PROTON®

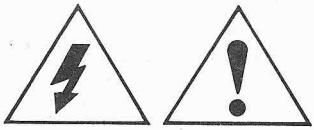
440

OWNER'S MANUAL

440

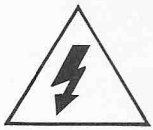
PROTON

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 consitute 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 ETRE INSÉRÉES À FOND SANS EN LAISSER AUCUNE PARTIE À DÉCOUVERT.

❶ Read Instructions - All the safety and operating instructions should be read before the appliance is operated.
❷ Retain Instructions - The safety and operating instructions should be retained for future use.
❸ Heed Warnings - All warnings on the appliance and in the operating instructions should be adhered to.
❹ Follow Instructions - All operating and use instructions should be followed.
❺ 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.
❻ 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.
❼ Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
❽ 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.
❾ Grounding or Polarization - Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
❿ 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.
⓫ Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
⓬ Power Lines - An outdoor antenna should be located away from power lines.
⓭ 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 bulit up static charges.
Section 810 of the National Electricai Code. ANSI/NFPA No. 70-1984 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.
⓮ Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
⓯ Object and Liquid Entry - Care

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

⓰ Damage Requiring Service- The appliance should be serviced by qualified service personnel when:

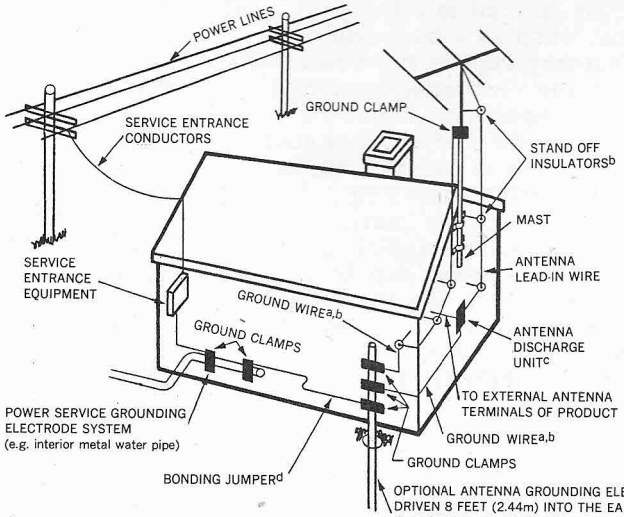
A) The power-supply cord or the plug has been damaged; or
B) Objects have fallen, or liquid has been spilled into the appliance; or
C) The appliance has been exposed to rain; or
D) The appliance does not appear to operate normally or exhibits a marked change in performance; or
E) The appliance has been dropped, or the enclosure damaged.

⓱ 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.

NOTE TO CATV SYSTEM INSTALLER:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specfies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

FIGURE 1
EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810-"RADIO AND TELEVISION EQUIPMENT"



a
Use No. 10 AWG (5.3 mm^2) copper, No.8 AWG (8.4 mm^2) aluminum, No. 17 AWG (1.0 mm^2) copper-clad steel or bronze wire, or larger, as a ground wire.

b
Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4-6 feet (1.22-1.83 m) apart.

c
Mount antenna discharge unit as close as possible to where lead-in enters house.

d
Use jumper wire not smaller than No. 6 AWG (13.3 mm^2) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21 (j).

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INTRODUCTION

Your Proton 440 Stereo FM/AM Tuner has been carefully developed of sound. Whether adding to an exisiting audio or video system or as part of an all new system, you are certain to notice the clarity, detail and depth of performance which make Proton products among the best in the world--regardless of price.

Among the unique characteristics of the Proton 440 is the exceptional FM performance made possible by the inclusion of Proton's own Schotz FM reception system. We're confident you'll find that the excellent quality of your new 440 makes it a pleasure to use.

PROTECTION FROM DAMAGE OR THEFT

The best way to transport your Proton 440 is in its original shipping carton. Once you have unpacked the unit, set aside and save the carton and packing materials in case the unit ever requires shipping.

The serial number of your Proton 440 is located on the unit's rear panel. Record it below for your permanent records. This will aid in the unit's recovery if it is ever lost or stolen.
SERIAL NUMBER: 19045

YOUR AUDIO SYSTEM

Every circuit in your Proton 440 is devoted to the precise capture and reproduction of FM and AM broadcasts. As a result, it can do a remarkable job of bringing you more stations with less noise than ever before. However, it cannot improve upon the signal passed to it by your antenna system; nor can it force good clean reproduction from an amplifier or loudspeaker of marginal quality.

