SANSUI EIGHT deluxe

FM/AM SOLID STATE STEREO RECEIVER When it was first introduced, the Sansui EIGHT was the very latest concept in the art of a stereo receiver. Now, Sansui is proud to announce the EIGHT Deluxe, which takes the bold engineering of the EIGHT a major step forward, incorporating new technology that was not even available when the EIGHT was first introduced. For one thing, the EIGHT Deluxe incorporates a pure complementary OCL power amplifier. For another, it has new provisions for extended versatility, including connection jacks for both a noise reduction adaptor and a 4-channel adaptor. In short, the EIGHT Deluxe represents the finest of Sansui's advanced receiver technology, combining in one handsome unit the very finest integrated stereo amplifier and FM/AM stereo tuner. Features you'll appreciate in the EIGHT Deluxe include a super sensitive and selective FM tuner, that features three dual-gated MOS FET's and a 4-gang tuning capacitor. There is an extremely low noise and low distortion control amplifier, with elaborate 3-stage 4-transistor equalizer amplifier, the latter including a sophisticated SEPP output stage for astoundingly wide phono dynamic margin. Then there are Sansui's unique Triple Tone Controls for total sound control, and also a stable, low distortion power amplifier featuring an advanced pure complementary OCL output stage. The EIGHT was the finest receiver Sansui ever made. But the EIGHT Deluxe does it one better. Obviously, the engineers at Sansui are never content to rest on their laurels.

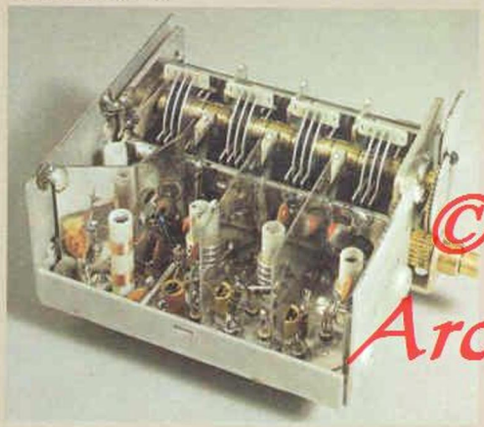
Sansui

The Finest Stereo Receiver Ever Made

TUNER SECTION

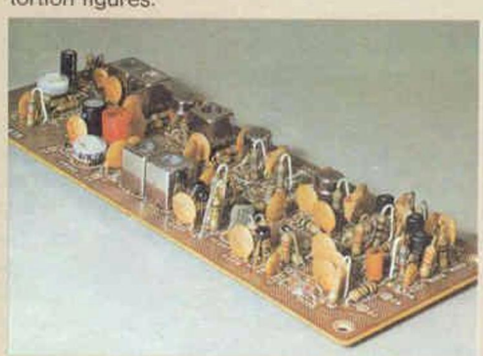
1 SUPER-SENSITIVE FM FRONTEND:

FM reception with the EIGHT Deluxe has no parallel. Sansui has employed three expensive, low-noise dual-gated metal oxide semiconductor (MOS) FETs for its two RF amplifiers and one mixer amplifier. This technology, coupled with a 4-gang frequency linear variable capacitor and two-stage automatic gain control circuit, means that the EIGHT Deluxe offers unusually superior intermodulation distortion and image ratio characteristics. Moreover, this high performance level is also evident in the receiver's high sensitivity (1.7μV, IHF), which permits the receiver to pull in even weak FM stations with total hi-fi clarity.



2 THREE IC IF AMPLIFIER:

The FM IF amplifier in the EIGHT Deluxe is a masterpiece of efficiency. It boasts a high degree of phase linearity since it combines four bi-resonator ceramic filters and three IC's and thus automatically corrects any phase deviation. It also makes possible a high 80dB selectivity and an extremely desirable 1.5dB capture ratio. What's more, the high degree of phase linearity enhances the tuner's stereo separation and distortion figures.



3 SHARP-CUTTING MULTIPLEX CARRIER LEAK FILTER:

Included in the EIGHT Deluxe is an FM multiplex demodulator circuit that contains a two-stage LC filter with sharp cut-off characteristics. This feature prevents the leakage of the FM multiplex carrier as well as resulting beat interference and intermodulation.

4 FM MUTING SWITCH AND ADJUSTOR:

Like most high-quality Sansui receivers, the EIGHT Deluxe is provided with a muting circuit to mute inter-station tuning noise on the FM band to permit pleasant noise-less tuning. Situated on the front panel, the special switch for this circuit may be switched off when you desire to tune in a weak station. A control provided on the rear panel permits you to adjust the muting level to the desirable level in your area, meaning that you can prevent the muting of your favorite stations that may be weak.

