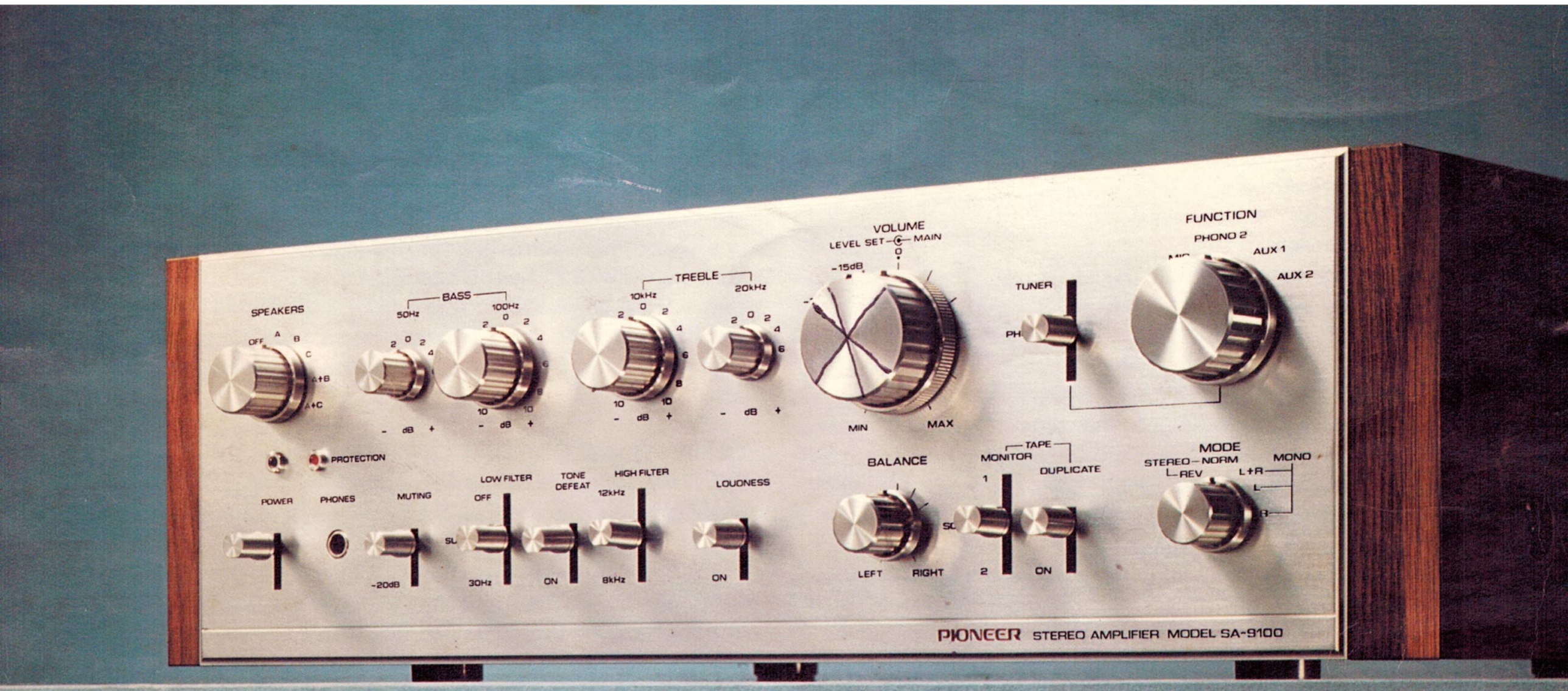
PIONEER®

A professional, precision-built stereo amplifier with plus-minus split-power supply for all stages and complementary direct-coupled OCL power amp design.



The SA-9100 is Pioneer's finest two-channel stereo integrated amplifier. Featuring a wealth of improvements in design, this distinguished amplifier offers more than just great power output, but the professional reliability that is so necessary for undistorted sound in today's advanced systems. Employed throughout all the circuit stages is a plus-minus split-power supply. In all amplifier first-stages is a differential amplifier design used in the equalizer, control amplifier and power amplifier section. The result is extraordinarily stable and reliable performance exceeding the characteristics of some of the most expensive amplifiers now available. The equalizer section, for example, has a large input handling capability of 250mV (RMS) and precise RIAA equalization within ±0.2dB for true hi-fi sound reproduction. Signal-to-noise ratio, distortion, and dynamic margin are also greatly improved, and the power amplifier section uses the complementary direct-coupled OCL design to provide a wide frequency response and power bandwidth—with automatic electronic protection circuit. Tone control function is also unique, featuring Pioneer's new Twin Tone Control system that uses special sub tone controls plus ordinary main controls for bass and treble adjustment. With this complex arrangement, extremely high and low sound spectrum adjustment is possible—and by combining the main and sub controls, even more precise tone control characteristics may be obtained that reflect the performance of your speaker system or phono cartridge, or even the acoustical properties of your musical listening room! In terms of power, Pioneer guarantees a solid 60 watts+60 watts (both channels driven at 8 ohms) as the minimum standard output, and stands behind this guarantee with a factory tested data sheet which is included with each SA-9100. This power output is indicated by the continuous power output measurement, with both channels driven at 8 ohms within the all-important 20-20,000Hz sound range. Versatility is top-notch, as one would expect from an amplifier of this price and quality: the SA-9100 handles up to three pairs of speaker systems, two turntables, two tape decks, two microphones, and two additional auxiliary sound sources. There is also a level-set switch that widens the optimum control range for the volume level, with stops at 0dB, −15dB and −30dB. Subsonic filters are provided for both individual pre- and power-amp sections with 12dB/oct. at 8Hz. As an investment in professional quality sound reproduction, the SA-9100 is totally uncompromising. It delivers more for your money, in keeping with Pioneer's high standards. It is one of the finest high power amplifiers now being made.

