
VESTAX MR-66

MULTITRACK RECORDER OWNER'S MANUAL

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INTRODUCTION

The Vestax MR-66 is a 6-track cassette recorder / player. It is designed to answer the growing demand for more flexibility in a cassette-based multi-track recorder. Please read this manual carefully before you start to use the unit in order to better understand its operation.

MR-66 FEATURES

User Friendly

Home studios are getting increasingly more MIDI oriented. Drum machines, sequencers, and multi-timbral sound modules make it possible for musicians to produce very high quality music at home. And not only keyboard players use MIDI. Guitarists also use it to produce demos with keyboard sounds. MIDI sync is the key, but with 4 tracks this can be a problem, because you only have 3 tracks left on which to record music. Now, with the MR-66, 5 tracks are free for recording music while a 6th track can be dedicated to MIDI sync.

A 6-2 Mixer with Expandability, Flexibility, and within Your Budget

The MR-66 has a built-in 6-2 tape output mixer. You should think of it as a 6-2 -2 mixer, because there are master insertion jacks, just like bus lines. You can mix down a six-track tape and have a rough master tape without an outside mixer.

You can use the master send and return jacks to connect a stereo graphic equalizer during mixdown if EQ is needed, or, if you have a small 6-2 or 8-2 mixer, this can be used to expand the flexibility of the MR-66. Line input and tape output jacks are fitted to the front panel of the MR-66 for quick and easy connection to an outboard mixer. The more channels your mixer has, the more you can achieve with MR-66.

Built-in Patch Bay

A unique feature of the MR-66 is the 34 terminal front panel patch bay. With it, you have easy access to all six tracks, enhancing flexibility and expanding your creativity. For example, you can ping-pong very easily by connecting output terminals and input jacks.

Complete MIDI Sync Capability

A reliable MIDI sync signal is very important, so the MR-66 has a sync level control as well as a sync on/off switch.

High and Normal Tape Speeds

High and normal tape speeds can be used for recording and playback. For the best sound quality, high speed should be used, but good results and extended recording / playback time can be achieved with normal speed. Both speeds can also be used as effects.

DBX Noise Reduction

DBX noise reduction is provided to reduce tape noise and expand dynamic range. It is switchable for all tracks, and a sync switch enables sync signal recording / playback regardless of DBX status.

THE RECORDER SECTION

The MR-66's track format is very special and not compatible with the standard 4-track or stereo track. The tape moves at 1-7/8 ips (4.8 cm/s) in NORM mode and 3-3/4 ips (9.5cm/s) in HIGH.

A pitch control, allowing tape speed control with $\pm 15\%$, lets you tune the MR-66 to instruments. Switchable dbx* noise reduction gives clean, quiet recordings with plenty of headroom to avoid distortion. You can switch off the DBX circuit in order to play back tapes which have not been DBX-encoded. Remote punch-in and punch-out is simple and easy, using the Remote Foot Switch FP-1. This is an invaluable tool when overdubbing all or just portions of a track.

