

PR99 MK II

STUDER **REVOX**



BEDIENUNGSANLEITUNG
OPERATING INSTRUCTIONS
MODE D'EMPLOI

OPERATING INSTRUCTIONS REVOX PR99 MK II

IMPORTANT NOTE

Protect your tape recorder from excessive heat and humidity. Install it in a manner which ensures the free convection of air through the ventilating louvers.

There are no user serviceable parts inside the equipment, however, should it become necessary to open the tape recorder, it must first be disconnected from the electrical current supply. Be sure to connect the unit to AC (50 ... 60 Hz) mains supplies only. For operation on different supply voltages, a voltage selector has to be set to cover the nominal voltages of 100/120/140 v or 200/220/240 V.

GUARANTEE

A special guarantee request card is bypacked sold within the Federal Republic of Germany. This card is either located inside the packing or in a plastic pouch on the outside of the packing. Should this card be missing, please consult your REVOX dealer or your national REVOX distributor.

Guarantee cards sold in Switzerland and Austria are issued directly by the authorized dealer.

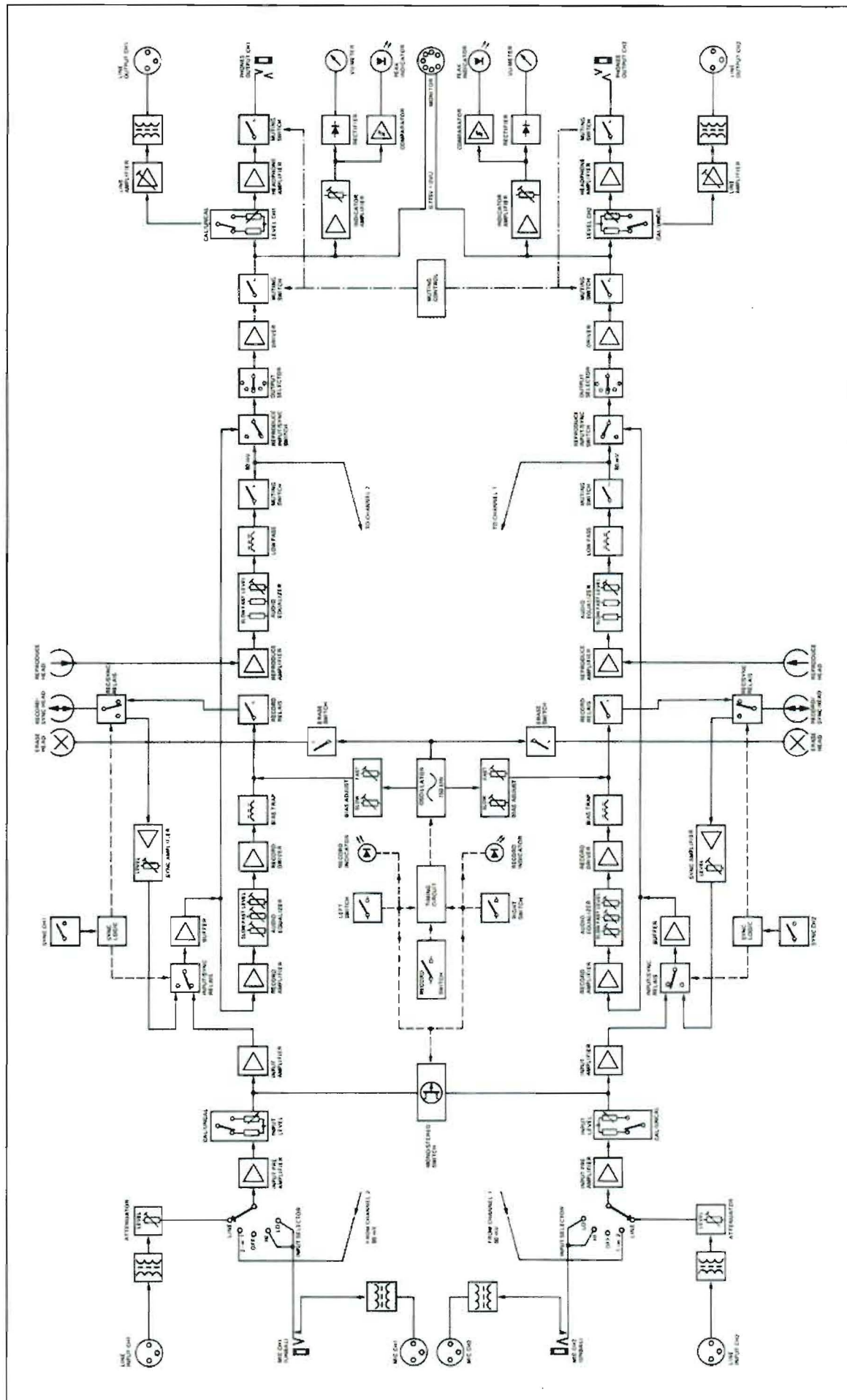
Guarantee cards sold in France are located inside the packing. This card must be completely filled out and signed by your authorized REVOX dealer.

Please note that the guarantee is only valid within the country in which the equipment has been sold. The guarantee becomes null and void if unauthorized modifications or unprofessional repairs are made.

PACKING

Please save the original packing material because its special construction provides optimum protection for your valuable equipment.

BLOCK DIAGRAM REVOX PR99 MKII



INTRODUCTION TO THE UTILIZATION OF THIS OPERATING INSTRUCTIONS

To satisfy the information needs of experienced technicians as well as users with limited technical know-how, the instructions contained in this operating guide have been arranged into sections of corresponding detail. The first section of this operating guide is of interest to all users. It contains information on pre-operational checks, for putting the machine into operation, and an index of the front-panel controls. The second section contains a concise operating description which provides sufficient detail for the experienced practitioner. At the end of this section you will find a detailed function description of each control.

The third section is specifically addressed to those users, whose experience so far has been limited to non-professional equipment and therefore need to familiarize themselves with the features provided by professional audio engineering equipment.

The fourth section can be considered as appendix to the preceding chapters. It concentrates on special applications relating to playback, synchronous mode, or echo mode. These modes of operation should only be considered after the standard operating procedures of the tape deck have been thoroughly studied.

The fifth section contains remarks about maintenance and amplifier calibrations.

When consulting this operating instructions, always fold out the double page at the beginning of this manual. It provides an overview of the various controls. The index numbers of the illustrations are also referred to in the instructions. In this manner it will be much easier to locate the corresponding control.

We suggest that you carefully study the fold-out double page while sitting in front of the tape deck in order to familiarize yourself with the layout of the machine.

TAPE DECK REVOX PR99 MK II

The Revox PR99 MK II Series is an easy to operate tape deck, designed for the multiple needs of the broadcast studio or demanding non-professional use. Maintenance and calibration are easy to perform because the corresponding connections and controls are accessible from the front. Fader start operation and remote control are available as options for the PR99 MK II.

Design concept

- 19" standard chassis or 19" case for rack mounting
- Hardened aluminium front plate for tape transport and amplifier
- 3-motor direct drive tape transport system
- Tape tension switchable to match hub diameter
- Increased tape tension during fast wind allows use of single sided spools
- Headblock assembly mounted on the same plane as controls, hence more easily accessible
- Edit and dump editing selectable
- Synchronous operation; in record mode, one channel can be switched to "playback from recording head"
- Real-time counter
- Tape speed variable ± 7 semitones
- Remote control connectors for:
 - Fader start (front-panel controls interlocked)
 - All tape transport functions remotely controllable
 - Tape speed variable (± 7 semitones)
- Front-panel controls logically divided between record and reproduce functions
- Balanced inputs and outputs switchable via level control
- Audio adjustments externally accessible
- Headphones volume adjustable even with calibrated output level
- Level metering via 2 illuminated VU meters equipped with inertialess peak level indicator LEDs

The remote control unit and a balanced microphone input are available as options.

In addition to the basic version, the following models are available:

- Tape deck REVOX PR99 MK II MONO
REVOX PR99 MK II in console
REVOX PR99 MK II with monitor
REVOX PR99 MK II carrying case

Standard accessories:

Power cord, operating instructions, set of circuit diagrams, set of fuses (500 mA, 800 mA, 1 A, 1.6 A), one connector each for capstan control, tape drive, fader start and monitor.

PRE-OPERATIONAL CHECKS

- Does the setting of the voltage selector at the rear panel match the local mains voltage?
- Remove fuse and check whether it matches the technical specifications. This check is mandatory if the voltage selector needs to be adjusted.
- Briefly turn reel support by hand to make sure that the brake bands are not blocked.

PUTTING INTO OPERATION

Establish AF (audio frequency) connections (general plan located on the inside of the fold-out page).

All toggle switches must be flipped down. Any lock-down button which has been depressed will return to its off position when it is depressed a second time.

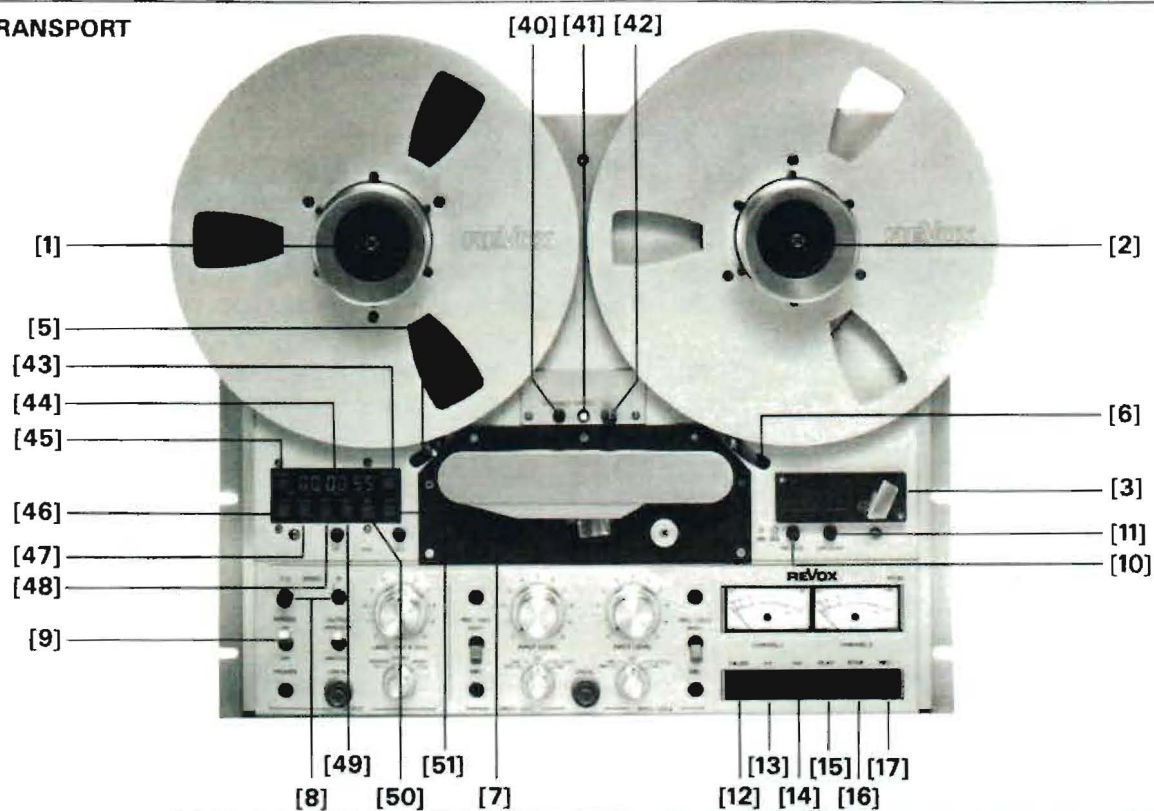
The machine can now be connected to the mains.

