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SANSUI AU919

Sansui Integrated "Straight DC" Stereo Amplifier with Exclusive
DD/DC Power/Phono Amps and MC Amp.

Only hi-fi, everything hi-fi.

Sansui



Down to the last "...est"

Sansui engineers have perfected the "Straight DC" circuitry of the AU-919 Integrated Stereo Amplifier right down to the very last superlative. Fastest rise time, highest slew rate, lowest TIM or Transient Intermodulation Distortion are not the least on the "...est" list. Then there are the words which describe its phono equalizer and flat amp—cleanest, quietest and definitely latest. Add the fact that the "Diamond Differential DC" circuit in the power amp and phono equalizer offers one of the widest frequency ranges ever achieved in audio—extending from zero Hz (DC) to an amazing supersonic high of 500,000Hz—and you have some of the reasons the AU-919 delivers the purest musical performance you've ever heard.

The AU-919 isn't the cheapest integrated amp on the market. And at a modest 100 watts per channel*, it isn't the most powerful. But we're convinced that for the serious audiophile who really cares about sound quality, and who is willing to make an investment in truly state-of-the-art equipment designed

for nothing less than straight, uncolored, dynamic audio performance, the AU-919 deserves the most superlative "...est" of all: The Finest. The following pages, devoted to in-depth technical, and some not-too-technical explanations of the features, circuitry and advantages of this remarkable audio instrument, can only tell you the whats and whys. To hear *how* it sounds with your own ears, audition the AU-919 at your Sansui franchised dealer, where it's *all* hi-fi.

*The "modest" power output of the AU-919—more than enough to fill the largest ordinary listening space with pure DC-amplified sound—is rated as a continuous 100 watts per channel, min. RMS, both channels driven into 8 ohms, over a 5 to 20kHz range, with no more than 0.008% total harmonic distortion, measured pursuant to the U.S. Federal Trade Commission's trade regulations on power output claims for audio amplifiers.



Two Sansui-exclusive DC techniques for pure musical performance

Add Nothing. Subtract Nothing. Sansui's "Straight DC" is simple audio arithmetic.

An ideal audio amplifier would be the proverbial "straight wire with gain"—a circuit which would merely boost or amplify a musical signal without adding or subtracting a thing. It would generate no additional distortion, add no extra noise. And best of all, it would cause absolutely no "coloration" of the signal. It would, that is, if such a circuit were possible to build.

Sansui engineers have come closer than ever to the "straight wire with gain" ideal, perhaps as close as anyone will ever come, with the perfection of the "Straight DC" circuit configuration used in the AU-919.

Major amps inside are of DC design from input to output: the phono equalizer amp, the "flat" amp, and, finally, the power amplifier itself. You'll enjoy the very purest performance possible.

Every Dynamic Parameter Improved: Sansui's "Diamond Differential DC" (PAT.PEND.) is a technological jewel.

For the power amplifier and phono equalizer, we have perfected a DD/DC, or "Diamond Differential DC" circuit design. The improvements it offers are truly revolutionary, and it's no wonder that we have applied for a patent on it. Improvement number one is the fact that the DD/DC circuit offers very high slew-rate performance, thanks to the extra large driving current it can deliver. It means TIM distortion is drastically reduced.

Also of vital importance is the fact that the circuit's steady-state response is likewise superb, with the frequency response extending from zero Hz (DC) to a super high of 500kHz in the power amp section. In turn, this means a flatter phase response extending well into the supersonics, and lowest TIM distortion as well.

Slew Rate & Rise Time: Valuable new quantifiers used in lowering TIM distortion.

Let's take them one at a time: Slew rate shows how many volts an amplifier's output can deliver within one microsecond when a test input (i.e. a square wave) is applied to the input. The higher the rate, the faster the amp responds to an input signal. This is an especially important quantifier when it comes to music, for because musical signals are highly pulsive, an amp with a high slew rate is one which will deliver the clearest, sharpest reproduction for musical realism.

Rise time, on the other hand, is the measurement of the time it takes an amplifier's output voltage to rise from 10% to 90% of the peak voltage of the square wave input. The smaller the rise time, the faster that amp can respond to an input signal.

Using these new and valuable quantifiers puts an end to the semantic confusion and vagueness caused by words like "transient" and "responsive" which, not long ago, were the only means available to audio engineers in comparing one amplifier with the next in the critical area of musical performance.

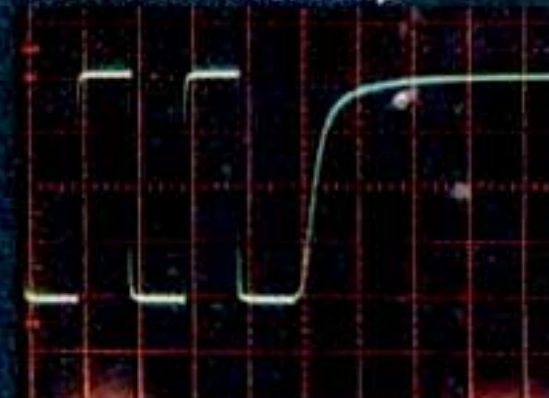
In practical application, we can say that the AU-919, with its high slew rate of $200\text{V}/\mu\text{sec}$, and fast rise time of $0.5\mu\text{sec}$, has a power amplifier capable of drastically reducing TIM, or Transient Intermodulation distortion.

Slew rate, rise time and TIM. These dynamic parameters, when considered together with conventional steady-state quantifiers, are your best guide to any amplifier's abilities.

Sansui has achieved the best dynamic parameter specifications the world has ever seen in an audio-use power amplifier. With its newly-developed, Sansui-exclusive "Diamond Differential DC" circuit, the Sansui AU-919 offers the world's highest slew rate and fastest rise time, the lowest possible TIM or Transient Intermodulation distortion, an extremely wide frequency range of from zero Hz (DC) to 500kHz and impressive dynamic range for the purest possible musical reproduction.

