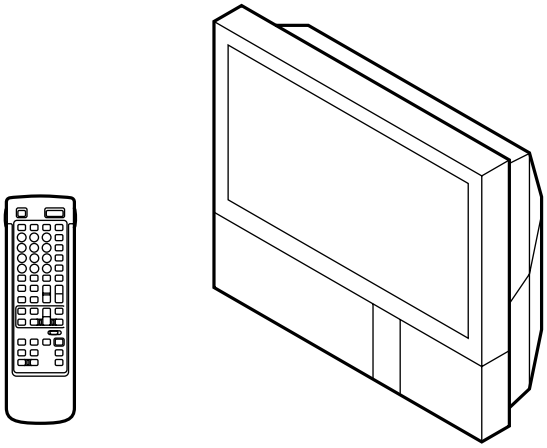
# SERVICE MANUAL

# LE-1 CHASSIS

| MODEL | COMMANDER | DEST. |
|---|---|---|
| KL-37W2U | RM-838 | UK |

| MODEL | COMMANDER | DEST. |
|---|---|---|
| | | |



MICROFILM

* Please file according to model size. ....□

37

TRINITRON® COLOR TV

SONY®

# Specifications

This product complies with the EU Directive 89/336/EEC.

| | |
|---|---|
| Television system | B/G/H, D/K, I, L |
| Colour system | NTSC 3.58/4.43 (VIDEO IN) |
| Channel coverage | See “Receivable channels and channel displays” at the bottom. |
| Projected picture size | 37 inches<br>Approx. 94 cm diagonally |

**Terminals**

| | |
|---|---|
| Rear | 1 21-pin Euro connector (CENELEC standard) inputs for audio and video signals<br>- inputs for RGB<br>- outputs of TV video and audio signals<br>2/ 2 21-pin Euro connector<br>- inputs for audio and video signals<br>- inputs for S video<br>- outputs for audio and video signals (selectable)<br>4/ 4 21-pin Euro connector<br>- inputs for audio and video signals<br>- inputs for S video<br>- outputs for audio and video signals (monitor out)<br>2, 4 S video inputs<br>- 4 pin DIN<br>Audio inputs (L, R) - phono jacks<br>S video output 4-pin DIN<br>Audio outputs - phono jacks<br>Audio outputs (variable)-phono jacks |
| Front | 3 video input - phono jack<br>Audio inputs - phono jacks<br>3 S video input - 4-pin DIN<br>2 Headphone jack: stereo minijack |

| | |
|---|---|
| Sound output | 2 × 5 W (RMS)<br>Centre 1 × 20 W |
| Power consumption | 170W |
| Dimensions (W × H × D) | Approx. 920 × 825 × 390 mm |
| Weight | Approx. 29 kg |
| Supplied accessories | See page 6. |
| Other features | Digital comb filter (High resolution)<br>PAP (Picture-and-picture)<br>FASTEXT<br>Graphic Equalizer |

Design and specifications are subject to change without notice.

## Receivable Channels and Channel Displays

| | Receivable channels | Indication on the screen |
|---|---|---|
| B/G/H | E2..12 21..69 | C02 C03 C04..C12 C21..C69 |
| CABLE TV (1) | S1..41 | S01 S02..S41 |
| CABLE TV (2) | S01..S05 M1..M10 U1..U10 | S42..S46 S01..S10 S11..S20 |
| ITALY | A B C D E F G H H1 H2 21..69 | C11..C69 |
| D/K | R01..R12 R21..R69 | C02..C12 C21..C69 |
| CABLE TV (1) | | S01 S02..S41 |
| CABLE TV (2) | | S42 S43..S46 |
| CABLE TV | B..Q, S21..41 | S02, S03..S17, S21..S41 |
| L | F2..F10 F21..F69 | C01..C12 C21..C69 |
| I | B21..B68 | C21..C68 |

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**SAFETY-RELATED COMPONENT WARNING!!**
**COMPONENTS IDENTIFIED BY SHADING AND MARK ! ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

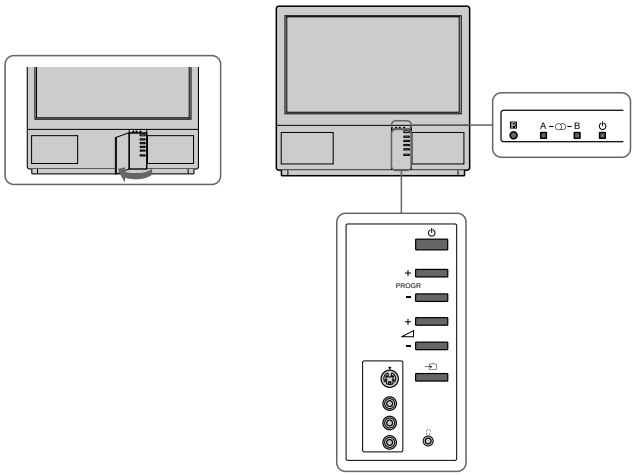
The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remein as in the manual.

# SECTION 1
# GENERAL

## Overview

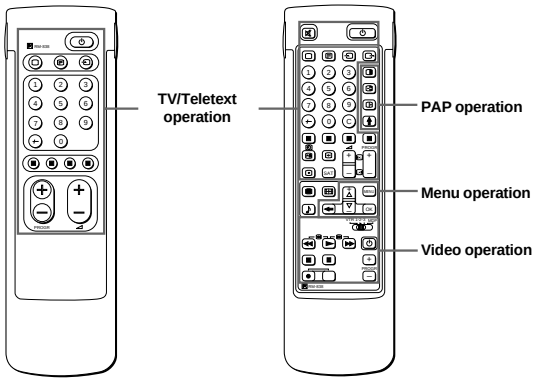
This section briefly describes the buttons and controls on the TV set and on the Remote Commander. For more information, refer to the pages given next to each description.

**TV set-front**




| Symbol | Name | Refer to page |
|---|---|---|
| f | Main power switch | 14 |
| f | Standby indicator | 14 |
| A - m - B | Stereo A/B indicators | 16 |
| PROGR+/– | Programme | 14 |
| ⊿+/– | Volume buttons | 14 |
| –⊖ | Input select buttons | 15 |
| I | Headphones jack | 23 |
| –⊖ 3, –⊖ 3, –⊖ 3 | Input jacks (S video/video/audio) | 24 |

**Remote commander**




Simple side

Full-Function side

**Note**
The SAT button does not operate with this TV.

**TV/Teletext operation**

| Symbol | Name | Refer to page |
|---|---|---|
| o | Mute on/off button | 15 |
| f | Standby button | 14 |
| O | TV power on/TV mode selector button | 14 |
| _ | Teletext button | 15 |
| –⊖ | Input mode selector | 15 |
| ⊖→ | Output mode selector | 24 |
| 1,2,3,4,5,6, 7,8,9 and 0 | Number buttons | 14 |
| –/-- | Double-digit entering button | 14 |
| C | Direct channel entering button | 10 |
| ⊿+/– | Volume control button | 14 |
| PROGR +/– | Programme selectors | 14 |
| | Teletext page access buttons | 20 |
| ⏺ | Picture adjustment button | 16 |
| ♪ | Sound adjustment button | 16 |
| $ | On-screen display button | 15 |
| [ | Teletext hold button | 20 |
| # | Time display button | 15 |
| L L L L | Fastext buttons | 20 |
| | “Freeze” button | 15 |
| | Button to change Screen Format | 15 |

**PAP (Picture-and-picture) operation**

| Symbol | Name | Refer to page |
|---|---|---|
| | PAP on/off button | 18 |
| C | PAP source selector | 18 |
| | Swap button | 18 |
| | PAP freeze button | 18 |

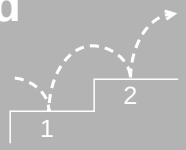
**Menu operation**

| Symbol | Name | Refer to page |
|---|---|---|
| MENU | Menu on/off button | 7 |
| >+/ ?– | Select buttons | 7 |
| OK | OK(confirming)button | 7 |
| @ | Back button | 7 |

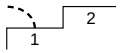
**Video operation**

| Symbol | Name | Refer to page |
|---|---|---|
| VTR1/2/3, MDP | Video equipment selector | 26 |
| ;; - :: L J a f PROGR +/– | Video equipment operation buttons | 26 |

# Getting Started




## Step 1 Preparation

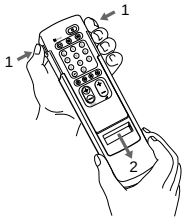



### 1 Check the supplied accessories

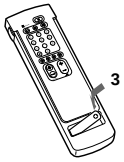
When you've taken everything out of the carton, check that you have these items:

- RM-838 Remote Commander
- One IEC designation R6 battery
- Wrench (1)
- Bracket (2)
- Dust Remover (1)

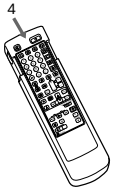
### 2 Insert the battery into the Remote Commander




Remove the cover.



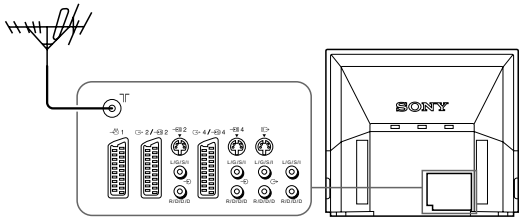

Check the correct polarities.




Refit the outside cover making sure that the Full-Function side is visible to use the menu in step 2.

**Note:** Always remember to dispose of used batteries in an enviromental friendly way.

### 3 Connect the aerial

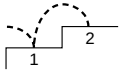


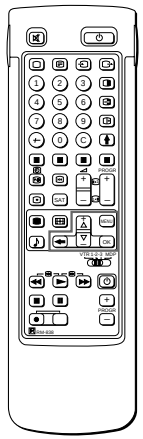

Fit an IEC aerial connector attached to 75-ohm coaxial cable (not supplied) to the ) socket at the rear of the TV.





## Step 2 Tuning in to TV Stations



Once you have set up the TV, you can choose the language of the menu. Then, you should preset the channels (up to 100 channels) by choosing either the automatic or manual method. The automatic method is easier if you want to preset all receivable channels at once. Use the manual method if you only have a few channels and want to preset channels one by one.

**Before you begin**

- Check that the Full-Function side of the Remote Commander is visible.
- Locate Menu operation buttons on the Remote Commander. They are shaded in the illustration at the left.

### 1 Choose a language

**1** Press f on the TV.
The TV will switch on. If the standby indicator on the TV is lit, press O or a number button on the Remote Commander.

**2** Press the MENU button.
The LANGUAGE menu appears. (See Fig. 1.)

MENU

**3** Select the language you want with > + or ? – and press OK.

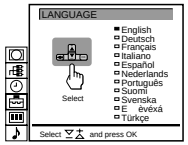
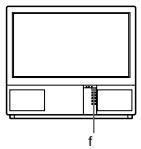



**Fig. 1**




### 2 Display the menu

Press MENU.

The main menu appears. (See Fig. 2.)

Using > + or ? – select the symbol and press OK.

Now, choose one of the methods described overleaf:

**"Preset Channels Automatically"**

or

**"Preset Channels Manually"**

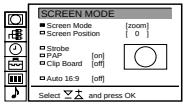



**Fig. 2**

**To go back to main menu**
Keep pressing @

**To go back to the normal TV picture**
Press MENU. Normal TV picture will be restored after one minute if menu functions are not selected.

**Note on the Demo function**
If you choose Demo in the Installation menu, you can see a sequential demonstration of the menu functions.
Press MENU to stop the function.

# 3 Preset channels automatically

1 Select the symbol for “Preset” with >+ or ?– and press OK.
The PRESET menu appears. (See Fig. 3.)

2 Select “Auto Programme” with >+ or ?– and press OK.
The AUTO PROGRAMME menu appears. (See Fig. 4.)

3 Press OK.
Select if necessary the TV broadcast system (B/G for Western European or D/K for Eastern European countries) with >+ or ?– and press OK. The first element of the “PROG” number will be highlighted.

4 Select the programme (number button) from which you want to start presetting. Select the first element of the double-digit number with >+ or ?– or the number buttons (e.g., For “04,” select “0” here) and press OK.

The second element of “PROG” will be highlighted.

5 Select the second element of the double-digit number with >+ or ?– or the number buttons (e.g., For “04,” select “4” here) (See Fig. 5) and press OK.

6 Select “C” or “S” with >+ or ?– and press OK.
The automatic channel presetting starts.
When presetting is finished, the preset menu reappears. All available channels are now stored on successive number buttons.
Press menu to restore normal TV picture.

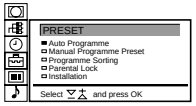



**Fig. 3**

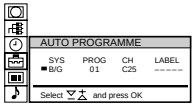



**Fig. 4**

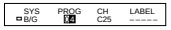



**Fig. 5**

**To go back to the main menu**
Keep pressing @

**To stop automatic channel presetting**
Press @on the Remote Commander.

**Notes**
- After presetting the channels automatically, you can check which channels are stored on which programme positions.
  For details, see “Displaying the Programme Table” on page 15.
- You can sort the programme positions to have them appear on screen in the order you like. For details, see “Sorting Programme Positions” on page 10.





# 3 Preset channels manually

Use this method if there are only a few channels in your area to preset or if you want to preset channels one by one.
You may also allocate programme numbers to various video input sources.

**If you have made a mistake**
Press @to go back to the previous position.

**To return to the main menu**
Keep pressing @

**To go back to the normal TV picture**
Press MENU.

1 Select the symbol for “Preset” with >+ or ?– and press OK.
The PRESET menu appears. (See Fig. 6.)

2 Select “Manual Programme Preset” with >+ or ?– and press OK.
The MANUAL PROGRAMME PRESET menu appears. (See Fig. 7.)

3 Using >+ or ?–, select the programme position (number button) to which you want to preset a channel, and press OK.

4 Select, if necessary the TV broadcast system or a video input source (EXT)) with >+ or ?–.

5 Then press OK. The CH position will be highlighted. (See Fig. 8.)

6 Using >+ or ?–, select C (to preset a regular channel), S (cable channel) or F (to tune in by frequency) and press OK.
The first element of the “CH” number will be highlighted.
If you have selected EXT in step 5, select the video input source with >+ or ?–. (See Fig. 9.)

There are two ways to preset channels, If you know the channel number, go to step “7-Manual,”
or
If you don’t know the channel number, go to step “7-Search.”

***7 Manual***

**-a** Select the first element of the “CH” number with >+ or ?– or the number buttons and press OK.
The second element of the “CH” number will be highlighted.

**-b** Select the second element of the number with >+ or ?– or the number buttons.
The selected number appears. (See Fig. 10.)

**-c** Press OK
The “SEARCH” position is highlighted and the selected channel is now stored. (See Fig. 11.)

**-d** Press OK until the cursor appears by the next programme position.

**-e** Repeat steps 3 to 7 to preset other channels.

***7 Search***

**-a** Press OK repeatedly until the colour of the SEARCH position changes.

**-b** Start searching for the channel with >+ (up) or ?– (down).
The CH position changes colour. (See Fig. 12.)
The CH number starts counting up or downwards. When a channel is found, it stops. (See Fig. 13.)

**-c** Press OK if you want to store this channel. If not, press >+ or ?– to continue channel searching.

**-d** Press OK until the cursor appears by the next programme position.

**-e** Repeat steps 3 to 7 to preset other channels.

**To tune in a channel by frequency**
After selecting F in step 6, enter three digits using the number buttons.

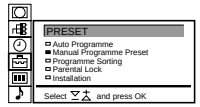



**Fig. 6**

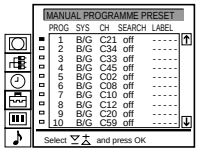



**Fig. 7**

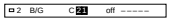



**Fig. 8**

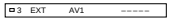



**Fig. 9**

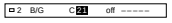



**Fig. 10**

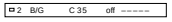



**Fig. 11**

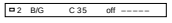
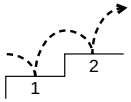



**Fig. 12**

**Fig. 13**

# Additional Presetting Functions



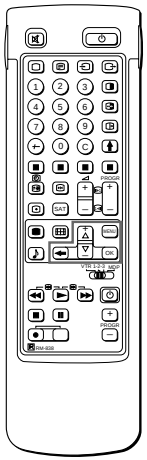

This section shows you additional presetting functions such as sorting or skipping programme positions, captioning a station name, manual fine-tuning, and using the parental lock.

### Before you begin

- Check that the Full Function side of the Remote Commander is visible.
- Locate the Menu operation buttons.

## Sorting Programme Positions

**PROGRAMME SORTING**



With this function, you can sort the programme positions to a preferable order.

**1** Press MENU to display the main menu.

**2** Select the symbol for "Preset" with >+ or ?– and press OK. The PRESET menu appears.

**3** Select "Programme Sorting" with >+ or ?– and press OK. The PROGRAMME SORTING menu appears. (See Fig. 14.)

4 Using >+ or ?–, select the programme position you want to move to another and press OK.
The colour of the selected position changes. (See Fig. 15.)

**5** Using >+ or ?–, select the programme position to which you want to move the channel of the programme position selected in step 4 and press OK. Now the programme positions have been sorted. (See Fig. 16.)

**6** Repeat steps 4 and 5 to sort other programme positions.

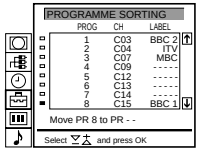



**Fig. 14**

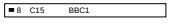



**Fig. 15**

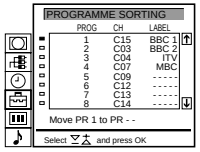



**Fig. 16**

**For higher programme positions**
The display scrolls automatically.

**If you have made a mistake**
Press @to go back to the previous position

**To go back to main menu**
Keep pressing @

**To go back to the normal TV picture**
Press MENU.





**INSTALLATION**

## Using "Further Programme Preset"

Using the menu "further Programme Preset" you can

**a)** in case of a strong local aerial signal (striped picture) attenuate the signal individually for each programme position (RF attenuator).

**b)** individually adjust and store the volume level of each channel (Volume offset).

**c)** in case of a strong sound signal (distorted sound), attenuate the sound signal for each programme position.

**d)** use the manual fine tuning to obtain a better picture reception, if the picture is distorted. Normally the AFT (automatic fine tuning) is operating.

**1** Press MENU to display the main menu.

**2** Select the symbol for "Preset" with >+ or ?– and press OK. The PRESET menu appears.

**3** Select "Installation" with >+ or ?– and press OK. The INSTALLATION menu appears.

**4** Select "Further Programme Preset" with >+ or ?– and press OK. The FURTHER PROGRAMME PRESET menu appears (See Fig. 17).

**5** Using >+ or ?– select the desired programme position and press OK once to select a) "ATT" (RF Attenuator), twice to select b) "VOL" (Volume offset), three times to select c) "IN-AMP" (Input Amplifier) or four times to select d) AFT (Automatic Fine Tuning). The selected item changes colour.

To adjust or change:

***a) RF attenuator (ATT)***
Using >+ or ?– select "On" for the selected programme position. Press OK to confirm the selection. Repeat step 5 to attenuate other programme positions.

***b) Volume offset (VOL)***
Using >+ or ?– you can adjust the volume level for the selected programme position within a range form –7 to +7.
Press OK to store the volume level.
Repeat step 5 to set the volume level for other programme positions.

***c) IN-AMP (input amplifier)***
Using >+ or ?– select "Off" for the selected programme position. Press OK to confirm the selection. Repeat step 5 to switch off the input amplifier for other programme positions.

***d) AFT***
Using >+ or ?– you can fine-tune the channel within a range from –15 to +15. Press OK to store the fine-tuned level. Repeat step 5 to fine-tune the other channels.

**6** Press MENU to return to the normal TV mode.

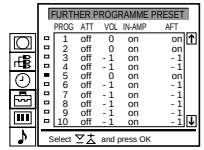



**Fig. 17**

**To reactivate AFT (Automatic Fine Tuning)**
Repeat from the beginnig and select "ON" in step 5.

MANUAL PROGRAMME PRESET

## Skipping Programme Positions

You can skip unused programme positions when selecting programmes with PROGR +/– buttons. However, the skipped programmes may still be called up when you use the number buttons.

1 Press MENU to display the main menu.

2 Select the symbol for "Preset" with >+ or ?– and press OK.
The PRESET menu appears.

3 Select "Manual Programme Preset" with >+ or ?– and press OK.
The MANUAL PROGRAMME PRESET menu appears. (See Fig. 18.)

4 Using >+ or ?–, select the programme position which you want to skip and press OK.
The "SYS" position changes colour.

5 Press >+ or ?– until "– – –" appears in the SYSTEM position. (See Fig. 19.)

6 Press OK. (See Fig. 20.)
When you select programmes using the PROGR +/– buttons, the programme position will be skipped.

7 Repeat steps 4 to 6 to skip other programme positions.

**If you have made a mistake**
Press @to go back to the previous position.

**To go back to main menu**
Keep pressing @

**To go back to the normal TV picture**
Press MENU.

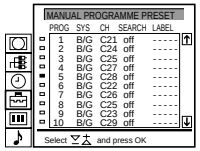



Fig. 18

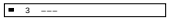



Fig. 19

Fig. 20

MANUAL PROGRAMME PRESET

## Captioning a Station Name

Programme names are usually automatically taken from Teletext if available, You can also "name" a channel or an input video source using up to five characters (letters or numbers) to be displayed on the TV screen (e.g. BBC1). Using this function, you can easily identify which channel or video source you are watching.

1 Press MENU to display the main menu.

2 Select the symbol for "Preset" with >+ or ?– and press OK.
The PRESET menu appears.

3 Select "Manual Programme Preset" with >+ or ?– and press OK.
The MANUAL PROGRAMME PRESET menu appears. (See Fig. 21.)

4 Using >+ or ?–, select the programme position you want to caption and press OK repeatedly until the first element of the LABEL position is highlighted.

5 Select a letter or number with >+ or ?– and press OK.
The next element will be highlighted.
Select other characters in the same way. If you want to leave an element blank, select - and press OK. (See Fig. 22.)

6 After selecting all the characters, press OK repeatedly until the cursor appears by the next programme position (at the left margin).
Now the caption you chose is stored. (See Fig. 23.)

7 Repeat steps 5 and 6 to caption names for other channels.

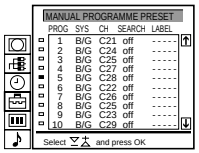



Fig. 21

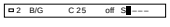



Fig. 22

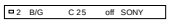



Fig. 23





PARENTAL LOCK

## Parental Lock

You can prevent undesirable broadcasts from appearing on the screen. We suggest you use this function to prevent children from watching programmes which you consider unsuitable.

1 Press MENU to display the main menu.

2 Select the symbol for "Preset" with >+ or ?– and press OK.
The PRESET menu appears.

3 Select "Parental Lock" with >+ or ?– and press OK.
The PARENTAL LOCK menu appears. (See Fig. 24.)

4 Using >+ or ?–, select the programme position you want to block and press OK.
The symbol appears in front of the programme number indicating that this programme is now blocked. (See Fig. 25.)

5 Repeat step 4 to block other programme positions.

**If you try to select a programme that has been blocked**
The message "LOCKED" appears on the blank TV screen.

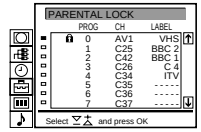



Fig. 24

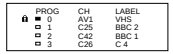



Fig. 25

### Cancelling blocking

1 On the PARENTAL LOCK menu, select the programme position you want to unblock with >+ or ?–.

2 Press OK.
The symbol disappears indicating that the blocking has been cancelled.

## Tuning in a Channel Temporarily

You can tune in to a channel temporarily, even when it has not been preset. Use the buttons on the Full-Function side of the Remote Commander.

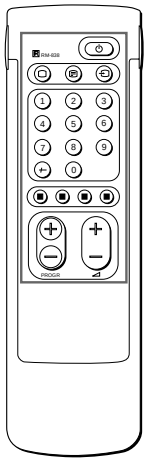
1 Press C on the Remote Commander. For cable channels, press C twice.
The indication "C" ( "S" for cable channels) appears on the screen. (See Fig. 26.)

2 Enter the double-digit channel number using the number buttons (e.g. for channel 4, first press 0, then 4).
The channel appears.
However, the channel will not be stored.

Fig. 26

# Operating Instructions

## Watching the TV



**If no picture appears when you depress f on the TV and if the standby indicator on the TV is lit, the TV is in standby mode.**
Press Oor one of the number buttons to switch it on.

This section explains the basic functions you use while watching TV. Most of the operations can be done using the simple side of the Remote Commander.

### Switching the TV on and off

#### Switching on

Depress f on the TV.

#### Switching off temporarily

Press f on the Remote Commander.
The TV enters standby mode and the standby indicator on the front of the TV lights up in red.

**To switch on again**

Press Q PROGR +/–, or one of the number buttons on the Remote Commander.

When the power is turned on again right after the power is turned off, the projection TV will enter standby mode with the f (standby) indicator flashing. After the set cools down, the power will come on.

#### Switching off completely

Depress f on the TV and indicator on the front of the TV lights up in amber.

### Selecting TV Programmes

Press PROGR +/– or press the number buttons.

#### To select a double-digit number

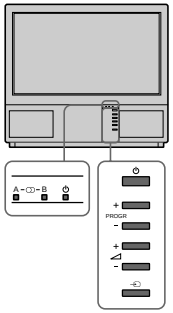
Press -/--, then the numbers.
For example, If you want to choose 23, press -/--, 2 and 3.

### Adjusting the Volume

Press ⊿ +/–.

