

# **PERFORMANCE**

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## *Audio*

### **740** **OWNER'S MANUAL**

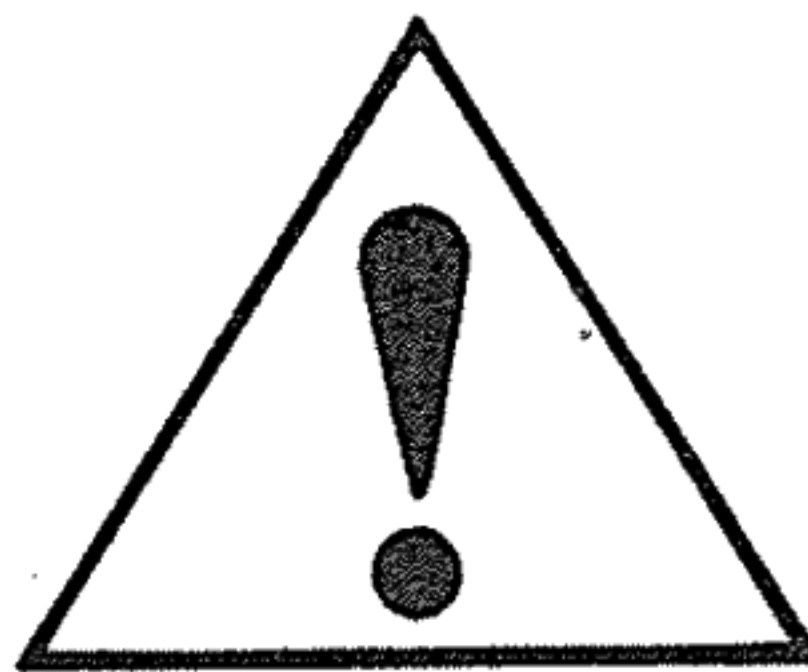
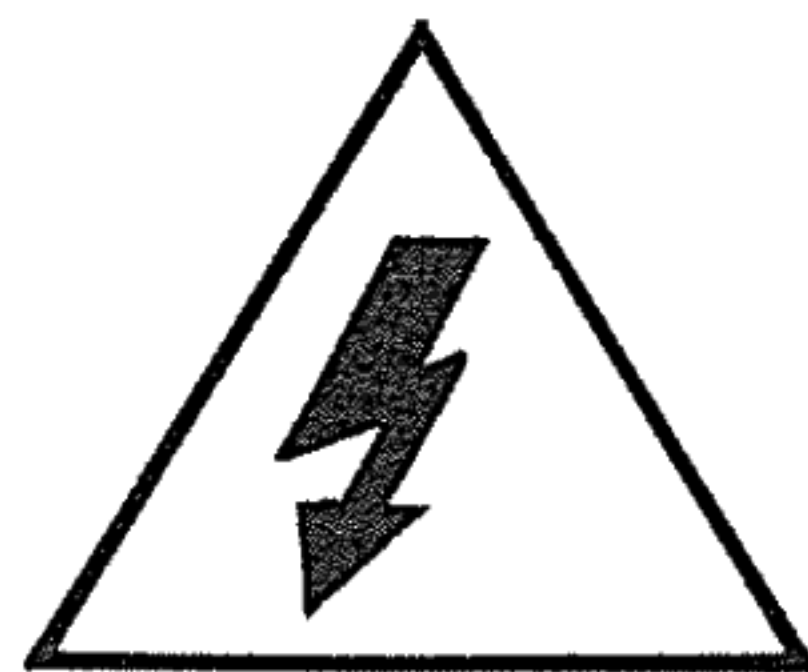


**NO**  
**TO**  
**USE**  
**ONLY**

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**WARNING:** to reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

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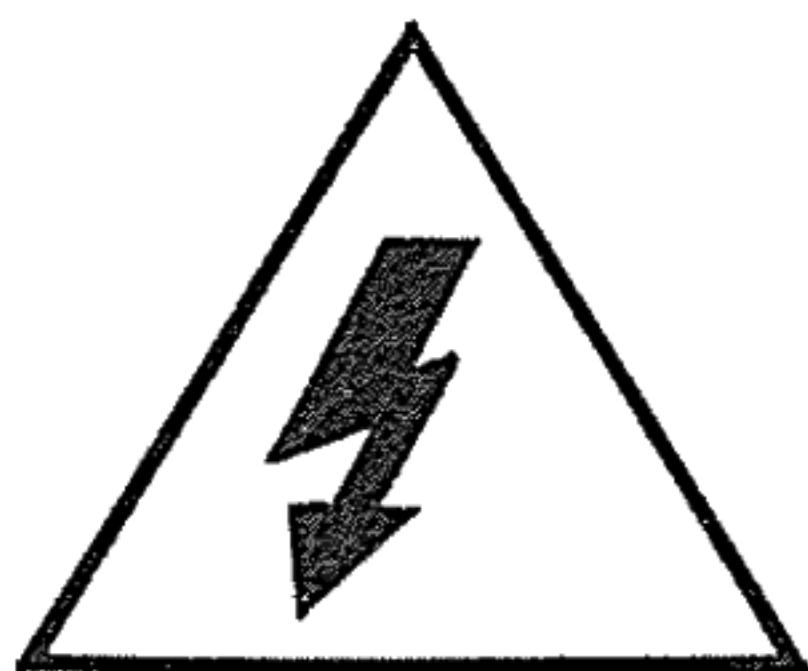


