RM-VZ950T

SERVICE MANUAL

Ver 1.0 2000. 08

AEP Model

SPECIFICATIONS

Operating distance
Approx. 10 m (32.8 ft.) (varies depending on components of different manufacturers)

Power requirements
Two R6 (size AA) alkaline batteries (not supplied)

Battery life
Approx. 3 months (varies depending on frequency of use)

Dimensions
Approx. 49 × 230 × 25 mm (1 15/16 × 9 1/8 × 1 in.) (w × h × d)

Mass
210 g (7 oz) (including alkaline batteries)

Learnable signals*
Capacity per signal: up to 250 bit
Signal frequency range: up to 500 kHz
Signal interval: up to 400 ms
Number of learnable keys: up to 260 keys (varies depending on learned signals)

* Some signals cannot be learned by the Commander, even though the signals comply with these specifications.

Design and specifications are subject to change without notice.

REMOTE COMMANDER

SONY®

TABLE OF CONTENTS

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

This section is extracted from instruction manual.

Features

The RM-VZ950T Remote Commander provides centralised control of all your AV components from a single remote commander and saves the trouble of operating different AV components with different remote control devices. The following are its main features.

Centralised control of Sony AV components with this one remote commander
This Commander is preset at the factory to operate Sony brand components, so you can use it out of the box as a control centre for your Sony AV components.

Remote control signals for non-Sony components are also preset
This Commander is preset for most major brands components including Sony. You can remote control your components by setting their code numbers (page 8).

Learning function for programming other remote control signals you need
This Commander has a Learning function, to "learn" remote control signals to operate non-preset components or functions (page 15).
In addition, the Commander can "learn" remote control signals (infrared signals only) of non-Audio Visual components such as air-conditioners, lights, etc. (some specific appliances or functions may not be available) (page 18).

Reassigning new components
You can assign Setting position numbers to freely operate other components. This is useful when you have more than two of the same kind of AV components (page 8).

LCD display and Jog dial for easy monitoring and operation
This Commander has an LCD display that shows the current component to operate, or the current status during setup (page 7). With the Jog dial, you can easily select a function to operate, or confirm a setting at various setup procedures (page 7).

Customisable function display
You can freely change the names of components as you would want to call them on the display (page 26).

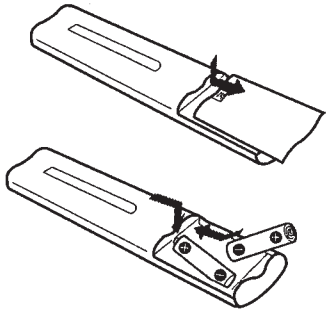
Universal remote commander of high-quality design and material
We carefully designed this universal Commander so that it coordinates with your living room interior.

The CE mark on the unit is valid only for products marketed in the European Union. CE

Getting Started

Installing the Batteries

Slide open the battery compartment lid and insert two R6 (size AA) alkaline batteries (not supplied). Be sure to match the + and – ends on the batteries to the diagram inside the battery compartment.



Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position. When you close the compartment lid, make sure to fix its position first.

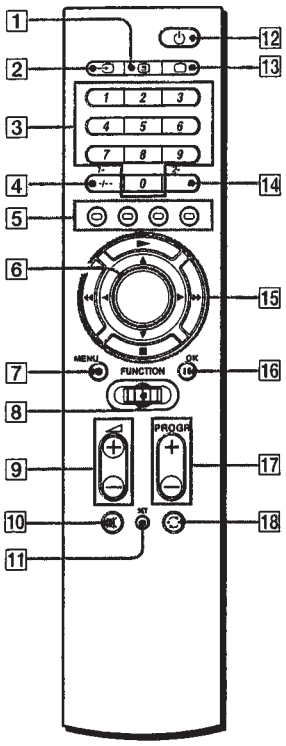
When to replace the batteries

Under normal conditions, the batteries will last up to three months. When the batteries are worn out, the LCD display turns off about ten seconds after you press any control button. When you press a button, the LCD display turns on, and "BATT" appears in the display. When this happens, replace the batteries with new ones.

If you want to save the batteries
The LCD display of this Commander usually displays the last used component name. To save the batteries, you can also set the display to turn off while the Commander is not in use. See "Turning Off the LCD (DISP)" on page 33 for details.

Notes on batteries
- Do not mix old batteries with new ones or mix different types of batteries together.
- If the electrolyte inside the battery should leak, wipe the contaminated area of the battery compartment with a cloth and replace the old batteries with new ones. To prevent the electrolyte from leaking, remove the batteries when you plan not to use the Commander for a long period of time.
- The Commander still holds the memorised settings even after you change the batteries. To erase the memory, see "Erasing All Memorised Settings (DELETE)" on page 30.

Location of Controls



1 (Text) button
2 (Input) button
3 Number buttons
4 -/-- (1-) button
5 Colour buttons (Red, Green, Yellow, Blue)
6 LCD display
7 MENU ● button
8 Jog dial
9 (Volume) +/– buttons*
10 (Mute) button*
11 SET button

PRESET ↔ LEARN ↔ MOVE
EXIT ↕
DELETE ↔ DISP. ↔ NAME

12 (Power) button
13 (TV) button
14 2- button
15 ◄/►/▲/▼ (Cursor) buttons or ►/■/◄◄/►► (Player control) buttons
16 OK II button
17 PROGR (Programme) +/– buttons
18 (Recall) button

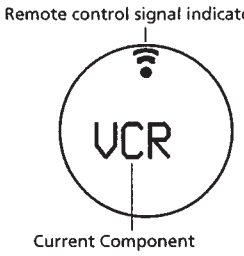
Note on the +/– and buttons
The Commander controls or mutes the TV's volume when you select a visual component. The Commander controls or mutes the amplifier's volume when you select an audio component.

Note
The function of control buttons vary depending on settings/operating modes.
"Table of Preset Functions" (page 38) shows how the Commander generally operates for each component at preset mode.
These settings can be changed, and some buttons are used specifically in the setup procedure as described in the following pages.

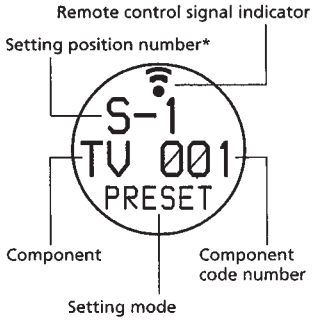
About the LCD display

The LCD (Liquid Crystal Display) displays the component in operation or the current status of the Commander as shown below. It also has a backlight that lights up when you turn or push the Jog dial during component operations (does not light up at SET modes). When a remote control signal is sent, appears in the display.

Example: At normal mode



Example: At SET mode



* You can control up to 8 components, each of which are preset at Setting position numbers "S-1" to "S-8."

Note
At normal conditions, the LCD display shows the last selected component name. When the batteries are low of charge, "BATT" appears in the display after you press a control button.

How to use the Jog dial

The Jog dial can be used to perform various operations at the setup procedure, as well as selecting the components to operate.

Example: At normal mode

1 Turn the Jog dial to select the component you want to operate.

2 Press the button for the desired function.

Example: At SET mode

1 Turn the Jog dial to select the Setting position number ("S-1" to "S-8").

2 Press to enter.

The component name flashes in the display.

Tip
You can also press ◄/► instead of turning the Jog dial to the left/right (except for when you select a character at the NAME mode).
You can also press OK instead of pressing the Jog dial.

Setting the Component Codes

The Commander is preset at the factory to operate Sony brand AV components (see the table below). You can use the Commander with other preset AV components also. If you are using the Commander with a factory-set Sony component, skip the following procedures.

To use with other AV components, you need to follow the procedures to set the correct codes for each component.

You can set 8 different components to 8 Setting position numbers (S-1 to S-8).

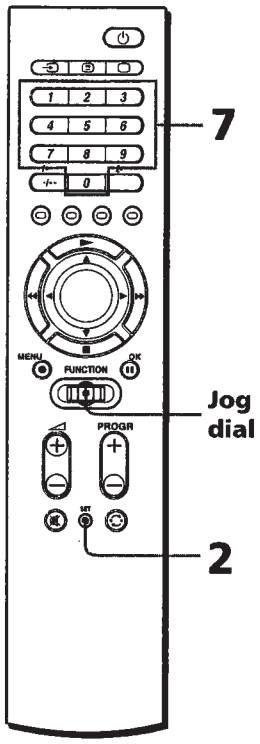
Setting position number	Display	Factory setting
S-1	TV	Sony TV
S-2	SAT (Satellite tuner)	Sony SAT
S-3	VCR (Video player)	Sony VHS VCR
S-4	DVD	Sony DVD player
S-5	CD	Sony CD player
S-6	MD	Sony MD deck
S-7	TAPE (Cassette deck*)	Sony cassette deck
S-8	AMP (Amplifier)	Sony amplifier

* Analog audio compact cassette deck

Note

See "Table of Preset Functions" (page 38) for the functions of buttons as for each component.

Setting by entering the code number



Tip

You can also press ◀/▶ instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Example: To set up a Philips' TV at "S-1/TV"

1 See the tables in the supplied "Component Code Numbers," and find the three-digit code number for the desired component.

If more than one code number is listed, use the number that is listed first.

For example, to set up a Philips' TV, you would use the code number 086.

2 Press SET.

"PRESET" flashes in the display, and the Commander changes to SET mode.

3 Press the Jog dial.

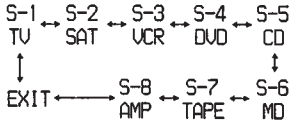
The Setting position number flashes, and the component name appears in the display. The Commander changes to the Component PRESET mode.

Note

If you have changed the name of the component (page 26) that name is displayed.

4 Turn the Jog dial to select the Setting position number ("S-1" to "S-8").

Each time you turn the Jog dial, the display changes as follows.



Notes

- If you have changed the names of the components (page 26) those names are displayed.
- If you press the Jog dial at "EXIT," the Commander returns to the top of SET mode (Step 2).

5 Press the Jog dial.

The component name flashes in the display.

Note

The component names displayed at this point represent the type of the component to operate. These names cannot be changed.

If you want to set a different component to this Setting position number, turn the Jog dial to select the desired component. The display changes as shown below.

Continued

Notes
- You cannot set "AMP" at "S-1" to "S-7." You can set "AMP" only at "S-8."
- If you press the Jog dial at "EXIT," the Commander returns to the top of the Component PRESET mode (Step 3).

6 Press the Jog dial.

The three-digit code number next to the component name flashes in the display.

7 Press the Number buttons to enter the three-digit component code number.

As you press a button, the number appears from the right side of the flashing numbers, and moves to the left when you press another button.

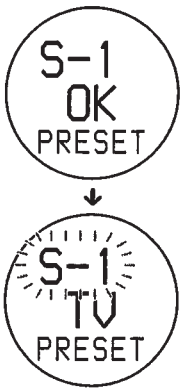
In this example:
Press 0, 8, 6.

When you set the code number to "000"
The component set at this Setting position number does not appear in the display at normal mode, and you cannot operate the component. This is useful when you want to skip unused components.
To put it back to the display, set the code number to match your component.

Tips
- You can also press PROGR +/– to go to the next/previous code number.
- It is useful that you take a note of the code number.

8 Press the Jog dial.

"OK" appears in the display. The code number is set, and the Commander returns to the Component PRESET mode.



If "NG" flashes twice and the three-digit component code number flashes again after you press the Jog dial, it means that the setup is incomplete. Check the component code number, and try setting again from Step 7.

If you want to set a code for another component, repeat from Steps 4 to 8.

9 Select "EXIT," then press the Jog dial to finish setting.

To cancel setup
Press SET.

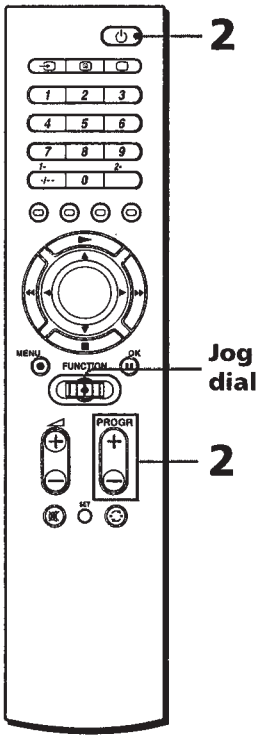
Note
If you don't input anything into the Commander for over 30 seconds between each step, the Commander exits SET mode.

Tips
- If you press the Jog dial at "EXIT" on each menu, the Commander returns to the top of the previous mode.
- If you press SET at any point during this operation, the settings to which "OK" have been displayed to this point are saved, and the setup procedure is cancelled. Start over from Step 2.

Setting by searching

You can find a code number available for a component that doesn't have one in the supplied "Component Code Numbers."

Before starting to search
Set each component to the following status so that the Search function works effectively.
TV: Power-on
SAT, VCR, DVD, AMP: Power-off
CD, MD, TAPE: Power-on with a playback source (disc, cassette tape, etc.)



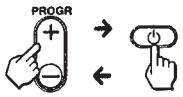
Tip
You can also press ◄/► instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Continued

1 Follow Steps 2 to 6 on pages 9 and 10 to go to the PRESET mode.

2 Aim the Commander at the component, and press PROGR + or PROGR – and ⏻ in turn until the component reacts as described in the following.

Powers off: TV
Powers on: VCR, SAT, DVD, AMP
Plays back: CD, MD, TAPE



Press PROGR + to go to the next code number.
Press PROGR – to go back to the previous code number.

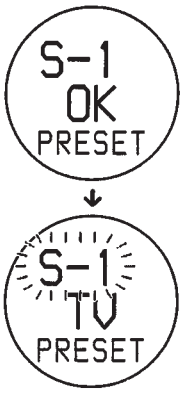
After the numbers have reached the highest limit, they will start over from "000."

Each time a remote control signal is sent, appears in the display.

Tip
It is useful that you take a note of the code number.

3 Press the Jog dial.

"OK" appears in the display. The code number is set, and the Commander returns to the Component PRESET mode.



If you want to set a code for another component, repeat from Step 1 to 3.

4 Select "EXIT," then press the Jog dial to finish setting.

To cancel setup
Press SET.

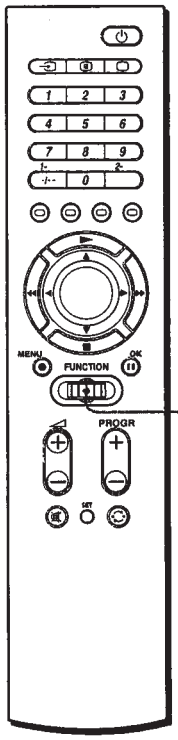
Note
If you don't input anything into the Commander for over 30 seconds between each step, the Commander exits SET mode.

