

HiFi ENGINE[®]

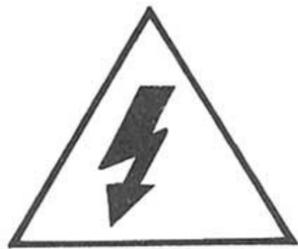
For more Hi-Fi manuals and set-up information
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PERROTTON

Audiot

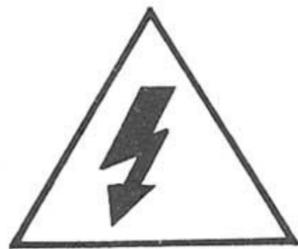
D940
OWNER'S MANUAL

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



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

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.



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.

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.

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 Outdoor Antenna Grounding - If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code. ANSI/NFPA No. 70-1981 provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna- discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure 1.
- ⑭ Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- ⑮ Object and Liquid Entry - Care

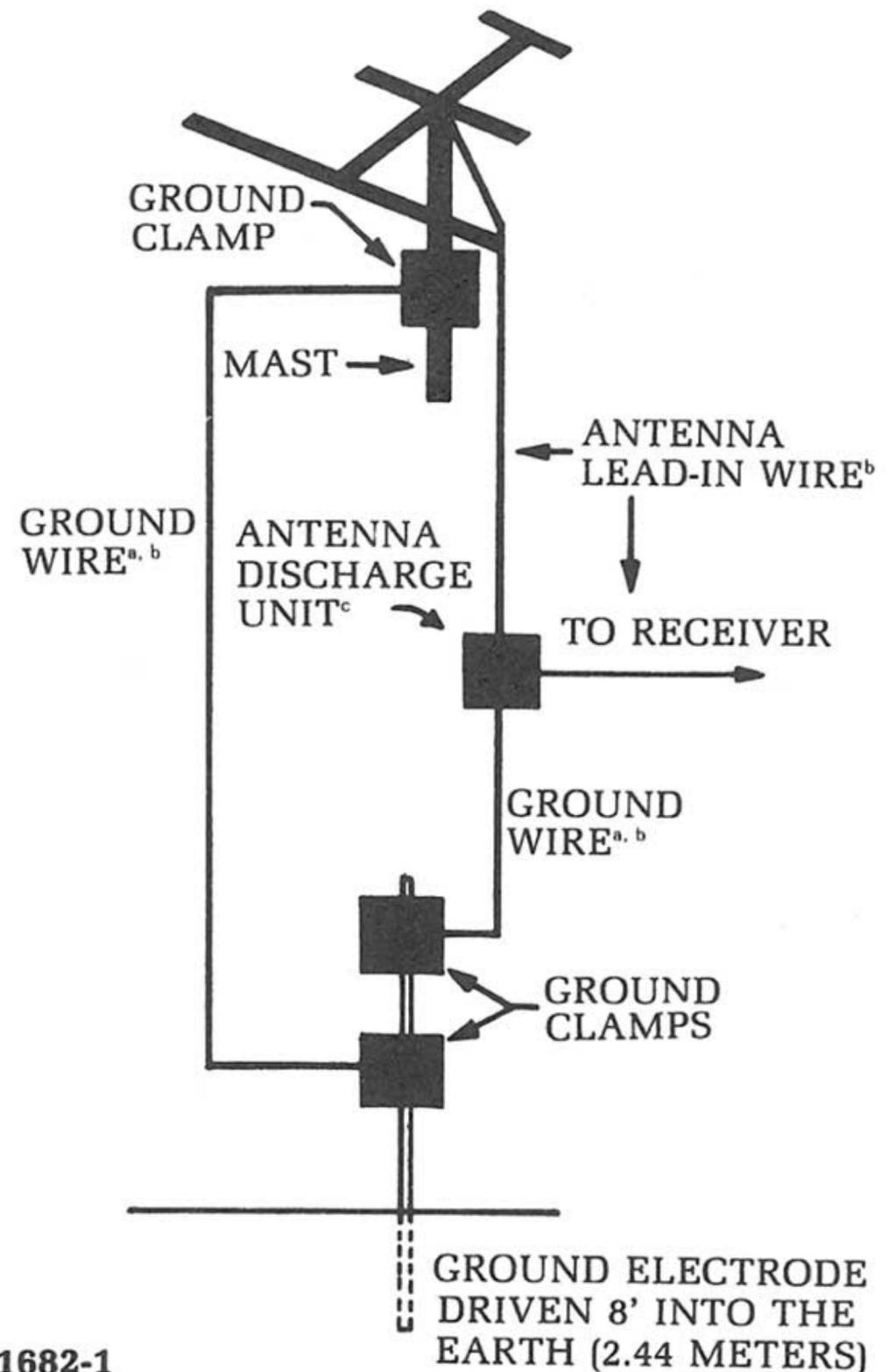
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should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

⑩. 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.

⑪ 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.



SB1682-1

fig. 1

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INTRODUCTION

Your Proton D940 Stereo FM/AM Receiver has been carefully developed with complete emphasis on the quality of sound. Whether adding to an existing audio or video system or as part of an all new system, you are certain to notice several performance characteristics which make Proton products among the very best -- regardless of price.

One of the important characteristics of the Proton D940

is the exceptionally noise-free FM performance made possible by the inclusion of our SCHOTZ NOISE REDUCTION system in an extremely sensitive audio tuner. Also, our exclusive Dynamic Power on Demand (DPD) amplifier produces unsurpassed levels of dynamic power. We're confident that you'll find that the features and flexibility of your D940 make it a pleasure to use.

PROTECTION FROM DAMAGE OR THEFT

The best way to transport your Proton D940 is in its original shipping carton. Therefore, save the carton and packaging material for possible reuse.

The serial number of your D940 is

located on the unit's rear panel. Record the serial number below for your records. This will aid you in recovering the unit should it be lost or stolen.

SERIAL NUMBER: _____

YOUR AUDIO SYSTEM

Your Proton D940 is designed for precise radio reception and exact reproduction of musical signals without contributing any noise or distortion of its own.

The radio section can do a remarkable job of bringing you more stations with less noise than ever before. Of course,

it cannot improve upon the signal passed to it by your antenna system. The amplifier section similarly is capable of processing complex musical signals without adding noise or distortion. However, it cannot improve upon the signal passed to it by other components; nor nor can it force high

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fidelity sound from speakers of marginal quality. While we recommend the inclusion of other Proton audio and video products in your system, your D940 will work well with many high performance components. When selecting loudspeakers, look for those capable of handling high peak-power

levels. Be aware that the D940 is deceptively powerful for its size and weight -- it contains high-current power amplifiers that are stable into loads as low as two ohms, and that are capable of producing dynamic power peaks of up to 380 watts into two ohms.

