

SANSUI G33000/22000

Sansui Pure Power "Straight DC" Stereo Receivers
with Unique Separable Construction.

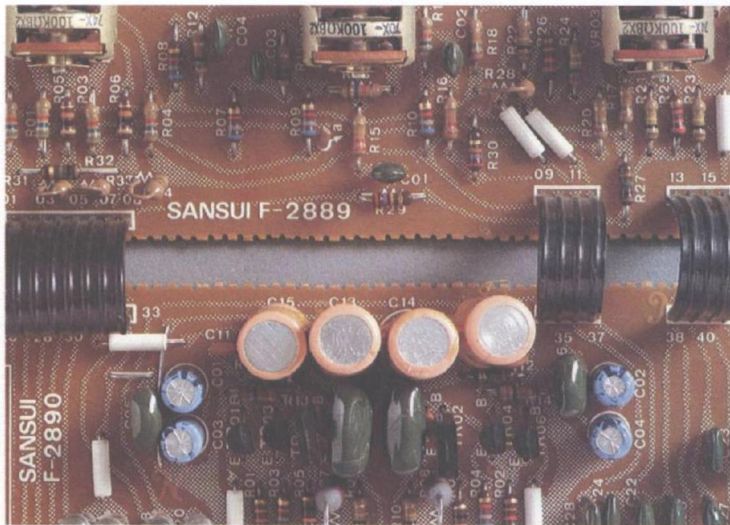
Only hi-fi, everything hi-fi.

Sansui





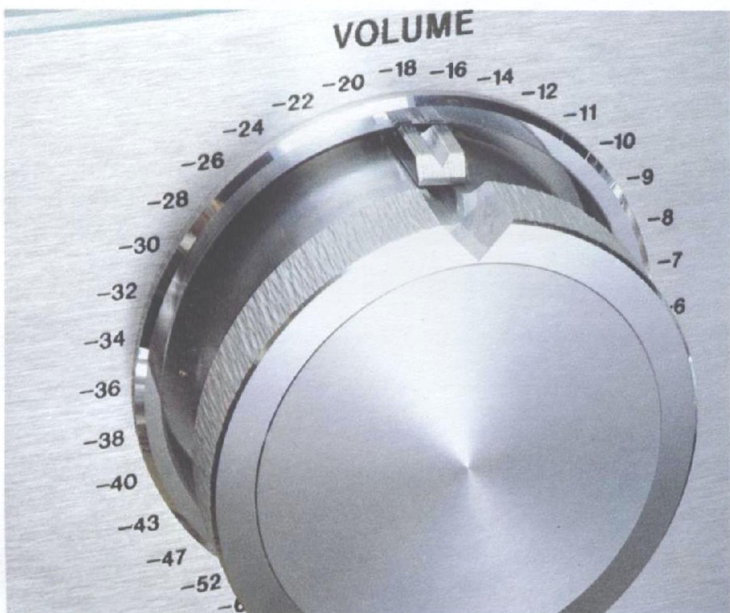
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Archiv Michael Otto



Master Volume Control: 32-step calibrations and Preset Tab.

No expense spared here. We've used a precision attenuator with 32 accurately calibrated steps for the master volume control. It has a four-gang construction: two gangs are circuited in front of, and two after, the "flat" and tone amp; since any noise generated by the "flat" amp is automatically controlled by the second pair, audible signal-to-noise ratio is improved, especially during low-level reproduction.

For your convenience, a Preset Tab is built into the volume control; set it once and you can always quickly return the control to the volume you prefer.



Selectable Phono Impedance: Effective end to cartridge mismatch.

Sound deterioration resulting from impedance mismatching when different phono cartridges are used can account for any number of unpleasant results. You can pick the

impedance your cartridge requires with front-panel controls on the G-33000/G-22000. Specifically, the impedance for Phono-1 is adjustable between 33k ohms, 47k ohms and 100k ohms; for Phono-2, it is selectable between 47k ohms and 100k ohms.



Two-Deck Monitor/Dubbing.

Front-panel controls permit simple monitoring of either of two connected stereo tape decks, and tape-to-tape dubbing from either one to the other, even as you listen to another source. A third stereo deck may be connected through the 4-Channel/NR Adaptor circuit if you wish.

Convenient Connections.

The jackplates on both receivers are located on the side panels to make it unnecessary to move the units to reach the rear. Input terminals are on the left, outputs on the right. Speaker output terminals (rear on power unit) are designed to guarantee stable performance. And special carrying grips, built into each unit, make handling easier.

Little Things Mean a Lot.

- SUBSONIC & HIGH FILTERS—Cut harmful super-low/ultra-high noise without harming musical content.
- 4-CHANNEL/NR—Switches input/output for connecting quadraphonic or noise reduction unit, or third deck.
- MIC MIXING—Special circuit with its own volume control.
- SPEAKER SELECTION—A, B, A+B, OFF.
- TWO STEREO HEADPHONES—Set of two jacks for private listening.
- AUDIO MUTING—Instantly reduces level (volume) by 20dB.
- LOUDNESS CONTROL—Natural tonal balance during low-volume play.
- SELECTOR CONTROL—Easy-to-use rotary switch with LEDs for the selected source.
- CORD-CADDY—Rail on side may be used to hide extra cords.
- DISTINCTIVE DESIGN—Controls are especially designed for quick and easy use and long-life good looks in this Sansui original.
- PREAMP/POWER AMP SEPARATION—Side-panel terminals and a switch on the G-33000/G-22000 let you separate the preamp and power amp sections for independent use.
- REMOTE POWER ON/OFF SWITCH—Provided on the power amp unit, it lets the power switch on the tuner/preamp unit control power for a connected, separate power amp unit.

Strictly Hi-Fi Tuner: Sansui-exclusive circuitry in FM/AM

We have field-tested every FM/AM tuner section for absolutely dependable reception and high fidelity reproduction under all conceivable conditions.

Sansui has earned its high reputation in tuner technology by following a strictly-hi-fi design policy, and sparing no expense in research and development, and in quality control for parts and construction, to achieve it. That policy is based on the realistic concept that the only tuner worth building is one that can receive *and reproduce* radio-frequency signals with the highest possible accuracy and purity.

We have devised circuitry and parts which completely suppress or minimize all undesirable factors standing in the way of achieving pinpoint accuracy in radio-frequency reception under the most difficult conditions anywhere our tuners or receivers are put to use.

But in addition, no less attention has been paid to the circuitry and parts used in converting those received signals into clean, faithful-to-the-original sound waves for reproduction in your listening room.

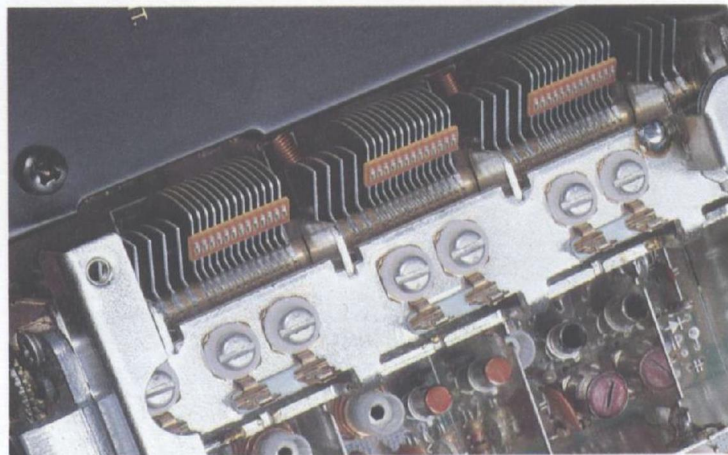
Reception and reproduction performance in the FM/AM tuner sections of the G-33000/G-22000 will never fail you, however. And here's why:

Linear-Tracking FM Frontend: Super-sensitive "jam-proof" reception.

