JVC

SERVICE MANUAL

COMPUTER CONTROLLED RECEIVER

MODEL No. RX-1001VBK

Contents

No. 20057
Jun. 1988

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may create shock, fire, or other hazards.

4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

5. Leakage current check (Electrical shock hazard testing)

   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

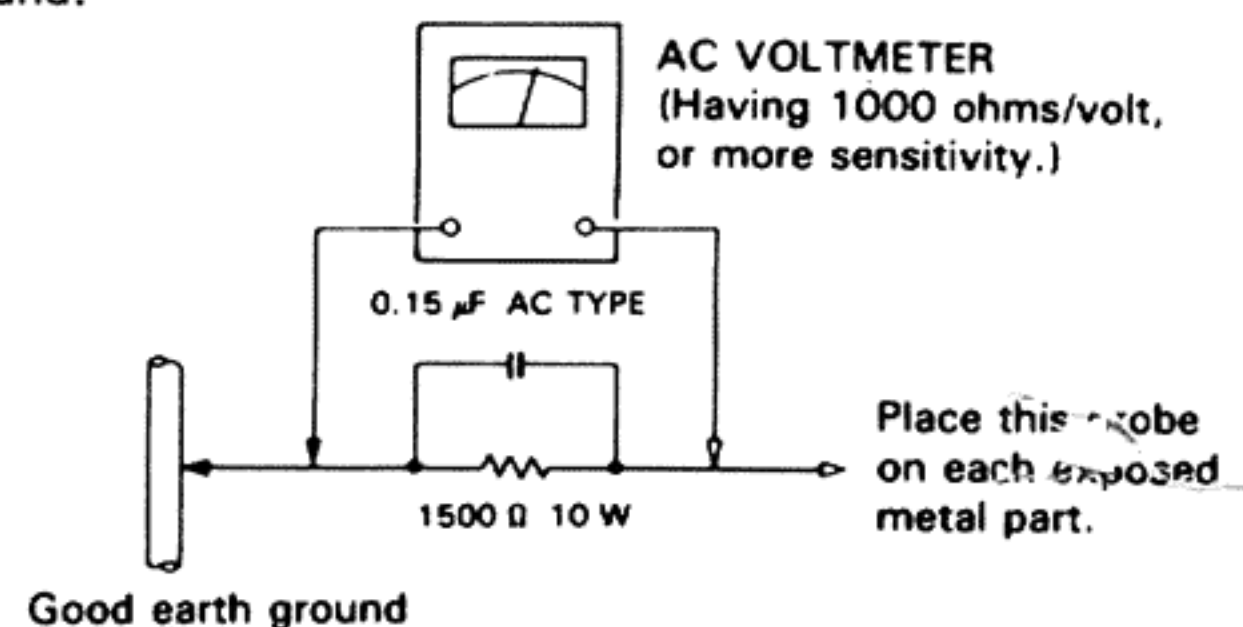   Do not use a line isolation transformer during this check.

   • Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5 mA AC (r.m.s.).

   • Alternate check method

   Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.

   Measure the AC voltage across the resistor with the AC voltmeter.

   Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).

   AC VOLTMETER
   (Having 1000 ohms/volt, or more sensitivity.)

   0.15 μF AC TYPE

   1500 Ω 10 W

   Place this probe on each exposed metal part.

   Good earth ground

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Specifications

AMPLIFIER SECTION

Output Power

2-Channel Operation : **120 watts per channel, min. RMS, both channels driven into 8 ohms from 20 Hz to 20 kHz, with no more than 0.007% total harmonic distortion**
130 watts per channel, min. RMS, both channels driven, into 8 ohms from 40 Hz to 20 kHz, with no more than 0.2% total harmonic distortion.
125 watts per channel, min. RMS, both channels driven, into 8 ohms at 1 kHz with no more than 0.003%** total harmonic distortion.

4-Channel Operation : (Front Channels)
110 watts per channel, min. RMS, both channels driven into 8 ohms from 20 Hz to 20 kHz, with no more than 0.007% total harmonic distortion
(Rear Channels)
15 watts per channel, min. RMS, into 8 ohms at 1 kHz, with no more than 0.07%* total harmonic distortion.

Total harmonic distortion : 0.003%** at 125 watts (1 kHz, 8 ohms)
Intermodulation distortion : 0.007% at 120 watts
Damping factor : 45 at 8 ohms, 1 kHz

Input sensitivity/impedance

PHONO (MM) : 2.5 mV/47 kohms
PHONO (MC) : 250 μV/100 ohms
TAPE 1 PLAY,
TAPE 2 PLAY : 230 mV/47 kohms
DAT PLAY,
CD, VIDEO
VCR 1 PLAY,
VCR 2 PLAY

Recording output level : 230 mV

Frequency response

PHONO (RIAA equalization) : 20 Hz — 20 kHz, +0.5 dB, −0.5 dB
TAPE 1 PLAY, : 5 Hz — 50 kHz, +0 dB, −1 dB
TAPE 2 PLAY
DAT PLAY,
CD, VIDEO
VCR 1 PLAY,
VCR 2 PLAY

S.E.A. graphic equalizer

Center frequencies : 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6.3 kHz, 16 kHz
Control range : ±10 dB

Signal-to-noise ratio

PHONO(MM) : 80 dB ('66 IHF)
80 dB ('78 IHF)
(Rec out)

TAPE 1 PLAY, : 100 dB ('66 IHF)
TAPE 2 PLAY   85 dB ('78 IHF)
DAT PLAY,
CD, VIDEO
VCR 1 PLAY,
VCR 2 PLAY

FM TUNER SECTION

IHF

Tuning range : 87.5 MHz — 108.0 MHz
Usable sensitivity : Mono 10.3 dBf
0.9 μV/75 ohms
50 dB quieting sensitivity : Mono 14.8 dBf (1.5 μV/75 ohms)
Stereo 38.3 dBf (22.5 μV/75 ohms)
Signal-to-noise ratio (85 dBf) : Mono 84 dB
Stereo 78 dB (A-net)
Total harmonic distortion 1 kHz : Mono 0.08%
Stereo 0.08%
Frequency response : 30 Hz — 15 kHz, +0.5 dB, −0.8 dB
Capture ratio (85 dBf) : 1.5 dB
Alternate channel selectivity : 70 dB, ±400 kHz
Image response ratio : 90 dB at 98 MHz
IF response ratio : 100 dB at 98 MHz
Stereo separation : 50 dB at 1 kHz

AM TUNER SECTION

IHF

Tuning range : 530 kHz — 1,710 kHz (for U.S.A. and Canada)
522 kHz — 1,629 kHz
530 kHz — 1,630 kHz
Sensitivity : 30 μV*
250 μV/m*
Signal-to-noise ratio : 50 dB* (100 mV/m)
Selectivity : 38 dB, ±10 kHz
Image response ratio : 40 dB*
IF response ratio : 65 dB
Total harmonic distortion : 0.5%* (100 mV/m)

VIDEO SECTION

Output signal level (VCR 1, VCR 2 REC) (MONITOR OUT A, B) : 1 Vp-p (at 1 Vp-p input)
Impedance : 75 ohms unbalanced
Synchronization : Negative
Signal-to-noise ratio : 45 dB
Crosstalk : 45 dB (3.58 MHz)

* Measured at 1,000 kHz or 999 kHz
** Measured by JVC Audio Analysis System.

GENERAL

Dimensions (W x H x D) : 18-3/4 x 6-3/16 x 15-1/8 inches
475 x 156 x 383 mm
Weight : 29.8 lbs. (13.5 kg)
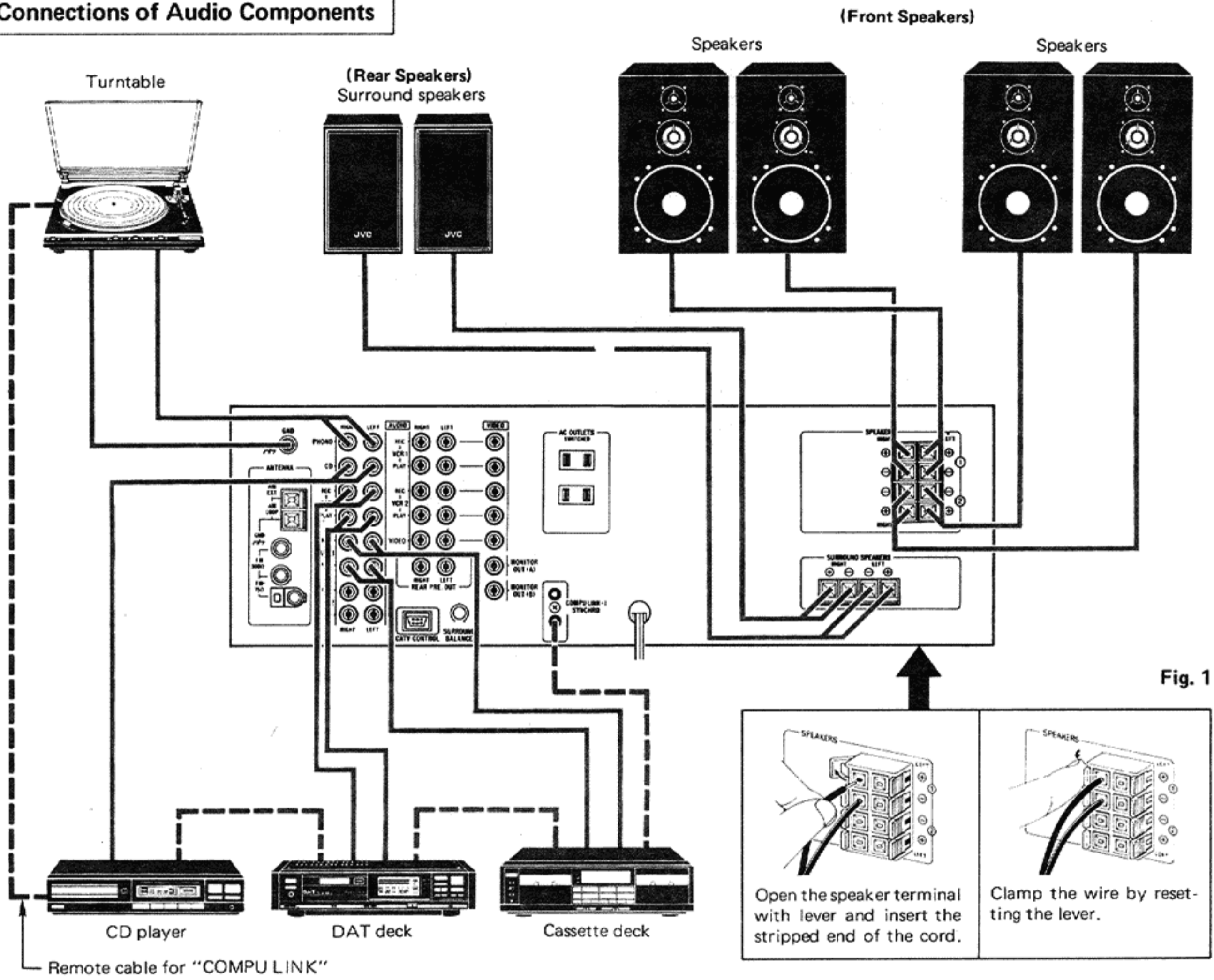
Design and specifications subject to change without notice.

POWER SPECIFICATIONS

Areas	Line Voltage & Frequency	Power Consumption
U.S.A.	AC 120V~,60 Hz	580watts, 690VA
Canada		
Continental Europe	AC 220V~,50 Hz	390watts
U.K.	AC 240V~,50 Hz	790watts
Australia	AC 240V~,50 Hz	390watts
Other areas	AC 110/120/220/240V~selectable. 50/60 Hz	390watts

CONNECTION DIAGRM

Connections of Audio Components

Turntable

(Rear Speakers) Surround speakers

(Front Speakers)
Speakers   Speakers

Fig. 1

Open the speaker terminal with lever and insert the stripped end of the cord.

Clamp the wire by resetting the lever.

CD player   DAT deck   Cassette deck

— Remote cable for "COMPU LINK"

Connections of Video Components

To RF output   To TV antenna terminal

VCR

- Since the mutual interference between video and audio equipments causes noise or disordered vision, please be sure to use coaxial cable for TV/video antenna.

To TV antenna

VCR

(AUDIO)   (VIDEO)

LINE OUT (VIDEO)
TV (VIDEO) OUTPUT
LINE OUT (AUDIO)
TV (AUDIO) OUTPUT

AV TV

INPUT (VIDEO)
*EXT IN (VIDEO)

(AUDIO)   (VIDEO)

Video disc player

*In case the JVC's AV TV (audio-visual TV) has the multi-input function, connect to the "VIDEO 1" terminal of the AV TV.
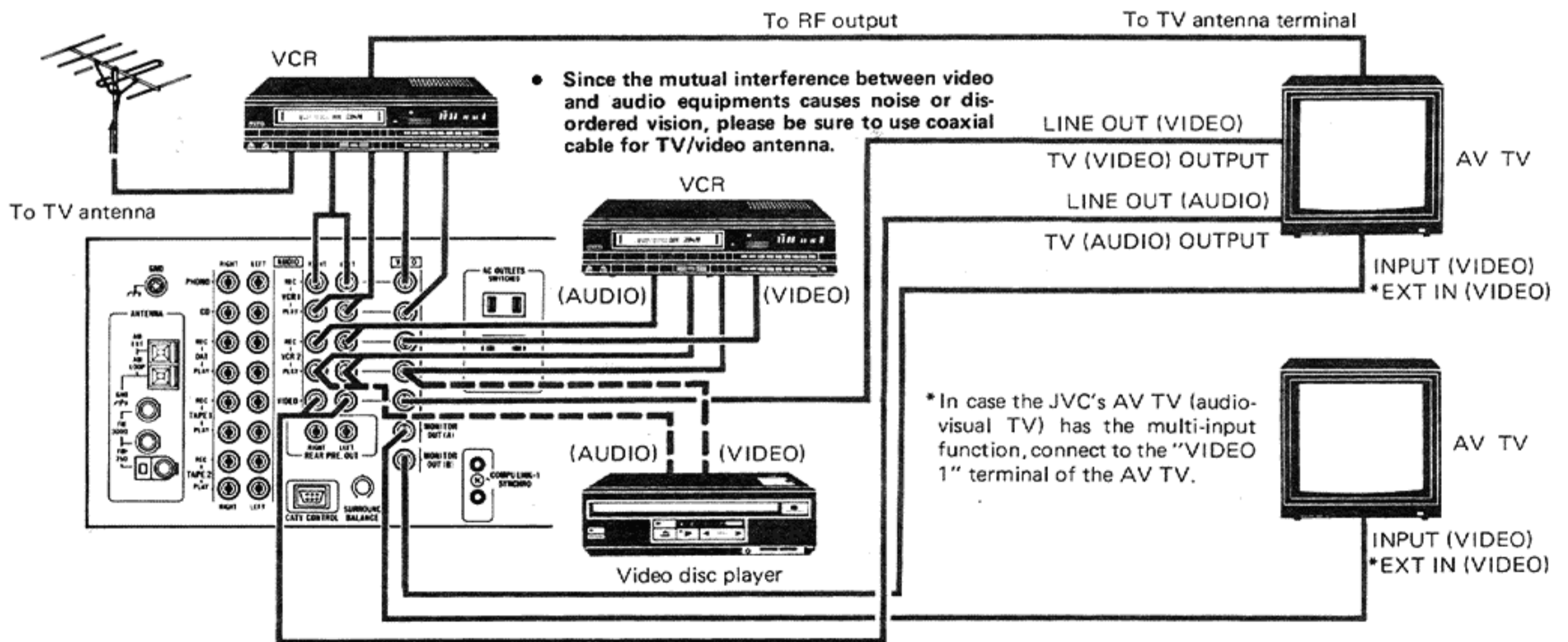
AV TV

INPUT (VIDEO)
*EXT IN (VIDEO)

Fig. 2

REAR PANEL

❶ External ANTENNA terminals
❷ GND terminal
❸ CATV CONTROL terminal
   Connect the optional CATV antenna control unit. For connection, refer to the instruction book of the CATV antenna control unit.

AUDIO : For audio signal connection

❹ PHONO terminals
❺ CD terminals
❻ DAT REC terminals
❼ DAT PLAY terminals
❽ TAPE 1 REC terminals
❾ TAPE 1 PLAY terminals
❿ TAPE 2 REC terminals
⓫ TAPE 2 PLAY terminals
⓬ VCR 1 REC terminals
⓭ VCR 1 PLAY terminals
⓮ VCR 2 REC terminals
⓯ VCR 2 PLAY terminals

Note:
● The AUDIO jacks of the VCR 1 and VCR 2 terminals can also be used with audio equipment.

⓰ VIDEO terminals
⓱ REAR PRE. OUT termianls
   To upgrade the rear speaker sound (to get more power and better sound quality), connect a separate power amplifier to these terminals. In this case, disconnect the rear speakers from the ❸⓿ SURROUND SPEAKERS terminals of this unit, and reconnect them to the speaker terminals of the rear channel power amplifier.

Note:
● For connection and operations, refer to the instruction book of the power amplifier.

VIDEO : For video signal connection

⓲ VCR 1 REC terminal
   Connect a VCR's video in terminal to this.
⓳ VCR 1 PLAY terminal
   Connect a VCR's video out terminal to this.
⓴ VCR 2 REC terminal
㉑ VCR 2 PLAY terminal
㉒ VIDEO terminals

㉓ MONITOR OUT (A) terminal
   Connect the VIDEO MONITOR OUT (A) terminal to an AV TV with a TV OUTPUT terminal or a television provided with a video input terminal, to reproduce video signals.
㉔ MONITOR OUT (B) terminal
   Connect any of several JVC-specified TVs or an AV TV with a LINE OUT terminal. No signal is output from this terminal when the VIDEO source is selected.

GENERAL

㉕ SURROUND BALANCE
   Set this knob to its center position. Normally it is not necessary to readjust it.
   However, if the balance between left and right channels is not appropriate, adjust this so that no sound is heard from the rear speakers when playing back a monaural source in the DOLBY SURROUND mode.
㉖ COMPU LINK-1/SYNCHRO terminals
   Connect to units provided with a COMPU LINK-1/SYNCHRO terminals for the COMPU LINK control system function.
㉗ AC OUTLETS (SWITCHED)⋯ for U.S.A. and Canada
㉘ SPEAKERS 1 terminals
㉙ SPEAKERS 2 terminals
㉚ SURROUND SPEAKERS terminals
㉛ Power cord

NOTES
1. **When connecting components, connect their left and right channels correctly. If channels are reversed, the stereo effect will be degraded.**
2. **Connect speakers with correct polarity: (+) to (+) and (−) to (−). Reversed polarity may degrade the stereo effect.**
3. **Switch the power off when connecting any components.**
4. **Connect plugs and wires firmly. Poor contact may result in hum.**
5. **The AC OUTLETS do not supply power when the power switch is turned off. Do not connect equipment requiring more than the outlet's rated value.**
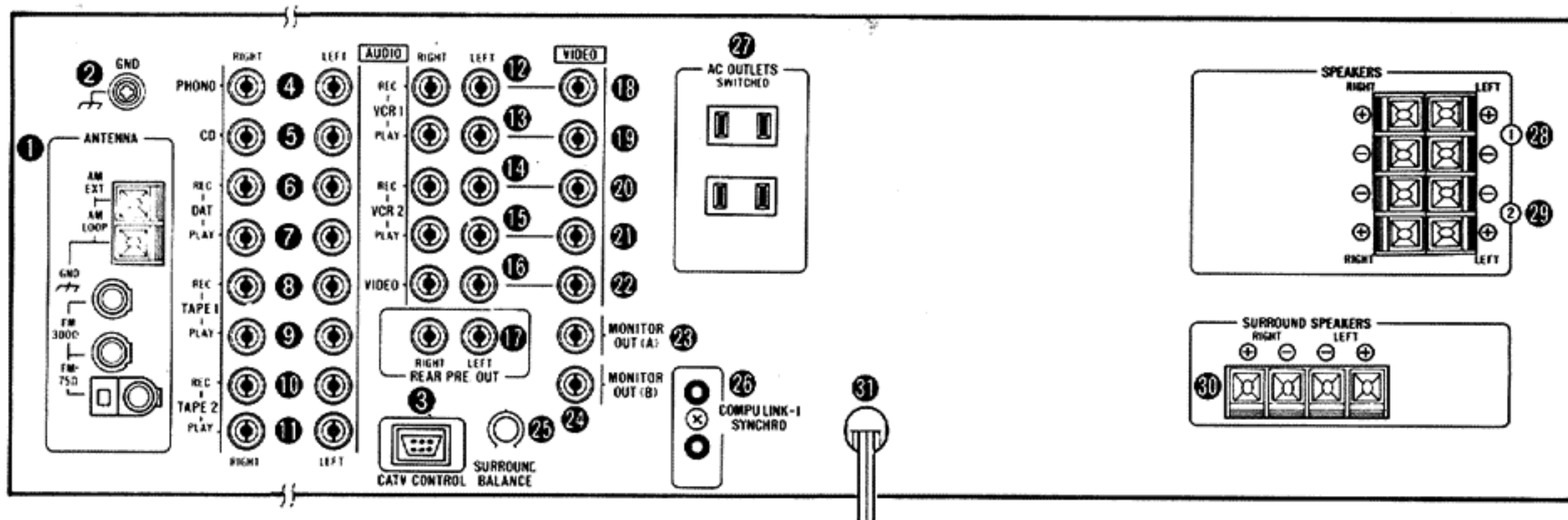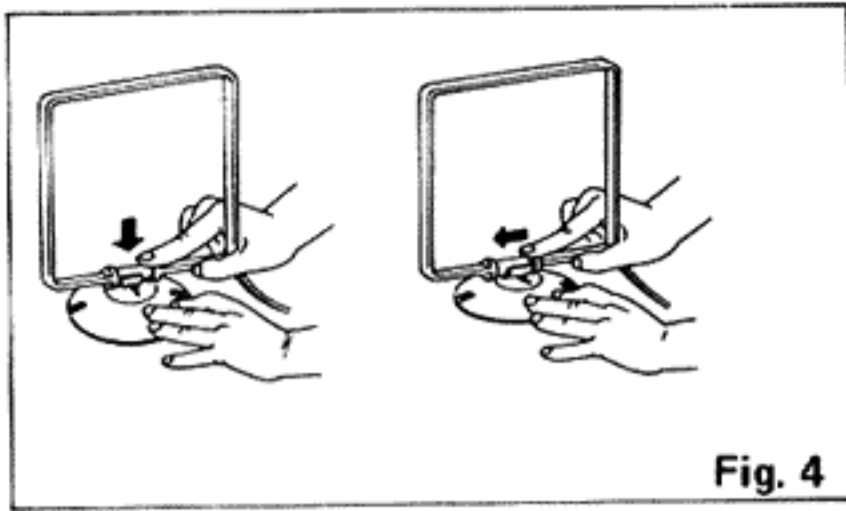6. **Keep connection cords as far as possible from the TV.**
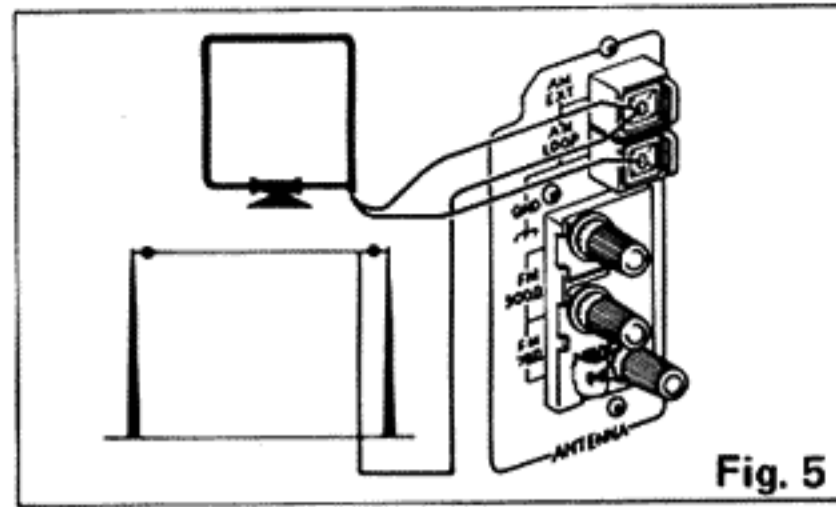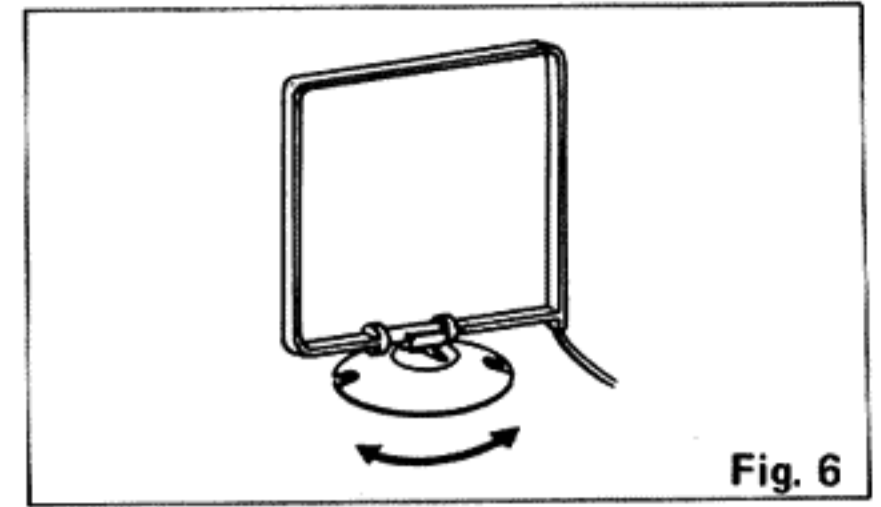

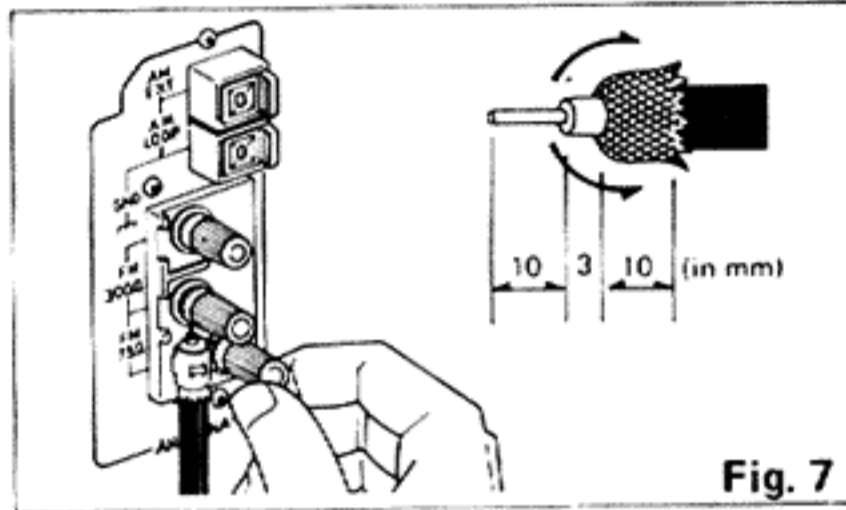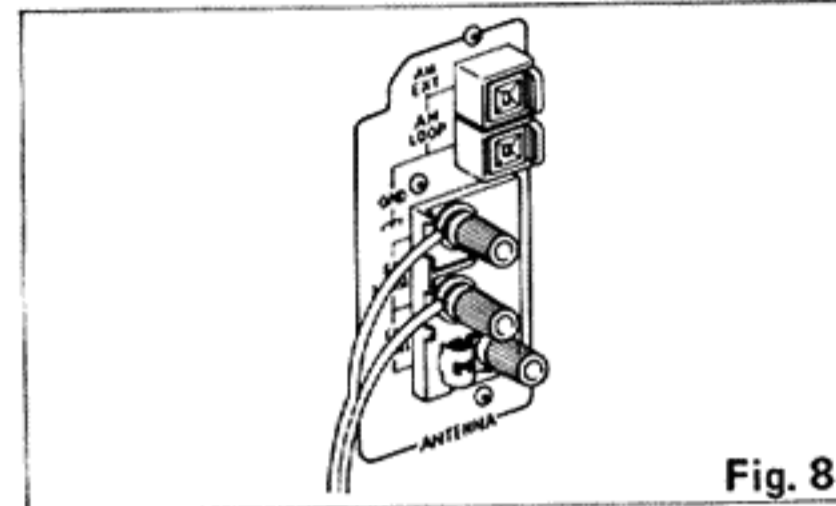
Fig. 3

ANTENNAS

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

AM antennas
How to fix the loop antenna (Fig. 4)
AM loop antenna (Fig. 5)
This antenna is for the reception of local AM broadcasts.
AM external antenna (Fig. 5)
If AM reception is unsatisfactory, connect an external AM ANTENNA (single-wire antenna) to the AM ANTENNA terminal.
Noise and interference (Fig. 6)
Change the direction of the loop antenna or reinstall it in a better position when reception is noisy.

Notes:
- **If the provided loop antenna is not connected or an uninsulated antenna wire touches the rear panel, it will be impossible to receive AM broadcasts.**
- **When installing an external AM antenna, leave the AM loop antenna connected.**

FM antennas
- **75-ohm antenna with coaxial (Fig. 7)**
  Loosen the screws on the bracket and insert the cable through the ring from below. Connect the stripped core to the upper terminal then tighten the ring. The ring is the antenna ground.
- **Feeder antenna (Fig. 8)**
  Connect to the 300-ohm terminal.
  Make sure that the feeder antenna wires do not touch any other terminals.

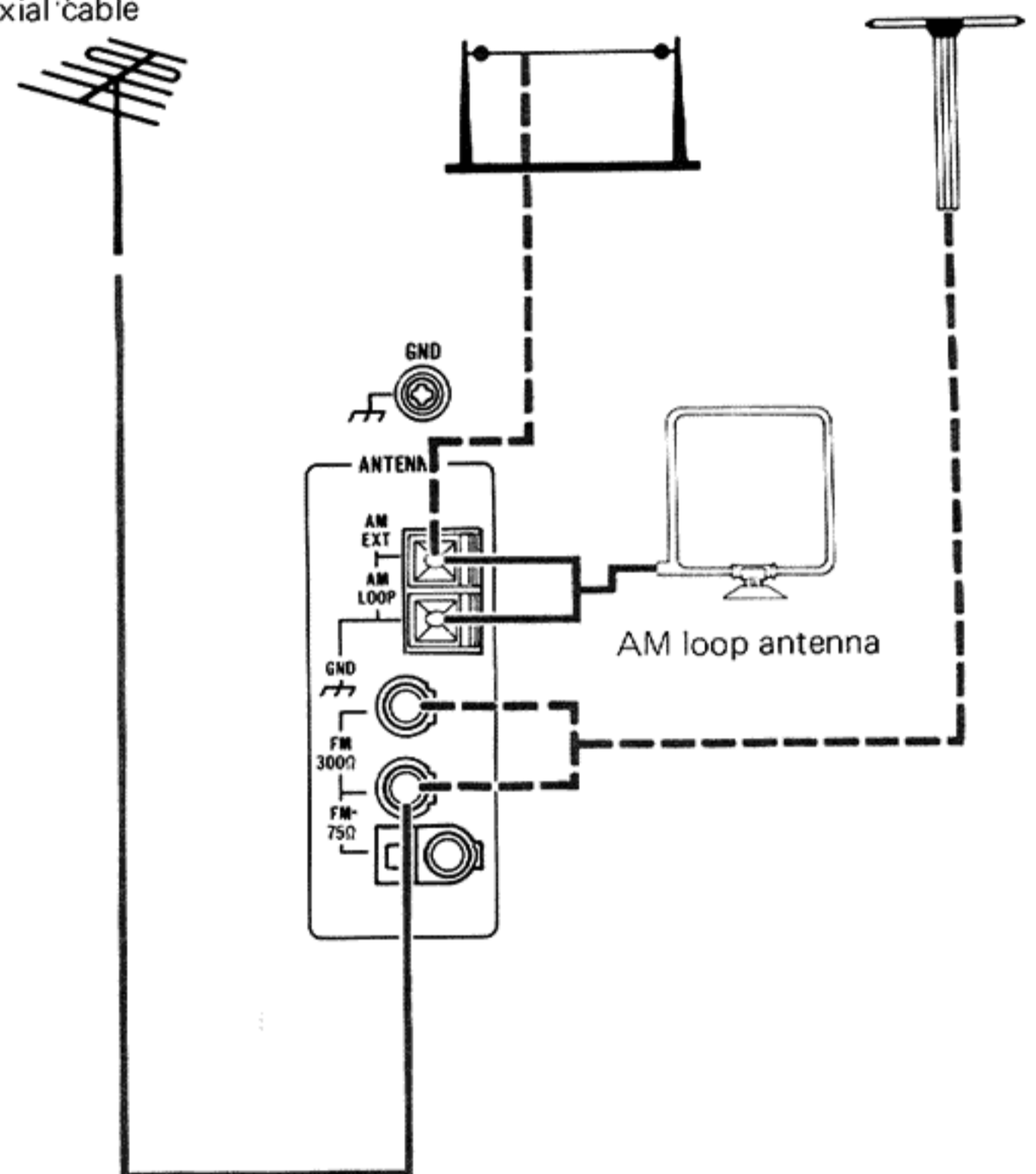75-ohm antenna with coaxial cable

AM external antenna

FM feeder antenn

AM loop antenna

Fig. 9

USE WITH CATV UNIT (Refer to the Instruction Book of CATV Antenna Control Unit) : for U.S.A. and Canada
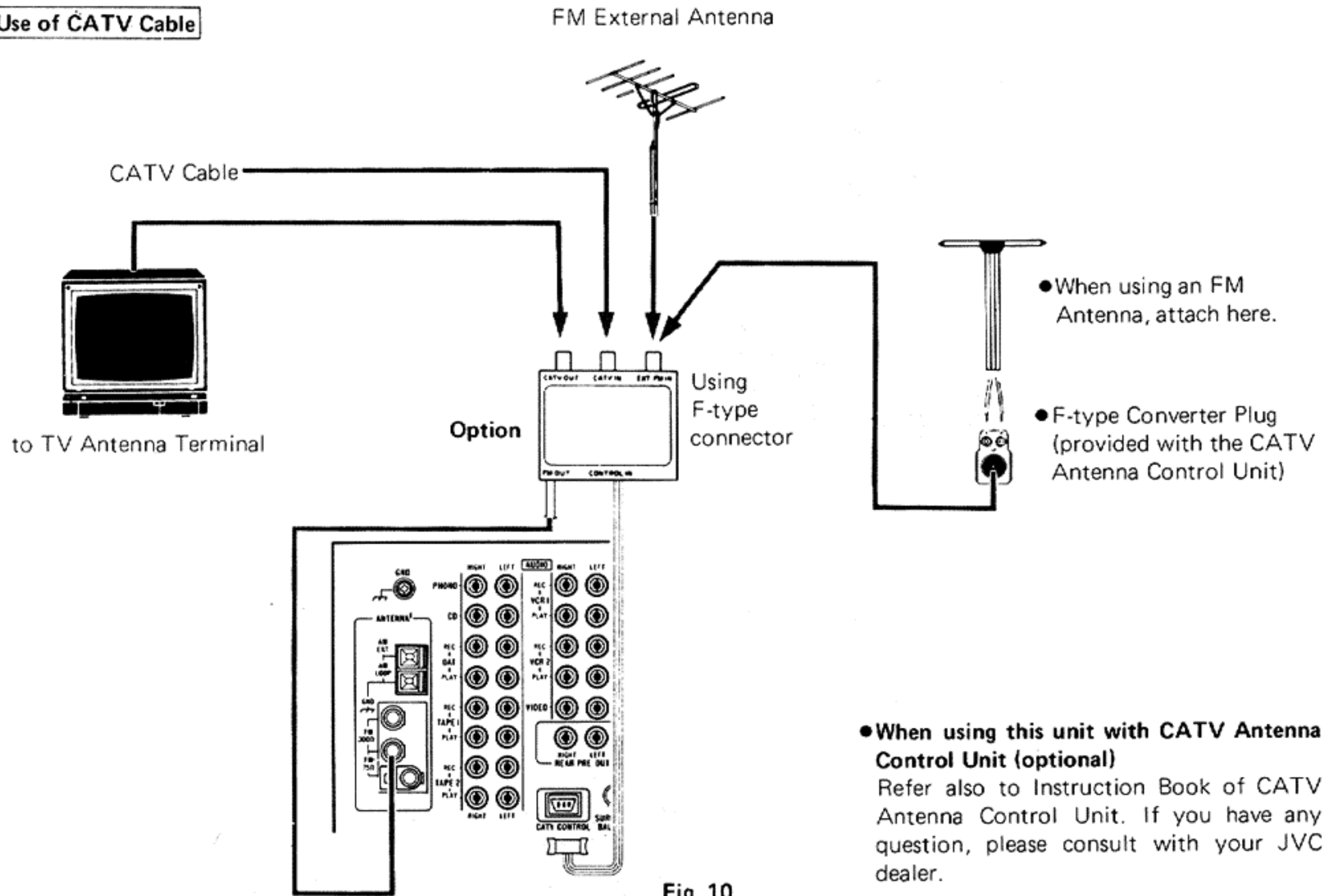
Use of CATV Cable

FM External Antenna

CATV Cable

to TV Antenna Terminal

Option

Using F-type connector

●When using an FM Antenna, attach here.

●F-type Converter Plug (provided with the CATV Antenna Control Unit)

●When using this unit with CATV Antenna Control Unit (optional)
Refer also to Instruction Book of CATV Antenna Control Unit. If you have any question, please consult with your JVC dealer.

Fig. 10

When using 2 FM antennas

●The CATV Antenna Control unit can also be used as a switching unit when two FM antennas are used.

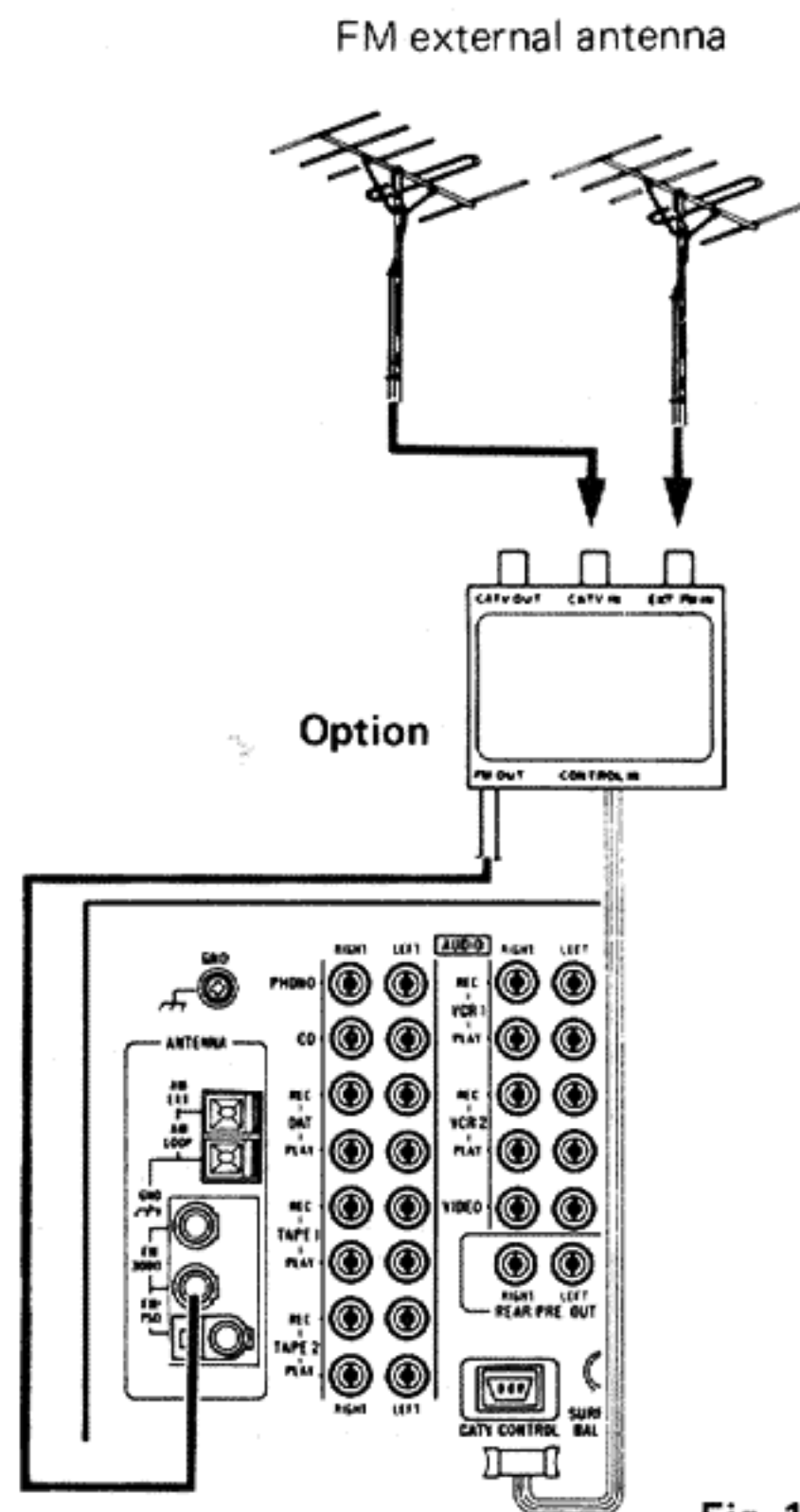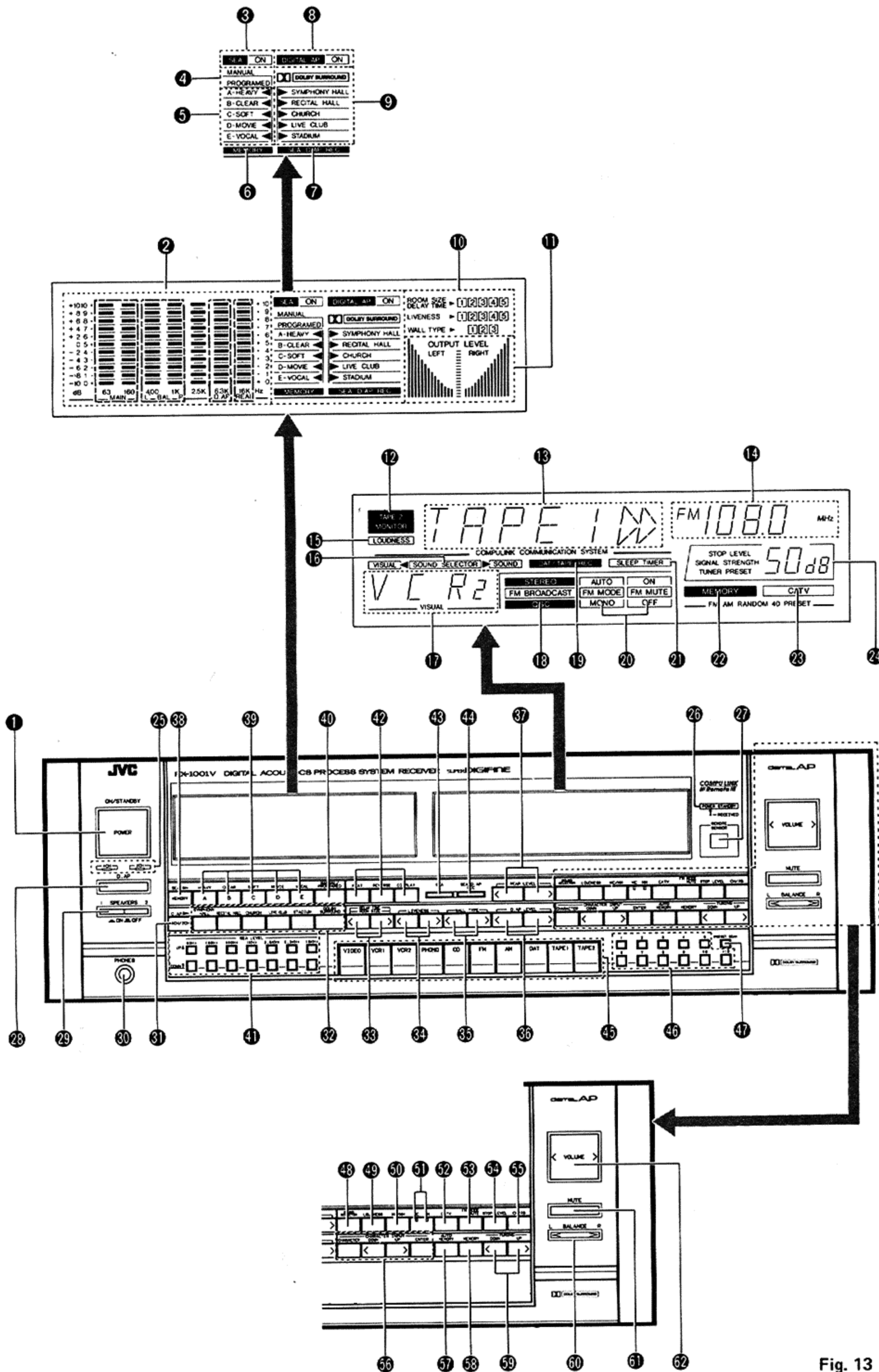FM external antenna

Option

Fig. 11

Fig. 13

FRONT PANEL

❶ POWER

ON: Press to turn the power on. To turn the power off, press again. Even when the power is turned off, the STANDBY indicator remains lit unless the receiver is unplugged from the wall out.

