PROFESSIONAL

Model PMD740 User Guide

6 Channel Mixer / 4 Track Recorder

marantz®

ENGLISH

FOREWORD

This section must be read carefully before any connection is made to the mains supply.

WARNINGS

- Do not expose the equipment to rain or moisture
- Do not remove the cover from the equipment.
- Do not insert anything into the equipment through the ventilation holes.
- Do not handle the mains lead with wet hands.

COPYRIGHT

Recording and playback of some material may require permission. For further information refer to the following:

- Copyright Act 1956
- Dramatic and Musical Performers Act 1958
- Performers Protection Acts 1963, and 1972
- Any subsequent statutory enactments and orders

PRECAUTIONS

The following precautions should be taken when operating the equipment.

GENERAL PRECAUTIONS

When installing the equipment ensure that:

- the ventilation holes are not covered.
- air is allowed to circulate freely around the equipment.
- it is placed on a vibration-free surface.
- it will not be exposed to excessive heat, cold, moisture or dust.
- it will not be exposed to direct sunlight.
- it will not be exposed to electrostatic discharges.

In addition, never place heavy objects on the equipment.

If a foreign object or water does enter the equipment, contact your nearest dealer or service center.

Do not pull out the plug by pulling on the mains lead; grasp the plug.

It is advisable when leaving the house, or during a thunderstorm, to disconnect the equipment from the mains supply.

Really Important Stuff to Know Before You Start

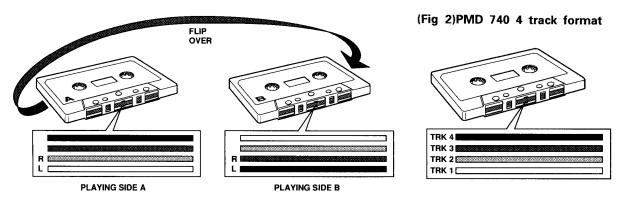
1. Track Format: 4 tracks on a standard cassette

Stereo music requires 2 tracks of tape—one for the left speaker, and one for the right speaker. That is why stereo tape is sometimes referred to as 2-track tape.

Stereo cassettes actually have 4 tracks on the tape. Tracks 1 and 2 comprise the stereo music on side A, and tracks 3 and 4 comprise the stereo music on side B. See figure 1.

In order to record and play 4 tracks simultaneously, the PMD74O uses the two tracks from side A, and the two tracks from side B at the same time. See figure 2. Effectively, PMD74O 4-track tapes do not have a side B—they only have a side A.

(Fig 1) Normal Stereo Cassette Track Format



You cannot turn a PMD74O four track tape over, and record more tracks on side B.

To protect yourself from accidentally using side B, and destroying your work, you can break the record-protect tab on the top right side of the tape (looking at side A).

2. Tape Type

The PMD74O is designed to provide optimum performance with high quality chrome tapes (sometimes called $Cr0_2$, Type II, or High-position tape). Marantz recommends the use of these chrome tapes in C-90 (90 minute) or C-6O (60 minute) lengths. Longer tapes (0-100, 0-120) may be too thin to maintain sound quality during heavy use (such as long overdub sessions), and shorter tape will not provide much recording time. Because you cannot use side B of the tape, a 0-60 = 30 minutes of recording at normal speed, and 15 minutes of recording at high (double) speed.

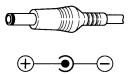
3. Impedance

When you connect other equipment to the PMD74O, be aware of impedance matching. As a rule, you may connect lower-impedance outputs to higher-impedance inputs.

4. Power supply

The PMD740 is shipped with a DC power supply. If any DC adapter other than the DA74OPMD is used, be sure that the voltage, amperage, and polarity of the adapter are the same as that of the DA74OPMD.

Polarity of AC adaptor.



BUTTONS AND CONTROLS (See page 15,16)

1 INPUT SELECTOR SWITCH (Channels 1-4)

These switches select the source of input to the mixer section.

MIC/LINE

In the Mic/Line position, the input for that channel will come from the back panel XLR or 1/4" jack for that channel. See also the XLR switch,

OFF

The off position is used to mute all input to that channel.