### Operating the TV Using the Buttons on the TV

To select the programme number, press the PROGR +/– buttons.
To adjust the volume, press the ⊿ +/– buttons.
To select the video input picture, press the –⊂ button.
To reset picture and sound controls to the factory preset level (RESET function), press PROGR +/– buttons simultaneously.

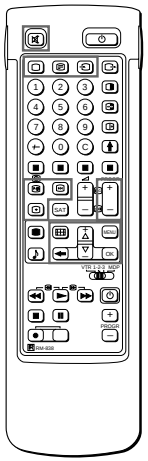






For details of the teletext operation, refer to page 20.

For details of the video input picture, refer to page 24.



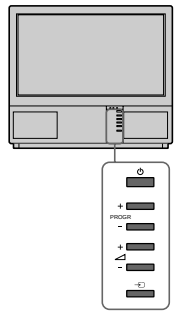
### Watching Teletext or Video Input

#### Watching teletext

1 Press _ to view the teletext.
2 For teletext operation, enter a 3-digit page number with the number buttons to select a page.
For fastext operation, press one of the coloured buttons.
For both operations, press V (PAGE + ) for the next page or U (PAGE – ) for the preceding page.
3 To go back to the normal TV picture, press O.

#### Watching a video input picture

1 Press –⊂ repeatedly until the desired video input appears.
2 To go back to the normal TV picture, press Q



### More Convenient Functions

Use the Full-Function side of the Remote Commander.

#### Displaying the on screen indications

- Press $ once to display all the indications. They will disappear after a few seconds.
- Press $ twice to have the programme number and label stay on screen. Press twice again to make the indications disappear.

#### Muting the sound

Press o.
To resume normal sound, press o again.

#### Displaying the time

Press #. This function is available only when teletext is broadcast.
To make the time display disappear, press # again.

#### Displaying the Programme Table

Press OK. A Programme Table will be displayed on the left side of the TV screen. (See Fig. 27.)

#### Selecting TV programmes

Press PROGR +/– or select the desired programme position using >+ or ?– and press OK.

To make the Programme Table disappear, press MENU.

#### Freezing the Picture

When watching the TV you have the possibility to “freeze” the picture. Press ⏭. Press the button again to return to the normal TV picture.

#### Changing the Screen format

Press ▦ repeatedly to change the Screen mode as follows:
4:3 (4:3 picture)
A Smart (imitation of 16:9 for 4:3 broadcast)
A Zoom (imitation of 16:9 for movies broadcast in cinemascopic format)
or
A Wide (for 16:9 broadcast).
See also page 19 for more information.

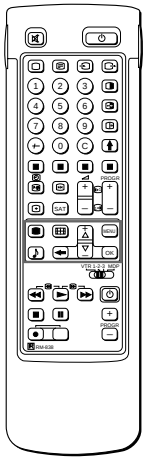
| | |
|---|---|
| 1 | BBC |
| 2 | SAT |
| 3 | TV5 |
| 4 | C02 |
| 5 | C15 |
| 6 | RTL |
| 7 | SKY |
| 8 | S34 |
| 9 | AV1 |
| 10 | MTV |

**Fig. 27**

# Adjusting and Setting the TV Using the Menu

**PICTURE CONTROL**

**SOUND CONTROL**



**If you have made a mistake**
Press @to go back to the previous position.
**To go back to the main menu**
Keep pressing @

**Notes**
- HUE is only available for NTSC colour systems.

**When watching a video input source with stereo sound**
You can select DUAL SOUND to change the sound.

## Adjusting the Picture and Sound

Although the picture and sound are adjusted at the factory, you can adjust them to suit your own taste. You can also select dual sound (bilingual) programmes when available or adjust the sound for listening with the headphones. Also you have the possibility to adjust the sound to your individual taste using the Graphic Equalizer and special Sound effects.

1 Press ⬬ (for picture) or ♪ (for sound) on the Remote Commander.

**or**

Press MENU and select the symbol ▮▮▮ for Picture Control or ♪ Sound Control, then press OK.
The PICTURE CONTROL or SOUND CONTROL menu appears. (See Fig. 28 or Fig. 29.)

2 Using >+ or ?–, select the item you want to adjust and press OK.
The selected item changes colour. (See Fig. 30.)

3 Adjust the setting with >+ or ?– and press OK.
The cursor appears beside the next item (at the left margin). (See Fig. 31.)
For the effect of each control, see the table below.

4 Repeat steps 2 and 3 to adjust other items.

5 Press MENU to return to TV picture.

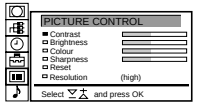



**Fig. 28**

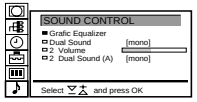



**Fig. 29**

**Fig. 30**

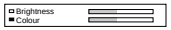



**Fig. 31**

### Effect of each control

| PICTURE CONTROL | Effect |
|---|---|
| Contrast | Less ··· More |
| Brightness | Darker ··· Brighter |
| Colour | Less ··· More |
| Hue | Greenish ··· Reddish |
| Sharpness | Softer ··· Sharper |
| RESET | Resets picture to the factory preset levels. |
| Resolution | Normal high: obtain a high quality picture |

| SOUND CONTROL | Effect |
|---|---|
| Graphic Equalizer | (See page 17 for more information) |
| Dual Sound | A: channel 1 B: channel 2 Stereo Mono |
| | The selected mode of the A-mB indicator on the TV lights up. |
| Headphones:<br>2 Volume | Less ··· More |
| 2 Dual Sound | A: channel 1 n B: channel 2 n PAP (if PAP is switched on you can select the PAP sound for the headphones) |
| | Stereo n Mono |





**Note:** The modifications made in "USER" mode will be stored. All other settings are reset to factory-set level when you change to another mode.

**TIMER**

**To switch off the timer**
Select "OFF" in step 3.

**To check the remaining time**
Press $.

**To go back to the normal TV picture**
Press MENU.

## Graphic Equalizer

Using this function you can individually adjust the sound by cutting and boosting selected frequencies. You can also select between the following modes:

Flat n Pop n Rock n Jazz n Vocal n User

1 Select "Sound Control" in the main menu, then select "Graphic Equalizer" using >+ or ?– and press OK.
The GRAPHIC EQUALIZER menu appears (See Fig. 32).

2 Press OK. The colour of "Mode" changes. Select the desired mode with >+ or ?– and press OK.

3 If you want to modify a mode, select the desired bar of a frequency band using >+ or ?– and press OK. The selected frequency changes colour. Using >+ or ?– adjust the level of frequency and press OK. In this way you can adjust all 5 graphic bars.

4 Press MENU to return to the normal TV mode.

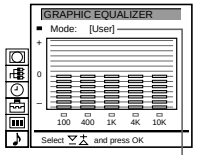



**Fig. 32**

Flat
Pop
Rock
Jazz
Vocal
User

## Using the Sleep Timer

You can select a time period after which the TV automatically switches into standby mode.

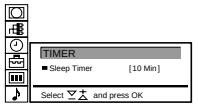
1 Using >+ or ?– select the symbol t for "Timer" and press OK.
The TIMER menu appears (see Fig. 33).

2 Press OK.
The time period option changes colour.

3 Select the time period with >+ or ?–.
The time period (in minutes) changes as follows:

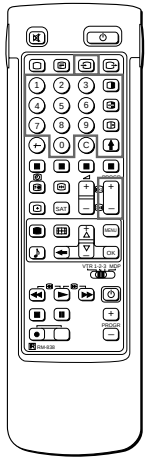
10 n 20 n 30 n 40 n 50 n 60 n 70 n 80 n 90

4 After selecting the time period, press OK.
The cursor moves back to the left margin and the timer starts counting.
One minute before the TV switches into standby mode, a message is displayed on the screen.




**Fib. 33**

# PAP (Picture and Picture)



With this function you can display two screens at the same time. In this way you can watch two TV programmes at the same time. Also you can watch or monitor the video output from any connected equipment (for example from a VCR) while watching TV or vice versa. For information about connection of other equipment, refer to page 23.

***Switching PAP on and off***
Press ◨ to display the screens in 8:9 format.

The PAP screen will be displayed next to the main TV screen.

The PAP screen will come from the source chosen when the TV was last used.

**To switch PAP off**
Press ◨ repeatedly.

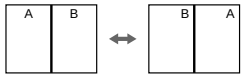
***Selecting PAP source***
Press >.

The symbol > will be displayed at the bottom, left-hand corner of the screen.

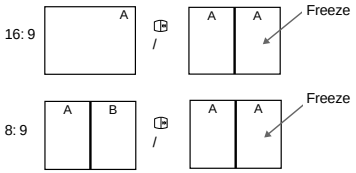
Press PROGR +/–, the number buttons or É to select the desired source for the PAP screen.

***Swapping screens***
Press ⇄.

The main screen will switch the picture with the PAP screen.



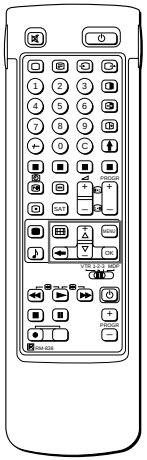

***Freezing the picture***
You have the possibility to "freeze" the picture of the PAP screen. Press ⧉ once to freeze and twice to return to the normal screen.




**Notes**
- RGB input source cannot be displayed in PAP.
- PAP is not available in the Zoom mode.
- The sound of the right screen is only available via the headphones.
- The picture quality of the TV screen and PAP may differ.







**When you want to select the screen mode**
You can also select the screen mode by pressing the ▦ button on the Remote Commander.

## Operating Screen Mode/PAP using the Menu

Using the Screen Mode menu you have the possibility to change the aspect ratio for the TV display for wide screen effects, operate the PAP Mode or reproduce the main picture image by image (Strobe function).

**1** Press MENU to display the main menu.

**2** Select the symbol ◰ for "Screen Mode" with >+ or ?– and press OK. The SCREEN MODE menu appears (See Fig. 34).

You have the choice among the following modes:
4:3 for normal ratio 4:3 (See Fig. 35).
Smart: imitation of wide screen effect (16:9) for 4:3 broadcasts (See Fig. 36).
Zoom imitation of wide screen effect (16:9) for movies broadcast in cinemascopic format (See Fig. 37).
**or**
Wide: for 16:9 broadcasts (See Fig. 38).

**a) Changing the Screen position (only for Zoom mode)**
When using the Zoom mode part of the picture at the top and bottom will be cut off. With the help of the function "Screen position" you can move the screen up- or downwards in order to see the cut-off part of the screen (e.g., to read the subtitles).

Using >+ or ?– select "Screen position" and press OK. The selected item changes colour. Using >+ or ?– adjust the screen position and press OK.

**b) Strobe Mode**
Using >+ or ?– select "Strobe" and press OK. Now the TV picture is displayed image by image, creating a slow motion effect (See Fig. 39). Using >+ or ?– select the speed of the motion (3 different speeds are available). Press OK to return to the normal TV mode.

**c) Switching PAP on and off**
Using >+ or ?– select "PAP" and press OK. Using >+ or ?– select "ON" to display the PAP screen in 8:9 format and "OFF" to switch if off and press OK.

**d) Freezing the PAP screen**
Using >+ or ?– select "Clip Board" and press OK.
Using >+ or ?– select "On" to freeze the PAP screen and "Off" to restore the normal picture.

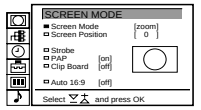


**Fig. 34**

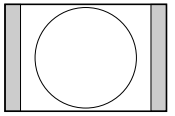


**Fig. 35**

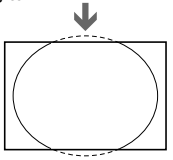


**Fig. 36**

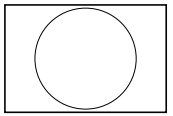


**Fig. 37**

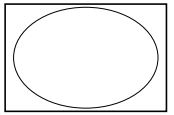


**Fig. 38**

## Auto 16:9

If you preset Auto 16:9 to ON and the 16 : 9 format signal is being transmitted, the screen mode automatically changes from any mode to the 16 : 9 mode. When the 16 : 9 format programme is finished, the screen mode automatically returns to the previous mode.

**1** Press MENU to display the main menu.

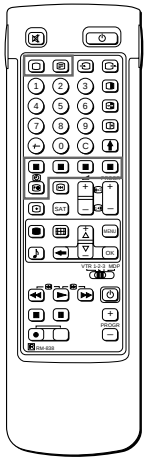
**2** Select the symbol ◰ for "Screen Mode" with >+ or ?– and press OK. The SCREEN MODE menu appears.

**3** Select "Auto 16:9" with >+ or ?– and press OK.

**4** Select ON or OFF with >+ or ?– and press OK.

**Fig. 39**

# Teletext



**Note**
Teletext errors may occur if the broadcasting signals are weak.

**With the simple side of the Remote Commander**
You can switch teletext on and off, operate Fastext, and directly select page numbers.

**Note**
Fastext operation is only possible, if the TV station broadcasts Fastext signals.

TV stations broadcast an information service called Teletext via the TV channels.Teletext service allows you to receive various information pages such as weather reports or news at any time you want. For advanced teletext operation, use the buttons on the Full-Function side of the Remote Commander.

## Direct Access Functions

### Switching Teletext on and off

1 Select the TV channel which carries the teletext broadcast you want to watch.

2 Press _ to switch on teletext.
A teletext page will be displayed (usually the index page).
If there is no teletext broadcast, "No text available" is displayed on the information line at the top of the screen.

**To switch teletext off**

Press Q.

### Selecting a teletext page

**With direct page selection**

Use the number buttons to input the three digits of the chosen page number.
If you have made a mistake, type in any three digits. Then re-enter the correct page number.

**With page-catching**

1 Select a teletext page with a page overview (e.g. index page).

2 Press OK. Using >+ or ?–, select the desired page. "Page Catching" will be displayed on the information line. Press OK.
The requested page will appear in a few seconds.
Press _ to resume normal teletext reception.

**Accessing next or preceding page**

Press g (PAGE+) or G (PAGE-).
The next or preceding page appears.

**Superimposing the teletext display on the TV programme**

- Press _ once in teletext mode or twice in TV mode.
- Press _ again to resume normal teletext reception.

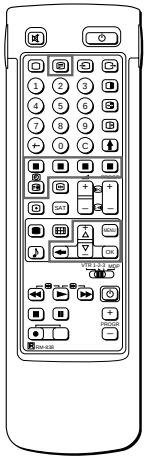
### Preventing a teletext page from being updated

- Press [ (HOLD). The HOLD symbol "[ " is displayed on the information line.
- Press _ to resume normal teletext reception.

### Using Fastext

With Fastext you can access pages with one key stroke.
When a Fastext page is broadcast, a colour-coded menu will appear at the bottom of the screen. The colours of this menu correspond to the red, green, yellow and blue buttons on the Remote Commander.
Press the corresponding coloured button on the Remote Commander which corresponds to the colour-coded menu. The page will be displayed after a few seconds.





**Note**
Some of the features may not be available depending on the teletext service.

Press OK to select "OFF" for the TIME PAGE setting to cancel the request.

## Using the Teletext Menu

This TV is provided with a menu-guided teletext system. When teletext is switched on, you can use the menu buttons to operate the teletext menu. Select the teletext menu functions in the following way:

1 Press MENU. The menu will be superimposed on the teletext display. (See Fig. 40.)

2 Using >+ or ?–, select the teletext function you want and press OK. (See Fig. 41.)

### USER PAGES/PRESET USER PAGES

See page 22 for information about presetting and operating the user pages.

### INDEX

The index will give you an overview of the contents of the teletext and the page numbers.

### TOP/BOTTOM/FULL

For convenient reading of a teletext page, you can enlarge the teletext display with the ability to scroll up and down. After having selected the function, an information line Top/Bottom/Full will be displayed. (See Fig. 42.)
Press >+ for "Top" to enlarge the upper half. For "Bottom" keep pressing ?–, to enlarge the lower half. Press OK for "Full" to resume the normal size.
Press _ to resume normal teletext reception.

### TEXT CLEAR

After selecting the function, you can watch a TV programme while waiting for a teletext page to be captured. (The symbol changes colour.) (See Fig. 43.)
Press _ to resume normal teletext reception.

### SUBTITLES

Your teletext service will inform you if a TV programme is subtitled. After having selected the function the subtitles will be displayed.

### REVEAL

Sometimes pages contain concealed information, such as answers to a quiz. The reveal option lets you disclose the information. After having selected the function, an information line "REVEAL ON/OFF" will be displayed. (See Fig.44.)
Using >+ or ?–, select ON to reveal the information or OFF to conceal it again.
Press _ to resume normal teletext reception.

### TIME PAGE

Your teletext service will inform you, if a time coded page is available. You may have a page (e.g., an alarm page) displayed at a certain time.

1 An information window will be displayed at the bottom of the page. Using >+ or ?– select "ON" and press OK.

2 To select the desired page, enter three digits for the page number (e.g., 452) using the number buttons.

3 To select the desired time, enter four digits for the desired time (e.g., 1800) using the number buttons. Press MENU.
The selected time is displayed at the top in the left-hand corner.
At the requested time, the page will be displayed.
Press _ to resume normal teletext mode.

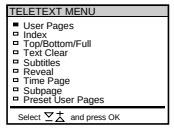



**Fig. 40**

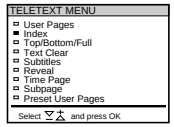



**Fig. 41**

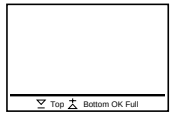



**Fig. 42**

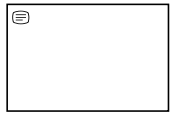


**Fig. 43**

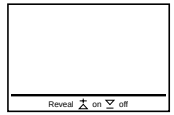



**Fig. 44**

**To cancel the request**
Select Subpage and press OK.

**If two broadcasting stations use the same Teletext**
You can preset one bank to 2 different programme positions.

### SUBPAGE

You may want to select a particular teletext page from several subpages which are rotated automatically. After having selected the function, an information line will be displayed.

To select the desired subpage, enter four digits using PROGR +/– or the number buttons (e.g., enter 0002 for the second page of a sequence).

## User Page Bank System

You can store up to 30 pages in the "Teletext page band system". In this way you have quick access to the pages you watch frequently.

### Storing pages

There are 5 "banks" (A to E) for 5 teletext stations. In each bank you can store 6 preferred pages (P1 to P6).

1 Press _ (if Teletext is not on already) and MENU to show the TELETEXT MENU display.

2 Select PRESET USER PAGES with >+ or ?– and press OK.

3 Select the desired bank with >+ or ?– and press OK. The cursor will go to the first position (P1) of the preferred pages.

4 Input the three digits of your first preferred page with the number buttons and press OK.
The cursor will go to the second position.

5 Repeat step 4 for the other 5 page numbers you want to preset. If you do not want to preset all 6 page numbers available, press OK without inserting any number. After having finished the presetting press OK repeatedly until the cursor appears besides the next bank at the left margin.

6 Select Allocate Bank with >+ or ?– and press OK.

7 Select the programme position for which you have preset pages with >+ or ?– and press OK. (See Fig. 45.)

8 Select the desired bank with >+ or ?– (Banks A to E are available) and press OK.

9 Repeat steps 3 to 8 for the other 4 banks available.

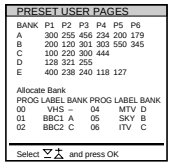



**Fig. 45**

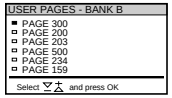



**Fig. 46**

### Displaying User Pages

1 Select MENU.

2 Select User Pages with >+ or ?– and press OK.
A table of the stored preferred pages will be displayed. (See Fig. 46)

3 Select the desired page with >+ or ?– and press OK. The page will be displayed after some seconds.

**or**

You can use the coloured buttons on the Remote Commander to have quick access to the first four User pages. Page 1 corresponds to the red button, P2 to the green one, P3 to the yellow one and P4 to the blue button.

To select the desired page press the respective coloured button while you are in TV mode. Now the Page number of this teletext page will appear in white at the top in the left-handed comer of the TV screen. When the page number changes colour, the page is available. Press the coloured button again to display the page.





# Connecting and Operating Optional Equipment

## Connecting Optional Equipment

You can connect optional audio-video equipment to this TV such as a VCR, video disc player, and stereo system.

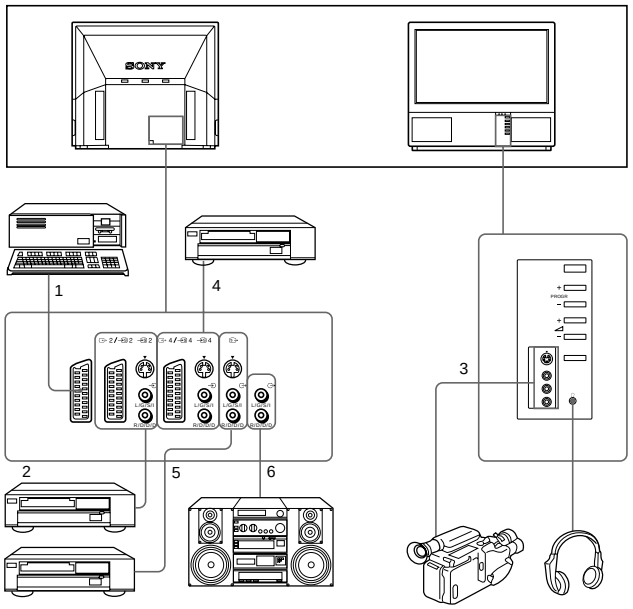
**To connect a VCR using the ) terminal**
Connect the aerial output of the VCR to the aerial terminal ) of the TV. We recommend that you tune in the video signal to programme number "0." For details see "Preset channels manually" on page 9.

**If the picture or the sound is distorted**
Move the VCR away from the TV.

**S/video Input (Y/C input)**
Video signals may be separated into Y (luminance or brightness) and C (chrominance) signals.
Separating the Y and C signals prevents them from interfering with one another, and therefore improves picture quality (especially luminance). This TV is equipped with 3 S Video input jacks through which these separated signals can be input directly.

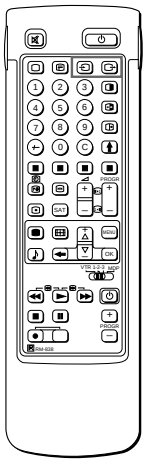
**When connecting a monaural VCR**
Connect only the white ⊣⊙ jack to both the TV and VCR.

**Note on playing video games:**
Games that involve shooting at the screen with an electronic gun or similar device cannot be played with this TV.




| Acceptable input signal | | Available output signal |
|---|---|---|
| 1 | Normal audio/video and RGB signal | Video/audio from TV tuner |
| 2 | Normal audio/video and S video signal | Video/audio from selected source |
| 3 | Normal audio/video and S video signal | No outputs |
| 4 | Normal audio/video and S video signal | Video/audio displayed on TV screen (monitor out) |
| 5 | No inputs | S/video/audio signal displayed on TV screen (monitor out) |
| 6 | No inputs | Audio signal |

**Selecting input with PROGR +/– or number buttons**
You can preset video input sources to the programme positions so that you can select them with PROGR +/– or number buttons. For details, see “Preset channels manually” on page 9.



## Selecting Input and Output

This section explains how to view the video input picture (of the video source connected to your TV), and how to select the output signal using direct access buttons or the menu system.

### *Selecting input*

Press ⇢ repeatedly to select the input source.
The symbol of the selected input source will appear.

⇢ 1

**To go back to the normal TV picture**

Press O.

### *Input modes*

| Symbol | Input signal |
|---|---|
| ⇢ 1 | Audio/video input through the ⇢ 1 connector |
| ⇢ | Audio/RGB input through the ⇢ 1 connector |
| ⇢ 2 | Audio/video input through the ⇢ 2/ ⇢ 2 connector |
| ⇢ 2 | Audio/S video input through the ⇢ 2/ ⇢ 2 or ⇢ 2 connector (4-pin connector) |
| ⇢ 3 | Audio/video input through ⇢ 3 and ⇢ 3 connector on the front |
| ⇢ 3 | S video input through the ⇢ 3 connector (4-pin connector) at the front |
| ⇢ 4 | Audio/video input through the ⇢ 4/ ⇢ 4 connector |
| ⇢ 4 | S video input through the ⇢ 4 / ⇢ 4 or ⇢ 4 connector(4-pin connector) |

You can also select the input mode using the ⇢ button on the TV.

### *Selecting the output*

The ⇢ 2 / ⇢ 2 connector outputs the source input from the other connectors.

Press ⇢ repeatedly to select the output.

The symbol of the selected output source appears.

1 ⇢

### *Output modes*

| Symbol | ⇢ 2/ ⇢ 2 connector outputs |
|---|---|
| 1 ⇢ | Audio/video signal from the ⇢ 1 connector |
| 2 ⇢ | Audio/video signal from the ⇢2/ ⇢ connector |
| 2 S⇢ | Audio/S video signal from the ⇢2/ ⇢ 2 or ⇢ 2 connector (4 pin) |
| 3 ⇢ | Audio/video signal from the ⇢ 3, ⇢3 connectors |
| 3 S⇢ | Audio/S video signal from the ⇢ 3, ⇢ 3 connectors |
| 4 ⇢ | Audio/video signal from the ⇢ 4/ ⇢ 4 connector |
| 4 S⇢ | Audio/S video signal from the ⇢ 4/ ⇢ 4 or ⇢ 4 connector (4 pin) |
| TV⇢ | Audio/video signal from the ) aerial terminal |





## Using AV Preset

Using this function you can preset the desired input source (e.g. ⇢ 1, RGB signal) to the respective AV input (AV 1 ⇢). In this way a connected VTR will automatically switch to the RGB signal.