STANDBY: Even when all of the indicators are off, the memory circuit operates and the preset data and the source select data, etc. are not subject to cancellation or accidental alteration as long as the power cord is plugged into an AC outlet. This is called the STANDBY mode. The preset data and the source select data are maintained even in the case of a power failure or when the power cord is disconnected, if the period power is not applied does not exceed a couple of days.

Notes:

- **Even in the STANDBY mode, this receiver consumes a small amount of electricity (2 watts). To shut off the power completely, disconnect the power cord.**
- POWER STANDBY indicator:
  Connecting the power plug to the AC wall outlet causes this indicator to light, indicating that the unit has been set to the STANDBY mode.
- **When the power is tuned on, the operation buttons may not work correctly and abnormal indications may appear. If this happens, unplug the power cord from the AC outlet and insert it again.**

❷ S.E.A. indicator and VOLUME/BALANCE indicator

This indicator normally light in the VOLUME/BALANCE mode, showing the volume levels for MAIN and REAR speakers as well as the balance between L-channel and R-channel. When any of the S.E.A. graphic equalizer buttons is operated, it enters the S.E.A. mode for a fixed period, then returns to the VOLUME/BALANCE mode.

To display the S.E.A. mode continuously, press the DISPLAY button. In this mode, operating the VOLUME, REAR LEVEL, D.AP LEVEL or BALANCE control will recall the VOLUME/BALANCE mode for a fixed period. Pressing the DISPLAY button again releases the S.E.A. mode.

S.E.A. mode: The dots rise and fall in response to the pressing of the corresponding SEA LEVEL buttons, showing the S.E.A. level in each frequency band.

MAIN: This is concerned with the VOLUME button, and shows the output level from the "FRONT" or "FRONT + REAR" speakers.

L-BAL-R: This is concerned with the BALANCE button, and shows the balance between the L-channel and R-channel signals.

D.AP: This shows how much of the D.AP (Digital Acoustics Processing) effect has been applied.

REAR: This is concerned with the REAR LEVEL button, and shows the volume level of the rear speakers as a proportion of that of the front speakers.

❸ SEA indicator

The "ON" indicator lights when the SEA button is pressed ON, to show that the S.E.A. graphic equalizer has been activated.

❹ MANUAL/PROGRAMED indicators

Pressing the MANUAL/PROGRAMED button causes "MANUAL" or "PROGRAMED" to light on the display, indicating which mode has been selected.

❺ S.E.A. preset indicators

Pressing the MANUAL/PROGRAMED button will cause one of the "A-HEAVY" to "E-VOCAL" indicator to light, according to which preset pattern was being used the last time the unit was in that particular mode (MANUAL or PROGRAMED). If no preset pattern was being used, no preset pattern indicator will light. These indicators also light when an S.E.A. preset button is pressed, to select a preset pattern or to store a newly-created pattern in memory.

❻ MEMORY indicator

Pressing the MEMORY button lights "MEMORY" for about five seconds, thus indicating the unit is ready to store the pattern you have created.

❼ SEA D.AP REC indicator

This indicator lights when the SEA D.AP REC button is pressed, and the signal to which the S.E.A. and/or D.AP effect is applied will be output from the TAPE1, DAT, VCR1 and VCR2 REC OUT terminals.
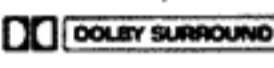
This indicator does not light when both the SEA and D.AP buttons are set to off.

❽ DIGITAL AP indicator

The "ON" indicator lights when the D.AP or DOLBY SURROUND mode is engaged.

❾ DOLBY SURROUND and D.AP mode indicators

The signal processing mode selected with the DOLBY SURROUND button or the D.AP mode select buttons is shown by the corresponding indicator.

The ▢▢ ⬚DOLBY SURROUND⬚ indicator lights when the DOLBY SURROUND button is pressed, or an arrow " ▶ " lights when the corresponding D.AP mode selector button is pressed.

❿ ROOM SIZE/DELAY TIME, LIVENESS and WALL TYPE indicators

ROOM SIZE/DELAY TIME: When the DOLBY SURROUND button is pressed, these indicators shows the DELAY TIME setting, and when any of the D.AP mode select buttons is pressed, they show the ROOM SIZE setting.

When the DELAY TIME/ROOM SIZE [>] button is pressed, the indicators light in numerical order from [1] to [5], and when the [<] button is pressed, the indicators light in reverse order, from [5] to [1].

LIVENESS: When the LIVENESS [>] button is pressed, the indicators light in numerical order from [1] to [5], and when the [<] button is pressed, the indicators light in reverse order, from [5] to [1].

WALL TYPE: When the WALL TYPE [>] button is pressed, the indicators light in numerical order from [1] to [3], and when the [<] button is pressed, the indicators light in reverse order, from [3] to [1].

⓫ OUTPUT LEVEL indicator

Displays the volume output level from the speakers and headphones for left and right channels separately.

This indicator has the function of displaying peak levels at a fixed state.

⓬ TAPE 2 MONITOR indicator

This indicator lights when the TAPE 2 button is pressed.

⓭ COMPU LINK COMMUNICATION SYSTEM indicator

This indicator shows one of the following three modes:
(1) When any of the operation buttons on the remote control unit is pressed, the corresponding operation mode will be displayed.

(2) When any of the source selector buttons is pressed, the name of the source corresponding to the button will be displayed.

(3) When the CHARACTER input mode is engaged, any desired "title" can be stored to correspond to the TUNER PRESET number, or "A" to "E" of the S.E.A. MANUAL mode. The title will be displayed when the preset channel or S.E.A. pattern is recalled.

Examples
"FM-1", "AM-2", "TV-3", or "JAZZ1", "ROCK2", etc.

⑭ FM/AM indicator
The "FM" indicator lights during FM broadcast reception, and "AM" lights during AM broadcast reception, while the frequency being received is also displayed.

⑮ LOUDNESS indicator
This indicator lights when the LOUDNESS button has been pressed.

⑯ SOUND SELECTOR indicator
This indicator lights when the SOUND SELECTOR button has been pressed to ON.

⑰ VISUAL indicator
This shows when a video signal has been selected with the VIDEO source selectors, for playback or recording.

⑱ FM BROADCAST STEREO/QSC indicator
STEREO: When an FM stereo broadcast is being received, this indicator lights. When the MODE indicator shows "MONO", the STEREO indicator will not light even if a stereo FM broadcast is being received. In such a case, press the FM MODE/MUTE button so that "AUTO" is shown.
QSC: When the signal strength of an FM stereo broadcast is low, this indicator lights and the QSC (Quieting Slope Control) circuit is switched on to reduce noise.

⑲ DAT/TAPE REC indicator
This indicator lights for about 5-seconds when the DAT (Digital Audio Tape) deck or cassette deck enters the record mode under the control of the remote control unit.

⑳ FM MODE/FM MUTE indicator
These indicators show "AUTO / ON" or "MONO / OFF" according to the setting of the FM MODE/MUTE button.

㉑ SLEEP TIMER indicator
This indicator lights when the SLEEP TIMER is engaged by pressing the SLEEP TIMER key on the remote control unit.

㉒ MEMORY indicator
This indicator lights for about 5-seconds when the MEMORY button is pressed to on, or for one second when a frequency is stored in memory during auto memory operation.

㉓ CATV indicator
This indicator lights when the CATV button is pressed to ON, showing that the receiver is set to receive CATV FM broadcasts.

㉔ STOP LEVEL/SIGNAL STRENGTH/TUNER PRESET indicator
This indicator is used as the dB SIGNAL STRENGTH indicator, the TUNER PRESET indicator showing the channel number of the preset station, and the STOP LEVEL indicator for auto tuning.
This indicator can be switched between the SIGNAL STRENGTH and the TUNER PRESET display modes by

pressing the CH/dB button. The STOP LEVEL display is shown by pressing the STOP LEVEL button.

Notes:
- 0 dB corresponds to 1 µV/75 ohms in FM, and 1 µV/m in AM.
- The indication is shown in 5 dB steps.
- The optimum signal strength is more than 40 dB for FM mode, more than 60 dB for FM stereo, and 70 dB for AM. If the signals is too weak or too strong, this display may not indicate the correct value.
- Even if the dB display mode is set by pressing the CH/dB button, the CH indication is displayed and maintained when the station select buttons are pressed. When the TUNING button is pressed, the 0 dB indication is displayed.
- If a broadcast is received by preset tuning, and then the CH/dB button is pressed so that the dB indication is displayed before switching the power off, the CH indication will be displayed when the power is switched on again.

㉕ 4CH/2CH indicators
Either of these indicators lights according to the operation mode set with the 4CH/2CH select button, to show the mode in which the D.AP (Digital Acoustics Processing) operation is applied.

㉖ RECEIVED and POWER STANDBY indicator
This indicator lights when a signal is received from the remote control unit. It remains lit continuously when the POWER button is off, to show that the receiver is in the STANDBY mode.

㉗ REMOTE SENSOR
This window receives signals from the remote control unit. Do not block it.

㉘ D.AP
Press this button so that the DIGITAL AP "ON" indicator lights, when playing a source with the D.AP or DOLBY SURROUND effect. To release the selected mode, press this button again so that the "ON" indicator goes out.

㉙ SPEAKERS
SPEAKERS 1: Press to switch the speakers connected to the SPEAKERS 1 terminals on or off.
SPEAKERS 2: Press to switch the speakers connected to the SPEAKERS 2 terminals on or off.

㉚ PHONES (Headphone jack)
Plug stereo headphones into this jack for private listening and to monitor recording. If you want to listen to sound from the headphones only, press the SPEAKERS buttons to OFF.
The sound heard from headphones is the same as that heard from front speakers.

㉛ 4CH/2CH
Select the D.AP operation mode with this button when the D.AP effect is required.
When this button is pressed, the D.AP mode is alternated between 4-channel operation and 2-channel operation, and the selected mode indicator lights.
4CH: In this mode, the reproduced sound is output from the front and rear speakers.
The D.AP processed sound is added to the normal stereo sound and output from the front speakers, while only the D.AP processed sound is output from the rear speakers.

When DOLBY SURROUND sound is required set to this position.

2CH: In this mode, only the front speakers are required. The normal stereo sound is mixed with the D.AP processed sound and output from the front speakers only.

Note:
- **In the 2CH mode, no sound is output from the rear speakers connected to the SURROUND SPEAKERS terminals.**

㉜ DOLBY SURROUND and D.AP mode selector

When playing the source sound in the DOLBY SURROUND mode or any D.AP mode, first press the D.AP button then select one of the following buttons, as required.

DOLBY SURROUND: Press this button when playing back a program source encoded with Dolby Surround sound. Dynamic and three-dimensional surround sound (as in a movie theater) will be obtained.

- **DOLBY SURROUND***

Many video programs (video tapes and video discs) available today have a ⟦ ⟧ mark showing that they have been transcribed with the Dolby Stereo soundtrack left as it is. The soundtrack of these movies includes exactly the same surround sound information as the films you see in movie theaters. As the RX-1001VBK incorporates a Dolby Surround decoder circuit, you can get a similar effect to that in a movie theater equipped with Dolby Stereo, in your home. The RX-1001VBK will turn your listening room into a home movie theater.

* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under one or more of the following patents: U.S. numbers 3,632,886, 3,746,792 and 3,959,590.

"DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Movie programs, etc. encoded with the Dolby Surround system are produced so that the volume balance between the front channels and the surround channels is set by the producer of the individual movie. For this reason, it is recommended that you do not set the level of the surround channel too high, to obtain a Dolby Surround sound effect which is closer to that intended.

Use any of the following D.AP mode selector buttons when listening to a normal (2-channel) stereo sources.

SYMPHONY HALL: When this button is pressed, the D.AP sound field effect simulating a large concert hall is obtained.

RECITAL HALL: When this button is pressed, the D.AP sound field effect simulating a small concert hall is obtained.

LIVE CLUB: When this button is pressed, the D.AP sound field effect simulating a small jazz club is obtained.

CHURCH: When this button is pressed, the D.AP sound field effect simulating a church is obtained.

STADIUM: When this button is pressed, the D.AP sound field effect simulating an open-air stadium is obtained.

Note:
- **For details of each D.AP mode, refer to the description of the "About the Digital Acoustics Processor (D.AP)" on page 19.**

㉝ DELAY TIME/ROOM SIZE

Adjust the DELAY TIME in the DOLBY SURROUND mode, or the ROOM SIZE in the D.AP mode with these buttons. The indicator corresponding to the selected mode will light. When the [>] button is pressed, the setting is changed in numerical order from [1] to [5], and the [<] button is pressed, it is changed in reverse order, from [5] to [1].

DELAY TIME: Select the delay time which is the most suitable for the surround sound components included in the program source encoded with Dolby Surround system, in your listening room.

As the delay time setting (indicator) advances in numerical order (from [1] to [5]), the selected delay time becomes longer.

When the distance between the listener and the front speakers is almost the same as that between the listener and the rear speakers, set it to the [3] position.

When the rear speakers are placed relatively far away from the listening position, set the delay time to a shorter setting than [3], and when they are placed relatively close to the listening position, set it slightly longer than [3].

After setting the delay time, to the normal [3] position, say, it is recommended to experiment to find the most effective position while actually listening to the program source.

ROOM SIZE: This adjusts to the size of the room where the original recording was made, etc. in five steps. The room size and therefore the sound field will become wider when the setting indicator is changed in numerical order from [1] to [5].

㉞ LIVENESS

This adjusts the amount of reverberations in five steps. When the [>] buttons is pressed repeatedly, the amount of reverberation becomes greater from [1] to [5], and when the [<] button is pressed repeatedly, the amount of reverberation becomes less in descending order.

Note:
- **If this button is pressed in the DOLBY SURROUND mode, it has no effect.**

㉟ WALL TYPE

This adjusts for different walls and ceiling materials where the original recording was made, in three steps. When the [>] buttons is pressed, the material type of walls and ceiling seems to become harder in the order from [1] to [3], and when the [<] button is pressed, the material of walls and ceiling seems to become softer in the order from [3] to [1].

Note:
- **If this button is pressed in the DOLBY SURROUND mode, it has no effect.**

㊱ D.AP LEVEL

In the D.AP mode, adjust the amount of D.AP enhancement effect to be mixed with the normal stereo sound for the front speakers with these buttons.

When in case of the 4-channel mode, the sound level of the

rear speakers can be adjusted.

Press the [>] button to increase the level and press the [<] button to decrease it. The current level setting is displayed in the D.AP level indicator.

Notes:
- In the DOLBY SURROUND mode, these button do not effect reproduced sound.
- When the D.AP LEVEL is set to the lowest level in the D.AP mode, no sound will come from the rear speakers.

⑰ REAR LEVEL
Adjust the volume level of the rear speakers relative to the front speakers with these buttons. Press the [>] button to increase the relative volume level and press the [<] button to decrease it.

㊳ MEMORY (S.E.A.)
Press this button and the MEMORY indicator will light for about five seconds. While it is lit, press one of the S.E.A. preset buttons to store the S.E.A. pattern in memory currently being displayed.

㊴ S.E.A. preset
Press to store the displayed S.E.A. pattern in memory or to recall the preset S.E.A. pattern corresponding to each of the "A" to "E" buttons. While in the MANUAL mode, pressing the MEMORY button and then one of these five buttons will store the pattern you have created. Later, while in MANUAL mode, that pattern can be recalled by pressing the appropriate S.E.A. preset button. Up to five original patterns can be stored in memory, to be recalled in this way.

A different set of S.E.A. patterns is available in the PRO-GRAMED mode. These five patterns (HEAVY, CLEAR, SOFT, MOVIE and VOCAL) have been permanently stored in memory before the unit was shipped, and cannot be replaced. So, up to 10 patterns may be recalled. For more details, refer to page 35.

㊵ MANUAL/PROGRAMED
Press to switch between the MANUAL and PROGRAMED S.E.A. pattern modes.

㊶ SEA LEVEL
The built-in graphic equalizer divides the audio spectrum into seven frequency bands with center frequencies from 63 Hz to 16 kHz at intervals of 4/3 octave.

When the S.E.A. level is set to "0" (center position), the frequency response is flat. The response in each band can be varied by ±10 dB by pressing the UP or DOWN SEA LEVEL buttons.

Buttons for different frequency bands can be pressed at the same time, and holding them down causes the level to rise or fall continuously.

63 Hz: Raise to emphasize the very low base response of organs, drums, and contrabass. When used for emphasis, it produces stable and solid sound; when de-emphasized, eliminates unclear response at low frequencies.

160 Hz: Emphasize to obtain a more expanded low sound. De-emphasize to eliminate unclear sound caused by large or nearly empty listening rooms.

400 Hz: This frequency range is the base on which music is constructed. Emphasize to put real punch in your music.

1 kHz: Most effective in emphasizing or de-emphasizing the human voice. Emphasize to cause the vocalist to be brought to the foreground, or de-emphasized to fade into the background.

2.5 kHz: The human hearing is most sensitive to this frequency. If the music sounds hard or metallic, de-emphasize it.

6.3 kHz: Boost to add clarity to winds and strings. This frequency band varies the tonal expression, influencing the subtleties of the music.

16 kHz: Boosting this frequency range suitably adds to the delicacy of highs, with cymbals and triangles resounding in a more ear-pleasing manner, and provides a feeling of extension. This frequency band can also be used to compensate for cartridge response since most moving-magnet cartridges have resonance peaks in the frequency range from 10 kHz to 20 kHz.

㊷ S.E.A. selector
FLAT: Press this button for a flat response.

REVERSE: Press this button to reverse the characteristics of the pattern.

DISPLAY: Press this button to display the S.E.A. graphic equalizer on the display. To restore the VOLUME/BAL-ANCE display, press this button again.

Note:
- If you press the FLAT or REVERSE button only one time when the display is in the VOLUME/BALANCE mode, it will only change the display mode and not the effect. To change the effect, press the FLAT or RE-VERSE button twice consecutively.

㊸ SEA
Press this button for S.E.A. compensation so that "ON" lights in the SEA indicator.

When S.E.A. graphic equalizer is not used, press this button again so that the "ON" indicator goes out.

㊹ SEA D.AP REC
When recording S.E.A. compensated sound, D.AP effected sound or in the S.E.A. + D.AP mode, press this button so that the "SEA D.AP REC"indicator lights.

The effected sound will be output to the TAPE1, DAT, VCR1 and VCR2 REC OUT terminals.

When S.E.A. or D.AP recording is not required, press this button again so that the "SEA D.AP REC" indicator goes out.

Notes:
- The SEA D.AP REC button does not function when both the SEA button and D.AP button are set to OFF.
- S.E.A./D.AP recording is impossible with the tape deck connected to the TAPE 2 terminals.
- S.E.A.-compensated sound is not available to the TAPE 2 REC, SURROUND SPEAKERS and REAR PRE. OUT terminals.

㊺ Source select
VIDEO: Press this button to watch the source from the video component connected to the VIDEO terminals.

VCR 1: Press this button to watch the source from the VCR connected to the VCR1 terminals.

VCR 2: Press this button to watch the source from the VCR connected to the VCR2 terminals.

PHONO: Press to listen to a turntable connected to the PHONO terminals.

CD: Press this button to listen to a compact disc player connected to the CD terminals.

FM: Press this button to listen to an FM broadcast.

AM: Press this button to listen to an AM broadcast.

DAT: Press this button to listen to a DAT deck connected to the DAT terminals.

TAPE 1: Press to listen to a tape deck connected to the TAPE 1 terminals.

TAPE 2: Press to listen to a tape deck connected to the TAPE 2 terminals. Press this button again to release this function and hear the source selected by another source select button.

Note:
- When a 3-head tape deck is connected to the TAPE 1 and TAPE 2 terminals, monitoring the sound that has just been recorded on the tape is possible. However, when monitoring the TAPE 1 deck, be careful of the following:
  * S.E.A./D.AP recording is impossible.
  * Tape dubbing from TAPE 2 to TAPE 1 is impossible.
  To release tape monitoring, press the source select button being used for recording.

⑯ TUNER 10-KEY (1 to 10, +10)

Up to 40 FM and AM broadcast frequencies can be preset in this receiver's memory. After presetting, select the desired channel by inputting the preset channel number with these buttons. When selecting preset channel "1" to "10", just press the corresponding numeric button. When selecting preset channels "11" or above, first press the +10 button the required number of times, then press a button from 1 to 10.

For example, to select preset channel "35", first press the +10 key three times, then press 5. Or, to select preset channel "40", press +10 key three times, then 10.

When the desired preset channel is recalled, the display shows the preset channel number and its frequency.

⑰ PRESET SCAN

This lets you scan preset channels to find a broadcast you want to listen to. When the PRESET SCAN button is pressed, preset scanning starts. If you have tuned to the current station using the 10-KEY keypad, the tuner scan to the next higher preset channel and the broadcast is received for about 4-seconds with the preset channel number blinking. It then tunes to higher preset channels in sequence. When it reaches the top preset channel, it goes to the bottom channel and scans up until it reaches the original channel, at which point it stops.

If you have tuned to the current station in any other way, scanning will start from preset channel 1 and finish after preset channel 40 has been received, then the broadcast being received before preset scanning was started will be heard again. When you hear a broadcast you want to listen to, press the PRESET SCAN button again to stop preset scanning.

⑱ SOUND SELECTOR

When this button is pressed (the SOUND SELECTOR indicator lights), the sound signal can be selected from a different AUDIO source in combination with the VISUAL signal originating from the VIDEO source.

⑲ LOUDNESS

Press this button to compensate for the ear's lower sensitivity at low listening levels.

㊿ MC/MM

Select the type of the cartridge used in your turntable with this button. Pressing this button alternates the cartridge mode between MC and MM, and the selected mode indicator lights.

MC: Set to this mode when a using MC cartridge having an output voltage of less than 0.5 mV.

MM: Set to this mode when using a MM cartridge or a MC cartridge having an output of 0.5 mV or higher.

㊿① MC/MM indicator

Either the MC or MM indicator lights to show the currently selected cartridge mode set by pressing the MC/MM button.

㊿② CATV

Use this button when a separate CATV Antenna Control Unit is connected. When a CATV cable is connected for the reception of CATV programs or if the FM antenna is connected to "CATV-IN" of the CATV Antenna Control Unit for the reception of FM broadcasts, push this button so that the CATV indicator lights. Even when the CATV indicator is not lit, you can listen to broadcasts received by the antenna connected to the EXT. FM IN terminal of the CATV antenna control unit. The CATV button functions can also be stored in preset memories together with frequencies.

㊿③ FM MODE/MUTE

For normal FM reception, for the automatic elimination of interstation noise, press this button so that FM MODE "AUTO" and FM MUTE "ON" light in the display.

When receiving a weak or noisy FM stereo broadcast, press this button so that FM MODE "MONO" and FM MUTE "OFF" light; the broadcast will be heard in mono but reception will be clearer.

㊿④ STOP LEVEL

This is used to set the strength of broadcast signals at which scan tuning stops in 5 dB steps, for 30 – 50 dB in FM, and 60 – 80 dB in AM.

Note:
- 0 dB corresponds to 1 μV/75 ohms in FM and 1 μV/m in AM.

㊿⑤ CH/dB

Press to select either the channel indication or dB indication.

If one of the station select buttons is not pressed first, only the dB indication is shown and this button has no effect.

㊿⑥ CHARACTER INPUT

These buttons are used when storing a broadcast station name for TUNER PRESET channels, or when storing titles for the S.E.A. MANUAL mode in memory. The stored title will be shown in the display when the corresponding channel or pattern is selected.

Select the desired TUNER PRESET channel or required S.E.A. MANUAL pattern from "A" to "E" in which the title is to be input, beforehand.

CHARACTER: Press this button to enter the CHARACTER input mode. When storing the broadcast station name into a TUNER PRESET channel, first recall the desired PRESET channel number using the 10-KEY keypad, then press this button. When storing the title of an S.E.A. MANUAL preset pattern, press the required button (from A to E) then press this button.

DOWN (<)/UP (>): Select the required character, number or symbol to be input by pressing DOWN or UP button. After the required alphanumeric character is displayed, press the CHARACTER button again to move to the next character. By repeating this procedure, input the station name or title as required. Titles can be up to five alphanumeric characters long.

ENTER: After completing the title, press this button to store it in memory.

⑤⑦ AUTO MEMORY

After setting the stop level using the STOP LEVEL button, press this button and then any of the TUNER 10-KEY buttons to scan and preset broadcasts automatically. Starting from the frequency being displayed, the tuner tunes to increasingly higher frequencies, until a broadcasts is tuned in. Its signal strength is then shown in dB for one second and the channel number you have pressed earlier flickers for three seconds. If you don't wish to store this station in memory, press this button within 4 seconds; the dB indication is shown and the scan function starts again. Otherwise, the MEMORY indicator and channel number light together and the frequency is stored in that channel. Then the next channel number is shown and up-scanning restarts, as the tuner automatically searches for a frequency to store in the next channel. This process continues until the highest numbered channel preset stations has a frequency stored in its memory.

If the upper limit of the frequency band is reached before this happens, the upper limit of the frequency is shown with dB displayed instead of the channel number.

Otherwise, when this process ends, the last frequency tuned to and its corresponding channel number are displayed. If, while this operation is taking place within a particular broadcast band, that same broadcast band button is pressed, the operation stops and the broadcast currently being tuned to is heard. If a different broadcast band button is pressed, the operation stops and the broadcast last tuned to when that band was listened to is heard.

Note:
● **To cancel the auto memory function, press any of the buttons in the tuner section other than the AUTO MEMORY button.**

⑤⑧ MEMORY

Press this button, and the MEMORY indicator will light to show that it is ready to receive a memory setting. Pressing the station select button while the MEMORY indicator is lit (for about 5-seconds) stores the station in the specified memory. At this time, the channel number is shown in the display.

⑤⑨ TUNING DOWN/UP

DOWN (<): Press this button to tune to a lower frequency.

UP (>): Press this button to tune to a higher frequency. Holding either button pressed for more than 1 second and then releasing it starts auto tuning. When a broadcast is received, tuning will stop. If either button is held down, scanning continued even when a broadcast is received. In auto tuning, pressing either button stops scanning. When tuning toward higher frequencies, if the upper limit frequency is reached, the frequency will change to the lower limit and then auto tuning restarts in the direction of

increasing frequency. When tuning toward lower frequencies, if the lower limit is reached, the frequency will change to the upper limit and auto tuning restarts in the direction of lower frequencies. The same operation is also performed in AM tuning.

Each time these buttons are tapped, the FM frequency will change in 100 kHz steps, and the AM frequency in 10 kHz steps.

⑥⓪ BALANCE (L/R)

This control is used to adjust the balance between the left and right speakers. Tap the L side to shift the balance to the left by one step and the R side to shift to the right. Holding the button pressed changes the balance continuously. The BALANCE indicator in the display shows the current balance setting.

⑥① MUTE

When this button is pressed, the ⑬ COMPU LINK COMMUNICATION SYSTEM indicator displays "MUTE", and the sound will be muted instantaneously. To return the volume to its original level, press this button again, or press the BALANCE or VOLUME button.

⑥② VOLUME (UP/DOWN)

Adjust the volume of speakers or headphones with this button. Press the > (up) side once to increase the volume by one step, and the < (down) side once to decrease it by one step; this level is shown by the VOLUME indicator. Holding down either side of this button will cause the volume to rise or fall continuously.

OPERATION

Before use
Connect each component correctly, and then plug the power cord into an AC wall outlet.

Basic operation
1. Press the POWER button to on.
2. Select the speaker system with the SPEAKER buttons.
3. Proceed through the steps described below, as required.
4. Adjust the volume and the balance to your requirement.
5. Use the SEA buttons to obtain the tone you want to hear.
6. When the DOLBY SURROUND sound effect or a D.AP sound field effect is required, press the D.AP and other required buttons. (Refer to page 17.)

Presetting to selected stations (FM, AM or CATV)
There are two ways to preset stations using the TUNING buttons; **A. AUTO TUNING/MANUAL TUNING, B. AUTO MEMORY FUNCTION.**

A. — How to operate AUTO TUNING/MANUAL TUNING —
(Refer to ❺❾ TUNING DOWN/UP buttons.)
1. Press the FM or AM button.
   When tuning to a CATV FM broadcast, press the FM button, then the CATV button.
2. Tune to a station by pressing the TUNING button for auto tuning or tapping it for manual tuning.
3. Press the MEMORY button so that the MEMORY indicator lights.
4. Press any of the TUNER 10-KEY buttons to be stored in memory as the preset channel number.
5. Perform the same pre-tuning procedure (steps 2, 3, 4) for the remaining channels.
   Up to 40 stations can be preset for FM and AM stations in total.

B. — How to operate the AUTO MEMORY FUNCTION —
(Refer to ❺❼ AUTO MEMORY button.)
1. Press the FM or AM button.
   When tuning to a CATV FM broadcast, press the FM button, then the CATV button.
2. Display the frequency from which scanning is to start using the TUNING button.
3. Press the AUTO MEMORY button and then TUNER 10-KEY button.
   The MEMORY indicator flickers and auto scanning starts from the displayed frequency, upward. When a broadcast is tuned in, its signal strength is shown in dB for one second and the channel number you have pressed earlier flickers for three seconds. If you do not press the AUTO MEMORY button, the MEMORY indicator and channel number light together and the frequency is stored in that channel. Then the next channel number is shown again and scanning up restarts, searching the frequency to store in the next channel. This process continues until the channel preset station with the highest number has a frequency in its memory or auto scanning reaches the highest frequency.

Listening to broadcasts
1. Press the FM or AM button.
2. Select the desired preset channel by pressing the TUNER 10-KEY buttons. The channel number corresponding to the buttons pressed is shown in the display.

Notes:
● **When FM broadcast signals are too weak to be received, press the FM MODE/MUTE button to show "MONO/OFF".**

● For the reception of AM broadcasts, set the loop antenna to the position where reception is best.
● Before listening to broadcasts, first preset the stations correctly; if they are not pre-tuning accurately, reception will be noisy.

Listening to records
1. Press the PHONO button so that "PHONO" is displayed in the COMPU LINK COMMUNICATION SYSTEM indicator.
2. Set the MC/MM button of this unit according to the cartridge in use.
3. Operate the turntable as described in its operation manual.

Note:
● If your turntable has a separate ground lead, connect it to the GND terminal.

Listening to CD
1. Press the CD button so that the "CD" is displayed in the COMPU LINK COMMUNICATION SYSTEM indicator.
2. Operate the CD player as described in its operation manual.

Listening to DAT
1. Press the DAT button so that "DAT" is displayed in the COMPU LINK COMMUNICATION SYSTEM indicator.
2. Operate the DAT deck as described in its operation manual.

Listening to tapes
1. Press the TAPE 1 or 2 button so that "TAPE 1" is displayed in the COMPU LINK COMMUNICATION SYSTEM indicator or "TAPE 2 MONITOR" indicator lights.
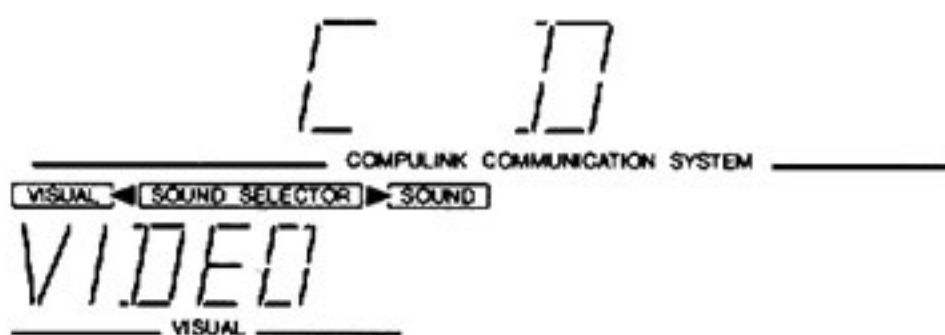2. Operate the tape deck for playback as described in its operation manual.

Watching and listening to VIDEO
1. Press the VIDEO button so that the COMPU LINK COMMUNICATION SYSTEM and VISUAL indicators light and show "VIDEO".
2. Operate the video unit as described in its operation manual.

Note:
● Connect the video and audio signal cords of the video unit to the AUDIO and VIDEO terminals of this unit. It is also possible to connected audio sources to these terminals, in which case the video terminals are not connected.

When the SOUND SELECTOR function is used

Refer to ㊽ SOUND SELECTOR button in the "FRONT PANEL" section.

1. Press the VIDEO, VCR1 or VCR2 button; the corresponding COMPU LINK COMMUNICATION SYSTEM and VISUAL indicators will light in the display. (Fig. 14)
2. Operate the video unit as described in its operation manual. With this setting, the SOUND and VISUAL signals input via the VIDEO, VCR1 or VCR2 terminals are output.
3. Press the SOUND SELECTOR button so that the "SOUND SELECTOR" indicator lights.
4. Press the desired AUDIO source selector button (PHONO, CD, FM, AM, DAT, TAPE 1, TAPE 2). (Fig. 15) The SOUND signal of the source thus selected is output from the speakers, while the VISUAL signal from the VIDEO terminals is output from VIDEO MONITOR OUT.

Fig. 14

Fig. 15

Watching and listening to VCR

1. Press the VCR 1 (VCR 2) button so that the COMPU LINK COMMUNICATION SYSTEM and VISUAL indicators light and show "VCR 1" ("VCR 2").
2. Operate the VCR for playback as described in its operation manual.

Recording tapes

— Recording from records —

1. Press the PHONO button so that "PHONO" is displayed in the COMPU LINK COMMUNICATION SYSTEM indicator.
2. Operate the turntable.
3. Operate the tape deck for recording.
* For S.E.A./D.AP recording using the SEA D.AP REC button, refer to page 12.

— Recording from other sources (CD, FM, AM, DAT, VIDEO, VCR 1, VCR 2) —

Press the button corresponding to the source to be recorded. All other operations are identical to those when recording from records.

Note:

● The sound you hear from the speakers or headphones is the source sound (record playback sound in this case), not the signal recorded on the tape.

— How to operate the monitor while recording onto a tape deck —

1. Connect a 3-head tape deck to the TAPE 2 terminals.
2. Make sure that the signal cords are connected to the PLAY and REC terminals, and remove the remote cable connected to the tape deck.
3. Select a source from which you want to record by depressing the corresponding source select button.
4. Operate the tape deck for recording as described in its operation manual.
5. By playing the source component, you can record on the tape deck.
6. While recording on the tape deck, the recorded sound can be heard by pressing the TAPE 2 button on the front panel or remote control unit.

— If you are using a JVC three-head tape deck provided with COMPU LINK-1/SYNCHRO or SYNCHRO terminals —

1. Connect the COMPU LINK-1/SYNCHRO or SYNCHRO terminals of each unit using the remote cables provided.
2. Connect the tape deck to the TAPE 1 terminals.
3. You can monitor the recorded sound while recording by pressing the TAPE 1 button. Be careful not to monitor in the SEA REC mode, since pressing this button conceals the SEA REC function.
4. To return to listening to the source sound, press the button of the recorded sound's source.

— If you are using a three-head tape deck without the SYNCHRO terminals —

1. Connect the tape deck to the TAPE 2 terminals.
2. You can monitor the recorded sound while recording by pressing the TAPE 2 button.

Tape dubbing

To perform tape dubbing, two tape recorders should be connected, one to the TAPE 1 terminals (called the "No. 1" tape deck) and another to the TAPE 2 (called the "No. 2" tape deck).

— Dubbing from deck No. 1 to deck No. 2 —

1. Press the TAPE 1 button. Sound can be monitored through speakers or headphones.
2. Operate the No. 2 tape deck for recording.
3. Operate the No. 1 tape deck for playback.

— Dubbing from deck No. 2 to deck No. 1 —

1. Press the TAPE 2 button. Sound can be monitored through speakers or headphones.
2. Operate the No. 1 tape deck for recording.
3. Operate the No. 2 tape deck for playback.

Notes:

- **When dubbing from the tape deck (connected to the TAPE 2 terminals) onto the other tape deck, select a button other than "TAPE 1".**
- **When dubbing the SOUND signal from the No. 2 tape deck to the VCR 1, VCR 2 or DAT, use a selector other than "VCR 1", "VCR 2" or "DAT".**
- While playing back a tape on the tape deck (connected to the TAPE 2 terminals), you cannot record other source sounds onto the component (connected to the REC terminals of the TAPE 2, DAT, VCR 1 and VCR 2 terminal).
- **When dubbing the SOUND signal from the No.1 tape deck to the VCR 1, VCR 2 or DAT; press a SOURCE SELECT button other than "VCR 1", "DAT", "TAPE 1" and "TAPE 2" first, and after that "TAPE 1" button. In this case, S.E.A. /D.AP recording is impossible.**
- During dubbing, S.E.A./D.AP recording onto TAPE 2 is impossible.
- **If a tape deck having three heads or a monitor facility is used, refer to page 16.**

Recording video tapes

— Recording from a video unit —

1. Press the VIDEO button.
2. Operate the video unit.
3. Operate the VCR 1 or VCR 2 for recording.

Notes:

- **Dubbing from VCR 1 to VCR 2 or from VCR 2 to VCR 1 is also possible. In this case, in step 1, above, press the source side button (VCR 1 or VCR 2).**
- **When the SOUND SELECTOR button is pressed, the SOUND SELECTOR function can be used for recording as described on page 16. The VISUAL signal from the VIDEO terminals and the SOUND signal selected are recorded on the VCR. (The SOUND signal cannot be from another video unit when the SOUND SELECTOR function is being used.)**

Using stereo headphones

Stereo headphones can be plugged into the front panel PHONES jack. The signal from this jack is independent of the speakers.

1. Plug the stereo headphones into the PHONES jack for private listening.

2. To listen through headphones while listening to the speakers, press the appropriate SPEAKERS button to ON (▬).

Note:

- **Pull out the headphone plug when not in use.**
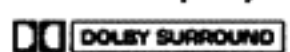
How to perform DOLBY SURROUND or D.AP playback

Place the front and rear speaker systems appropriately referring to "Example of speaker placement in D.AP/DOLBY SURROUND sound system". (Fig. 16)

1. Press the D.AP button so that the D.AP "ON" indicator lights.
2. Select the required operation mode with the 4CH/2CH button.

   ### Note:
   - **When DOLBY SURROUND sound is required, set to the 4CH mode.**

3. Select the required effect mode with the DOLBY SURROUND and D.AP mode select buttons.

   ### Note:
   - **When playing back a video program, etc. with a ▢▢ DOLBY SURROUND ™ mark, press the DOLBY SURROUND button, and when playing back a normal stereo (2-channel) source, press any of the D.AP mode select buttons.**

4. When DOLBY SURROUND is selected, adjust to the most appropriate delay time with the DELAY TIME buttons, and when any of the D.AP mode is selected, adjust the ROOM SIZE, LIVENESS and WALL TYPE with the corresponding buttons.
5. Start playback the program source.
6. Using the VOLUME button, adjust the volume of the front speakers for the 2CH mode, or adjust the volume of the front and rear speakers for the 4CH mode.
7. In the D.AP mode, adjust the level of the D.AP effect sound to be added to the front speakers sound using the D.AP LEVEL buttons.
8. In the 4CH mode, also adjust the volume of the rear speakers in relation to that of front speakers using the REAR LEVEL buttons.
* For details of buttons and indicators in the above operations, refer to the section in which the "Front Panel" is described.

Example of speaker placement in D.AP/DOLBY SURROUND sound system
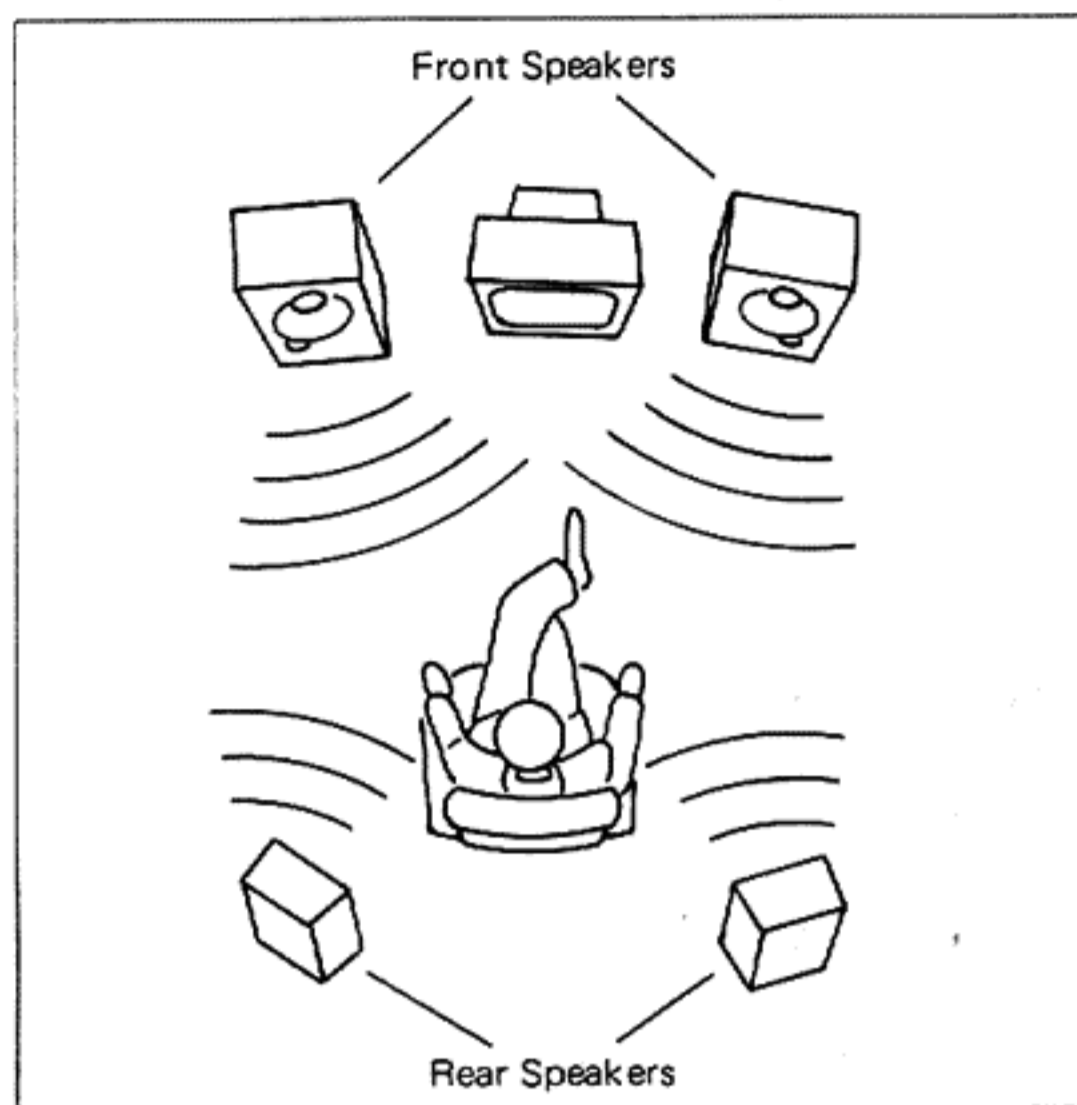

Fig. 16

In order to enjoy the DOLBY SURROUND sound and 4 CH mode D.AP sound, this is the standard way to place the system.

This has the greatest effect providing playback with great ambient fidelity.

How to input characters

Before starting to input characters, recall the tuner preset channel or S.E.A. Manual preset pattern (A — E) to be input or altered so that it is displayed in the CCS (COMPU LINK Communication System) indicator.