SLEW RATE AND RISE TIME OF TWO POWER AMPS

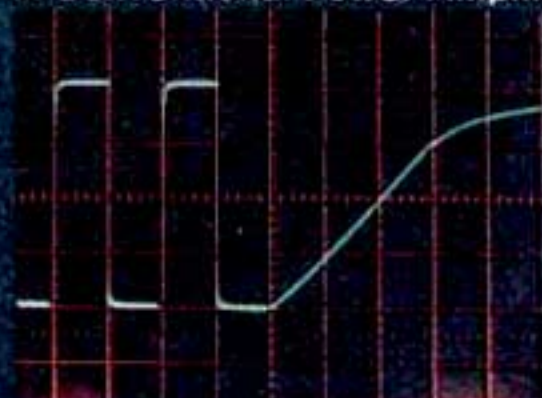
AU-919's Power Amp



Slew Rate: $200\text{V}/\mu\text{sec}$.
Rise Time: $0.5\mu\text{sec}$.

V: $20\text{V}/\text{div}$.
H: $50\mu\text{sec}$, $1\mu\text{sec}/\text{div}$.

A Conventional Power Amplifier

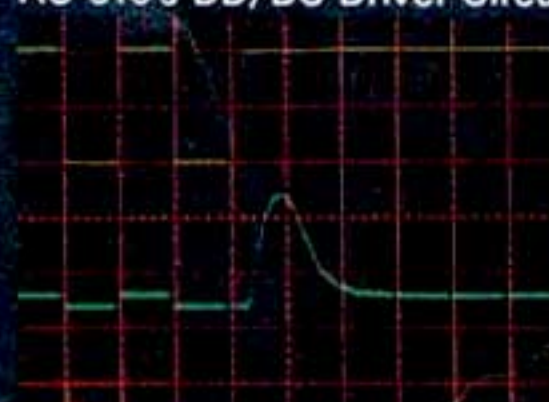


Slew Rate: $20\text{V}/\mu\text{sec}$.
Rise Time: $4\mu\text{sec}$.

V: $20\text{V}/\text{div}$.
H: $50\mu\text{sec}$, $1\mu\text{sec}/\text{div}$.

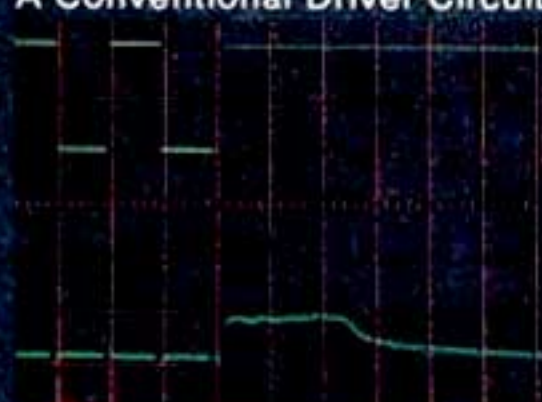
CURRENT WAVEFORMS

AU-919's DD/DC Driver Circuit



A high slew rate is achieved only when a driver circuit in a power amp can provide sufficiently high current against an input of pulsive nature. With our DD/DC circuit, no clipping is seen, meaning it provides a sufficiently high current stably and constantly, and thus has the capability to respond quickly to any form of input. With the conventional design, however, saturation is seen.

A Conventional Driver Circuit

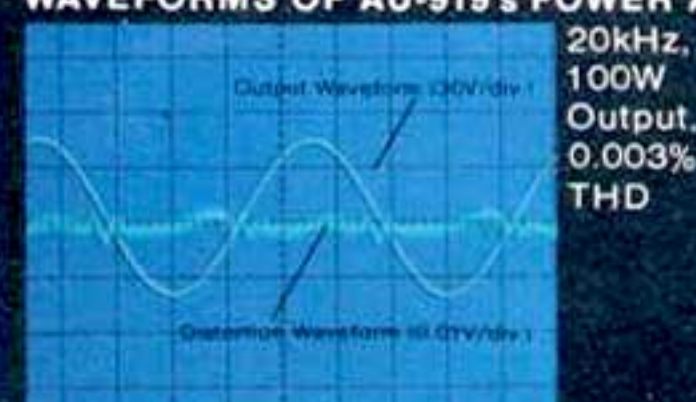


SQUARE WAVE RESPONSE OF AU-919's DC PHONO EQUALIZER



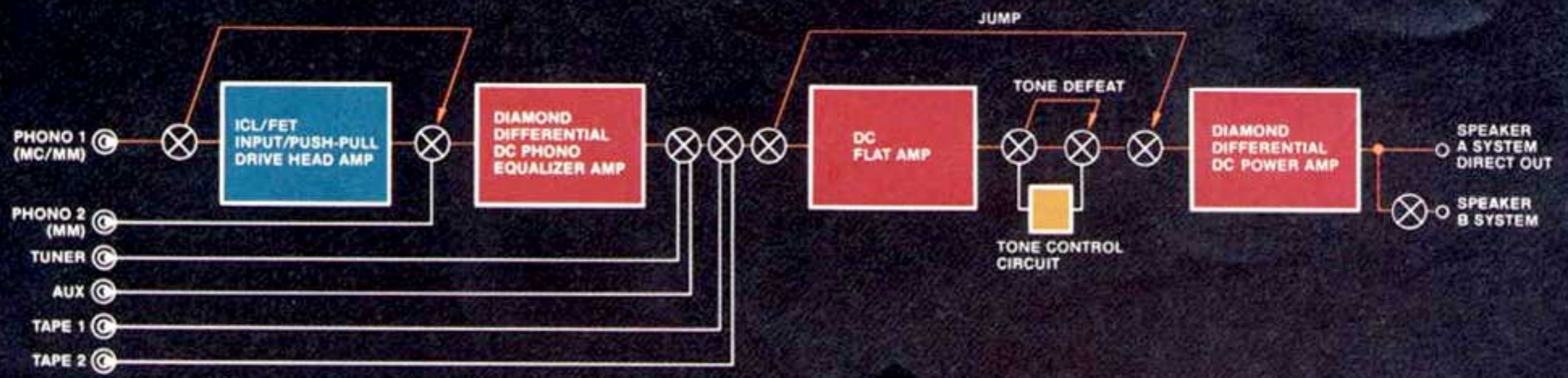
The photo shows the square wave input is reproduced without phase shifts.

OUTPUT AND DISTORTION WAVEFORMS OF AU-919's POWER AMP



The photo shows two traces of waveform measured with the power amp delivering the 100 watt output. You'll see there's hardly a trace of notching distortion.