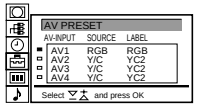



**Fig.47**

**1** Select the symbol for “Preset” with >+ or ?– and press OK.

**2** Select first “Installation”, then “AV Preset” with >+ or ?– and press OK.
The AV PRESET menu appears (See Fig. 47).

**3** Select the desired AV input with >+ or ?– and press OK.

**4** Select the desired source with >+ or ?– and press OK.
For the respective AV inputs you have the following possibilities:

| | | | |
|---|---|---|---|
| AV1 | RGB or AV | AV3 | YC3 or AV |
| AV2 | YC2 or AV | AV4 | YC4 or AV |

**5** If you want to name the AV input select “Label” using >+ or ?– and press OK. Select a letter or a number with >+ or ?– and press OK. The next element will be highlighted. Select other characters in the same way. If you want to leave an element blank, select - and press OK.
After having selected all the characters, press OK repeatedly until the cursor appears by the next AV input at the left margin.

**6** Repeat steps 3 to 6 for the other AV inputs.

### *Checking and selecting the input and output sources using the menu*

You can display the menu to see which input sources are selected for the TV screen and PAP screen, and which output source is selected. You can also select them on the menu display.

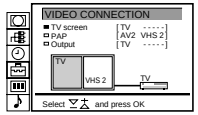



**Fig. 48**

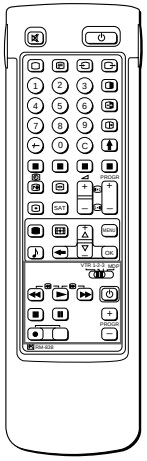
1 Select the symbol for “Video Connection” with >+ or ?– and press OK. The VIDEO CONNECTION menu appears. (See Fig. 48)
You can see which source is selected for the TV and PAP input, and for the output. If you want to select the input and output on this menu, go on to the next step.

**2** Select TV Screen (input source for the TV screen), PAP (input source for the PAP screen), or output (output source) with >+ or ?– and press OK. One of the source items changes colour.

**3** Select the desired source with >+ or ?–.
For details about each source, see the table on page 24.

**4** Press OK.
The selected source is confirmed, and the cursor appears.

**5** Repeat steps 2 to 4 to select the source for other inputs or outputs.



When recording when you use the a (record) button, make sure to press this button and the one to the right of it simultaneously.

## Remote Control of Other Sony Equipment

You can use the TV Remote Commander to control most of Sony remote-controlled video equipment such as: beta, 8 mm and VHS VCRs and video disc players.

**Tuning the Remote Commander to the equipment**

1 Set the VTR 1/2/3 MDP selector according to the equipment you want to control:

VTR1: Beta VCR
VTR2: 8 mm VCR
VTR3: VHS VCR
MDP: Video disc player

2 Use the buttons indicated in the illustration to operate the additional equipment.
If your video equipment is furnished with a COMMAND MODE selector, set this selector to the same position as the VTR 1/2/3 MDP selector on the TV Remote Commander.
If the equipment does not have a certain function, the corresponding button on the Remote Commander will not operate.



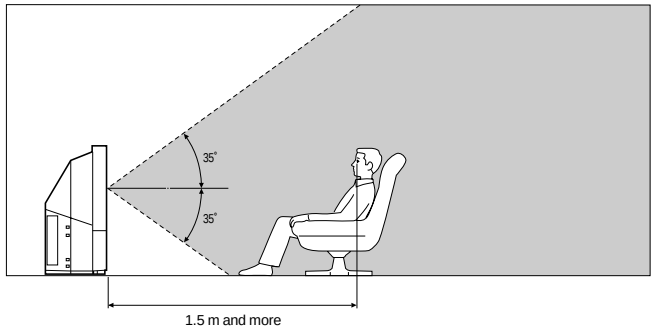


# For Your Information

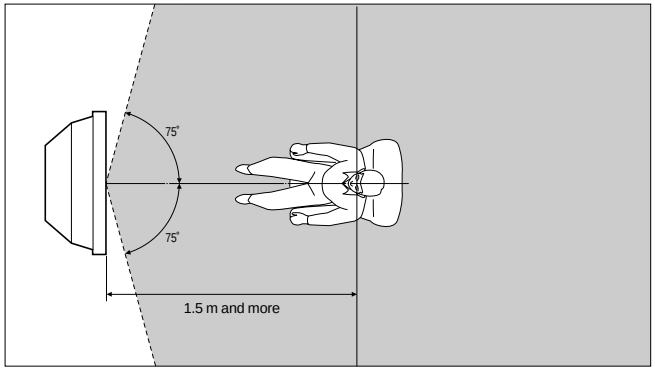
## Optimum Viewing Area

For the best picture quality, try to position the projection TV so that you can view the screen from within the areas shown below.

**Vertical viewing area**




**Horizontal viewing area**



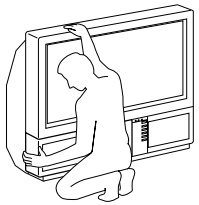
## Cleaning of the Air Filter

Periodic cleaning of the air filter is necessary. Clean the air filter once a month. When the filter becomes old and dust remains on the filter even after cleaning, replace it with a new one.

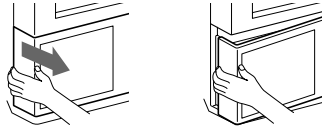
- Clean the air filter periodically. If you don't clean, it may cause internal heat build-up.
- Never use an air filter which is torn or has holes. Attach the filter firmly with six tabs. If dust enters the TV, the picture may become dark.

**1 Turn off the power and disconnect the power cord.**

**2 Remove the front panel.**

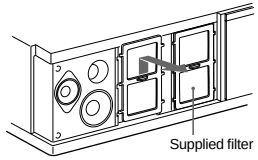


Remove the front panel without moving the TV.

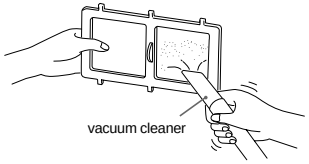


Grasping the side of the front panel with your fingers, pull it forward. Be careful not to catch your fingernails.

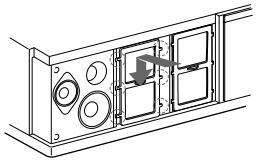
**3 Pull the filter upward and remove it.**




**4 Clean the dust with a vacuum cleaner.**




**5 Attach the filter.**
Attach the six tabs securely.



**6 Attach the front panel.**
Be careful not to damage the speaker.

**Notes**
- Attach the filter firmly. If it is not firmly attached, the power will not turn on.
- Remove the supplied filter in the same way as the attached filter.
- Consult your nearest Sony service center to obtain a new filter.



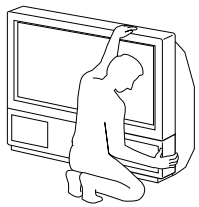
## Replacing the Lamp

When the lamp becomes dark or the picture colour is not normal, replace with a new lamp.

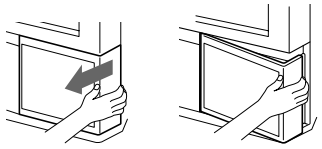
- Use the lamp XL-100E for replacement. If you use another lamp, it may cause damage to the TV.
- Do not remove the lamp except when replacing it.
- Before replacing the lamp, turn off the power and disconnect the power cord.
- Replace the lamp after it becomes cool. The front glass of the lamp remains 100 °C (212 °F) and more even 30 minutes after the power is turned off.
- Do not place the removed lamp in proximity to children or flammable material.
- Do not get the removed lamp wet, or insert objects inside the lamp. It may cause the lamp to explode.
- Do not place near metal or easily flammable objects, as this may cause fire. Also, do not put your hand inside the lamp compartment, as you may be burned.
- Attach the new lamp firmly. If it is not firmly attached, the picture may become dark.

**1 Turn off the power and disconnect the power cord.**
Replace the lamp 30 minutes or more after the power is turned off.
Prepare the new lamp.

**2 Remove the front panel.**

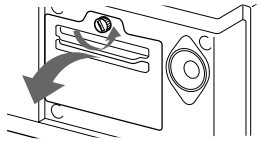


Remove the front panel without moving the TV.

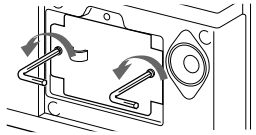


Grasping the side of the front panel with your fingers, pull it forward. Be careful not to catch your fingernails.

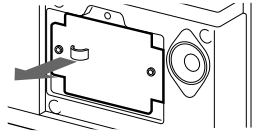
**3 Loosen the screw with the object such as a coin and remove the lamp cover.**



**4 Loosen two screws and pull out the lamp.**
The lamp is still too hot just after the power is turned off. Be careful that you don't touch the front glass or surrounding area of the lamp or the glass of the lamp compartment.



Loosen two screws with the supplied wrench.



Pull out the lamp by the handle.

**5 Attach the new lamp.**
Fasten two screws tightly.

**6 Attach the lamp cover.**
Fasten the screws tightly.

**7 Attach the front panel.**
Be careful not to damage the speaker.

**Notes**
- Do not touch or stain the front glass of the new lamp or the glass of the lamp compartment. If the glass become dirty, the picture quality may deteriorate or the lamp life may shorten.
- Attach the lamp cover firmly. If it is not firmly attached, the power will not turn on.
- When the lamp burns out, a noise is audible. This does not represent a damage.
- Consult your nearest Sony service center to obtain a new lamp.

## Troubleshooting

Here are some simple solutions to some problems which may affect the picture and sound.

| Problem | Solution |
|---|---|
| No picture (screen is dark), no sound | • Plug in the TV in.<br>• Press f on the TV (if f indicator is on, press O or a programme number on the Remote Commander).<br>• Check the aerial connection.<br>• Check if the selected video source is on. |
| Poor or no picture (screen is dark), but sound is OK | • Press ● to enter the PICTURE CONTROL menu and adjust the brightness, contrast and colour. |
| Poor picture quality when watching an RGB video source | • Press –⊙ repeatedly to select –⊙. |
| Good picture but no sound | • Press ◿ +.<br>• If o is displayed on the screen, press o. |
| No colour for colour programmes | • Press ● to enter the PICTURE CONTROL menu, select RESET, then press OK. |
| Remote Commander does not function | • The batteries are weak. |

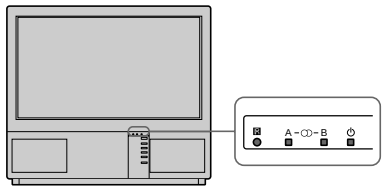
If you continue to have problems, have your TV serviced by qualified personnel. Never open the casing yourself.





## Warning Indicators

When a problem occurs, the indicator flashes as follows. Attempt the solution recommended for the given problem. When a problem occurs while operating the set, the f (standby) indicator flashes first and then warning will be indicated.



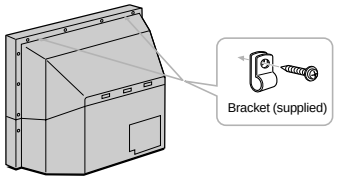

| Cause | Indicator flashing patterns |
|---|---|
| The lamp burns out or the quality of the lamp is deficient. | The B indicator flashes twice then A flashes once. Flashing continues in this manner. |
| The cover of the filter or the lamp is removed. | The B indicator flashes three times then A flashes once. Flashing continues in this manner. |
| The fan for cooling stops. | The B indicator flashes four times then A flashes once. Flashing continues in this manner. |
| Internal heat builds up. | The B indicator flashes five times then A flashes once. Flashing continues in this manner. |

If the lamp flashes in a way not described above, consult your nearest Sony service center.

## Stabilizing the Projection TV

After setting up, secure the projection TV to a wall, etc., with the supplied brackets, for safety purposes.

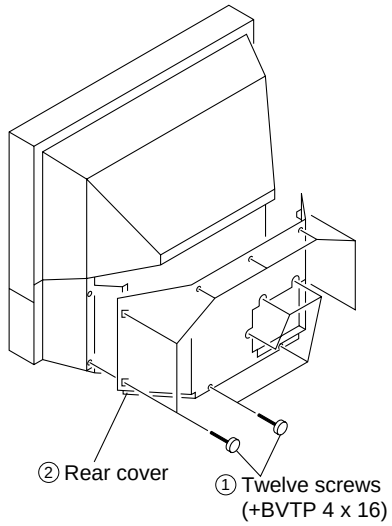
**1 Mount the two supplied brackets with the screws to the upper rear side of the projection TV.**



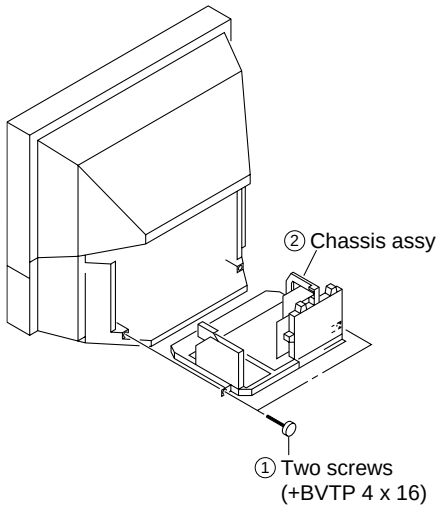

**2 Pass a strong cord or a chain through each bracket mounted in 1, and then secure to a wall or a pillar, etc.**

# SECTION 2
# DISASSEMBLY

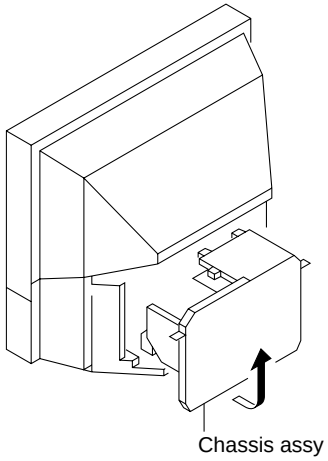
## 2-1. REAR COVER REMOVAL



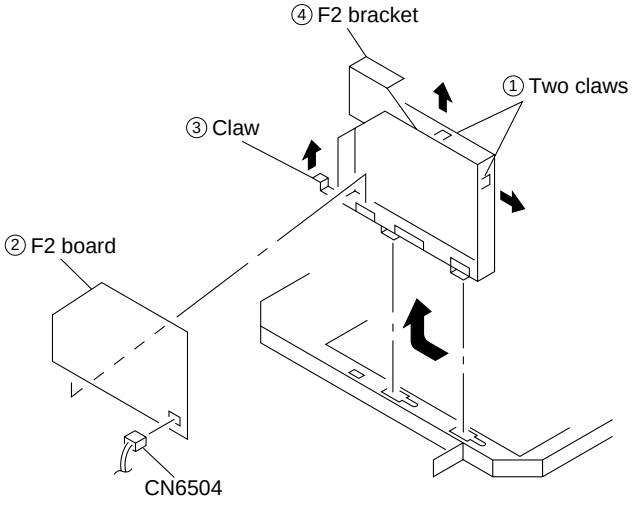

## 2-2. CHASSIS ASSY REMOVAL



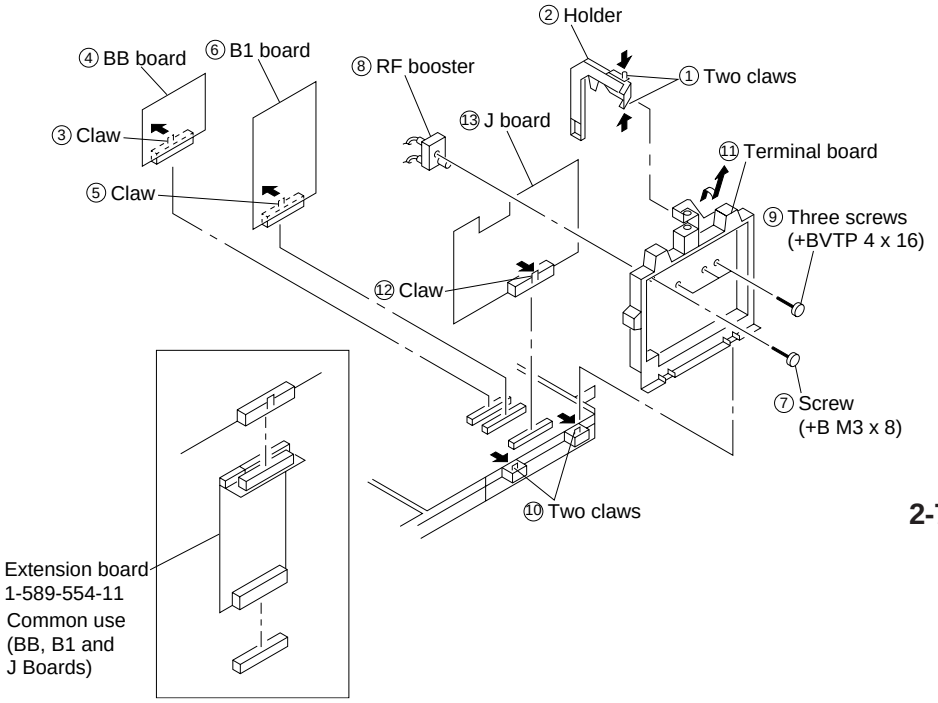

## 2-3. SERVICE POSITION



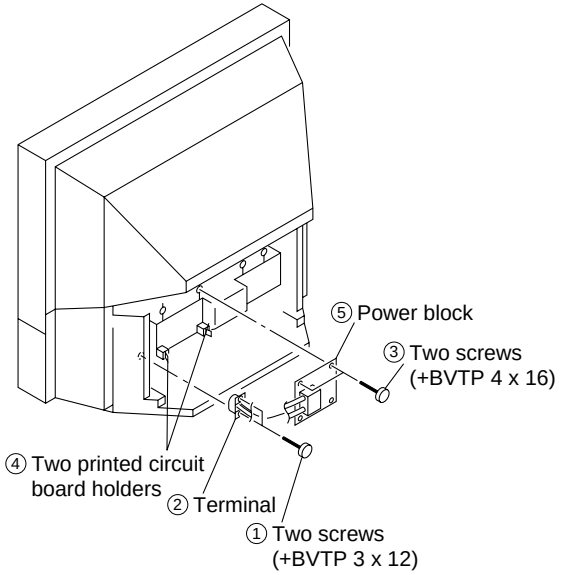

## 2-4. F2 BOARD AND F2 BRACKET REMOVAL



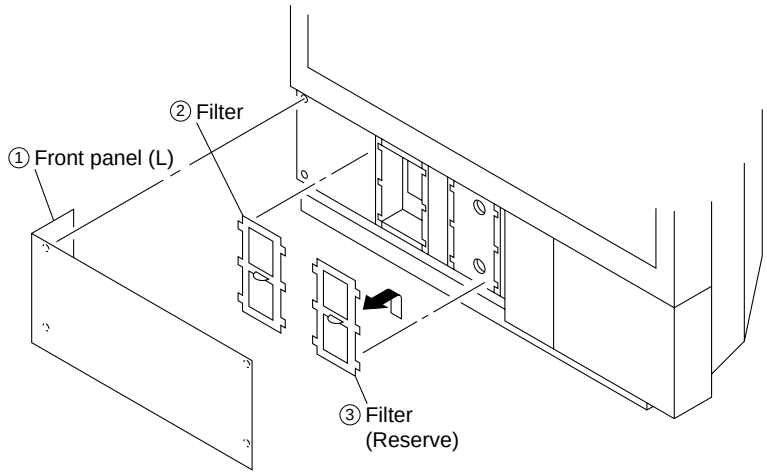
## 2-5. BB, B1 AND J BOARDS REMOVAL (EXTENSION BOARD)



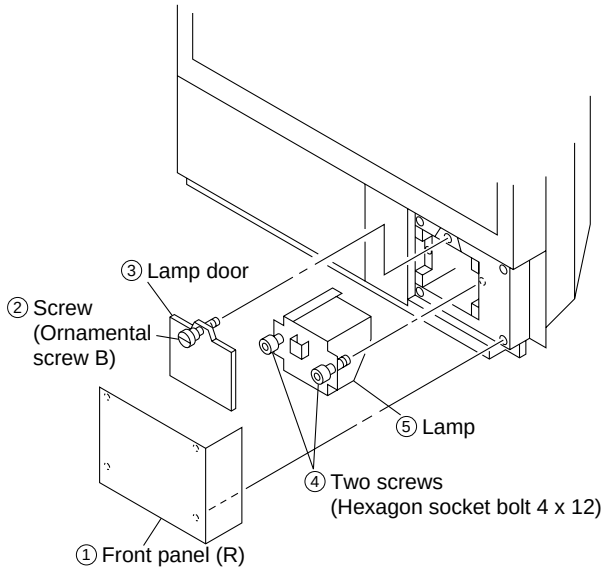

## 2-6. POWER BLOCK REMOVAL



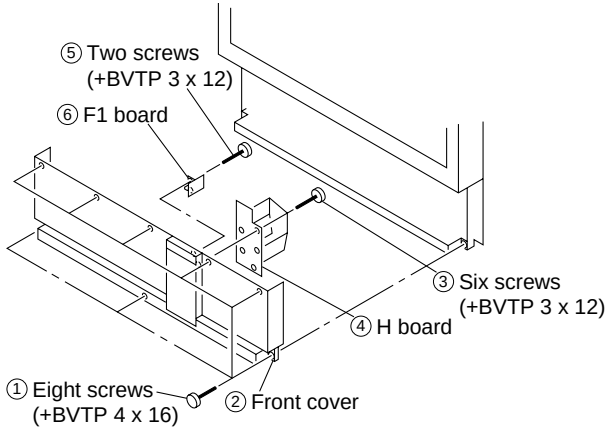

## 2-7. FILTER REMOVAL



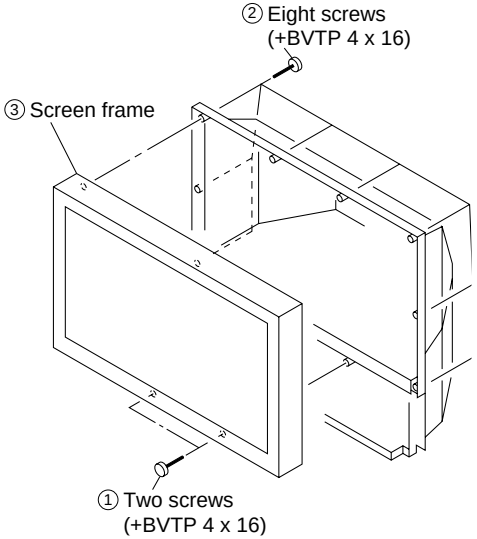
## 2-8. LAMP REMOVAL



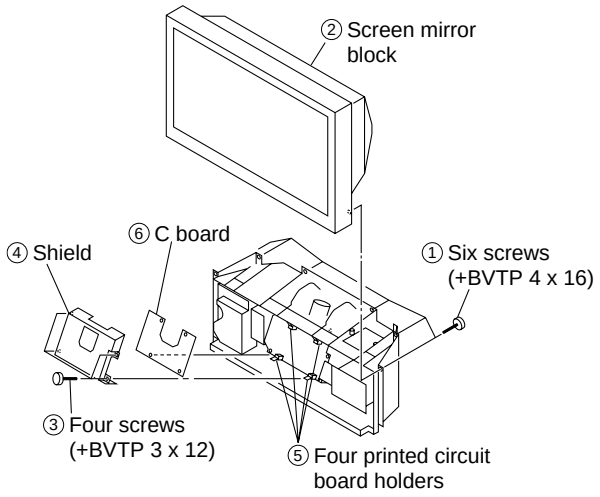

## 2-9. H AND F1 BOARDS REMOVAL



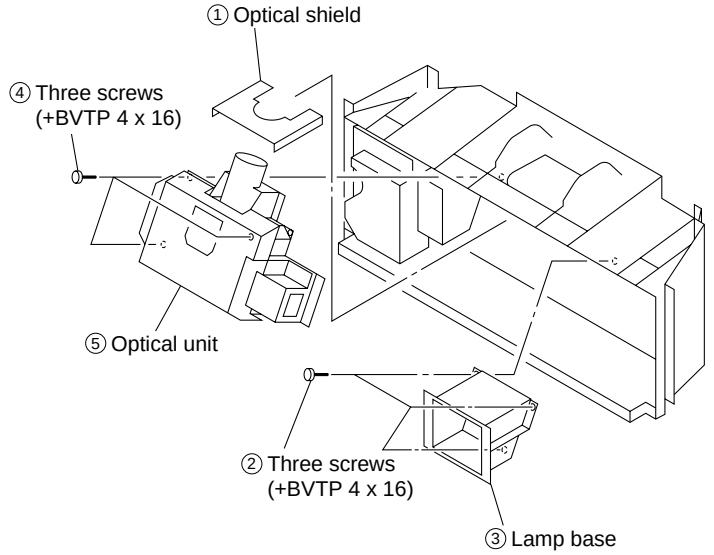

## 2-10. SCREEN FRAME REMOVAL



## 2-11. C BOARD REMOVAL




## 2-12. OPTICAL UNIT REMOVAL



# SECTION 3
# CIRCUIT ADJUSTMENTS

## 3-1. ELECTRICAL ADJUSTMENTS

Service adjustment to this model can be performed with the supplied remote commander, RM-838.

**HOT TO ENTER INTO SERVICE MODE**

1. Turn on the main power switch of the set while pressing the + (plus) and Ð (minus) buttons on the customer front panel.