<b>CAUTION</b>
<b>RISK OF ELECTRIC SHOCK DO NOT OPEN</b>

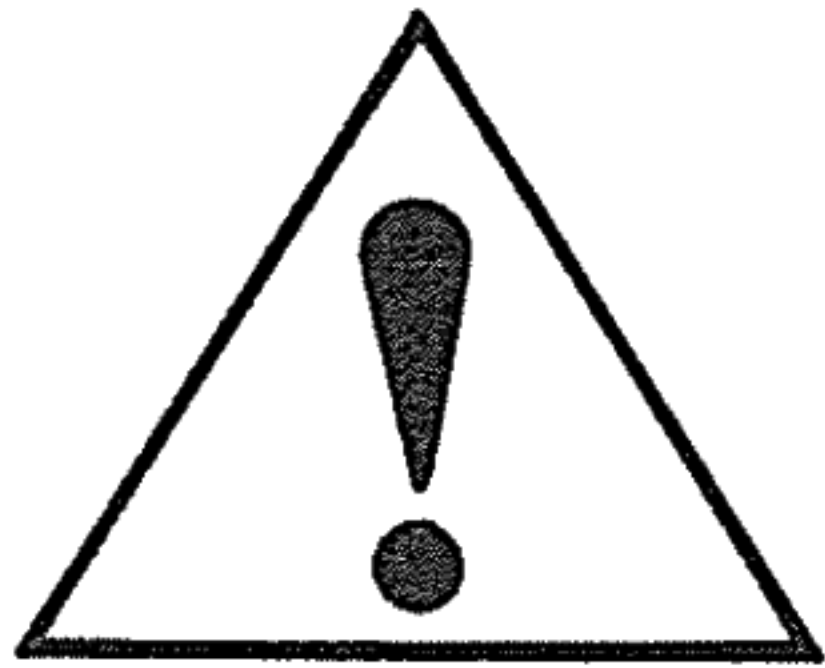
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**CAUTION:** to reduce the risk of electric shock, do not remove cover (or back); no user-serviceable parts inside. Refer servicing to qualified service personnel.

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The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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**CAUTION/ATTENTION:** \*TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

\*POUR PRÉVENIR LES CHOCS ÉLECTRIQUES NE PAS UTILISER CETTE FICHE POLARISÉE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ÊTRE INSÉRÉES À FOND SANS EN LAISSER AUCUNE PARTIE À DÉCOUVERT.

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## SAFETY INSTRUCTIONS

- ① Read Instructions- All the safety and operating instructions should be read before the appliance is operated.
- ② Retain Instructions- The safety and operating instructions should be retained for future use.
- ③ Heed Warnings- All warnings on the appliance 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 appliance should not be used near water for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- ⑥ Ventilation- The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance 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.
- ⑦ Heat- The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
- ⑧ Power Sources- The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- ⑨ Grounding or Polarization- Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
- ⑩ Power-Cord Protection- Powersupply cords should be routed so that 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 appliance.
- ⑪ Cleaning- The appliance should be cleaned only as recommended by the manufacturer.
- ⑫ Power Lines- An outdoor antenna should be located away from power lines.
- ⑬ Nonuse Periods- The power cord of the appliance 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 liquids are not spilled into the enclosure through openings.
- ⑮ Damage Requiring Service- The appliance 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 a 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 appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

