



MX-55T-M, T, N-M
PROFESSIONAL RECORDERS
OPERATION AND MAINTENANCE MANUAL
SIXTH EDITION

Otari, Inc.

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OTARI

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INC.

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CAUTION

To prevent fire or shock hazard :

Do not expose this unit to rain or moisture.

Do not remove panels (unless instructed to do so).

There are no user-serviceable parts inside.

Refer servicing to qualified service personnel.

PLEASE READ THROUGH THE SAFETY INSTRUCTIONS ON THE NEXT PAGE.



SAFETY INSTRUCTIONS

- 1. Read Instructions** All the safety and operating instructions should be read before the device is operated.
- 2. Retain Instructions** The safety and operating instructions should be retained for future.
- 3. Heed Warnings** All warnings on the device and in the operating instructions should be adhered to.
- 4. Follow Instructions** All operating and use instructions should be followed.
- 5. Water and Moisture** The device should not be used near water — for example, near bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6. Carts and Stands** The device should be used only with a cart or stand that is recommended by the manufacturer.
- 7. Ventilation** The device should be situated so that its location or position does not interfere with its proper ventilation. For example, the device should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- 8. Heat** The device should be situated away from heat sources such as radiator, heat registers, stoves or other appliances (including amplifiers) that produce heat.
- 9. Power Sources** The device should be connected to a power supply only of the type described in the operating instructions or as marked on the device.
- 10. Grounding or Polarization** Precautions should be taken so that the grounding or polarization means of the device is not defeated.
- 11. Power Cord Protection** Power supply cords should be routed as they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the device.

- 12. Cleaning** The device should be cleaned only as recommended by the manufacturer.
- 13. Non-Use Periods** The power cord of the device should be unplugged from the outlet when left unused for a long period of time.
- 14. Object and Liquid Entry** Care should be taken so that objects do not fall and that liquids are not spilled into the enclosure through openings.
- 15. Damage Requiring Service** The device should be serviced by qualified service personnel when:
- A.** The power-supply cord or the plug has been damaged; or
 - B.** Objects have fallen, or liquid has been spilled into the appliance; or
 - C.** The appliance has been exposed to rain; or
 - D.** The appliance does not appear to operate normally or exhibits marked change in performance; or
 - E.** The appliance has been dropped, or the enclosure damaged.
- 16. Servicing** The user should not attempt to service the device beyond that described in the operating instructions. All other service should be referred to qualified personnel.

WARNING

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at this own expense will be required to take whatever measures may be required to correct the interference.

COMMUNICATION WITH OTARI

FOR SERVICE INFORMATION AND PARTS

The Otari products are manufactured under strict quality control and each unit is carefully inspected and tested prior to shipment.

If, however, some adjustment or technical support becomes necessary, replacement parts are required, or technical questions arise, please contact your nearest Otari dealer or contact Otari at:

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Another part of Otari's continuing technical support program for our products is the continuous revision of manuals as the equipment is improved or modified. In order for you to receive the information and support which is applicable to your equipment, and for the technical support program to function properly, please include the following information, most of which can be obtained from the Serial number label on the machine, in all correspondence with Otari:

- Model Number:
- Serial Number:
- Date of Purchase:
- Name and address of the dealer where the machine was purchased and the power requirements (voltage and frequency) of the machine.

COMMUNICATION WITH OTARI

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Section 1

Introduction

The Otari MX-55 Series Tape Recorders are compact high-performance 1/4" tape recorder/reproducers utilizing the latest technology in analog tape recording. The MX-55 Series is comprised of six machines in the following configurations.

Table 1-1
MX-55 Series Machine Configurations

Model	Track Configuration	Cabinet Style
MX-55N	NAB 2trk 2ch	Standard
MX-55N-M	NAB 2trk 2ch	Meterbridge
MX-55D	DIN Stereo	Standard
MX-55DE	DIN Stereo	Standard (Euro version)
MX-55T	NAB 2trk 2ch with center time code track	Standard
MX-55T-M	NAB 2trk 2ch with center time code track	Meterbridge

This manual is intended for use with MX-55T-M, MX-55T and MX-55N-M models.

1.1 MX-55 Series Tape Recorders

The MX-55 Series of Tape Recorders are built on die-cast aluminum alloy deck plates and side frames for maximum ruggedness and mechanical stability.

All machines in the series will accept any size reel from a 5" EIA reel to an 11.8" DIN hub. Different size reels can be used for Supply and Take-up.

The front panel pitch control utilizes a unique rotary encoder to provide $\pm 20\%$ variable speed range in 0.01% increments. The capstan motor speed can also be controlled by an external source of 9600 Hz (nominal) square waves for easy interface with a synchronizer or similar controller. The speed range under external control is +100%, -50%.

An optional Voice Edit mode PCB allows listening at twice normal play speed without pitch shift for easy editing of lecture and interview work or for transcription.

The built-in tape timer displays the current tape position as Hours, Minutes and Seconds, or the tape speed in inches per second, or the tape speed as a percentage of change from the selected play speed.

The tape timer incorporates a four point search-to-cue locator with three cue point memories and a zero location memory. The included repeat function allows continuous repeat play between any two selected cue points. One cue point memory can be set to store the location where Play or Record was last entered, for easy return to the beginning of a sequence or take.

All machines in the Series feature front panel selection of two operating speeds, with internal switch selection of either High (15 ips and 7.5 ips) or Low (7.5 ips and 3.75 ips) speed pair operation.

The MX-55 Series machines provide switch selection of NAB or IEC equalization; +4 dBm or -16 dBm Input and Output levels; 185, 250 or 370 nWb/m Reference Flux level with front panel indication of Reference Flux level and equalization. XL type connectors are provided for Inputs and Outputs with transformerless active balanced circuitry.

The MX-55 Series machines also provide the HX Pro* Headroom Extension System. HX Pro improves the high frequency performance of any tape recorded on the MX-55 by analyzing the high frequency components of the audio signal and continuously adjusting recording bias to maintain bias linearity for optimum distortion, noise, and frequency response characteristics. HX Pro is not an "encoding" process, and does *not* require any decoding during playback.

* Dolby HX Pro: HX Pro Headroom Extension originated by Bang & Olufsen and manufactured under license from Dolby Licensing Corporation. "Dolby" and the Double-D symbols are trademarks of Dolby Licensing Corporation.

1.2 Using This Manual

This manual is intended for use with MX-55T-M, MX-55T and MX-55N-M model. For convenience, the descriptions and references apply to MX-55T-M, where any differences exist between this model and others in the series, those differences will be fully explained in context.

1.2.1 Organization

This manual is divided into nine sections beginning with this **INTRODUCTION** which contains general information about the MX-55 Series and about the manual.

Section 2, CONTROLS AND INDICATORS, contains a keyed reference guide to the operating controls, indicators and connectors on the machine. This section contains detailed information about each control and its function. Refer to this section when you have a question about the function of a particular control, indicator, or connector.

Section 3, OPERATION describes the operation of the MX-55 machines, and is divided into two parts;

- a. A table of machine operating modes, which lists each mode and the controls necessary to enter that mode; and
- b. Detailed operating instructions, which describe each operation and the controls and indicators associated with that operation.

Section 4, MAINTENANCE AND ADJUSTMENT, provides the information necessary to perform routine maintenance operations, including head cleaning and demagnetizing and capstan motor lubrication. It also covers the audio and transport adjustments associated with normal operation of the machine.

Section 5, INSTALLATION, contains the information necessary when first unpacking and installing the machine. The information and procedures contained in this section should be followed very carefully when the machine is first unpacked and installed. Performing the inspection and checkout steps will familiarize you with the machine and its component parts if this is your first contact with the MX-55 series of tape recorders.