5 WIDE DIAL WITH LINEAR FM SCALE:

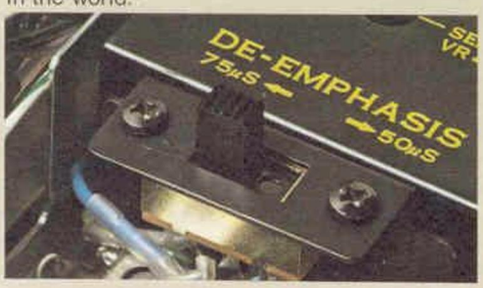
Tuning the EIGHT Deluxe is easy and precise, thanks to a high-precision frequency linear 4-gang variable capacitor that permits an evenly-graduated linear scale for the FM band. This band, proceeding in 250KHz steps from 88 to 108MHz, is placed on an easy-to-read wide dial that is fashioned out of highly-transparent scratch-free smoked glass. The dial features a unique blackout design, as well as a pointer that lights up during tuning.

6 LARGE TUNING METERS:

Two large meters aid in obtaining pinpoint FM tuning accuracy. One is used to indicate the strength of the FM signal being received. The other—a center tuning meter—permits the operator to tune the tuner circuit at the center of the discriminator where distortion is at a minimum.

7 FM DE-EMPHASIS SWITCH:

An FM de-emphasis switch is provided inside the chassis to allow changing the FM de-emphasis characteristic between 50μ sec and 75μ sec. This enables the EIGHT Deluxe to reproduce FM signals exactly as broadcast anywhere in the world.

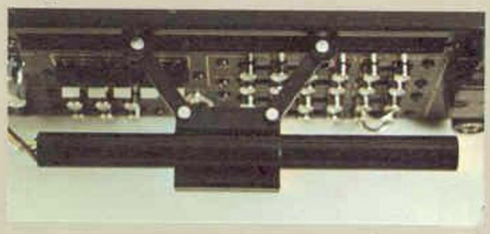


8 SUPERIOR AM TUNER:

The quality AM tuner section in the EIGHT Deluxe is the equal of its FM tuner. It includes a one-stage RF amplifier and a 3-gang tuning capacitor for RF amplification, and also employs a bi-resonator Jaumann type ceramic filter in its IF amplifier, the latter for increased sensitivity and selectivity. It also features a two-stage LC type whistle filter to cut out beat interference by adjacent stations.

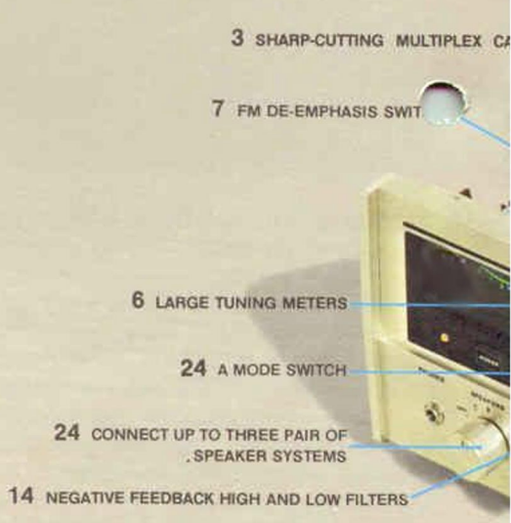
9 UNIQUE PANTOGRAPH ANTENNA:

Sansui has employed a unique pantograph design for its AM bar antenna. This not only permits free adjustment of the antenna direction, but also folds into the back panel of the receiver for protection against careless handling.



10 SMOOTH TUNING DIAL POINTER:

The tuning dial pointer moves with unusual smoothness thanks to the use of nylon gears and a large flywheel.

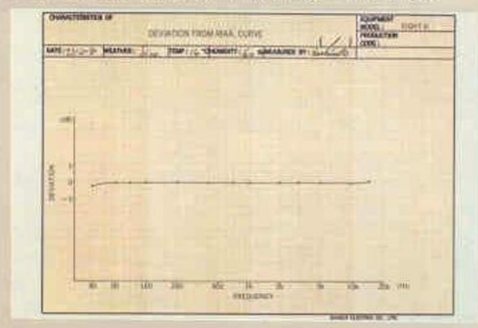


PREAMPLIFIER SECTION

11 THREE-STAGE 4-TRANSISTOR EQUALIZER:

No other receiver in the EIGHT Deluxe price range can equal the design of its phono equalizer amplifier. Sansui has used an advanced three-stage 4-transistor configuration, which includes, in the first stage, a carefully-selected silicon PNP transistor, and, in the third stage, a single-ended push-pull complementary circuit constructed of two transistors. Such workmanship gives the equalizer amplifier an exceptionany high input capability—300mV RMS (with total harmonic distortion of 0.2%) or 840mV peak to peak. This, of course, contributes to a very wide dynamic margin, while the entire equalizer amplifier itself is designed for superior signal-to-noise and distortion specifications.

