

TANDBERG

Power Amplifier 3003

Operating Instructions

E ENGLISH

Notice d'Utilisation

F FRANCAIS

Bedienungsanleitung

D DEUTSCH

Gebruiksaanwijzing

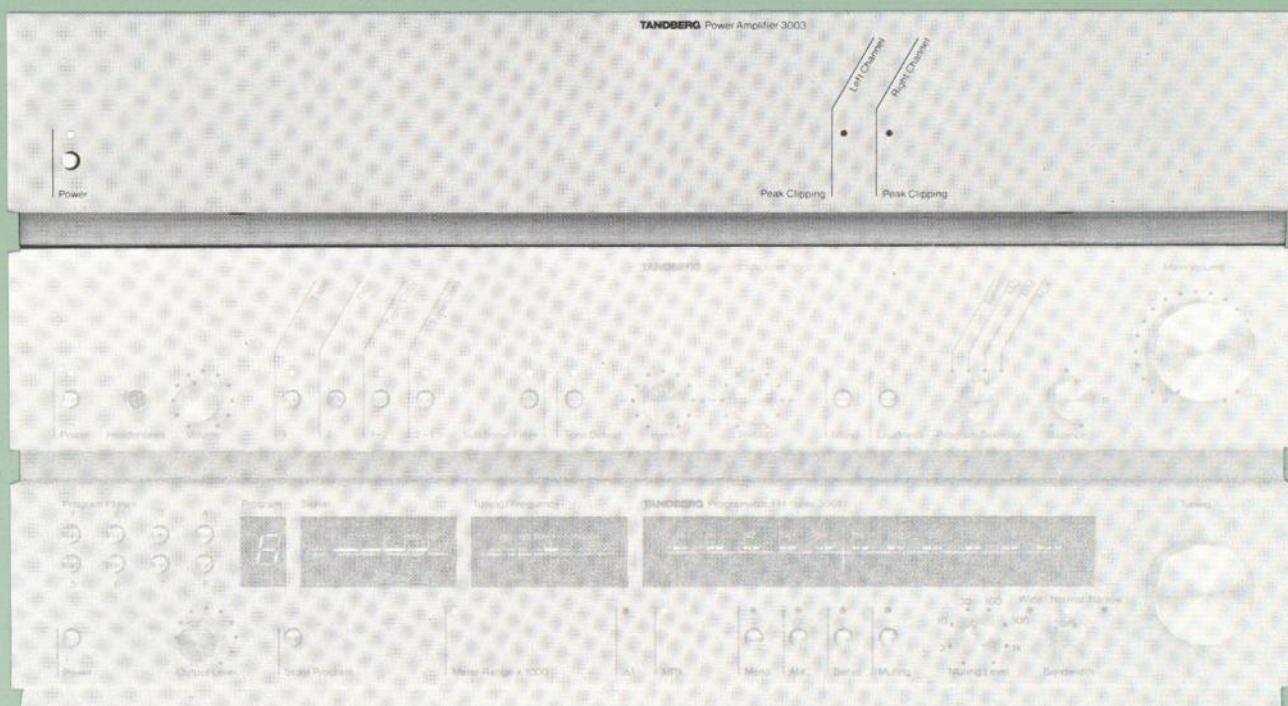
NL NEDERLANDS

Bruksanvisning

N NORSK

Bruksanvisning

S SVENSK



Tandberg Power Amplifier TPA 3003

Technical Data

Power requirements:	115/230 V \pm 10%, 50/60 Hz
Power consumption:	50 – 770 W
Dimensions:	Width: 17 1/8" (43.5 cm) Depth: 13 3/4" (35.0 cm) Height: 3 1/4" (8.3 cm) Weight: 25 lbs (11.3 kg)

Other Technical Data

Frequency Response:	5 – 100,000 Hz, + 0/–1.5 dB
Output Impedance (20 – 1000 Hz):	0.04 ohms
Slew rate:	> 70 V/ μ s
A-weighted Signal-to-Noise Ratio: (Ref. 150 W/8 ohms)	120 dB

Technical Data according to IHF-A-202, 1978

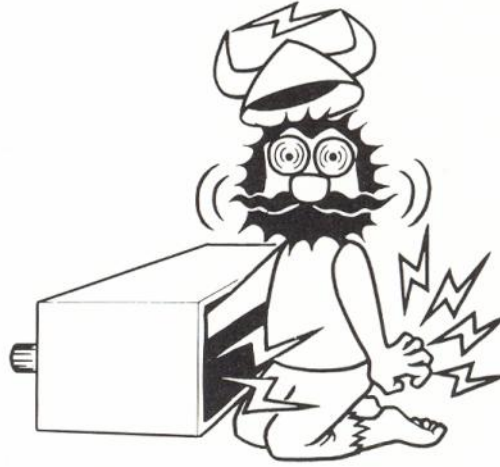
Continuous Average Power Output: (8 ohms, 20 – 20,000 Hz, THD < 0.02%)	2 x 150 W
Dynamic Headroom:	0.35 dB
Frequency Response:	20 – 20,000 Hz, + 0/– 0.2 dB
Sensitivity:	1 V
A-weighted Signal-to-Noise Ratio: (Ref. 1 W/8 ohms)	98 dB

● Specifications are subject to change for further improvement without notice.

Secondary Disclosures

Clipping Headroom:	1.05
Output Impedance (20 - 20,000 Hz):	0.08 ohms
Wideband Damping Factor:	100
Low Frequency Damping Factor:	200
SMPTE Intermodulation Distortion:	0.02%
IHF Intermodulation Distortion:	0.02%
Transient Overload Recovery Time:	Immeasurable
Reactive Load Factor:	1.2
Reactive Load Rating:	0.8 dB
Separation:	> 75 dB
Difference of Frequency Response:	< 0.1 dB

TANDBERG A/S
P.O. Box 55, Bogerud
N – OSLO 6 – Norway



E

For your safety!

To prevent electrical shock or fire, do not expose electronic products to rain or moisture and do not remove covers (or back). If anything fails, leave the repairs to a qualified technician.

Pull out the power plug during thunder-storms and when you are away for a long time (e.g. holidays, etc.).

F

Pour votre sécurité!

Pour éviter les chocs électriques ou le feu, ne laissez pas les matériels électroniques exposés à la pluie ni à l'humidité et n'enlevez pas le couvercle (ni le panneau arrière). En cas de panne, faites réparer par un technicien qualifié.

Débranchez la prise secteur en cas d'orage et quand vous vous absentez pour longtemps (vacances etc.).

D

Zu Ihrer Sicherheit!

Zu Ihrer persönlichen Sicherheit und der Vermeidung von Brandgefahr müssen elektronische Geräte vor Feuchtigkeit geschützt werden. Keinerlei Abdeckungen z.B. Rückwände und Bodenplatten selbst entfernen. Jegliche Eingriffe in das Gerät dürfen nur von einem qualifizierten Service-Techniker vorgenommen werden.

Netzstecker bei Gewitter, und bei längerer Abwesenheit (z.B. Urlaubsreisen u.s.w.) herausziehen.

NL

Voor Uw eigen veiligheid!

Om elektrische schokken en brand te voorkomen, mogen elektrische apparaten niet in de regen of bij hoge vochtigheid worden gebruikt. Dekplaten om het apparaat mogen niet worden verwijderd. Laat alle service uitvoeren door de vakman.

Als U op vakantie bent, of bij onweer, kunt U het best de netstekker uit zijn contact trekken.

N

For Deres sikkerhet!

For å unngå elektrisk støt eller brann må elektroniske apparater ikke utsettes for regn eller fuktighet. Apparatets deksler (kapsling) må ikke fjernes. Overlat enhver service til kvalifisert servicepersonell.

Dra ut nettpluggen i tordenvær og ved lengre tids fravær (f.eks. ferier, etc.).

S

För Er egen säkerhet!

För att förhindra elektrisk stöt eller eld – utsätt inte elektroniska apparater för regn eller annan fuktighet och avlägsna inte apparatens skydd. Försök inte att reparera själv. Kontakta en fackman.

Drag ut kontakten i åskväder och vid längre tids bortavaro (tex. semester, ect.).

E

Contents

	Page
Mains voltage — Fuses	4
Connections	4
Mains switch	4
Peak clipping indicators	4
Protection circuits	4
Connections	12
Mounting the side panels	13
Mounting the rack mount kit	13

F

Sommaire

	Page
Alimentation secteur — Fusibles	5
Raccordements	5
Interrupteur secteur	5
Indicateurs d'écrtage	5
Circuits de protection	5
Raccordements	12
Montage des panneaux latéraux	13
Montage des adaptateurs pour rack	13

D

Inhalt

	Seite
Netzspannungen — Sicherungen	6
Anschlüsse	6
Netzschalter	6
Begrenzungsanzeige (Peak Clipping)	6
Sicherheitschaltungen	6
Anschlüsse	12
Montage des Seitenplatten	13
Montage der Griffe für 19"-Einschub	13

NL

Inhoud

	Pagina
Netspanning — Zekeringen	7
Verbindingen	7
Netschakelaar	7
Piek-vervorming indicators	7
Beveiligingcircuits	7
Verbindingen	12
Montering van zijwanden	13
Montering van rack bevestiging	13

N

Innhold

	Side
Nettspenning — Sikringer	8
Tilkoplinger	8
Nettbryter	8
Overbelastningsindikatorer (Peak Clipping)	8
Beskyttelseskretser	8
Tilkoplinger	12
Montering av sidepaneler	13
Montering av rack monteringssett	13

S

Innehåll

	Sida
Nätspänning — Säkringar	9
Anslutningar	9
Nätbrytare	9
Överbelastningsindikatorer (Peak Clipping)	9
Säkringskretsar	9
Anslutningar	12
Montering av gavlar	13
Montering av rack monteringssets	13

Mains voltage – Fuses

Check that the equipment is set to the correct voltage, see figure on page 10.

