

DENON

STEREO POWER AMPLIFIER

OPERATING INSTRUCTIONS

MODEL POA-3000



NIPPON COLUMBIA CO., LTD.

**“SERIAL NO. _____
PLEASE RECORD UNIT SERIAL NUMBER ATTACHED TO THE REAR OF THE
CABINET FOR FUTURE REFERENCE”**

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This manual carries information necessary for proper and effective use of this DENON product. You are requested to read it thoroughly, and keep it within your easy reach as a source of reference information.

GENERAL INSTRUCTIONS FOR PROPER USE

The circuitry of this product is implemented with the high-grade circuit elements carefully selected to fully accommodate the temperature changes and line voltage variations anticipated for its service in the hand of the user. The elements last long, but the user can make them last longer still and give persistently stable performance by adhering to the following instructions:

AVOID HIGH TEMPERATURES

High temperature are hard on transistors and diodes. Do not use this product in the direct sun beam exposure or adjacent to any room-heating device.

AVOID DUST AND MOISTURE

Do not use this product in a dusty or damp place. Dust or moisture degrade the quality of electrical parts. Any water entering the cabinet can give rise to trouble.

TAKE GOOD CARE OF THE POWER SUPPLY CORD

Do not place any heavy object on the cord; do not pinch it; and do not attempt to rework it yourself to shorten or lengthen it.

UNPLUG THE SUPPLY CORD AFTER EACH USE

It is a bad practice to leave the cord plugged into the AC outlet particularly when you are to be gone for days.

When plugging or unplugging the cord, hold the plug end of it, not the cord part. The cord part is not meant for pulling.

DO NOT ALLOW ANY FOREIGN MATTERS TO ENTER THE CABINET

A sewing needle, hair pin or coin, for instance, entering the cabinet can be the cause of serious trouble or of even electrical shock.

DO NOT REMOVE THE COVER PART OF THE CABINET

It is dangerous to operate the product with its cover removed. Remember, there are high-tension parts inside.

If anything happens and you wish to look into the product, restrain yourself from the urge to open the cabinet. In such a case, consult your dealer for assistance.

DO NOT USE BENZINE, LACQUER THINNER AND THE LIKE ON CABINET SURFACE

Benzine, thinner and insecticide liquid will spoil the finish of the cabinet surface. So-called chemical wiping cloth can discolor the finish or even break the bond between the finish coating and the base. To remove stains and dust, use a soft cloth.

CONNECT AND DISCONNECT · CONNECTING CORDS WITH THE POWER SUPPLY CORD UNPLUGGED

A wrong interconnection is not the remotest possibility. Check and double-check to be sure that this product is properly connected with other equipments before plugging its power supply cord into the AC outlet, with its power on-off switch turned off.

BE CONSCIOUS OF HEAT DISSIPATION WHEN STACKING

A provision is made in the top of the cabinet to let out the internally generated heat: the provision is in the form of heat dissipating windows.

Never set another device direct on the cabinet top or the heat will be trapped inside to result in a harmful temperature buildup.

Be aware of the possibility of inductive interference to this product from other devices of high-current type, such as a power amplifier, or high-magnetic-flux type, such as a motor. Keep it away from such devices, providing adequate separating distances: a distance of at least 100mm must be secured if the source-of-interference device is a power amplifier.

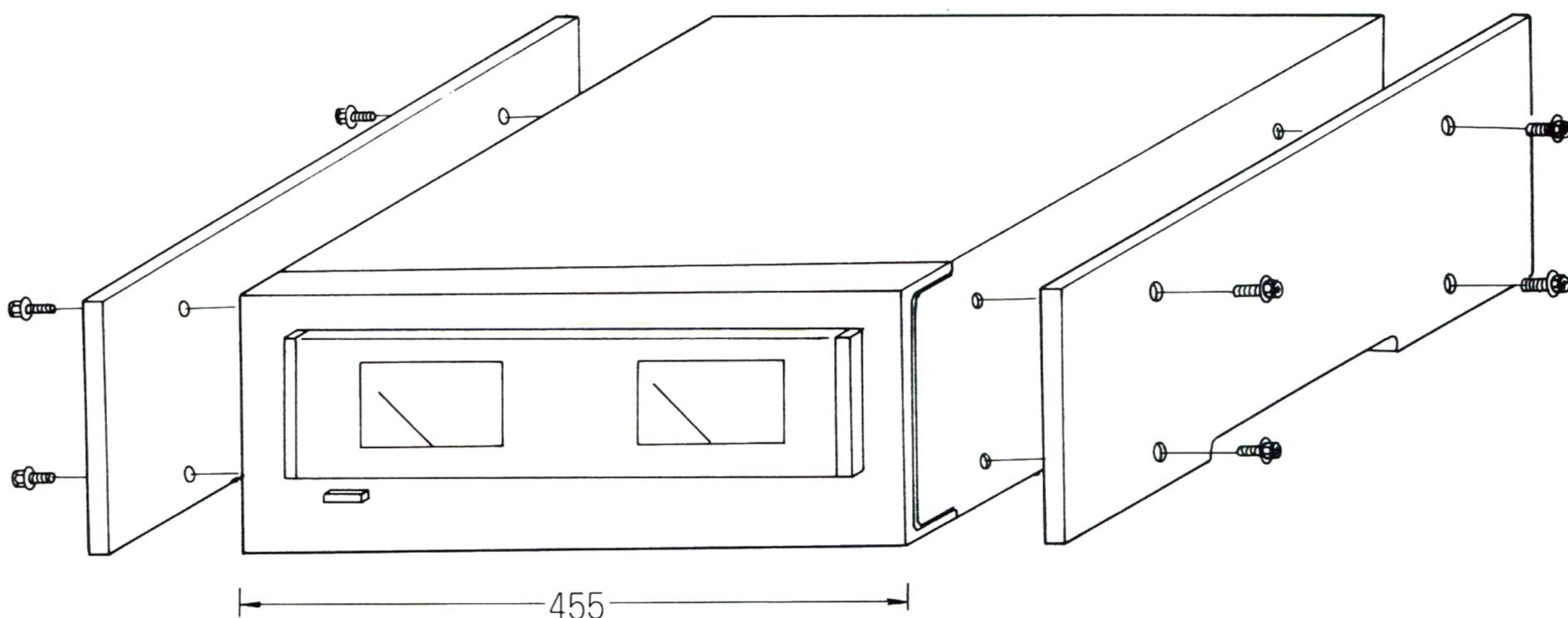
STORE THE MANUAL AND WARRANTY CARD TOGETHER WITHIN EASY REACH

This manual is to be read and re-read from time to time: it is the sole source of information that is readily available to the user for proper use of this product. Keep it within easy reach.

HOW TO RACK-MOUNT THE POA-3000

The POA-3000 unit can be mounted on an EIA-specification rack, which measures 480 mm in width and depth. To do so, remove the two side plates by loosening 4 screws on each, and set the amplifier unit on the rack in such a way as to provide a heat dissipating clearance.

NOTE: For heat dissipation, an overhead clearance of at least 100 mm must be provided. Provisions should be made to guard the rack-mounted amplifier unit against the heat dissipated by the other devices.



