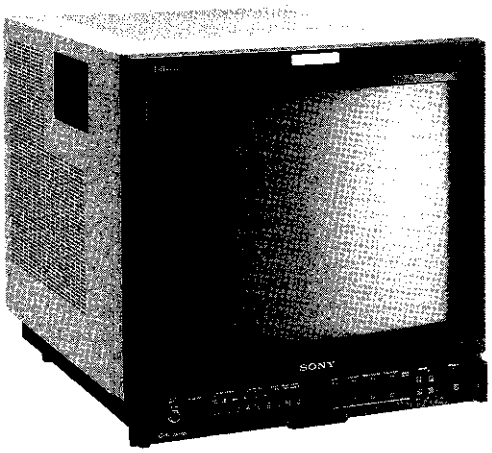
SONY

TRINITRON® COLOR VIDEO MONITOR

BVM-1916
BVM-2016P



BVM-1916
CHASSSIS NO. SCC-D19B-A
BVM-2016P
CHASSSIS NO. SCC-D12B-A

TRINITRON

OPERATION AND MAINTENANCE MANUAL

2nd Edition

Serial No. 2000001 and Higher (BVM-1916)

Serial No. 2000382 and Higher (BVM-2016P)

For customers in the U.S.A.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

Pour les utilisateurs au Canada

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

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. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

VORSICHT!!

Hinweis für den Benutzer
Das Gerät ist nicht für den Einsatz in Bildschirmarbeitsplätzen vorgesehen.

CAUTION!!

DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.

ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSNATS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DESS SUPPLEMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT INDETIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

ATTENSION!!

NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRITUR POUR DÉMAGNÉTISER L'ÉCRAN.
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LA PANNEAU FRONTAL.

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Section 1 Operation

1-1. Overview

1-1-1. Features

The BVM-1916 and BVM-2016P are high-performance color video monitors designed for critical evaluation of video signals in broadcasting stations and production houses.
The BVM-1916 is the NTSC model intended for use in NTSC color standard areas and the BVM-2016P is the PAL model for the PAL color standard areas. By using optional plug-in type decoder boards, both models permit any of the NTSC, PAL, SECAM, D1 and D2 video signals to be monitored.
The other features and operations are the same.

High-resolution picture
The Fine Pitch Trinitron picture tube (0.4-mm aperture grille pitch) gives a high resolution, high contrast picture. Horizontal resolution is more than 600 TV lines at the center of the picture.

Stabilized color temperature
The incorporated beam control circuit maintains the color temperature constant for a long period of time.

Picture aspect selection
In addition to the conventional 4:3 aspect, the16:9 aspect can be selected for monitoring the increasing number of wide-screen programs.

Split screen for precise picture confirmation
The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in the chrominance or luminance channel, etc.

Blue-only mode for precise evaluation of noise components
In blue-only mode, an apparent monochrome display is obtained with all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

Easy-to-use menu operations
The essential parameters to be preset for video monitoring can be easily set by selecting menu options displayed on the screen.

Other features

- Picture setup function facilitating adjustment of the monitor's reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators, facilitating monitor setup
- VITC (Vertical Interval Time Code) display possible using the optional BKM-1460 VITC adaptor
- Auto chroma/phase adjustment, automatic white balance adjustment etc. are possible using the optional BKM-2056 auto set-up adaptor.
- Precise setting of black level of the monitor, using the optional BKM-1480 black level signal generator
- A drawer containing convergence, white balance and menu controls and other function selectors
- High-performance comb filter available for the BVM-1916 as built-in standard. (For the BVM-2016P, the BKM-1422 is available as an option.)
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage
- EIA standard 19-inch rack mounting, using the optional BKM-2000 rack mount kit

1-1-2. Options

The following optional accessories are available for flexible changes and enhancement of the functions of the BVM-1916/2016P.

Caution

When installing the optional boards, be sure to perform the necessary settings by following the procedure mentioned in "To specify the installed optional boards" of "1-4-7. Defining the Monitor Configuration." If the settings are not correctly performed, the optional boards may not function properly.

BKM-1410 NTSC adaptor (BC board) [built-in standard for the BVM-1916]
Decoder board for the NTSC color system

BKM-1411 NTSC comb adaptor (BB board)
Comb filter board for the NTSC color system

BKM-1412 NTSC comb adaptor (BT board) [built-in standard for the BVM-1916]
Dynamic comb filter board for the NTSC color system

BKM-1420 PAL adaptor (BD board) [built-in standard for the BVM-2016P]
Decoder board for the PAL color system

BKM-1421 PAL-M adaptor (BM board)
Decoder board for the PAL-M color system

BKM-1422 PAL comb adaptor (BT board)
Comb filter board for the PAL color system

BKM-1430 SECAM adaptor (BE board)
Decoder board for the SECAM color system

BKM-1440 RGB/component adaptor (BF board)
Decoder outputs of RGB or component signals

BKM-1460 VITC adaptor (BL board)
Reader of Vertical Interval Time Code

BKM-1470 safe area display (BQ board)
For displaying the safe area

BKM-1480 black level signal generator (BS board)
For generating black level signals

BKM-2000 rack mount kit
For mounting in an EIA standard 19-inch rack

BKM-2053 auto set-up probe
For auto set-up operation with the BKM-2056 auto set-up adaptor

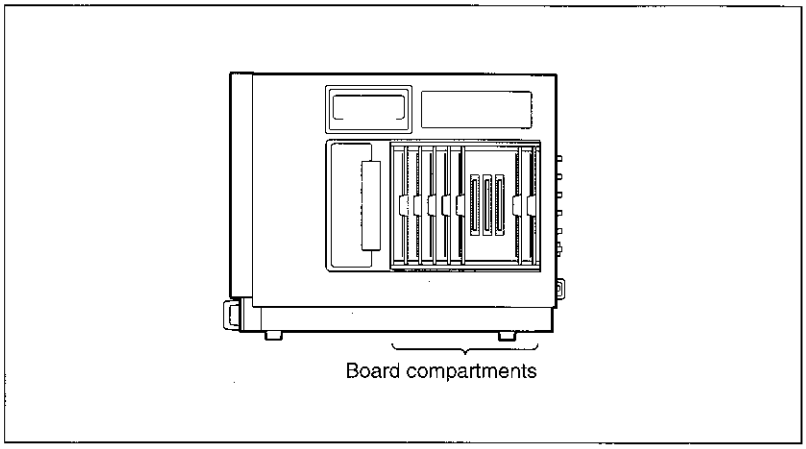
BKM-2056 auto set-up adaptor (BN, BO and BP boards)
For auto chroma/phase adjustment, auto white balance adjustment, and selection of color temperature

BKM-2085-20 digital 4:2:2 serial input kit (BA3 and BV boards)
For two serial inputs of component digital video signals

BKM-2090-20 D-2 serial input kit (BA3 and BU boards)
For serial input of a digital composite video signal

Combination of the optional boards

The BVM-1916/2016P is equipped with the board compartments B1 through B5 behind the right-side panel, each of which can hold an optional board selected from the B boards listed above.



Right-side view

The BVM-1916 comes from the factory with the BT (NTSC comb adaptor) and BC (NTSC adaptor) boards installed in compartments B4 and B5.
The BVM-2016P comes from the factory with the BD (PAL adaptor) boards installed in compartment B5.
Note that the combinations of boards are limited by the allowable board assignments, as shown in the table on the next page.
Add the desired boards or replace the supplied BT, BC or BD board with optional boards, referring to the table on the next page.

Notes

- The compartments other than B1 through B5 are reserved for the supplied BA, BG, BH, BI and BJ boards. Be sure to use these boards in the respective compartments having the same names.
- Do not leave compartment B5 empty. Be sure to insert one of the boards specified in the table on the next page. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.

Board assignment

Board name	Function	Compartment name				
		B5	B4	B3	B2	B1
BB (BKM-1411)	NTSC comb filter	X	○	○	○	○
BT (BKM-1412)	NTSC comb filter	○	○	○	○	○
BT (BKM-1422)	PAL comb filter	○	○	○	○	○
BC (BKM-1410)	NTSC decoder	○	○	○	○	○
BD (BKM-1420)	PAL decoder	○	○	○	○	○
BE (BKM-1430)	SECAM decoder	○	○	○	○	○
BM (BKM-1421)	PAL-M decoder	○	○	○	○	○
BF (BKM-1440)	RGB/component adaptor	X	X	○	X	X
BL (BKM-1460)	VITC reader	X	X	X	○	X
BQ (BKM-1470)	Safe area display	X	△	X	○	X
BS (BKM-1480)	Black level signal generator	○	○	○	○	○
BN, BO, BP (BKM-2056)	Auto set-up adaptor	○	○	X	X	X
BV, BA3 (BKM-2085-20)	Digital 4:2:2 serial interface	X	X	X	X	○
BU, BA3 (BKM-2090-20)	D-2 serial interface	X	X	X	X	○

○ : acceptable
× : not acceptable
△ : acceptable but the switch or control settings on the subcontrol panels cannot control the display.

Notes

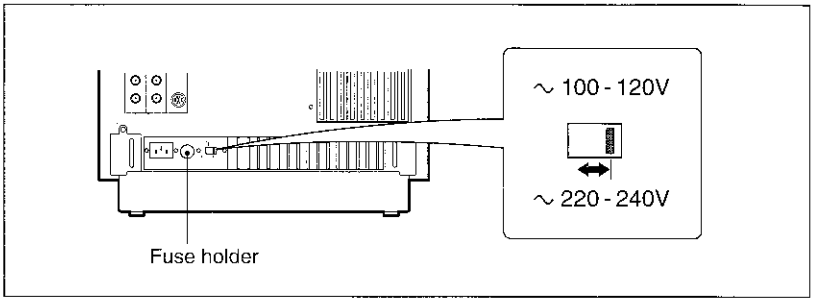
- Do not use the BD (PAL decoder) and the BM (PAL-M decoder) boards simultaneously. This causes malfunctions of the monitor.
- Do not use the BB (NTSC comb filter) and the BT (NTSC comb filter) boards simultaneously. This causes malfunctions of the monitor.