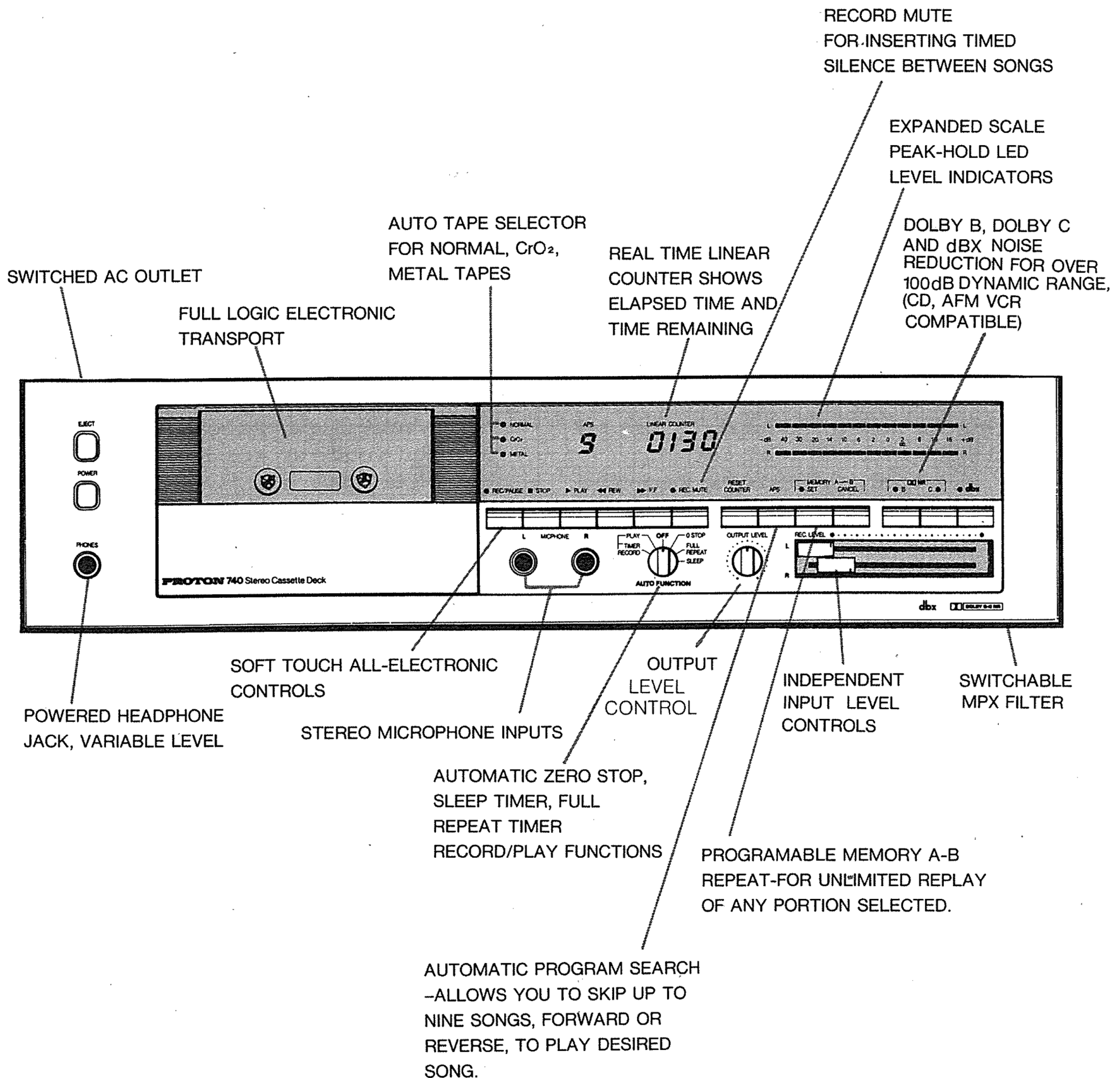


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## 740 FEATURES





# 740

## INTRODUCTION

Congratulations on your selection of the Proton 740 stereo cassette deck. Whether you're adding to an existing audio or video system, or assembling an all new system, we're certain you'll appreciate the outstanding performance and features

that make Proton products among the best you can obtain--regardless of price. The few moments you spend now reading this manual will ensure your receiving maximum enjoyment from your Proton 740, and outstanding performance for years to come.

## PROTECTION FROM DAMAGE OR THEFT

The best way to transport your 740 is in its original shipping carton. Save the carton and packing materials in case the unit ever requires shipping. The serial number is located

on the unit's rear panel. Record it here for your records to aid in the unit's recovery if it is ever lost or stolen.

SERIAL NUMBER: \_\_\_\_\_

## YOUR AUDIO SYSTEM

Every circuit in your Proton 740 is devoted to the precise recording and reproduction of sound. Its ultimate performance is limited only by the components and tape with which it is used.

While we recommend the inclusion of matching Proton audio and video products (such as the 540 amplifier, 440 tuner, and 940 receiver), your 740 is designed to work well with any of the high performance components

available today. With its 100dB dynamic range (using dbx noise reduction), the 740 is well suited to recording music from CD players and AFM (Hi-Fi) VCRs.

The tape you use is critical to maximum performance. While your Proton 740 has been optimized for certain tape formulations at the factory, (see specifications), you may find that other premium-quality cassettes perform equally well. Experiment with



different brands. When you find one that gives the most satisfactory

results, stick with it. Avoid "bargains" and unfamiliar brands.

## INSTALLATION

Try to locate your 740 away from other powered components which can induce hum. Do not stack the 740 directly on top of your amp or receiver if hum is heard. (Many amps,

also give off tape-damaging heat.)

To prevent the possibility of partial tape erasure, locate your 740 and tapes at least six inches away from loudspeakers and other components containing magnets or motors.

