

English

INTRODUCTION

This amplifier is unique in the field of audio engineering. By making use of the most recent techniques, this amplifier offers you years of listening pleasure of unequalled quality. We advise you to read these operating instructions carefully; you will then quickly become familiar with the facilities which this amplifier offers.

INSTALLATION

Remember the following important points when installing the amplifier:

- Do not expose the amplifier to rain or moisture, as this may cause damage to the amplifier.
- All amplifiers produce some heat during operation and this heat must be allowed to dissipate freely. Do not close any ventilation openings and ensure that there is adequate ventilation space behind, beside and above the amplifier.
- Prevent extra heat from reaching the unit. Never put the amplifier in the full glare of the sun or near to a heat source.

CONNECTIONS

The following points are important when connecting the equipment to the amplifier:

- Check that the amplifier is not switched on.
- Make each connection individually.
- Check that each connection has been made correctly and press the plugs firmly into the sockets.
- Always connect plugs or sockets marked 'L' or 'LEFT' to similarly marked sockets on the amplifier. Do the same with sockets and plugs marked 'R' or 'RIGHT'.
- Always connect the 'OUT' outputs of a recorder to the 'IN' sockets of the amplifier and the 'IN' inputs of the recorder to the 'OUT' sockets of the amplifier.

Figure 2

- (A) 'PHONO' sockets
For connecting a record player with an 'MM' (Moving Magnet) or an 'MC' (Moving Coil) cartridge.
Note: These sockets are gold-plated so that the contact resistance between these sockets and the connecting cables of the player is kept as small as possible. In order to maintain the high-grade quality of this connection, we recommend that connecting cables are used which also have gold-plated plugs.
- (B) 'CD' sockets
For connecting a Compact Disc player.
Note: See note under (A).
- (C) 'TUNER' sockets
For connecting a tuner.
- (D) 'TV/AUX 1' sockets
For connecting the audio output of a TV set or other equipment with an output level that is suitable for this input.
- (E) 'VIDEO/AUX 2' sockets
For connecting the audio output of a video unit or other equipment with an output level that is suitable for this input.
- (F) connection screw for earth wire of record player 'GND'
For connecting the earth wire of a record player. Prevents hum.
- (G) 'TAPE OUT 2' sockets
For connecting the line inputs (LINE IN) of a recorder.
- (H) 'TAPE IN 2' sockets
For connecting the line outputs (LINE OUT) of a recorder.
- (I) 'TAPE OUT 1' sockets
For connecting the line inputs (LINE IN) of a recorder.
- (J) 'TAPE IN 1' sockets
For connecting the line outputs (LINE OUT) of a recorder.
- (K) 'SPEAKERS' connections
For connecting one or two pairs of loudspeakers. See Figs. 3 and 4.
See also 'GENERAL INFORMATION' section.
- (L) fuse holder
Contains a fuse which continuously protects the amplifier against overload.
Important: A faulty fuse should be replaced by the same type of fuse to prevent a possible malfunction.
- (M) mains lead
- (N) voltage adapter
For setting the correct operating voltage. The switch must indicate the mains voltage.
Before the equipment is connected to the mains, check that the operating voltage shown on your unit is the same as the local mains voltage. If this is not the case, consult your dealer.

CONTROLS AND THEIR FUNCTIONS

Figure 1

① 'ON/OFF' switch

If the 'ON/OFF' switch is pressed, it takes seven seconds before the amplifier is completely switched on. This switching on may be heard by the snapping-in of the loudspeaker relays.

② 'BASS/TREBLE' tone controls

Bass and treble can be adjusted to your own preference using these controls. The neutral position is '0'.

③ 'REC OUT' recorder output switch

For transmitting the signal from the sound source to be recorded to the sockets ⑥ 'TAPE OUT 2' or ① 'TAPE OUT 1'. If no recording is made, this switch should preferably be set to the 'Source' position.

Note: For further details on the use of this switch, see section 'Use with a recorder' under 'OPERATION'.

④ 'SELECTOR' sound source selector switch

For playback from a Compact Disc player, record player, tuner, television and video equipment, which are connected to the corresponding sockets.

⑤ function display with indicators for: 'CD', 'PHONO', 'TUNER', 'TV/AUX 1', 'VIDEO/AUX 2', 'TAPE 1' and 'TAPE 2'.

These indicators light up according to the sound source selected.

