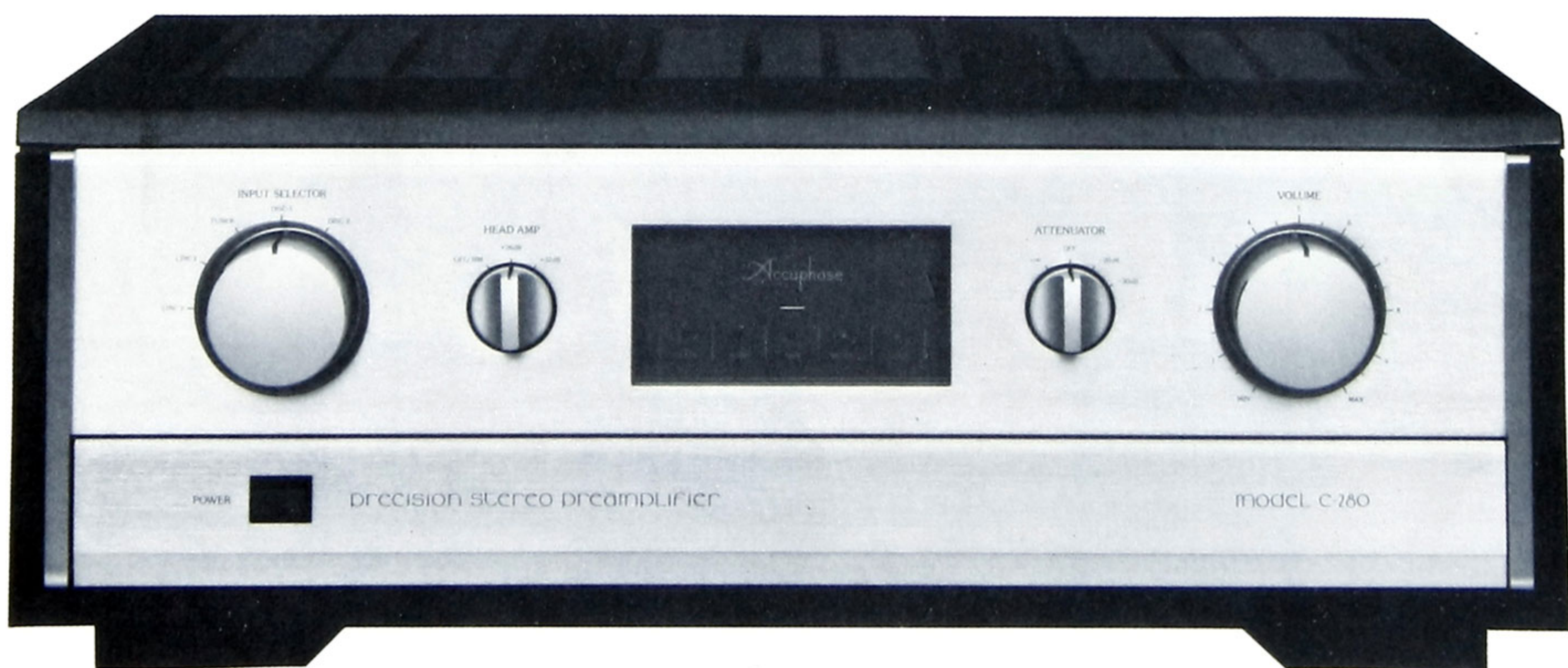


STEREO PREAMPLIFIER

C-280 INSTRUCTION MANUAL



Accuphase

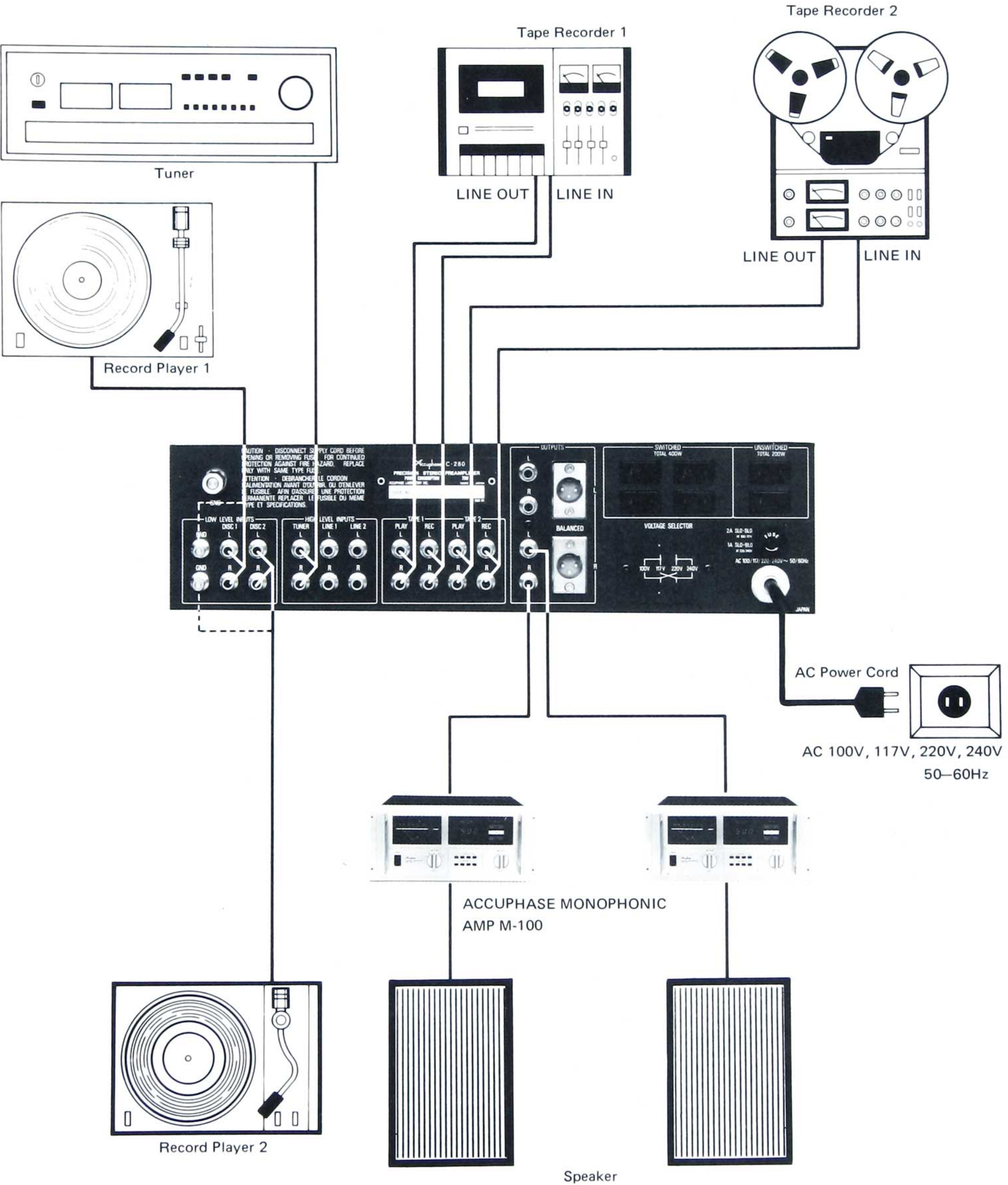
Thank you for purchasing this Accuphase product, which we here at Accuphase, who are dedicated to creating the highest quality audio components, are proud to introduce. You can be assured that, in preparing this component, every attention was paid by our entire staff to strictest quality control. This policy is followed throughout the whole manufacturing process - from basic research, the selection of each part, assembly, testing, data recording, up to packing and shipping - so that we supply a product with every confidence that it will provide full satisfaction and pride in ownership.

We welcome you to the fast-growing Accuphase circle of distinguished audio enthusiasts and devotees of true sound.