AU-919 STRAIGHT DC BLOCK DIAGRAM



AU-919 DC power amplifier for world's highest slew rate and fastest rise time

No other amp on earth delivers a higher slew rate or faster rise time to eliminate TIM distortion. Frequency range is 0–500,000Hz!

Sansui Exclusive "Diamond Differential DC" Circuit handles super-high drive current.

A thermally-matched Dual FET in a differential arrangement forms the input circuit in each channel of the power amplifier section of the AU-919 and achieves input capacitor-less true DC design. The second stage is our new "Diamond Differential DC" circuit (Sansui Pat. Pend.), while the third is a current differential push-pull driver amp.

Since this advanced circuit configuration permits an extraordinarily large amount of drive current to be applied to the final output, slew rate, rise time and TIM specifications are greatly improved.

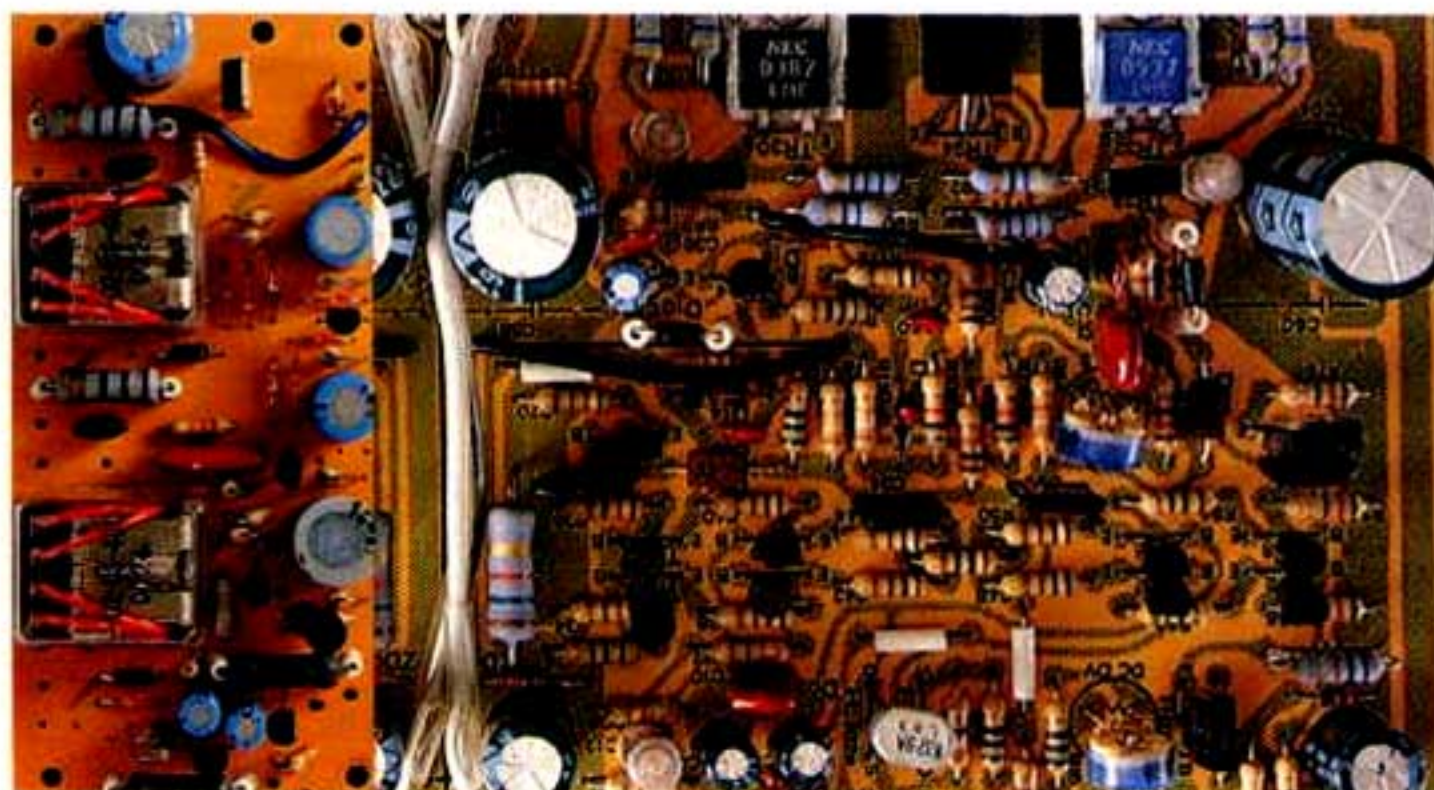
The final output stage, by the way, has a three-stage, Darlington-connected, parallel push-pull OCL configuration. The power transistors are extra large, and offer linear response even at high power operation.

Thus from input to output, the elaborate power amplifier of the AU-919 delivers high stability, even in the face of heat build-up and against the large amounts of current drawn when a high slew rate is required.

Safety First: Self-restoring power protection with twin-detection construction.

Two fail-safe circuits prevent DC components from appearing at the speaker terminals of the AU-919 should the DC balance of the power amplifier section be disturbed:

- **DC VOLTAGE DETECTION CIRCUIT**—Opens a relay to electrically separate your speakers from the output terminals if the voltage ever drifts from balanced zero values. No DC voltage, however minute, can ever reach your valuable speaker systems.
- **OVERLOAD CURRENT DETECTION CIRCUIT**—If ever a dangerously excessive current is drawn in the output power transistors due to output shorts or other accidents, the speaker output is instantly powered off to protect the transistors from breakdown.



When and if either of these protection circuits is triggered, an LED Power Indicator on the front panel will flicker until you eliminate the cause. This indicator also flickers for a few moments when you switch on the power, telling you that the circuits are being electrically stabilized.

The use of our newly-developed die-cast heat sinks prevents thermal degradation of the power transistors in actual performance. The sinks are designed and mounted to provide maximum surface area to efficiently dissipate heat as quickly as it is generated.

Unique Penta-Power Supply: Low internal impedance and high energy efficiency.