230 V, 50 Hz:

The equipment is set to 230 V, 50 Hz at the factory and is fitted with a 4 A fuse for this operating voltage. On this setting, any mains voltage between 220 V and 240 V can be used.

115 V, 60 Hz:

- Set the voltage selector on the equipment to the 115 V position (use a screwdriver).
- Change the fuse to 8 A (supplied). Open the fuse holder with a screwdriver or a coin.

Fuses:

230 V, 50 Hz: 4 A, slow blow, 5 x 20 mm.
115 V, 60 Hz: 8 A, slow blow, 5 x 20 mm.

Connections, see diagram pages 11 and 12

IMPORTANT! All connections should be carried out before the Power is switched on.

- Connect signal source to the Input connectors.
- Connect speakers to the Speaker terminals.

NOTE! Check the speaker polarity.

Mains switch

- Check that the equipment is connected to the correct mains voltage, see above.
- Check that the correct fuse is fitted.
- Plug in the mains lead (see alternatives pages 11 and 12).

- Press in the mains switch (marked Power).

NOTE! A protection circuit will cause a few seconds delay.

Peak clipping indicators

The indicators (one for each channel) will indicate when peak clipping of the signal occurs.

Protection circuits

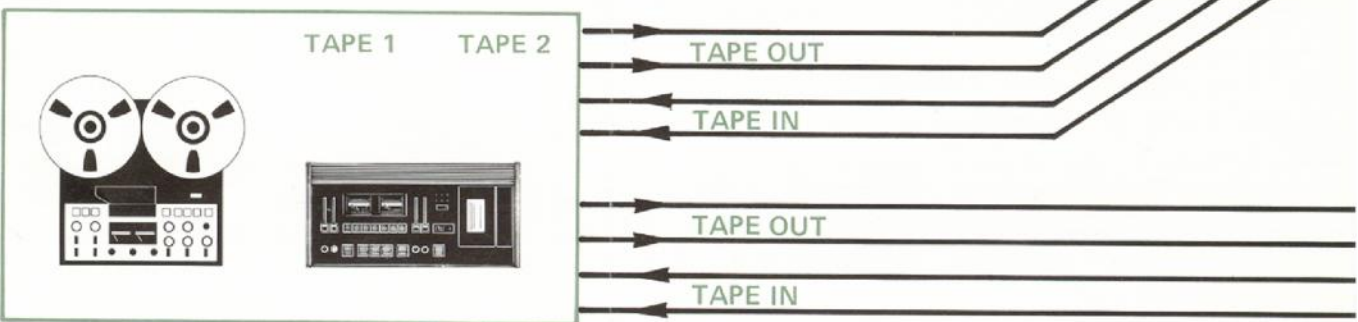
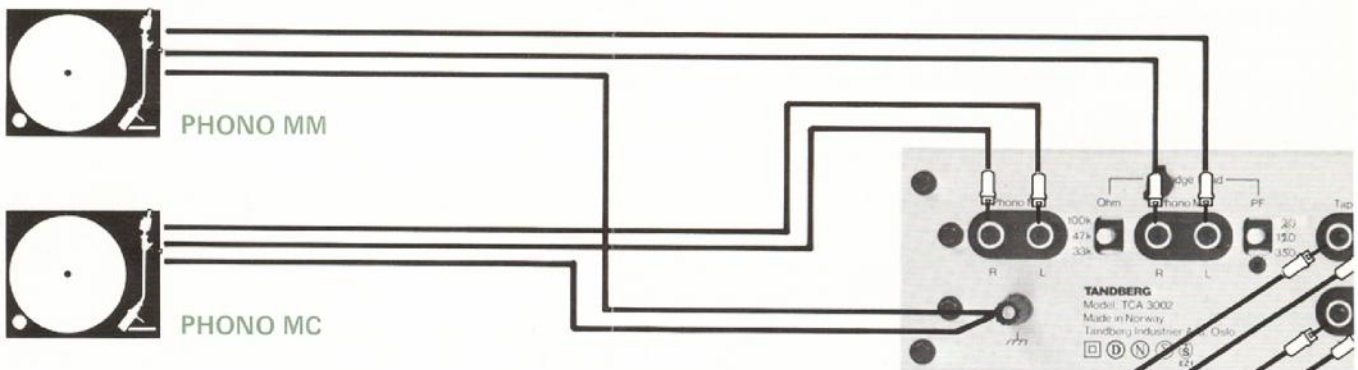
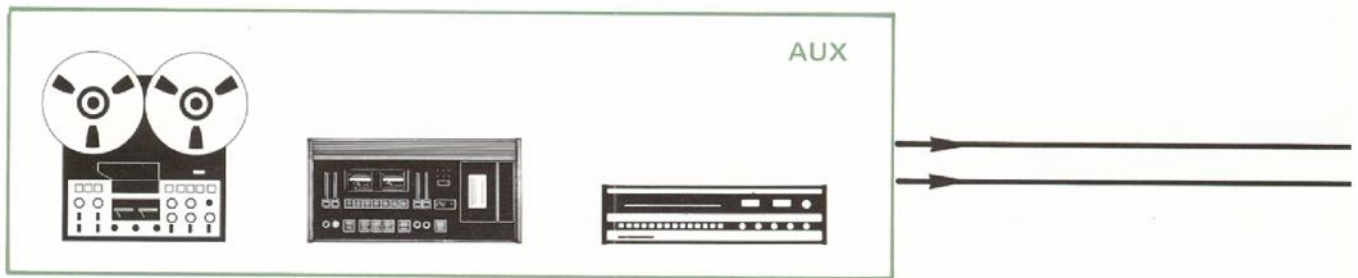
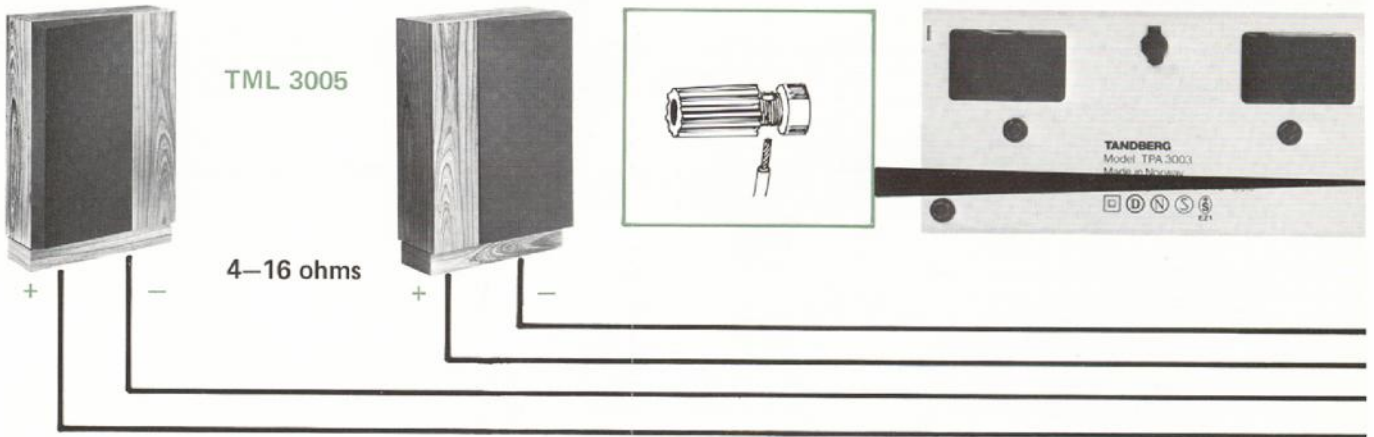
Electronic circuits will protect the power amplifier against:

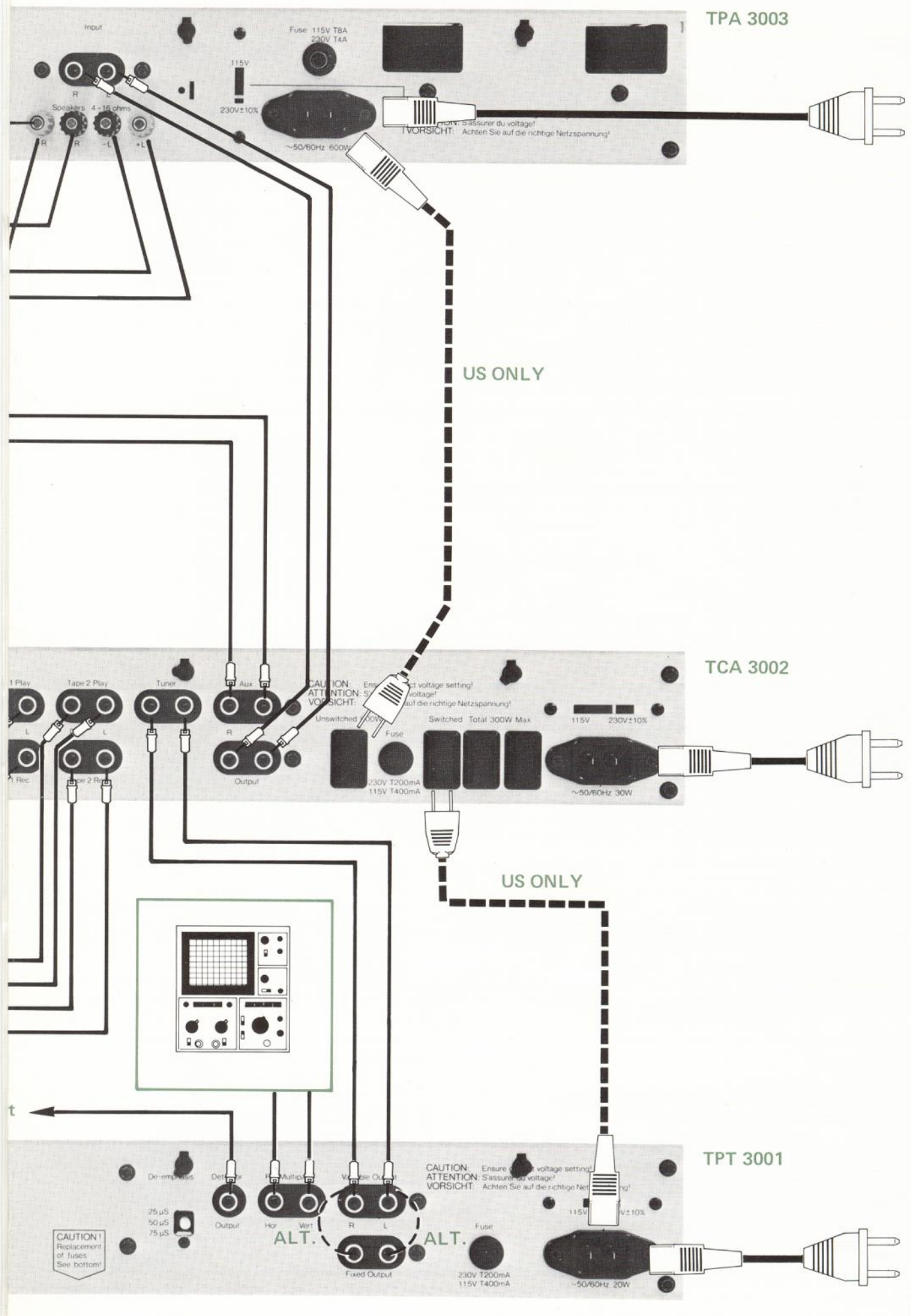
- load impedances lower than 2 ohms per channel short-circuit included,
- flashback from inductive speaker load, and
- protect the speakers from damage caused by d.c. voltages.