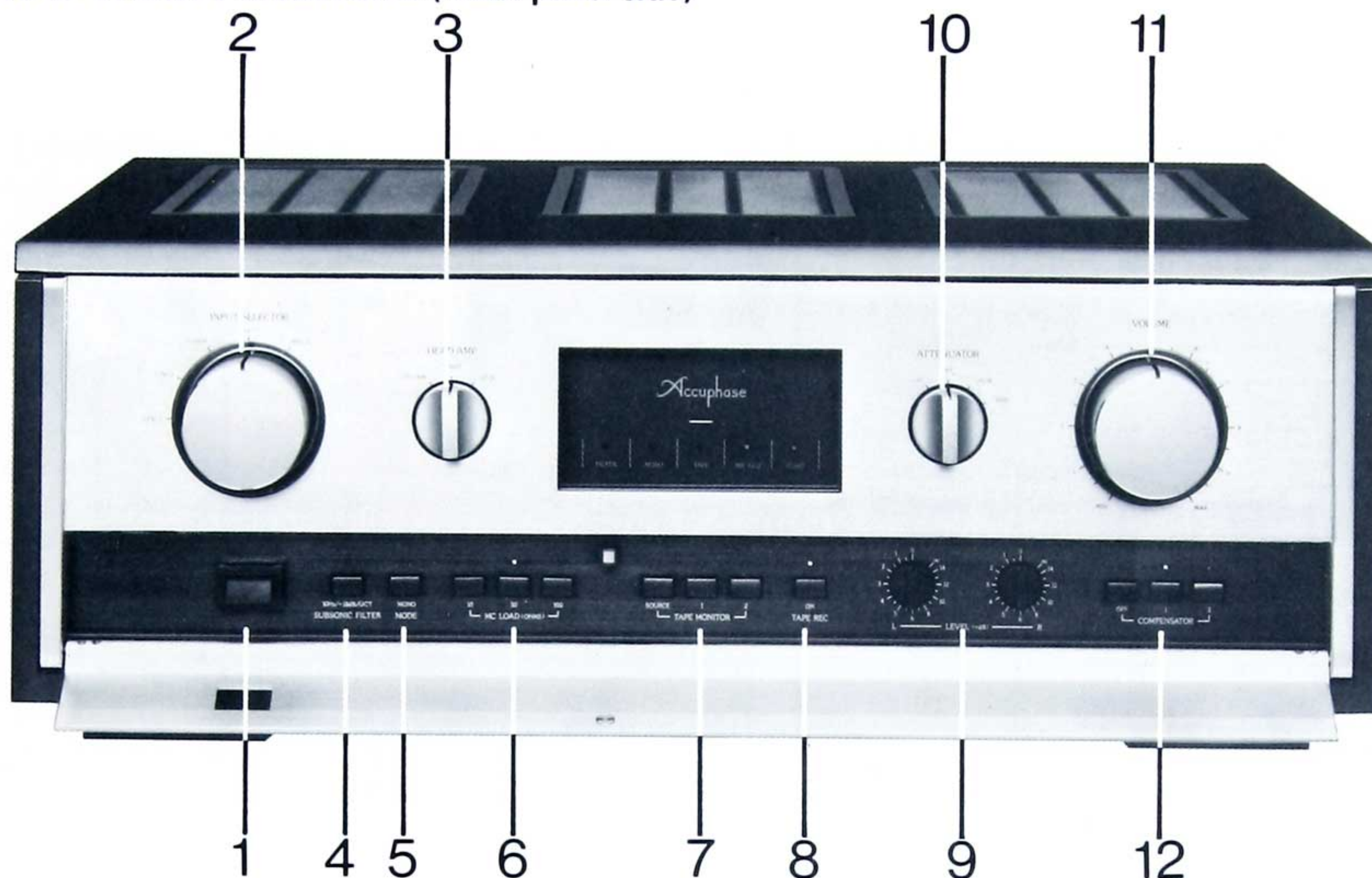
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INTERCONNECTION OF COMPONENTS



PARTS AND THEIR FUNCTIONS (front panel side)



1 POWER — Power Switch

Depress to the IN (■) position to turn power on and depress again to return to the OUT (■) position to turn power off. The muting circuit operates for about 2 or 3 seconds after power is turned on until the circuitry stabilizes. No sound is heard during this period. When the muting circuit ceases to operate, the red indicator underneath the ACCUPHASE logo in the center of the front panel lights. LED (Light-Emitting Diode) indicators are also provided to confirm the settings of all pushbutton switches in the sub-panel section. The C-280 uses sophisticated electronic circuitry to control all operations. At the heart of this control circuitry is a logic circuit equipped with a nickel-cadmium battery powered backup system so that all switch positions when power was turned off will be retained when power is turned on again, even if the unit has not been used for a long period.

The nickel-cadmium battery requires no maintenance and can be used for many years. It is fully charged at the factory before shipment and even if the battery is somehow discharged, it will be automatically recharged during normal operation of the C-280.

2 INPUT SELECTOR

The muting circuit operates for about one second each time the position of this selector is changed. The red indicator underneath the ACCUPHASE logo extinguishes to show when the muting circuit is operating. Muting is also activated when the HEAD AMP [3] and MC LOAD [6] selectors are switched. However, the head amp and MC load selectors do not activate muting when the input selector is in the TUNER, LINE 1 or LINE 2 position.

DISC 1 / DISC 2

Use one of these positions to listen to the turntable connected to the corresponding rear panel DISC 1 or DISC 2 [13] jacks.

TUNER

Use this position for radio reception through a tuner connected to the rear panel TUNER jacks [14]. The volume level may change when the input selector is changed from a DISC position to the TUNER position even though the volume control is untouched. If this occurs, adjust the output level control on the tuner to match its output with the turntable.

LINE 1 / LINE 2

The two pairs of rear panel LINE jacks are used with components having high level output signals comparable to tuners and tape decks. The C-280's rated input voltage is 126mV (the input voltage required to deliver the rated output). Use the LINE jacks for a COMPACT DISC player, second tuner, third tape deck or other similar component.

3 HEAD AMP — Head Amp Selector

Use this selector to turn the built-in head amp on and off and select the amount of gain when using an MC phono cartridge. When the input selector is in one of the DISC positions, the muting circuit operates for about one second when the position of this selector is changed.

OFF / MM (MM cartridge position)

This position turns the head amp off and is used for MM (moving magnet) and other high output cartridges that do not require a step-up device. Some MC (moving coil) cartridges deliver a high output voltage equivalent to MM cartridges. However, we do not recommend the use of high output MC cartridges at this position, since the high input impedance of the MM position may cause noise.

+26dB and +32dB (MC cartridge positions)

Use one of these positions when listening to a turntable equipped with a low output MC cartridge. The numbers refer to the head amp gain at each position. At the +26dB position, the cartridge output voltage is amplified 20 times. That means a 0.1mV output cartridge would yield a 2mV voltage. The +32dB position amplifies the cartridge output voltage 40 times.

The +26dB position provides enough gain for almost all MC cartridges. In general, only MC cartridges having an output voltage of 0.1mV (5 cm/sec, 1 kHz) max. should be used with the +32dB position.

If there seems to be insufficient gain when using the +26dB position, the +32dB position may give better

results. However, if this position is used with an MC cartridge having an output voltage higher than 0.5mV at a cutting velocity of 5 cm/sec, 1 kHz, high level signals will be distorted and overall sound quality will deteriorate.

If the setting is raised from +26dB to +32dB without changing the position of the volume control, noise may be caused if you are using very efficient speakers. This occurs because the degree of amplification has increased while the amplifier's noise level has remained the same.

If an MM cartridge is used with the head amp, high frequencies will be attenuated and overall tonal balance will suffer.

4 SUBSONIC FILTER

The subsonic filter suppresses extremely low frequency signals below 10 Hz (that is, well below the audible frequency range) with a slope steepness of 18dB/octave and serves to prevent extremely low frequency noise from interfering with sound reproduction in the audible frequency range. This filter is most useful in suppressing extremely low frequency signals generated by record warps which could prevent the woofers from operating properly. Press this switch to turn the filter on (FILTER indicator lights) and once again to turn the filter off (indicator extinguishes).

5 MODE — Mode Switch

Use this switch to select STEREO-PHONIC or MONOPHONIC reproduction. The MONO indicator lights to show when this selector is in the MONOPHONIC setting. In the MONOPHONIC setting, the left and right channel signals are mixed and sent to both speakers. This is useful for adjusting the volume balance between the two speakers. Press this switch again to return to the STEREO-PHONIC mode (indicator extinguishes).

6 MC LOAD (OHMS) — MC Load Selector

Use this selector to match the built-in head amp's input impedance with the load impedance of the MC

cartridge. Normally, the 100-ohm position should be used with MC cartridges requiring a load impedance of 20 ohms or more. For MC cartridges specifying a lower load impedance, the 30-ohm or 10-ohm position should be used. The general rule is that an input impedance at least two to three times higher than the cartridge's source impedance is necessary. However, excellent results are obtained at the 100-ohm position with certain cartridges having a source impedance of under 20 ohms. Therefore, listen to your cartridge at each load impedance setting to determine the one giving the best results. Remember that, unlike a step-up transformer, a head amp will overdamp the cartridge when a load impedance equal to or less than the cartridge's source impedance is used. This causes an insufficient low range and restricts the high range to result in a very dull and unnatural tonal quality.

The muting circuit operates for about one second each time the setting of this selector is changed.

