



TOSHIBA

4 CHANNEL STEREO AMPLIFIER

SB-404S





Provided with Toshiba's unique built-in MATRIX decoder unit, which converts a conventional 2-channel program source into a 4-channel stereo, this SB-404S represents a high-performance premain-amplifier also capable of reproducing a 4-channel program source.

We strongly recommend that you carefully read this manual so that the Toshiba SB-404S will always display its fullest performance to your satisfaction.

FEATURES

1. The four main amplifiers employ all-stage, direct-coupled, OCL-type IC power amplifier (r.m.s 60W at distortion of 0.4% into 8 ohm speaker), thus improving performance and reliability.
2. When used with a 2-speaker system, output can be approximately doubled by taking advantage of the BTL connection.
3. The built-in 4ch MATRIX DECDER allows all 2-channel program sources (records, open reels, cassette and cartridge tapes, and FM broadcasts) to be reproduced with an amazing 4-channel effect.
4. Containing a special amplifier for use with the electret condenser cartridge (Model C-401S), direct connection to a record player is possible and change over by switch to a magnetic cartridge is also possible.
5. Provided with four large-scaled level meters, the exact power level is indicated for each channel so that respective level adjustments can be made.
6. By adopting throughout low-noise transistors produced by Toshiba's exclusive PCT (Perfect Crystal Device of Technology) manufacturing method, little or no noise is audible.
7. Provision for two 4-channel input terminal systems permits reproduction of all 4-channel program sources.
8. A 4-channel tape deck can be jointly employed.
9. FRONT and REAR jacks for the headphone permits use of a 4-channel headphone (Toshiba HR-40) as well as a 2-channel headphone.

CONTENTS

1. REQUEST	2
2. REGARDING THE INSTALLATION SITE	2
3. NAME AND DESCRIPTION OF EACH COMPONENT	3
4. CONNECTION DIAGRAM	5
5. HOW TO OPERATE THE SB-404S	6
6. HANDY HINTS ON USAGE	7
7. OPERATING CAUTIONS	9

REQUEST

Your Toshiba SB-404S is manufactured under strict quality control. Should any complication arise as to doubtful points or damage suffered in transit and so on, waste no time in contacting the Toshiba representative where the equipment was purchased.

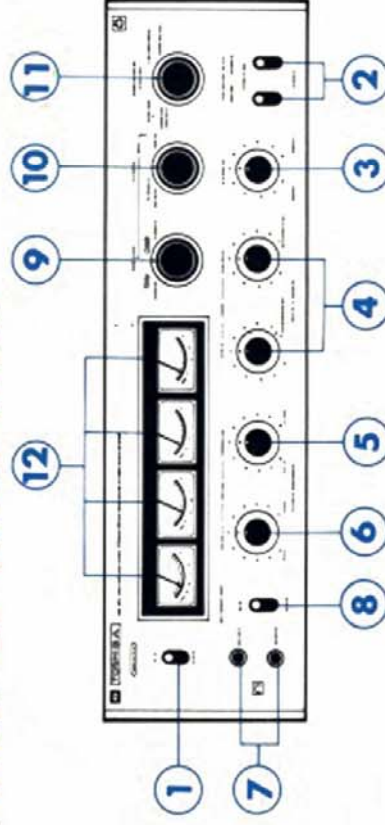
REGARDING THE INSTALLATION SITE

Although the SB-404S is a high-output amplifier using a large number of highly reliable ICs and transistors, heat sources are particularly injurious to such semiconductors. Exercise the utmost care in installing the SB-404S in a well-ventilated place free from moisture and dust.

Exercise care not to place items (books, trays, thick scarfs, etc.) on the amplifier or crowd the amplifier in a narrow space; otherwise, heat radiation will create a problem.

NAME AND DESCRIPTION OF EACH PART

FRONT PANEL



① POWER Switch

Turns the power supply on or off accordingly as the switch is set at ON or OFF position.