This advanced FM frontend employs a low-noise, dual-gated MOS FET in its RF amplifier, and a newly-designed precision frequency-linear tuning capacitor of the wide-gap, five-gang design. Stabilized frequency response characteristics are further ensured with the use of a heat-resistant glass epoxy circuit board.

Then, the RF amp and the tuning capacitor have been carefully aligned to eliminate the possibility of any tracking

error. The overall results are increased tuner sensitivity and considerably improved rejection of crossmodulation and other forms of "jamming" interference.



Selectable IF Bandwidth: NARROW for weak stations, WIDE for the strong ones.

When receiving strong, nearby FM stations you'll want to use the WIDE position on the IF Bandwidth selector. It means that distortion, stereo separation, capture ratio and other factors are optimized for measurable improvements in sound.

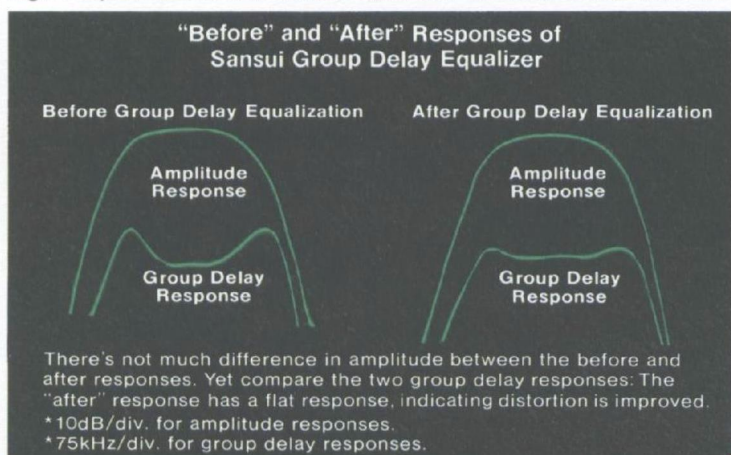
If the station you want is weak or distant, use the NARROW mode: interference is lessened because selectivity is improved. The selector is backed by a special bi-resonator ceramic filter (for NARROW) which cuts out unwanted interference before the signal is passed to the three bi-resonator ceramic filters shared by the WIDE mode. The signal is then amplified by five newly-developed ICs, each containing a two-stage differential.



Group Delay Equalizer:
Sansui-patented device ends
group delay distortion.

Our engineers have carefully determined the exact amount of group delay characteristic distortion caused by ceramic filters. This has permitted them to design a special circuit to provide an exact mirror-image of that distortion and remove it.

This Sansui-patented device restores the original fidelity of the signal you want to hear. Better performance in the high frequencies and in stereo separation are some of its benefits.



New Power Ratio Detector:
Lower FM distortion.

Also increasing the value of the Sansui G-33000/G-22000 is a new FM detector, called a Power Ratio Detector, formed of a six-stage differential circuit driven by three high performance ICs with a discriminator attached to the circuit.

The former drives the latter with high power so that overall linearity is greatly improved. The device is thus able to demodulate a wider frequency band than conventional detectors, and do so without output signal level reduction, to reduce distortion in FM reception. The discriminator circuit is carefully shielded to obtain a high signal-to-noise ratio.

New Adjacent Channel Filter:
No interference from the neighbors.

This device cancels the so-called "beat" components caused by interference from stations which are adjacent (on your dial) to the one you want to hear. The usefulness of the Adjacent Channel Filter is especially appreciated when you use the WIDE mode for IF bandwidth.

New FM Automatic Noise Filter:
Ends unwanted, unexpected noise.

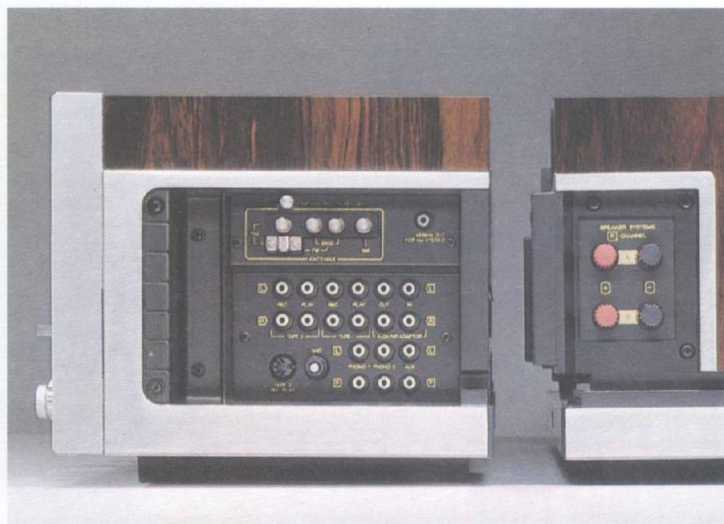
Say that an airplane strays into your antenna's field of reception, and that it causes the reflection of out-of-phase "ghosts" of the signal from the station to which you've tuned. Hearing the unpleasant noise this causes once is bad enough, but hearing it over and over again on the tape you happened to be making at the time is even more annoying.

We've included a brand-new Automatic Noise Filter to lower this noise (and your blood pressure) in the most effective way possible: it automatically activates when and if the strength of a tuned-in broadcast falls below a pre-determined level for any reason.



**PLL MPX IC: Lower distortion,
wider dynamic range, better separation.**

PLL, that's Phase-Locked Loop, is an important feature found in the MPX or Multiplex demodulator which separates the composite FM signal into left and right-channel sound.

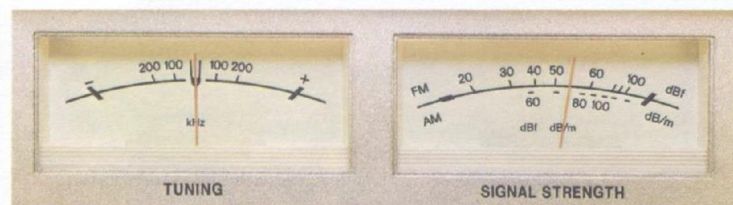


The whole is contained, along with its peripheral circuits, in our new high-performance IC to offer outstanding performance under all conditions. Stereo separation is not the only improvement. Switching distortion (in the change from stereo to mono and back) is significantly lowered, and dynamic range has never been wider.

Signal/Tuning Meters: Direct readouts without guessing.

Greatly improved linearity is the benefit you'll appreciate most in the newly-designed Signal Meter on the G-33000/G-22000. Accurate, *direct* readouts of the strengths of even the weakest FM and AM signals can be made.

The Tuning Meter, used for FM only, is equally accurate. Line up the pointer within the marked center of the scale and enjoy optimum FM reception. The precision-oriented mechanism permits direct readouts of tuning differences as small as a few kilo-Hertz.



Selectable IF Band for AM: WIDE/NARROW improves reception.

By broadening the signal-passing bandwidth in the AM tuner section, frequency range is dramatically improved. For this reason, you'll want to use the WIDE position on the IF bandwidth selector. When the station to which you have tuned is strong enough, the results in improved high frequency response are impressive.

On the other hand, weak or distant AM stations are received more clearly when you use the NARROW position; the interference caused by stronger stations broadcasting on adjacent frequencies is dramatically lowered.

AM transmissions have a wider frequency response than you might think, but the AM tuner must offer a bandwidth above 20kHz to enjoy its full potential. We use an 8-pole LC filter with a 8.5kHz (−6dB) bandwidth in the WIDE mode to deliver an IF selectivity with a response of 30dB at 20kHz so that the resulting sound can be as good as that from your record turntable.

Double-Tuned Antenna Circuit: Better AM sound quality.