Section 6 lists the **SPECIFICATIONS** of the MX-55T-M, MX-55T and MX-55N-M tape recorders.

Section 7, EXPLODED VIEWS AND PARTS LISTS, contains assembly drawings of the machine "exploded" to show internal parts and hardware, and the order of assembly. Each drawing is keyed to an accompanying Parts List containing the Otari part number for each mechanical component.

Section 8, PRINTED CIRCUIT BOARD LAYOUTS AND PARTS LISTS, contains two-color "X-ray" views of the printed circuit boards (PCBs) showing component locations and foil traces. This section also contains Parts Lists of the electronic components associated with each PCB.

The final section contains the **SCHEMATIC DIAGRAMS** for all electronics assemblies and printed circuit boards.

1.2.2 Conventions within this manual

Generally this manual uses all capital letters to describe a control, indicator, or connector when that item is similarly labeled on the machine (e.g., INPUT level control or PARALLEL I/O connector). Where a control or indicator is not labeled on the machine, the name of that item is spelled with initial capital letters only (e.g., Mic Input connector or Cue Speaker). The six major transport control buttons are not labeled on the machine, but are labeled on the button caps with graphic symbols. This manual uses the name of the button rather than the graphic symbol whenever the buttons are referenced.

Button Symbol	Name
	PLAY
	RECORD
	STOP
	FAST FORWARD (F.FWD)
	REWIND
	CUE

Section 2

Controls and Indicators

This section describes the Controls, Indicators, and Connectors on the MX-55T-M, MX-55T and MX-55N-M tape recorders.

2.1 Tape Transport

This section describes the controls, indicators, and main components of the MX-55 tape transport. Numbers in brackets [] refer to callouts in **Figure 2-1**.

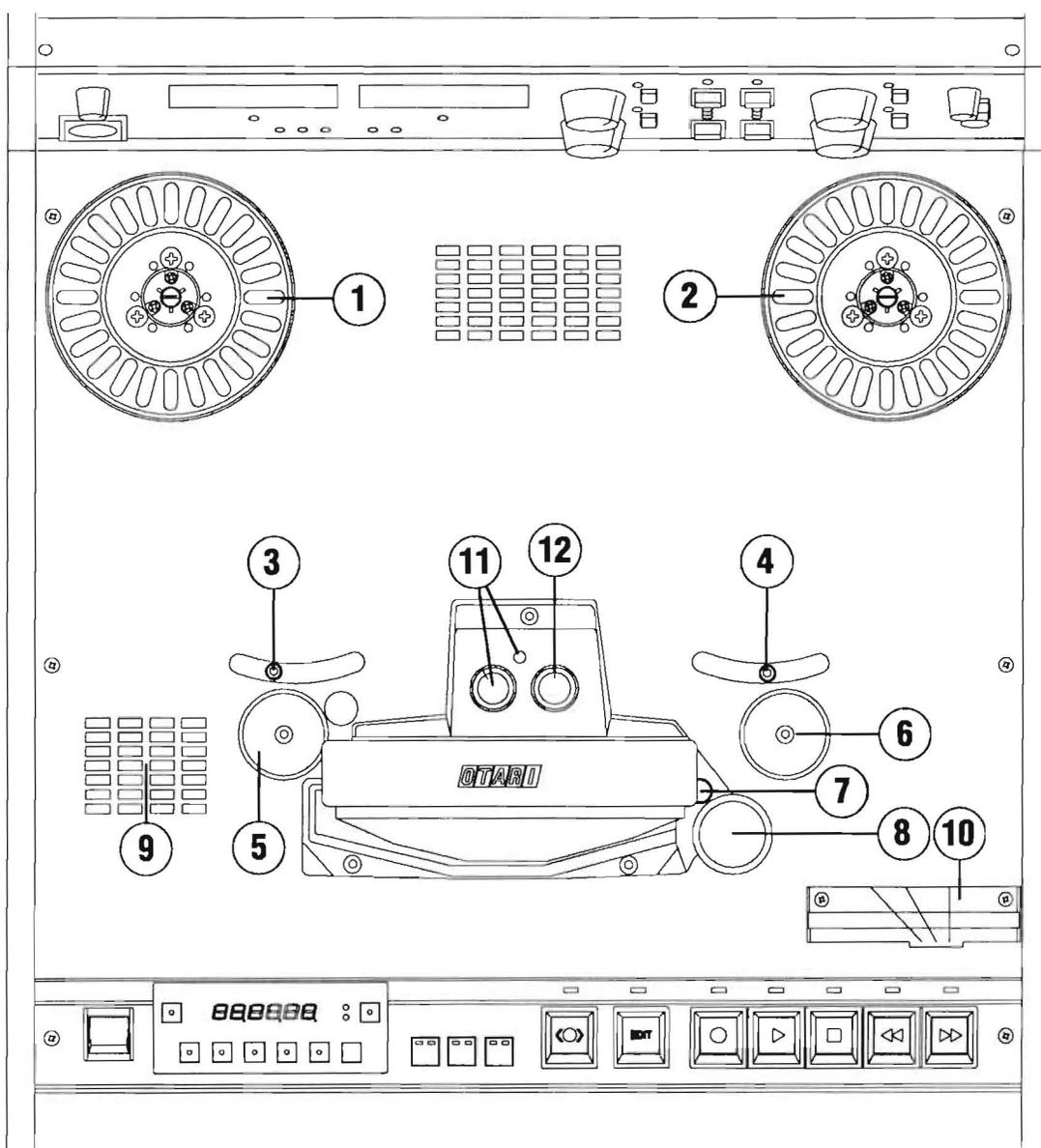


Figure 2-1
Tape Transport

[1] Supply Reel Table
[2] Take-up Reel Table

Reel Tables with reel clamps for 5" or 7" reels. When using a 10.5" NAB reel, use the supplied reel adapter.

Select the appropriate tape tension for the reel size being used by pressing the REEL SIZE SUP S/L and REEL SIZE T.UP S/L buttons (**Figure 2-2, [11], [12]**). Different reel sizes can be accommodated on each Reel Table by selecting the appropriate tape tension switch position.

[3] Supply Swing Arm
[4] Take-up Swing Arm

These arms help correct tape tension fluctuations due to changes in tape pack diameter or irregularities in tape pack.

When the MX-55 is in Stop mode, the reel brakes are released by moving the Swing Arms toward the outside of the deck plate.

The Supply Swing Arm is provided with a safety switch which stops the transport when the tape becomes unthreaded from the reel or when too much slack develops in the tape path.

[5] Guide Roller

This roller provides tape guidance and helps isolate the heads from variations in tape motion caused by irregularities in tape supply.

[6] Tachometer Roller

The tape motion causes this roller to rotate, which generates tach pulses which are used to calculate tape time and tape direction.

[7] Capstan Shaft

The Capstan Shaft is directly driven by a Quartz crystal Phase Locked Loop controlled brushless DC servo capstan motor.

[8] Pinch Roller

The tape is driven by the rotation of the Capstan Shaft against this roller.

[9] Monitor Speaker

The Monitor Speaker is provided for monitoring the audio signals. Inserting a headphone plug into PHONES jack (**Figure 2-4, [16]**) mutes the built-in monitor speaker. The monitor level is adjustable by the MONITOR level control (**Figure 2-4, [14]**). The channel(s) to be monitored are selected by the Monitor Select buttons (**Figure 2-4 [15]**).

[10] Splicing Block

The built-in splicing block provides a convenient method of editing tapes.

[11] Speed Mode switch and Indicator

When this switch is set to the FIX position, the capstan motor speed is controlled by the internal crystal oscillator, and the tape speed is selected by the SPEED LO/HI button (**Figure 2-2, [10]**).

When this switch is set to the VARI position, the tape speed is controlled by the Pitch Control knob.