## REAR PANEL CONNECTIONS/CONTROLS

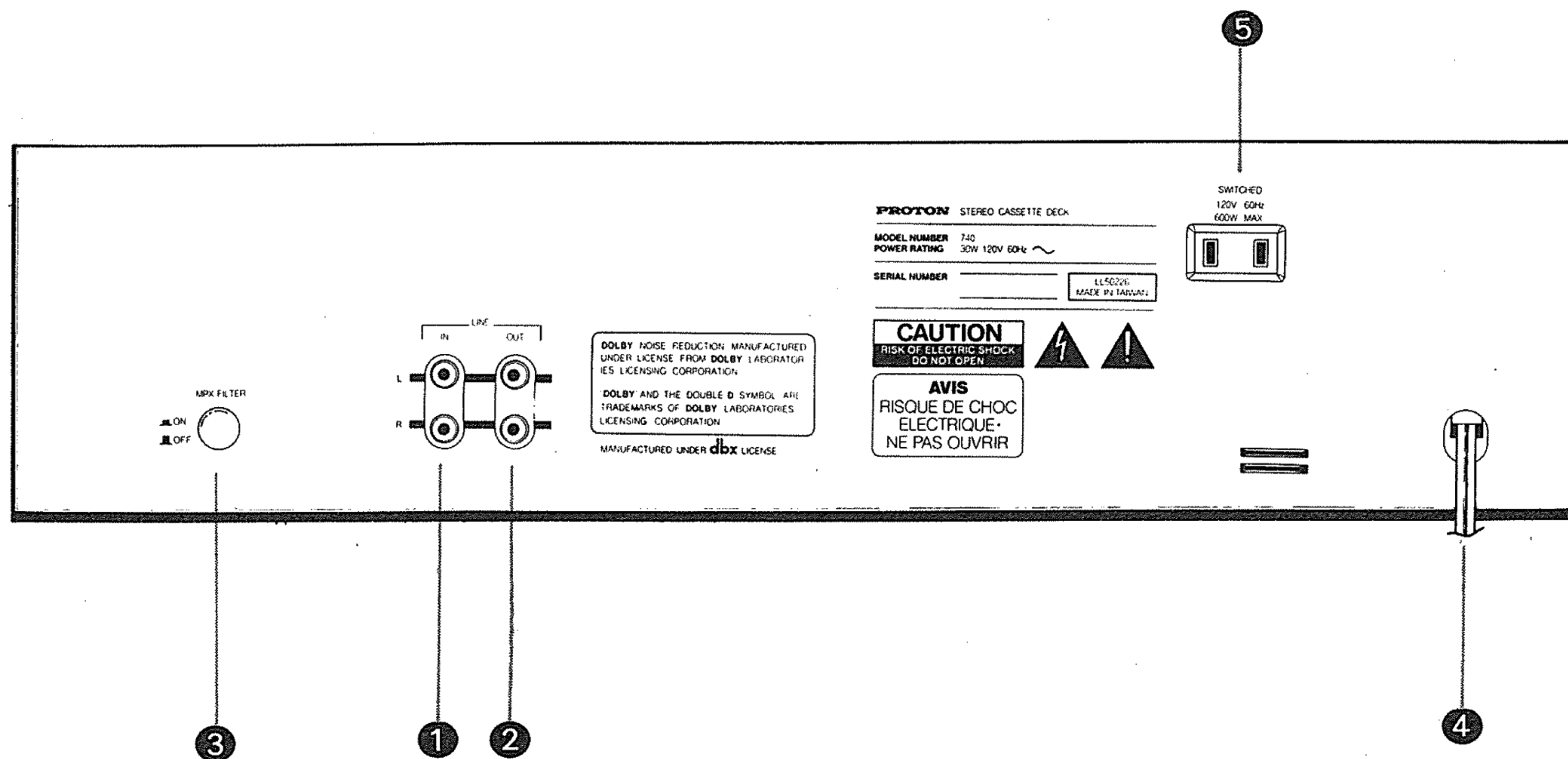


FIG. 1



# 740

Your Proton 740 is designed to be connected into the tape loop of any conventional audio receiver, preamplifier, or integrated amplifier. All input and output connections should be made with high quality RCA-type audio cables. Each set of terminals is color-coded, white for left channel and red for right channel.

**CAUTION:** WHENEVER REAR PANEL CONNECTIONS ARE BEING MADE, YOUR 740 AND ALL ASSOCIATED EQUIPMENT SHOULD BE POWERED OFF.

**LINE IN ①** As the name implies, the "line in" terminals on your 740 accept a line level input. Connect these terminals to the Tape Output terminals on your preamp/receiver. Such terminals are sometimes marked "record" (or REC). Be careful to connect left channel input to left channel output and right channel input to right channel output.

**LINE OUT ②** These terminals provide a line level output to be sent back to your preamp/receiver for listening to tapes. Connect these terminals to the Tape Input terminals on your preamp/receiver. These terminals are sometimes called "playback" (OR PLAY). Again, be careful to make accurate left and right channel connections.

**MPX FILTER ③** The green MPX button activates a filter to remove high frequency interference (the pilot tone from a stereo FM tuner) which can cause problems with the Dolby Noise Reduction systems. In general, if you are using either Dolby circuit, it is best to leave this filter "on" only during recording. To turn the filter on, simply push the green button until it clicks in.

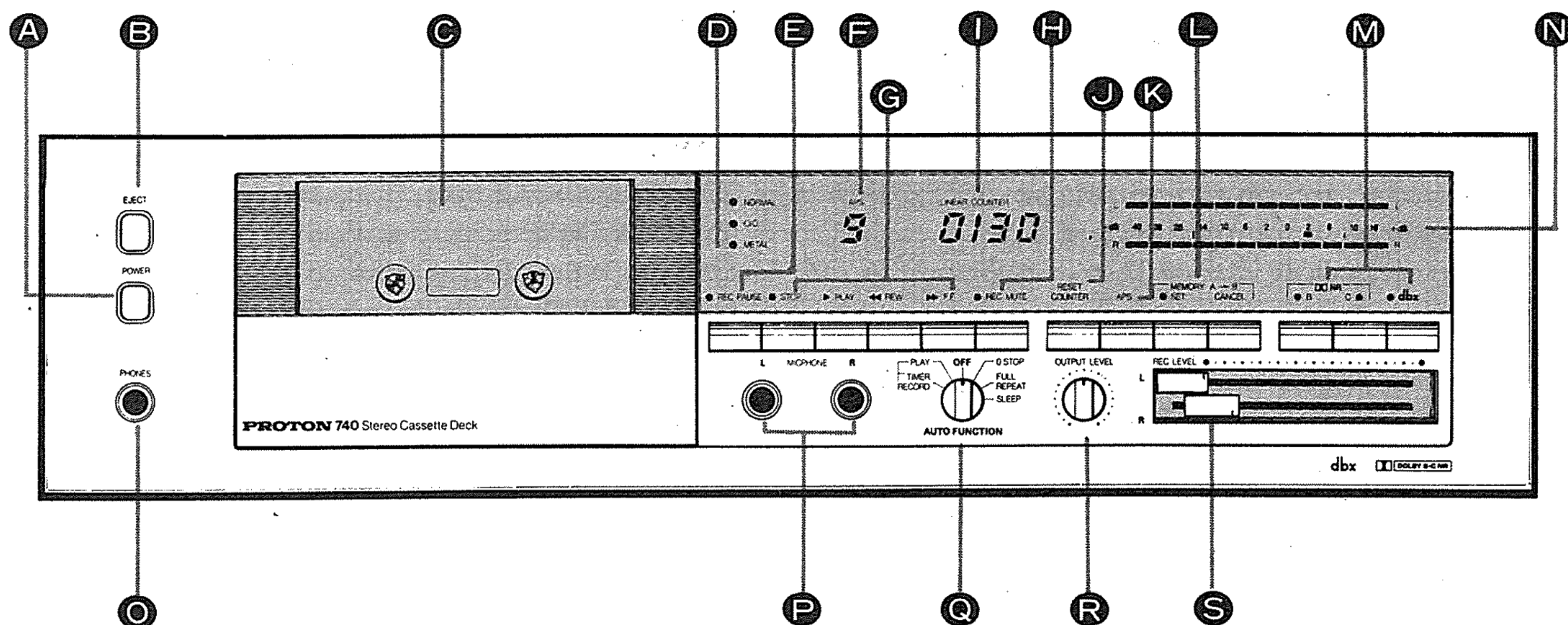
Some people prefer to turn the circuit "off" while recording from a source other than an FM tuner (i.e. turntable or a second tape deck). This is because the filter does have a minimal (although barely audible) effect on extremely high frequency response. To defeat the filter, push the button again and release it. Be sure, however, to reactivate the filter the next time you tape from your FM tuner.

**AC CORD ④** Once all connections have been made, plug the AC cord into a live 120 volt, 60 cycle outlet.

**SWITCHED AC OUTLET ⑤** "ON" whenever 740 is ON. Connect any equipment you wish to control (eg, a radio for timer recordings) here. It is also controlled by "SLEEP" function. This outlet is rated for 600 watts maximum.