TRACK FORMAT

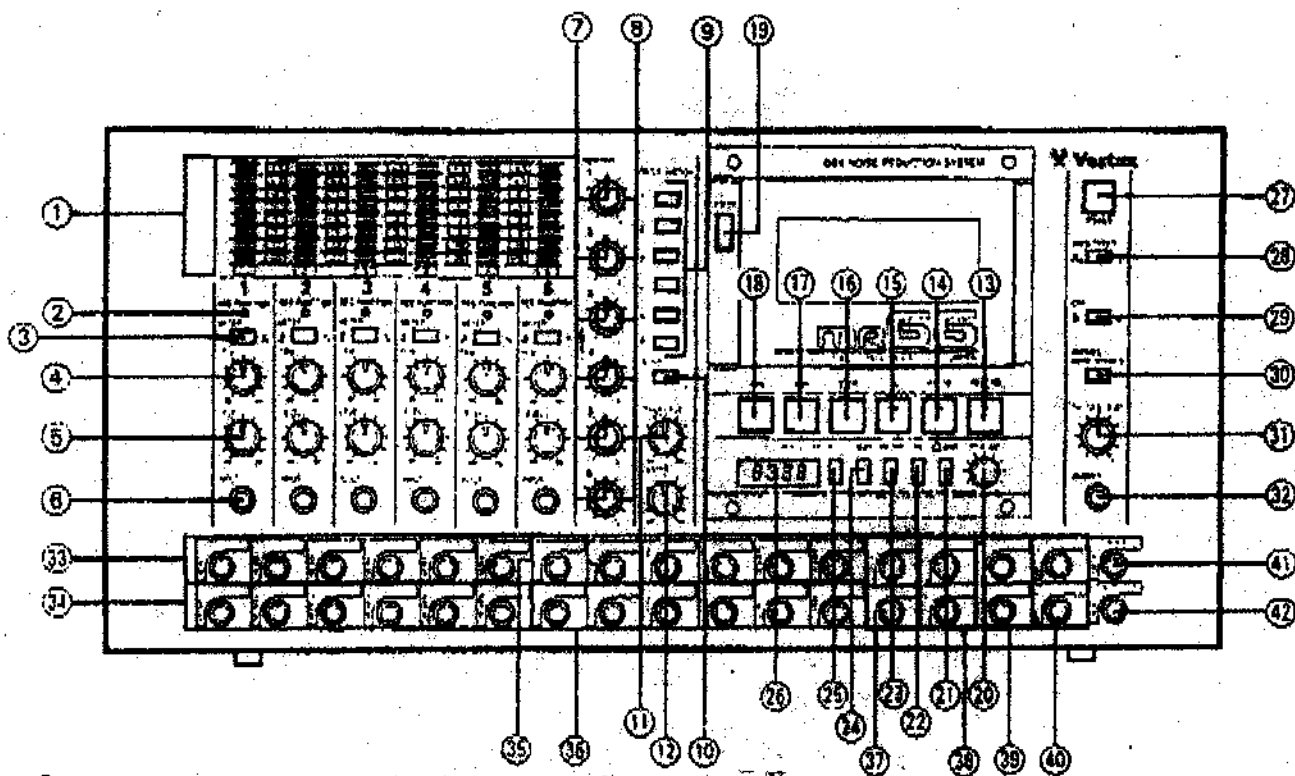
The MR-66 track format is designed with consideration to giving more freedom to you while maintaining good crosstalk levels for sound recording. The MR-66 records and plays in only one direction using the entire width of the tape. So do not turn over the tape, or you will erase recorded tracks.

CASSETTE TAPE

Remove both safety tabs of the cassette in order to protect the finished master, or you may accidentally erase the tracks of your master. Do not use C-120 cassettes, as the extremely thin tape used in C-120 cassettes might lead to troubles from stretching and breaking. For optimum recording quality, use the shortest possible tape for a given job. In order to get the best results, use 70µs High Bias, Type II tapes such as TDK SAX, MAXELL UD XL II S or equivalent formulations.

- In order to avoid hazardous electric shock, please do not open the unit. No user serviceable parts inside. If you think you need repair, please talk with your dealer or distributor.
- Please keep the unit away from dust and humidity.
- This unit is covered by the distributor's warranty which is basically based on manufacturer's warranty. Warranty may vary from country to country. If you have any question on service, please talk with your dealer or distributor.
- This manual is correct at the time of its printing. However, Vestax reserves right to change specifications in order to improve the unit without prior notice.

CONTROLS & FUNCTIONS



INPUT/OUTPUT CONTROLS

(1) METER (LED Peak Level Meter)

The meter indicates either input or tape playback level which is selected by METER SELECTOR (3).

For recording a track, adjust input signal level with TRIM (4) and LEVEL (5) so that 0dB of the meter blinks constantly. If 0 dB LED lights and +5 dB LED frequently blinks, the input level is too high. If 0dB LED does not blink or light, the input level is too low to achieve a good S/N ratio.

(2) REC FUNCTION LED

Blinks to show that the track is in RECORD ready mode. Then pushing REC button makes it light and recording will begin.

(3) METER (LED Peak Level Meter Changeover Switch)

The METER switch selects the contents of the meter displays.

INPUT (for recording) - Shows input level of each track.

TAPE (for playback) - Shows playback level of each track.

(4) TRIM

The TRIM control adjusts the level of the input signal from the 6.3 ϕ (mono standard quarter inch phone) MIC / LINE jack on the front of the unit to an appropriate volume. Turn the TRIM control fully clockwise (to the right)

when working with low level signals, such as those from microphones or conventional electric guitars, and counter-clockwise (to the left; for LINE level signals) when working with high level signals, such as those from a keyboard.