When this switch is set to the EXT position, the tape speed is controlled by the external speed reference signal connected to the PARALLEL I/O connector on the rear panel. Set the Speed Mode switch to this position when using a synchronizer or resolver to control the MX-55. Refer to **Section 5.2.4** for additional information about controlling the tape speed using an external controller.

NOTE: The Tape Time display shows only tape time when the Speed Mode switch is set to EXT.

When this switch is set to the VEM (Voice Edit Mode) position, and the optional VEM PCB is installed, the tape is reproduced at two times the currently selected speed, but the pitch of the signal remains constant. Changing the setting of the Pitch Control knob while in Voice Edit mode, causes the tape speed to change, with an accompanying pitch change.

When this switch is set to the VARI or VEM position, the indicator becomes illuminated. When this switch is set to the EXT position, the indicator is only illuminated when the speed control signal is being supplied. In the FIX position, the indicator is not illuminated.

[12] Pitch Control knob

When the Speed Mode switch is set to the VARI position, the Pitch Control changes the tape speed in Record and Play modes.

The Pitch Control knob is velocity sensitive, so that turning the knob a small amount quickly produces a large pitch change, while turning the knob the same amount slowly produces a small pitch change.

The tape speed is variable by $\pm 20\%$ of the selected speed in 0.01% steps. The amount of pitch change can be displayed on the Tape Time display by pressing TIME-IPS-% button.

2.2 Transport Control Panel

This section describes the controls and indicators on the Transport Control Panel of the MX-55. Numbers in square brackets [] refer to callouts in **Figure 2-2**.

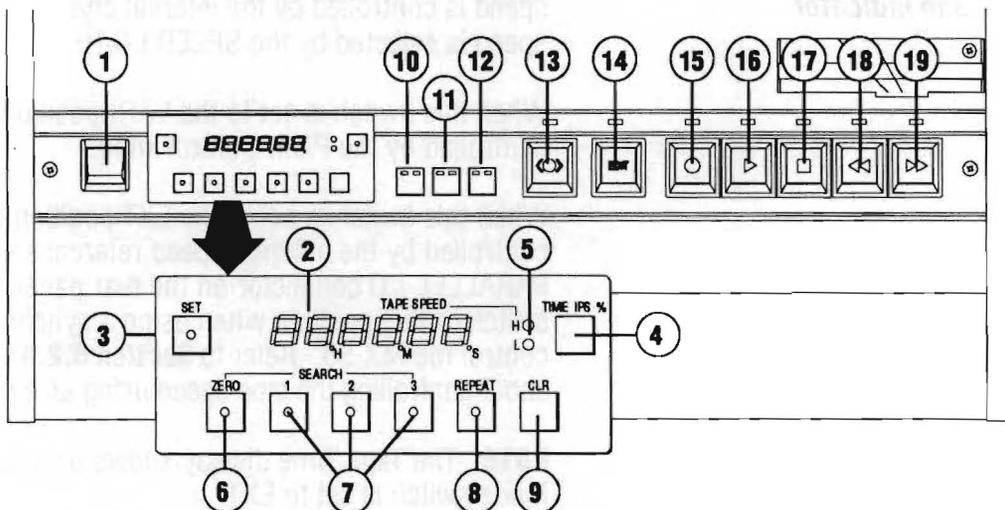


Figure 2-2
Transport Control Panel

[1] POWER switch

Pressing the upper portion of this switch causes Power to be applied to the machine. The VU meter lamps, tape timer digits, and the indicator above the STOP button will become illuminated.

[2] Tape Time display

This 6-digit display shows the tape time in Hours, Minutes, and Seconds, or the tape speed in inches per second, or the tape speed as a percentage change from the selected play speed, as selected by the TIME-IPS-% button.

When the Tape Time display is set to show the tape speed as the percentage of change from the currently selected Play speed, the rightmost digit of the display will show "P". In this mode, 00.00 indication corresponds to nominal tape speed.

When the Tape Time display is set to show the tape speed in inches per second, the rightmost digit of the display will show "iP".

The Tape Time display also shows the location stored as a Search Cue point when the STOP button is held pressed, and one of the SEARCH buttons is pressed.

When power is first applied to the MX-55, the Tape Time display shows the selected tape speed for several seconds, and then changes to show tape time. When the Speed Mode switch is set to the EXT position, the Tape Time display shows tape time.

[3] SET button

Pressing this button initiates Set mode. There are three Set modes:

- A. Cue Point Set mode:** In which a desired tape time can be entered and stored in any selected Cue Point memory.
- B. Vari Speed Set mode:** In which the amount of pitch change from the nominal tape speed can be preset.
- C. VEM Set mode:** In which the amount of speed change from the nominal VEM tape speed can be preset.

When Set mode has been selected, the decimal points of the Tape Time display flash, and the functions of the buttons associated with the Tape Time display are changed as follows:

- **SEARCH ZERO:** In Cue Point Set mode, pressing this button alternates, in turn, between 0, 1, 2, and - time entry.

In Vari Speed Set mode, pressing this button alternates between + (no display) and - percentage entry.

In VEM Set mode, pressing this button alternates between 0 (no display) and 1 (corresponding to 100%).

- **SEARCH 1:** In Cue Point Set mode, pressing this button increments the hours digit by one.

In Vari Speed Set mode, pressing this button alternates, in turn, between 0, 1, and 2 (corresponding to tens of percent of speed change).

In VEM Set mode, pressing this button increments the tens of percent digit.

- **SEARCH 2:** In Cue Point Set mode, pressing this button increments the tens of minutes digit by one.

In Vari Speed Set mode, pressing this button increments the units of percent digit by one.

In VEM Set mode, pressing this button increments the units of percent digit.

- **SEARCH 3:** In Cue Point Set mode, pressing this button increments the units of minutes digit by one.

In Vari Speed Set mode, pressing this button increments the tenths of percent digit by one.

In VEM Set mode, pressing this button increments the tenths of percent digit.

- **REPEAT:** In Cue Point Set mode, pressing this button increments the tens of seconds digit by one.

In Vari Speed Set mode, pressing this button increments the hundredths of percent digit by one.

In VEM Set mode, pressing this button increments the hundredths of percent digit.

- **CLR:** In Cue Point Set mode, pressing this button increments the units of seconds digit by one.

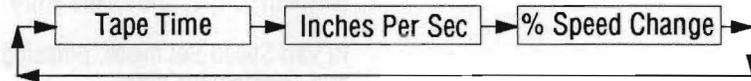
In Vari Speed Set and VEM Set modes, pressing this button has no effect.

After the desired tape time setting has been entered into the display, hold the SET button pressed while pressing a SEARCH button on which the LED is not illuminated (i.e., a location has not been stored) to store the entered location as a Cue Point.

To leave Set mode press the CLR button while holding the SET button pressed. The LED of the SET button turns off.

[4] TIME-IPS-% button

Pressing this button causes the Tape Time display to show, in turn, the current tape time, the currently selected tape speed in ips, or the percent of change from the currently selected tape speed.



Pressing this button simultaneously with the CLR button causes the Tape Time display to be reset to 0:00:00.

NOTE: When the Speed Mode switch is set to the EXT position, the Tape Time display shows only tape time.

[5] TAPE SPEED H/L indicators

The indicator shows the current setting of the SPEED LO/HI switch. When the Speed Pair switch (SW 1-1 on the Transport Control PCB) is Off, the H indication corresponds to 15 ips and the L indication corresponds to 7.5 ips. When the Speed Pair switch is On, the H indication corresponds to 7.5 ips, and the L indication corresponds to 3.75 ips.

[6] SEARCH ZERO button

Pressing this button causes the MX-55 to enter Search Zero mode, in which the tape will be moved at Fast Wind speed to the location corresponding to 0:00:00 on the Tape Time display and Stop.