SA-9100

THREE-STAGE DIRECT-COUPLED EQUALIZER SECTION

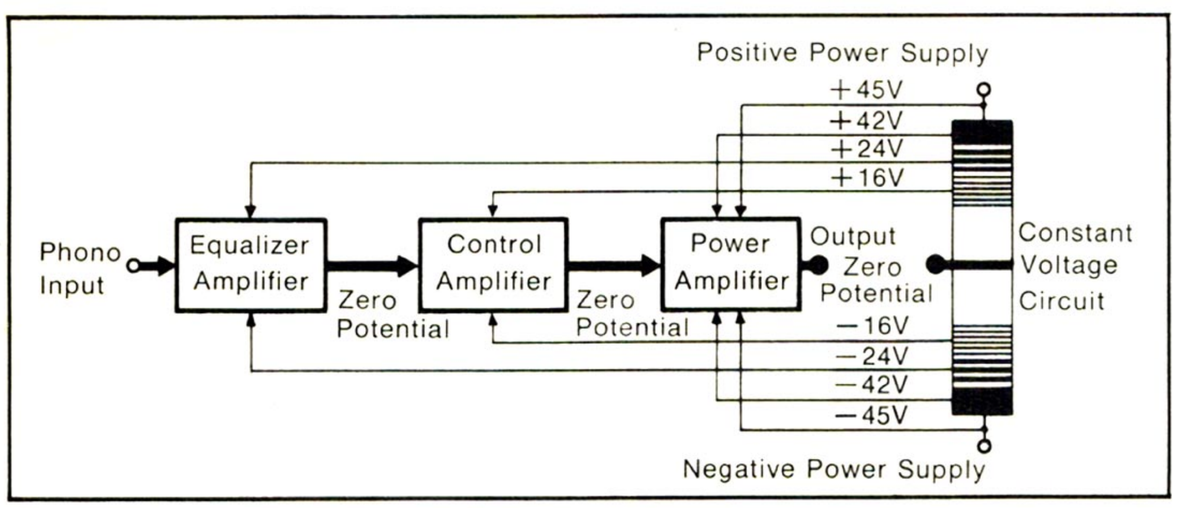
The three-stage direct-coupled single-ended push-pull NF (Negative Feedback) type equalizer circuit with differential amplifier at the first-stage is distinguished both in terms of precision and wide dynamic range. A total of five transistors, including two can-sealed transistors, are used in this section for each channel. Especially latter type transistors are noted for their excellent low-noise characteristics.

The other features of the SA-9100's equalizer are the following:

(1) PLUS-MINUS SPLIT POWER SUPPLY

Since the equalizer employs the plus-minus split power supply circuitry and maintains zero potential at both input and output points, it also helps to eliminate the irritating "click" noise that often occurs when switches are altered.

Block Diagram of + — Split Power Supply



(2) FIRST-STAGE DIFFERENTIAL AMPLIFIER

The stability of the SA-9100 is maximized by the first-stage differential amplifier and the 100% DC negative feedback. Distortion is also very low over the entire wide frequency range. The SA-9100 is also characterized by an excellent "dynamic character," made possible by an improved transient response. Even program sources that contain sudden changes of musical peaks and dips are rendered constant by the SA-9100.

(3) EXTRA-WIDE DYNAMIC RANGE

The single-ended push-pull circuit design contributes to a high output voltage with low distortion. The improved utilization of the power supply voltage is responsible for the extra-large input handling capability of 250mV (RMS) at 1KHz at the equalizer stage (15V output), and an extra-wide dynamic range. Signals fed to the amplifier will not be clipped when excessively strong signals are applied. Therefore, so-called "flat-topping" is prevented when phono cartridges of high output voltage are utilized in conjunction with the SA-9100. Since the ratio of dynamic margin is apt to be small in the high frequency range, Pioneer paid special care to achieve an equivalent dynamic margin even at 1KHz or 15KHz, considering the RIAA curve.

(4) PRECISE RIAA EQUALIZATION WITHIN ±0.2dB

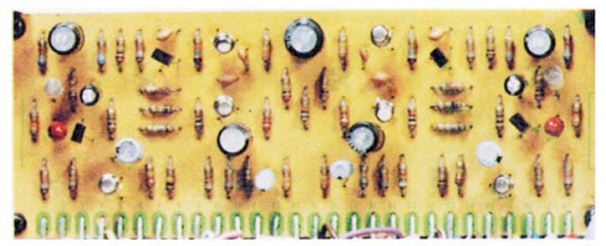
By selecting little-error circuit elements with precision characteristics, Pioneer has created an RIAA standard equalization curve with only slight deviation — in fact, within plus-minus 0.2dB over the important 30-15,000Hz sound range. This extremely precise characteristic means that the SA-9100 will reproduce sound with the faithfulness that the sound engineer of a recording company intended it to be reproduced.