REAR PANEL CONNECTIONS AND CONTROLS

U.S.A. Model

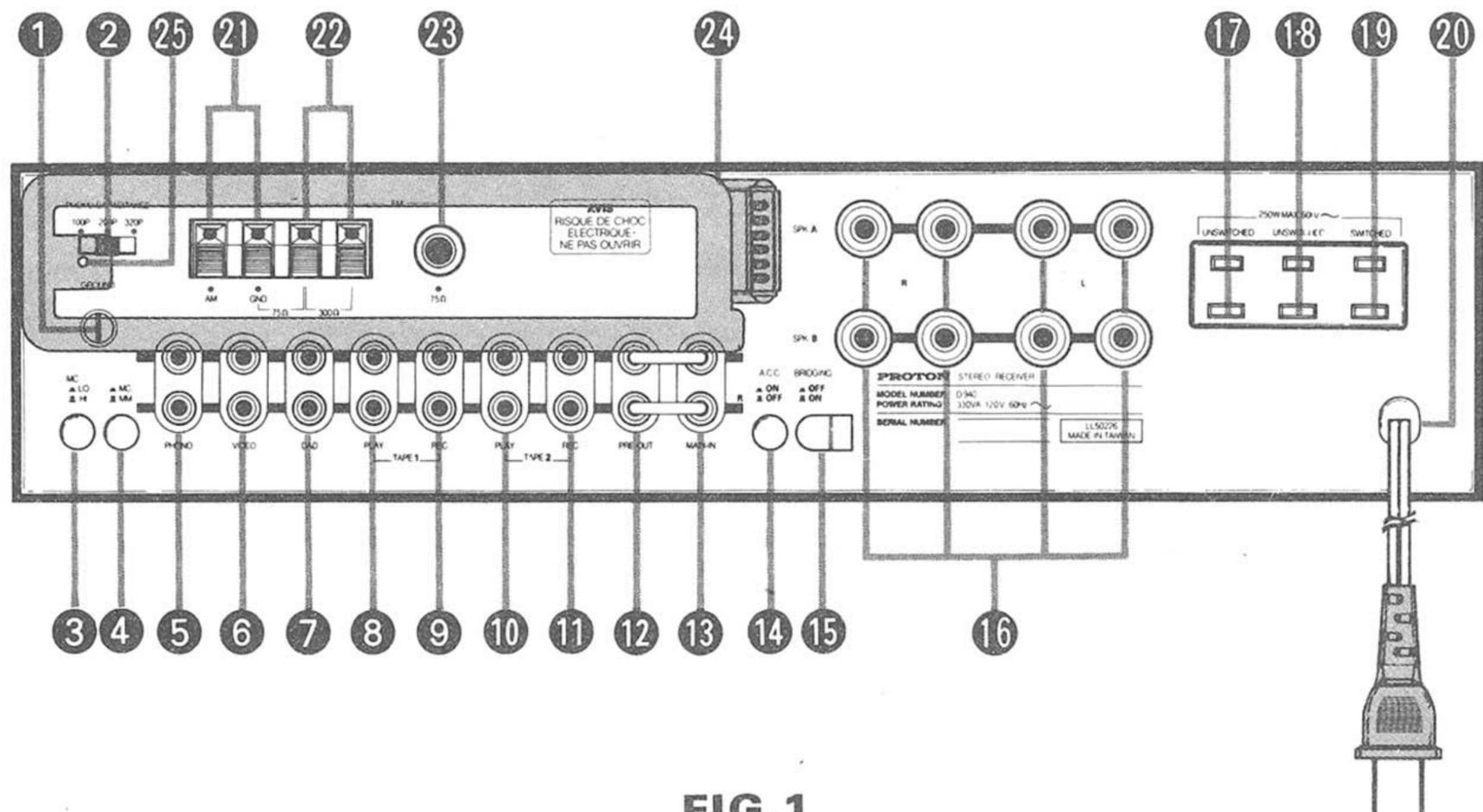
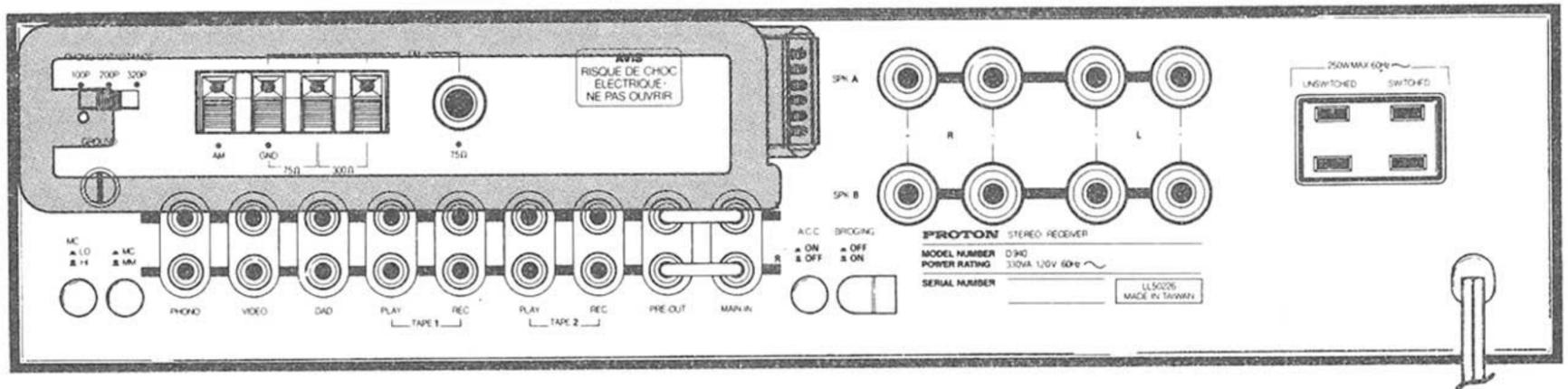


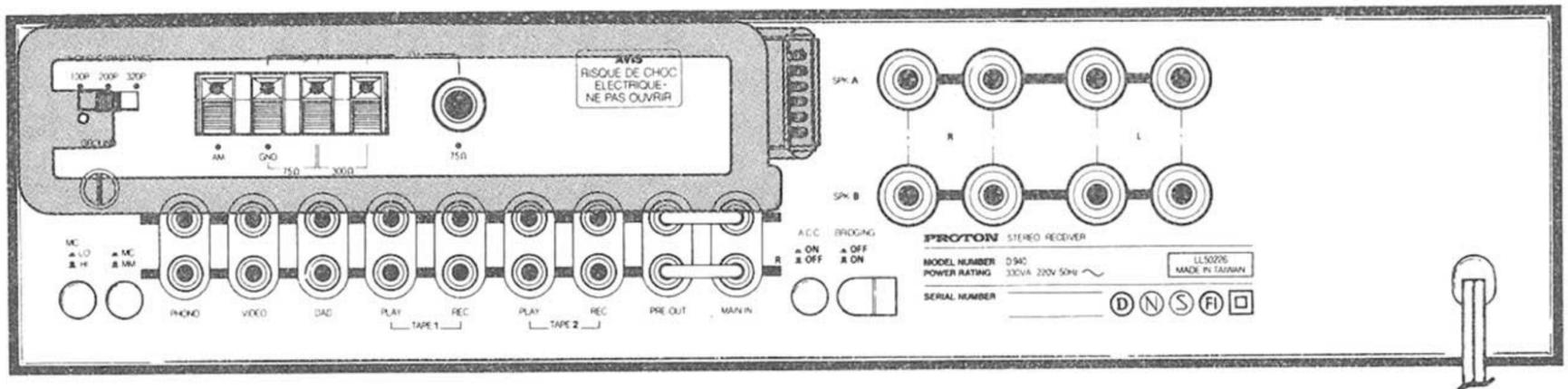
FIG. 1

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Canadian Model

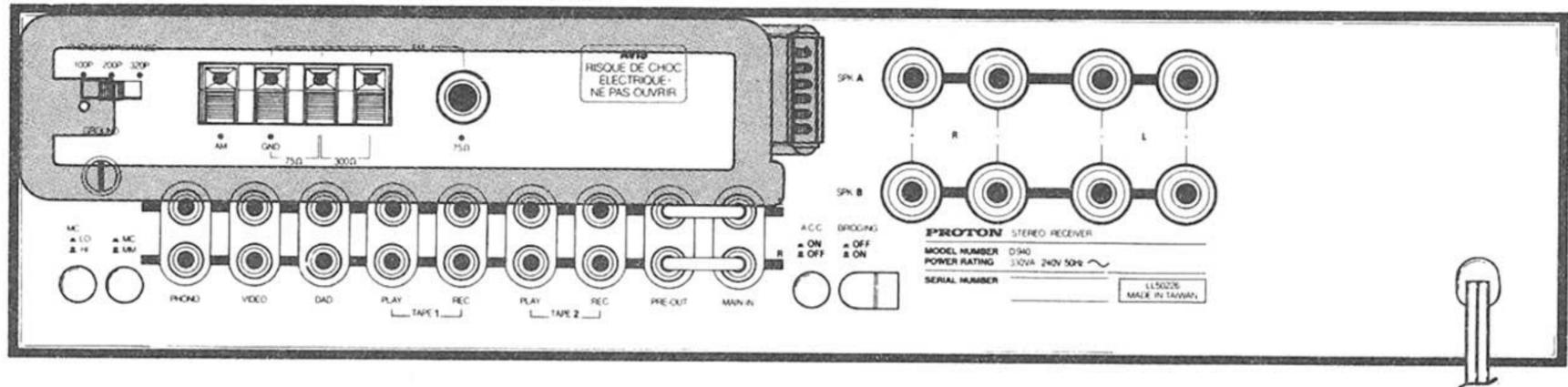


European Model

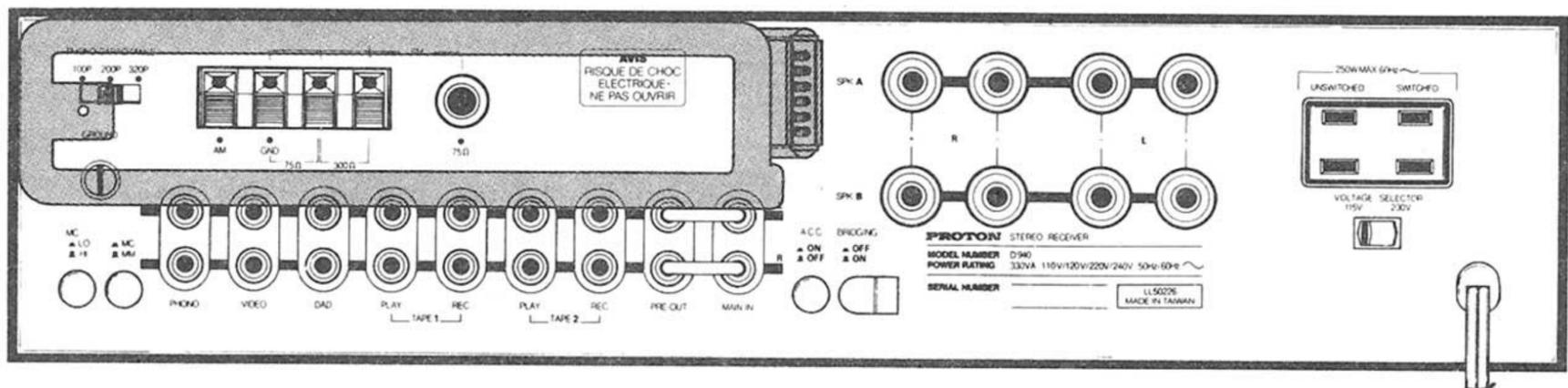


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British and Australian Models



General Model



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AM ANTENNA ②① ②④ ②⑤

Your Proton D940 has come supplied with an external loop antenna (24) which can be directly mounted to the D940 rear panel or mounted to a wall with a mounting hole supplied (25). Connect both wires supplied with loop antenna (24) to rear panel socket (21) marked GND and AM; insert one wire to GND and the other wire to AM. Then adjust position of antenna for best reception.

