

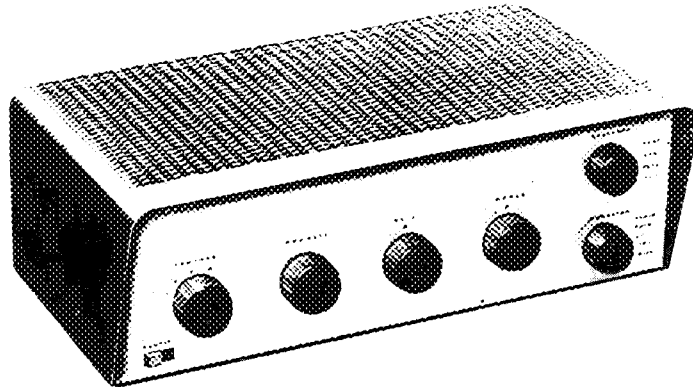
**harman kardon**

MODEL PC-200

# *The Prelude*

PRINTED CIRCUIT AMPLIFIER AND PREAMPLIFIER

## OPERATION AND SERVICE INSTRUCTIONS



### UNPACKING

After unpacking the Prelude, inspect it carefully for any signs of damage in transit. Your unit was subjected to many inspections and tests, and then carefully packed. If any damage is visible, notify your dealer immediately. If the unit was shipped to you, notify the transportation company at once.

Check the contents of the package carefully. You should find:

- 1-Prelude, Model PC-200
- 1-Instruction booklet
- 1-Warranty card

It is strongly urged that the warranty card be completed and mailed without delay, to protect your rights under warranty. If you should require repair service or information on the use of the Prelude, we will be able to identify your unit immediately, and respond quickly.

### VENTILATION

All electrical equipment generates heat which must be allowed to escape. Although the Prelude is well

ventilated in itself, sufficient space should be allowed around it to permit free air flow. If it is placed in a bookcase, it should be located well toward the front, to provide as much clearance as possible at the rear.

Do not put books or other objects on top of the Prelude. Covering the perforated tube grill will reduce the ventilation and result in sharply reduced component and tube life.

### SPEAKER CONNECTIONS

Provision has been made to connect to any of today's fine speaker systems. A three-screw terminal strip marked "SPEAKER" is located on the rear of the chassis. The terminals are identified as "G", "8", and "16". The generous use of inverse feedback in the design of the Prelude permits the connection of practically any speaker between either the "G" and "8" terminals or the "G" and "16" terminals with negligible difference in results. For optimum results and maximum damping factor, it is suggested that speaker systems with a rated impedance between 4 and 12 ohms be connected between "G" and "8". Speaker systems with a rated impedance between 12 and 24 ohms should be connected between "G" and "16".

**HARMAN - KARDON, INC.**

520 MAIN STREET, WESTBURY, L. I., N. Y.

## ER CONNECTION

A coaxial connector marked "Tuner" will be found on the rear of the Prelude. A shielded cable may be connected between this receptacle and the output receptacle of any tuner rated for at least 1/2 volt output.

The tuner output impedance will determine the maximum practical length of this cable. It is suggested that not more than 3 or 4 feet be used if the tuner has a high impedance output. If the tuner has a low impedance cathode follower output, a longer lead (up to 100 feet) can be used without hum pickup or high frequency attenuation.

## POWER CONNECTIONS

Plug the power cord into any outlet furnishing 117 volts, 60 cycles house current. The exact voltage is relatively unimportant, and may vary between 105 and 125; be sure, however, that you have 60 cycle AC power. An auxiliary AC receptacle is incorporated on the chassis to furnish power to an associated device. A Safety Interlock Power Cord provides added safety by disconnecting power when the cage is removed.

## PHONOGRAPH CONNECTIONS

Any type of record player will operate with the Prelude. To derive maximum enjoyment it is suggested that a high quality pickup cartridge and a rumble-free turntable be used. Two classes of pickup cartridges are in general use: Magnetic (GE, Pickering, Clarkstan, Fairchild, and Audak) and Crystal (including the newly developed ceramics). While any type of cartridge may be used with the Prelude, it is strongly urged that the magnetic type be selected. It should be plugged into the receptacle marked "PHONO". Connect crystal or ceramic cartridges to the receptacle marked "TUNER". If a crystal or ceramic cartridge is used with a tuner, such as the Harman-Kardon Model A-200, the output of the record player can be plugged into the PHONO input on the tuner. The selector switch on the tuner will then feed the tuner or the phono output to the Prelude.

A word of advice: The useful life of a phonograph needle is quite short, ranging from 15 minutes to several hours. In addition to degradation of tone quality as the needle wears, the strong possibility exists that valuable records will be damaged if worn needles are not promptly replaced. The purchase of a diamond, which has much longer life, is therefore a worthwhile investment.