CONTENTS

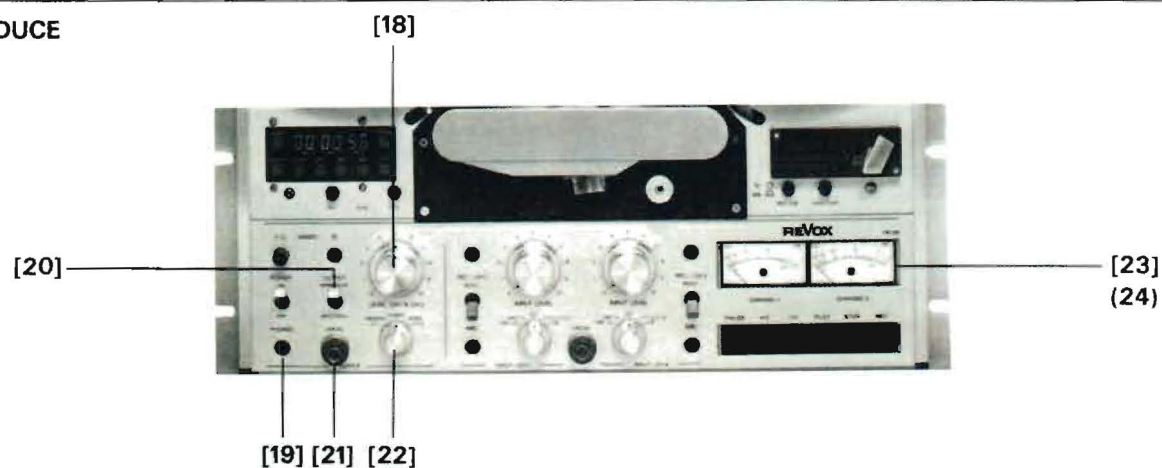
	Page
Guarantee	1
Block diagram	2
SUMMARY OF OPERATING CONTROLS	4
CONNECTION POSSIBILITIES	4
Connection panel	4
INDEX OF OPERATING ELEMENTS	5
QUICK REFERENCE OPERATING INSTRUCTIONS	6
Reel mounting	6
Operating the tape	6
Reproduction	7
Recording	7
FUNCTION OF THE OPERATING CONTROLS	8
DETAILED OPERATING DESCRIPTION	11
Reproduction	11
Mono recordings	11
Stereo recordings	12
Principle diagram Revox PR99 MK II	12
SPECIAL APPLICATION	13
Copying	13
Playback-recording	13
Echo arrangements	14
TECHNICAL SUPPLEMENT	15
Care and maintenance	15
Calibration and recalibrations	15
Adjustment of the infrared tape end sensor	18
TECHNICAL DATA	19
Dimensions	20

SUMMARY OF OPERATING CONTROLS

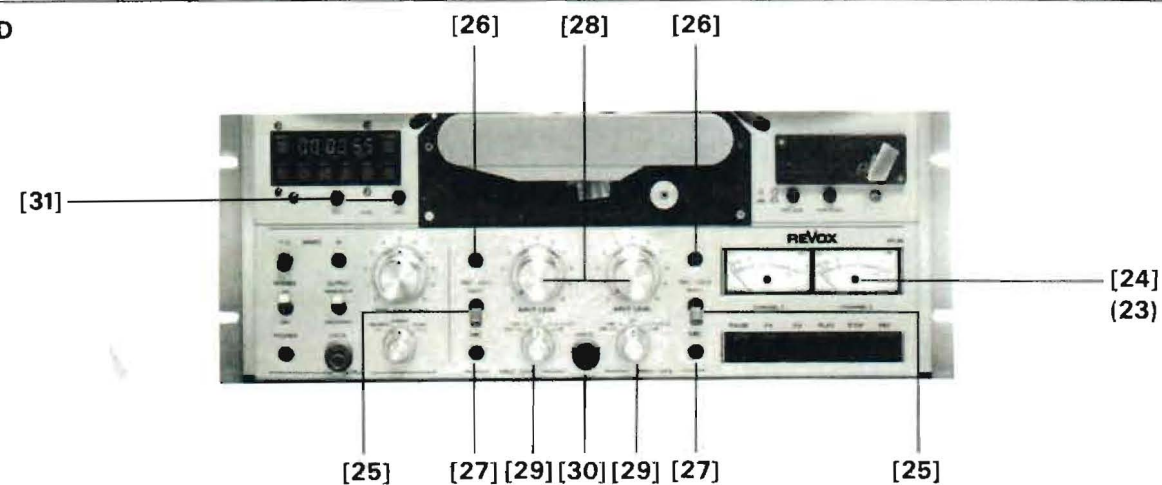
TAPE TRANSPORT



REPRODUCE

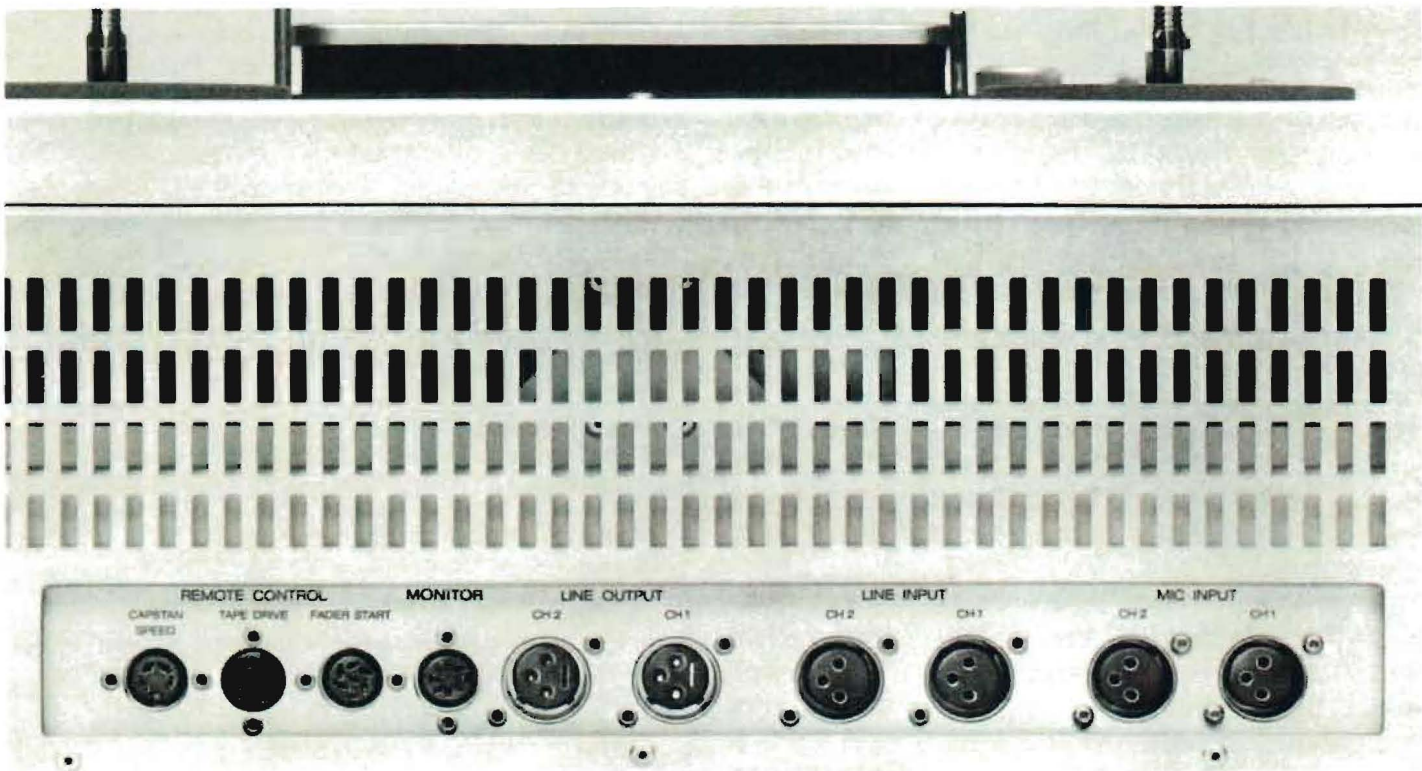


RECORD



CONNECTION POSSIBILITIES

TOP VIEW



BACK VIEW



FRONT VIEW



(unbalanced)

INDEX OF OPERATING ELEMENTS

TAPE DECK

- | | |
|--|--|
| [1] Left-hand reel support | [40] Push button VARIABLE SPEED on/off |
| [2] Right-hand reel support | [41] Pilot LED VARIABLE SPEED on |
| [3] Splicing block with cutter | [42] VARIABLE SPEED control knob |
| | [43] Push button TRANSFER |
| [5] Left-hand guide pin | [44] Tape counter display |
| [6] Right-hand guide pin | [45] Counter reset button |
| [7] Cutter slide | [46] Push button ZERO-LOCATOR |
| [8] Tape speed selector buttons | [47] Push button ADDRESS-LOCATOR |
| [9] AC POWER switch | [48] Push button REPEAT |
| [10] REEL SIZE selector button | [49] Push button SET |
| [11] TAPE DUMP button for dump editing | [50] Push button SELECT |
| [12] Pause key | [51] Push button STEP |
| [13] < Fast rewind key | |
| [14] > Fast forward key | |
| [15] PLAY key | |
| [16] STOP key | |
| [17] RECORD key | |

REPRODUCE

- [18] Reproduce level control
- [19] Headphone jack
- [20] Source / Tape monitoring switch
- [21] Playback level change-over button
- [22] Mode selector (stereo model only)
- [23] VU-meters
 - Stereo model = CH1 and CH2
 - Mono model = input and output level
 - ([24] Peak level indicator LED)

RECORD

- [24] Peak level indicator LED
 - ([23] VU-meter)
- [25] Record preselector
- [26] Recording indicator lamp
- [27] Microphone input, unbalanced
- [28] INPUT LEVEL control
- [29] Input selector
- [30] Input level change-over button
- [31] Channel selection buttons for SYNC-playback

QUICK REFERENCE OPERATING INSTRUCTIONS

REEL MOUNTING

Three-pronged reel (DIN): Mount supply reel on left-hand reel support and empty take-up reel on right-hand reel support. Pull out three-pronged guide and lock it with a 60° rotation.