This antenna will facilitate good reception on local stations. If you require better reception of distant AM stations, you can attach an outdoor antenna to the antenna terminal marked GND and AM (21).

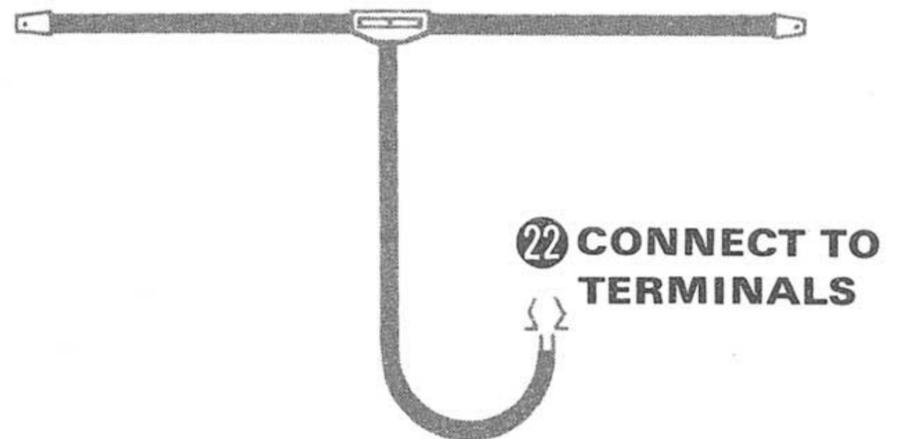


FIG. 2
TWIN-LEAD DIPOLE FM ANTENNA

FM ANTENNA ②② ②③

A twin lead dipole antenna is supplied with your Proton D940. When unfolded, this antenna is shaped like a "T" (See fig. 2). To use the dipole antenna, connect the two wires on the vertical section of the "T" to the 300

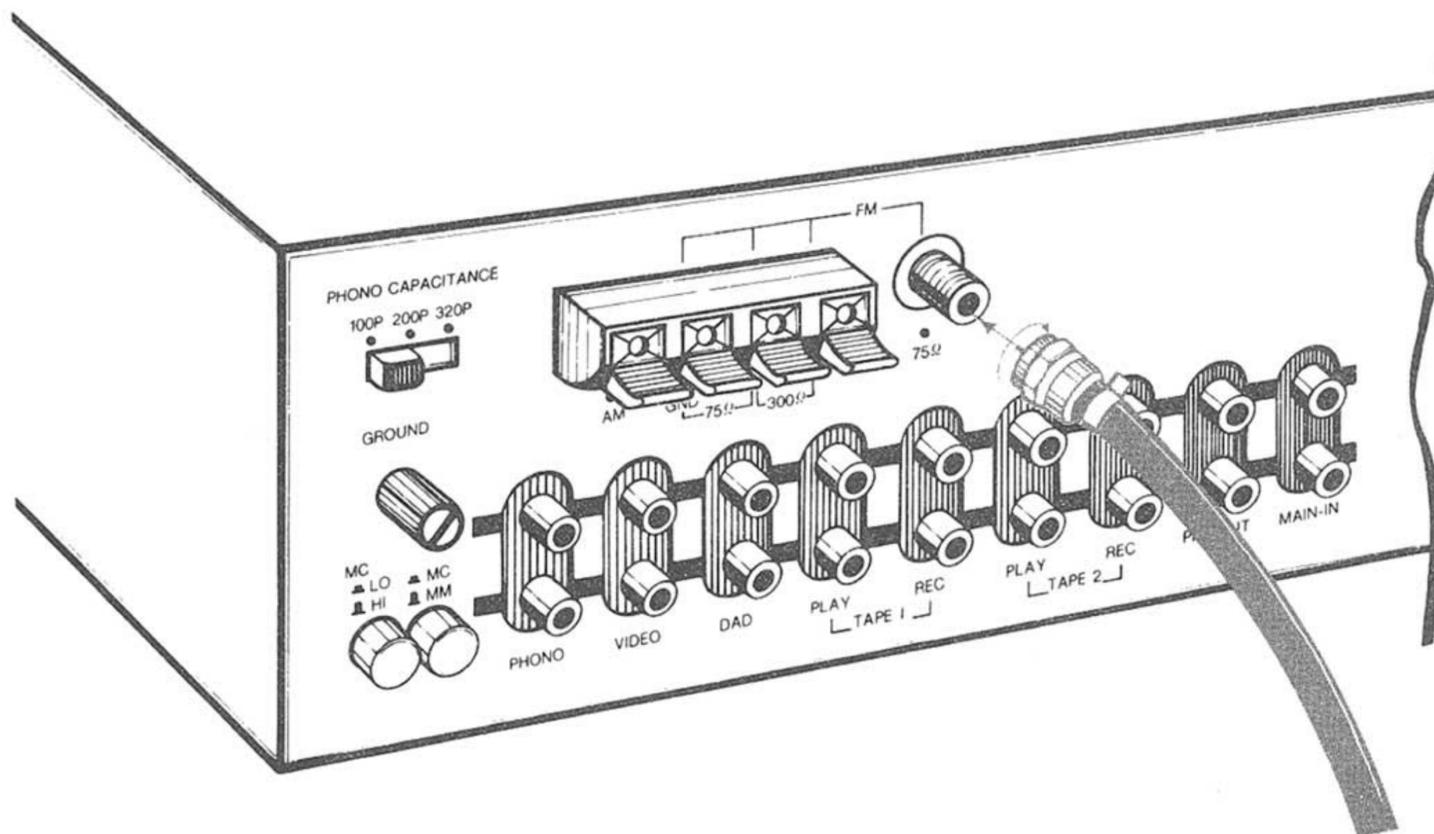


FIG. 3 75 OHM FM ANTENNA
(Coaxial Cable With F-Connector)

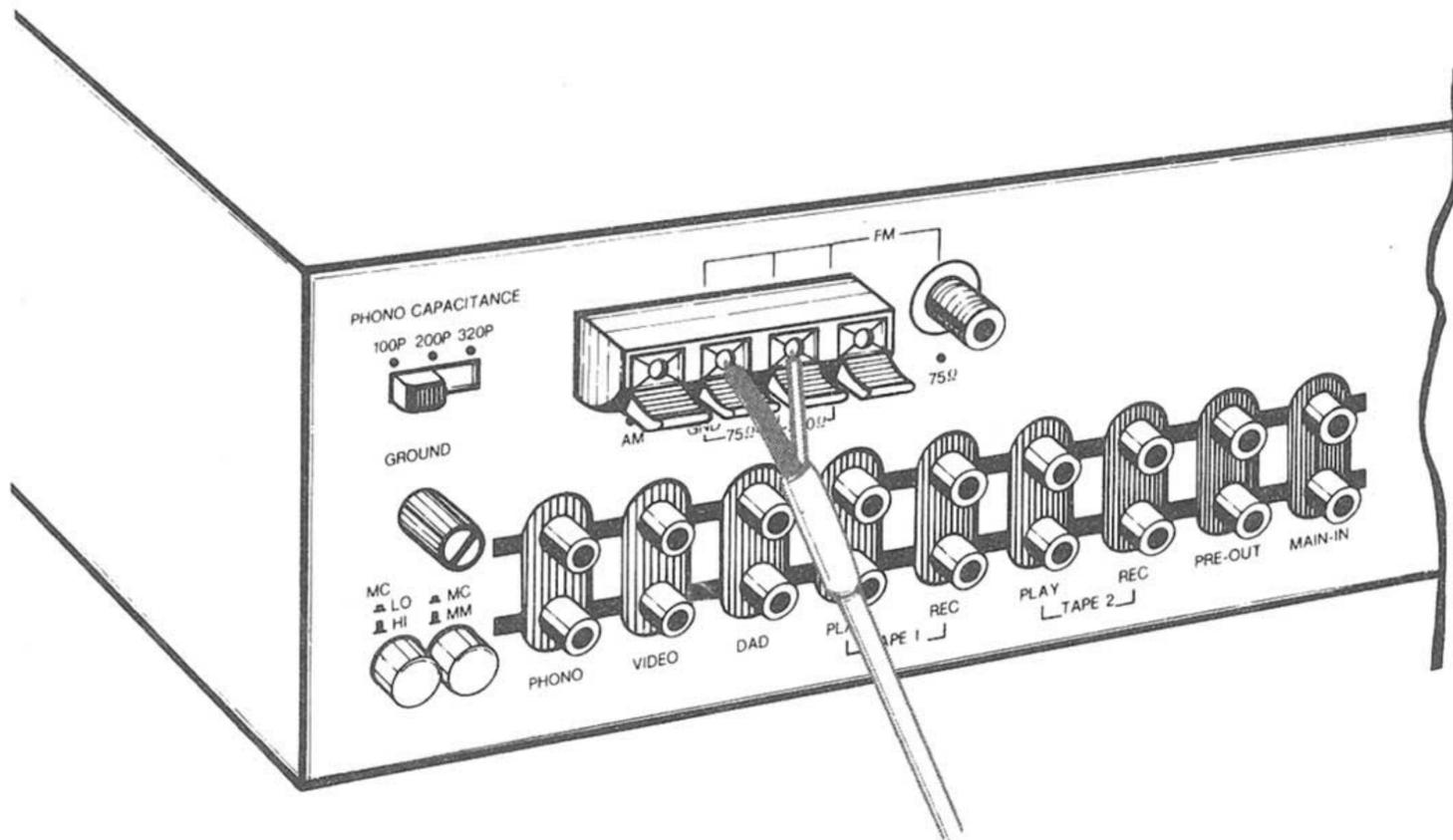


FIG. 4 75 OHM COAXIAL LEAD WITHOUT CONNECTOR

ohm terminals (22) of your D940. Push in and hold one of the black pads while you insert one of the wires into the hole. Release the pad and gently tug the wire to check the connection. Insert the second wire into the second hole in the same manner.