FEATURES

The POA-3000 Stereo Power Amplifier is among the first series of DENON audio products designed and built in line with the guiding concept of **REAL TIME AUDIO TECHNOLOGY**, a new term signifying DENON's new approach to reproduction of real music.

The POA-3000 is a new Class-A amplifier unit in which the inherently low efficiency associated with Class-A is eliminated by advanced design features. (20 patents pending)

Thus, it is capable of high-output operation without sacrificing the advantage of Class-A mode — wider audio band coverage with distortionless amplifying action.

1. **180 W + 180 W Class-A**

Freedom from cross-over distortion and switching distortion is accounted for by Class-A, and high output by the new scheme called "real bias circuit" that successfully endows Class-A with high efficiency. Seven of the 20 pending patents reside in this circuit.

2. **High-speed power transistors for high-power high-linearity performance**

Ten power transistors with improved characteristics in the upper frequency range, rated 150 W for P_C and 100 MHz for f_t , are used in two parallel rows of 5 transistors each to constitute the power stage. Broader bandwidth, minimized distortion, and excellent linearity particularly in high-out operation with higher frequencies — these are the highlights on the power stage.

3. **Distortionless drive for power stage**

Small-signal transistors with 400 MHz for f_t are paralleled to form a cascode emitter-follower drive circuit for broad-band distortionless driving of the power stage to prevent the high-frequency characteristics from deteriorating due mainly to the junction capacitance (C_{ob}) in power transistors. (patents pending)

4. **Direct DC servo circuit for assuring clean, clear music**

This circuit, developed specially for audio amplification, suppresses DC mid-point drift and reduces both amplifier noise level and distorting tendency. It is this circuit that takes credit for significant part of the real-music performance of the POA-3000. (3 patents pending)

5. **Large-capacity power source**

1 kVA toroidal transformer. Separate-transformer voltage amplification. Newly developed electrolytic capacitor of 100,000 μF of low impedance type. With these elements, a truly powerful source is secured to drive with such a large power as 180 watts for each channel. Inrush current is necessarily large but power switches and other elements are protected by means of large-size cemented resistors and power relays.

6. **Protective muting**

A high-speed protective circuit is built in to instantly respond to each turning on of power supply and to occurrence of abnormal input voltage such as DC voltage. It mutes circuit operation to protect transistors and speakers, making an LED lamp to flicker at the front panel, until a steady state resumes in the power source. (2 patents pending)

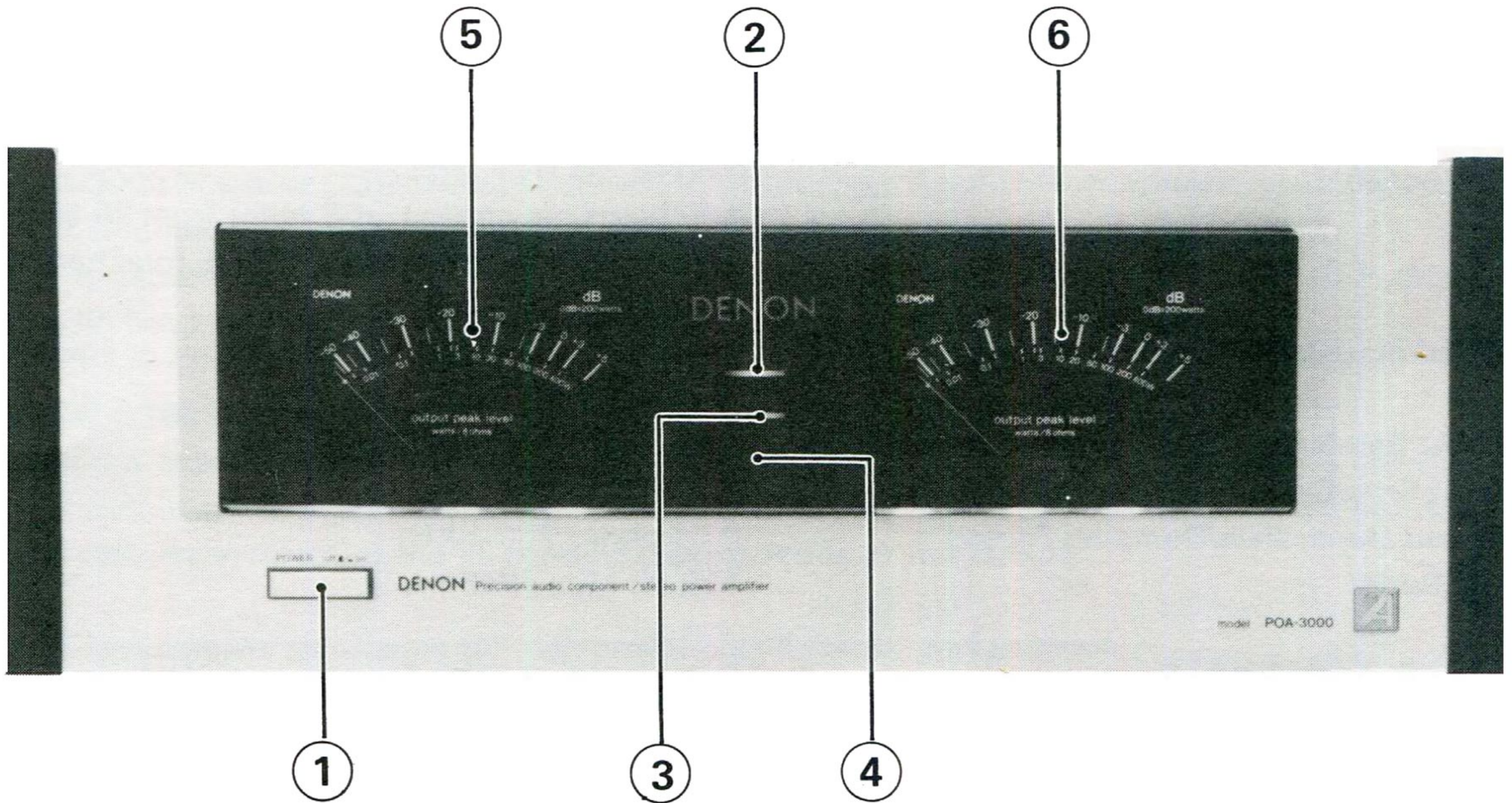
7. **A thick decorative glass plate accentuates the clean-cut pleasant-to-see front**

The gloss-finish side plates add to the high-quality styling of the cabinet design. A new display scheme is incorporated: during 5 to 6 seconds of turning on of the power switch, the DENON mark is illuminated and, thereafter, the faces of the two high-grade peak meters are lighted.