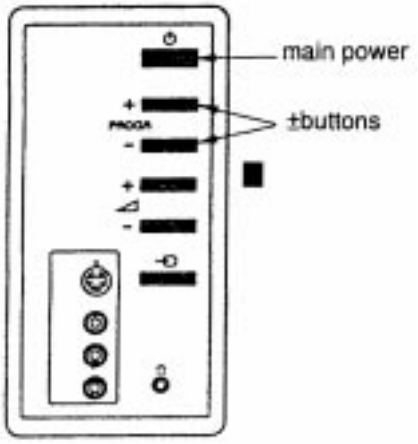



**Fig. 4-1**

2. ÒTTÓ will appear on the upper right corner of the screen.

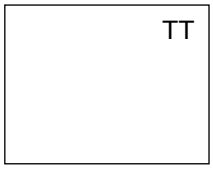



**Fig. 4-2**

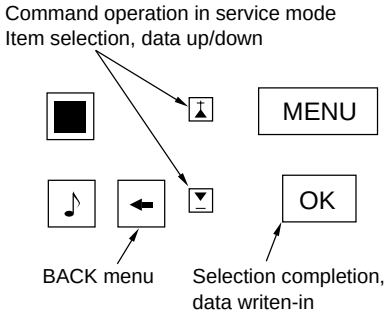



**Fig. 4-3**

3. Press 01 on the commander to get the menu on screen.

| Venus | V2.07 | AE-3 | 12/03/96 |
|---|---|---|---|

○ Init

| | |
|---|---|
| ○ Video Contr | CXA1839 |
| ○ Scan Con. | CXD2428 |
| ○ Video Proc M | CXD2030 |
| ○ Timing Gen. | CXD2412 |
| ○ RGB Interface | CXA2011 |
| ○ PAP | CXD2031 |
| ○ SRC | CXD2032 |
| ○ TDA6812 | TDA6812 |
| ○ PALPLUS | |

4. Press the ↕ and % buttons on the remote commander to select the adjustment item.
5. Press the OK button to procced to the next menu.
6. If the adjustment item is Video cont press the % button to move to Video cont then press OK button.
7. The Menu as indicated in Fig will appear on the screen.

**Video Cont. CXA1839**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | Sub BRT | [6] |
| 2 | Sub COL1 | [15] |
| 3 | Sub CON1 | [15] |
| 4 | PIC | [53] |
| 5 | HUE | [31] |
| 6 | COL | [31] |
| 7 | BRT | [31] |
| 8 | SHP | [31] |
| 9 | Sub HUE | [6] |
| 10 | D COL | [off] |
| 11 | SHP Lim | [off] |
| 12 | Age WHT | [off] |
| 13 | R-Y R | [8] |
| 14 | R-Y B | [13] |
| 15 | G-Y R | [11] |

8. Press the % button to move > to the adjustment item and press the OK button.
9. Press the ↕ and % buttons to change the data in order to comply with each standard.
10. Press the OK button to write data into memory.
11. Turn off the power to quit the service mode when adjustments have been completed.

**Scan Converter CXD2428**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | H-shift | [126] |
| 2 | V-shift | [14] |
| 3 | H-phase | [58] |
| 4 | V-phase | [31] |
| 5 | H-SZ-RD (40h) | [140] |
| 6 | H-SZ-RD (50h) | [3] |
| 7 | H-SZ-WR (41h) | [140] |
| 8 | H-SZ-WR (51h) | [3] |
| 9 | LN-DAT0 | [0] |
| 10 | MD-DAT0 | [3] |
| 11 | LN-DAT1 | [0] |
| 12 | MD-DAT1 | [0] |
| 13 | LN-DAT2 | [0] |
| 14 | MD-DAT2 | [0] |
| 15 | LN-DAT3 | [0] |

**Video Proc M CXD2030**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | DNR | [on] |
| 2 | DNR value | [5] |
| 3 | TA Sync C1p pls width | [16] |
| 4 | TB BGP position | [50] |
| 5 | TD CLP position | [25] |
| 6 | Foto CD SW | [off] |
| 7 | BLK porch pos | [16] |
| 8 | NTSC TD BGP pos | [25] |
| 9 | PAL TD BGP pos | [25] |
| 10 | Not Secam TB BGP pos | [50] |
| 11 | Secam TB BGP pos | [50] |
| 12 | 358 NR Level | [3] |
| 13 | 443 NR Level | [5] |
| 14 | Color detect Mode | [0] |
| 15 | Extern Y/C | [off] |

**RGB Interface CXA2011Q**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | Drive Level | [48] |
| 2 | Sig Sel | [0] |
| 3 | Sub Bright | [23] |
| 4 | Sync Sel | [0] |
| 5 | Sync SW | [3] |
| 6 | ABL SW | [off] |
| 7 | AKB-T | [off] |
| 8 | HD Sync | [on] |
| 9 | R Drive | [31] |
| 10 | G Drive | [31] |
| 11 | B Drive | [31] |
| 12 | R Cutoff | [124] |
| 13 | G Cutoff | [124] |
| 14 | B Cutoff | [123] |
| 15 | Gamma Level | [0] |

**TIMING GENERATOR CXD2412QA**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | SLSH1 | [on] |
| 2 | SLSH2 | [off] |
| 3 | SLSH3 | [on] |
| 4 | BH Bias | [252] |
| 5 | RH Bias | [252] |
| 6 | BL Bias | [112] |
| 7 | RL Bias | [122] |

**PAP CXD2031**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | Main phase WR start | [52] |
| 2 | Sub phase WR start | [20] |
| 3 | Main RD start | [43] |
| 4 | Brightness sub | [8] |
| 5 | Twin pic | [on] |
| 6 | WR inhibit1 | [off] |
| 7 | WR inhibit0 | [off] |
| 8 | RD inhibit0 | [off] |

**SRC CXD2032**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | YCD | [0] |
| 2 | YDF | [0] |
| 3 | COF | [0] |
| 4 | Reference clamp | [0] |
| 5 | Offset | [off] |
| 6 | IIR latch | [off] |
| 7 | BGP Sync SW | [0] |
| 8 | Clamp | [off] |
| 9 | 50/60 | [off] |
| 10 | Reference clamp | [32] |
| 11 | Offset Level | [0] |
| 12 | System Delay | [9] |
| 13 | Offset Level | [0] |
| 14 | FVSW | [on] |
| 15 | Mask SW | [on] |

**TDA 6812**

| Item No. | Adjustment item | Data Amount |
|---|---|---|
| 1 | Stereo-sep | [15] |
| 2 | Pre-Volume | [2] |
| 3 | Treble-offset L/R | [0] |
| 4 | Bass-offset L/R | [0] |
| 5 | Treble-offset C/S | [255] |
| 6 | Bass-offset C/S | |

## 3-2. TEST MODE

Is available by pressing the Test button twice, OSD ÒTTÓ appears. The functions described below are available by pressing the t numbers. To release Test Mode 2, press 0, 10, 20...twice or switch the TV into Standby Mode. Pressing the two Local Control but and Ð) during Power ON will also switch into ÒTTÓ mode.
In TT mode, it is possible to remove the Menu from the screen by pressing the Speaker Off button once. Pressing the Speaker OFF a second time will cause the menu to reappear. The Function is kept even when the menu is not displayed!!

| | |
|---|---|
| 00 | Switch back to normal mode - TT mode off |
| 01 | Switch service menu on |
| 02 | no function |
| 03 | Set Volume to 30 % |
| 04 | Service Menu in “Service Mode” |
| 05 | Service Menu in “Production Mode” |
| 06 | Set Volume to 80 % |
| 07 | Aging mode |
| 08 | Shipping condition (Production request)<br>To ensure that all TV sets leave the Production with the same pressettings. Programme 1 is selected, AV IN is set to AV1, AV Out is set to TV Out, Volume and HP Volume is set to 35 %, Resolution is set to high, Format is set to 4:3, Pip is set to Top Left position, Pip is switched off, TT mode is switched off, all analogue values are set to the reset setting, space Sound - Equalizer - Loudness = off, DNR off, Dig. Mode = 1, Wide Zoom Mode for W28 models, Menu Language Reset, Prog. Pointer table reset Non Interlace is allowed in Text mode. |
| 09 | Language reset. With this function the Menu Language is set to “unselected” (NVM Bank OAAH Adress ODCH). The value for the Language Group is not overwritten (Selection West/East/Common).<br>The Language Menu appears now automatically when the TV set is switched ON as long as no new language is selected. |
| 10 | The TT number will be deleted.<br>All numbers with 0 (10, 20 30, 40, 50, 60, 70, 80, 90) will reset the TT number. A new number can be selected. TT display is kept |
| 11 | Direct access to Balance. With Cursor Up/Down the Balance can be controlled (w/o OSD, Menu display) |
| 12 | Direct access to Hue. With Cursor Up/Down the Hue can be controlled (w/o OSD, Menu display) |
| 13 | Display of Software Version and TV set configuration |
| 14 | Production Info Display |
| 15 | Read factory setting from ROM (Program code) and store this data at Last Power Memory data location (The previous last power memory data is overwritten)<br>AE3 has 3 packages of Analogue data:<br>1. Last Power memory data. This data is sent continiously to the corresponding IC’s (TDA1839, SC, TDA6812) with this data the TV picture/sound appears.<br>2. Reset data. By pressing “Reset” in the menu this data is transfered from Reset Data location to the Last Power data location in the NVM.<br>That means the previous Last Power Memory Data is overwritten by the Reset data last Power memory and Reset data are now the same. |

| | |
|---|---|
| 15 | 3. Factory fixed data. In the ROM code of the micro processor are also analogue datas which are fixed (ROM can’t be changed) |
| 16 | Save actual Last Power Memory data at Reset Data location (The previous Reset data is overwritten) |
| 15/16 | With these two functions, it is possible to preset user defined Reset values (just TT16) or to preset factory defined Reset values (first TT15 then TT16) |
| 17 | This functions presets the Labels for the AV sources: The Labels are AV1, RGB, AV2, YC2, AV3, YC3, AV4, YC4. |
| 18 | Text possible On/Off selection of Text (toggle function) |
| 19 | Direct access to Stereo Separation<br>With cursor Up/Down the Stereo separation can be adjusted (w/o OSD, Menu display) |
| 20 | see TT10 |
| 21 | no function |
| 22 | Operating Timer and Error Monitor display |
| 23 | Direct access to Sub Brightness Adjustment<br>With cursor Up/Down the Sub BRT can be adjusted (w/o OSD, Menu display) |
| 24 | Direct access to Sub Color. With Cursor Up/Down the Sub Color can be adjusted. |
| 25 | Status menu display (SubController, CXA1840 Status, Main Controller.) |
| 26 | Text Character set selection (Char set 06 -> West Europe) |
| 27 | Text Character set selection (Char set 38 -> East Europe) |
| 28 | Text Character set selection (Char set 40 -> West Europe) US English |
| 29 | Text Character set selection (Char set 55 -> West Europe) Turkish |
| 30 | see TT10 |
| 31 | Increase V-Aperture |
| 32 | Decrease V-Aperture |
| 33 | no function |
| 34 | no function |
| 35 | no function |
| 36 | Mtx Register 112 = intern display clock |
| 37 | Mtx Register 112 = extern display clock |
| 38 | Automatic selection of Screen Modes: 4:3 -> Zoom -> Zoom up -> Zoom down -> smart -> wide. |
| 39 | Reset Programme Table (NVM Bank 0ACH) The sorting of programmes in “Programme Sorting Menu” is reset. |
| 40 | see TT10 |

| | |
|---|---|
| 41 | Picture min |
| 42 | no function |
| 43 | no function |
| 44 | no function |
| 45 | Set NVM to Protect mode (Bank 0AEH Adr. 0FFH write with 0) |
| 46 | IR Channel Pressetting Mode. The channel pressetting can be done by a Special IR transmitter (Deatiled INFO about IR transmitter from SEC)<br>Sequence: TT46 -> --PR Number select display appears Select Prog. No from where the channel shall be stored.<br>--> Now TV is waiting for IR sequence <--<br>--> If no IR transmission starts TT46 is released after 20 secs <-- !Note: When TT46 is active, any transmission will be interpreted as PROG data ! |
| 47 | Direct access to Headphone Source Selection with Cursor Up/Down the Source of Headphone can be selected (w/o OSD, Menu display) |
| 48 | no function |
| 49 | The EEPROM Testbyte is erased. After Power OFF -> ON the complete EEPROM data (exept channel tables) are overwritten. EEPROM Protection byte is set to 0 protection mode |
| 50 | see TT10 |
| 51 | Strobo mode is activated. |
| 52 | no function |
| 53 | no function |
| 54 | no function |
| 55 | MTX Slicer Control “Low Pass” (only Sys L)) |
| 56 | MTX Slicer Control “No Compensation” |
| 57 | Megatext Service Menu ON |
| 58 | MTX Small Framing Code Window |
| 59 | MTX Wide Framing Code Window |
| 60 | see TT10 |
| 61 | no function |
| 62 | ACI disable. |
| 63 | ACI enable. |
| 64 | Reset all IIC Slave commands |
| 65 | Reset stored error codes in NVM. |
| 66 | Reset for Sub Controller. |
| 67 | Direct access to Headphone Volume. With cursor Up/ Down the Headphone volume can be controlled (w/o OSD, menu display) |
| 68 | ignore errors. |
| 69 | reset ignore errors (show errors) |
| 70 | see TT10 |
| 71 | Picture Rotation Function On/Off toggle. |
| 72 | no function |
| 73 | Megatext RGB textlevel one step decreased |
| 74 | Megatext RGB textlevel one step decreased |
| 75 | reserved for TT command Network ID, not inplemented yet |
| 76 | CXD2030 Default data setting. |
| 77 | CXD 2031 Default data setting. |
| 78 | CXD 2032 Default data setting. |
| 79 | CXD 2428 Default data setting. |
| 80 | see TT10 |
| 81 | Default data setting CXA2011 |
| 82 | no function |
| 83 | no function |
| 84 | CXA 1839 Default data setting |
| 85 | Default data setting CXD 2412 |
| 86 | no function |
| 87 | Default data setting CXD 2030 |
| 88 | Text character set Russian/East |
| 89 | Text character set Russian/West |
| 90 | see TT10 |

## 3-3. ERROR MONITOR AND DETECTION

In the menu ÔError MonitorÕ, information about the error status of the set is displayed.

- ¥ Actual operating time
- ¥ Last five errors which are stored in the NVM
- ¥ Actual error

| Erroe Monitor |
|---|
| Operating Time<br>000355 h 35min<br><br>Saved Errors<br>1. 40h=D1 Board<br>2. 60h=Q Board<br>3. 70h=T Board<br>4. 00h=no error occured<br>5. 00h=no error occured<br><br>Actual Error<br>-> 00h=no error occured |
| to reset the NVM press ÔTTÕ 65 |

Additionally the Error Reader can be connected to the service connector to read out the actual errors.

The device check itself is active while the TV set is running out of stand-by mode. The devices are checked by sending a start sequence and if there is no acknowledgement back from the devices it is regarded as an error. Each device is checked three times and if at every attempt there is no reply from the relevant device an error is given. To read the error codes press ÔTTÕ followed by 22 on the commander to view the Error Monitor menu.

To reset the error codes in the NVM press ÔTTÕ followed by 65 on the remote commander.

**TABLE OF ERROR CODES**

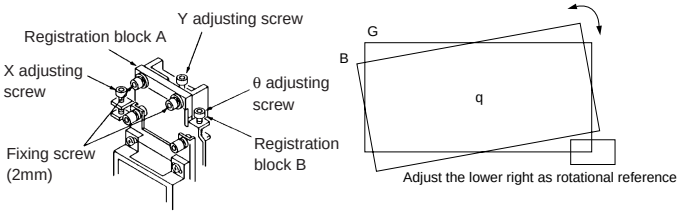
| Error Code | Device | Description | Board |
|---|---|---|---|
| 000h | no device | no error has occured | – |
| 001h | IIC 1 and IIC 2 | IIC 1 and IIC 2 blockaded | – |
| 002h | IIC 1 | IIC 1 is blockaded | – |
| 003h | IIC 2 | IIC 2 is blockaded | – |
| 010h | A Board | A Board is defective | – |
| 020h | A1 Board | A1 Board is defective | – |
| 030h | BX-Board (B, B1, B2) | B, B1, or B2 Board is defective | – |
| 040h | D1 Board | D1 Board defect | – |
| 050h | J Board | J Board defect | – |
| 060h | Q Board | Q Board defect | – |
| 070h | T Board | T Board defect | – |
| 011h | CXP85332 | No response from the Subcontroller | A |
| 012h | ST24C16 | No response from the NVM | A |
| 013h | SDA5273 | No response from the Megatext IC | A |
| 014h | TDA6812 | No response from the Sound Processor | A |
| 015h | SAA7283 | No response from the Nicam Decoder | A |
| 016h | UV916H | No response from the Main Tuner | A |
| 017h | CXA1839Q | No response from the Video Controller | A |
| 018h | CXA1840 | No response from the CRT Driver | A |
| 019h | RGB8443 | No response from RGB/ YUV | A |
| 021h | TDA6622 | Audio processor of the Center and Surround channel in the case of Dolby Prologic does not respond. | A1 |
| 022h | TDA7317 | No reponse from the Equalizer. | A1 |
| 031h | CXD2030R | No response from the Digital Video Processor. | B/B1 |
| 032h | CXD2031R | No response from the Twin Picture IC. | B1 |
| 033h | CXD2032R | No response from the Digital Sampling Rate Converter. | B/B1 |
| 034h | CXD2033R | No response from the Picture in Picture IC. | B |
| 035h | CXD2035R | No response from the Aspect Converter. | B/B1 |
| 036h | TDA9160 | No response from the Chroma Decoder. | B/B1 |
| 037h | TDA9145 | No response from the Chroma Decoder (on French models only.) | B2 |
| 041h | CXA1526 | No response from the Convergence IC. | D1 |
| 051h | CXA1855 | No response from the AV-Switch | J |
| 061h | 83C65202 | No response from the Local Controller. | Q |
| 071h | UV1316/ TSA5526 | No response from the Subtuner. | T |
| 072h | CXA1875 | No response from the Port Expander. | T |

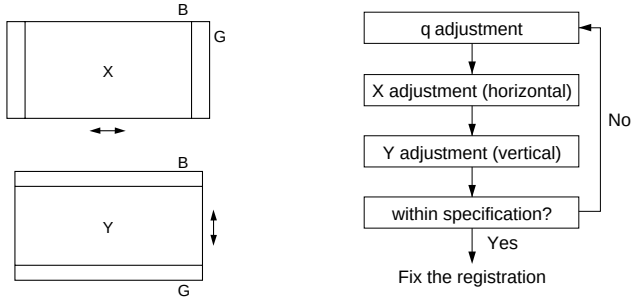
## 3-4. REGISTRATION ADJUSTMENT

Preparation
¥ Aspect ratio ..... 16:9
¥ Image quality adjusting menu ..... Standard

Note: In adjusting the registration, the registration fixing block is secured with an adhesive, and therefore the PANEL BLOCK ASSY is required.
¥ Tools and Kit
Hex. wrench keys (2 mm, 1.5 mm)
PANEL BLOCK ASSY (Refer to SECTION 5. EXPLODED VIEWS)

1. Entering G monochrome crosshatch signal or B monochrome crosshatch signal, adjust the registration between B and G. Overlay B image on the G image as shown, while turning the registration adjusting screws in the order of θ → X → Y.
2. Enter full black signal to the B panel, then the R monochrome crosshatch signal to adjust the registration of R and G.
3. Tighten tentatively the registration fixing screws on the R and B panels, and secure the registration blocks A and B with an adhesive.
4. Tighten the registration fixing screws.



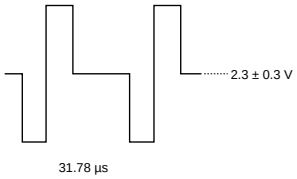

### LENS FOCUS ADJUSTMENT

1. Loose screw of LENS focus.
2. Adjust LENZ focus so that best focus.

## 3-5. C BOARD ADJUSTMENT

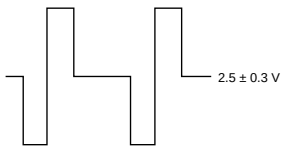
1. PLL f0 Adjustment
(1) WIDE Mode
1) Change to ÒWIDE ModeÓ.
2) Input to monoscope signal.
3) Change ÒH. SYNC inputÓ CN5202 1pin input to open (no signal).
4) Connect 100Ω resister between 2pin of IC5004 and TP5009, then connect frequency counter to 1pin of IC5004.
5) Turn L5002 and adjust to 13.67± 0.1 MHz.
6) Input H. SYNC for PAL double speed.
7) Confirm that the waveform for TP5007 <RPD2> shall be Fig.

13.67± 0.1 MHz

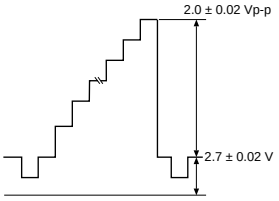



(2) 4.3 Mode
1) Change to Ò4 : 3 ModeÓ.
2) Input to monoscope signal.
3) Change H. SYNC CN5202 1pin input to open (no signal).
4) Connect 100Ω resister between 2pin of IC5004 and TP5009, then connect frequency counter to 1pin of IC5004.
5) Turn L5004 and Adjust to 10.22± 0.05 MHz.
6) Input H. SYNC for PAL double speed.
7) Confirm that the waveform of TP5004 <RPD1> shall be Fig.

10.22± 0.05 MHz

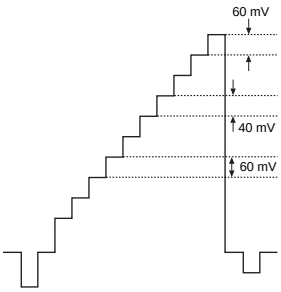



2. r curve adjustment
(1) Change to ÒWIDE ModeÓ.
(2) Input PAL double speed signal 10 step.

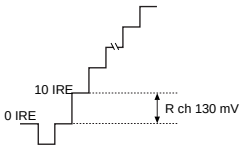


(3) R ch

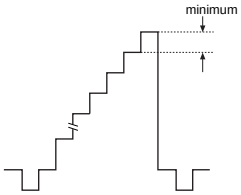
1) Connect Oscilloscope to TP5201 <R>.
2) Add 2.25± 0.02 V to TP5211 <RLBS>
   3.95± 0.02 V to TP5210 <RHBS>
   by DC power supply.
3) Confirm that the signal level under 10 IRE and above 80 IRE is increased with above condition.




4) Adjust RV5201 <RL, GAIN> so that signal level of Ò0 IRE ~ 10 IREÓ might be 130 ± 10 mV.



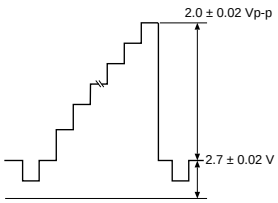

5) Turn RV5209 <RH GAIN> to the left direction by aplox 150° and adjust so that Ò90 IRE ~ 100 IREÓ might be minimum.



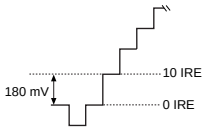

(In Case that Ò100 IRE ~ GNDÓ is above 3.7 V ; Adjustment is N.G)

(4) G ch

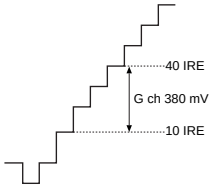
1) Connect Oscilloscope to TP5401 <G>.
2) Add 2.25± 0.02 V to TP5411 <GLBS>
   3.95± 0.02 V to TP5410 <GHBS>
   by DC power supply.
3) Confirm that the signal level under 10 IRE and above 90 IRE is increased with above condition.




4) Turn RV5401 <GL, GAIN> to the right direction and adjust so that Ò0 IRE ~ 10 IREÓ might be 180 ± 10 mV.

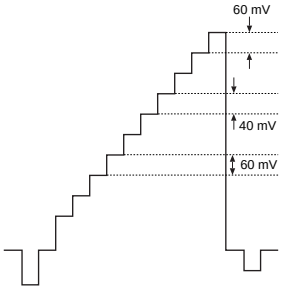



5) Change TP5411 <GLBS>, TP5410 <GHBS> to OPEN.
6) Turn RV5402 <GL, BIAS> to the left direction and adjust so that Ò10 IRE ~ 40 IREÓ might be 380 ± 10 mV.

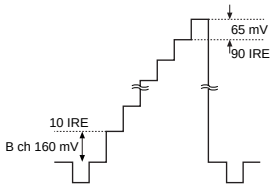



(5) B ch

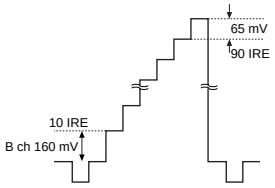
1) Connect Oscilloscope to TP5601 <B>
2) Add 2.20± 0.02 V to TP5611 <BLBS>
   3.95± 0.02 V to TP5610 <BHBS>
   by DC power supply.
3) Confirm that the signal level under 10 IRE and above 80 IRE is increased with above condition



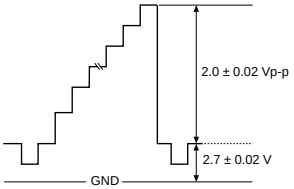

4) Turn RV5601 <BL, GAIN> to the right direction and adjust so that Ò0 IRE ~ 10 IREÓmight be Ò160 ± 10 mVÓ



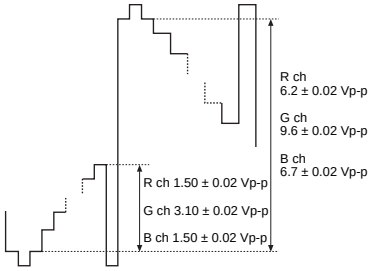
5) Turn RV5609 <BH, GAIN> and adjust so that Ò90 IRE ~ 100 IREÓ might be Ò65 ± 10 mVÓ
(RV5609 can be adjusted at mechanical center of the VR to obtain above metioned condition. In case that Ò100 IRE ~ GNDÓ is above 3.7 V Adjustment is N.G)



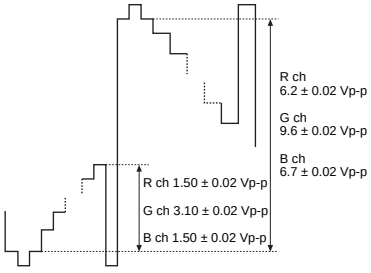

(6) IC level adjustment (R ch)
1) Change to ÒWIDE ModeÓ.
2) Input PAL double speed signal 10 step waveforms.