⑥ 'CD DIRECT' indicator

This indicator lights up if selector switch ⑮ 'CD DIRECT' is pressed in.

⑦ 'VOLUME' control

In order to improve the signal/noise ratio at the low volume settings, this volume control is lead out internally in quadruplicate.

⑧ 'PHONES' socket for stereo headphones

For connecting stereo headphones with an impedance of 8-1000 ohms. By unlocking the switches ⑨ 'SPEAKERS', it is possible to listen separately via the headphones.

⑨ 'SPEAKERS' switches A and B

For switching the loudspeakers connected to the corresponding loudspeaker connections ⑫ on and off. See also 'GENERAL INFORMATION' section for this.

⑩ 'LOUDNESS' correction switch

Switch for additionally amplifying the treble and bass at a low volume.

⑪ 'TONE DEFEAT' tone control switch

For switching the tone controls ② 'BASS/TREBLE' on and off. Switch not pressed in, then the sound reproduction can be modified with tone controls ②.

Switch pressed in, then the tone control is switched off. This is comparable with the tone controls ② in the neutral position '0'.

⑫ 'MONO' switch

In the 'MONO' position (pressed in) the channel separation between left and right is cancelled. The same (mixed) signal is reproduced via both channels.

Select this position if stereo noise occurs during the reception of weak FM stereo broadcasts or when reproducing a mono (= single channel) sound source.

In all other cases select the 'STEREO' position (not pressed in).

⑬ 'TAPE MONITOR 1' selector switch

For playback from a recorder connected to the sockets ① and ④.

Important: This switch overrides selector switches ④ and ⑭.

⑭ 'TAPE MONITOR 2' selector switch

For playback from a recorder connected to sockets ⑤ and ⑧.

Important: This switch overrides the sound source selector switch ④.

⑮ 'TAPE COPY 1 → 2' dubbing button

For dubbing sound recording tapes from recorder tape 1 to recorder tape 2.

⑯ 'TAPE COPY 2 → 1' dubbing button

For dubbing sound recording tapes from recorder tape 2 to recorder tape 1.

⑰ selector switch for 'MM' or 'MC' record player cartridge

Depending on the cartridge used, this switch must be in the 'MM' (Moving Magnet) or 'MC' (Moving Coil) position.

See the record player manual for this.

Button ⑰ not pressed in: 'MM' position.

Button ⑰ pressed in: 'MC' position.

⑱ Compact Disc direct switch 'CD DIRECT'

For direct playback from a Compact Disc player.

Note: For further details on the use of this switch, see section 'Use with the CD DIRECT switch' under 'OPERATION'.

⑲ 'BALANCE' control

For the balance adjustment of left and right stereo channel.

OPERATION

Use with the sound source selector switch

1. Ensure that the volume control ⑦ 'VOLUME' is not set at maximum.
Set this preferably to a low position in order to prevent damage to your loudspeakers.
2. Switch the amplifier on with switch ① 'ON/OFF'.
The border lighting around the volume control ⑦ and above the 'ON/OFF' switch ① lights up.
3. Switch the loudspeakers on with switch(es) ⑨ 'SPEAKERS'.
Button 'A' pressed in: for loudspeakers connected to the loudspeaker connections ⑫ 'system A', see Figure 3.
Button 'B' pressed in: for loudspeakers connected to the loudspeaker connections ⑫ 'system B', see Figure 4.
4. Switch the required sound source on and set it for playback.
5. Set the 'SELECTOR' switch ④ on the amplifier to the position corresponding to the sound source.
The corresponding indicator now lights up on the 'function display' ⑤.
Important: Selector switches ⑬ and ⑭ should only be pressed in if you want to make a recording. In all other cases the sound is interrupted if the selector switches ⑬ or ⑭ are pressed in.
6. Slowly adjust the volume with control ⑦ 'VOLUME'.

You cannot hear anything and no indicator lights up?

- The amplifier is not switched on.
- The amplifier is not connected to the mains.
- The fuse ① is faulty.
- The socket is not live.

You cannot hear anything but an indicator lights up?

- Is 'SELECTOR' ④ in the correct position?
- Is the selected sound source functioning properly?
- Are the loudspeakers properly switched on?
- Is the volume control open enough?
Do not keep it in the MAX position!
- Is button ⑬ 'TAPE MONITOR 1' or ⑭ 'TAPE MONITOR 2' pressed in?
- Are the loudspeakers connected properly?
Before you check this, ensure that the amplifier is switched off.