For details on installation and functions of the optional boards, refer to the operation and maintenance manuals of the boards.

Section 1 Operation

1-2. Voltage Selection

The BVM-1916 operates on 100-120 V AC and the BVM-2016P operates on 220-240 V AC.
Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of your monitor is set for the appropriate voltage. If not, change the position of the selector.



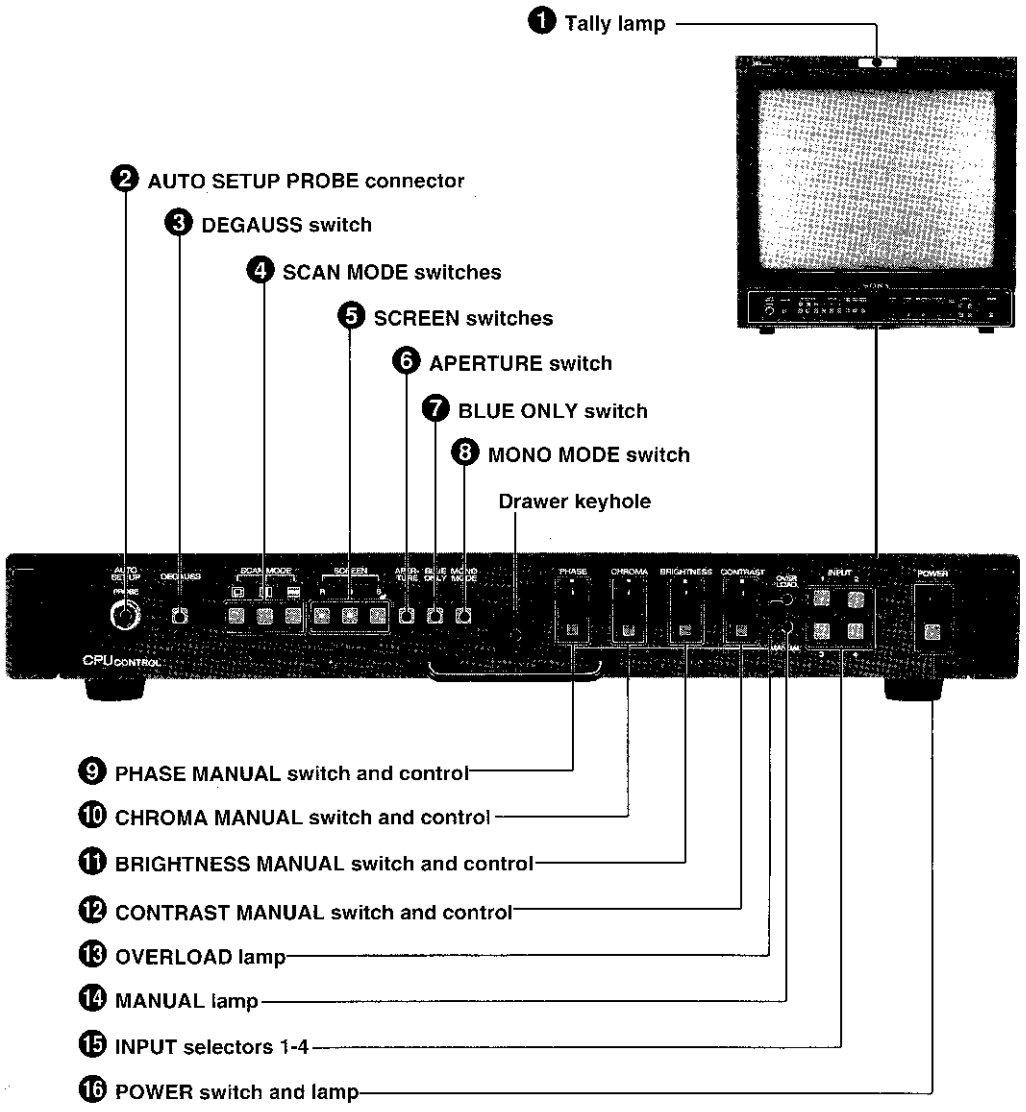
Voltage selector

Note

Use a 4A/125 V fuse for the BVM-1916 (100-120 VAC) and a T2A/250V fuse for the BVM-2016P (220-240 V AC). The appropriate fuse is installed at the factory in accordance with the voltage presetting.

1-3. Location and Function of Parts

1-3-1. Front Panel



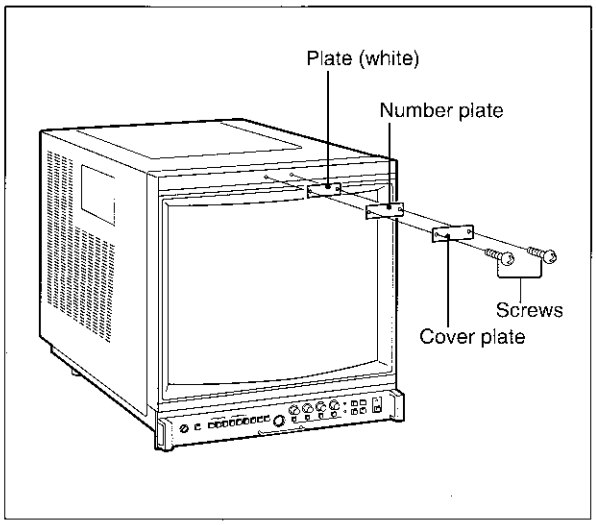
The photo shows the BVM-1916. The parts configuration is common to the BVM-2016P.

Front panel

Section 1 Operation

❶ Tally lamp

Lights when pin No. 3 and No. 8 of the REMOTE connector on the rear panel are short-circuited. The model number plate has been attached here at the factory. Replace it with one of the supplied tally number plates, as illustrated below.



❷ AUTO SETUP PROBE connector

Connect the optional BKM-2053 auto set-up probe for auto setup operations.

❸ DEGAUSS switch

When the power is turned on, automatic degaussing is activated.
To demagnetize the screen manually, press this switch momentarily with the power on.
When degaussing repeatedly, wait for 5 minutes or more before pressing the switch again.

❹ SCAN MODE switches

(underscan): Depress this switch for underscanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.

(horizontal delay): Depress this switch to observe the horizontal sync signal in the left quarter of the screen. Picture brightness is automatically increased for easy observation.

(vertical delay): Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.

- A pulse cross is displayed by depressing both the and switches.
- To resume normal scanning, press to release the depressed switches.

❺ SCREEN switches

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

❻ APERTURE switch

Normally keep this switch released. A flat frequency response is obtained.
For aperture correction, depress this switch and adjust the APERTURE control inside the drawer. The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the S1 switch on the internal BG board.
With the S1 switch set at the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture.
With the S1 switch set to the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of aperture loss of the CRT.

❼ BLUE ONLY switch

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.

❽ MONO MODE switch
Normally keep this switch released (AUTO mode). Color or monochrome mode is automatically selected according to the presence or absence of color burst.
Depress the switch to display color pictures in monochrome (MONO mode).

❾ PHASE MANUAL switch and control
When this switch is in the released position, the subcarrier phase preset with the PRESETS menu operation is obtained.
To adjust the subcarrier phase manually, depress the switch and turn the control.
See "1-4-3. Presetting the Picture Levels."

Note
The PHASE MANUAL switch and control are disabled when the SECAM system is selected (the SECAM lamp is lit) with the SYSTEM button in the drawer, or the PAL system is selected (PAL lamp is lit) with selecting PAL D mode (the PAL S/SECAM F/COMB S lamp is not lit).

❿ CHROMA MANUAL switch and control
When this switch is in the released position, the color saturation preset with the PRESETS menu operation is obtained.
To adjust the color saturation manually, depress the switch and turn the control.
See "1-4-3. Presetting the Picture Levels."

⓫ BRIGHTNESS MANUAL switch and control
When this switch is in the released position, the brightness preset with the PRESETS menu operation is obtained.
To adjust the brightness manually, depress the switch and turn the control.
See "1-4-3. Presetting the Picture Levels."

⓬ CONTRAST MANUAL switch and control
When this switch is in the released position, the contrast preset with the PRESETS menu operation is obtained.
To adjust the contrast manually, depress the switch and turn the control.
See "1-4-3. Presetting the Picture Levels."