(5) LEVEL

This control varies the amount of the input signal from the 6.3 ϕ (mono, standard quarter inch phone) jack on the front panel of the unit.

Combination of TRIM and LEVEL

To have the best S/N ratio in recording and playback, set LEVEL between 7 and 8 first, and then adjust TRIM control to have the best input level described above.

(6) INPUT JACK 1 - 6 (mono, 1/4" standard phone jack)

Accepts input from musical instruments, microphones, etc.

MONITOR CONTROLS

(7) LEVEL (Level Adjustment Knobs, inner shaft of dual shaft volume) 1 - 6

The LEVEL knob allows adjustment of the playback signals on tracks 1 through 6, or of the LINE IN 1-6 jack input signal levels.

Rotating this knob increase playback level.

Nominal output level is obtained at MAX position. Please set the knob at MAX first and then rotate it counter-clockwise for level and balance adjustment.

(8) PAN (Pan Control knobs, outer shaft of dual shaft volume) 1 - 6

PAN control allows you to select assignment of playback signals on tracks 1 through 6 or of the LINE IN 1-6 jack input signal, to either the left or right BUSS line.

RECORDING AND SYNC CONTROLS

(9) RECORD FUNCTION 1 - 6

Pushing the button enters the designated track to enter record ready mode. REC FUNCTION LED flashes when the unit is on record standby, and stays lit when the unit is on record.

(10) SYNC SW

It is effective only for playback of Track 6. When you do MIDI sync with a pre-recorded FSK signal on Track 6, you will get stable syncing with this switch on.

MIDI Sync Recording & Playback

When recording an FSK signal converted from MIDI by an outside MIDI-FSK converter on Track 6, please use Track 6 input (TRIM, LEVEL, JACK, etc). Please note that DBX noise reduction is off in recording.

To play back the FSK signal, turn Sync switch on, and connect the Sync Output of the MR-66 to the Sync In of your MIDI device.

(11) SYNC LEVEL

Adjust this knob for MIDI sync playback. It is effective only for playback of Track 6 with Sync switch (10) on.

(12) MASTER LEVEL

Controls master output level. Rotating this knob clockwise increases volume.

- Nominal output level is obtained at MAX position. Please set the knob at MAX first and then rotate it counter-clockwise to get the best result.

RECORDING CONTROLS

(13) REC (Record Button)

Pressing this button puts the unit in the record mode.

Press this button and Pause (14) button together and then push Play (15) button to start recording.

(14) PAUSE (Pause Button)

Pressing this button during playback or recording causes the tape to stop running (i.e., the electronics remain engaged). When the Pause switch is depressed, and then released in the Record mode, recording begins instantly.

(15) PLAY (Play Button)

Pressing this button sets the unit on playback.

(16) STOP (Stop Button)

Pressing this button stops all tape motion and disengages electronics.

(17) FF (Fast Forward Button)

Pressing this button winds the tape forward at high speed.

(18) REW (Rewind Button)

Pressing this button rewinds the tape at high speed.

(19) EJECT Button

Push this button to open the tape compartment for inserting or removing your cassette tape.

(20) PITCH CONTROL (Knob)

This control changes the tape speed at $\pm 15\%$, thus raising or lowering the pitch of the music.

(21) MEMO (MEMORY Switch)

This is used for inputting a point on the tape to memory so that you can return to that point on the tape at any time. Once the Memory switch is selected, you can Fastforward or Rewind to that point and the tape will stop automatically. While in this mode, the Memory switch LED will blink. After pressing the Memo switch, you can also select the Return Mode switch (22), at which the Memo LED will stay lit and will not blink. In the Return Mode, the unit will stop at the selected Memory point and automatically begin playback.

(22) RTN MODE (Return Mode Selector Switch)

The Return Mode switch can be selected while in the MEMO mode or the Zero Return mode. If Return Mode is selected in either case, the unit will automatically begin playback upon reaching Zero Return, or the Memo point selected.

(23) ZERO RTN (Zero Return)

This switch is selected when you want the unit to stop at the tape counter "0000" after rewind or fastforward is selected. When Zero Return is selected,

the LED will blink. While in this mode, Return Mode may also be selected. In this function, the unit will automatically begin playback after reaching "0000".

(24) RESET

Pressing this button return the counter to 0.

(25) TAPE COUNTER (Display Changeover Switch)

Pushing this button determine the content of the tape counter. By pressing this switch alternately, you can view the tape turn or "real time."

