PIONEER®

SX-1050

High Sensitivity, Outstanding Circuit Design in A New AM/FM Receiver.

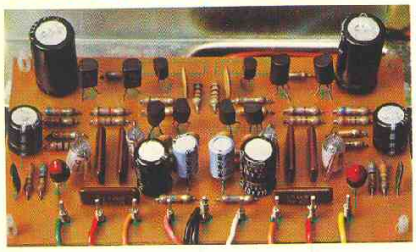
The Pioneer SX-1050 puts every significant AM/FM receiver feature together in a strikingly handsome package. From a highly sensitive FM front end, a high selectivity IF section, to the low distortion, big power amplifier section that delivers the outstanding **continuous power output of 120 watts* per channel, min. RMS at 8 ohms from 20 Hertz to 20,000 Hertz, with no more than 0.1% total harmonic distortion,** the SX-1050 radiates the excellence that the stereo buff has come to expect from Pioneer electronics. Such features as a phase locked loop IC in the MPX section, the audible multipath switch that helps eliminate FM wave interference, and the highly advanced equalizer section are not just "extra" touches in this receiver, but exemplify the considerable thought that has been applied to the overall design and circuit of the SX-1050. Other important contributions to flawless sound include the Pioneer Twin Tone Control, the Toroidal-core transformer, the two very large capacitors in the power supply section – all calculated to reproduce the sound spectrum with stability and full component protection in the inimitable Pioneer style.

*Walnut veneered top and side panels are used in the construction of this cabinet.

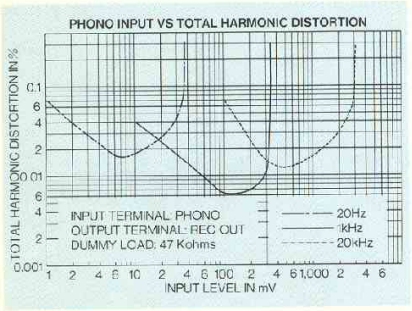
*Measured pursuant to Federal Trade Commission's Trade Regulation Rule on Power Output Claims for Amplifiers. (Applicable to the U.S.A. only)

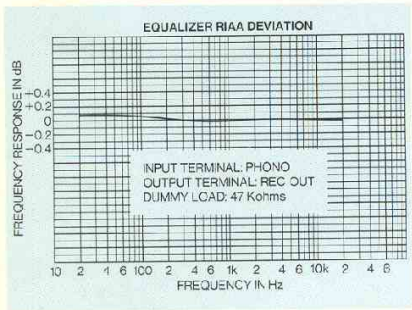
SX-1050

RELIABLE EQUALIZER SECTION USING 1-STAGE DIFFERENTIAL AMP AND SEPP AT FINAL STAGE (RIAA DEVIATION ±0.2dB)

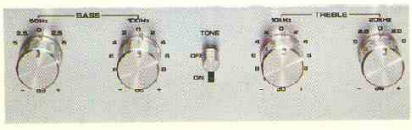


The SX-1050's equalizer section consists of a first stage PNP differential and final stage SEPP circuit, both consisting of 5 transistors per channel. Use of the SEPP circuit in the final stage has made possible a lower output impedance, which suppresses effects of the load impedance and obtains a high dynamic range. A high voltage of plus-minus split power (±30V) is supplied to this circuit to boost the PHONO overload level to 300mV (1 kHz, T.H.D. 0.1%) against an input sensitivity of 2.5mV, allowing for sufficient dynamic margin. The selected parts employed in the RIAA elements (resistor tolerance ±1%, capacitor tolerance ±2%) ensure a RIAA deviation of only ±0.2dB for record reproduction.