## FRONT PANEL CONTROLS/OPERATION



**1. POWER** **A** Push the green power button to activate your 740. The LINEAR COUNTER **I** will display "0000", the APS number **F** will be "0", the METAL and STOP LEDs will be lit.

Push the POWER button again to turn off the 740.

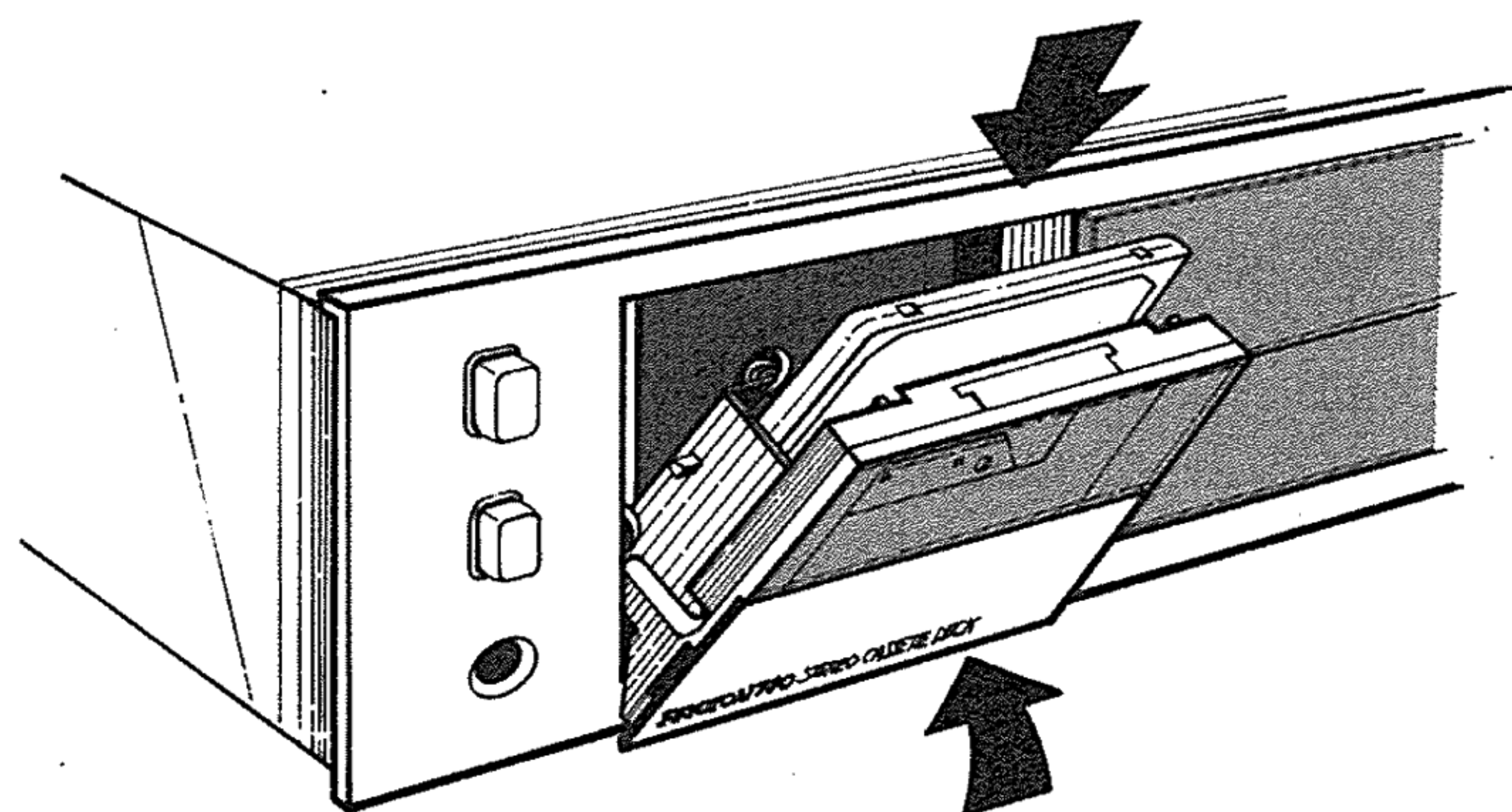
### NOTE:

When the AUTO FUNCTION switch **Q** is set for TIMER PLAY or TIMER RECORD, your 740 can be timer-controlled by plugging its AC cord into an external timer; in this mode the POWER and RECORD/PLAY buttons are activated automatically at the preset time.

### 2. TO LOAD/EJECT CASSETTE

To LOAD a cassette: press EJECT **B** button to open cassette door **C**.

Insert cassette, open end down, into cassette holder on door with side to be played facing you, as shown below.



PUSH TO CLOSE



Push door closed until it latches.

Notice that an auto tape selector LED ⑤ lights automatically to show the type of tape in use: NORMAL, CHROME (CrO<sub>2</sub>), or METAL. This feature automatically sets the 740 for correct bias and equalization; there are no switches to set or adjustments you need to make.

To REMOVE cassette: Press EJECT ⑥ again to open door (740 must be in STOP mode, or power must be off). Grasp cassette at top edges and remove.

### 3. TO PLAY A TAPE

-Turn deck on and insert cassette (steps 1, 2).

-Select playback noise reduction system (corresponding to NR type used to record tape) with NR Select Keys ⑦:

No noise reduction: Repeatedly press keys until none of the 3 LEDs are lit.

• DOLBY B<sup>TM</sup>: Press key under ⑧ NR B to light LED. (Pressing button again extinguishes it.) This is the noise reduction system most commonly found on pre-recorded tapes.