(26) TAPE COUNTER (Tape Counter/Reset Button)

A 4-digit display indicates tape transport condition and position in tape turn mode. It shows minutes and seconds in time mode. Pressing the reset button sets the display at "0000".

(27) POWER/POWER LED

The LED is lit when the power is on.

(28) TAPE SPEED (Changeover Switch)

Tape speed is selectable from HIGH (9.5 cm/s) and NORM (4.75cm/s).

Note: Optimum sound quality can be best achieved in the HIGH speed mode.

(29) DBX ON/OFF (dbx ON/OFF Switch)

This switch turns DBX on and off. Always set the DBX switch to ON when playing back signal recorded with DBX ON and to OFF when playing back signals recorded with DBX OUT.

(30) PHONES- STEREO/MONO Select Switch

When monitoring the tape, you can have mono mix monitor signal if necessary by pushing this switch.

(31) PHONES LEVEL (Headphone Output Level Knob)

This control allows you to adjust the volume of sound monitored at the headphones.

(32) PHONES JACK (stereo, 1/4" standard phone jack)

Connect a pair of headphones to this jack. (8 Ω recommended)

PATCHBAY SECTION

(33) LINE IN 1 - 6 (mono, 1/4" standard phone jack)

This is the 6-channel line level input, for connecting keyboards or drum machines, etc. The signals input from this jack are assigned directly to recording tracks in recording.

(34) TAPE OUT 1 - 6 (mono, 1/4" standard phone jack)

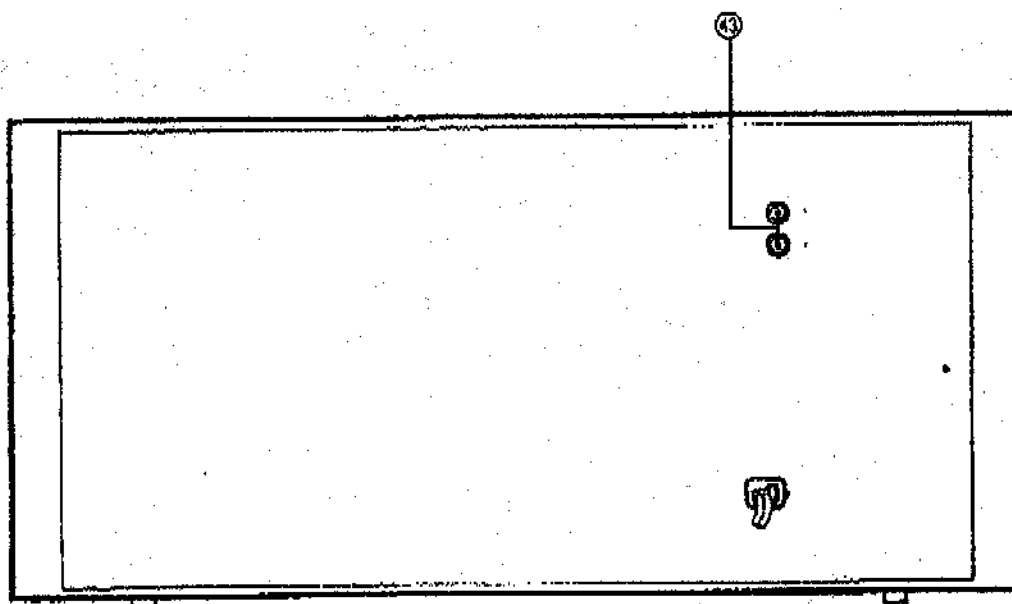
Outputs the tape playback signal of each track.

When you use an outside mixer for expansion, It is recommended to use LINE INPUT (33) and TAPE OUTPUT (34).

(35) AUX SEND 1 - 6 (mono, 1/4" standard phone jack)

These are outputs for an external effects device when you want to add effects on signals input from INPUT or LINE INPUT jacks. Connect to the input of external effects device.