SPECIFICATIONS

MUSIC POWER (with 8 ohm load):	250 W + 250 W
Rated Output (sinusoidal output, 8 ohm load):	180 W + 180 W, 20 Hz ~ 20 kHz
Total Harmonic Distortion Factor:	0.002%, 20 Hz ~ 10 kHz 0.003%, 20 Hz ~ 20 kHz 180 Watts per channel at 8 ohms from 20 Hz to 20 kHz with no more than 0.005% total harmonic distortion. (U.S.A.)
Mixed-modulation Distortion Factor:	0.003% Max., at 180 W rated output or equivalent with 4/1 = 60 Hz / 7 kHz
Power Bandwidth (Both-channel drive, IHF):	5 Hz ~ 100 kHz (THD of 0.02%)
Input Sensitivity/Input Impedance:	1 V / 50 k ohm
Output Impedance/Damping Factor:	0.04 ohm / 200 1 kHz
S/N Ratio:	122 dB Min. (IHF "A")
SPEAKER TERMINALS:	One system; 8 ohms for optimum load impedance
Transmission Characteristic:	1 Hz ~ 350 kHz $\begin{matrix} +0 \\ -3 \end{matrix}$ dB
Subsonic Filter Characteristic:	16 Hz · 6 dB/OCT
Separation:	100 dB Min. for 20 Hz ~ 10 kHz 85 dB Min. for 20 Hz ~ 20 kHz
Slew-rate:	±300 V/μsec Min.
LEVEL METER CHARACTERISTIC:	
Type of Indication:	Output level peak indication
Indicating Range:	0 dB = 200 W/8 ohm, -50 dB ~ +5 dB
Frequency Characteristic:	±3 dB, 10 Hz ~ 100 kHz
OTHERS:	
Power Requirements:	Germany and France : AC 220 V, 50 Hz U.S.A. : AC 120 V, 60 Hz
Power Consumption:	1,300 W (at maximum output)(IEC) 570 W (U.S.A) (UL)
Cabinet Dimensions (inc. feet):	495 mm (W) x 188 mm (H) x 495 mm (D)
Weight:	34 kg

FRONT-PANEL ARRANGEMENT AND FUNCTIONAL DESCRIPTION



① POWER (Power Switch)

Push POWER switch to turn on power supply: this will make the DENON mark loom clearly by lighting at the center of the panel to tell "muting" at work. After about 6 seconds of muting, illumination takes place on the two peak meter faces to signify that the output is on.

② POWER (Power Pilot Lamp (Green))

This lamp lights up to indicate that power supply is on.

③ SUBSONIC (Subsonic Pilot Lamp)

By light up, this lamp tells that the subsonic filter is at work. The switch for this filter is located at the rear. When output relays have operated (for muting or for protective actions), this lamp remains off.

④ PROTECTOR (Protector Pilot Lamp)

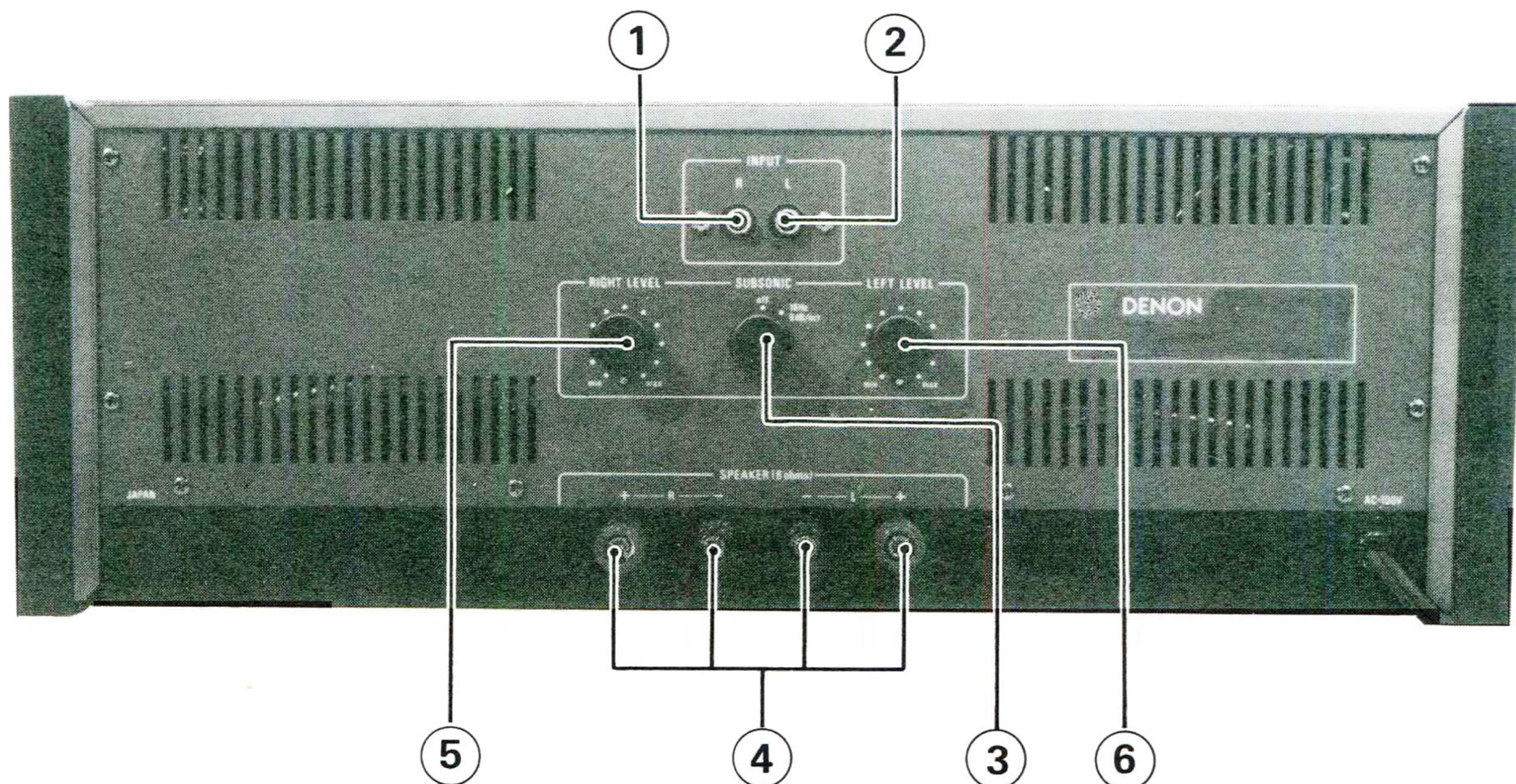
This LED lamp flickers when the protector circuit is operating to protect output transistors and speakers in the event of internal circuit fault or occurrence of DC component in the power supply from the line.

When this pilot lamp starts flickering, meter illumination goes out and the DENON mark looms. (Power supply fuse failure does not activate this pilot lamp.)

⑤ ⑥ OUTPUT PEAK LEVEL (Output Peak Level Meters)

Each meter indicates the output peak level of its channel. When an 8 ohm speaker is driven at 200 watts, the indicating hand will show "0 dB". The scale is calibrated for decibel (dB) and watt (W).

REAR-PANEL ARRANGEMENT AND FUNCTIONAL DESCRIPTION



① ② INPUT R.L CHANNEL (INPUT R.L. Channel Jacks)

Plug the preamplifier output cords into these jacks. Rated input is 1 V_{rms}.

③ SUBSONIC (SUBSONIC Switch)

This switch is for cutting in and cutting out the subsonic filter. The filter, capable of 6 dB/OCT for up to 16 Hz, removes the ugly groaning frequency components, if any, creeping in from such as a warped record.