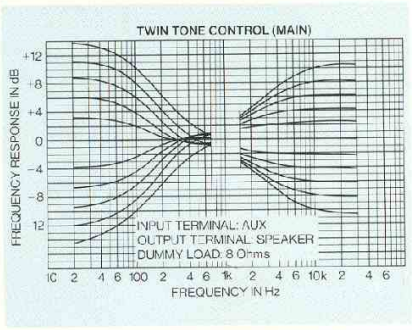


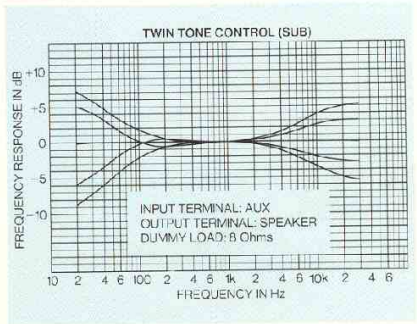


PIONEER TWIN TONE CONTROL WITH EXPANDED CONTROL FUNCTIONS



A high performance plus-minus split power supply is provided in the control circuit while an A-class operation SEPP circuit is used as the input buffer amplifier to reduce output impedance. This enables a low resistance volume control to be used in the following stage to help minimize noise and to prevent adverse high musical spectrums that are often caused by input capacitance of the next stage. Then, in the rear stage of the volume control is a flat amplifier with an FET (1-stage FET, composed of two transistors) that is used to prevent noise increase caused by level change of the volume control in the previous stage. This tone control circuit is a Pioneer exclusive, and by combining the main and the sub controls, an extraordinary degree of tone control is possible. Moreover, the tone ON/OFF switch can be used to flatten tone control as well as to check the effectiveness of the twin tone control.



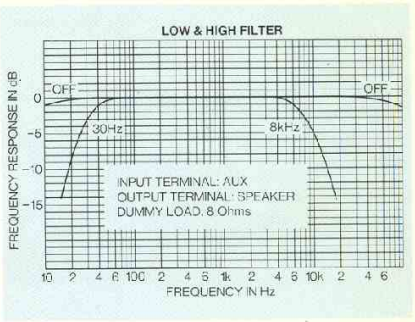


HIGH PERFORMANCE DECIBEL INDICATOR WITH 32-STEP VOLUME ATTENUATOR

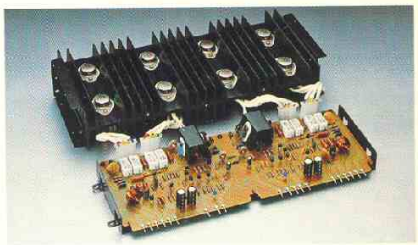
A 32-step volume attenuator with decibel indicator is employed for attenuation reading. The gang error of this feature between left and right channels is as precise as 0.5dB over the entire range of 0 to −70dB. Additionally, a lever type muting attenuator with two-position is used for instantaneous volume attenuation of 0dB and −20dB, as well as for convenient tone adjustment.

LOW CUT AND HIGH CUT FILTERS TO SHARPLY CUT UNNECESSARY FREQUENCY RANGE

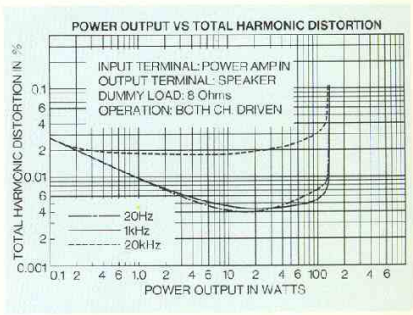
The low cut filter (30Hz) and high cut filter (8kHz) have sharp curve characteristics of 12dB/oct. They thus can cut unnecessary frequency range without impairing tonal quality.