(5) LOW-NOISE CHARACTERISTICS

Can-sealed transistors, used in the first-stage differential amplifier, are the long-life, low-noise type. They contribute overall to the precision, low-noise characteristics of the amplifier.

THREE-STAGE DIRECT-COUPLED CONTROL AMPLIFIER SECTION

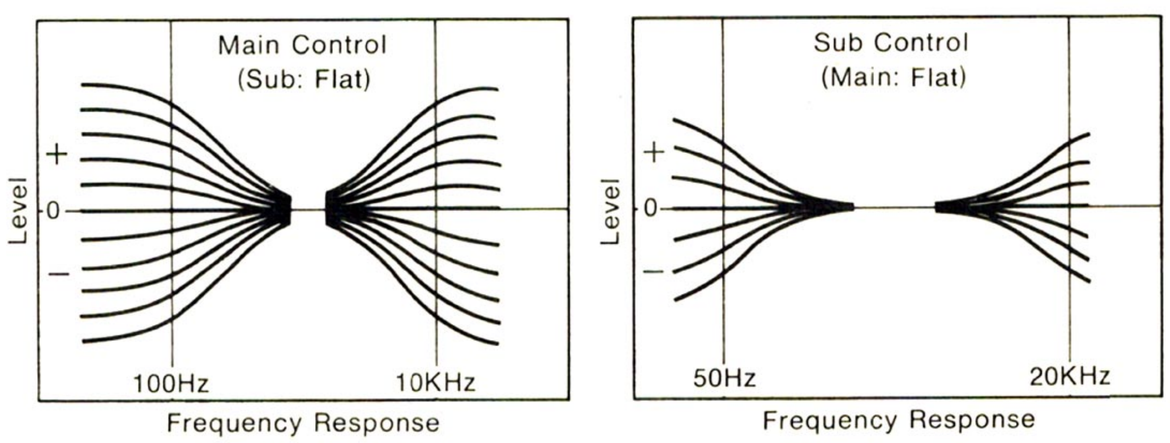
Highlights of the SA-9100's control amplifier section include the three-stage direct-coupling circuit, with differential amplifier employed at the first-stage.

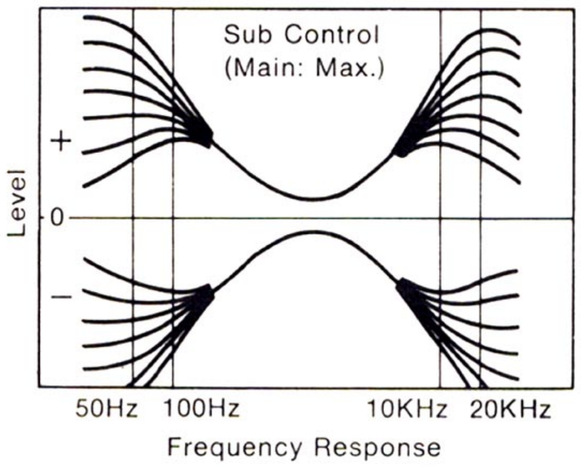


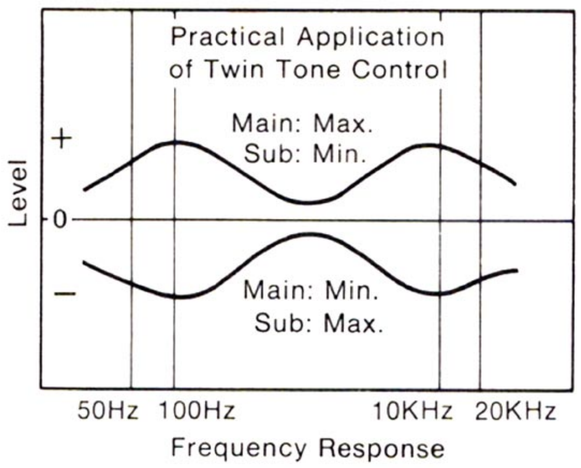
(1) TWIN TONE CONTROL SYSTEM

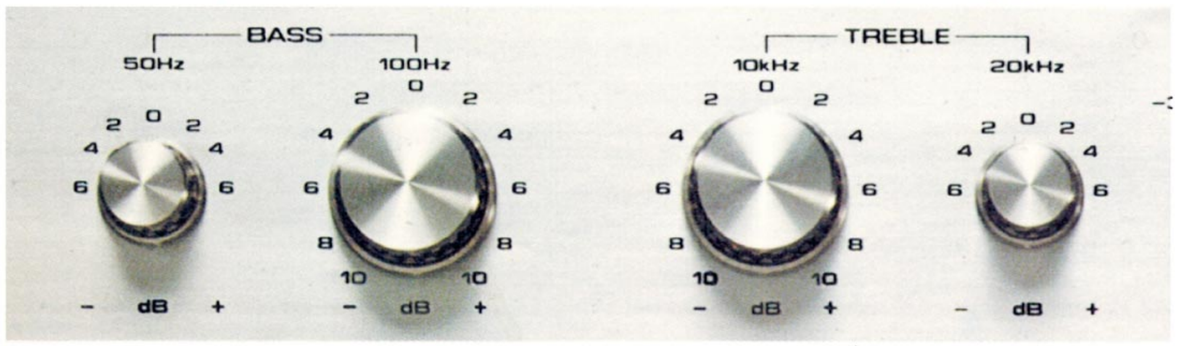
The SA-9100 is the first Pioneer amplifier employing Twin Tone Controls. Both individual BASS and TREBLE controls feature two controls, one a conventional MAIN control, the other an unusual SUB control. The latter control allows you to boost or cut the frequency in both low and high frequency ranges without exerting influence on the midrange sound. The SUB controls may be used independently or combined in function with the MAIN controls. With MAIN and SUB controls combined, it is possible to create up to 5,929 different kinds of tone control characteristics, according to the various acoustical characteristics or your speaker system, phono cartridge or listening room. With the tone control in the FLAT position, negative feedback (NFB) is applied only to the resistor, permitting you the ideal flat frequency response at this position.