It also means that the EIGHT Deluxe delivers a sound that is extremely close to perfection. That is, the total deviation from the RIAA equalizer characteristic—a nominal standard of perfection—is kept to ±1.0dB throughout 30—15,000Hz. This extremely low figure is completely inaudible to the human ear. The equalizer amplifier in the EIGHT Deluxe therefore contributes no influence whatsoever on the original tonal quality of the program source.



12 NEGATIVE FEEDBACK TYPE CONTROL AMPLIFIER:

The control amplifier enables various key adjustments of reproduced sound in the EIGHT Deluxe. It is a heavy, a two-stage negative feedback amplifier utilizing a low-noise PNP transistor for the first stage. Among its many key virtues are low noise and extremely low distortion.

13 TRIPLE TONE CONTROL CIRCUIT:

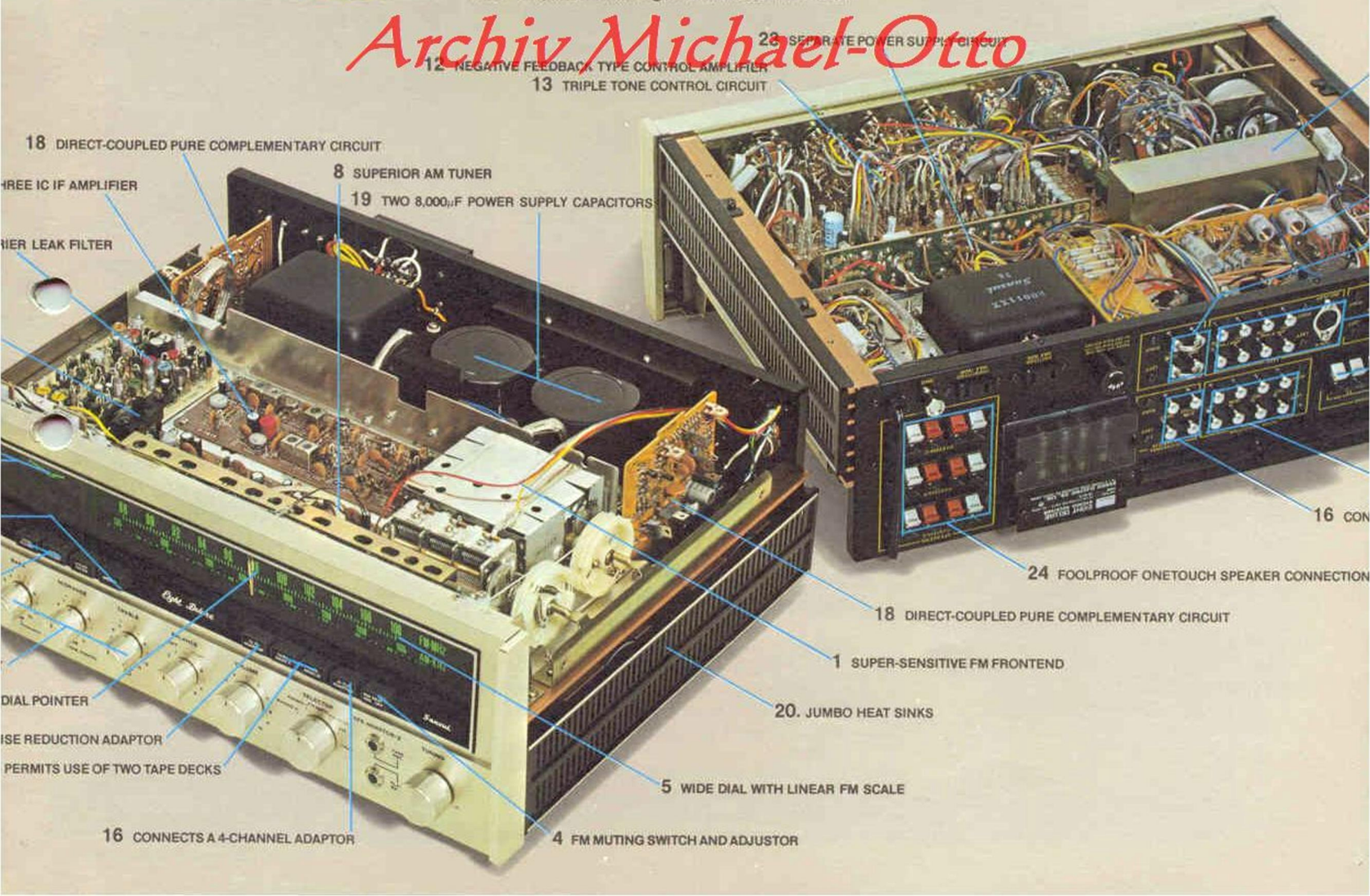
The EIGHT Deluxe is equipped with a Triple Tone Control circuit that one is apt to find only on the finest quality receivers. A low-distortion two-stage E-B NF (emitter-to-base negative feedback) circuit in design, it permits control of the strength of the bass and treble notes in steps of 3dB each, and that of the midrange notes in steps of 1dB each. Such control means that unusually precise correction of program source irregularities and room acoustics is possible with the EIGHT Deluxe.