Five—count 'em—five separate power supplies inside the AU-919 ensure that no circuit, however large or small in energy requirements, is ever "starved"

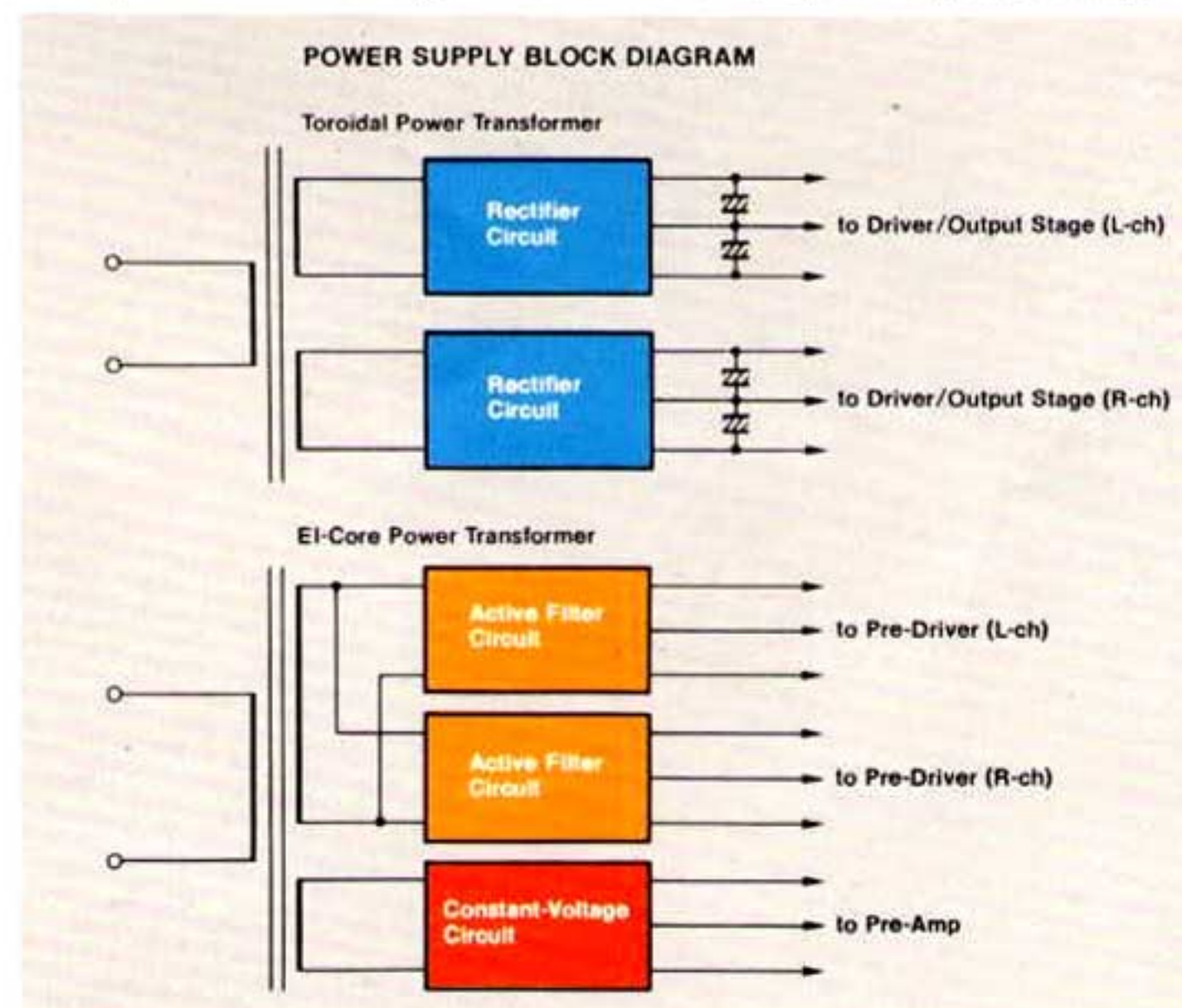
One supplies the Class-A preamp, and is formed of an EI-core transformer and a precision constant-voltage circuit.

Two others, formed of an EI-core transformer and a precision active filter circuit, serve the Class-A left and right pre-drivers, respectively.

The fourth and fifth, each using a toroidal power transformer with separate coil windings, feed current to the Class-B left and right drivers/output stages, respectively.

This unique Penta-Power Supply system ensures that Class-A amps, those handling relatively small but extremely delicate signals, are each supplied independently from the Class-B sections which require electrical energy in large, and widely varying amounts according to the nature of the pulsive, musical information they must handle.

To keep the power reserve capacity high for the delivery of plentiful power on demand, we've used four new Sansui Oval Capacitors, each of 15,000 μ F. They help improve transients in the supply system—particularly when pulsive signals are sent to the power amp—by keeping internal impedance very low over the widest possible frequency range. Reproduction is always clean, and sound images are distinct and sparkling at all times.



AU-919 DC equalizer/flatamps for "straight DC" configuration

Sansui engineers insist on DC configurations with ICL FET inputs and fully push-pull outputs for major preamplifier circuit block.

Sansui's meticulous attention to details and concern for balanced performance throughout provides the logical basis for extending the DC advantages of the power amplifier design all the way into the preamplifier, too. That is, we've used the DC configuration with ICL (Input Capacitor-Less) inputs using FET input, and with fully push-pull outputs for the major amplifier blocks in the preamp—the equalizer and the "flat" amp. As a result, circuits respond faster with a higher slew rate, the low-noise factor improves signal-to-noise ratio, and tonal coloration is entirely avoided.

With such advanced circuit designs, naturally we have selected the finest available electronic parts and components. The results are easily heard in the high purity of performance offered by this remarkable integrated amplifier.

The JUMP Switch: Bypasses "flat" amp to achieve purer DC direct coupling from input to output.

In the case of phono inputs, once they have been equalized in the DC phono equalizers, the front-panel "Jump" switch helps you have extraordinarily clean performance with very clear sound-image location within the stereo sound field. These benefits are also available for tuner, tape and AUX inputs.

The "Jump" switch alters the signal path so that signals are sent directly to the power amplifier; the "flat" amp and the tone control sections are bypassed at the touch of a finger.

Since the "flat" amp provides about 16.5dB gain, bypassing it will reduce the level at the output by the same amount. This is usually no problem, especially at normal to low listening levels, since the difference can be made up by the master volume control. Remember, the "Jump" gives you the very purest DC performance possible.

MC Cartridge Pre-Preamp: ICL, FET input, push-pull drive circuit saves you space and expense.