Since your Proton D940 has extraordinary sensitivity, you will probably find that this dipole antenna is all you need for exceptional FM reception. However, there are many other antennas which can help reduce FM interference even further. Ask your Proton Audio dealer to help you decide which type of antenna is best suited to your needs.

In any case, an FM antenna having a 300 ohm (flat) lead is connected in the same manner described above for the basic dipole antenna.

An antenna with a 75 ohm coaxial lead (recommended because it provides better shielding) is connected to the round 75 ohm terminal (23). Insert the antenna lead into this terminal and twist the cable's outer metal ring to tighten the connection (See fig. 3). If the coaxial lead is two wires without a connector, insert the ground wire into the second terminal from the left (marked "G") and the inner wire into the second terminal from the right marked 75 ohm (See fig. 4).

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PHONO PREAMP CONTROLS ①②③④

Your Proton D940 can accept and process signals from almost any type of high quality phono cartridge. There are three rear panel controls which are used to program the D940 for optimum performance with your particular cartridge. These are the PHONO CAPACITANCE switch (2), the MC (moving coil) LO/HI button (3) and the MC/MM (moving coil/moving magnet button) (4).

The MC/MM button (4) adjusts the input sensitivity as well as the gain of the internal phono preamplifier to match the output of a moving coil or moving magnet cartridge. The MC button (3) further adjusts the phono preamplifier to meet the requirements of specific types of moving coil cartridges.

Whenever you are using a moving coil cartridge, the MC/MM button should be pushed to its "in" position. Push the button until it clicks in. Then set the MC button (3) according to the output specification of your cartridge. If yours is a low output moving coil cartridge (1.0mV or lower), the button belongs in its LO position. Push the button until it clicks in. If you are using a high output moving coil cartridge (1.0mV or higher), the button should be in its HI position. Push the button again so that it clicks out. (Always refer to the specification sheet for your particular cartridge).

For other types of cartridges -- moving magnet, moving flux, moving iron (variable reluctance), or induced magnet -- the MC/MM button (4) should be in its "out" position.

The PHONO CAPACITANCE switch (2) adjusts the high frequency equalization of the phono preamplifier. The best way to select the proper setting for this switch is to check your cartridge's specification sheet for its "recommended loading". Then put the PHONO CAPACITANCE switch on the closest number (100P, 200P, or 320P). If you are unable to locate the capacitance of your particular cartridge, simply try all of the settings until you determine which sounds best to you.

Typically, when the capacitance is too low the upper-midrange will be softened and the response at the highest frequencies will be peaky, leading to edgy violin tone and increased surface noise. Too high a value of capacitance will bring the upper-midrange forward while rolling off the extreme highs.

If you are using a low-inductance pickup or a moving-coil cartridge, then the setting of the Capacitance Selector is unimportant. But with many high-inductance magnetic pickups the capacitance setting will audibly alter the sound of the pickup.

PHONO INPUT ⑤

CAUTION: Turn off D940 when making connections to turntable or resetting the MC/MM button. Failure to do so may damage your audio system!

Plug the signal jacks (RCA-type) of your turntable into the gold-plated

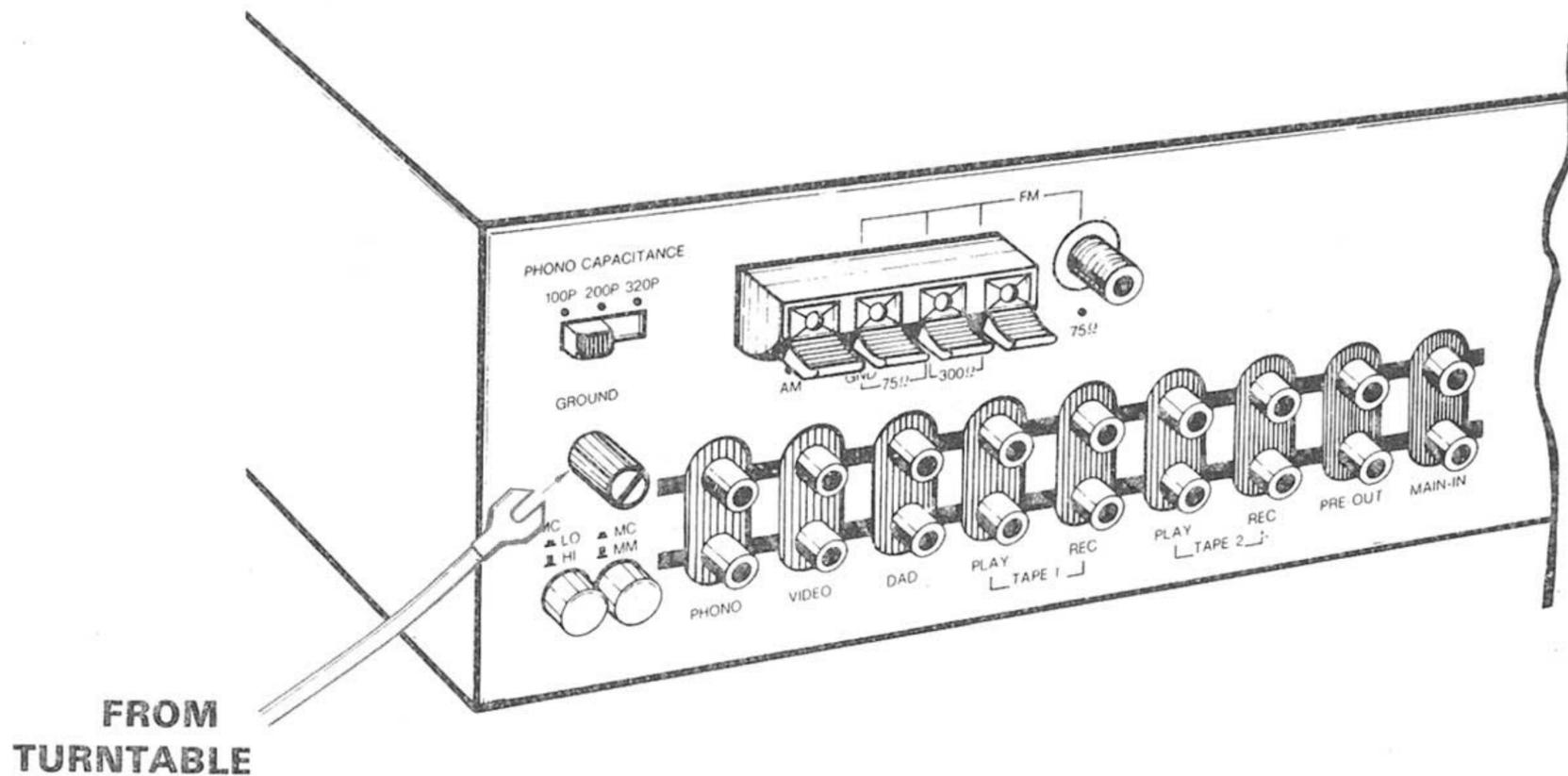


FIG. 5

PHONO input terminals (5). Be sure to connect the turntable's left channel phono output to the top "L" input terminal and the right channel phono output to the bottom "R" input terminal.

Next, connect your turntable's ground cable to the D940 GROUND terminal (1) in the following manner:

Loosen the outer ring on the GROUND terminal by turning the ring counter-clockwise (left) far enough to expose the hole in the inside metal shaft. Insert the end of your turntable's ground wire through this hole and tighten the outer ring (turn clockwise) to hold the ground wire in place (fig. 5).

If your ground wire has a U-shaped lug on its end, simply loosen the outer ring on the D940 terminal, position the

lug around the shaft between the outer ring and the D940 rear panel, and tighten the ring.

VIDEO ⑥ and DAD ⑦ INPUTS

The VIDEO and DAD input terminals both accept line level audio signals from any auxiliary source. You can use the VIDEO input to receive the direct audio program from a video component (tuner, monitor/receiver, stereo TV sound decoder, VCR, or video disc player).