The plug receptacle marked SWITCHED on the rear panel can be turned on or off at the same time (equipment of 50W or less can be connected).

② TAPE MONITOR Switches(F: Front, R: Rear)

TAPE : Set the switch to this position when reproducing tapes or when simultaneously reproducing sounds being recorded on a 3-head tape deck.

Set the switch F to TAPE position with 2-channel tape deck; set the both F and R switches to TAPE position when using a 4-channel tape deck.

SOURCE : Set the switch to this position for performance other than tape.

③ VOLUME CONTROL Knob

Used to control the total 4 channel volume, turning the knob to the right increases volume.

④ LEVEL CONTROL Knobs

These 4 knobs are used to control the volume level of respective channels. The central projecting knobs are used to control the right channels; the larger knobs control the left channels.

While the knob is or nearly fully turned clockwise -the NORMAL position, adjust the knob to decrease the level should the channel be of high level.

⑤ TREBLE CONTROL Knobs

Trebles are accentuated by turning these knobs clockwise. Control is also effected front and/or rear in a 4-channel system.

⑥ BASS CONTROL Knobs

Basses are pronounced by turning this knob clockwise. Control is also effected front and/or rear in a 4-channel system.

⑦ HEADPHONE Jacks

Plug in the FRONT jack when using a 2-channel headphone; plug in the FRONT and REAR jacks when using a 4-channel headphone.

⑧ SPEAKER Switch

When listening only with a headphone, set the switch to OFF position to restrain sound of the loudspeakers at zero. Set the switch to ON position when listening to sounds through loudspeakers.

⑨ MATRIX Switch

CONCERT HALL
RM
SQ
STAGE

This switch is capable of widely changing the MATRIX effect. For details, refer to "HANDY HINTS ON USAGE" in page 7.

⑩ MODE Switch

MONO : Set the switch to MONO when listening to a conventional 2-channel source reproduced from two speakers in the monaural mode.

In this case, the REAR speakers are not used.

STEREO : Set the switch to STEREO when listening to conventional stereo reproduced from two speakers.

In this case, the REAR speakers are not used.

MATRIX : Use this position when you enjoy matrix 4 channel program. There are two types of matrix 4 channel disks — RM and SQ. (The matrix system other than SQ is called RM or regular matrix).

You can also convert ordinary 2 channel stereo programs into quasi-4 channel sound in this position.

DISCRETE : Use this position when you enjoy CD-4 disks or 4 channel tapes, or discrete 4 channel sound.

⑪ SELECTOR Switch

PHONO 1 : Either a magnetic cartridge or an electret condenser cartridge can be used when the switch is set to this position.

(CC) : When using an electret condenser cartridge, connect to the PHONO 1(CC) terminal on the rear panel and set the change-over switch on the rear panel to CONDENSER CARTRIDGE.

(MAG) : When using a magnetic cartridge, connect to the PHONO 1(MAG) terminal on the rear panel and set the change-over switch on the rear panel to MAGNETIC CARTRIDGE.

PHONO 2 : Set the switch to this position when playing records with a magnetic cartridge.

TUNER : Set the switch to this position when reproducing with an AM or FM tuner.

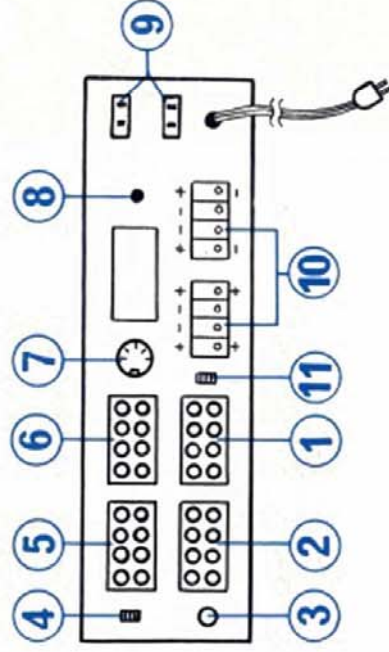
AUX 1(4 CH) : Set the switch to this position when reproducing with an external 4-channel device.