1. Press CHARACTER button to enter the character input mode.

   The character in the leftmost column blinks. If no character has been stored in this position, the coursor "—" will blink.

2. Select the desired character using DOWN/UP buttons. (The character will change in the order shown in the Fig. 17 when the DOWN/UP buttons are pressed.) Press CHARACTER button again so that the second character blinks.

   Repeat this operation to display all required characters. Up to 5 characters can be input.

   To change the character in any other position, press CHARACTER button repeatedly so that the character in the required position blinks.

3. After inputting the last character, press ENTER button to store the characters in memory.

For details of each of the above buttons, refer to the section in which the "Front Panel" is described.

Alphanumeric character order

- The character displayed is changed in the order shown in the figure when the DOWN and UP buttons are pressed.
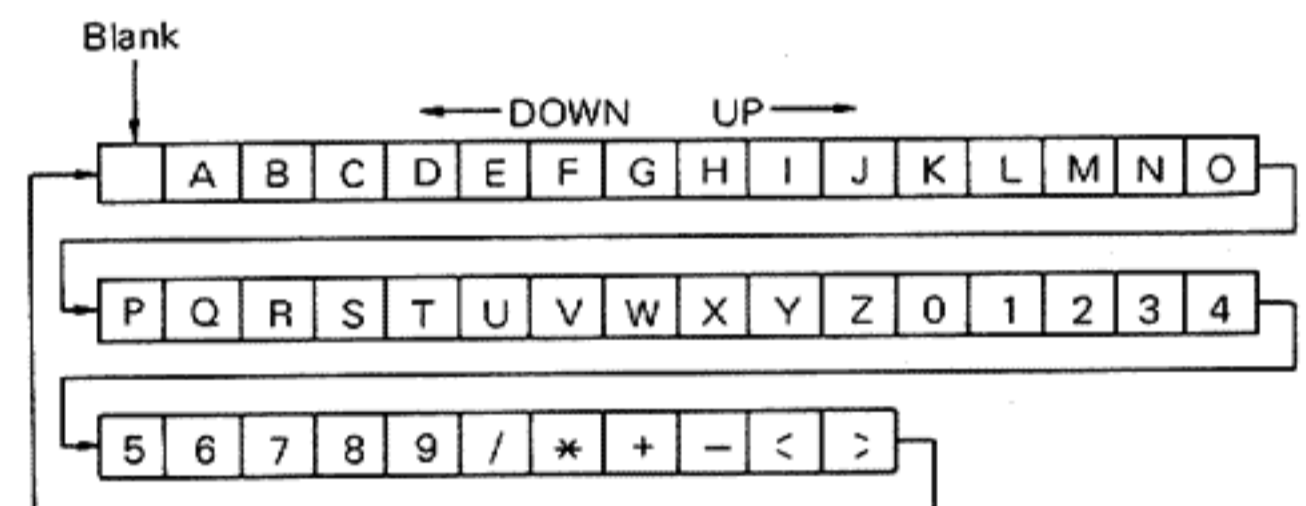

Fig. 17

About the Digital Acoustics Processor (D.AP)

1. The history of sound field reproduction

All audio systems are intended to reproduce sound fields; this was the target, ever since the age of monaural sound. With a conventional stereo source, there is more directional information, which results in a two-dimensional sound field. However, the original sound contains sound field components caused by reflections and reverberations where the original recording took place. Our Digital Acoustics Processing extracts these components on the source signals and uses them to create a sound field which simulates that in a concert hall, etc. But this isn't all that it does; it takes into account the conditions of the listening room where the music is reproduced — its size, the degree to which sound is reflected from its walls and absorbed by its furnishings — so that the sound that the listener hears is a "realistic" recreation of the original performance.

2. Structure of sound field signals (Fig. 18-a, b)

The sound field signals obtained where the music is performed have three main components; direct sound (DS), early reflections (ER) and reverberations (REV).

Among these signal components, the key to the unique acoustic characteristics of any auditorium is the early reflections, generated by the direct, "original" sound, reflected one or more times from the walls and ceiling. Each of the reflections has a different level and appears to come from a different direction, and the pattern of early reflections is different for different concert halls, auditoriums and jazz clubs, wherever music is performed.

As described above (and can be seen in Fig. 18-a, b), the early reflections are the most important factor, and reach the listener's ears from various directions with various levels, depending on the characteristics of the auditorium. At JVC, using a newly-developed sound field measurement analysis system, we've measured the sound fields in a number of places where music is performed and obtained a great deal of data concerning sound fields.

From these results, the relationship between the reflections and the sound field has been analyzed to calculate the typical reflection patterns in various concert halls, etc. Data from the above research is stored in memory element incorporated in the RX-1001VBK.

3. Description of each sound field pattern

- **SYMPHONY HALL**

  This simulates the sound heard in a typical concert hall where concerts, generally of classical music, are held. The data used as a basis for this pattern was measured in modern concert hall with an auditorium holding about 2,000 people. In this sound field, there are many reflections from side walls which create an extended sound field. It is suitable for playing most classical music, from orchestral works to chamber music and recreates the atmosphere of an actual concert hall.

- **RECITAL HALL**

  This recreates the conditions where chamber music and piano solos are performed and where accompanied vocalists sing, and you will be able to enjoy music as played in a small concert hall.

  Since it simulates a room with relatively harder walls made from wood or plaster, it provides a sound field, with many reflections.

- **LIVE CLUB**

  This recreates is the sound field heard in a jazz club with a wooden floor and a low ceiling. It provides many reflections with a relatively short delay; this sound field has the least "expansion" among the five patterns. It is most suitable for playing jazz and other music played by small and medium sized groups.

- **CHURCH**

  The sound field in a building with a high roof such as a church has longer-duration reflections. Suitable for organ music, choral works and other church music, etc. with solemn atmosphere.

  The echo duration is set at 2 seconds for both ROOM SIZE and LIVENESS parameters.

- **STADIUM**

  This mode simulates a large open-air arena with tiered stands, such as a baseball or football stadium, where the time delays of reflections are long and not much sound is reflected.

  When used with rock or pop music, you will feel you are at an outdoor concert with massive sound reinforcement equipment.

4. Description of Each Parameter

- **ROOM SIZE [1] — [5] (Fig. 19-a, b)**

  The higher the parameter level selected (from [1] to [5]), the wider the sound field. The delay before you hear the reflections will be extended and the timing with which reverberations decay will be longer. The levels of reflected sound images will not be changed.

- **LIVENESS [1] — [5] (Fig. 20-a, b)**

  The level of the reflections will be increased when a higher setting is selected, and a sound field containing many reflections will be obtained.

- **WALL TYPE [1] — [3] (Fig. 21-a, b)**

  The higher the level selected, the more high frequency components will increase, and the effect of having walls and a ceiling made of harder materials where the original recording was made will be obtained.
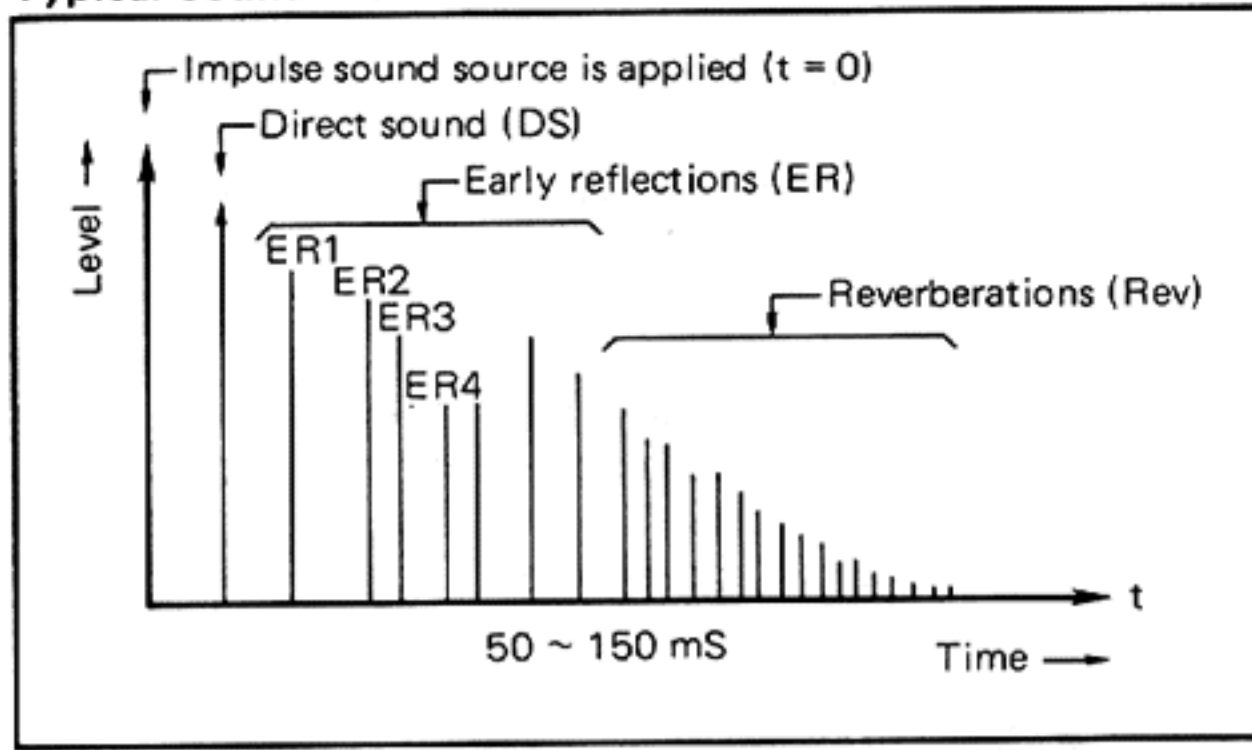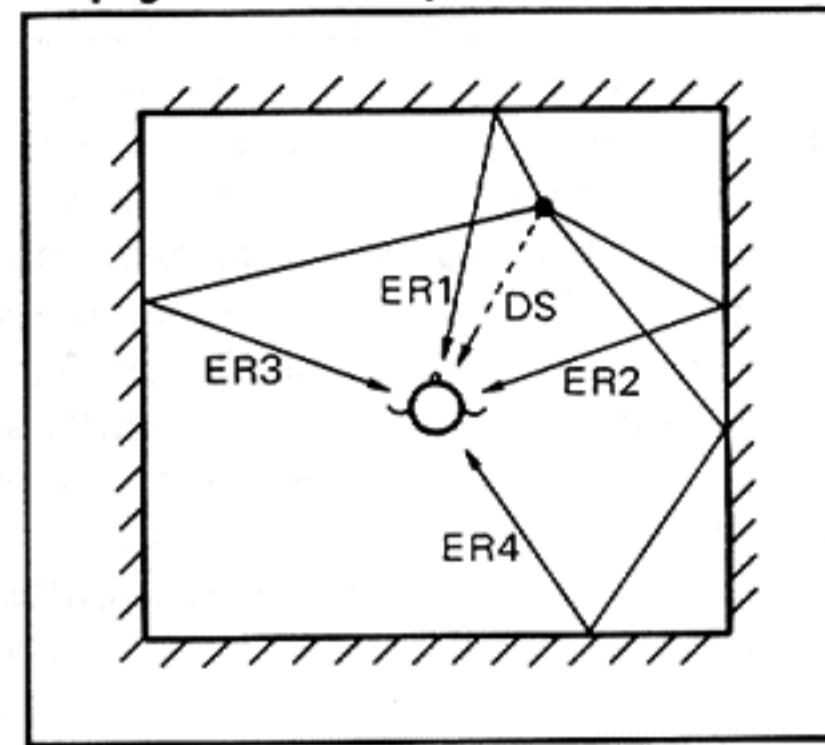
Typical Sound Field Pattern

Impulse sound source is applied (t = 0)

Direct sound (DS)

Early reflections (ER)

ER1
ER2
ER3
ER4

Reverberations (Rev)

Level

50 ~ 150 mS

Time →

t

Fig. 18-a

Propagation of Early Reflections

ER1 DS
ER3   ER2
ER4

Each reflection (ER1 to ER4) comes from a different direction   **Fig. 18-b**
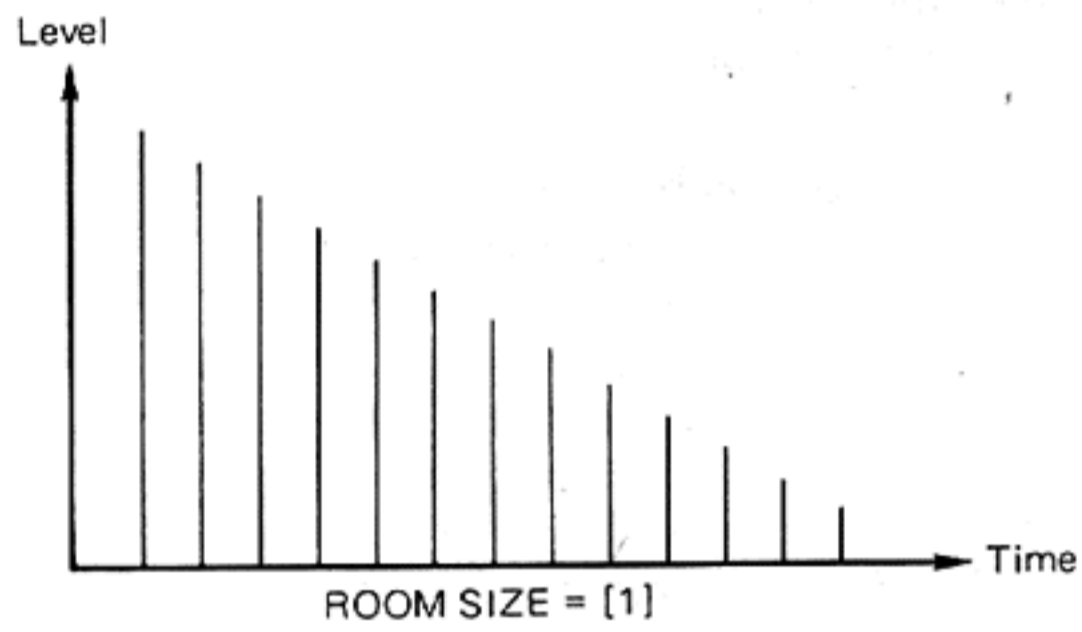
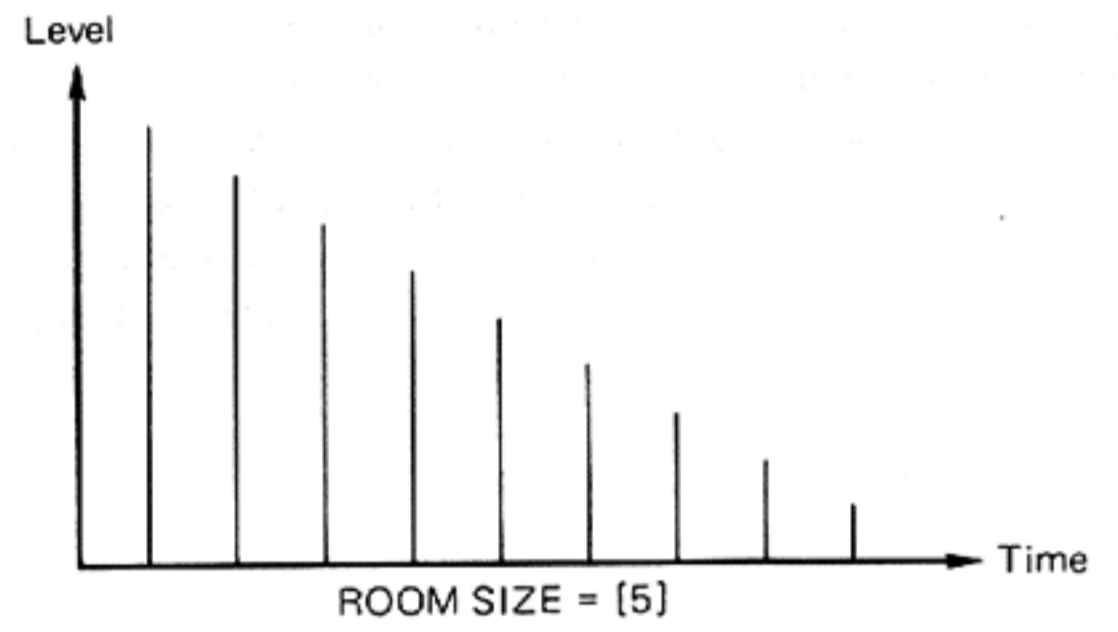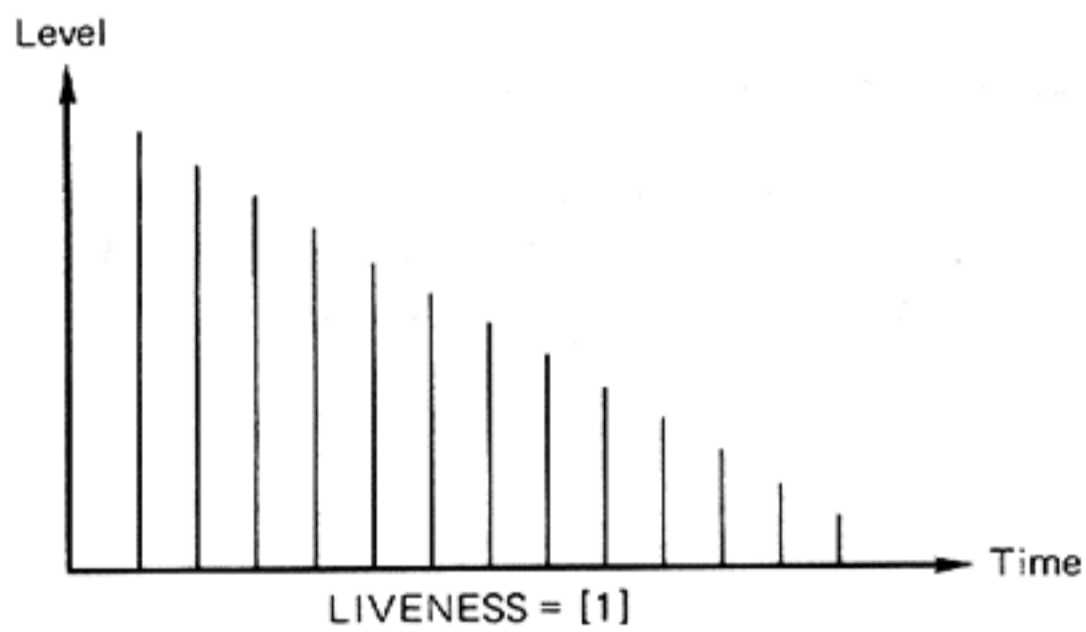## Various Reflection Patterns depending on Different Room

Level

Time

ROOM SIZE = [1]

Fig. 19-a

Level

Time

ROOM SIZE = [5]

Fig. 19-b

Level

Time

LIVENESS = [1]

Fig. 20-a

Level

Time

LIVENESS = [5]

Fig. 20-b

Rev. time

Low   WALL TYPE = [1]   High

Frequency level

Fig. 21-a

Rev. time

Low   WALL TYPE = [3]   High

Frequency level

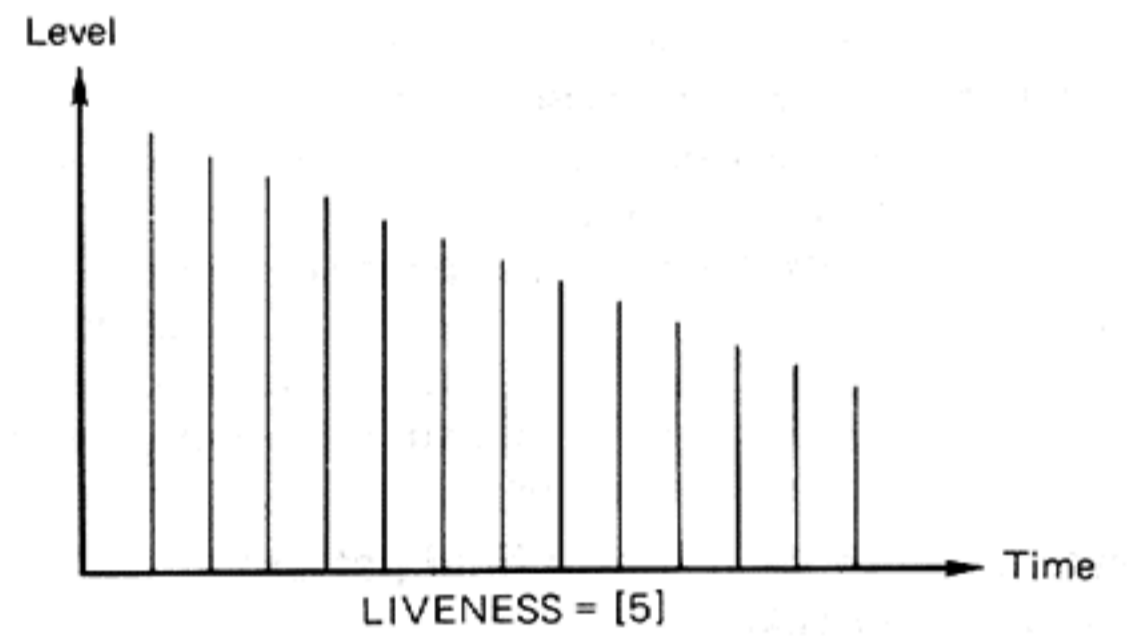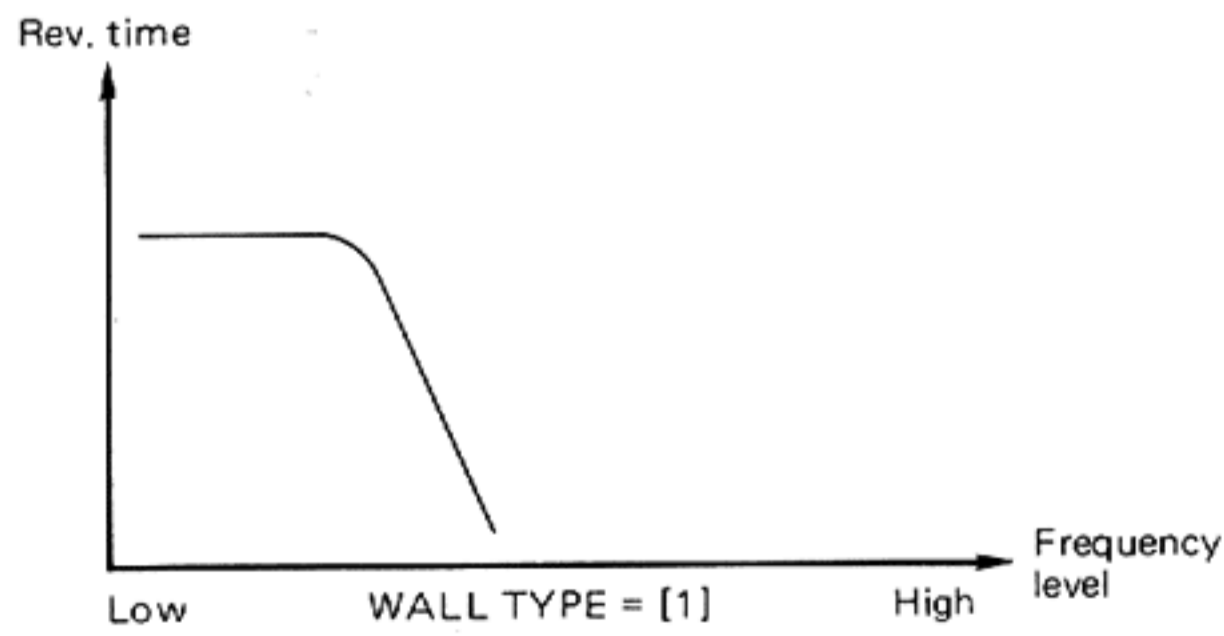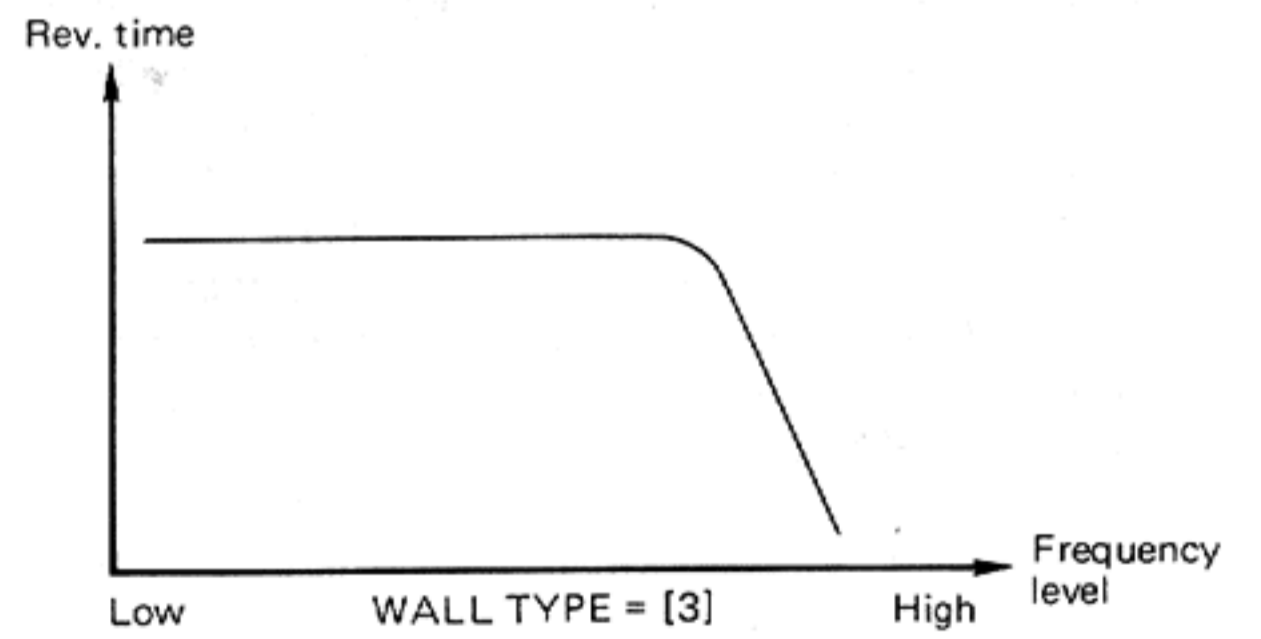**Fig. 21-b**

REMOTE CONTROL UNIT (RM-SR1001)

Refer to page 37 and keep it open.

This remote control unit (RM-SR1001) has the two display modes; the Standard mode ([JVC] appears on the Indicator/Key panel) and the Programming mode ([PROGRAMMED] appears on the Indicator/Key panel).

The Programming (learning) mode has function key corresponding to the control button of a CD player, a DAT deck, a TV, a VCR and an external source component (CD, DAT, TV, VCR and EXT). These are provided so you can "teach" the remote control the functions of components with infrared remote controls, even from other manufacturers. It allows you to program the functions of the remote control units of existing audio, video and other remote controllable equipment into the RM-SR1001, so that they can be controlled directly from the RM-SR1001. (For programming operations, refer to "Programming Procedure" on page 29.)

❶ Programming buttons and indicators

LEARN indicator: This indicator blinks during programming and lights continuously when the programming (learning) operation of a function of another remote control unit has been completed.

ERROR indicator: This indicator lights when the control signal cannot be transmitted or when programming (learning) is impossible. It lights together with the LEARN indicator while setting the programming (learning).

SELECT: Select the display mode of the ❾ Indicator/Key panel with this button.

CLEAR: Press this button to clear all the functions stored in the buttons for one screen displayed on the ❾ Indicator/Key panel in the Programmable (learning) mode.

CHECK: During programming (learning), pressing this button enters the check mode. In this condition, you can check that the programming operation has been completed correctly by transmitting any memorized key function once, without changing the display mode using ❶❺ USE/LEARN select switch.

EXT (Extra): This button is used to control a source component in addition to those that can be selected with the ❶❷ SOURCE SELECT buttons in the Programming mode.

❷ POWER

AUDIO: Turn on or off the power of the RX-1001VBK.
TV: Turn on or off the power of the TV.
VCR 1: Turn on or off the power of the VCR.

Notes:
- **As long as one of the JVC-specified VCRs or TVs is used, it can be remote-controlled.**
- **Before operating the television or VCR by remote control, be sure to read the television or VCR instruction manual carefully.**

❸ LIGHT

When the red button located on the left side, a lamp lights to illuminate the ❾ Indicator/Key panel.

❹ REMOTE ON/OFF

The remote control unit alternates between on and off when this button is pressed. When switched off, the display on the panel goes out. When it is turned on again, the remote control unit returns to the previous operating mode. For example, if the remote control unit is turned off with "PHONO" displayed, when it is turned on again, "PHONO" will be selected automatically. When no further entry is made one hour after the last key operation, the remote control unit will be automatically turned off. To turn it on again, press the REMOTE ON/OFF button to switch it on.

❺ ♪ ON/OFF

Normally, when a control signal is transmitted, an electric buzzer beeps. If you don't want this beep, it can be switched on and off by pressing this key.
This key is effective for the USE and LEARN modes.

❻ REMOTE CONTROL

This shows the remote control operation mode currently selected.

JVC: In this mode, JVC's COMPU LINK components connected to the RX-1001VBK with remote cables can be controlled with this remote control unit.

PROGRAMMED: In this mode, any components the functions of which have been programmed can be controlled with the remote control unit, by transmitting the programmed signal to the component.

Transmit indicator (▼): This indicator blinks when a remote control signal is transmitted.

❼ Battery indicator (▯)

When this indicator lights, the batteries are nearly discharged.
Replace the batteries with new ones referring to page 25.

❽ SLEEP TIMER

When this key is pressed, its indicator blinks. Each time this key is pressed, the sleep timer's setting increases in 10-minute increments up to 80 minutes; the sleep timer setting is shown on the display of the RX-1001VBK.

❾ Indicator/Key panel

This panel is a touch sensitive LCD (Liquid Crystal Display) which consists of indicators which act as operating keys. When one of the ❶❶ DISPLAY buttons or the ❶❷ SOURCE SELECT buttons is pressed, symbols will appear on the ❾ Indicator/Key panel; by pressing these, you can operate the selected component.

For example, if you choose a CD player as input, the menu associated with the CD player will appear on the ❾ panel; by pressing the keys, you can perform the required operation. (Refer to Fig. 53)

Notes:
- **When the "TAPE 2" SOURCE SELECT button is pressed, the panel display will not change.**
- **Each of the keys has the same function as one of the buttons on the front panel of the RX-1001VBK. For operation, refer to the description in the "Front Panel" section.**
- **The "TAPE 2" SOURCE SELECT button only switches the tape monitor switch ON or OFF. It does not control the TAPE 2 deck.**
- **"VCR 2" functions only in the Programming (learning) mode. It does not function in the Standard control mode.**

Standard Control Mode

When any of the (►), (■), (❚❚), (◄◄), (►►), (◄◄) or (►►❙) keys for the TAPE 1, DAT, CD/CD CHANGER, and PHONO modes are pressed, the corresponding symbol will be displayed.

— TAPE 1 mode —

PLAY (►): Press to play a tape.

STOP (■): Press to stop operation.

PAUSE (❚❚): Press to pause during playback or recording. To release this function, press the PLAY button.

MUSIC SCAN (◄◄ , ►►): Press one of these buttons to scan to the beginning of the required tune.

FF (►►): Press to fast wind the tape from left to right.

REW (◄◄): Press to fast wind the tape from right to left.

REC (●): While holding this button pressed, press the PLAY (►) button to start recording. When this button is pressed together with the PAUSE (❚❚) button, the deck will enter the REC-PAUSE mode.

DIRECTION: Press to change the direction of tape travel.

— DAT mode —

PLAY (►): Press to start play.

STOP (■): Press to stop operation.

PAUSE (❚❚): Press to suspend playback or recording temporarily.

FF (►►): Press to fast forward the tape.

REW (◄◄): Press to rewind the tape.

REC (●): While holding this button pressed, press the PLAY (►) button to start recording. When this button is pressed together with the PAUSE (❚❚) button, the deck will enter the REC-PAUSE mode.

AUTO SEARCH:

(◄◄): Press to skip to the beginning of the previous tune.

(►►❙): Press to skip to the beginning of the next tune.

Note:

● **(◄◄) and (►►❙) buttons of this unit have the some function as the (◄❙) and (❙►) buttons on the specified DAT deck**

1 — 9, 10, +10: Select the track No. of tune No. to be listened to or to be programmed.

When selecting a track or tune with a number of 10 or higher, first press +10 the required number of times, then one of 1 to 10. (See Ex.)

<Examples>

5 : Press ⑤ .
10 : Press ⑩ .
17 : Press +10 once, the press ⑦ .
20 : Press +10 once, the press ⑩ .
25 : Press +10 twice, then press ⑤ .

— CD/CD CHANGER mode —

TRACK :

1 — 10, 0, +10: Use these keys to assign the track numbers (1 — 10) for a disc which is to be played or programmed. To assign a track number over 10, use a combination of the +10 key with a numeric keys.

Notes:

● **10, +10: These keys are used exclusively for the CD player.**

● **0, 10, +10: The use of these keys depends on the CD player. For details, refer to the instruction book provided with the CD player.**

PLAY (►): Press to start play.

STOP (■): Press to stop play.

OPEN/CLOSE: Press to move the disc tray in and out.

PAUSE (❚❚): Press to suspend play temporarily.

AUTO SEARCH (◄◄): Press to skip back to the beginning of the current tune or the previous tune during play. The pickup will go back one tune each time the key is pressed. If the key is held down, the pickup will go back continuously, one tune at a time, until the key is released.

AUTO SEARCH (►►❙): Press to skip ahead to the beginning of the next tune during play. The pickup will be advanced to the beginning of next tune each time the key is pressed. If the key is held down, the pickup will skip ahead continuously, one tune at a time, until the key is released.

MANUAL SEARCH (◄◄): Press to search for the portion required to be played by moving the pickup back quickly during play.

MANUAL SEARCH (►►): Press to search for the portion required to be played by moving the pickup forward quickly during play. During fast-forwarding, sound can be heard at reduced volume level.

PLAY MODE

Press one of these buttons to select a JVC CD AUTO CHANGER.

CONTINUE: Press this button to listen to compact discs loaded in the CD magazine in the numerical order regardless of the programmed playback setting.

PRGM: Press this button to listen to the compact discs in programmed order.

MAG. PRGM: Press this button to listen to the compact discs in the order of the program previously stored for each magazine.

When any PLAY MODE button is pressed, "MODE" lights in the display.

DISC :

These keys are for setting the disk number of the CD AUTO CHANGER.

P: Press to play or program a disc on the SINGLE PLAY TRAY.

1 — 6: Press to play or program discs in a magazine.

Note:

● **For details, refer to the instruction book provided with the CD player.**

— PHONO mode —

PLAY (►): Press to start play.

STOP (■): Press to stop play.

— TUNER mode —

1 —10,+10: Select the required preset channel 0 key is not used at this time. When selecting a preset channel with a number of 10 or higher, first press +10 the required number of times, the one of 1 to 10 keys. (See Ex.)

<Examples>

5 : Press ⑤ .
10 : Press ⑩ .
17 : Press +10 once, the press ⑦ .
20 : Press +10 once, the press ⑩ .
25 : Press +10 twice, then press ⑤ .

DOWN UP (−, +): Press to scan preset stations sequentially.

— D.AP/SEA mode —

SEA : Press to listen to the source with S.E.A. compensation.

SEA PRESET: Press to select an S.E.A. pattern. Each time this key is pressed, the preset pattern of the equalizer is changed in the order MANUAL A − B − C − D − E − PROGRAMMED A − B − C − D − E, then returns to MANUAL A again.

63 Hz − 16 kHz: Press to select the frequency band.

DOWN UP (−, +)

−: Press to decrease the response in the frequency band selected by the 63 Hz − 16 kHz keys.

+ : Press to increase the response in the frequency band selected by the 63 Hz − 16 kHz keys.

D.AP : Press to listen to the source with the D.AP or DOLBY SURROUND effect.

D.AP MODE: Press to select the DOLBY SURROUND mode or any required D.AP mode. Every time the key is pressed it changes from DOLBY SURROUND to SYMPHONY HALL, RECITAL HALL, LIVE CLUB, CHURCH, STADIUM and back to DOLBY SURROUND again.

The display will show "DOLBY" → "HALL 1" → "HALL 2" → "CHRCH" → "CLUB" → "STDUM" and back to "DOLBY" again.

DELAY TIME: Press to adjust the delay time in the DOLBY SURROUND mode. Each time the key is pressed, the delay time will be lengthened, while the indicator is changed in order 1 − 2 − 3 − 4 − 5, then back to 1.

MODE

SIZE: Press to adjust the "ROOM SIZE" (width of the sound field). Each time the key is pressed, the width of the sound field will be increased sequentially, while the indicator changes in the order 1 − 2 − 3 − 4 − 5, then back to 1.

LIVE: Press to adjust the "LIVENESS" (amount of reflection in the sound field). Each time the key is pressed, the amount of reflections will be increased, in sequence, while the indicator is changed in the order 1 − 2 − 3 − 4 − 5, then back to 1.

WALL: Press to adjust the "WALL TYPE". Each time the key is. pressed, the wall material (of the room where the music was played) will be harder in sequence, while the indicator changes in the order 1 − 2 − 3, then back to 1.

REAR LEVEL (−, +)

−: Press to decrease the REAR LEVEL.

+ : Press to increase the REAR LEVEL.

D.AP LEVEL (−, +)

−: Press to decrease the D.AP LEVEL.

+ : Press to increase the D.AP LEVEL.

BALANCE (L, R)

L: Press to shift the balance to the left by one step. Holding this key pressed changed the balance continuously.

R: Press to shift the balance to the right by one step. Holding this key pressed changed the balance continuously.

— TV mode —

1 − 9, 0: Press to select the TV channel.

DOWN UP (−, +): Press to scan TV channels sequentially.

Notes:

● **For details of operation, refer to the instruction book provided with the television.**

● **Among the JVC's components, there are TV's that cannot be operated by the RM-SR1001. If you wish to use the RM-SR1001, program the TV's remote control functions on to the RM-SR1001. Refer to pages 26 to 31.**

— VCR mode —

1 − 9, 0: Press to select the channel of the VCR.

DOWN UP (−, +): Press to scan VCR channels sequentially.

PLAY (▶): Press to play a video tape.

STOP (■): Press to stop operation.

PAUSE (II): Press to pause during playback or recording. To release this function, press the PLAY button.

FF (▶▶): Press to fast forward a tape.

REW (◀◀): Press to rewind a tape.

REC (●): While holding this key pressed, press the PLAY (▶) key to start recording. When this key is pressed together with the PAUSE (II) key, the deck will enter the REC-PAUSE mode.

Notes:

● **For details of operation, refer to the instruction book provided with the VCR.**

● **Among the JVC's components there are VCR's that cannot be operated by the RM-SR1001. If you wish to use the RM-SR1001, program the VCR's remote control functions on to the RM-SR1001. Refer to pages 26 to 31.**

For keys having the same indications (names) as those on the front panel of the RX-1001VBK, refer to the description of the "Front Panel" section.

⑩ Component controlled display

Press the ⑪ DISPLAY buttons or the ⑫ SOURCE SELECT buttons to select the component to be controlled. The selected source (but not TAPE 2, VCR 2) will appear on this section.

⑪ DISPLAY

Press these buttons to select the source component or D.AP/S.E.A. mode to be controlled. The source display for control ⑩ indicates the selected source or D.AP/ S.E.A., and the associated symbols will appear on the ⑨ Indicator/ Key panel.

Note:

● **The DISPLAY button does not control the source selector on the front panel (RX-1001VBK) directly. The source selector will only change when any of the opera-**

tion keys displayed on the ⑨ Indicator/Key panel is pressed after pressing this button.

⑫ SOURCE SELECT

Press these buttons when any required source component or D.AP/S.E.A. unit is to be controlled. The ⑩ component controlled display indicates the selected source or D.AP/S.E.A., and the relevant symbols will appear on the ⑨ Indicator/Key panel.

TAPE 1: Press to listen to a tape deck connected to the TAPE 1 terminals.

TAPE 2: Press to listen to a tape deck connected to the TAPE 2 terminals. If you press this button once more, it will release this function so that the source selected by another source select button may be heard.

Note:

● **Press this button to monitor the recorded sound (to listen to the sound just recorded on the tape) when using a three-head tape deck.**

FM: Press to listen to an FM broadcast.

AM: Press to listen to an AM broadcast.

DAT: Press to listen to a DAT deck connected to the DAT terminals.

CD: Press to listen to a CD player connected to the CD terminals.

PHONO: Press to listen to a turntable connected to the PHONO terminals.

VCR 1: Press to watch and listen to the source from the VCR 1 connected to the VCR 1 terminals.

VCR 2: Press to watch and listen to the source from the VCR 2 connected to the VCR 2 terminals.

VIDEO/TV: Press to watch and listen to the source from the video unit connected to the VIDEO/TV terminals.

Note:

● **When source selection is done from the front panel of the RX-1001VBK, the front panel and remote control source displays will be different: The new source will be displayed on the front panel of the RX-1001VBK while the source indicator of the remote control unit is not changed.**

⑬ MUTE

Press this button to instantly mute the sound. To return to the original sound level, press this button again or press the ⑭ VOLUME button.

⑭ VOLUME (−, +)

Press the − button to decrease the volume and the + button to increase it.

⑮ USE/LEARN select switch

USE: Normally set to this position. The JVCs original control signals or programmed (learned) control signals will be transmitted to the relevant component.

LEARN: When programming (learning) the function of other remote control unit, set to this position. In this mode, no control signals can be transmitted.

Batteries

- **How to install batteries (Fig. 22)**
1. Slide the cover of the battery compartment in the direction of the arrow to remove it.
2. Install the provided batteries with the correct polarity. (It is recommended that the batteries with a longer service life are used.)
   SIZE "AAA" x 6
3. Re-install the cover of the battery compartment.

Note:
- **When replacing the batteries, be sure to set the ⑮ USE/ LEARN switch on the rear panel of the remote control unit to the USE position.**

- **How to use the batteries**
Improper use of the batteries can cause leakage or damage. So, take the following precautions:
1. Install batteries with their polarities properly placed.
2. Do not mix new and used batteries.

3. Use the same brand and type of batteries because otherwise the voltages may differ sightly.
4. If the remote control unit will not be used for a long time remove the batteries.
   Also, follow the instructions on the batteries.

- **Battery replacement time**
When the ❼ battery indicator lights or distance from which the remote control unit is effective starts to decrease, replace all control batteries with new ones.
When the illumination of the ❾ Indicator/Key panel is dim when the ❸ LIGHT button is pressed, replace the two batteries used for illumination.