④ R.L SPEAKER (R.L. SPEAKER Jacks)

These are rotary terminals. Plug the speaker cords into these jacks. Drive will be optimized if speakers with nominal impedance of 8 ohm are used. When plugging the cords in, be careful not to allow any likelihood of shortcircuit to occur between adjacent cords at the jacks.

High-reliability jacks of the type commonly used in large-size communication devices are provided as speaker jacks.

⑤ RIGHT LEVEL (RIGHT LEVEL Knob)

This knob is a volume control for the level of right-channel input of this power amplifier. Normally, the knob is to be left at lock on "max" side.

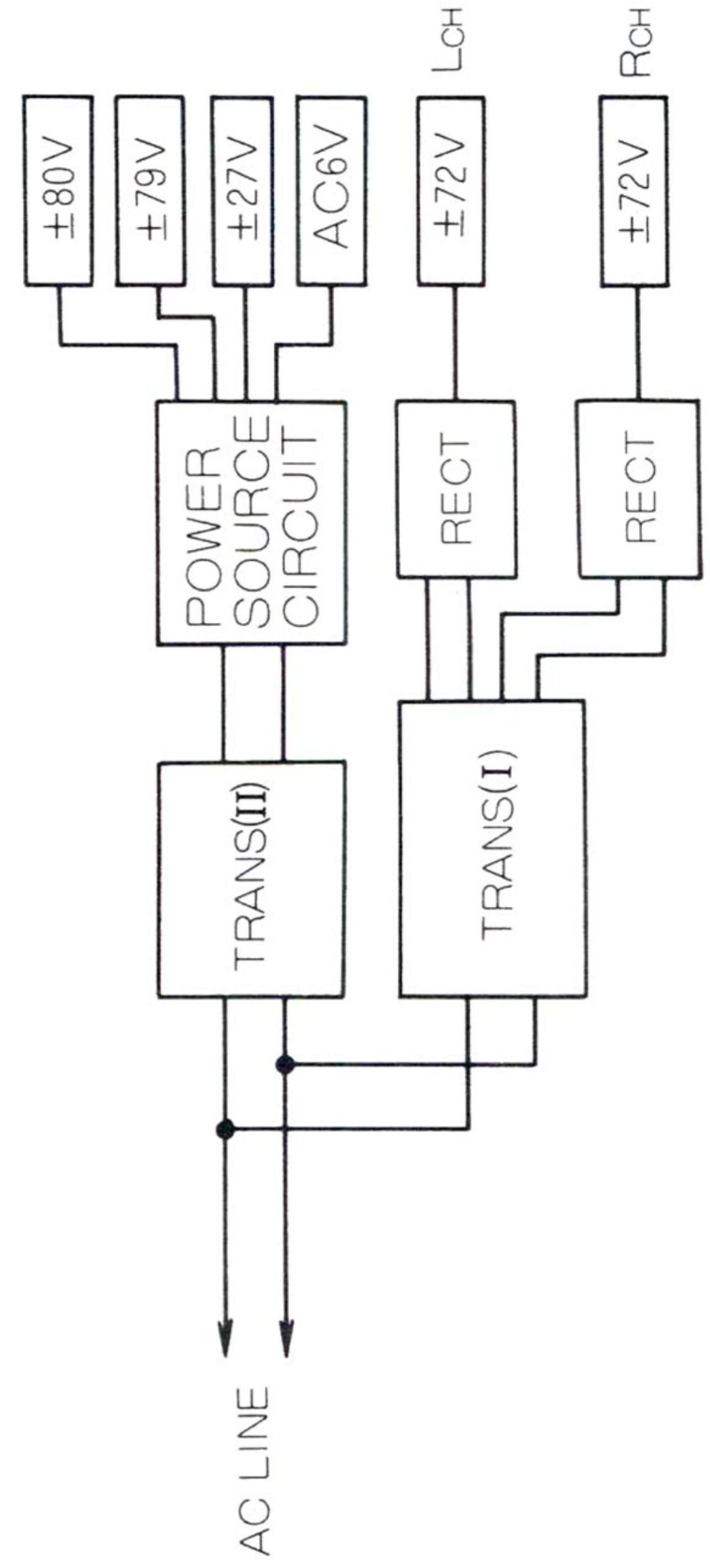
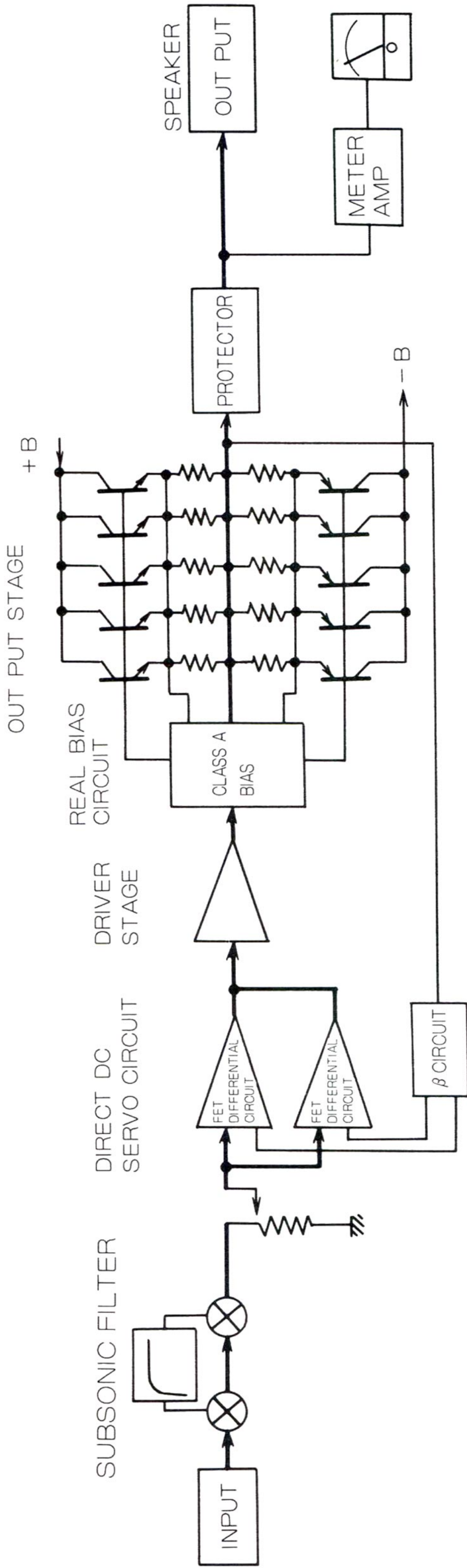
Before plugging in the input cord (output cord of the preamplifier), be sure to turn the knob back on "min" side and shut off power supply.

This knob, together with the identical one for the left channel, is to be used in level adjustment, as necessary, where this power amplifier is employed in a multi-channel system. The volume or variable resistor of this knob is of high-precision type and permits the level to be adjusted very closely.