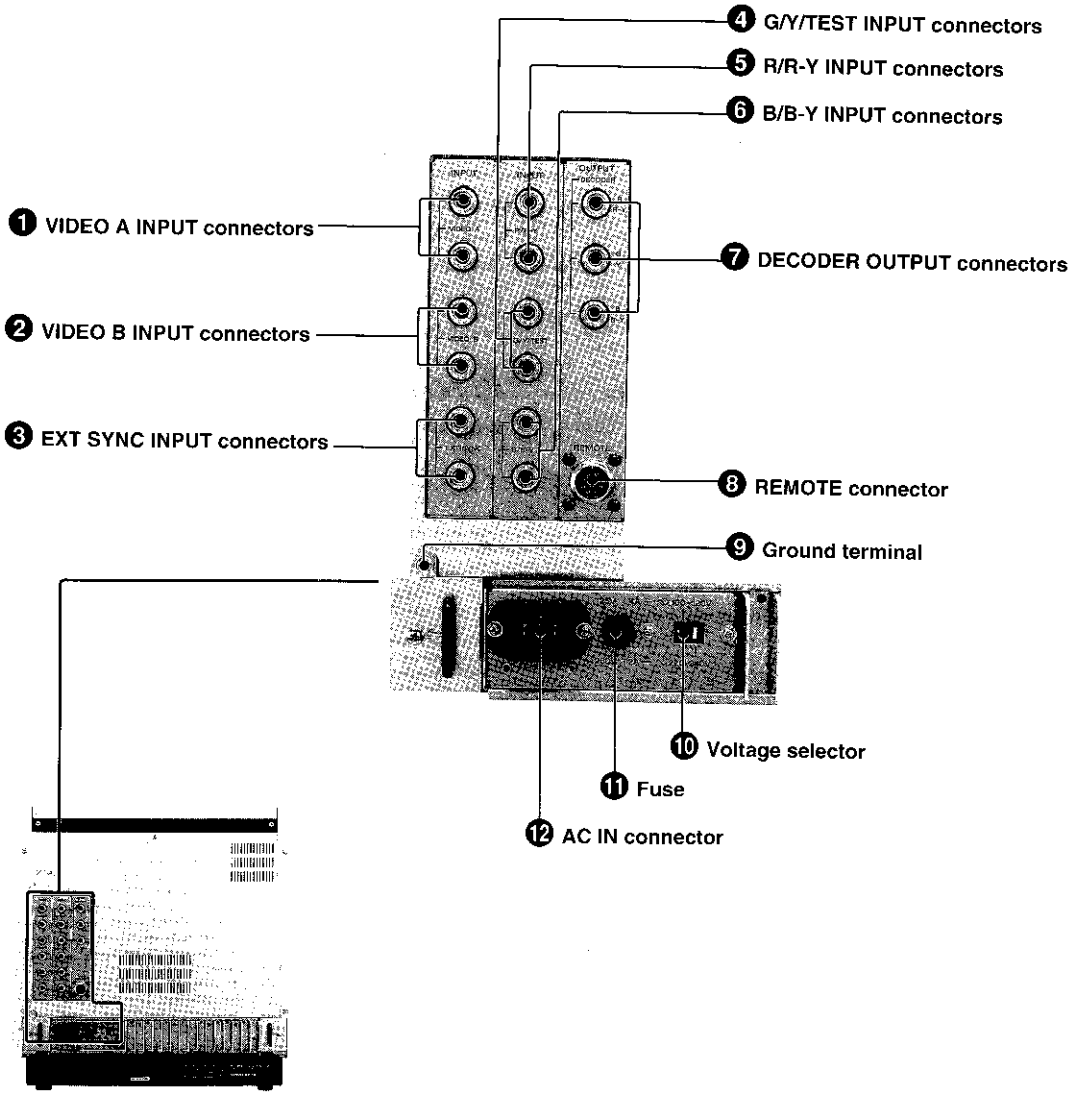
⓭ OVERLOAD lamp
Lights to warn of overloading of the CRT.

⓮ MANUAL lamp
Lights when any of the four MANUAL switches ❾ through ⓬ is depressed.

⓯ INPUT selectors 1 - 4
Select the input signal to be monitored by pressing one of these buttons.
The requirements of the input signals can be set with the CONFIGURATION buttons in the drawer and can be assigned independently to the selectors and stored in memory through the INPUT CONFIG menu operation.
See "1-4-2. Setting the Input Configuration."

⓰ POWER switch and lamp
Depress this switch to turn on the power. The lamp lights. To turn it off, press the switch again.

1-3-2. Rear Panel



The photo shows the BVM-1916. The parts configuration is common to the BVM-2016P.

Rear panel

❶ VIDEO A INPUT connectors (BNC)
❷ VIDEO B INPUT connectors (BNC)

Input composite video signals.
Use one connector of each pair for input and the other for loop-through output.
When the loop-through output is not used, attach a 75-ohm terminator.

❸ EXT SYNC INPUT (external sync input) connectors (BNC)

Input a sync signal.
Use one connector for input and the other for loop-through output.
When the loop-through output is not used, attach a 75-ohm terminator.

❹ G/Y/TEST INPUT connectors (BNC)
❺ R/R-Y INPUT connectors (BNC)
❻ B/B-Y INPUT connectors (BNC)
Input RGB video signals, component signals or a composite test signal. The signal format can be selected with the FORMAT button in the drawer.
Use one connector of each pair for input and the other for loop-through output.
When the loop-through output is not used, attach a 75-ohm terminator.

❼ DECODER OUTPUT connectors (BNC)
Output RGB or component (Y, R-Y, B-Y) outputs decoded from the composite (VIDEO A, VIDEO B or TEST) or component signals being displayed on the screen with the BKM-1440 RGB/component adaptor installed.
The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.
To provide RGB output, set the S1 selector to the upper position.
To provide component output, set it to the lower position.

Notes

- The DECODER OUTPUT connectors do not provide the correct RGB outputs when RGB signals are displayed on the screen. To obtain the correct RGB outputs, use the loop-through outputs of the R, G and B INPUT connectors.
- The outputs obtained from noncomposite signals are also noncomposite. Supply a sync signal from the EXT SYNC INPUT connector when required.
- The output signals are affected by the CHROMA, PHASE and APERTURE controls and MATRIX switch.
- The color killer circuit is not activated for output signals.

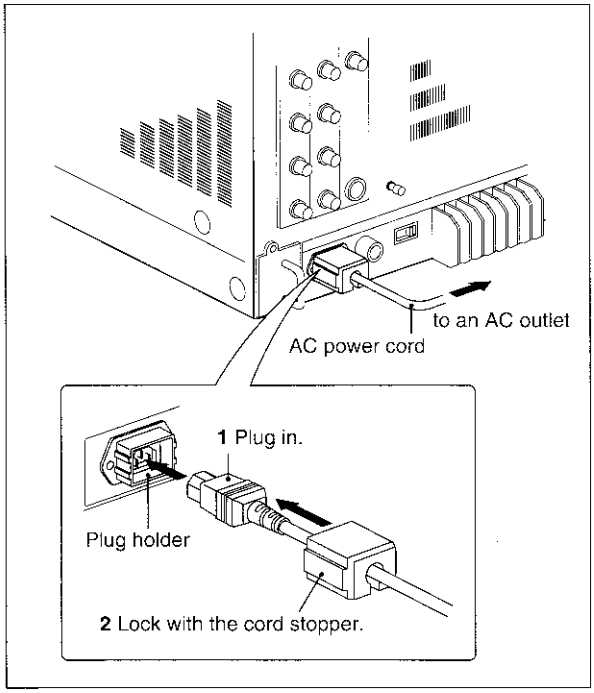
❽ REMOTE connector
Connect to an external control device using the supplied 10-pin connecter.
To enter remote control mode, press the LOCAL/REMOTE button in the drawer so that the associated lamp lights.
The input mode and the pin assignment can be set through the REMOTE menu operation.
See "1-4-6. Assigning the Remote Control Functions."

❾ Ground terminal
Connect to the system ground, when required.

❿ Voltage selector
Set to 100-120 V AC for the BVM-1916 or 220-240 V AC for the BVM-2016P.

⓫ Fuse
Use a 4A fuse for the BVM-1916 or a T2A fuse for the BVM-2016P.

⓬ AC IN connector
Connect the supplied AC power cord here and secure it with the supplied cord stopper.



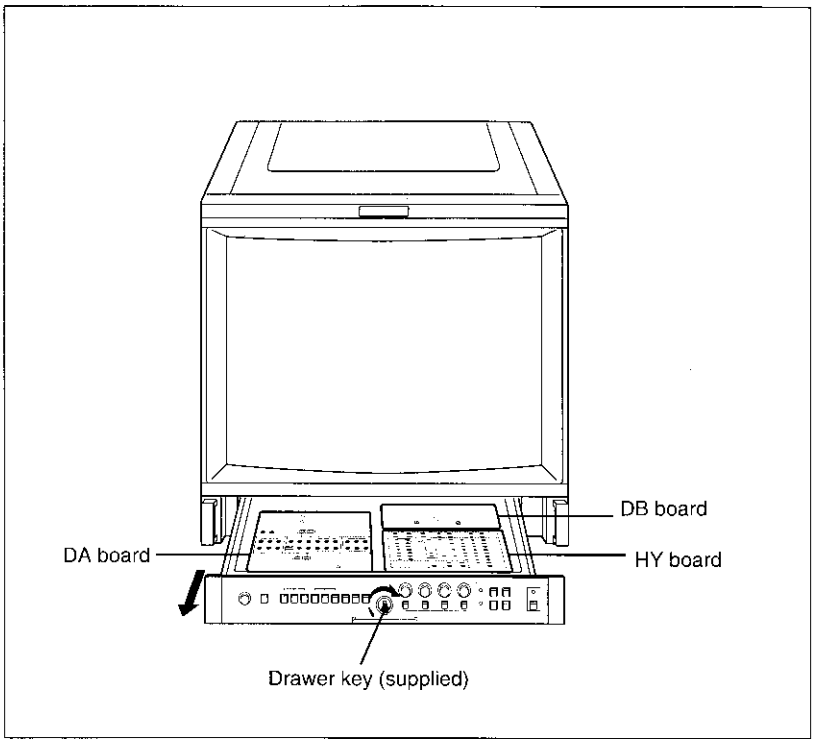
NOTICE
THIS NOTICE IS APPLICABLE FOR THE USA ONLY.
If shipped to the USA, use the UL LISTED power cord specified below for 220 - 240 V AC operation.

DO NOT USE ANY OTHER POWER CORD.