NAB reels: Mount NAB adaptor and reel support and lock three-pronged guide. Mount NAB reel on adaptor and turn top section of adaptor clockwise until it locks in place.

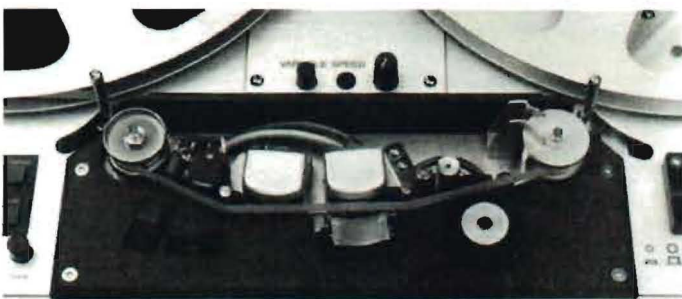


AEG reel flange: Mount adaptor disk on the reel support and lock three-pronged guide.

Mount full reel on left-hand reel support; lift up cover plate and rotate by 90° until it rests on the two guide pins. After completing the preceding instructions, mount an empty core on the right-hand reel support.



Threading of tape: Thread tape according to opposite illustration. The tape must be threaded neatly around the two tape guide pins [5]/[6]. Thread leading tape end onto right-hand reel and manually rotate take-up reel in a counter-clockwise direction until the tape is locked. Tape fitted with a transparent leader should be wound forward until the start of the magnetic surface has passed the heads. Set tape counter to zero by depressing the reset key [45].



OPERATING THE TAPE DECK

Apply power to the tape deck by setting the POWER SWITCH [9] to the ON position. Select desired tape speed with corresponding button [8]. Playback can be started by touching the PLAY key [15]. The audio path is automatically switched on. Fast winding is initiated with key < [13] or > [14]. These keys can also be used to search for a particular tape section. The amplifier circuits are not active during fast wind operations.

The STOP key [16] cancels the current operating mode.

The PAUSE key [12] suspends the current operating mode until this key is released.

Slide [7] causes the tape to be pressed against the sound-heads and switches on the reproduce amplifier. This mode of operation (cutter mode) is used for acoustically searching the desired cutting position. During the search, the tape can be transported through manual rotation of the spindles or under control of the spooling motors by depressing key < [13] or > [14]. The cutter mode can be terminated by depressing the PLAY key [15] or by pushing the pressure roller against the capstan. The tape deck command keys function fully independently and do not require the tape to be stopped. This also applies to the tape speed selector [8].

When using tape reels with small hub diameters, the REEL SIZE switch [10] should be depressed.

For the so-called dump editing, the right-hand spooling motor can be switched off by depressing the TAPE DUMP key [11].



REPRODUCTION

Headphone listening: In the reproduce mode, the headphone may be plugged in at any time without affecting the line output. The level of the headphone output can be adjusted independently of the calibrated line level (button [21] released) with the aid of the LEVEL control [18].

Procedure:

Thread tape

Set switch [20] to REPRODUCE

Depress PLAY key [15]

Adjust headphone volume with LEVEL control [18]

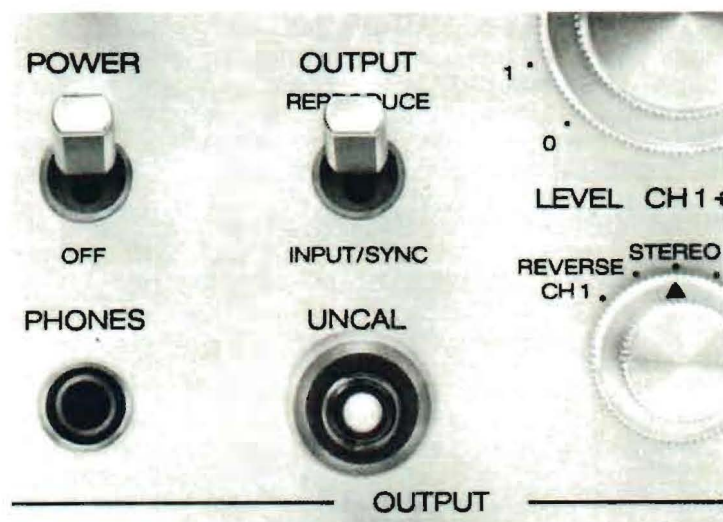
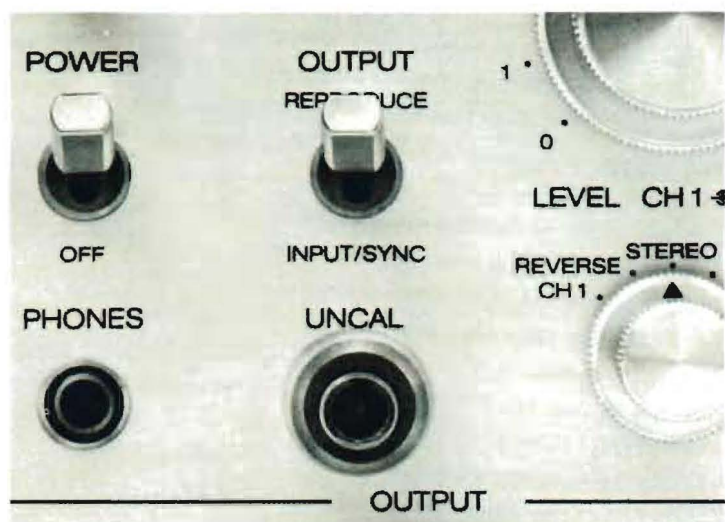
Reproduction via LINE OUTPUT: In the reproduce mode, the source/tape monitor switch [20] must always be set to the REPRODUCE position.

The line output is to be adjusted to a calibrated value (internally adjustable).

The line level can only be influenced if button [21] is depressed (UNCAL position). In this position, the LEVEL control [18] regulates the line output as well as the headphone output.

The output selector [22] is only available for stereo models. It permits selection of the output mode (stereo, mono, reversed channels, etc.). Enter reproduce mode by depressing the PLAY key [15].

If the reel is fitted with a transparent leader, the PLAY key [15] must remain depressed until the magnetic section of tape has reached the optical tape end sensor.



RECORDING

Adjustment of recording level: Select desired sound source with input selector [29]. If only one source is used, the input selector of the unused channel should be set to the OFF position. Set recording preselector [25] of the active channel to the READY position.

Caution: when making mono recordings on one channel of a stereo tape deck, the recording preselector of the unused channel must always be in the SAFE position. Recordings which have been made on this channel will be erased if this precaution is not observed.

The input can now be adjusted for 0 dB. Peaks in excess of 0 dB (relative to line level) will be signalled by LED [24]. 0 VU corresponds to the calibrated input level (button [30] released). The input sensitivity can be adjusted via control [28] by depressing the UNCAL key [30].

After the levels have been set, recording can be started by simultaneously depressing the PLAY [15] and REC [17] keys. The corresponding recording indicator lamps [26] light up.



FUNCTIONS OF THE OPERATOR CONTROLS

VARIABLE SPEED [40]

This operating mode is activated/deactivated with the self-locking push button [40]. The active mode is acknowledged with the pilot LED [41]. The speed can be varied with the knob [42]. The control range is $\pm$ seven semitones, corresponding to a deviation of -33% to $+50\%$ from the preselected nominal speed. Because of the selected potentiometer characteristic, the travel around the zero setting, i.e. in the center position, is spread. This means that the pitch can be particularly fine adjusted, e.g. matched to a nontunable music instrument.

The internal VARIABLE SPEED has priority of the external control which means that it must be switched off (LED 41 dark) when the external VARIABLE SPEED control is to be used.

TAPE COUNTER INFORMATION

The tape counter displays the playing time in hours (HR), minutes (MIN), and seconds (SEC), relative to the selected tape speed. The display capacity ranges from $-9.59.59$ to $29.59.59$. The buttons on the tape counter can be actuated in any operating mode. If these are commands that influence the operating mode, they will be executed immediately. The buttons Z-LOC [46], A-LOC [47], and RPT [48] thus function as supplementary tape transport command keys. If one of the standard command keys is pressed, the current operating mode of the tape counter (except SET) is cancelled.

RESET [45]

This button resets the counter to zero. The playing time relative to this point is displayed either as a positive or negative value, depending on the direction of the tape movement.

TRANS [43]

The TRANSFER button always transfers the current counter reading into the address memory, regardless of whether this is the momentary playing time of a value entered manually in SET MODE.

The actual playing times is displayed after the transfer.

Z-LOC [46]

The ZERO LOC button can be pressed in any operating mode. The tape is automatically repositioned at the location that corresponds to the counter reading zero. The corresponding LED is on during the locate process.

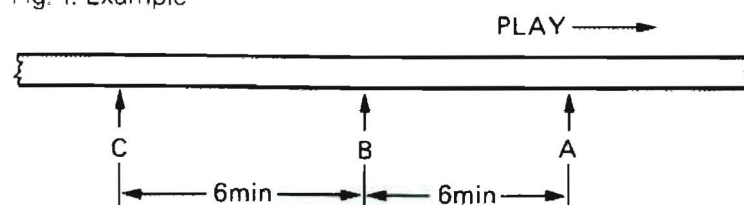
A-LOC [47]

With the ADDRESS LOCATOR button, the tape can be repositioned to a previously defined address. This button can be actuated in any operating mode. A pilot LED acknowledges that this mode is in progress.

Note: the address refers to the playing time (positive or negative) relative to zero.