An MC (Moving-Coil) cartridge requires a pre-preamp to boost small signals. Normally, this "pre-preamp" function is handled by a "head amp" or "step-up transformer"—

usually a separate outboard unit which adds not only to the expense but also to the bulk and complexity of your stereo system. The AU-919, however, has the answer: it features a high performance head amp.

It's not just another "frill." To ensure the purest sound, this circuit uses an ICL construction with total twelve low-noise FETs in parallel push-pull connection and push-pull transistor output stage in a fully complementary arrangement for low-noise/low-distortion dependability. The front-panel selector set to PHONO 1 (MC) lets you enjoy its many advantages.

Pure Gold: Phono Equalizer has Dual-FET input and Sansui exclusive DD/DC Circuit.

From the gold-plated phono input terminals on the rear panel (helping to resist corrosion for longer life) to the low-impedance output stage, the phono circuitry in the AU-919 delivers impressive performance with spectacular specifications where they count. The phono equalizer uses purely DC configuration with 16 low-noise transistors per channel for cleaner sound.

The circuit design includes an ICL Dual-FET differential input with cascade-connected bootstrapping and dual current source. The ICL/FET/DC construction avoids tonal coloration, phase shift and external noise.

To further ensure high performance, the second stage is the newly developed DD/DC or Diamond Differential DC Circuit—same as the power amplifier. It permits a high drive current so achieved high slew rate, fast rise time and cleaner, fresher sound.

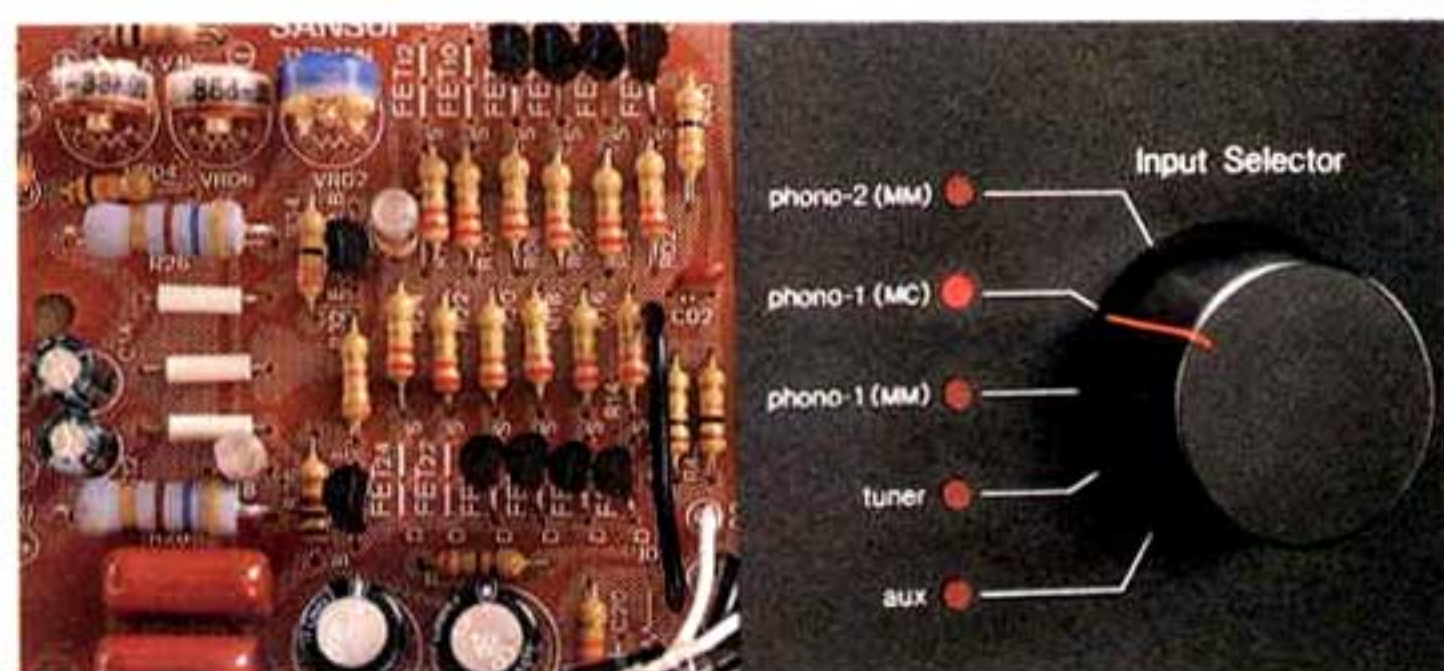
The final stage is Darlington connected with the capability to drive large currents without strain. It has a very low 200-ohm output impedance. That is, to assure a flat response, the phono equalizer is matched in impedance with the following amp block.