Pressing the PLAY button during Search Zero mode causes the MX-55 to enter Play mode immediately upon reaching the zero location.

Pressing any other transport control button (F.FWD, REWIND or STOP) during Search Zero mode causes the MX-55 to leave Search Zero mode and enter the selected mode of operation.

[7] SEARCH 1, 2, 3 buttons

These three buttons are used to store and/or initiate a Search to one of three tape locations.

When a tape location has been stored in a memory corresponding to a SEARCH button, the indicator in that button becomes illuminated.

When the indicator in a particular SEARCH button is not illuminated, no location has been stored in the memory corresponding to that button.

Pressing any one of these buttons, when its associated indicator is not illuminated, causes the tape time, at the instant the button was pressed, to be stored in that Cue Point memory.

Pressing any one of these buttons, after a location has been stored in the Cue Point memory corresponding to that button, causes the MX-55 to move the tape at Fast Wind speed to the location stored as that cue point and then Stop.

NOTE: Search operation is disabled when the MX-55 is in Record mode.

For the first two seconds after a Search has been initiated, the Tape Time display will show the location to which the MX-55 is Searching.

While the MX-55 is Searching to a Cue Point, the indicator in the button will flash.

Pressing the PLAY button during Search mode causes the MX-55 to enter Play mode immediately upon reaching the Cue Point location.

Pressing any other transport control button (F.FWD, REWIND, or STOP) during Search mode causes the MX-55 to leave Search mode and enter the selected mode of operation.

Holding the STOP button pressed and simultaneously pressing any SEARCH button causes the tape location which was stored in that Cue Point memory to be shown on the Tape Time display for about two seconds.

Holding the CLR button pressed and pressing any SEARCH button having its indicator illuminated, causes the tape location stored for that Cue Point to be cleared.

Depending on the position of switches on the Transport Control PCB, Search memory 3 can be used to automatically store, and search to, the last location at which either the PLAY or RECORD button was pressed. If Search Start is enabled, the Search 3 memory cannot be cleared. Refer to **Section 5.3** for further information.

If Switches 2-1 or 2-2 (on the Transport Control PCB) are On, the function of the SEARCH 3 button is changed to Fader Start, Search Start, or Foil Sense On/Off. Refer to **Section 5.3** for further information.

[8] REPEAT button

Pressing this button, then pressing any two illuminated SEARCH buttons, or an illuminated SEARCH button and the SEARCH ZERO button, then pressing PLAY button causes the MX-55 to enter Repeat mode. In Repeat mode the machine plays from one selected point to another, rewinds to the first point and plays again, repeating until stopped. The indicators in the selected SEARCH buttons will flash during Repeat mode and the indicator in the REPEAT button is illuminated.

Pressing the REWIND or FAST FORWARD button during Repeat mode causes the MX-55 to wind the tape to the corresponding Cue Point and Stop. In Repeat mode, the tape cannot be moved beyond the Cue Points.

To exit from Repeat mode, hold the CLR button pressed and press the REPEAT button.

Pressing the REPEAT button again during Repeat mode causes the REPEAT button indicator to flash and the indicator in the selected SEARCH button to become illuminated. In this mode, new cue points can be selected for the Repeat operation without leaving Repeat mode.

[9] CLR button

Pressing this button together with another button cancels or resets the mode associated with that button.

- CLR + SET - deactivates Set mode.
- CLR + TIME-IPS.% - resets the Tape Timer display to 0.00.00.
- CLR + SEARCH 1-3 - clears stored Cue Point memory.
- CLR + REPEAT - deactivates Repeat mode.

If SW 1-4 on the Transport Control PCB is On, pressing the CLR button simultaneously with the SPEED H/L button changes the Tape Speed.

[10] SPEED LO/HI button

If SW 1-4 on the Transport Control PCB is Off, pressing this button twice within one second, or holding this button pressed for more than one second, causes the tape speed to change.

NOTE: The H and L indicators in the button will be alternately illuminated during the one second period.

If SW 1-4 on the Transport Control PCB is On, pressing this button simultaneously with the CLR button causes the tape speed to change.

The last setting of the SPEED LO/HI button will be preserved in memory for several days after the MX-55 is disconnected from AC Power. After that time, the MX-55 will enter High speed (15 or 7.5 ips as determined by the setting of SW1-1 on the Transport Control PCB) when power is first applied to the machine.

For information regarding changing machine Speed Pairs (15/7.5 or 7.5/3.75) refer to **Section 5.3**.

[11] REEL SIZE SUP S/L button
[12] REEL SIZE T.UP S/L button

These buttons select the reel tension to match the Reel size being used.

Set the REEL SIZE button to the L position when using 10.5" NAB reels or 11.8" AEG Hubs on the corresponding Reel Table.

Set the REEL SIZE button to the S position when using any other reel size (5" or 7") on the corresponding Reel Table.

If SW 1-4 on the Transport Control PCB is Off, pressing either of these buttons twice within one second, or holding either button pressed for more than one second, causes the reel tension for that reel (Supply or Take-up) to change.

NOTE: The S and L indicators in the button will be alternately illuminated during the one second period.

If SW 1-4 on the Transport Control PCB is on, pressing either of these buttons simultaneously with the CLR button causes the reel tension for that reel (Supply or Take-up) to change.

The last setting of the REEL SIZE buttons will be preserved in memory for several days after the MX-55 is disconnected from AC Power. After that time, the reel tension will be set to the L position when power is first applied to the machine.

[13] CUE button and indicator

Pressing this button during Fast Wind modes initiates Cue mode, in which the tape lifters retract allowing the tape to be in contact with the Reproduce head for audio monitoring at wind speed.

Holding the CUE button pressed causes the tape lifters to remain retracted as long as the button is held pressed.

Tapping the CUE button quickly causes the lifters to remain retracted until the next time the CUE button is pressed.

In Cue mode, the Line and Monitor audio outputs are attenuated -16 dB to prevent damage to speakers or headphones.

[14] EDIT button and indicator

Pressing this button while in Stop mode causes the MX-55 to enter Edit Ready mode, in which the take-up motor is turned off, the safety switch for the Supply Swing Arm is deactivated, and the EDIT indicator flashes.

Pressing the PLAY button while in Edit Ready mode, or pressing the EDIT button while in Play mode, causes the MX-55 to enter Dump Edit mode, in which the Take-up reel does not rotate allowing tape to be "dumped" from the transport.

Pressing the STOP button during Edit mode causes tape motion to Stop and Edit mode to be canceled.

NOTE: If there is slack in the tape path and the safety switch for the Supply Swing Arm is deactivated, Edit Ready mode will be activated when the EDIT button is pressed, and Dump Edit mode will start when PLAY button is pressed.

[15] RECORD button and indicator

When any channel is in Record Ready mode, the Ready indicator and the Record mode indicator flash. One of two methods of entering Record mode can be selected. The methods are:

1. Pressing this button simultaneously with the PLAY button.
2. Pressing this button while the MX-55 is in Play mode.

Similarly there are two selectable methods of leaving Record mode while tape motion continues. The methods are:

1. Pressing the PLAY button.
2. Pressing the RECORD and STOP buttons simultaneously.

The method of entering and leaving Record mode is selected by the position of SWs 1-2 and 1-3 respectively, on the Transport Control PCB. Refer to **Section 5.3** for further information.

[16] PLAY button and indicator

Pressing this button places the transport into Play mode, in which the tape moves from the Supply reel to the Take-up reel at the currently selected speed.

Pressing this button while in Edit Ready mode places the transport in Dump Edit mode (refer to **Figure 2-2**, [14] EDIT button).

Pressing this button when there is slack in the tape path causes the Take-up reel to rotate very slowly until the slack is removed, then the transport enters Play mode.