AUX 2(4 CH) : Set the switch to this position when reproducing with an external 4-channel device.

⑫ LEVEL METERS

The level meter is used to indicate the output level of each channel.

REAR PANEL



① PREAMPLIFIER OUTPUT AND MAIN AMPLIFIER INPUT TERMINALS

While the preamplifier output and main amplifier input are usually connected with each other, these terminals are used when independently employing the preamplifier and main amplifier.

② 4-CH INPUT TERMINAL

Use this terminal when reproducing a 4-channel source.

③ GROUND TERMINAL (GND)

When connecting a record player or tape deck to the SB-404, connect the ground wire of each piece of equipment to this GROUND Terminal to completely ground the entire system.

④ INPUT CHANGE-OVER SWITCH

Use this switch according to the type of cartridge—magnetic type or electret condenser type—when the SELECTOR Switch is set at PHONO 1 and the player output is connected to "PHONO 1" input terminal.

⑤ 2-CHANNEL INPUT TERMINALS (2CH INPUT)

Connect a 2-channel tuner or player to the terminals named as PHONO 1, PHONO 2 or TUNER.

⑥ TAPE INPUT AND OUTPUT TERMINALS

These are input and output terminals for a 4-channel tape deck. With the MODE knob on the front panel set to MATRIX position, a 2-channel source also can be recorded after being converted into a 4-channel source.

When using a 2-channel tape deck, connect it to all the FRONT terminals of REC, TAPE jacks.

⑦ RECORD AND REPRODUCTION TERMINAL (DIN)

While the TAPE INPUT AND OUTPUT TERMINALS also can be used when operating a 2-channel tape deck, this DIN terminal may prove useful in such instances.

⑧ CIRCUIT BREAKER

This is used for protecting the amplifiers.

Should the meter lamp fail to light when the power switch is turned on, depress the red, elongated push button. Should the lamp go off during operation, trace and correct the trouble prior to depressing the same push button.

⑨ EXTERNAL POWER SUPPLY (AC OUTLET)

This socket is internally connected to the power supply circuit.

There are two sockets—a SWITCHED Socket which can be turned on and off simultaneously with the POWER Switch on the front panel, and an UNSWITCHED Socket which is always connected to the power supply.

⑩ SPEAKER TERMINALS (SPEAKERS)

These are terminals for connecting speakers.

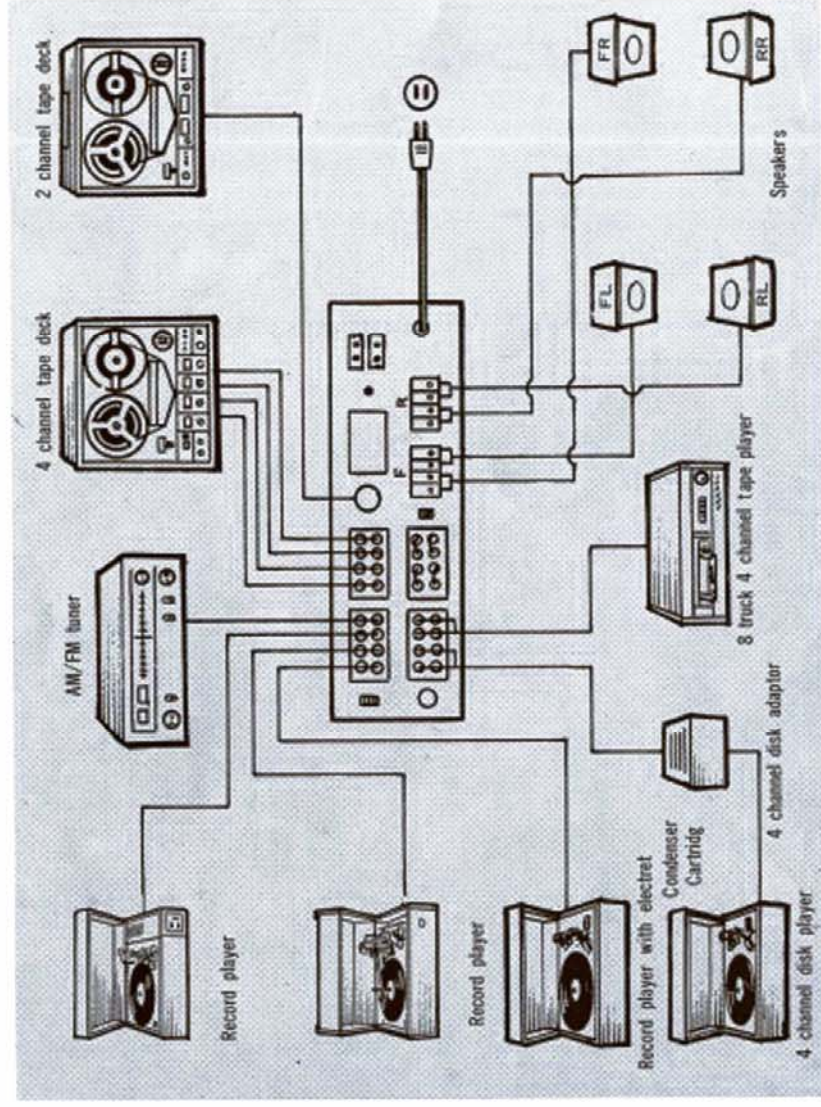
Employ a BTL connection shown on Page 5 with two speakers. Employ a 4-speaker connection when four speakers are used.