Furthermore a thermal fuse will operate if the temperature inside the amplifier rises above normal operating temperature. This fuse will be reset automatically when normal temperature conditions are resumed.

IMPORTANT! When placing this power amplifier in a rack or in a shelf, always be sure that sufficient ventilation is available.

Connections / Raccordements / Anschlüsse / Verbindungen / Tilkoplinger / Anslutningar





(E) Mounting the side panels (extra)

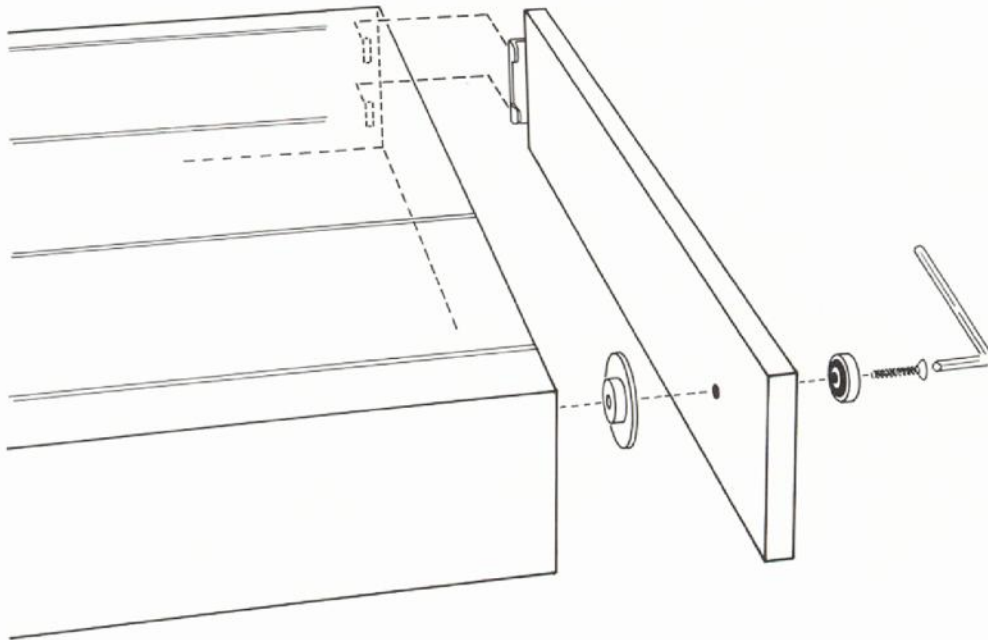
(F) Montage des panneaux latéraux (extra)

(D) Montage der Seitenplatten (extra)

(NL) Monteren van zijwanden (extra)

(N) Monteren av sidepaneler (ekstra)

(S) Monteren av gavlar (extra)



(E) Mounting the 19''-rack mount kit (extra)

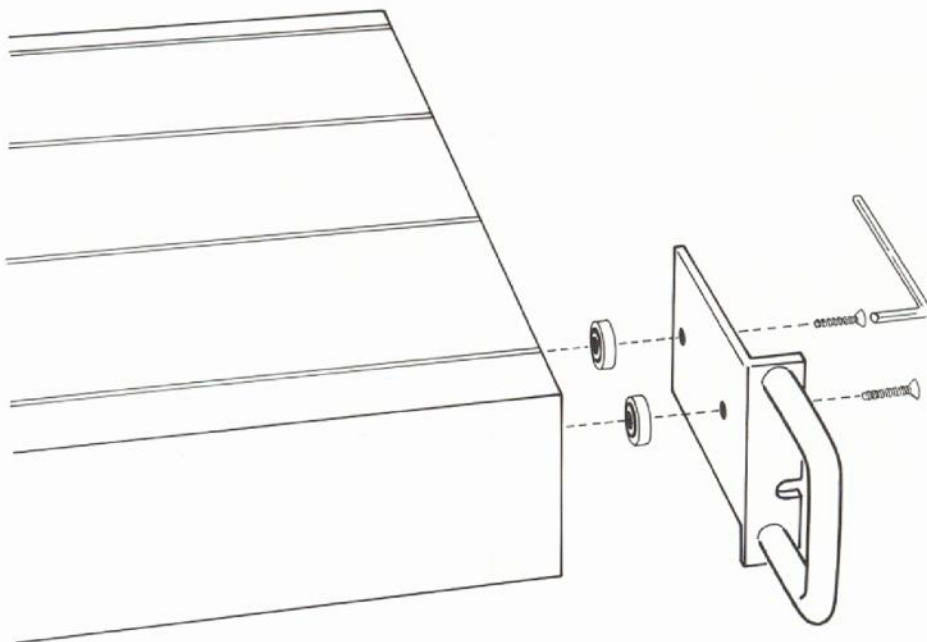
(F) Montage des adaptateurs pour 19''-rack (extra)

(D) Montage der Griffe für 19''-Einschub (extra)

(NL) Monteren van 19''-rack bevestiging (extra)

(N) Monteren av 19''-rack monteringssett (ekstra)

(S) Monteren av 19''-rack monteringssett (ekstra)



TANDBERG

Control Amplifier 3002

Operating Instructions

E ENGLISH

Notice d'Utilisation

F FRANCAIS

Bedienungsanleitung

D DEUTSCH

Gebruiksaanwijzing

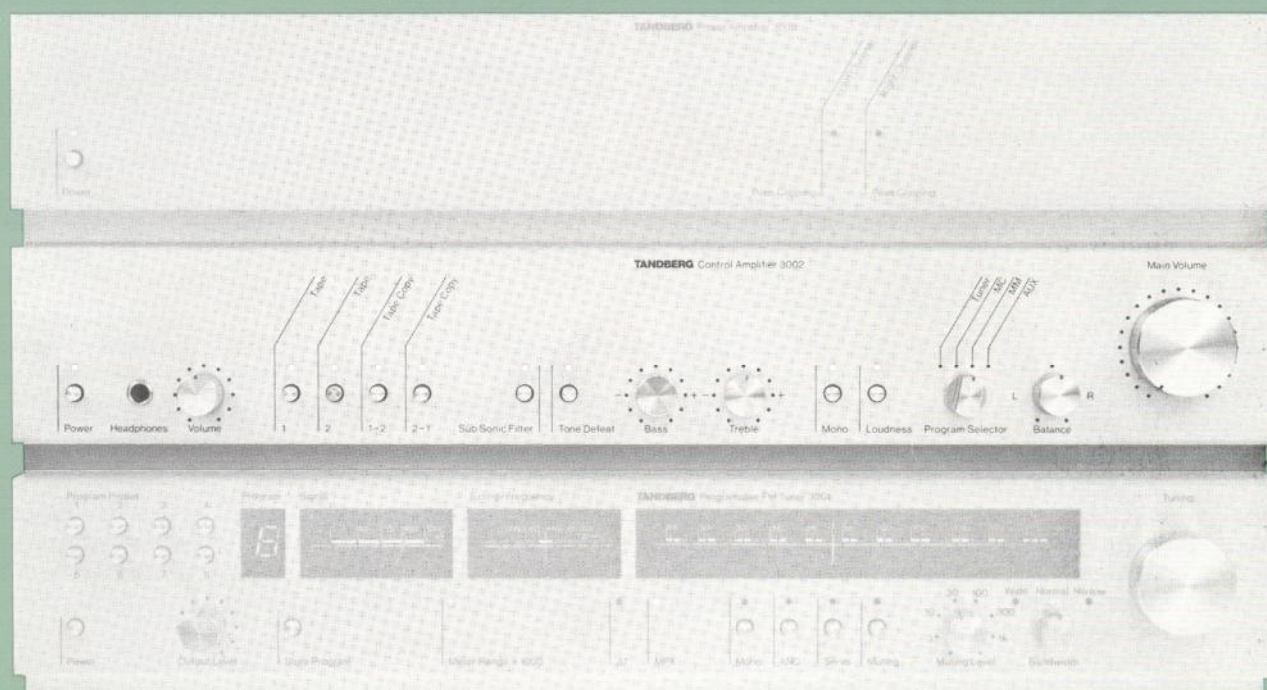
NL NEDERLANDS

Bruksanvisning

N NORSK

Bruksanvisning

S SVENSK



Tandberg Control Amplifier TCA 3002

Technical data

Power requirements:	115/230 V \pm 10%, 50/60 Hz
Power consumption:	30 W max.
AC-outlets:	Unswitched 1
	Switched 3