⑥ LEFT LEVEL (LEFT LEVEL Knob)

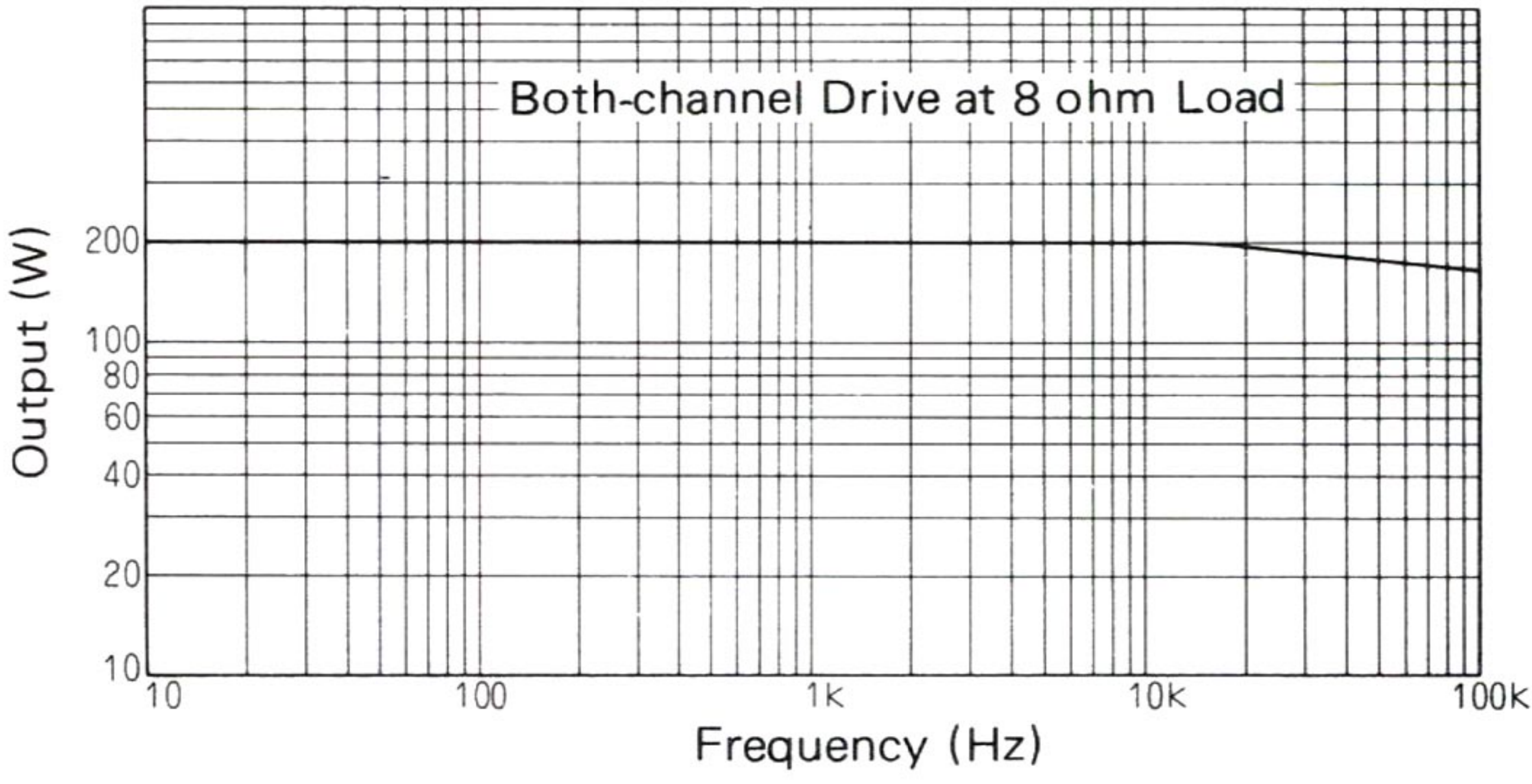
Identical to RIGHT LEVEL knob (5) in all respects except that this one is for left channel while knob (5) is for right channel.