Plug cap	Tandem blade with ground pin
Cord	Type SJT, three 16 or 18 AWG Wires
Length	Maximum 15 feet
Rating	Minimum 10 A, 250 V AC

1-3-3. Subcontrol Panels inside the Drawer

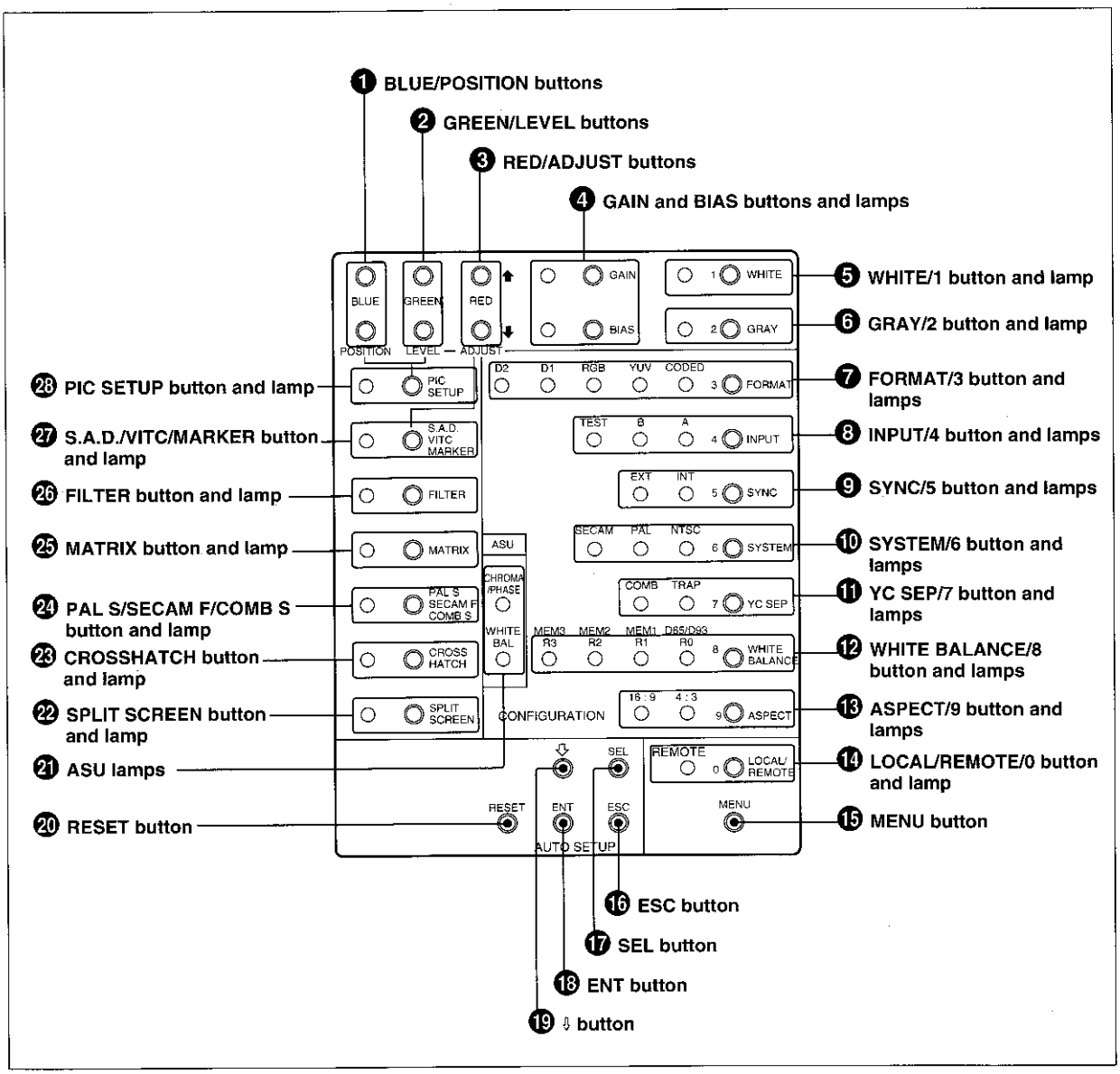
Insert the supplied drawer key into the keyhole of the drawer lock, turn it 90° clockwise and pull the drawer out.
Adjust the button and controls on the subcontrol panels when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.



Subcontrol panels

For turning the controls on the DA and DB boards, use the supplied screwdriver.

HY board (input configuration, menu and auto setup operation section)



HY board

❶ BLUE/POSITION buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the blue signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the position of the input signal checking zone.

❷ GREEN/LEVEL buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the green signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the brightness of the black reference area.

❸ RED/ADJUST buttons
When adjusting white balance (the GAIN or BIAS lamp is lit), use these button to adjust the red signal.
When the safe area is displayed (the S.A.D./VITC/ MARKER lamp is lit), use them to adjust the safe area size.

❹ GAIN and BIAS buttons and lamps
When adjusting the white balance, select the adjustment items.
BIAS: Adjust the white balance at the lowlight and brightness of the screen.
GAIN: Adjust the white balance at the highlight and contrast of the screen.
For the adjustments, use the BLUE/POSITION, GREEN/LEVEL and RED/ADJUST buttons.

❺ WHITE/1 button[1] and lamp
When adjusting the white balance at the highlight, press this button so that the lamp lights. The internal 100% white signal is displayed on the screen. To turn off the signal, press the button again.

❻ GRAY/2 button[1] and lamp
When adjusting the white balance at the lowlight, press this button so that the lamp lights. The internal gray signal is displayed on the screen. To turn off the signal, press the button again.

❼ FORMAT/3 button[1] and lamps
Select the signal format according to the signal to be monitored. Press this button so that the lamp of the appropriate format lights.
CODED: For monitoring NTSC, PAL or SECAM signal with the decoder board (BC, BD, BE or BM) installed.
YUV: For monitoring Y/R-Y/B-Y component signals.
RGB: For monitoring RGB signals.
D-1: For monitoring D-1 format component signals.
D-2: For monitoring a D-2 format composite signal.

❽ INPUT/4 button[1] and lamps
When monitoring a composite signal, select the input connector.
Press this button so that the lamp of the appropriate connector lights.
A: For monitoring the signal connected to the VIDEO A INPUT connector.
B: For monitoring the signal connected to the VIDEO B INPUT connector.
TEST: For monitoring the test signal connected to the G/Y/TEST connector.

❾ SYNC/5 button[1] and lamps
Select the sync mode. Press this button so that the lamp of the appropriate mode lights.
INT (internal sync mode): The unit operates in synchronization with the sync signal of the composite signal being displayed on the screen.
EXT (external sync mode): The unit operates in synchronization with the sync signal supplied from the EXT SYNC INPUT connector.

❿ SYSTEM/6 button[1] and lamps
When monitoring a composite signal or a signal decoded with a decoder board (BC, BD, BE or BM), select the color system according to the signal to be monitored. Press this button so that the lamp of the appropriate system lights.
NTSC: For monitoring a signal of the NTSC color system.
PAL: For monitoring a signal of the PAL color system.
SECAM: For monitoring a signal of the SECAM color system.

Note
If the decoder board for the selected color system has not been installed:
- The picture does not appear when the FILTER lamp is lit (FILTER ON).
- The picture is displayed in monochrome when the FILTER lamp is not lit (FILTER OFF).

1) These buttons also function as numeric keys when specifying the password.
See "1-4-5. Changing and Applying the Password."

⓫ YC SEP(Y/C separation filter)/7 button[1] and lamps

For NTSC or PAL signal, select the filter to be used for Y/C separation. Press the button so that the lamp of the appropriate filter lights.

COMB: To use the comb filter with the comb filter board (BB or BT) installed.

TRAP: To use the built-in trap filter.

Note

When the appropriate comb filter board has not been installed, the trap filter is activated regardless of the setting with this button.

⓬ WHITE BALANCE/8 button[1] and lamps

Select the white balance and picture levels stored in the respective registers. Press this button so that the lamp of the appropriate register lights.

At the factory, the white balance for D65 has been stored in all the registers.

D65/D93 R0: To use the white balance and picture levels stored in register 0.

MEM 1 R1: To use the white balance and picture levels stored in register 1.

MEM 2 R2: To use the white balance and picture levels stored in register 2.

MEM 3 R3: To use the white balance and picture levels stored in register 3.

For details, see "1-4. Menu Operations."

⓭ASPECT/9 button[1] and lamps

Select the aspect ratio of the picture to be monitored. Press this button so that the lamp of the appropriate ratio lights.

4:3: For the 4:3 aspect

16:9: For the 16:9 aspect.

⓮ LOCAL/REMOTE/0 button[1] and lamp

To enable the monitor to be controlled from an external control device connected to the REMOTE connector on the rear panel, press this button so that the lamp lights (REMOTE mode). To disable the remote control (LOCAL mode), press the button again.

For the remote control functions, see "1-4-6. Assigning the Remote Control Functions."

⓯ MENU button

Press to initiate menu operations. The initial menu is displayed.

⓰ ESC (escape) button

Press to quit menu or auto setup operations.

⓱ SEL (select) button

Press to set the monitor to color temperature selection mode in auto setup operations. In color analyzer mode, select the memory position of the probe connected to the AUTO SETUP PROBE connector.

For details, refer to the operation and maintenance manual of the BKM-2056 auto set-up adaptor.

⓲ ENT (enter) button

Press to proceed to the next step during menu or auto setup operation and save the data.

⓳ ⇩ (cursor) button

For selecting menu options displayed on the screen in menu or auto setup operations. Each time this button is pressed, the cursor moves downwards and, if at the bottom, jumps to the top.

⓴ RESET button

Press to reset an auto setup operation.