To exit from PLAY mode, press the STOP, F.FWD, REWIND or EDIT button.

[17] STOP button and indicator

Pressing this button when the transport is in Record, Play, Dump Edit, Fast Forward or Rewind mode causes the tape motion to stop.

Pressing this button simultaneously with any illuminated SEARCH button (1, 2, or 3) causes the Tape Time display to indicate the tape time stored in the Cue Point memory for that cue number.

Pressing this button when there is slack in the tape path causes the Take-up reel to rotate very slowly until the slack is removed.

[18] REWIND button and indicator

Pressing this button places the transport into Rewind mode, in which the tape moves from the Take-up reel to the Supply reel at Fast Wind speed and the REWIND indicator is illuminated.

To exit from Rewind mode, press the STOP, PLAY or F.FWD button.

[19] F.FWD button and Indicator

Pressing this button places the transport into Fast Forward mode, in which the tape moves from the Supply reel to the Take-up reel at Fast Wind speed and the F.FWD indicator is illuminated.

To exit from Fast Forward mode, press the STOP, PLAY or REWIND button.

2.3 Head Assembly

NOTE: Numbers in square brackets [] refer to callouts in **Figure 2-3**.

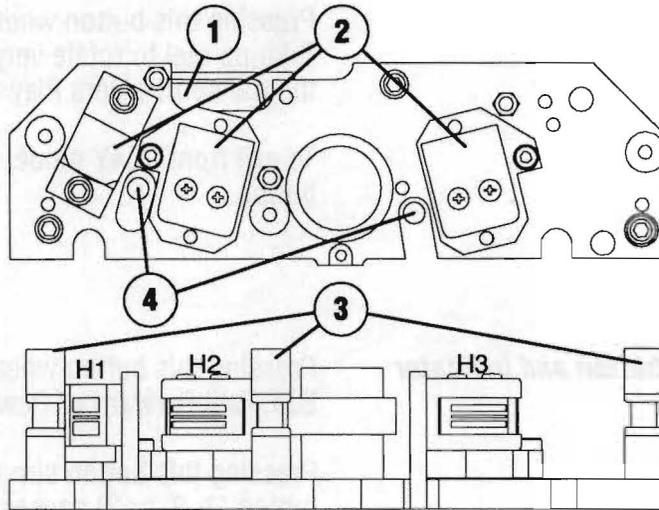


Figure 2-3
Head Assembly

[1] Head connector

The Head connector is connected directly to the Head Amplifier.

[2] Heads

Head azimuth, height, zenith and wrap are individually adjustable on the Reproduce and Record Heads.

HEAD ARRANGEMENT (MX-55N-M Model)

H1 (Erase)	H2 (Record)	H3 (Reproduce)
2trk 2ch	2trk 2ch	2trk 2ch

HEAD ARRANGEMENT (MX-55T, MX-55T-M Model)

H1 (Erase)	H2 (Record)	H3 (Reproduce)
3trk 3ch	3trk 3ch	3trk 3ch

[3] Tape Guides

These fixed guides direct the tape motion across the heads.

[4] Tape Lifters

The Tape Lifters are extended when the MX-55 is in Fast Forward and Rewind modes to separate the tape from the heads and are retracted while in Stop, Record, Play, Edit and Cue modes.

2.4 Amplifier Panel

NOTE: Numbers in square brackets [] refer to callouts in **Figure 2-4**.

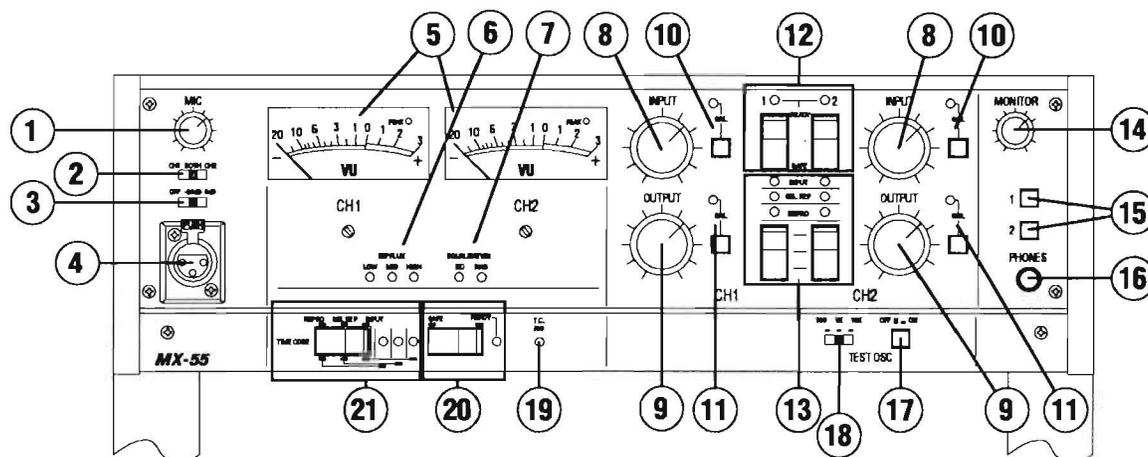


Figure 2-4
Amplifier Panel

[1] MIC Level control

Adjusts the microphone input level.

If the Level control does not have enough range of adjustment, change the setting of the Mic Input Sensitivity switch.

[2] CH 1/BOTH/CH 2 Channel Assignment switch

This switch selects the channel to which the microphone input signal is connected.

[3] OFF/0/-20 Mic Input Sensitivity switch

If the output level of microphone in use is about 70 dB, set this switch to the 0 position, and to the -20 position for microphones having about -50 dB output level. Set this switch to the Off position when Mic is not used.

[4] MIC Input connector

This XL type connector accepts microphones having output impedance of 150 Ohms to 10 kOhms.

Pin 1 of the connector is connected to shield (GND), pin 2 is connected to Signal Low, and pin 3 is connected to Signal High.

[5] VU meters

Each back-lit VU meter incorporates a PEAK indicator which illuminates when the signal reaches a level equivalent to 1040 nWb/m.

[6] REF FLUX LOW/MID/HIGH indicators

These indicators show the selected reference flux level. The selection of reference flux level is made with the REF FLUX LOW/MID/HIGH switch on the Connector Panel and each switch position corresponds to following flux level.

USA

HIGH = 370 nWb/m

MID = 250 nWb/m

LOW = 185 nWb/m

EURO

HIGH = 510 nWb/m

MID = 320 nWb/m

LOW = 250 nWb/m

For information regarding selection of USA/EURO flux level settings, refer to **Section 5.3.1.7**.

[7] EQUALIZATION IEC/NAB indicators

These indicators show the selected equalization. Selection of equalization is made with the EQUALIZATION IEC/NAB switch located on the Connector Panel.

**[8] INPUT level control
[9] OUTPUT level control**

These controls adjust the line input and output levels. When the SRL button associated with an INPUT or OUTPUT control is pressed, and its indicator illuminated, the level control has no affect.

If the Level control does not have enough range of adjustment, change the setting of the LINE LEVEL LOW/HIGH switch and perform the level matching adjustment described in **Section 4.3**.

**[10] INPUT SRL switch & indicator
[11] OUTPUT SRL switch & indicator**

When one of these switches are pressed, the 0 VU indication on the corresponding VU meter corresponds to the reference flux level selected by the REF FLUX LOW/MID/HIGH switch.

**[12] READY/SAFE switches
and READY Indicators**

Setting one or both of these switches to the Ready position places the corresponding channel(s) into Record Ready mode, in which the channel(s) will enter Record mode when the RECORD and PLAY buttons are pressed simultaneously. Setting this switch to the Ready position while the MX-55 is in Record mode places the channel in Record mode immediately.