- (36) AUX RETURN 1 - 6 (mono, 1/4 " standard phone jack)
Accept signals from output of external effects device which received signals from AUX SEND (35).
- (37) M/O SEND L/R (mono, 1/4 " standard phone jack)
These are outputs for adding effects to master outputs from tape playback. Connect to the inputs of external effects device.
- (38) M/O RTN L/R (mono, 1/4 " standard phone jack)
These are inputs for signals which are output from M/O SEND L/R (37) to external effects device.
- (39) M. OUT L/R (mono, 1/4 " standard phone jack)
These are master output jacks for the tape playback signals. Connect to an external tape deck to make a stereo master tape.
- (40) MON OUT L/R (mono, 1/4 " standard phone jack)
These are parallel outputs to master outputs mainly used to connect monitor speakers, etc.
- (41) PUNCH IN/OUT Remote Jack (6.3 ϕ / Standard Quarter Inch Phone Jack)
Connect FP-1 Punch In /Out Remote Pedal for convenient hands-free operation. Remote operation is recommended for punch in/out to get the best results.
- (42) PAUSE ON/OFF Remote Jack (6.3 ϕ / Standard Quarter Inch Phone Jack)
Connect FP-1 Remote Pedal for convenient hands-free operation.
- (43) OUTPUT Jack L/R (RCA PIN JACK)
These are master output jacks only for the tape playback signals parallel to M.OUT (39). Connect to external tape deck to make stereo master tape.
If you use M.OUT and OUTPUT simultaneously, OUTPUT is cancelled.



BASIC OPERATION

RECORDING

1. Set the cassette tape which you are going to record with properly to the tape compartment of MR-66.
2. Set the knobs and switches as follows.

(POWER) Switch (27) -----ON
(METER) Select Switch (3) -->INPUT
(LEVEL) Knob (5) -----ON
(TRIM) Knob (4) ----->Play the musical instrument and adjust it
so that you can have the best input level.
For example, it will be right of the center
if you play the electric guitar.
(REC FUNCTION) Button (9) ---->Push the switch of the track which you are
going to record, and the LED will start to
stay lit.

3. Check out the input level again. If you record an electric guitar, just play it to confirm the level by watching the meter.
4. Push PAUSE and REC buttons simultaneously, and the Rec Function LED of the track you are going to record will start to blink. Then push PLAY button to start recording.
5. When you finish recording, push the STOP button to stop the tape running.

PLAYBACK

1. Set the tape that you have previously recorded.
2. Set the knobs and switches as follows.

(POWER) Switch (27) -----ON
(METER) Select Switch (3) -->TAPE
(REC FUNCTION) Button (9) ---->All tracks OFF.

3. Push the PLAY button and the tape will start to run for playback.
4. You may adjust playback level or pan placement using the mixer section controls.
5. When you finish playback, push the STOP button to stop the tape running.

OTHER OPERATIONS

PUNCH IN/OUT

Punch In recording is basically to make a desired track turn into recording during playback. It is useful when you re-do or change a part of a certain track of the MR-66's 6 tracks.

Punch Out is to make a desired track turn into playback during recording.

1. Punch In/Out by Remote Pedal

You can punch in/out easily even if your hands are occupied with playing musical instruments with the optional FP-1 Punch In/Out Remote Switch hooked up to Punch In/Out jack of MR-66.

① First connect FP-1 Remote Pedal to Punch In /Out jack of MR-66.

② Then push the REC FUNCTION button of the desired track. The track's REC FUNCTION LED will start to blink.

③ Push REC and PLAY buttons simultaneously to start the tape running.

With FP-1 connected, the REC FUNCTION LED will continue to blink despite of record mode above, and no recording will start. It is just playing back.

④ As soon as you press the pedal, recording will start (Punch In) and when you press the pedal again, it will return to play back. (Punch Out)

2. Punch In/Out without Remote Pedal

① First push the REC FUNCTION button of the desired track to turn the unit to record ready mode.

② Push PLAY and REC buttons simultaneously where you want to punch in and push PLAY button to punch out.

MIXDOWN

Mix Down, also called Track Down, is to make a stereo master tape from a multi-track recorded tape.

To mix down with the line track mixer which is built-into MR-66 is as follows.

1. Set the pre-recorded cassette tape which you are going to mix properly to the tape compartment of MR-66.

2. Set the knobs and switches as follows.

(POWER) Switch (27)	-----ON
(METER) Select Switch (3)	---TAPE
(LEVEL) Knob (5)	-----Adjusts level and balance of tracks.
(PAN) Knob (8)	-----Determines panning of each track.

-
- (MASTER) Knob (12) -----→Set to MAX in order to have the nominal output level.
- (OUTPUT) Jack (39) -----→Connect from master outputs left and right jacks to inputs of the master deck.

3. Play back MR-66 and record it on to the master deck.

PING-PONG

Ping-Pong recording can be done with optional cables by using built-in line track mixer and patch bay section.