Even after the reset button has been pressed, the same tape address will be searched as before because the stored address will be recomputed relative to the new zero of the tape counter and subsequently written into the memory (see example Fig. 1).

Fig. 1: Example



A The counter is set to zero in tape location "A".

B Tape location "B" is stored by pressing the TRANSFER button, e.g. after 5 minutes.

C The RESET button is pressed in tape location "C" (e.g. after 11 minutes).

The stored tape address for A-LOC changes to -6 minutes.

The counter reading and the address are always set to zero when the recorder is switched on.

SET [49]

The address currently stored in memory will be displayed when this button is pressed. The left-hand digit flashes to signal that this mode is active.

When the SET button is pressed again, the momentary tape address reappears in the display.

SEL [50]

The digit to be changed in SET MODE can be addressed with the SELECT button. The digits are addressed from left to right, the selected digit flashes.

STP [51]

The selected flashing digit can be modified with the STEP button. The digit is incremented continuously when this button is held. In the most significant display position, digit 2 is followed by a negative sign.

RPT [48]

REPEAT is used to continuously replay a predefined tape segment. The correspond LED turns on when this mode is selected. The tape segment to be repeated is defined by the counter reading zero and the value in the address memory which may also be negative.

PLAY MODE is started at the lower of the two values (also refer to example Fig. 1).

TAPE DECK

Left-hand reel support [1]

Mount full reel on this side.

Right-hand reel support [2]

Mount empty reel on this side.

Splicing block with cutter [3]

Tape guide pin, left-hand [5]

Tape guide pin, right-hand [6]

Cutter slide [7]

When operating this slide, the tape will be pressed against the sound heads. Thus, the cutting position can be searched by manually turning the reels. This function can be cancelled by depressing the PLAY key [15] or by lightly pushing the pressure roller against the capstan.

Speed selectors SPEED [8]

Select desired tape speed by depressing the corresponding button (self-locking). The tape speed may be changed in any operating mode.

Mains switch POWER [9]

Before switching on the tape deck, check setting of voltage tapping switch at the rear of the tape deck.

The tape deck switched on by setting the POWER switch [9] to the ON position. When power is applied, the VU meters [23] are illuminated.

REEL SIZE buttons [10]

When using small-diameter tape reels (18 cm or smaller), the REEL SIZE button [10] should be depressed. If the hub diameter is larger than 60 mm, this button does not need to be depressed.

TAPE DUMP button [11]

The right-hand spooling motor remains disabled as long as this button is depressed. In this mode, obsolete tape sections can be played into the "waste basket" by depressing the PLAY key [15].

PAUSE key [12]

In contrast to the STOP key [16], the currently active operating modes can be suspended at any time by depressing the pause key. As soon as the pause key [12] is released, the tape deck re-enters the previously established operating mode. For longer pauses, the self-locking key of the remote control can be used.

Fast rewind << [13]

Depressing this key results in immediate rewinding of the tape. This function can be selected directly from any other operating mode. The rewind function terminates if the STOP key [16] is depressed, a new command is entered, or when the optical tape end sensor detects the end of the tape.

With slider [7] in the cutter position, the rewind function remains active only as long as this key stays depressed, thus allowing motorized search of a cutting position.

Note:

To reduce wear on the soundheads, long tape sections should not be wound in the cutter position.

Fast forward >> [14]

This key causes immediate fast forward winding of the tape. It is used in the same manner as key [13].

PLAY key [15]

The reproduce function is initiated by depressing the PLAY key. It may also be depressed while fast forward or rewind is active.

STOP key [16]

This key cancels the current mode of operation. The tape deck is ready to accept a new command.

REC key [17]

This key is only active if the PLAY key [15] is depressed simultaneously. The recording function can be entered directly from the fast forward or rewind mode. To prevent unintentional erasure, the individual channels can be protected by setting switch [25] to the SAFE position.

"Soft drop-in" is only possible by simultaneously depressing the REC [17] and PLAY [15] keys.

REPRODUCTION

Level control [18]

The function of this control is dependent on the setting of switch [21]. When this button is in the released position, this control only affects the level of the headphone. If button [21] is locked in place, level control [18] regulates the output of the line as well as the headphones. In stereo models, this control is implemented by a dual-operated potentiometer. The inner control is assigned to channel 1, the outer control to channel 2. The controls are interconnected with a slip friction clutch and thus can be individually adjusted for balancing.

Headphone jack [19]

Jack socket for one set of headphones (impedance min. 200 ohms). The output level of the headphone jack can be adjusted with LEVEL control [18].

Source / tape monitor switch OUTPUT [20]

The setting of this switch determines whether the output signal is selected from the tape or another source. When the tape is not moving, this switch should be in the INPUT / SYNC position; during playback in the REPRODUCE position. In standard recording operations, either position may be selected (for tape/ source monitoring).

In SYNC mode, this switch must be set to the INPUT / SYNC position.

UNCAL button [21]

When this button is released, the calibrated line output level is connected directly to the outputs. If the UNCAL button [21] is locked in place, the output level can be adjusted with LEVEL control [18].

Mode selector [22] (Stereo models only)

The reproduce mode is determined by the setting of the mode selector. (Switches all outputs and the VU-meters.)

Switch positions:

- | | |
|------------------|--|
| STEREO | Individual reproduction on both channels |
| MONO | Reproduction is intermixed on both channels (check mono compatibility) |
| REVERSE | Same as STEREO, however, channels are reversed |
| CH1 / CH2 | The channel selected will be reproduced on both outputs. |

VU-meters [23]

The VU-meters always indicate the level available at the output. To check the recording level, switch OUTPUT [20] must be set to the INPUT / SYNC position. In mono models, the left-hand VU-meter displays the input level, the right-hand VU-meter the output level.

RECORDING

(Although two sets of controls and connectors are available in stereo models, each pair will be described only once because the functions are identical.)

Peak level indicators [24]

If these LEDs light up (even if only briefly), modulation should be reduced in order to prevent distortion. The sensitivity of the LEDs can be adjusted internally.

Recording preselector REC [25]

With this toggle switch, the desired recording channel can be preselected (switch position READY). However, the actual recording operation must be initiated by simultaneously depressing the PLAY and REC keys. For stereo recordings, both switches must be set to the READY position. For mono half-track recordings or in SYNC mode, the unused channel should be protected against unintentional erasure by setting the corresponding switch to the SAFE position. During recording operations, these switches can be used neither for soft drop-in nor for soft drop-out.

Recording indicator lamp [26]

This lamp lights up when all conditions for recording (including tape transport) have been satisfied. The material previously recorded on the tape will be erased.

Microphone input MIC [27] (unbalanced)

Jack socket for connecting unbalanced microphones operating with low to high levels.

INPUT LEVEL control [28]

With calibrated input level, the function of these controls is disabled. The input signal is switched to these controls when button [30] is depressed. In this manner, the recording level (modulation) can be adjusted directly at the tape deck. Preadjustment of the level is possible by setting the Tape / Source monitor switch [20] to the INPUT / SYNC position. For mono recordings, the signals from both inputs can be mixed. If one of the controls is not used, it should always be set to the zero position.

Input selector [29]

This switch selects the inputs (sound sources).

Switch positions:

- | | |
|----------------|---|
| MIC LO | Microphones operating with low levels |
| MIC HI | Microphones operating with high levels (e.g. with built in amplifier) |
| OFF | Input disabled |
| CH1→CH2 | Stereo only Re-recording from one channel to another |
| CH2→CH1 | Stereo only Re-recording from one channel to another |
| ECHO | Mono only The recorded signal is played back from the reproducing head to the recording channel |
| LINE | Switches the LINE input to the recording channel |

UNCAL switch [30]

When this button is released, the line input is switched to the calibrated line level. When locked in place (position UNCAL), the input sensitivity can be adjusted with the INPUT LEVEL control [28].

DETAILED OPERATING DESCRIPTION

REPRODUCTION

Reproduction with fixed level setting (line level)

Set OUTPUT switch [20] to the REPRODUCE position.

Release UNCAL button [21].

Select desired playback mode with switch [22] (stereo models only).

STEREO	Reproduce with channels in stereo mode
REVERSE	Reproduce in stereo mode with reversed channels
MONO	Reproduce with both channels operating in mono mode
CH1	Reproduce from channel 1 on both outputs
CH2	Reproduce from channel 2 on both outputs

With the UNCAL button [21] released, the LEVEL CH1↔CH2 controls affect only the PHONES jack [19].

The output level corresponds to the internally set line level.

Enter reproduce mode by depressing the PLAY key [15].



Reproduction with variable level

Set OUTPUT switch [20] to REPRODUCE position.

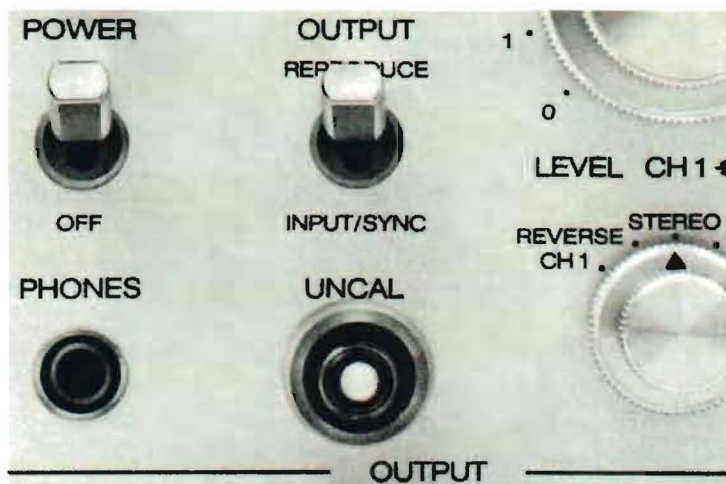
Depress UNCAL button [21].

Set selector [22] to the desired reproduce mode (stereo models only).

The output level and the balance can be influenced with the dual-control knob LEVEL CH1↔CH2 [18].

Start tape deck in reproduce mode by depressing PLAY key [15].

Note: With the UNCAL button [21] locked in place, LEVEL control [18] regulates the line output as well as the headphone jack. When the UNCAL button is released, only the headphone jack is controlled.



RECORD

Mono recordings

Mono model:

Set recording preselector [25] to READY position.

Select sound source with input selector [29]. If the input sensitivity is to be controlled, the UNCAL button [30] must be locked in place. In this position, the input sensitivity can be increased by more than 10 dB. The input sensitivity can be adjusted to 0 VU with the aid of INPUT LEVEL control [28]. The second input can be used as mixing input. In uncalibrated mode, the content of the second input can be adjusted with INPUT LEVEL control [28]. Enter recording mode by simultaneously depressing the PLAY [15] and REC [17] keys.