14 NEGATIVE FEEDBACK HIGH AND LOW FILTERS:

The EIGHT Deluxe is equipped with emitter-follower negative feedback high and low filter circuits utilizing transistors designed exclusively for this purpose. These filter circuits boast a sharp 12dB/oct. cutoff characteristic.

15 PERMITS USE OF TWO TAPE DECKS:

The EIGHT Deluxe is equipped with two tape monitor circuits. One of these is provided both with rear-panel pin jack terminals and front-



panel phone-type 3-pin jacks. This means that you may connect two tape decks to the receiver and record, playback and monitor on either. Additionally, by the use of the new TAPE MONITOR switch, a recorded tape can be copied from one deck to the other. Of course, monitoring a recording as it is being made is also possible on either tape deck.

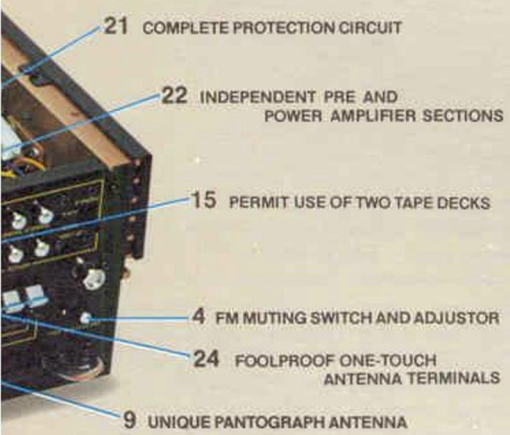
16 CONNECTS A 4-CHANNEL ADAPTOR:

There may come a time when you wish to upgrade the EIGHT Deluxe to 4-channel capability. When you do, the unit is ready. It includes input terminals that are provided on the rear panel to connect an external 4-channel adaptor or 4-channel decoder rear amplifier. If this input is not utilized for a 4-channel adaptor, it may be used to hook up a third stereo tape deck.

17 CONNECTS A TAPE RECORD/PLAY-BACK NOISE REDUCTION ADAPTOR:

Even greater versatility for advanced stereo uses is possible with this adaptor, that permits you to hook up a noise reduction adaptor like the latest Dolby type. Exclusive inputs are provided for this unit that will help you enjoy hiss-free recording and playback. They enable you to connect tape decks and the unit direct to the receiver, then select either deck to record or play back through the unit, or bypass it altogether.

11 THREE-STAGE 4-TRANSISTOR EQUALIZER



17 CONNECTS A TAPE RECORD/PLAY BACK NOISE REDUCTION ADAPTOR

ECTS A 4-CHANNEL ADAPTOR

ERMINALS

POWER AMPLIFIER SECTION

18 DIRECT-COUPLED PURE COMPLEMENTARY CIRCUIT:

The output stage of the power amplifier adopts the advanced pure complementary design which arranges PNP and NPN transistors symmetrically to achieve ideal phase inversion for push-pull operation. Such circuitry helps to minimize the amplifier's crossover distortion and switching pulse content during low-amplitude operation; it also contributes to its significantly reduced distortion factor and increased linearity. The result is a power amplifier that is able to provide faithful amplification of signals at all amplitudes—and with an absolute minimum of distortion and best musicality.

19 TWO 8,000μF POWER SUPPLY CAPACITORS:

Prodigious is the word for the two power supply capacitors used in the EIGHT Deluxe. Each delivers 8,000μF which adds up another way to 200 watts in music power, or 80 watts per channel of continuous power, with a distortion factor of 0.2%, and a 5 to 40,000Hz power bandwidth. Even when driven for its maximum power output, the EIGHT Deluxe reproduces clean, distortion-free sound with unwavering steadiness. These extra-large capacitors have also minimized the pop noise usually heard when the amplifier power is turned on.