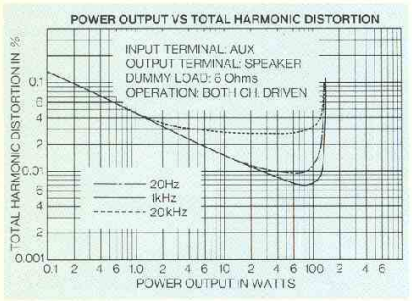
LOW DISTORTION, HIGH POWER AMPLIFIER SECTION

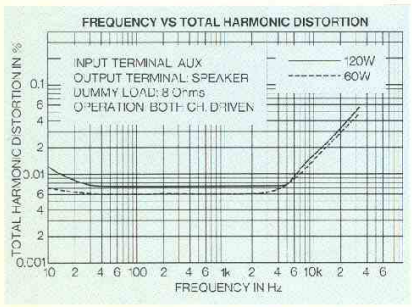


The SX-1050 is designed to perform with low distortion and high quality even when used with a small power output. However, the receiver delivers the big **continuous power output of 120 watts* per channel, min. RMS at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.1% total harmonic distortion.** The circuit construction of the power amplifier section is designed to obtain DC stability, high gain and low distortion by the use of a 2-stage differential amplifier. The pre-driver stage is a class-A operation push-pull circuit that employs a current mirror circuit. The drive and output stages are the push-pull type with a 2-stage Darlington Direct-Coupled OCL circuit to ensure steady operation with low distortion from small to very large output levels. The parallel push-pull circuit provided in the output stage radiates undesirable heat effectively, and can restrict the transistors' operational point to their linear region.

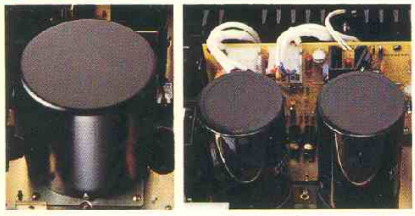


*Measured pursuant to the Federal Trade Commissi

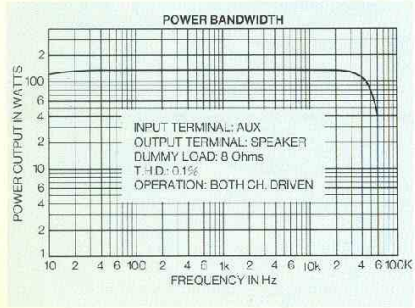




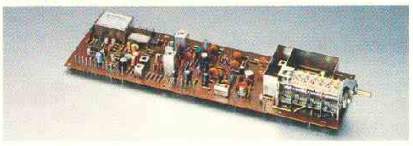
TOROIDAL-CORE TRANSFORMER AND TWO 22,000μF CAPACITORS IN THE POWER SUPPLY SECTION



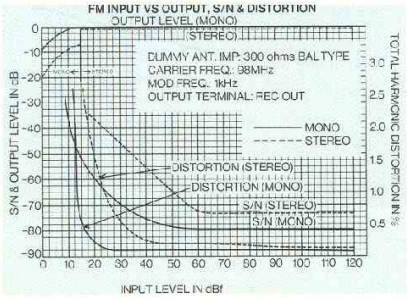
High power sound reproduction is assured by the use of a large Toroidal-core transformer and a pair of large 22,000μF capacitors employed in the power supply section. This ensures the improvement in voltage regulation and the extension of high fidelity sound reproduction to the low frequency range. Furthermore, a protection circuit with a fuse and power relay is employed in the primary section to prevent rush current so that high power sound reproduction can be enjoyed without giving bad effect on other equipment.