[7] TAPE MONITOR — Tape Monitor Control

In the SOURCE setting, components other than those connected to the rear panel TAPE PLAY jacks [15] can be heard. Therefore, this selector must be in the SOURCE setting at all times except when listening to one of the tape decks. In the SOURCE setting, the indicators in the center of the sub-panel and the TAPE indicator in the central indicator section will remain extinguished. The TAPE indicator (in the central indicator section) and one of the indicators in the center of the sub-panel will light when this selector is in either of the tape settings. To listen to a tape deck, press either selector 1 or 2 according to which rear panel jacks the deck is connected.

To make a recording, press the tape recording switch [8] to turn it on (indicator lights). Put the tape monitor control in the SOURCE setting to monitor the program source or in the 1 or 2 setting to monitor the

just-recorded signal from the deck (if it has independent recording and playback heads). If the head amp selector [3] or MC load selector [6] is used while recording, the muting circuit will operate and there will be a silent gap of about one second in the recording. This will not happen if the input selector is in the TUNER or LINE position.

[8] TAPE REC — ON / OFF Switch of Tape Recording Output

This switch turns the rear panel REC jacks on and off. Press once to turn on (indicator lights) and again to turn off (indicator extinguishes). This switch must be on in order to perform tape recording operations. A second indicator is provided in the central indicator section so the tape recording state can be checked even when the sub-panel door is closed.

[9] LEVEL — Level Controls

These controls permit you to adjust the left and right output levels independently. Each control has a range from 0 to infinite ($-\infty$). The range from 0 to -6dB is marked in 0.5dB steps and from -6 to -14dB in 1dB steps. These controls are useful for adjusting balance between the right and left stereo channels. Normally, both controls should be in the maximum 0 position and all volume adjustments performed with the volume control [11].

[10] ATTENUATOR

Use this selector to instantaneously reduce the volume level by -20dB or -30dB. When this selector is turned to the infinite position ($-\infty$), no sound is audible. This selector is useful for temporarily reducing volume without changing the position of the volume control, for comparative listening and at the beginning of phonograph records (to avoid the noise when the stylus is set down on the disc).

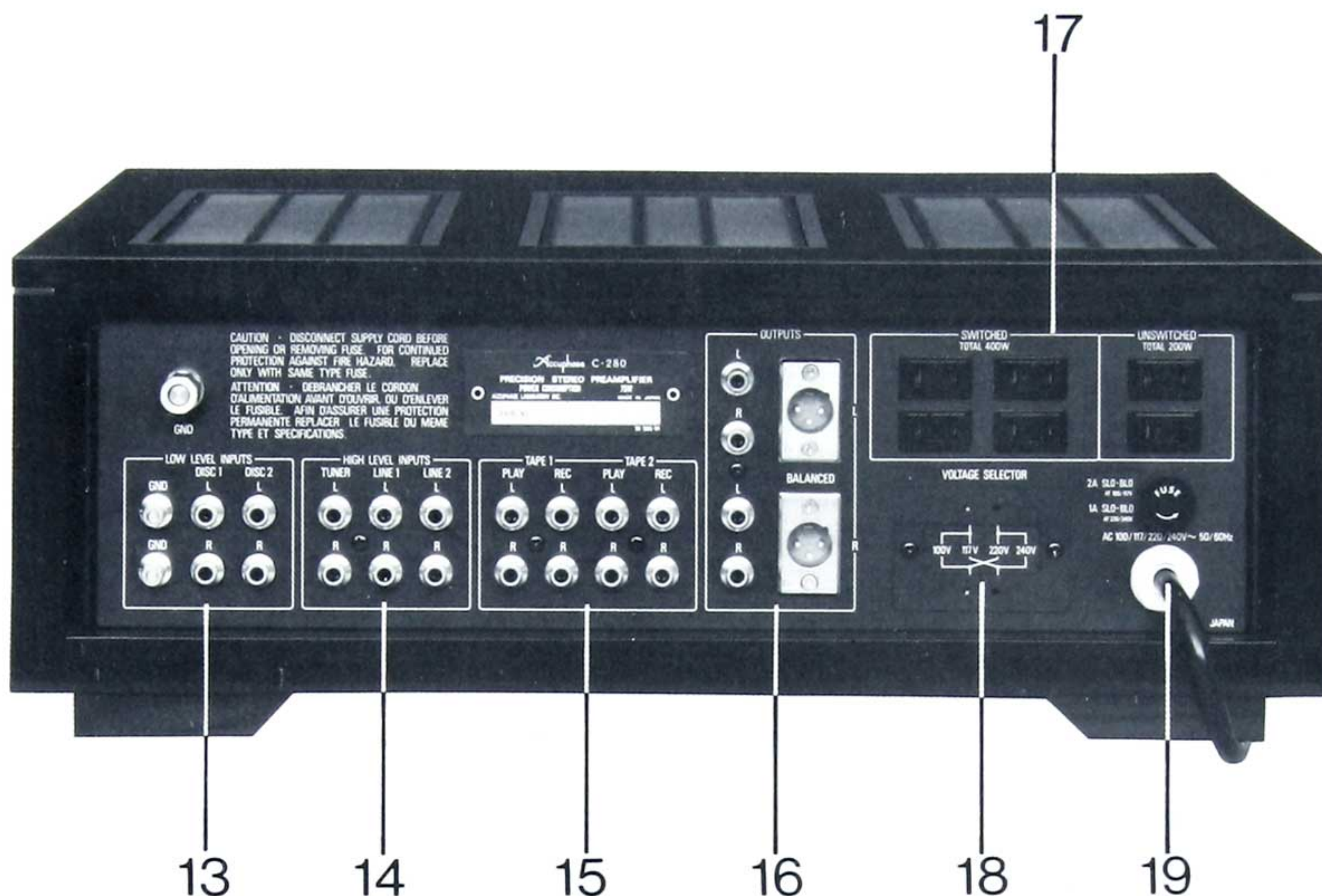
[11] VOLUME — Volume Level Control

Turn clockwise to raise the volume level. You should acquire the habit of turning down the volume control before turning the power on or off,

before playing a record and when changing to a different program source.

12 COMPENSATOR — Loudness Compensator

These selectors are used to compensate for unevenness in perceived acoustic energy across the audible frequency range at low volume levels. As the volume is lowered, the human ear becomes less sensitive to very low and high frequencies. These selectors are provided to compensate for this shortcoming. In the 1 setting, frequencies around 100Hz are boosted +3dB; in the 2 setting, frequencies around 100Hz are boosted +8dB and frequencies around 20kHz are boosted +6dB. An indicator immediately over selector 1 or 2 lights to show when either mode has been activated. A second indicator is provided in the central indicator section to show that one of these selectors is pressed even when the sub-panel door is closed.



13 LOW LEVEL INPUTS

For DISC 1/DISC 2, two sets of phono jacks are provided so that two turntables or one turntable with two tonearms can be connected to the C-280. Shorting pin plugs are inserted in the DISC 2 jacks before shipment. They should be left in place when only the DISC 1 jacks are used.

If both sets of DISC jacks are used, gently pull out the shorting pin plugs and insert them in two of the LINE input jacks. The shorting pin plugs can be inserted in any pair of input jacks, but they should never be inserted in the output (TAPE REC, OUTPUTS) jacks. If this is done, no sound will be heard and a malfunction may result. Remember to connect the turntable ground terminal to one of the rear panel GND jacks before playing a record for the first time. All three GND jacks are the same so it does not matter which one you use.

14 HIGH LEVEL INPUTS TUNER / LINE 1 / LINE 2

Connect the tuner output cables to the TUNER jacks. The LINE 1 and LINE 2 jacks can be used for a COMPACT DISC player, second tuner, third tape

deck or any other suitable audio or video component.