Setting one or both of switches to the Safe position places the corresponding channel(s) into Safe mode, in which recording cannot take place.

Setting either READY/SAFE switch to the Safe position while the MX-55 is in Record mode causes that channel to leave Record mode immediately.

The READY indicator flashes when the channel is in Record Ready mode, and becomes steadily illuminated when the channel is in Record mode.

**[13] INPUT/SEL-REP/REPRO select
switches and Indicators**

These switches select the machine output and monitor signals.

When an INPUT/SEL-REP/REPRO switch is set to the Input position, the signal at that channel's OUTPUT connector, VU Meter, and Monitor Select switch is the signal present at that channel's INPUT connector, or the Test Oscillator signal if it is activated. The Amber indicator will be illuminated.

When an INPUT/SEL-REP/REPRO switch is set to the Sel-Rep position, the signal at that channel's OUTPUT connector, VU Meter, and Monitor Select switch is the signal present on tape reproduced by that channel's Record head. The Green indicator will be illuminated.

When an INPUT/SEL-REP/REPRO switch is set to the Repro position, the signal at that channel's OUTPUT connector, VU Meter, and Monitor Select switch is the signal present on tape reproduced by that channel's Reproduce head. The Red indicator will be illuminated.

[14] MONITOR level control

Adjusts the level of the signal at the monitor speaker and at the PHONES jack.

- [15] Monitor Select buttons** Pressing one or both of these buttons causes the selected channel's output signal to be fed to the built-in monitor speaker and to the PHONES jack.
- [16] PHONES connector** This 1/4" tip-ring-sleeve phone jack provides signal output for headphones having input impedance of 8 Ohms and greater. Inserting a headphone plug into this jack mutes the built-in monitor speaker.
- [17] TEST OSC Off/On button** Pressing this button causes the internal Test Oscillator to be alternately activated and deactivated.
- [18] Oscillator Frequency
100 1K 10K Select switch** The setting of this switch controls the frequency of the built-in Test Oscillator.
- [19] T.C. SIG indicator**
(Models MX-55T and MX-55M-T Only) This indicator illuminates when Time Code is present on tape, when in T.C. Repro or T.C. Sel-Rep modes, or at the Rear Panel T.C. INPUT (CH3) Connector when in T.C. Input mode.
- [20] T.C. READY/SAFE switch
and Indicator**
(Models MX-55T and MX-55M-T Only) Setting this switch to the Ready position places the Time Code channel into Record Ready mode, in which the Time Code channel will enter Record mode when the RECORD and PLAY buttons are pressed simultaneously. Setting this switch to the Ready position while the MX-55 is in Record mode places the Time Code channel in Record mode immediately.
- Setting this switch to the Safe position places the Time Code channel into Safe mode, in which recording cannot take place.
- Setting this switch to the Safe position while the MX-55 is in Record mode causes the Time Code channel to leave Record mode immediately.
- The READY indicator flashes when the Time Code channel is in Record Ready mode, and becomes steadily illuminated when the Time Code channel is in Record mode.

**[21] INPUT/SEL-REP/REPRO select
switches and Indicators
for Time Code**

(Models MX-55T and MX-55M-T Only)

This switch selects the Time Code output and monitor signals.

When the switch is set to the Input position, the signal at the Time Code channel's OUTPUT connector, and T.C. SIG indicator is the signal present at the Time Code channel's INPUT connector. The Amber indicator will be illuminated.

When the switch is set to the Sel-Rep position, the signal at the Time Code channel's OUTPUT connector and TC SIG indicator is the Time Code signal present on tape reproduced by the Time Code channel's Record head. The Green indicator will be illuminated.

When the switch is set to the Repro position, the signal at the Time Code channel's OUTPUT connector and TC SIG indicator is the Time Code signal present on tape reproduced by the Time Code channel's Reproduce head. The Red indicator will be illuminated.

2.5 Audio Connector Panel

MX-55N-M and MX-55T-M models have an Audio Connector Panel located on the rear of the Amplifier assembly. The Audio Connector panel contains the connectors for amplifier input and output and the Equalization, Line Level, and Reference Flux Level select switches.

On the MX-55T, these connectors and switches are located on the Transport rear panel.

NOTE: Numbers in square brackets [] refer to callouts in **Figure 2-6**.

[1] INPUT and OUTPUT connectors These XL type connectors are for audio input and output. Pin 1 is connected to the shield, Pin 2 is connected to the signal cold and Pin 3 is connected to signal hot.

[2] REF FLUX LOW/MID/HIGH switch This switch selects the reference flux level for recording and playback. The positions correspond to the following reference levels.

USA	EURO
HIGH = 370 nWb/m	HIGH = 510 nWb/m
MID = 250 nWb/m	MID = 320 nWb/m
LOW = 185 nWb/m	LOW = 250 nWb/m

Refer to **Section 5.3.1.7** for more information regarding selection of USA/EURO Reference Flux Levels.

[3] EQUALIZATION IEC/NAB switch This switch selects the equalization for recording and playback. This switch should be set to the NAB position when using NAB standard equalization for recording and playback. This switch should be set to the IEC position when using IEC standard equalization for recording and playback.

[4] LINE LEVEL LOW/HIGH switch This switch selects the level for the LINE INPUT and OUTPUT connectors.

Set this switch to the HIGH position if your standard operating level is close to 0 dBm (e.g., +4 dBm). If it is close to -20 dBm (e.g., -10 dBm), set the switch to the LOW position.