Tips
- If you press the Jog dial at "EXIT" on each menu, the Commander returns to the top of the previous mode.
- If you press SET at any point during this operation, the setup procedure will be cancelled. Start over from Step 1.

Operating Your Components with the Remote Commander

When you operate a non-Sony component, make sure you set the component code number first (page 8).

Operating a component



Jog dial

1 Turn the Jog dial to select the component you want to operate.

At the factory, the selection order is preset as follows.

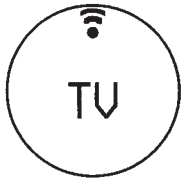
TV ↔ SAT ↔ VCR ↔ DVD
↕ ↕
AMP ↔ TAPE ↔ MD ↔ CD

Notes
- If you have changed the name of the component (page 26) that name is displayed.
- You can change the selection order also (page 24).

2 Press the button for the desired function.

See "Table of Preset Functions" (page 38) for the functions of buttons for each component.

When a remote control signal is sent, appears in the display.



Tip
You can skip an unused component from the selection menu by entering "000" to the code number (page 10). To put it back on the display, set the code number to match your component.

Note
The remote control signals may be different for some components or functions. In this case, program the remote control signals with the Learning function (see page 15).

Continued

Note on buttons that have already "learned" remote control signals

If another signal has already been programmed on that button using the Learning function (page 15), that "learned" signal will work even after you set the component code number. To use it as a preset function button, first erase its "learned" signal (page 21).

When you use a double cassette deck

1 If the remote control for your deck has a Deck A/B select control, the ↻ (recall) button on your Commander has the corresponding function.
2 If you cannot select Deck A/B with the ↻ (recall) button, first set the number code for either one of the decks, and
- set the function controls for the other deck to other free buttons (for example, the Number buttons) using the Learning function (page 15),

or

- assign the other deck to another Setting position number (page 8).

When you select the input source to the amplifier

1 Turn the Jog dial to select "AMP," then press the Jog dial.

Note
If you have changed the name of the amplifier (page 26), that name is displayed.

2 Turn the Jog dial to select the desired component.

The selection order is as follows.

VIDEO1 ↔ VIDEO2 ↔ AUX ↔ TUNER
↕ ↑
INPUT
↕ ↓
PHONO ↔ TV ↔ DVD ↔ TAPE ↔ CD

Notes
- If the preset amplifier does not have an input select function, or you have not "learned" any functions to the buttons (page 15), no names are displayed.
- The names and numbers of input sources vary depending on the component's code number, "learned" functions, or if you changed the names using the NAME function (page 26).

3 Press the Jog dial.

((•)) appears in the display. The input source is set, and "AMP" appears in the display again.

Note
If the input select does not function properly, you can setup the Commander using the Learning function (page 15).

Tip
It is convenient if you program frequently used input sources to the Number buttons or Colour buttons using the Learning function (page 15).

Controlling the volume

To control the volume of an audio component (CD, MD, TAPE)

Press ◿ +/– to control the volume, and 🔇 to mute on the amplifier.

Example
When you press ◿ +/– at "CD," you can control the volume of the amplifier.

You can change this setting also (page 15).

To control the volume of a visual component (SAT, VCR, DVD)

Press ◿ +/– to control the volume, and 🔇 to mute on the TV.

Example
When you press ◿ +/– at "VCR," you can control the volume of the TV.

You can change this setting also (page 15).

Note
If you have programmed any signal on the ◿ +/– or 🔇 button for "TV" or "AMP" using the Learning function (page 15), that signal will not be transmitted when you control other components. To use "learned" signals, you need to program the ◿ +/– or 🔇 buttons for each component using the Learning function.

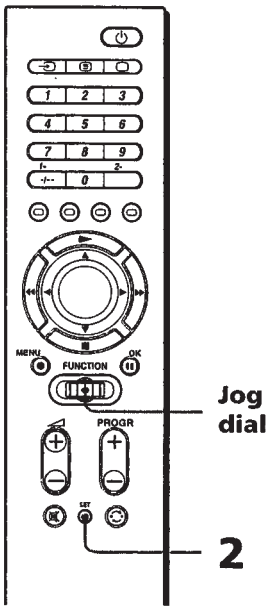
Operating Non-Preset Components

— Learning Function

To operate non-preset components or functions, use the following Learning procedure to "teach" any of the programmable buttons to operate the functions of another remote control. You can also use the Learning function to change the signals of individual buttons after setting the component code number.
It is recommended that you make a note of the "learned" function controls.

Note
Some specific remote control signals may not be "learned."

Programming a component signal



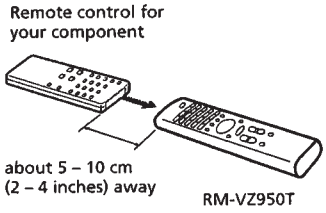
Continued

Operating Non-Preset Components
— Learning Function (continued)

Tip
You can also press ◄/► instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Example: To program the ► (Play) signal of your component to the VCR ► (Play) button of the Commander
You can "teach" to "AMP" only at "S-8." See also page 18.

1 Place the RM-VZ950T head to head with your component's remote control.



2 Press SET, turn the Jog dial to select "LEARN," then press the Jog dial.
The Setting position number flashes, and the component name appears in the display. The Commander changes to the LEARN mode.

Note
If you have changed the name of the component (page 26), that name is displayed.

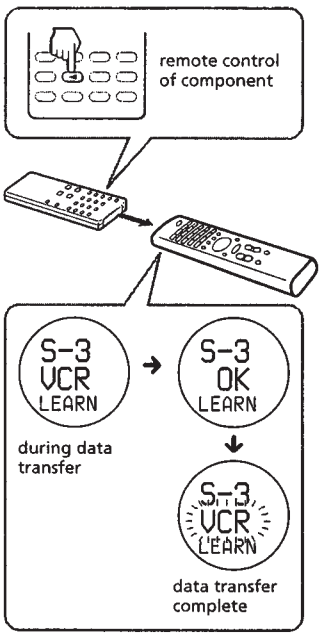
3 Turn the Jog dial to select the Setting position number ("S-1" to "S-8") of the component you want to set up. Then press the Jog dial.
The component name flashes in the display.

Note
If you have changed the name of the component (page 26), that name is displayed.

4 Press the button on the Commander you want to "teach."
The component name stops flashing, and "LEARN" flashes rapidly in the display (Learning function standby).

If another signal has already been "learned" by that button
"NG" flashes twice, and the component name flashes again. Either "teach" to another free button, or erase the already "learned" function (page 21) and start over from the beginning.

5 Press and hold the button on the other remote control, until "OK" appears in the display.
During data transfer, "LEARN" stops flashing.
After data transfer is complete, "OK" appears in the display. Then, the Commander returns to its state in Step 3.



If "NG" flashes twice, and the component name flashes again
Learning was unsuccessful. Try again from Step 4.

6 Repeat Steps 4 and 5 to "teach" functions to other buttons.

7 Select "EXIT," then press the Jog dial to finish Learning.

To cancel Learning
Press SET.

Notes
- If you do not perform Learning steps within 30 seconds at any point during the process, the LEARN mode ends.
- If you do not perform Step 5 within 10 seconds after Step 4, the Commander returns to its state in Step 3.
- You cannot teach to the Jog dial and the SET button.
- If the memory of the commander is full, "OVER" flashes, and the Commander returns to its state in Step 3. Erase the already "learned" function (page 21) and start over from the beginning.

If the Commander does not seem to be working
If the "learned" button does not operate properly, "teach" once again. (For example, if the volume becomes very loud after pressing ◄ + only once, noise may have interfered during the Learning procedure.)

If you set a component code after "learning" a signal
If you have programmed any signal on a button by the Learning function, that signal will work even after you set a component code.

Note on the REC ● signal
You can only "teach" to one button at a time. Therefore you cannot teach a sequential button operation (for example REC ● + ►) to a single button on your Commander.

Continued

When you "teach" signals to the ◿ +/– or ◖◖ buttons

If you have programmed any signal on the ◿ +/– or ◖◖ button for "TV" or "AMP" using the Learning function, that signal will not be transmitted. To use "learned" signals, you need to program the ◿ +/– or ◖◖ buttons for each component using the Learning function.

When you "teach" the signals for an air-conditioner or illumination

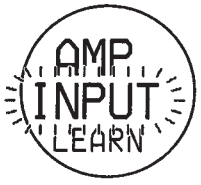
If you have unused components or unused control buttons on your Commander, you can "teach" the signals for non-Audio Visual components such as an air conditioner.

Note

If you are "teaching" signals for an air conditioner, you may need to perform Learning anew every season.

When you "teach" the signals for the amplifier

At Step 3 (page 16), the display changes as shown below after pressing the Jog dial.



Proceed "learning" from Step 4 to 7.

You can also "teach" the input select (page 19).

For accurate Learning

- Do not move the remote units during the Learning procedure.
- Be sure to keep holding down the "learning" button until your Commander reacts as described.
- Use fresh batteries in both remote units.
- Avoid Learning in places under direct sunlight or a strong fluorescent light.
- The remote control detector area may differ depending on each remote unit. If Learning does not work, try changing the positions of the two remote control units.
- When you "teach" signals of an interactive signal exchange system remote control unit (supplied with some of Sony's receivers and amplifiers) to the Commander, the response signal of the main unit may interfere with the Learning of the Commander. In such a case, move to a place where the signals will not reach the main unit (e.g. other rooms, etc.).

IMPORTANT

Be sure to place the Commander out of the reach of small children or pets. Components such as air conditioners, heaters, electric appliances, and electric shutters or curtains receiving an infrared signal can be dangerous if misused.

Note

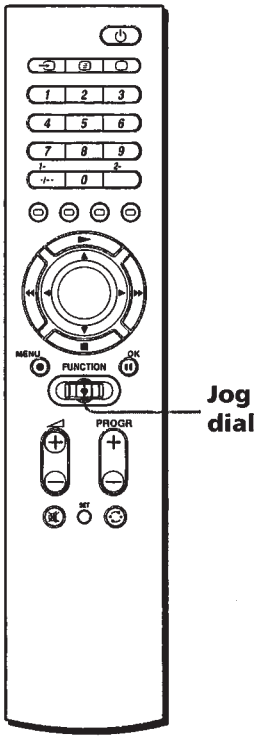
For details on the learnable remote control signals, see "Specifications" on page 35.

Programming the input select for the amplifier

If you cannot select the input source even after setting the code number (page 8), you can "teach" the function directly from the amplifier's remote commander.

Note

You can operate the amplifier only at "S-8."



1 Follow Step 1 to 2 on page 16 to go to the LEARN mode.

2 Turn the Jog dial to select "S-8," Then press the Jog dial.

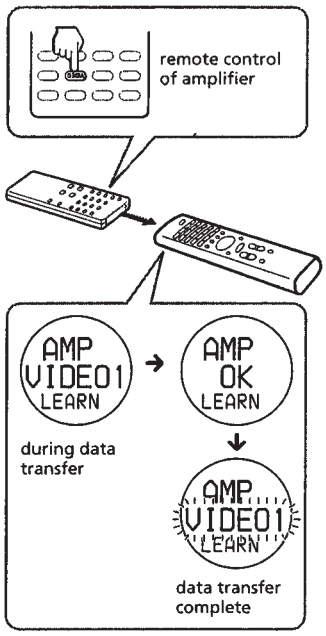
"AMP" appears and "VIDEO1" flashes in the display.

Continued

Operating Non-Preset Components
— Learning Function (continued)

3 Press and hold the input select button (e.g. VIDEO or CD etc.) on your amplifier's remote control, until "OK" appears in the display.

During data transfer, "LEARN" stops flashing.
After data transfer is complete, "OK" appears in the display. Then, the Commander returns to its state in Step 2.



If "NG" flashes twice, and the component name flashes again
Learning was unsuccessful. Try again from this Step.

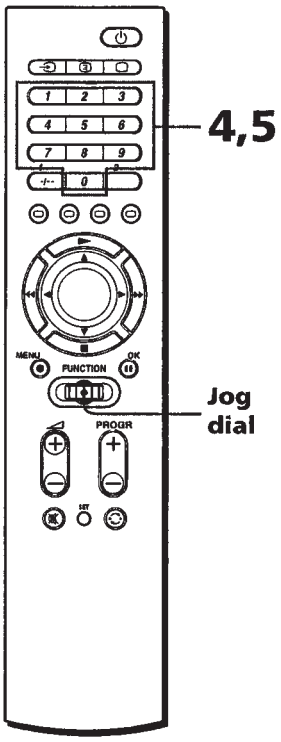
4 Select "EXIT," then press the Jog dial to finish Learning.

To cancel Learning
Press SET.

Changing or erasing the function of a "learned" button

To change the "learned" function, erase it first and perform Learning again.

To erase the "learned" function of a single button



Tip
You can also press ◀/▶ instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial (except for the following Steps 4 and 5).

Example: To erase the "learned" function from the VCR Number button 1

1 Follow Step 2 on page 16 to go to the LEARN mode.

2 Turn the Jog dial to select the Setting position number ("S-1" to "S-8") of the component you want to erase. Then press the Jog dial.

The component name flashes in the display.

Note
If you have changed the name of the component (page 26) that name is displayed.

3 Turn the Jog dial to select "DEL," then press the Jog dial.

"DEL" appears in the first row, and "KEY?" flashes in the display.

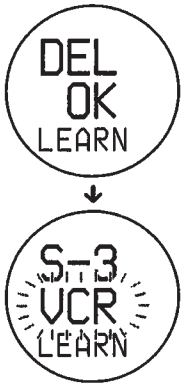
Continued

4 Press the button you want to erase.

"OK?" flashes rapidly in the display.

5 Press the same button again.

"OK" stops flashing, and the component name flashes again.

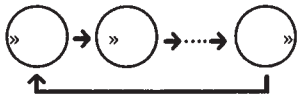


If you want to erase the "learned" function from another button, repeat from Step 3 to 5.