The double-tuned antenna circuit provides a wide bandwidth for AM, and is used together with noise-eliminating filters to improve sound quality. Without it, the advantages of the WIDE/NARROW BANDWIDTH (above) would be lost.

Among the improvements this system offers are a 70dB image response ratio and 70dB IF response ratio—important indicators of just how far Sansui has gone to improve AM listening.

455kHz AM Stereo: We're ready when you are.

Stereo AM? Real 2-channel, hi-fi sound from AM is not far from becoming a reality. The G-33000/G-22000 AM section has a 455kHz output terminal which, when used with an adaptor soon available, will permit AM stereo reproduction of special AM broadcasts.

Other FM/AM Tuner Highlights.

- FM MUTING SWITCH—Ends inter-station tuning noise.
- DOLBY FM DE-EMPHASIS SWITCH—For FM Dolby adaptor.
- SLIDABLE AM BAR ANTENNA—This built-in aid to better AM listening has a control lever on the side panel.
- A 10kHz whistle filter built into the AM tuner damps spurious noise with sharp attenuation of about −45dB at 10kHz to assure clean sound.



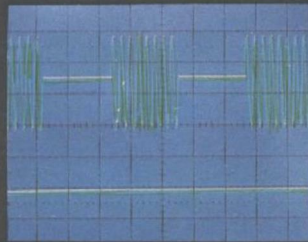
TRANSIENT CROSSTALK

Input Terminal: Power Amp in
Output Terminal: Speakers A

G-33000/G-22000

L-CH
V: 10V/div.

R-CH
V: 0.5V/div.



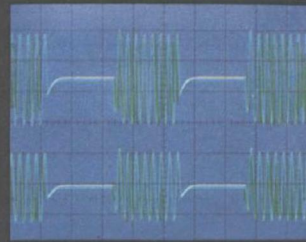
H: 2mSec/div

Operation: Left Channel=Tone Burst Wave (1kHz, 8 waves on, 8 waves off)
Right Channel=Input Terminal: 10k ohms Terminated.

A CONVENTIONAL RECEIVER

L-CH
V: 10V/div.

R-CH
V: 0.5V/div.



H: 2mSec/div

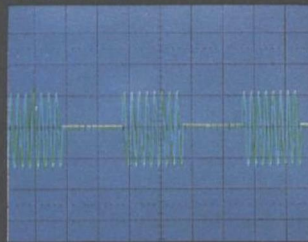
Transient crosstalk—a phenomenon observed in one channel (the right one in this case) when a tone burst is applied to the other channel—is never a problem in the Sansui G-33000/G-22000, because of their separate left/right power supplies. Transient distortion is reduced and dynamic response dramatically improved.

TONE BURST WAVE RESPONSE

Input Terminal: Power Amp in
Output Terminal: Speakers A

Operation: Left Channel=Tone Burst Wave (100Hz, 8 waves on, 8 waves off)

INPUT WAVE

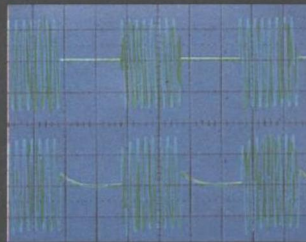


V: 2V/div

G-33000/G-22000

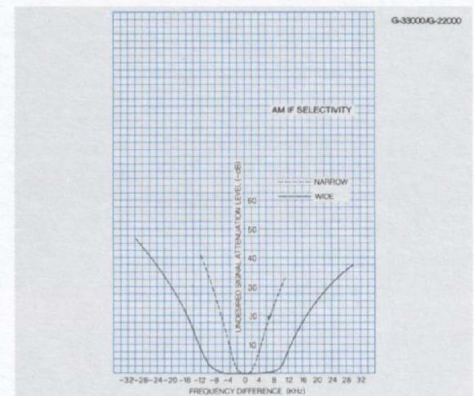
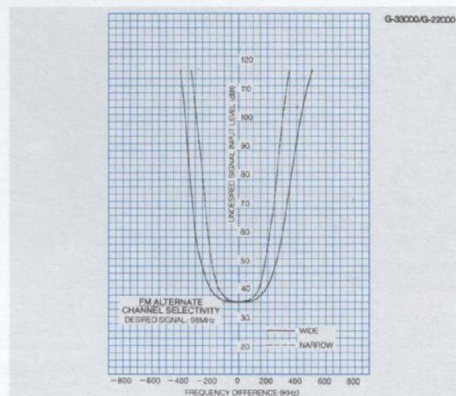
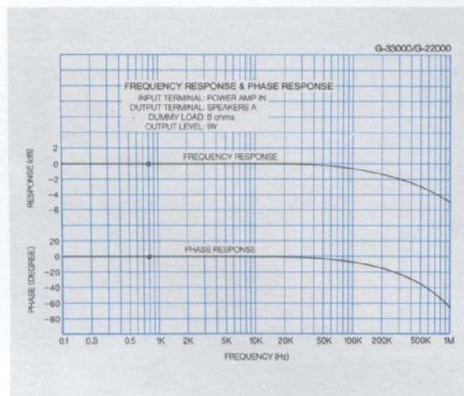
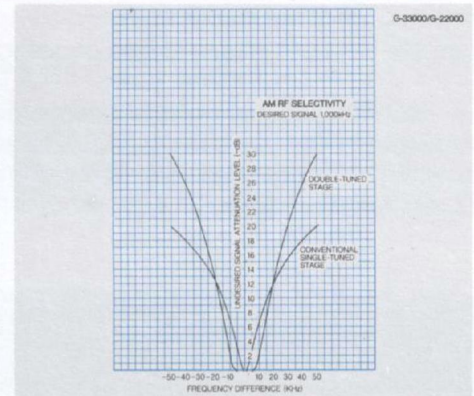
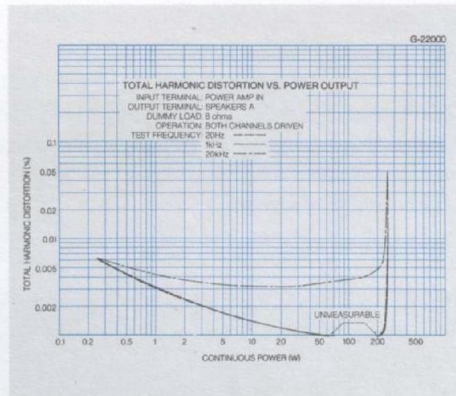
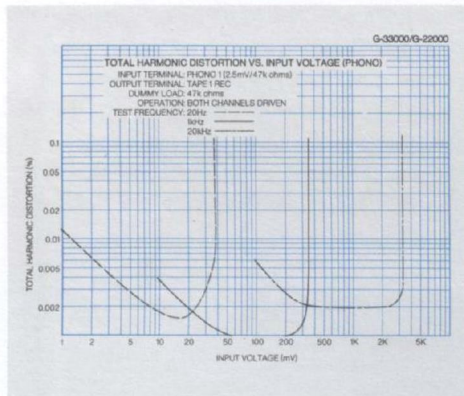
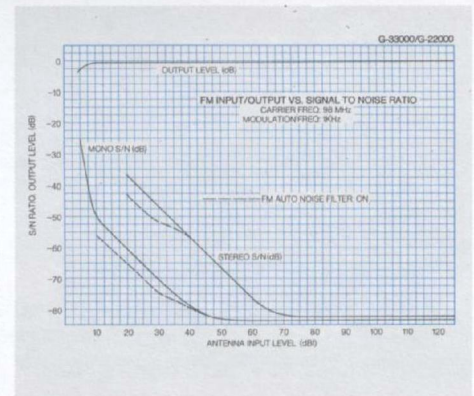
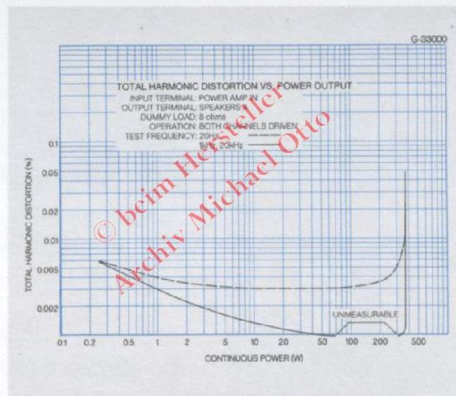
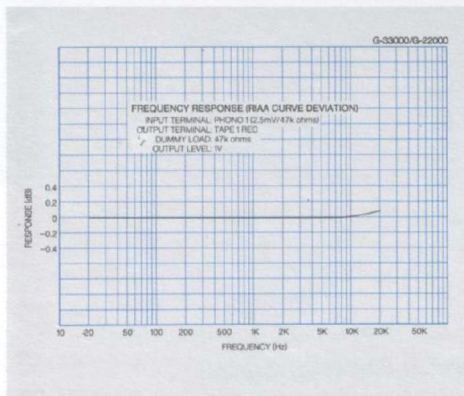
A CONVENTIONAL RECEIVER