⑪ SPEAKER CHANGE-OVER Switch

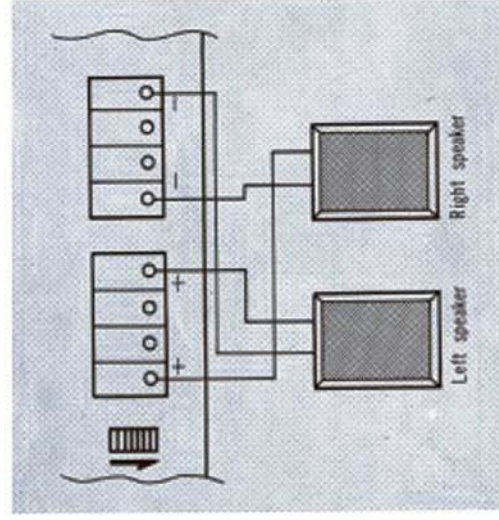
When two speakers are used, employ a BTL connection and set this switch to the 2 SP position.

When four speakers are used, set the switch to the 4 SP position.

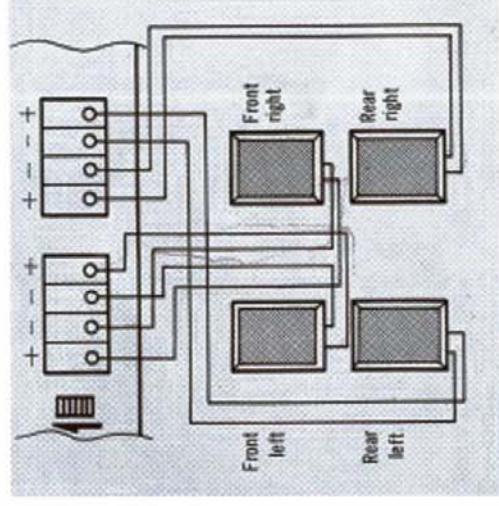
CONNECTION DIAGRAM



Connection of speakers



2 speakers BTL connection



4 speakers

HOW TO OPERATE THE SB-404S

1. Connect your equipment such as a tuner, tape deck, and player in accordance with the connection diagram shown on Page 5.

A player having a preamplifier as a photoelectronic cartridge and IC cartridge can be used by connecting it to FRONT Terminal of the 4 CH INPUT Terminals.