The power cord of the turntable may be plugged into the auxiliary outlet on the rear of the Prelude chassis. It is sometimes advisable to ground the phonograph chassis to the receiver, to reduce hum or other unwanted noises. This may be accomplished by the use of any type of wire, one end connected to the "G" terminal of the "SPEAKER" terminal strip, the other end connected to the metal framework of the phonograph.

## TAPE INPUT

A "TAPE INPUT" receptacle at the rear of the chassis permits feeding the output of a tape recorder directly through your high fidelity system. The FUNCTION Switch located on the front panel not only selects this input, but also provides the correct preamplifier equalization for the tape playback head.

This input is designed to accept signals directly from the playback head of approximately 0.01 volt. Therefore if your tape recorder has its own preamplifier and its output is obtained after amplification, it must be connected to the "TUNER" input of The Prelude.

## TAPE OUTPUT

A receptacle marked "TAPE OUT" is located on the rear of the Prelude chassis. This is used to provide output to a tape recorder or other auxiliary equipment. Any program material appearing at the speaker terminals also appears at the "TAPE OUT" receptacle, but unmodified by the volume and tone controls. This makes it possible to record programs with the proper recording equalization (as determined by your tape recorder) while simultaneously listening to the program with the proper tone control, contour and loudness settings.

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## OPERATING INSTRUCTIONS

A full understanding of the relationship among the Prelude's operating controls will assure you realization of the rich potential of this excellent instrument.

## RECORD EQUALIZATION

In order to assure good reproduction of the wide range of frequencies in music and to make necessary adjustments for the limitations of the recording technique, record manufacturers have found it necessary to modify the actual frequency response of the music while it is being recorded. Thus, to avoid overcutting and consequent distortion, a measured and deliberate reduction is effected in low frequency response by selecting a "turnover frequency" and by recording attenuated response below that point. To assure optimum signal-to-noise at the high frequency end when the record is played at home, the highs are deliberately exaggerated during the recording process. A measured and deliberate boost is effected above a certain frequency. This combination of deliberate exaggeration at the low and high ends of the frequency response can be expressed in a "recording curve". When the record is played a mirror image of that curve should be available so that the ideal "flat" response may be achieved. Since several different recording curves have been used in the past (differing with respect to the turnover points and the degree of emphasis or deemphasis) a choice of playback curves is provided in Harman-Kardon instruments.

The **FUNCTION** switch has five positions: Tuner, tape and three phono turnovers. Its primary use is to select the desired type of program. A secondary purpose is to select a specific low frequency record equalization characteristic.

The **ROLL-OFF** control has four positions. By varying this control it is possible to reduce annoying scratch and noise often found on older, worn records by attenuating undesirable high frequencies. With normal records it provides the proper high frequency response as required by the recording curve. The Recommended Equalization chart shown below gives suggested settings.

Recommended Equalization Chart  
(Microgroove)

<u>Record Label</u>	<u>Turnover</u>	<u>Roll-Off</u>
Allegro . . . . .	LP . . . . .	16
American Record Soc. . . . .	AES . . . . .	12
Angel . . . . .	RIAA . . . . .	12
Atlantic . . . . .	AES . . . . .	16
Audiophile . . . . .	RIAA . . . . .	12
Bach Guild . . . . .	LP . . . . .	16
Bartok . . . . .	RIAA . . . . .	16
Blue Note . . . . .	AES . . . . .	12
Caedmon . . . . .	RIAA . . . . .	16
Canyon . . . . .	AES . . . . .	12
Capitol . . . . .	AES . . . . .	12
Cetra-Soria . . . . .	LP . . . . .	16
Columbia . . . . .	RIAA . . . . .	12
Columbia (old) . . . . .	LP . . . . .	16
Concert Hall . . . . .	LP . . . . .	16
Cook . . . . .	RIAA . . . . .	12
Coral . . . . .	AES . . . . .	12
Decca . . . . .	RIAA . . . . .	16
Electra . . . . .	RIAA . . . . .	16
Epic . . . . .	RIAA . . . . .	12
Esoteric . . . . .	RIAA . . . . .	12
Handel Society . . . . .	LP . . . . .	16
Hayden Society . . . . .	LP . . . . .	16
HMV English . . . . .	LP . . . . .	16
HMV American . . . . .	AES . . . . .	16
London . . . . .	LP . . . . .	12
Lyrichord . . . . .	RIAA . . . . .	16
Mercury . . . . .	AES . . . . .	12
MGM . . . . .	RIAA . . . . .	12
Oceanic . . . . .	LP . . . . .	16
Period . . . . .	RIAA . . . . .	16
RCA Victor . . . . .	RIAA . . . . .	12
RCA Victor (old) . . . . .	AES . . . . .	12
Remington . . . . .	RIAA . . . . .	16
Stradivari . . . . .	LP . . . . .	16
Tempo . . . . .	RIAA . . . . .	12
Urania . . . . .	LP . . . . .	16
Vanguard . . . . .	LP . . . . .	16
Vox . . . . .	LP . . . . .	16
Westminster . . . . .	RIAA . . . . .	12

ever, since there is a lack of uniformity in older records we suggest you select the position that sounds best to your ear.