BLOCK DIAGRAM

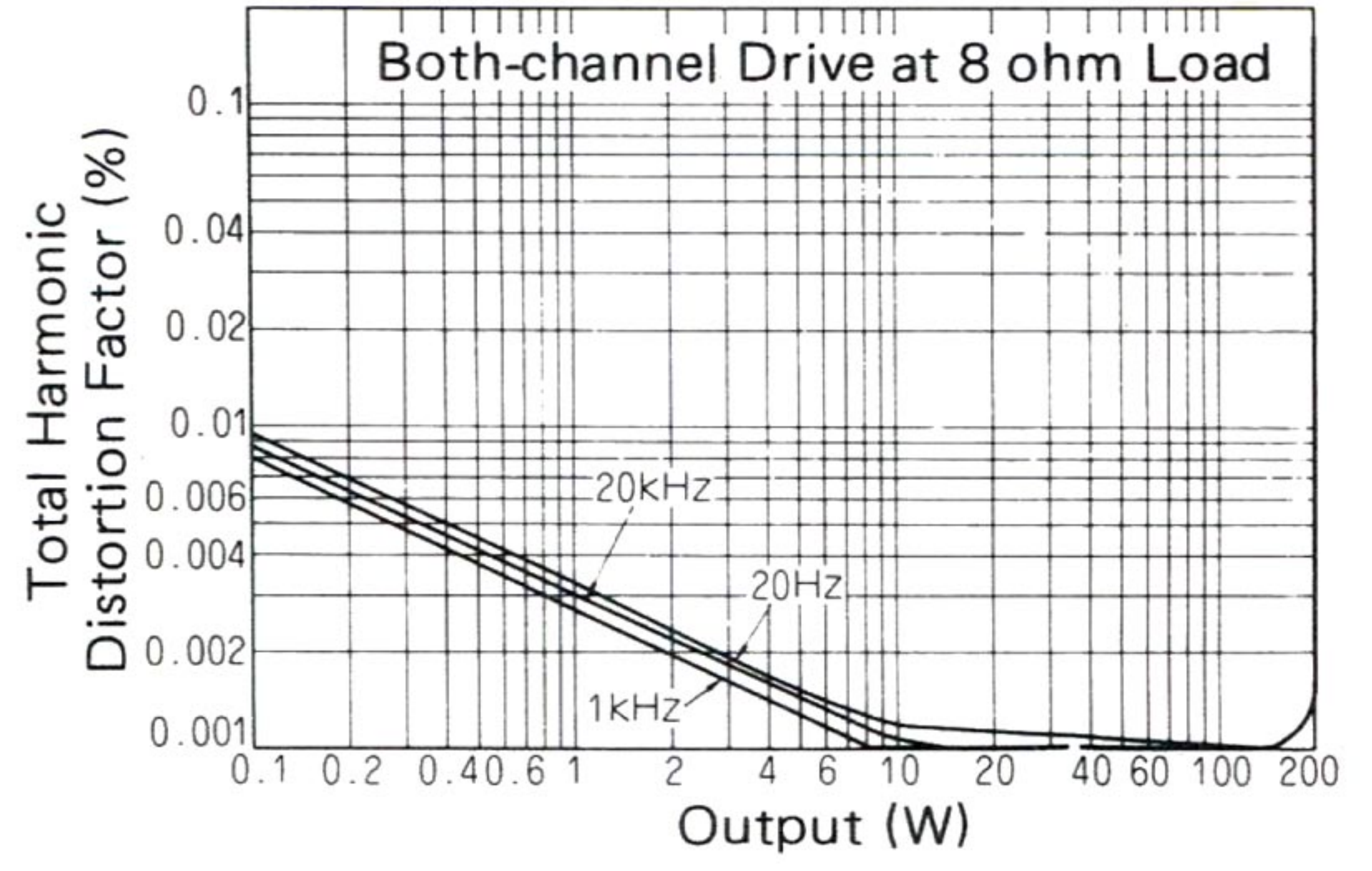


CHARACTERISTICS CURVES

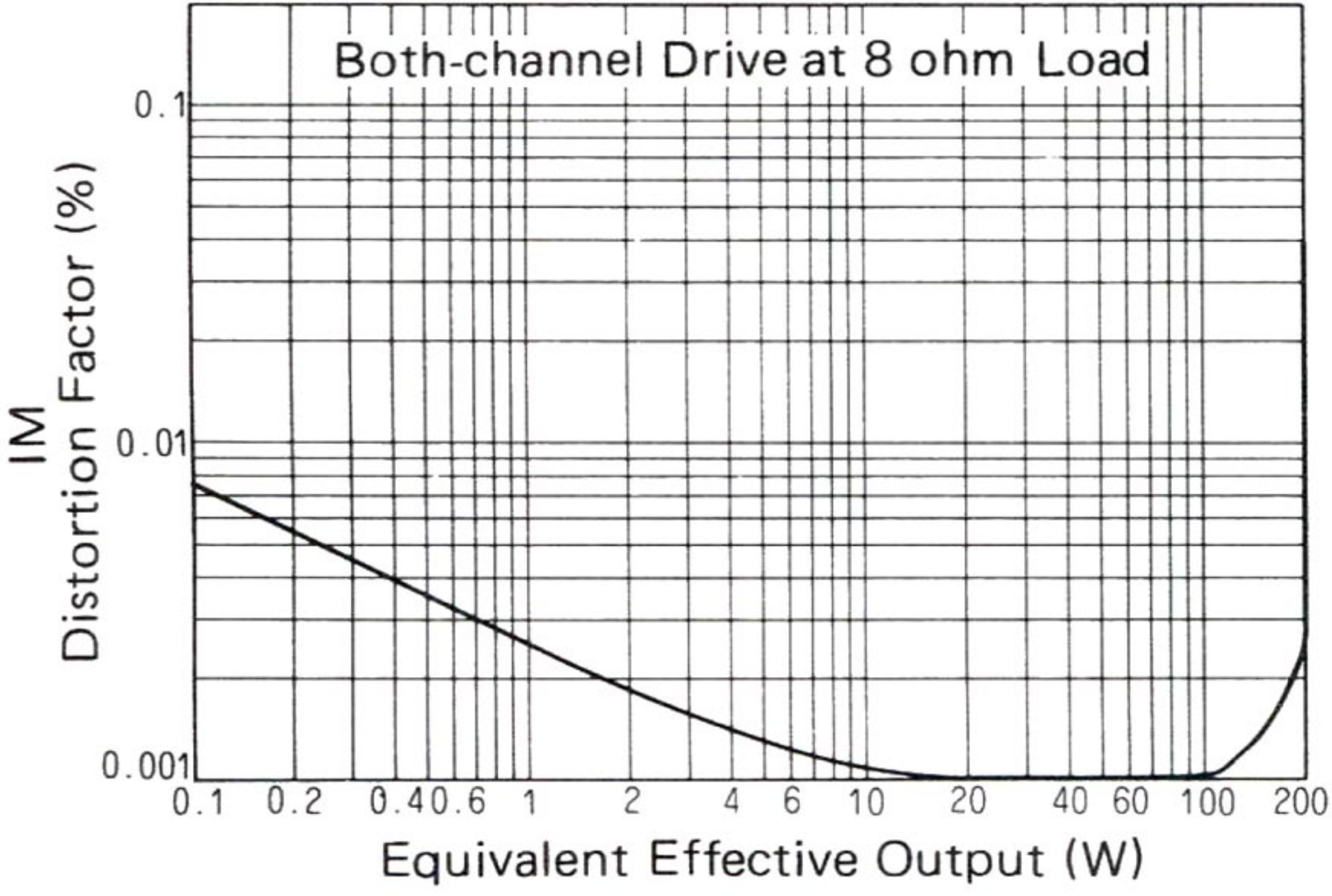
Clipping Level Characteristic



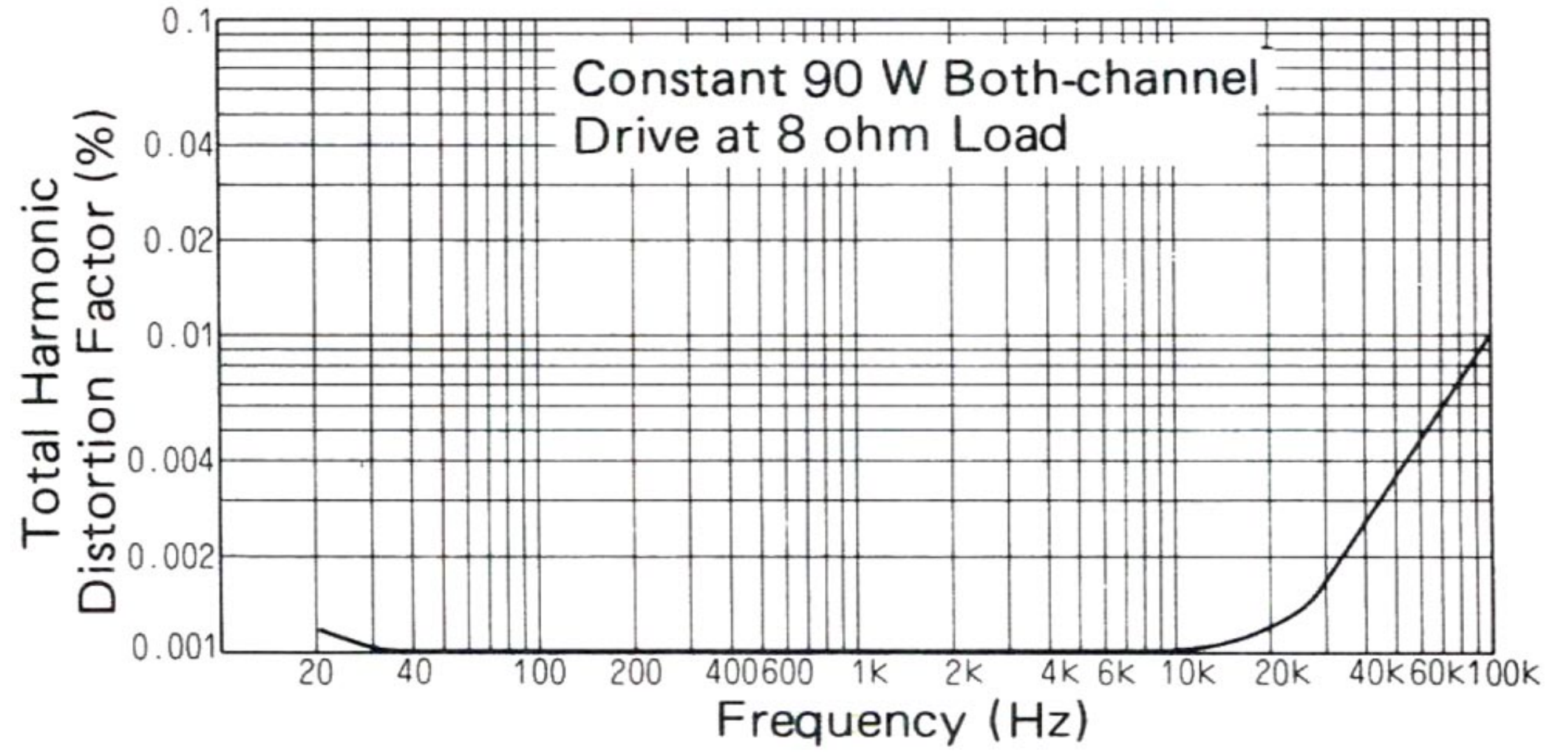
Output Characteristic of Total Harmonic Distortion Factor