TAPE

When Channels 1-4 have "Tape" selected as their input source, the corresponding tape track will be routed to that channel, instead of the Mic or Line source plugged into the back. For example, if channel 3 is set to "Tape" input, then channel 3 will get it's signal from tape track 3, regardless of what is plugged into Mic or Line input #3 on the back panel.

2 DIRECT ASSIGN SWITCH (Channels 5 and 6)

The Direct Assign switch allows you to route the output of channels 5 and 6 directly to one track, before being mixed with other channels, effects, etc. This is useful for recording an isolated signal on a track of it's own, while still being able to hear it in the mix.

Channel 5

The Direct Assign Switch for Channel 5 has three positions: TRK 1, DIRECT OFF (L/R) and TRK 3.

Channel 6

The Direct Assign Switch for Channel 6 has three positions: TRK 2, DIRECT OFF (L/R) and TRK 4.

3 XLR SWITCH (Channels 1-4)

These switches are found only on the first four channels. When they are in the BAL (down) position, the channel is expecting input from its XLR connector. When in the UNBAL (up) position, the channel will expect input from its 1/4' connector. Both can be used for either mic or line level inputs.

4 TRIM CONTROL

When the channel input selector is set to TAPE, this knob has no effect. The TAPE input level is fixed.

When the input selector is switched to MIC/LINE, these controls adjust how much signal goes from the channel input jack (on the back panel) to the preamplifier for that channel. This is only the first "gain stage" for the channel. If you use this control to set a "rough" volume level, you can use other controls for finer adjustment.

5 HI EQ/LOW EQ CONTROL

These Equalization controls are found on each of channels 1-6. They control the High (Treble) and Low (Bass) frequency content of the signal on that channel.

6 MID EQ GAIN (Channels 1-4)

Like the HI and LOW EO controls, the MID EQ has control over amplification and attenuation (sometimes called boost and cut) of a range of frequencies.

7 MID EQ SHIFT (Channels 1-4)

The HI EQ affects all frequencies above a certain "hinge" frequency (10 kHz). The LOW EQ affects all bands below a certain "hinge" frequency (100 Hz). The MID EQ affects a group, or "band" of frequencies in between.

The MID EQ SHIFT control sets the middle point, or "center frequency" for this band. If this control is turned all the way to the left, then the MID EQ GAIN will control a band of frequencies centered around approximately 160 Hz. If this control is turned all the way to the right, then the MID EQ GAIN will control a band of frequencies centered around approximately 7.5 kHz.

8 O FACTOR (Channels 1-4)

Let's say that we have chosen a center frequency with the MID EQ SHIFT control above. We know the center frequency of the band, but we don't know the bandwidth. Put another way, we know that we are going to control a "group" of frequencies, but we don't know how big this group is.

The 0 FACTOR control lets us specify a NARROW band (small group) of frequencies, or a WIDE band (large group of frequencies).

With the switch in the NARROW (up) position, the EQ curve rolls off at 12 dB per octave, on either side of the center frequency. With the switch in the WIDE (down) position, the EQ curve rolls off at 6 dB per octave on either side of the center frequency.

9 EFFECT

With this control, each channel can individually adjust how much of its signal will go the effects bus.

10 EFFECT MASTER

The EFFECT MASTER controls the total output level of the entire EFFECTS BUS.

11 EFFECT RETURN

After the signal leaves the effects bus, via the EFFECT OUT on the rear panel, it is processed by your effects unit, and the new, modified signal is returned to the PMD74O. It enters the PMD74O through the stereo EFFECTS RETURN JACKS on the rear panel, and then SOME of it is mixed back into the stereo bus. HOW MUCH of this signal is mixed into the stereo bus, is controlled by the EFFECT RETURN knob.

12 PAN

All 6 channels are routed to the stereo bus. How much signal goes to the left side, and how much goes to the right side is controlled by the PAN (panorama) controls.

13 CHANNEL FADERS

The CHANNEL FADER is the second gain stage. Once a general level is set at the TRIM control, this fader can be used to make further adjustments to the volume of the signal. The signals from all of the CHANNEL FADERS are combined, and then go to the STEREO BUS. The total level of this combined signal is controlled by the MASTER FADER.