While we recommend the inclusion of other Proton audio (and video) products in your system, your 440 is designed to work quite well with any of the high performance equipment available today.

REAR PANEL CONNECTIONS

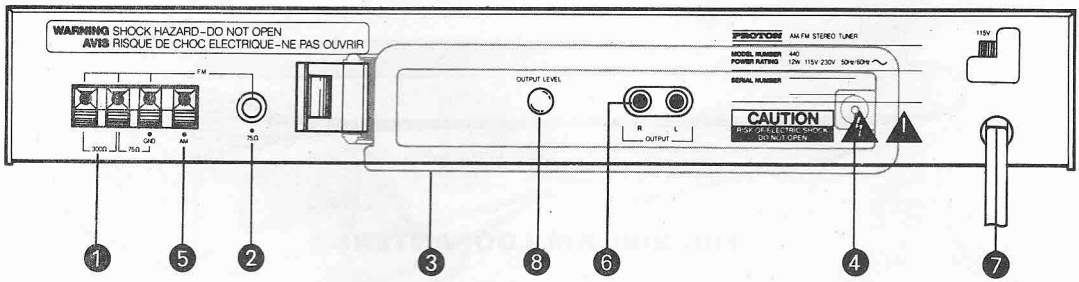


FIG. 1 REAR PANEL

FM ANTENNA TERMINALS (❶ and ❷)

A twin lead dipole antenna is supplied with your Proton 440. When unfolded, this antenna is shaped like a "T". To use the dipole antenna, connect the two wires on the vertical section of the "T" to the 300 terminals (1) of your 440.

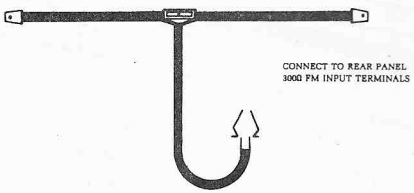


FIG. 2(A) TWIN LEAD DIPOLE FM ANTENNA

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. (Figure 2A).

Since your Proton 440 has the extraordinary sensitivity provided by Proton's Schotz tuner, you will probably find that this dipole antenna is all you need for exceptional FM reception. However, there is a variety of other types of 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 supplying a 300 ohm (flat) lead is connected in the same manner described on the previous page for the basic dipole antenna.

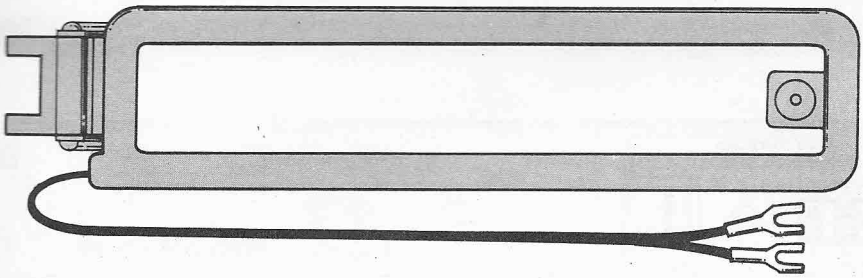


FIG. 2(B) AM LOOPANTENNA

An antenna with a 75 ohm coaxial lead (recommended because it provides better shielding) is connected to the round 75 ohm terminal (2). Insert the antenna lead into this terminal and twist the cable's outer metal ring to tighten the connection. (See figure 3). If the coaxial lead is two wires without a connector, insert the ground wire into the third terminal from the left (marked GND) and the other wire into the second terminal from the left (marked 75). See figure 4.

In many areas, stereo sound for movies and other cable TV programs is carried on an FM frequency which your Proton 440 can receive,if it is wired appropriately to your cable system. contact your Proton dealer or cable company for details on this connection.