OUTPUT WAVE



V: 10V/div

The power amps inside the G-33000/22000 are of the highly advanced DC design, not a single music-spoiling capacitor is employed anywhere in the entire signal path. DC's superiority to conventional designs is shown by the more faithful reproduction of a tone-burst input—an indication that signals of super-low frequencies are amplified with exceptional stability.



Specifications

POWER AMP SECTION

POWER OUTPUT*

G-33000

Min. RMS, both channels driven, from 5Hz to 20,000Hz, with no more than 0.009% total harmonic distortion

300 watts per channel into 8 ohms

Min. RMS, both channels driven, at 1,000Hz, with no more than 0.009% total harmonic distortion
450 watts per channel into 4 ohms
330 watts per channel into 8 ohms

G-22000

Min. RMS, both channels driven, from 5Hz to 20,000Hz, with no more than 0.009% total harmonic distortion

220 watts per channel into 8 ohms

Min. RMS, both channels driven, at 1,000Hz, with no more than 0.009% total harmonic distortion
300 watts per channel into 4 ohms
240 watts per channel into 8 ohms

TOTAL HARMONIC DISTORTION*

less than 0.009% at or below rated min.

RMS power output

less than 0.002% at 1kHz, rated power output

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

less than 0.009% at or below rated min.

RMS power output

60 into 8 ohms

DAMPING FACTOR

8 ohms

LOAD IMPEDANCE*

SLEW RATE

175V/ μ sec.

RISE TIME

0.7 μ sec.

FREQUENCY RESPONSE (at 1 watt)

DC to 300,000Hz +0dB

-3.0dB

HUM AND NOISE (IHF)

120dB

CHANNEL SEPARATION (at 1,000Hz)

100dB

INPUT SENSITIVITY AND IMPEDANCE (at 1,000Hz)

1.5V, 47k ohms

PREAMP SECTION

RIAA CURVE DEVIATION (20 to 20kHz)

+0.2dB,

-0.2dB

INPUT SENSITIVITY AND IMPEDANCE (at 1,000Hz)

PHONO 1

2.5mV/33, 47, 100k ohms

PHONO 2

2.5mV/47, 100k ohms

AUX

150mV/47k ohms

MIC

6mV/10k ohms

(PHONO: Max. input capability more than 350mV RMS at 0.009% distortion)

OUTPUT VOLTAGE AND IMPEDANCE (at 1,000Hz)

TAPE REC (PIN)

150mV, 47k ohms

(DIN)

43mV open

PREAMPLIFIER OUTPUT

1.5V, 47k ohms

MAXIMUM PREAMPLIFIER OUTPUT (0.009% T.H.D.)

10V, 47k ohms

TOTAL HARMONIC DISTORTION

OVERALL (from AUX) less than 0.002% at 1kHz, 2V output

FREQUENCY RESPONSE (at 1 watt)

OVERALL (from AUX) 5 to 50,000Hz +0.2dB, -1.5dB

HUM AND NOISE

PHONO

87dB

AUX

105dB

CHANNEL SEPARATION (at 1,000Hz)

PHONO

65dB

AUX

75dB

CONTROLS

BASS

+10dB, -10dB at 50Hz

MIDRANGE

+5dB, -5dB at 1.5kHz

TREBLE

+10dB, -10dB at 10kHz

TONE SELECTORS

BASS

200Hz, 400Hz

TREBLE

2.5kHz, 5kHz

LOUDNESS

8dB at 50Hz/6dB at 10kHz

SUBSONIC FILTER

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

HIGH FILTER

-3dB at 3kHz (6dB/oct.)

MUTING (Audio)

-20dB

FM SECTION

TUNING RANGE

88 to 108MHz

SENSITIVITY

MONO (IHF)

8.7dBf (1.5 μ V IHF T-100)

(DIN)

0.9 μ V

STEREO

15.0dBf

50dB QUIETING SENSITIVITY

MONO

12.5dBf/7.5dBf (A.N.F. IN)

STEREO

34.0dBf/29.0dBf (A.N.F. IN)

SIGNAL TO NOISE RATIO AT 65dBf

MONO

82dB

STEREO

77dB

FREQUENCY RESPONSE

MONO

30 to 15,000Hz +0.2dB, -1.0dB

STEREO

30 to 15,000Hz +0.2dB, -1.0dB

DISTORTION AT 65dBf

MONO (WIDE)

less than 0.06% at 100Hz

less than 0.05% at 1,000Hz

less than 0.08% at 6,000Hz

less than 0.2% at 1,000Hz

less than 0.1% at 100Hz

less than 0.07% at 1,000Hz

less than 0.1% at 6,000Hz

less than 0.5% at 1,000Hz

(NARROW)

0.9dB

STEREO (WIDE)

(NARROW)

CAPTURE RATIO

ADJACENT CHANNEL SELECTIVITY

WIDE

5dB at 200kHz

NARROW

18dB at 200kHz

ALTERNATE CHANNEL SELECTIVITY

WIDE

55dB at 400kHz

NARROW

90dB at 400kHz

SPURIOUS RESPONSE RATIO 110dB

IMAGE RESPONSE RATIO

110dB

IF RESPONSE RATIO

110dB (Balanced)

RF INTERMODULATION

75dB

STEREO SEPARATION

40dB (100Hz), 50dB (1kHz), 40dB (10kHz)

30dB from 30 to 15,000Hz

ANTENNA INPUT IMPEDANCE

300 ohms balanced

75 ohms unbalanced

AM SECTION

TUNING RANGE

530 to 1,600kHz

SENSITIVITY (Bar antenna)

WIDE

53dB/m (450 μ V/m)

NARROW

50dB/m (300 μ V/m)

SELECTIVITY

WIDE

30dB ($\pm$ 20kHz)

NARROW

30dB ($\pm$ 10kHz)

SIGNAL TO NOISE RATIO

50dB

DISTORTION

WIDE

less than 0.5% at 80% Mod. 100dB/m

NARROW

less than 0.45% at 30% Mod. 80dB/m

less than 0.8% at 80% Mod. 100dB/m

70dB at 1,000kHz

70dB at 1,000kHz

IMAGE RESPONSE RATIO

IF RESPONSE RATIO

FREQUENCY RESPONSE

WIDE

20Hz to 8.5kHz (-6dB)

NARROW

30Hz to 3kHz (-6dB)

GENERAL

AC OUTLETS

switched max. 100 watts

unswitched total 300 watts

POWER REQUIREMENTS

POWER VOLTAGE

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

POWER CONSUMPTION

1,100/950 watts (G-33000/G-22000)

DIMENSIONS

2 UNITS CONNECTED

636mm (25 $\frac{1}{16}$ ")W

227mm (8 $\frac{15}{16}$ ")H

553mm (21 $\frac{13}{16}$ ")D

TUNER/PREAMP UNIT

636mm (25 $\frac{1}{16}$ ")W

227mm (8 $\frac{15}{16}$ ")H

283mm (11 $\frac{1}{16}$ ")D

POWER AMP UNIT

634mm (25")W

225mm (8 $\frac{7}{8}$ ")H

286mm (11 $\frac{1}{16}$ ")D

WEIGHT

G-33000

TUNER/PREAMP UNIT

16.1kg (35.5lbs.) Net

18.3kg (40.3lbs.) Packed

POWER AMP UNIT

29.3kg (64.6lbs.) Net

31.6kg (69.7lbs.) Packed

G-22000

TUNER/PREAMP UNIT

16.1kg (35.5lbs.) Net

18.3kg (40.3lbs.) Packed

POWER AMP UNIT

26kg (57.3lbs.) Net

28.3kg (62.4lbs.) Packed

FINISH

Simulated rosewood grain

NOTE: The G-33000/G-22000 come in two packages, one each for the power amp and tuner/preamp units.