14 MASTER FADER

After all six channels of the mixer, the stereo line input and the effects return have been combined on the stereo bus, the master fader controls the master level of this combined signal which is then sent to the stereo line outs, and to the headphones.

I5 PHONES 1

This knob controls output volume of the PHONES 1 jack on the front panel. PHONES 1 always monitors the STEREO BUS (line out)

16 PHONES 2

This knob controls output volume of the PHONES 2 jack on the front panel. The signal going to PHONES 2 can be switched with the PHONES 2 SELECTOR switch.

17 PHONES 2 SELECTOR

The PMD74O has two independent headphone jacks. While the first is exclusively for monitoring the STEREO BUS, the second can be switched between three sources. Depending on the position of this switch, PHONES 2 will monitor 1) the STEREO BUS, 2) the tape CUE combined with the STEREO BUS, or 3) the EFFECTS BUS.

18 SYNC

The SYNC switch re-routes the input and output of track 4 to the special SYNC IN/OUT terminals on the back of the PMD74O. This allows a permanent connection to a MIDI• or SMPTE synchronizer, without tying up mixer channels, and without tying up track 4 on non-SYNC recordings.

When the SYNC switch is ON, track 4 is re-routed to the SYNC IN/OUT on the back panel. When SYNC is OFF, track 4 is not re-routed, and behaves like any other track.

19 SYNC OUT

The SYNC OUT knob controls the level at which sync tones are output. Various kinds of synchronizers require different level signals at their input. This control allows you to match the PMD740's sync output level with the input level of your synchronizer. The sync tone must already have been properly recorded on track 4, and the SYNC switch must be set to ON before this control has any effect.

In most cases, the SYNC OUT control will be set at the NORM (hard right) position. If the output SYNC signal is too strong, it may be attenuated by turning the SYNC knob to the Left.

NOTE

dbx noise reduction may interfere with using a synchronizer. Test your sync system with dbx on, and if you encounter problems, leave dbx off for your synchronized recordings. Also note that recording onto Track 3 at high levels while synchronizing may interfere with the SYNC output. If you are recording to Track 3, and are having trouble synchronizing, try recording to Track 3 at a lower level.

20 METER SELECTOR

This switch selects either of the two meter modes. With the switch in the TRK position, meters 1-4 show the signal recorded on their respective tracks. In L/R/CUE/EFFECT, meters 1-4 show the following:

Meter 1: Left side of the **STEREO BUS**

Meter 2 Right side of the STEREO BUS

Meter 3 Master output level of the CUE BUS

Meter 4 Master output level of the EFFECTS BUS

21 vu meter

These four large VU meters are backlit in green for easy viewing from a distance or in a dark studio. When a track enters record mode, the corresponding meter light will change from green to red, to indicate recording. When the track is no longer recording, the meter changes back to green. Note that while other indicators light to show that tracks are armed or that the machine is in record-pause mode, the VU meter color does not change until the transport is moving, and the unit is ACTUALLY RECORDING. This is an excellent form of visual feedback, to monitor the functioning of the PMD74O.

22 TAPE CUE

These controls adjust the level of each track going to the cue bus. This signal is then sent to the CUE OUT on the rear panel. This signal may also be sent to the output of PHONES 2 if the PHONES 2 SELECTOR switch is set to CUE.

23 RECORD SELECT Switches and LEDs

These switches serve two functions. First, they arm and disarm each track for recording—i.e., they make it possible or impossible to record on a track. With a switch in the SAFE position, the track is SAFE (or "disarmed"). This means that you cannot accidentally record on that track. This is particularly important when you finally get "the perfect take" of a guitar solo, and you want to protect yourself from mistakenly recording over it. When a switch is in the LEFT, RIGHT, or DIRECT positions, it is considered "armed". The red light flashes on next to the switch, and it is possible to record onto that track.

The second function the RECORD SELECT switches serve, is to designate a source for recording.