Mono recordings with stereo model:

Set recording preselector [25] of the recording channel to the READY position. The switch of the unused channel must be set to the SAFE position, otherwise this track will also be re-recorded.

Select sound source with input selector [29]. If another source is to be mixed in via the second input, the source can be fed in with the input selector [29] assigned to that channel.

All other operations are identical to those of the REVOX PR99 MK II Mono model.

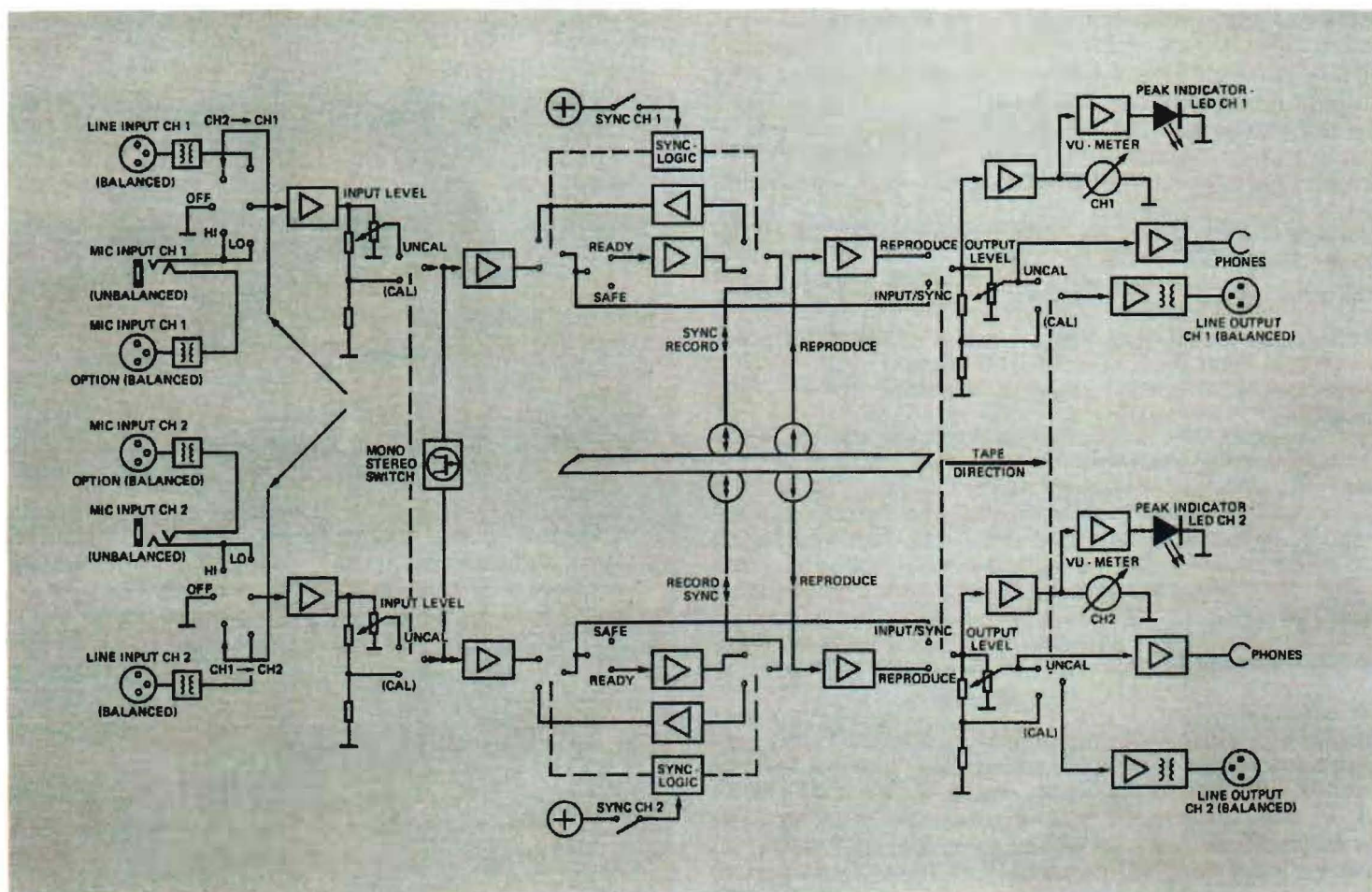
Note: With the UNCAL button [30] released, the inputs are connected to the nominal line level. The input level controls are disabled in this position.

Stereo recordings

Set recording preselector [25] for CH1 and CH2 to the READY position. Select source with the two input selectors [29]. For stereo recordings, both selectors must be in the same position.

In normal operations (UNCAL button released), level controls [28] are disabled. If the UNCAL key [30] is depressed, the input level for CH1 and CH2 must be individually regulated with the corresponding input level control [28]. Start tape deck in recording mode by simultaneously depressing the PLAY and REC keys.

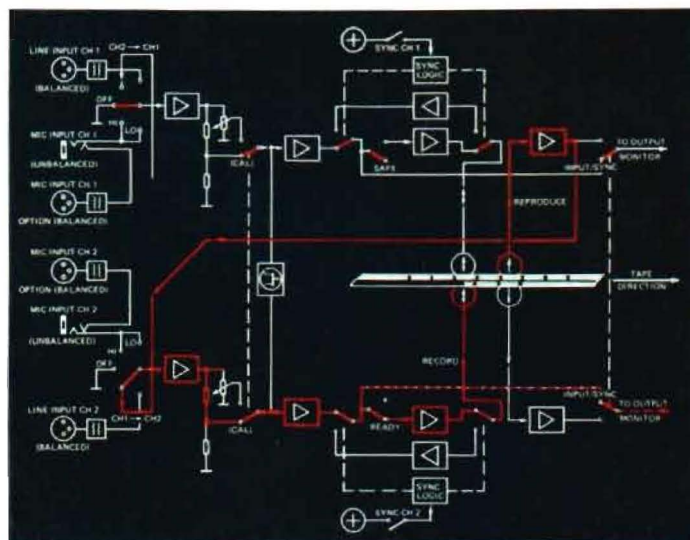
PRINZIPLE DIAGRAM PR99 MK II



COPYING FROM ONE TRACK TO THE OTHER

Secure recorded track by setting preselector [25] to the SAFE position. For the channel on which recording takes place, set the recording preselector to the READY position. Set tape / source monitor switch [20] to the INPUT / SYNC position. Set input selector [29] for the recording channel to position CH1→CH2 or CH2→CH1 as required.

With the UNCAL button released, the calibrated level can be used for copying. If the re-recording level is to be regulated, the UNCAL button should be depressed, in which case the output channel will be connected to the corresponding control. Start tape deck in recording mode by simultaneously depressing the REC and PLAY keys.



PLAYBACK-RECORDING without synchronous playback

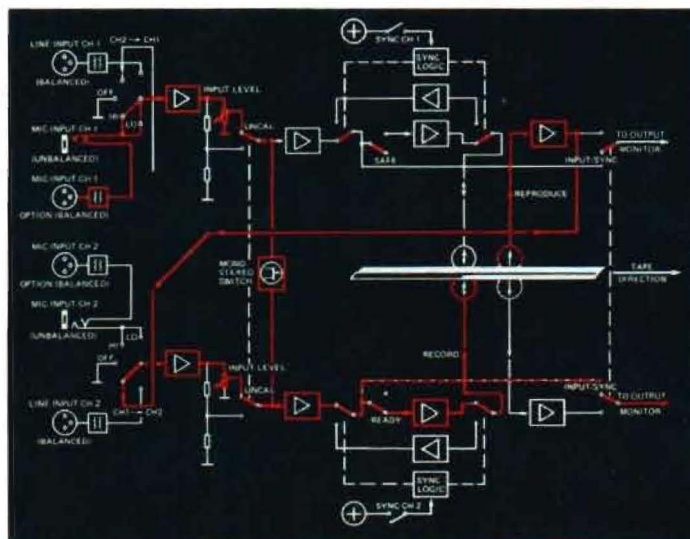
The playback-recording mode permits copying of an existing recording from one channel to another while simultaneously recording from a second source (mixed in).

Procedure:

Connect source to the input of the previously recorded channel by setting the input selector [29] to the corresponding position. Secure recorded track by setting recording preselector [25] to the SAFE position. Set input selector [29] of the unrecorded channel to position CH1→CH2 or CH2→CH1 as required.

If the level of the re-recording or the input signal is to be influenced, depress UNCAL button [30]. The copying level can be adjusted with the INPUT LEVEL control [28] of the copying channel, while the level of the source can be regulated with the control of the other channel.

Set source / monitor switch [20] to the SYNC INPUT position. Start tape deck in recording mode by simultaneously depressing the PLAY and REC keys (test recording). Check test recording and adjust level as necessary. Rewind tape and restart recording.



with SYNC reproduction

For playback-record operations with separate channels (one channel used as clock track, second channel for new recording), the clock track must be reproduced without time offset. This means that reproduction must occur from the recording head. With the REVOX PR99 MK II, either channel can be switched in this manner.