This allows you to enjoy high fidelity sound from your TV system, video tapes, or discs.

The DAD input is commonly used to receive signals from a digital audio disc player.

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Use high quality RCA-type cables to connect left and right audio outputs from your source. Be sure to maintain accurate left and right channel connections.

If yours is a mono audio source (such as a mono VCR), you can connect the single audio output to either left or right channel input. When you select that input on your D940 front panel, you will have to remember to also put your D940 in its mono mode so that signals will be sent to both channel speakers. A more convenient method of hook-up is to use a Y-adaptor to split the mono signal into two signals (one for each input).

TAPE LOOPS (8 and 9) (10 and 11)

RECORD TERMINALS. The terminals marked RECORD are output terminals. The signal appearing at these terminals is always from the program source which you have selected with the front panel RECORD selector. This signal is not affected by bass, treble, volume or balance controls.

TAPE 1 REC/PLAY. The tape connections (8, 9) may be used with recorders of all types: cassette, microcassette, open-reel, digital etc. To make recordings, connect a stereo patch cord from the D940 RECORD jacks to the recorder's LINE IN jack (not to its microphone inputs). To play back tapes, connect a stereo patch cord from the recorder's LINE OUT jacks to the D940 PLAY input jacks.

TAPE 2 REC/PLAY. These jacks (10, 11) allow you to connect a second tape recorder of any type and the D940 is wired to permit dubbing tapes from either recorder to the other. Connect a cable from the RECORD jacks to the tape deck's LINE IN jacks, and another cable from the deck's LINE OUT jacks to the PLAY input jacks on the amplifier.

The TAPE 2 jacks may be used for a signal-processing accessory instead of a second tape recorder. Examples of such accessories include a dynamic range processor, a dynamic noise filter, a CX or DBX disc decoder, or any other device whose operation depends on the setting of a signal threshold. Connect a patch cord from the RECORD jacks to the processor's inputs, and another patch cord from the PLAY jacks to the processor's outputs.

Other signal processing accessories, such as a graphic equalizer or the special equalizer supplied with some loudspeakers (e.g. Bose, Electro-Voice, KLH) may be connected either to the Tape jacks or at the Preamp Out jacks. The choice is a matter of convenience.

PRE-OUT/MAIN-IN 12 and 13

An integrated amplifier "integrates" a preamplifier and a power amplifier into the same chassis. Your Proton D940 allows you to get in between the preamplifier and power amplifier to connect a variety of signal processing

equipment such as an equalizer, noise reduction system, etc. Unlike the REC output, the PRE-OUT terminals are affected by bass, treble, volume, balance, mono, BASS EQ and loudness controls.

Your unit arrives from the factory with metal "U" shaped connectors which bridge the PRE-OUT terminals (12) to the MAIN-IN terminals (13). These connectors should not be removed unless you are connecting a signal processor between these two terminals.

To make such a connection, first turn off power and remove the two "U" shaped connectors by pulling them straight out away from the rear panel. Save these connectors in case you want to remove your signal processor later.

Next, use high quality RCA-type cables to connect the PRE-OUT terminals (12) to the line level input terminals on your signal processor. Be careful to connect left channel to left channel and right channel to right channel.

Now use the same type of cable to connect the output terminals of your signal processor to the MAIN-IN terminals (13) on your D940. Again, be sure to maintain accurate left and right channel connections.

NOTE: The PRE-OUT terminals can also be connected to an outboard power amplifier. This flexibility allows you to increase the power of your system without having to replace the preamplifier in your D940. If you decide to do this, short the D940's MAIN-IN terminals with shorted RCA plugs. This will disable the D940's amplifiers.

ANTI-CLIPPING CIRCUIT™ 14

The purpose of Proton's ANTI-CLIPPING CIRCUIT is to allow you to achieve effectively higher volume levels without distorting your music or endangering your loudspeakers. It accomplishes this by gently limiting any wave form which would otherwise drive the amplifier into clipping the sound signal into a harsh potentially speaker-damaging "square" wave.

To activate this circuit, press the A.C.C. button (14) in until it clicks. We recommend using it when compact discs will be played at loud levels. If you listen at moderate power levels, the A.C.C. button may be left off (out).

BRIDGING BUTTON 15

BRIDGING: This button (15) "bridges" the two power amplifier channels to form a monophonic amplifier with more than double the output power. To convert to bridged operation, the following procedure should be followed.

- 1) Switch OFF the POWER.
- 2) Disconnect the metal jumper or signal cable from the Left-channel MAIN-IN to the power amplifier section of the D940. In the bridged mode the amplifier is driven only through its right-channel MAIN input. (If you need stereophonic reproduction, the Left-channel PREAMP OUT signal can be used to drive a second, separate power amplifier. If a Proton D940 in bridged mode is used for the second stereophonic channel, it too will be driven through

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its right-channel MAIN input, regardless of whether it is used for the left or right speaker.)

3) Disconnect any speaker wires from both the SPK A and SPK B terminals. From the speaker which is to be driven by the bridged D940, connect its positive lead to the red R+ terminal (the extreme left terminal in the upper row), and its negative lead to the red L+ terminal (the extreme right terminal in the upper row), in the SPK A group of terminals. Do NOT connect any wires to the black terminals (R- and L-).

If you want to drive two speakers in parallel, connect the second speaker's leads to the red (R+ and L-) terminals in the lower SPK B group. Do not connect any wires to the black (R- and L-) terminals.

NOTE: In the bridged mode the loudspeaker's impedance is effectively halved as "seen" by the amplifier. An 8-ohm load looks like 4 ohms, a 4-ohm load looks like 2 ohms, and a pair of 4-ohm speakers operated in parallel will look like a 1-ohm load. Driving a pair of 4-ohm speakers to high levels may cause the amplifier to overheat and shut down. For best results the bridging mode should be used with only a single 4-ohm or 8-ohm speaker in each channel.

CAUTION: In the bridged mode the speaker wires be "floating" with respect to the circuit ground. Do NOT connect the speaker wires to anything which shares a common ground between stereo channels (such as a speaker switch, an adapter for electrostatic headphones, or subwoofer), nor to anything which shares a common ground

with the amplifier's inputs (such as a switching comparator or a distortion analyzer).

4) After the preceding conditions have been satisfied, remove the screw from the metal bracket which holds the BRIDGING button down to its normal OFF position. (Save the bracket and screw for possible reuse.) Press the BRIDGING button so it pops up (ON).

5) To return the D940 to normal stereo operation later, first turn off the power. Depress the BRIDGING button to OFF and reattach the button cover to prevent accidental activation.

Restore the left channel PRE-OUT to MAIN IN connection, and re-connect loudspeaker wires to the appropriate terminals as described below under

SPEAKER TERMINALS 16

The Proton D940 is equipped with speaker terminals for two pairs of speakers. Most people connect their main (or front) speakers to the SPK A outputs (top row).

For best possible sound quality, Proton always recommends the use of heavy gauge speaker wire. The absolute minimum size recommended is 18 gauge (common lamp cord), and this is acceptable only when the wire will not be run longer than 12 feet. Smaller gauge wire (higher number) will almost always result in some degradation of sound. A heavier 16 gauge or 14 gauge wire is preferable, especially if you will be running speaker wire longer than 12 feet and/or using two pairs of speakers.