20 JUMBO HEAT SINKS:

Another EIGHT Deluxe feature: jumbo heat sinks that work to ensure the safety of the power transistors even when the amplifier is driven for the maximum power output.

21 COMPLETE PROTECTION CIRCUIT:

The stability and safety of a direct-coupled amplifier depends upon the level of temperature compensation as well as the performance of the differential amplifier that protects the power transistors. The EIGHT Deluxe is designed for *extra* stability and safety. It not only employs extra transistors exclusively for temperature compensation, but incorporates a special two-stage differential amplifier. It also has six quick-acting fuses and a special current limiter circuit for further protection of the power transistors in the unlikely possibility of an overcurrent. Since the EIGHT Deluxe's output-capacitorless power amplifier reproduces very, very low frequencies down to the DC range, the EIGHT Deluxe is also equipped with a speaker protection circuit that utilizes a relay to prevent direct current from flowing into the speaker systems (and again in the unlikely event that the power transistors should be damaged).

22 INDEPENDENT PRE AND POWER AMPLIFIER SECTIONS:

Both preamplifier and power amplifier sections of the EIGHT Deluxe have no peer for versatility or performance. They are designed to permit separate usage in an advanced electronic crossover stereo set-up where separate power amplifiers drive the woofer, midrange and tweeter. Used separately, the preamp section becomes a very high-performance control amplifier for professional tape recording engineers.

23 SEPARATE POWER SUPPLY CIRCUIT:

The EIGHT Deluxe is equipped with independent power supply circuits for the output stage, driver stage, control amplifier, head amplifier and tuner. Except for the circuit for the output stage, all are expensive stabilized power supply circuits that deliver unfluctuating power of an optimum level to each section.

OTHER FEATURES

24 FULL SYSTEM OF ACCESSORY CIRCUITS:

1) A mode switch for STEREO/MONO.
2) Two phono input circuits. The input impedance of the second circuit can be switched over between 30 and 50 kΩ
3) Foolproof one-touch antenna and speaker connection terminals.
4) Program source indicators.
5) FM stereo indicator.
6) 300Ω/75Ω antenna terminals.
7) Connects up to three pairs of speaker systems. A front panel rotary control lets you choose between A, B, C, A+B or A+C.

The Eight Deluxe Gives You a Demonstrable Technical Superiority

ALL-STAGE DIRECT-COUPLED OCL SEPP OUTPUT CIRCUIT

Most conventional hi-fi amplifiers—especially receivers—use a SEPP (single-ended push-pull) output circuit, as indicated in Fig. 1. In such a circuit, the output signal appears at neutral point (B). However, since half of the power supply voltage +Vcc is applied to that point, connecting a speaker directly between that point and point (C) (ground) will cause large amounts of DC current to flow into the speaker voice coil and burn it.

To prevent this in an actual circuit, a capacitor, C, is inserted between the speaker terminals and the transistors. This cuts out DC content and allows only the AC signal content to flow from point (B') into the speaker.

This capacitor, however, tends to obstruct the flow of very low-frequency signals near DC, it also has resistive and inductive components which become influential in the very high frequency range. This adversely affects the amplifier's frequency response, damping factor and transient response characteristics. Thus, since a true top-grade amplifier should provide the finest amplification possible, the question becomes how to eliminate the capacitor.

Sansui's solution is an all-stage direct-coupled OCL SEPP output circuit that applies a plus voltage to point (D) and a minus voltage of the same magnitude to point (F). This renders the DC potential of neutral point (E) nil and enables a speaker to be connected directly between that point and the ground.

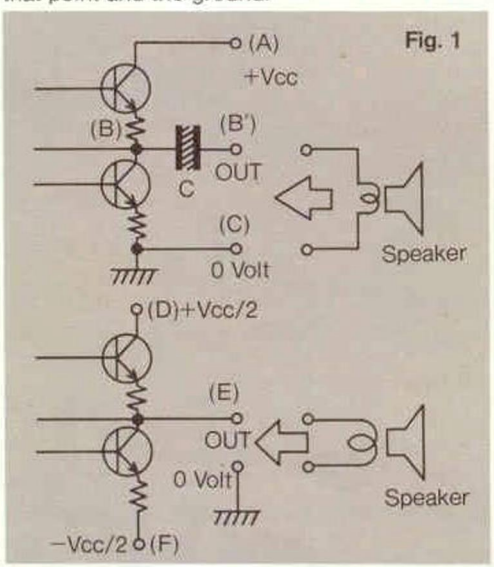
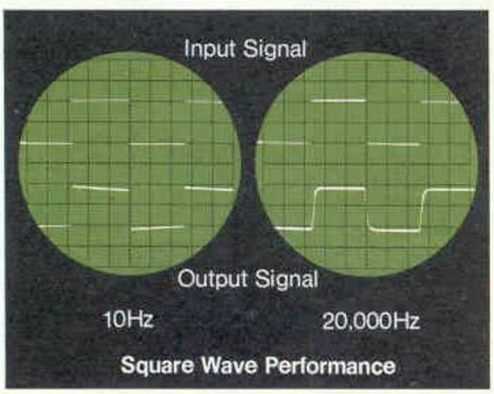