Tone Characteristics of Twin Tone Control System









(2) DIFFERENTIAL AMPLIFIER AT THE FIRST-STAGE

Both stability and low-distortion over the ultra-wide frequency bandwidth are made possible by the use of a differential amplifier employed at the first-stage of the unit.

(3) CAN-SEALED TRANSISTORS

Low-noise characteristics and excellent signal-to-noise ratio of the SA-9100 are the result of the use of can-sealed transistors, employed in the first-stage differential amplifier.

(4) TONE DEFEAT SWITCH

This important switch instantly cancels the MAIN and SUB tone control functions and renders them "flat." The switch also enables you to compare the effects of the Twin Tone Control system.

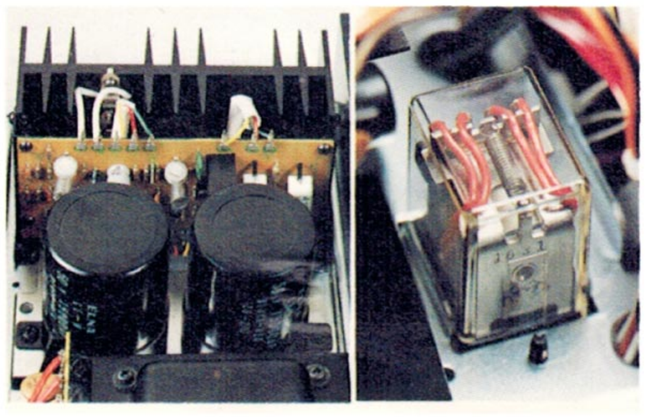
(5) PLUS-MINUS SPLIT POWER SUPPLY

Use of plus-minus split power supply circuitry functions to maintain DC stability and thus helps to prevent annoying click-noise that often occurs when switches are altered.

POWER AMPLIFIER SECTION

The power amplifier section of the SA-9100 uses a two-stage differential amplifiers and complementary direct-coupled OCL circuitry for extended frequency response and wide power bandwidth. For additional reliability a constant current circuit is employed as the class-A driver load. And then, to ensure protection for your power transistors and speaker systems, a completely automatic protection circuit with relay switch and electronic circuit is employed in the amplifier. This protection circuit also acts as a muting circuit to eliminate irritating pop-noise that often occurs when the power switch is turned on.

Power amplifier features include the following:



(1) EXCELLENT DC STABILITY

Because of the 100% DC negative feedback and bias compensation circuit, stability of the power amplifier is improved to the point that off-set voltage is maintained at ±0.005V within the temperature range of −15°C to +55°C.

(2) CROSSOVER DISTORTION ELIMINATED

Since the SA-9100 employs two constant current circuits and a stabilized power source at both the pre-driver and driver stage, crossover distortion has been eliminated.

(3) DEEP NEGATIVE FEEDBACK

Pioneer has applied deep negative feedback in the SA-9100 so that the amplifier offers extreme low-distortion, measured at less than 0.1% within the 20-20,000Hz range at continuous power output, while obtaining high open-loop gain with the use of constant current circuits.

(4) COMPLEMENTARY CIRCUIT

The complementary circuit of the SA-9100 has a variety of distinctive features that add up to unparalleled performance. Paired PNP and NPN transistors are used as the drivers and power transistors of the complementary circuit. An extra-large heat sink is used for heat radiation, along with the automatic protection circuit. Such features contribute to the SA-9100's rank as one of the finest amplifiers ever manufactured.

(5) CONTINUOUS POWER OUTPUT OF 60 WATTS+ 60 WATTS, BOTH CHANNELS DRIVEN AT 8 OHMS WITHIN 20-20,000Hz.

Power aplenty is part of the SA-9100 story. Continuous power output of 60 watts+60 watts with both channels driven at 8 ohms over the significant 20-20,000Hz range is ensured with this amplifier, with distortion of less than 0.1%. And this is only the minimun guaranteed standard, confirmed by the factory-tested data sheet supplied with each amplifier.

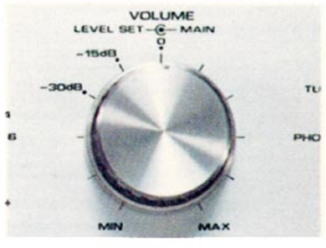
(6) 15,000μF ELECTROLYTIC CAPACITORS

Pioneer has employed two extra-large 15,000μF electrolytic capacitors in the power supply section of the SA-9100. The result of these component parts is excellent regulation characteristics contributing to the near-perfect distortion figures in the extremely low sound range.