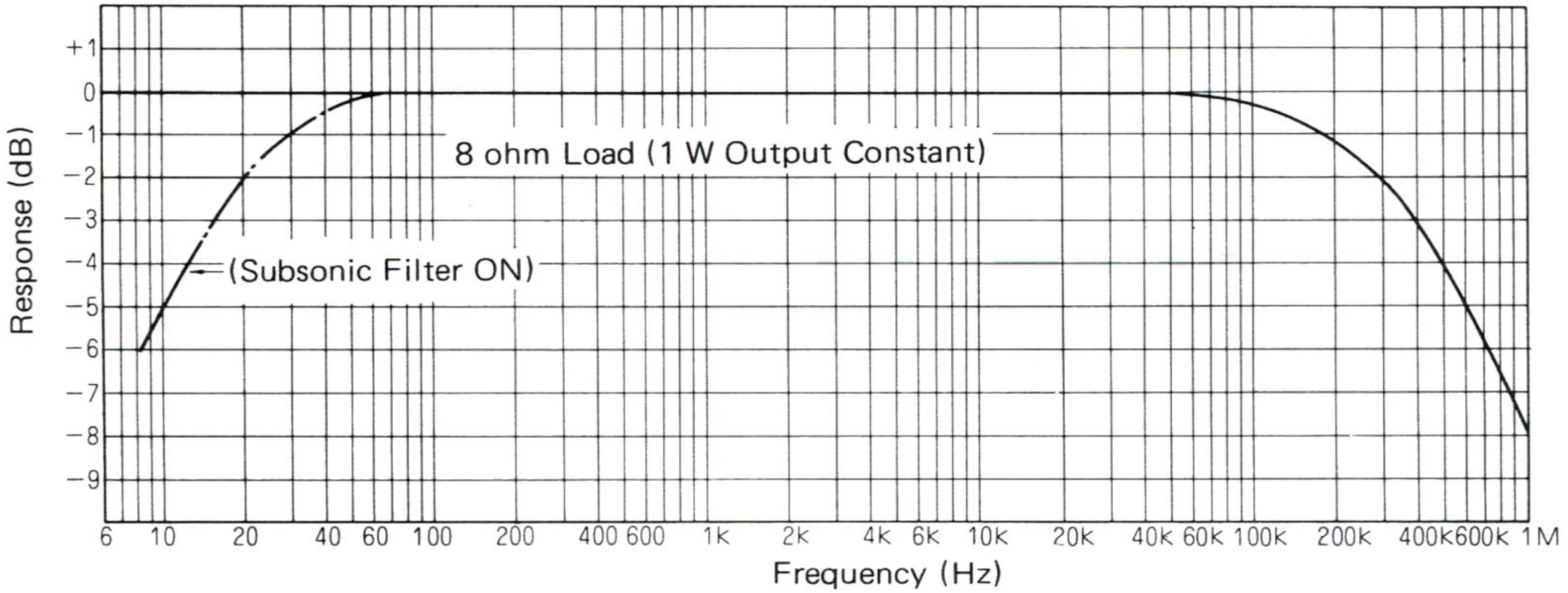
IM Distortion Characteristic



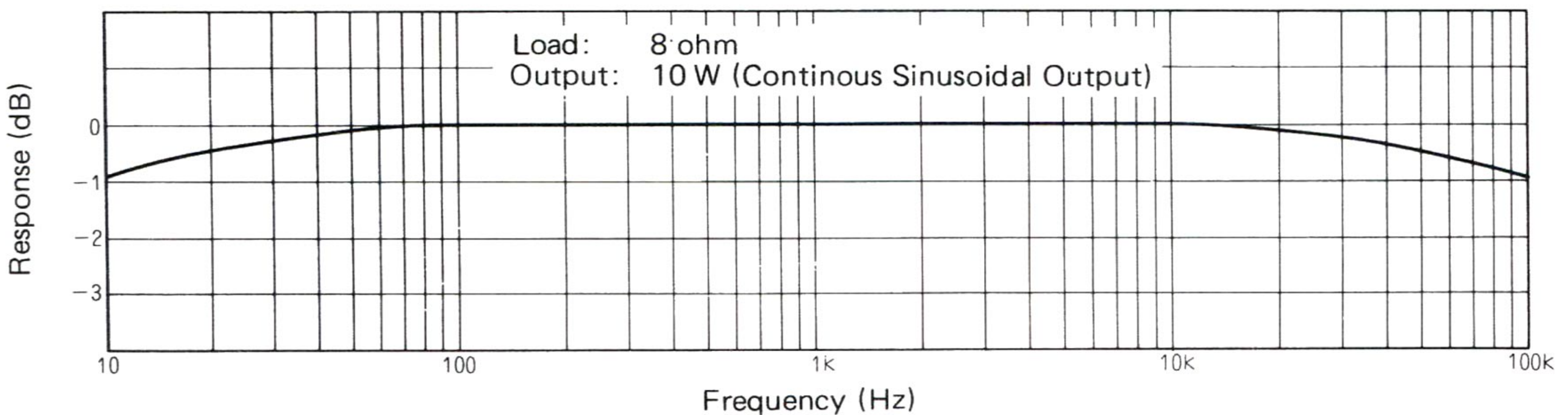
Frequency Characteristic of Total Harmonic Distortion Factor



Transmission Characteristic (Subsonic Filter Characteristic)