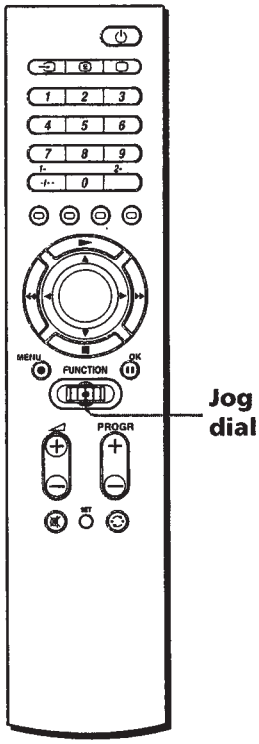
6 Select "EXIT," then press the Jog dial to finish erasing.

Notes

- If you exit SET mode by pressing SET, nothing is erased.
- It may take a few seconds to finish erasing depending on the amount of memory to be erased. In this case, a processing indicator appears in the display. Wait until this indicator disappears.



To erase all function signals "learned" for a specific component



Tip

You can also press ◀/▶ instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Example: To erase all functions "learned" by the "VCR" mode

1 Follow Steps 1 to 3 on page 21. Then turn the Jog dial until the component name flashes rapidly in the display.

Note

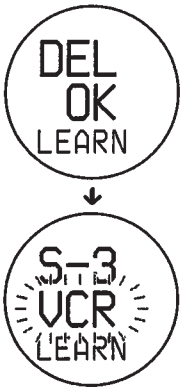
If you have changed the name of the component (page 26) that name is displayed.

2 Press the Jog dial.

"OK?" flashes rapidly in the display.

Continued

3 Press the Jog dial again.
"DEL OK" appears in the display, and the component name flashes again.



Note
In some cases, a processing indicator (see Notes on page 22) might appear in the display. Wait until this indicator disappears.

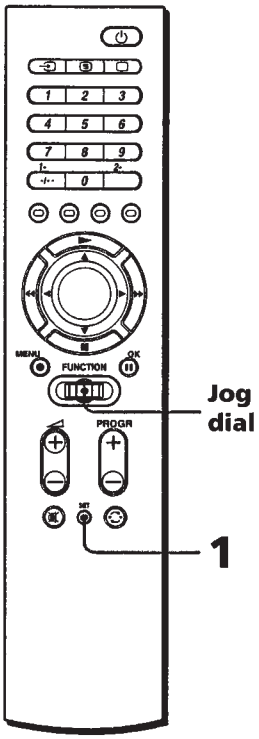
4 Select "EXIT," then press the Jog dial to finish erasing.

To exit SET mode, press SET.

Changing the Component Selection Order (MOVE)

At the factory, the Commander is preset to change the component in the following order. However, you can change the order as you like.

TV ↔ SAT ↔ VCR ↔ DVD
↕ ↕
AMP ↔ TAPE ↔ MD ↔ CD



Tip
You can also press ◄/► instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Example: To move "VCR" between "TAPE" and "AMP"

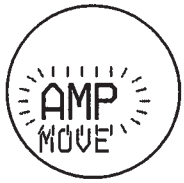
1 Press SET, turn the Jog dial to select "MOVE," then press the Jog dial.
The Commander changes to the MOVE mode.

Note
If you have changed the name of the component (page 26) that name is displayed.

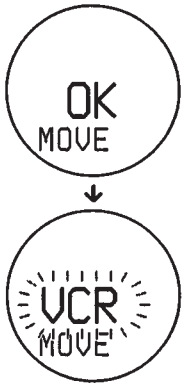
2 Turn the Jog dial to select the desired component you want to move, then press the Jog dial.
The selected component name flashes rapidly.

3 Turn the Jog dial to select a component in front of where you want to set the selected component.
While you scroll through the menu, all other component names also flash rapidly.

In this example:
Select "AMP."



4 Press the Jog dial.
"OK" appears in the display for one second. The component selection order is fixed, and the previously selected component name flashes again.



Continued

Changing the Component Selection Order (MOVE) (continued)

The component selection order is changed as follows.

VCR ↔ AMP ↔ TV ↔ SAT
↕ ↕
TAPE ↔ MD ↔ CD ↔ DVD

If you want to move the position again, repeat Steps 3 and 4.

5 Select "EXIT," then press the Jog dial to finish setting.

To cancel setup

Press SET.

Note

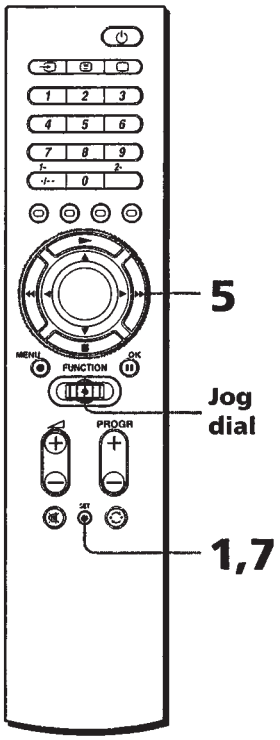
If you have set the code number "000" for a component (page 10), it is not displayed.

Tip

You can also skip an unused component by setting its code number to "000" (page 10).

Changing the Name of the Component (NAME)

You can change the name of the component to operate. This is convenient when you are using more than one of the same component.
You can write up to six characters for the component name.



Tip

You can also press ◀/▶ instead of turning the Jog dial to the left/right (except for when you select a character to write a name).
You can also press OK instead of pressing the Jog dial.

Example: To change "VCR" to "SONYDV"

1 Press SET, turn the Jog dial to select "NAME," then press the Jog dial.

The Setting position number flashes, and the component name appears in the display. The Commander changes to the NAME mode.

Note

If you already have changed the name of the component, that name is displayed.

Tips

- It is recommended that you look at your note on the component code list when write the names.
- If you press the Jog dial at "EXIT" at any point during operation, the Commander returns to the previous mode.

2 Turn the Jog dial to select the component name you want to change, then press the Jog dial.

The component name flashes in the display.

If you want to change the name of the amplifier's input source, press the Jog dial again.
The input source name flashes in the display.

3 Press the Jog dial.

A cursor flashes on the first character of the component name.

4 Turn the Jog dial to select a desired character.

The selected character and the cursor flash in turn.

Continued

Changing the Name of the Component (NAME) (continued)

Each time you turn the Jog dial, the characters change as listed below:

Capital letters of the English alphabet.
↕
Small letters of the English alphabet.
↕
Numbers 0 to 9
↕
Symbols –, . (dot), /, ?, : (colon), @, <<, >>, (space)

Tip
It is useful that you take a note of the names.

5 Press the Jog dial to move to the next character field, and enter the next character.

You can enter up to six characters.
You can freely change a character by pressing ◀ or ▶ to move the cursor to the desired character field.

Note
If you press SET during this procedure, the name written thus far is saved as the new name.

After you finish entering the sixth character, "EXIT" flashes in the display.

6 Press the Jog dial.

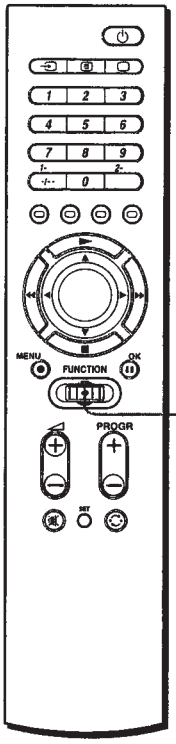
The component name of the next Setting position number flashes in the display.

If you want to change the name for another component, repeat from Step 3.

7 Press SET.

The newly written component name appears in the display.

To reset the name of the component back to the initial factory preset



Tip
You can also press ◀/▶ instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Example: To reset the changed name at "S-3" to the factory preset

1 Follow Steps 1 to 2 on page 27. Then turn the Jog dial to select "INIT."

"INIT." flashes in the display.

2 Press the Jog dial.

The factory preset component name of the selected Setting position number flashes in the display.

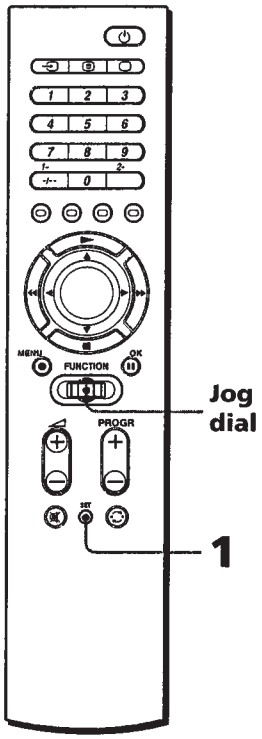
If you want to reset the names for other Setting position numbers, turn the Jog dial to select "EXIT," press the Jog dial, and repeat from Steps 1 to 2.

3 Select "EXIT," then press the Jog dial to finish setting.

Erasing All Memorised Settings (DELETE)

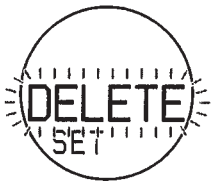
You can erase the memorised settings, such as component code numbers or names, or "learned" settings to a Setting position number, or all memorised settings and reset the Commander to the initial factory settings.

Erasing all memorised settings from a Setting position number



Tip
You can also press ◀/▶ instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

1 Press SET, and turn the Jog dial to select "DELETE."
"DELETE" flashes in the display.

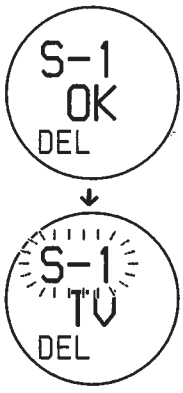


2 Press the Jog dial.
The Setting position number flashes, and the component name appears in the display. The Commander changes to the DELETE mode.

Note
If you have changed the name of the component (page 26) that name is displayed.

3 Turn the Jog dial to select the desired component, then press the Jog dial.
"OK?" flashes rapidly in the display.

4 Press the Jog dial.
"OK" appears in the display for one second. All settings to the selected Setting position number are deleted. The Setting position number flashes, and the original component name appears in the display.

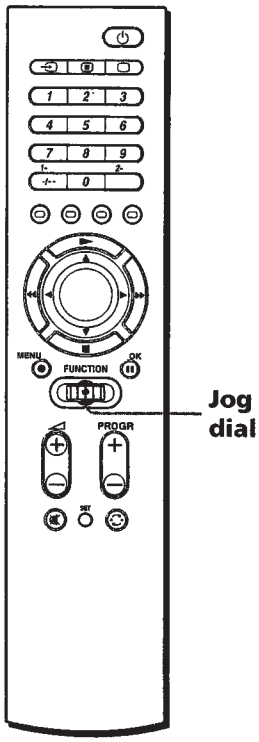


If you want to delete the memorised setting from another Setting position number, repeat from Step 3.

5 Select "EXIT," then press the Jog dial to finish erasing.

Erasing all memorised settings from the Commander

— Factory Reset



Tip
You can also press ◀/▶ instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Continued

Erasing all Memorized Settings (DELETE) (continued)

1 Follow Steps 1 to 2 on page 30 to go to the DELETE mode.

2 Turn the Jog dial to select "ALL."

"ALL" flashes in the display.

3 Press the Jog dial.

"ALL OK?" flashes rapidly in the display.

4 Press the Jog dial.

"ALL OK" appears, and "DEL" flashes in the display.

All settings are erased, and the Commander returns to the factory preset.

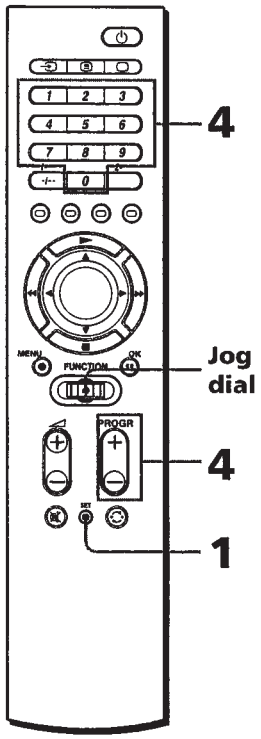
Note

Through this operation, all "learned" functions as well as the component code numbers, the names of the components, and the component selection order are reset to the factory setting.

Turning Off the LCD (DISP)

You can turn off the LCD display when the Commander is not in use to save the batteries. You can set the time for the display to turn off at 10 to 240 seconds (4 minutes) in increments of 1 second. By setting the LCD to turn off, you can increase the battery life from 1 to 3 times longer than at normal use.

Setting the time for the LCD to turn off



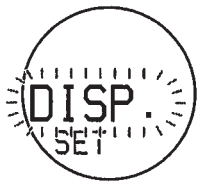
Tip

You can also press ◀/▶ instead of turning the Jog dial to the left/right. You can also press OK instead of pressing the Jog dial.

Example: To set the LCD to turn off after 30 seconds

1 Press SET, and turn the Jog dial to select "DISP."

"DISP." flashes in the display.



2 Press the Jog dial.

"ON" flashes in the display. The Commander changes to the DISP mode.

Note

The battery life varies depending on how you use the Commander and the time for the LCD to turn off.

3 Turn the Jog dial to select "OFF."

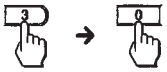
The time for the LCD to turn off flashes in the display.

Continued

Turning Off the LCD (DISP) (continued)

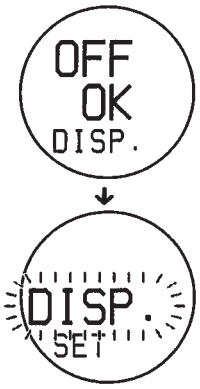
4 Press the Number buttons to enter the time for the LCD to turn off.

In this example:
Press 3, 0



You can also press PROGR + or PROGR – to enter the time.

5 Press the Jog dial.
"OK" appears in the display for one second. The time for the LCD to turn off is set, and the Commander returns to the top of SET mode.



If "NG" flashes twice
The input time is not effective. Try again from Step 4.

6 Select "EXIT," then press the Jog dial to finish setting.

To cancel setup
Press SET.

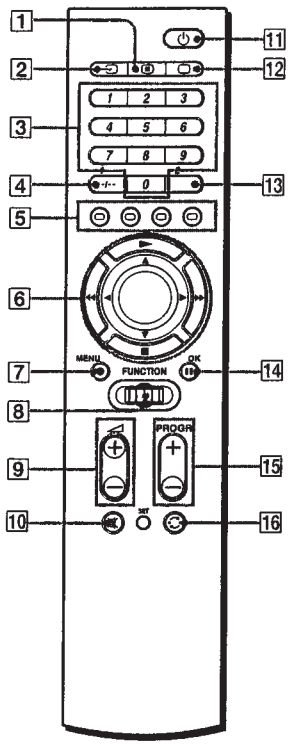
Additional Information

Precautions

- Do not drop the unit or give a shock to the unit, or it may cause a malfunction.
- Do not leave the unit in a location hear heat sources, or in a place subject to direct sunlight, excessive dust or sand, moisture, rain or mechanical shock.
- Do not put foreign objects into the unit. Should any liquid or solid object fall into the unit, have it checked by qualified personnel before operating the unit any further.
- Do not expose the remote control detectors of your components to direct sunlight or other strong illumination. Too much light there can interfere with remote control operations.
- Be sure to place the Commander out of the reach of small children or pets. Components such as air conditioners, heaters, electric appliances, and electric shutters or curtains receiving an infrared signal can be dangerous if misused.