Fig. 1



Since no capacitor now exists to raise the circuit impedance at very low and high frequencies, it is possible to drive a speaker directly with very low internal impedance with stability for signal frequencies near the DC range. Very flat, linear amplification is achieved over a wide bandwidth from super low to high frequencies, while the transient response also remains unaffected (see oscillograms of square wave amplification by the EIGHT Deluxe.) The result is well-damped, well-defined and clear sound.

PURE COMPLEMENTARY DARLINGTON CIRCUIT

The output circuit of the power amplifier built in to the EIGHT Deluxe also benefits from an advanced technique called *a pure complementary Darlington circuit*. This is shown in Fig. 2.

In the past it has been common to connect NPN transistors (TR'3, TR'4) after the complementary symmetrical circuit comprising a NPN transistor (TR'1) and a PNP transistor (TR'2), as shown in the right half of the diagram.

Such a circuit, however, is not entirely symmetrical across the base line leading to the speaker terminals, and thus generates a small amount of notch distortion. Although you might consider this distortion negligible for all practical purposes, it certainly has no place in an amplifier the quality of the EIGHT Deluxe. Sansui has eliminated it by utilizing a pair of matching NPN/PNP transistors (TR3, TR4) for the final output stage transistors as shown in the second half of Fig. 2, and thus created a totally symmetrical pure complementary Darlington circuit.

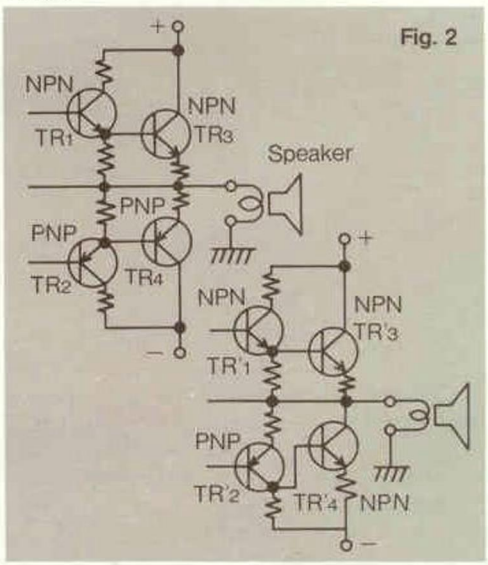


Fig. 2

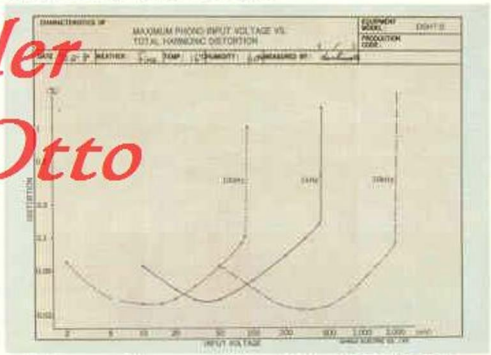
WIDE DYNAMIC MARGIN OF PHONO INPUT CIRCUIT

New advances in recording technology have led to many disc records with a surprisingly wide dynamic range. These records can be reproduced without distortion, but only through a stereo amplifier with an equally wide dynamic range.

Dynamic range is usually understood as the range of signal strength from the very weakest to the very strongest sound. Thus the dynamic range of an amplifier is the range of loudness level it can reproduce. Its lowest level would be determined by the loudness of the noise and hum it might generate; its highest level would be regulated by the maximum output capability of its amplifier.