The **LOUDNESS** control is used to adjust the volume of any program. Its effect is selectively varied by the

### DYNAMIC CONTOUR CONTROL

One of the limitations of human hearing is its tendency to lose sensitivity to the very low and very high pitched sounds, as the sound level is reduced. It is this characteristic (known as the Fletcher-Munson effect) which causes one to play music programs at high level in order to experience the fullness of tone available from fine modern recordings and identified with "live" listening. The Harman-Kardon Dynamic Loudness Contour Control compensates for the Fletcher-Munson effect, eliminating high reproduction level as a requisite for full enjoyment of reproduced music. Four positions of compensation are provided, to allow the selection of the one most suited to your hearing.

Each position causes the loudness (Volume) control to perform with a different degree of compensation, the amount increasing with each clockwise setting. Position 1 is uncompensated. Position 2 provides somewhat less compensation than that required to match the Fletcher-Munson loudness contour curves. Position 3 matches the Fletcher-Munson curves. Position 4 provides greater amounts of compensation than the curves suggest. Since hearing characteristics vary from person to person (some require more and others less compensation), the great flexibility provided in these controls can be appreciated.

In operation, the proper choice of contour is easily made, by switching through the several loudness contour positions and selecting the one which sounds best to you.

Separate **BASS** and **TREBLE** controls are incorporated in the Prelude, to provide the full range of adjustment required for satisfactory high fidelity performance.

Many records, record changers and turntables produce an objectionable low frequency signal that is often strong enough to be picked up by the phono cartridge and introduced into the playback system. Known as "rumble" this undesirable signal can be eliminated in The Prelude by use of the **RUMBLE FILTER** which reduces response below 50 cycles.

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### ORGANIZING THE VARIOUS CONTROLS

In general, every control on a well designed, honestly considered high fidelity instrument has a spe-

Standard 78 rpm discs generally have the same recording characteristics as their microgroove labels. How-

cific useful function, related to each of the other controls. Although this cannot be a full treatise on the subject, an explanatory note on the relationship of the various front panel controls will doubtless prove useful in organizing and clarifying them for the user.

Beginning with the function selector, choose the type of program material you plan to listen to (tuner, phono, etc.). Choose the correct record equalization setting for the particular record you are to play as indicated in the Recommended Equalization Chart. With Loudness Contour Selector in the uncompensated position, turn the loudness (volume) control to as high a level as you can briefly allow. (This to permit you to make the remaining adjustments while you are listening at your own maximum efficiency.) Now adjust the Bass and Treble Tone Controls to correct for the electro-mechanical characteristics of the loudspeaker you are using and for the acoustic characteristics of the room in which you are listening. These adjustments are wisely pragmatic.

Modify each until settings are chosen which in your total system create the proper sense of aural balance and evenness. Now reduce the loudness (volume) control setting to a level somewhat lower than normal listening level in your room. You will note that the full bodied - lifelike quality you experienced at high listening level has disappeared (this because of the Fletcher-Munson effect described in the paragraph on the H/K Dynamic Loudness Contour). With all other controls unchanged, select the best contour setting for you. Do this by switching quickly from the uncompensated position to the most compensated and then backing down one position at a time until you find the one which most nearly duplicates the full-bodied sound you enjoyed at high level. Now turn the loudness control up to the level at which you wish to listen - (perhaps the maximum level you can permit in your home) - and listen. You'll find

that there is automatic compensation of contour wherever you set the loudness control thereafter. In fact, under normal circumstances, you should not find it necessary to readjust the tone controls or the contour selector once having chosen the correct settings for you, your room and your system.

The red dot next to each control is the suggested position to be used for "flat" overall response. Variations are recommended, of course, to compensate for individual requirements. However, it should be noted that an uninitiated user can set the controls of The Prelude to the RED DOTS for normal program material and be certain that the resulting sound will be correctly balanced. This extra feature simplifies true high fidelity operation for the entire family.

## HUM PROBLEMS

In some installations where a record player, tape recorder, or other auxiliary AC operated equipment is used, hum may be encountered due to voltage differences between the various units. This may be eliminated by reversing one or all of the AC power plugs. Simply reverse one at a time until improvement is experienced.

## MAINTENANCE AND REPAIR

Due to the conservative design and high quality components of the Prelude, no routine maintenance other than yearly tube checking is required. Should trouble develop, however, only the most qualified service man should be employed, as special equipment and training is required to properly service High Fidelity equipment.