7. Adjust the stereo balance with control ⑱ 'BALANCE'.
8. Adjust the bass and treble with the control ② 'BASS/TREBLE'.
9. If required, press the mono switch ⑫ 'MONO'.
10. If required, press the correction switch ⑩ 'LOUDNESS' with a low volume position.
11. If required, press the tone control switch ⑪ 'TONE DEFEAT'.

Does the sound come from one side?

- Is the balance control set correctly?
- Check the connection with the faulty loudspeaker.
- Check the connection between sound source and amplifier.
- If using headphones, check that the plug is properly inserted in the socket.

Does the amplifier hum, buzz or howl during record playback?

- Check the earthing of the record player.
- Are the connection plugs pushed far enough into the sockets?
- Keep the connection cable to the record player as far away as possible from mains cables (hum) or TV circuits (buzz).
- The amplifier may howl as a result of acoustical feedback from the loudspeakers to the record player unit. This occurs mainly at higher volumes.

In this case change the positioning of the loudspeaker.

Use with the CD DIRECT switch

For direct playback from a Compact Disc player.

If you use this switch, the signal from the connected CD player is led directly via the volume control and the flat internal 'Tone Defeat' amplifier to the output amplifier and reproduced amplified. The advantage of this is that the sound signal passes through as few circuits as possible and thus gives high-fidelity reproduction.

Playback

1. Switch the amplifier on with ① 'ON/OFF'.
2. Switch the loudspeakers on with ⑨ 'SPEAKERS'.
3. Switch the CD player on and set it for playback.
4. Press the 'CD DIRECT' switch ⑮ on the amplifier.

If the 'CD DIRECT' switch ⑮ is pressed in:

- the 'CD DIRECT' indicator ⑥ lights up.
- the 'SELECTOR' switch ④ is overridden.
- the tone controls ② 'BASS/TREBLE' are switched off.
- the 'MONO' switch ⑫ is switched off.
- the selector switches ⑬ 'TAPE MONITOR 1' and ⑭ 'TAPE MONITOR 2' are overridden.
- the signal inputs and outputs, with the exception of the CD input of the amplifier, are disconnected, so that the high quality of the CD signal is not affected.

Consequently no sound recording can be made with recorder 1 and/or recorder 2.

Note: After playback is completed, the 'CD DIRECT' switch ⑮ should be released, by pressing the switch once more. Indicator ⑥ is then extinguished.

5. Slowly adjust the volume with control ⑦ 'VOLUME'.
6. Adjust the stereo balance with control ⑱ 'BALANCE'.
7. If required, press correction switch ⑩ 'LOUDNESS' at a low volume setting.

Use with a recorder

Playback

Playback from a recorder connected to the sockets ⑥ and ⑨ or ① and ④ occurs in the same way as from any other sound source, as indicated under 4., 5. and 6. in the section 'Use with the sound source selector switch'.

Now however press selector switch ⑬ 'TAPE MONITOR 1' or ⑭ 'TAPE MONITOR 2'. Indicator 'TAPE 1' or 'TAPE 2' now lights up on function display ⑤.

Recording

It is possible to make a recording in two ways:

- With the recorder output switch ③ 'REC OUT' in the 'source' position. The signal at the sockets ⑥ and ① is then the same as that which can be heard through the loudspeakers and/or headphones.

At the same time set a recorder connected to sockets ⑥ and ⑨ or ① and ④ ready for recording.

- With the recorder output switch ③ 'REC OUT' in the position 'CD', 'PHONO', 'TUNER', 'TV/AUX 1' or 'VIDEO/AUX 2'. The signal at the sockets ⑥ and ① then corresponds to the selected 'REC OUT' position (provided this sound source is set for operation).

There is now the facility to make a recording from the selected sound source with ③ 'REC OUT', while you are listening to another sound source selected with ④ 'SELECTOR'. At the same time set a recorder connected to sockets ⑥ and ⑨ or ① and ④ ready for recording.

Note: Actuation of tone, volume and balance control and mono/stereo switch will not affect the recording.

It is not possible to make a recording if the 'CD DIRECT' switch ⑮ is pressed in.

Listening while recording with a recorder

It is possible to listen while recording in two ways:

- With selector switch ⑬ 'TAPE MONITOR 1' or ⑭ 'TAPE MONITOR 2' not pressed in.