㉑ ASU (automatic setup) lamps

CHROMA/PHASE: Lights when the automatic chroma and phase adjustment is completed with AUTO CHROMA/PHASE in auto setup operations. The lamp goes off when MANUAL is selected on the SELECT MONITOR MEM menu in auto setup operations.

WHITE BAL: Lights when one of the color temperature to be transfered to the monitor by the auto white balance adjustment is selected on the SELECT MONITOR MEM menu in auto setup operations. When this lamp is lit, the color temperature selection on the SELECT MONITOR MEM menu can be performed using the WHITE BALANCE/8 button.

1) These buttons also function as numeric keys when specifying the password.
See "1-4-5. Changing and Applying the Password."

㉒ SPLIT SCREEN button and lamp
To display the lower half of the picture in monochrome mode, press this button so that the lamp lights. Press this button again to resume the normal picture.

㉓ CROSSHATCH button and lamp
To display the internal crosshatch pattern for convergence adjustment, press this button so that the lamp lights.
The crosshatch pattern is synchronized with the selected composite sync signal.
To turn off the pattern, press the button again.

㉔ PAL S/SECAM F/COMB S button and lamp
While monitoring a PAL signal, the demodulation mode of the the PAL system can be switched. When this button is pressed and the lamp lights, S (simple) mode is selected. By pressing the button to turn off the lamp, D (deluxe) mode is selected.
While monitoring a SECAM signal, the ID signal of the the SECAM system can be switched. When this button is pressed and the lamp lights, the F (field) signal is selected. By pressing the button to turn off the lamp, the L (line) signal is selected.
When the BKM-1412 NTSC comb filter is activated, the comb filter mode can be switched. When this button is pressed and the lamp lights, the S (simple) comb filter is selected. By pressing the button to turn off the lamp, the D (dynamic) comb filter is selected. (When the BKM-1411 NTSC comb filter is activated, the S (simple) comb filter is always selected regardless of the button setting.)

㉕ MATRIX button and lamp
Should normally be OFF (lamp not lit).
By pressing this button so that the lamp lights (ON), the matrix circuit is activated and the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors.
To turn off the matrix circuit, press the button again.

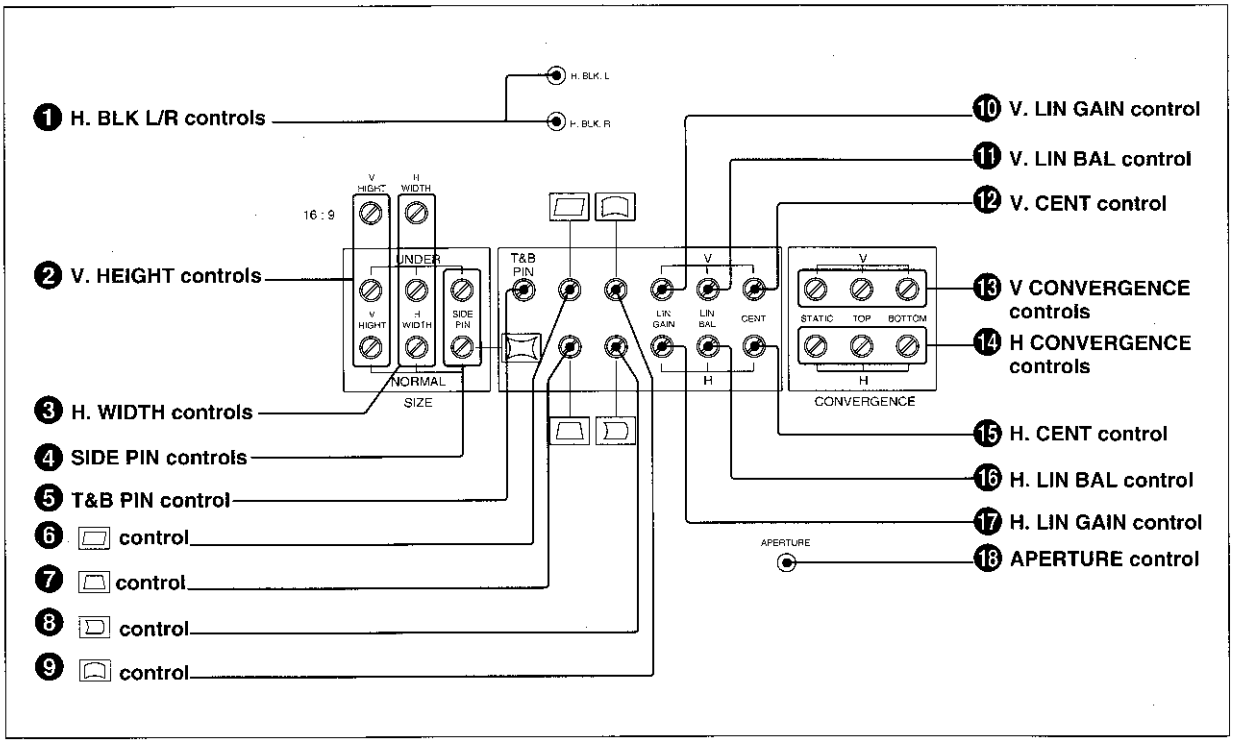
㉖ FILTER button and lamp
To activate the comb or trap filter (selected with the YC SEP button) in MONO mode (MONO MODE switch on the front panel depressed), press this button so that the lamp lights.
To deactivate the filter for a wider frequency range, press the button again.

Note
In AUTO mode (the MONO MODE switch released), the filter is always activated for color signals regardless of the setting with this button.

㉗ S.A.D.(safe area display)/VITC/MARKER button and lamp
When the safe area is displayed with the BQ board (BKM-1470 safe area display) installed, the adjustment of the safe area size can be enabled.
When the BL board (BKM-1460 VITC adaptor) has been installed, the VITC display can be turned on and off.

㉘ PIC SETUP (picture setup) button and lamp
Use to match the black reference of the monitor with the black level of the input signal to be monitored.
By pressing this button so that the lamp lights, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.
See "1-5-2. Black Level Adjustment."

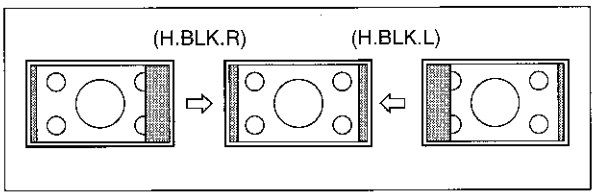
DA board



DA board

❶ H. BLK. L/R (horizontal blanking left/right) controls

Adjust the width of the horizontal blanking at both sides of the screen.



❷ V. HEIGHT (vertical height) controls

Adjust the height of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

❸ H. WIDTH (horizontal width) controls

Adjust the horizontal width of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

❹ SIDE PIN (pincushion) controls

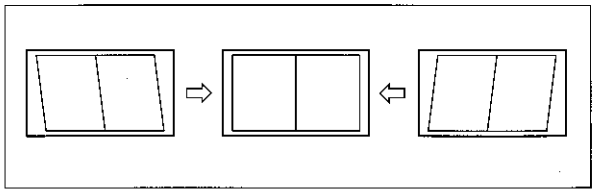
Correct the side pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture and the UNDER control for the 4:3-aspect underscanned picture.

❺ T&B PIN (top and bottom pincushion) distortion control

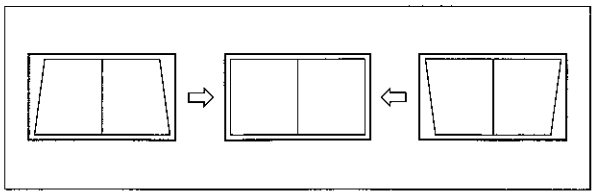
Correct the top and bottom pincushion distortion.

❻ ▱ (parallelogram distortion) control

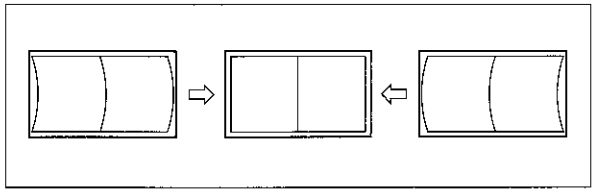
Correct the right angled distortion of the deflection yoke.



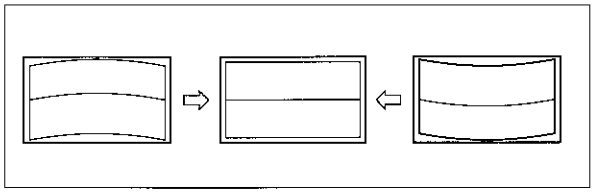
❼ (side pincushion tilt) control
Adjust the phase of the side pincushion distortion.



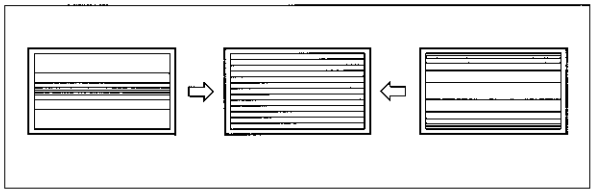
❽ (horizontal centering linearity) control
Adjust the horizontal linearity at the center of the picture.



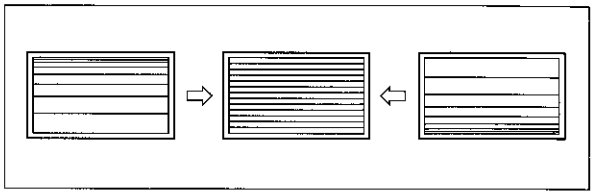
❾ (top and bottom pincushion balance) control
Adjust the distortion at the center (X axis) of the picture.



❿ V. LIN GAIN (vertical linearity gain) control
Adjust the vertical linearity of the picture.