Dimensions:	Width	17 1/8" (43.5 cm)
	Depth	13 3/4" (35.0 cm)
	Height	3 1/4" (8.3 cm)
	Weight	12.5 lbs (5,7 kg)

Technical Data according to IHF-A-202, 1978

Frequency response

Phono MM:	20 – 20,000 Hz	\pm 0.2 dB
Phono MC:	20 – 20,000 Hz	\pm 0.2 dB
Tape 1, Tape 2:	20 – 20,000 Hz	+ 0/– 0.1 dB
Tuner, AUX:	20 – 20,000 Hz	+ 0/– 0.1 dB

Maximum Voltage Output

Preamp output:	5 V at THD = 0.004%
Preamp output:	10 V at clipping level
Tape 1, Tape 2:	7.5 V
Headphone output:	20 V/R = ∞

Total Harmonic Distortion (20 Hz – 20,000 Hz)

Phono MM:	< 0.004%
Phono MC:	< 0.004%
Tape 1, Tape 2:	< 0.004%
Tuner, AUX:	< 0.004%

Input Sensitivity – Ref. 0.5 V output voltage

Phono MM:	1 mV
Phono MC:	80 μ V
Tape 1, Tape 2:	70 mV
Tuner, AUX:	70 mV

A-weighted Signal-to-Noise Ratio

Phono MM:	80 dB
Phono MC:	74 dB
Tape 1, Tape 2:	97 dB
Tuner, AUX:	97 dB

Maximum Input Voltage (1 kHz)

Phono MM:	290 mV
Phono MC:	22 mV
Tape 1, Tape 2:	11 V
Tuner, AUX:	11 V

Input Impedance

Phono MM:	33 / 47 / 100 kohms
Phono MC:	1 kohm
Tape 1, Tape 2:	47 kohms
Tuner, AUX:	47 kohms

Secondary Disclosures

Output Impedance

Preamp:	560 ohms + 10 μ F in series
Headphones:	470 ohms
Headphones (min. load):	4 ohms

Tone-control Response

Bass:	\pm 10 dB at 50 Hz
Treble:	\pm 10 dB at 10,000 Hz
Loudness:	Max. 7 dB at 50 Hz
	Max. 3 dB at 10,000 Hz

Filter

Sub Sonic:	– 12 dB/oct., – 3 dB at 15 Hz
------------	-------------------------------

Crosstalk (100 Hz – 10 kHz)

Phono MM:	To any of the other sources > 70 dB
Phono MC:	To any of the other sources > 70 dB
Tape 1, Tape 2:	To any of the other sources > 70 dB
Tuner, AUX:	To any of the other sources > 70 dB

Separation (100 Hz – 10 kHz)

Phono MM:	> 53 dB
Phono MC:	> 53 dB
Tape 1, Tape 2:	> 58 dB
Tuner, AUX:	> 58 dB

Transient intermodulation

All inputs:	Immeasurable
-------------	--------------

Other Technical Data

Frequency Response

Tape 1, Tape 2:	5 – 130,000 Hz, + 0/– 1.5 dB
Tuner, AUX:	5 – 130,000 Hz, + 0/– 1.5 dB

Phase shift (20 Hz – 20,000 Hz)

Tape 1, Tape 2:	+ 9.5°/– 2.5°
Tuner, AUX:	+ 9.5°/– 2.5°

- Specifications are subject to change for further improvement without notice.

TANDBERG A/S
P.O. Box 55, Bogerud
N – OSLO 6 – Norway

E**Contents**

	Page
Mains voltage — Fuses	4
Mains sockets (outlets) for extra equipment	4
Mains switch.	4
Volume — Balance.	4
Headphones	4
Bass and Treble.	12
Tone Defeat	12
Loudness.	12
Sub-Sonic Filter (Rumble-filter).	12
Connections	18
Program Selector.	20
Playback from a record player	20
Playback from open reel/cassette recorder(s)	20
Mono	20
Recording on a connected open reel/cassette recorder	28
Copying between two open reel/cassette recorders.	28
Combined recording/playback	28
Mounting the side panels.	34
Mounting the rack mount kit.	34
Block diagram.	35

F**Sommaire**

	Page
Tension d'alimentation — Fusibles	5
Prises secteur équipement accessoire.	5
Interrupteur secteur.	5
Volume — Balance.	5
Écouteurs.	5
Grave et aigu	13
Tone Defeat	13
Loudness (correcteur physiologique de volume)	13
Sub Sonic Filter (filtre anti-grondement)	13
Raccordements.	18
Sélecteur de programme	21
Reproduction à partir d'un tourne-disque	21
Reproduction d'un enregistreur à bobines ou à cassette.	21
Mono	21
Enregistrement sur un enregistreur à cassette ou à bobines raccordé	29
Copie entre deux enregistreurs (à bobine ou à cassette)	29
Enregistrement et reproduction combinés	29
Montage des panneaux latéraux	34
Montage des adaptateurs pour rack	34
Schéma bloc.	35

D**Inhalt**

	Seite
Netzspannung — Sicherungen.	6
Netz-Steckdosen für Zusatzgeräte.	6
Netzschalter.	6
Lautstärke — Balance.	6
Kopfhörer	6
Bässe und Höhen.	14
Lineartaste (Tone Defeat).	14
Physiologische Lautstärke-Korrektur.	14
Infraschall-Filter (Sub Sonic Filter).	14
Anschlüsse	18
Programm-Wahlschalter (Program Selector)	22
Wiedergabe von einem Plattenspieler	22
Wiedergabe vom Spulen-Tonbandgerät bzw. Cassettenrecorder.	22
Mono	22
Aufnahme auf einem angeschlossenen Spulen- Tonbandgerät bzw. Cassettenrecorder	30
Kopiermöglichkeiten zwischen 2 Magnetbandgeräten	30
Kombinierte Aufnahme/Wiedergabe	30
Montage der Seitenplatten.	34
Montage der Griffe für 19"-Einschub.	34
Block-Schaltbild	35

NL**Inhoud**

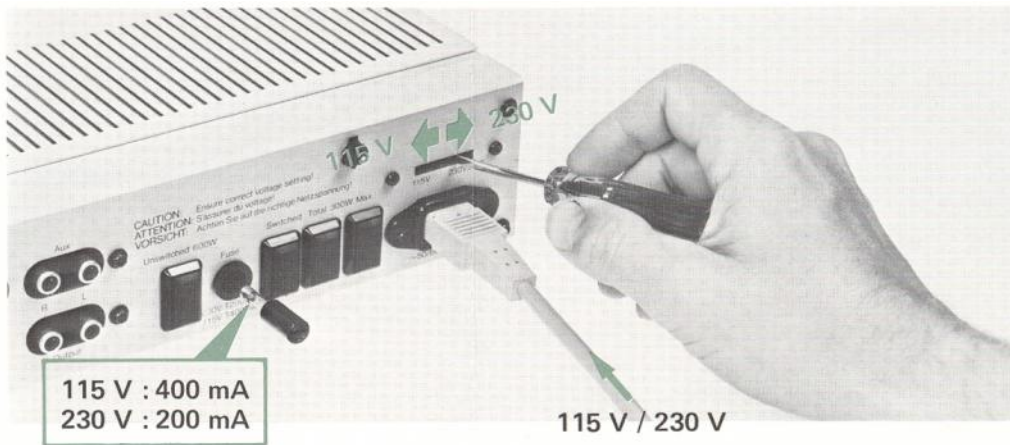
	Pagina
Nettspanning — Zekeringen	7
Netaansluitingen voor extra apparatuur	7
Netschakelaar.	7
Volume — Balans.	7
Hoofdtelefoon	7
Lage en Hoge tonen	15
Lineair-filter.	15
Fysiologische-volume regeling	15
Sub-Sonic Filter (Rumble filter).	15
Verbindingen	18
Programma-keuze	23
Weergave van een platenspeler	23
Weergave van een spoelen/cassette recorder	23
Mono	23
Opnemen op een spoelen/cassette recorder.	31
Copieren tussen 2 spoelen/cassette recorders.	31
Gekombineerd weergeven/opnemen	31
Montering van zijwanden	34
Montering van rack bevestiging.	34
Blokschema	35