• DOLBY C<sup>TM</sup>: Press key under ⑨ NR C to light LED. Dolby C is a newer system which offers even greater reduction in noise and distortion than Dolby B, but is less frequently used in personal cassette and car stereo players. If you are unsure which type of Dolby was used for a tape, try either B or C (or none). Determine which results the least amount of high frequency "dullness" at low levels.

**NOTE :** Playback with the "wrong" noise reduction selected will not harm anything.

• dbx<sup>TM</sup>: Press key under "dbx" to light LED and activate system. Like DOLBY B and C, dbx is a noise reduction system that must be employed during both recording and playback. Unlike the Dolby system--which basically boosts low-level high frequencies to overcome tape hiss in playback--dbx compresses (compands) all frequencies during recording based on levels, then expands them in playback to achieve about 20dB more noise reduction than Dolby B and 10dB more than Dolby C. Dbx-encoded tapes played back without proper dbx decoding sound very "flat" and muddy, so it should be obvious when a tape requires you to select the dbx system.

-Select "TAPE" on your audio system and adjust your volume control to a comfortable level.

**TO start playback:** press the ►PLAY key in the transport control group ⑩. The LINEAR COUNTER ⑪ counts elapsed time in minutes and seconds.

-Slowly turn up the OUTPUT LEVEL control ⑫ for sufficient loudness with your audio system's volume control at a position normally used for your other components. (This will provide a matched level when you switch from the 740 to other components.)

### NOTE :

The LED level meters ⑬ indicate recorded levels. They are not affected by the OUTPUT LEVEL control. The headphone output ⑭ is affected by the OUTPUT LEVEL control.



-Tape will play to end of cassette and stop automatically.

-To cease tape playback, press the ■STOP key.

### To automatically REPEAT a tape:

-Set AUTO FUNCTION switch ⓐ to "FULL REPEAT". at end of tape, cassette will be rewound to beginning and replayed. To defeat FULL REPLAY function, set AUTO FUNCTION to "OFF".

**To use SLEEP function:** Set AUTO FUNCTION switchⓐto "SLEEP." At end of tape, the 740 will itself off.

**To use ZERO STOP function:** Set AUTO FUNCTION switchⓐto "0 STOP." Whenever "0000" is encountered in REWIND mode (◀◀REW Key), the tape will be stopped automatically.

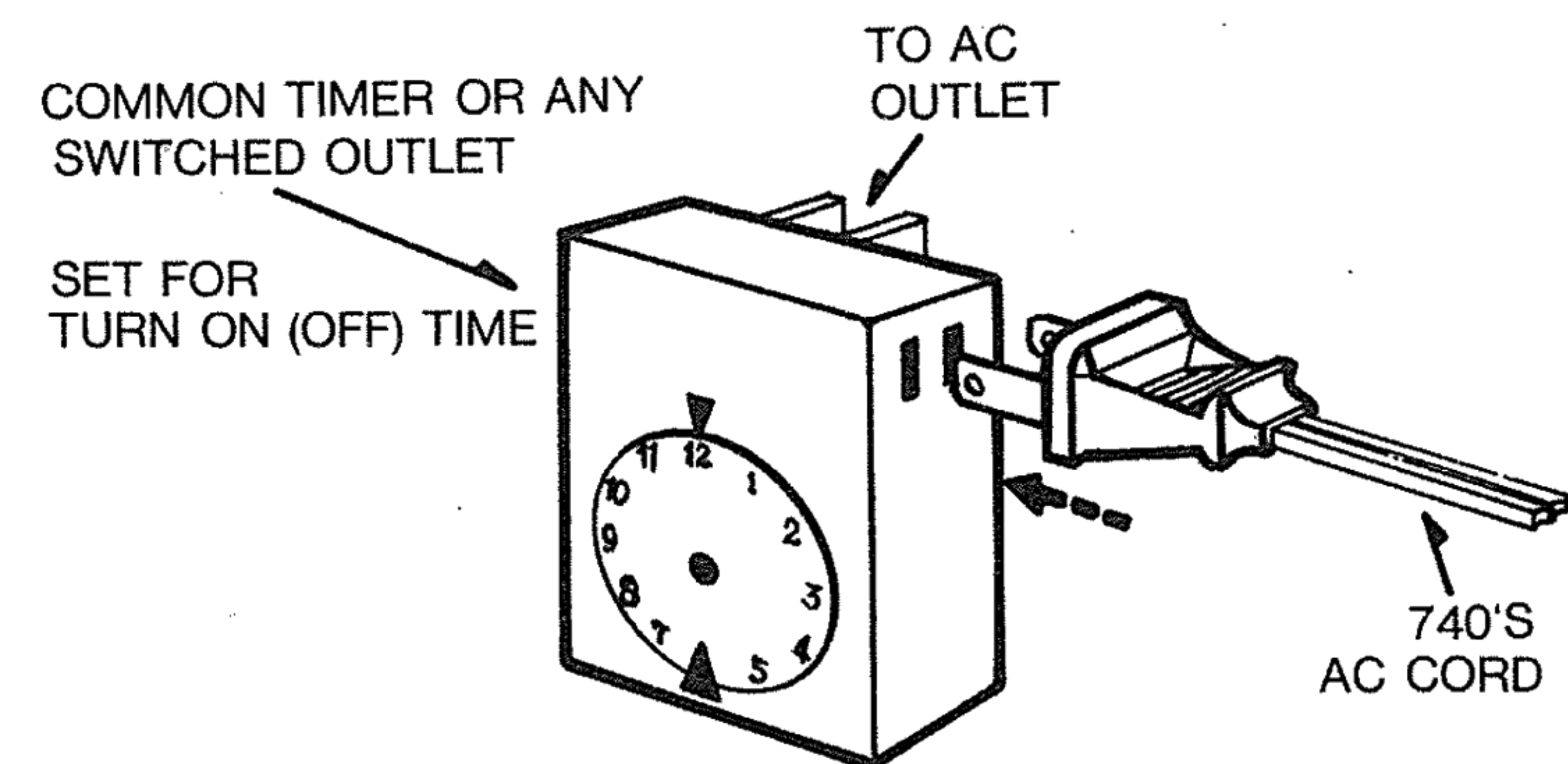
-To place a "0000" marker at any point an the tape, simply press the RESET COUNTER button Ⓟ.