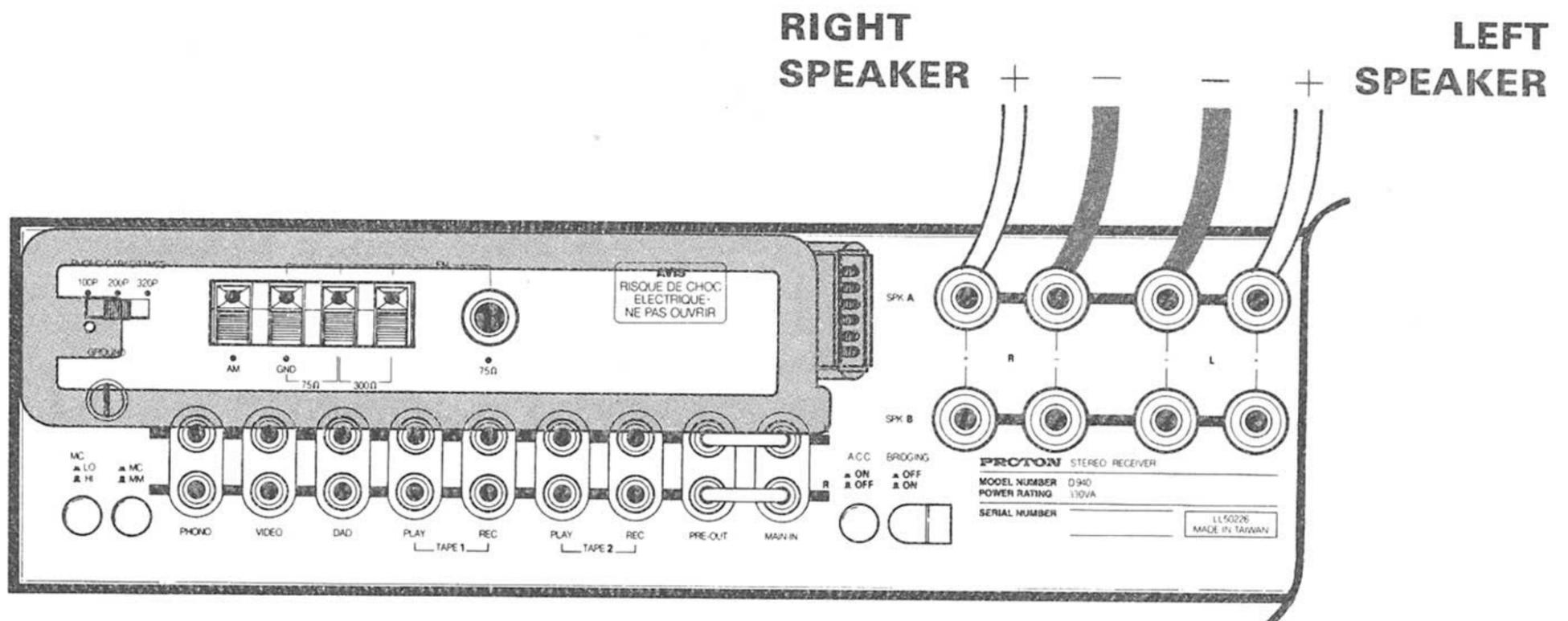


FIG. 6

To connect your speakers, strip approximately 1/2" of insulation from the two conductors on each of the cord and twist the small internal wires together. (If possible, "tin" these wires with solder.) Rotate the knob anticlockwise on appropriate speaker terminal, insert the wire into the hole which is now exposed in the terminal, and rotate the knob clockwise until tight. The hole will close around the wire and hold it in place. Tug gently to be sure an adequate connection has been made (fig. 6). Repeat this procedure with the remaining speaker leads.

NOTE: Banana plugs are not recommended for connecting your speakers to the D940's outputs. The D940's terminals were designed for lower contact resistance than banana jacks and plugs to assure maximum current transfer. This is especially important with out DPD design.

Extra care should be taken to maintain proper left and right channel connections as well as proper phase (positive and negative connections). The speaker terminals on your D940 are color coded -- red posts indicate positive ("+") terminals and black posts indicate negative ("-") terminals. Positive output terminals on your D940 should be connected to the positive input terminals on your speakers.

Usually, speaker cord is coded in some manner to help you make proper connections. In some cords, one wire is copper and the other is silver. Or a stripe will appear along the insulator on one side. Or one side of the insulator will be rounded while the other is squared. Whatever the case, it is very important to the sound quality (especially bass response) that your speakers be connected "in phase".

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AC OUTLETS ⑰ ⑱ and ⑲

NOTE:

AC OUTLETS are not provided on unit for European, British and Australian Models.

The Proton D940 provides 3 AC power outlets into which you can plug other audio/video equipment. The SWITCHED outlet (19) receives power only when the D940 itself is powered on. Any piece of equipment connected to this outlet can be turned on and off by the power control of the D940. (It is not recommended for amplifiers or equipment which draw in excess of 250 watts. The D940's power switch could be damaged. It's better to plug an outboard high-power amp directly into a wall outlet and use its own power switch, being sure to shut the amp off before switching off the D940.)

The UNSWITCHED outlets (17, 18) are not affected by the power control on the D940 front panel. The outlets receive power at all times that the D940 is connected to a live AC wall outlet. Use these UNSWITCHED outlets for any piece of equipment which should be turned on and off by its own power control (ie, turntable, tape deck, etc.). The outlets can also be used for equipment which contains a clock or timer (eg: VCR). These outlets should not be used to supply more than 250 watts.

AC CORD ⑳

NOTE:

(Only for the United Kingdom)
AC CORD should be wired to 13 amp. plug as per instructions attached to cord. Once connections have been made, plug into a live 240V/50 cycle outlet.

Once you have made all of the connections as described above, plug the AC CORD (20) into a live wall outlet. (Please refer to power supply specification on last page.)

FRONT PANEL CONTROLS

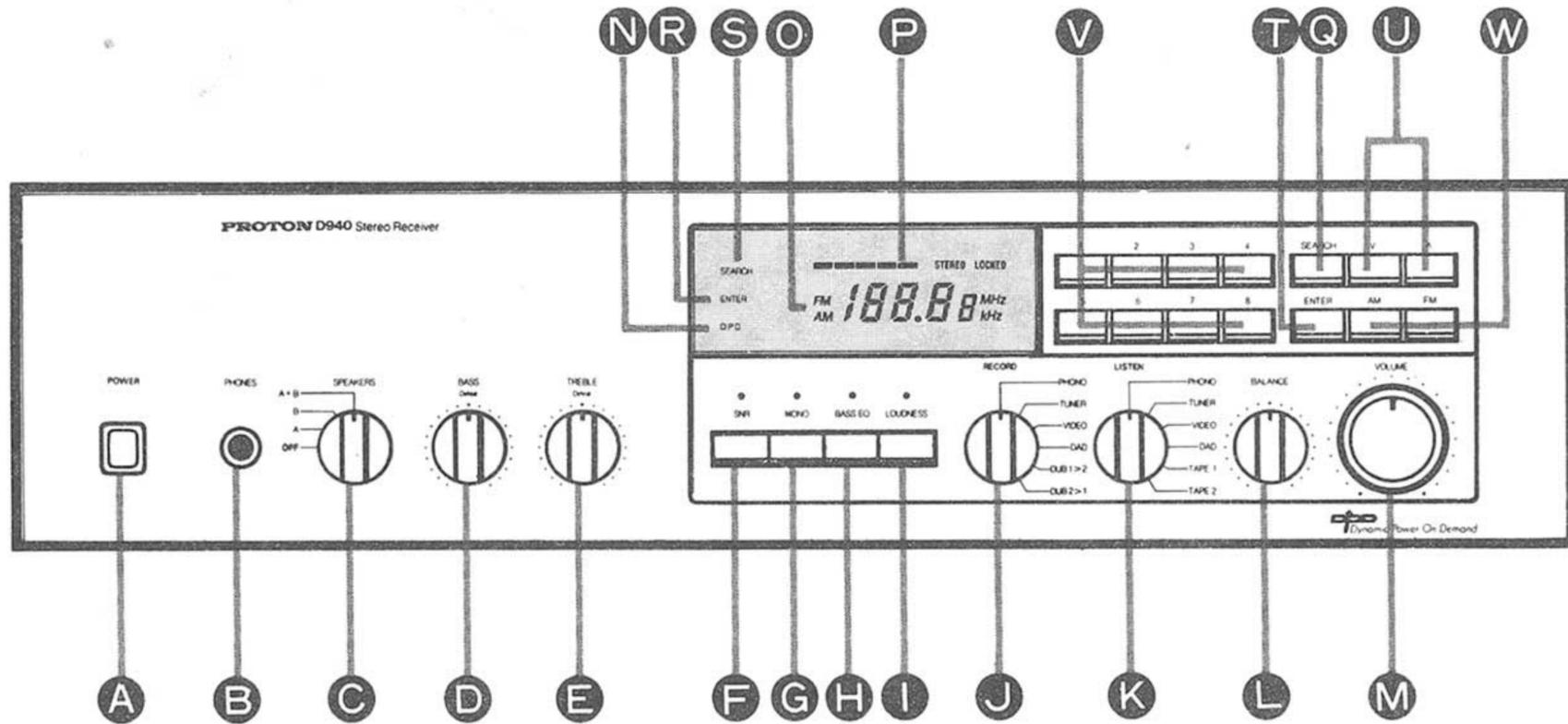


FIG. 7

POWER **A**

Depress this button to switch on the D940 and any other equipment plugged into the rear SWITCHED AC outlet. The digital frequency display (I) will illuminate when the power is ON. To switch the power off, depress the button again and release it.

PHONES **B**

The headphone terminal (B) provides a stereo audio signal sufficient for driving all conventional stereo headphones except electrostatic headphones which generally require

signal from the speaker output terminals.

Before plugging headphones into the PHONES jack, turn down the VOLUME control (M) for safety.

Plug your standard headphone jack into this terminal for listening. If your headphones have a mini-sized jack, you will need a mini-to-RCA adaptor. Your Proton Audio dealer can help you with this.

SPEAKER SELECTOR **C**

When this switch is set to "A" sound is heard only from the loudspeakers connected to the SPKS A

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terminals on the rear panel. When the switch is set to "B" the SPKS A terminals are shut off and sound is heard only from the loudspeakers connected to the SPKS B terminals. At the "A + B" setting the amplifier's output power is fed to both sets of speakers; they are wired in parallel by the switch. At the "OFF" setting both sets of speakers are silenced.

Thus if you have your main stereo speakers wired to the "A" terminals and a set of extension speakers wired to the "B" terminals, you can choose to hear only the main speakers (A), only the extension speakers (B), or both (A + B).

The amplifier's output signal is present at the PHONES jack at all settings of the SPKS selector switch. When using headphones it normally is advisable to switch OFF the loudspeakers. Then the VOLUME control may freely be used to adjust the loudness level in the headphones with no fear of overdriving the speakers or disturbing neighbors.