SENSITIVE FM FRONT END WITH EXCELLENT INTERMODULATION AND HIGH INPUT CHARACTERISTICS

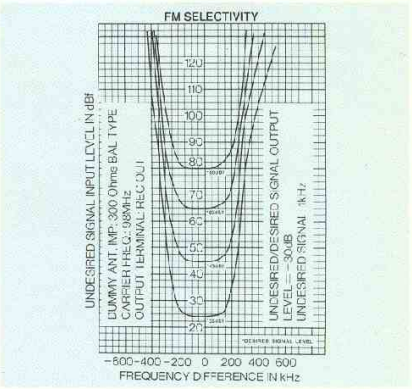


The front end performs the most important function in the tuner. This is because it must possess high sensitivity to complement the weakness of waves that occur in the weak electric field area, as well as excel in interference-wave-eliminating capability with respect to the strong electric field area. For instance, when two strong adjacent waves appear in an electric field there arise harmonic components in the non-linear section of the tuner, and the interference generated between these components will usually produce what is called a "ghost" station. Thus, if a desired station exists near the "ghost," the reception of the desired signals is adversely affected. To cope with this annoying "intermodulation," the SX-1050 uses a pair of dual gate MOS FETs in both the RF amplifier and mixer, and in combination with the precision 4-gang variable capacitor. This means that the tuner section of this outstanding receiver boasts of extraordinarily high sensitivity and intermodulation characteristics that work to prevent adverse effects emanating from interfering waves. An addition to this superb circuit in the SX-1050 is a buffer circuit employed in the local oscillator to stabilize oscillation, which mean that local oscillation signals are fed into the mixer in such a way as not to affect the antenna input signals. The result is that the local oscillation circuit is not adversely influenced by excessive input signals, interference between antenna input signals and local oscillating signals is prevented, and the tuner performs with outstanding stability.



HIGH SELECTIVITY IF SECTION WITH THREE 2-ELEMENT CERAMIC FILTERS AND LOW DISTORTION, LOW NOISE RATIO DETECTING SECTION

The tuner's IF section consists of three two-element ceramic filters with excellent phase characteristics, a differential amplifier IC, and another IC that utilizes more than 200 elements. The use of a limiter leads to high selectivity and stability against alternate channel interference. Finally, a ratio detector with a differential amplifier IC is provided in the front stage to ensure low distortion and low noise.

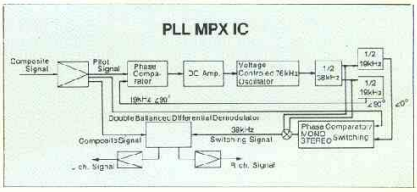


ANTI-BIRDIE FILTER TO PREVENT BEAT INTERFERENCE BY ADJACENT STATIONS

Beat interference from adjacent stations away from 200kHz is prevented in the SX-1050 because an anti-birdie filter is employed before feeding the output of the detector into the MPX section to eliminate unnecessary high frequency components. The result of this filter is a major contribution to clean tonal quality and the suppression of various adverse effects often caused by the elimination of interference to the MPX stage.

NEW PLL (PHASE LOCKED LOOP) IC FOR STABLE STEREO PERFORMANCE IN THE MPX SECTION

In all FM stereo broadcasts, mixed left and right signals are separated into left signals and right signals, with the MPX circuit employed for stereo separation in a complex operation that is often influenced by temperature changes. Pioneer's way of handling this difficult technical problem is to employ a PLL (Phase Locked Loop) IC in the MPX circuit that corresponds to the automatic control of separation and distortion stability. A PLL is a loop circuit that complements the drift of switching signals, so that the MPX switching signals produced in the tuner are always in the same phases with the pilot signals transmitted from the broadcast station. The circuit is impervious to temperature fluctuation. Pioneer has also used another innovation in the SX-1050: a new high gain IC in the PLL circuit that contributes to excellent separation characteristics. The addition of a low pass filter with sharp characteristics leads to a very flat frequency range and the elimination of worry about beat or cross modulation by the 19kHz pilot signal during FM recording.



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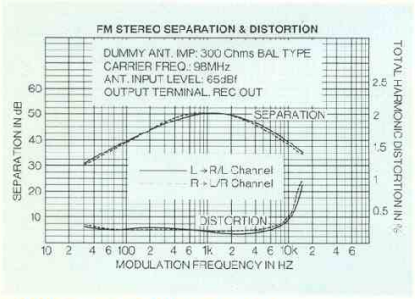


FM MUTING WITH REED RELAY

The muting circuit uses a built-in reed relay to eliminate pop noises and other harsh and annoying interstation noise during moments of station tuning and detuning.