### To use TIMER PLAY function:

-Load cassette.

-Set AUTO FUNCTION ⓐto TIMER PLAY.

-Unplug 740 AC cord and connect to any commercially available timer, which you have preset to the desired turn on time, as shown.



-At the designated turn on time, the 740 will playback automatically, until it reaches the end of tape or the timer's turn off setting.

### To use AUTO PROGRAM SEARCH (APS):

You can set your 740 to skip up to nine songs, in either direction, to find and playback a particular selection as follows:

-Determine the number of songs to be skipped.

-Repeatedly press the APS key Ⓚ until this number appears in the APS display Ⓢ.

-Press ▶▶FF to search forward, or ◀◀REW to search backwards.

-The 740 indicates its searching process by blinking the ▶PLAY LED and counting down the number of songs being skipped with the APS display. When "0" is found (the beginning of the song desired), the 740 begins playback.

### NOTE :

For accurate searching, there must be at least 3 seconds of silence between songs. (The REC MUTE function can be used for this purpose during recording.) Some extremely soft passages (as in classical music) may be counted as a "blank spot", as will long pauses in speech.

### To use MEMORY A→B function:

-At any point "A" during playback, press the MEMORY A→B Ⓛ "SET" key. The LED will blink.

-At any later point "B" press the SET key again. The LED will light solidly, the 740 will rewind to point A, and playback to point B. It will replay the A→B section indefinitely, until



you press the MEMORY A→B "CANCEL" key.

#### 4. TO RECORD A TAPE

- Turn unit on and insert a cassette (steps 1,2).
- If you are recording on a new tape, it's a good practice to run the tape through a FAST FORWARD and REWIND cycle to remove any tension built up during storage.
- Select the desired noise reduction system by pushing one of the NR Select keys ④. (Refer to step 3 for a description of each noise reduction system.)
- Press the red REC/PAUSE key. The REC/PAUSE LED will light, the transport will engage, but the tape will not start moving.
- Adjust both REC LEVEL sliders ⑤, noting the associated LED level indicators ⑥. In general, the REC LEVEL controls should be set so that the first and second red LEDs light during the loudest music peaks.

**NOTE 1:** The 740 LED level indicators are "peak reading" types, meaning that they react more quickly and accurately to music than conventional "averaging" VUmeters. (This is why you can allow peaks to reach +4dB without overloading the tape.)

**NOTE 2:** The 740 LED level indicators are also "peak holding", meaning that they continue to show the peak level reached for about a second after the peak is over. This feature makes it easier to set levels.

**NOTE 3:** Compact disc and stereo (AFM) VCR recordings may be permitted to hit higher peaks (+6 to +10dB) if quiet passages register too low (-40 to -30dB). It's also recommended that you use dbx for these wide range recordings.

To zero the counter at the start of a cassette, press RESET COUNTER key ⑦. This will let you know how tape has been used.

Alternatively, if you'd rather know time remaining, reset the counter at the end of the cassette, and rewind to the beginning before recording. The LINEAR COUNTER will then begin with a minus number--the exact time remaining--and will count down to the end.

#### To start recording:

- If REC/PAUSE is on, just press PLAY key,
- Otherwise, press REC/PAUSE and PLAY keys.

**To PAUSE during recording:** Press REC/PAUSE key. Press PLAY to resume recording.

#### To insert silence between songs:

If you are compiling assorted songs on a cassette, it's desirable to have at least 3 seconds of silence between them. This will allow you to use the Auto Program Search function during playback.

You can easily insert these silent spots:

- At end of a song, press REC MUTE key ⑧. The 740 will automatically record 3 seconds of silence.
- Cue up the next song and resume recording by pressing PLAY. Repeat these steps for all songs.

**TIPS:** To record longer silences, hold down the REC MUTE key. Release when desired. To record shorter (under 3 seconds) silences, press REC MUTE, then press REC/PAUSE within 3 seconds. Use the LINEAR COUNTER for timing these silences.



## To use **TIMER RECORD** function:

- Load cassette and adjust recording levels.
- Set AUTO FUNCTION switch @ to **TIMER RECORD**.
- Play the 740's AC cord into any commercially available timer, which you've preset for turn on (and turn off) time. Recordings will take place automatically.

**NOTE:** Noise reduction circuits will not operate when using timer recordings.

## To make **MICROPHONE** recordings:

- Turn down audio system's volume to prevent feedback.
- Plug microphone(s) into **MICROPHONE** jacks @. When mics are plugged into these jacks, the **LINE IN** signals are automatically disconnected.
- Set levels and make recordings as described previously.
- To record your voice and music simultaneously, connect a mic into the **RIGHT** jack only. The 740 will record the microphone input onto the tape's right channel, and the left channel line input onto the tape's left channel.

**NOTE:** When using this dual input method, set your audio system to mono (if possible) or you will only record one channel of a stereo music program.