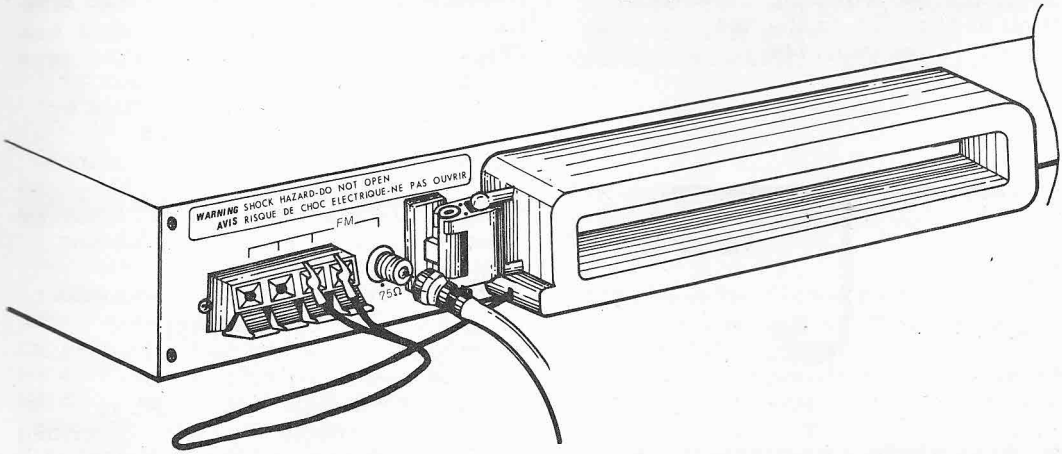


FIG. 3 75 OHM FM ANTENNA/CABLE TV

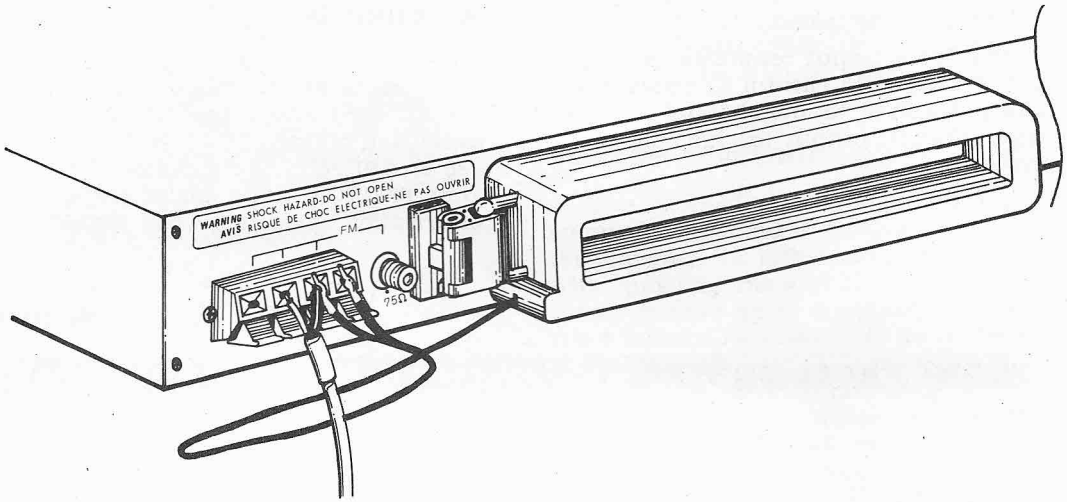


FIG. 4 75 OHM COAXIAL LEAD WITHOUT CONNECTOR

AM ANTENNA ❸

Your Proton 440 has come supplied with an external loop antenna (3) which can be directly mounted to the 440 rear panel or mounted to a wall with a mounting hole supplied (4). Connect both wires supplied with loop antenna (3) to rear panel socket (5) 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.

OUTPUT LEVEL ❽

This control varies the volume level of the tuner's output. You may leave it set at maximum. After you start to use the tuner, you can use this control to adjust the tuner's output so minimize any change in volume level when you switch your amplifier from PHONO to TUNER.

OUTPUT TERMINALS ❻

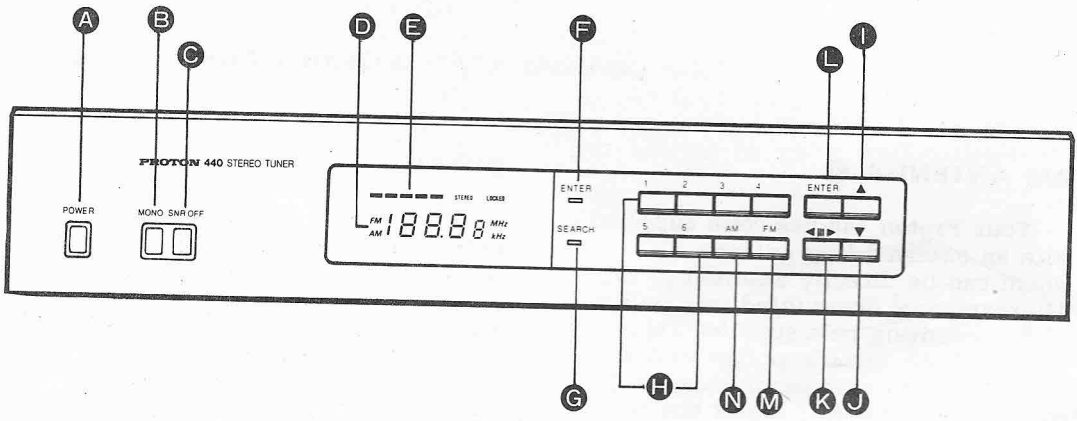
These terminals provide a line level output to be sent to you preamplifier for listening to FM or AM radio. Use high quality RCA-type audio cables to connect these terminals