3) Add 0 V to TP5211 <RLBS> and 9 V to TP5210 <RHBS> by DC power supply.
4) Adjust the level by RV5205 <R-GAIN> as Ò0 IRE ~ 100 IREÓ on TP5203 <R-sig2> is 1.50 ± 0.02 Vp-p.

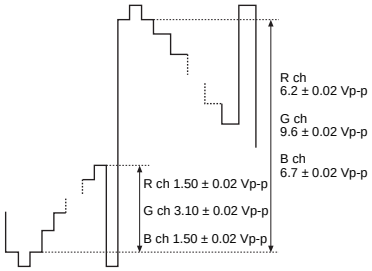



5) Adjust by RV5206 <R-BIAS> so that ÒPositive polarity 0 IRE ~ Negative polarity 0 IREÓ might be 6.2 ± 0.02 Vp-p.




6) By RV5203 <R-S, GAIN1>, RV5207 <R-S, BIAS1>, adjust the waveform for TP5202 <R-sig1> to the waveform TP5203 <R-sig2>. (within ± 0.02 V)

7) By RV5204 <R-S, GAIN2> & RV5208 <R-S, BIAS2>, adjust the waveform for TP5204 <R-sig3> to the waveform for TP5203 <R-sig2>. (within ± 0.02 V)



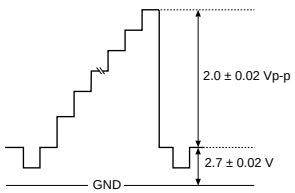

8) Confirm that the waveform for TP5203 <R-sig2> is within standard mentioned.

(7) IC Level Adjustment (G ch)
1) Proceed 4) ~ 8) by the same way as R ch.
2) Proceedure 3) to add external voltage must not be done. As for Òrelated VRÓ and Òoutput terminalÓ please refer to the Fig.

(8) IC Level Adjustment (B ch)
1) Proceed 3) ~ 8) by the same way as R ch.
As for Òrelated VRÓ and Òoutput terminalÓ please refer to the Fig.

| | R ch | G ch | B ch |
|---|---|---|---|
| -Sig 1 | TP5202 | TP5402 | TP5602 |
| -Sig 2 | TP5203 | TP5403 | TP5603 |
| -Sig 3 | TP5204 | TP5404 | TP5604 |
| LBS | TP5211 | TP5411 | TP5611 |
| HBS | TP5210 | TP5410 | TP5610 |
| -GAIN | RV5205 | RV5405 | RV5605 |
| -BIAS | RV5206 | RV5406 | RV5606 |
| -S.GAIN 1 | RV5203 | RV5403 | RV5603 |
| -S.BIAS 1 | RV5207 | RV5407 | RV5607 |
| -S.GAIN 2 | RV5204 | RV5404 | RV5604 |
| -S.BIAS 2 | RV5208 | RV5408 | RV5608 |

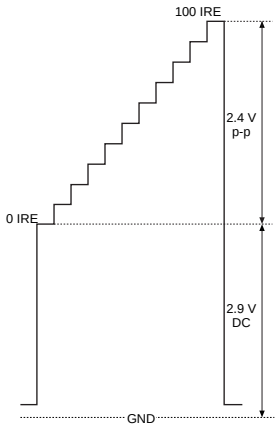
(9) V com Adjustment
1) Change to ÒWIDE ModeÓ.
2) Input PAL double speed signal 10 steps waveform.



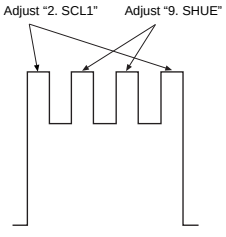
3) Measure the voltage on TP5203 (R ch out).
4) Adjust RV5211 <RVCOM> so that the voltage on TP5205 <R-V comout> might be Ð 0.6±0.02 V.
5) Measure the voltage on TP5403 (G ch out).
6) Adjust RV5411 <GVCOM> so that the voltage on TP5405 (G-V com out) might be Ð 0.5±0.02 V.
7) Measure the voltage on TP5603 (B ch out).
8) Adjust RV5611 <BVCOM> so that the voltage on TP5605 <R-V com out> might be Ð 0.8±0.02 V.

## 3-6. A BOARD ADJUSTMENT

(1) Pre-adjustment on Ò2GÓ output level.
1) Change following two data as follows.
CXA1839 Ò22 DC TranÓ→ 0
Ò23 Dyn PICÓ→ 0
2) Input 10-step swaveform on 1 Vpp (75 terminated value) to Video 1 input.
3) Set picture control to RESET.
4) Adjust CXA1839Q Ò3. Sub-CON1Ó so that the level from 0 IRE to 100 IRE on TP1002 Ò2GÓ can approach to 2.4 Vp-p the most.
5) Adjust CXA1839Q Ò1. Sub-BRTÓ so that the level of 0 IRE on Ò2GÓ can approach to 2.9 Vdc the most.

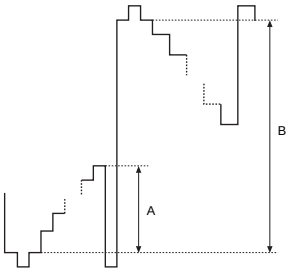



(2) HUE, COLOR Adjustment
1) Input 75 % full field color bar to Video INPUT 1.
2) Adjust CXA1839Q Ò2. Sub COL1Ó so that the peak level for 2 pulse on both right and left side on TP1003 Ò2BÓ can be equal.
3) Adjust CXA1839Q Ò9. Sub HUEÓ so that the peak level of 2 pulse in the center on Ò2BÓ can be equal.
4) Return following two data.
CXA1839 Ò22 DC Tran: 0→ 1
Ò23 Dyn PIC: 0→ 1




## 3-7. SUB BRT, SUB PIX ADJUSTMENT

(1) Sub BRT Adjustment
1) Input 10 step signal to Video, 1 picture mode: smart
Setup as follows
PIX = 90 %
COL = 50 %
BRT = 50 %
SHP = 50 %
2) Change two data as follows.
CXA1839 Ò22 DC TranÓ1®0
Ò23 Dyn PICÓ 2®0
3) Connect Oscilloscope to TP5403.
4) Adjust B with CXA2011 Ò3. Sub BrightÓ as 8.2±0.02 V.
5) Adjust A with CXA2011 Ò1. Drive LevelÓ as 2.9±0.02 Vpp.
6) Return following data as follows.
CXA1839 Ò22 DC TranÓ→ 0 1
CXA1839 Ò23 Dyn PICÓ→ 0 2




## 3-8. WHITE BALANCE ADJUSTMENT

1) Keep set with aging condition more than 15 min.
2) Change to following data.
CXA1839 Ò22 DC TranÓ 0
Ò23 Dyn PICÓ→ 0
CXD2412 Ò6. BL BiasÓ→ 00
Ò7. RL BiasÓ→ 00
3) Input 30 IRE flat field signal.
4) Adjust CXA2011 Ò12R cutoffÓ and Ò14B cut offÓ can be within standard. (CXA2011 Ò13G cutoffÓ so that cutoff white balance should be fixed to 124.)

Standard

X = 0.2952 with in 4JND

Y = 0.3047

5) Input 70 IRE flat filed signal.
6) Adjust CXA2011 Ò9R DriveÓ and Ò11B DriveÓ so that high light can be within standard. (CXA2011 Ò10G DriveÓ should be fixed by Ò31Ó)

Standard

X=0.2952

Y=0.3047 with in 5JND

7) Repeat 3)~6) and trucking and adjust so that both 30 IRE, 70 IRE is within standard.

8) Input 20 IRE flat fild signal.
9) Adjust with CXD2412 Ò7. RL BiasÓ or Ò6. BL BiasÓ so that can approach to adjusting center the most.

   Adjustment Center

   X=0.2952

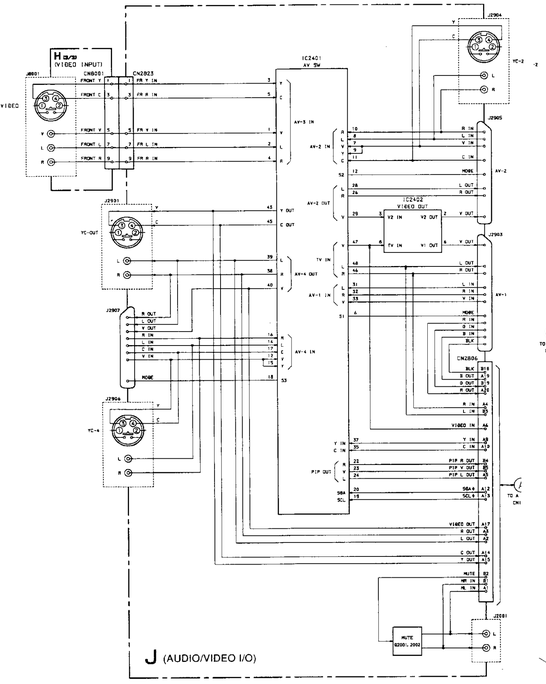
   Y=0.3047

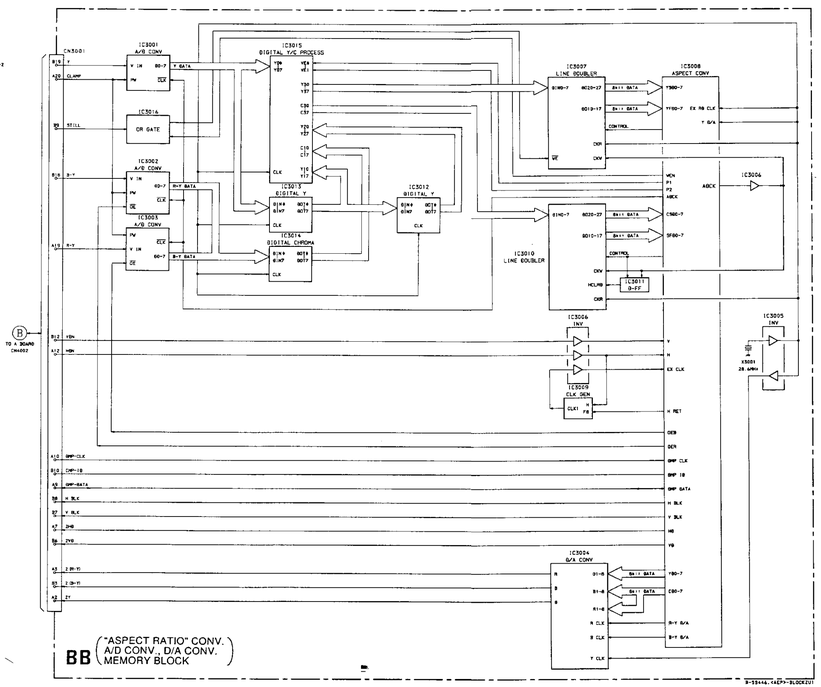
10) Return following two data.
    CXA1839 Ò22. DC TranÓ 0
    Ò23. Dyn PICÓ 2
11) Confirm that color from 0 to 100 IRE each steps on the screen should be uniform and it does not differ much from other part.

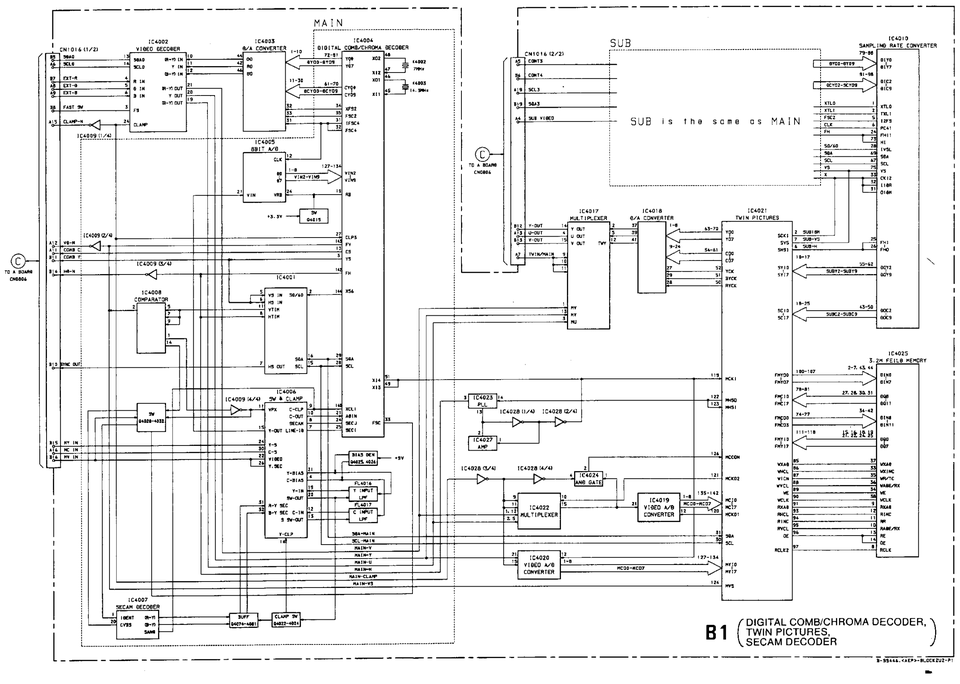
# MEMO

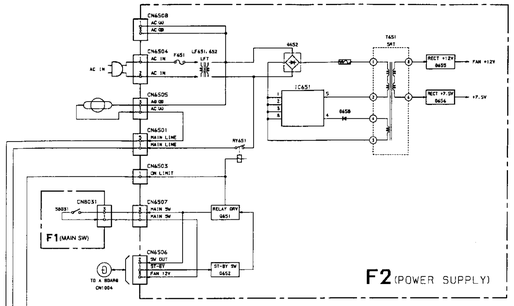
SECTION 4
DIAGRAMS

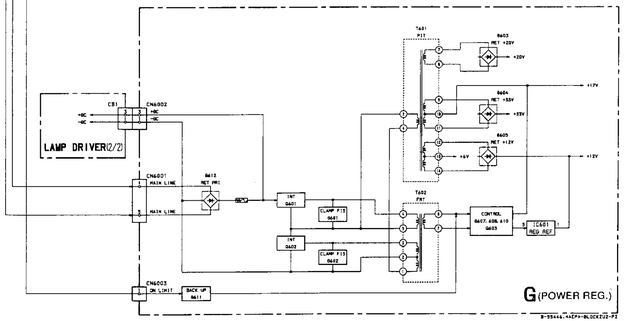
## 4-1. BLOCK DIAGRAMS



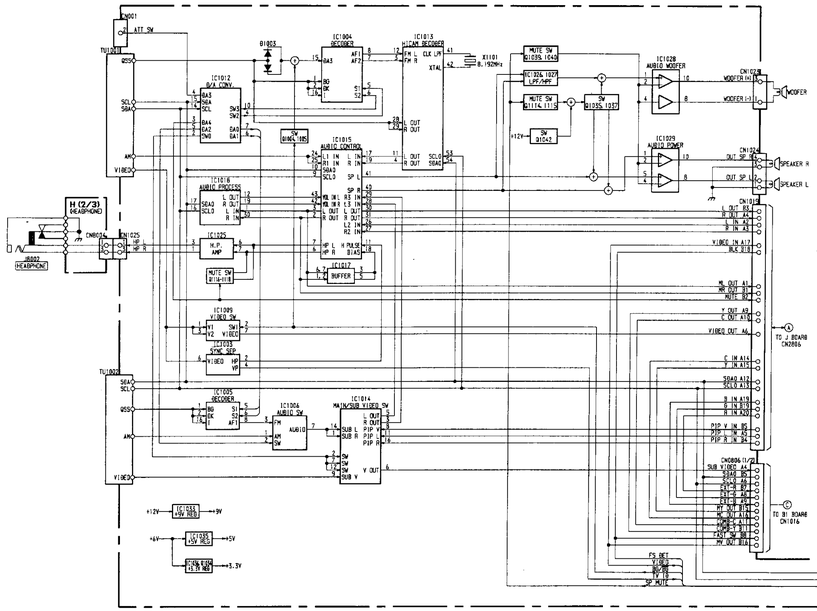



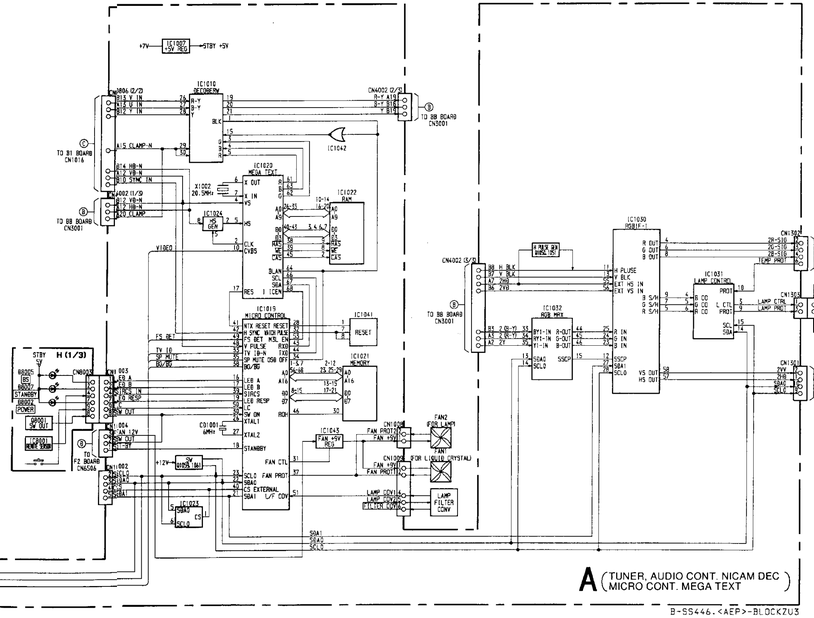

F2 (POWER SUPPLY)
F1 (MAIN SW)


LAMP DRIVER(2/2)
G (POWER REG.)

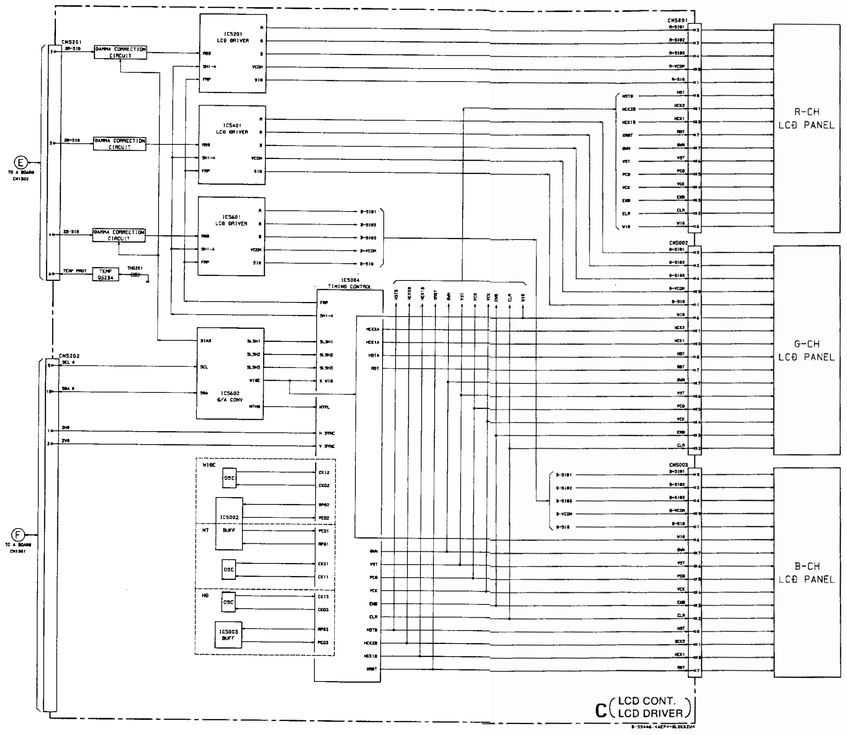


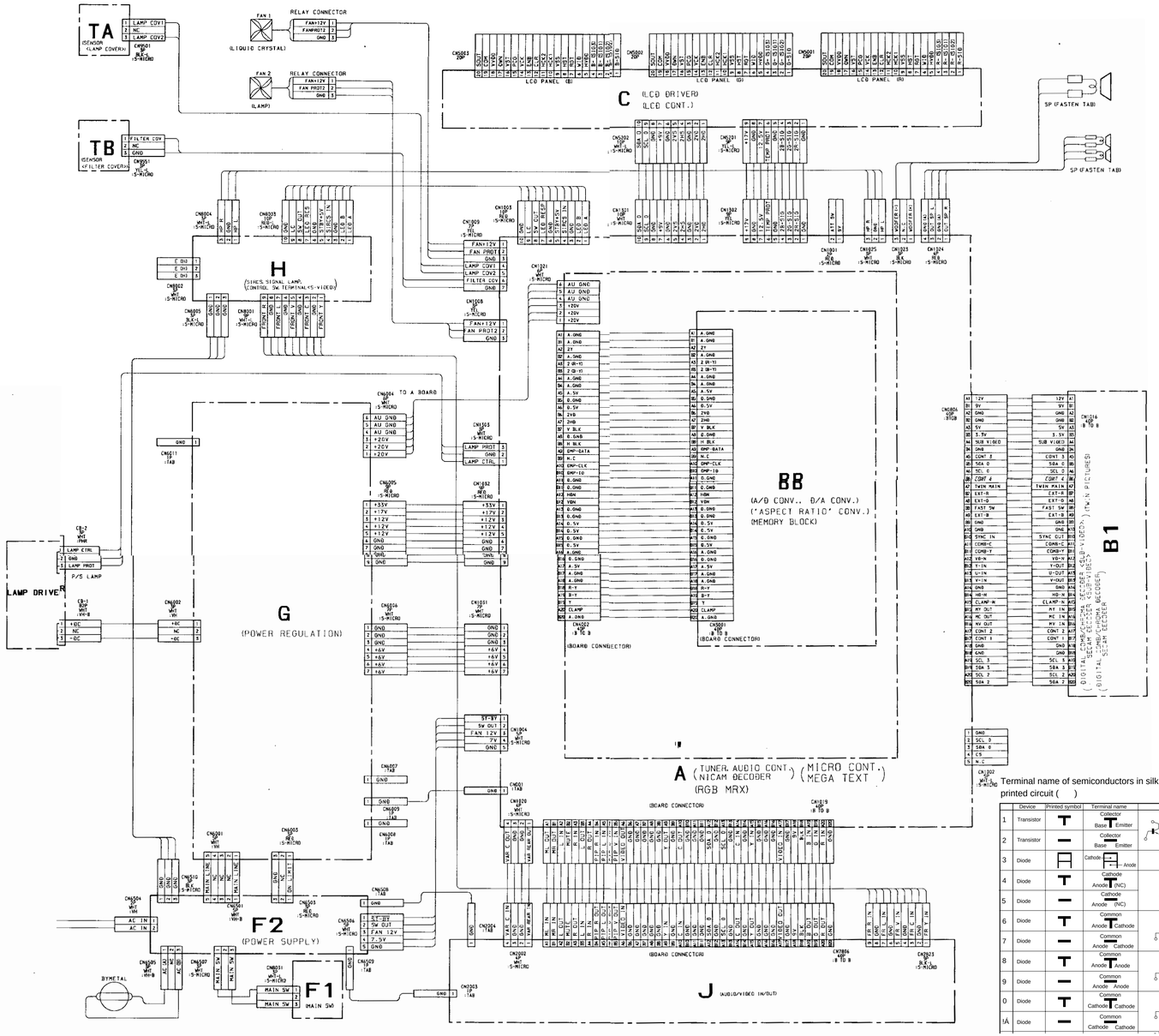

H (2/3)
(HEADPHONE)



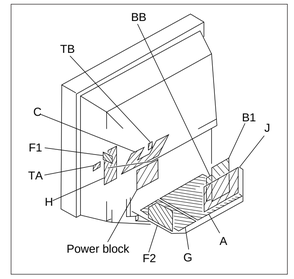

A (TUNER, AUDIO CONT, NICAM DEC
MICRO CONT. MEGA TEXT )
B-SS446.<AEP>-BLOCKZU3

## 4-2. FRAME SCHEMATIC DIAGRAM




## 4-3. CIRCUIT BOARDS LOCATION




## 4-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

**Note:**

- All capacitors are in μF unless otherwise noted. (pF: μμF)
  Capacitors without voltage indication are all 50 V.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4 W (CHIP : 1/10 W)

- All resistors are in ohms.
- : nonflammable resistor.
- : fusible resistor.
- ¢ : internal component.
- : panel designation, and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-ground.
- : earth-chassis.
- All voltages are in V.
- Readings are taken with a 10 MΩ digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
  - * : Can not be measured.
  - NO MARK: PAL
  - ( ) : SECAM
- Circled numbers are waveform references.
- ▬▬ : B + bus.
- ▬ ▬ : B – bus.
- ⇨ : Signal path.