Notes:
- **When the remote control is operated too near the receiver during AM reception, it may cause interference.**
- **The remote control can be used up to about 8 m (26 ft) from the receiver.**

1

3-2

(For controller)

2

4

For illumination (LIGHT)

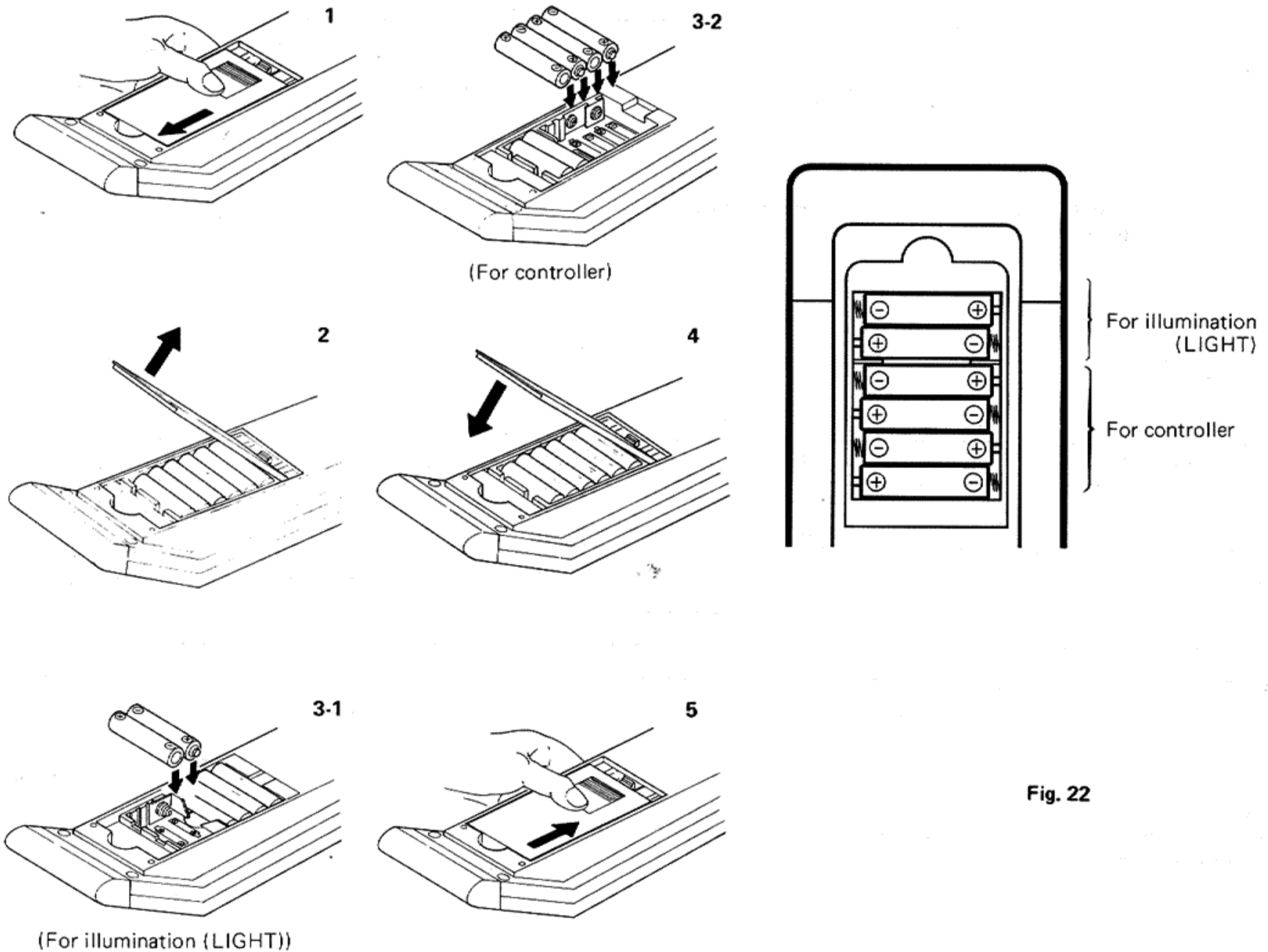For controller

3-1

5

(For illumination (LIGHT))

Fig. 22

HOW TO PERFORM PROGRAMMING (LEARNING)

The RM-SR1001 can be programmed to memorize functions of remote control units from other manufacturers.

Each operation key can be programmed to "remember" operation key functions for five different sources — CD, DAT, TV, VCR and EXT.

Three to five menu screens are available for each of the five different sources (CD, DAT, TV, VCR and EXT). (See Fig. 23 — Fig. 28)

Select the required ❾ Indicator/Key panel display using the ❶ SELECT button.

- Only one screen of each mode can be programmed. Changing to other screens cannot be done even if the ❶ SELECT button is pressed after the first key is programmed. When you wish to program other screens, first cancel the present screen and then select a different screen. The method for cancelling is explained on page 31.

- Besides displaying on the screen, it is possible to program on the ❷ "TV" and "VCR 1" POWER buttons.
  This is valid only when each of the modes (TV and VCR 1) is in the PROGRAMMED mode.

Indicator/Key Panel in LEARNING mode

CD mode
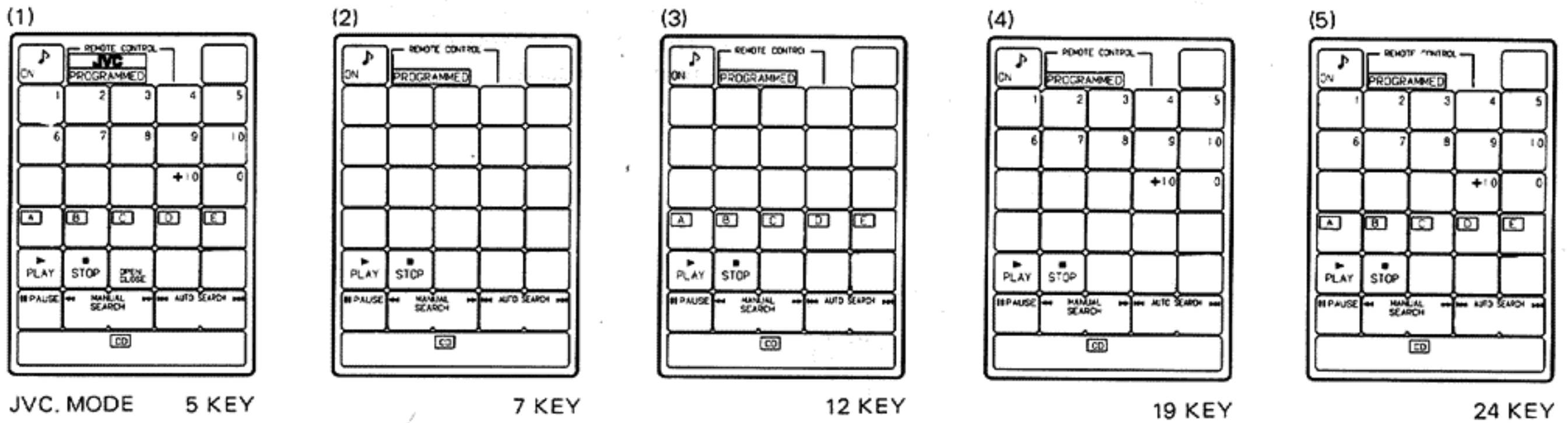
| (1) JVC. MODE | 5 KEY | (2) 7 KEY | (3) 12 KEY | (4) 19 KEY | (5) 24 KEY |

Fig. 23

Note:
- In the JVC mode, programming can be done only for menu screens Ⓐ to Ⓔ.

DAT mode

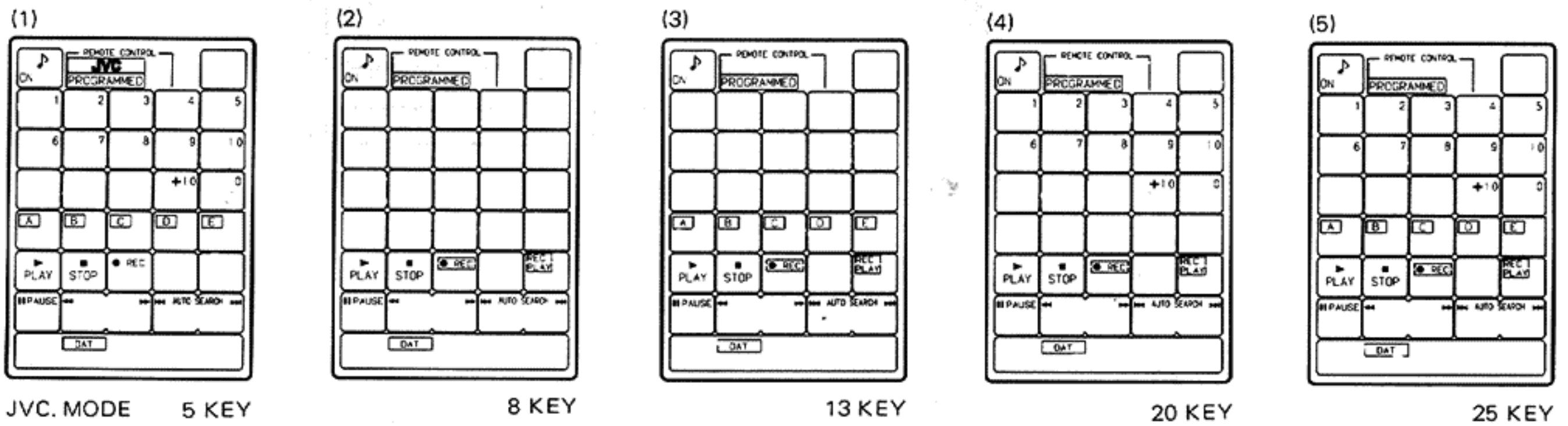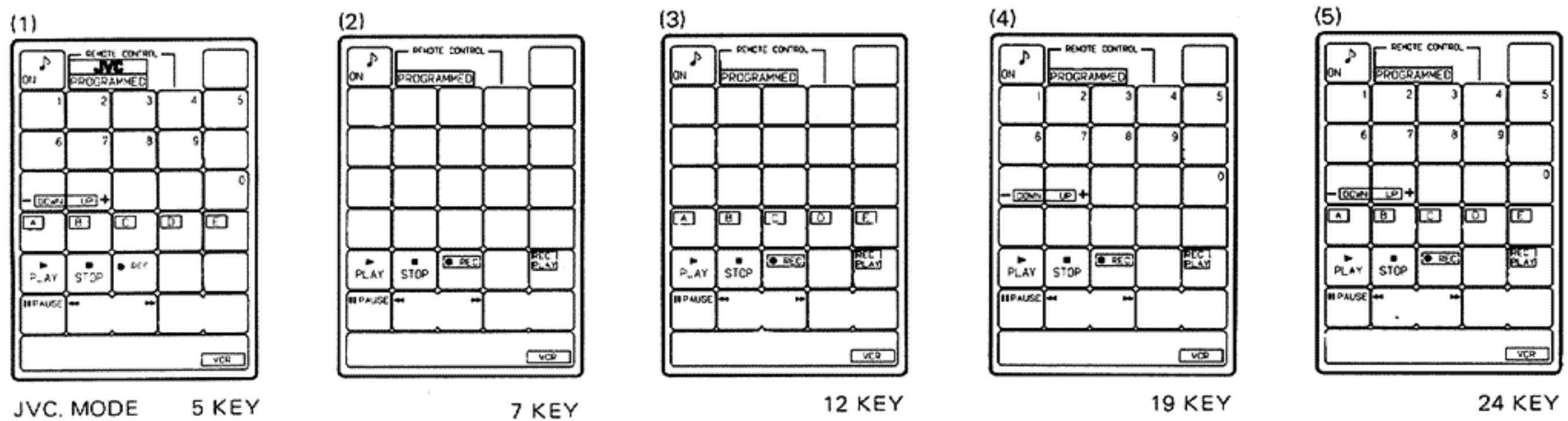| (1) JVC. MODE | 5 KEY | (2) 8 KEY | (3) 13 KEY | (4) 20 KEY | (5) 25 KEY |

Fig. 24

Note:
- In the JVC mode, programming can be done only for menu screens Ⓐ to Ⓔ.

VCR 1 mode | (Menu screen when the ⑮ USE/LEARN select switch is set to LEARN mode after pressing the VCR 1 (⓫ or ⓬) button.)

(1)   (2)   (3)   (4)   (5)

JVC. MODE   5 KEY   7 KEY   12 KEY   19 KEY   24 KEY

Fig. 25

Notes:

1. In the JVC mode, programming can done only for menu screens Ⓐ to Ⓔ .
2. In modes (2) through (5), the ❷ "VCR 1" POWER button can also be programmed.
3. When programming is done on VCR 1 mode, programming cannot be done on VCR 2 mode.
   (Becomes selection of source only and nothing will be displayed on the ❾ Indicator/Key Panel)

VCR 2 mode | (Menu screen when the ⑮ USE/LEARN select switch is set to LEARN mode after pressing the ⓬ VCR 2 button.)

(1)   (2)   (3)   (4)

6 KEY   11 KEY   18 KEY   23 KEY
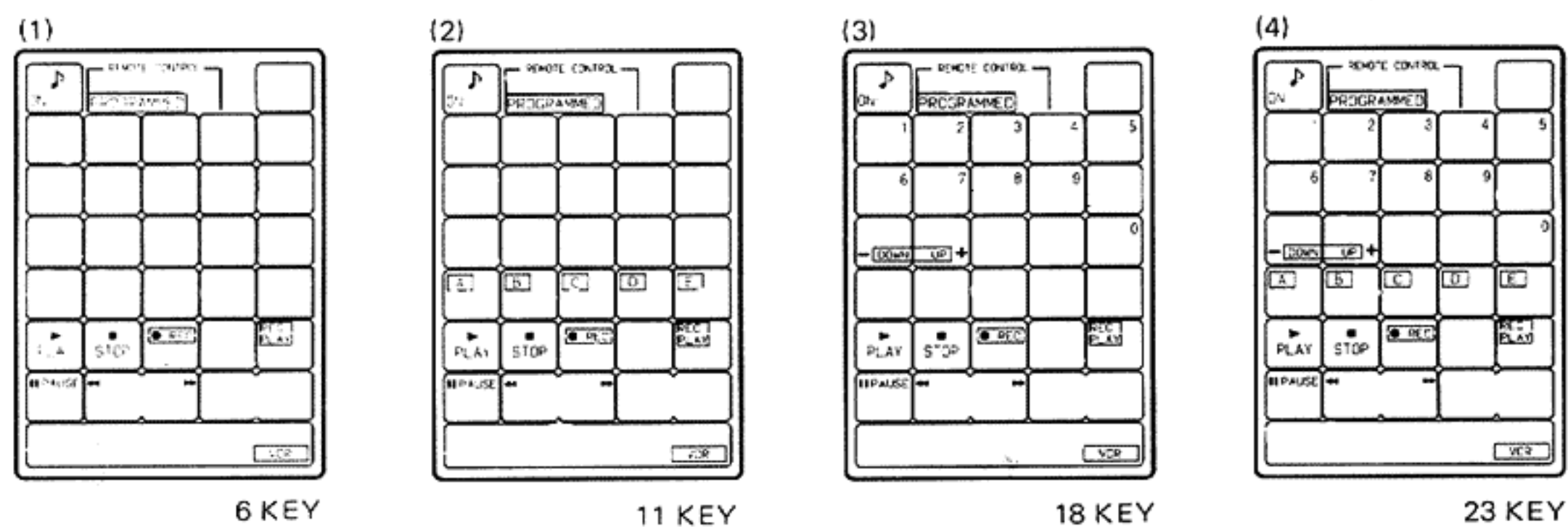
Fig. 26

Note:

● When programming is done in the VCR 2 mode, the VCR 1 mode becomes the menu for the JVC mode only and programming cannot be done on the VCR 1 mode and ❷ "VCR 1" power button.
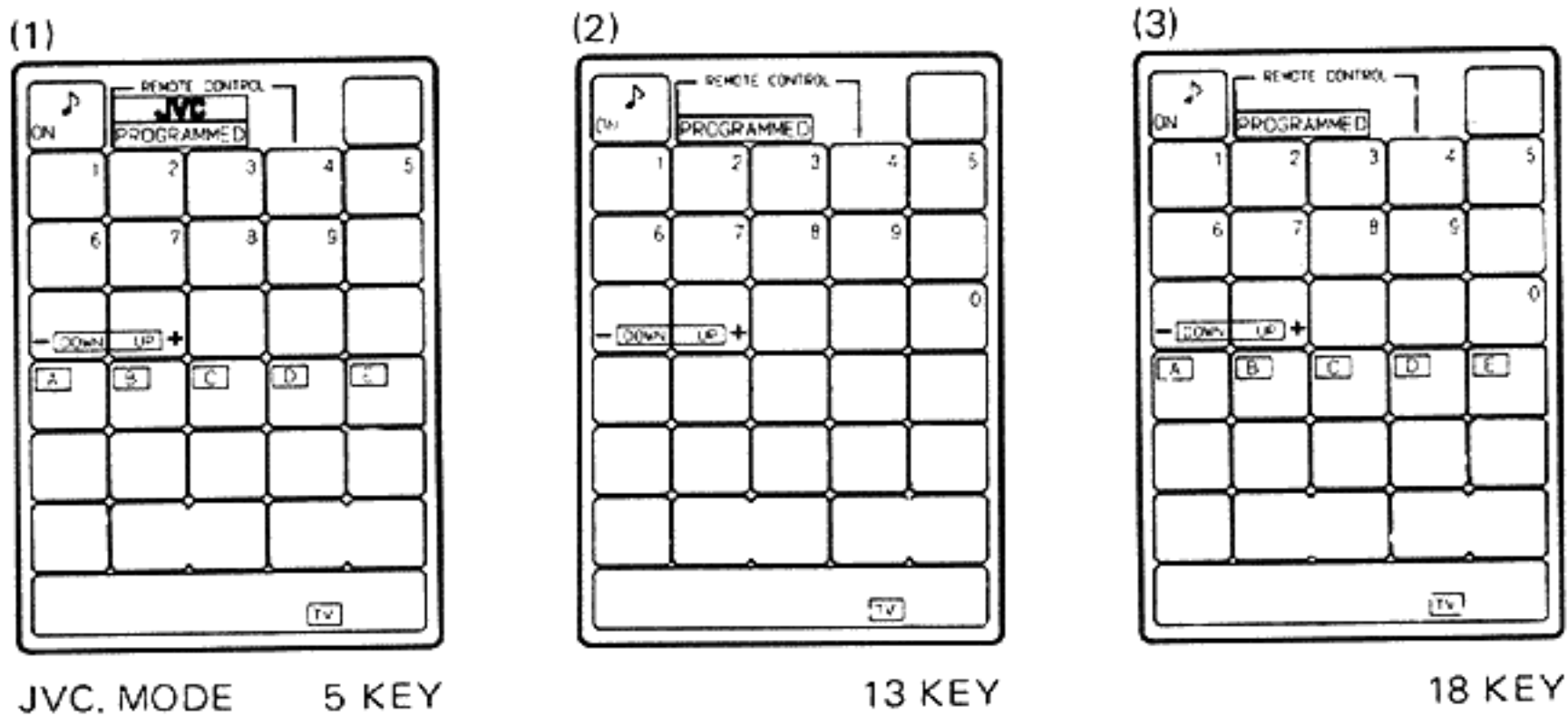
(1)   (2)   (3)

JVC. MODE   5 KEY   13 KEY   18 KEY

Fig. 27

Notes:
- In the JVC mode, programming can only be done for menu screens Ⓐ to Ⓔ .
- In modes (2) or (3), the ❷ "TV" POWER button can also be programmed.

EXT mode

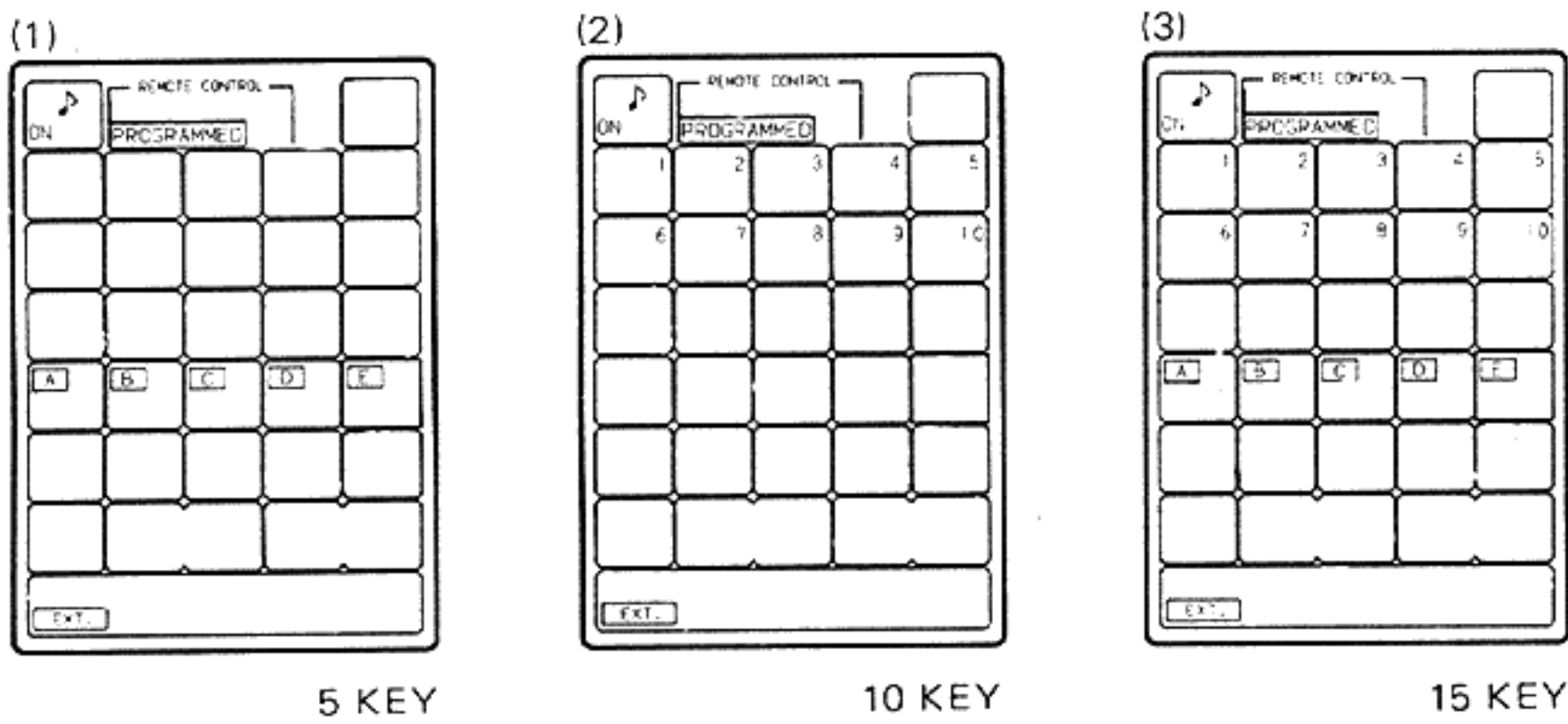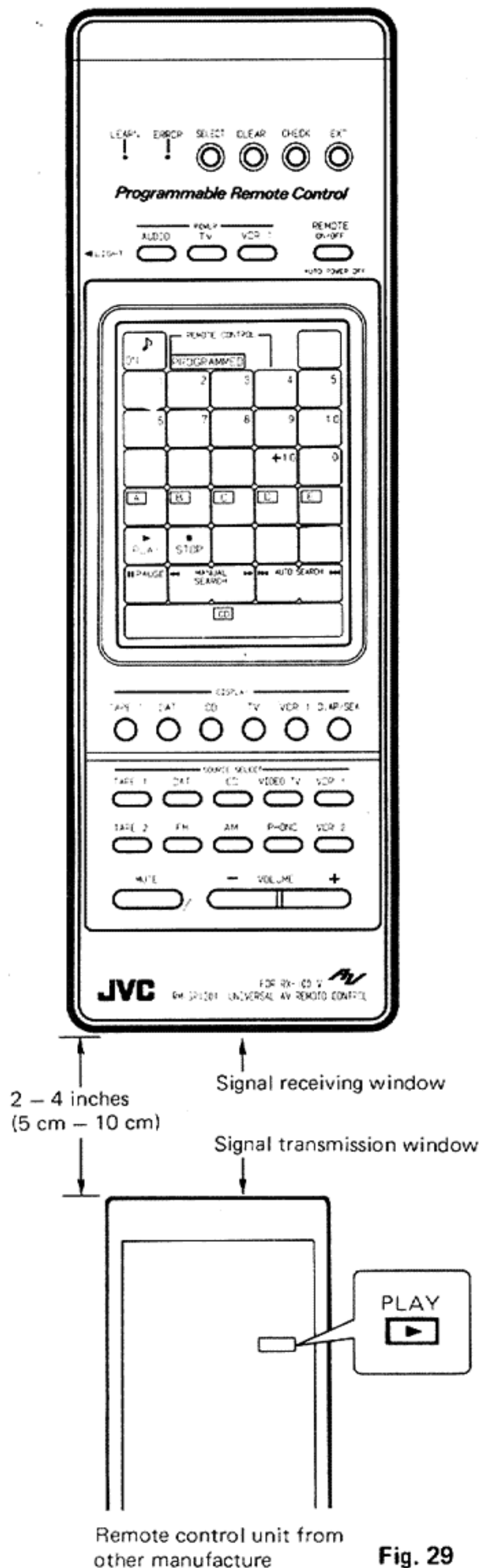(1)   (2)   (3)

5 KEY   10 KEY   15 KEY

Fig. 28

2 – 4 inches
(5 cm – 10 cm)

Signal receiving window

Signal transmission window

PLAY
▶

Remote control unit from
other manufacture

Fig. 29

Programming Procedure

1. Select the source to be programmed using any of the ⓫ DISPLAY buttons or ⓬ SOURCE SELECT buttons. (Fig. 31)

2. Set the ⓯ USE/LEARN switch on the rear panel of the remote control unit to the LEARN position. (Fig. 32) After changing to the LEARN position, the screen cannot be changed. If you wish to change the screen, change to the USE position and start over from step 1.

3. Select the required menu pattern for ❾ Indicator/Key panel using the ❶ SELECT button. (Fig. 33)

4. Put the two remote controls on a table with the transmission window of the remote control the functions of which are to be learned pointing towards the signal receiving window at the rear of the RM-SR1001. Leave a distance of about 2 – 4 inches (5 – 10 cm) between them. (Fig. 34)

5. Press the key on the RM-SR1001 in which you want to program other function. (Fig. 35) The ❶ LEARN indicator will blink (for about 7 seconds). (Fig. 36) If the ❶ ERROR indicator lights at the same time, a function has already been memorized in that key. (Fig. 37) If only the ❶ ERROR indicator lights, you have pressed a key which cannot be used for programming. (Fig. 38) Select another key and try again from the beginning.

6. While the ❶ LEARN indicator is blinking (for about 7 seconds), press the button of the other remote control unit the function of which is to be memorized. (Fig. 39) While setting program, the ❶ LEARN indicator lights from the blinking state and the ❶ ERROR indicator lights. (Fig. 40) When program setting has been completed, the ❶ LEARN indicator lights (Fig. 41) If programming has not been performed correctly, the ❶ ERROR indicator lights on its own. In this case, perform the operations in steps 5 and 6 again. (Fig. 42)

7. To memorize other functions into other keys of the RM-SR1001, or when a mistake has been made in the programming operation, perform the operations in steps 5 and 6 again.

8. Set the ⓯ USE/LEARN switch to the USE position. (Fig. 44)

With the above operations, pressing the key currently displayed on the ❾ Indicator/Key panel in which a function has been programmed will activate the programmed function.

How to use the special keys

The following keys (Fig. 30) are displayed for the DAT, VCR 1 and VCR 2 modes. Programming is done by pressing both keys at the same time. This is so that when in actual use after programming, recording operation will not be activated even if a key is mistakenly pressed. As a result, programming cannot be done by any one button.
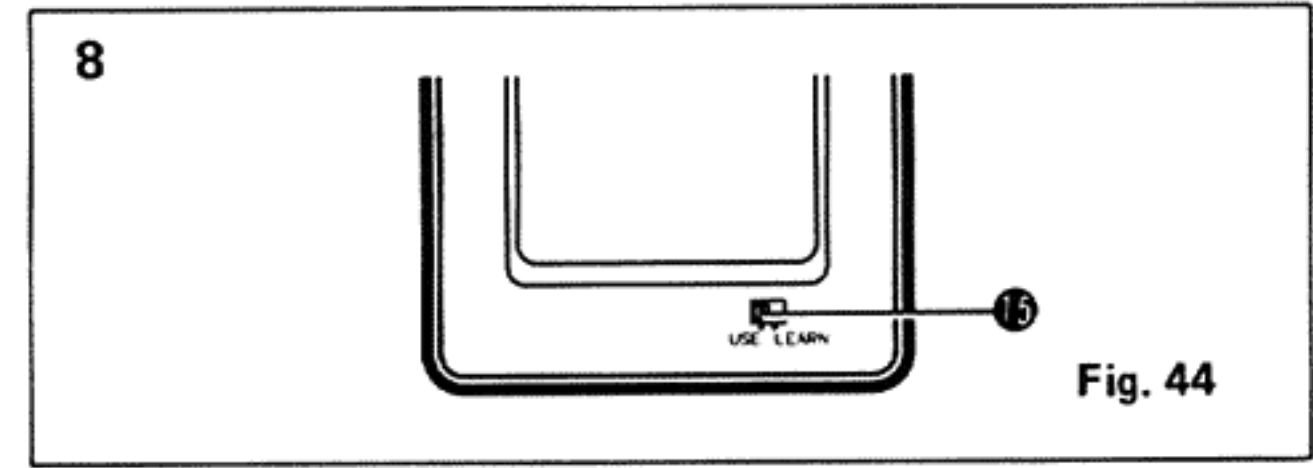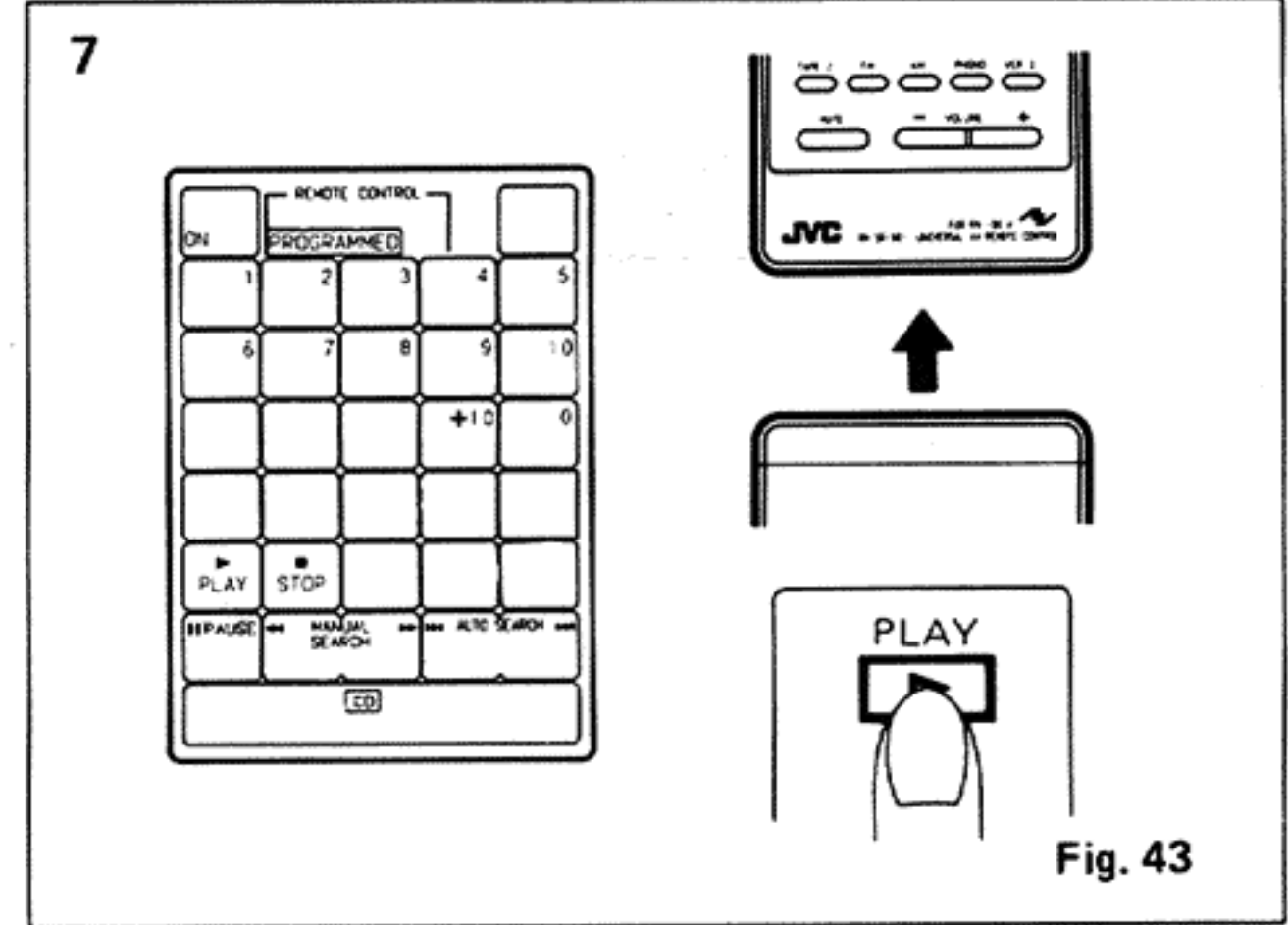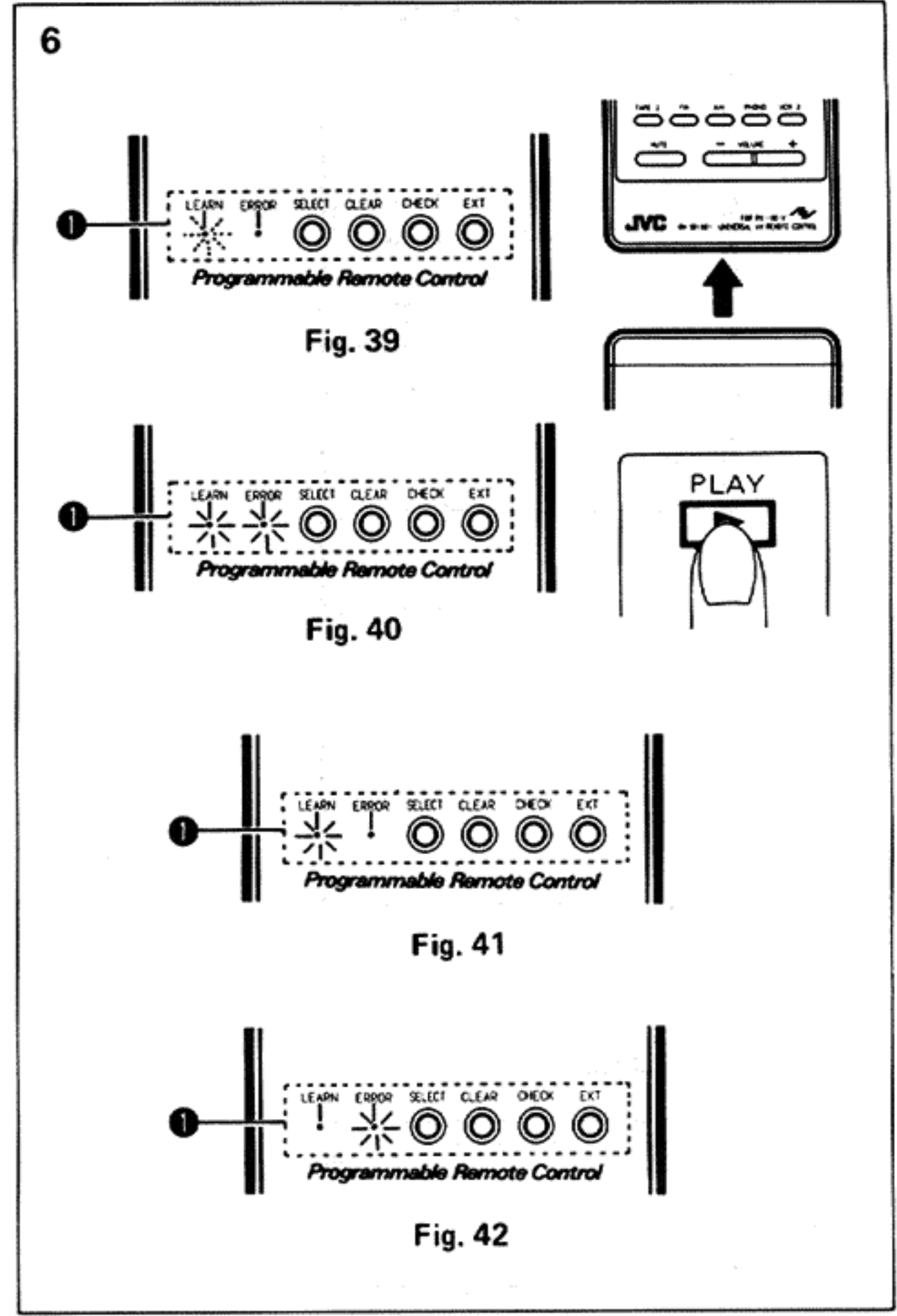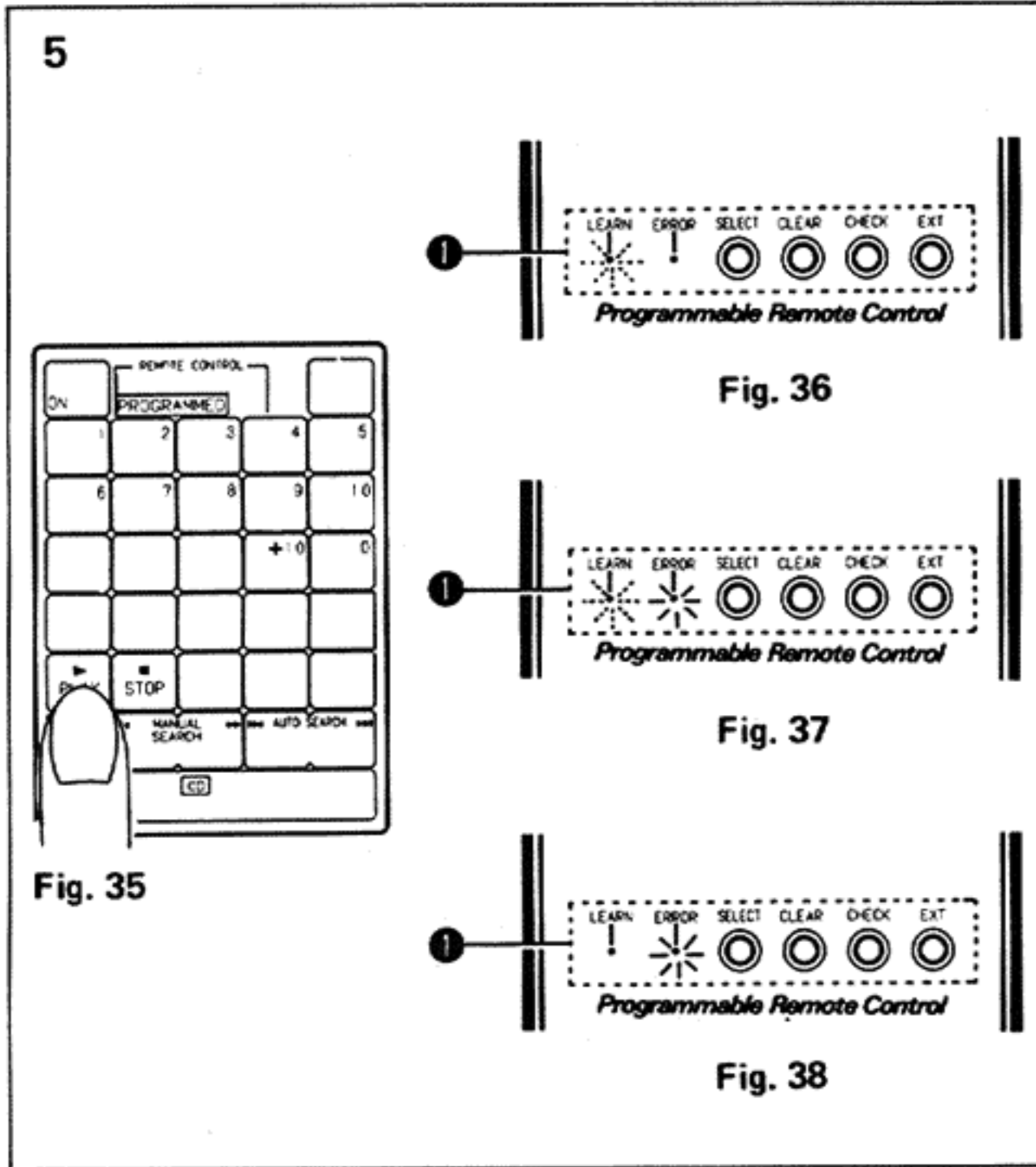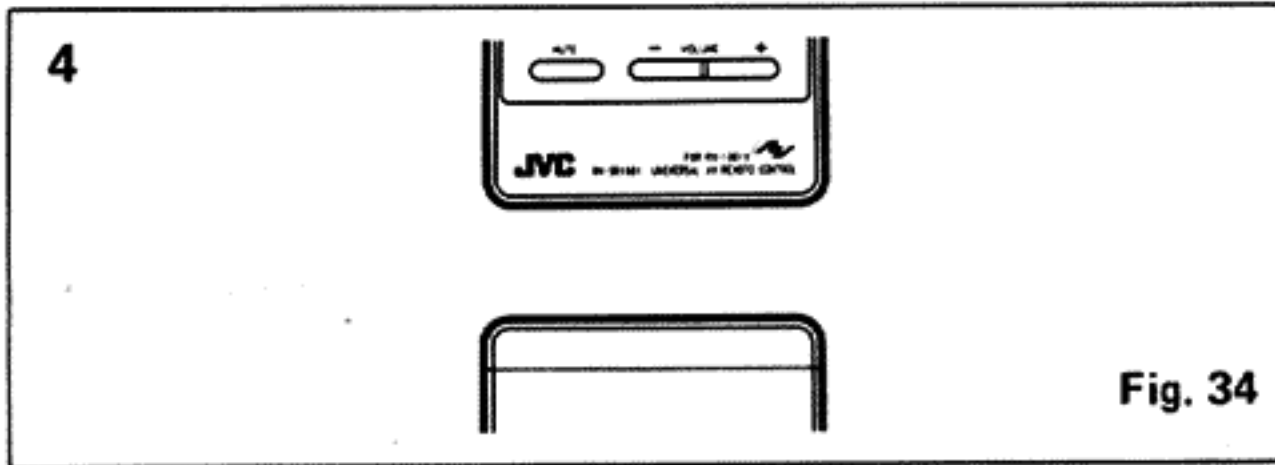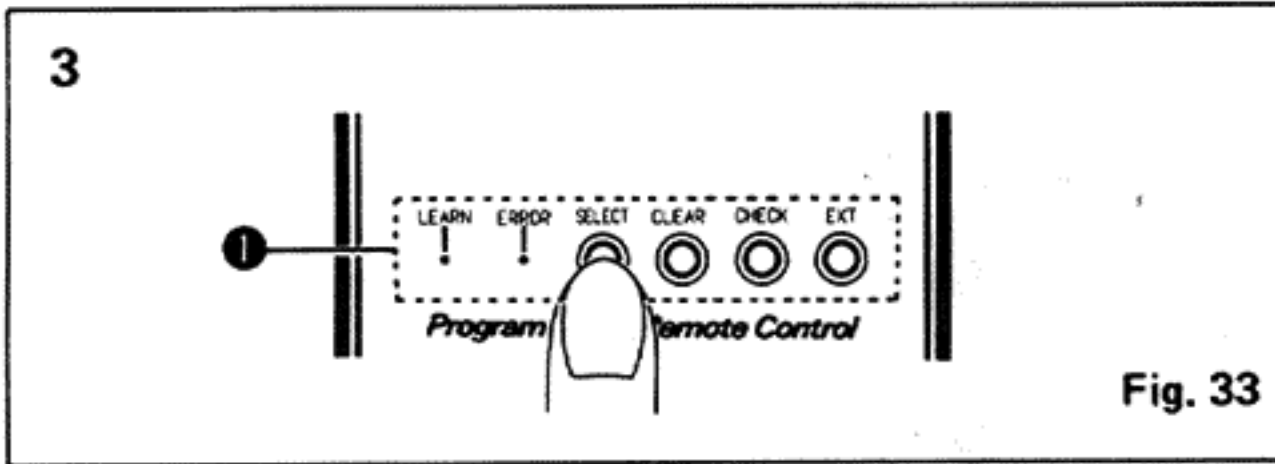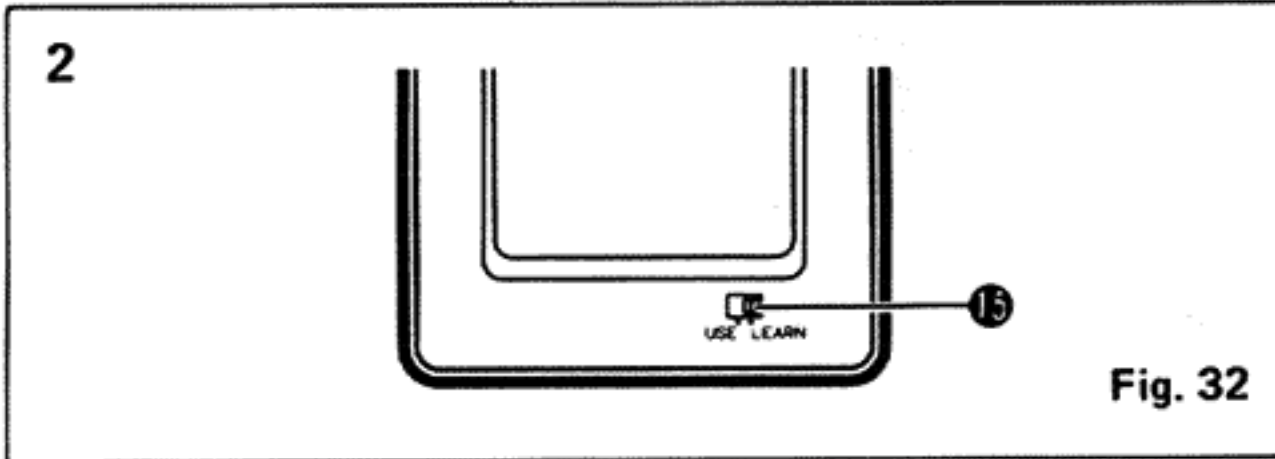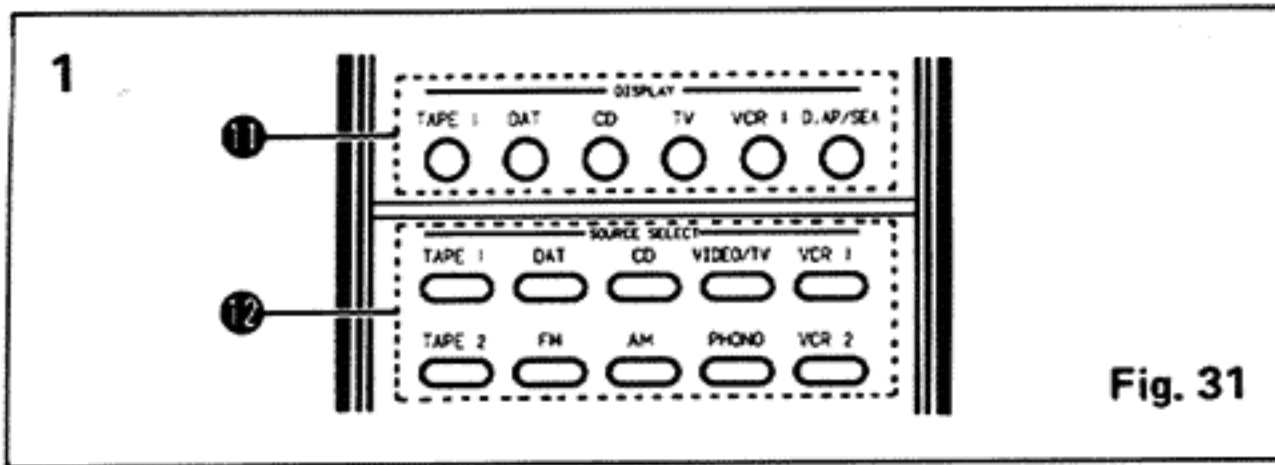
When using in the USE mode after programming, both buttons also have to be pressed at the same time to operate.

