), impedance 800 Ohm.
- N8501/02, unidirectional (cardioid) electret HiFi microphone with jack plug and detachable table stand, fitted with windshield, adaptor for floor stand with 3/8" Whitworth thread and supplied with storage cassette. Sensitivity 3.5 mV/Pa, frequency range 50-18,000 Hz (-6 dB), impedance 1,200 Ohm.
- N8404/02, HiFi stereo microphone pair, comprising two omnidirectional electret HiFi microphones, each with jack plug, with two table stands and storage case. Sensitivity 2.5 mV/Pa, frequency range 50-18,000 Hz (-6 dB), impedance 800 Ohm (per channel).
- N6330/02, HiFi stereo headphones with stereo jack plug, equipped with 12 auxiliary diaphragms for extreme spatial effect. Frequency range 16-20,000 Hz, impedance 2 × 600 Ohm, weight approx. 400 g.
- N6325/02, HiFi stereo electret headphones with stereo jack plug. Frequency range 20-22,000 Hz, weight 230 g.
- N6721, remote control unit for all tape transport functions (buttons (12) to (17) inclusive).

Connection, extension and adaptor cables

For microphones

- 4822 321 20364, mono extension cable, length 500 cm. With 6.3 mm mono jack socket connector and 6.3 mm mono jack plug.
- 4822 321 20367, adaptor cable, length 15 cm, for connection of a microphone with 3-pole DIN plug. With 5-pole mono DIN socket connector and 6.3 mm mono jack plug.
- 4822 321 20368, adaptor cable, length 15 cm, for connection of a stereo microphone with 5-pole stereo DIN plug. With one 5-pole stereo DIN socket connector and two 6.3 mm mono jack plugs.

For headphones

- 4822 321 20316, stereo extension cable, length 500 cm. With 6.3 mm stereo jack socket connector and 6.3 mm stereo jack plug.
- 4822 321 20291, adaptor cable, length 15 cm, for connection of headphones with stereo DIN die 5-plug. With stereo DIN die-5 socket connector and 6.3 mm stereo jack plug.

With coaxial 'phono' plugs

- Connecting cables:
 - 4822 321 20381, length 50 cm;
 - 4822 321 20382, length 250 cm.
- With four coaxial phono plugs at both ends.
- 4822 321 20383, extension cable, length 250 cm. With four coaxial phono socket connectors and four coaxial phono plugs.
- 4822 321 20308, connecting cable, length 250 cm.

With two coaxial phono plugs at both ends.

- 4822 321 20307, extension cable, length 250 cm.

With two coaxial phono socket connectors and two coaxial phono plugs.

With DIN plugs

- Connecting cables:

4822 321 20207, length 120 cm (= EL 3768/14, supplied);

4822 321 20295, length 250 cm.

With 5-pole stereo DIN plug at both ends.

- Extension cables:

4822 321 20294, length 250 cm;

4822 321 20336, length 500 cm.

With 5-pole stereo DIN socket connector and 5-pole stereo DIN plug.

- 4822 321 20193, adaptor cable, length 15 cm, for joint connection of two apparatuses to one DIN socket.

With two 5-pole stereo DIN socket connectors and stereo DIN plug.

With coaxial phono and DIN plugs

- Connecting cables:

4822 321 20189, length 120 cm;

4822 321 20198, length 120 cm, with attenuating resistors (1 MΩ) on pins 1 and 4.

With four coaxial phono plugs and 5-pole stereo DIN plug.