N**Innhold**

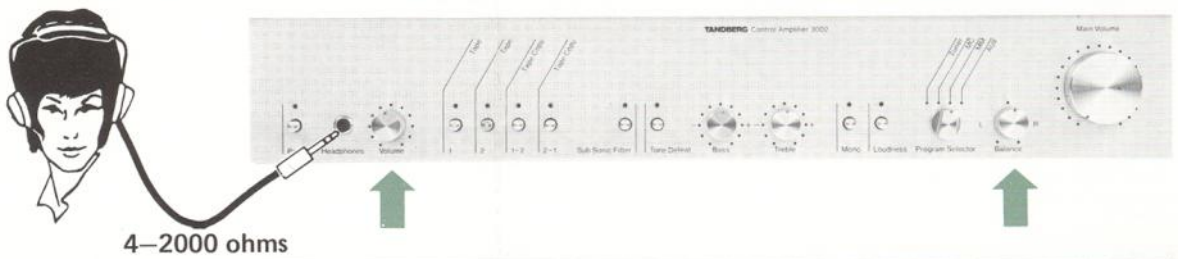
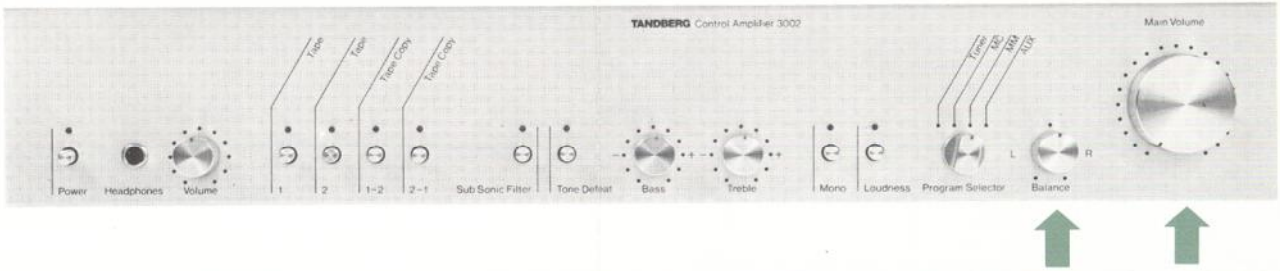
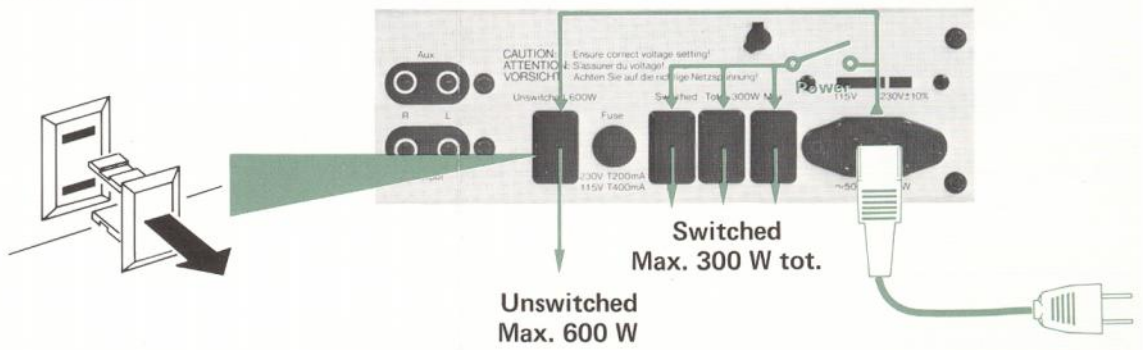
	Side
Nettspenning — Sikringer	8
Nettkontakter for ekstrauststyr.	8
Nettbryter	8
Lydstyrke — Balanse	8
Hodetelefoner.	8
Bass og diskant	16
Tone Defeat	16
Loudness	16
Sub Sonic Filter (Rumble-filter).	16
Tilkoplinger	18
Programvelger (Program Selector).	24
Avspilling fra platespiller.	24
Avspilling fra bånd/kassettpiller(e).	24
Mono	24
Innspilling på tilkoplebånd/kassettpiller	32
Kopiering mellom to bånd/kassettpillere.	32
Kombinert innspilling/avspilling.	24
Montering av sidepaneler.	34
Montering av rack monteringssett	34
Blokkskjema.	35

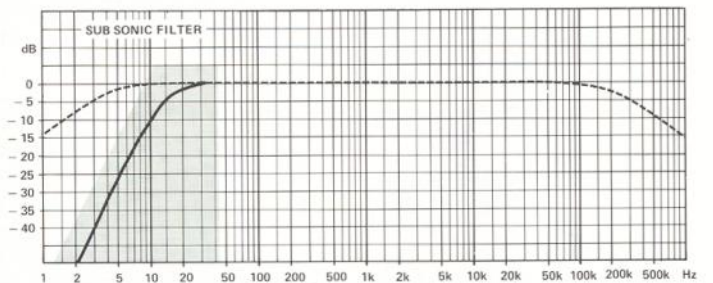
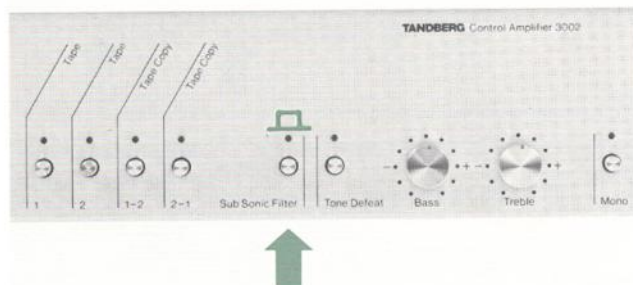
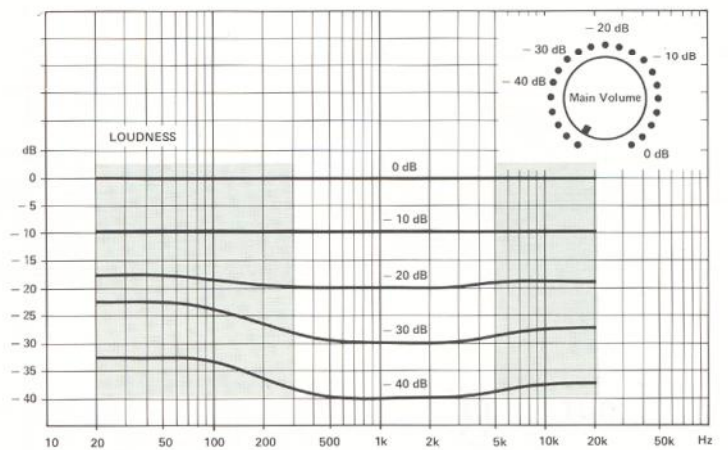
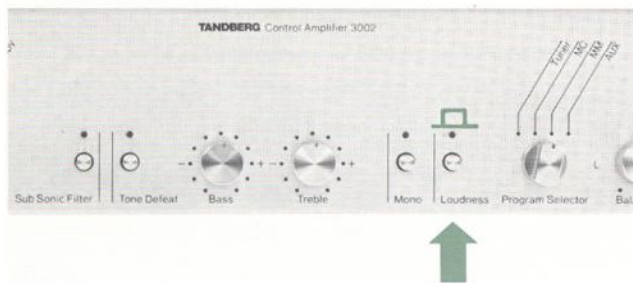
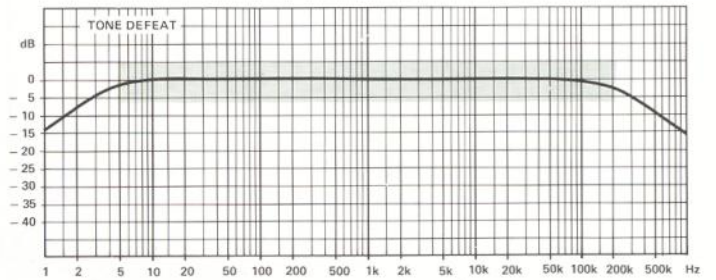
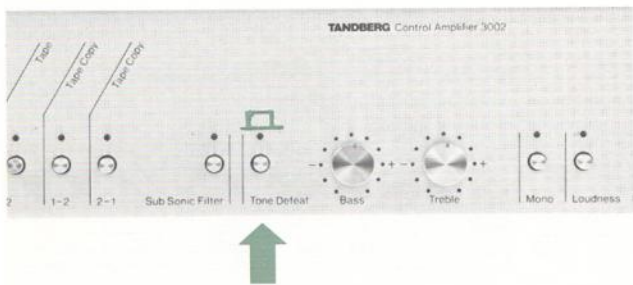
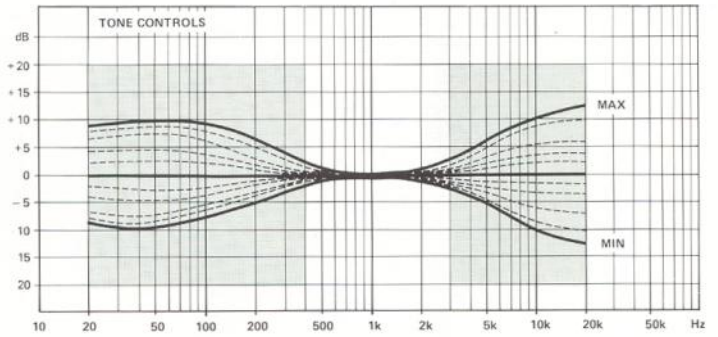
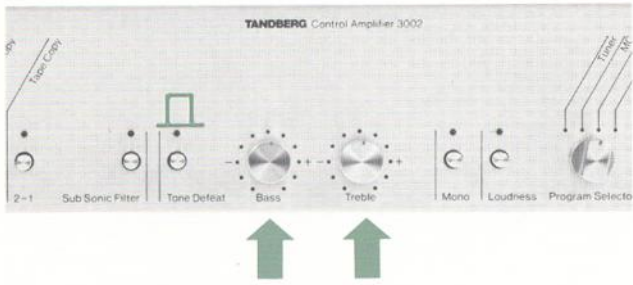
S**Innehåll**

	Sida
Nätspänning — Säkringar.	9
Nätkontakter för extra utrustning.	9
Nätbrytare	9
Ljudstyrka — Balans.	9
Hörlurar	9
Bas och diskant.	17
Tone Defeat	17
Loudness.	17
Sub Sonic Filter (Rumble-filter).	17
Anslutning	18
Programväljare (Program Selector)	25
Avspelning från skivspelare	25
Avspelning från band/kassettspelare	25
Mono	25
Inspelning på band/kassettspelare	33
Kopiering mellan två band/kassettspelare	33
Kombinerad inspelning/avspelning	33
Montering av gavlar	34
Montering av rack monteringssetts	34
Blokschema	35



For the US market only





Bass and Treble

- Control the bass and treble with the knobs marked Bass and Treble.

NOTE! The tone controls will only work when the Tone Defeat button is released (out).

Tone Defeat

- When the Tone Defeat button is pressed in, a flat frequency response is obtained regardless of the position of the tone controls.

NOTE! The Loudness and Sub-Sonic Filter facilities are not affected by the position of the Tone Defeat button.

Loudness

At low volume the ear is less sensitive to high tones and low tones. To compensate for the ear's lower sensitivity, push in the Loudness button. This causes the high and low tones to be reproduced louder in relation to the middle tones.

The operation of the loudness facility is dependent on the volume. The curves (graphs) show the effect of the loudness facility for different positions of the Main Volume control.