Appendix

Table of Preset Functions



Note

There may be some components or functions that cannot be operated with this Commander.

Using Fastext

With Fastext you can access pages with a press on a button. When a Fastext page is broadcast, a colour-coded menu appears at the bottom of the screen. The colours of this menu correspond to the RED, GREEN, YELLOW, BLUE buttons on the Commander.
Press the button which corresponds to the colour-coded menu. The page will be displayed after some seconds.

TV

KEY	FUNCTION
11 ⏻	To turn the power on/ off.
3 1 – 9, 0	To change the programme. Also to turn on.
4 -/--, 1-	To select double-digit numbers. Works in the same way as the TV's commander.
13 2-	To select a number between 20 and 29.
5 RED, GREEN, YELLOW, BLUE	Fastext buttons
1	To switch to teletext.
12	To turn on. To return from teletext to TV.
2	To change the input mode.
7 MENU	To call up the MENU display.
6 ▲	To move the cursor upward.
6 ▼	To move the cursor downward.
6 ►	To move the cursor to the right.
6 ◄	To move the cursor to the left.
14 OK	To enter the selection of the MENU display.
15 PROGR +/–	Programme up: +
	Programme down: –
16	To operate JUMP, FLASHBACK or PROGRAMME RETURN function on the TV depending on the setting of the TV's manufacturer.
9 +/–	Volume up: +
	Volume down: –
10	To mute the volume on the TV. Press again to turn muting off.

SAT

KEY	FUNCTION
11 ⏻	To turn the power on/ off.
3 1 – 9, 0	To change the programme. Also to turn on.
4 -/--	To select double-digit numbers. Works in the same way as the TV's commander.
5 RED, GREEN, YELLOW, BLUE	Fastext buttons
2	To switch the output of the SAT receiver to the TV*.
12 (EPG)	To turn the EPG display on/off .
1 (GUIDE)	To bring up Master Guide.
13 2- (EXIT)	To exit the mode.
7 MENU	To call up the MENU display.
6 ▲	To move the cursor upward.
6 ▼	To move the cursor downward.
6 ►	To move the cursor to the right.
6 ◄	To move the cursor to the left.
14 OK	To bring up the Station Index when a program guide is not displayed. To select the programme that is highlighted.
15 PROGR +/–	Channel up: +
	Channel down: –
16	To operate JUMP, FLASHBACK or PROGRAMME RETURN function on the SAT depending on the setting of the SAT's manufacturer.

* When you connect a TV cable or antenna to the SAT, the output switches between the TV and SAT programme.

VCR

KEY	FUNCTION
11 ⏻	To turn the power on/ off.
3 1 – 9, 0	To change the programme. Also to turn on.
2	To select the input source. The source changes each time you press the button.
6 ◄◄	To rewind.
6 ►	To play.
6 ►►	To fast-forward.
7 ●	To record, press ► while pressing ●**. First release ►, then release ●.
6 ■	To stop.
14 ❚❚	To pause.
15 PROGR +/–	Programme up: +
	Programme down: –
13 2-	To select a number between 20 and 29.
4 -/--, 1-	To select double-digit numbers. Works in the same way as the VCR's commander.

**You can assign this operation to a single button (●) using the Learning function (page 15).

Continued

Table of Preset Functions (continued)

DVD

KEY	FUNCTION
11 ⏻	To turn the power on/ off.
3 1 – 9, 0	Number buttons: To set items selected from the screen.
4 1- , -/-- (+10)	To select numbers 10 and above.
13 2- (ENTER)	To enter the setting. To set items selected from the screen.
2 (AUDIO)	To change the sound.
12 (DISPLAY)	To show the current play status on the screen.
1 (TITLE)	To display the title menu.
7 MENU	To display the DVD menu.
6 ▲	To move the cursor upward.
6 ▼	To move the cursor downward.
6 ►	To move the cursor to the right.
6 ◄	To move the cursor to the left.
14 OK	To execute items selected from the screen.
5 RED (◄◄)	To rewind.
5 GREEN (■)	To stop.
5 YELLOW (►)	To play.
5 BLUE (►►)	To fast-forward.
15 PROGR + (FF (AMS))	To proceed to the next location or song.
15 PROGR – (REW (AMS))	To proceed to the previous location or song.

CD

KEY	FUNCTION
11 ⏻	To turn the power on/ off.
3 1 – 9, 0	To select the track number. 0 selects track 10.
4 1-, -/-- (+10)	To select numbers 10 and above.
16 (D.SKIP)	To select next disk.
6 ◄◄	To select the previous track.
6 ►	To play.
6 ►►	To select the next track.
6 ■	To stop.
14 ▮▮	To pause.

MD

KEY	FUNCTION
11 ⏻	To turn the power on/ off.
3 1 – 9, 0	To select the track number. 0 selects track 10.
4 1-, -/-- (+10)	To select numbers 10 and above.
16 (D.SKIP)	To select the next disc.
6 ◄◄	To select the previous track.
6 ►	To play.
6 ►►	To select the next track.
7 ●	To record, press ► while pressing ●*. First release ►, then release ●.
6 ■	To stop.
14 ▮▮	To pause.

* You can assign this operation to a single button (●) using the Learning function (page 15).

TAPE

KEY	FUNCTION
3 0 (REV PB)	To play in reverse mode.
16 (A/B)	To select deck A/B**.
6 ◄◄	To rewind.
6 ►	To play.
6 ►►	To fast-forward.
7 ●	To record, press ► while pressing ●*. First release ►, then release ●.
6 ■	To stop.
14 ▮▮	To pause.

* You can assign this operation to a single button (●) using the Learning function (page 15).

**If you cannot select deck A/B, see page 14.

AMP

KEY	FUNCTION
11 ⏻	To turn the power on/ off.
8 Jog dial	To select the input source**: Changes every time the Jog dial is pressed. • VIDEO 1 • VIDEO 2 • AUX • TUNER • CD • TAPE • DVD • TV • PHONO • INPUT
15 PROGR +/– (BAND +/–)	Presetting or tuning frequency up: +
	Presetting or tuning frequency down: –
16 (SHIFT)	To shift band or presetting select.
9 +/–	Volume up: +
	Volume down: –
10	To mute the volume on the AMP. Press again to turn muting off.

**If the input source does not have remote control signals (preset or "learned"), it is not displayed.

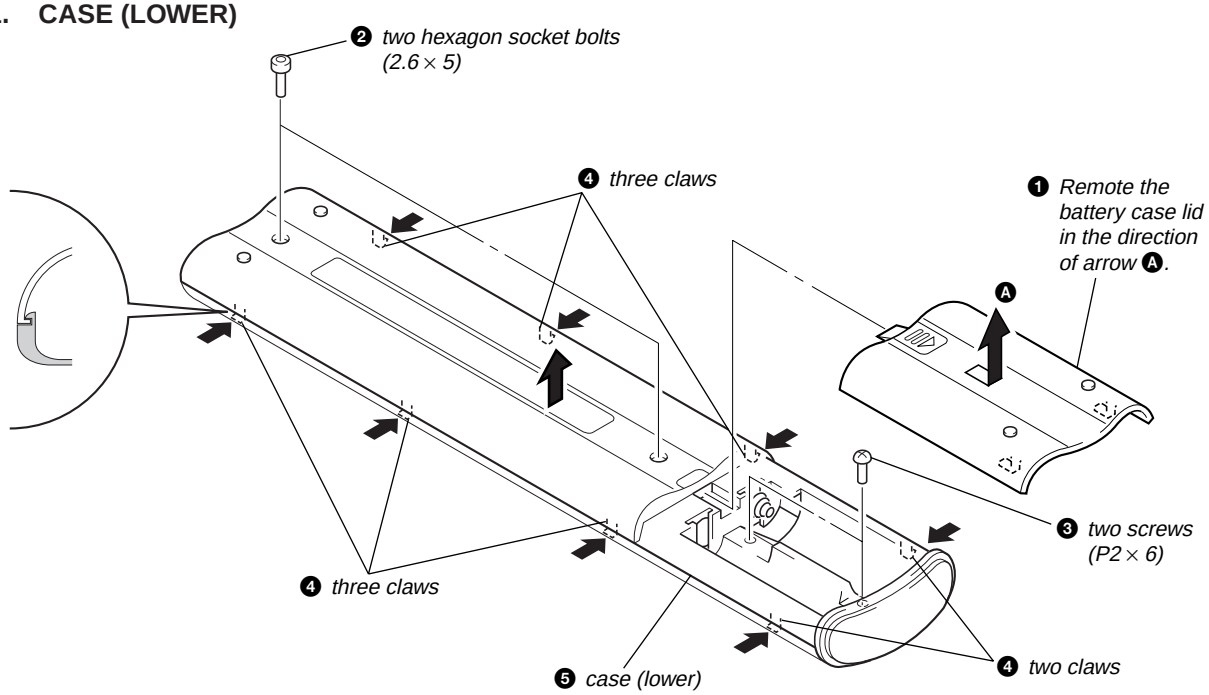
SECTION 2
DISASSEMBLY

• This set can be disassemble in the order shown below.

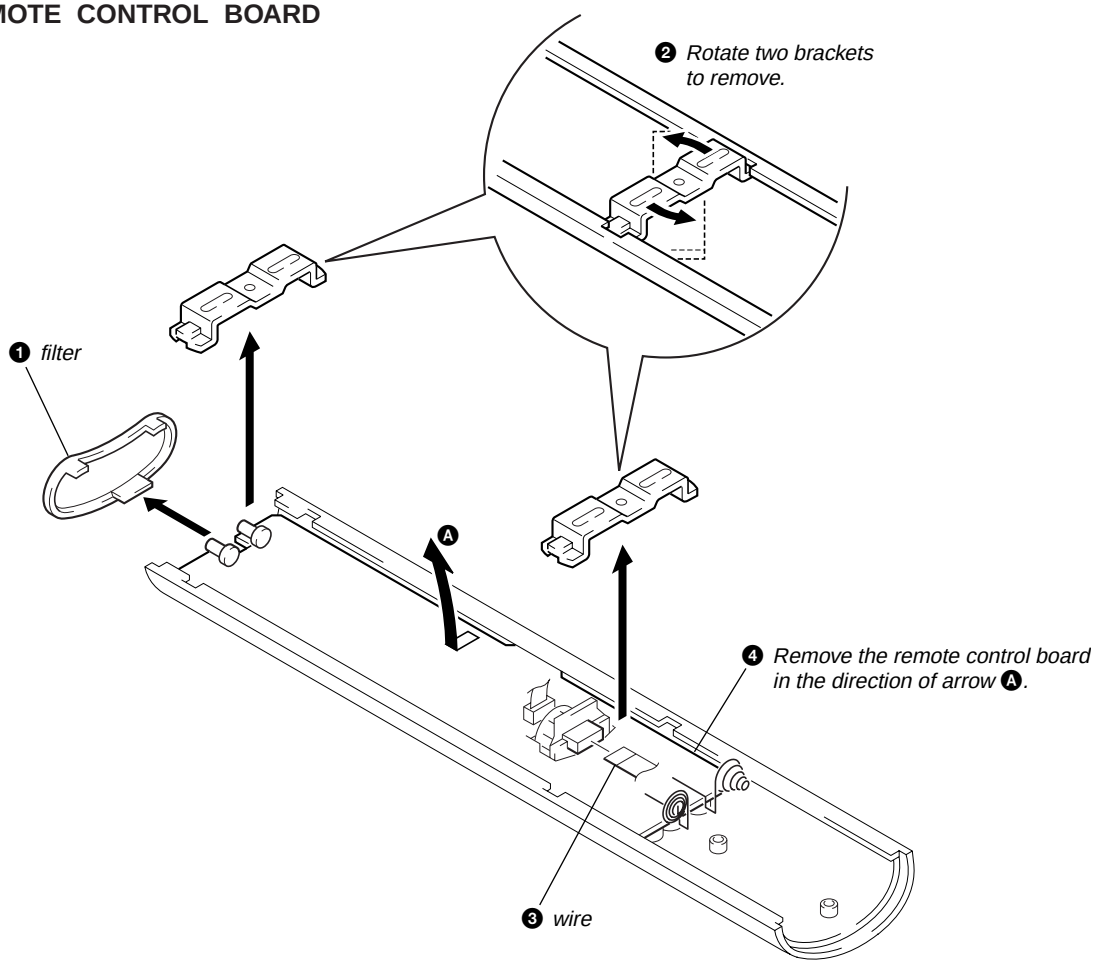
Set ➡ *Case (Lower)* ➡ *Remote Control Board* ➡ *Case, Inner*

Note: Follow the disassembly procedure in the numerical order given.