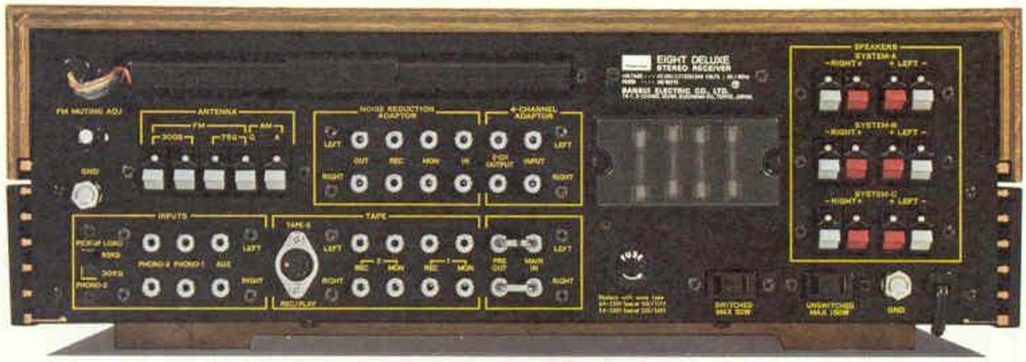
The maximum output capability of the amplifier is not the sole determining factor in the reproduction of disc records; the dynamic range of the phono equalizer amplifier has even a greater bearing. With an equalizer amplifier of a narrow dynamic range, high-amplitude signals would simply saturate it or increase distortion. The increased distortion could never be eliminated in the subsequent amplifying stages.

Since the sound volume control is situated between the phono equalizer amplifier and the control amplifier, the output of the cartridge cannot be regulated with the sound volume control. It therefore becomes necessary to increase the maximum input capability of the equalizer amplifier. This can be achieved by raising the DC voltage supplied to the equalizer amplifier. But it can be done only if other factors are taken into consideration—not the least being the utilization of improved parts and the stability of the equalizer amplifier circuit.



The equalizer amplifier of the EIGHT Deluxe uses a low-noise transistor having a very high VCEO (maximum rated voltage between the transistor's collector and emitter), to which a high 46-volt voltage is supplied by a constant-voltage power supply circuit. As a result, the equalizer amplifier possesses a very high maximum input capability (840mV peak-to-peak) as designated in the receiver's specifications.

Next step: The average good stereo record has a difference of about 20dB (10 times) between its average record level and its highest level. Some hi-fi records may even have a difference of 30dB (30 times). If you use a phono cartridge having a 5mV output voltage rating, it would generate an output voltage of 150mV maximum. Converted into a peak-to-peak value, this would mean approximately 420mV. A phono equalizer amplifier is thus required to have a higher maximum input capability than this figure. The 840mV for the EIGHT Deluxe is substantially higher, allowing the amplifier to take in the loudest signals on a record with ease.

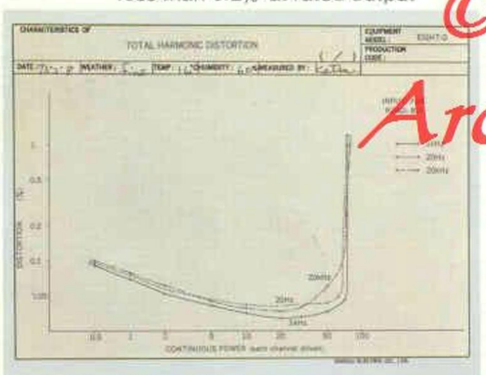


SPECIFICATIONS

AUDIO SECTION

POWER OUTPUT (AT RATED DISTORTION)
- MUSIC POWER (IHF)
  - 200 Watts into 4Ω at 1,000Hz
  - 160 Watts into 8Ω at 1,000Hz
- CONTINUOUS POWER
  - each channel driven
    - 80/80 Watts into 4Ω at 1,000Hz
    - 60/60 Watts into 8Ω at 1,000Hz
  - both channels driven
    - 55 + 55 Watts into 8Ω at 1,000Hz
  - both channels driven (from 20 to 20,000Hz)
    - 50 + 50 Watts

TOTAL HARMONIC DISTORTION
- POWER AMPLIFIER ONLY
  - less than 0.2% at rated output
- PREAMPLIFIER ONLY
  - PHONO to preamp output
    - less than 0.1% at rated output
  - AUX to preamp output
    - less than 0.1% at rated output
- OVERALL
  - AUX to poweramp output
    - less than 0.2% at rated output



INTERMODULATION DISTORTION
(70Hz : 7,000Hz = 4 : 1 SMPTE method)
- POWER AMPLIFIER ONLY
  - less than 0.3% at rated output
- OVERALL
  - AUX to poweramp output
    - less than 0.3% at rated output

POWER BANDWIDTH (IHF)
- 5—40,000Hz

FREQUENCY RESPONSE
- POWER AMPLIFIER ONLY
  - 5—50,000Hz, +0.5dB −1dB
- OVERALL
  - AUX to poweramp output
    - 10—40,000Hz, +1.0dB −1.5dB