$24_{\rm dbx\,NR}$

This is the On/Off switch for the dbx noise reduction system. dbx is an Encode/Decode system of noise reduction. This means that the system does half of its work when recording the tape (encoding), and half of its work while playing the encoded tape back (decoding). Therefore, it is very important that tapes recorded with dbx on, be played back with dbx on. Also, tapes recorded with dbx off should be played back with dbx off.

25 PITCH CONTROL

This slider allows +I— 10% variation in tape speed, and the associated pitch changes. This can be used to correct tunings or for special effects. A center detente allows you to locate the "normal" speed by feeling for the center "click".

26 SPEED

This switch selects one of the PMD74O's two tape speeds. The higher tape speed provides lower noise, and better frequency response, so we recommend that all important recordings be made on high speed.

27 TAPE COUNTER

This display shows the current tape counter location, in addition to the location of various memory points, etc.

There are several LEDs located on the TAPE COUNTER display, directly above the numbers. These LEDs indicate what the number on the display means. You can press the DISPLAY button to step through the various display modes.

28 AUTO FUNCTIONS

This section is used for the operation of the PMD74O's Automatic functions. While the specific operation is covered in more detail in another section, we will define the keys and their basic functions here.

MEMORY 1 This key defines MEMORY 1 as the current tape location.

MEMORY 2 This key defines MEMORY 2 as the current tape location.

>>0<< This key will fast wind (forward or reverse) to 0000 on the TAPE COUNTER

>>1<< This key will fast wind (forward or reverse) to MEMORY 1 on the TAPE COUNTER

1<<2 This key toggles the Auto-Rewind mode. When this mode is ON, the transport will

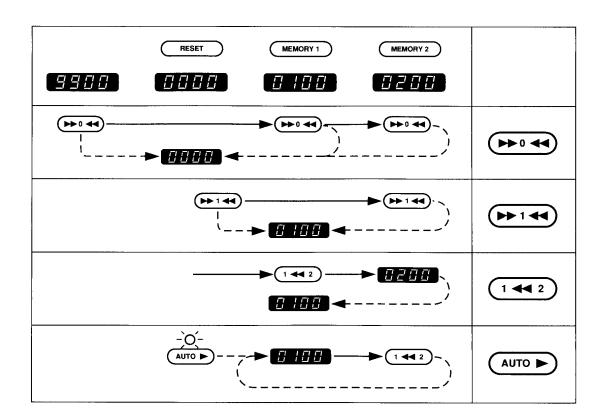
automatically rewind to MEMORY 1 when it hits MEMORY 2.

AUTO> This key toggles the Auto-Play mode. When this mode is ON, the transport will

automatically enter PLAY mode when the transport stops. This is particularly useful in conjunction with the >>1<< key, to begin playback at a specific point, or in conjunction

with the 1<<2 key, to hear and rehearse a section repetitively.

AUTO REC This key engages the AUTO-RECORD MODE. Its operation is covered in much greater detail in the Advanced Recording Section.



9

29 PLAY

Press this button to start playback of the tape. If the tape is in record-pause mode, you can press this button to begin recording. See also #33. When the PLAY button and the FF (or REW) button are pressed simultaneously, the tape transport will enter cue (review) mode. You will now hear the contents of the tape played at the Fast-wind speed. This is very useful for locating a section of a partially recorded tape for playback or recording. Once in cue/review mode, releasing the FF/REW button will re-enter normal play mode. You can toggle cue/review and play modes by holding down the play button, and toggling the fast wind buttons.

$30\,\mathrm{FF}$

Press this button to FAST FORWARD the tape. (See also 'CUE' in 'PLAY' above.)

31 REW

Press this button to rewind the tape. (See also 'REVIEW' in 'PLAY' above).

32 STOP

Press this button to stop the tape.

33 REC

Press this button to enter record-pause mode. Then press play, or pause to begin recording.

34 REC indicator

This LED, located above the record button, can have any one of three values. Each value shows the status of the recorder.

RED You are currently in record-pause, or record-play mode, and tracks are selected (armed) by the RECORD SELECT switches.

GREEN You are currently in record-pause, or record-play mode, but no tracks are selected by the RECORD SELECT switches. If any track is selected, that track will immediately enter record.

NO LIGHT You are not in record mode, and cannot record, regardless of which (if any) tracks are armed with the RECORD SELECT switches.