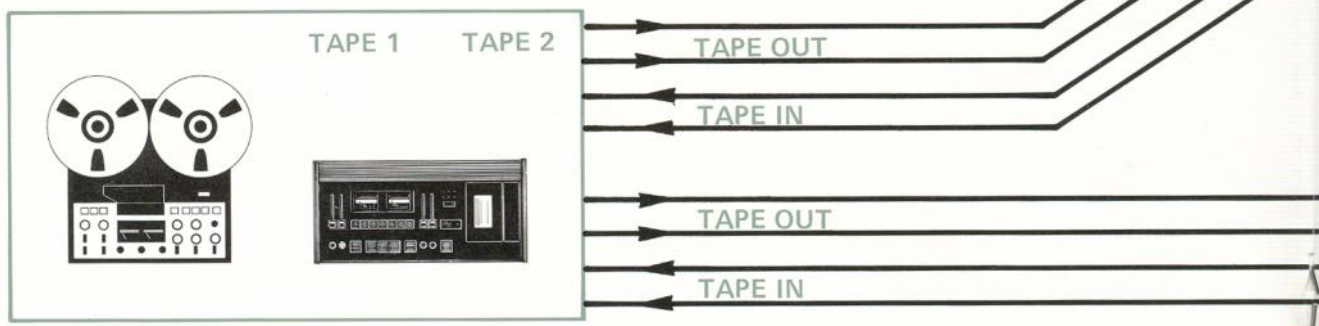
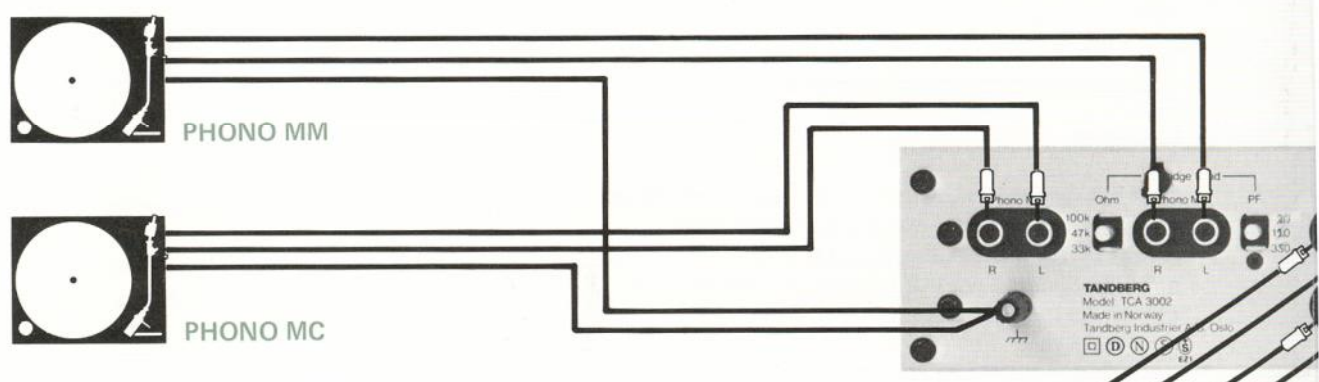
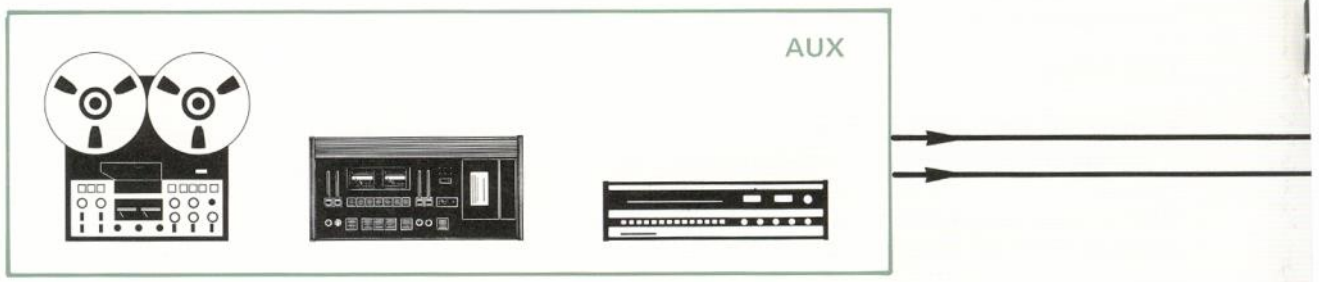
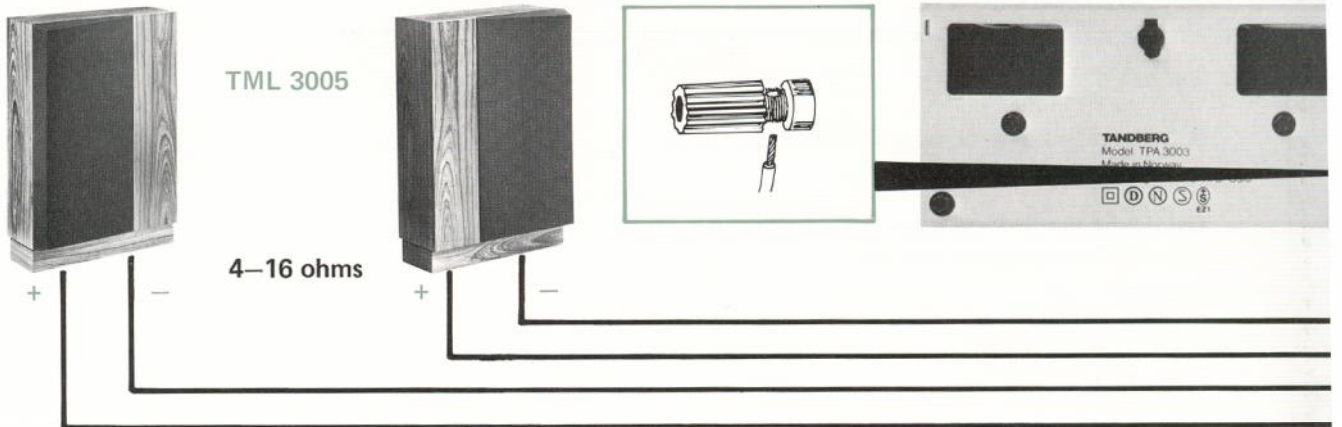
Sub-Sonic Filter (Rumble-filter)

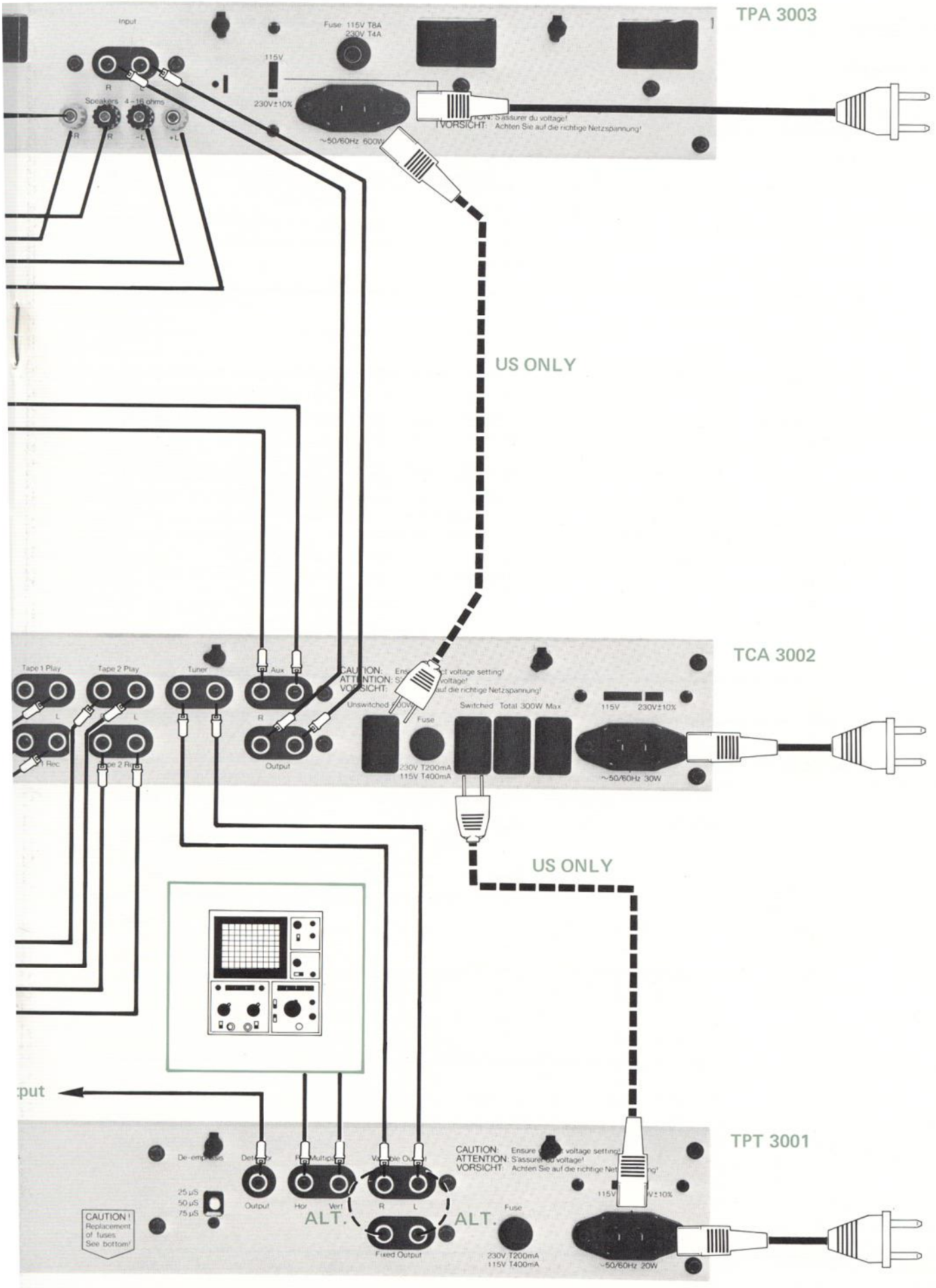
- Press in this button to reduce noise in the low-frequency region e.g. rumble from a record player of poor quality.