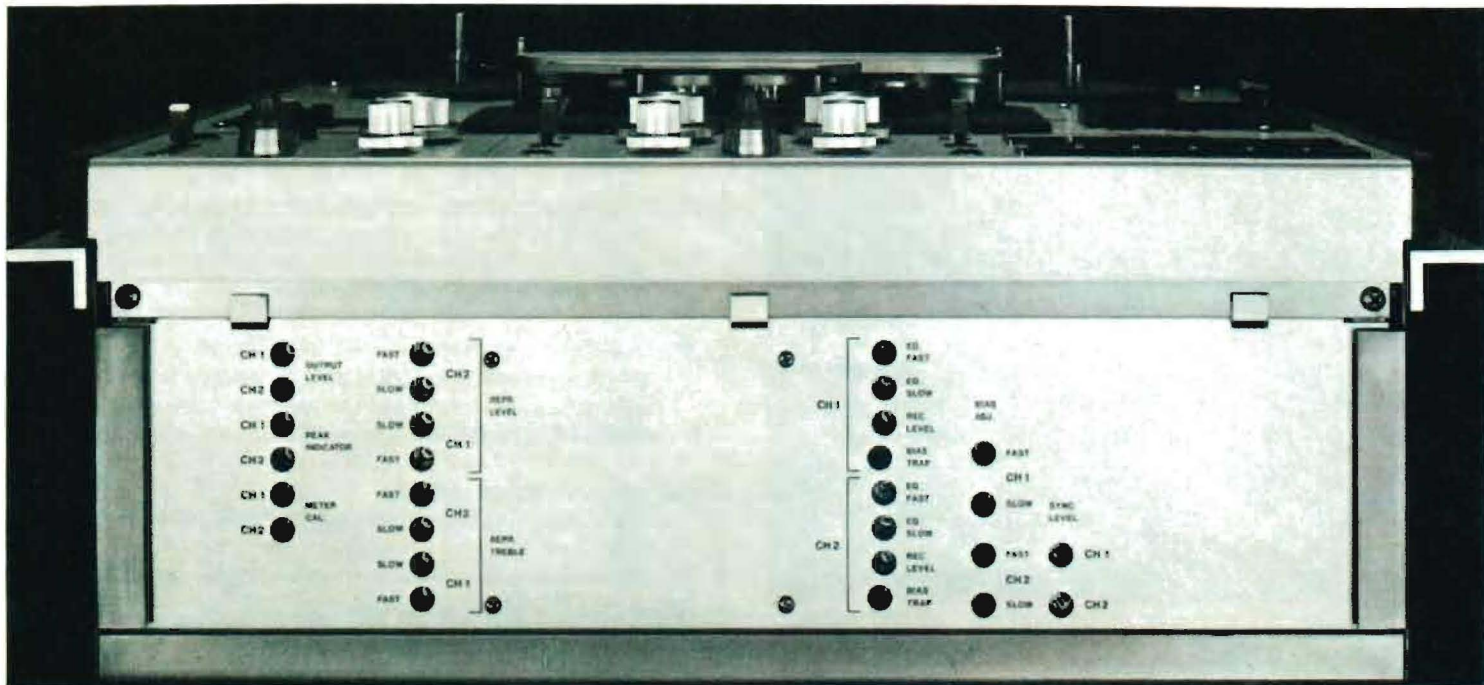
Procedure:

Depress the SYNC switch [31] associated with the clock track (recorded channel). Set Tape / Source monitor switch [20] to the INPUT / SYNC position (causing the clock track to reproduce from the recording head).

Set recording preselector [25] of the clock channel to the SAFE position. The other channel is set up for standard recording operations.

Start tape deck in reproduce mode.





Adjustment of VU meter and PEAK INDICATOR LED

1. Calibrate input circuit.
2. Adjust potentiometer METER CAL CH1 / CH2 (at the underside of the machine, externally accessible) so that a 0 VU reading is obtained at the instrument.
3. Increase input voltage by 6 dB (to 1.55 V at output MONITOR).
4. Adjust potentiometer PEAK INDICATOR CH1 / CH2 in such a manner that the LEDs of the VU meter just start to light up.
5. Decrease input level to operating level.
6. Connect millivoltmeter to LINE OUTPUT (terminate output with 600 ohms.)
7. Adjust LINE OUTPUT LEVEL potentiometer (underside of machine) to desired operating level.

Azimuth adjustment of reproduce head

1. Mount test tape. Forward tape to azimuth adjustment section (10 kHz).
2. Connect millivoltmeter to output LINE OUTPUT CH1 / CH2.
3. Depress PLAY key and adjust for maximum output voltage with setscrew (P).

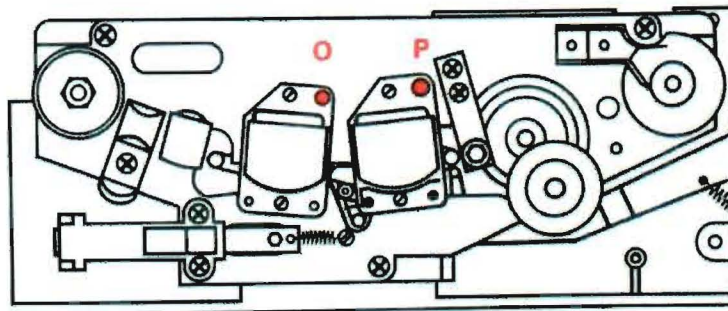
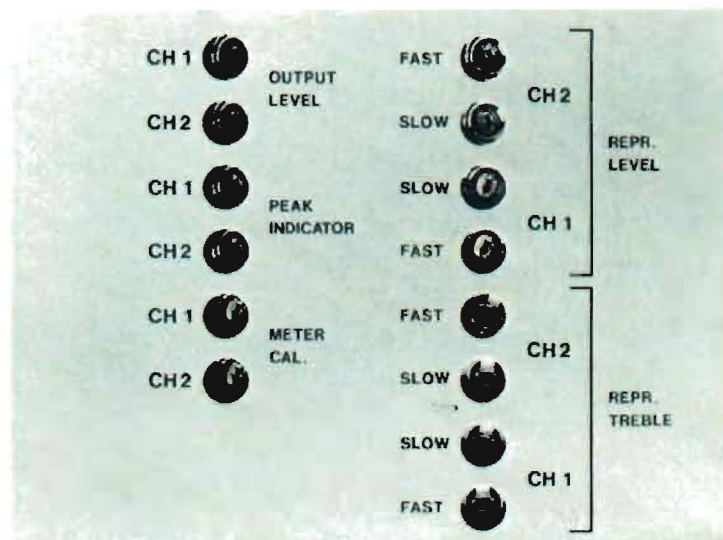
Adjusting the reproduce level from the calibration tape

The reproduce level must be adjusted separately for each tape speed (SLOW and FAST).

1. Connect AF millivoltmeter to LINE OUTPUT CH1.
2. Advance test tape to level tone section (NAB = operating level, DIN/CCIR = Peak Level).
3. Start machine in reproduce mode.
4. Adjust potentiometer REPR LEVEL CH1 to the desired operating-/peak level.
5. Connect AF millivoltmeter to LINE OUTPUT CH2.
6. Adjust potentiometer REPR LEVEL CH2 to be desired operating level.

Checking of frequency response with test tape

The frequency response must be adjusted for both tape speeds (REPR TREBLE). The guaranteed values (reproduce frequency response) must be maintained.



1. Advance test tape to the frequency response section.
2. Connect AF millivoltmeter to LINE OUTPUT CH1 and CH2.
3. Start machine in reproduce mode and check frequency response relative to 1000 Hz.

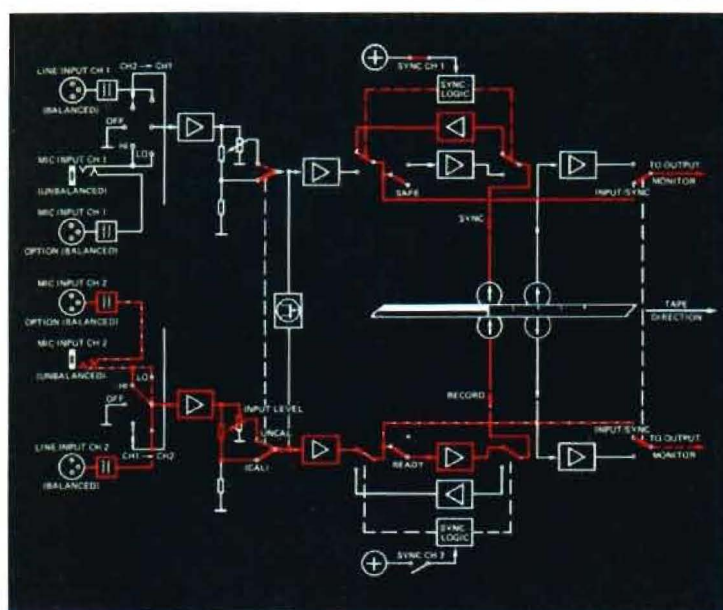
Note: The clock track should be heard by the vocalist-instrumentalist via headphone. When monitoring with speakers, portions of the clock track will also be included in the microphone input.

The recording can be checked by switching to normal reproduce mode (OUTPUT switch [20] to REPRODUCE). Depending on the setting of the output mode selector, the following can be checked:

MONO both channels mixed
CH1/CH2 only the track selected
STEREO on one side, the clock track will be heard and on the other side, the synchronous recording

If the recording is satisfactory, it can be copied to a second tape deck (mixed) after which a new track can be recorded.

Note: Synch-reproduction is possible only on one **or** the other channel. If both channels are selected, the tape deck operates in non-synch mode in which case reproduction occurs via reproduce head.



ECHO ARRANGEMENTS

With separate recording and reproducing heads, it is possible to generate echo effects without auxiliary equipment. During recording, the input signal is available at the reproducing head with a defined time delay. If the signal is fed back to the recording head from the reproducing head, it will be recorded a second time with a corresponding delay. The first echo is again fed back from the reproducing head, and thus, with the same delay, generates a second echo, etc.

The time intervals between echoes is directly dependent on the tape speed. At 38.1 cm/sec. it measures 0.085 sec., at 19.05 cm/sec. it is equal to 0.17 sec. and at 9.5 cm/sec. it is equal to 0.34 sec.