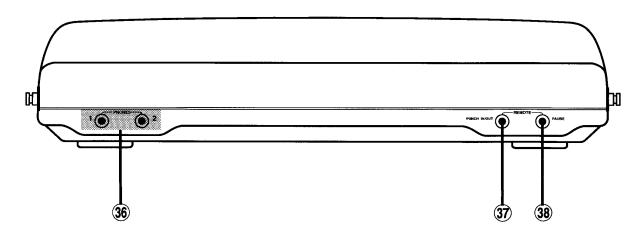
35 PAUSE

During playback or record, this button will stop the transport, but it will not disengage the heads. To start the transport again, press the pause button again. This is called "releasing" the transport from pause mode. Pausing and releasing the transport allows you to start and stop the tape more quickly and accurately than is possible with STOP and PLAY.

In record mode, engaging pause will stop the transport, but still allow you to monitor source signals on the VU meters, whereas pressing stop will not allow you to monitor source signals.

Front and Rear Panel Connections

Drawing of front panel



36 PHONES 1 and 2

PHONES 1 and 2 jacks are stereo 1/4" (TRS) jacks, for connecting 2 pairs of stereo headphones. PHONES 1 monitors the stereo bus, and its level is controlled by the PHONES 1 control on the front panel. PHONES 2 Can monitor the CUE, the STEREO BUS, or the EFFECT BUS. This is controlled by the PHONES 2 SELECTOR. The level is controlled by the PHONES 2 control on the front panel.

37 remote punch in/out

The REMOTE PUNCH IN/OUT jack is used for connecting an optional PUNCH IN/OUT pedal. While overdubbing, a musician can punch in and out of record mode by pressing on this pedal, even if both hands are busy playing an instrument, etc.

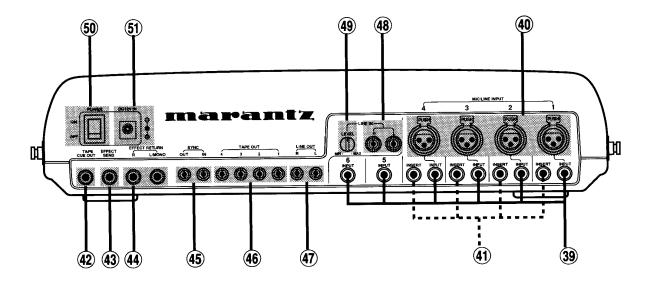
38 REMOTE PAUSE

The REMOTE PAUSE jack is used for connecting an optional PAUSE pedal. This allows you to PAUSE either playback or recording even when both hands are busy, or you are not close to the controls.

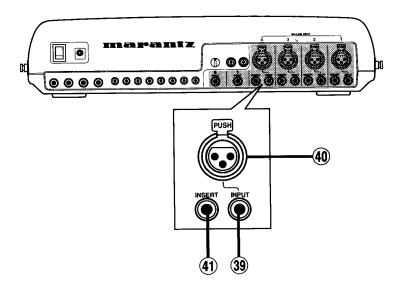
• ABOUT FOOTPEDALS -

The PMD74O is designed for use with a **normally open** momentary contact footswitch, such as the Marantz FP74OPMD Remote Punch Pedal.

Drawing of rear panel



Mic/Line/XLR/Insert Jacks



39 MIC/LINE

There are six 1/4" MIC/LINE input jacks—one for each of the six channels on the mixer. These inputs are high impedance inputs, and can accept high or low impedance microphones, or line level signals—such as synthesizers, electric guitar pre-amps, etc. On channels 1-4, the XLR switch must be in the UNBAL (up) position to use these jacks.

40_{XLR}

The PMD74O includes balanced XLR inputs for channels 1-4. The XLR switch 4 must be in the BAL (down) position to use these jacks. If the XLR switch is in the UP/UNBAL position, the channel will expect its input from the 1/4" connector.