AUDIBLE MULTIPATH SWITCH

Obstacles like tall buildings, mountains or other structures in the path of the FM wave cause interference between the direct wave and its reflected waves, a distortion phenomenon called "multipath". It is possible to minimize the multipath distortion by changing the direction of an antenna. Especially, the multipath switch provided in the SX-1050 can adjust the optimum antenna direction easily and precisely. Just set the antenna direction by choosing the minimum sound output from the speakers.

AM SECTION WITH IC FOR SUPERB TONAL QUALITY REGARDLESS OF WAVE STRENGTH

The AM section in the SX-1050 employs a special IC, which excels in AGC characteristics that guarantee constantly stable operation regardless of the input signal strength. This means that AM sound is never distorted even in a strong electrical field area, with the result being stable tonal quality at all times.

LARGE FLYWHEEL TUNING MECHANISM

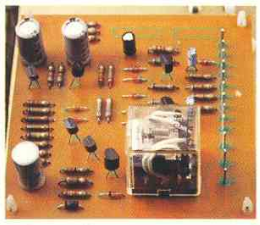
The SX-1050 uses a high-inertia, very large flywheel in its tuning mechanism for ease of operation.

ELEGANT DESIGN

A reflected-light dial scale is adopted for the front panel of the SX-1050 to enhance the unit's distinguished beauty. The front panel is constructed of aluminum, the side poles are walnut-finished, and the overall effect is an elegance that you not only hear, but also see.

OTHER FEATURES

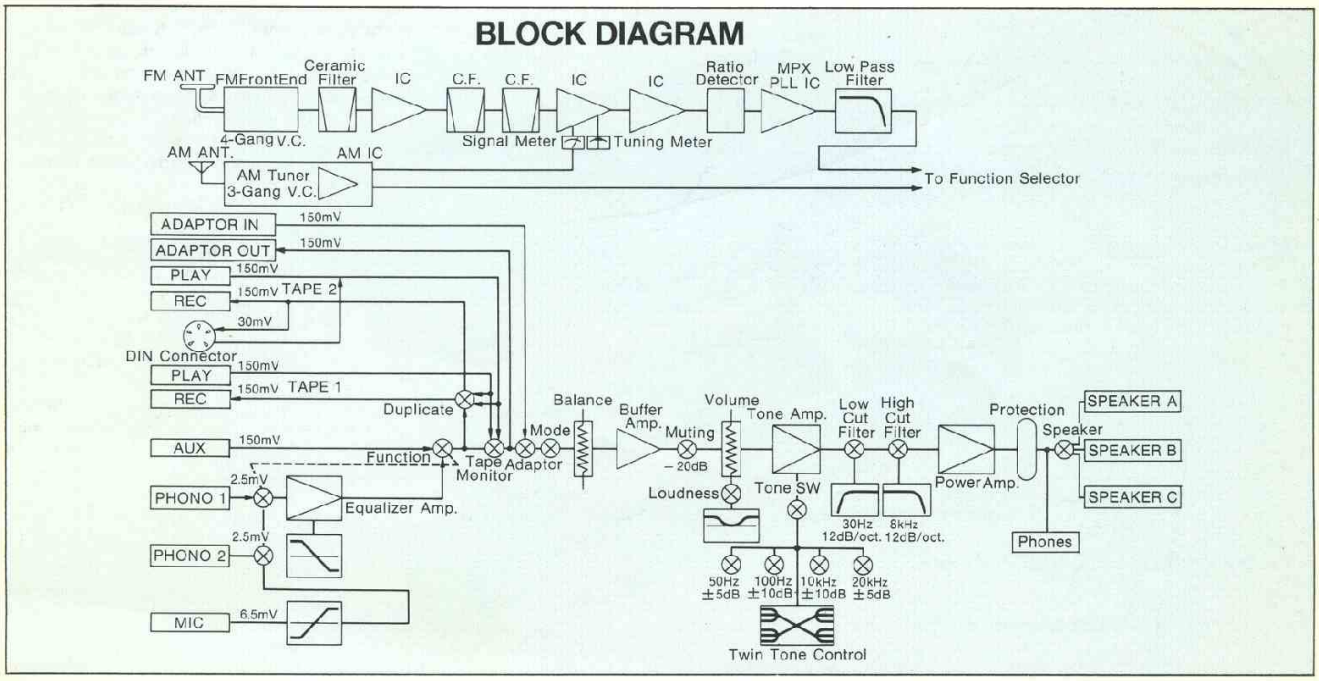
(1) A protection circuit equipped with a power relay is used to protect speakers and transistors from potential damage. It combines an electronic circuit with rapid detecting ability as well as a power relay.