When using an electret condenser cartridge, connect it to PHONO 1 (cc) terminal and set the INPUT CHANGE-OVER Switch on the rear panel to the CONDENSER CARTRIDGE position.

2. When a four-speaker system is used, connect the speaker systems according to the 4-speaker connection shown in the Speaker Connection Diagram on page 5, setting the SPEAKER CHANGE-OVER Switch to 4 SP. When a two-speaker system is used, employ the BTL connection and set the SPEAKER CHANGE-OVER Switch to 2 SP.

3. Set the SELECTOR Switch on the front panel to the position desired.

For reproduction by tape deck, set the TAPE MONITOR Switch to TAPE. In this case, tape reproduction or monitoring while recording can be effected regardless of the set position of the SELECTOR Switch. When using equipment other than a tape deck, set the latter switch to SOURCE.

4. Set the MODE Switch on the front panel as desired.

MONO : When listening in the monaural mode.

STEREO : When listening in the conventional stereo mode.

MATRIX : When listening to a 4-channel stereo after converting 2-channel source into 4-channel program.

In this case, the MATRIX can be changed by operating the MATRIX Switch.

(For details, see page 7.)

DISCRETE : When listening through a 4-channel source.

5. Turn the LEVEL CONTROL Knob fully clockwise.

6. Set the VOLUME CONTROL Knob and TONE CONTROL Knobs to the respective desirable positions.

7. Adjust the LEVEL CONTROL Knob of a particular channel whose level is excessively high to create balance between the FRONT, REAR, RIGHT, and LEFT speakers.

8. When using a headphone, plug it in the HEADPHONE jack and turn off the SPEAKER Switch.

Plug an ordinary 2-channel headphone in the FRONT jack; plug a 4-channel headphone (HR-40, etc.) in both the FRONT and REAR jacks.

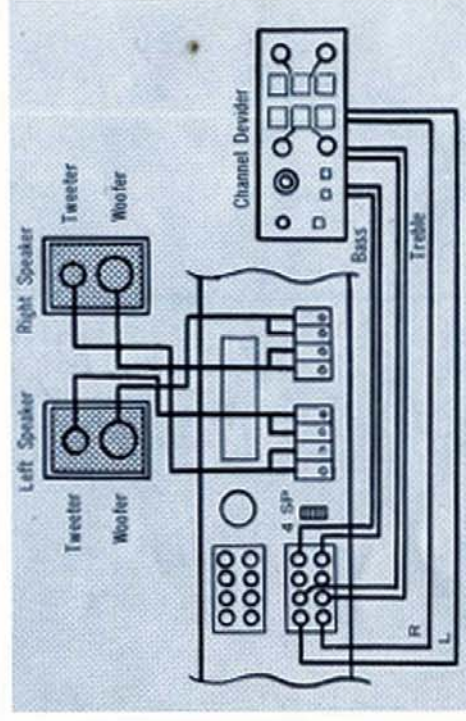
When using speakers, turn on the SPEAKER Switch.

Regarding the speaker layout, see page 8.

When Using the SB-404S as a MULTI-AMPLIFIER SYSTEM

While a description has been given on general usage procedures, the SB-404S can be used as MULTI-AMPLIFIER SYSTEM as well.

Shown in the figure on the right in an example of a 2-way speaker system used as a MULTI-AMPLIFIER SYSTEM.



HANDY HINTS ON USAGE

■ MATRIX Switch

The SB-404S is provided with a MATRIX Switch so that program source features may be displayed to a maximum. While it can be used according to the customer's preference, this switch offers the following effects.



● CONCERT HALL

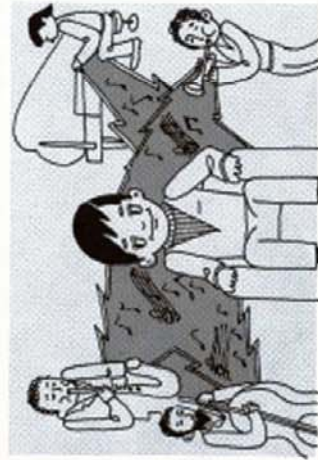
The "live" sound available only in large concert halls or opera-house auditoriums can be obtained. Soft reverberation sounds reflected from auditorium walls literally captivate you. Suitable for orchestra classic renditions, opera, big band jazz, and mood music.