This filter will also reduce acoustic feedback from the loudspeakers to the pick-up.

The attenuation is -12 dB per octave, and -3 dB at 15 Hz.

Connections / Raccordements / Anschlüsse / Verbindungen / Tilkoplinger / Anslutningar





Program Selector

The program selector enables 4 different program sources to be selected:

- Tuner: FM/AM receiver.
- MC: Record player with moving-coil pick-up.
- MM: Record player with moving-magnet pick-up.

- AUX: Spare Program Source e.g. for a tape recorder, AM tuner (playback only).

NOTE! Buttons Tape 1 and Tape 2 must be released.

Playback from a record player

- Connect the record player as shown on pages 18 and 26.

Phono MC: Record player with moving-coil pick-up.

Phono MM: Record player with moving-magnet pick-up.

The input can be corrected with two selectors (Ohm and pF) to match different types of moving-magnet pick-up.

The ground lead (static) from the record player can be connected to the ground screw under the sockets. Try different arrangements to obtain the best hum-free result.

- When playing back, set the Program Selector to MC or MM dependent on the type of record player.
-

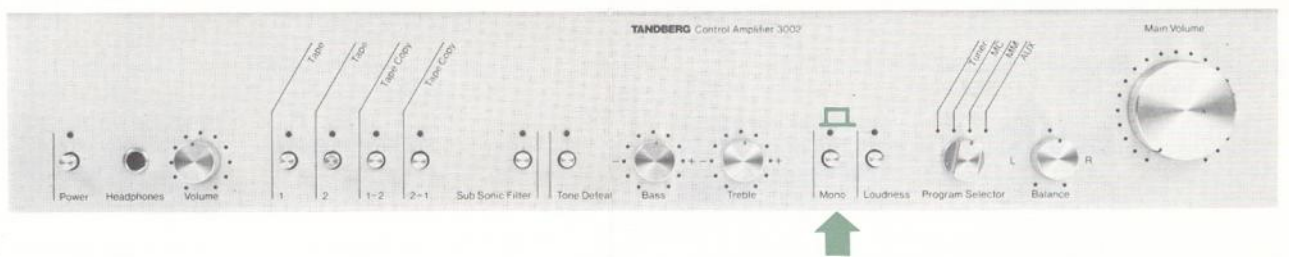
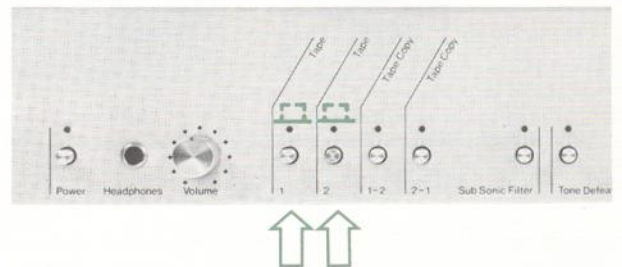
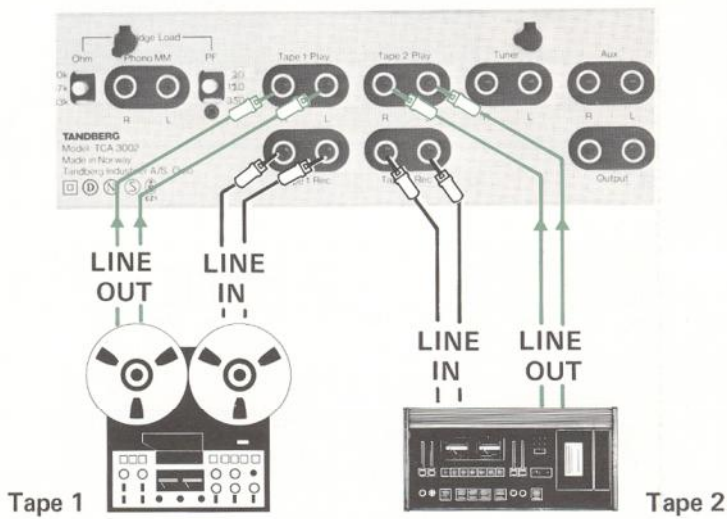
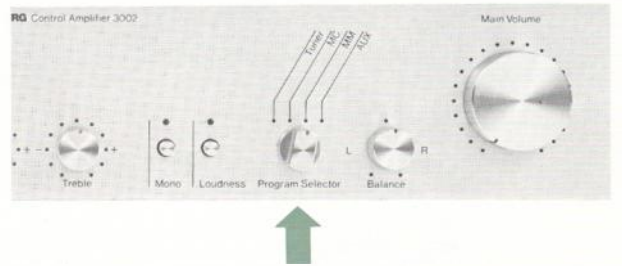
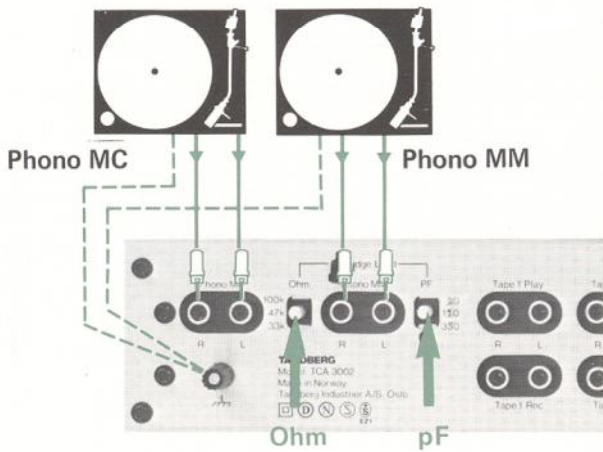
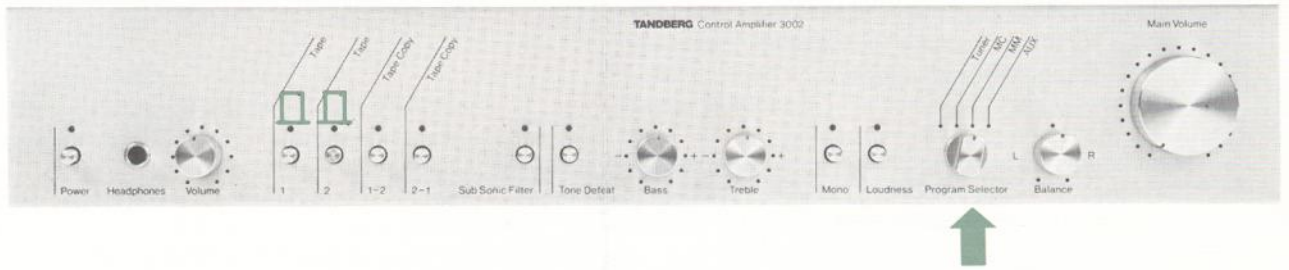
Playback from open reel/cassette recorder(s)