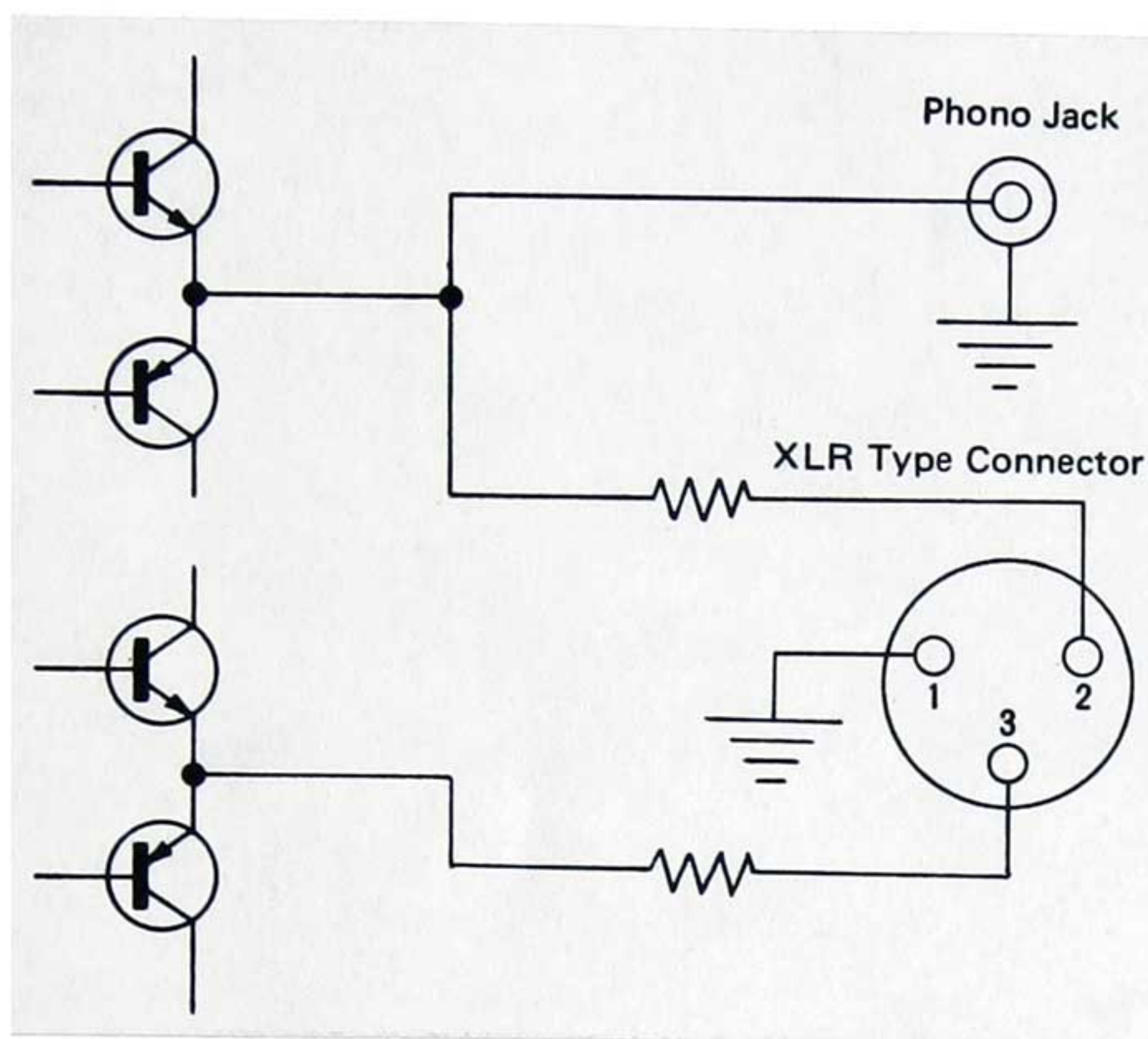
15 TAPE 1 / TAPE 2 PLAY / REC

Two sets of playback and recording jacks are provided so that two tape decks can be connected at one time. The tape deck LINE OUT cables should be connected to the PLAY jacks and the LINE IN cables to the REC jacks.

To make a recording, the tape recording switch [8] must be in the ON setting. The signal output from the TAPE REC jacks is not affected by the settings of the volume control, attenuator or compensator. The recording level should be set on the tape deck.

16 OUTPUTS

These consist of two pairs of phono jacks and one pair of XLR type connector jacks. The output impedance of the phono jack outputs is 1 ohm, unbalanced. The output impedance of the XLR type outputs is 600 ohms, balanced, to permit easy connection with professional components. Refer to the connection diagram for details.



Normally, the output signal is sent to a power amplifier via the phono jack. The C-280 includes high quality audio cables as an accessory. When these cables are used, the left and right channel cables should either be twisted together or routed close together and attached to some object at several points with tape and connected to the power amp.

If the output from the 600-ohm balanced XLR type connectors is fed into unbalanced XLR type connectors, such as those on the ACCUPHASE M-100, the output impedance of the C-280 will become 300 ohms.

17 SWITCHED / UNSWITCHED — AC Outlets SWITCHED

Use these outlets to supply power to other components in your audio system. Power to the other components will then be turned on and off by the C-280's power switch. Remember that the total power consumption of the components connected to these outputs should not exceed 400 watts.

UNSWITCHED

As long as the C-280's power cord is plugged into a wall socket, these outlets supply power to other components regardless of the position of the C-280's power switch. The total power consumption of the components connected to these outputs should not exceed 200 watts.

Remarks: These switched and unswitched outlets may not be supplied depending on the safety standards or regulations applicable in the particular country to where the unit is destined.

18 VOLTAGE SELECTOR

Use this selector to adapt this unit to the power supply voltage in your area. The switches have already been set to the proper setting for the country to which each unit is destined. If you use the unit in an area where the power supply is different, the voltage selector must be changed accordingly. The voltage selector can be set to any of four voltages: 100V, 117V, 220V and 240V. To change the position of the voltage selector, unscrew the two screws holding the voltage selector panel and remove the panel. When both the top and bottom switches are in the right positions, the unit is set to 240V; if the top switch is in the right and the bottom switch is in the left position, the setting is 220V. The present voltage setting is read by following the white line on the voltage cover from the top white dot to the bottom one. The voltage written along the path of that line shows the voltage setting. After having reset the voltage selector to the proper setting, replace the panel and screws.

19 FUSE

This is an AC line fuse. If after use the amplifier should fail to operate due to fuse failure, check its cause and eliminate it, before replacing the fuse. Sometimes a fuse may fail by itself without cause. Use the same type slow-blow 2A fuse for 100, 117V area and 1A for 220, 240V when making fuse replacements.

If you move to an area with a different power supply voltage, or if the fuse blows to shut off all power, consult your nearest ACCUPHASE dealer for instructions.

PRECAUTIONS

■ Precautions concerning heat build-up

Because each amplifier unit uses power transistors in a pure class A configuration, a considerable amount of heat is generated. The top panel may become hot after this unit has been operated for a while, but this has no adverse effect on performance and is not a malfunction. The C-280, including the attractive wooden cabinet, is carefully designed to provide sufficient heat dispersion at all times. However, to assure adequate ventilation, do not place this unit in narrow confines or in such a way that proper ventilation is impeded. Also, do not place this unit in a location exposed to direct sunlight or near a room heater or other heat source.

■ Turn AC power off when connecting or disconnecting inter-connecting cables

When RCA type pin plugs, the most widely used connectors for interconnecting cables, are used, the (+) and (-) leads are connected or disconnected separately, i.e., one side before the other. If this is done without having first turned off the AC power, a momentary current surge that results may damage the speaker. Always remember to turn the AC power off before trying to connect or disconnect the cables between associated components.

■ Using the shorting pin plugs

The DISC 2 jacks are equipped with shorting pin plugs. When only the DISC 1 jacks are used, the DISC 2 shorting pin plugs should be left in place. If they are removed to accommodate a second turntable, the plugs should be reinserted in another set of unused input jacks (TUNER, LINE, TAPE PLAY) that is not being used. The shorting plugs should never be inserted in any of the output jacks as no sound will be heard.

■ Cleaning the wooden cabinet

The cabinet of this unit is made of persimmon wood. Wipe off dirt and dust from time to time with a damp cloth that has been well wrung out. Commercial wood cleaning and polishing products may permanently mar the finish of this cabinet. Avoid waxing since the wood may become too glossy or the wax may accumulate on the surface of the wood without being absorbed, leading to an unsightly coating of dust.

■ Do not place the C-280 directly on top of or underneath a power amplifier

This unit contains a high gain pre-amp with a moving coil cartridge (MC) head amplifier. If it is placed too close to a power amplifier or another component that generates a strong magnetic field, a hum may be produced in this unit through magnetic induction. Therefore, leave a gap of at least 10 cm between this unit and other audio and video components. When placing components in a rack, be sure to allow sufficient ventilating space for the power amp.

OPERATING INSTRUCTIONS

■ To play a phonograph record

Confirm that the turntable output cables are correctly connected to the left and right DISC 1 or DISC 2 jacks ⑬ on the rear panel. Also be sure the turntable ground cable has been connected to one of the rear panel GND jacks. Then perform the following steps.