OTHER FEATURES

(1) VOLUME CONTROL WITH LEVEL-SET SWITCH

The SA-9100 uses a level-set switch for wide and flexible operational range of the volume control. By choosing one of three positions (0dB, −15dB, −30dB), it is possible for you to control the volume at the center position even when operating the unit at low volume levels.



(2) PHONO 2 INPUT TERMINALS WITH LEVEL CONTROL AND IMPEDANCE SELECTOR

An output level control is used to adjust output level when the PHONO 2 terminals are utilized. This permits easy optimum

level adjustment and thus easy comparison of different cartridges with different output voltage. Additionally, an impedance selector provided for PHONO 2 input terminals has three positions (25 Kohms, 50 Kohms, 100 Kohms) so that you may choose the suitable impedance reflected by your choice of phono cartridges.

(3) SPEAKER B OUTPUT LEVEL CONTROL

This control can also be used to compare different speaker systems of different sensitivities. It permits output level adjustment without variation of output impedance or deterioration of damping factor.

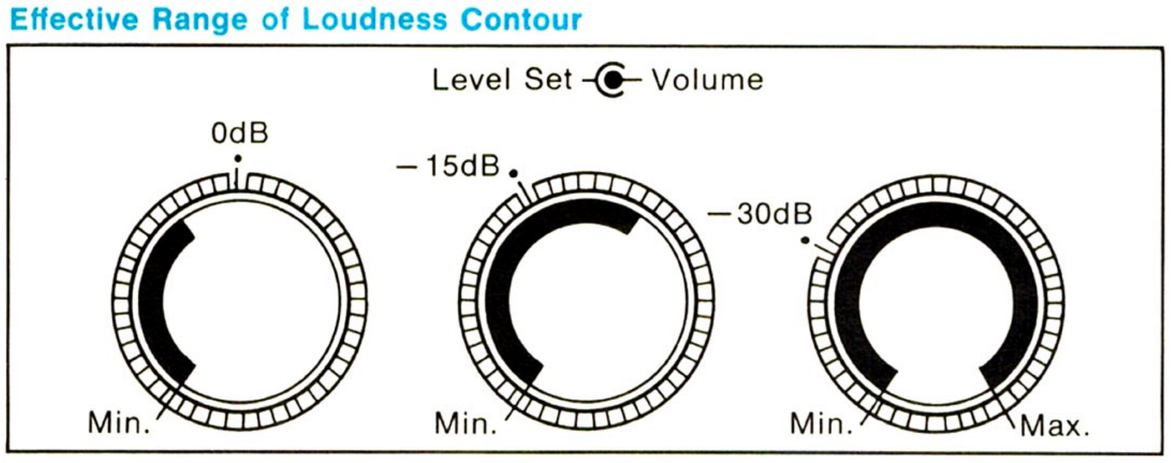
(4) AUX 2 INPUT LEVEL CONTROL

This control is provided for level adjustment convenience when you connect a tape deck, TV set, etc., with the SA-9100.

(5) VERSATILE LOUDNESS SWITCH

This switch compensates for the lack of low frequencies at extreme low level listening to enhance natural sound reproduction. The loudness switch is coupled with the level-set switch to enlarge its range of function.

Effective Range of Loudness Contour



(6) AUDIO MUTING SWITCH

This switch lets you instantly lower the volume of the amplifier by −20dB. It is valuable when the telephone interrupts your listening, you must reduce the volume, but wish to return to the original volume level.

(7) TWO MICROPHONE JACKS

The SA-9100 is provided with two microphone input jacks on the back panel so that it may be used as a public address system and for other communications uses.

(8) THREE SPEAKER OUTPUT TERMINALS

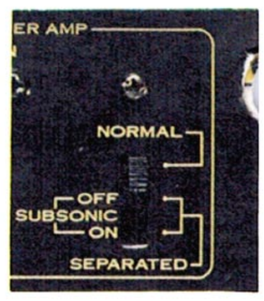
The SA-9100 handles up to three different sets of speakers, and operates up to two sets simultaneously (either A+B or A+C).

(9) HIGH/LOW FILTERS

The SA-9100 is equipped with both high and low filters to cancel irritating noise. The high filters are set at 8KHz and 12KHz, 12dB/oct. Low filters are set at 30Hz, 12dB/oct.