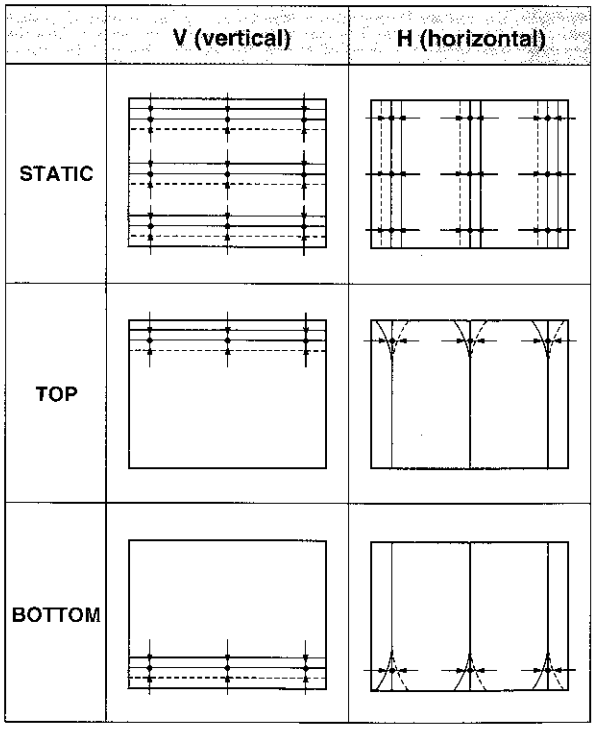


⓫ V. LIN BAL (vertical linearity balance) control
Adjust the balance of the vertical (Y axis) linearity of the picture.



⓬ V. CENT (vertical centering) control
Adjust the vertical position of the picture.

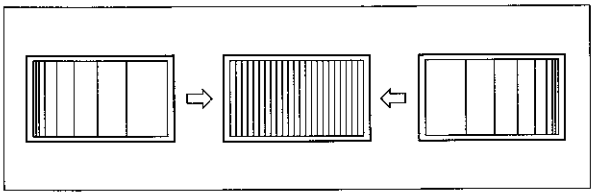
⓭ V (vertical) CONVERGENCE controls
⓮ H (horizontal) CONVERGENCE controls
Adjust the vertical (Y axis) or horizontal (X axis) convergence of corresponding portion of the screen as follows.



⓯ H. CENT (horizontal centering) control
Adjust the horizontal position of the picture.

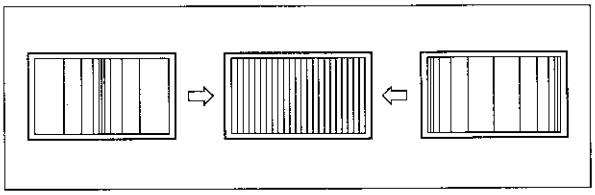
⑯ H. LIN BAL (horizontal linearity balance) control

Adjust the balance of the horizontal (x axis) linearity of the picture.



⑰ H. LIN GAIN (horizontal linearity gain) control

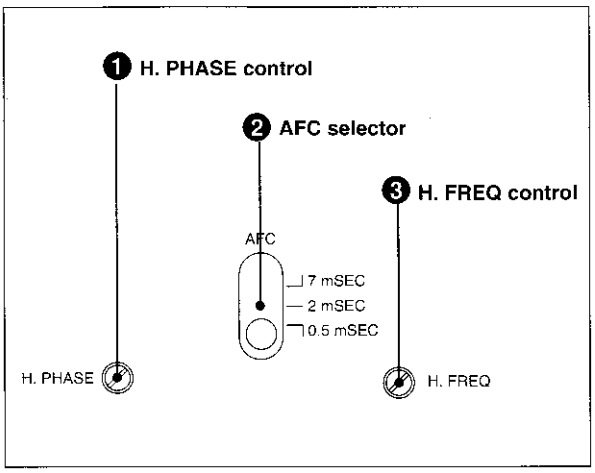
Adjust the horizontal linearity of the picture.



⑱ APERTURE control

Adjust the frequency response when the APERTURE switch on the front panel is depressed.

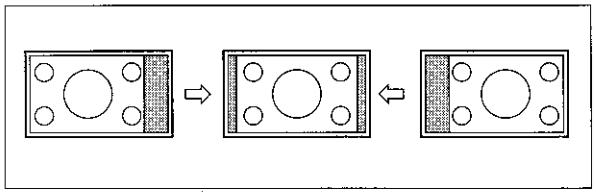
DB board (H.V. oscillator section)



DB board

❶ H. PHASE (horizontal phase) control

Adjust the horizontal position of the picture.



❷ AFC (automatic frequency control) selector

Select the AFC time constant.

0.5 mSEC (fast): This mode is fast enough to compensate for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.

2 mSEC (normal): Normally set to this position.

7 mSEC (slow): This mode is slow enough to display the time base instability introduced by mechanical jitter in the VTR playback signal.

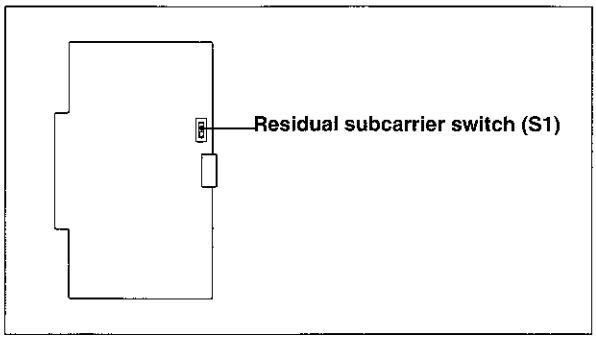
❸ H. FREQ (oscillator) control

Adjust the free-run horizontal frequency.

1-3-4. Switches inside the Cabinet

To access to the switches on the boards inside the cabinet, see Section 2.

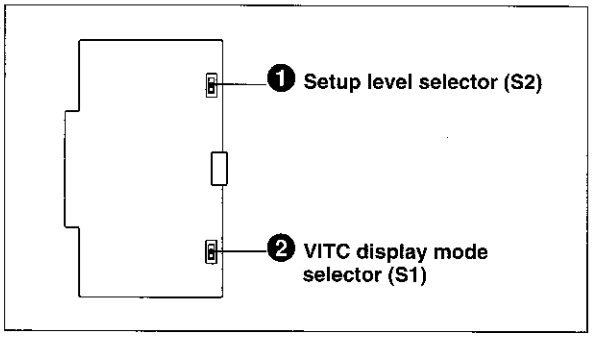
BJ board



BJ board

Residual subcarrier switch (S1)
This switch is factory-preset to the lower position (OFF).
Normally there will be no residual subcarrier in input video signals. However, if a residual subcarrier is present, this may affect the display. Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.

BH board

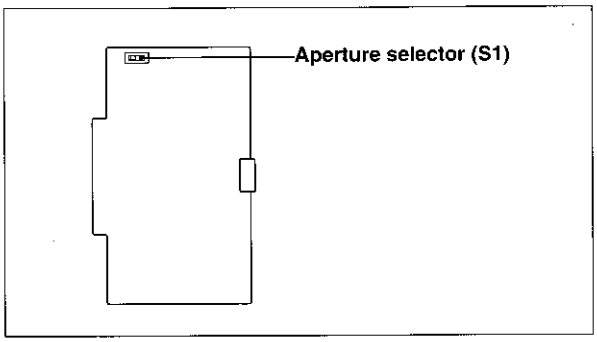


BH board

❶ Setup level selector (S2)
Select the setup level.
0 IRE: The setup level is 0%.
AUTO: The setup level set through the COMPONENT OFFSET or NTSC OFFSET option of the MONITOR CONFIG menu is obtained.
See "1-4-7. Defining the Monitor Configuration."
7.5 IRE: The setup level is 7.5%.
The 0% setup levels can be varied with the RV1 control and 7.5% level with the RV2 control in a range from –2.5% through +12.5%.

❷ VITC display mode selector (S1)
Use to invert the character and background colors for VITC display.
Upper position: Factory-preset position. The VITC is displayed in white characters on a black background.
Lower position: The VITC is displayed in black characters on a white background.
For details, see the operation and maintenance manual of the BKM-1460 VITC adaptor.

BG board

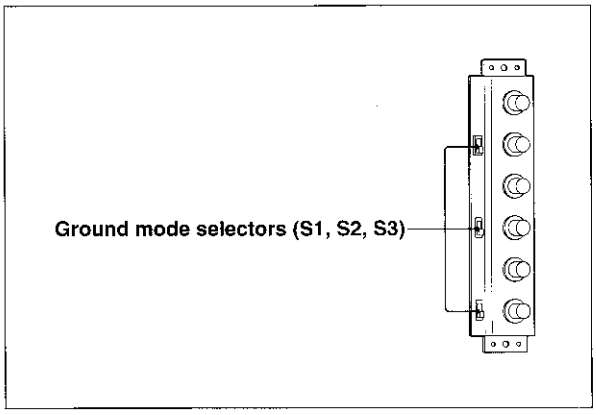


BG board

Aperture selector (S1)
Select the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

QA and QB boards

The QA board is located behind the VIDEO A, VIDEO B and EXT SYNC INPUT connector panel and the QB board is located behind the R/R-Y, G/Y/TEST and B/B-Y INPUT connector panel. To access these boards, remove the INPUT connector panels, referring to Section 2.



QA and QB boards

Ground mode selectors (S1, S2, S3)
The selectors on the QA board correspond to the VIDEO A, VIDEO B or EXT SYNC INPUT connectors and those on the QB board correspond to the R/R-Y, G/Y/TEST or B/B-Y connectors, respectively.

S (nonfloating): Factory-preset position. Normally keep the selectors at this position.