(2) Tape to tape duplication with a tape duplication switch is possible from Deck 1 to Deck 2 or vice versa, permitting the listener to enjoy another musical source while duplicating.
(3) Versatile input terminals include PHONO x 2, AUX x 1, ADAPTOR x 1, TAPE MONITOR x 2.
(4) MIC inputs for L & R channels are employed for independent reproduction.
(5) A convenient loudness contour switch to complement lows and highs at low volume reproduction is provided.
(6) A, B and C speaker terminals are provided, and can be operated individually, or in A+B, B+C and C+A combinations, the latter which can be driven simultaneously with two speaker systems are employed.

(7) PRE OUT and POWERAMP IN are separable, making it possible to enjoy various audio combinations if you own more than one amplifier.
(8) The 25 μS de-emphasis selector for Dolbyized FM broadcasting permits you to receive and reproduce with precision any FM broadcasts that are Dolbyized, when a Dolby adaptor is used.

BLOCK DIAGRAM



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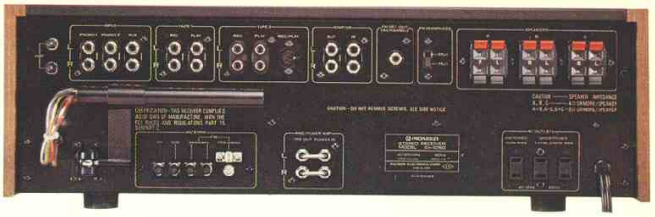
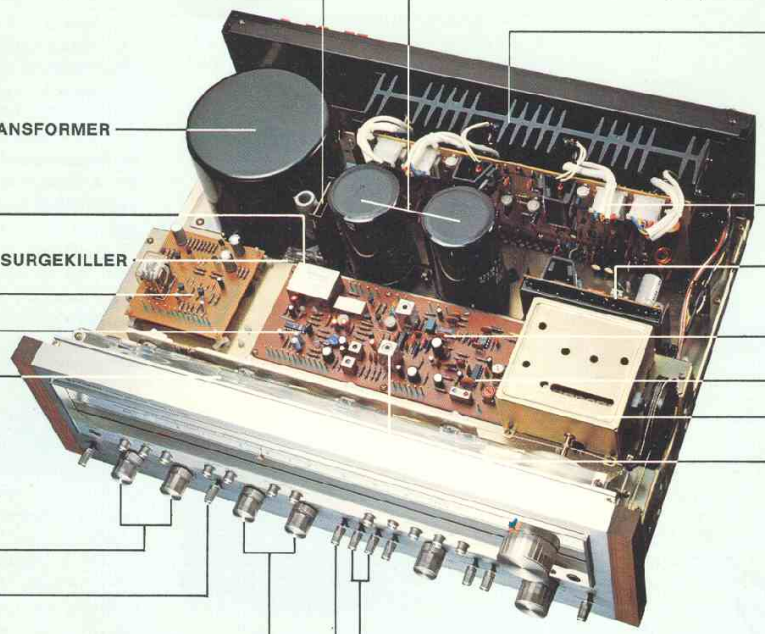