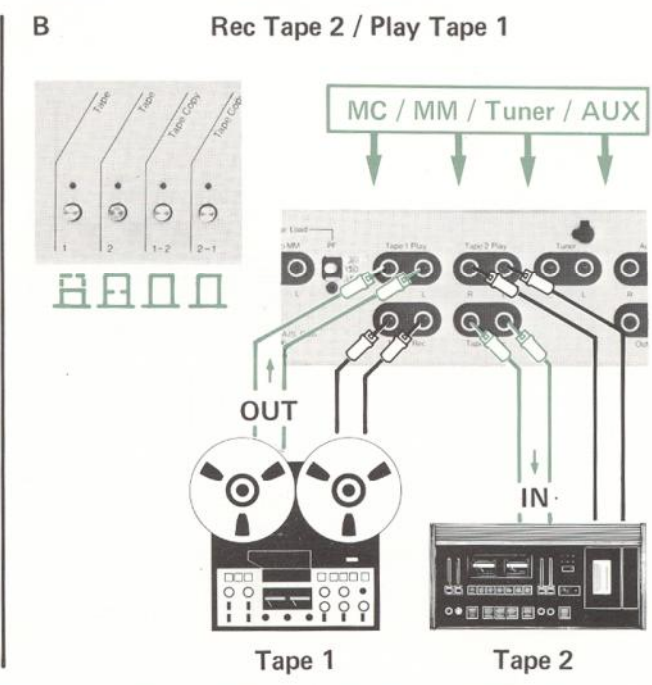
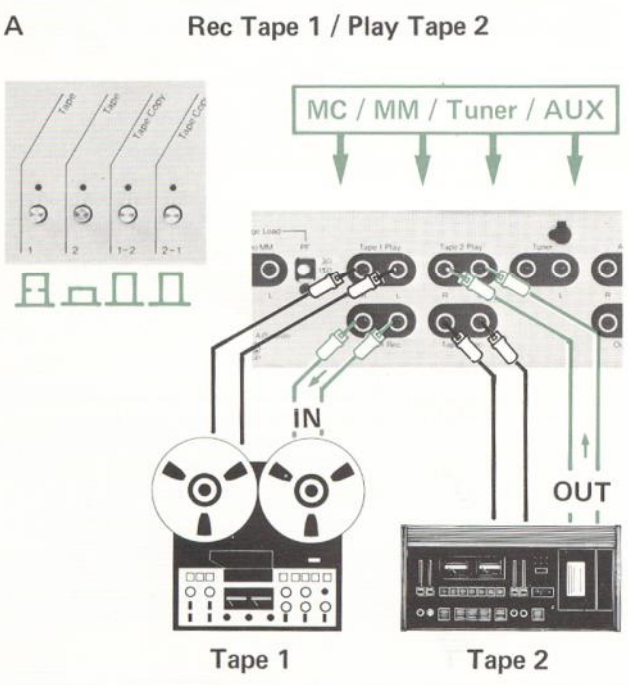
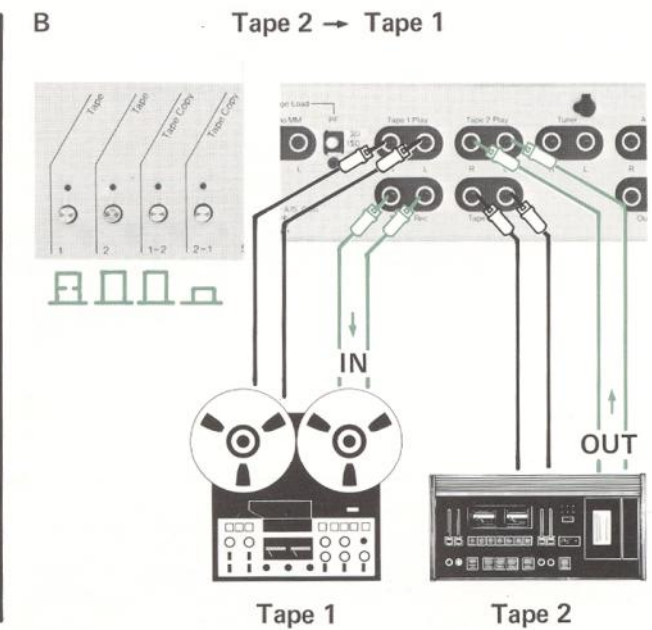
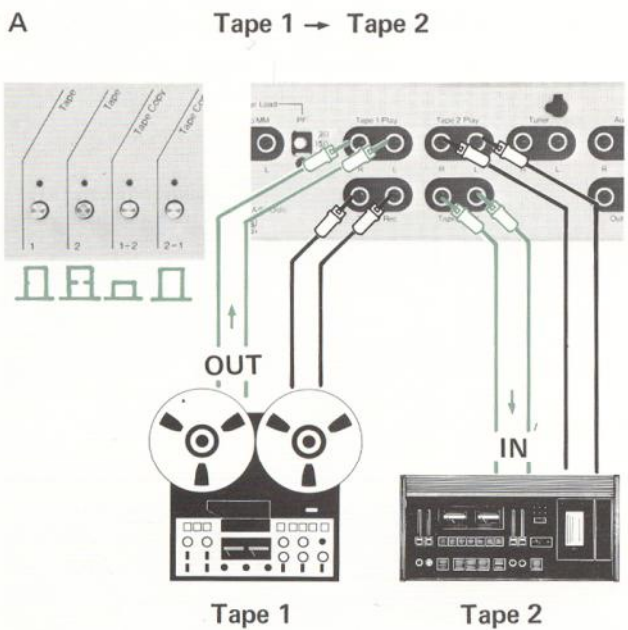
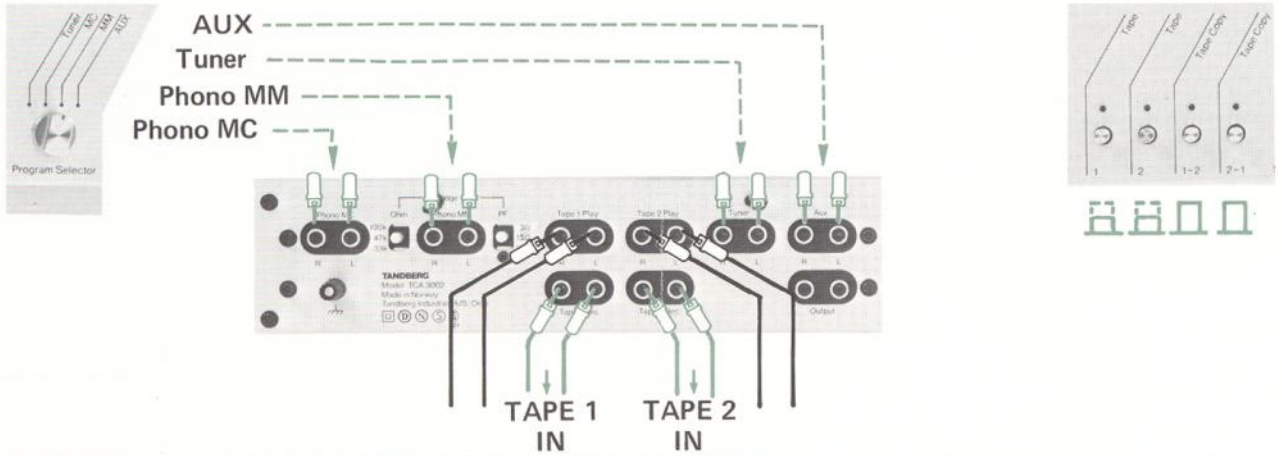
- Connect the tape recorder(s) as shown on pages 18 and 26.
- Playback from Tape 1: Press in Tape 1 button.
- Playback from Tape 2: Press in Tape 2 button.
- Release the button after playback.

NOTE! If Tape 1 and Tape 2 are both pressed in at the same time, only the program from Tape 1 will be replayed.

Mono

- Press in the Mono button for mono reproduction of programs.
-





Recording on a connected open-reel/cassette recorder

NOTE! Buttons Tape Copy 1 – 2 and Tape Copy 2 – 1 must be released.

- Release buttons Tape 1 and Tape 2.
- Connect the program from the program source (Phono MC, Phono MM, Tuner AUX) to the corresponding input on the TCA 3002 and set the Program Selector to the correct position.

- The program is now connected to the Tape 1 Rec. and Tape 2 Rec. sockets and a recording can be made on the tape recorder(s) connected to these sockets.

- If the connected tape recorder has the facility for a B-test (Tape test) and it is set to carry out the B-test, the test can be performed:
 - on a recording on Tape 1: Press in Tape 1 button.
 - on a recording on Tape 2: Press in Tape 2 button.

Copying between two open reel/cassette recorders

- Set buttons Tape 1 and Tape 2 in the outer position.
- Connect the tape recorder(s) to Tape 1 and Tape 2, see pages 19 and 27.

From Tape 1 to Tape 2 (figure A)

- Press in Tape Copy 1 – 2.
- Start Tape 1 for playback and Tape 2 for recording.
- For B-test, press in Tape 2 (Tape 1 must be released). The Tape 2 tape recorder must be set for B-test.

From Tape 2 to Tape 1 (figure B)

- Press in Tape Copy 2 – 1.
- Start Tape 2 for playback and Tape 1 for recording.
- For B-test, press in Tape 1. The Tape 1 tape recorder must be set for B-test.

While a copying is going you can listen to a program selected on the Program Selector. This program will be disconnected while you monitor the recording in B-test.

Combined recording/playback

Recording Tape 1/playback Tape 2 (figure A)

NOTE! Tape Copy buttons released.

- Set the desired program on the Program Selector.
- Make Tape 1 clear for recording.
- Make Tape 2 clear for playback.
- Press in Tape 2 button.

The program selected on the Program Selector will now be recorded on Tape 1, while the program on Tape 2 will be replayed and can be heard on the speakers.

- B-test on recording: Press in Tape 1 button. The program played back from Tape 2 will now be disconnected.

Recording Tape 2/playback Tape 1 (figure B)

NOTE! Tape Copy buttons released.

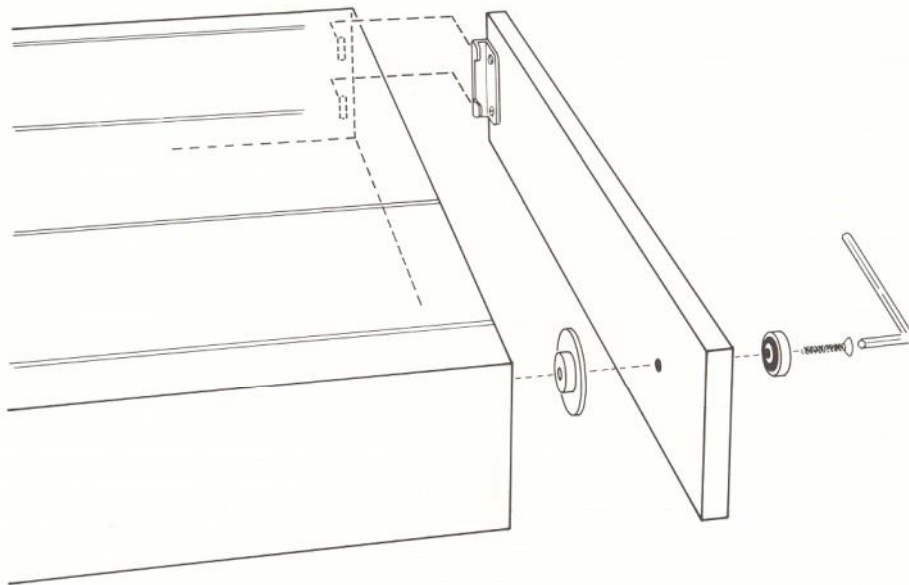
- Select the desired program on the Program Selector.
- Make Tape 2 clear for recording.
- Make Tape 1 clear for playback.
- Press in Tape 1 button.

The program selected on the Program Selector will now be recorded on Tape 2, while the program on Tape 1 will be played back and can be heard on the speakers.

- B-test on recording: Release Tape 1 button, press in Tape 2 button. The program played back from Tape 1 will now be disconnected.

- (E) Mounting the side panels (extra)
- (F) Montage des panneaux latéraux (extra)
- (D) Montage der Seitenplatten (extra)

- (NL) Monteren van zijwanden (extra)
- (N) Monteren av sidepaneler (ekstra)
- (S) Monteren av gavlar (extra)



- (E) Mounting the 19"-rack mount kit (extra)
- (F) Montage des adaptateurs pour 19"-rack (extra)
- (D) Montage der Griffe für 19"-Einschub (extra)

- (NL) Monteren van 19"-rack bevestiging (extra)
- (N) Monteren av 19"-rack monteringssett (ekstra)
- (S) Monteren av 19"-rack monteringssett (extra)