You hear the signal as it goes directly from the sound source to the amplifier and it is reproduced amplified (method 1 only).

- With selector switch ⑬ 'TAPE MONITOR 1' or ⑭ 'TAPE MONITOR 2' pressed in. You hear the signal as it goes to the recorder heads. The strength of this signal is in this case partly dependent on the recording volume setting of the recorder.

Note: If the recorder used has separate heads for recording and playback, then it is possible to monitor the recording. See the recorder manual.

Was the recording unsuccessful?

- If the recording could be followed without disturbance with selector switch ⑬ or ⑭ pressed in, failure can only be caused by improper use of the recorder.
- A faulty recording can also be the result of:
 - faulty operation of the signal source to be recorded.
 - actuation of the 'SELECTOR' switch ④.
 - actuation of the 'CD DIRECT' switch ⑮.

Dubbing tapes

Using button ⑮ 'TAPE COPY 1 → 2' a tape can be dubbed from recorder 1 to recorder 2.

Using button ⑯ 'TAPE COPY 2 → 1' a tape can be dubbed from recorder 2 to recorder 1.

In the meantime it is possible, if required, to listen to another sound source.

- Press dubbing button ⑮ or ⑯.
- Playback with recorder 'TAPE 1' or 'TAPE 2'.
- Record simultaneously with recorder 'TAPE 2' or 'TAPE 1'.

The dubbing process can be followed by pressing switches ⑬ or ⑭. The corresponding indicator lights up. If you wish to listen to another sound source at the same time, then set the 'SELECTOR' switch ④ to the appropriate position.

Do not forget here to release switch ⑬ or ⑭ if it has been pressed in.

Note: While dubbing, dubbing button ⑮ or ⑯ should not be operated. After dubbing is completed the depressed dubbing button should be released.

GENERAL INFORMATION

Connection of loudspeakers

Loudspeakers (impedance 4 to 16 ohms if only system 1 or system 2 is used or loudspeakers with an impedance of 8 to 16 ohms if system 1 and system 2 are used) must be connected in pairs to the loudspeaker connections ⑧ 'SPEAKERS'.

In order to do this, the wires of the loudspeaker cables, which preferably have a minimum cross-sectional area of $1\frac{1}{2}$ mm², should be prepared i.e. stripped of their insulation (± 5 mm) and core wires should be intertwined. To do this remove the loudspeaker plugs if necessary. If you do not wish to do this, use suitable adapter cables.

One of the two wires of a loudspeaker cable or adapter cable usually has a special distinguishing feature, i.e. a colour, rib or other marking.

Bear this distinction in mind!

Connections

1. Ensure that the amplifier is switched off!
2. Decide which group of terminals you are going to use (e.g. A).
3. Select the loudspeaker to be connected (e.g. the left-hand one, 'L').

This determines which two wires are going to go into which two terminals.
4. Put then the marked wire in the red terminal, the unmarked wire in the black terminal (see Figs. 5a, 5b and 5c).

Tighten the loudspeaker terminal firmly in order to keep the contact resistance between the terminal and the wire as small as possible.
5. Connect the wires of the other loudspeaker (in this case the right-hand speaker, 'R') to the two other terminals (in this case A), in exactly the same way, i.e. the marked wire again in the red terminal, the unmarked wire in the black terminal. If you do not do this, the loudspeakers will not work 'in phase'. The stereo playback will not be correct.
6. If a second pair of loudspeakers is to be connected, connect them in exactly the same way to the remaining terminals (in this case terminals B).
7. Check that all connections have been made correctly:
 - Uninsulated wire ends must not touch each other (short circuit!).
 - The wires must not be loose in the terminals (tighten firmly).
8. Do not switch on the amplifier until you have ensured that the volume control is not at MAX.

Positioning the loudspeakers

In order to get as good a stereo effect as possible, take a little care when setting up the loudspeakers. Because every room has its own limitations, the best position will only be found by experimentation.

Observe the following rules when experimenting:

- Seen from the listener's position, place the loudspeaker connected to the 'L' terminals on the left and the loudspeaker connected to the 'R' terminals on the right.
- Try to keep the distance between the loudspeakers the same as that between each of the loudspeakers and the listener's position.
- Bass reproduction is amplified by placing the loudspeakers on the floor or in a corner.
- The placing of loudspeakers behind obstacles (furniture, sunblinds, curtains, etc.) has an unfavourable effect on treble reproduction.
- Try to keep the arrangement and positioning height as symmetrical as possible.

