PROTON®

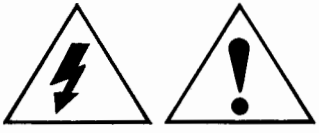
AM-200

OWNER'S MANUAL

AM-200

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

SAFETY INSTRUCTIONS

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- Power supply 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 Non-use Periods- The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

⓮ Object and Liquid Entry- Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

⓯ 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.

⓰ 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.

AM-200

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INTRODUCTION

Your Proton AM-200 integrated amplifier 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 the clarity, detail and depth of performance which make Proton products among the best in the world-- regardless of price.

PROTECTION FROM DAMAGE OR THEFT

The best way to transport your Proton AM-200 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 AM-200 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: _____

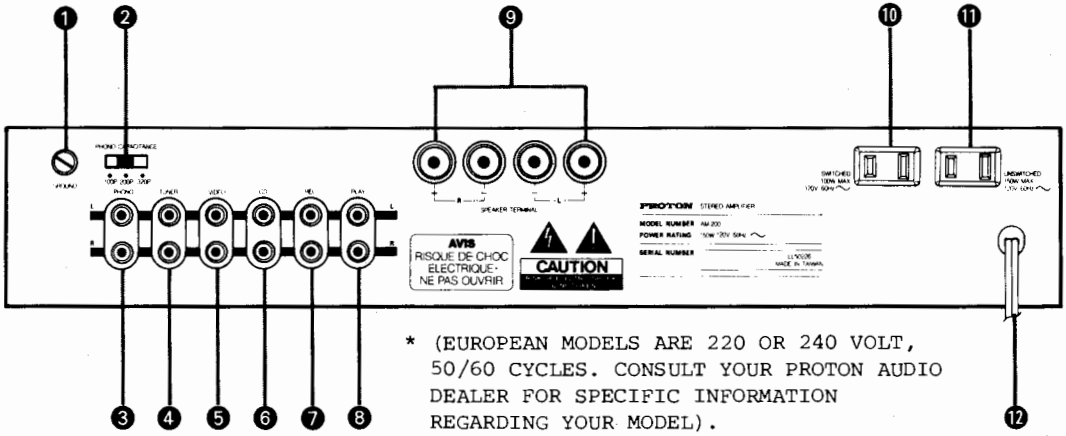
YOUR AUDIO SYSTEM

Every circuit in your Proton AM-200 is devoted to the precise reproduction of sound. As a result, it can do a remarkable job of processing complex musical signals and delivering them to your loudspeakers without adding any noise or distortion of its own. However, it cannot improve upon the signal passed to it by external program sources (tuner, turntable, tape deck, etc.); nor can it force strong bass and crisp highs from speakers of marginal quality.

While we recommend the inclusion of other Proton audio (and video) products in your system, your AM-200 is designed to work quite well with any of the high performance equipment available today. When selecting loudspeakers, look for those capable of reproducing a full frequency range. The Proton AM-200 contains a high current power amplifier that is stable into loads as low as two ohms.

REAR PANEL CONNECTIONS AND CONTROLS

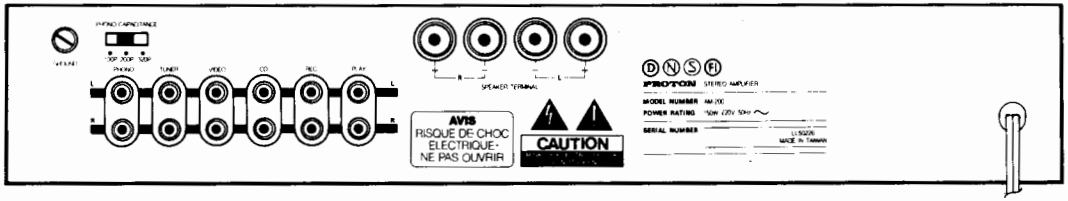
U.S.A. and Canadian Model



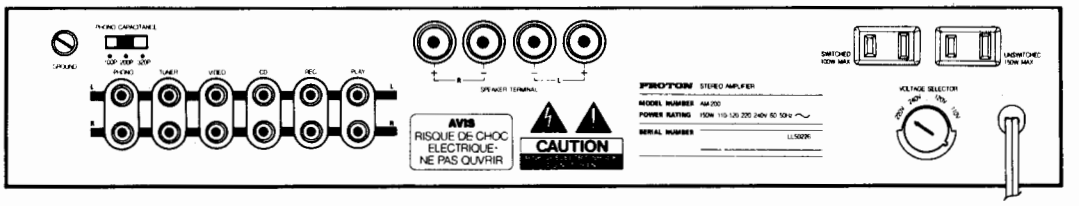
* (EUROPEAN MODELS ARE 220 OR 240 VOLT, 50/60 CYCLES. CONSULT YOUR PROTON AUDIO DEALER FOR SPECIFIC INFORMATION REGARDING YOUR MODEL).