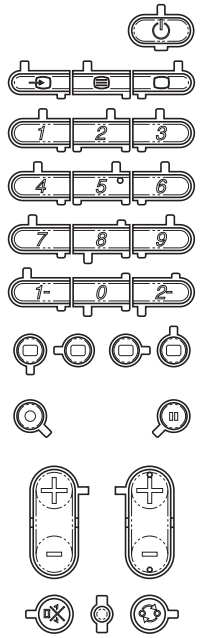
2-1. CASE (LOWER)

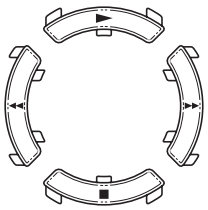


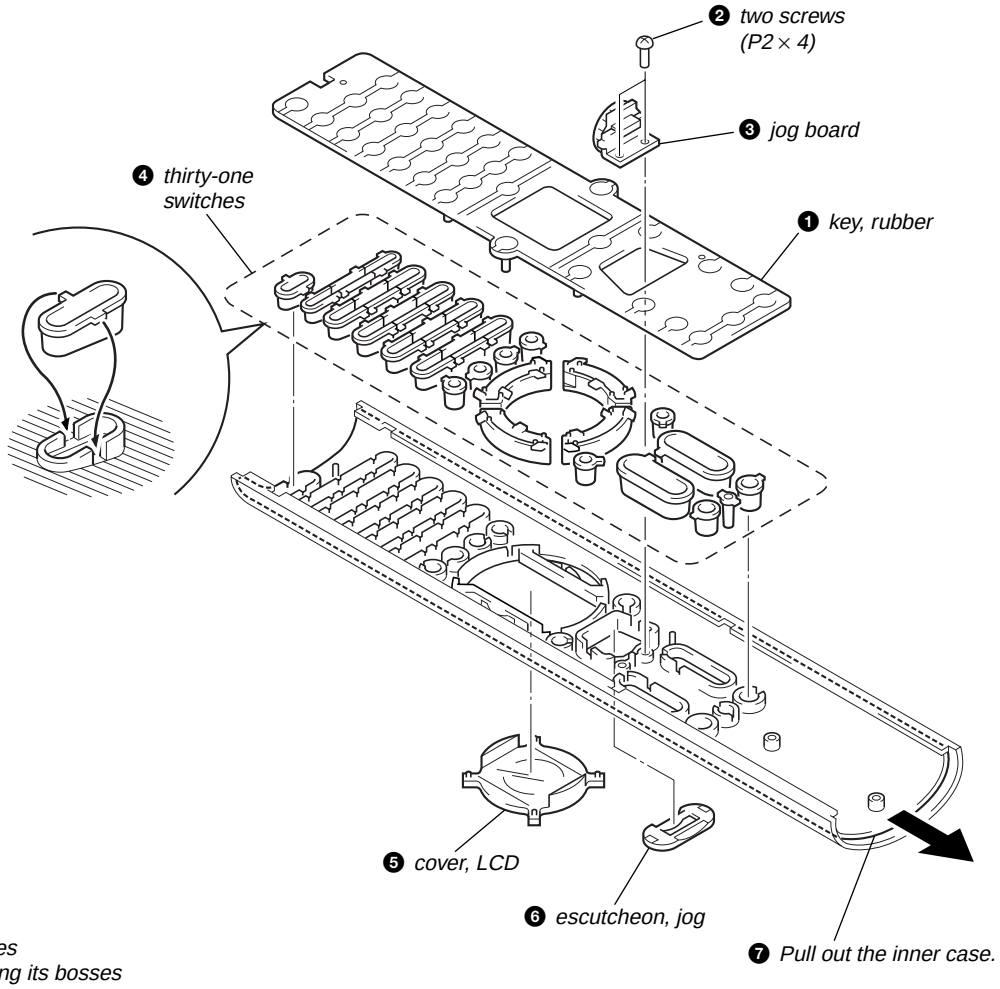
2-2. REMOTE CONTROL BOARD



2-3. CASE, INNER



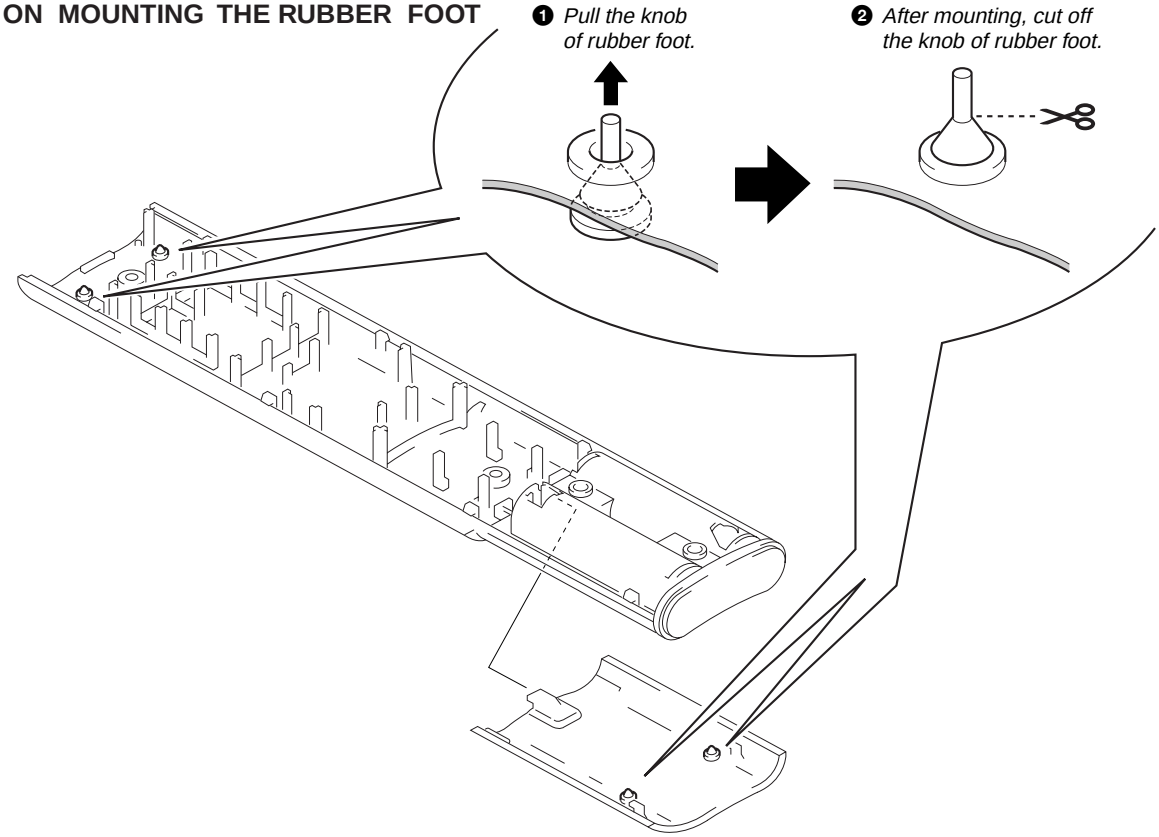




Note on mounting the switches

1. *Mount each switch, meeting its bosses with respective guides.*
2. *Mount each switch to original position, as its shape is different each other.*

NOTE ON MOUNTING THE RUBBER FOOT



SECTION 3
TEST MODE

[GENERAL]

The test mode of this set consists of six test items including BATT test, LCD test, KEY test, LEARN test, MEMORY test, and MEMORY ERASE test and further each test item comprises several check items.

[Setting/Releasing Test Mode]

Setting the test mode:
Push the [SET] key while pushing the [MENU ●] key. The "BATT TEST" will be displayed, when the test mode is set.
Releasing the test mode:
If the specified key is not pushed for more than 60 seconds while the set is waiting for key input for the test item selection, or if the test item "EXIT TEST" is selected.

[Test Item Selection]

1. Operation key
   In the test mode, operate the jog dial and [SET] key.

2. Operating method

(1) Progress operation
Pushing the jog, progress the check items in order.

(2) Next test operation

- Clicking the left jog button at the check item selection causes the "NEXT TEST" to be displayed for confirmation. ("NEXT TEST" is displayed on LCD with "NEXT" blinking)
- Pushing the jog with the "NEXT TEST" on LCD causes the next test item of current test to be displayed for selection.
- Clicking the right jog button with the "NEXT TEST" on LCD causes the set to return to the check item before the "NEXT TEST" display.
- Clicking the left jog button with the "NEXT TEST" on LCD is ignored.

(3) Skip operation

- Clicking the right jog button while the set is waiting for key input causes the "SKIP" to be displayed for confirmation. ("SKIP" is blinking on the LCD)
- Pushing the jog with the "SKIP" on LCD allows the set to proceed to the next check item of current item.
- Clicking the right jog button with the "SKIP" on LCD causes the set to return to the check item before the "SKIP" display.
- Clicking the left jog button with the "SKIP" on LCD is ignored. The skip operation at the last check item for each item causes the next test item to be displayed for selection.

(4) Others
If no key is pushed for more than 60 seconds while the set is waiting for the check item selection of current test item, the next test item is displayed.

3. Test item selection display list

- Test items

(1) BATT test selection display: "BATT TEST" is displayed (with "BATT" blinking)
(2) LCD test selection display: "LCD TEST" is displayed (with "LCD" blinking)
(3) KEY test selection display: "KEY TEST" is displayed (with "KEY" blinking)
(4) LEARN test selection display: "LEARN TEST" is displayed (with "LEARN" blinking)
(5) MEMORY test selection display: "MEMORY TEST" is displayed (with "MEMORY" blinking)
(6) MEMORY ERASE test selection display: "DEL MEMORY" is displayed (with "DEL" blinking)
(7) EXIT test selection display: "EXIT TEST" is displayed (with "EXIT" blinking)

- (1) is displayed immediately after the test mode is set.
  Each time the right jog button is clicked, the display varies in order of (1) → (2) → (3) → (4) → (5) → (6) → (7) → (1) → and so on. Also, the display varies in the reverse direction when the left jog button is clicked.
- Pushing the jog at any display causes the displayed test mode to be activated.
- The test item selection screen will appear, if any test item finished, or the test mode was released in the next test. At this time, the LCD will display the next test item of currently selected test item. However, any test item can be selected there through the jog operation.

[Test Mode Items]

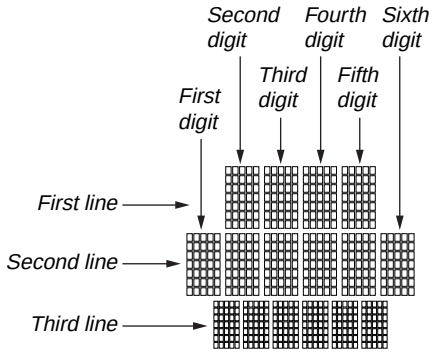
1. BATT test

(1) Battery voltage check:
Whether the battery voltage is below or over 2.5 V is checked.
"BATT CHECK LOW" is displayed if the battery voltage is below 2.5 V, or "BATT CHECK GOOD" is displayed if over 2.5 V The battery voltage is checked at 0.5 second interval until the jog is pushed, and LCD display is updated. Proceed to (2) if the jog is pushed

(2) DC/DC stop check:
DC/DC is stopped whichever the battery voltage is below or over 2.5 V The set waits for either key input or jog operation. When either the key or jog is operated, DC/DC starts, and after LCD initial setting, the BATT test is conducted, and then the "LCD TEST" is displayed for selection.

2. LCD test

LCD display: Explanatory notes



(1) Transmission mark blinking check:

Only the "((•))" is displayed for 0.5 sec and hidden for 0.5 sec repeatedly. Proceed to (2) if the jog is pushed.

(2) First line, horizontal one-row dots vertical scanning check:

The transmission mark is cleared, and horizontal one-row dots of 2 to 5 digit characters on the first line are displayed from the top row to the bottom row, every 0.3 sec for each row. This is repeated until the jog is pushed. Proceed to (3) if the jog is pushed.

(3) Second line, horizontal one-row dots vertical scanning check:

The display of the first line is cleared, and the similar to (2) check is made to the 1 to 6 digit characters on the second line. Proceed to (4) if the jog is pushed.

(4) Third line, horizontal one-row dots vertical scanning check:

The display of the second line is cleared, and the similar to (2) check is made to the 1 to 6 digit characters on the third line. Proceed to (5) if the jog is pushed.

(5) First digit character, vertical one-column dots horizontal scanning check:

The display of the third line is cleared, and horizontal one-column dots of 2, 3 digit characters on the first digit are displayed from the left to the right, every 0.3 sec for each column. This is repeated until the jog is pushed. Proceed to (6) if the jog is pushed.

(6) Second digit character, vertical one-column dots horizontal scanning check:

The display of the first digit is cleared, and the similar to (5) check is made to the 1 to 3 line characters on the second digit. Proceed to (7) if the jog is pushed.

(7) Third digit character, vertical one-column dots horizontal scanning check:

The display of the second digit is cleared, and the similar to (5) check is made to the 1 to 3 line characters on the third digit. Proceed to (8) if the jog is pushed.

(8) Fourth digit character, vertical one-column dots horizontal scanning check:

The display of the third digit is cleared, and the similar to (5) check is made to the 1 to 3 line characters on the fourth digit. Proceed to (9) if the jog is pushed.

(9) Fifth digit character, vertical one-column dots horizontal scanning check:

The display of the fourth digit is cleared, and the similar to (5) check is made to the 1 to 3 line characters on the fifth digit. Proceed to (10) if the jog is pushed.

(10) Sixth digit character, vertical one-column dots horizontal scanning check:

The display of the fifth digit is cleared, and the similar to (5) check is made to the 2, 3 line characters on the sixth digit. Proceed to (11) if the jog is pushed.

(11) Backlight blinking check:

The backlight turns on for 0.5 sec when "BACK LIGHT ON" is displayed, and it turns off for 0.5 sec when "BACK LIGHT OFF" is displayed. This is repeated until the jog is pushed. When the jog is pushed, the backlight turns off, the LCD test finishes, and the "KEY TEST" is displayed for selection.

3. KEY test

When a key other than that specified on the LCD was pushed, or when multiple keys were pushed, "KEY CHECK NG??" is displayed for one second, and then the LCD returns to the screen displayed last.

(1) [⏻] key check:

The set waits for the input of [⏻] key when "push POWER key" is displayed. When [⏻] key is pushed, the initially preset TV POWER key data code is outputted from the REM (output of 3 frames), and the set proceeds to (2).

(2) [⏎] key check:

The set waits for the input of [⏎] key when "push INPUT key" is displayed. When the [⏎] key is pushed, the set proceeds to (3).

(3) [▤] key check:

The set waits for the input of [▤] key when "push TEXT key" is displayed. When the [▤] key is pushed, the set proceeds to (4).

(4) [▢] key check:

The set waits for the input of [▢] key when "push TV key" is displayed. When the [▢] key is pushed, the set proceeds to (5).

(5) [1] key check:

The set waits for the input of [1] key when "push 1 key" is displayed. When the [1] key is pushed, the set proceeds to (6).

(6) [2] key check:

The set waits for the input of [2] key when "push 2 key" is displayed. When the [2] key is pushed, the set proceeds to (7).

(7) [3] key check:

The set waits for the input of [3] key when "push 3 key" is displayed. When the [3] key is pushed, the set proceeds to (8).

(8) [4] key check:

The set waits for the input of [4] key when "push 4 key" is displayed. When the [4] key is pushed, the set proceeds to (9).

(9) [5] key check:

The set waits for the input of [5] key when "push 5 key" is displayed. When the [5] key is pushed, the set proceeds to (10).

(10) [6] key check:

The set waits for the input of [6] key when "push 6 key" is displayed. When the [6] key is pushed, the set proceeds to (11).