BASS Ⓓ

The BASS knob (D) affects the relative volume level of the lower audio frequencies. At its center (detent) position it has no effect on the signal; the tone control circuits are defeated. Turn the control clockwise (to the right) to boost (increase) bass output. Turn the control counterclockwise (to the left) to cut (decrease) bass output.

As with any tone control, the bass

knob should be adjusted to the point where it sounds best to you.

TREBLE Ⓔ

The TREBLE knob (E) functions just like the BASS knob except that it affects the relative volume level of the higher frequencies. Turn the control clockwise (right) from center to boost (increase) treble output. Turn the knob counter-clockwise (left) from center to cut (decrease) treble output.

SNR Ⓕ

Your Proton D940 features the SCHOTZ NOISE REDUCTION system which improves FM performance by reducing annoying back-ground hiss common in medium strength FM signals. Since the SNR circuit has no effect on strong signals, the circuit may be left on at all times.

The SNR button (F) activates or defeats the circuit. When the lamp above the button is ON, the Schotz Noise Reduction System is working. Push the button in until the lamp is off to disable the circuit.

MONO Ⓖ

When the MONO lamp (G) is OFF your D940 is operating in its STEREO mode (as long as a stereo signal is being

processed). When you push this button in and light the lamp, the two channels will be combined to form a mono signal.

Push this button in when you are listening to a mono source (such as a VCR) which you have connected to a single channel input on your D940. This causes the audio signal to be sent to both channel outputs. Be sure to press the MONO button again (lamp out) Activate this button when you find a weak FM station that is very noisy in stereo. In such cases, the noise can be reduced by switching the D940 to mono, when you return to a stereo source.

BASS EQ (H)

Whenever speaker components are attached to a sealed box (as in the case of all acoustic suspension and infinite baffle speakers), the resonant frequency of the woofer increases to approximately 60 to 80 Hz. A roll-off in the bass response of 12dB per octave below the resonant frequency is inherent in the design of such speakers.

To compensate for this reduced bass response, your Proton D940 will provide a 10dB boost at 42Hz. Activate this special bass equalization circuit by pushing the BASS EQ button (H) in until the lamp lights. Push the button again to defeat the boost.

NOTE: While the BASS EQ can be used with "vented" speakers (bass-reflex, tuned port, auxiliary bass radiator, et al.), these designs

usually exhibit a much more rapid rolloff (typically either 18 or 24 dB/octave) below the system's planned cutoff. Consequently, in most cases the BASS EQ will not produce the same dramatic benefit with these designs as it does with acoustic-suspension systems.

If your loudspeakers already have extended deepbass response, the BASS EQ will still be useful to compensate for the bass rolloffs in many recordings. The equalization also provides psychoacoustically effective "loudness" compensation when you listen to music at low volume levels.

Two CAUTIONS should be observed when using the BASS EQ:

1) This circuit is intended for use with loudspeakers having woofers eight inches (20cm) or larger in diameter, preferably those with "long-throw" voice-coils and acoustic-suspension enclosures. It is not recommended for use with small "mini" speakers having woofers smaller than six inches; in most cases they are not designed to accept high power input at low frequencies and may only distort or suffer damage as a result.

2) Be prepared to switch off the equalization when playing recordings (especially digitally mastered discs) or CDS that contain unusually potent recorded bass. The BASS EQ boosts deep bass levels by 12dB (i.e. by a factor of 16 in power). With this boost, a bass-heavy input signal may overdrive the amplifier into clipping and more important-overdrive your woofers beyond their safe excursion limits, causing the voice-coils to clatter against the magnet back plates. As

long as the speaker sounds good it probably is OK; but distorted or unmusical sounds, such as clattering noised, are a sign of distress in a woofer.

LOUDNESS ①

Your Proton D940 also features a Loudness Compensation circuit which helps improve sound quality at low volume levels.

The human ear is naturally more sensitive to mid-range frequencies than it is to very high and very low frequencies. As a result, high and low frequencies are difficult to hear at low volume levels. The Loudness circuit in the D940 boosts the relative volume level of these frequencies so that they are heard when the volume is low.

To activate the loudness circuit push the LOUDNESS button (I) in until the lamp lights.

As the volume level increases, the ear no longer has difficulty hearing these high and low frequencies so the boost is no longer required. In general, it is best to defeat the loudness circuit whenever you turn the volume control up past its 10 o'clock position.

Push the button again and release it to defeat the circuit.

RECORDING SELECTOR ②

This rotary switch selects which

input signal will be fed out to the rear-panel RECORD jacks for tape recording. The selected signal is fed to both TAPE 1 and TAPE 2 and may be recorded simultaneously on two tape machines. The RECORDING selector operates independently of the LISTENING selector; thus you can record from one program source while listening to a completely separate signal source. You can record from the TUNER while listening to PHONO, or copy recordings from TAPE 1 onto TAPE 2 while listening to PHONO or TUNER.

In order to dub (copy) tapes from TAPE 1 onto TAPE 2, simply set the RECORDING selector to DUB 1>2. The playback signal from the TAPE 1 recorder will be fed to the TAPE 2 REC jacks for recording. Then you can set the LISTENING selector to TAPE 1 (to hear the source tape), or to TAPE 2 (in order to monitor the output of the copying recorder), or to PHONO, TUNER, or VIDEO if you want to listen to something else while the copying proceeds. Changing the setting of the LISTENING selector has no effect on the signal fed to the tape recorder by the RECORDING selector switch.

Similarly, tapes can be copied from TAPE 2 back to TAPE 1 simply by setting the RECORDING selector to DUB 2>1. In all recording, you set the RECORDING selector to the program source that you want to record from.

If you have a signal processor such as an equalizer or a DBX processor connected to the TAPE 2 jacks, you can use it to process the playback signal from the TAPE 1 recorder by setting the RECORD selector to DUB 1>2. Then set the LISTENING selector to TAPE 1

to hear the unprocessed signal, or to TAPE 2 to hear the processed signal.

If you have a DBX or CX decoder connected to the TAPE 2 jacks, you can use it to decode DBX-or CX-encoded records by setting the RECORDING selector to PHONO. This will feed the preamplified phono signal to the decoder via the RECORD jacks. Then set the LISTENING selector to TAPE 2 to hear the decoded signal.

Similarly, if you have an equalizer or any other signal processor connected to the TAPE 2 jacks, you can use it to process any input signal by setting the RECORDING selector to the program source that you want to listen to, so that the desired signal will be fed to the processor via the RECORD jacks. Then set the LISTENING selector to TAPE 2 to hear the processed signal.

If you want to use an equalizer, DBX encoder, or other signal processor to process a signal before recording it, you must disconnect the tape recorder from the D940's RECORD and PLAY jacks. Connect the processor to the D940's REC PLAY jacks, and then connect the tape recorder to the processor's own TAPE record play jacks.

LISTEN SELECTOR Ⓚ

This rotary switch selects the signal that you will hear.

If you have a three-head tape recorder and wish to monitor its

playback output while a recording is being made, use the RECORDING selector to select the desired input signal and feed it to the recorder. Then set the LISTEN selector to TAPE 1 or TAPE 2 (as appropriate) to hear the monitor output from the recorder.

Similarly, if you have a signal processor connected to the TAPE 2 jacks and want to hear the processed signal, first use the RECORDING selector to choose the desired input signal and feed it to the processor. Then set the LISTEN selector to TAPE 2 to hear the processed signal.

BALANCE Ⓛ

Use the BALANCE knob (L) to adjust the relative level of left and right channel speakers. The knob has a detent at its center (neutral) position. Turn the knob clockwise (right) past center to increase the apparent level of the right channel. Turn it counterclockwise (left) to increase the apparent volume level of the left channel.

Adjust this balance control so that a central sound such as a single voice seems to be coming from a position midway between the speakers. You may use it to compensate for one speaker being located closer than the other to your listening position, one speaker being located farther from your receiver (longer speaker wire), or one channel of your program material having a lower output level.

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VOLUME (M)

The VOLUME knob (M) affects the output level of your D940. Rotating the knob clockwise (to the right) increases the level of the sound. Rotating it counterclockwise (to the left) reduces the level of the sound.

Your D940 employs an active volume control. The average amplifier makes use of a simple "pot" at the preamp output. This variable resistance means that signal transfer to the power amp is never truly optimized until the control is "up" all the way (out of the circuit). At realistic levels, you never listen with the full benefit of the "spec". With the D940 as you rotate the level control, the dual-point feedback engineering used actually changes the way the preamp works. Lower the volume, and a true reduction in "gain" improves the signal-to-noise ratio by 10dB, and transient response and I.M. measurements don't vary as you set different listening levels.

D.P.D. LED (N)

Your Proton D940 is equipped with D.P.D. (Dynamic Power on Demand) amplifier circuits to deliver much more dynamic power than any other conventional amplifier. When you drive Proton D940 heavily enough, the music signal will trigger and activate the D.P.D. circuit. The D.P.D. LED (N) will light and show you that D.P.D. circuit is working. Also the D.P.D. LED may flicker ON and OFF when the

amplifier is working close to the threshold of the preset level of the D.P.D. circuit. This is normal.