FIG. 1

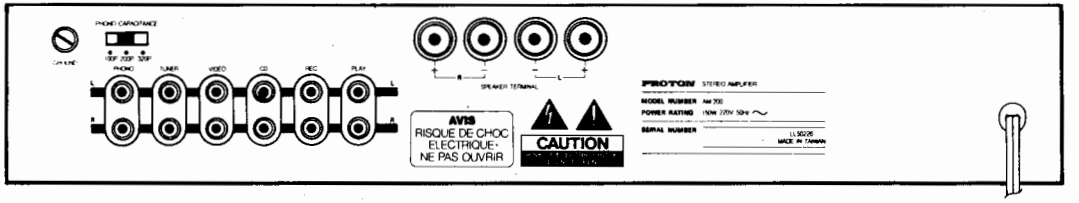
Scandinavian Model



General Model



European Model



PHONO PREAMP CONTROLS ❶ ❷

Your Proton AM-200 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 AM-200 for optimum performance with your particular cartridge. These are the PHONO CAPACITANCE switch (2).

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.

PHONO INPUT ❸

Plug the signal jacks (RCA-type) of your turntable into the gold-plated PHONO input terminals. CAUTION: WHENEVER REAR PANEL CONNECTIONS (ESPEUALLY TO TURNTABLE) ARE BEING MADE, YOUR AM-200 AND ASSOCIATED EQUIPMENT MUST BE POWERED OFF. Be careful to connect your left channel phono output to the top (L) input terminal and the right channel phono output to the lower (R) input terminal.

Next, connect your turntable's ground cable to the AM-200 GROUND terminal (1) in the following manner:

Loosen the outer ring on the GROUND terminal by turning the ring counterclockwise (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. (Figure 2).

If your ground wire has a U-shaped lug on its end, simply loosen the outer ring simply loosen the outer ring on the AM-200 terminal, position the lug around the shaft between the outer ring and the AM-200 rear panel, and tighten the ring.

TUNER INPUT ❹

Use high quality RCA-type audio cables to connect your radio tuner to these terminals. Be careful to connect the left channel output of your tuner to the top (L) TUNER input terminal and the right channel output to the lower (R) TUNER input terminal.

VIDEO ❺ and CD ❻ INPUTS

The VIDEO and CD 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 composite video source (VCR or video disc player). This allows you to enjoy high fidelity sound from your favorite video tapes or discs. The CD input is commonly used to receive signals from a digital audio disc player.

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 AM-200 front panel, you will have to remember to also put your AM-200 in its mono mode so that signals will be sent to both channel speakers. A more convenient mehtod of hook-up is to use a Y-adaptor to split the mono signal into two signals (one for each input).

TAPE LOOP ❼ and ❽

Any type of tape deck (cassette, open reel, micro-cassette, etc.) can be connected to this tape loop with high quality RCA-type cables.

RECORD TERMINALS. The two terminals marked REC (7) are output terminals. The signal appearing at these terminals is always from the program source which you have selected with the front panel program SELECTOR. This signal is not affected by bass, treble, volume or balance controls.

Connect these terminals to the input terminals on your tape recorder. Be sure to maintain accurate left and right channel connections.

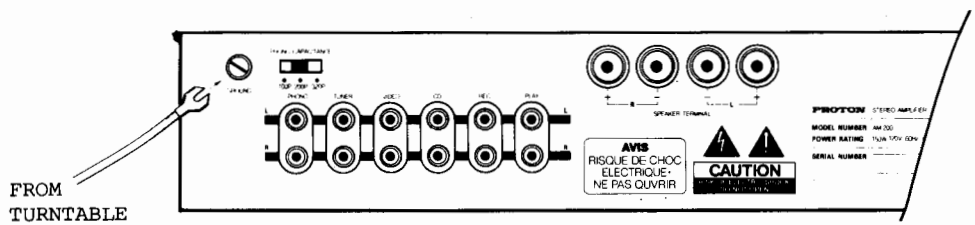


FIG. 2

PLAY TERMINALS. The two terminals marked PLAY (8) are input terminals which allow you to listen to your tapes. Connect the output terminals of your tape recorder to these PLAY terminals, being careful to make accurate left and right channel connections.