● REC   REC PLAY

Fig. 30

Note:
● **Programming cannot be done using either one of these keys in combination with other keys.**

1

DISPLAY
TAPE 1   DAT   CD   TV   VCR 1   D.AP/SEA
SOURCE SELECT
TAPE 1   DAT   CD   VIDEO/TV   VCR 1
TAPE 2   FM   AM   PHONO   VCR 2

Fig. 31

2

USE LEARN

Fig. 32

3

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Program___ ___mote Control

Fig. 33

4

JVC

Fig. 34

5

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Programmable Remote Control

Fig. 36

REMOTE CONTROL
ON   PROGRAMMED
1   2   3   4   5
6   7   8   9   10
+10   0
PLAY   STOP
MANUAL SEARCH   AUTO SEARCH
CD

Fig. 35

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Programmable Remote Control

Fig. 37

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Programmable Remote Control

Fig. 38

6

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Programmable Remote Control

Fig. 39

JVC

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Programmable Remote Control

Fig. 40

PLAY

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Programmable Remote Control

Fig. 41

LEARN   ERROR   SELECT   CLEAR   CHECK   EXT
Programmable Remote Control

Fig. 42

7

REMOTE CONTROL
ON   PROGRAMMED
1   2   3   4   5
6   7   8   9   10
+10   0
PLAY   STOP
PAUSE   MANUAL SEARCH   AUTO SEARCH
CD

JVC

PLAY

Fig. 43

8

USE LEARN

Fig. 44

Notes:

- To program a key function correctly, while both the LEARN and ERROR indicators are lit, keep pressing the button on the other remote control.
- When a key in which a function has been programmed does not work correctly after being used for a long period, perform programming again. With certain components, slightly different remote control signals may not be acceptable.
- Special control signals such as those transmitted for a longer period cannot be programmed into this remote control unit.
  If programming is impossible or correct operation is not possible even after trying three or four times, the other remote control may use these special signals.
- The functions of another remote control when two keys are pressed in sequence can be programmed into a single key of the RM-SR1001. (Except for REC or REC/PLAY functions.)
  In this case, perform programming in sequence according to the key operation of the other equipment.
- When programming the REC or REC/PLAY function (to start recording), it is safer if you program it pressing two keys of this remote control simultaneously.
  This is to make misoperation difficult, to protect against accidental erasure.
- When VCR 1 mode has been programmed, no function can be programmed in the VCR 2 mode, to prevent misopera-

tion when two VCRs are connected to the RX-1001VBK.
- Up to 106 key functions can be programmed with this remote control unit.
  The number of keys in which functions have been programmed will be counted and indicated in the ❾ Indicator/Key panel of each menu screen selected by the ❶ SELECT button.
- For proper operation be sure to aim the RM-SR1001 at the target component. Especially when transmitting a key programmed from the remote controls of other JVC's component at the RX-1001VBK, there may be ties (although rare) when the RX-1001VBK will malfunction.

How to Cancel Programming

When canceling programming, all key functions for the selected screen will be erased at once. The function assigned to a single key cannot be erased.

1. Set the ⑮ USE/LEARN switch on the rear panel to the LEARN position.
2. Press the ❶ CLEAR button.
   The ❾ Indicator/Key panel blinks twice, and the Standard control mode screen will appear.
3. Set the ⑮ USE/LEARN switch to the USE position.

Note:

- After step 2, if a new menu screen is selected on ❾ Indicator/Key panel using the ❶ SELECT button, the programming mode will be activated.

Indicator lighting (For programming)

☀ : Blinks　　☼ : Lights continuously　　○ : Does not light
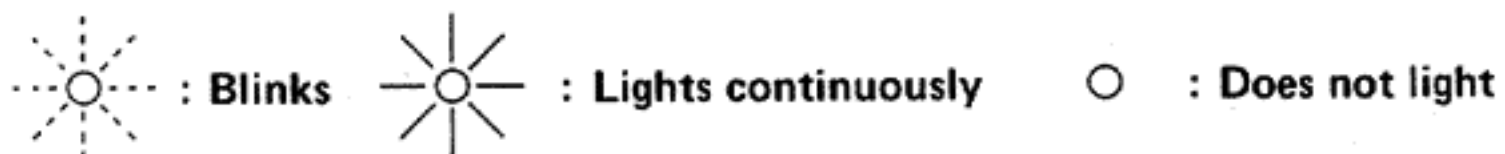
Button on RM-SR1001	Button on other remote control	LEARN indicator	ERROR indicator	Status
Step 5 ▶	—	☀	○	Button in which no function has been memorized
Step 5 ▶	—	☀	☼	Button in which a function has been memorized
—	Step 6, 7 PLAY ▶	☼	☼	While memorizing a setting
		☼	○	Memorizing complete
		○	☼	Memorizing incomplete
Step 5 FM		○	☼	Incorrect button is pressed

Fig. 45

Removal Procedures

■ **Removing the metal cover**
1. Remove the four screws on both sides.
2. Remove the two screws located on the top of the rear panel.
3. Slightly open both sides of the metal cover, to the left and right, and raise the rear side. Then slowly lift it up and straight backward.

■ **Removing the front panel**
1. Remove the metal cover.
2. Remove the plastic rivets Ⓐ fastening the front panel on its upper side. (See Fig-1)
3. Remove three screws fixing the front panel on its under side, and then pull out the front panel.

Ⓐ PLASTIC RIVET   Ⓑ PLASTIC RIVET
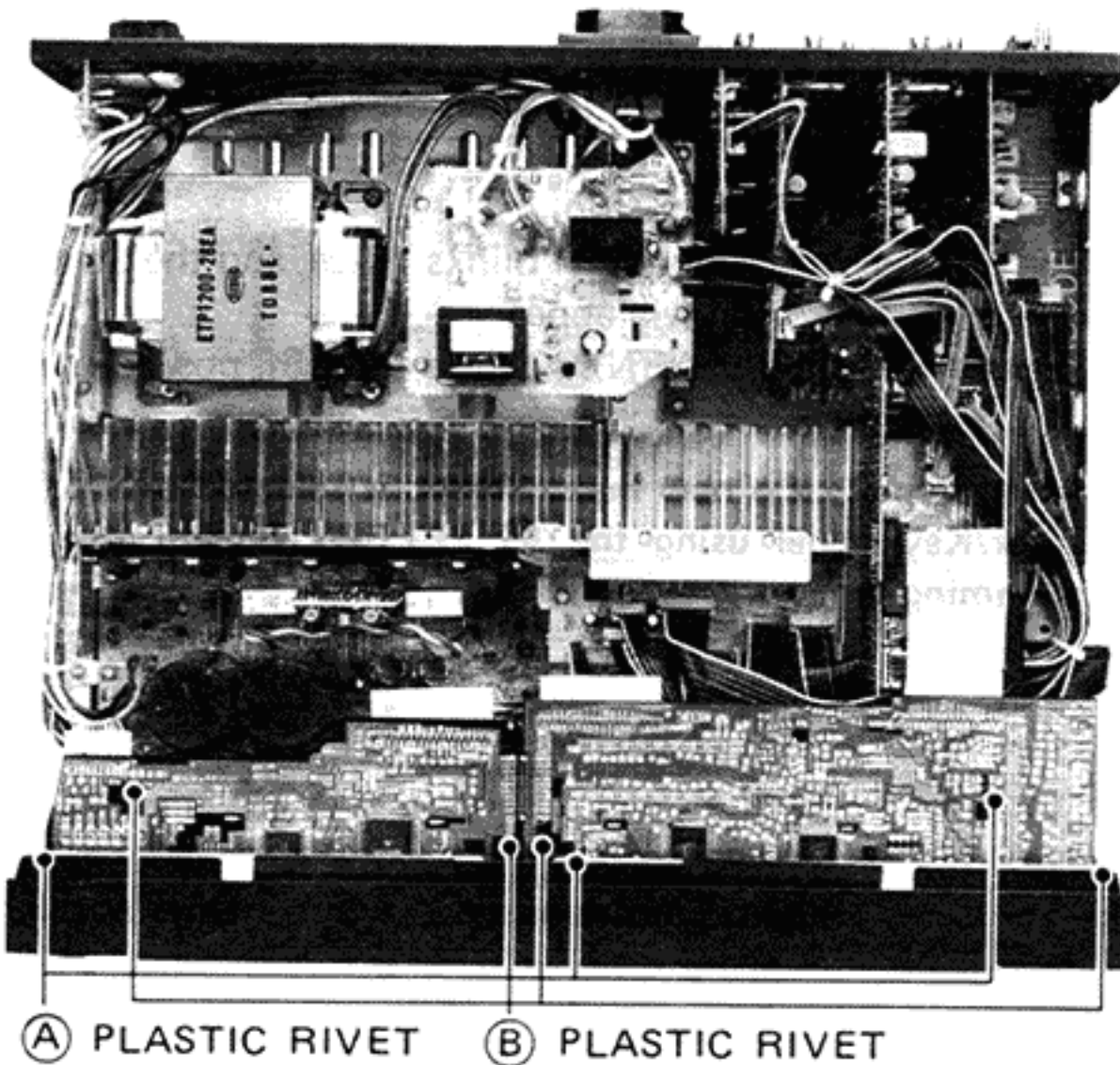
Fig. -1

■ **Removing the front switch PC Board**
1. Remove the front panel.
2. Pull off five plastic rivets fixing the front switch PC Board.
3. Lift up the front switch PC Board and pull it off toward you from the connectors. (See Fig-2)

Action-(2)
Front switch PC Board
Action-(1)
Action-(1)
Front switch PC Board
Action-(2)
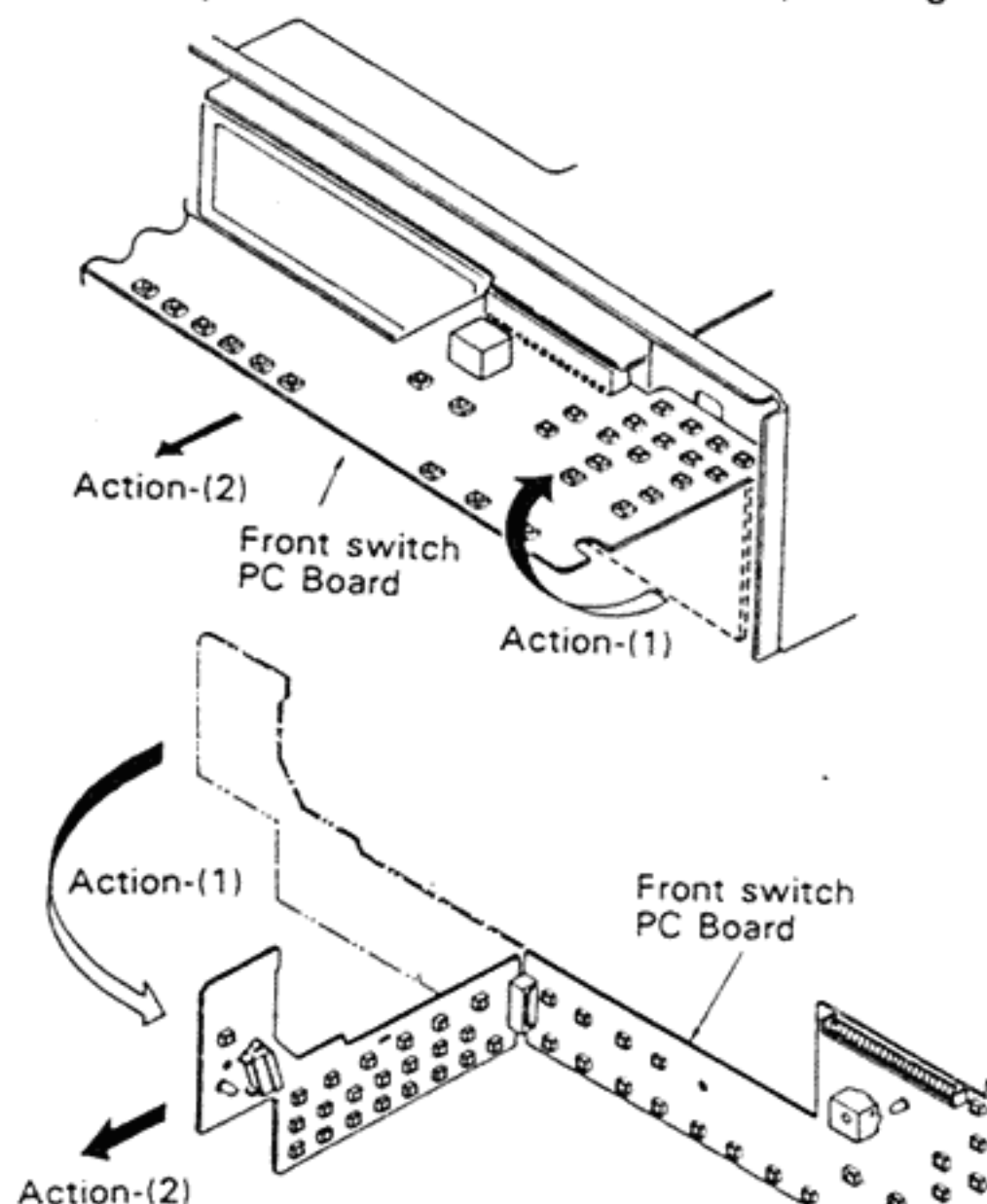
Fig. -2

■ **Removing the LCD PC Board**
1. Remove the front switch PC Board.
2. Pull off four plastic rivets Ⓑ fixing the LCD PC Board. (See Fig-1)
3. Pull off the flat wires (30 pins, 37 pins).
4. Remove the left side LCD PC Board forward. (See Fig-3)
5. Pull off pins connectors (3 pins, 9 pins).
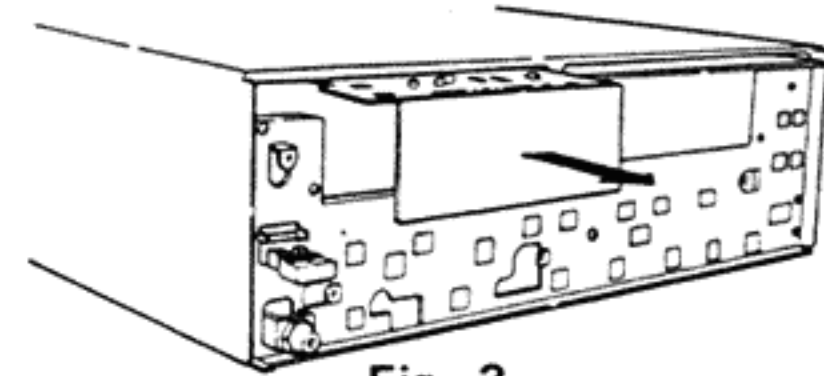6. Remove the right side LCD PC Board backward.

Fig. -3

■ **Removing the power transistors**
1. Remove the metal cover.
2. Remove all seventeen screws holding the bottom plate. Then remove the bottom plate.
3. Remove the four screws holding the PC Board (ENP-006). (See Fig-4)
4. Remove the two screws holding the shield bracket. Then remove the shield bracket.
5. Unsolder the power transistors.
6. Remove the screws holding the power transistors using a pair of pliers, a wrench, or a bent screwdriver.

Note: Remove the PC Board (ENH-100-2) holding on the heat sink if removing the transistors Q734, Q015, Q016, Q017 and Q018.
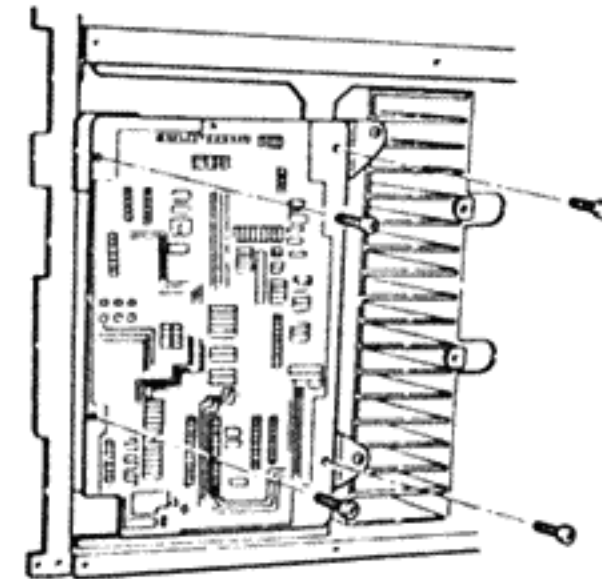

Fig. -4

■ **Removing the joint PC Board (ENE-046-4)**
1. Pull off the flat wires from the sockets.
2. Release two fasteners holding the PC Board.
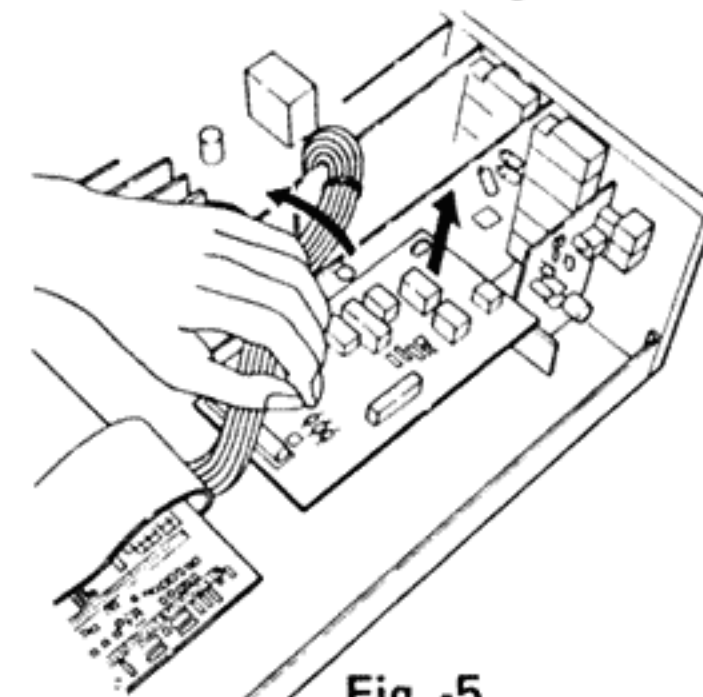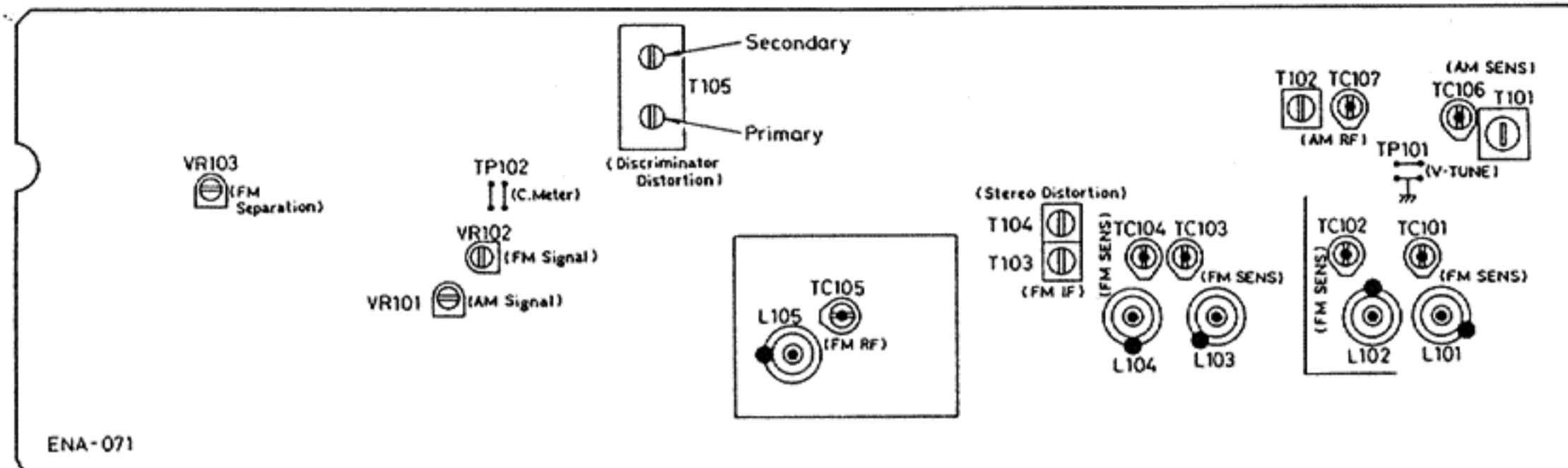3. Lift up a side of the joint PC Board and pull it up from the connector. (See Fig-5)

Fig. -5

Note: Confirm the voltages on foil side of ENE-046-2 with removing the rear panel and pcb (ENE-046-3.)
The ground is floating when removing ENE-046-3, then take a ground to ENF-042-1 with shorting wire or pin cord.

FM/AM Tuner Alignment Procedures

ENA-071

■ FM Section

FM tuning range

1. Connect a DC voltmeter to test point "TP-101(W102-W103)", and set the FM MODE switch to the "MONO" position.
2. Set the frequency display to "87.5 MHz".
3. Adjust L105 so that the voltage of test point "TP-101" becomes 7.5V±0.1V.
4. Set the frequency display to "108 MHz" and adjust TC105 so that the voltage becomes 22.0V±0.1V.
5. Repeat the above adjustments of L105 and TC105 alternately until reference voltage is obtained.

FM sensitivity

1. Connect an RF generator to the antenna terminals on the rear panel through a dummy load antenna.
2. Connect an AC voltmeter and an oscilloscope to the "REC. OUT" terminal on the rear panel.
3. Set an RF generator to 89.9 MHz, a 1 kHz modulation and a 75 kHz diviation to provide an input of 2μV (6 dB).
4. Set the frequency display to 89.9 MHz.
5. Adjust L101, L102, L103 an L104 to maximize the output.
6. Adjust IFT(T103) to maximize the output.
7. Set the RF generator to 105.9 MHz and set the frequency display to 105.9 MHz.
8. Adjust TC101, TC102, TC103 and TC104 to maximize the output.
9. Repeat the low and high frequencies adjustment alternately until maximum output is obtained.

Discriminator Distortion

1. Connect an RF generator, a 1 kHz modulation and a 75 kHz deviation to the antenna terminals on the rear panel through a dummy antenna.
2. Connect an oscilloscope, distortion meter and AC voltmeter to the "REC. OUT" terminal on the rear panel.
3. Set the RF generator to 100.1 MHz, generator output to 60 dB (1 mV).
4. Set the frequency display to 100.1 MHz.
5. Connect a DC voltmeter between TP-102.
6. Adjust the primary core of T105 for DC voltmeter reading of 0±1.5 mV.
7. Adjust the secondary core of T105 so that the distortion is minimized.
8. Repeat these items alternately.

Stereo Distortion: T104

Note: This adjustment is after the discriminator distortion adjustment.
1. Set the RF generator to 100.1 MHz, generator output to 60 dBμ (1 mV) and switch the selector of stereo-modulator to left channel modulation.
2. Set the frequency display to 100.1 MHz.
3. Confirm the QSC display off.
4. Adjust T104 so that the distortion is minimized.

Stereo Separation: VR103

1. Set the RF generator to 100.1 MHz, generator output to 60 dB (1 mV) and switch the selector of stereo-modulator to left channel modulation.
2. Set the frequency display to 100.1 MHz.
3. Confirm the QSC display off.
4. Adjust VR103 so that the output of right channel is minimized.
5. Switch the selector of stereo-modulator to right channel modulation.
6. Confirm the output of left channel.
7. Set VR103 to an average, if the separation of left and right is different.

FM Signal Strength Display: VR102

1. Set the RF generator to 100. 1MHz, 40dB(100 μV). While rotating VR102 clockwise, adjust the FM-strength meter so that this meter displays 40 dB.

■ AM Section

AM tuning range

1. Connect a loop antenna to the "AMLOOP" terminals on the rear panel.
2. Connect a DC voltmeter to test point "TP-101 (W102-W103)"
3. Set the frequency display to "522 KHz" (9 kHz channel step) or "530 kHz" (10 kHz channel step).
4. Adjust T102 so that the voltage of test point "TP-101" becomes 0.9 V ± 0.2 V (522 kHz), 1.0 V ±0.3 V (530 kHz).
5. Set the frequency display to "1629 kHz" or "1710 kHz".
6. Adjust TC107 so that the voltage becomes 7.5 V ±0.5 V (1629 kHz), 8.2 V (1602 kHz).
7. Repeat the above adjustment of T102 and TC107 alternately until reference voltage is obtained.

AM Sensitivity

1. Connect a loop antenna to the "AMLOOP" terminals on the rear panel. Also connect an RF generator, a 400 Hz modulation and a 30% deviation to the antenna terminals through a dummy antenna.
2. Connect an AC voltmeter and an oscilloscope to the "REC OUT" terminal on the rear panel.
3. Set the RF generator to 600 kHz (or 603 kHz).
4. Set the frequency display to 600 kHz (or kHz).
5. Adjust T101 to maximize the output.
6. Set the RF generator to 1400 kHz (or 1404 kHz).
7. Set the frequency display to 1400 kHz (or 1404 kHz)
8. Adjust TC106 to maximize the output.
9. Repeat the above adjustments of T101 and TC106 alternately until maximum sensitivity is obtained.

AM Signal Strength Display: VR101

1. Connect the RF generator to the antenna terminals on the rear panel through the dummy antenna with 5.6 kΩ in series.
2. Set the RF generator to 1000 kHz (or 999 kHz), generator output to 2.2 mV (67 dB)
3. Set the frequency display to 1000 kHz (or 999 kHz).
4. While rotating VR101 clockwise, adjust the AM-signal strength meter so that displays 80 dB.

Power Amplifier Adjustment Procedures

■ Idling Current Adjustment

1. Trun VR701 and VR702 fully counter-lockwise before the power switch on.
2. Warm up at least 5 minutes before adjustment.
3. Must keep the heatsink to prevent over-heating before adjustment.
4. Set the volume control to minimum during this adjustment.
5. Connect a DC voltmenter to R773 resistor's leads for left channel, or to R774 for right channel.
6. Adjust VR701 for left channel, or VR702 for right channel, so that the DC voltmeter becomes 5mV ±3mV.
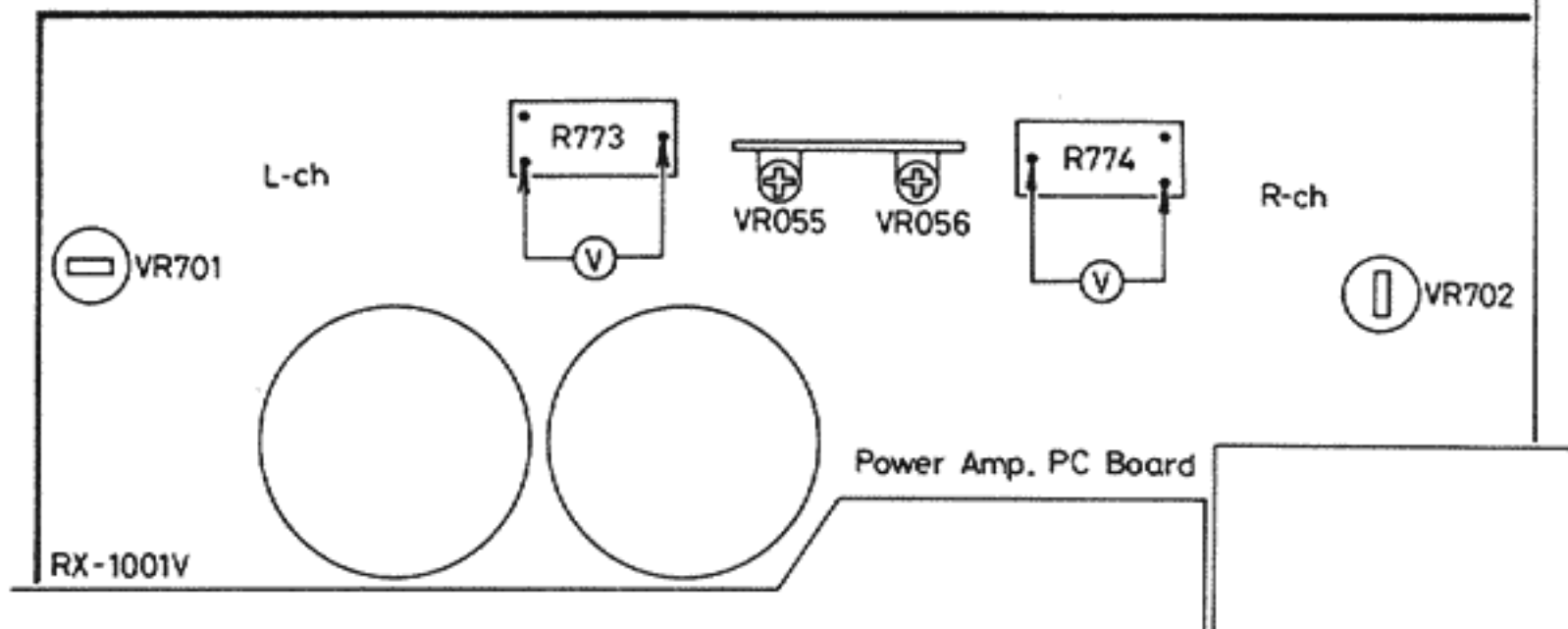
■ Power Supply switching circuit Adjustment

(Except of the U.S.A. and Canada.)

1. Connectan an AC voltmeter and an oscilloscope to the speaker terminal.
2. Before turning the power ON, turn the semi-fixed resistors (VR055 for the left channel and VR056 for the right) on the power amplifier PC Board fully counterclockwise.
3. Turn the power ON and provide a 100 Hz sine wave to the left (or right) channel of the CD input terminals.
4. Connect a 7Ω dummy load to the speaker terminal and adjust the volume control so that 29V is output. At this time, minimize the output level of the other channel with the BALANCE control.
5. Turn the semi-fixed resistor (VR055 for the left channel or VR056 for the right) slowly clockwise, and stop when the output waveform begins clipping on the oscilloscope.
6. Replace the 7Ω dummy load with an 8Ω one, and confirm that the output waveform does not clip.

Note: This adjustment should be performed for the channels one at a time.

■ Confirm the waveforms for surround effects

Dolby Surround

1. Set the D.A.P switch to "ON".
2. Set the 4CH indicator to "ON".
3. Set the SEA switch to "OFF".
4. Set the Dolby surround to "ON".
5. Provide a sine wave signal 100Hz, 200mV p-p to the right channel of CD input terminals.
6. Connect the X-axis of oscilloscope to the input signal and the Y-axis to the right channel of speaker terminals.
7. Adjust the volume control to 200mV p-p at the right channel of speaker terminals.
8. Set the oscilloscope to X-Y axis.
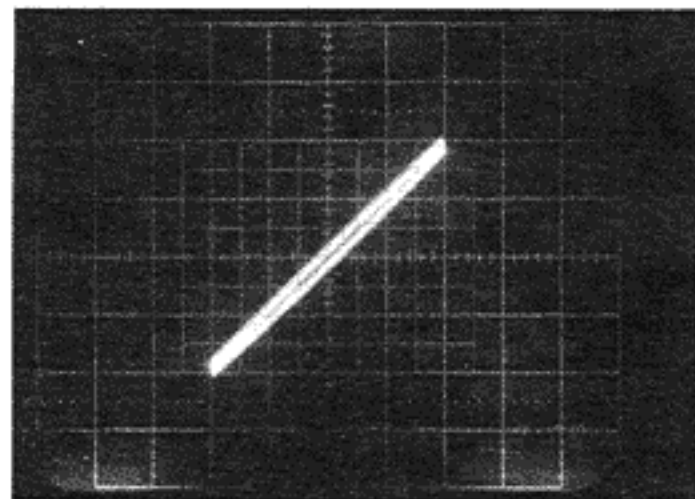9. Confirm the waveform. (Fig.-1)

Fig.-1

Dolby surround

1. Set the "Delay Time" to 2, 3 and 4.
2. Provide a sine wave signal 100 Hz, 200 mVp-p to the left channel of CD input terminals.
3. Connect the X-axis of oscilloscope to the input signal and the Y-axis to the left channel of "REAR PRE. OUT".
4. Set the "SURROUND BALANCE" on the rear panel to center position.
5. Adjust the "REAR LEVEL volume" and "Volume control" to 200mV at the left channel of "REAR PRE. OUT"
6. Set the oscilloscope to X-Y axis.
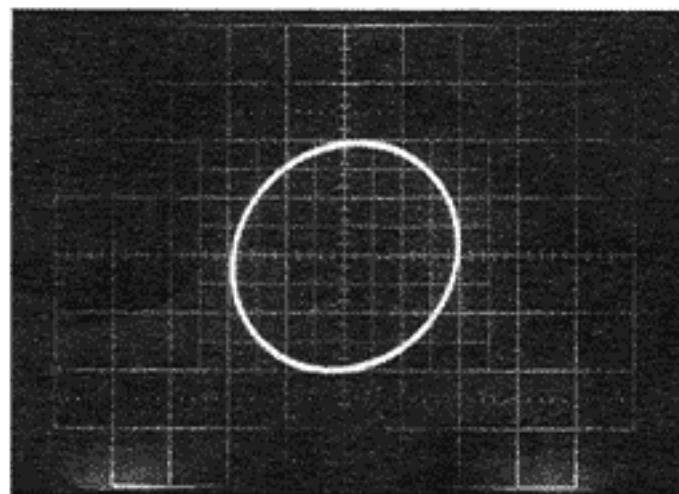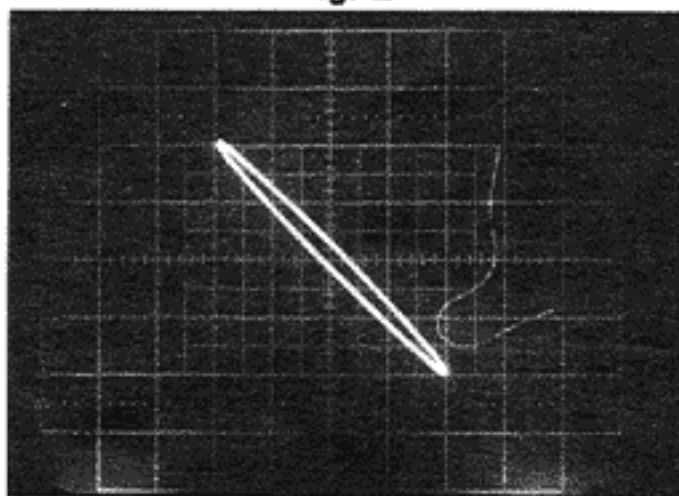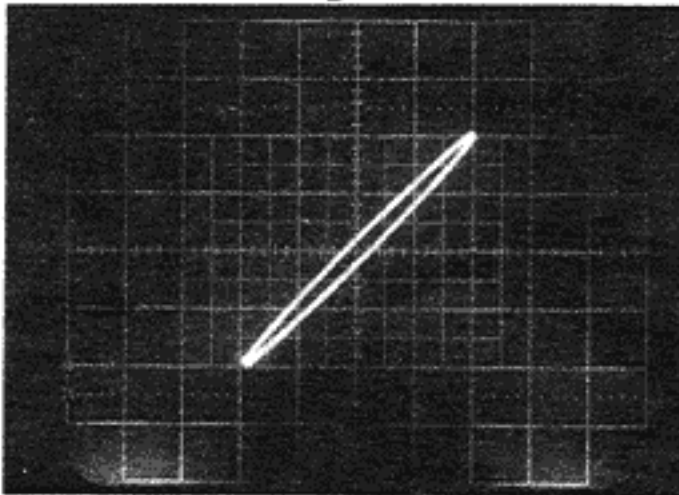7. Confirm the waveforms. (Fig.-2,3,4)

Fig.-2

Fig.-3

Fig.-4

Dolby Surround

1. Set the "Deley Time" to 3.
2. Provide a sine wave signal 100 Hz, 200 mV p-p to the right channel of CD input terminals.
3. Connect the X-axis of oscilloscope to the input signal and the Y-axis to the right channel of speaker terminals.