(11) [7] key check:

The set waits for the input of [7] key when "push 7 key" is displayed. When the [7] key is pushed, the set proceeds to (12).

(12) [8] key check:

The set waits for the input of [8] key when "push 8 key" is displayed. When the [8] key is pushed, the set proceeds to (13).

(13) [9] key check:
The set waits for the input of [9] key when “push 9 key” is displayed. When the [9] key is pushed, the set proceeds to (14).

(14) [1- -/--] key check:
The set waits for the input of [1- -/--] key when “push -/— key” is displayed. When the [1- -/--] key is pushed, the set proceeds to (15).

(15) [0] key check:
The set waits for the input of [0] key when “push 0 key” is displayed. When the [0] key is pushed, the set proceeds to (16).

(16) [2-] key check:
The set waits for the input of [2-] key when “push 2- key” is displayed. When the [2-] key is pushed, the set proceeds to (17).

(17) [■ (RED)] key check:
The set waits for the input of [■ (RED)] key when “push RED key” is displayed. When the [■ (RED)] key is pushed, the set proceeds to (18).

(18) [■ (GREEN)] key check:
The set waits for the input of [■ (GREEN)] key when “push GREEN key” is displayed. When the [■ (GREEN)] key is pushed, the set proceeds to (19).

(19) [■ (YELLOW)] key check:
The set waits for the input of [■ (YELLOW)] key when “push YELLOW key” is displayed. When the [■ (YELLOW)] key is pushed, the set proceeds to (20).

(20) [■ (BLUE)] key check:
The set waits for the input of [■ (BLUE)] key when “push BLUE key” is displayed. When the [■ (BLUE)] key is pushed, the set proceeds to (21).

(21) [►▲] key check:
The set waits for the input of [►▲] key when “push UP key” is displayed. When the [►▲] key is pushed, the set proceeds to (22).

(22) [◄◄◄] key check:
The set waits for the input of [◄◄◄] key when “push ← key” is displayed. When the [◄◄◄] key is pushed, the set proceeds to (23).

(23) [►►►] key check:
The set waits for the input of [►►►] key when “push → key” is displayed. When the [►►►] key is pushed, the set proceeds to (24).

(24) [■▼] key check:
The set waits for the input of [■▼] key when “push DOWN key” is displayed. When the [■▼] key is pushed, the set proceeds to (25).

(25) [MENU ●] key check:
The set waits for the input of [MENU ●] key when “push MENU key” is displayed. When the [MENU ●] key is pushed, the set proceeds to (26).

(26) [OK ▮▮] key check:
The set waits for the input of [OK ▮▮] key when “push OK key” is displayed. When the [OK ▮▮] key is pushed, the set proceeds to (27).

(27) [◿ +] key check:
The set waits for the input of [◿ +] key when “push VOL + key” is displayed. When the [◿ +] key is pushed, the set proceeds to (28).

(28) [◿ –] key check:
The set waits for the input of [◿ –] key when “push VOL - key” is displayed. When the [◿ –] key is pushed, the set proceeds to (29).

(29) [🔇] key check:
The set waits for the input of [🔇] key when “push MUTE key” is displayed. When the [🔇] key is pushed, the set proceeds to (30).

(30) [PROGR +] key check:
The set waits for the input of [PROGR +] key when “push CH + key” is displayed. When the [PROGR +] key is pushed, the set proceeds to (31).

(31) [PROGR –] key check:
The set waits for the input of [PROGR –] key when “push CH - key” is displayed. When the [PROGR –] key is pushed, the set proceeds to (32).

(32) [⟲] key check:
The set waits for the input of [⟲] key when “push RECALL key” is displayed. When the [⟲] key is pushed, the set proceeds to (33).

(33) Jog right check:
The set waits for the jog right turn when “turn RIGHT JOG” is displayed. When the jog is turned to the right, the set proceeds to (34). (In this item, “SKIP” is disabled)

(34) Jog left check:
The set waits for the jog left turn when “turn LEFT JOG” is displayed. When the jog is turned to the left, the Key test finishes and the “LEARN TEST” is displayed for selection. (In this item, “NEXT TEST” is disabled)

4. LEARN test
The learn function is tested. Infrared data are sent from other remote commander to the photodetector for the learn function to test if the learn function operates normally, and the learned data are outputted through infrared when the jog is pushed. Check if the learning data are identical to the infrared output data using an external device. (For the test, use the exclusive checker in the factory, and the product in the field)

(1) Infrared input check:
The set waits for the input of infrared data (PDT) when “input LEARN” is displayed on the LCD. If infrared data input is abnormal, “NG input LEARN” is displayed on the LCD. “input LEARN”is again displayed when the jog is pushed. If infrared data input is normal, “GOOD input LEARN” is displayed on the LCD. The set proceeds to (2) when the jog is pushed.

(2) Learned data output check:
The learned data are outputted by the amount of 3 frames from the REM. Then, the Learn test finished, and the set proceeds to the MEMORY test.

5. MEMORY test

- For the EEPROM, the memory occupation display, writing error history display, error test, and data erasing are carried out.
- For the writing error history display, whether the data writing error occurred since the EEPROM was erased last is displayed.
- For the error test, the data are written to all areas, and then whether all data are correct is checked and the result is displayed.
- After the error test finished, the data in all areas of EEPROM are erased and all settings are initialized.

(1) EEPROM memory occupation display

How many percents of all memory areas are occupied with the learned data is displayed in steps of 10%. When no data is stored, 0% is displayed, or otherwise, the unit place is rounded up. The set proceeds to (2) when the jog is pushed.

(2) EEPROM writing error history display

In actual, each time the writing error occurred in the EEPROM, the error flag turns on. "MISSED MEMORY" is displayed on the LCD if the error flag is present, or "NO MISSED MEMORY" is displayed if not present. The set proceeds to (3) when the jog is pushed.

(3) EEPROM error test

(a) Memory writing confirmation display
"WRITE MEMORY" and "push SETkey MEMORY" are alternately displayed on the LCD every second. The set proceeds to (b) if the SET key is pushed.

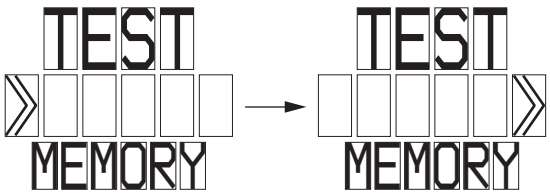
(b) Memory data writing (-1)
The lower 8-bit values of the memory addresses are written to all areas.
If an error occurred during data writing, the set goes to (g) with the error flag turned on, or if no error occurs, the set proceeds to (c).

(c) Memory data check (-1)
All bytes are read for checking.
If an error occurred during data check, the set goes to (g) with the error flag turned on, or if no error occurs, the set proceeds to (d).

(d) Memory data writing (-2)
The inverted lower 8-bit values of the memory addresses are written to all areas.
If an error occurred during data writing, the set goes to (g) with the error flag turned on, or if no error occurs, the set proceeds to (e).

(e) Memory data check (-2)
All bytes are read for checking. If an error occurred during data check, the set goes to (g) with the error flag turned on, or if no error occurs, the set proceeds to (f).

(f) Memory erasing
All bytes are erased to return all settings to initial state.
If an error occurred, the set goes to (g) with the error flag turned on, or if no error occurs, the set proceeds to (g).
For the LCD display of (b) to (f), see below.



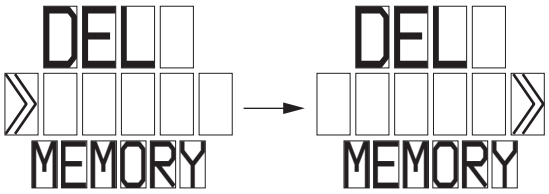
(g) Memory check result display
"TEST GOOD MEMORY" is displayed on the LCD if the error flag is not present, or "TEST ERROR MEMORY" is displayed if the error flag is present. Push the jog, and the MEMORY test finishes and the "MEMORY ERASE" is displayed for selection.

6. MEMORY ERASE

(1) Memory erasing

(a) Memory erasing confirmation display
"DELETE MEMORY" and "push SETkey MEMORY" are alternately displayed on the LCD every second. The set proceeds to (b) if the SET key is pushed.

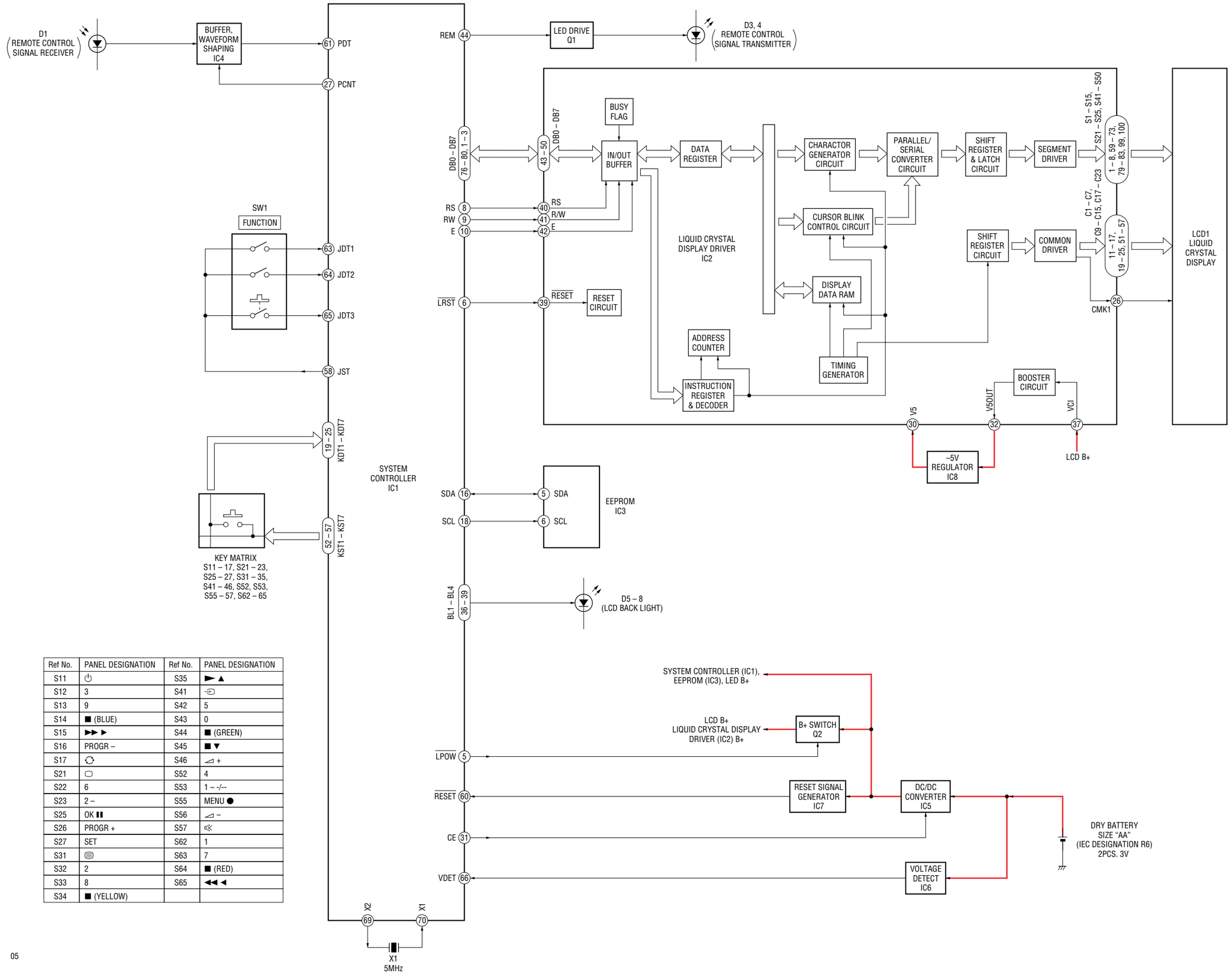
(b) All bytes in the EEPROM are erased to return all settings to initial state.
During this operation if an error occurred, the set goes to (c) with the error flag turned on, or if no error occurs, the set proceeds to (c) with the error flag not turned on.
For the LCD display of (a) and (b), see below.



(c) Memory erasing result display
"DEL GOOD MEMORY" is displayed on the LCD if the error flag is not present, or "DEL NG MEMORY" is displayed if the error flag is present. Push the jog, and the MEMORY ERASE test finishes and the test items are displayed for selection.

SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAM

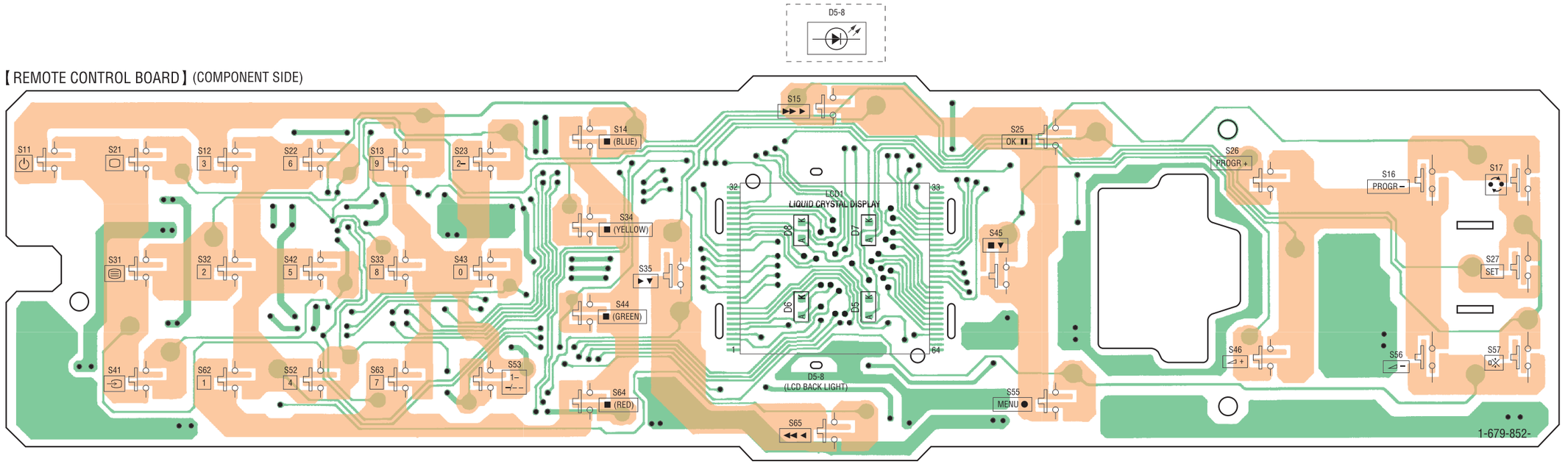


Ref No.	PANEL DESIGNATION	Ref No.	PANEL DESIGNATION
S11	⏻	S35	► ▲
S12	3	S41	⏎
S13	9	S42	5
S14	■ (BLUE)	S43	0
S15	►► ►	S44	■ (GREEN)
S16	PROGR –	S45	■ ▼
S17	⟳	S46	◿ +
S21	▭	S52	4
S22	6	S53	1 – -/--
S23	2 –	S55	MENU ●
S25	OK ▮▮	S56	◿ –
S26	PROGR +	S57	🔇
S27	SET	S62	1
S31	▤	S63	7
S32	2	S64	■ (RED)
S33	8	S65	◄◄ ◄
S34	■ (YELLOW)		

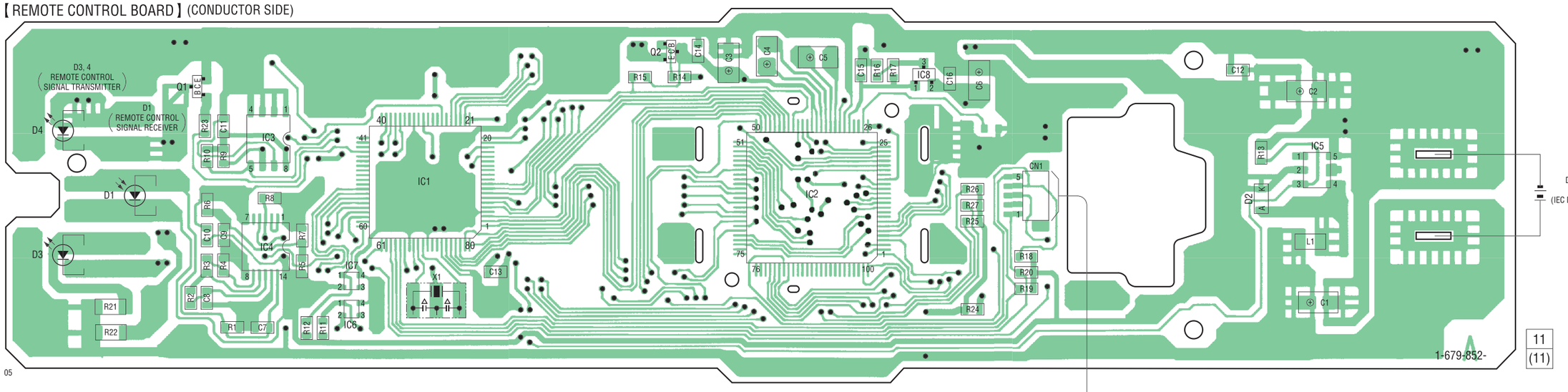
05

4-2. PRINTED WIRING BOARDS

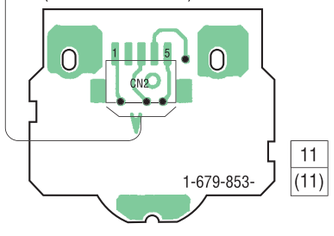
【REMOTE CONTROL BOARD】(COMPONENT SIDE)



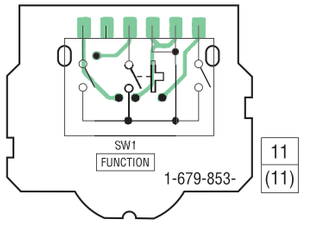
【REMOTE CONTROL BOARD】(CONDUCTOR SIDE)



【JOG BOARD】
(COMPONENT SIDE)



【JOG BOARD】
(CONDUCTOR SIDE)



- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D1	F-2	IC2	G-8
D2	F-11	IC3	F-3
D3	G-1	IC4	G-3
D4	F-1	IC5	F-12
D5	C-8	IC6	G-4
D6	C-7	IC7	G-4
D7	C-8	IC8	E-9
D8	C-7		
		Q1	E-2
IC1	F-4	Q2	E-6

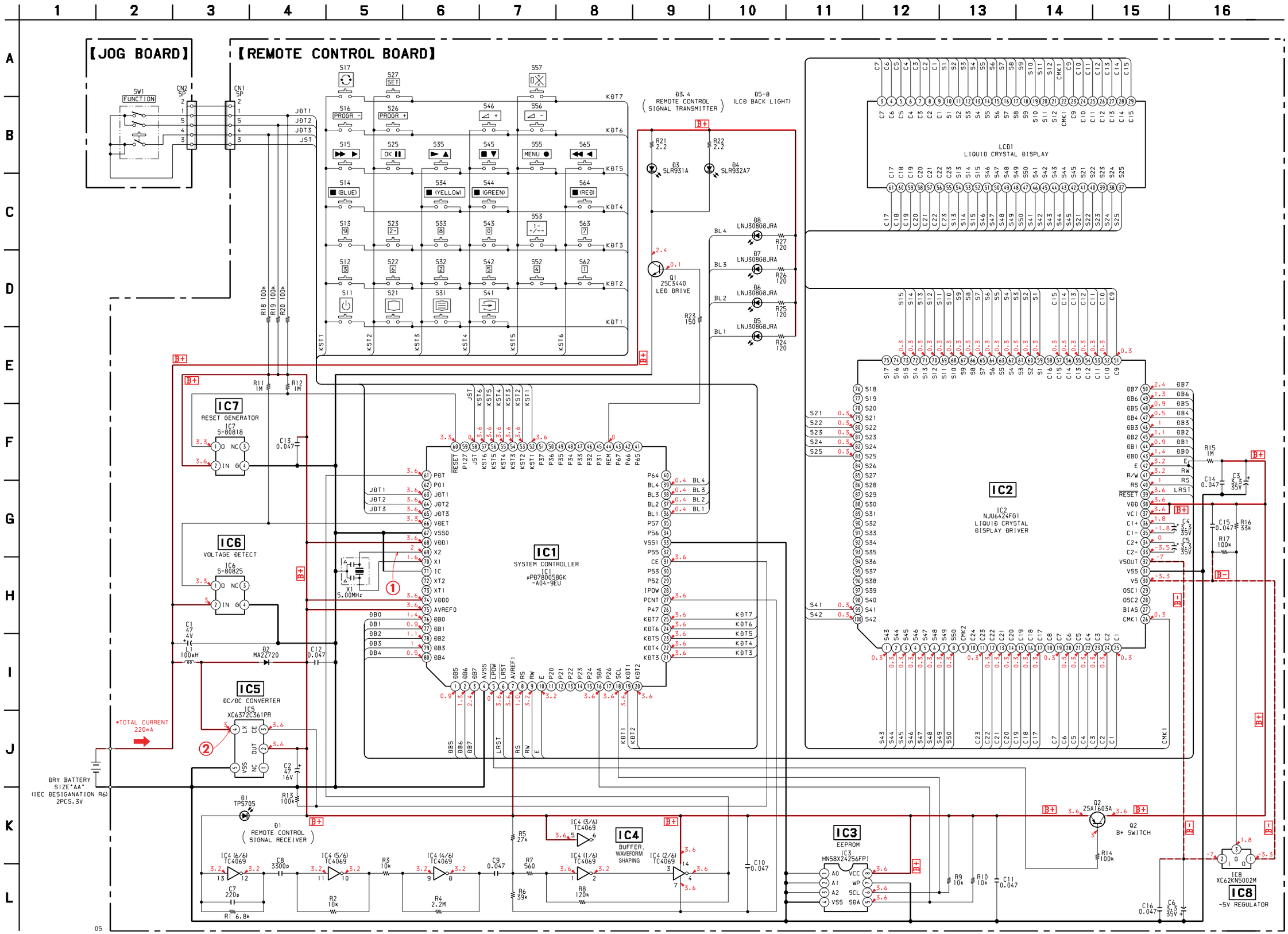
Note on Printed Wiring Boards:

- ——— : parts extracted from the conductor side.
- ● : Through hole.
- △ : internal component.
- : Pattern from the side which enables seeing.
- : Carbon pattern.

(The other layers' patterns are not indicated.)

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.



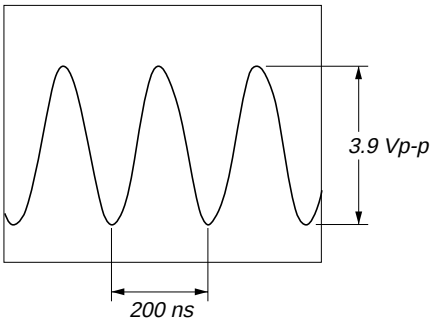
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- □ : panel designation.
- B+ : B+ Line.
- B− : B− Line.
- Power voltage is dc 3 V and fed with regulated dc power supply from battery terminal.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