Service

The outside of the amplifier can be cleaned with a damp cloth (not wet!). Use only water to dampen the cloth.

TECHNICAL DATA

(Subject to alteration)

- Power output acc. to FTC
at 8 ohm load
(20-20.000 Hz, D ≤ 0.03%): 100 W continuous sine wave
at 4 ohm load
(20-20.000 Hz, D ≤ 0.05%): 125 W continuous sine wave
- Power output acc. to IEC
at 8 ohm load
(63-12.500 Hz, D ≤ 0.3%): 115 W continuous sine wave
- Power output acc. to DIN
(1 kHz, D ≤ 0.7%)
at 8 ohm load: 115 W continuous sine wave
at 4 ohm load: 180 W continuous sine wave
at 2 ohm load: 250 W continuous sine wave
- IHF music power
at 8 ohm load: 120 W
at 4 ohm load: 225 W
at 2 ohm load: 280 W
- Harmonic distortion (1 kHz): 0.008%
- Intermodulation distortion: 0.03%
- Power bandwidth (−3 dB): 10-30.000 Hz
- Frequency response: 40-20.000 Hz ± 0,5 dB
- S/N ratio: 106 dB (weighted)
- Channel separation (1 kHz): 75 dB
- Damping factor at 8 ohms: 180 ×
- Input sensitivity:
Phono MC: 0.25 mV/100 ohm
Phono MM: 2,5 mV/47 kohm
Compact Disc: 150 mV/25 kohm
Tuner: 150 mV/25 kohm
TV1/Aux 1: 150 mV/25 kohm
Video 1/Aux 2: 150 mV/25 kohm
Tape 1: 150 mV/25 kohm
Tape 2: 150 mV/25 kohm
- Outputs:
Tape: 150 mV/220 ohm
2 × 2 loudspeakers: 4-8 ohm
Headphones: 8-1000 ohm
- Tone control:
bass: + 10 dB to − 10 dB at 100 Hz
treble: + 10 dB to − 10 dB at 10 kHz
- Loudness: + 6 dB at 100 Hz, + 4 dB at 10 kHz
- Balance control: 0-50 dB
- Power consumption: 360 W

This product complies with the radio interference requirements as laid down in EEC (European Economic Community) regulations.

Important note for users in U.K.:

The U.K.-execution is not fitted with a mains plug.
When fitting a mains plug to the mains lead proceed as follows: The wires in the mains lead are coloured 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 adapter or at the distribution board. If in doubt consult a qualified electrician.

Français

INTRODUCTION

Cet amplificateur est unique en son genre dans le domaine de la technique audio. Bénéficiant des plus récents progrès de la technique, il vous procurera de longues années de plaisir d'écoute, avec une qualité inégalée.

Nous vous conseillons de lire attentivement le présent mode d'emploi; vous pourrez ainsi vous familiariser rapidement avec les possibilités qu'offre cet amplificateur.

INSTALLATION

Lorsque vous installez votre amplificateur, veillez à respecter les consignes suivantes:

- Evitez d'exposer l'amplificateur à la pluie ou à l'humidité, ceci pouvant endommager l'appareil.
- Un amplificateur chauffe toujours plus ou moins en cours de fonctionnement. Cette chaleur doit pouvoir se dissiper sans problème. Aussi, n'obturez pas les ouïes d'aération, et veillez à garder un espace suffisant à l'arrière et sur les côtés de l'appareil.
- Ne placez jamais l'amplificateur au soleil ni à proximité d'une source de chaleur afin d'éviter un échauffement excessif.

BRANCHEMENTS

Lorsque vous branchez d'autres éléments sur cette chaîne, veillez à respecter les points suivants:

- Assurez-vous que la chaîne n'est pas sous tension.
- Faites les branchements.
- Vérifiez si tous les branchements sont corrects et enfoncez bien les connecteurs.
- Branchez toujours les fiches et connecteurs repérés par un 'L' ou par la mention 'LEFT', aux prises correspondantes de l'amplificateur.
Il en va de même pour les fiches et connecteurs repérés par un 'R' ou par la mention 'RIGHT'.
- Raccordez toujours les sorties 'OUT' d'un magnétophone avec les prises 'IN' de l'amplificateur et les entrées 'IN' du magnétophone avec les prises 'OUT' de l'amplificateur.