● RM

Most standard position for the MATRIX system. One should be surrounded by musicians and audience applause in a manner that he can enjoy a three-dimensional audio effect in the best form possible with a 4-channel stereo system.

Good for popular music, mood music, and electronic tunes. (Moog sounds).



● SQ

SQ is an abbreviation of Stereo Quadraphonic and is a kind of matrix 4 channel system developed by CBS/SONY.

If you have a SQ encoded disk, play it with the switch in SQ position.



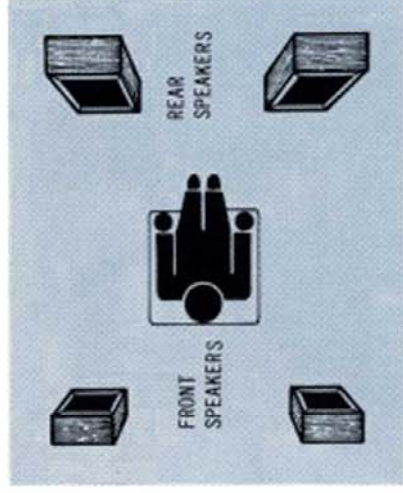
● STAGE

Gives you that "on-stage feeling" with the players. Suitable for dance parties or BGM in wide rooms.

■ Speaker Layout

Various effects can be produced, depending on the speaker layout.

● 2-2 System



This is the most orthodox speaker layout for a 4-channel system. In this system, the listener is surrounded by a four-speaker system. It is like enjoying music while bathing oneself in delightfully refreshing sound.

Appropriate for popular music, mood music, and on-the-spot recording.

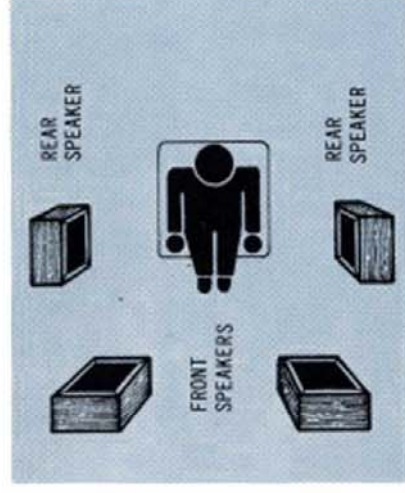
Positioning the rear speakers little higher than the front speakers may prove even more effective.

■ Regarding the Rear Speakers

While it is ideal to prepare the rear speakers similar to the front speakers, an adequate effect is achievable with a small-scaled speaker system.

In this case, as far as possible select speakers free from peculiarities to heighten the effective response.

● 4-0 System



In this system, when the rear speakers are moved from their positions in the 2-2 system to positions further forward compared with the listener's position, one feels as though he is enjoying music while seated in a concert hall. Ideal for relishing stage renditions such as classical music and big-band jazz.

In this case, the rear speakers may face in different directions; the effect of such as layout may vary depending on the room condition. Experiment with several directions to obtain the best effect.

INSTALLATION

POWER REQUIREMENT

The SB-404S has a power supply voltage selector inside the cabinet, for 100V, 120V(117V), 220V, or 240V supply.

However, we adjusted your SB-404S's selector for your local power line voltage. In case you want to use your SB-404S in the different voltage area, please contact your local dealer.