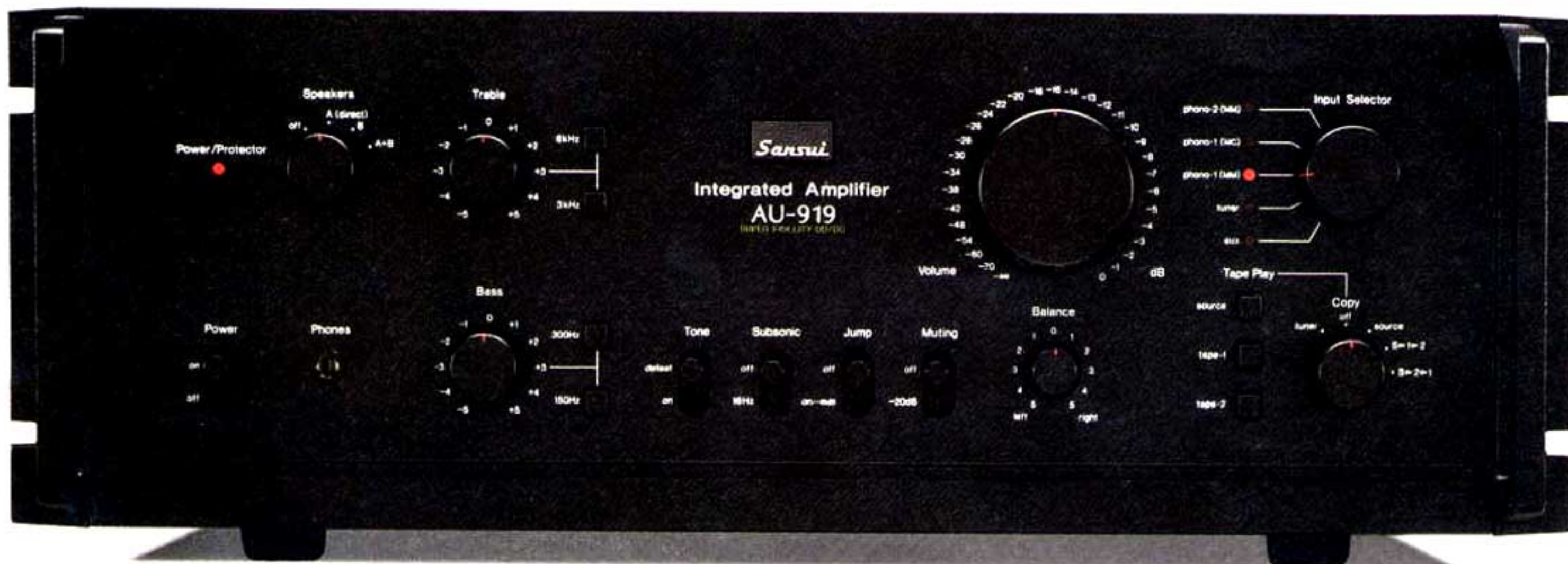


Accurate RIAA: Equalization is flat $\pm 0.2\text{dB}$ over a wide 20—20,000Hz.

High-precision equalization components are used here to help keep the RIAA equalization to a tiny $\pm 0.2\text{dB}$ or less across the 20 to 20,000Hz audio spectrum. Faithful reproduction of recorded, original waveform information is assured.

An exceptionally high phono overload capacity of 350mV is achieved. And there is the outstanding 90dB signal-to-noise ratio, and it joins with the other high specifications to





guarantee that your favorite music on record is reproduced without distortion, without clipping and without the slightest compromise of available dynamic range.

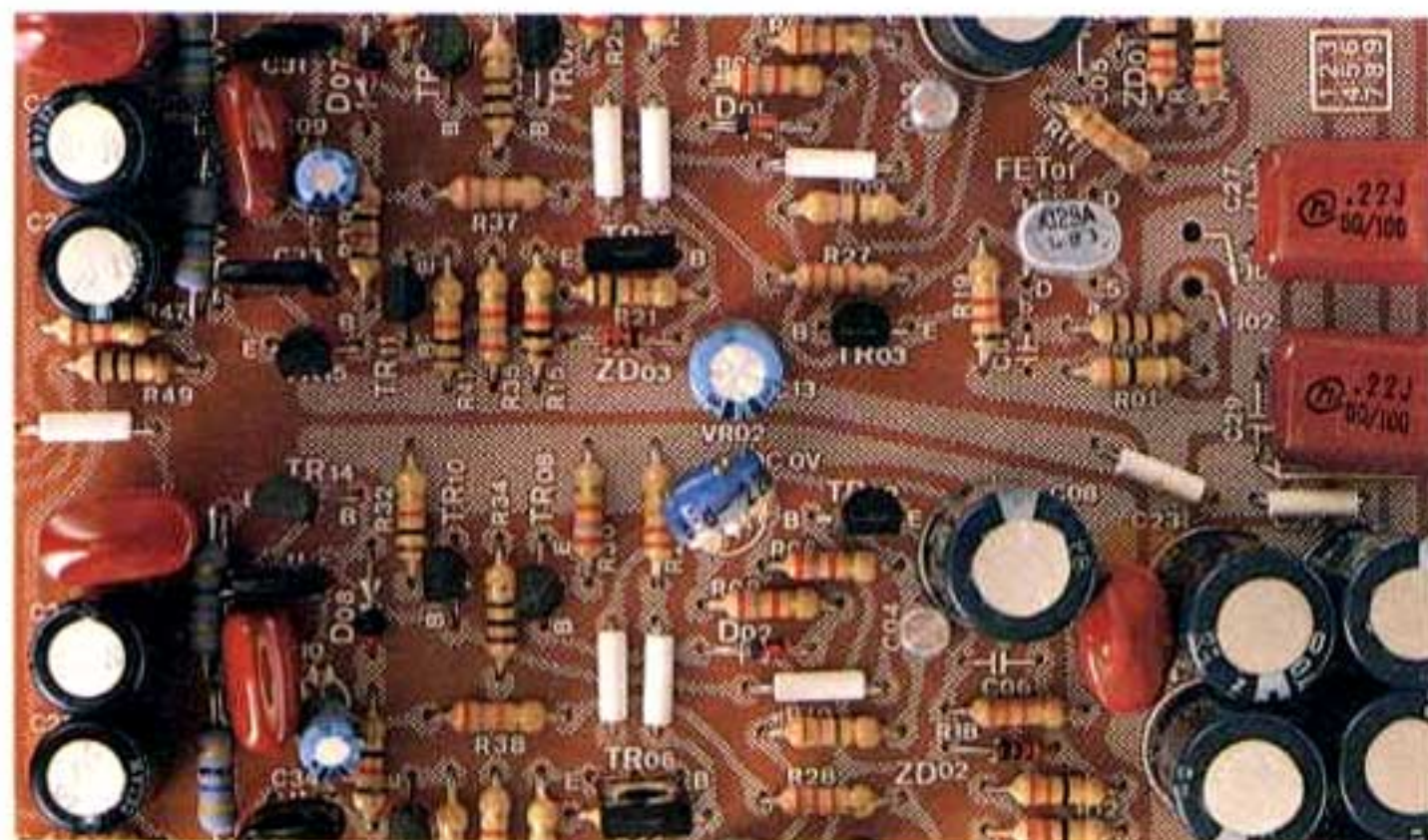
Another DC Gem:
Sansui-exclusive "flat" amp avoids
capacitor-caused shifts and coloration.

Using the most highly advanced amp technology yet devised, Sansui engineers have given the AU-919's "Straight DC" design the final touch by providing an independent DC amplifier in the "flat" amp so that TIM and capacitor-caused tonal coloration are minimized.