4. Adjust the "REAR LEVEL volume" and "Volume control" to 200 mV p-p at the right channel of "REAR PRE. OUT".
5. Set the oscilloscope to X-Y axis.
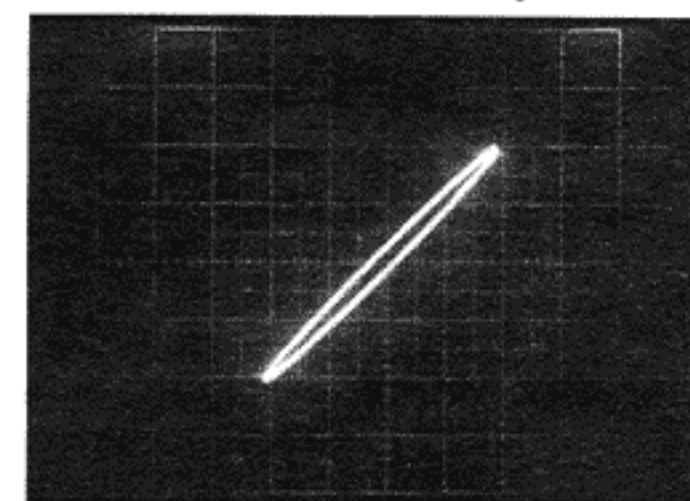6. Confirm the waveform. (Fig.-5)

Fig.-5

LIVE CLUB

1. Set the "Live Club" to ON.
2. Provide a sine wave signal 100 Hz, 200mVp-p to the left channel of CD input terminals.
3. Connect the X-axis of oscilloscope to the input signal and the Y-axis to the left channel of "REAR PRE. OUT".
4. Set the "Room size" to 3, "Liveness" to 3 and "Wall type" to 2.
5. Adjust the "REAR LEVEL volume" and "Volume control" to 200 mV at the left connel of "REAR PRE. OUT".
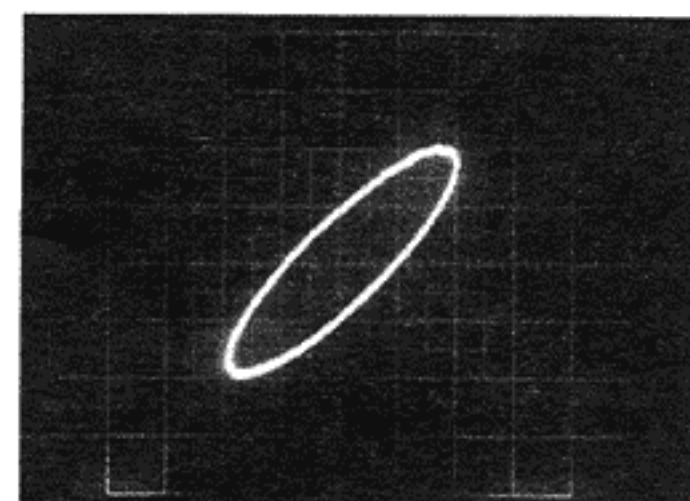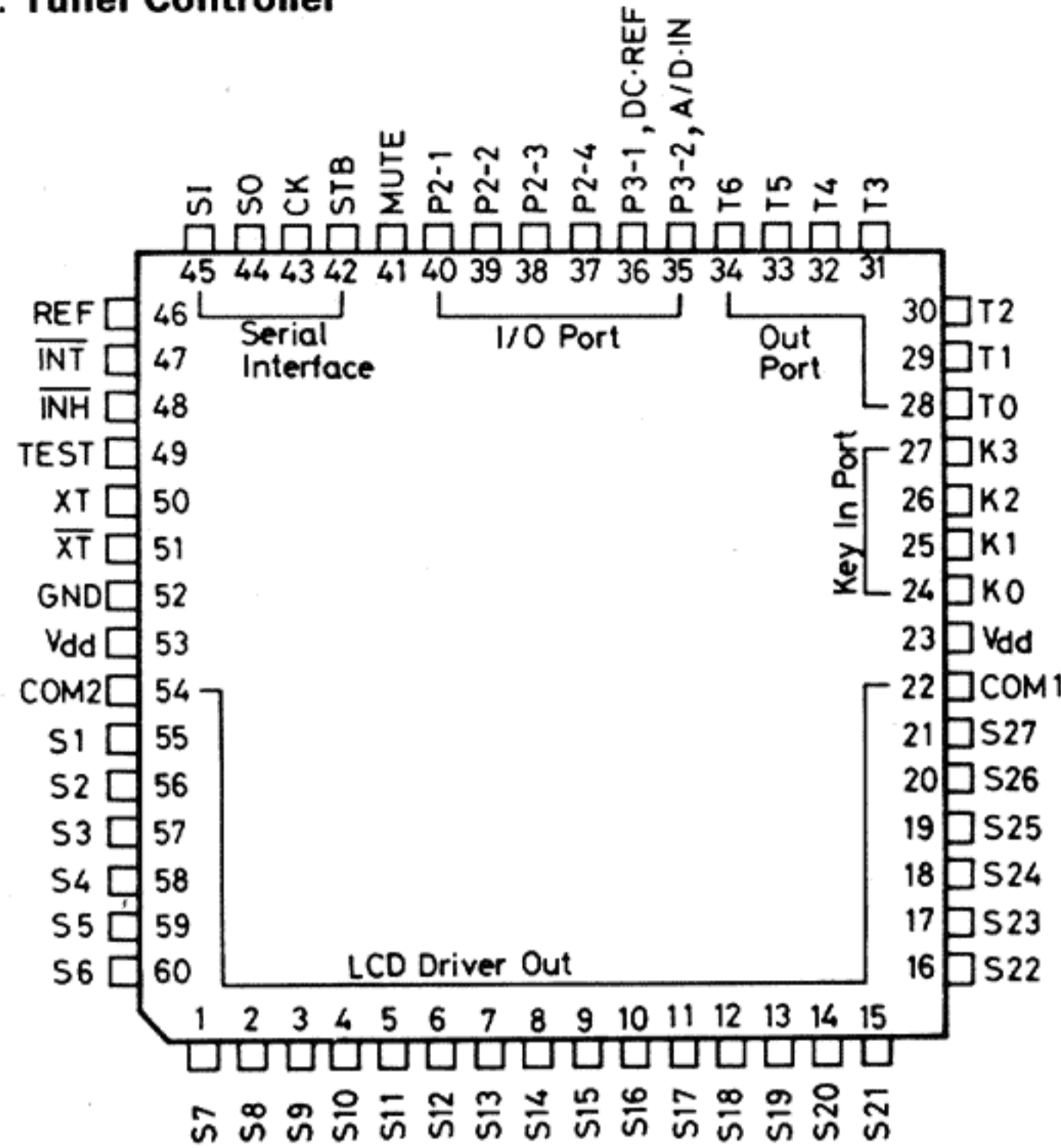6. Confirm the waveform. (Fig.-6)

Fig.-6

Internal Block Diagrams of ICs

■ **TC9306F-028BS (IC421): Tuner Controller**

(1) External Diagram

(2) Pin Functions

Pin No.	Symbol	Name	I/O	Terminal Function
55~60 1~21	SEG.1~ ~SEG.27	Segment1~ ~Segment27	O	Drive the LCD segment.
22	COM 1	Common 1	O	Drive the common 1 of the LCD.
54	COM 2	Common 2	O	Drive the common 2 of the LCD.
24	K0	Key in 0	I	Key input
25	K1	Key in 1	I	Key input
26	K2	Key in 2	I	Key input
27	K3	Key in 3	I	Key input
28	T0	Key out 0	O	Key output
29	T1	Key out 1	O	Key output
30	T2	Key out 2	O	Key output
31	T3	Key out 3	O	Key output
32	T4	Key out 4	O	Key output
33	T5	Key out 5	O	Key output
34	T6	Key out 6	O	Key output
35	A/D IN	A/D input or TUNED input	I	Input for signal meter or input for TUNED indicator
36	DC REF	DC reference	I	Reference voltage for A/D
37	P2-4	Key out 7	O	Key output
38	P2-3	DCS IN	I	Input for Direct Call System
39	P2-2	DCS OUT	O	Output for Direct Call System
40	P2-1	STEREO IN	I	Input for stereo indicator
41	MUTE	MUTE	O	"H" output when muting is turned ON.
42	STB	STB	O	Serial Data Bus (Connect to LC7217.)
43	CK	CK	O	Serial Data Bus (Connect to LC7217.)
44	SO	SO	O	Serial Data Bus (Connect to LC7217.)
45	SI	SI	I	Serial Data Bus (Connect to LC7217.)
46	$\overline{REF}$	$\overline{REF}$	O	Output for PLL reference frequency
47	$\overline{INT}$	$\overline{INT}$	I	Initialized at "L" level
48	$\overline{INH}$	$\overline{INH}$	I	State of inhibit at "L" level
49	TEST	TEST	---	Terminal of crystal oscillator (7.2 MHz)
50	XT	XT	---	Terminal of crystal oscillator (7.2 MHz)
51	$\overline{XT}$	$\overline{XT}$	---	Terminal of crystal oscillator (7.2 MHz)
52	GND	GND	---	Ground
23,53	V DD	V DD	---	+5V (Connecting inside)

■ MN17581JSM (IC441): System Controller
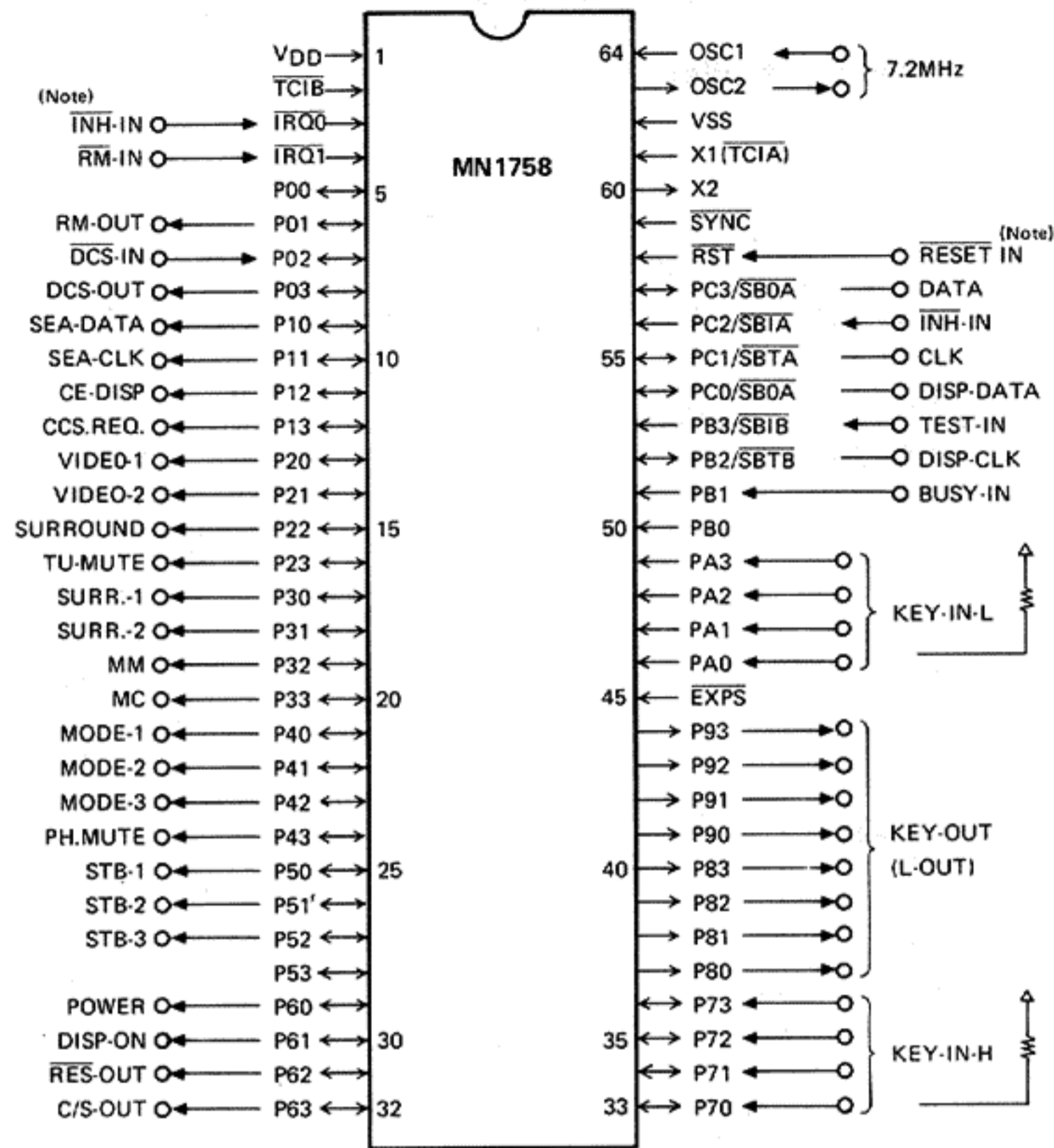
Note: TRQO and PC2/SBIA may be connected and used.

(2) Pin Functions

Pin No.	Port	Input/Output Name	I/O	Function		Off	Back-up
1	VDD	———	I	5V			
2	TCIB	———	I	GND			
3	IRQ0	INH-IN	I	L=AC off; enters back up mode			
4	IRQ1	RM-IN	I	Remote control input			
5	P00					L	L
6	P01	RM-OUT	O	Remote control IND, ON (H: ON)		L	L
7	P02	DCS-IN	I	DCS input, Input at negative logic		L	L
8	P03	DCS-OUT	O	DCS output		L	L
9	P10	SEA-DATA	O	S-DATA of LC7522 (SEA)		L	L
10	P11	SEA-CLK	O	S-CLK of LC7522 (SEA)		L	L
11	P12	CE-DISP	O	CE of LC7582 (display driver)		L	L
12	P13	CCS-REQ.	O	L=DATA OUT REQ. (at time of CCS data output)		L	L
13	P20	VIDEO-1	O	VIDEO signal switching		L	L
14	P21	VIDEO-2	O	VIDEO signal switching		L	L
15	P22	SURROUND	O	H=SURROUND ON		L	L
16	P23	TU-MUTE	O	H=TUNER MUTE (at times other than that of the source tuner)		L	L
17	P30	SURR. 1	O	Surround switching		L	L
18	P31	SURR. 2	O	Surround switching		L	L
19	P32	MM	O	MM/MC cartridge switching	H=MM	L	L
20	P33	MC	O		H=MC	L	L
21	P40	MODE-1	O	Surround mode switching	H=MODE 1	L	L
22	P41	MODE-2	O		H=MODE 2	L	L
23	P42	MODE-3	O		H=MODE 3	L	L
24	P43	PH. MUTE	O	PHONO MUTE at the time of MC/MM switching		L	L
25	P50	STB-1	O	STB of analog switch VOL.		L	L
26	P51	STB-2	O	STB of analog switch VOL.		L	L
27	P52	STB-3	O	STB of VOL-A		L	L
28	P53	———	O			L	L
29	P60	POWER	O	H=AC (POWER) ON		L	L

Pin No.	Port	Input/Output Name	I/O	Function	Off	Back-up
30	P61	DISP-ON	O	H=display on (INH of the TUBER and LC7582)	L	L
31	P62	RES OUT	O	RESET output (with respect to CCS)	H	H
32	P63	C/S-OUT	O	Chip select output, L output	L	L
33	P70	KEY-IN-H	I	KEY input, L take-in		L
34	P71	KEY-IN-H	I	KEY input, L take-in		L
35	P72	KEY-IN-H	I	KEY input, L take-in		L
36	P73	KEY-IN-H	I	KEY input, L take-in		L
37	P80	KEY-OUT	O	KEY output, L output		L
38	P81	KEY-OUT	O	KEY output, L output		L
39	P82	KEY-OUT	O	KEY output, L output		L
40	P83	KEY-OUT	O	KEY output, L output		L
41	P90	KEY-OUT	O	KEY output, L output		L
42	P91	KEY-OUT	O	KEY output, L output		L
43	P92	KEY-OUT	O	KEY output, L output		L
44	P93	KEY-OUT	O	KEY output, L output		L
45	EXPS	———	I	OPEN	—	—
46	PAO	KEY-IN-L	I	KEY input, L take-in		
47	PAI	KEY-IN-L	I	KEY input, L take-in		
48	PA2	KEY-IN-L	I	KEY input, L take-in		
49	PA3	KEY-IN-L	I	KEY input, L take-in		
50	PB0	———			L	L
51	PB1	BUSY-IN	I	H=C.C.S output OK (at the time of CCS data output)	L	L
52	PB2/SBTB	DISP-CLK	O	S-CLK of LC7582 and C.C.S.	L	L
53	PB3/SBIB	TEST-IN	I	H=TEST MODE	L	L
54	PCO/SBOB	DISP-DATA	O	S-DATA of LC7582 and C.C.S.	L	L
55	PC1/SBTA	DISP-CLK	O	S-CLK of analog switch, VOL.	L	L
56	PC2/SBIA	INH-IN	I	L=AC off; enters back-up mode	—	—
57	PC3/SBOA	INH-DATA	O	S-DATA of analog switch, VOL.	L	L
58	RST	RESET	I	RESET input		
59	SYNC	———	O	OPEN		
60	X1(TCIA)	———	I	Pull up		
61	X2	———	O	OPEN		
62	V$_{SS}$	———	I	GND		
63	OSC2	———	O	7.2 MHz RESONATOR		
64	OSC1	———	I	7.2 MHz RESONATOR		

■ MN17581JSP (IC461): Display Control

Pin No.	Port	Input/Output Name	I/O	Function	
1	V$_{DD}$	—	I	5 V supply	
2	TCIB	—	I	Not used	
3	IRQ0	—	I	INH input: microcomputer starts at H	
4	IRQ1	—	I	Display data request	
5	P00	Key input	I	Chapter	
6	P01	Key input	I	Enter	
7	P02	Key input	I	Up	
8	P03	Key input	I	Down	
9 ↓ 24				Not used	
25	P50	D0	I	DAP display data 5 bit	Not used at time of RX-999
26	P51	D1	I	DAP display data 5 bit	Not used at time of RX-999
27	P52	D2	I	DAP display data 5 bit	Not used at time of RX-999
28	P53	D3	I	DAP display data 5 bit	Not used at time of RX-999
29	P60	D4	I	DAP display data 5 bit	Not used at time of RX-999
30	P61	DAP,REQ	I	DAP display data REQUEST	Not used at time of RX-999
31				Not used	

Pin No.	Port	Input/Output Name	I/D	Function
32				Not used
33	P70	RES	O	LC7584-8701 reset out
34	P71	CE	O	LC7584-8701 CE out
35	P72	SOUND SELECTOR	O	Sound selector out
36	P73	Busy	O	Display BUSY OUT
37 ↓ 46				Not used
47	PA1		I	H at time of RX-1001
48				Not used
49	PA3	DISP.ON	I	Display START input
50	PB0	REQ	I	Display data REQUEST
51	PB1	INH	I	INH input
52	SBTB	CL	O	LC7584-8701 serial clock out
53				No used
54	SBOB	DI	O	LC7584-8701 serial data out
55	SBTA	DSP-CLK	I	Display data CLK
56	SBIA	DSP-DATA	I	Display data
57				No used
58	RST	RESET	I	RESET input
59 ↓ 61				No used
62	VSS	VSS	I	GND
63	OSC2		I	7.2 MHz resonator connection
64	OSC1		I	7.2 MHz resonator connection

■ LA1266A (IC102): FM/AM IF

LA3401 (IC103): FM MPX

Vcc (22) VCO (21) LPF (20) LPF (19) PLL IN (18) Pilot Det (17) Pilot Det (16) Mute IN (15) Mute (14) Stereo LED (13) GND (12)

LA3401

Vol. Reg. | OSC | Phase Comparator | Pilot Det. | Driver

VCO stop

Symmetrical Reactance Circuit

Trigger

FF | FF | FF 38kHz | FF 19k ∠90° | FF 19k ∠0°

Stereo Switch

Decoder

Muting Control FM·AM Change | Muti-ng OUT

Muting FM·AM Change

Vcc on Muting

(1) AM IN (2) FM IN (3) Pilot OUT (4) Sepa. Adj. (5) L·OUT (6) L̄ (7) R̄ (8) R·OUT (9) Vcc ON Mute (10) FM·AM Change over (11) Muting OUT

LC7217 (IC101): PLL Synthesizer

(1) Internal Block Diagram

SYC (6)

LC7217

XIN (1)
XOUT (24)

Reference Divider

Phase Detector Charge Pump

(21) PD1
(22) PD2

FM IN (19)

1/2

SWALLOW counter 1 16 , 1 17 4 bit

(16) HCTR

AM IN (18)

12 bit Programmable Divider

(15) LCTR

CE (2)
DI (3)
CL (4)
DO (5)

Shift Register Latch

Universal Counter

(20) Vdd
(23) Vss

(9) OUT0 (10) OUT1 (11) OUT2 (12) OUT3 (13) OUT4 (14) OUT5 (17) OUT6 (7) IN0 (8) IN1
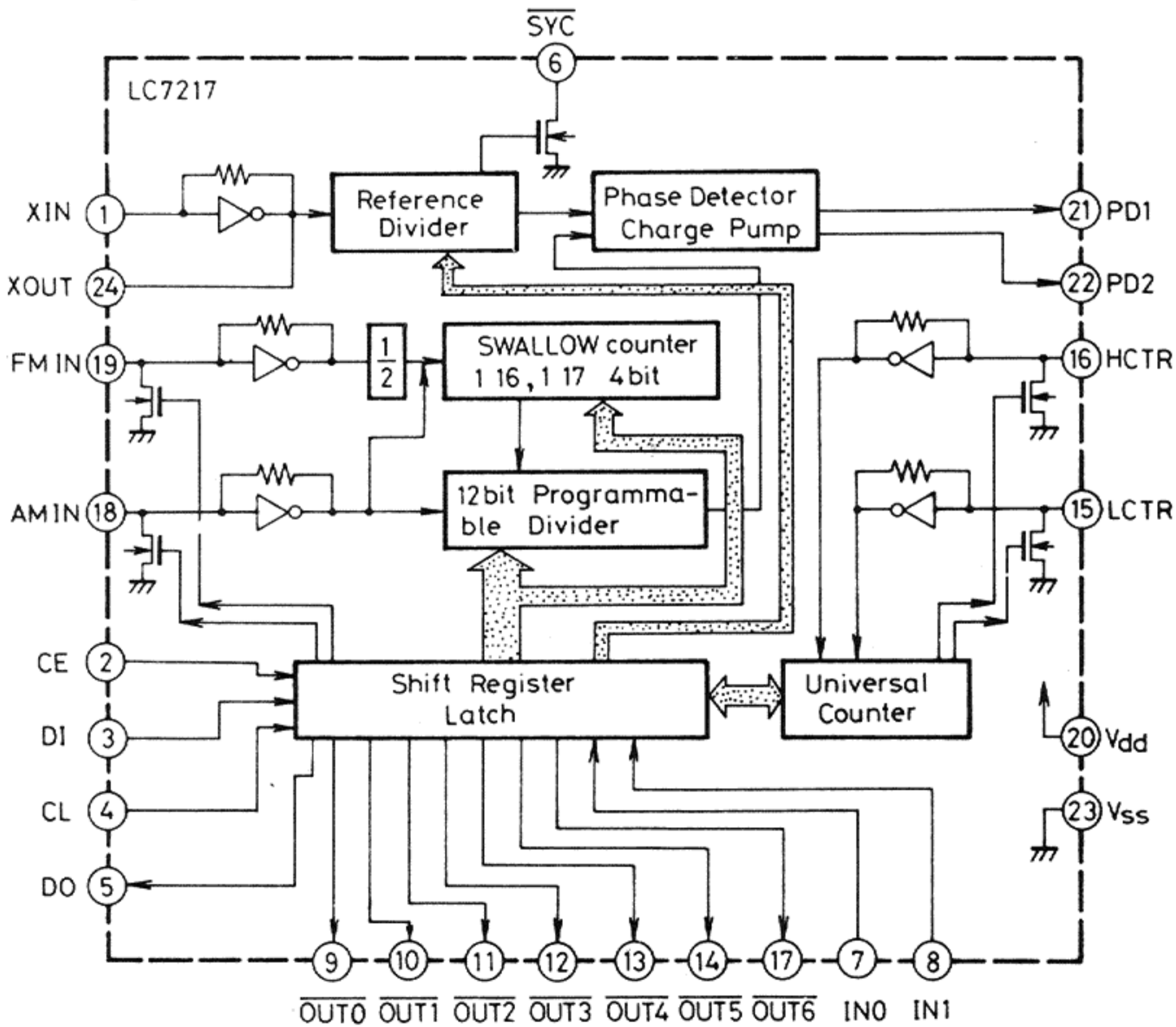
(2) Pin Functions

Symbol	Pin No.	Details	Function	I/O
Xin Xout	1 24	X'tal OSC	·Crystal oscillator (7.2 MHz)	I O
FMIN	19	Local oscillator signal input	·FMIN is selected for serial data input: DV=1 is assigned. ·Input frequency is 10 ~ 130 MHz (125 mVrms min.). ·The signal passes through the built-in pre-scaler(1/2) and is transmitted to the swallow counter.	I

AMIN	18	Local oscillator signal input	·AMIN is selected for serial data input: DV=0 is assigned.
			·When serial data is input: SP=1 is assigned:
			  ·Input frequency is 2 ~ 40 MHz (125 mVrms min.).
			  ·The signal is transmitted to the swallow counter without passing through the built-in pre-scaler(1/2).
			·When serial data is input: SP=0 is assigned:
			  ·Input frequency is 0.5 ~ 10 MHz (125 mVrms min.).
			  ·The signal is transmitted directly to the 12-bit programmable divider.
				I

PD1 PD2	21 22	Charge pump output	·PLL charge pump output. When the local oscillator signal frequency divided by N results in a frequency higher than the reference frequency, high level signals are output from PD1 and PD2. When it is lower than the reference frequency, low level signals are output.	O
$\overline{SYC}$	6	Controller clock	·This is the controller clock output pin and a 400 kHz signal (duty 66 %) is output after the power is turned ON.	O (N-ch open drain)
V dd	20	Power supply	·Power supply pin for LC7217. It supplies 4.5 ~ 6.5 V when the PLL circuit is activated.	-
V ss	23	Ground	·GND pin of LC7217.	-
CE	2	Chip enable	·This pin goes high when serial data is input (DI) to LC7217 or output from it.	I
CL	4	Clock	·This clock is used to synchronize data when serial data is input (DI) to or output (DO) from LC7217.	I
DI	3	Input data	·Input pin for serial data which is transmitted from the controller to LC7217. ·A total of 36 bits of data should be input for initialization.	I
DO	5	Output data	·Output pin for serial data transmitted from LC7217 to the controller. ·A total of 24 bits can be output from the internal shift register in synchronized with CL.	O (N-ch open drain)
$\overline{OUT\ 0}$ $\overline{OUT\ 1}$ $\overline{OUT\ 2}$ $\overline{OUT\ 3}$ $\overline{OUT\ 4}$ $\overline{OUT\ 5}$ $\overline{OUT\ 6}$	9 10 11 12 13 14 17	Output port	·Latches O0 ~ O6 of the serial data transmitted from the controller, and inverts the data to output it in parallel. ·$\overline{OUT\ 0}$ can outputs the time base for clock (8 Hz). (When TB = 1.) ·$\overline{OUT\ 1}$ and $\overline{OUT\ 2}$ are complementary outputs. ·$\overline{OUT\ 0}$, $\overline{OUT\ 3}$, $\overline{OUT\ 4}$, $\overline{OUT\ 5}$ and $\overline{OUT\ 6}$ are N-ch open drain outputs (up to 13 V).	O
IN 0 IN 1	7 8	Input port	·The data at input ports IN 0, IN 1 is converted from parallel to serial, and can be output from output pin DO.	I
HCTR	16	General purpose measurement signal input pin	·With serial data input: SC = 1, HCTR is selected. ·The signal is transmitted to the general-purpose counter (20-bit binary counter) via a 1/8 divider internally. For this, the value of the general-purpose counter becomes 1/8 of the actual frequency which is input to the HCTR pin. ·The measured results can be output from the MSB of the general-purpose counter via output pin DO.	I

LCTR	15	General purpose counter frequency input pin	·With serial data input: SC = 0, LCTR is selected.
			·At this time, if serial data is input: SF = 1 ;
			  ·The signal is transmitted directly to the general-purpose counter without passing through the internal 1/8 divider.
			·If serial data is input SF = 0 ;
			  ·Input frequency is 1 Hz ~ 20kHz (V IH = 0.7 V DD min., V IL = 0.3 V DD max.)
			  ·The measurement periods of 1-cycle and 2-cycle can be selected; when 2-cycle is selected, the input frequency is 2 Hz ~ 20kHz.(GT = 1/0 : 2/1 period)
				I

# ■ TC9177P (IC306): Analog Switch for Front Volume Control

(1) Block Diagram
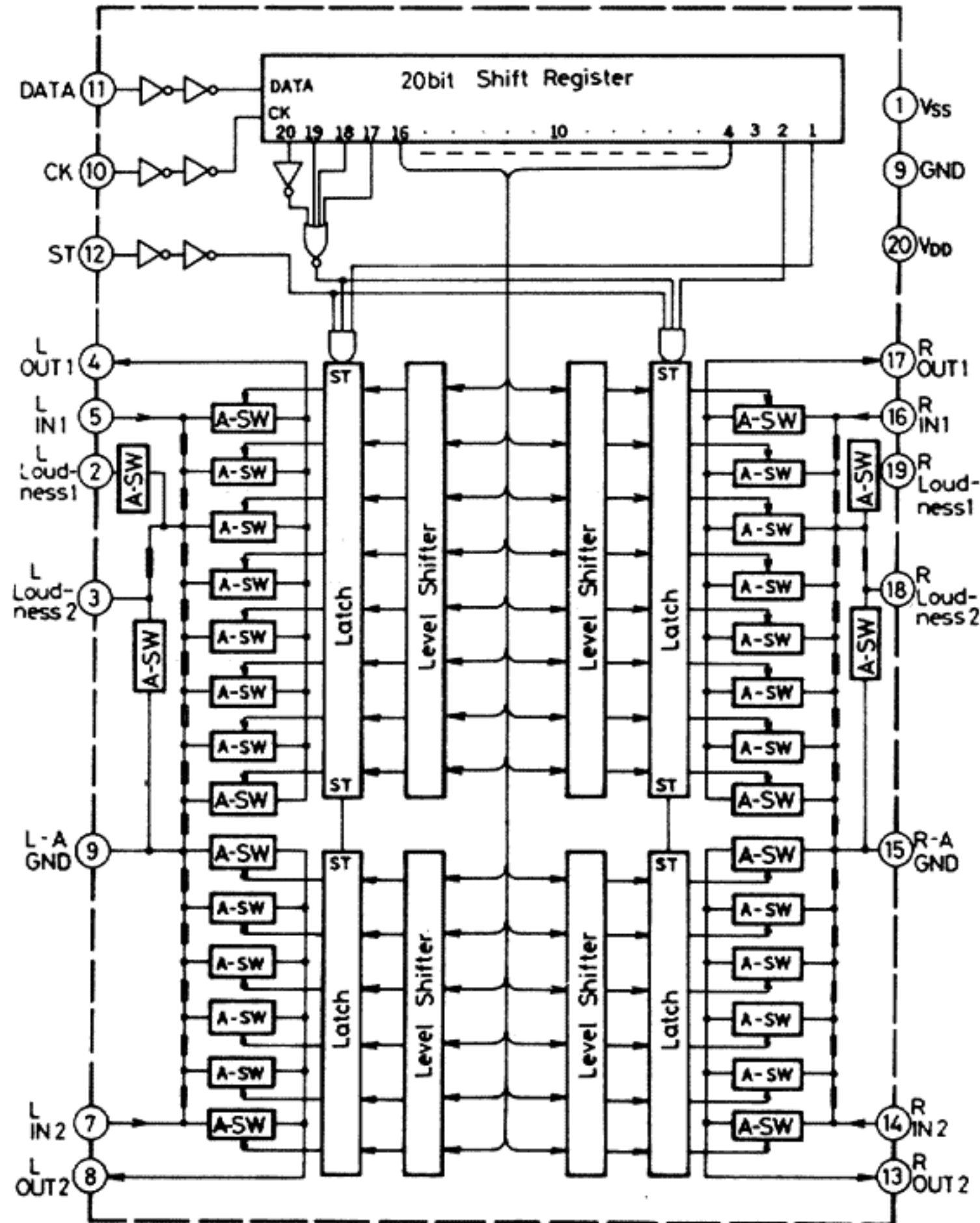
(2) Pin Functions

Pin No.	Symbol	Function
1	Vss	(−)Power Supply
2	L Loudness1	Terminal for Loudness (L-ch)
3	L Loudness2	Terminal for Loudness (L-ch)
4	L-OUT1	10dB Step Attenuator Output
5	L-IN 1	10dB Attenuator Input
6	A GND	Ground (Power Supply)
7	L-IN 2	2dB Attenuator Input
8	L-OUT2	2dB Step Attenuator Output
9	GND	Ground (Signal)
10	CK	Clock Input
11	DATA	Data Input
12	ST	Strobe Input
13	R-OUT2	2dB Step Attenuator Output
14	R-IN 2	2dB Attenuator Input
15	A-GND	Ground (Power Supply)
16	R-IN 1	10dB Attenuator Input
17	R-OUT1	10dB Step Attenuator Output
18	R-Loudness2	Terminal for Loudness (R-ch)
19	R-Loudness1	Terminal for Loudness (R-ch)
20	Vdd	(+)Power Supply

■ BA401 (IC104, IC105, IC106): IF Amp
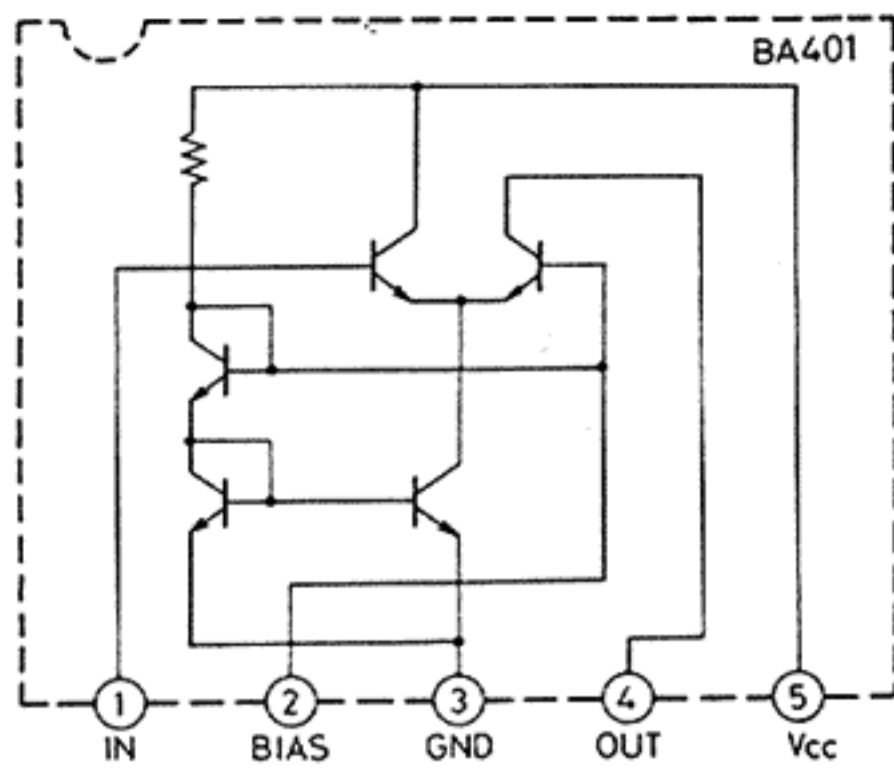
■ AN1358 (IC107): OP Amp
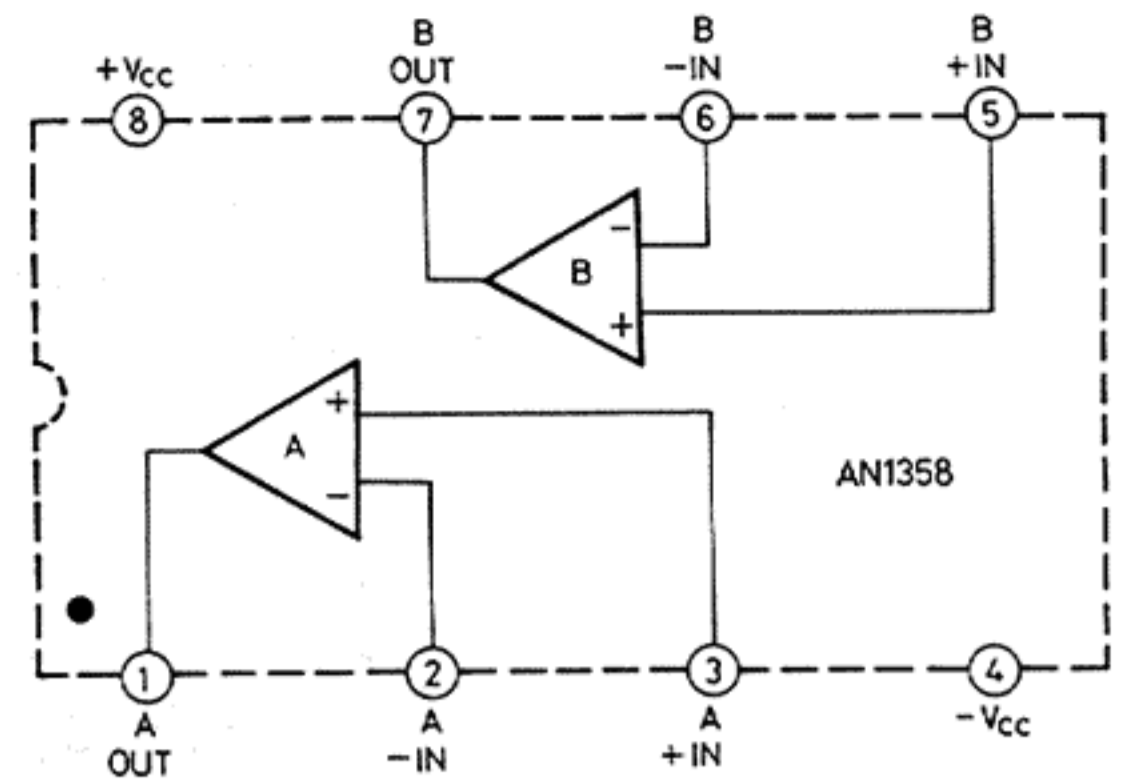
■ TC9176P (IC542): Analog Switch for Rear Volume Control
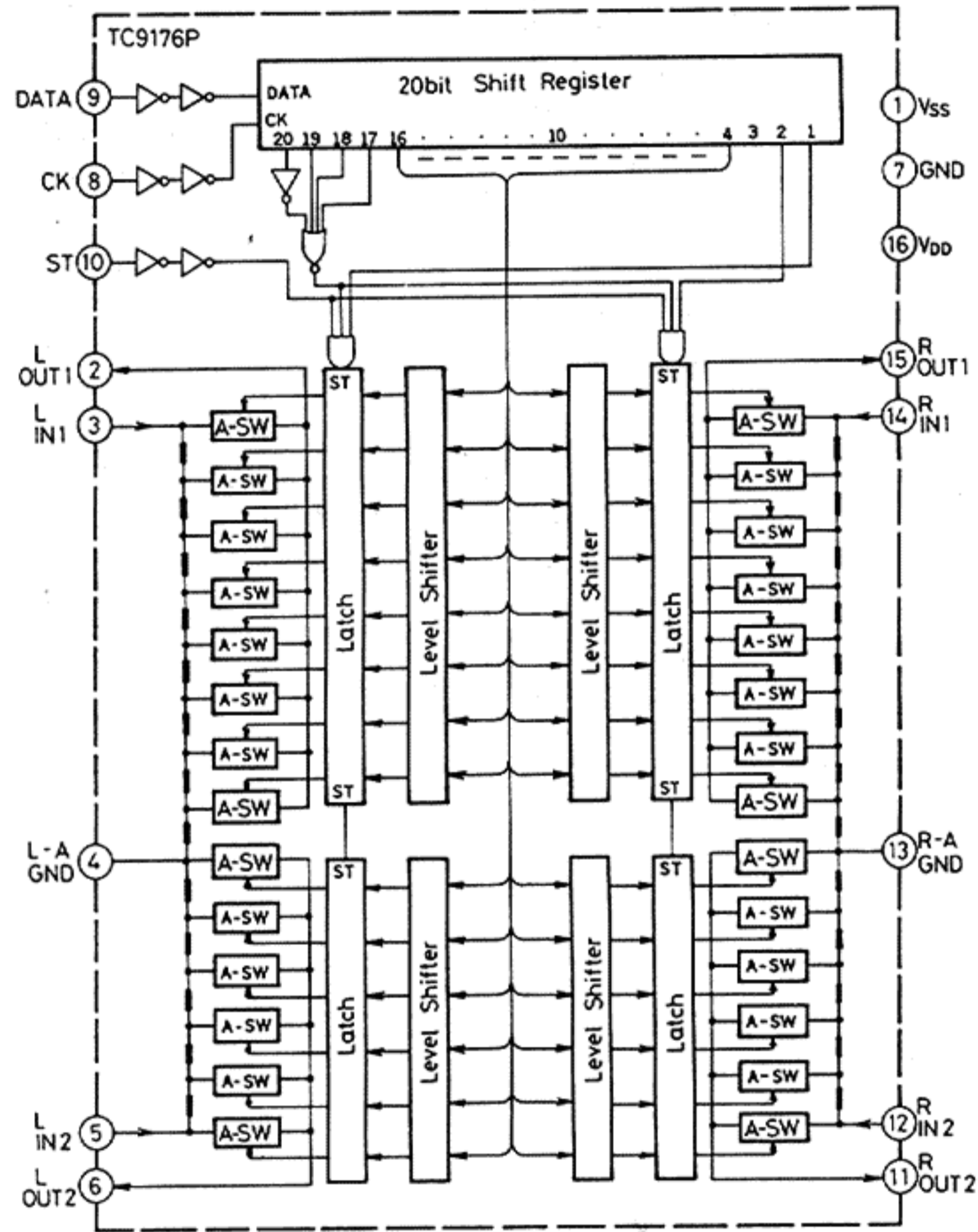
■ LC7522 (IC504): SEA Volume Control
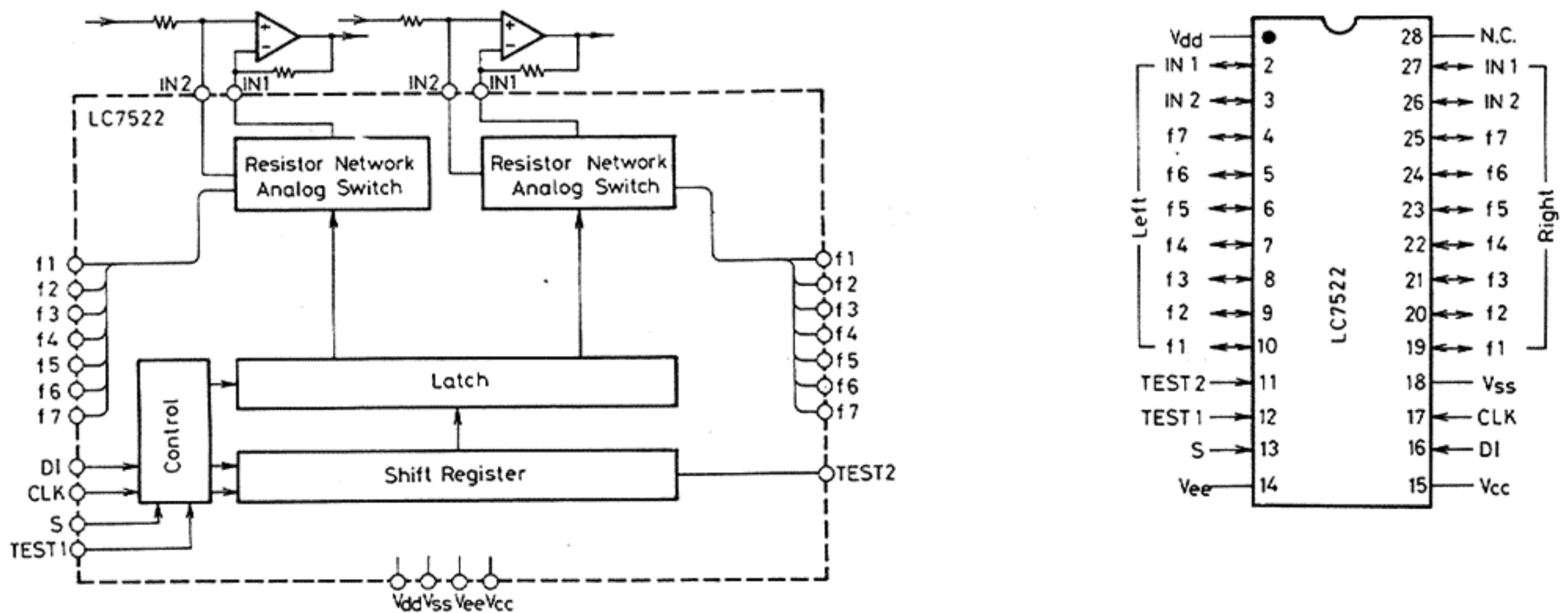
■ LA3607S (IC501, IC502): 7-elements Electrical Equalizer
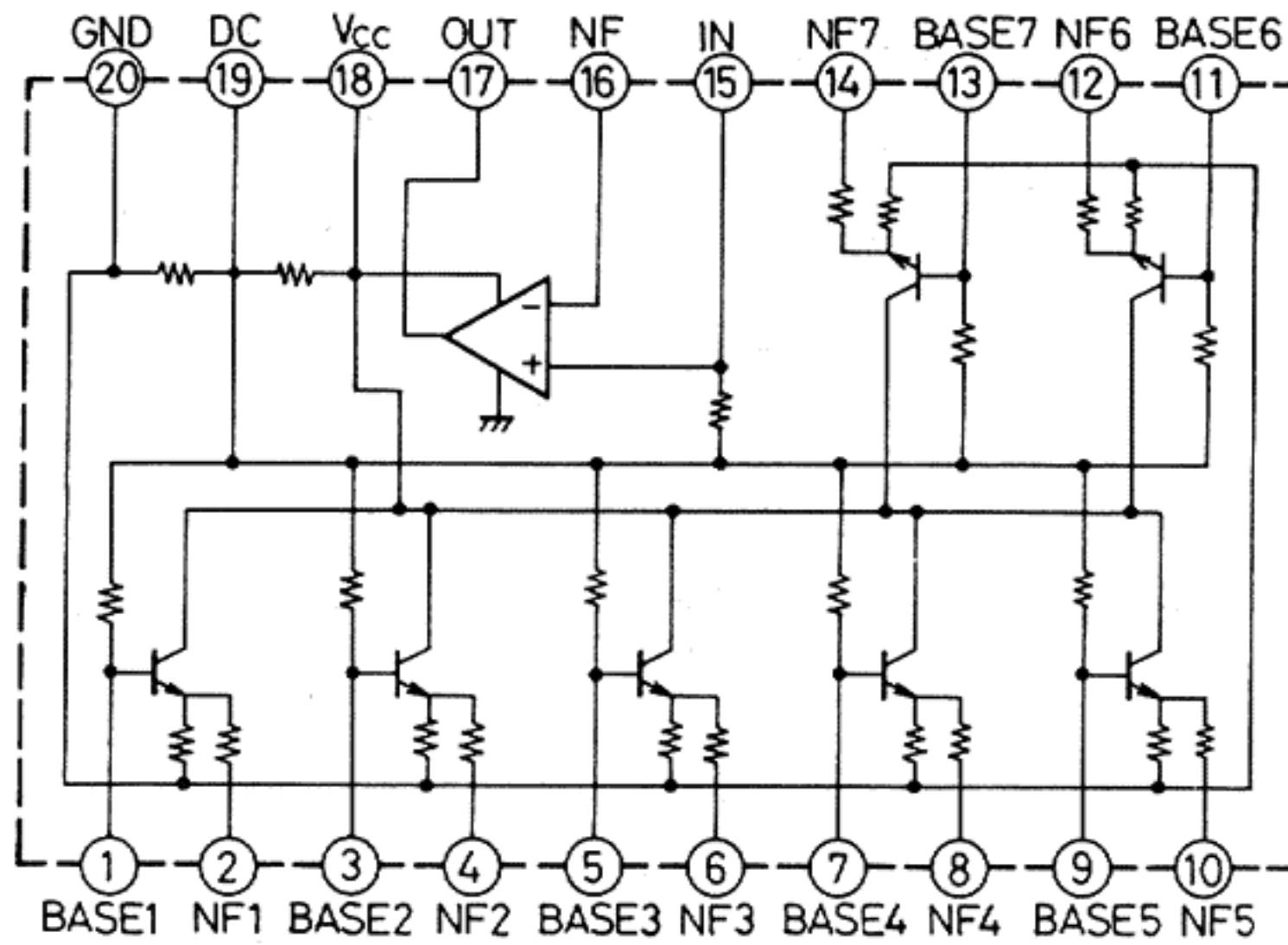
■ VC5022-2 (IC701, IC702): Super-A Bias Controller
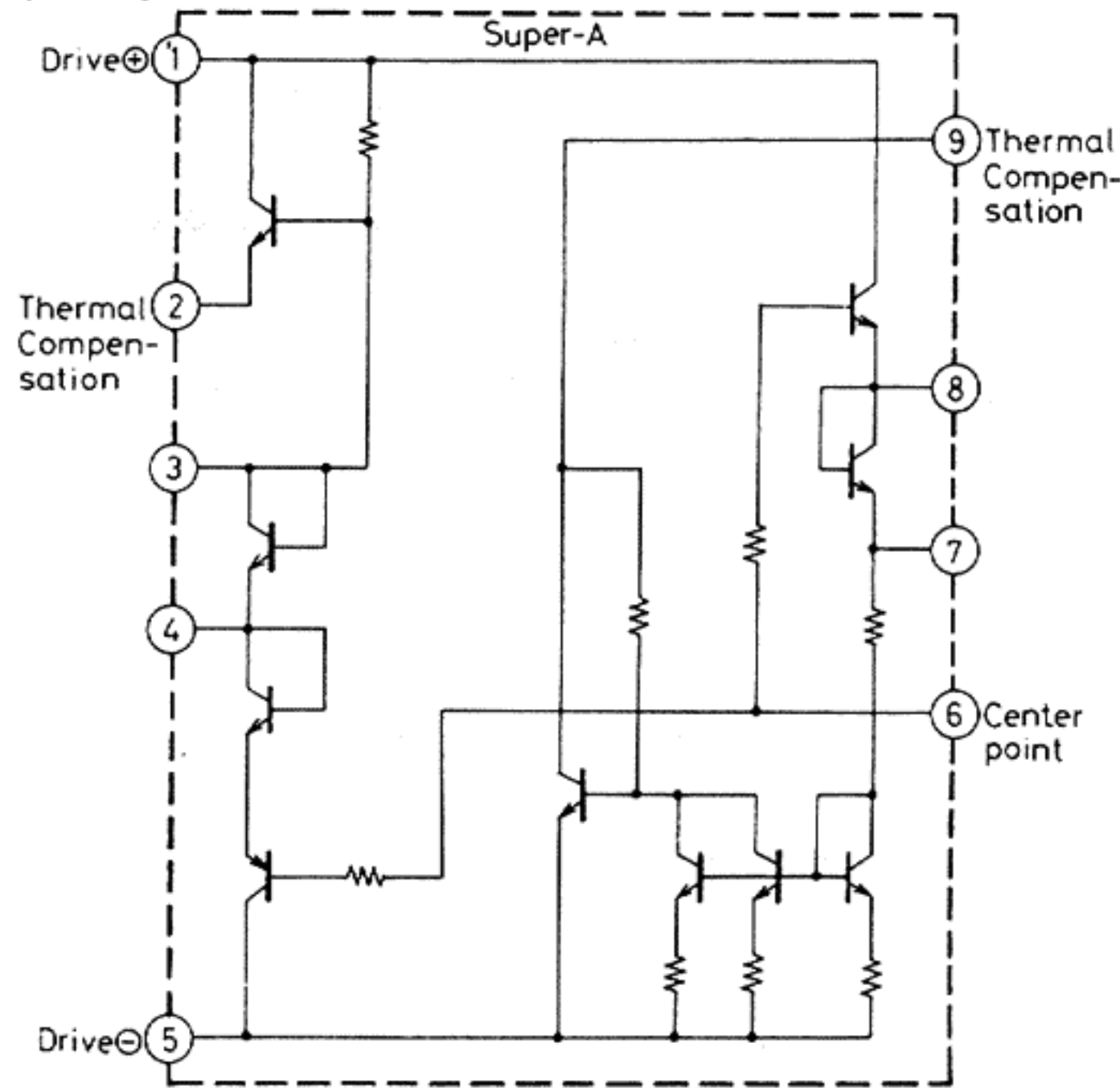
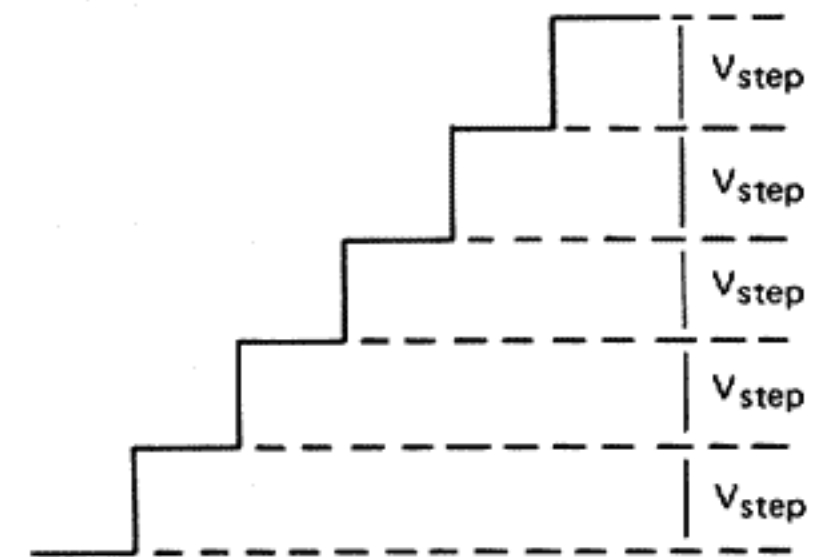# ■ TA7317P (IC901, IC941): Protector for Amplifier
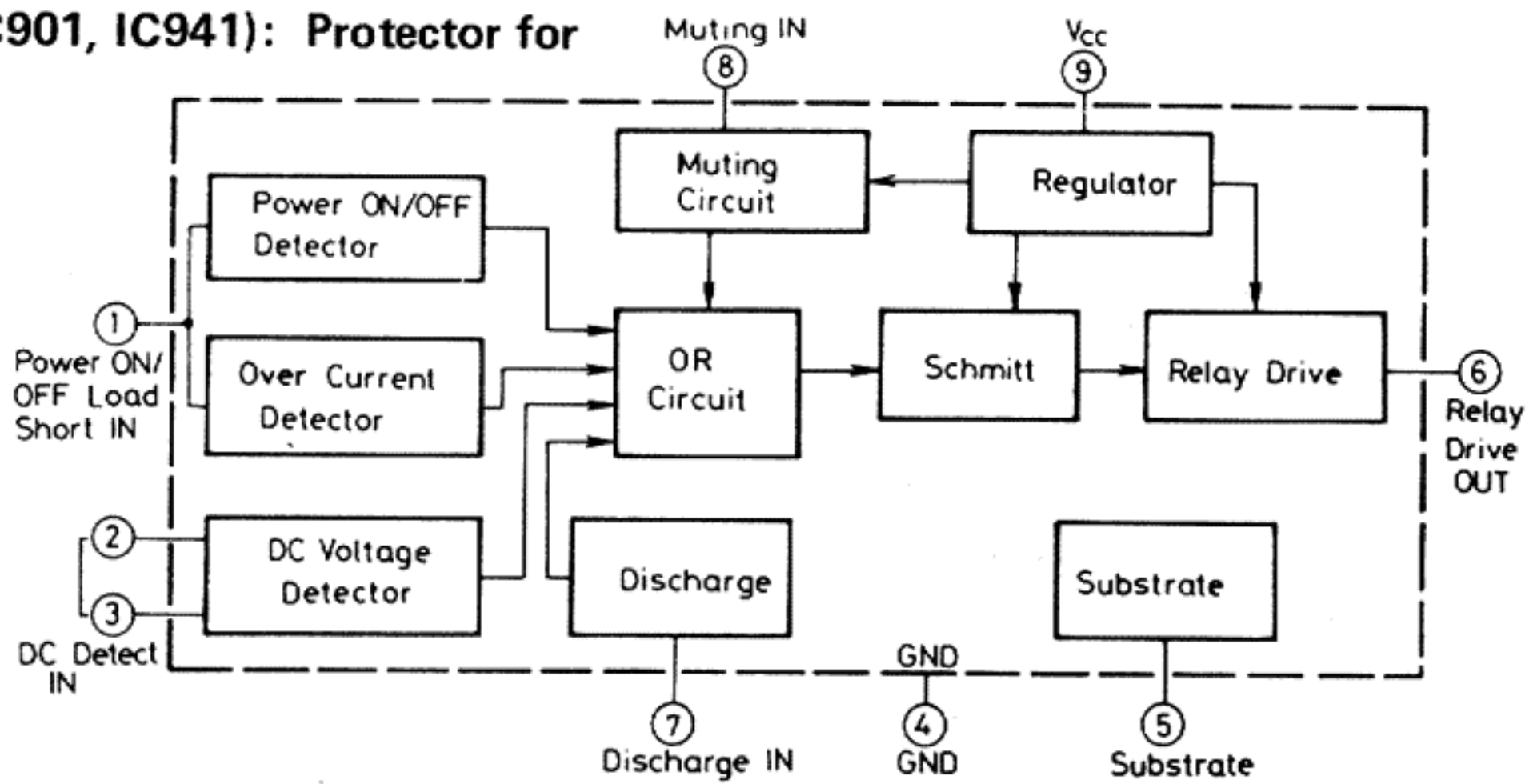
■ LC7582 (IC401): LCD Driver for Volume, SEA and Surround
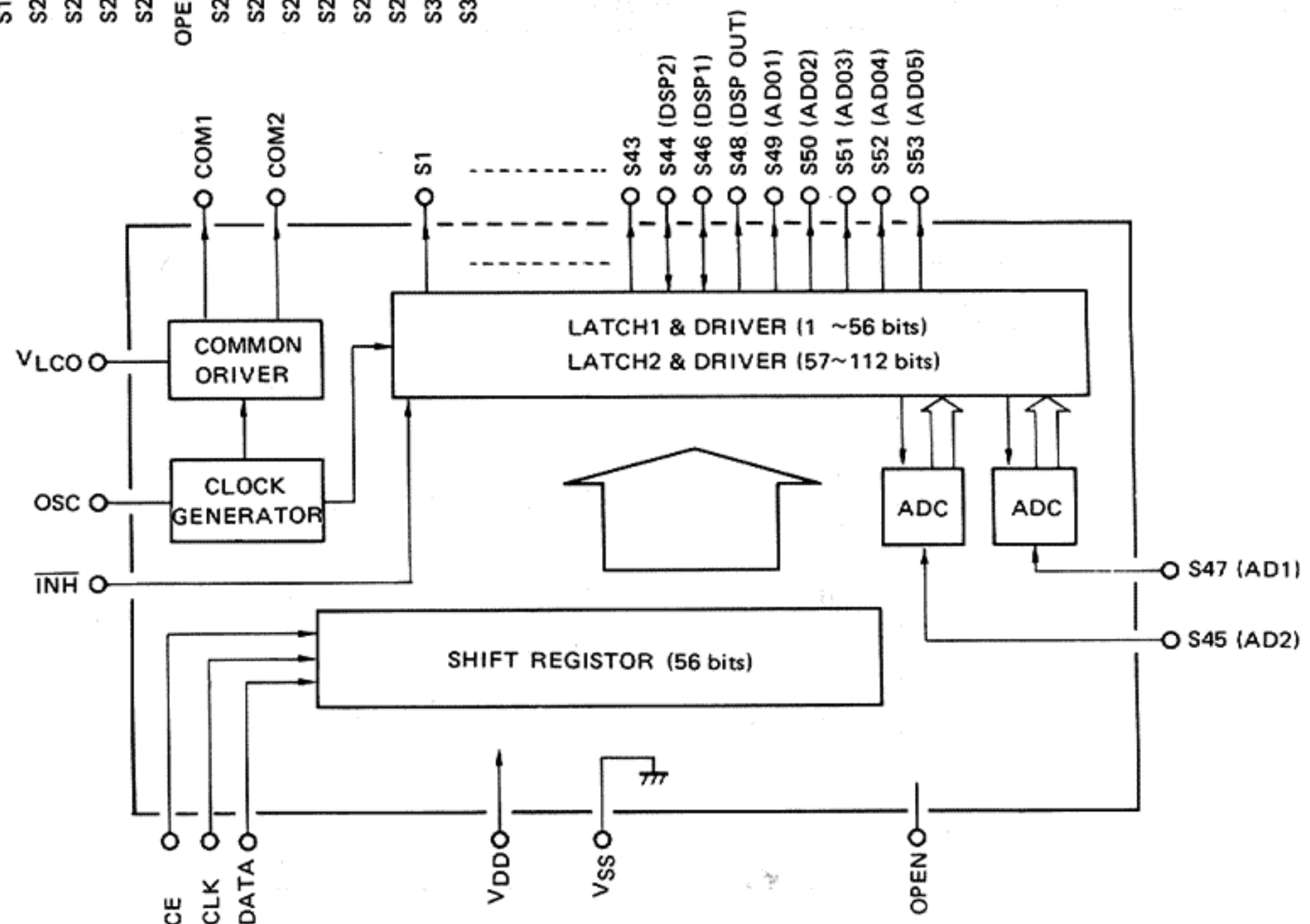
(1) Pin Configuration