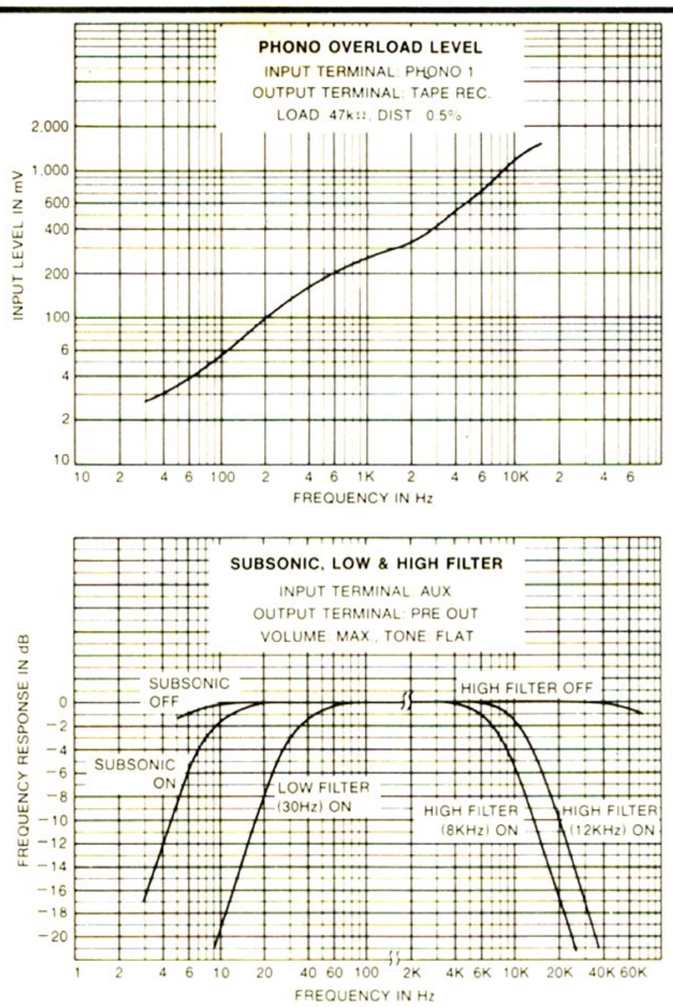
(10) SUBSONIC FILTERS

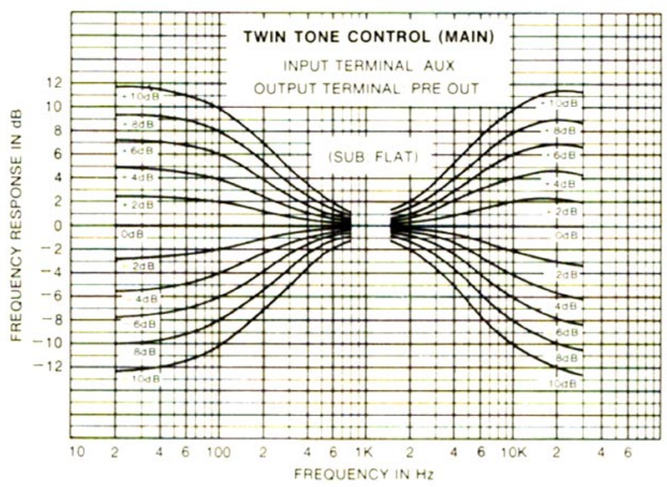
Because the pre-amplifier and power-amplifier may be separated for individual usage, subsonic filters are included in both pre- and power amplifier sections of the SA-9100 with a cut-off frequency of 8Hz and with 12dB/oct. sharp characteristics.