Here is how you bounce Tracks 1,2,3 and 4 to Tracks 5 & 6.

1. Turn the MASTER output knob to MAX and adjust level and balance of Tracks 1, 2,3, and 4.
 2. As one example of stereo ping-pong, adjust PAN of Track 1 and 3 to left, and Track 2 and 4 to right.
 3. Connect OUTPUT L to Track 5 of LINE IN and OUTPUT R to Track 6 with cables.
 4. Push on REC FUNCTION buttons of Track 5 and 6, and start recording. Please note that all other REC FUNCTION buttons are at safe position in order not to erase important recording.
- Oscillation is likely to be noticed if you ping-pong at normal speed with fairly high input and output levels. The unit is not necessary defective if you hear oscillation with above conditions. Please try to reduce it by decreasing input and output levels.

TO EXPAND SYSTEM WITH AN EXTERNAL MIXER

You can expand your MR-66 recording system with an external mixer. The MR-66 has input and output jacks on the front panel thanks to the patch bay system so that you can connect a mixer easily.

An ideal mixer to MR-66 is of 8 buss (group) out or more with tape outputs. You do not have to change patching from recording to mix down with such a mixer. Furthermore, a mixer with these features usually has good on-board equalizers and effects processing capability at the same time.

We are going to explain the way to use a low-cost, simple keyboard mixer, not an expensive professional recording mixer.

8-channel keyboard mixer

You can expand a recording system with the MR-66 to a large extent by using a low-cost keyboard mixer. You can find the following 8-channel keyboard mixer easily.

- ① Number of input channels : 8
- ② Equalizer : high and low for each channel
- ③ AUX Send
- ④ Output : L / R, no buss out

Such a small mixer can expand possibility of MR-66 recording greatly.

1. RECORDING

Hook up keyboard, etc. to inputs of the mixer. Connect L/R outputs of the mixer to LINE IN of desired track of MR-66.

- If you combine several inputs to record on one track, set the pan of all input channel to left or right, and send signal from left or right output to LINE INPUT of desired track of MR-66.

2. PLAYBACK

Connect TAPE OUTPUT 1-6 to the mixer input channel of the same number. You are going to use the mixer instead of built-in line track mixer.

When you want to mix down, use the same connection as above and record from L / R outputs of the mixer to L / R inputs of the master deck.

3. PING-PONG

Please refer to above 1 and 2 for ping-pong recording.