Top pins (left to right, 64 down to 49): COM1, COM2, DATA, CLK, CE, VSS, VLCD, INH, VDD, OSC, S53 (AD05), S52 (AD04), S51 (AD03), S50 (AD02), S49 (AD01), S48 (DSP OUT)

Left pins (1–16): S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16

Right pins (48–33): S47 (AD1), S46 (DSP1), S45 (AD2), S44 (DSP2), S43, S42, S41, S40, S39, S38, S37, S36, S35, S34, S33, S32

Bottom pins (17–32): S17, S18, S19, S20, S21, S22, S23, OPEN, S24, S25, S26, S27, S28, S29, S30, S31

Center label: LC7582

(2) Step Voltage Differential

Input voltage of S45(AD2) and S47(AD1)

V_{step} (×5, stepped)

(3) Block Diagram

Top terminals: COM1, COM2, S1 ... S43 (DSP2), S44 (DSP1), S46 (DSP1), S48 (DSP OUT), S49 (AD01), S50 (AD02), S51 (AD03), S52 (AD04), S53 (AD05)

- COMMON ORIVER (driven by V_{LCO})
- CLOCK GENERATOR (OSC)
- INH
- LATCH1 & DRIVER (1 ~56 bits)
- LATCH2 & DRIVER (57~112 bits)
- ADC, ADC → S47 (AD1), S45 (AD2)
- SHIFT REGISTOR (56 bits)

Bottom terminals: CE, CLK, DATA, VDD, VSS, OPEN

(4) Terminal Description

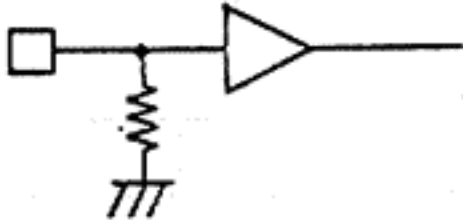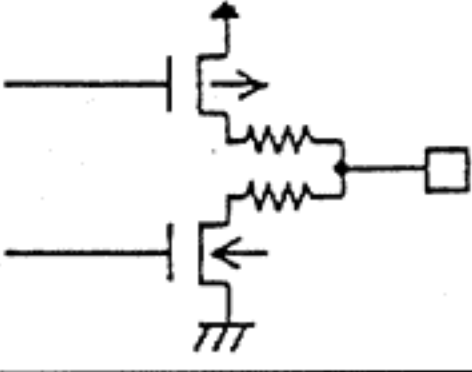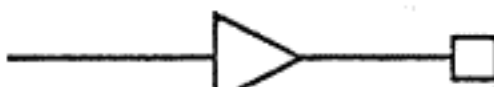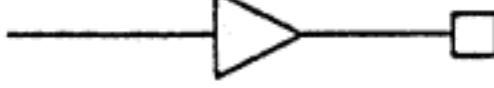|		
• S1 ~ S43	:	Segment output terminals
• S46(DSP1), S44(DSP2)	:	Segment output or DSP input terminals
• S47(AD1), S45(AD2)	:	Segment output or AD input terminals
• S48(DSPOUT)	:	Segment output or ADS output terminal
• S49 ~ S53 (AD0 ~ 5)	:	Segment output or AD output terminals
• COM1, 2	:	Common output terminals (Only COM 1 is used at the time of 1/1 duty, at which time CQM 2 is open)
• V_{LCD}	:	LCD bias voltage setting terminal
• OSC	:	Oscillator terminal
• CE, CLK, DATA	:	Input terminals for serial data transmission
• V_{SS}, V_{DD}	:	Power supply terminals
• INH	:	Input terminal for extinguishing and lighting the display (Effective only for the output driver. Therefore, serial data can be sent during extinguishing and lighting)
• OPEN	:	Unconnected
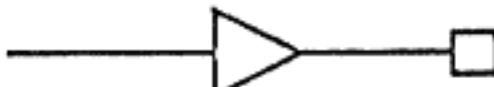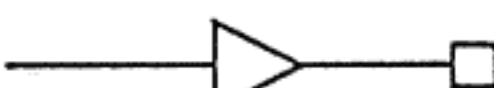
# ■ LC7584-871 (IC462): LCD Driver for Character

(1) Block Diagram
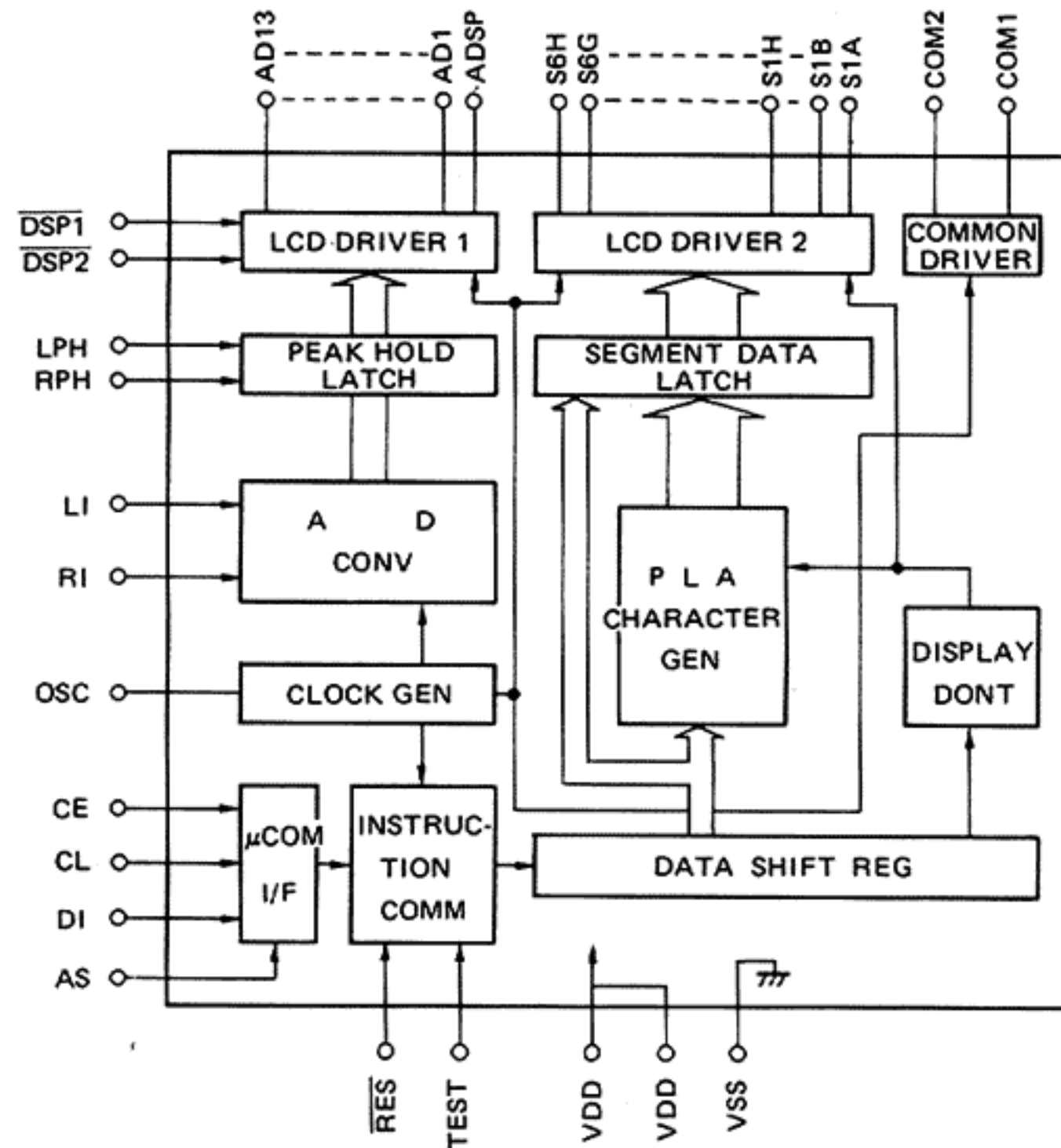
(2) Terminal Description

Terminal Name	Pin No.	Terminal Type	Description
$\overline{DSP1}$ $\overline{DSP2}$	36 38		• Input terminals for direct (external input display. The segment output is output from SDSP. COM1: $\overline{DSP1}$ COM2: $\overline{DSP2}$
LPH RPH	27 28		• C and R connection terminals which determine the peak hold reset time of the level meter display.
LI RI	37 39		• Input terminals of the AD converter. Full scale is achieved with (31/48) VDD.
OSC	29		• External C and R connection terminal for the oscillator.
CE CL CI	33 34 35		• Serial data transmission interface terminals. CE: Chip enable CL: Synchronous clock DI: Transmission data
AS	30		• Address select terminal when two unis are used. (see table below)
$\overline{RES}$	32		• This terminal forces the display off and on at the initialization condition. (Resets the LSI) The lighting is performed by serial data command from the microcomputer.

AS terminal address table:

AS Terminal	Address				Hex Code
	A0	A1	A2	A3	
L	0	0	1	0	4
H	1	0	1	0	5

Terminal Name	Pin No.	Terminal Type	Description
TEST	40		• Used open or with VSS.
V_{DD}	31 73		• Power supply terminals. They supply 4.0 to 5.5 V.
V_{SS}	26		• Ground terminal
COM1 COM2	41 42		• LCD common drivers with a frame frequency of $\frac{fosc}{1024}$ Hz.
S1A ~ S1H	43 ~ 50		• LCD segment drivers. < for the first digit >
S2A ~ S2H	51 ~ 58		• LCD segment drivers. < for the second digit >
S3A ~ S3H	59 ~ 66		• LCD segment drivers. < for the third digit >
S4A ~ S4H	67 ~ 75		• LCD segment drivers. < for the fourth digit >
S5A ~ S5E S5F ~ S5H	76 ~ 80 1 ~ 3		• LCD segment drivers. < for the fifth digit >
S6A ~ S6H	1 ~ 11		• LCD segment drivers. < for the sixth digit >
SDSP	12		• LCD segment driver. < for direct ($\overline{DSP1}$ and $\overline{DSP2}$) display >
AD1~AD13	13 ~ 25		• LCD segment drivers. < for AD converter level display > AD1 is the lowest level and AD13 is the highest level.

■ LA7951 (IC544): 4 input-4 output Video Switch/6 dB Video Amp.

(1) Equivalent Circuit Block Diagram
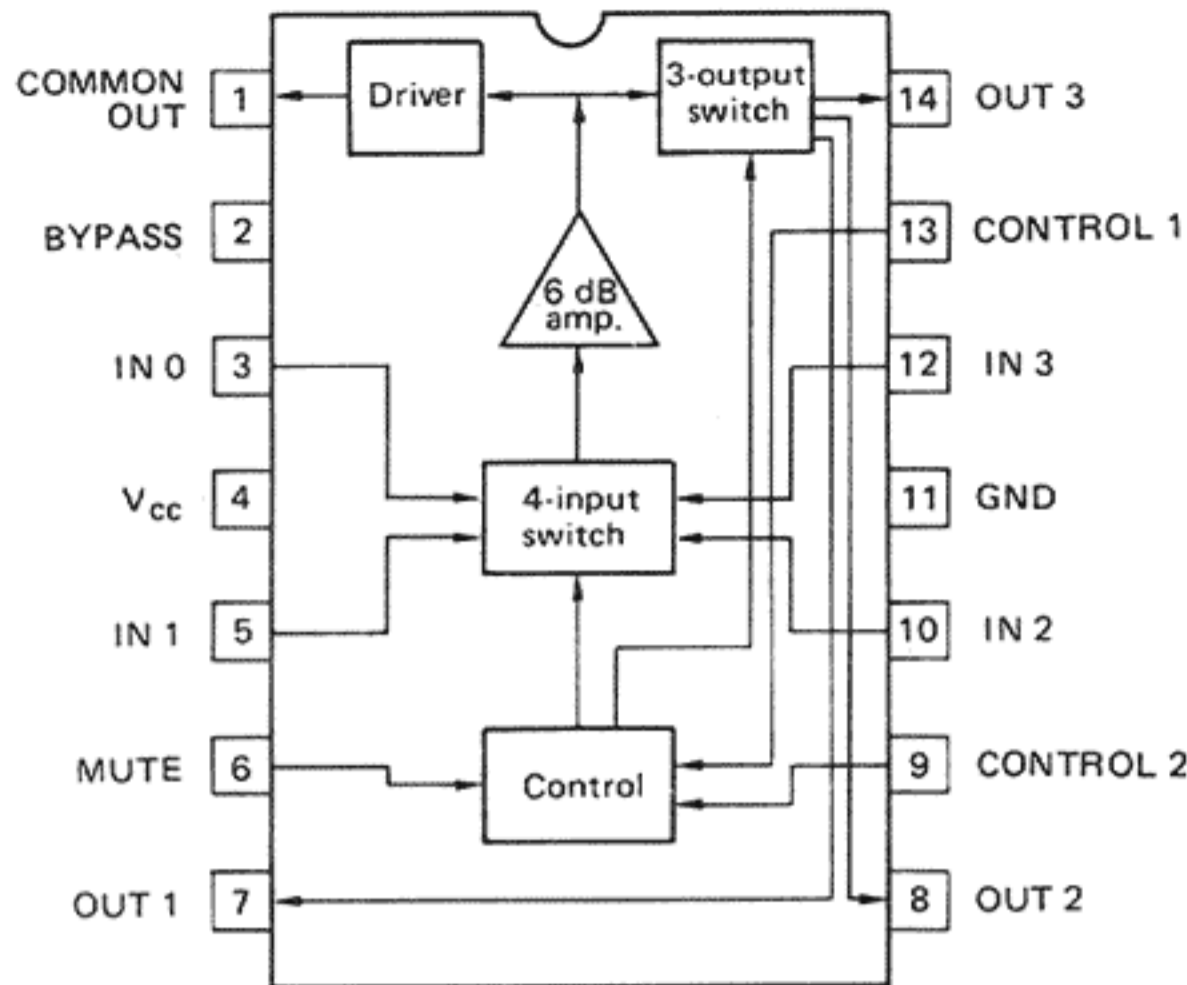
(2) Positive Logic Value Table

CONTROL			IN				OUT			
MUTE (6 pin)	1 (13 pin)	2 (9 pin)	0 (3 pin)	1 (5 pin)	2 (10 pin)	3 (12 pin)	COMMON (1 pin)	1 (7 pin)	2 (8 pin)	3 (14 pin)
L	–	–	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
H	L	L	ON	OFF	OFF	OFF	ON	ON	ON	ON
H	L	H	OFF	ON	OFF	OFF	ON	OFF	ON	ON
H	H	L	OFF	OFF	ON	OFF	ON	ON	OFF	ON
H	H	H	OFF	OFF	OFF	ON	ON	ON	ON	OFF

■ LA2730 (IC606): Dolby "B" Noise Reduction
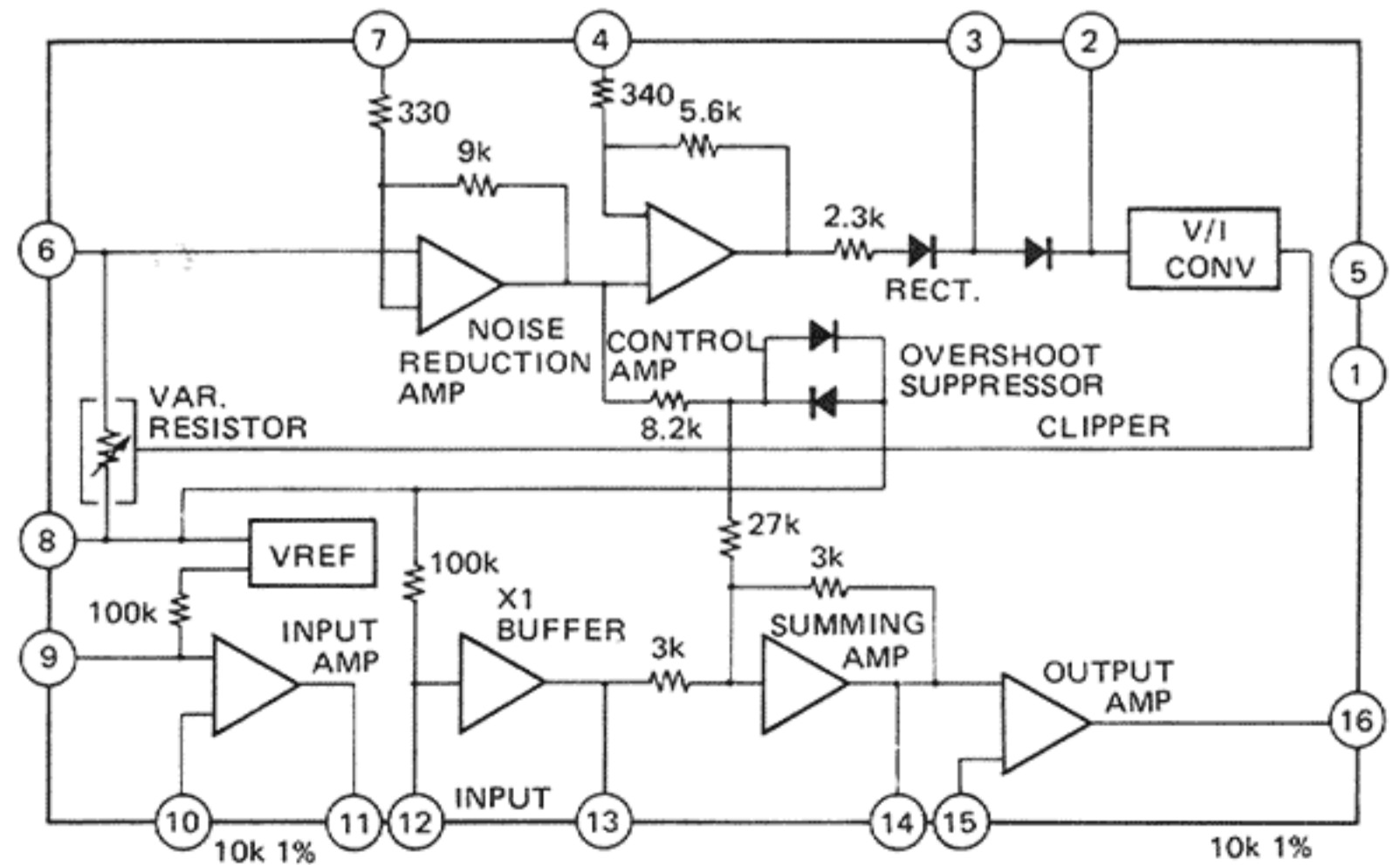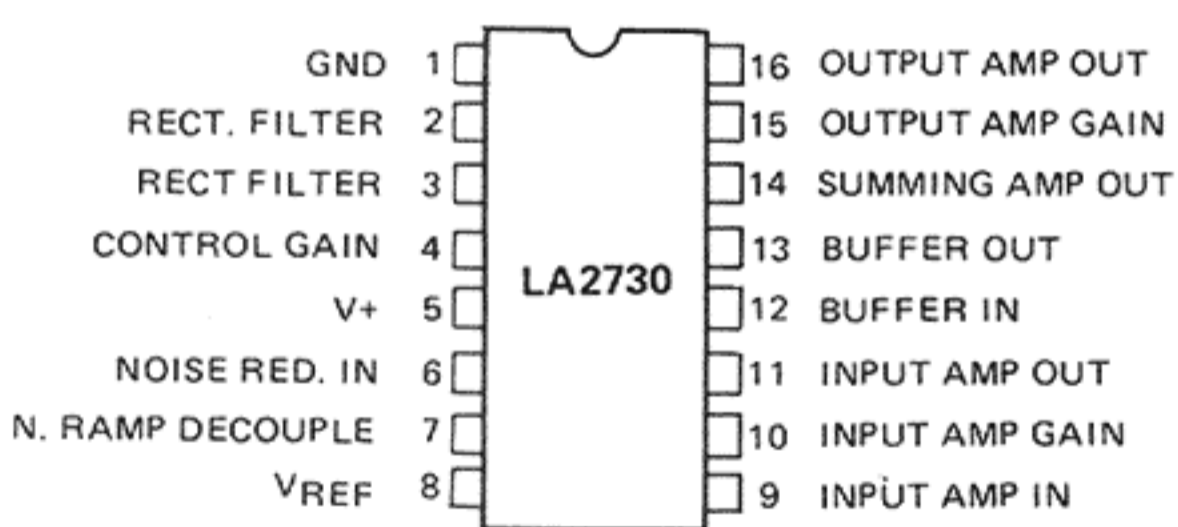
■ VC4097-001 (IC601): Digital Audio Signal Processor

(1) General

The TC9330N is a single chip digital signal processor for accoustic applications, especially sound hall control. It permits a high-quality, high-accuracy digital delay which is not possible in analog delay systems as well as writing and reading of data. The high throughput which simultaneously executes multiplication and addition computations allows all types of AV digital surround. Also, natural reverberation such as that of halls, stages, and stadiums can be simulated by fold-in computations of inicially reflected sounds and reverberation computations.

(2) Pin Configuration
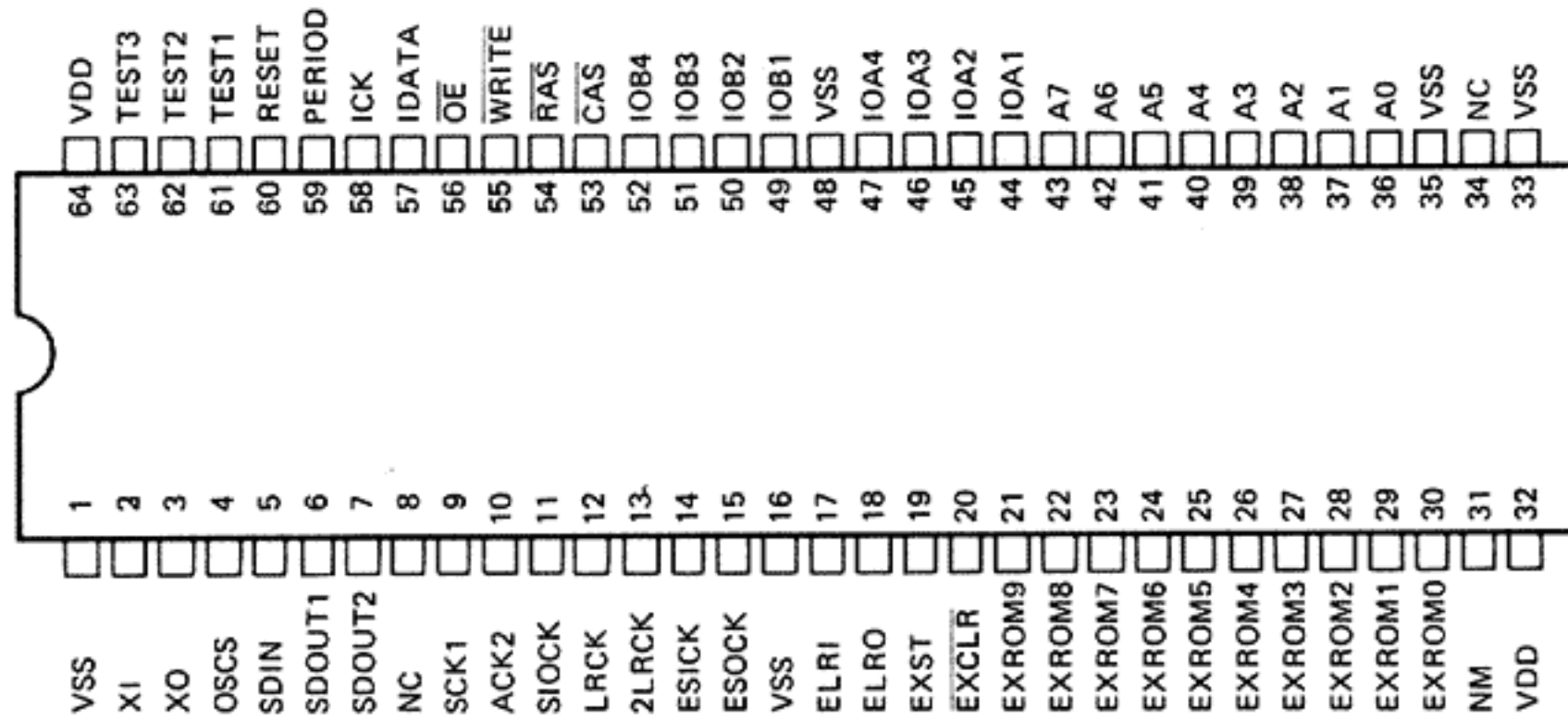
(3) Block Diagram
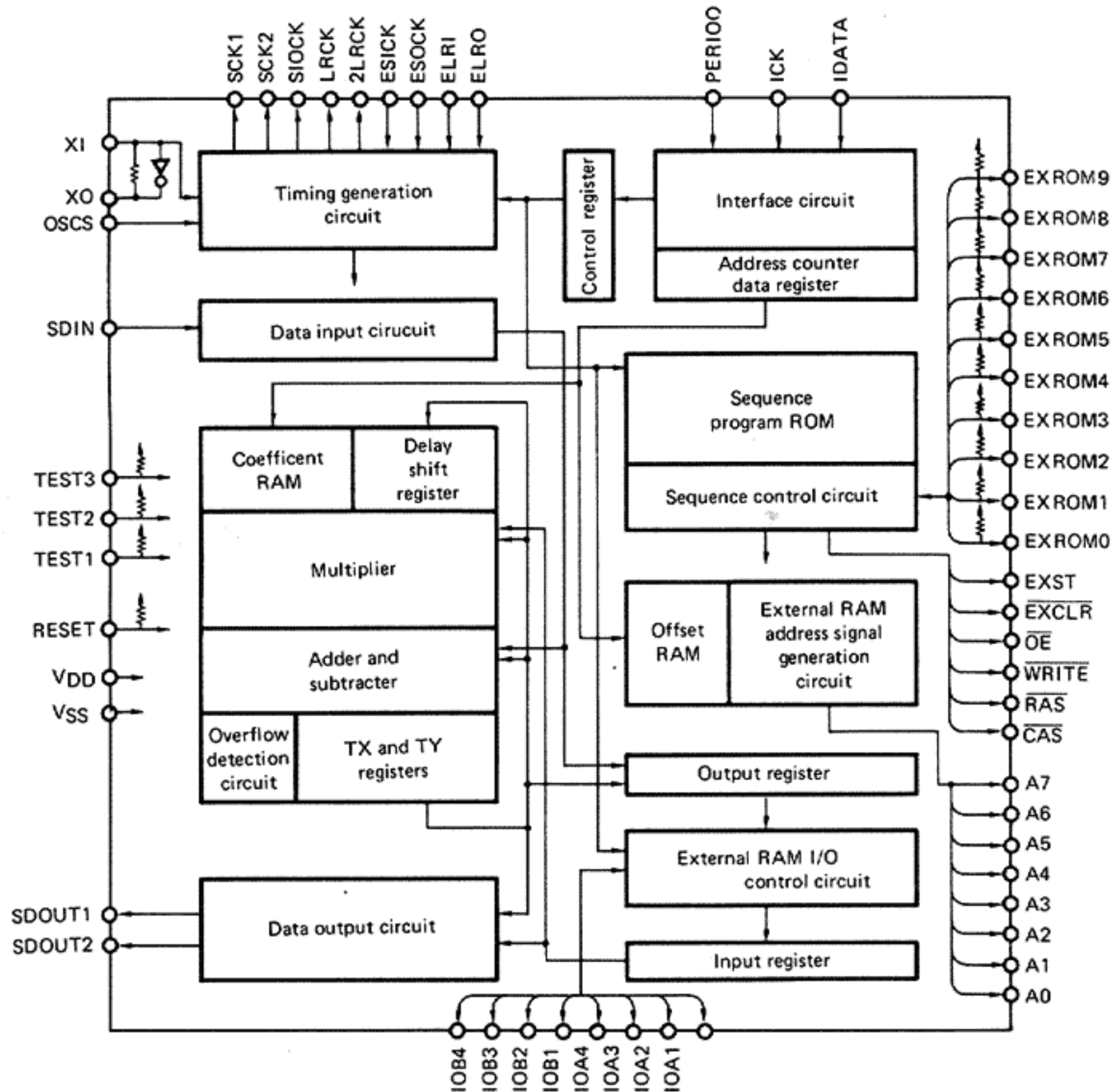
(4) Pin Functions

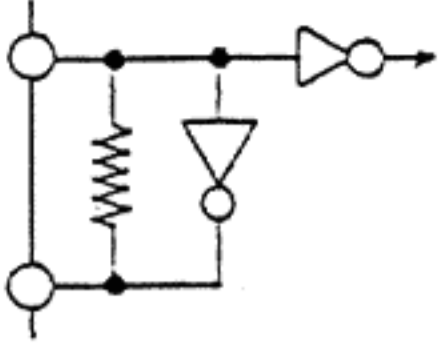| Pin No	Simbol	I/O	Functional Description	Remarks
1	VSS	–	Ground pin.	
2	XI	I	Crystal oscillator connection pin. Or, supplies a clock to the XI pin from the outside. Return resistor built in.	
3	XO	O		
4	OSCS	I	Oscillation/external clock frequency switching pin.	
5	SDIN	I	L ch. and R ch. serial data input pin.	Schmitt input
6	SDOUT1	O	L ch. and R ch. serial data output pins.	
7	SDOUT2	O		
8	NC	–	Unconnected pin.	
9	SCK1	O	Becomes the buffer output of the XI clock when OSCS is "L" and a divide-by-two output of the XI clock when OSCS is "H".	
10	SCK2	O	Becomes a divide-by-two output of the XI clock when OSCS is "L" and a divide-by-four output of the XI clock when OSCS is "H".	
11	SIOCK	O	Data shift clock output pin corresponding to the S/D converter and the D/A converter.	Internal oscillation mode.
12	LRCK	O	Channel clock output pin corresponding to the A/D converter and the D/A converter.	Same as above.
13	2LRCK	O	Clock output pin with double the frequency of LRCK.	Same as above.
14	ESICK	I	Shift clock input pin to read the L ch. and R ch. serial data.	External input mode Schmitt input.
15	ESOCK	I	Shift clock input pin to output the L ch. and R ch. serial data.	Same as above.
16	VSS	–	Ground pin.	
17	ELRI	I	Channel clock input pin corresponding to the L ch. and R ch. serial input data.	External input mode Schmitt input.
18	ELRO	I	Channel clock input pin corresponding to the L ch. and R ch. serial output data.	Same as above.
19	EXST	O	Program sequence ROM start pulse output pin.	Used in the external ROM mode.
20	EXCLR	O	System clear signal output pin.	Same as above.
21	EXROM9	I	External ROM data input pin. Pull-up resistor built	Same as above.
22	EXROM8	I		
23 ⟨ 30	EXROM7 ⟨ EXROH0	I/O	External ROM data input pin. Becomes the output pin during tests. Pull-up resistor built in.	Used in the external ROM mode.
31	NC	–	Unconnected pin.	
32	VDD	–	Supply pin.	
33	VSS	–	Ground pin.	
34	NC	–	Unconnected pin.	
35	VDD	–	Ground pin.	
36 ⟨ 43	A0 ⟨ A7	O	Address output pin of the externally connected DRAM.	
44 ⟨ 47	IOA1 ⟨ IOA4	I/O	Data input pin of the externally connected DRAM. Only IOA1 through IOA4 are used in the four-times access mode.	
49 ⟨ 52	IOB1 ⟨ IOB4			
48	VSS	–	Ground pin.	
53	CAS	O	Column address strobe output pin of the externally connected DRAM.	
54	RAS	O	Low address strobe output pin of the externally connected DRAM.	

Pin No	Simbol	I/O	Functional Description	Remarks
55	WRITE	O	Read/write pulse output pin of the externally connected DRAM.	
56	OE	O	Output-enable pulse output pin of the externally connected DRAM.	
57	IDATA	I	Interface data input pin.	Schmitt input.
58	ICK	I	Interface clock input pin.	Same as above.
59	PERIOD	I	Interface period pulse input pin.	Same as above.
60	RESET	I	Reset signal input pin. Pull-up resistor built in.	
61 ⟨ 63	TEST1 ⟨ TEST3	I	Test pins. Use when normally "H" or at open. Pull-up resistor built in.	
64	VDD	—	Supply pin.	

■ MN178611JSQ (IC402): LCD Control Microcomputer for D. AP

(1) Outline of the Functions

The MN178611JSQ is a high-speed, high performance CMOS 4-bit single-chip microcomputer with a built-in LCD drive circuit. It has 6K words of ROM and 384 words of RAM built in.

This microcomputer is also equipped with an internal input/output port for a wide range of applications, two 8-bit timer counters, two-8-bit shift buffers, a vector interrupt mechanism, LCD drive circuit, and a back-up mode.