SPEAKER TERMINALS ⑨

The Proton AM-200 is equipped with speaker terminals for one pair of speakers.

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.

To connect your speakers, strip approximately 1/2" of insulation from the two conductors on each end of the cord and twist the small internal wires together. Push in and hold the tab on the appropriate speaker terminal, insert the wire into the hole which is now exposed in the terminal, and erelease the tab. The hole will close around the wire and hold it in place. Tug gently to be sure an adequate connection has been made (Figure 3). Repeat this procedure with the remaining speaker leads.

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 AM-200 are color coded--red tabs indicate positive ("+") terminals andack tabs indicate negative ("-") terminals. Positive output terminals on your AM-200 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".

AC OUTLETS ⑩ and ⑪

The Proton AM-200 provides 2 AC power outlets into which you can plug other audio/video equipment. The SWITCHED outlet (10) receives power only when the AM-200 itself is powered on. Any piece of equipment connected to this outlet can be turned on and off by the power control of the AM-200. (It is not recommended for amplifiers or equipment which draw

mexcess of 100 watts. The AM-200'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 swithing off the AM-200.)

The UNSWITCHED outlet (11) is not affected by the power control on the AM-200 front panel. This outlet receives power at all times that the AM-200 is connected to a live AC wall outlet. Use this UNSWITCHED outlet for any piece of equipment which should be turned on and off by its own power control (ie, turntable, tape deck, etc.). This outlet can also be used for equipment which contains a clock or timer.

AC CORD ⑫

Once you have made all of the connections as described above, plug the AC CORD (12) into a live 120 volt, 60 cycle wall outlet. (EUROPEAN MODELS are 220 or 240 volt, 50/60 cycles.)

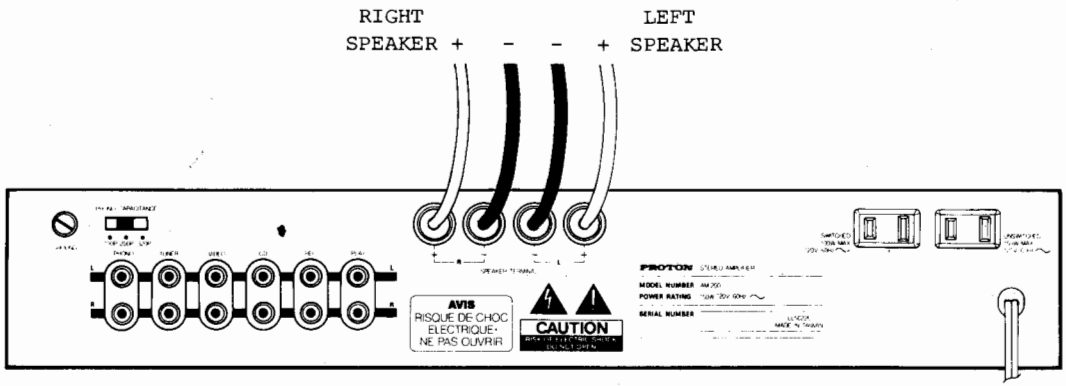
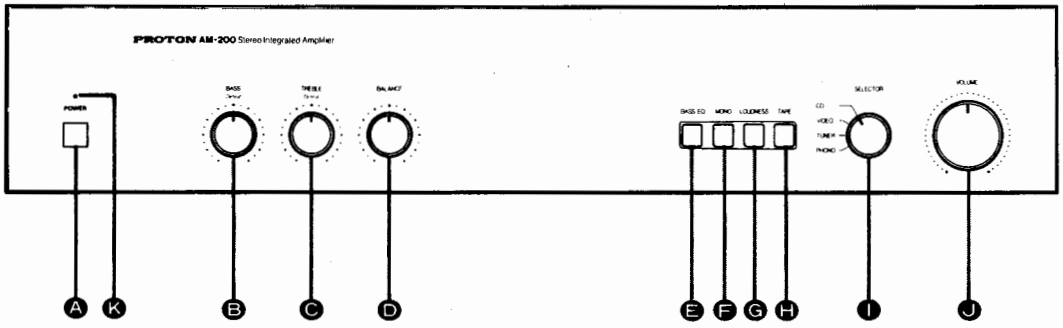


FIG. 3

FRONT PANEL CONTROLS

FIG. 4



POWER Ⓐ

Push the green POWER button (A) "in" to turn on your Proton AM-200. The green POWER LED (K) will light to indicate that your AM-200 is powered ON.