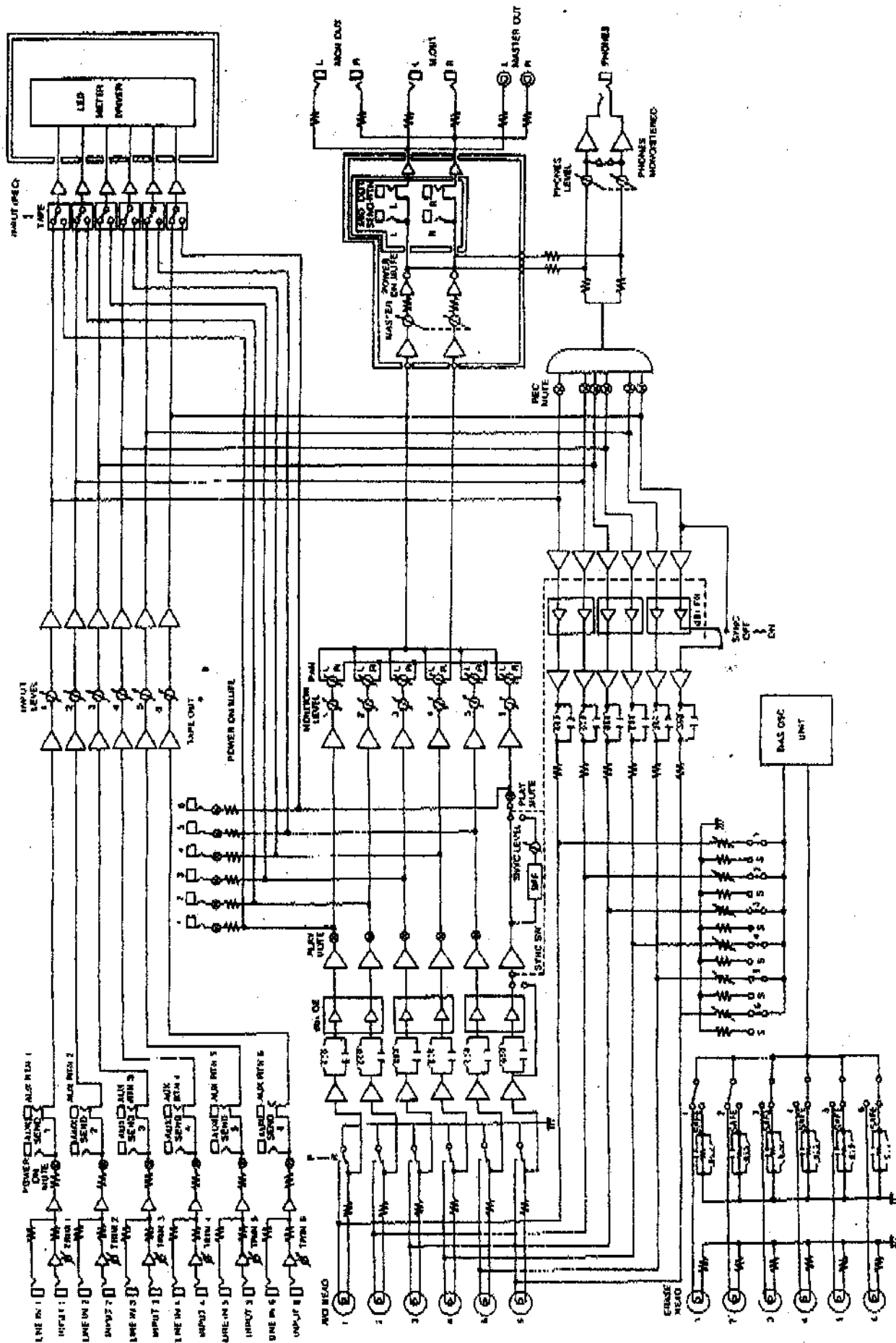
Connect from TAPE OUT jack of desired track of MR-66 to the mixer input and from output jack L/R to LINE IN of the track (s) you want to bounce tracks to.

4. EFFECT PROCESSING

If the keyboard mixer has effect send function, you can add effects in recording or mix down.

Connect effect send jack of the mixer, which is usually mono, to input (s) of outboard effects device. Use Channel 7 and 8 of the mixer for effects return, if the device is mono-in stereo-out. By doing this, you can add depth to your music with digital reverb, etc. during mix down.

MR-66 BLOCK DIAGRAM



MR-66 SPECIFICATIONS

MECHANICAL CHARACTERISTICS

Tape	Compact cassette C-30 TO C-90, 70us EQ (Type II)
Track Format	6-track, 6-channel (1 direction)
Head Configuration	2 Heads (erase and record/playback)
Motor	1 FG servo controlled DC capstan motor and 1 DC reel motor
Tape Speed	4.75cm/s $\pm 1\%$, 9.5cm/s $\pm 1\%$, switchable
Wow and Flutter	0.04% (NAB weighted)
Fast Winding Time	Approx. 110seconds for C-60
Dimensions	482 x 220 x 222 mm (WHD)

ELECTRICAL CHARACTERISTICS

INPUT / OUTPUT SECTION

MIC / LINE Input	6.4 (1/4") Phone Jack unbalanced
Input Impedance	470k Ω
Nominal Input Level	-70 to +15dBV (0.3mV - 5.6V)
Line Input	6.4 (1/4") Phone Jack unbalanced
Input Impedance	220k Ω
Nominal Input Level	MAX 15dB (5.6V) MIN -20dBV (0.1V)
Line Output	6.4 (1/4") Phone Jack unbalanced
Output Impedance	10k Ω
Nominal Output Level	-10dBV
Headphone Output	6.4 (1/4") Phone Jack balanced
Load Impedance	8 Ω
Maximum Output Level	100mW (8 Ω)

RECORDER SECTION

Record Channel	6 (6 simultaneously)
Playback Channel	6
Bias Frequency	100KHz
Equalization	3180 s+35 s
Noise Reduction	DBX TYPE II

PERFORMANCE CHARACTERISTICS

Frequency Response	20Hz - 18KHz ± 3 dB
T.H.D.	0.05% (1KHz nominal level)
S / N Ratio	95dB (WTD, with DBX)
Power	AC

*DBX MANUFACTURED UNDER LICENSE FROM DBX /CTI.

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