- ① Turn down the volume control ⑪, turn on the power switch and set the input selector ② to the DISC 1 or DISC 2 position depending on which set of jacks is being used.
- ② If the turntable is equipped with an MM (moving magnet) or other high output type cartridge which requires no step-up device, set the head amp selector to the OFF/MM position. If an MC (moving coil) cartridge is being used, the built-in head amp must be used. The +26dB position will provide sufficient gain for most MC cartridges.
- ③ Next, set the MC load selector to the proper setting for the impedance of the MC cartridge. The load impedances of MC cartridges range between approx. 2 ohms and 50 ohms. As a rule, MC cartridges requiring a load impedance of 20 or more ohms should be used with the 100-ohm setting and cartridges having a rating below 20 ohms with either the 30-ohm or 10-ohm setting. Generally, a load impedance about two to three times higher than the specified cartridge load impedance is appropriate.
- ④ Confirm that the attenuator ⑩ is in the OFF position and that the tape monitor selector ⑦ is in the SOURCE setting.
- ⑤ As soon as the stylus has been lowered onto the record, raise the volume to the desired listening level. If the cartridge being used has an output voltage of 0.1 mV (at a cutting velocity of 5 cm/sec, 1 kHz) or less, set the head amp selector ③ to the +32dB setting to obtain an adequate amount of gain. However, when using high out-

put MC cartridges having an output voltage of 0.5mV (5 cm/sec, 1 kHz) or more, the +32dB position may result in excessive distortion.

- ⑥ Press the mode selector ⑤ to change to the MONOPHONIC mode to confirm that the sound image is properly centered. Then use the compensator ⑫ to boost the low and high end frequencies if necessary.
- ⑦ If the record is seriously warped, the resulting low frequency resonance will cause the woofers to "pump", i.e., move back and forth at a subsonic frequency, which interferes with their proper performance. In this case, turn on the subsonic filter switch ④ to eliminate such unwanted subsonic frequency signals.
- ⑧ Finally, when using an MC cartridge, ascertain that the impedance setting performed in Step ③ is correct. This is necessary because even some low impedance MC cartridges perform best at the 100-ohm setting. Therefore, compare sound quality at each impedance setting to be sure you are using the optimum setting.

■ Radio reception

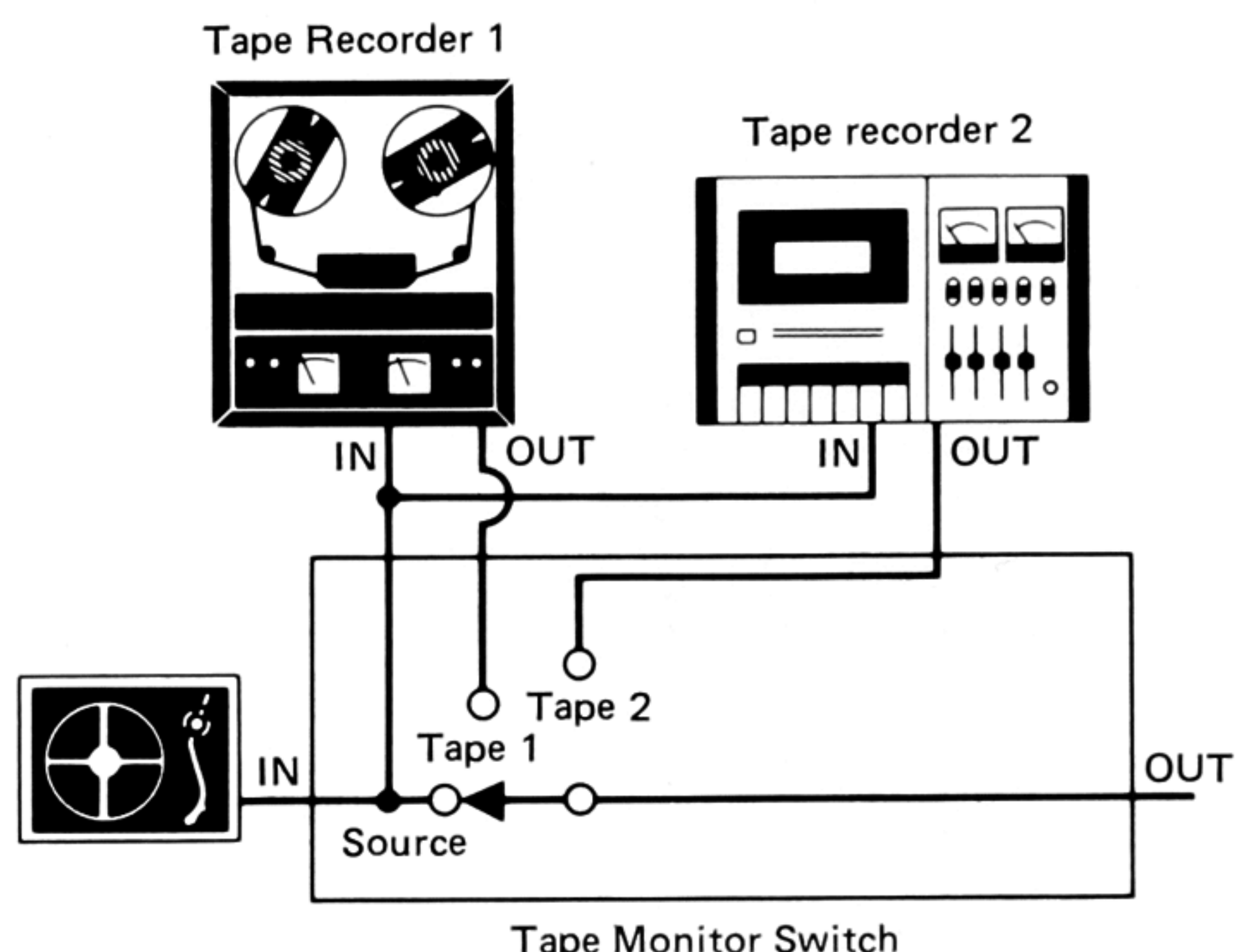
Confirm that the tuner output cables are correctly connected to the left and right TUNER jacks ⑭ on the rear panel. Also confirm that the tape monitor selector ⑦ is in the SOURCE setting. Then set the input selector ② to the TUNER position and raise the volume to the desired listening level. Since the output levels of the turntable and tuner may be different, the volume level may change when the input selector is changed to the TUNER position. Adjust the output level control on the tuner to correct this problem.

■ To play back or record a tape

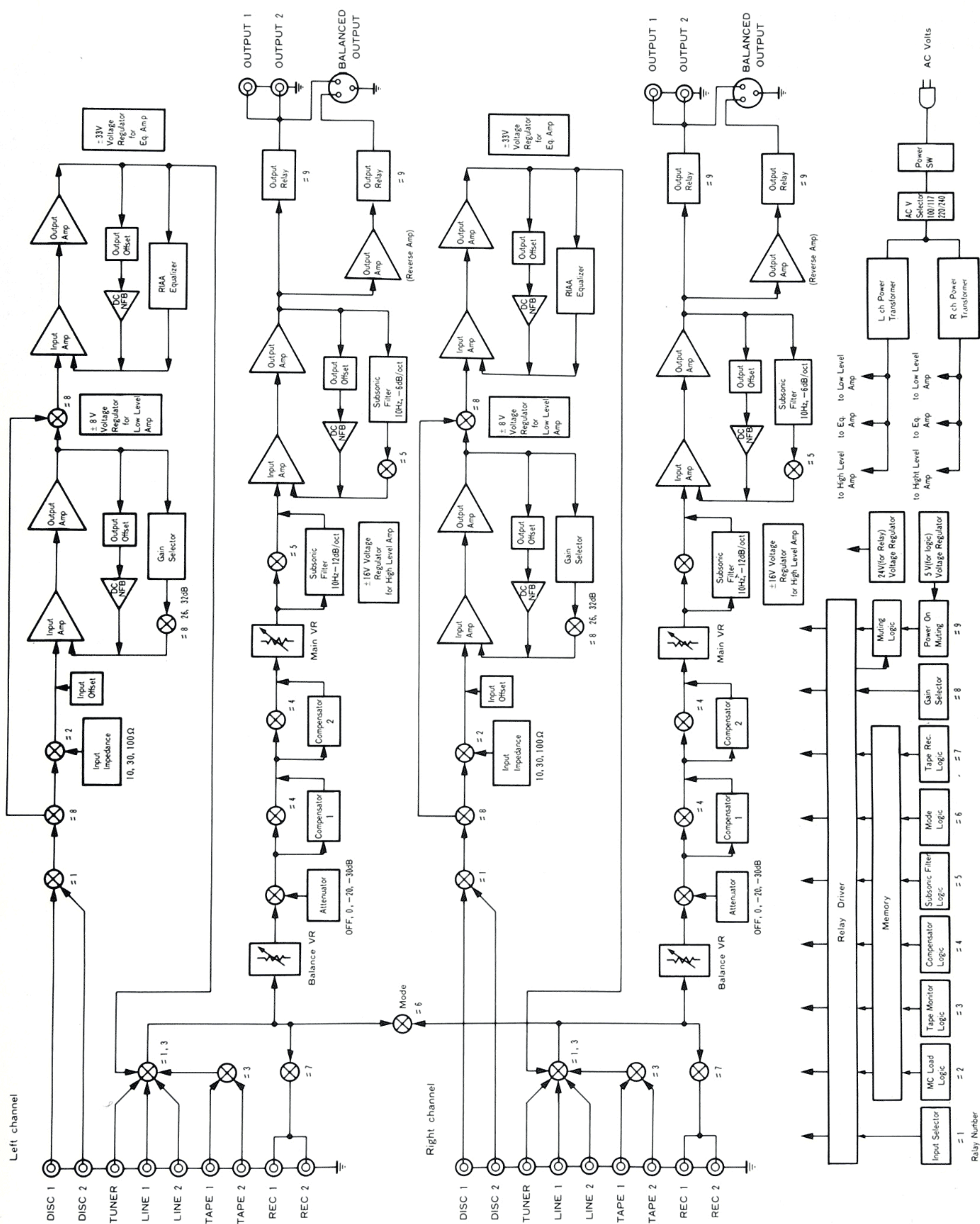
Confirm that the tape deck LINE IN jacks are connected to the rear panel REC jacks and the LINE OUT jacks to the rear panel PLAY jacks ⑮. Also confirm that all left and right connections are correct.