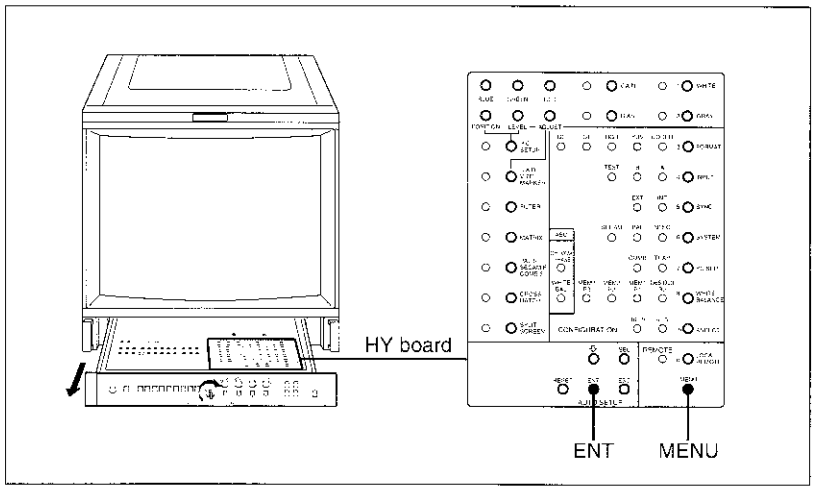
F (floating): When there is hum in the input signal to be monitored, set to this position. Common mode noise will be rejected.

1-4. Menu Operations

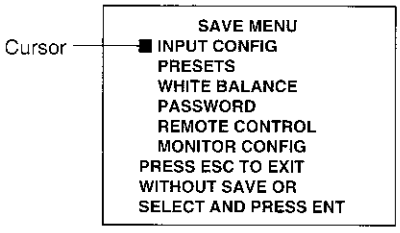
The menu operations permit the various monitor requirements to easily be set by following messages displayed on the screen.

1-4-1. Starting with the Menu Operations

For the menu operations, use the buttons on the HY board in the drawer and some switches and controls on the front panel.



Pressing the MENU button displays the following initial menu showing the items which can be set through the menu operations.



Initial menu

INPUT CONFIG (input configuration): To assign input signals to INPUT selectors 1 to 4 on the front panel.
PRESETS: To adjust the preset values for the phase, chroma, contrast, brightness, and picture setup (black reference) levels.
WHITE BALANCE: To adjust the white balance.
PASSWORD: To specify and activate/deactivate the password.
REMOTE CONTROL: To assign the remote control functions.
MONITOR CONFIG (monitor configuration): To specify operating conditions of the monitor, such as the optional boards to be used and signal setup levels, and to restore the factory-set menu data.

To select a menu option

Move the cursor with the ⇩ button to the line of the desired menu option and press the ENT button.
Pressing the ⇩ button moves the cursor downward and, if at the bottom, to the top.

To cancel the menu operation on the way

Press the ESC button.
At any level of the menu operations, pressing the ESC button cancels the operations without changing any data and restores normal status.

1-4-2. Setting the Input Configuration

At the factory, the following input signals are assigned to INPUT selectors 1 to 4 on the front panel.

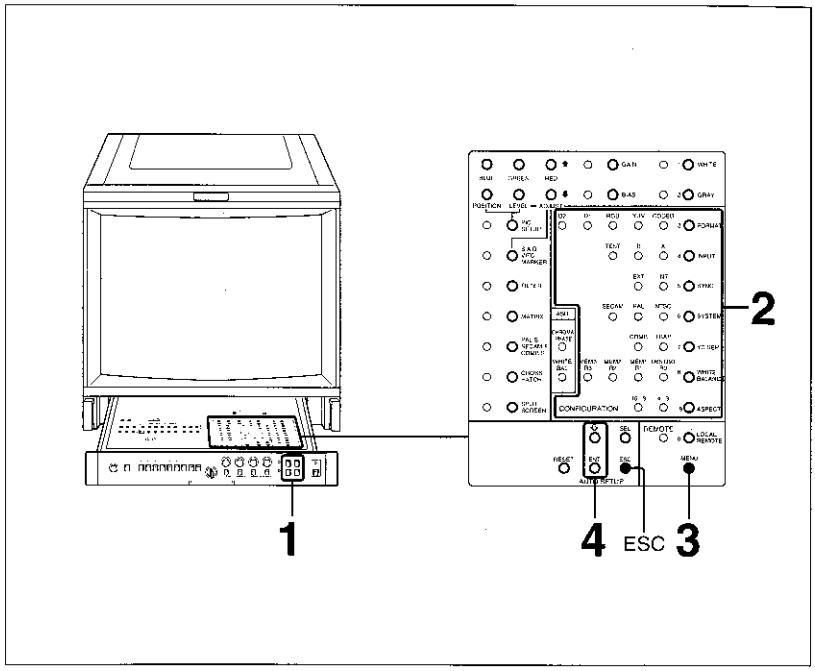
Factory-set configuration

Signal	INPUT selectors			
	1	2	3	4
FORMAT	CODED	CODED	COMPONENT	RGB
INPUT	A	B	—	—
SYNC	INT	INT	INT	INT
SYSTEM[a)]	NTSC/PAL	NTSC/PAL	—	—
ASPECT	4 : 3	4 : 3	4 : 3	4 : 3
YC SEP[b)]	COMB	COMB	—	—

a) NTSC for the BVM-1916 and PAL for the BVM-2016P.
b) Only for BVM-1916. The INPUT selectors 1 and 2 on the BVM-2016P have been set to TRAP.

Using the CONFIGURATION buttons on the HY board in the drawer, these requirements of the input signals (input configuration) can be changed as desired and stored in memory through the INPUT CONFIG menu operation.
The stored configuration is always obtained when the assigned INPUT selector is pressed.
When the change is not stored through the menu operation, the input configuration returns to the previous status when another INPUT selector is pressed.

Operation



1 Press one of the INPUT selectors on the front panel.

2 Using the following COFIGURATION buttons in the drawer, set the input configuration for the INPUT selector selected in step 1. Press the buttons so that the appropriate lamps light.

FORMAT: Select the signal format (CODED, YUV, RGB, D-1 or D-2).
INPUT: Select the input connector A, B or TEST when you select CODED for FORMAT, or A or B when you select D-1 or D-2 for FORMAT.
SYNC: Select the sync mode (INT or EXT).
SYSTEM: Select the color system (NTSC, PAL or SECAM) when you select CODED or D-2 for FORMAT.
YC SEP: Select the filter when you select NTSC or PAL for the color system.
WHITE BALANCE: Select the register (R0, R1, R2 or R3) on which the desired white balance has been stored.
See "1-4-4. Selecting the White Balance."
ASPECT: Select the picture aspect (4:3 or 16:9).

3 When the settings are completed, press the MENU button. The initial menu is displayed.

4 Should the cursor on the initial menu not be located at INPUT CONFIG, press the ⇩ button until it returns to INPUT CONFIG, and press the ENT button.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

The input configuration set in step 2 for the INPUT selector selected in step 1 is now stored in memory.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Repeat this procedure for the other INPUT selectors as desired.

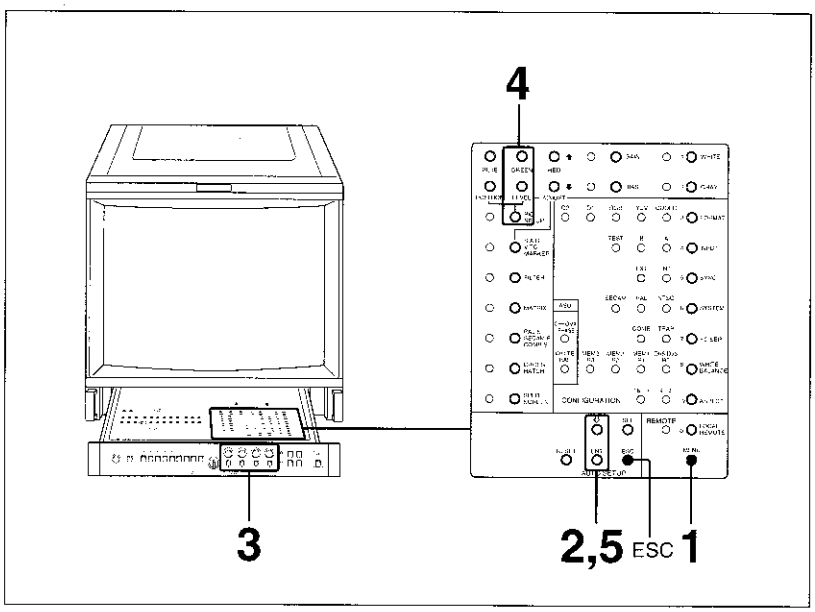
To cancel the operation

Press the ESC button before pressing the ENT button in step 4.

1-4-3. Presetting the Picture Levels

The four sets of the phase, chroma, brightness, contrast, and picture setup (black reference) levels can be set and stored in Registers R0 to R3 through the PRESETS menu operation.

Operation



1 Press the MENU button.
The initial menu is displayed.

2 Press the ⇩ button until the cursor reaches PRESETS, then press the ENT button.
The SAVE PRESETS menu is displayed.

```
        SAVE PRESETS
  ■ TEXT ON/OFF
    DATA REGISTER R0 *
    DATA REGISTER R1
    DATA REGISTER R2
    DATA REGISTER R3
PHASE   100  BRIGHT    100
CHROMA  100  CONTRAST  100
  PICTURE SETUP LEVEL 100
  SELECT AND PRESS ENT
```

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

3 Depress the PHASE, CHROMA, BRIGHTNESS and CONTRAST MANUAL switches and turn the respective controls so that the desired levels are obtained.