OPERATING CAUTIONS

1. Do not short the SPEAKER Terminals. If these are shorted, the IC protective fuse inside the set will blow and no sound will be reproduced. In this case, trace and correct the cause of a short after turning off the power switch, then replace the blown fuse with one of the same capacity. (2A).
2. When connecting the speakers, exercise care not to error in the polarities ((+) and (-)) of each speaker. Errors in polarity may result in an unnatural effect in blending sounds of the FRONT, REAR, RIGHT, and LEFT speakers.
3. In the SB-404S, when speakers with an impedance below 4 ohms are used for a 2-speaker system (BTL connection), the protective circuit may operate and result in failure to reproduce sound. As far as possible, use speakers with an impedance exceeding 8 ohms.
4. When the INPUT CHANGE-OVER Switch is set to CONDENSER CARTRIDGE, voltage develops on the R-channel terminal on the PHONO 1 (cc) terminal on the rear panel. Inadvertently connecting a magnetic cartridge to this terminal may not result in equipment breakdown; however, a harsh sound will result. In this case, correct the connection according to the connection Diagram on page 5.
5. The meters may display a large deflection when the power switch is turned on or off; however, the deflection stabilizes in a few seconds.

SPECIFICATION

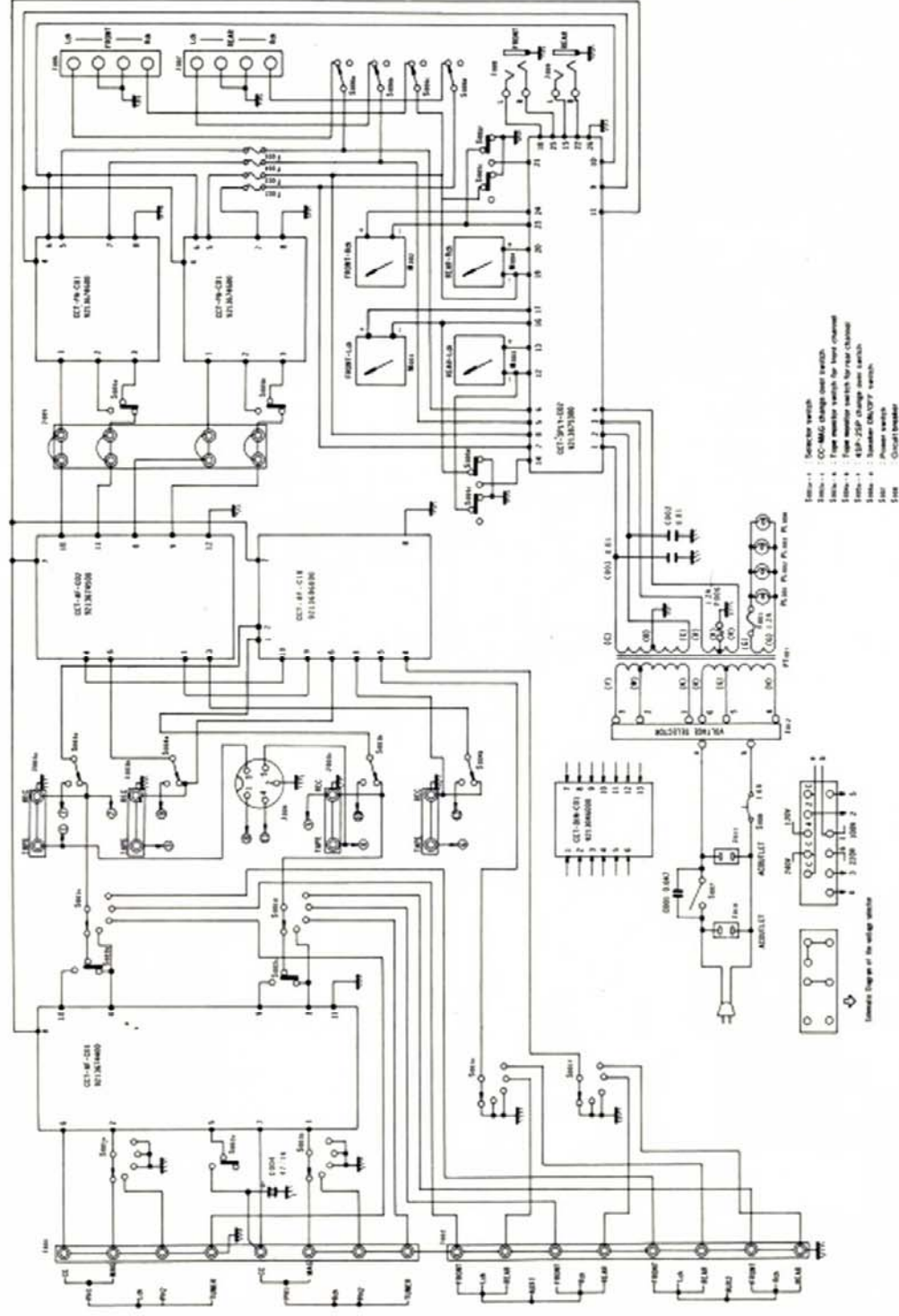
Main amplifier section

1. Output power
 - IHF music power 30W×2(8 ohm) BTL
 - (0.8% distortion) or 17W×4(8 ohm)
 - r.m.s (0.4% distortion) 26W×2(8 ohm) BTL
 - or 15W×4(8 ohm)
2. Distortion factor: total harmonic distortion, 0.4% at rated output(8 ohm)
IM distortion, 0.8% at rated output(8 ohm)