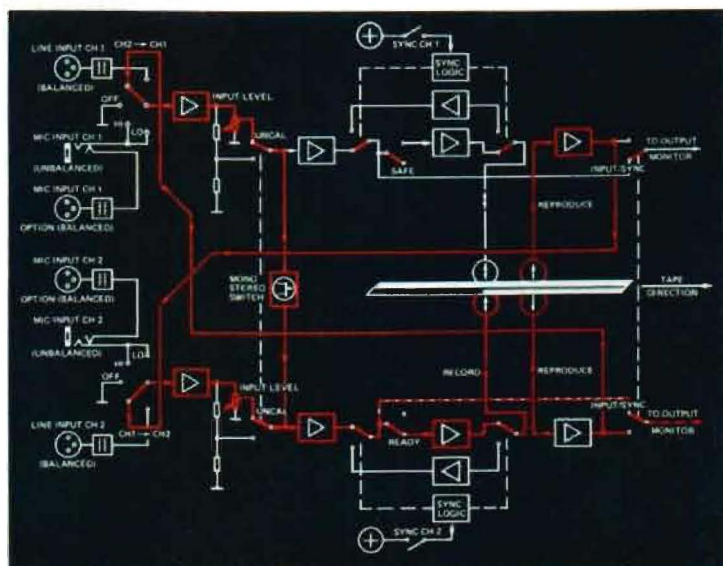
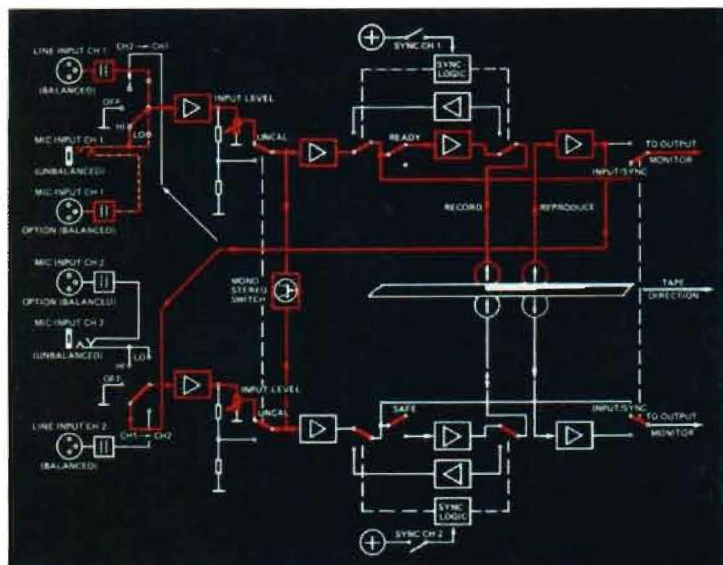
Echo arrangements for recording operations

Connect source to MIC / LINE INPUT CH1.
 Set input selector [29] CH1 to the desired source.
 Set recording preselector [25] to the READY position.
 Set input selector [29] CH2 to CH1→CH2.
 Start tape deck in recording mode.
 Depress UNCAL button [30], allowing the volume of the echo to be adjusted with INPUT LEVEL control [28] CH2.

Echo arrangements for existing recordings

In order to mix an echo with an existing recording, the sound material must first be copied to the other track.
 Set recording preselector [25] of the recorded channel to the SAFE position, the selector of the unrecorded channel to the READY position.
 Set input selector [29] of the unrecorded channel to CH1→CH2 or CH2→CH1 as required.
 Set input selector of the recorded channel to CH2→CH1 or CH1→CH2 as required.
 Start tape deck in recording mode.
 Depress UNCAL button [30], allowing the echo content to be regulated with INPUT LEVEL control [28] of the recorded channel and the copy level to be regulated with the INPUT LEVEL control [28] of the unrecorded channel.

Note: The recording can be repeated at any time because the original track will not be erased.



CARE AND MAINTENANCE OF THE REVOX PR99 MK II

The maintenance work is reduced to cleaning and demagnetizing the tape guidance elements.

Note: During the cleaning, take care that no cleaner comes into the bearing of the capstan axle.

The tape guides should be cleaned prior to each recording because contaminants can cause recording gaps or so-called drop outs.

For optimum cleaning use the Revox cleaning set (order code 39000). It contains all utensils necessary for cleaning the machine and a special cleaning fluid.

Lubrication of the sintered bearing bushes and of the ball bearing is described in the service instructions.

Procedure

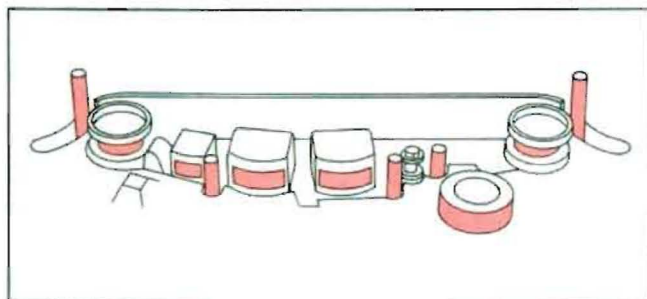
Dip a felt swab into the cleaning fluid and clean all tape guidance elements. Dry the cleaned surfaces with a new, dry felt swab.

Demagnetizing

After approx. every 100 hours of operation (or prior to a recording), demagnetize the soundheads and tape guidance elements. Use a demagnetizer (order no. 10.042.002.01).

Procedure

(Tape deck switched off, no tape on the spindles). Slowly bring the tip of the demagnetizer in close proximity to the component to be demagnetized. After a few seconds, retract the choke slowly. This procedure should be repeated for all tape guidance elements and heads shown in the corresponding illustration. The demagnetizer can be switched off in a distance of approx. 50 cm (20").



ORIGINAL REVOX ACCESSORIES

PR99 MIC	Order code:
INPUT BALANCED	1.177.855
(Retrofit kit)	
Remote control unit, incl. 10m cable	34227
Capstan motor control	34237
±7 semitones	
Tool set PR99	20.020.001.70
NAB adapter (black)	45001
NAB adapter (professional)	45010
AEG flange for single sided spool	34501
(horizontal operating only)	
Cleaning set	39000
Demagnetizing choke	10.042.002.01
Revox microphone M3500	30450
Revox headphones RH310	32010

CALIBRATION AND RECALIBRATION OF THE REVOX PR99 MK II

General

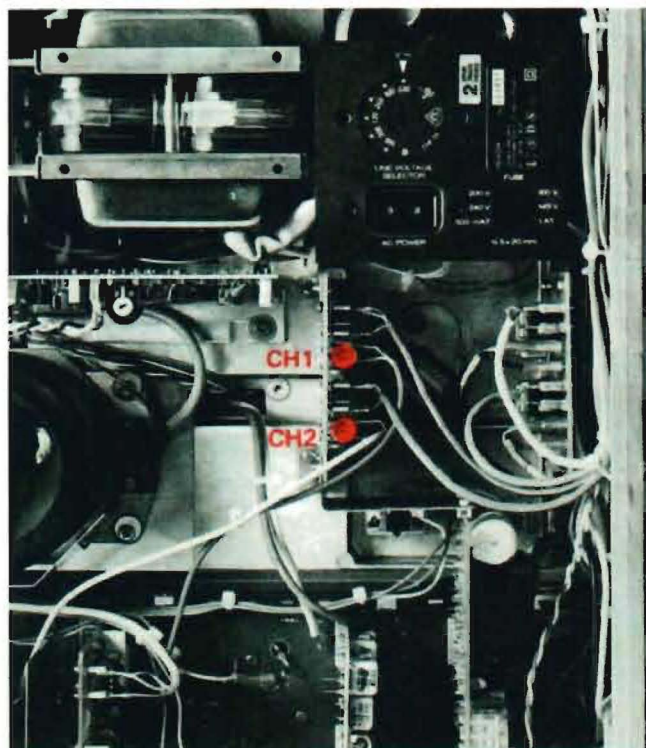
The adjustments based on NAB or CCIR test tapes are different in the following details:

NAB: Operational level approx. 6 dB below peak recording level. The intensity of magnetization is 250 nWb/m and 500 nWb/m at peak recording level. The machine is factory-adjusted to these values.

CCIR: Reference level Δ peak recording level. Magnetizing force is (factory adjusted) 510 nWb/m. To simplify the instructions, the reference is the operating level (Δ 0 VU resp. 6 dB below peak recording level).

Calibration of input circuit:

1. Remove machine from housing (case) (undo 4 screws on back of unit).
2. Connect AF millivoltmeter to monitor connector pin 3 (CH1) / pin 5 (CH2) and pin 2 (GND).
3. With AF generator, apply 1 kHz signal of desired operating level for 0 VU.
4. Switch on machine.
5. Release UNCAL button [21] and SYNC button [31].
6. Set OUTPUT switch [20] to the INPUT / SYNC position.
7. Adjust monitor output to 0.775 V with potentiometer R8 (CH1) or R16 (CH2) respectively (PCB LINE INPUT CIRCUIT).
8. The sensitivity can be increased for small levels by replugging jumpers S1/S2, located behind potentiometers R8/R16, to position A or B (sequence viewed from potentiometers: C B A).
9. Switch machine off and reinstall in housing.



Tape bias

1. Connect millivoltmeter to LINE OUTPUT CH1 / CH2.
2. Connect AF generator to LINE INPUT (10 kHz, 0 VU - 20 dB).
3. Mount blank tape of the desired quality and start machine in record mode.
4. Turn potentiometers
BIAS ADJ. CH1 (SLOW + FAST)
BIAS ADJ. CH2 (SLOW + FAST)
clockwise from the left-hand limit position until the maximum AF output level is reached. Select corresponding tape speed.

Make note of the position which provides maximum indication and subsequently continue turning the potentiometer in the same direction until the AF output voltage has dropped by the value indicated in the table below (ΔU).

Checking the azimuth of record head

Adjust for maximum output voltage at 10 kHz - 20 dB (setscrew 0). If necessary recheck the tape bias.

Adjustment of recording level (on the desired tape speed)

1. Reproduce levels must have been adjusted previously.
2. Adjust generator level to 1000 Hz, at operating level.
3. Start machine in record mode.
4. Set tape monitor switch [20] to REPRODUCE.
5. Adjust potentiometer INPUT LEVEL CH1 / CH2 [28] to the operating level.

Check:

No level difference by switching from REPRODUCE to INPUT / SYNC.

Adjustment of recording equalization

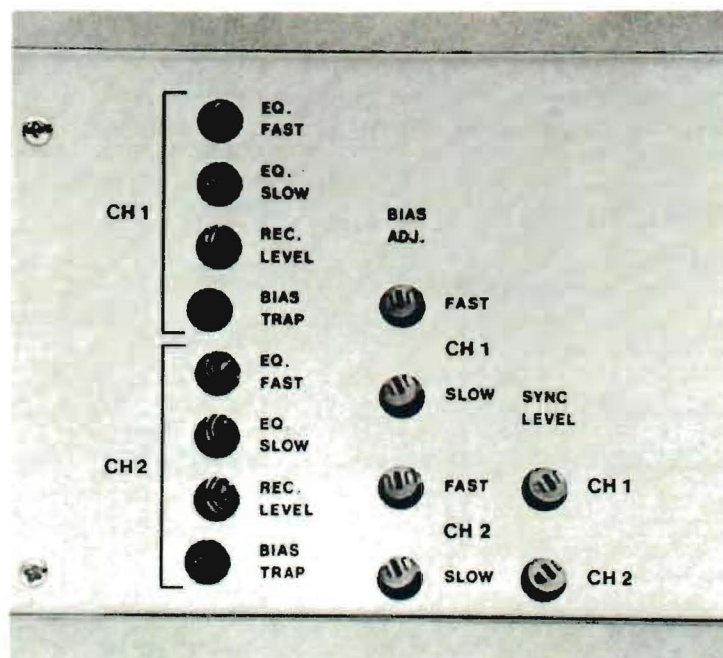
1. Adjust AF generator to 12 kHz, 0 VU - 20 dB.
2. Start in record mode.
3. Corresponding to the tape speed, adjust potentiometer EQ SLOW, FAST for an output voltage of 0 dB to +1 dB relative to 1 kHz.