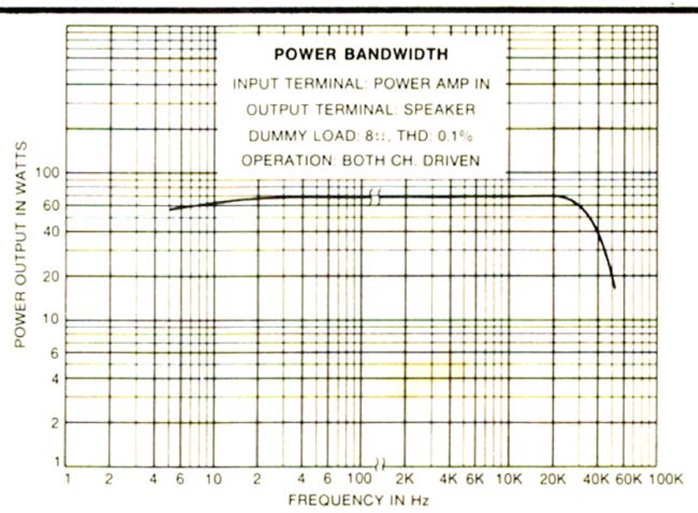


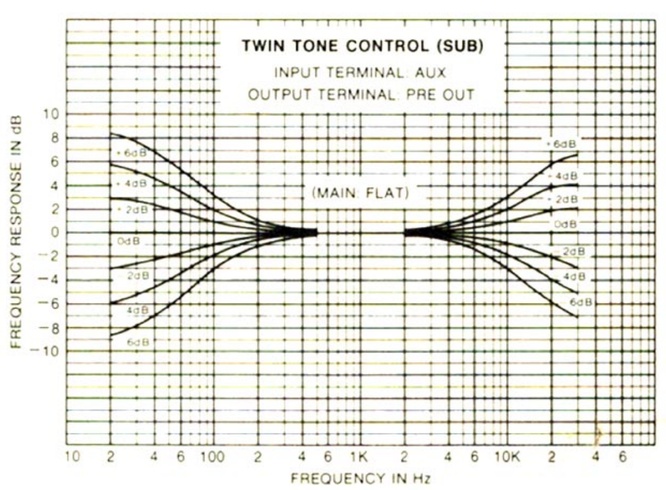
(11) PROTECTION INDICATOR

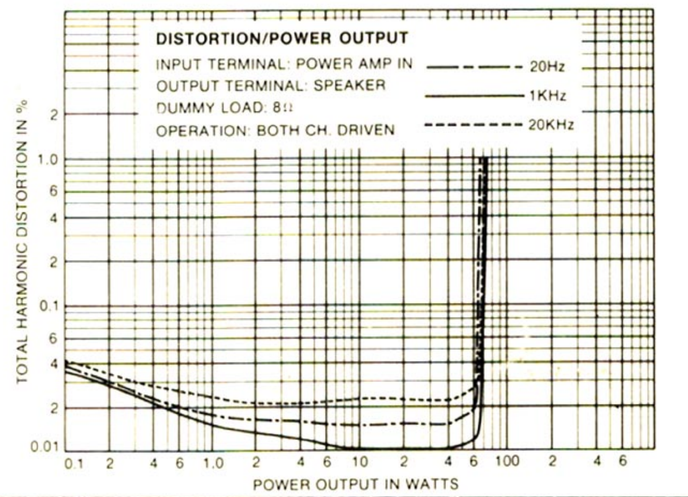
An indicator located on the front panel lights for a few seconds after the power switch is turned on to indicate operational stability and to mute annoying pop-noise.











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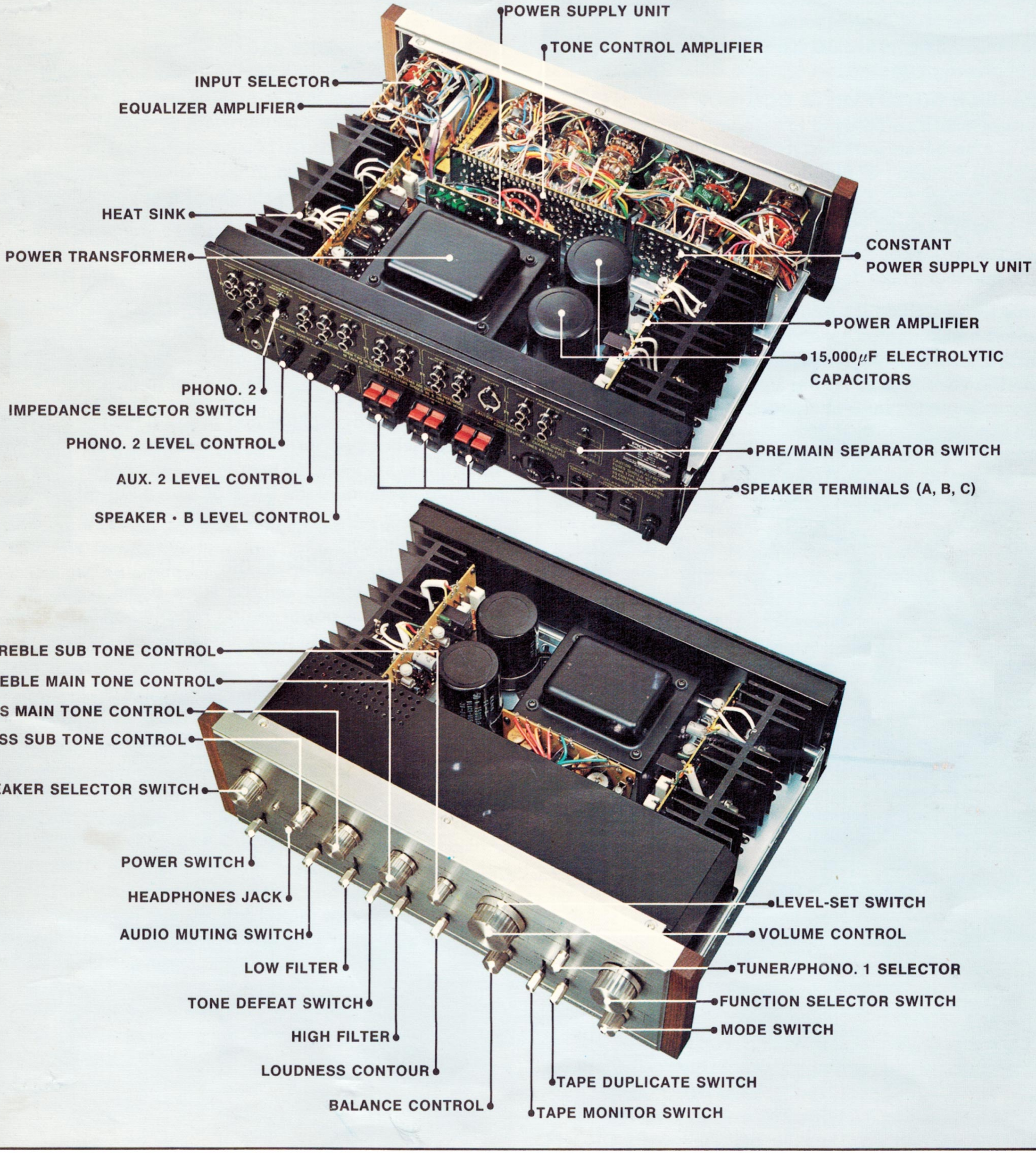