* Power specifications measured pursuant to U.S. Federal Trade Commission trade regulation on power output claims for amplifiers.

• The FM performance of the G-33000/G-22000 is measured pursuant to the new Institute of High Fidelity standard, IHF-T-200, except specifications with the legend IHF-T-100

• Design and specifications subject to change without notice for improvements.



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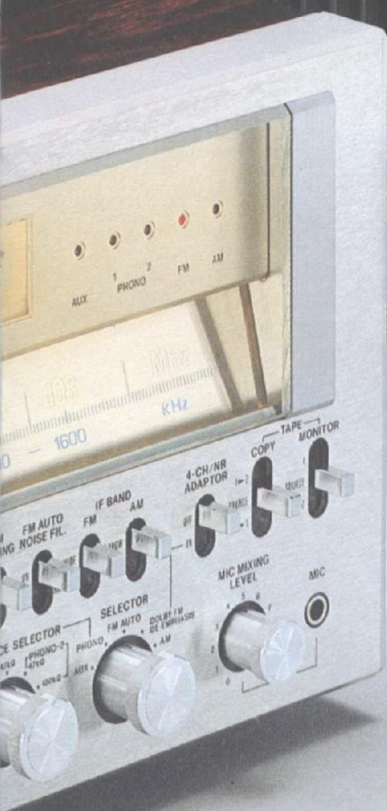


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PURE POWER DC STEREO RECEIVER
POWER AMPLIFIER SECTION

G-33000



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PURE SANSUI

At Sansui, every engineering decision is based, ultimately, on music. Pure music.

Reproducing perfect sinewaves on a graph or oscilloscope screen was not our goal in refining the basic electronic performance of the G-33000 and G-22000 to a level no other receivers have dared to claim. Such perfection *is* achieved in both Sansui Pure Power "Straight DC" Stereo Receivers, however, largely because it is the surest way to guarantee their performance excellence when judged by the best precision "test instrument" ever "invented"—the human ear.

The G-33000 and G-22000 are the largest of the Pure Power stereo receivers manufactured by Sansui. Their "Straight DC" design ensures that sound purity is jealously safeguarded all the way from input through output. Their superb performance specifications—including the highest slew rate ever attained in a stereo receiver—will attest to the very high technological and quality control standards with which they have been created.

Emphasis has been placed on clear and distinct sound image reproduction and impressive dynamic response in actual musical performance. Stereo FM/AM tuner and phono equalizer specifications are *strictly* hi-fi. But for the first time in hi-fi, they also offer the versatility one would expect to find only in the most elaborate and sophisticated of studio-class equipment. No combination of ordinary separate components can offer wider control flexibility or easier handling.

Your decision, too, should be based on pure music. Hear it in the Pure Power "Straight DC" Stereo Receivers G-33000 and G-22000 from Sansui, where it's *all* hi-fi.

G-33000/G-22000 Basic Concepts

Pure DC Performance: Concepts & Realities

Add nothing. Subtract nothing. That's simple audio arithmetic, and you don't need a computer to see that it equals *purity* when you're talking about amplifying the miniscule musical signals within the G-33000/G-22000 Pure Power DC Stereo Receivers from Sansui.

The concept of "DC" isn't entirely new to stereo. But making it work to improve musical performance has only very recently become a reality, thanks to the "Straight DC" design and the "Diamond Differential DC" (Pat. Pend.) circuit developed and perfected by our engineers for our strictly top-class equipment.

The term "DC" means "Direct Coupled" in Sansui's audio lexicon. It refers to circuit designs which permit an input signal to flow through the DC amplifier straight on to its output without encountering a single capacitor. This is important, since capacitors can cause tonal coloration and phase delay—factors which severely degrade the quality of your music.

Not only have we removed capacitors from the negative feedback loops but from the signal path and the inputs as well. With our "Straight DC" and "Diamond Differential DC" circuit exclusives at work, the improvements in slew rate, rise time and TIM or Transient Intermodulation distortion are indeed impressive.

The New Quantifiers: They end confusion by defining pure musical performance.

Quantifying actual dynamic performance of, say, an amplifier, is much more difficult than its steady-state performance such as frequency response, total harmonic distortion, and so on. Since music contains *pulsive* signals which are quite unlike the repetitive, constant-level test signals used in ordinary lab tests, vague words like "transient response" were just about the best science could find to measure musical performance.

They were, that is, until ways were found to measure such vital factors as slew rate, rise time and TIM:

Slew rate—it shows how many volts an amp's output can deliver within one microsecond when a test input (i.e. a square wave) is applied to the input. The higher the better.

Rise time—it goes hand in hand with slew rate, and is the measurement of the time it takes the amp's output voltage to rise from 10% to 90% of the peak voltage of the square wave

input. The smaller (faster) the rise time, the faster that amp can respond to an input signal.

TIM—Transient Intermodulation distortion—is significantly lowered in an amp able to deliver a high slew rate and fast rise time. This translates directly into better musical performance, since every individual part of the musical waveform is amplified and sent to your speakers without addition to or subtraction from its original *dynamic* identity.

We are proud to state that the slew rate and rise time factors in our finest receivers are the best ever achieved: 175V/ μ sec. slew rate and 0.7 μ sec. rise time for the G-33000/G-22000.

Wider frequency response & Higher power output.

Now that we can measure dynamic parameters like slew rate and rise time, are conventional specifications obsolete? Not at all. One of the most vital specifications—frequency response—is of particular value in judging the performance of our latest Pure Power DC stereo receivers.

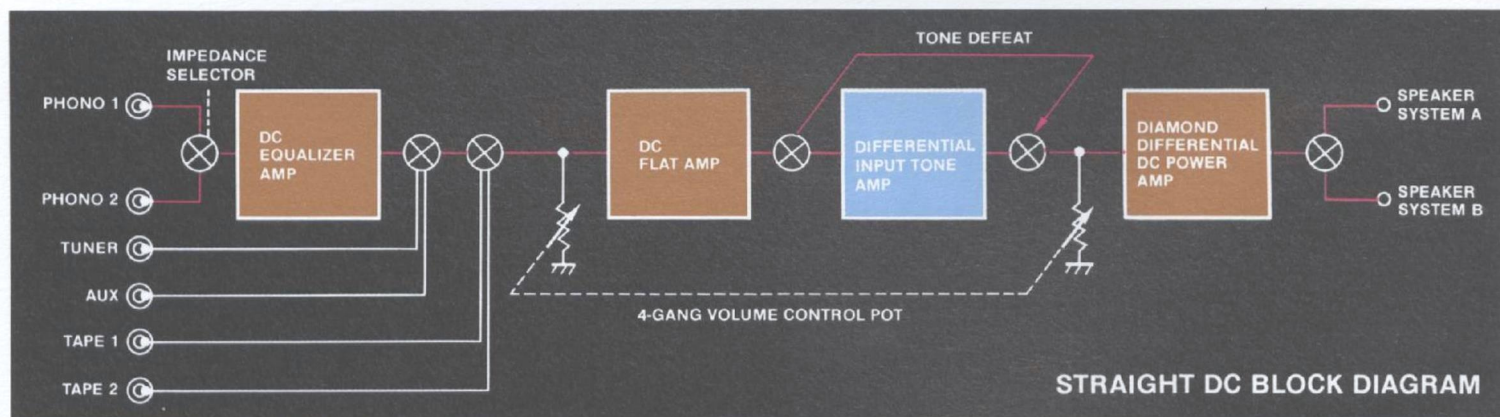
Thanks to their Sansui-exclusive power amp designs the G-33000/G-22000 deliver a truly amazing power amplification frequency response: it ranges from zero Hz (DC) to an incredible supersonic high of 300,000Hz.