Checking of frequency response "Over all"

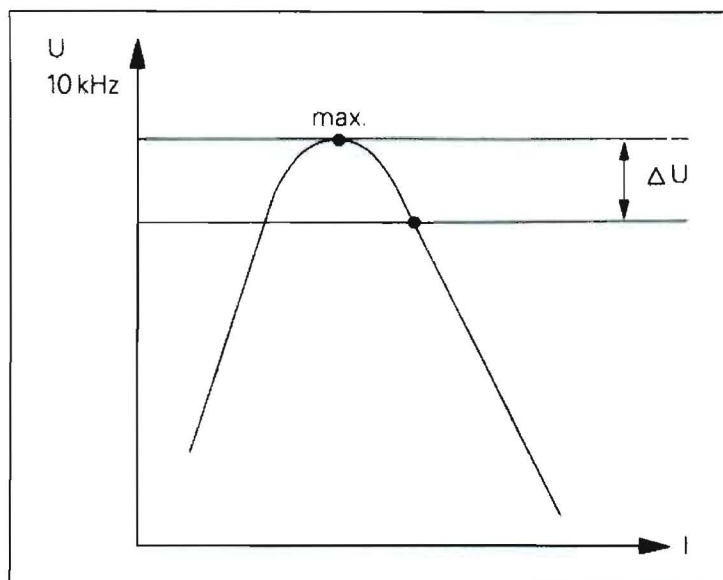
1. Leave AF generator at approx. the same level and check the frequency response.
2. If necessary, readjust the recording equalization.

Adjustment of SYNC playback from test tape

1. Set SYNC CH1 switch [31] to playback from recording head.
2. Connect AF millivoltmeter to LINE OUTPUT CH1.
3. Advance test tape to operating level section.
4. Start machine in reproduce mode.
5. Adjust potentiometer REPR LEVEL CH1 to the desired operating level.
6. Depress SYNC CH2 button (button CH1 released).
7. Connect AF millivoltmeter to LINE OUTPUT CH2.
8. Repeat same adjustments for CH2.



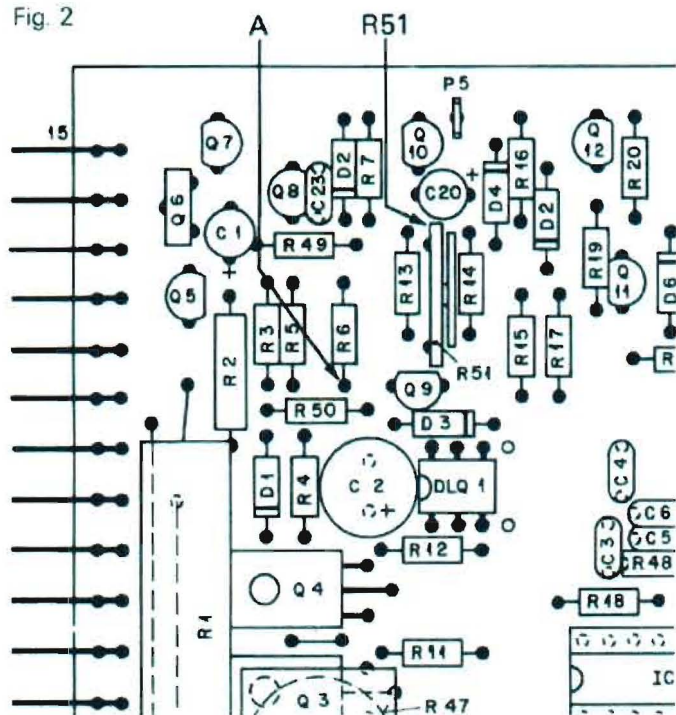
Bandsorte Type of Tape		ΔU 3 3/4 ips	ΔU 7 1/2 ips	ΔU 15 ips
Scotch	206	6 dB	5.5 dB	3 dB
	250	5 dB	6 dB	3.5 dB
	256	6 dB	6.5 dB	3.5 dB
	262/263	6 dB	6 dB	3 dB
Ampex	406	6 dB	5 dB	3 dB
	456	5 dB	6.5 dB	3.5 dB
AGFA PEM	468	6 dB	6 dB	3.5 dB
AGFA PER	525	6 dB	5.5 dB	3 dB
BASF SPR	50LHL	6 dB	5.5 dB	3.5 dB
BASF LGR	30P	6 dB	5.5 dB	4 dB
EMI	816/817	6 dB	6.5 dB	4 dB
REVOX	631	6 dB	6 dB	4 dB
REVOX	621	4.5 dB	4 dB	2.5 dB



Adjustment of the infrared tape end sensor

- Remove back panel.
- The required test point "A" (QP-END) is located on the TAPE DRIVE CONTROL 1.177.317-81 (refer to fig. 2).
- Connect multimeter in 30VDC measuring range to test point "A".
- Adjust with trimmer potentiometer R51. No tool is required because of the knurled knob.
- With leader tape present, the value must be > 7 VDC.
- With tape or non-transparent leader tape present, the value must be < 5 VDC.
- Reinstall back panel.

Fig. 2



TECHNICAL DATA

	PR99 MK II 3 3/4-7 1/2 ips, NAB	PR99 MK II 7 1/2-15 ips, NAB
Tape transport mechanism:	3 motor tape drive. 2 AC driven spooling motors. 1 AC driven capstan motor, electronically regulated	
Tape speeds:	3 3/4 ips and 7 1/2 ips electronic change-over	7 1/2 ips and 15 ips electronic change-over
Tolerance from nominal: With variable speed:	±0.2 % -33 % ... +50 %	±0.2 % -33 % ... +50 %
Wow and flutter: (DIN 45507/consistent with IEEE standard 193-1971)	at 3 3/4 ips less than 0.1 % at 7 1/2 ips less than 0.08 %	at 7 1/2 ips less than 0.08 % at 15 ips less than 0.06 %
Tape slip:	max 0.2 %	
Reel size:	up to 10.5 inch diameter (min. hub diameter 2.36 inches), tape tension switchable (for small hub diameters)	
Winding time:	approx. 120 sec for 2500 ft of tape	
Tape transport control:	Integrated control logic with tape motion sensor provides for any desired transition between different operating modes. Contactless electronic switching of all motors. Remote control of all functions and electric timer operation are possible. Fader start facilities. Tape dump mode	
Tape counter:	Accuracy ±0.5 % Real-time indication in hours, min., sec. Zero locator Address locator Repeat mode	
Equalization:	3 3/4 ips: NAB 90-3180 µs 7 1/2 ips: NAB 50-3180 µs	7 1/2 ips: NAB 50-3180 µs 15 ips: NAB 50-3180 µs
Frequency response: (measured via tape, at -20 VU)	at 3 3/4 ips: 30 Hz ... 16 kHz +2/-3 dB 50 Hz ... 10 kHz ±1.5 dB at 7 1/2 ips: 30 Hz ... 20 kHz +2/-3 dB 50 Hz ... 15 kHz ±1.5 dB	at 7 1/2 ips: 30 Hz ... 20 kHz +2/-3 dB 50 Hz ... 15 kHz ±1.5 dB at 15 ips: 30 Hz ... 22 kHz +2/-3 dB 50 Hz ... 18 kHz ±1.5 dB
Freq. response of Guide Track reproduction:	at 3.75 ips: 100 Hz ... 6 kHz +2/-3 dB at 15 ips: 100 Hz ... 12 kHz +2/-3 dB at 7 1/2 ips: 100 Hz ... 8 kHz +2/-4 dB	
Operating level:	250 nWb/m 0 VU	
Level metering:	VU meter in accordance with ASA standard plus LED peak level indicators (6 dB above operating level, adjustable)	
Distortion:	at: 0 VU nWb/m: 250 3 3/4 ips: <1 % 7 1/2 ips: <0.6 % 15 ips: <0.6 %	0 VU + 6 dB 500 <2.5 % <1.5 % <1.0 %
Signal to noise ratio: (measured via tape, ASA-A weighted referred to 500 nWb/m)	Half track: at 3 3/4 ips <63 dB at 7 1/2 ips <66 dB	Half track: at 7 1/2 ips <66 dB at 15 ips <66 dB
Crosstalk: (at 1000 Hz)	Stereophonic: better than 45 dB Monophonic: better than 60 dB	
Erase depth:	at 7 1/2 ips better than 75 dB (1 kHz)	
Inputs per channel: (0 dBu ≙ 0.775 V)	Line inputs balanced (input impedance ≥ 5 kohms) Calibrated: +4 dBu (adjustable - 10 ... +10 dBu, referred to operating level) Uncalibrated: Sensitivity ext. variable up to 10 dB above calibrated input Max. Line Input Level: +22 dBu (>40 Hz) Microphone inputs unbalanced (input impedance 100 kohms): MIC LO: -70 dBu (max. -24 dBu) MIC HI: -42 dBu (max. +4 dBu) OPTION: Microphone inputs balanced (input impedance > 1.2 kohms; 40 Hz ... 15 kHz): MIC LO: -82 dBu (max. -36 dBu) MIC HI: -54 dBu (max. -7 dBu)	

Outputs per channel: (0 dBu ≙ 0.775 V)

Line outputs balanced

(source impedance 50 ohms)

Calibrated:

+4 dBu (load 600 ohms)

(adjustable -20 ... +9 dBu, referred to operating level)

Uncalibrated:

Output level ext. variable up to 10 dB above calibrated output

Max. Line Output Level: +22 dBu/600 ohms

+20 dBu/200 ohms

PHONES:

max. 5.6 V, internal resistance 220 ohms, short-circuit proof

Connectors for:

Remote control of tape transport functions.

Remote control of variable tape speed. Fader start.

Electric current supply: (voltage selector)

100 V, 120 V, 140 V, 200 V, 220 V, 240 V

50 Hz ... 60 Hz, max. 100 watts

Primary power fuse:

100 V ... 140 V 1A slow-blowing

200 V ... 240 V 0.5A slow-blowing

Weight:

40 lbs 12 oz (18.5 kg)

Ambient Temp. Range:

+40° F (+7° C) to +104° F (+40° C)

Working position:

Any, between horizontal and vertical

All figures quoted are minimum performance values as measured with 3M 256 tape
normally exceeded by all units.

We reserve the right to make alterations as technical progress may warrant.

DIMENSIONS (mm)