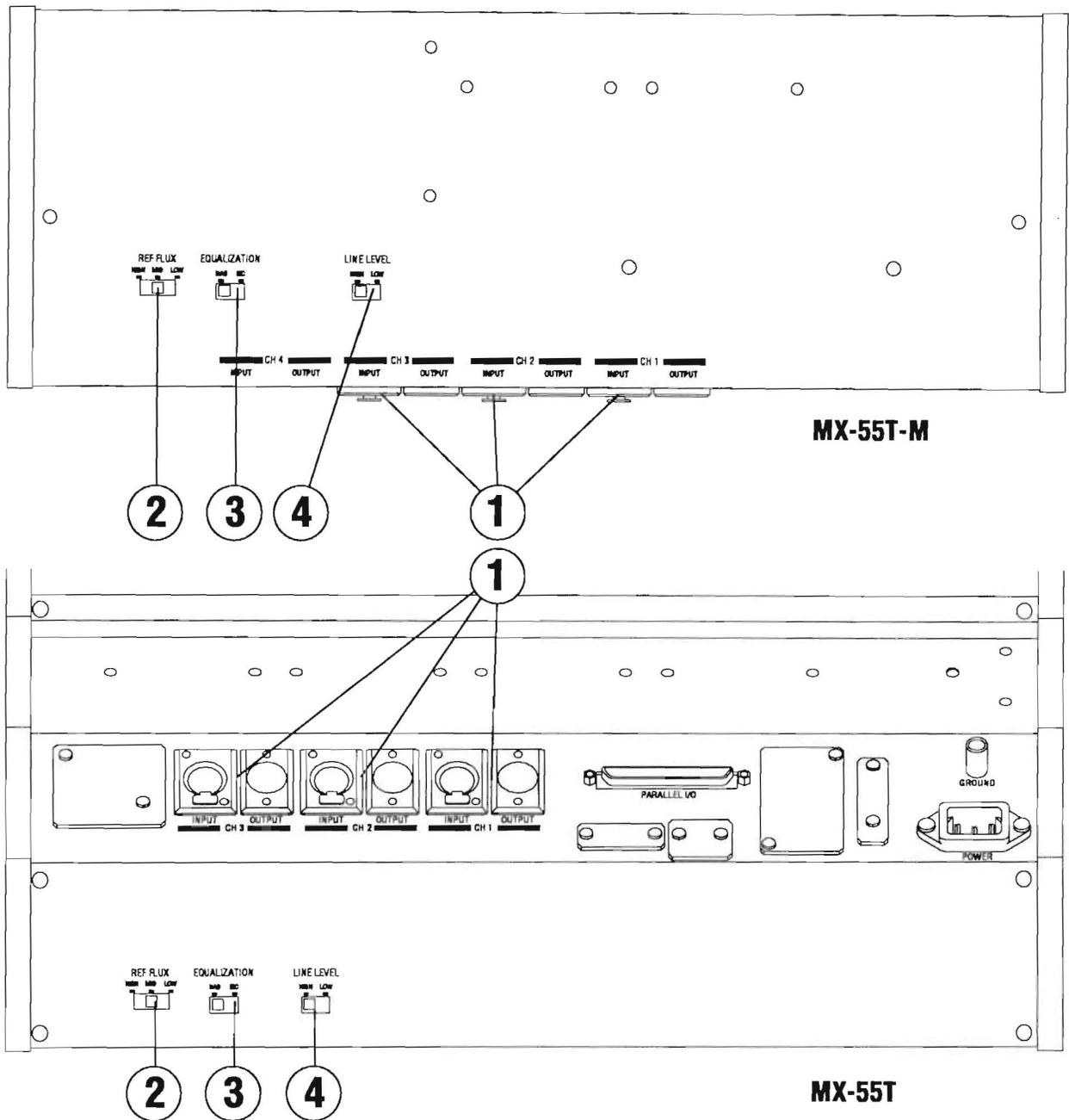


Figure 2-5
Amplifier Connector Panel

2.6 Transport Connector Panel

NOTE: On the MX-55T model, the Transport Connector panel contains the Audio Input and Output connectors in addition to those listed here.

NOTE: Numbers in square brackets [] refer to callouts in **Figure 2-6**.

[1] PARALLEL I/O connector

This 37 conductor D-type connector contains Transport Control command lines, status tally signals, and external capstan speed control signals. Refer to **Section 5.2.4** for further information about connector pin assignment, signal levels and control requirements.

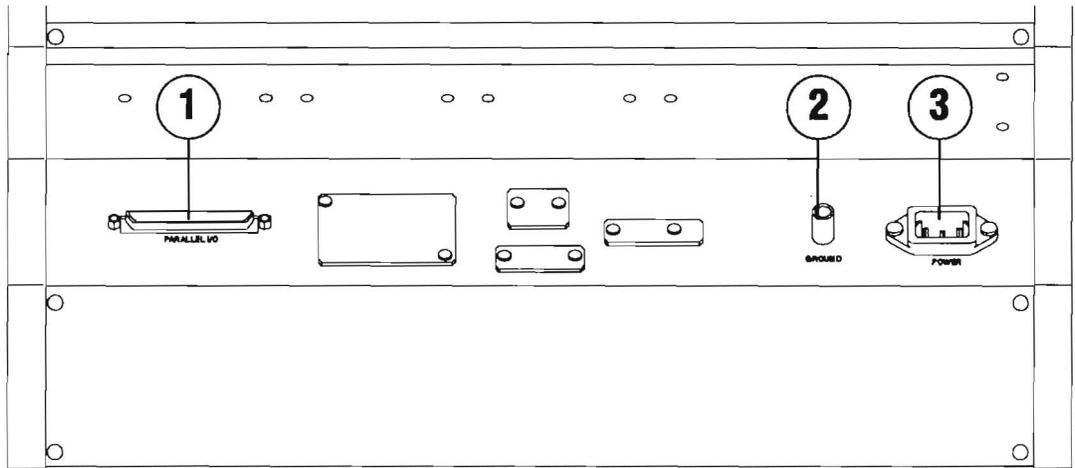
The optional CB-127 Remote Control connects to this connector.

[2] GROUND terminal

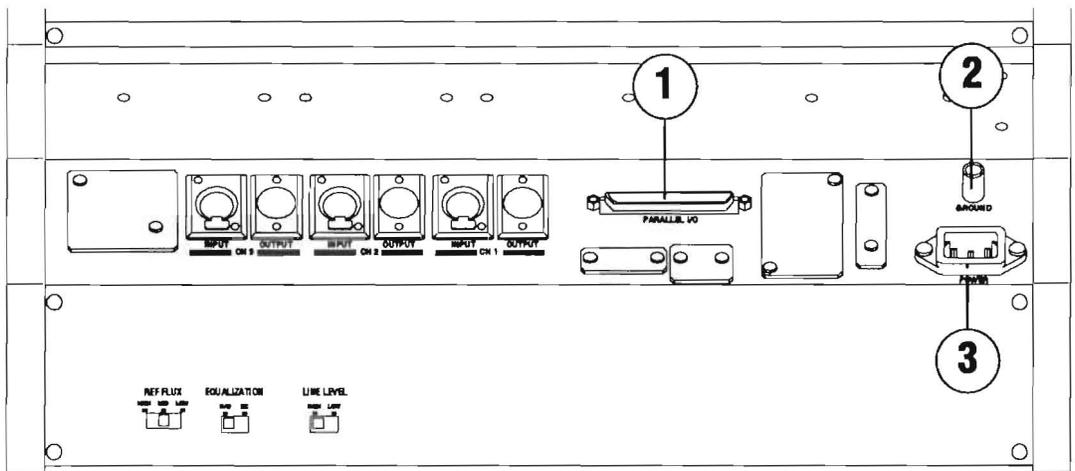
This connector provides a location for connecting an external chassis ground to the MX-55.

[3] POWER input connector

Connect the supplied AC Power cord to this connector. Refer to **Section 5.2.2** for information regarding changing the selection of AC mains voltage.



MX-55T-M (Bottom View)



MX-55T (Rear View)

Figure 2-6
Transport Connector Panel

2.7 Controls on Audio Amplifier PCB Assembly

INPUT LEVEL trimmer (VR 1)	This trimmer adjusts the level of the signal input to the Record electronics.
REC EQ HI trimmer (VR 2)	This trimmer adjusts the High Speed record equalization.
REC EQ LOW trimmer (VR 3)	This trimmer adjusts the Low Speed record equalization.
REC LEVEL trimmer (VR 4)	This trimmer adjusts the level on tape of the signal being recorded.
REPRO LEVEL trimmer (VR 6)	This trimmer adjusts the level of the signal reproduced from the tape in Play mode.
SEL-REP LEVEL trimmer (VR 5)	This trimmer adjusts the level of the signal reproduced from the tape in SEL-REP mode.
REPRO EQ HI SPD HF/LF trimmers (VR 7/VR 8)	These trimmers adjust the High and Low Frequency reproduce equalization, respectively, at the High tape speed.
REPRO EQ LO SPD HF/LF trimmers (VR 9/VR 10)	These trimmers adjust the High and Low Frequency reproduce equalization, respectively, at the Low tape speed.
OUTPUT LEVEL trimmer (VR 12)	This trimmer adjusts the level of the signal at the OUTPUT connector.
PEAK LED TRIGGER LEVEL trimmer (VR 11)	This trimmer adjusts the Trigger level for Peak level indicator.
BIAS SYMMETRY trimmer (VR 13)	This trimmer adjusts the Bias waveform symmetry.
OVERBIAS trimmer (VR 14)	This trimmer adjusts the level of the Record bias applied to the tape during recording.
ERASE CURRENT trimmer (VR 15)	This trimmer adjusts the level of the Erase current applied to the Erase Head during recording.
Bias Check points (CP 4/CP 7)	Those check points are used to measure the Bias current. CP 4 is connected to Ground and CP 7 is connected to the hot side.
Erase Check points (CP 5/CP 6)	Those check points are used to test for the presence of Erase Bias when replacing the Erase Head.