- 1 **PLAYBACK**
Place the tape deck in the playback mode and set the tape monitor selector ⑦ to the 1 or 2 setting depending on which set of jacks is being used. The tape can be heard regardless of the setting of the input selector. Return the tape monitor selector to the SOURCE setting to hear the program source chosen by the input selector.

- 2 **RECORDING**
 - 1 Select the program source (program to be recorded) and listen to it through the speakers to be sure all settings are correct.
 - 2 Press the tape recording selector ⑧ to turn it ON.
 - 3 Put the tape deck in the recording mode to begin actual recording. The sound heard through the speakers is what is being recorded.
 - 4 The volume control and compensator have no effect on the signal being recorded so the volume can be lowered to permit recording with no sound from the speakers. The recording level is set on the tape deck.
 - 5 Set the tape monitor selector to the SOURCE setting to monitor the program source. If you are recording on a 3-head deck, the just-recorded signal can be monitored by setting the tape monitor selector to the 1 or 2 setting (depending on which rear panel jacks are being used).
 - 6 Note that the same program can be simultaneously recorded on two tape decks.



BLOCK DIAGRAM



GUARANTY SPECIFICATIONS

PERFORMANCE GUARANTY:

All Accuphase product specifications are guaranteed as stated.

FREQUENCY RESPONSE:

TUNER/LINE/TAPE PLAY INPUT:

1Hz to 500,000Hz: +0, -3.0dB

20Hz to 20,000Hz: +0, -0.2dB

DISC INPUT:

20Hz to 20,000Hz: ± 0.2 dB

TOTAL HARMONIC DISTORTION:

(New IHF Standard)

Will not exceed 0.005% at rated output level, 20Hz to 20,000Hz.

INPUT SENSITIVITY AND IMPEDANCE:

Input Terminal	Sensitivity		Impedance (Ω)
	Rated Output	New IHF Std. (0.5V Output)	
DISC (Head Amp: Off/MM)	2.0mV	0.5mV	47k Ω
DISC (Head Amp: +26dB)	0.1mV	0.025mV	10/30/100 Ω
DISC (Head Amp: +32dB)	0.05mV	0.0125mV	10/30/100 Ω
TUNER/LINE/TAPE PLAY	126mV	31.5mV	20k Ω

OUTPUT LEVEL AND IMPEDANCE:

OUTPUT (UNBALANCED):

2.0V, 1.0 Ω (Connector: Phono Jack)

OUTPUT (BALANCED):

2.0V, 600 Ω (Connector: XLR type)

TAPE REC: 126mV, 200 Ω (Input: DISC)

A-WEIGHTED SIGNAL-TO-NOISE RATIO:

Input Terminal	Rated Output	New IHF Standard
DISC (Head Amp: Off/MM)	85dB	82dB
DISC (Head Amp: +26dB)	72dB	76dB
DISC (Head Amp: +32dB)	66dB	76dB
TUNER/LINE/TAPE PLAY	110dB	88dB

MAXIMUM OUTPUT LEVEL:

(at 0.005% distortion, 20Hz to 20,000Hz)

OUTPUT (UNBALANCED): 10.0V

OUTPUT (BALANCED) : 10.0V

TAPE REC : 19.0V

(Input: DISC)

MAXIMUM INPUT FOR DISC INPUT:

(at 0.005% distortion, 1kHz)

HEAD AMP OFF : 300mV

HEAD AMP +26dB: 15mV

HEAD AMP +32dB: 7.5mV

MINIMUM LOAD IMPEDANCE:

OUTPUT (UNBALANCED) : 1k Ω

TAPE REC : 10k Ω

VOLTAGE AMPLIFICATION IN DECIBELS:

TUNER/LINE/TAPE PLAY

Input to OUTPUT: 24dB

TUNER/LINE/TAPE PLAY

Input to TAPE REC Output: 0dB

DISC (Head Amp: Off/MM)

Input to OUTPUT: 60dB

DISC (Head Amp: Off/MM)

Input to TAPE REC Output: 36dB

HEAD AMP gain:

Selectable for +26dB and +32dB

LOUDNESS COMPENSATOR:

(volume attenuation at -30dB)

1 : +3dB at 100Hz

2 : +8dB at 100Hz, +6dB at 20kHz

SUBSONIC FILTER: 10Hz cutoff, 18dB/oct.

ATTENUATOR: -20dB, -30dB and infinity

SEMICONDUCTOR COMPLEMENT:

225 Tr's, 16 FETs, 33 ICs and 167 Di's

POWER REQUIREMENT:

Voltage Selector for 100, 117, 220

and 240V, 50/60Hz operation.

Power Consumption; 75W

DIMENSIONS:

468mm (18-7/16 inches) width,

171mm (6-12/16 inches) max. height,

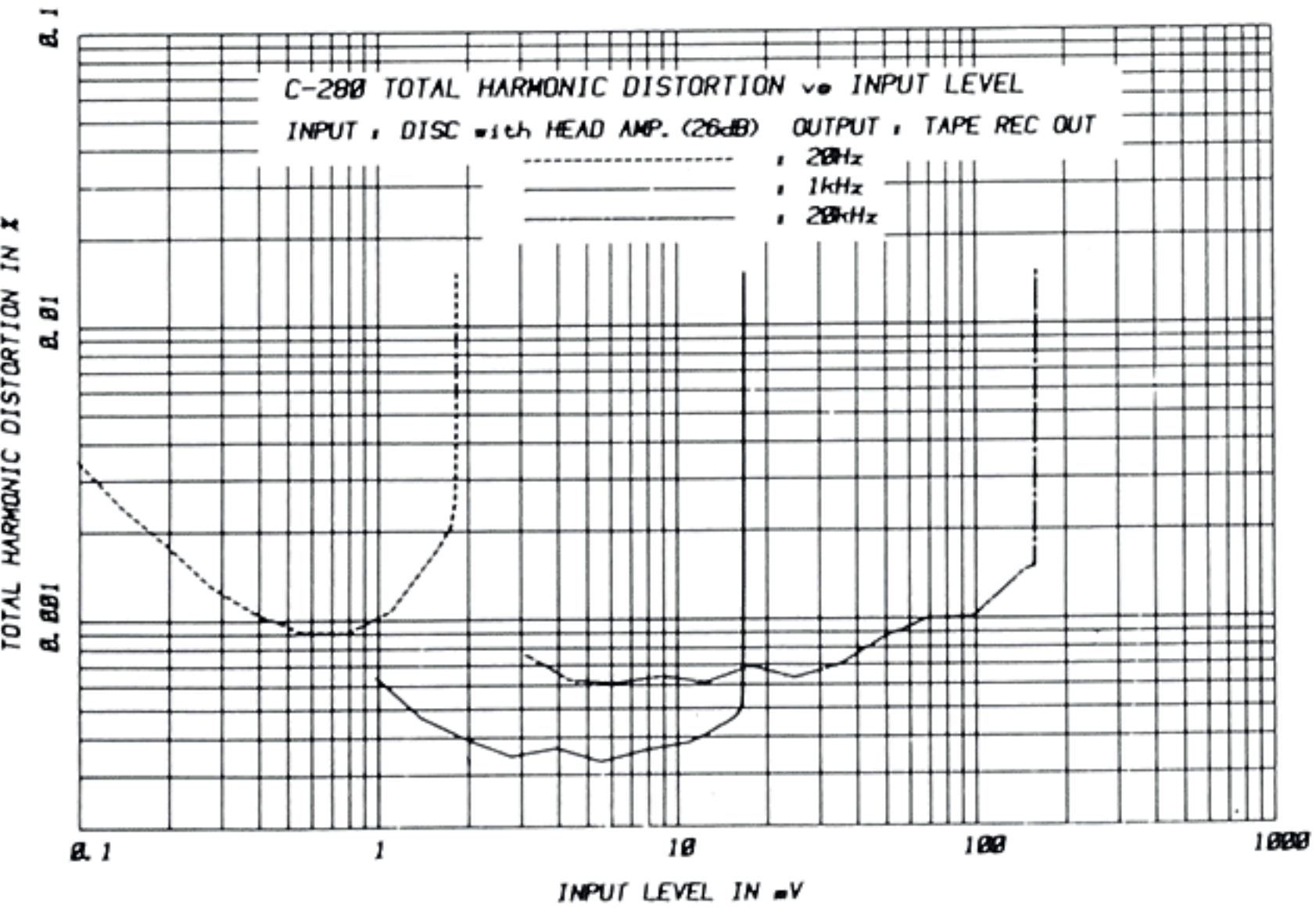
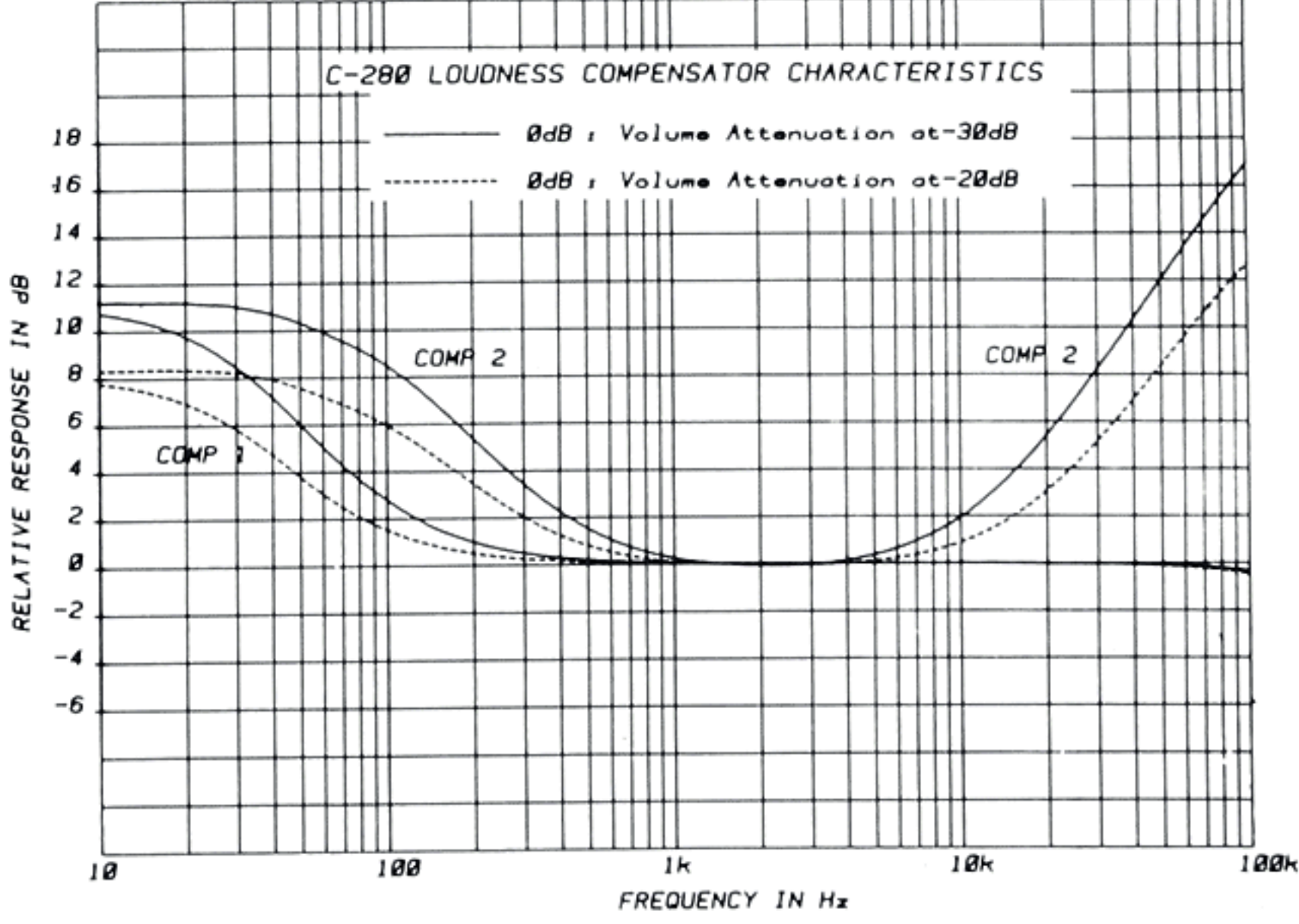
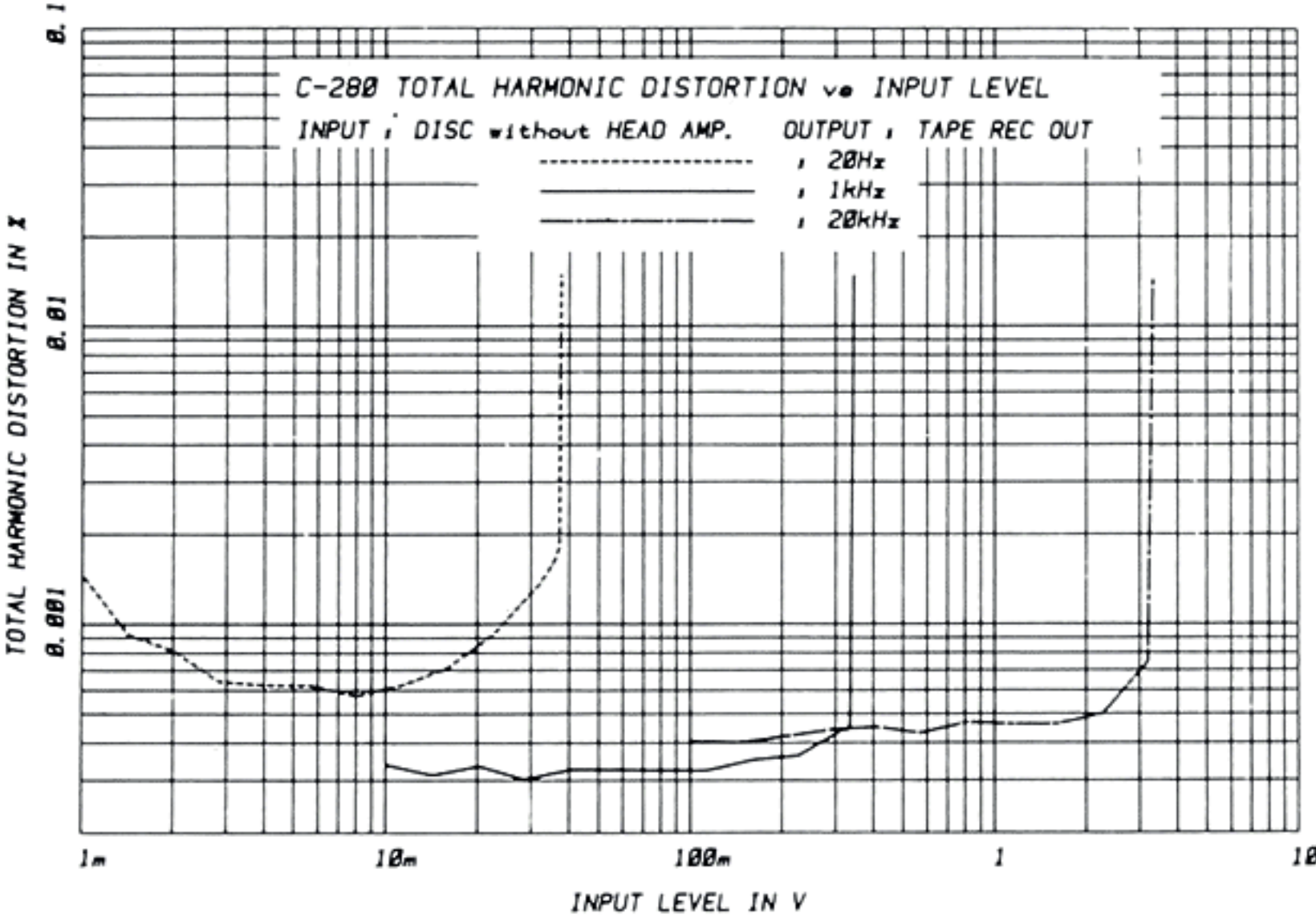
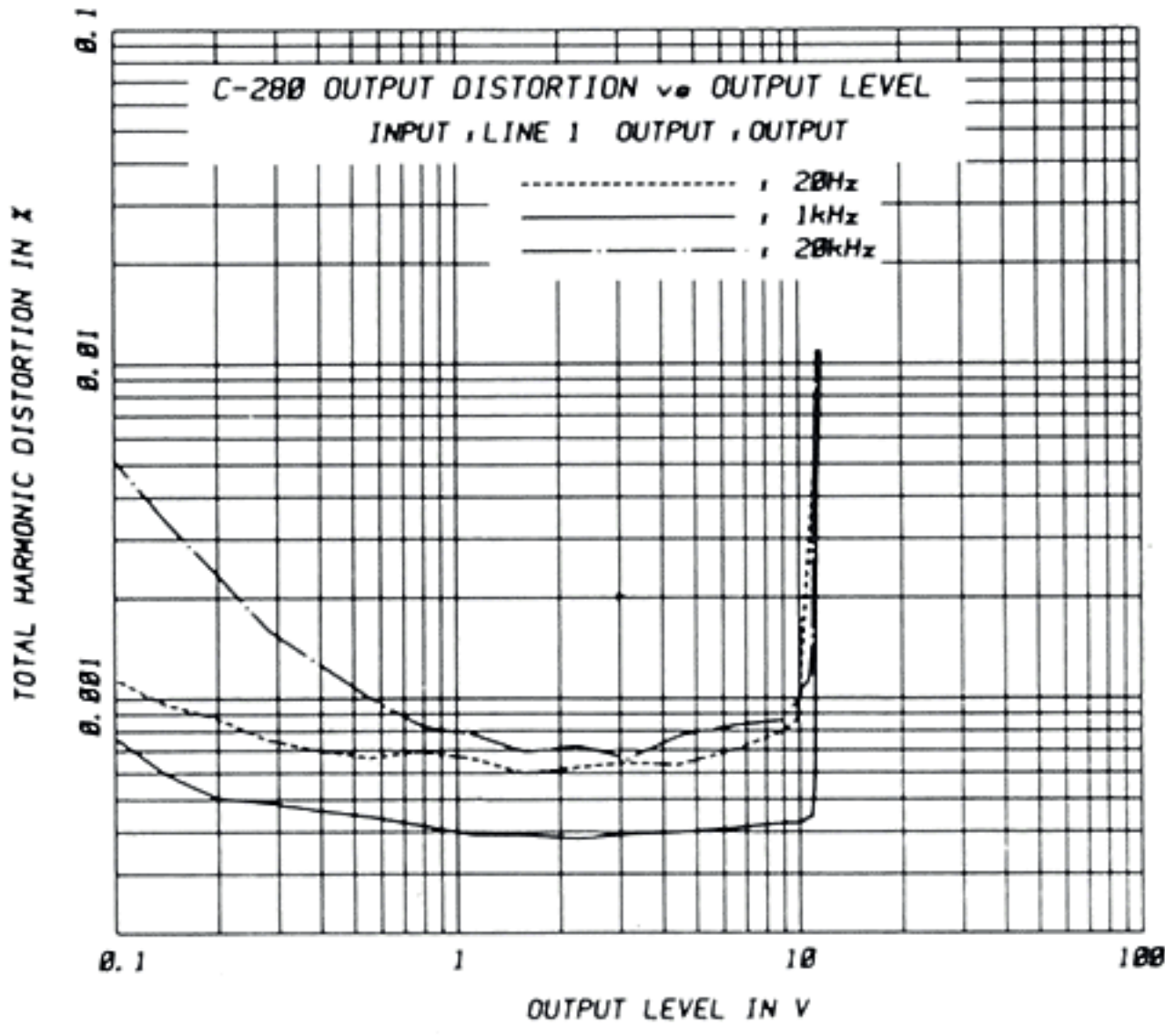
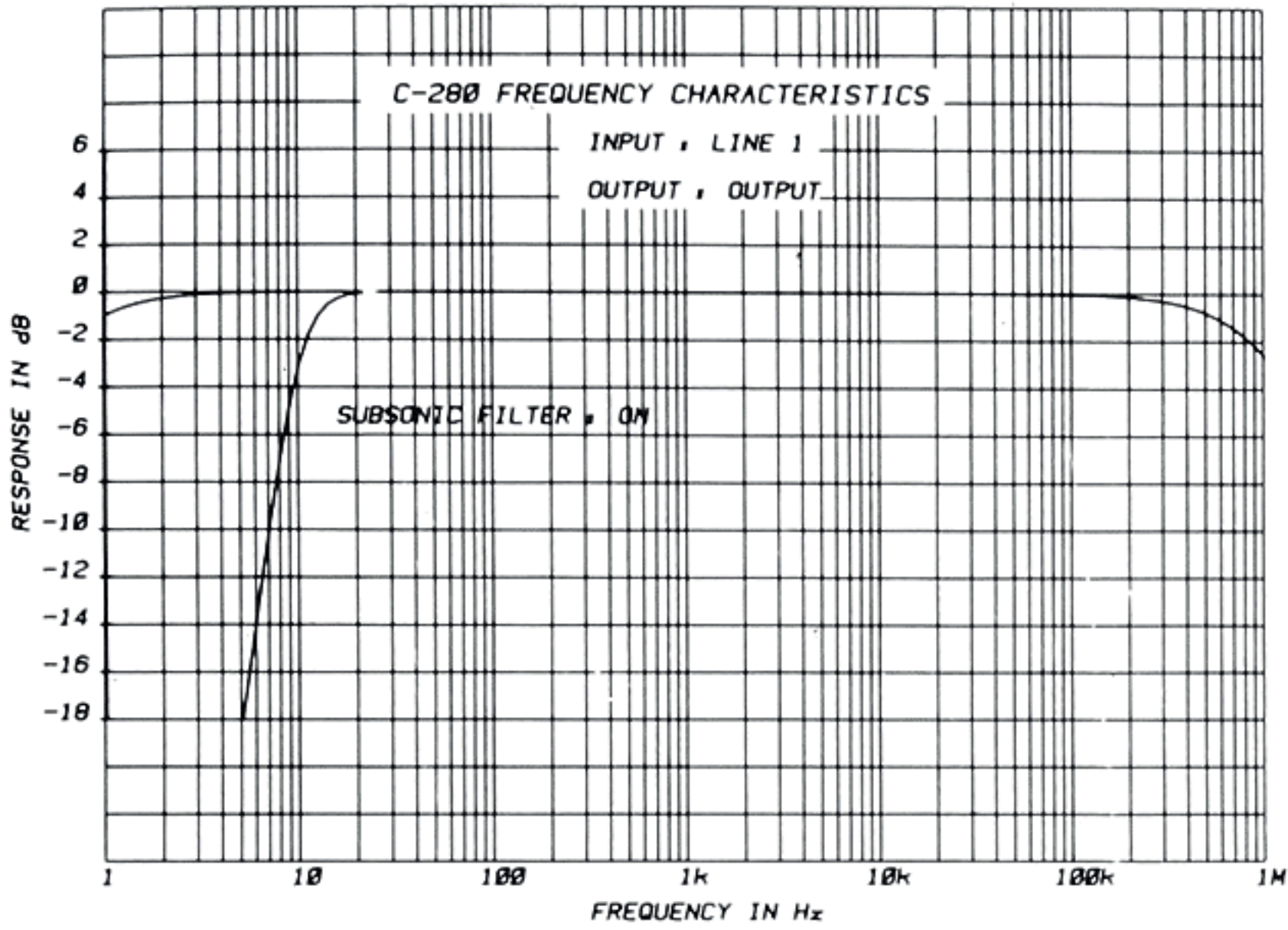
396mm (15-9/16 inches) depth.

WEIGHT:

18.1 kg (39.9 lbs) net.

23.1 kg (50.9 lbs) in shipping carton.

PERFORMANCE CURVES





14-10, 2-CHOME, SHIN-ISHIKAWA
MIDORI-KU, YOKOHAMA 227, JAPAN
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