This instruction booklet contains diagrams and other information needed by your service man. It should be kept available for his use.



## SPECIFICATIONS

Circuits: 2-6V6 Pentode Connected  
 Output Level: 10 watts at 3% IM. Peak Power: 15 watts  
 Output Impedance: 8 and 16 ohms  
 Frequency Response: ±1 db 20-20,000 c.p.s. at 5 watts;  
 ±1 db 30-10,000 c.p.s. at 10 watts

Damping Factor: 6

Hum: Min. Volume Hum: 80 db below 10 watts

Aux and Tuner Hum: 60 db below 10 watts

Phono Hum: 50 db below 10 watts

Tone Control Range: 12 db boost at 50 cycles  
 12 db boost, 15 db cut at 10,000 cycles

Rumble Filter: 6 db per octave cut below 50 cycles

Input Levels: Aux: 0.7 volts; Phono: 8 millivolts

Dynamic Loudness Contour: 4 Positions:

Position 1: Uncompensated

Position 2: Approximately 8 db less than Fletcher-Munson

Position 3: Fletcher-Munson Compensation

Position 4: Approximately 10 db more than Fletcher-Munson

Roll-Off Control: Flat, 8, 12, 16

Turnover Control: TAPE, RIAA, AES, LP

## OVERALL SPECIFICATIONS

Controls: (Total 7) Contour, Loudness, Treble, Bass, Function/Turnover (Tuner, Tape, 3 Phono Turnovers) Roll-Off, Rumble Filter

Convenience Outlet: 1-AC receptacle on chassis rear, controlled by power switch

Tube Complement: (Total 5) 2-12AX7, 2-EL84, 1EZ81

Dimensions: 12-5/8" wide x 4-1/8" high x 7-1/8" deep (not including knobs)

Power Consumption: 50 watts

Finish: Control Panel: Brushed Copper; Cage and Knobs: Matte Black

Shipping Weight: 12 lbs.

## SPECIAL NOTES

- Turnover Selector Switch includes position which provides correct preamplifier equalization for tape playback head (requires no extra tape preamplifier).
- Signal, unaffected by tone controls, available to drive tape recording head.
- Safety Interlock Power Cord disconnects power when cage is removed.
- Printed circuit used throughout, employs dip soldered copper-clad laminated phenolic plastic board.
- Simple mechanical disassembly makes board easily available for service.

## WARRANTY:

We warrant each Prelude, Model PC-200 to be free from defects in material and workmanship under normal use and service, and in accordance with the conditions herein below set forth, for a period of 90 days from date of delivery to the original purchaser, and agree to replace or repair any part or parts returned to us within said 90 days, with transportation prepaid, and which our examination shall disclose to our satisfaction to have been thus defective. This warranty does not include free labor, nor is it applicable to any instrument which shall have been repaired or altered in any way so as in our judgment to affect its stability or reliability nor which has been subject to neglect, misuse, abuse, negligence or accident nor which has had the serial number altered, effaced, or removed. Neither shall this warranty apply to any instrument which has been connected otherwise than in accordance with the instructions furnished by us.

This warranty is expressly in lieu of all other warranties, express or implied, and of all other obligations or liabilities on our part, and we neither assume nor authorize any representative or other person to assume for us any other liability in connection with the sale of the Model PC-200 Prelude.

## LIST OF REPLACEABLE PARTS

Description	Harman-Kardon Part Number	List Price
. Power Transformer . . . . .	FT 621950	. . . 9.50
. Output Transformer . . . . .	FT 621218F	. . . 8.50
. Tone Control . . . . .	RV 661564A	. . . 1.25
. Tone Control . . . . .	RV 661565A	. . . 1.25
. Loudness Control . . . . .	RV 661566A	. . . 2.05
. Rumble Filter Switch . . . . .	ES 621350	. . . 1.20
. Contour Switch . . . . .	ER 621286D	. . . 2.35
. Function Switch . . . . .	ER 621287C	. . . 2.35
. Electrolytic Cap 40, 20, 10/350, 100/50 . . . . .	JE 621281D	. . . 5.50
. Capacitor .05/200 Printed Circuit . . . . .	JB 2-.05	. . . .35
. Capacitor .22/200 Printed Circuit . . . . .	JB 2-.22	. . . .60
. Capacitor .047/600 Printed Circuit . . . . .	JB 6-.047	. . . .45
. Cage . . . . .	P 66A1285E	. . . 8.50
. Knob, large . . . . .	P 20778	. . . .15
. Knob, small . . . . .	P 22783	. . . .12
. Pilot Light Assy . . . . .	HC 66A1418C	. . . 2.60
. Power Supply Cord . . . . .	W 621265	. . . .85
. Instruction Book . . . . .	L 66A1546	. . . .75