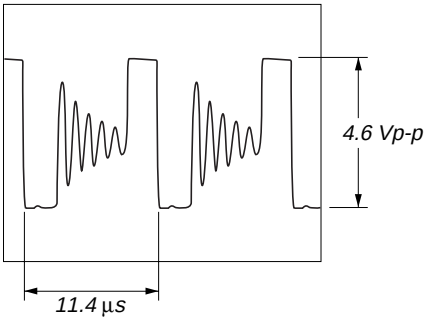
• **Waveforms**

– REMOTE CONTROL Board –

❶ IC1 ㊾ (X2)
1V/DIV, 50 ns/DIV

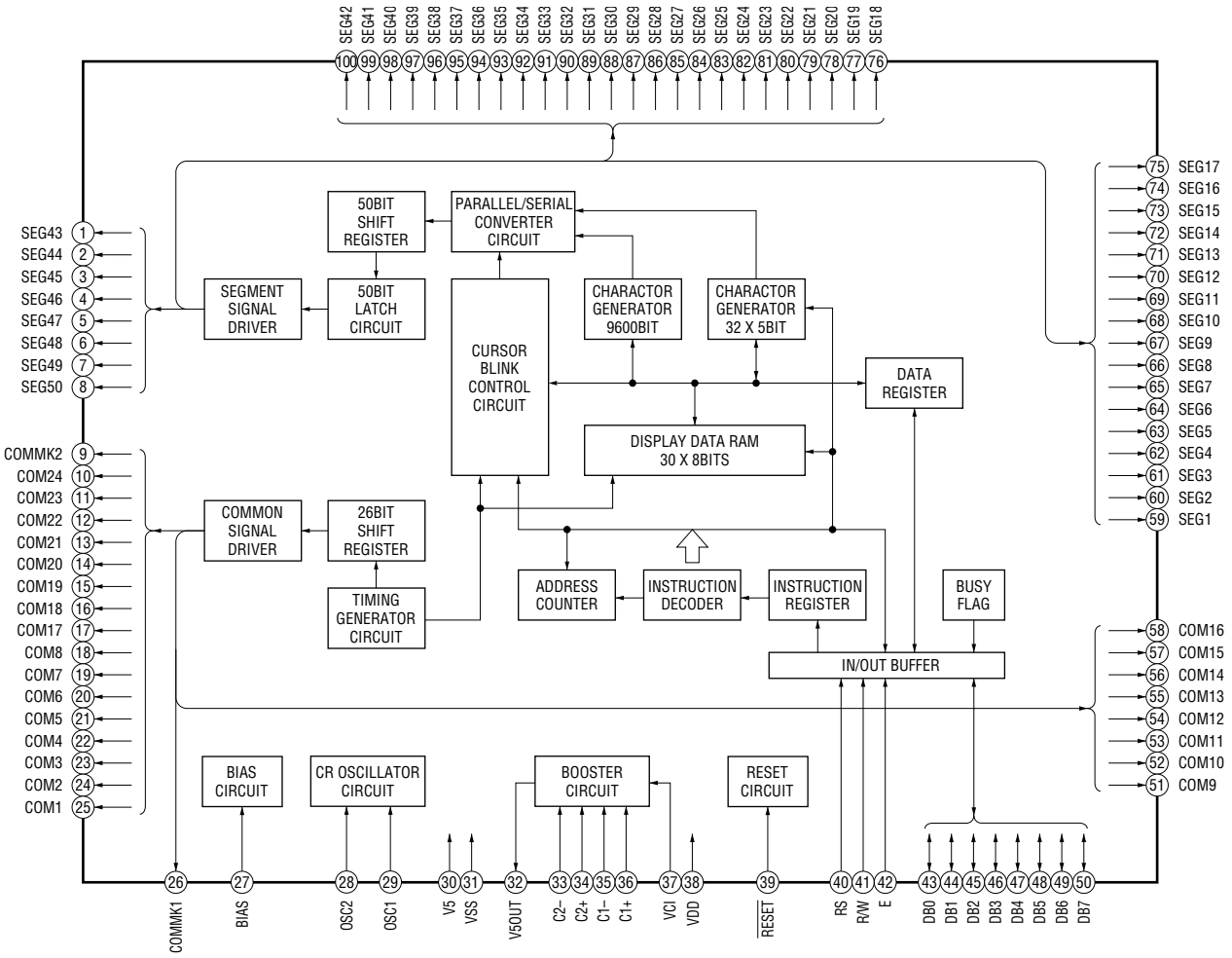


❷ IC5 ④ (LX)
1V/DIV, 5 µs/DIV

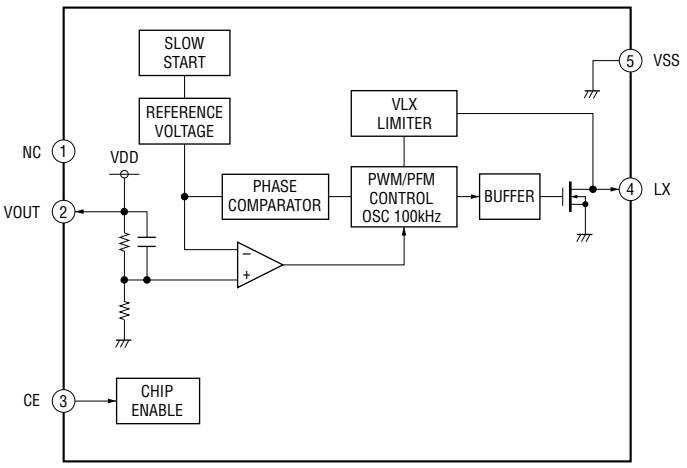


- **IC Block Diagrams**

IC2 NJU6424FG1-T



IC5 XC6372C361PR-T



4-4. IC PIN FUNCTION DESCRIPTION

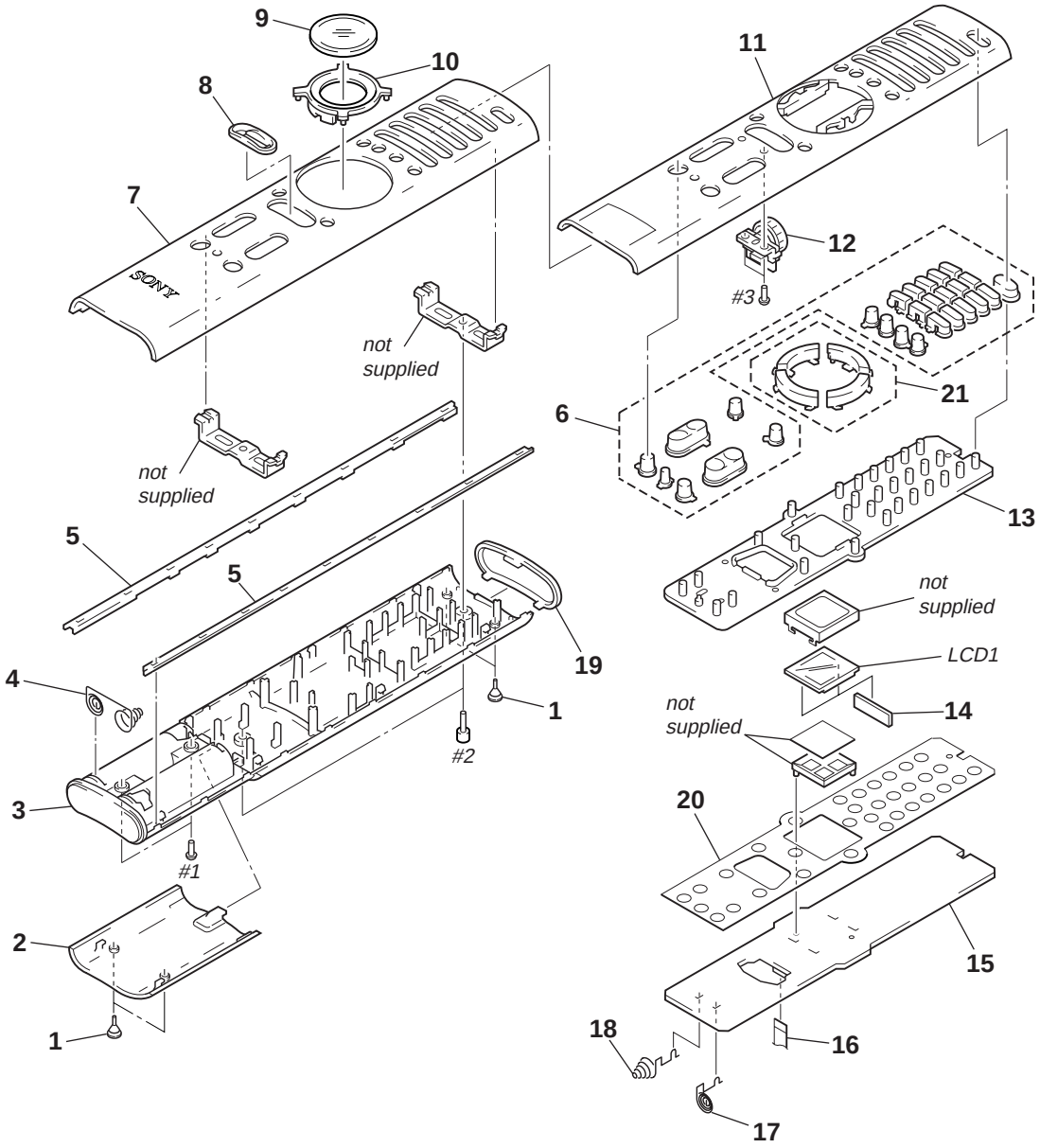
• MAIN BOARD IC1 μPD780058GK-A04-9EU (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1 to 3	DB5 to DB7	I/O	Two-way data bus with the liquid crystal display driver (IC2)
4	AVSS	—	Ground terminal (for A/D converter)
5	$\overline{\text{LPOW}}$	O	Power on/off control signal output for the liquid crystal display driver (IC2) "L": power on
6	$\overline{\text{LRST}}$	O	Reset signal output to the liquid crystal display driver (IC2) "L": reset
7	AVREF1	I	Reference voltage input terminal (for A/D converter)
8	RS	O	Register selection signal output to the liquid crystal display driver (IC2)
9	RW	O	Data read/write selection signal output to the liquid crystal display driver (IC2) "L": data write, "H": data read
10	E	O	Data enable signal output to the liquid crystal display driver (IC2)
11 to 15	P20 to P24	—	Not used (open)
16	SDA	I/O	Two-way data bus with the EEPROM (IC3)
17	P26	—	Not used (open)
18	SCL	O	Serial data transfer clock signal output to the EEPROM (IC2)
19 to 25	KDT1 to KDT7	I	Key data input from the key matrix "L" input when key pressing
26	P47	—	Not used (open)
27	PCNT	O	Learning control signal output to the TC4069 (IC4)
28	IPOW	O	Not used (open)
29, 30	P52, P53	—	Not used (open)
31	CE	O	Power on/off control signal output supply to the DC/DC converter (IC5) "H": power on
32	P55	—	Not used (open)
33	VSS1	—	Ground terminal
34, 35	P56, P57	—	Not used (open)
36 to 39	BL1 to BL4	—	LED drive signal output of the liquid crystal display back light (D5 to D8) "L": LED on
40 to 43	P64 to P67	—	Not used (open)
44	REM	O	LED drive signal output of the remote control signal transmitter (D3, D4) "H": LED on
45 to 51	P31 to P37	—	Not used (open)
52 to 57	KST1 to KST6	O	Key scan output to the key matrix "L" output when key waiting
58	JST	O	Jog scan output to the rotary encoder (SW1)
59	P127	—	Not used (open)
60	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC7) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
61	PDT	I	Learning data input from the TC4069 (IC4)
62	P01	—	Not used (open)
63	JDT1	I	Jog dial pulse input of the rotary encoder (SW1) (A phase input)
64	JDT2	I	Jog dial pulse input of the rotary encoder (SW1) (B phase input)
65	JDT3	I	Push switch input of the rotary encoder (SW1)
66	VDET	I	Voltage detection signal input terminal
67	VSS0	—	Ground terminal
68	VDD1	—	Power supply terminal (+3.6V)
69	X2	O	Main system clock output terminal (5 MHz)
70	X1	I	Main system clock input terminal (5 MHz)
71	IC	—	Internal connection terminal (connected to ground)
72	XT2	O	Sub system clock output terminal Not used (open)
73	XT1	I	Sub system clock input terminal Not used (open)
74	VDD0	—	Power supply terminal (+3.6V)
75	AVREF0	I	Reference voltage input terminal (for A/D converter)
76 to 80	DB0 to DB4	I/O	Two-way data bus with the liquid crystal display driver (IC2)

SECTION 5
EXPLODED VIEW

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.



Ref. No.	Part No.	Description	Remark
1	3-220-687-01	FOOT, RUBBER	
2	3-220-680-01	LID, BATTERY CASE	
3	3-220-683-01	CASE (LOWER)	
4	3-220-686-01	TERMINAL (C), BATTERY	
* 5	3-220-677-01	EDGE, SIDE	
6	3-220-679-01	BUTTON (B)	
7	3-220-681-01	CASE (TOP)	
* 8	3-220-672-01	ESCUTCHEON, JOG	
9	3-220-691-01	PANEL, LCD	
10	3-220-692-01	COVER, LCD	
* 11	3-220-682-01	CASE, INNER	
12	A-4541-208-A	JOG BOARD, COMPLETE	
* 13	3-220-675-01	KEY, RUBBER	

Ref. No.	Part No.	Description	Remark
14	3-220-689-01	TERMINAL, ZEBRA	
* 15	1-679-852-11	REMOTE CONTROL BOARD	
16	9-885-008-54	WIRE	
17	3-220-684-01	TERMINAL (A), BATTERY	
18	3-220-685-01	TERMINAL (B), BATTERY	
19	3-220-676-01	FILTER	
* 20	3-220-674-01	DOOM, POLY	
21	3-220-678-01	BUTTON (A)	
LCD1	9-885-008-47	DISPLAY PANEL, LIQUID CRYSTAL	
#1	7-685-104-14	SCREW +P 2X6 TYPE2 NON-SLIT	
#2	7-621-996-05	BOLT, HEXAGON SOCKET 2.6X5	
#3	7-685-102-19	SCREW +P 2X4 NON-SLIT TYPE 2	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-4541-208-A	JOG BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
CN2	9-885-008-53	CONNECTOR 5P			
		< JOG ENCODER >			
SW1	1-473-406-11	ENCODER, ED JOG (FUNCTION)			
**********					
*	1-679-852-11	REMOTE CONTROL BOARD			
		**********			
	3-220-684-01	TERMINAL (A), BATTERY			
	3-220-685-01	TERMINAL (B), BATTERY			
	3-220-689-01	TERMIAL, ZEBRA			
		< CAPACITOR >			
C1	1-126-607-21	ELECT CHIP	47uF	20%	4V
C2	1-126-204-21	ELECT CHIP	47uF	20%	16V
C3	1-128-008-21	ELECT CHIP	3.3uF	20%	35V
C4	1-128-008-21	ELECT CHIP	3.3uF	20%	35V
C5	1-128-008-21	ELECT CHIP	3.3uF	20%	35V
C6	1-128-008-21	ELECT CHIP	3.3uF	20%	35V
C7	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C8	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C9	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C10	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C11	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C12	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C13	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C14	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C15	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C16	1-164-361-11	CERAMIC CHIP	0.047uF		16V
		< CONNECTOR >			
CN1	9-885-008-53	CONNECTOR 5P			
		< DIODE >			
D1	9-885-008-55	DIODE TPS705 (HATA) (REMOTE CONTROL SIGNAL RECEIVER)			
D2	8-719-076-88	DIODE MA2Z720001S0			
D3	1-807-851-11	LED SLR-931A (REMOTE CONTROL SIGNAL TRANSMITTER)			
D4	8-719-053-06	LED SLR-932A-7 (REMOTE CONTROL SIGNAL TRANSMITTER)			
D5	8-719-058-69	LED LNJ308G8JRA (LCD BACK LIGHT)			
D6	8-719-058-69	LED LNJ308G8JRA (LCD BACK LIGHT)			
D7	8-719-058-69	LED LNJ308G8JRA (LCD BACK LIGHT)			
D8	8-719-058-69	LED LNJ308G8JRA (LCD BACK LIGHT)			
		< IC >			
IC1	8-759-699-74	IC uPD780058GK-A04-9EU			
IC2	9-885-008-48	IC NJU6424FG1-T			
IC3	9-885-008-49	IC HN58X24256FPI-T			
IC4	8-759-530-29	IC TC4069UBFT (EL, N)			
IC5	9-885-008-50	IC XC6372C361PR-T			
IC6	8-759-479-03	IC S-80825ANNP-EDN-T2			
IC7	8-759-665-49	IC S-80818ANNP-EDF-T2			
IC8	9-885-008-51	IC XC62KN5002MR-T			
		< COIL >			
L1	1-412-032-11	INDUCTOR CHIP 100uH			
		< TRANSISTOR >			
Q1	8-729-047-62	TRANSISTOR 2SC3440-T12-1F			
Q2	9-885-008-52	TRANSISTOR 2SA1603A-T			
		< RESISTOR >			
R1	1-218-867-11	METAL CHIP	6.8K	5%	1/16W
R2	1-216-833-11	METAL CHIP	10K	5%	1/16W
R3	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4	1-216-861-11	METAL CHIP	2.2M	5%	1/16W
R5	1-218-726-11	METAL CHIP	27K	5%	1/16W
R6	1-216-840-11	METAL CHIP	39K	5%	1/16W
R7	1-216-818-11	METAL CHIP	560	5%	1/16W
R8	1-216-846-11	METAL CHIP	120K	5%	1/16W
R9	1-216-833-11	METAL CHIP	10K	5%	1/16W
R10	1-216-833-11	METAL CHIP	10K	5%	1/16W
R11	1-216-857-11	METAL CHIP	1M	5%	1/16W
R12	1-216-857-11	METAL CHIP	1M	5%	1/16W
R13	1-216-845-11	METAL CHIP	100K	5%	1/16W
R14	1-216-845-11	METAL CHIP	100K	5%	1/16W
R15	1-216-857-11	METAL CHIP	1M	5%	1/16W
R16	1-216-839-11	METAL CHIP	33K	5%	1/16W
R17	1-216-845-11	METAL CHIP	100K	5%	1/16W
R18	1-216-845-11	METAL CHIP	100K	5%	1/16W

REMOTE CONTROL

Ref. No.	Part No.	Description			Remark
R19	1-216-845-11	METAL CHIP	100K	5%	1/16W
R20	1-216-845-11	METAL CHIP	100K	5%	1/16W
R21	1-216-134-91	METAL CHIP	2.2	5%	1/8W
R22	1-216-134-91	METAL CHIP	2.2	5%	1/8W
R23	1-216-811-11	METAL CHIP	150	5%	1/16W
R24	1-216-810-11	METAL CHIP	120	5%	1/16W
R25	1-216-810-11	METAL CHIP	120	5%	1/16W
R26	1-216-810-21	METAL CHIP	120	5%	1/16W
R27	1-216-810-11	METAL CHIP	120	5%	1/16W
		< VIBRATOR >			
X1	1-767-452-11	VIBRATOR, CERAMIC (5MHz)			

****

MISCELLANEOUS
****

16	9-885-008-54	WIRE
LCD1	9-885-008-47	DISPLAY PANEL, LIQUID CRYSTAL

****

ACCESSORIES & PACKING MATERIALS
****

3-223-637-11	MANUAL, INSTRUCTION (ENGLISH, GERMAN)
3-223-637-21	MANUAL, INSTRUCTION (FRENCH, ITALIAN)
3-223-637-31	MANUAL, INSTRUCTION (DUTCH, SWEDISH)
3-223-637-41	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE)
3-223-638-11	MANUAL, INSTRUCTION (for PRESET) (ENGLISH, FRENCH, GERMAN, SPANISH, DUTCH, SWEDISH, ITALIAN, PORTUGUESE)

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