EQUALIZATION (AT REC OUT)
- RIAA curve 30—15,000Hz, ±1.0dB

LOAD IMPEDANCE
- 4 to 16Ω

DAMPING FACTOR
- approx. 60 at 8Ω load

CHANNEL SEPARATION
(AT RATED OUTPUT 1,000Hz)
- POWER AMPLIFIER ONLY
  - better than 60dB
- OVERALL
  - PHONO to poweramp output
    - better than 50dB
  - AUX to poweramp output
    - better than 50dB

HUM AND NOISE (IHF)
- POWER AMPLIFIER ONLY
  - better than 90dB
- OVERALL
  - PHONO to poweramp output
    - better than 70dB
  - AUX to poweramp output
    - better than 80dB

INPUT SENSITIVITY
(for rated output at 1,000Hz)

PHONO-1	2.5mV 50kΩ
PHONO-2	2.5mV 30kΩ, 50kΩ
MAX. INPUT CAPABILITY	more than 300mV RMS at 0.2% distortion
AUX	100mV 50kΩ
TAPE MONITOR 1, 2	100mV 50kΩ
N.R. ADAPTOR	100mV 50kΩ
4-CH ADAPTOR	100mV 50kΩ
POWER AMPLIFIER INPUT	800mV 100kΩ

OUTPUT LEVEL

TAPE MONITOR	
(DIN)	30mV
(Pin)	100mV
(Phone type)	100mV
PREAMPLIFIER	800mV
MAX. OUTPUT	3V at 0.2% T.H.D.

CONTROLS

BASS	+15dB, −15dB at 50dB (3dB step)
MIDRANGE	+5dB, −5dB at 1,000Hz (1dB step)
TREBLE	+15dB, −15dB at 15,000Hz (3dB step)

FILTERS

LOW	−10dB at 50Hz (12dB/oct.) (−3dB at 90Hz)
HIGH	−10dB at 15,000Hz (12dB/oct.) (−3dB at 8,500Hz)

LOUDNESS
+10dB at 50Hz, +8dB at 10,000Hz

TUNER SECTION

FM:

TUNING RANGE	88 to 108MHz
SENSITIVITY (IHF)	1.7μV
TOTAL HARMONIC DISTORTION	
	0.3% (mono)
	0.5% (stereo)
SIGNAL TO NOISE RATIO	better than 65dB
SELECTIVITY	better than 80dB
CAPTURE RATIO	1.5dB

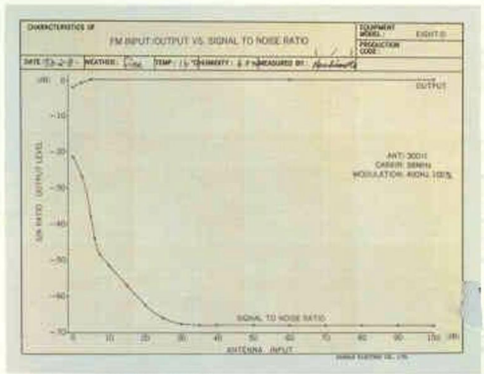


IMAGE REJECTION
- better than 100dB at 98MHz

IF REJECTION
- better than 100dB at 98MHz

SPURIOUS RESPONSE REJECTION
- better than 100dB at 98MHz

SPURIOUS RADIATION
- less than 34dB

STEREO SEPARATION
- better than 35dB at 400Hz

FREQUENCY RESPONSE
- 30 to 12,000Hz +0.5dB, −1.5dB

ANTENNA INPUT IMPEDANCE
- 300Ω balanced, 75Ω unbalanced

AM:

TUNING RANGE
- 535 to 1,605kHz

SENSITIVITY (BAR ANTENNA)
- 48dB/m at 1,000kHz

SELECTIVITY
- better than 30dB at 1,000kHz

IMAGE FREQUENCY REJECTION
- better than 100dB/m at 1,000kHz

IF REJECTION
- better than 100dB/m at 1,000kHz

GENERAL

SEMICONDUCTORS
- 85 Transistors; 44 Diodes; 3 FET's; 3 IC's; 4 Zener Diodes

POWER REQUIREMENTS
- VOLTAGE
  - 100, 117, 220, 240V 50/60Hz
- CONSUMPTION
  - 140 Watts (rated), 420VA (max.)

DIMENSIONS
- 447mm (17⅝")W × 140mm (5⅝")H × 328mm (12¹⁵⁄₁₆")D

WEIGHT
- NET 16.2kg (35.7 lbs.)
- SHIPPING WEIGHT 19.1kg (42.1 lbs.)

Design and specifications subject to change without notice for improvements.

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