**Reference information**

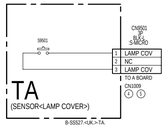
| | | |
|---|---|---|
| RESISTOR | : RN | METAL FILM |
| | : RC | SOLID |
| | : FPRD | NONFLAMMABLE CARBON |
| | : FUSE | NONFLAMMABLE FUSIBLE |
| | : RW | NONFLAMMABLE WIREWOUND |
| | : RS | NONFLAMMABLE METAL OXIDE |
| | : RB | NONFLAMMABLE CEMENT |
| COIL | : LF-8L | MICRO INDUCTOR |
| CAPACITOR | : TA | TANTALUM |
| | : PS | STYROL |
| | : PP | POLYPROPYLENE |
| | : PT | MYLAR |
| | : MPS | METALIZED POLYESTER |
| | : MPP | METALIZED POLYPROPYLENE |
| | : ALB | BIPOLAR |
| | : ALT | HIGH TEMPERATURE |
| | : ALR | HIGH RIPPLE |

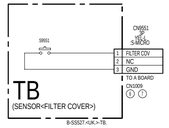
**Note: The components identified by shading and mark ! are critical for safety. Replace only with part number specified.**

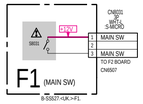
Terminal name of semiconductors in silk screen printed circuit ( )

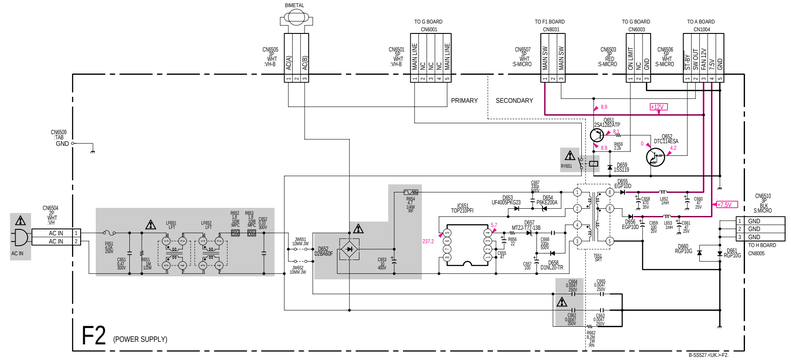
| | Device | Printed symbol | Terminal name | Circuit |
|---|---|---|---|---|
| 1 | Transistor | | Collector Base Emitter | |
| 2 | Transistor | | Collector Base Emitter | |
| 3 | Diode | | Cathode Anode | |
| 4 | Diode | | Cathode Anode (NC) | |
| 5 | Diode | | Anode Cathode (NC) | |
| 6 | Diode | | Common Anode Cathode | |
| 7 | Diode | | Common Anode Cathode | |
| 8 | Diode | | Common Anode Anode | |
| 9 | Diode | | Common Anode Anode | |
| 0 | Diode | | Common Cathode Cathode | |
| 1A | Diode | | Common Cathode Cathode | |
| 1B | Diode | | Anode Anode Cathode Anode Cathode Anode | |
| 1E | Transistor (FET) | | Drain Source Gate | |
| 1C | Transistor (FET) | | Drain Source Gate | |
| 1F | Transistor (FET) | | Source Drain Gate | |
| 1D | Transistor | | Cathode Emitter Collector Base | |
| 1I | Transistor | | C1B2E1 E1B2C1 | |
| 1K | Transistor | | C1B2E1 E1B2C1 | |
| 1L | Transistor | | C1 B2 E1 E1 B2 C1 | |
| @1 | Transistor | | C1 B2 E1 E1 B2 C1 | |
| @2 | Transistor | | E1 B2 C1 C1 B2 E1 | |
| @3 | Transistor | | E1 B2 C1 C1 B2 E1 | |
| @4 | Transistor | | E1 B2 C1 C1 B2 E1 | |
| – | Discrete semiconductor | | | |

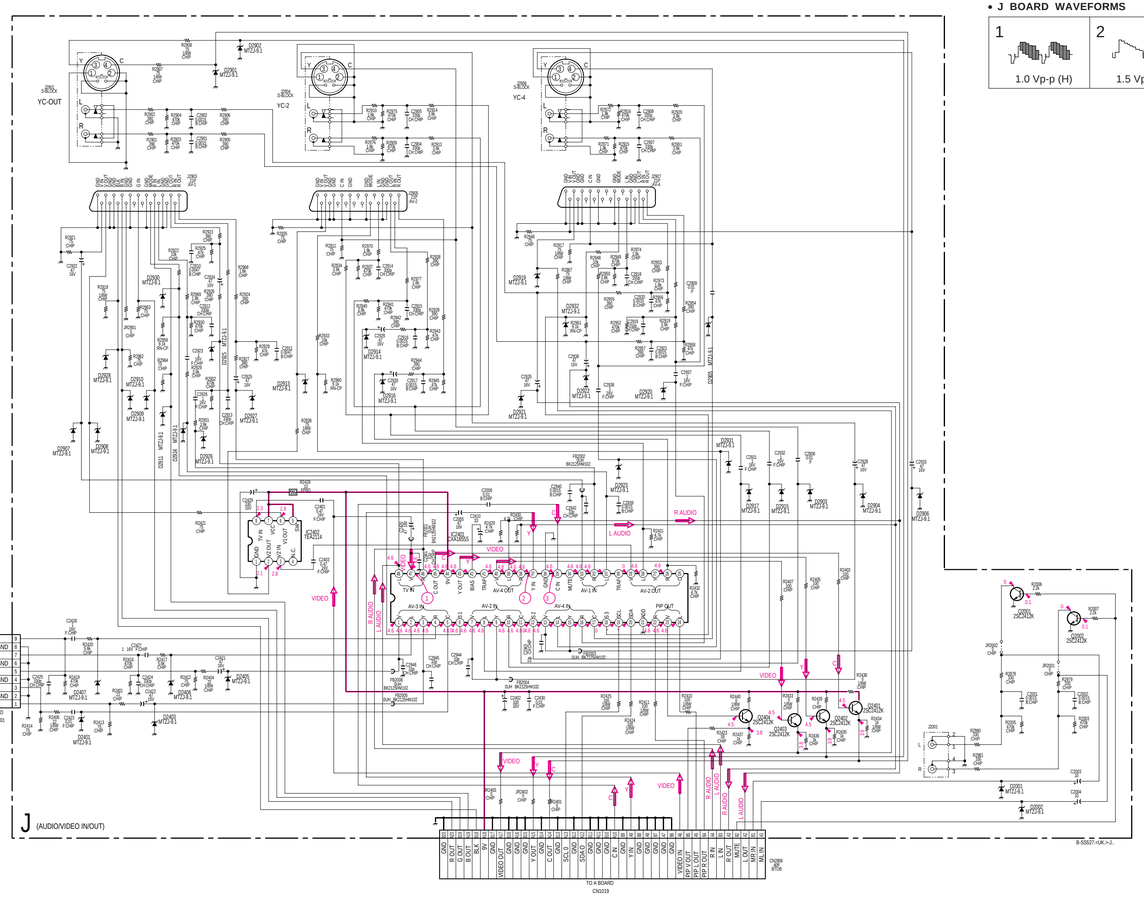
(Chip semiconductors that are not actually used are included.)



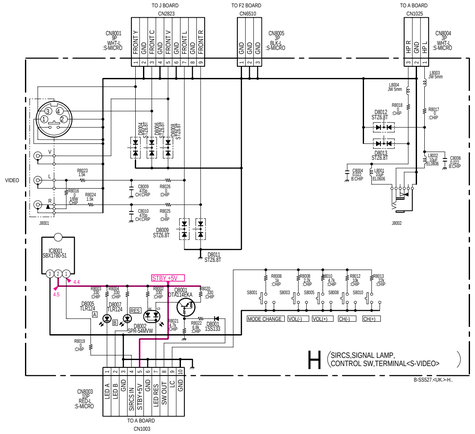



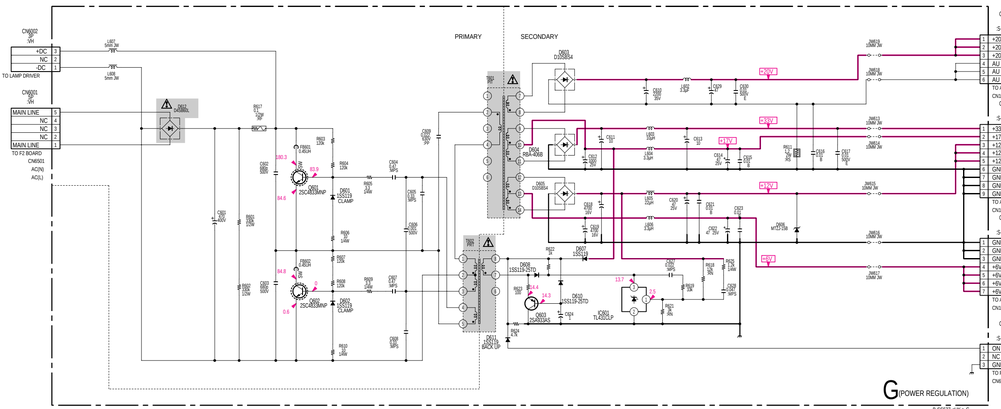




• J BOARD WAVEFORMS

| 1 | 2 | 3 |
|---|---|---|
| 1.0 Vp-p (H) | 1.5 Vp-p (H) | 1.0 Vp-p (H) |

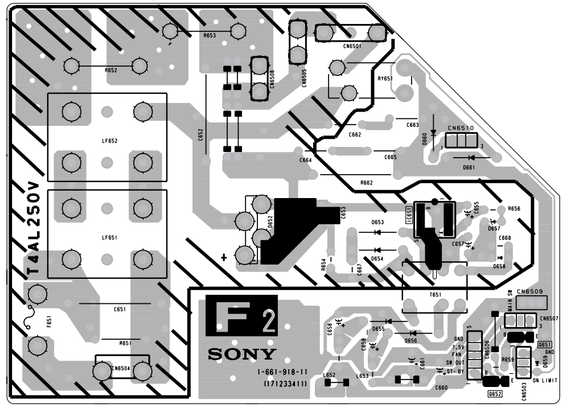


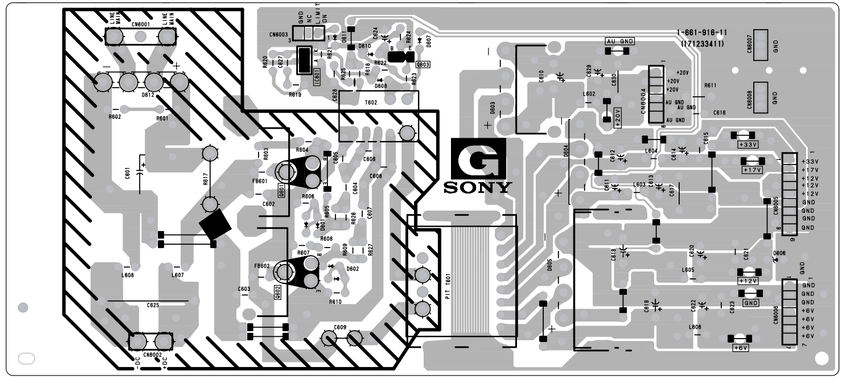

Schematic diagram

F1 F2 G H J TA TB board /

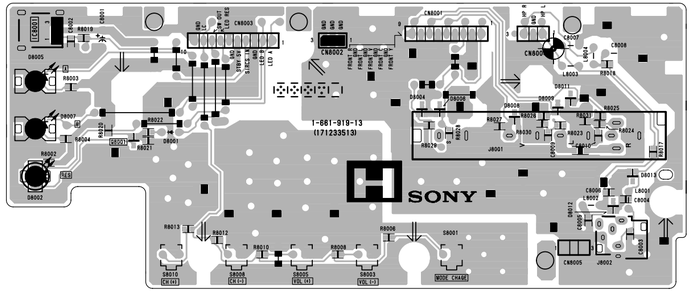
– F2 Board –




– G2 Board –




– H Board –

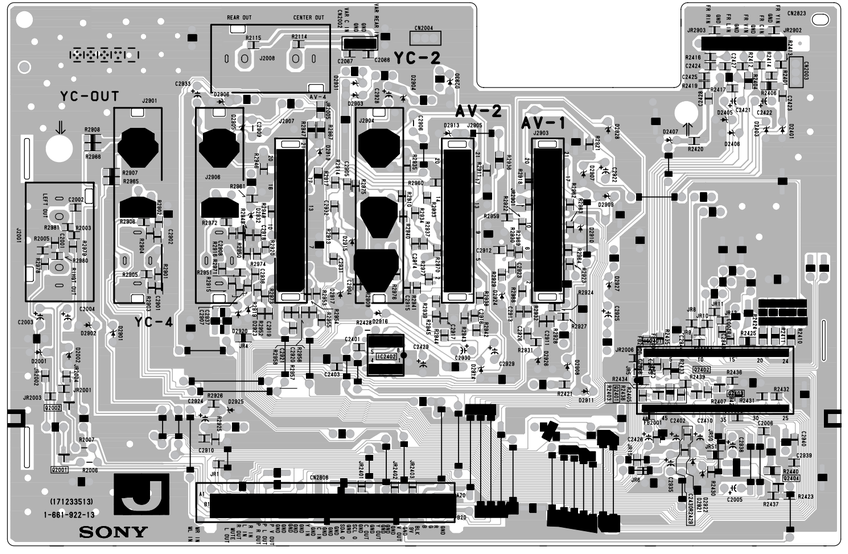



**H BOARD**
**Terminal name of semiconductors in silk screen printed circuit (*)**

| Ref. | * |
|---|---|
| Q8001 | 1 |
| D8004, D8006, D8008, D8009, D8011 – D8013 | 8 |

***: Refer to Treminal name of semiconductors in silk screen printed circuit (see page 44)**

– J Board –

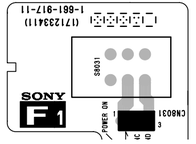



**J BOARD**
**Terminal name of semiconductors in silk screen printed circuit (*)**

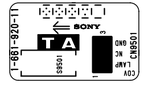
| Ref. | * |
|---|---|
| Q2001, Q2002, Q2401 – Q2404 | 1 |

***: Refer to Treminal name of semiconductors in silk screen printed circuit (see page 44)**

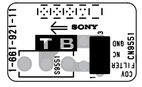
– F1 Board –




– TA Board –

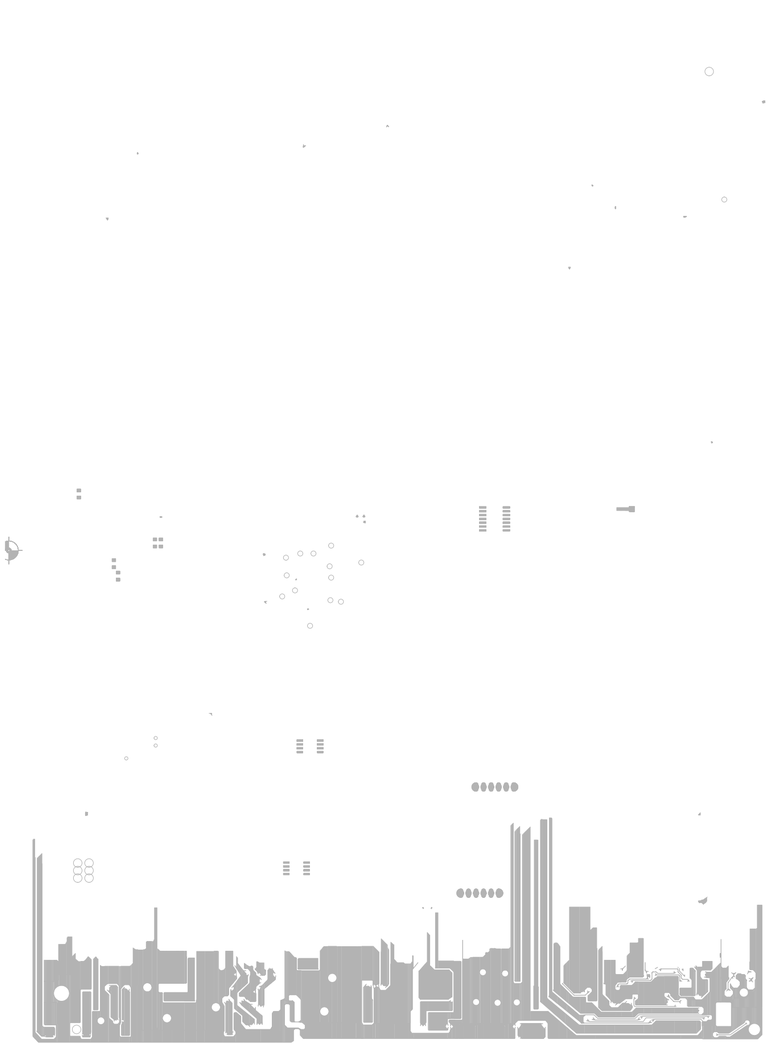



– TB Board –



**A** [TUNER, AUDIO CONT., NICAM DECODER, RGB MRX, MICRO CONT., MEGA TEXT]

**– A Board (Conductor Side) –**





## • A BOARD SEMICONDUCTOR LOCATION

### IC

| | | |
|---|---|---|
| IC1001 | | D-1 |
| IC1003 | E-2 | |
| IC1004 | E-3 | E-3 |
| IC1005 | F-3 | |
| IC1006 | F-2 | F-4 |
| IC1007 | A-5 | A-1 |
| IC1009 | E-2 | |
| IC1010 | B-3 | B-3 |
| IC1012 | E-2 | |
| IC1013 | | D-4 |
| IC1014 | | D-3 |
| IC1015 | | D-4 |
| IC1017 | | E-5 |
| IC1018 | E-1 | E-5 |
| IC1019 | | B-1 |
| IC1020 | | A-1 |
| IC1021 | | B-1 |
| IC1022 | A-5 | B-1 |
| IC1023 | B-5 | B-1 |
| IC1024 | B-4 | B-2 |
| IC1025 | C-1 | C-5 |
| IC1026 | A-1 | |
| IC1027 | A-1 | |
| IC1028 | A-2 | A-4 |
| IC1029 | A-3 | A-3 |
| IC1030 | | F-1 |
| IC1031 | | G-1 |
| IC1032 | | E-1 |
| IC1033 | G-3 | G-3 |
| IC1035 | G-1 | G-5 |
| IC1036 | G-2 | G-4 |
| IC1041 | | C-2 |
| IC1042 | | A-2 |
| IC1043 | A-4 | A-2 |

### TRANSISTOR

| | | | * |
|---|---|---|---|
| Q1001 | E-2 | | 1 |
| Q1003 | E-4 | | 1 |
| Q1004 | E-4 | | 1 |
| Q1005 | E-4 | | 1 |
| Q1007 | F-2 | | 1 |
| Q1008 | F-2 | | 1 |
| Q1011 | A-4 | | 1 |
| Q1012 | F-1 | | 1 |
| Q1013 | B-3 | | 1 |
| Q1014 | | B-3 | 2 |
| Q1015 | | B-3 | 2 |
| Q1016 | E-2 | | 1 |
| Q1017 | C-4 | | 1 |
| Q1018 | C-4 | | 1 |
| Q1019 | C-3 | | 1 |
| Q1020 | C-3 | | 1 |
| Q1021 | C-3 | | 1 |
| Q1022 | C-3 | | 1 |
| Q1024 | | C-3 | 2 |
| Q1025 | | C-3 | 2 |
| Q1026 | | B-3 | 2 |
| Q1027 | E-3 | | 1 |
| Q1028 | E-3 | | 1 |
| Q1029 | E-3 | | 1 |
| Q1030 | E-3 | | 1 |
| Q1031 | F-4 | | 1 |
| Q1032 | F-4 | | 1 |
| Q1033 | F-3 | | 1 |
| Q1034 | G-2 | G-4 | – |
| Q1035 | A-3 | | 1 |
| Q1036 | A-1 | | 1 |
| Q1037 | A-2 | | 1 |
| Q1038 | B-1 | | 1 |
| Q1039 | | A-3 | 2 |
| Q1040 | | A-3 | 2 |
| Q1042 | | A-5 | 2 |
| Q1043 | F-5 | | 1 |
| Q1044 | F-5 | | 1 |
| Q1045 | F-5 | | 1 |
| Q1047 | F-5 | | 1 |
| Q1048 | F-5 | | 1 |
| Q1049 | | F-1 | 2 |
| Q1050 | | F-1 | !- |
| Q1051 | | E-1 | !- |
| Q1052 | B-4 | | 1 |
| Q1053 | B-4 | | 1 |
| Q1059 | | C-1 | 2 |
| Q1060 | | C-1 | 2 |
| Q1061 | | C-1 | 2 |
| Q1062 | A-5 | | 1 |
| Q1064 | B-5 | | 1 |
| Q1065 | B-4 | | 1 |
| Q1066 | A-4 | | 1 |
| Q1067 | A-4 | | 1 |
| Q1068 | A-4 | | 1 |
| Q1069 | B-4 | | 1 |
| Q1070 | B-5 | | 1 |
| Q1071 | E-1 | | 1 |
| Q1072 | E-1 | | 1 |
| Q1076 | | B-3 | 2 |
| Q1077 | | B-3 | 2 |
| Q1078 | | B-3 | 2 |
| Q1079 | | B-3 | 2 |
| Q1105 | | D-5 | 2 |
| Q1106 | | D-5 | 2 |
| Q1107 | D-2 | | 1 |
| Q1108 | C-2 | | 1 |
| Q1109 | | E-5 | 2 |
| Q1110 | | E-5 | 2 |
| Q1112 | B-4 | | 1 |
| Q1114 | A-3 | | 1 |
| Q1115 | | A-3 | 2 |
| Q1116 | | A-5 | 2 |
| Q1117 | | C-4 | 2 |
| Q1118 | | C-4 | 2 |
| Q1119 | F-5 | | 1 |
| Q1120 | F-5 | | 1 |
| Q1121 | | F-2 | 2 |
| Q1122 | F-4 | | 1 |
| Q1123 | | F-2 | !\ |
| Q1124 | | F-2 | 2 |
| Q1125 | F-4 | | 1 |
| Q1126 | F-3 | | 1 |
| Q1127 | | B-2 | 2 |
| Q1128 | | B-2 | 2 |

### DIODE

| | | | |
|---|---|---|---|
| D1001 | E-2 | | 8 |
| D1002 | A-3 | | 6 |
| D1003 | E-4 | | !\[ |
| D1004 | F-2 | F-3 | – |
| D1007 | A-2 | A-4 | – |
| D1008 | A-2 | A-4 | – |
| D1009 | | A-5 | 9 |
| D1010 | | A-5 | 9 |
| D1011 | | A-5 | 9 |
| D1012 | | F-1 | 3 |
| D1013 | | F-1 | 9 |
| D1014 | | C-2 | 9 |
| D1015 | C-4 | | 8 |
| D1018 | | C-1 | !\] |
| D1019 | B-5 | | 8 |
| D1020 | B-5 | | !\[ |
| D1021 | B-5 | B-1 | – |
| D1022 | B-5 | B-1 | – |
| D1024 | B-5 | | 4 |
| D1026 | B-4 | | 8 |
| D1027 | D-2 | | 6 |
| D1028 | F-3 | | !\[ |
| D1029 | B-5 | | 3 |
| D1101 | | D-3 | 9 |
| D1102 | D-3 | | 3 |
| D1103 | | A-5 | 9 |
| D1104 | | A-5 | 9 |
| D1105 | A-1 | | 8 |
| D1106 | | A-5 | 9 |