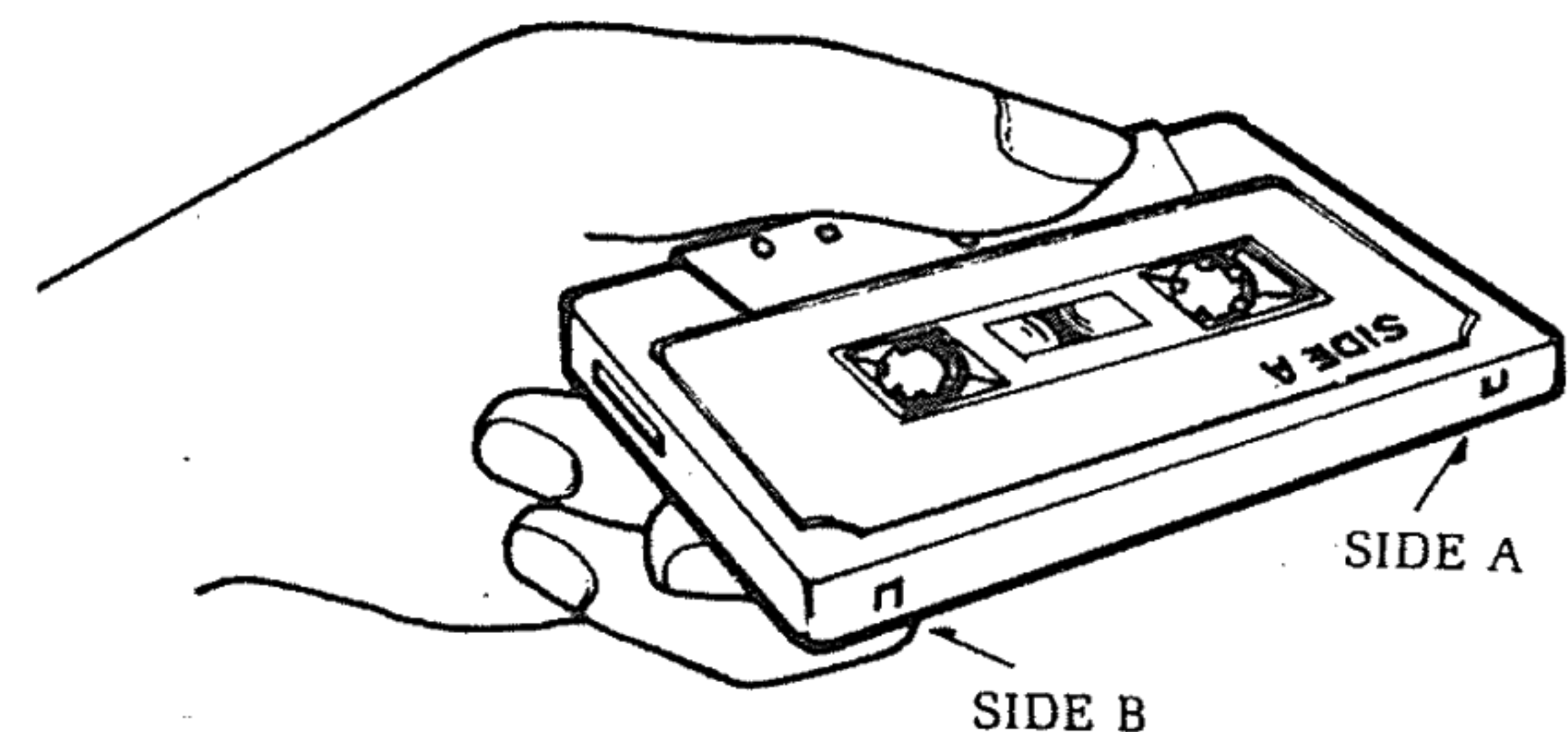
## 5. TO ERASE A TAPE

Your Proton 740 automatically erases any previous information on the tape while it is recording. However, if you want to erase a tape without

recording over it, simply slide the **REC LEVEL** controls all the way to the left, push **REC** and **PLAY** and let the tape run for whatever length you want to erase.

## 6. TO KEEP A TAPE FROM BEING ERASED

You can prevent accidental erasure of taped material by breaking off one (or both) of the tabs which are located on the back edge of all cassette tapes. When you are holding the tape in your hand, the tab on the lefthand side corresponds to the side of the tape which is facing up. If side A is



**BREAK OFF TABS TO PREVENT ACCIDENTAL ERASURE**

facing up, breaking off the tab on the left will make it impossible to erase (or record over) side A. Breaking off the other (righthand) tab will protect side B. The tabs are easy to remove with a small screwdriver or a pair of tweezers.

If you later decide you want to record over this material, simply cover the hole with a piece of tape.



## MAINTENANCE

Your proton 740 will yield maximum performance when routinely cleaned and demagnetized.

Clean the tape heads, capstan, and pinch roller after every 10 hours of use.

Demagnetize both heads and capstan at least twice a year.

Do not attempt lubrication or alignment of the transport.

Your proton audio dealer can recommend the proper cleaning and demagnetizing tools.

## SPECIFICATIONS

- Tape used for factory bias and EQ adjustments
 

NORMAL (120us EQ)	MAXELL XLI-S
CHROME (70us EQ)	MAXELL XLII-S
METAL	MAXELL MX
- Wow & Flutter JIS/WRMS. 0.05%
- Signal to Noise Ratio (referenced to 3% THD)
 

NR	NORMAL	CHROME	METAL
OFF	51dB	54dB	54dB
Dolby B	58.5dB	62dB	60dB
Dolby C	68dB	71.5dB	70dB
dbX	—	—	90dB
- Record/Playback Frequency Response (mpx filter, NR off)
 

25-16kHz	25-18kHz	25-19kHz
±3dB	±3dB	±3dB
- Total Harmonic Distortion (400Hz @ Dolby level)
 

1.2%	1.8%	1.5%
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- Crosstalk. 40dB
- Erase Effect. 65dB
- Line Input Sensitivity. 90mV
- Mic Input Sensitivity. 0.35mV
- LED Level Display Range. 56dB (12 segments/CH)
- Head Material. SENDUST (Fe-Al-Si alloy)



740

- Output Level. . . . . 0-1V variable
- AC Voltage. . . . . 120V/60Hz
- Power Consumption. . . . . 30watts
- Weight. . . . . 11.2lb (5.1Kg)
- Dimensions (HxWxD). . . . . 4 $\frac{1}{4}$ "x16 $\frac{1}{2}$ "x10"



Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation. Noise Reduction. System manufactured under license from Dolby Laboratories Licensing Corporation.

STEREO



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**PROTON**

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