Frequency Characteristic of Peak Level Meter Indication

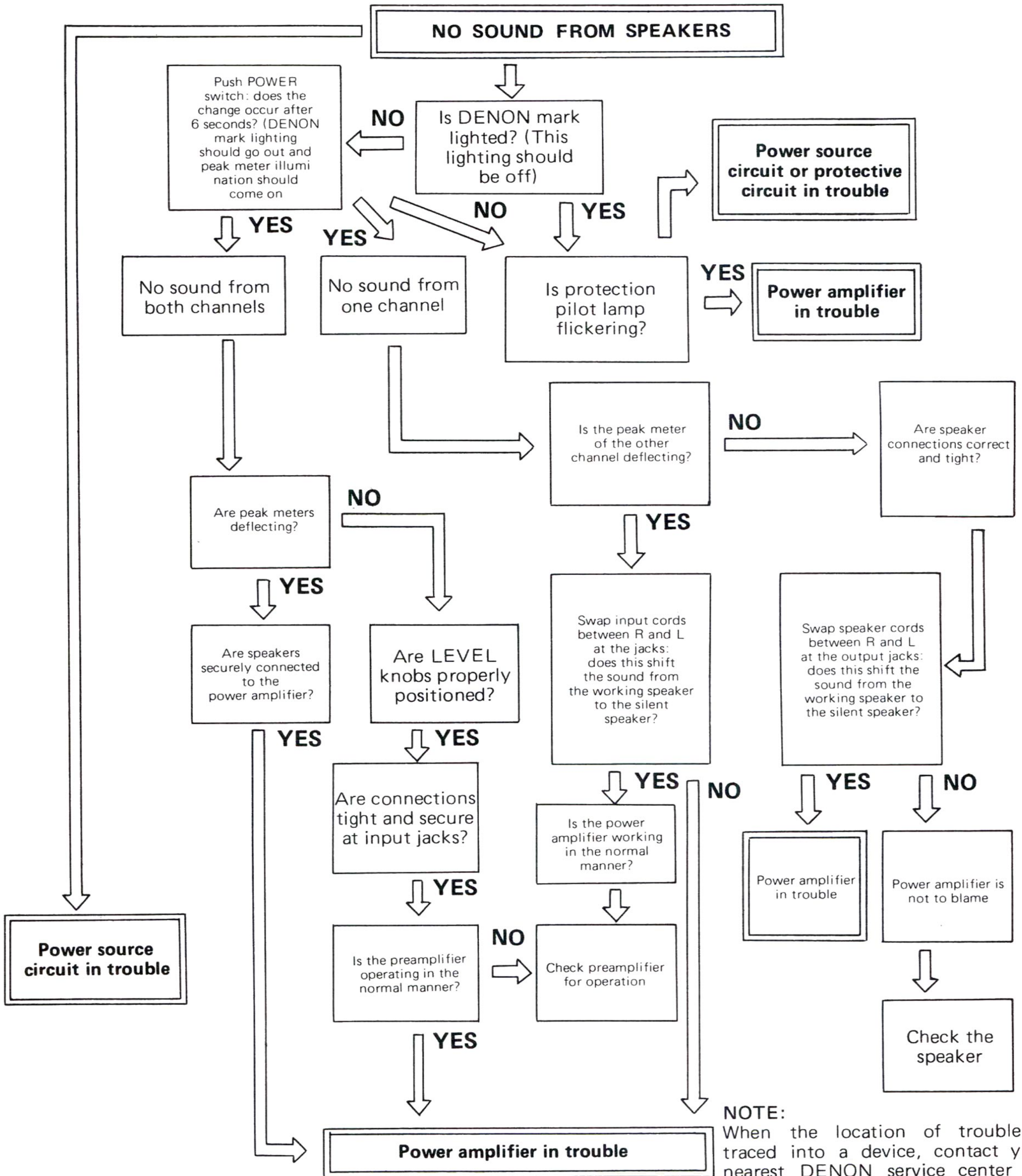


TROUBLESHOOTING FLOWCHART

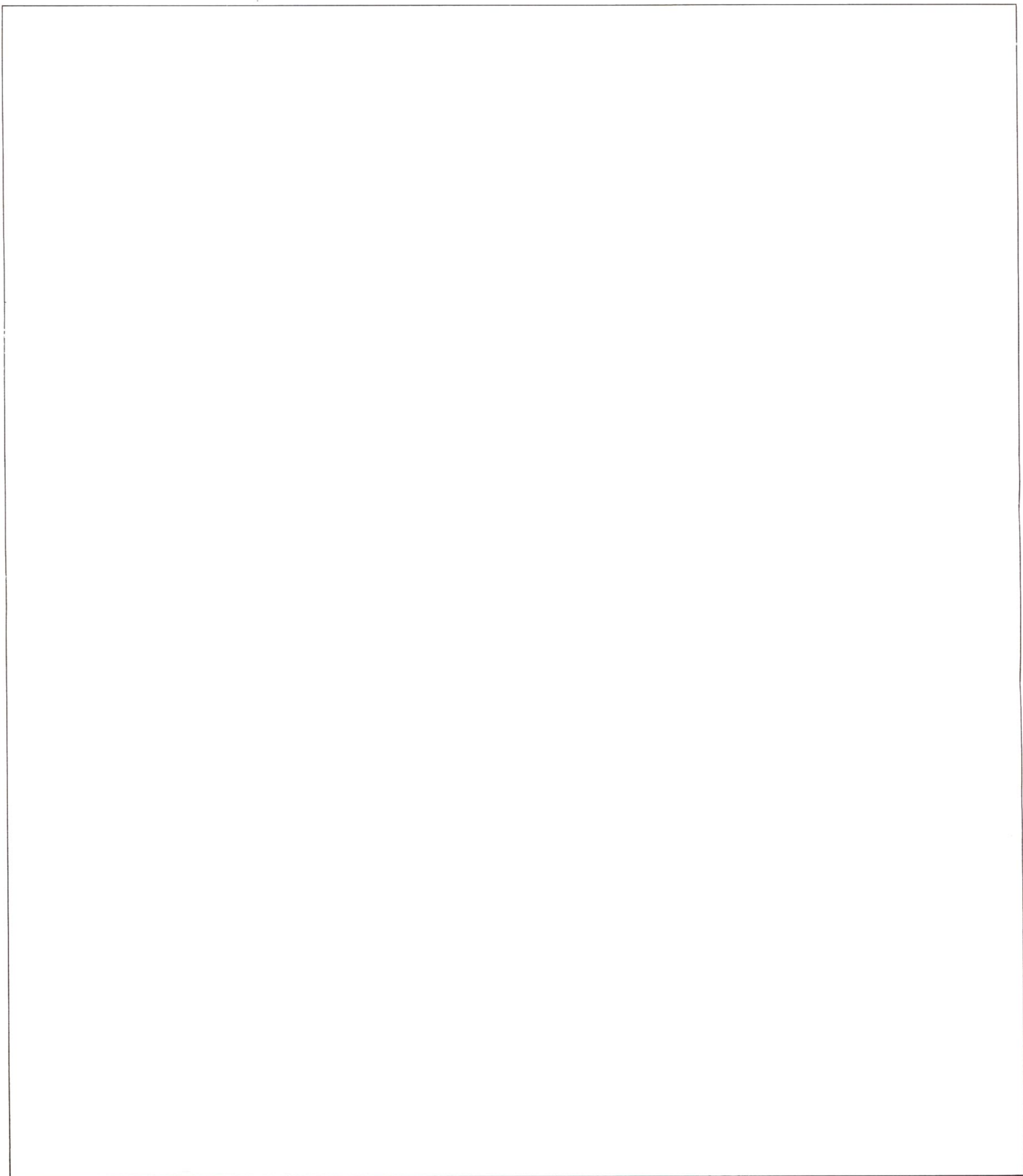
Before proceeding as directed by the flowchart, be sure that:

1. Devices are correctly connected to one another.
2. The POA-3000 and others are used as explained in their manuals.
3. The speakers and preamplifier are in good operable condition.

The procedure starts out with the symptom "NO SOUND FROM SPEAKERS"



DENON



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