Conventional specs like power output and THD or Total Harmonic Distortion are important, too: Continuous RMS 300 watts* per channel for the G-33000 and 220 watts per channel for the G-22000 at only 0.009% THD.

Sansui's "Straight DC": How sweet it is.

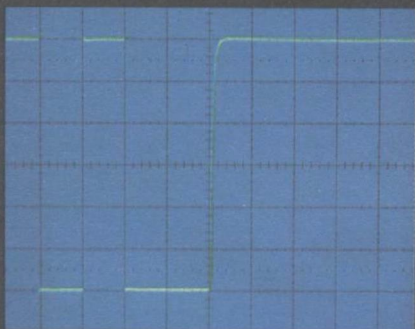
Using non-DC amps in the critical preamplifier section of a top-quality receiver or amplifier with DC power output is comparable to letting a honey-bear tend a beehive. There might be some of the original sweetness left by the time your musical signals reach the power amp, but you'll never be sure how much has been lost in the process.

This is why our "Straight DC" design uses DC not only for the power amp but for the critical preamplifier blocks, too. Thus when the only non-DC tone control amp block is bypassed—switch the TONE DEFEAT switch on—the G-33000/G-22000 offer absolutely pure DC performance straight through to your speakers.



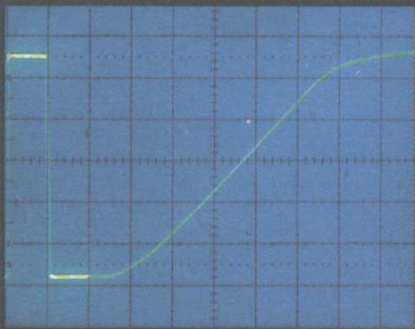
SLEW RATE & RISE TIME

Input Terminal: Power Amp in
Output Terminal: Speakers A
Output Level: Maximum Power



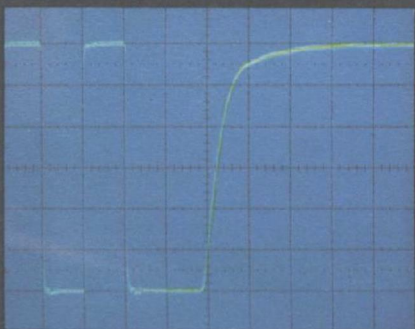
INPUT SQUARE WAVE
(10kHz)

V: 1V/div.
H: 50 μ Sec, 1 μ Sec/div.



A CONVENTIONAL
RECEIVER

Slew Rate: 21V/ μ Sec
Rise Time: 4 μ Sec



G-33000/G-22000

Slew Rate: 175V/ μ Sec
Rise Time: 0.7 μ Sec

V: 20V/div.
H: 50 μ Sec, 1 μ Sec/div.

Cleaner, preamp performance with ICL & Dual-FETs.

Our choice of the ICL design, plus the Dual-FET differential inputs and push-pull outputs for the key amp blocks, has resulted in improvements in signal-to-noise ratios, distortion factors and many other areas. No more time lags, no unwanted tonal coloration.

Power supply, control versatility & protection.

Three independent power supplies are provided in the G-33000/G-22000—one for the left channel, one for the right, and the third for the preamp and tuner. Details are found on the following page.

Unique separable construction. Purity is worth protecting.

As the world's first (and, so far, only) two-unit receivers, the G-33000 and G-22000 are unusual, to say the least. But the two-unit design is practical in more ways than one.

First, the power amplifier section is housed in an independent unit; for an amp of its size and power output, this makes it easier to handle. It also offers a technical advantage: the mutual interference between the power and preamp sections, or between the power and tuner sections, is avoided, thus eliminating possible oscillation and the kind of crosstalk caused when two electrical circuits are in proximity. The power amp section, furthermore, has an array of effective heat sinks, visually striking and co-ordinated with the preamp for looks you'll not find anywhere else.

Then, in the unit which combines the stereo FM/AM tuner and the preamp/control sections, a thick shield plate is used for still more protection against mutual interference. The two-units may be arranged any way you like; four 1.2m (3.9 ft.) umbilical cables—for power, signal and remote control—are provided.



Strictly hi-fi stereo FM/AM tuner.