SURGEKILLER UNIT

22,000μ F x 2 ELECTROLYTIC CAPACITORS

HEAT SINK

TOROIDAL-CORE POWER TRANSFORMER

LOW PASS FILTER

POWER AMP. UNIT

POWER RELAY for PRIMARY SURGEKILLER

PROTECTION CIRCUIT

REGULATED POWER SUPPLY UNIT

IC for FM MPX SECTION

IC for FM IF SECTION

LAMP UNIT

IC for AM SECTION

FM FRONT END

AM/FM TUNER UNIT

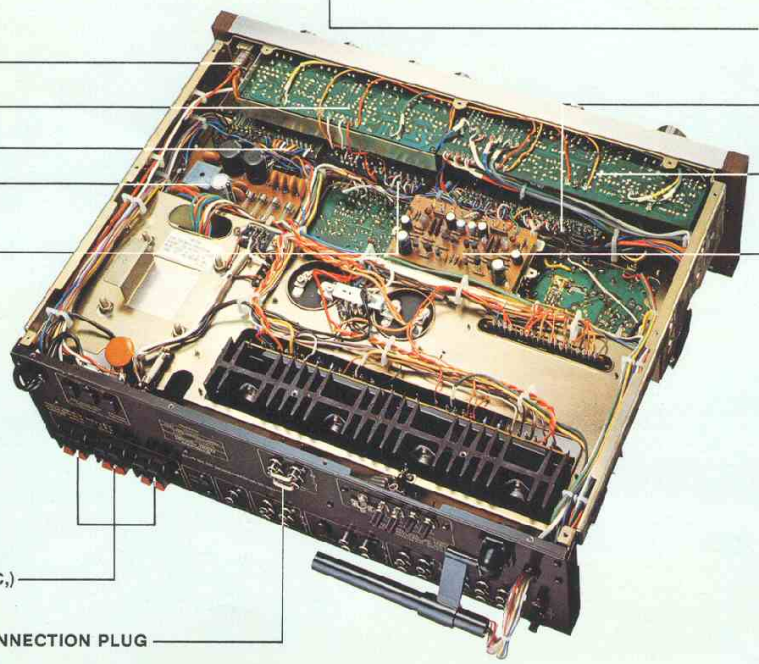
TWIN TONE CONTROLS (BASS)

TONE ON/OFF SWITCH

TWIN TONE CONTROLS (TREBLE)

TAPE MONITOR SWITCH

TAPE DUPLICATION SWITCH



POWER SWITCH

CONTROL AMP. UNIT

FUNCTION SWITCH UNIT

SPEAKER SWITCH UNIT

POWER SUPPLY UNIT

FLAT AMP. UNIT

FILTER AMP.

EQUALIZER AMP. UNIT

SPEAKER TERMINALS (A, B, C,)

PRE OUT/POWERAMP. IN CONNECTION PLUG

SX-1050 SPECIFICATIONS

POWER AMPLIFIER SECTION

Continuous Power Output is 120 watts* per channel, min. RMS at 8 ohms or 170 watts* per channel at 4 ohms from 20 Hertz to 20,000 Hertz with no more than 0.1% total harmonic distortion.

Total Harmonic Distortion:	No more than 0.1%
(20 Hertz to 20,000 Hertz,	(continuous rated power output)
from AUX)	No more than 0.05%
	(60 watts per channel power output, 8 ohms)
	No more than 0.06%
	(1 watt per channel power output, 8 ohms)
Intermodulation Distortion:	No more than 0.1%
(50 Hertz: 7,000 Hertz=4:1,	(continuous rated power output)
from AUX)	No more than 0.05%
	(60 watts per channel power output, 8 ohms)
	No more than 0.06%
	(1 watt per channel power output, 8 ohms)
Frequency Response:	7 Hertz to 90,000 Hertz +0dB, −1dB
Input Sensitivity/Impedance:	1V/50 Kohms (POWERAMP. IN)
Output Speaker:	A, B, C, A+B, B+C, A+C
Headphone:	Low impedance
Damping Factor:	25 (20Hz to 20kHz, 8 ohms)
Hum & Noise:	100dB
	(IHF, short-circuited A network)