41 INSERT

The INSERT jacks make it possible for an individual channel to be processed with external effects, without affecting other channels, and without hogging the EFFECTS BUS. This is particularly useful for adding special effects to single instruments, without disturbing the other instruments. Examples include adding delay to vocals, compression to bass guitar, gated reverb to a snare drum, etc. This is how it works. A signal enters the board at a 1/4" or XLR jack. It goes through the preamp and then gets sent out of the board on the special TRS (Tip-Ring-Sleeve) insert plug. The signal leaves the equalizer and mixer on the TIP section of the TRS plug, goes through the external effects, and returns to the mixer on the RING section of the TRS plug. When it returns to the mixer, the new, effected signal continues through the channel fader, as if nothing special had happened.

42 TAPE CUE OUT

The TAPE CUE OUT jack outputs the playback of all recorded tracks in mono. The output level for each individual track can be adjusted with the TAPE CUE knobs. This feature is very useful for monitoring dry tracks without effects, and for sending a separate, dry, monitor mix to musicians. Note: TAPE CUE OUT affects the 4 recorded tracks ONLY. It will not output any effects or instruments added in the mixer section, unless they have been recorded to a track.

43 EFFECT SEND

The EFFECT SEND jack sends the effects bus signal (in mono) to external processing gear such as reverb. The output level for any individual channel can be adjusted by Effect knob on on that channel, and the overall output level can be adjusted by the EFFECT MASTER.

44 EFFECT RETURN

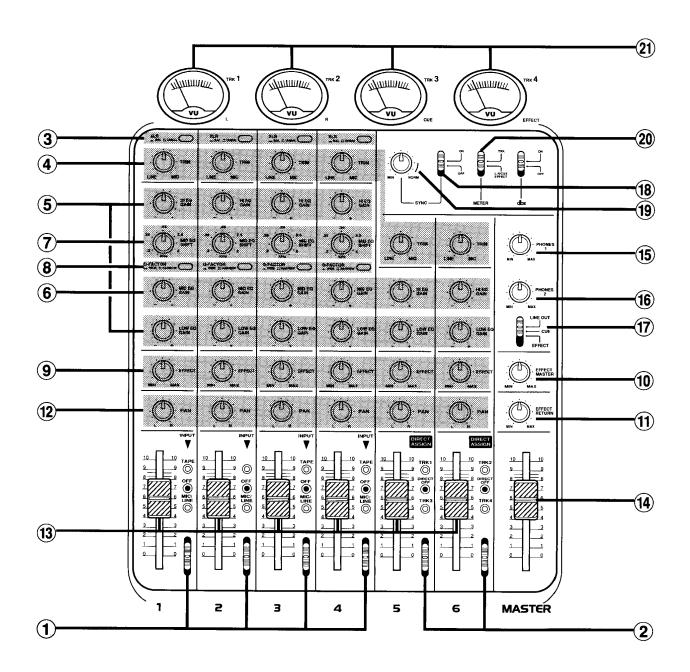
The EFFECT RETURN jack receives the changed (effected) signal from the external effects. Even though the effects send is mono only, the EFFECT RETURN can accept stereo signals, or mono signals. Mono signals should be plugged into the left side of the stereo EFFECT RETURN. The amount of this signal which is mixed into the STEREO BUS, is controlled by the effect return knob on the front panel.

Say, What does THIS button do?

This section discusses all of the Inputs, Outputs, Controls, and Displays of the PMD740.