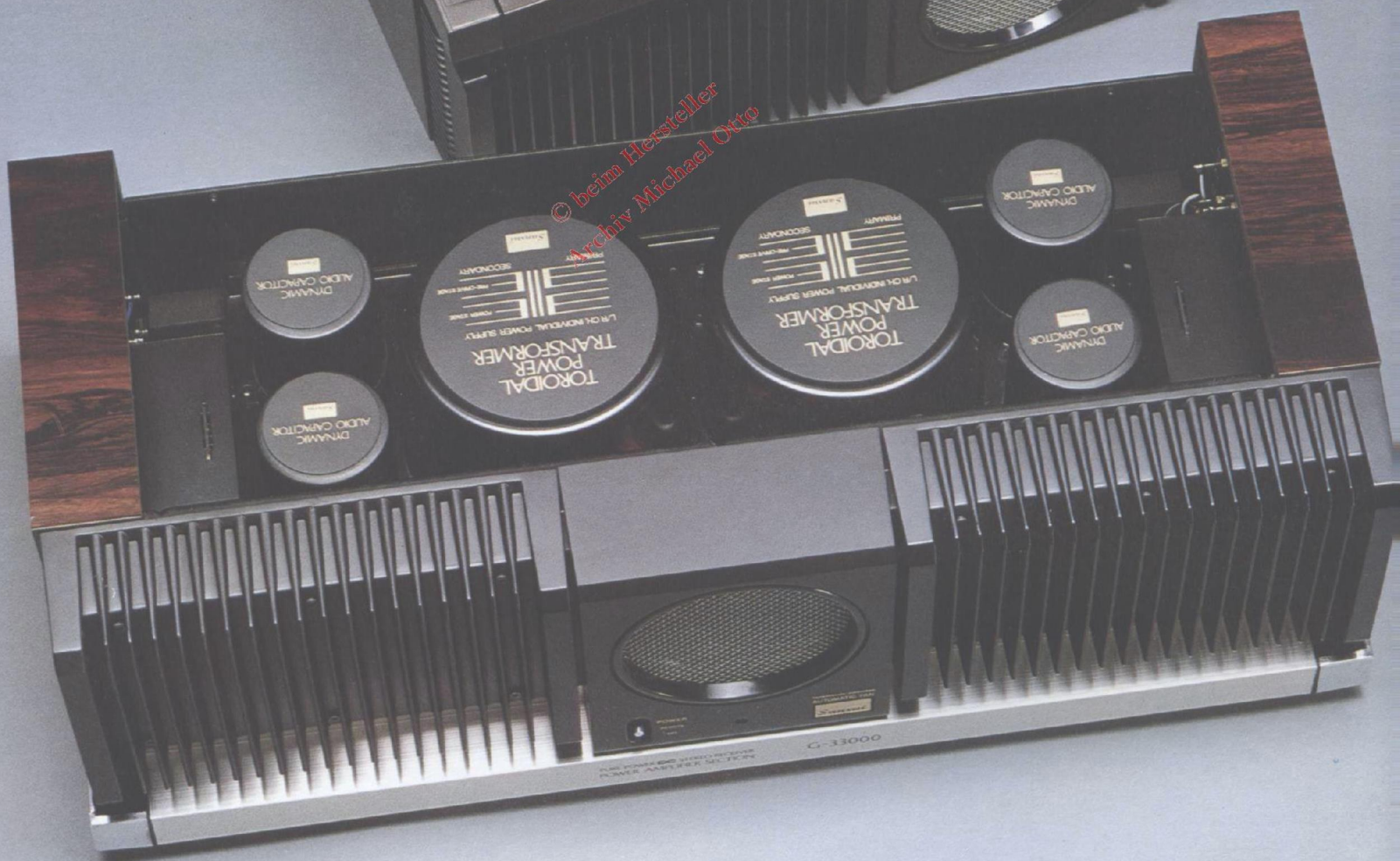
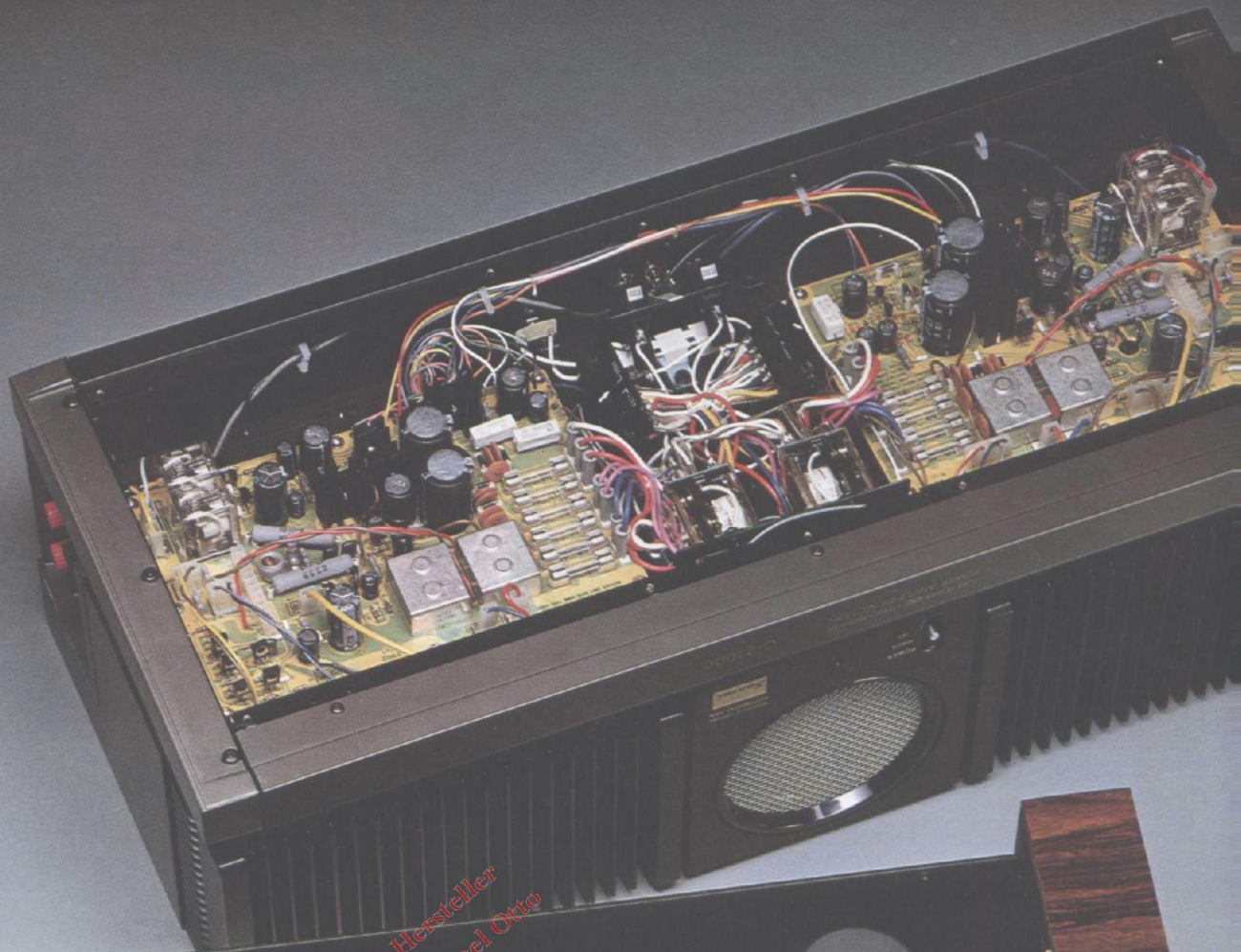
There's no need to worry about it—it is hi-fi. Top-quality tuner performance in both FM and AM in the G-33000/G-22000 is assured by Sansui's strictly hi-fi design policy and by the wide array of special—some newly-developed and exclusive—circuits and components found here.

For better stereo FM there's a Linear-Tracking FM Frontend, five newly-developed ICs for IF, a Sansui-patented Group Delay Equalizer, a New Power Ratio Detector, New Adjacent Channel Filter and New Automatic Noise Filter and more.

And here's an innovation you won't find on any other stereo receiver: the AM section has a selectable WIDE/NARROW IF Bandwidth. Big, *direct-readout* Signal and Tuning meters with greatly improved linearity, a built-in STEREO AM (yes, stereo AM!) adaptor terminal and lots of other surprises are included, too.

They all add up to superb high fidelity performance in both FM and AM in these outstanding stereo receivers from Sansui, where it's *all* hi-fi.

*Measured with both channels driven into 8 ohms, 20 to 20,000Hz, in accordance with U.S. Federal Trade Commission's rule on Power Output Claims for amplifiers.



Pure Power DC Performance: World's Purest Musical Performance

No other receivers in the world have higher slew rates or faster rise times. The amazing 0~300kHz frequency response is a bonus.

Our engineers have argued—and brilliantly proved in the G-33000/G-22000 receivers—that if a power amplifier is strictly pure and free of tonal coloration, phase distortion and other common irregularities, the musical waveforms it reproduces will likewise be pure.

Thus when, say, a cymbal crash is received in the form of an input signal, the Pure Power DC power amplifier of the design which is detailed in the following paragraphs is able to handle it without the slightest detectable change. The sharp, percussive attack of the drumstick, the crisp reverberation of the cymbal bell and its hammered edge, and its shimmering natural decay or trailing off are reproduced at the speaker terminals with all of their original sound components intact.

Power Purity: Sansui Exclusive Diamond Differential DC Circuit.

The vital roles played in power performance by TIM and the hand in-hand factors of slew rate and rise time have been discussed in the preceding pages. Here we'd like to explain, in more detail, how the power amp in the G-33000/G-22000 so effectively avoids phase delay.

A Dual-FET, with thermally matched characteristics, is used in a differential arrangement for the input circuit in each channel. Our new "Diamond Differential DC" (Pat. Pend.) circuit forms the second stage, and a current-differential, push-pull driver completes the power amp. The greatest advantage of the DD/DC circuit is that it can handle an extraordinarily large amount of drive current for a higher slew rate.

The output is OCL with a three-stage, Darlington-connected, push-pull configuration. This amp, one of the most advanced, uses eight extra large, highly linear power transistors connected in parallel in *each channel* (six transistors in the G-22000).