PREAMPLIFIER SECTION

Input Sensitivity/Impedance	
PHONO 1:	2.5mV/50 Kohms
PHONO 2:	2.5mV/50 Kohms
MIC:	6.5mV/50 Kohms
AUX:	150mV/50 Kohms
TAPE PLAY 1:	150mV/50 Kohms
TAPE PLAY 2:	150mV/50 Kohms
TAPE PLAY 2 (DIN connector):	150mV/50 Kohms
ADAPTOR IN:	150mV/50 Kohms
PHONO Overload Level (T.H.D. 0.1%)	
PHONO 1:	300mV (1 kHz)
PHONO 2:	300mV (1 kHz)
Output Level/Impedance	
TAPE REC 1:	150mV
TAPE REC 2:	150mV
TAPE REC 2 (DIN connector):	30mV/80 Kohms
ADAPTOR OUT:	150mV
PRE OUT:	1V/1 Kohm
Total Harmonic Distortion:	No more than 0.05%
	(20Hz to 20 kHz, 1V output)
Frequency Response	
PHONO (RIAA Equalization):	30Hz to 15 kHz ±0.2dB
AUX, TAPE PLAY:	10Hz to 50 kHz +0dB, −1dB
Tone Control	
BASS:	±10dB (100Hz) main control
	±5dB (50Hz) sub control
TREBLE:	±10dB (10kHz) main control
	±5dB (20kHz) sub control
Filter	
LOW:	30Hz (12dB/oct.)
HIGH:	8kHz (12dB/oct.)
Loudness Contour:	+6dB (100Hz), +3dB (10kHz)
(volume control set at −40dB position)	
Hum & Noise (IHF, short-circuited A network, rated power)	
PHONO:	75dB
AUX, TAPE PLAY:	90dB
Muting:	−20dB

FM TUNER SECTION

Usable Sensitivity:	Mono: 10.3dBf (1.8μV),
	Stereo: 15.7dBf (3.4μV)
50dB Quieting Sensitivity:	Mono: 14.5dBf (2.9μV),
	Stereo: 36.0dBf (35μV)
Signal-to-Noise Ratio (at 65dBf):	Mono: 78dB, Stereo: 73dB
Distortion (at 65dBf)	
100Hz:	0.1% (mono), 0.25% (stereo)
1kHz:	0.1% (mono), 0.25% (stereo)
6kHz:	0.4% (mono), 0.4% (stereo)
Frequency Response:	30Hz to 15kHz +0.3dB, −1.0dB
Capture Ratio:	1.0dB
Alternate Channel Selectivity:	80dB
Spurious Response Ratio:	100dB
Image Response Ratio:	85dB
IF Response Ratio:	100dB
AM Suppression Ratio:	55dB
Muting Threshold:	11dBf (2.0μV)
Stereo Separation:	45dB (1kHz), 30dB (30Hz to 15kHz)
Subcarrier Product Ratio:	73dB
SCA Rejection Ratio:	73dB
Antenna Input:	300 ohms balanced,
	75 ohms unbalanced

AM TUNER SECTION

Sensitivity:	300μV/m (IHF, ferrite antenna),
	15μV (IHF, ext. antenna)
Selectivity:	40dB
Signal-to-Noise Ratio:	55dB
Image Response Ratio:	65dB
IF Response Ratio:	85dB
Antenna:	Built-in ferrite loopstick antenna

SEMICONDUCTORS

FETs:	4
ICs:	5
Transistors:	79
Diodes:	49

MISCELLANEOUS

Power Requirements:	For U.S.A. and Canada: 120V 60Hz only,
	For other countries: 110/120/220/240V (switchable) 50 – 60Hz
Power Consumption:	490 watts (UL / CSA), 870 watts (max.)
Dimensions:	Without package:
	20-3/4(W) x 6-13/16(H) x 17-7/8(D) inches
	526.6(W) x 173(H) x 453.5(D)mm
Weight:	Without package: 51 lb. 8 oz./23.4kg

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

*Measured pursuant to the Federal Trade Commission's Trade Regulation Rule on Power Output Claims for Amplifiers. (Applicable to the U.S.A. only)

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