### TUNER

| | | |
|---|---|---|
| TU1001 | E-3 | E-3 |
| TU1002 | F-3 | F-3 |

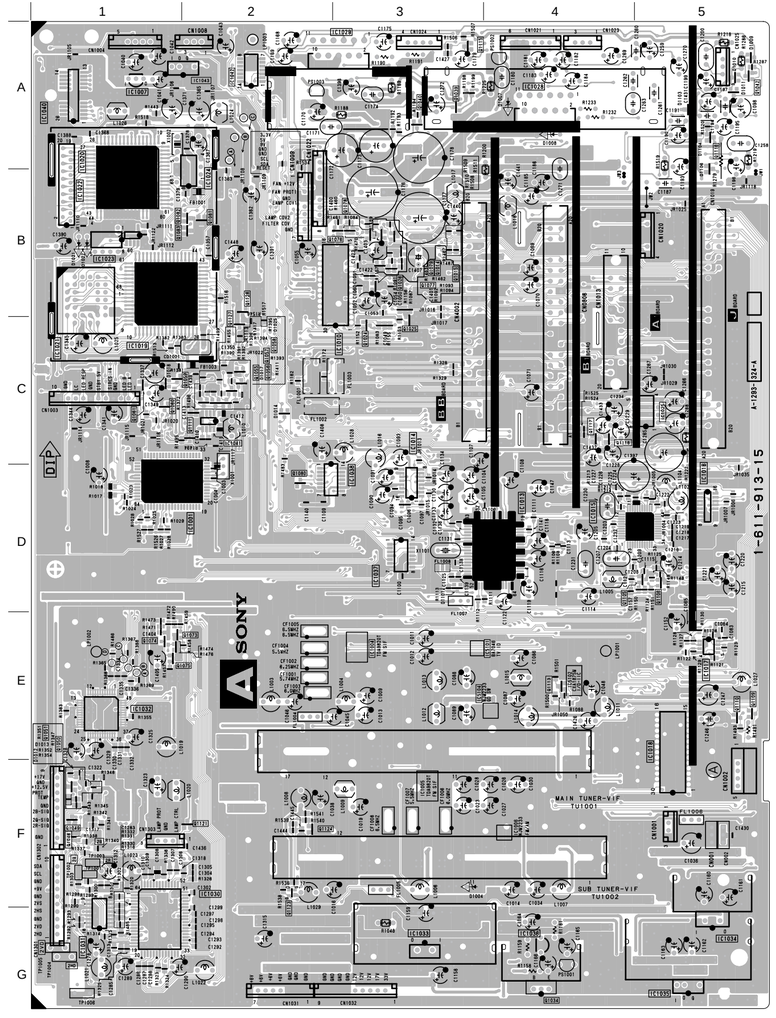
### CRYSTAL

| | | |
|---|---|---|
| X1001 | C-4 | C-2 |
| X1002 | A-4 | A-1 |
| X1101 | D-3 | D-3 |

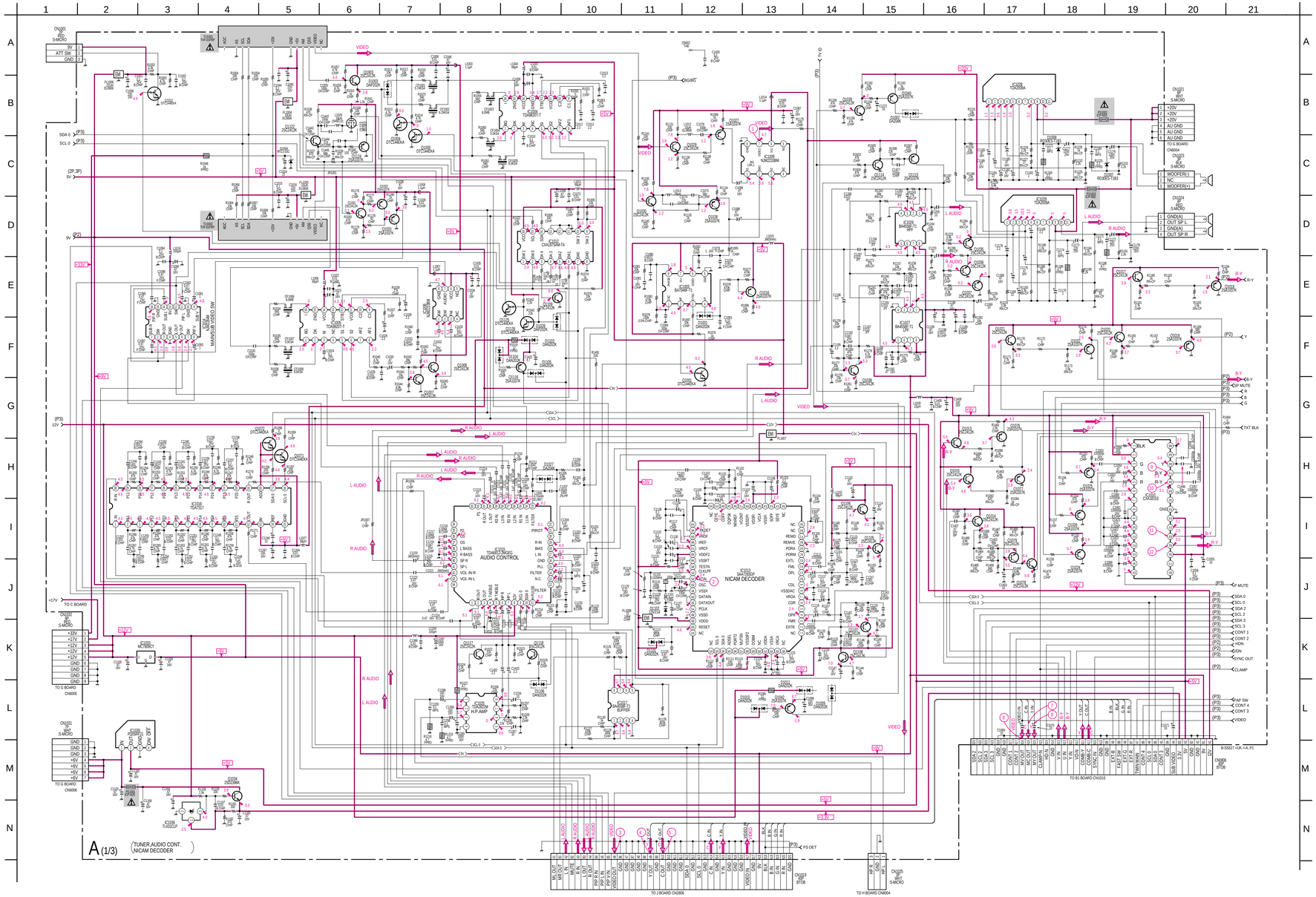
*: Refer to Terminal name of semiconductors in silk screen printed circuit
(see page 44)



**– A Board (Component Side) –**



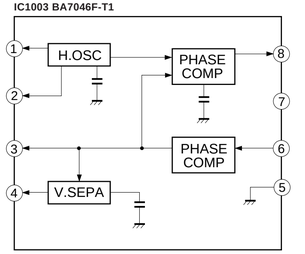
## 4-2. FRAME SCHEMATIC DIAGRAM



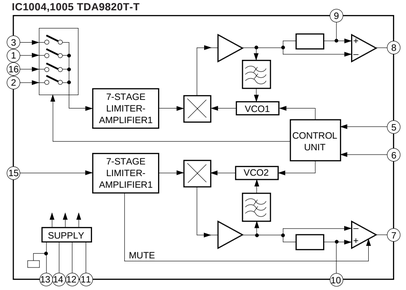

• A (1/3) BOARD
WAVEFORMS

| | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1.0 Vp-p (H) | 0.8 Vp-p (8.192 MHz) | 0.8 Vp-p (H) | 1.2 Vp-p (H) |
| 5 | 6 | 7 | 8 |
| 0.8 Vp-p (H) | 1.5 Vp-p (H) | 0.8 Vp-p (H) | 1.1 Vp-p (H) |
| 9 | 0 | !] | !\ |
| 0.8 Vp-p (H) | 0.8 Vp-p (H) | 2.2 Vp-p (H) | 2.2 Vp-p (H) |