3. Frequency response: 10Hz~55kHz ±3 dB
4. Input sensitivity and impedance: Main-in, 0.5V(37k ohm)
5. Residual noise: 0.5mV(8 ohm)
6. Damping factor: 20:8 ohm
7. Speaker impedance: 4~16 ohm(8~16 ohm, at BTL)

Pre-amplifier section

1. Input sensitivity and impedance:
 - PHONO 1 MAG 2.5mV(47k ohm)
 - CC 30mV(70k ohm)
 - PHONO 2 2.5mV(47k ohm)
 - TUNER 150mV(47k ohm)
 - AUX 1 (4CH) 150mV(47k ohm)
 - AUX 2 (4CH) 150mV(47k ohm)
 - 4 CH TAPE 500mV(47k ohm)
 2. Output level for recording:
 - TAPE REC 150mV
 - DIN 30mV
 - PRE OUT 0.5V(4.2V max.)
 3. Frequency response: 5Hz~100kHz ±3 dB
 4. Harmonic distortion: 0.04% at rated output
 5. Maximum input voltage:
 - PHONO MAG 100mV(1 kHz)
 - CC 1.2V(1 kHz)
 6. Tone control: Bass(100Hz) ±10 dB
Treble(10 kHz) ±10dB
 7. Equalizing curve: RIAA ±0.5 dB
 8. SN ratio:
 - PHONO MAG(2.5mV) 65dB
 - CC(30mV) 70 dB
 - AUX (150mV) 80 dB
- Power Source: AC 100/120/220/240V 50/60Hz
Power Consumption: 70W (max.)
(16W at no signal input)
- Semiconductor: 5 IC's, 27 Transistors, 10 Diodes
Dimensions: 400mm-W×280mm-D×115mm-H
(15 $\frac{3}{4}$ "-W×11"-D×4 $\frac{1}{2}$ "-H)
Weight: 7.5 kg(3 $\frac{3}{8}$ lbs)
Accessories: Fuse(1.5A)×2, silicone cloth, Felt pads,
and owner's manual.

WIRING DIAGRAM



We recommend you that you make Hi-Fi system using following Hi-Fi components

TUNER	TOSHIBA	ST-500
SPEAKER	TOSHIBA	SS-37 or SS-47
PLAYER	TOSHIBA	SR-300 or SR-80
HEADPHONE	TOSHIBA	HR-50(2 CH) or HR-40(4 CH)
TAPE DECK	TOSHIBA	PT-866(4 CH Open reel) PT-862(2 CH, 0 pen reel) PT-490(2 CH, Cassette, dolby, autoreverse) PT-470(2 CH, Cassette, dolby)



TOKYO SHIBAURA ELECTRIC CO., LTD.

MADE IN JAPAN

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