(2) Pin Configuration

(3) Block Diagram

LCD DRIVER

SEG0 ~31
COM0 ~3
VLC1 ~3

PB ~ PC — Input port

P0 ~ PX,P5 — Input/output port

SBIA
SBOA
SBTA — Shift buffer A

SBIB
SBOB
SBTB — Shift buffer B
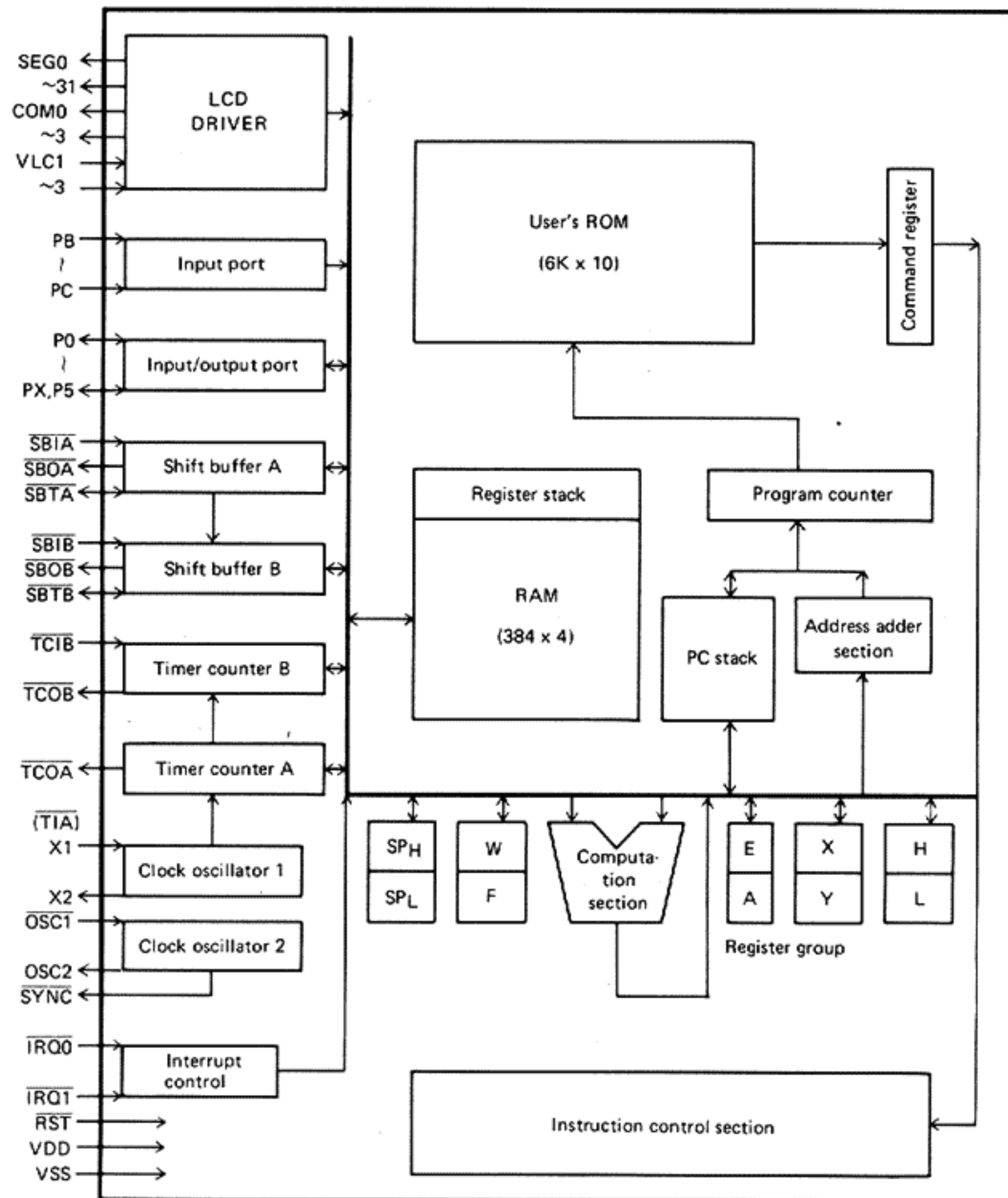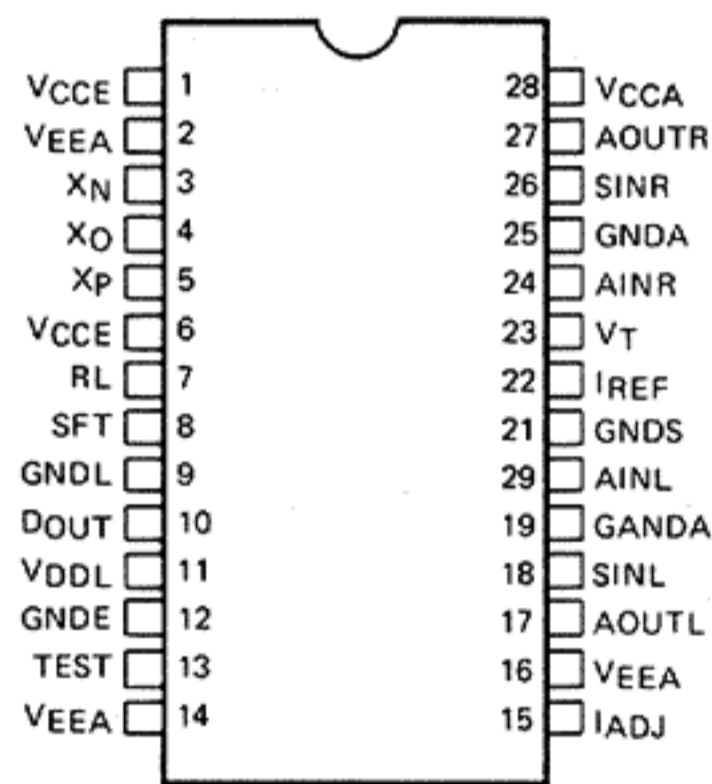
TCIB
TCOB — Timer counter B

TCOA — Timer counter A

(TIA)
X1 — Clock oscillator 1

X2
OSC1 — Clock oscillator 2

OSC2
SYNC

IRQ0
IRQ1 — Interrupt control
RST
VDD
VSS

User's ROM (6K × 10)

Command register

Register stack

RAM (384 × 4)

Program counter

PC stack

Address adder section

SP$_H$ / SP$_L$ · W / F · Computation section · E / A · X / Y · H / L

Register group

Instruction control section

(4) Pin Functions

Symbol	Pin Name	Pin Function
VDD	Supply pin	Connects +3 V to +5 V.
VSS	Ground pin	Connects the ground (0 V)
OSC1	Oscillator pin	Connects a crystal or ceramic oscillation element. Can also be used as an external clock input pin.
OSC2	Oscillator pin	Connects a crystal or ceramic oscillation element. A feedback resistor is built in between this pin and OSC1.
X1 (TCIA)	Oscillator pin for the clock	This is the evant counter input of timer counter A or the low-speed operation system clock input pin. The counting clock oscillation element is connected or the pin is used as an external clock input.
X2	Oscillation pin for the clock	Connects the counting clock oscillation element. A feedback resistor is built in between this pin and X1.
RST	Reset signal input pin	The reset will function when an "L" level is input over one machine cycle. Connecting a capacitor between the pull-up resistor (mask option or externally connected) and GND will enable intial clearing.
SYNC	Sync signal output pin	The internal timing signal CP3 is output every machine cycle. "L" level duty is 1/4.
IRQ0	Interrupt input pin	Program control interrupt will take effect when a negative edge signal is input.
PB1/IRQ1	Interrupt input pin	Program control interrupt will take effect when a negative edge signal is input.
PB1/TCIB	Timer counter input pin	This is the event count input pin of timer counter B.
PC1/SBTA	Clock input/output pin for serial data	Becomes the output (input) pin when shift buffer A is in the internal (external) clock mode.
PC2/PBIA	Serial data input pin	Eight-bit serial data is input to shift buffer A.

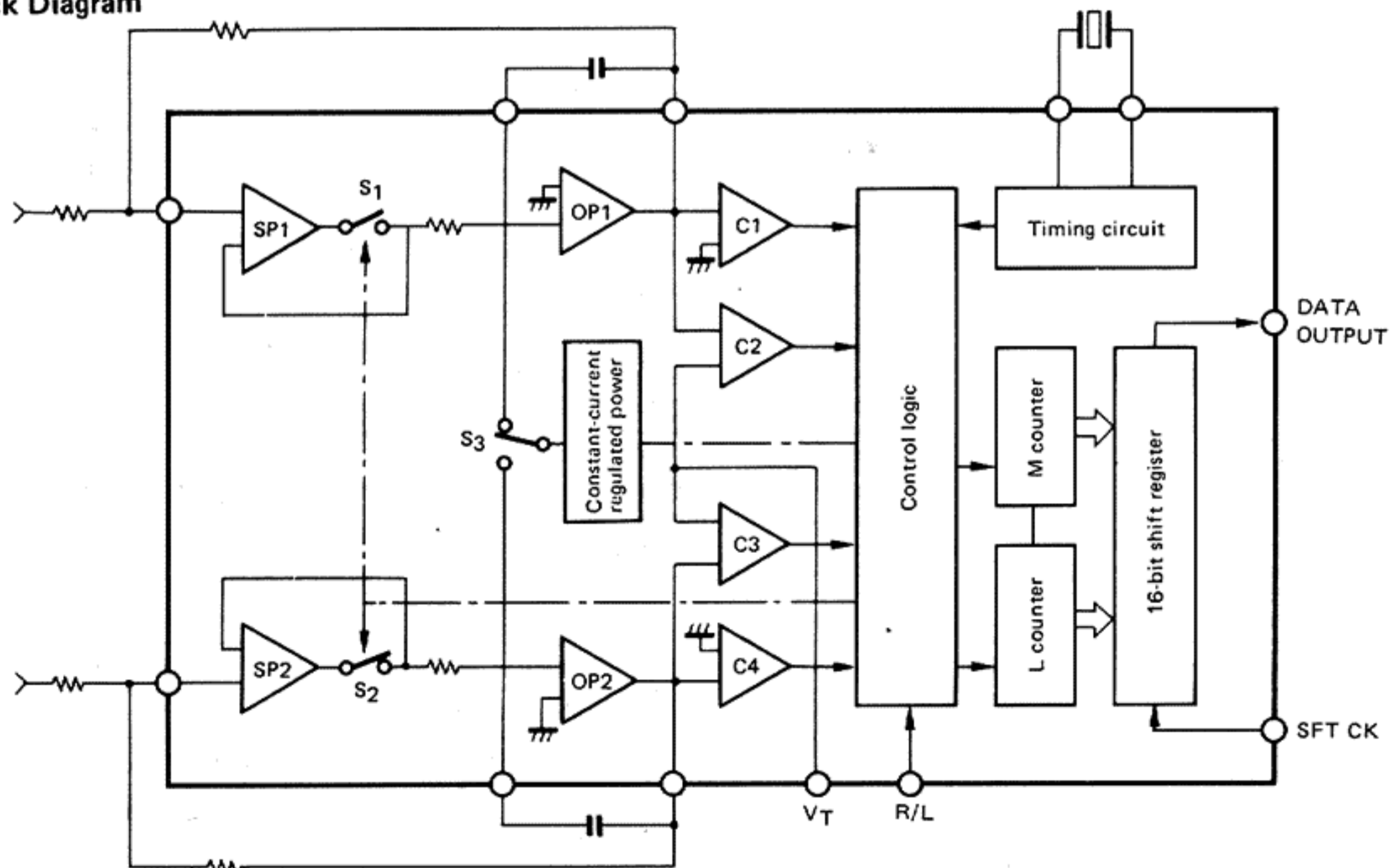| Symbol	Pin Name	Pin Function
PC3/$\overline{SBOA}$	Serial data output pin	In the send mode, 8-bit serial data is output from shift buffer A. When output is not being performed, the pin is high impedance.
PB2/$\overline{SBTB}$	Clock input/output pin for serial data	Becomes the output (input) pin when shift buffer B is in the internal (external) clock mode.
PB3/$\overline{SBIB}$	Serial data input pin	Eight-bit serial data is input to shift buffer B.
PC0/$\overline{SBOB}$	Serial data output pin	In the send mode, 8-bit serial data is output from shift buffer B. When output is not being performed, the pin is high impedance.
P00~P53 PX0~PX3	Parallel data input/output pin input/output pin	This is the 4-bit parallel data input/output port. The designation of input and output can be made by command in port units. Bit unit desifnations may also be made, but these are from P00 to P33. Eight-bit parallel data input/output is possible by pairing ports 0 & 1, 2 & 3 and 4 & 5. The input mode will be effective at reset time.
PB0~PC3	Parallel data input pin	This is the 4-bit parallel data input port.
PEG0~SEG31	LCD segment output pin	This is the LCD segment output pin. Each segment has a 4-bit data latch.
COM0~COM3	LCD common output pin pin	This is the LCD common output pin.
VLC1~VLC3	LCD power supply input pin	This is the input of the LCD power supply.
PX0/$\overline{TCOA}$	Timer output pin	This is the output pin of timer A. *1
PX1/$\overline{TCOB}$	Timer output pin	This is the output pin of timer B. *1

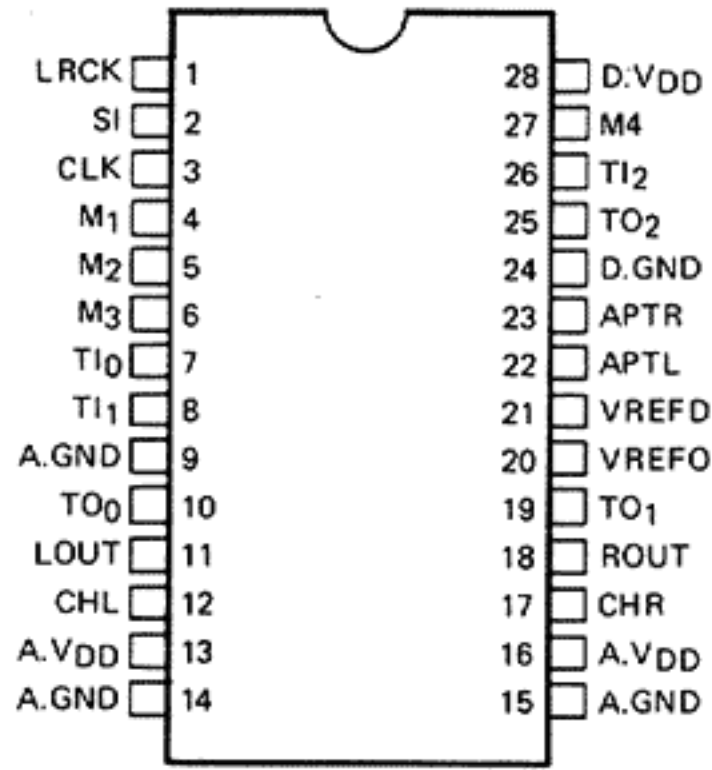## ■ TD6704P (IC604): 16 bits A/D Converter

(1) Pin Configuration

Pin	Name		Pin	Name
1	V_{CCE}		28	V_{CCA}
2	V_{EEA}		27	AOUTR
3	X_N		26	SINR
4	X_O		25	GNDA
5	X_P		24	AINR
6	V_{CCE}		23	V_T
7	RL		22	I_{REF}
8	SFT		21	GNDS
9	GNDL		29	AINL
10	D_{OUT}		19	GANDA
11	V_{DDL}		18	SINL
12	GNDE		17	AOUTL
13	TEST		16	V_{EEA}
14	V_{EEA}		15	IADJ

(2) Block Diagram

1-52 (No. 20057)

(3) Pin Function

| Pin No.	Symbol	Functional Description
1	V_{CCE}	Positive power supply pin of the ECL logic section. (5V)
2	V_{EEA}	Negative power supply pin of the analog section.
3	X_N	Oscillator pin Negative input
4	X_O	Oscillator pin Output
5	X_P	Oscillator pin Positive input
6	V_{CCE}	Positive power supply pin of the ECL logic section.
7	RL	This is the conversion operation switching signal input pin for the R ch. and the L ch. A sample hold is taken of the L ch. input at the rising edge and A/D conversion is performed during the "H" level period. Also, during this period the digital data of the R ch., which were previously converted, can be taken out as serial data.
8	SFT	This is a shift clock input pin used for taking out the converted digital data as serial data. To take out 16 bits while RL is "H" (or "L"), a frequency of 32 times RL is required.
9	GNDL	Ground pin of the TTL Logic section. (GND)
10	DOUT	Digiral data output pin. The data are synchronized with the fall of SFT and output from the MSB.
11	V_{DDL}	Positive power supply pin of the TTL logic section. (5 V)
12	GNDE	Ground pin of the ECL logic section.
13	NC	Use open.
14	V_{EEA}	Negative power supply pin of the analog section.
15	I_{ADJ}	This is the current ratio adjustment pin. A 3K Ω variable resistor is placed between this pin and V_{EEA} to correctly set the ratio of the discharge current IM and IL to 128:1.
16	V_{EEA}	Negative power supply pin of the analog section. (−10 V)
17	AOUTL	This is the L ch. integrating amp output pin. A capacitor used for integration is connected between this pin and the input.
18	SINL	L ch. analog signal input pin.
19	GNDA	Ground pin of the analog section
20	AINL	Lch. integrating amp input pin.
21	GNDS	Analog signal ground pin.
22	I_{REF}	By setting the current that flows into the integrating reference current input pin I_{ref} (which is at ground potential) to I_{ref}, the double integration of $IM = 4I_{ref}$ and $IL=1/32$, I_{ref} will be performed.
23	V_T	This is the comparator reference voltage input pin. The integrating current will switch from IL when the integrator output and V_T are in agreement.
24	AINR	Rch. integrating amp input pin.
25	GNDA	Ground pin of the analog section.
26	SINR	R ch. analog signal input pin.
27	AOUTR	This is the R ch. integrator output pin. A capacitor used for integation is connected between this pin and the input.
28	V_{CCA}	Positive power supply pin of the analog section. (5 V)

# ■ μPD6355G (IC605): D/A Converter

(1) Pin Configuration

```
        ┌────────┐
LRCK  1 │        │ 28  D.VDD
  SI  2 │        │ 27  M4
 CLK  3 │        │ 26  TI2
  M1  4 │        │ 25  TO2
  M2  5 │        │ 24  D.GND
  M3  6 │        │ 23  APTR
 TI0  7 │        │ 22  APTL
 TI1  8 │        │ 21  VREFD
A.GND 9 │        │ 20  VREFO
 TO0 10 │        │ 19  TO1
LOUT 11 │        │ 18  ROUT
 CHL 12 │        │ 17  CHR
A.VDD 13│        │ 16  A.VDD
A.GND 14│        │ 15  A.GND
        └────────┘
```

(2) Block Diagram
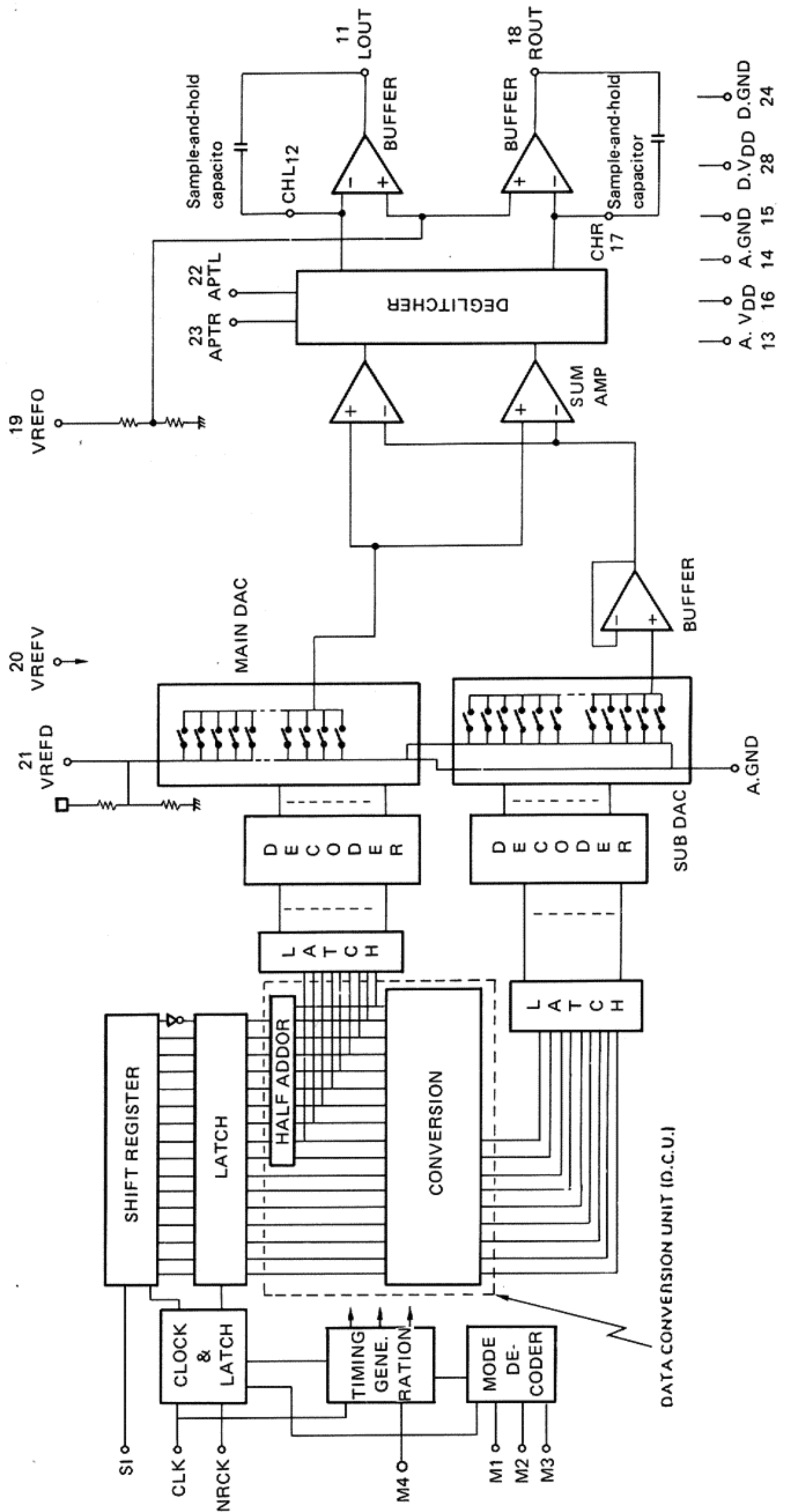
(3) Pin Function

| Pin No.	Symbol	Pin Name	Description	Input/ Output
1	LRCK	Left/Right Clock	This is the input pin of the input data left-right discrimination signal. "L"=Left, "H"=Right	Input
2	SI	Series Input	Input pin of the serial data.	Input
3	CLK	CLOCK	Input pin of the serial input data read clock.	Input
4	M1	Mode 1	Mode switching pin of the input data.	Input
5	M2	Mode 2		
6	M3	Mode 3		
7	TI_0	Test Input 0	Test pins. These should normally be connected to A. AND.	Input
8	TI_1	Test Input 1		
9	A. GND	Analog GND	GND pin of the analog section.	
10	TO_0	Test Output 0	Test pin. This should normally be left open.	Output
11	LOUT	L—ch OUTPUT	This is the output of the left side analog signal.	Output
12	CHL	Hold Capacitance	This is the capacitor connection pin for the left channel analog signal sample hold. A capacitor is connected between this pin and the LOUT pin.	Output
13	A. V_{DD}	Analog V_{DD}	This is the supply pin to the analog section.	
14	A. GND	Analog GND	This is the GND pin of the analog section.	
15	A. GND	Analog GND		
16	A. V_{DD}	Analog V_{DD}	This is the supply pin to the analog section.	
17	CHR	Hold Capacitance R-ch	This is the capacitor connection pin for the right channel analog signal sample hold. A capacitor is connected between this pin and the ROUT pin.	Output
18	ROUT	R-ch OUTPUT	This is the output pin of the right side analog signal.	Output
19	VREFO	Voltage Reference	This pin is connected to the reference voltage of the OP amp. Normally, a connection is made to A. GND through a capacitor in order to lower the impedance at high frequencies.	
20	VREFV	Voltage Reference	This pin is normally connected to A. GND through a capacitor.	
21	VREFD	Voltage Reference	This pin is connected to a resistance string. Normally, a connection is made to A. GND through a capacitor in order to lower the impedance at high frequencies	
22	APTL	Apertur L-ch	This is the input pin of the timing signal which sample holds the analog output of the left side. (Active high.)	Input
23	APTR	Apertur R-ch	This is the input pin of the timing signal which sample holds the analog output of the right side. (Active high.)	Input
24	D. GND	Digital GND	This is the ground pin of the logic section.	
25	TO_2	Test Output 2	Test pin. This pin should normally be left open.	Output
26	TI_2	Test Input 2	Test pin. This pin should be connected to D. V_{DD}.	Input
27	M4	Mode 4	Selects the clock of the internal logic circuit. In more detail, this pin selects whether or not the signal input from the CLK pin is demultiplied internally. There is no demultiplication at high level and 1/2 demultiplication at low level.	Input
28	D, V_{DD}	Digital V_{DD}	This is the supply pin to the logic section.	

■ AN6912 (IC051): Op Amp.
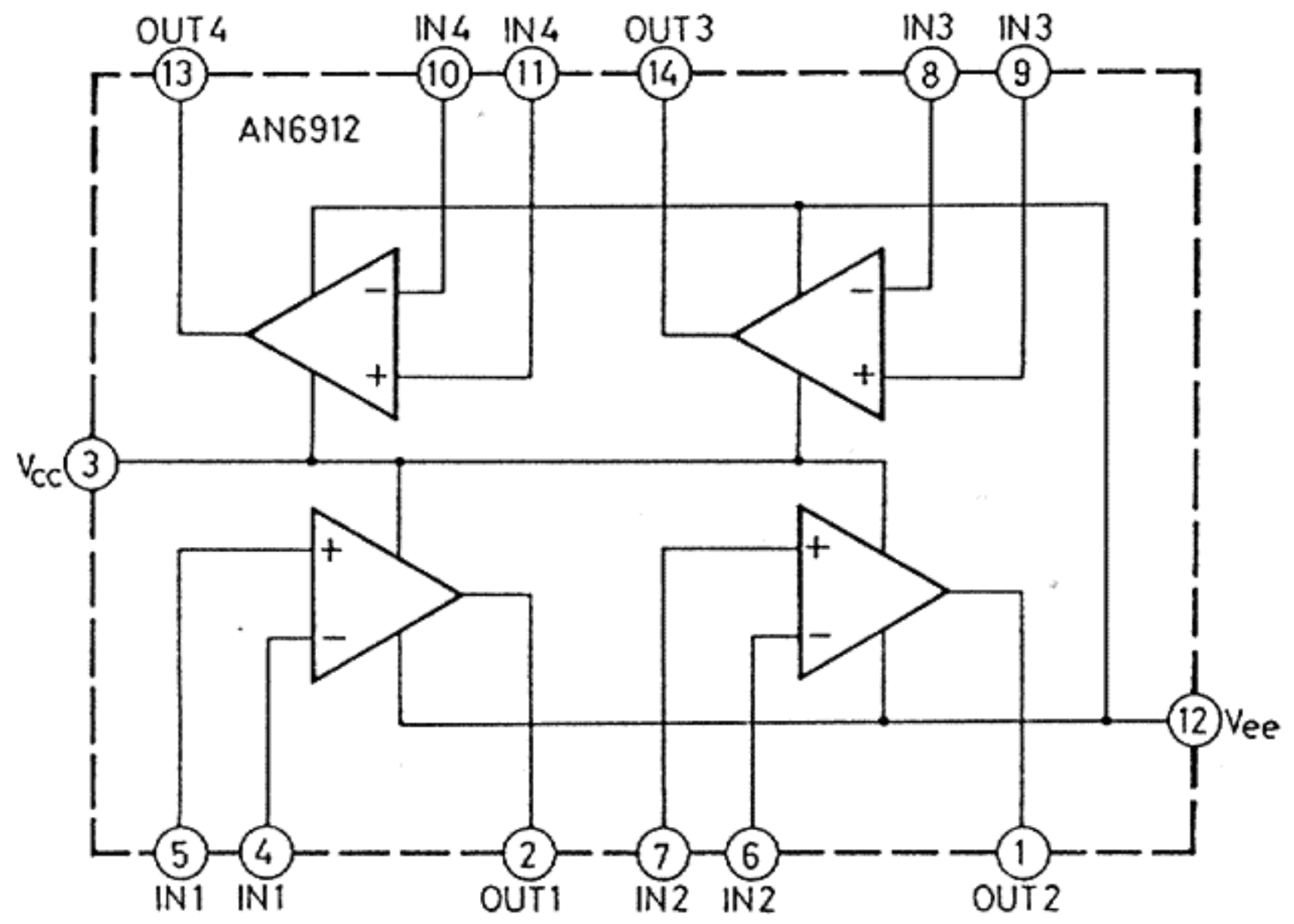
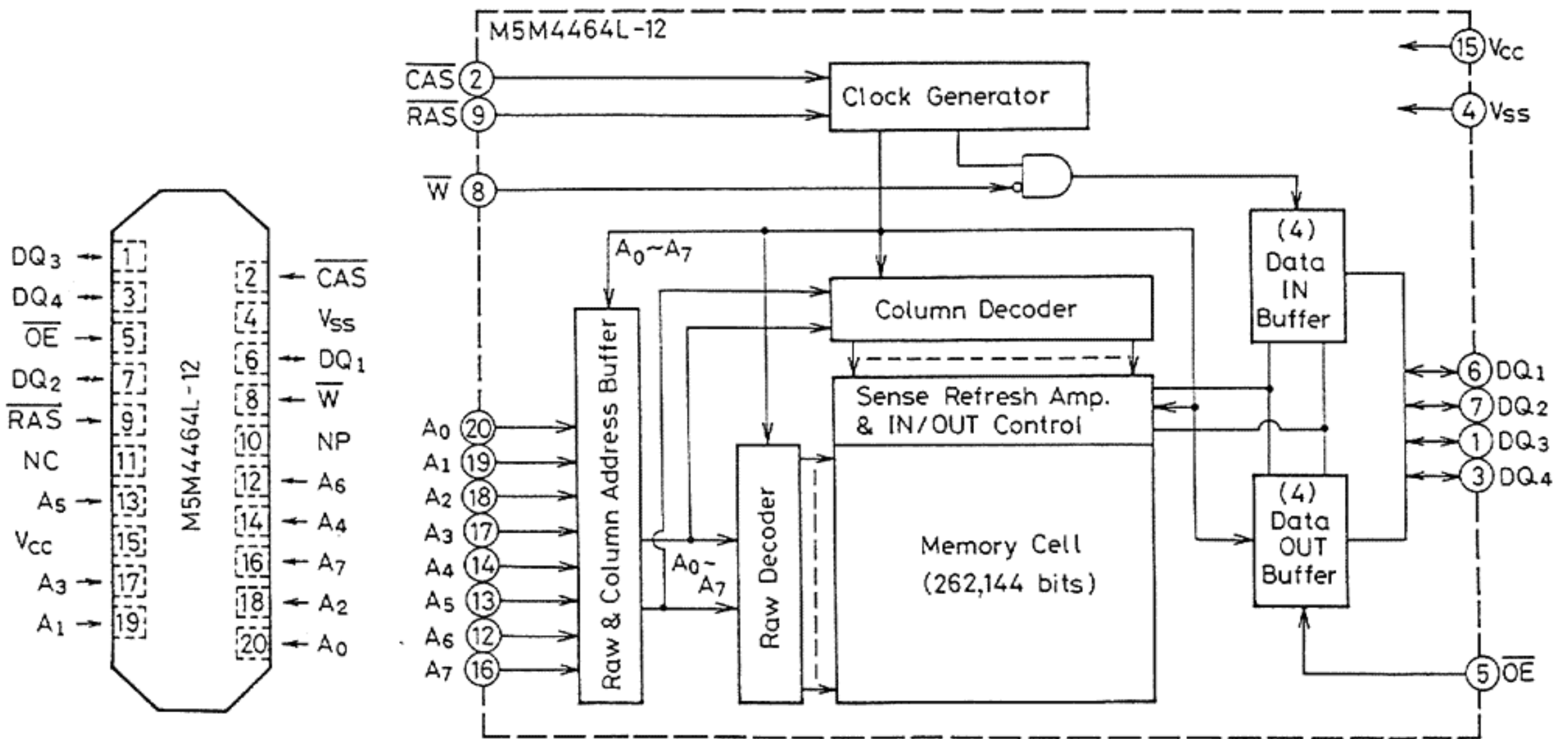## ■ NJM78L05A (IC698): Regulator
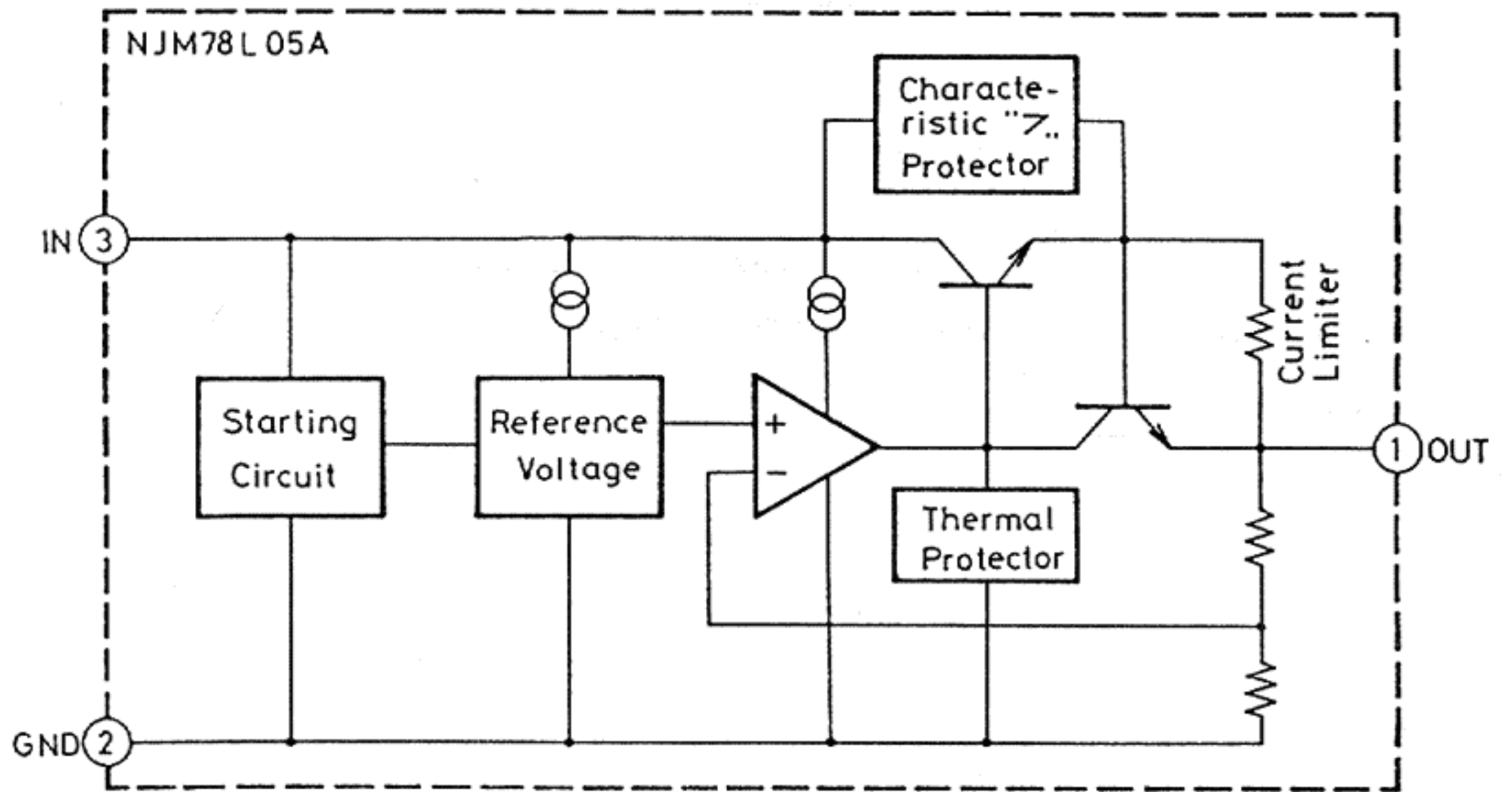
■ TA79L010P (IC699): Regulator
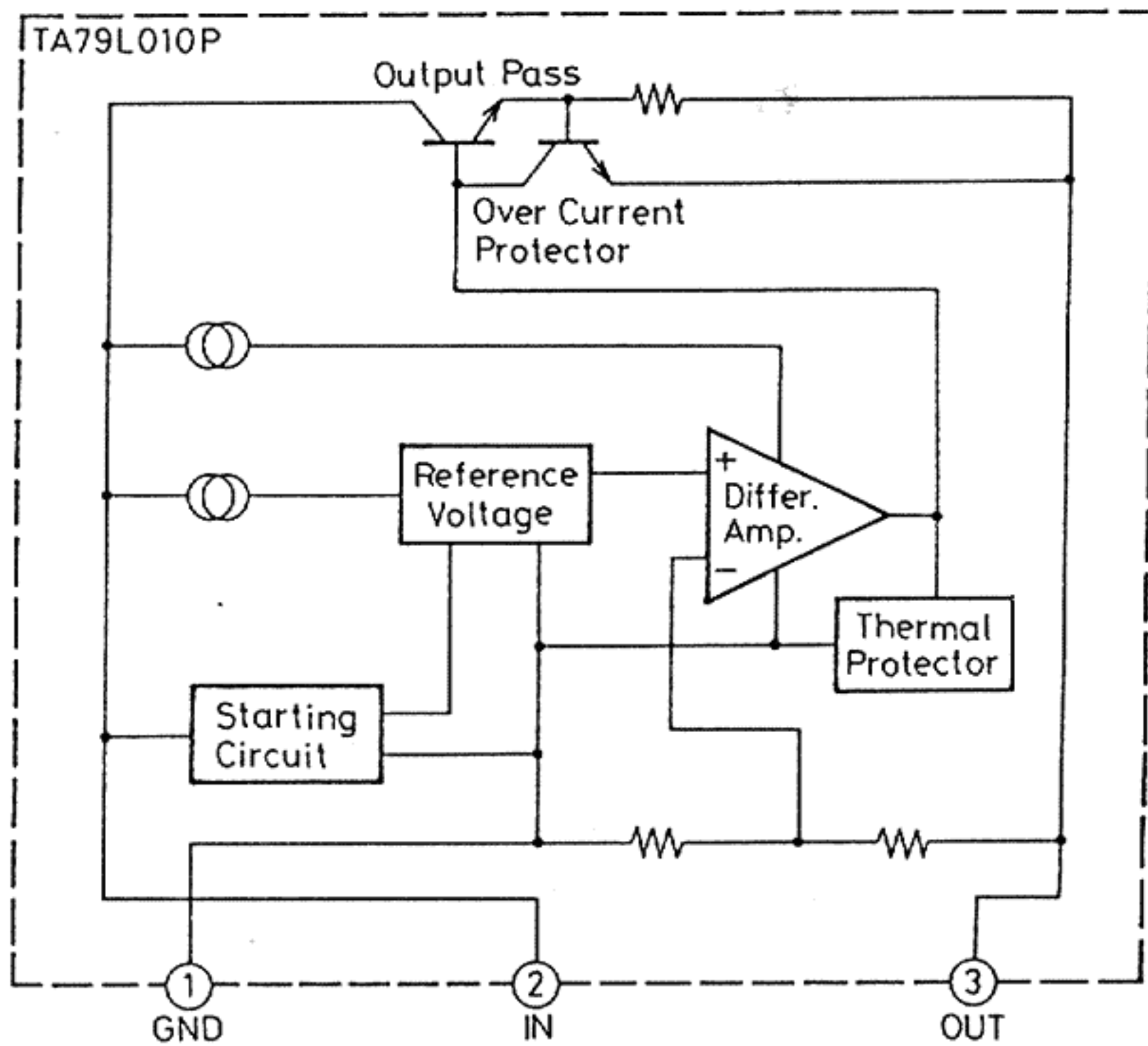
■ MM74HC123P (IC231): Multivibrator
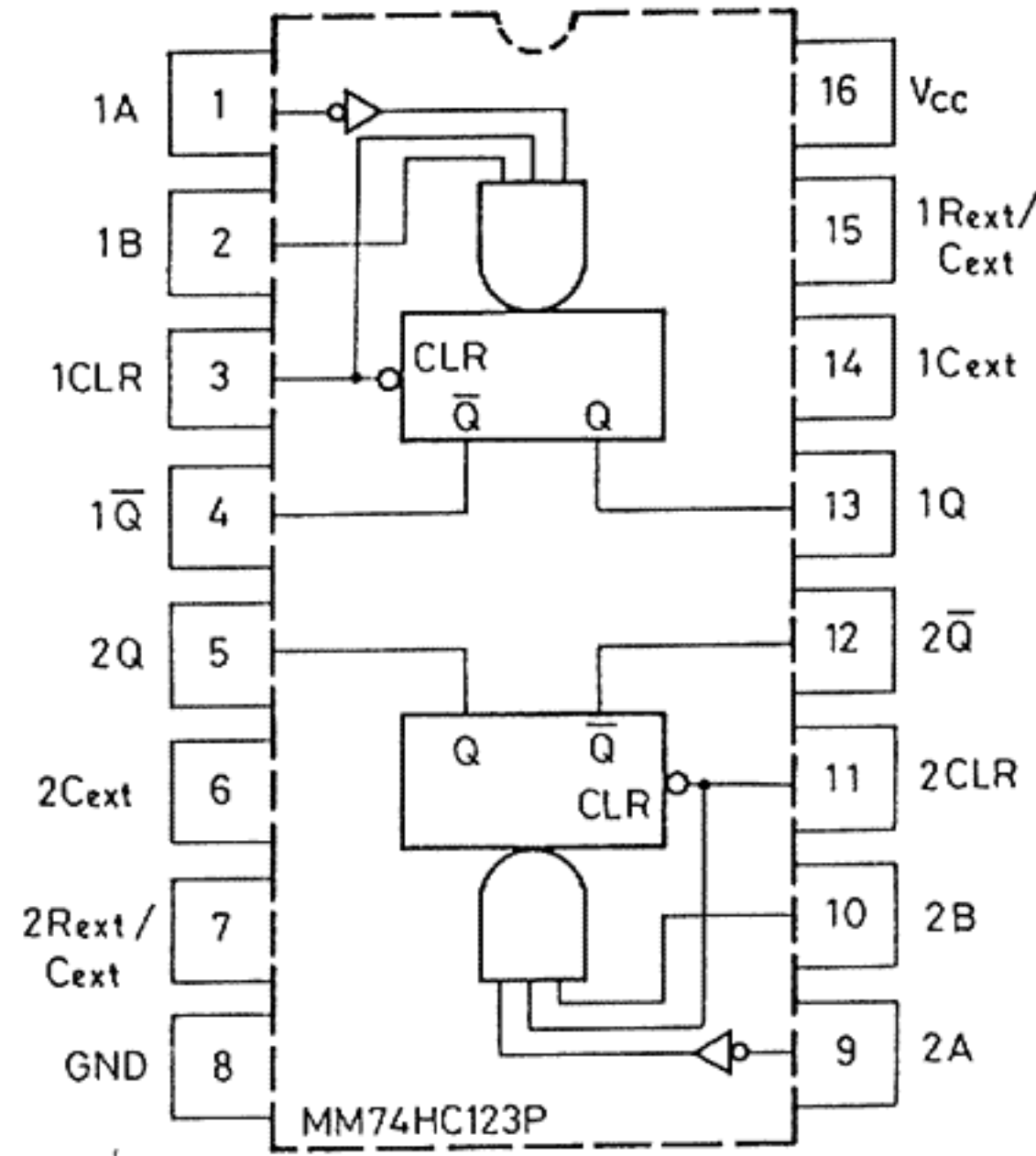
Input			Output	
CLEAR	A	B	Q	$\overline{Q}$
L	✕	✕	L	H
✕	H	✕	L	H
✕	✕	L	L	H
H	L	╱	⎍	⎌
H	╲	H	⎍	⎌
╱	L	H	⎍	⎌

■ M5M4464L-12 (IC602, 603): Dynamic RAM

JVC