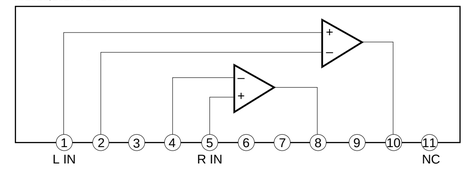
• A (1/3) BOARD
IC1003 BA7046F-T1




• A (1/3) BOARD
IC1004,1005 TDA9820T-T

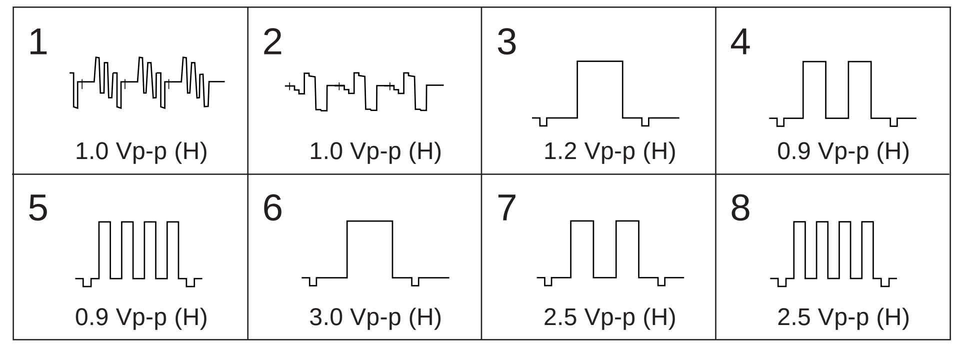


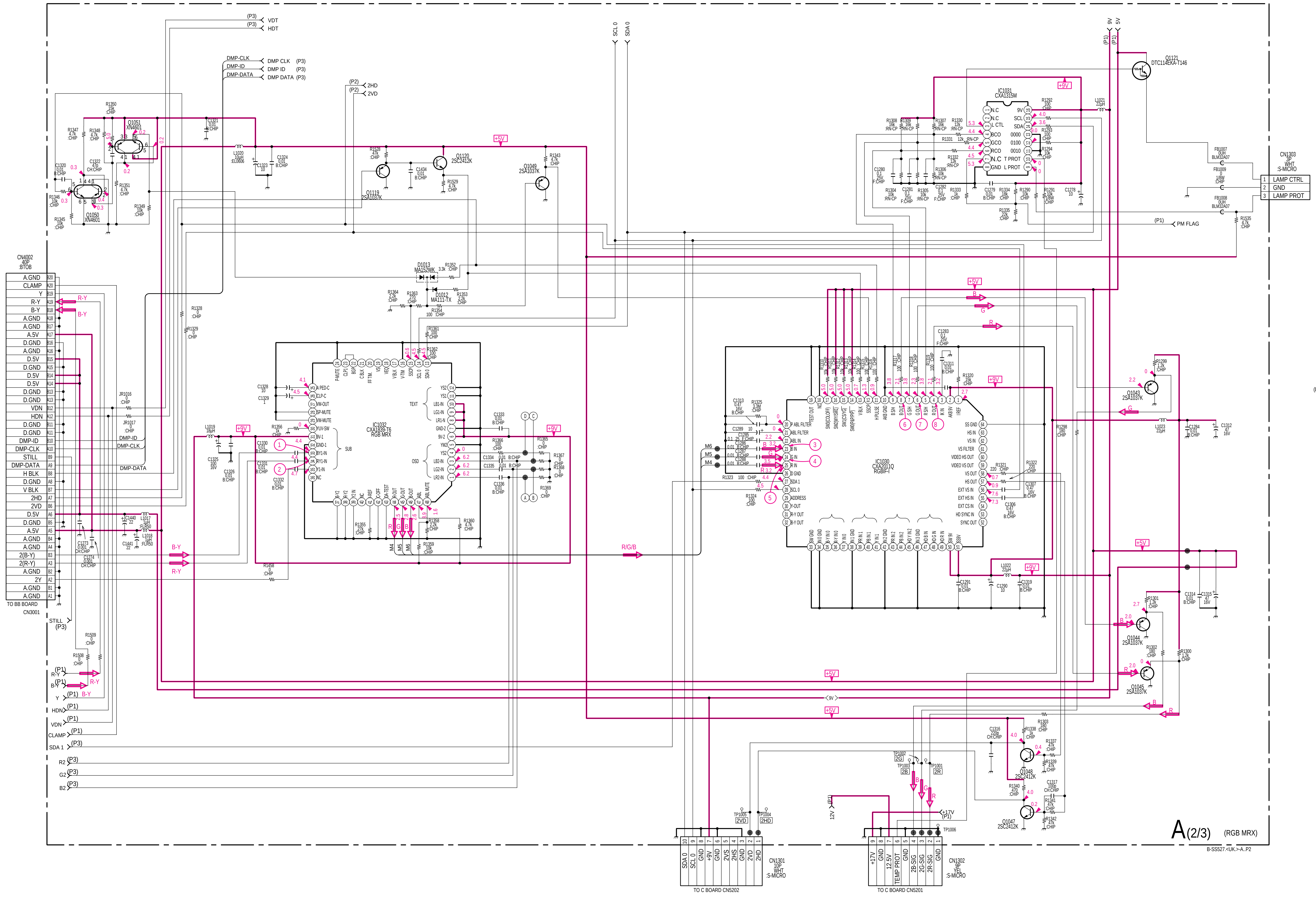

• A (1/3) BOARD
IC1028,1029 TDA2009A



## (3) Schematic Diagram of A (2/3) Board

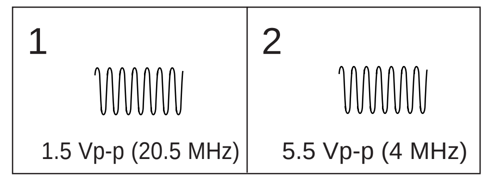
• A (2/3) BOARD WAVEFORMS

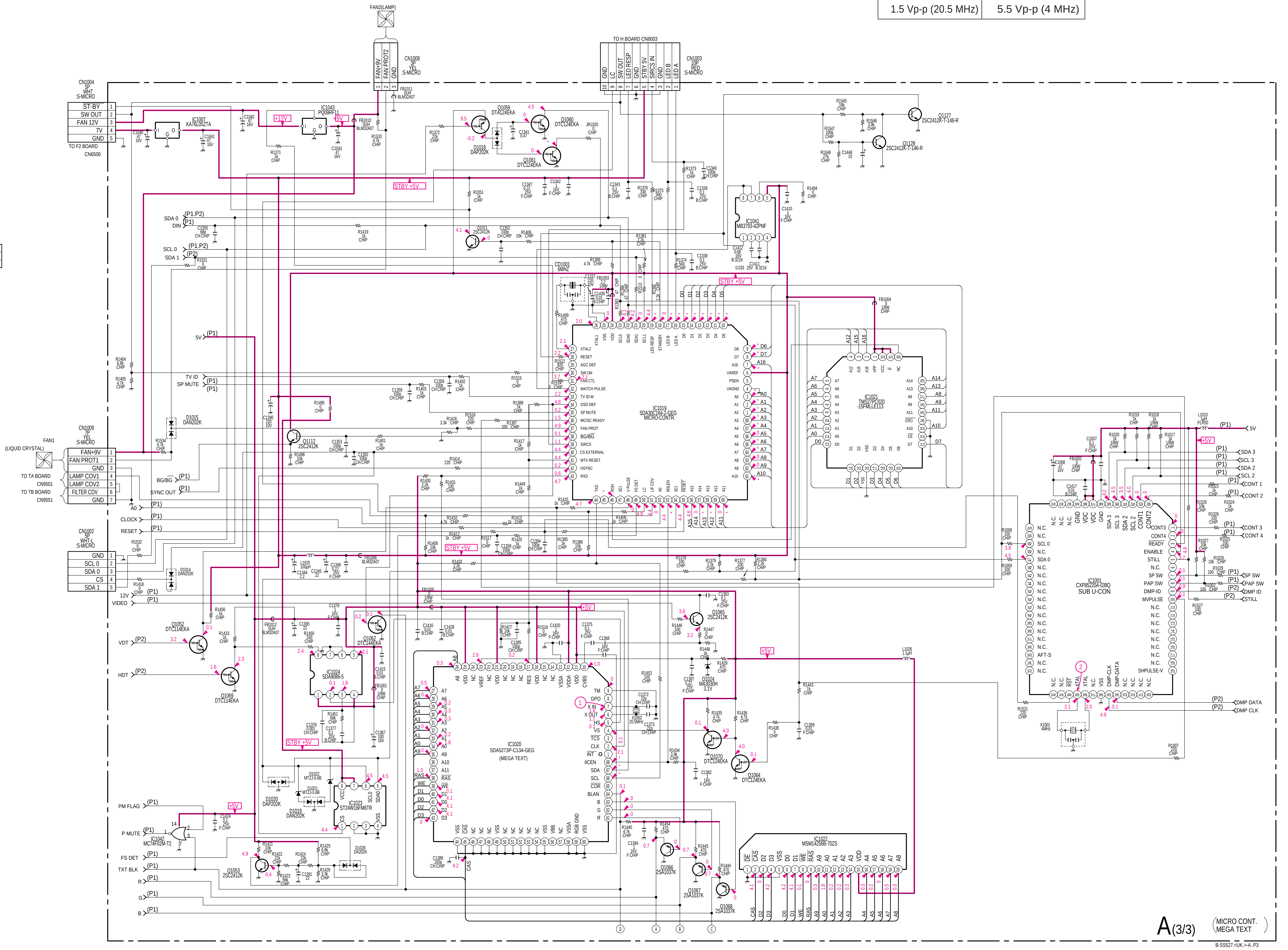



## (3) Schematic Diagram of A (3/3) Board

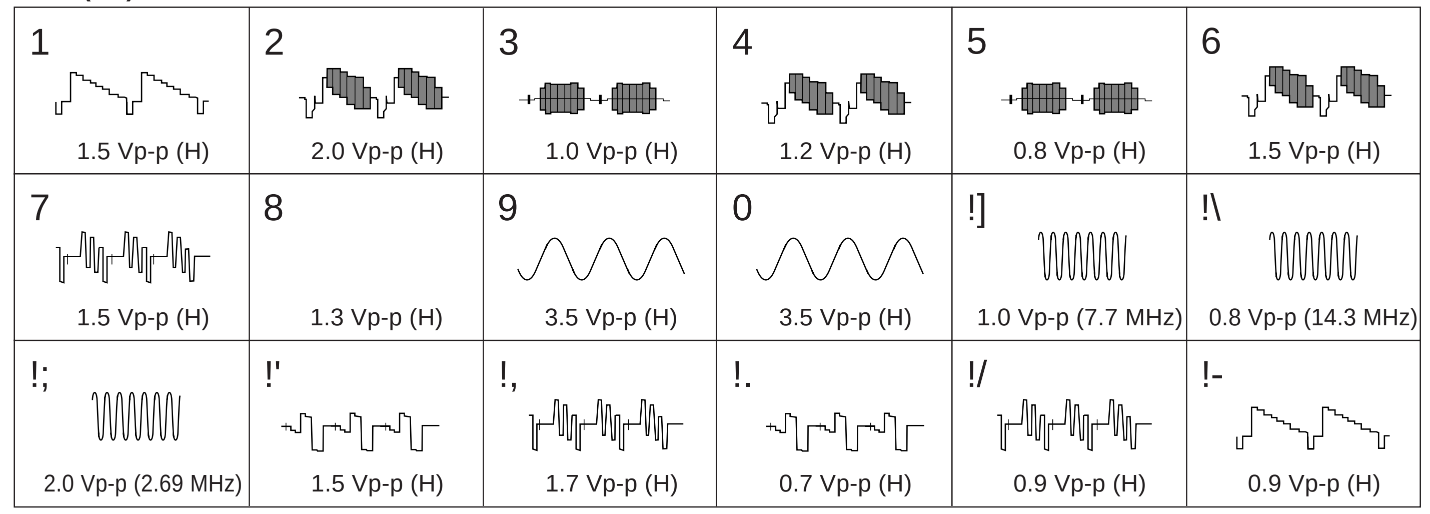
• A (3/3) BOARD WAVEFORMS

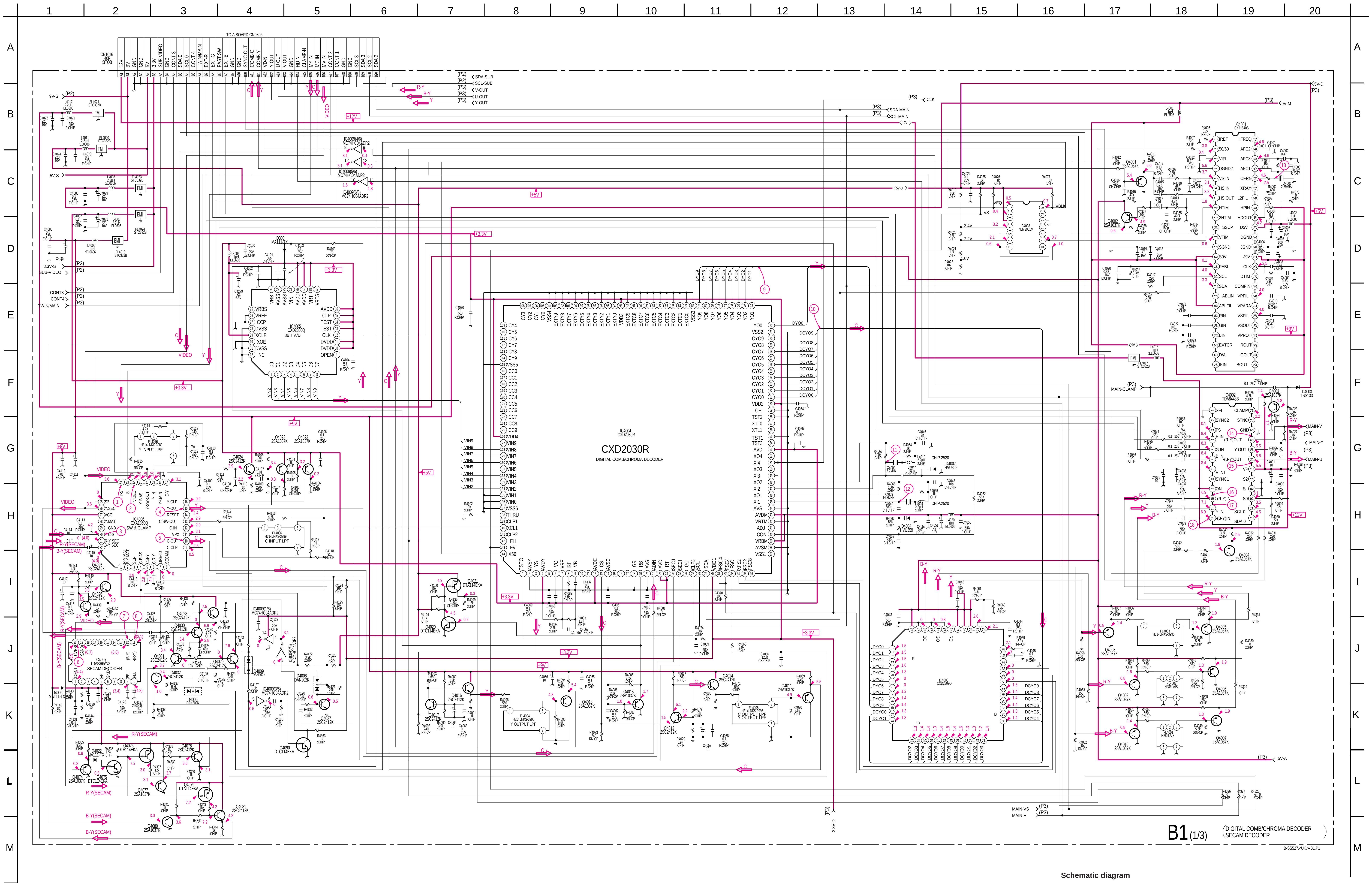


## (5) Schematic Diagram of B1 (1/3) Board

• **B1 (1/3) BOARD WAVEFORMS**



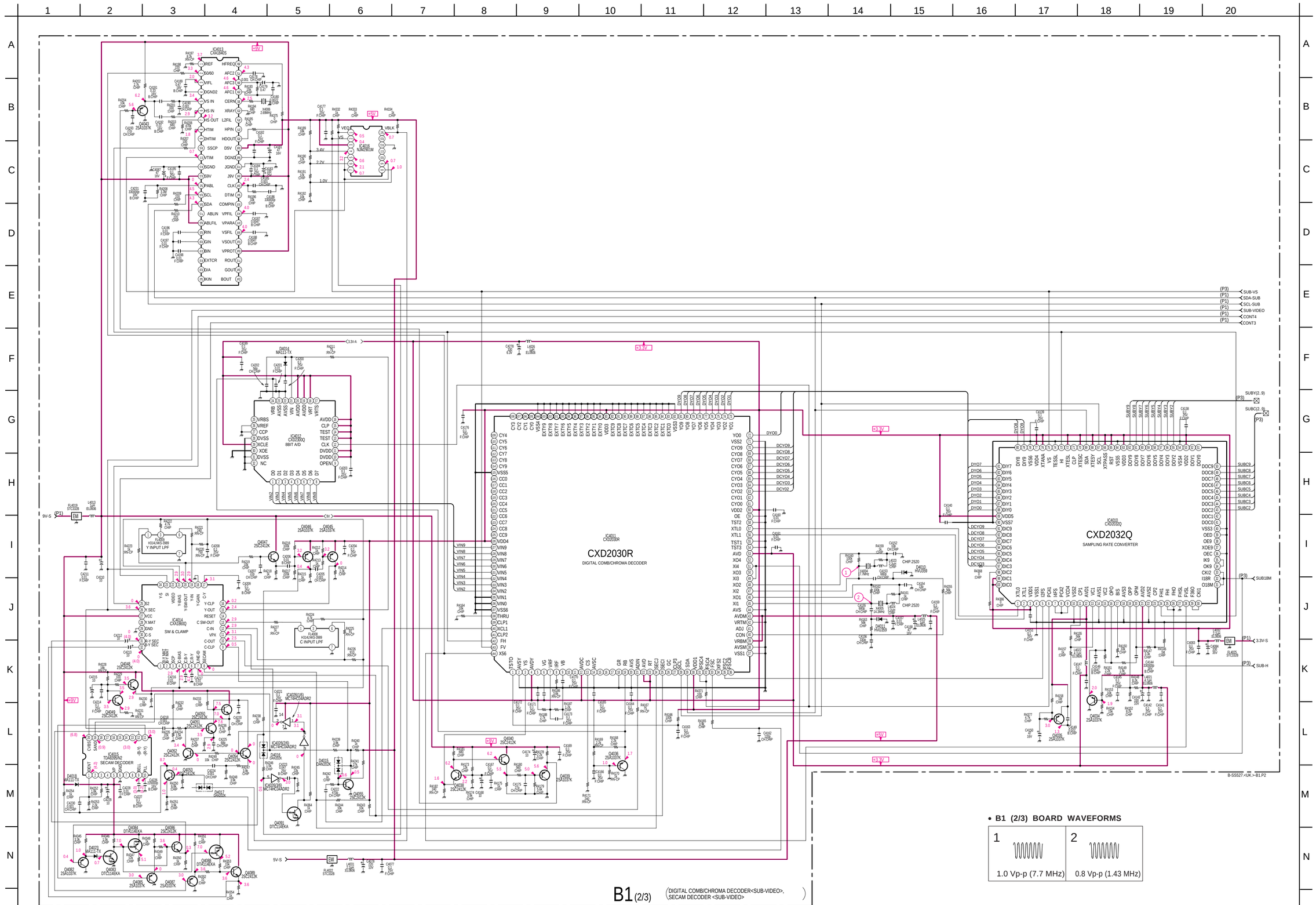




Schematic diagram
? B1 (1/2) board

Schematic diagram
B1 (2/3) board /

**(6) Schematic Diagram of B1 (2/3) Board**

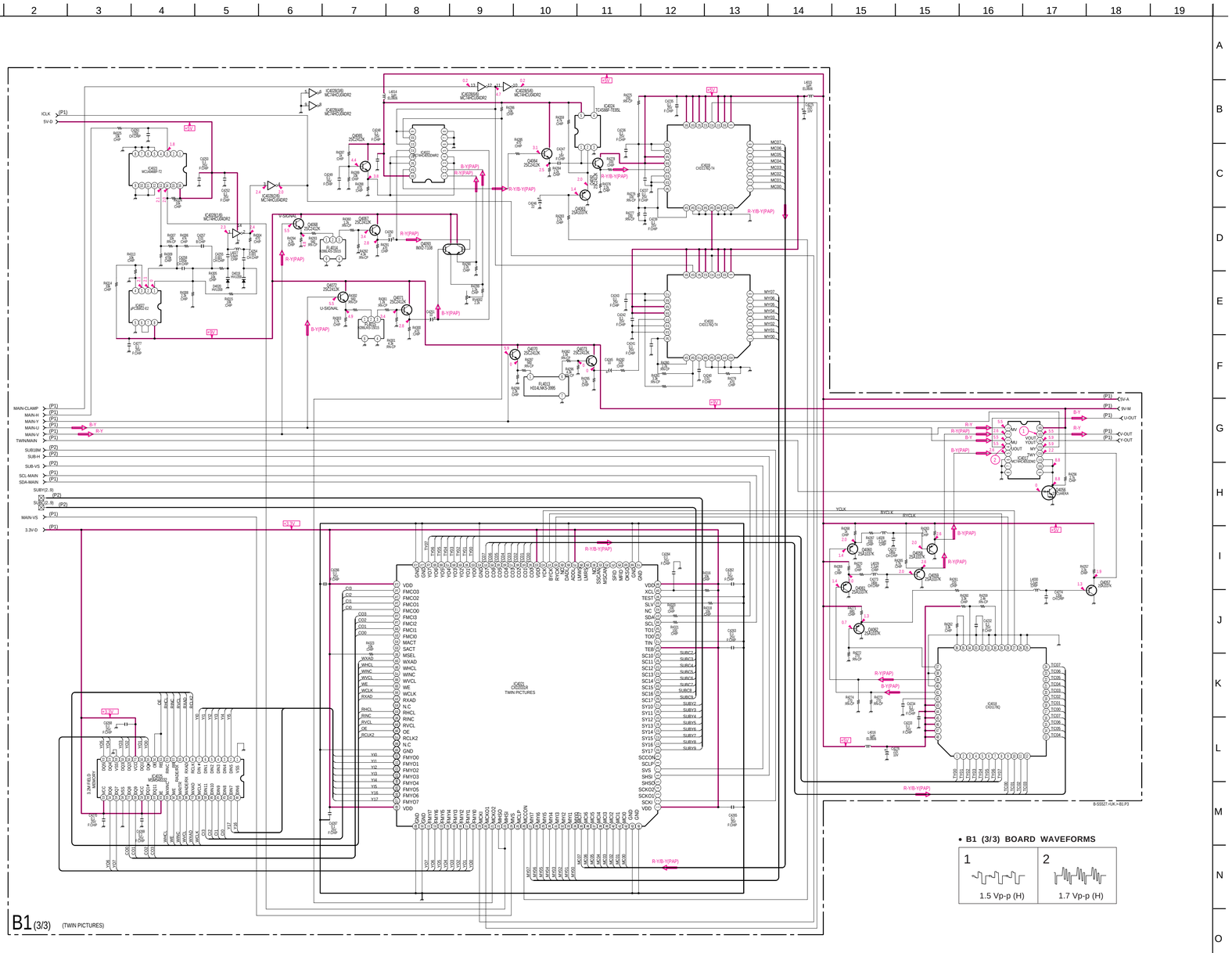



• **B1 (2/3) BOARD WAVEFORMS**

| 1 | 2 |
|---|---|
| 1.0 Vp-p (7.7 MHz) | 0.8 Vp-p (1.43 MHz) |

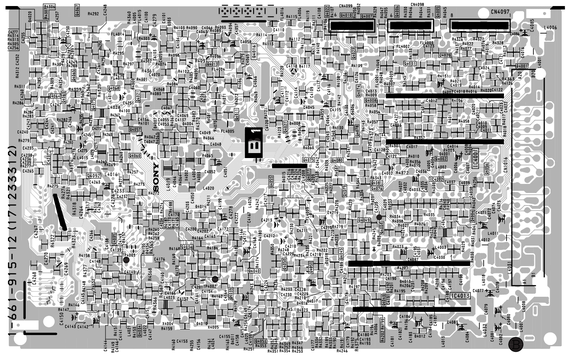

Schematic diagram
? B1 (1/2) board

Schematic diagram
C (1/2) board /

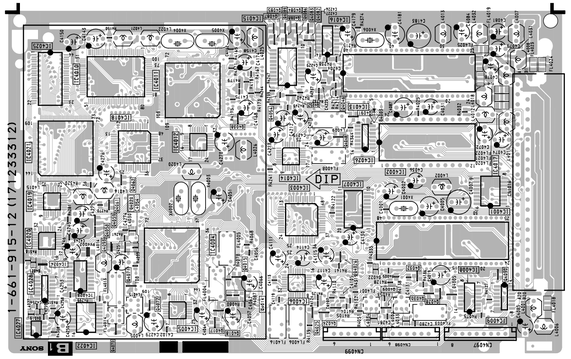





– B1 Board (Conductor Side) –




– B1 Board (Component Side) –



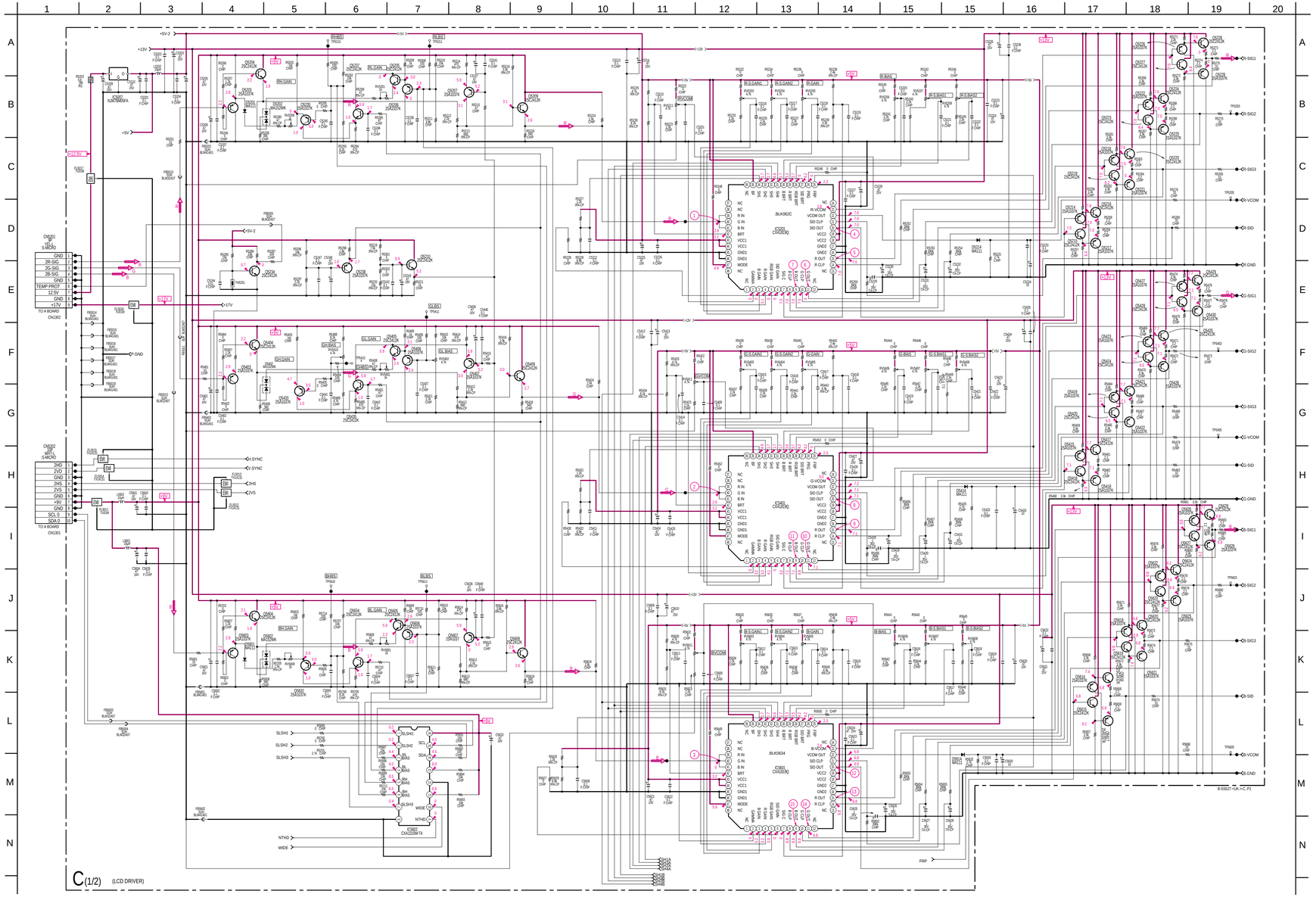

**B1 BOARD**

**Terminal name of semiconductors in silk screen printed circuit (*)**

| Ref. | * |
|---|---|
| Q4001, Q4003 – Q4008, Q4010, Q4011, Q4013, Q4016, Q4021 – Q4023, Q4027, Q4029, Q4031, Q4034 – Q4036, Q4039, Q4040, Q4043, Q4045, Q4047, Q4049 – Q4051, Q4053, Q4055 – Q4057, Q4060, Q4063 – Q4065, Q4067, Q4068, Q4073 – Q4081, Q4092 | 1 |
| Q4002, Q4009, Q4014, Q4015, Q4017, Q4018, Q4020, Q4024 – Q4026, Q4028, Q4030, Q4032, Q4038, Q4046, Q4048, Q4052, Q4054, Q4058, Q4059, Q4061, Q4062, Q4070 – Q4072, Q4082 – Q4091 | 2 |
| Q4093 | I. |
| D303, D4004, D4006, D4007, D4010, D4011, D4014, D4018 – D4020, D4022, D4023 | 3 |
| D4008, D4009, D4015 – D4017 | 8 |
| D4005 | 9 |

*: Refer to Treminal name of semiconductors in silk screen printed circuit (see page 44)

**(8) Schematic Diagram of C (1/2) Board**




• C (1/2) BOARD WAVEFORMS

| | |
|---|---|
| 1 0.8 Vp-p (H) | 2 0.8 Vp-p (H) |
| 3 0.8 Vp-p (H) | 4 10.0 Vp-p (H) |
| 5 10.0 Vp-p (H) | 6 10.0 Vp-p (H) |
| 7 10.0 Vp-p (H) | 8 10.0 Vp-p (H) |
| 9 10.0 Vp-p (H) | 0 10.0 Vp-p (H) |
| !] 10.0 Vp-p (H) | !\ 10.0 Vp-p (H) |
| !; 1.0 Vp-p (H) | !' 1.0 Vp-p (H) |
| !, 10.0 Vp-p (H) | |

## (9) Schematic Diagram of C (2/2)Board

• **C (2/2) BOARD WAVEFORMS**

1 — 5.0 Vp-p (H)

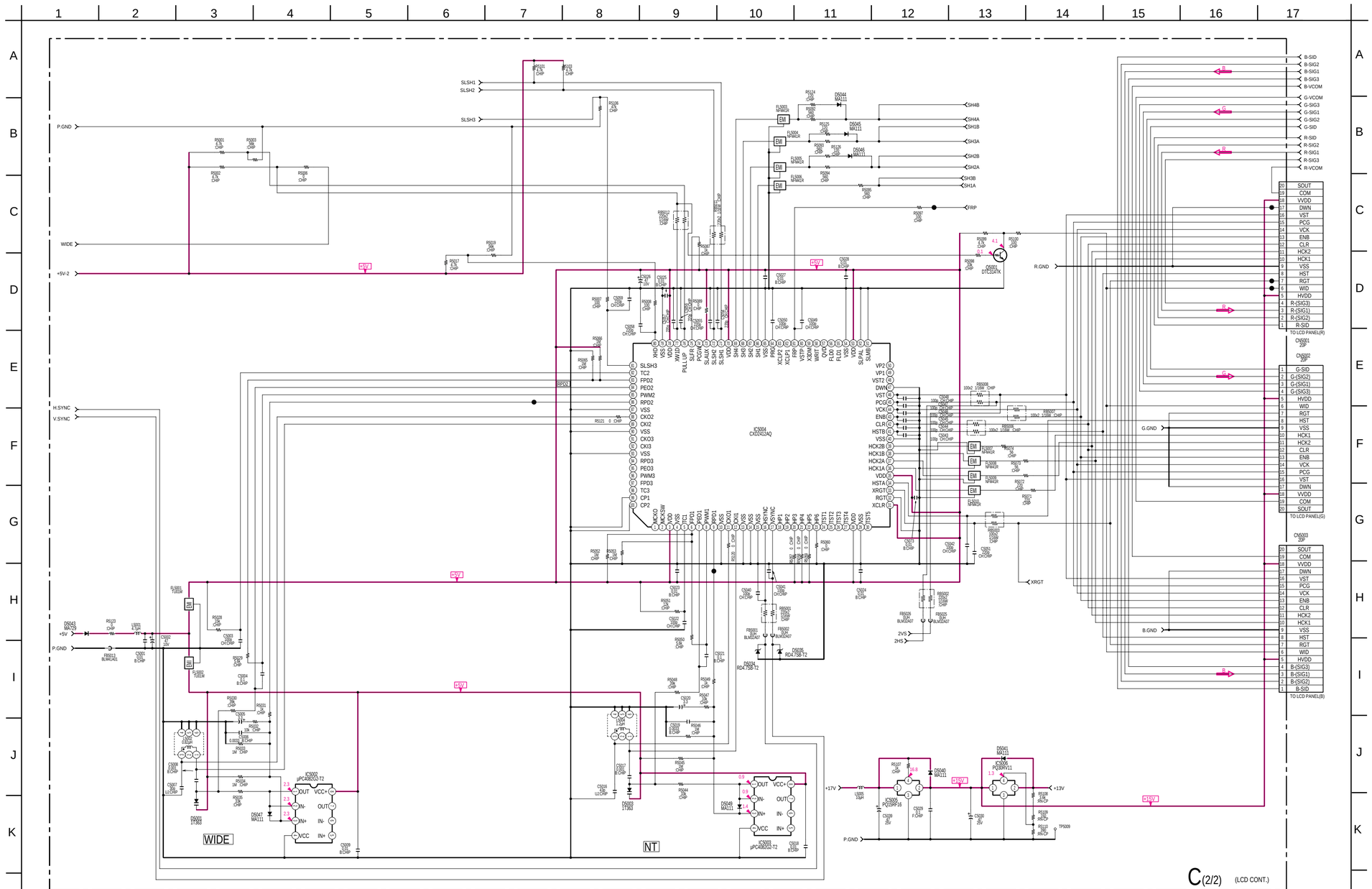
2 — 4.0 Vp-p (V)

**C BOARD**

**Terminal name of semiconductors in silk screen printed circuit (✳)**

| Ref. | ✳ |
|---|---|
| Q5404, Q5409, Q5417, Q5421, Q5425, Q5426, Q5429, Q5430, Q4533, Q5609, Q5616, Q5617, Q5620, Q5621, Q5624, Q5625, Q5628, Q5629 | 1 |
| Q5001, Q5203 – Q5207, Q5209, Q5210, Q5214 – Q5229, Q5234, Q5235, Q5237, Q5238, Q5403, Q5405 – Q5407, Q5415, Q5416, Q5418 – Q5420, Q5422 – Q5424, Q5427, Q5428, Q5435, Q5603 – Q5607, Q5614, Q5615, Q5618, Q5619, Q5622, Q5623, Q5626, Q5627, Q5632, Q5634 | 2 |
| D5001, D5003, D5034, D5035, D5040, D5041, D5043 – D5047, D5049, D5201, D5214, D5414, D5601, D5614 | 3 |
| D5202, D5402, D5602 | 9 |

✳: **Refer to Treminal name of semiconductors in silk screen printed circuit (see page 44)**




**Schematic diagram**

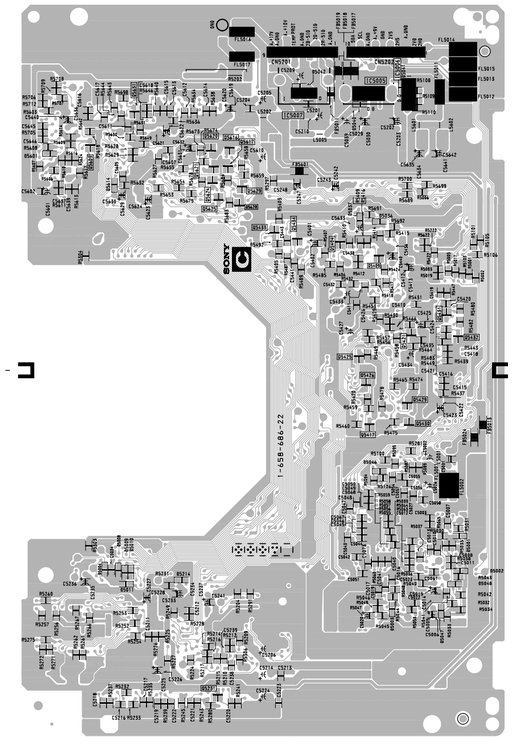
? C **(2/2) board**



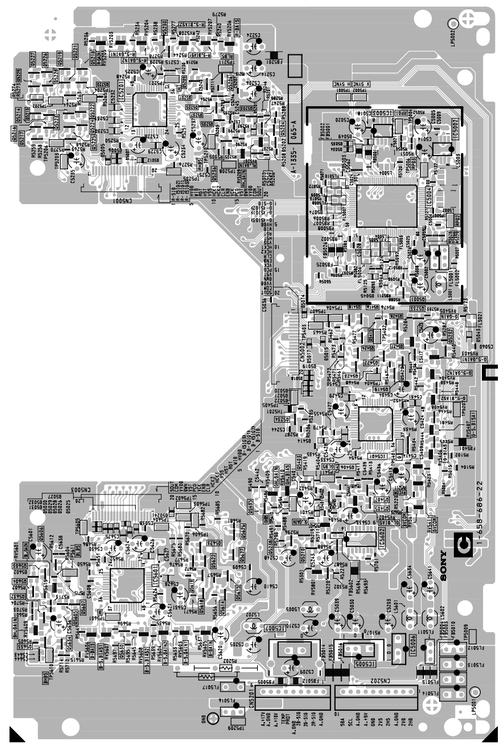


C [LCD DRIVER, LCD CONT.]

**– C Board (Conductor Side) –**



**– C Board (Conductor Side) –**



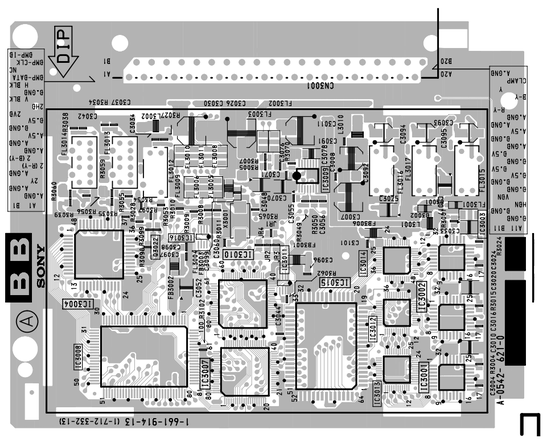
**Schematic diagram**

BB **(2/2) board /**

**BB** A/D CONV., D/A CONV. "ASPECT RATIO" CONV. MEMORY BLOCK

**– BB Board (Conductor Side) –**

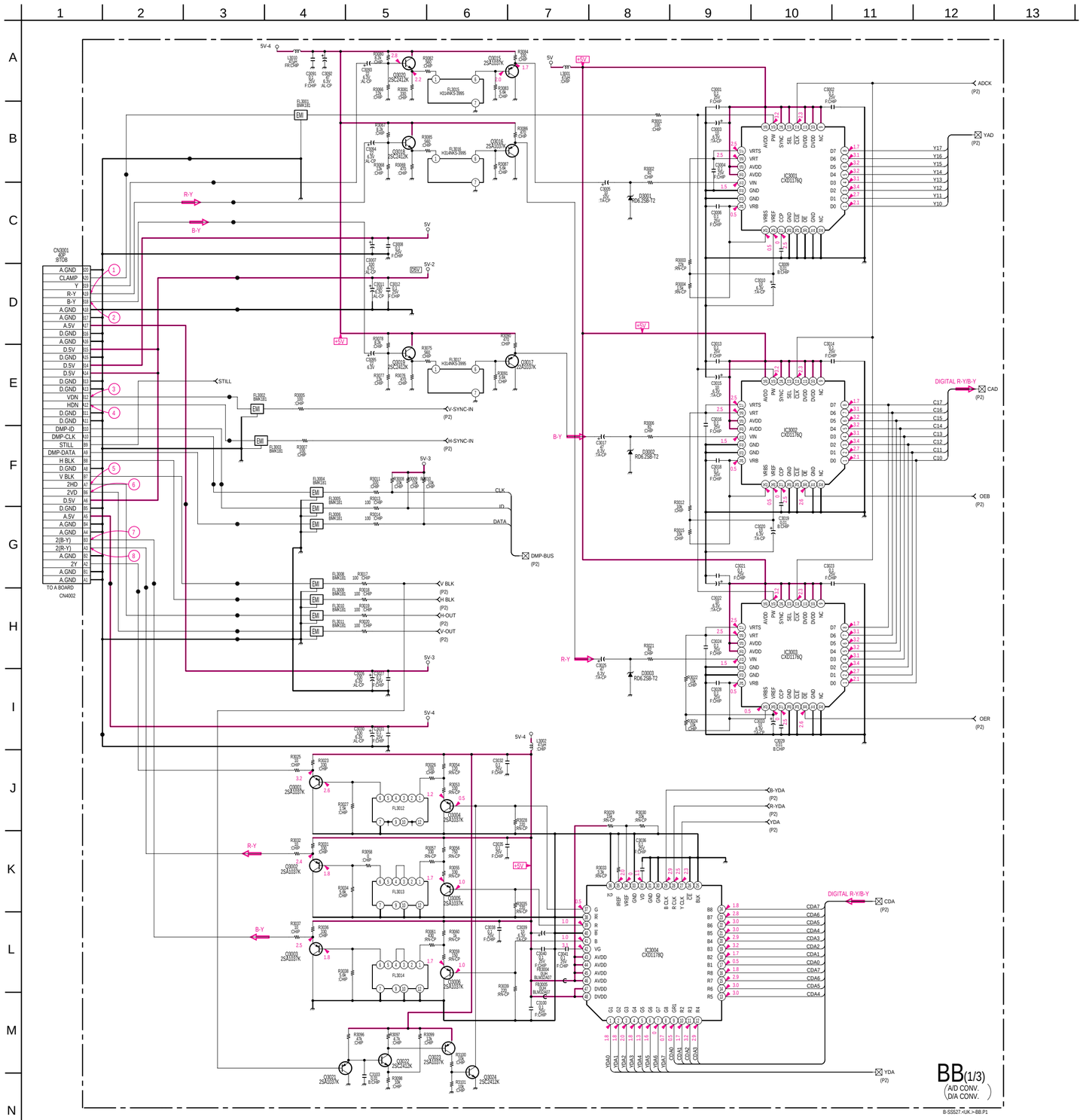
**– BB Board (Component Side) –**




**BB BOARD**
**Terminal name of semiconductors in silk screen printed circuit (✶)**

| Ref. | ✶ |
|---|---|
| Q3001 – Q3007, Q3015 – Q3021, Q3023, Q3024 | 1 |
| Q3022 | 2 |
| D3001 – D3005 | 3 |

**✶: Refer to Treminal name of semiconductors in silk screen printed circuit (see page 44)**




**• BB (1/3) BOARD WAVEFORMS**

1
1.0 Vp-p (H)

2
1.2 Vp-p (H)

3
3.0 Vp-p (H)

4
3.2 Vp-p (H)

5
4.3 Vp-p (H)

6
4.5 Vp-p (H)

7
1.0 Vp-p (H)

8
1.0 Vp-p (H)