to the Tuner Input terminals on your preamplifier. Be careful to connect left channel output to left channel input and right channel output to right channel input.

AC CORD ⑦

Once you have made all of the connections as described above, plug the AC cord into a live 120 volt, 60 cycle wall outlet. (EUROPEAN models are 220 or 240 volt, 50/60 cycles. Consult your PROTON audio dealer for specific information regarding your model).

FRONT PANEL CONTROLS



POWER Ⓐ

Push the green POWER button (A) "in" to activate your Proton 440. The digital readout will light up and indicate the last station (FM or AM) to which you had your system tuned.

MONO Ⓑ

When the MONO button (B) is out, your 440 is operating in its STEREO mode (as long as a stereo signal is being received).
When you push this button in, the two

channels will be combined to form a mono signal.

Occassionally you may find a week FM station that is very noisy when you try to listen to it in stereo. In such cases, the noise can be reduced by switching your system to mono. Be sure to switch it back to stereo when you change to a stronger station.

SNR ©

Your Proton 440 features the SCHOTZ NOISE REDUCTION system which improves FM performance by eliminating annoying background hiss common in medium-strength FM signals. Since the SNR circuit has no effect on strong signals, the circuit can be lift on at all times.

The SNR button (C) actually defeats the circuit. When the button is "out" the SCHOTZ NOISE REDUCTION system is working. Push the button until it clicks in to turn the system off.

TUNING INDICATOR Ⓓ

The digital indicator (D) displays the currently tuned frequency in the FM or AM mode.

SIGNAL STRENGTH INDICATOR Ⓔ

The SIGNAL STRENGTH INDICATOR (E) is a row of LEDs which, as the name implies, indicates the strength of the signal your 440 is currently processing. The stronger the signalm the greater the number of lighted LEDs. Four or five lighted LEDs indicates a good, strong signal.

SEARCH CONTROL (Ⓗthrouhg Ⓙ)

The SEARCH function provides a convenient method of tuning FM and AM frequencies. In either mode (FM or AM). pushing the ▲ button(I)causes the tuner to move up in frequency. Pushing the ▼ button(J)causes it to move down in frequency.

When the SEARCH circuit is defeated, the tuner moves up or down step by step each time you lightly push and quickly release the UP or DOWN button (▲or▼). If you hold one of these direction buttons in, the tuner will rapidly scan through the frequencies until you release that button.

When you activate the SEARCH circuit by pushing the red SEARCH button (K),the tuner will automatically search for and stop on the next frequency which carries a broadcast signal of sufficient strength. When you push the▲button(I), the tuner will move up to the station at the next higher frequency. When you push the▼ button (J), it will move down to the station at the nest lower frequency.

Any time your 440 is in its SEARCH mode, the red SEARCH LED(G) will be lit.

MEMORY

You can program you 440 for up to six FM station as well as six AM stations. To enter the stations of your choice, simply follow these

steps:

1) Put your unit in the FM or AM mode by pushing the FM button (M) or AM button (N).

2) Use the SEARCH controls to tune your 440 to the desired station. The station's frequency will be indicated by the digital readout.

3) Push the gray ENTER button (L). The green ENTER LED (F) will begin to blink to let you know that the 440 is in its memory mode.

4) Push one of the six MEMORY buttons (H) marked 1 through 6. The ENTER LED will go out.

Repeat this procedure for five other FM or AM stations. Then use the FM to AM or AM to FM) and follow the same steps to program six more stations.

MAINTENANCE

Your Proton 440 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 on 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 your audio and video equipment at the same time.

PERFOMANCE SPECIFICATIONS

FM TUNER SECTION

Usable Sensitivity:	1.8uV
50dB Quieting Sensitivity (MONO/Stereo):	3.2uV/25uV
T.H.D. @ 65dBf:	0.2%
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:	25uV
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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