The input stage of its "flat" amp is a differential with a Dual-FET, cascade connected with a current source, to assure high stability. The second stage is a current-mirror, current-differential push-pull driver (Sansui Pat. Pend.), while the final stage is of inverted Darlington push-pull output design. This circuitry is distinguished by excellent open-loop characteristics and low distortion performance.

And for the CR-type tone control circuit itself, two turnovers are provided for each of the two control ranges: 300Hz/150Hz for BASS and 6kHz/3kHz for TREBLE.

The potentiometers for both controls are elaborate, with ten precision click stops each for critical tone adjustments above and below the "0" positions.



With the Tone Defeat switch in, the tone control circuitry (but not the "flat" amp; see "Jump" switch) can be set out of the signal path.

Two-Deck Dubbing: All play/copy
modes via front-panel controls.

The AU-919 has full monitoring/recording/dubbing facilities for two stereo tape decks. All play/copy operations are performed with a trio of switches and a rotary control on the front panel:

- You can route any selected program (Phono-1/2, Tuner or AUX) to your speakers while at the same time dubbing a tape from either deck to the other.
- You can play Phono-1/2 or AUX through your speakers while recording from Tuner on either or both decks—a unique and interesting feature.

And That's Not All

- Subsonic Filter—Cuts off super-low frequency—below 16Hz with 6dB/oct. curve—caused by record warp, without harm to musical content.
- Volume Control—Precision attenuator with 32 accurately calibrated steps marked in decibels (dBs).
- Preamp/Power Amp Separation—Rear-panel terminals and a switch on the AU-919 let you separate the preamp and power amp sections for independent use.
- Direct Connected Speaker "A" Terminals—Better performance is assured.
- EIA Rack Mounting Brackets—Mount the AU-919 in a professional type EIA-standard rack for convenience and easy operation.

Specifications

POWER OUTPUT*

Min. RMS, both channels driven, from 5 to 20,000Hz, with no more than 0.008% total harmonic distortion

100 watts per channel into 8 ohms
8 ohms

LOAD IMPEDANCE*

TOTAL HARMONIC DISTORTION*

less than 0.008% at or below rated min.
RMS power output

INTERMODULATION DISTORTION

(70Hz:7,000Hz=4:1 SMPTE method)

less than 0.008% at or below rated min.
RMS power output

DAMPING FACTOR

(at 1,000Hz, both channels driven)

100 into 8 ohms

SLEW RATE

200V/ μ sec.

RISE TIME

0.5 μ sec.

FREQUENCY RESPONSE

(at 1 watt)

POWER AMP IN DC to 500,000Hz +0dB, -3dB

OVERALL (from AUX) 5 to 100,000Hz +0dB, -3dB

RIAA CURVE DEVIATION

(20 to 20,000Hz)

+0.2dB, -0.2dB

INPUT SENSITIVITY AND IMPEDANCE

(at 1,000Hz)

PHONO 1, 2 (MM) 2.5mV, 47k ohms

PHONO 1 (MC) 0.1mV, 33 ohms

AUX, TUNER, TAPE PLAY 150mV, 47k ohms

POWER AMP 1V, 47k ohms

MAXIMUM INPUT CAPABILITY

PHONO 1, 2 (MM) 350mV RMS

(at 1,000Hz 0.01% T.H.D.)

PHONO 1 (MC) 30mV RMS

(at 1,000Hz 0.03% T.H.D.)

OUTPUT VOLTAGE AND IMPEDANCE

(at 1,000Hz)

TAPE REC 1, 2 150mV/600 ohms into 47k ohm load

PREAMPLIFIER OUTPUT 1V/1.5k ohms into 47k ohm load

MAXIMUM PREAMPLIFIER

OUTPUT (at 0.05% T.H.D.) 4V/1.5k ohms into 47k ohm load

HUM AND NOISE (IHF)

PHONO 1, 2 (MM) 90dB

PHONO 1 (MC) -154dB/V

AUX, TUNER, TAPE PLAY 100dB

CHANNEL SEPARATION

(at 1,000Hz)

PHONO 1, 2 (MM) 75dB

PHONO 1 (MC) 70dB

AUX, TUNER, TAPE PLAY 80dB

CONTROLS

BASS +6dB, -6dB at 50Hz

TREBLE +6dB, -6dB at 15kHz

TONE SELECTORS

(Turnover frequencies)

BASS 300Hz, 150Hz

TREBLE 6,000Hz, 3,000Hz

FILTER

SUBSONIC -3dB at 16Hz (6dB/oct.)