Four-Way Protection & Cooling Fan: No DC component can ever reach speakers.

The G-33000/G-22000 power protection circuitry is elaborate (and so effective that we've applied for a patent):

1) **OVERCURRENT DETECTION PROTECTOR CIRCUIT**—Opens the output circuit to prevent overcurrent flow into power transistors if accidental short-circuit occurs.

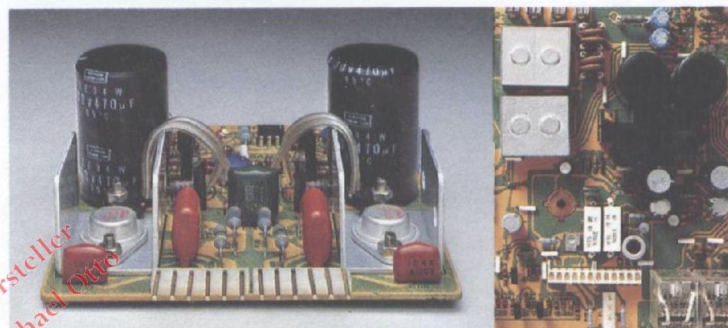
2) **SPEAKER TERMINAL SHORT DETECTION CIRCUIT**—Conventional amps usually have a protection circuit at the output stage of a current mirror circuit; if shorts or overcurrent occur, part of the current is shunted and power transistors protected. But this type of circuit has a disadvantage: the relay works only when the output is over a prescribed value. Not so

with Sansui's new protection circuit; its relay is triggered by *any* speaker short, large or small in output, over a prescribed level.

3) **THERMAL DETECTION PROTECTOR RELAY**—If heat-sink temperatures exceed a prescribed level, this circuit operates a relay to cut off the output and protect the power transistors from failure.

4) **DC DETECTION PROTECTOR CIRCUIT**—Should a DC component over a certain value appear at the output, this circuit instantly triggers the protection relay; there is absolutely no chance that a Direct-Current signal can reach your speakers to cause damage in crossover networks or voice coils.

There is a fifth guarantee of fine performance: a cooling fan at the rear of the power amplifier section automatically operates when the heat of the power transistor block exceeds 65°C, preventing transistor fatigue.



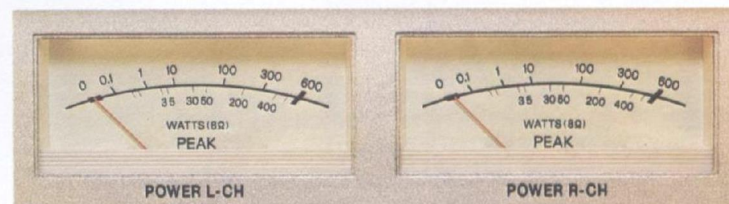
Three Power Transformers: Impressive transient immediacy.

The two channels in the power amplifier section each have an independent power supply system all its own. Two advanced toroidal power transformers, and four electrolytic capacitors (15,000μF each) are included in the ingenious design which ensures completely independent rectifying and voltage-stabilizing for the left and right stereo channels.

The voltage-stabilizing circuit, by the way, has a six-transistor, error-compensation design. A metallized mylar capacitor, coupled with the high-quality electrolytic one, guarantees that internal impedance is kept low in each channel from the very lowest to the ultra high frequencies, with impressive transient immediacy.

Peak Power Meters: Direct instant-by-instant power readout.

Sansui is the first to introduce such precision meters in stereo receivers. Unlike conventional power meters, these feature the same outer-magnet design used in professional types. You can rely on them to indicate instant-by-instant *peak level* power output from 0.1 to 600 watts in each channel.



Sansui's "Straight DC": Every Vital Preamp Block is Pure DC

For the first time in any stereo receivers you have the total assurance of Pure DC performance in every major preamplifier circuit.

DC is the rage, and every major stereo maker seems to be offering it in one form or another in their newest receivers. But are you *positive* that the "other guy's" circuit design really gives you all the DC benefits?

In Sansui's "Straight DC" design, the big advantages of the DC configuration circuitry used in the power amp are extended into every vital amplifier block in the preamp section. The phono equalizer, for instance, has an ICL or Input Capacitor-Less configuration in DC, with as many as 13 transistors per channel. The "flat" amp, too, is purely DC, to give you a level of performance never before attained in any stereo receiver.

Both these preamp sections guarantee outstanding stability and a very high slew rate, along with all the other top-level specifications which add up to pure musical performance. Here are the details:

Dual-FET Differential Input: DC phono equalizer avoids phase distortion.

The circuitry of the phono equalizer using the ICL design and some 13 low-noise transistors *per channel*, includes a Dual-FET differential input circuit with current-source, cascade bootstrapping circuit. This configuration affords high signal-to-noise, improving phase distortion in the low frequencies.

Your records are played with more tonal accuracy because the cascade bootstrapping circuit assures high stability: voltage in the FET input remains constant, hence changes in signal-source impedance cannot cause increased distortion.

Following is a push-pull differential circuit with a current-source emitter-follower, lowering low frequency distortion thanks to its purely symmetrical design. Finally, there is a fully complementary SEPP (Single-Ended Push-Pull) output to ensure low-impedance matching with the following amp stage.

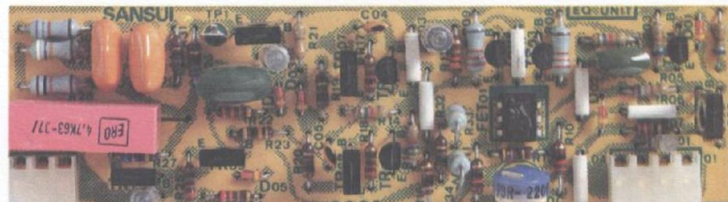
Impressive Specs: 87dB S/N, ± 0.2 dB RIAA from 20 to 20kHz.

Lower impedance in the negative feedback of this equalizer results in the impressive 87dB signal-to-noise ratio. The very accurate RIAA equalization noted in the above headline is the result of advanced circuitry combined with high-precision equalizing components such as metalized film resistors of only 1% tolerance for error, along with inductance-less polypropylene capacitors.

Wide Dynamic Margin: What you play is what you hear.

Loud! Or soft... Or in-between. The dynamic range

of today's disc records is the widest ever, and the G-33000/G-22000 phono circuitry delivers it all without distortion or clipping. Since it's driven by a dual stabilized supply of a high 33.4V, it achieves an exceptionally high phono overload capacity of 350mV.



Pure DC "Flat" Amp: What you hear is what you want.

Highs! Or lows... Or any of the in-between frequencies. A full-range high fidelity audio signal deserves no less than the purest of amplification if you are to enjoy a flat, uncolored response. This is why we've used our ICL/Dual-FET differential/push-pull DC amp design in the "flat" amplifier of the G-33000/G-22000. The amazingly high slew rate, with very low output impedance, help ensure that no tonal coloration spoils the signals before they are amplified by the Pure Power DC amp section.

Triple Tone Control: What you want is what you get.

Bass! Or trebles... Or the all-important midrange frequencies in between. This popular Sansui-exclusive Triple Tone Control gives you a wider range to tonal command than any receiver with just the conventional bass and treble controls.

The Midrange knob lets you dial-in a boosted response for, say, a favorite vocalist, or just as easily dial-in a mid-cut response to de-emphasize, say, an overblown clarinet.

But the main use is in adjusting the tonal quality of the receiver's output to achieve a flat response no matter what the acoustic conditions of your listening room. This unique tone control mechanically floats the potentiometers from the circuit when they are set to their center ("0") clicks.

Conventional controls have more or less resistance deviation when set to "0"—but not these. What you want in precision tonal tailoring is precisely what you get with this improved Sansui (Pat. Pend.) design. Of course, a TONE DEFEAT switch is included for an instant flat response.