TUNING CONTROLS (S)(Q)(U)

When the SEARCH mode is engaged SEARCH LED (S) ON, the tuner scans in a station-by-station mode rather than in small frequency increments. When the Up/Down Tuning buttons (U) are tapped, the tuner scans up or down in frequency and automatically stops at the next station whose signal is strong enough for good reception.

If you want to tune to a weak station, or if you want to fine-tune the tuner manually, disengage the SEARCH mode: Press SEARCH button (Q) until SEARCH lamp (S) goes out.

Now when you press the Up/Down tuning button (U), the tuner will move in small increments. The Up/Down Tuning buttons (U) allow you to tune up and down the AM or FM band. Depress \wedge button to tune to higher frequencies, and \vee button to tune to lower frequencies. When either Tuning button is pushed momentarily, the tuned frequency is shifted up or down by one step, unless SEARCH is active. (If SEARCH is active, the tuner will scan in a station-by-station mode rather than in fixed steps.)

If a Tuning button is held down with continuous pressure rather than just tapped, the tuning pauses briefly and then scans rapidly up or down in frequency.

Thus, to manually tune a station, the procedure is to press continuously on either Tuning button until the tuned frequency is close to the desired broadcast frequency, and then fine-tune by tapping the Tuning button until the digital frequency display exactly matches the station's broadcast frequency. If you know the exact broadcast frequency, simply set the tuner to that frequency. If you know only the approximate frequency, tune to the vicinity of the station and then observe the signal-strength indicator while fine tuning. Fine-tune to obtain maximum signal strength, and a "LOCKED" indication.

AM/FM SELECTION

These buttons are used to switch between the two tuning bands. The digital display (O) shows the tuned frequency in kHz for AM and MHz for FM.

The tuning circuit has a "last station selected" memory. When you switch between tuning bands, the circuit automatically re-tunes the last station that you were tuned to when you previously used that band.

ENTER

This button is used to enter the frequencies of your favorite stations in the receiver's 16 memory pre-sets (eight pre-sets on the FM band and eight pre-sets on AM). The procedure

is as follows.

1) Decide which station you want to assign to each preset. On each band you may arrange the stations in any order that you find convenient (or easy to remember): alphabetical, numerical, or in order of increasing frequency. If you are not certain of the frequencies of the stations, check the station/frequency directory in a local newspaper or broadcasting guide.

2) Select the AM or FM band, as appropriate. Using the Up/Down Tuning button (with the SEARCH lamp OUT), manually tune to the first station on your list. Check the Signal Strength indicators (P) to be sure that you have maximum signal strength channel. Press the ENTER button (T) then press MEMORY button #1 to store the first station.

3) Manually tune to the second station on your list. Press the ENTER button and press MEMORY button #2 to store the second station.

4) Manually tune to the third station on your list, press ENTER, and press #3 to store the station. Continue in this manner with any other stations that you want to store in the remaining pre-sets. Then switch to the other tuning band (FM or AM) and repeat the process for the second set of eight pre-sets.

Incidentally, if you make a mistake or change your mind, it is not necessary to re-program all MEMORY in sequence. You can re-program any MEMORY simply by tuning to the desired frequency, pressing ENTER, and pressing the MEMORY button that you want to re-program.

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NOTE: If you accidentally press ENTER, either wait for ten seconds for the ENTER mode to disengage automatically, or immediately press an Up/Down Tuning button to change the tuned frequency. This forces the tuner out of the ENTER mode.

MEMORY BUTTONS 1~8

To tune your favorite stations from day to day, just touch the appropriate MEMORY button.

The D940 has a "last station" memory. When the power is switched on, the receiver comes on tuned to the same station that it was tuned to when it was switched off.

The D940 memory preserves frequency assignments when the receiver is switched off or unplugged from the AC wall socket, for a period of up to two weeks. Thus you can rearrange your stereo system, or move the receiver from room to room, without losing the pre-set frequencies.

SIGNAL STRENGTH/STEREO INDICATORS

Signal strength. The signal strength indicator is a series of five bars. The number of illuminated bars increases with the strength of the received signal. If only one or two bars illuminate, the signal is too

weak for noise-free reception in stereo, but reception may be satisfactory in mono. Strong signals are indicated by four or five illuminated bars. If fewer than four bars are illuminated when you are correctly tuned to a station, then you are not getting all of the noise-quieting in stereo that the receiver is capable of unless the SNR circuit is in use. Otherwise, a better antenna (or a re-aiming of your present antenna) is desirable in order to pull in a stronger signal.

FM STEREO Indicator. The word "STEREO" illuminated when a stereo FM broadcast is being received and decoded by the receiver's multiplex decoder circuit. If a station is broadcasting in mono, or if a stereo broadcast signal is too weak for reasonably noise-free reception in stereo, then the receiver will automatically switch into mono and this light will not illuminate. Also, if you have mistuned the receiver away from the center of a station's broadcast channel, the stereo decoding circuits may not lock onto the signal and it may be received in mono. (This will also be indicated by extinguishing of the "LOCKED" indicator.) Best tuning is achieved when the "LOCKED" lamp is lit with the highest number of lit signal strength bars.

MAINTENANCE

Your Proton D940 has been carefully designed to look as good as it performs. A soft cloth is usually all that is necessary to keep the unit dust-free. Should the cabinet become soiled or fingerprinted use a soft cloth, mild soap, and water to clean it. Never use an abrasive cleaner in any part of this product.

To insure that proper connections are maintained, rotate each cable within its rear panel terminal periodically (about once a month). This practice keeps corrosion (caused by oxidation) from building up on terminals or cables and weakening the connection. For the same reason, it is a good idea to similarly rotate every connection on all of your audio and video equipment at the same time.

SPECIFICATIONS

FM TUNER SECTION

Usable Sensitivity:	1.8uV
50dB Quieting Sensitivity (MONO/Stereo):	3.2uV/25uV
T.H.D. @ 65dBf:	0.1%
S/N Ratio (A weighted at 65dBf) (MONO/Stereo):	83dB/74dB
HUM and Noise @ 65dBf (MONO/Stereo):	75dB/70dB
Capture Ratio @ 45dBf:	1.5dB
Image/rejection:	55dB
IF Rejection:	90dB
AM Rejection:	60dB
Stereo Separation (1kHz):	45dB

AM TUNER SECTION

Usable Sensitivity:	20uV
Selectivity:	35dB
Image Rejection:	35dB
IF Rejection:	50dB
T.H.D. 400Hz 30% Modulation @ 10mV:	0.5%
S/N Ratio @ 10mV:	43dB

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AMPLIFIER SECTION

Rated Power Output (20Hz-20kHz, 8 OHM):	40W, Per Channel
Dynamic Power at 8 OHM/4 OHM/2 OHM	
1) I.H.F. Standard 20ms Duration:	160W / 280W / 380W
2) 100ms Duration:	150W / 220W / 230W
3) 200ms Duration:	150W / 190W / 200W
(Duty Cycle: 500ms)	
Dynamic Headroom at 8 OHM/4 OHM/2OHM:	6dB
T.H.D. at Ratio Power:	0.02%
I.M.D. at Rated Power:	0.008%
Clipping Power at 8 OHM/4 OHM/2 OHM:	50W / 80W / 100W
Damping Factor:	>90
Frequency Response 20-20kHz:	±0.2dB
Power Bandwidth at T.H.D. 0.1%:	10-60kHz
High Level Input Resistance/Capacitance	40K OHM/220pF
Line Input Sensitivity (Video):	150mV
(Tape Play):	150mV
(Phono MM):	2.5mV
(Phono MC High/Low):	0.2mV / 0.1mV
Residual Noise (Flat):	0.2mV
Channel Crosstalk (1kHz):	75dB
Function Crosstalk (1kHz):	78dB
S/N Ratio (A-Weighted)(Video):	105dB
(Tape Play):	105dB
(Phono MM):	92dB
(Phono MC):	75dB
Bass Control @ 100Hz (Boost/cut):	+9/-9dB
Treble Control @ 10kHz (Boost/cut):	+9/-9dB
Bass EQ @ 75Hz:	+3dB
Loudness @ -30dB (100Hz):	+6dB
(10kHz):	+3dB
Phono Input Resistance (MM/MC):	47K OHM/100 OHM
Phono Input Capacitance (Selectable):	100pF / 200pF / 320pF
Phono Overload @ 1kHz T.H.D. 0.1% (MM):	250mV
Phono T.H.D. at 4.5V Output (MM):	0.01%
(MC):	0.03%
RIAA Response Accuracy MM/MC:	±0.2dB / ±0.5dB
Dimensions W H D (inch):	16 1/2" 3 3/4" 11 1/3"
(cm):	42 9.6 28.8
Net Weight:	8.5 Kg

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Power Supply

U.S. and Canadian Models

120V / 60Hz

European Model

220V / 50Hz

British and Australian Models

240V / 50Hz

Other Area Model (General Model)

110V, 120V, 220V, 240V / 50, 60Hz

D940

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HI-FI
ROOM
TONE

PROTON

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