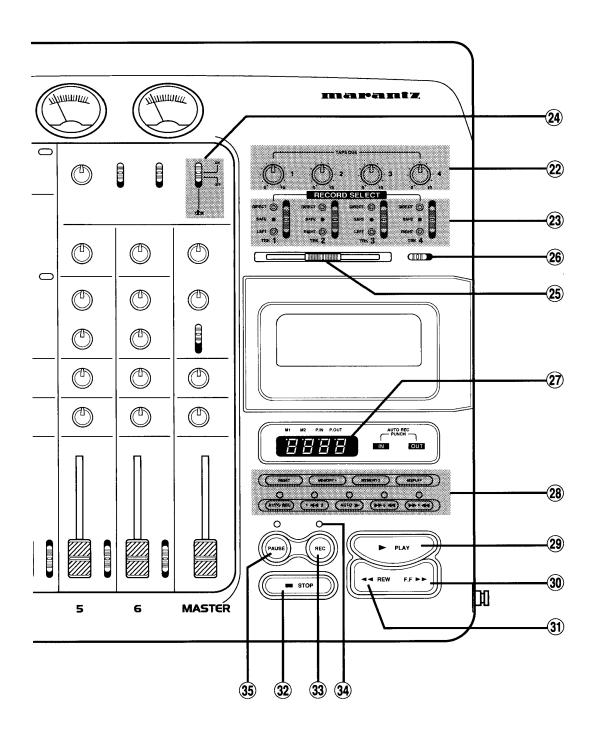
The PMD740 Mixer

Mixer section



PMD740 Recorder and Transport Controls

Drawing of Recorder and Transport Controls



CARE AND MAINTENANCE

This section describes the care and maintenance tasks that must be performed to optimize the operation of your Marantz PMD74O.

MAINTENANCE

Head Cleaning

If the heads are not cleaned for a long period, dirt or dust may be deposited on the heads and capstans, causing degraded high-frequency characteristics, volume drop or degraded recording and erasure. To prevent this, clean the heads, etc., periodically as follows.

- 1. Turn the power off.
- 2. Open the cassette holder.
- 3. Clean the parts which come in contact with tape, including the heads, capstans, tape guides, pinch wheels, etc., with a cotton swab soaked in a commercially available head cleaning solution.

Head Demagnetization

When the deck has been used for a long period of time, the head may be magnetized and noise may be generated. If the head is extremely magnetized, the high frequencies in recorded tapes could even be erased. To prevent this, demagnetize the heads and capstans periodically (every 20 hours of use) using a commercially available head demagnetizer. (For the operation, please refer to the instruction manual supplied with your head demagnetizer.)

Caution:

Be sure to turn the power of the cassette deck off before using a head demagnetizer.

CLEANING OF EQUIPMENT EXTERNAL SURFACES

The exterior finish of your unit will last indefinitely with proper care and cleaning. Never use scouring pads, steel wool, scouring powders or harsh chemical agents (e.g., lye solution), alcohol, thinners, benzine, insecticide or other volatile substances as these will mar the finish of the equipment. Likewise, never use cloths containing chemical substances. If the equipment gets dirty, wipe the external surfaces with a soft, lint-free cloth.

If the equipment becomes heavily soiled:

- dilute some liquid soap in water, in a ratio of one part soap to six parts water
- dip a soft, lint free cloth in the solution and wring the cloth out until it is damp
- wipe the equipment with the damp cloth
- dry the equipment by wiping it with a dry cloth

REPAIRS

Only the most competent and qualified technicians should be allowed to service your PMD74O. Marantz and its factory trained warranty station personnel have the knowledge and special equipment needed for repair and calibration of this precision instrument.

In the event of difficulty, call the toll-free telephone number listed on the face of the warranty to obtain the name and address of the Marantz Authorized Service Center nearest you. In many cases, the dealer where you purchased your Marantz unit may be equipped to provide service. Please include the model, serial number of your unit together with a copy of your purchase receipt and a full description of what you feel is abnormal in your PMD74O's performance.

TECHNICAL SPECIFICATONS

Tape Type

Head Configuration

Frequency Response

(Assumes Chrome Tape) Standard Speed

High Speed

Channel Separation

Erasure

S/N Ratio (dbx ON)

Distortion Motor Tape Speed

Pitch Control Wow and Flutter

Fast Wind Dimensions: Width

Height Depth Weight

Specifications subject to change without prior notice.

Phillips Compact Cassette

Type II (Cr0₂ 70μs) 4 Track 4 Channel

Permalloy REC/PLAY head 4 Channel Ferrite Erase head

4OHz- $12.5 kHz \pm 3dB$ 4OHz- $16 kHz \pm 3dB$

Greater than 55dB (at 1 kHz) Greater than 70dB (at 1 kHz)

85dB

Less than 1.5%

DC Servo x 1

Standard (4.75 cm/sec) High (9.5 cm/sec)

<u>+</u> 10%

Less than 0.15% WRMS

110 sec (C-60)

420mm 93mm

384mm

4.2 Kg

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