BASS Ⓑ

The BASS knob (B) affects the relative volume level of the lower audio frequencies. At its center (detent) position it has no effect on the signal. 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 (C) 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 counterclockwise (left) from center to cut (decrease) treble output.

BALANCE ⓓ

Use the BALANCE knob (D) 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. Your may use it to compensate for one speaker being located closer than the other to your listening position, one speaker being located further from your receiver (longer speaker wire), or one channel of your program material having a lower output level.

BASS EQ ⓔ

Whenever speaker components are attached to a sealed box (as in the case of all acoustic suspension and infinite baffle speakers), the resonant frequency (FS) 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 AM-200 will provide a 10dB boost at 37Hz. Activate this special bass equalization circuit by pushing the BASS EQ button (E) in. Push again and release the button to defeat the boost.

Note: Boosting bass does require substantially more power. Be sure to defeat this circuit if your program material contains extraordinarily strong bass signals. This is to avoid clipping the built-in power amplifier.

MONO ⓕ

When the MONO button (F) is out, your AM-200 is operating in its STEREO mode (as long as a stereo signal is being processed). When you push this button in, the two channels will be combined to from 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 AM-200. This causes the audio signal to be sent to both channel outputs. Be sure to release the MONO button when you return to a stereo source.

LOUDNESS ⓖ

Your Proton AM-200 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 AM-200 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 (G) in.

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.

TAPE ⓗ

Push the TAPE button (H) in to listen to your tapes or to monitor recordings as you make them. (Note: you must have a three-headed tape recorder in order to monitor playback during the recording process).

This button overrides the program SELECTOR (I). Whenever the TAP button is in, you will hear input from your tape deck regardless of the source you have selected with the program selector.

SELECTOR ⓘ

Use the SELECTOR knob (I) to select the program source you want to hear and/or tape. Turn the knob until the black notch is pointed at the appropriate source. Each source selection corresponds to the input signal from the rear panel terminals of the same name.

VOLUME ⓙ

The VOLUME knob (J) affects the output level of your AM-200. 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.

MAINTENANCE

Your Proton AM-200 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 conections 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 ar the same time.

PERFORMANCE SPECIFICATIONS

T.H.D. at Rated Poewer 20W:	0.015%
I.M.D. at Rated Power 20W:	0.015%
Clipping Power at 8 OHM/4 OHM/2 OHM:	27W/36W/40W
Dynamic Power at 8 OHM/4 OHM/2 OHM:	52W/80W/100W
Damping Factor:	>150
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
Residual Noise (flat):	0.3mV
Channel Crosstalk (1 kHz):	90dB
Function Ctosstalk (1 kHz):	80dB
S/N Ratio (Unweighted) (Aux):	93dB
(Tape Play):	93dB
(Phono MM):	80dB
Bass Control @ 100Hz (Boost/cut):	+9/-9dB
Treble Control @ 10kHz (Boost/cut):	+9/-9dB

* Bass EQ @ 55Hz:	+3dB
Loudness @ -30dB (100Hz):	+6dB
(10kHz):	+3dB
Phono Input Resistance:	47K OHM
Phono Input Capacitance (Selectable):	100pF/200pF/320pF
Phono Overload @ T.H.D. 0.1% MM (20Hz/1kHz/20kHz):	28mV/280mV/2.8mV
Phono T.H.D. at 4.5V Output (MM):	0.01%
Riaa Response Accuracy MM:	±0.2dB
Dimensions WxHxD (inch):	16.53"x2.95"x10"
(mm):	420mmx75mmx245mm
Net Weight:	5.2kg/11.44 Lbs
Shipping Weight:	6.1kg/13.42 Lbs

PROTON

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