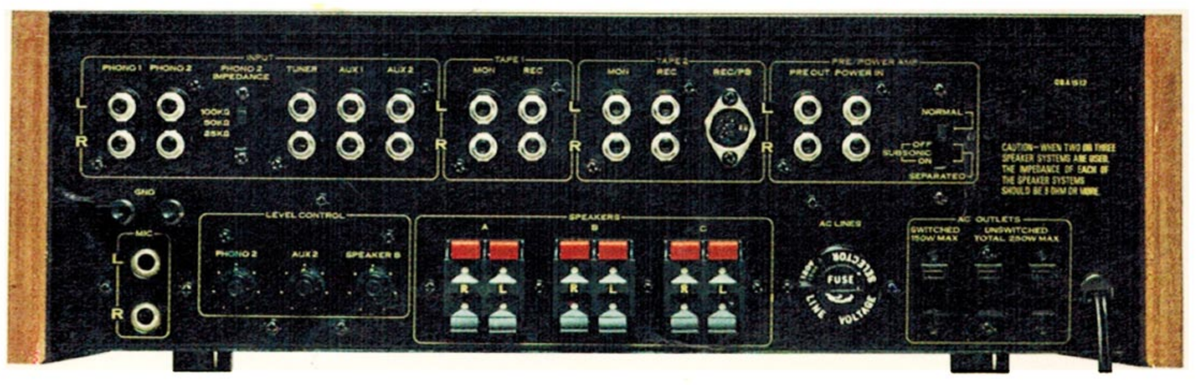

SPECIFICATIONS

SEMICONDUCTORS

Transistors:	63
Diodes:	30

POWER AMPLIFIER SECTION

Circuitry:	2-stage differential amplifiers, direct coupled complementary, OCL
Continuous Power Output:	
20Hz to 20KHz	60 watts + 60 watts (8 ohms),
(Both channels driven):	75 watts + 75 watts (4 ohms)
1KHz	65 watts + 65 watts (8 ohms),
(Both channels driven):	85 watts + 85 watts (4 ohms)
1KHz	75 watts/75 watts (8 ohms),
(Each channel driven):	100 watts/100 watts (4 ohms)
Harmonic Distortion:	Less than 0.1% (continuous power output), Less than 0.04% (1 watt + 1 watt power output)
Intermodulation Distortion:	Less than 0.1% (continuous power output) Less than 0.04% (1 watt + 1 watt power output)
Power Bandwidth:	5Hz to 40KHz (H.D. 0.1%) (IHF, both channels driven)
Frequency Response:	7Hz to 80KHz +0dB, −1dB
Input Sensitivity/Impedance:	500mV/50 Kohms (POWER AMP. IN)
Output Speaker:	A, B, C, A+B, A+C (4 to 16 ohms)
Headphone:	4 to 16 ohms
Damping Factor:	More than 70 (1KHz, 8 ohms)
Hum and Noise:	More than 95dB (IHF, short-circuited A network)
Residual Hum and Noise:	Less than 1mV (0.13μ watt) (8 ohms, pre & power amplifier)
Subsonic Filter:	8Hz (12dB/oct.)

PREAMPLIFIER SECTION

Circuitry	
Equalizer Amplifier:	1st. stage differential amplifier, 3-stage direct coupled SEPP NF type
Control Amplifier:	1st. stage differential amplifier, 3-stage direct coupled NF type
Input Sensitivity/Impedance	
PHONO 1:	2.5mV/50 Kohms
PHONO 2:	2.5mV to 10mV/25, 50, 100 Kohms
PHONO Overload Level (rms/P-P):	250mV/700mV (at 1KHz)
MIC:	2.0mV/50 Kohms
TUNER:	150mV/100 Kohms
AUX 1:	150mV/100 Kohms
AUX 2:	150mV to 1.5V/50 Kohms to 100 Kohms
TAPE MONITOR 1, 2:	150mV/100 Kohms
TAPE MONITOR 2 (DIN connector):	150mV/100 Kohms
Output Level/Impedance	
TAPE REC 1, 2:	150mV
TAPE REC 2 (DIN connector):	30mV/80 Kohms
PRE OUT:	2V/8 ohms
Harmonic Distortion:	Less than 0.03% (20Hz to 20KHz)
Frequency Response	
PHONO (RIAA equalization):	30Hz to 15KHz ±0.2dB
MIC:	10Hz to 10KHz +0dB, −1dB
TUNER, AUX, TAPE MON:	10Hz to 70KHz +0dB, −1dB
Tone Control	
BASS:	±10dB (100Hz) main control, ±6dB (50Hz) sub control
TREBLE:	±10dB (10KHz) main control, ±6dB (20KHz) sub control
Filter	
SUBSONIC:	8Hz (12dB/oct.)
LOW:	30Hz (12dB/oct.)
HIGH:	8KHz, 12KHz (12dB/oct.)
Loudness Contour:	+10dB (100Hz)
(volume control set at −40dB position)	
Hum and Noise (IHF, short-circuited A network)	
PHONO:	More than 80dB
MIC:	More than 70dB
TUNER, AUX, TAPE MON:	More than 90dB
Muting:	−20dB
Level Set:	0, −15, −30dB

MISCELLANEOUS

Power Requirements:	U.S.A. and Canada model; 120V 60Hz only or 110, 120, 130, 220, 240V (switchable) 50-60Hz
Power Consumption:	430 watts (max.)
AC Outlets:	Switched: 1, Unswitched: 2
Dimensions:	16-15/16(W) x 5-7/16(H) x 13-7/16(D) inches 430(W) x 138(H) x 341(D) mm
Weight:	Without package: 30lb./13.6kg With package: 33lb. 1oz./15.6kg

NOTE: Specifications and design subject to possible modification without notice.

PIONEER

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50, 000E-F-1-74 Printed in Japan