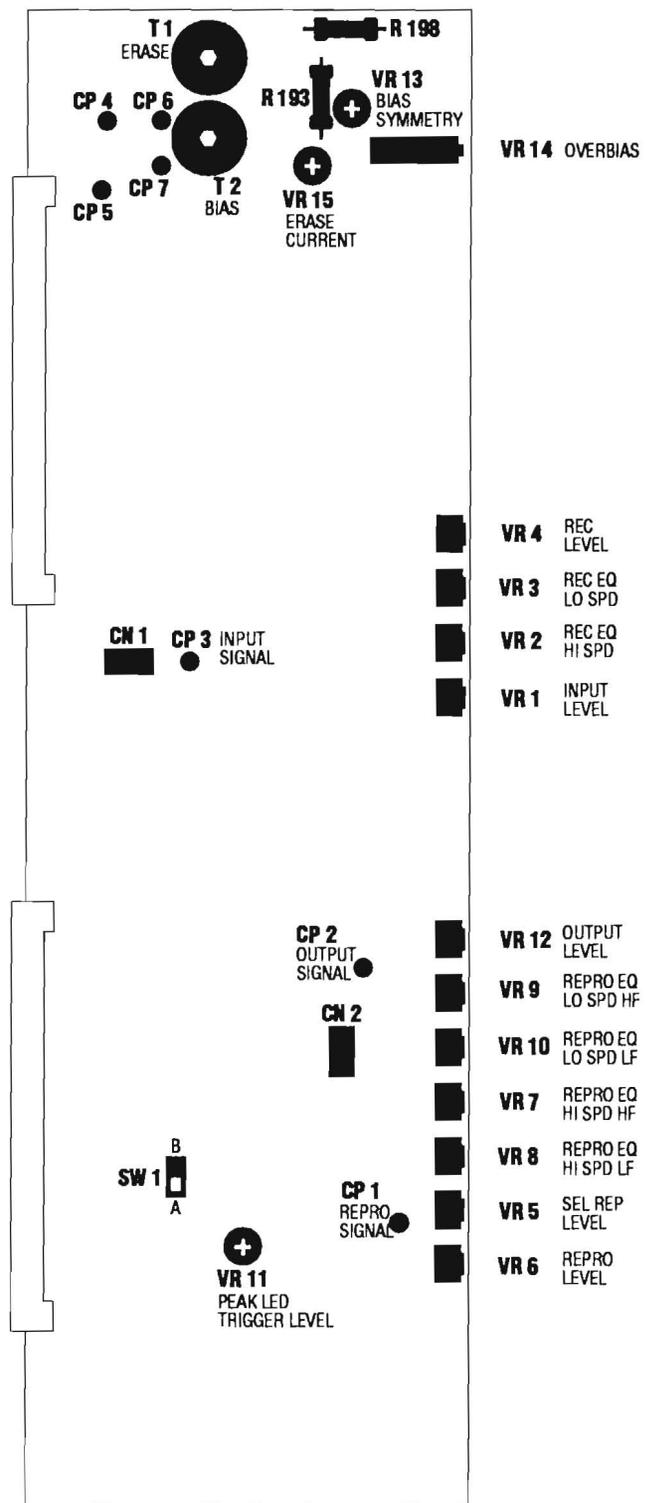


Figure 2-7
Controls on the Audio Amplifier PCB Assembly

2.8 Controls on Mic Amplifier PCB Assembly

Oscillator Waveform trimmer (VR 1) This trimmer is used to adjust the waveform of the Test Osc signal for minimum distortion.

Osc level trimmer (VR 2) This trimmer is used to adjust the output level of the Test Osc signal.

Dolby HX-Pro On/Off switch (SW 1) This switch turns the Dolby HX-Pro Headroom Extension system on and off.

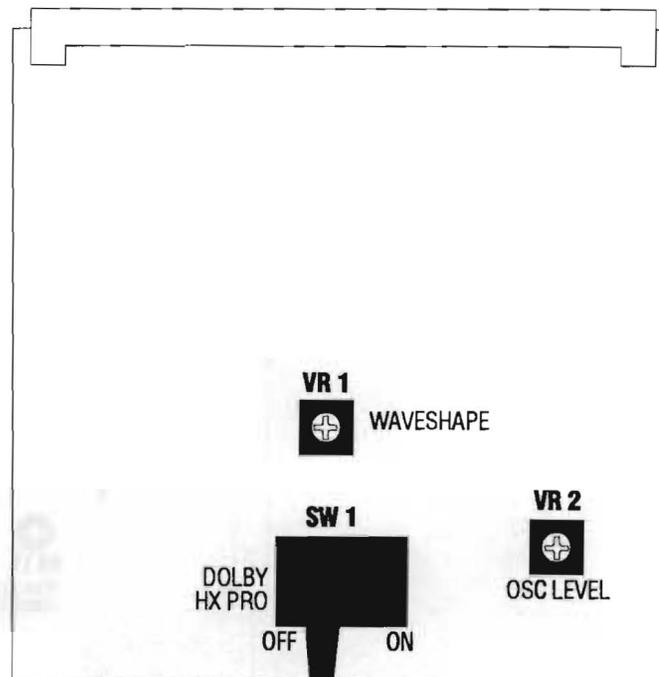


Figure 2-8
Controls on the Mic Amplifier PCB Assembly

2.9 Controls on Mother Board PCB Assembly

There are four DIP type switches (SW 1 ~ SW 4) on the Mother Board PCB Assembly. Each switch controls the same functions for the corresponding amplifier PCB assembly.

Switch Selection 1 ~ 6

Gapless Punch In/Out timing.*

Switch Selection 7

Selects staggered or in-line Erase head.*

Switch Selection 8

Selects whether the Rec indicator flashes in Transport Record mode

Off: Rec indicator flushes in the Transport Record mode after changing the READY/SAFE switch to the Safe position.

On: Rec indicator does not flush in the Transport Record mode after changing the READY/SAFE switch to the Safe position.

* Do not change these settings.

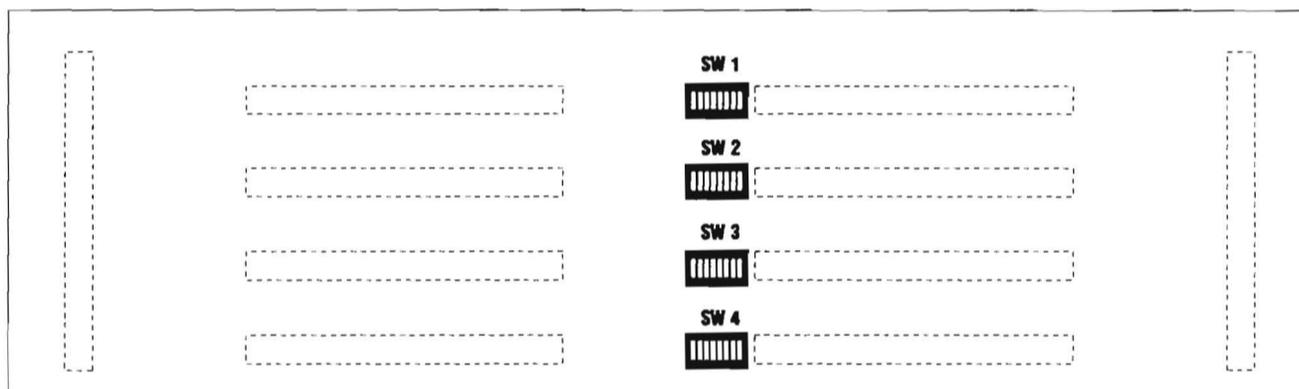


Figure 2-9

Controls on the Mother Board PCB Assembly

Notes:

A series of horizontal dotted lines for taking notes.