AUDIO MUTING

-20dB

AC OUTLETS

switched max 100 watts

unswitched total 250 watts

POWER REQUIREMENTS

POWER VOLTAGE 100, 120, 220, 240V 50/60Hz

POWER CONSUMPTION 480 watts

SEMICONDUCTORS

117 Transistors; 50 Diodes; 13 Zener Diodes;

6 LEDs; 30 FETs

430mm (16 $\frac{1}{16}$ ")W

168mm (6 $\frac{5}{8}$ ")H

428mm (16 $\frac{7}{8}$ ")D

with Rack-mounting Adaptors

482mm (18 $\frac{1}{16}$ ")W

168mm (6 $\frac{5}{8}$ ")H

445mm (17 $\frac{7}{16}$ ")D

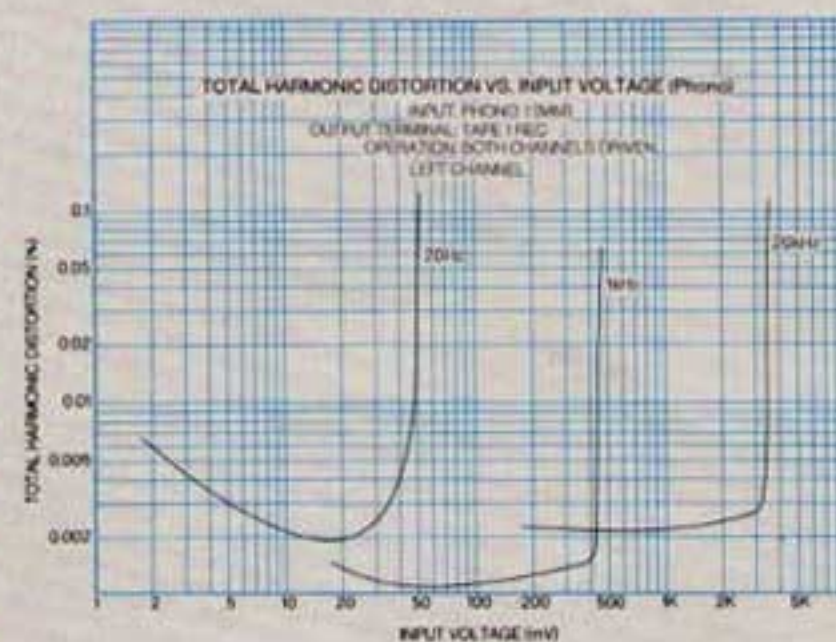
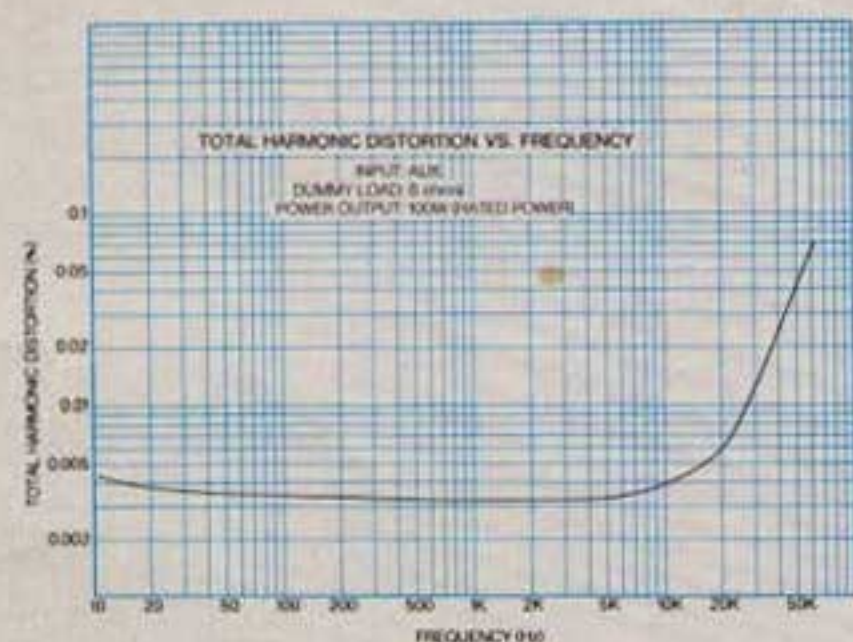
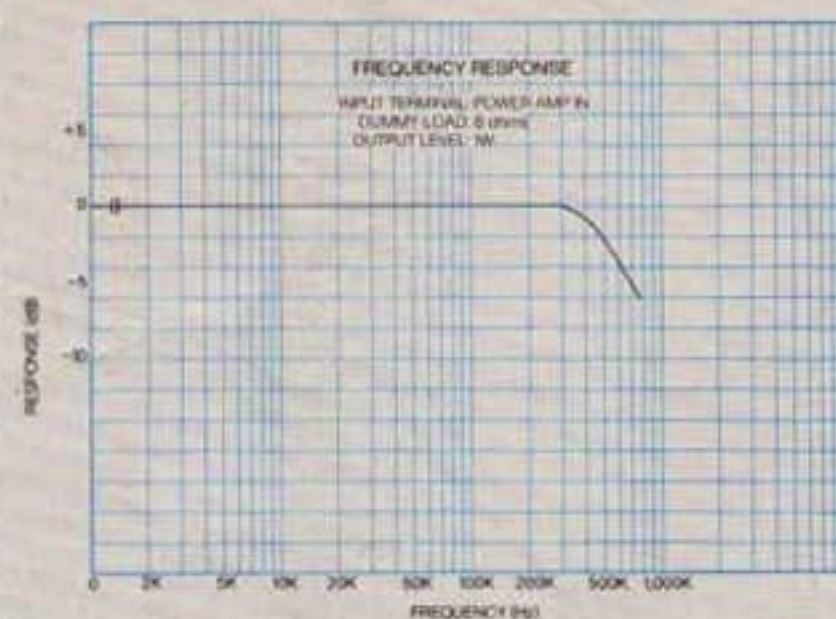
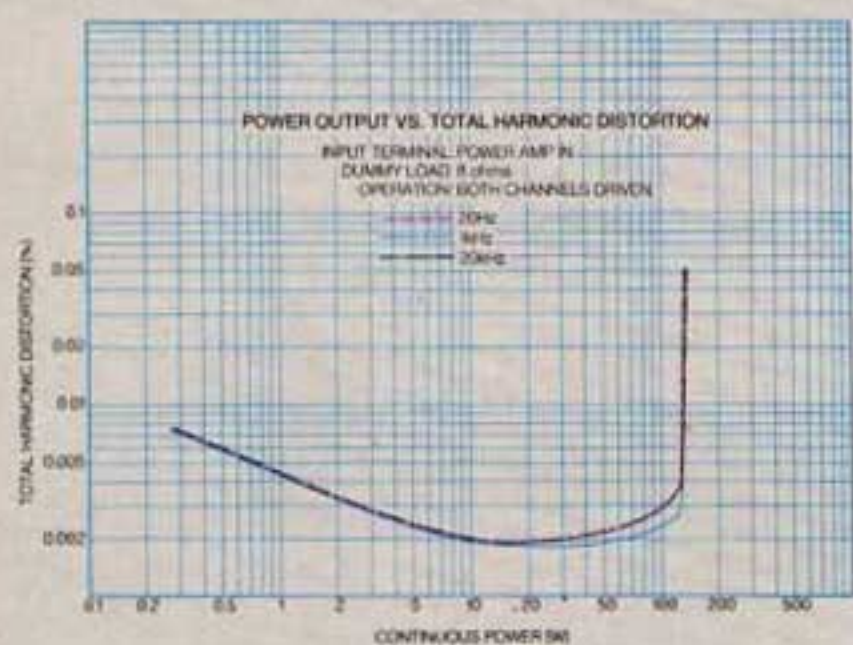
WEIGHT

with Rack-mounting Adaptors

21.4kg (47.2lbs.) Net

23.8kg (52.5lbs.) Packed

- * Power specifications measured pursuant to U.S. Federal Trade Commission trade regulation on power output claims for amplifiers.
- For European models, some specifications might change to comply with local safety regulations and standards.
- Design and specifications subject to change without notice for improvements.



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