4 Press the PIC SETUP button so that the associated lamp lights and adjust the setup level for the picture by pressing the LEVEL buttons.

Note

The adjustments in steps 3 and 4 can be precisly performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.
To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE PRESETS menu disappears.
For the picture setup level, follow the procedure in "1-5-2. Black Level Adjustment."
To return to the SAVE PRESETS menu, press the ENT button again.

5 Move the cursor to the register in which the set levels are to be stored and press the ENT button.

The levels set in steps 3 and 4 are now stored in the register selected in step 5.
The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat this procedure for the other registers as desired.

To cancel the operation
Press the ESC button before pressing the ENT button in step 5.

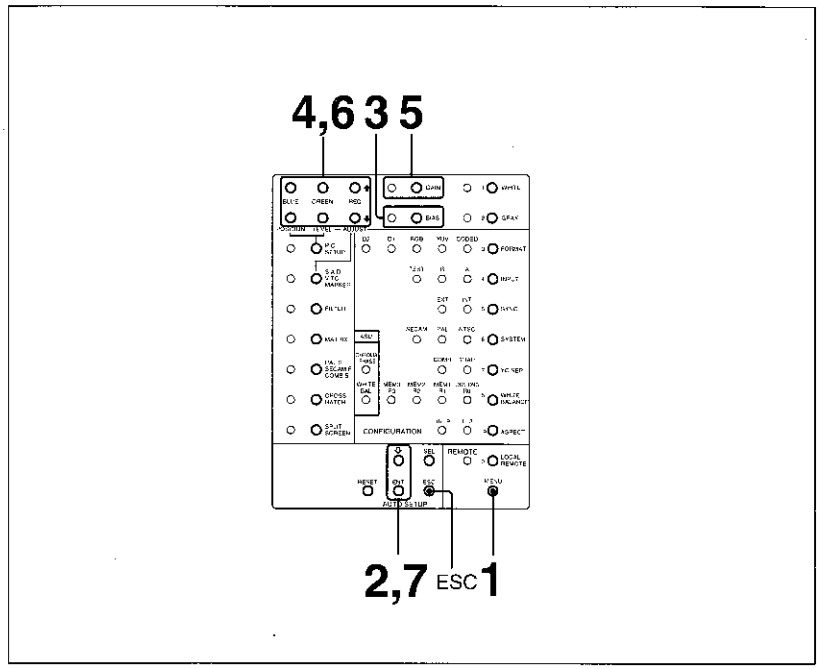
1-4-4. Selecting the White Balance

The four settings for white balance can be stored in Registers R0 to R3. At the factory, the setting for D65 has been stored in all the registers

Note

The settings for white balance are stored in combination with the picture levels set through the PRESETS menu operation in the same Registers R0 through R3.

Operation



1 Press the MENU button.
The initial menu is displayed.

2 Press the ⇩ button until the cursor reaches WHITE BALANCE, then press the ENT button.
The SAVE WHITE BALANCE menu is displayed.

```
SAVE WHITE BALANCE
■TEXT ON/OFF
  DATA REGISTER R0 *
  DATA REGISTER R1
  DATA REGISTER R2
  DATA REGISTER R3
R: – GAIN 100    BIAS 100
G: – GAIN 100    BIAS 100
B: – GAIN 100    BIAS 100
SELECT AND PRESS ENT
```

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

3 Press the BIAS button.
The associated lamp lights.

4 Adjust the R, G and B bias levels by pressing the RED, GREEN and BLUE buttons.

5 Press the GAIN button.
The associated lamp lights.

6 Adjust the R, G and B signal gain levels by pressing the RED, GREEN and BLUE buttons.

Note

These adjustments in steps 3 through 6 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.
To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE WHITE BALANCE menu disappears.
Then, adjust the white balance by following the procedure in "1-5-1. White Balance Adjustment."
To return to the SAVE WHITE BALANCE menu, press the ENT button again.

7 Move the cursor to the register in which the set white balance is to be stored and press the ENT button.

The white balance set in steps 3 through 6 is now stored in the register selected in step 7.
The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat the above procedure for the other registers as desired.

To cancel the operation
Press the ESC button before pressing the ENT button in step 7.

1-4-5. Changing and Applying the Password

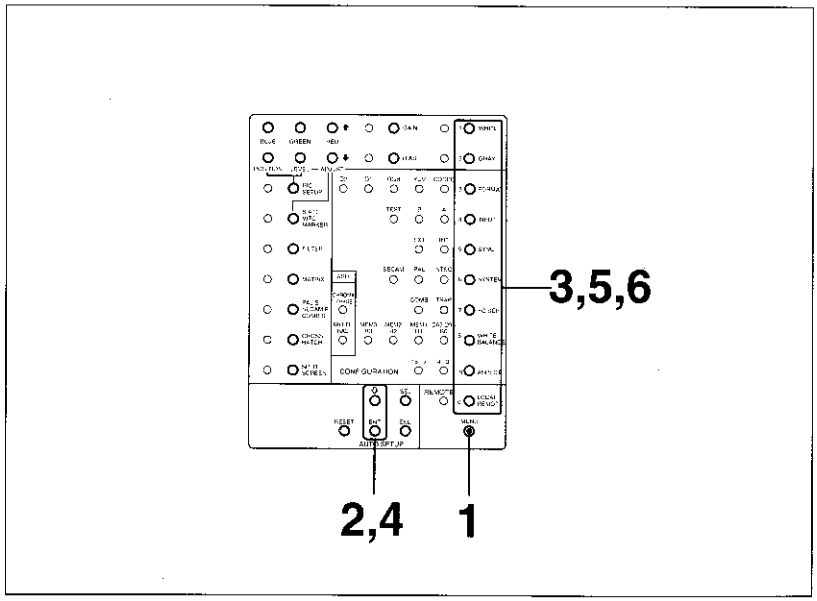
The password can be specified and applied to the desired menu option to prohibit the menu settings from being changed without permission. The password can be any desired four-digit number, which is entered by using the function buttons having additional numeric indications on the HY board.

The message **"PLEASE ENTER PASSWORD"** is displayed when you try to select the options for which the password has been applied, from the initial menu.

If an incorrect password is entered or the password is not entered within about 5 seconds after the above message is displayed, the message **"INCORRECT ENTRY"** is momentarily displayed and the menu operation is canceled.

To change the password

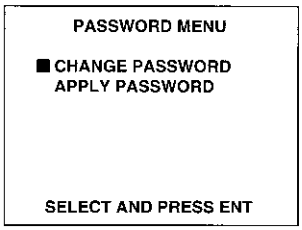
"9999" has been specified for the password at the factory. Change it to your desired four-digit number as follows.



1 Press the MENU button.
The initial menu is displayed.

2 Press the ⇩ button until the cursor reaches PASSWORD, then press the ENT button.
The message "ENTER PASSWORD" is displayed.

3 Enter the current password (Factory-set: 9999).
The PASSWORD MENU is displayed.



4 Select the CHANGE PASSWORD option.
The message "ENTER NEW PASSWORD" is displayed.

5 Enter any desired four-digit number as your new password using the buttons labeled 0 to 9.
The message "PLEASE RE-ENTER NEW PASSWORD TO CONFIRM" is displayed.

6 Enter the new password again.
The message "PASSWORD CHANGED" is displayed and the new password is now valid.

Note

If an incorrect password is entered, "INCORRECT ENTRY. PASSWORD NOT CHANGED" is displayed and the menu operation is canceled.

To cancel the operation

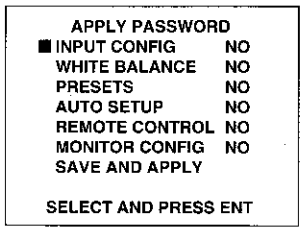
Press the ESC button before re-entering the new password in step 6.

To apply the password

The specified password can be activated/deactivated independently for each of the initial menu options and, with the BKM-2056 installed, the auto setup option.

1 Preform steps 1 through 3 mentioned in "To change the password."

2 By pressing the ⇩ button and then ENT button, select the APPLY PASSWORD option.
The APPLY PASSWORD menu is displayed.



NO is displayed for each option for which the password is not activated.
YES is displayed for each option for which the password is activated.

3 By pressing the ⇩ button, move the cursor to the option for which the password application is to be changed.

4 Press the ENT button to change NO to YES or vice virsa.
(Pressing the button toggles the YES/NO setting.)

Repeat steps 3 and 4 for the other options as desired.

5 When the password application setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message "PASSWORD APPLIED" is momentarily displayed, and the monitor returns to normal status.

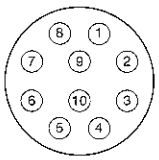
To cancel the operation
Press the ESC button before pressing the ENT button in step 5.

1-4-6. Assigning the Remote Control Functions

The remote control function is available either in STANDARD PARALLEL or CONFIGURE PARALLEL mode.
The mode change is achieved through the REMOTE CONTROL menu operation.
The SERIAL REMOTE option mode in the REMOTE CONTROL menu is provided for future use. If you inadvertently select it, cancel the REMOTE CONTROL menu by pressing the ESC button.

STANDARD PARALLEL mode

The remote control function is set to the STANDARD PARALLEL mode and the following functions are assigned to the pins of the REMOTE connector at the factory.



Pin assignment

Function			Pin No.						
INPUT	SYNC	MODE	1	2	3	4	5	6	7
A	INT	AUTO	O	O	–	O	–	–	–
		MONO	S	O	–	O	–	–	–
	EXT	AUTO	O	O	–	S	–	–	–
		MONO	S	O	–	S	–	–	–
B	INT	AUTO	O	S	–	O	–	–	–
		MONO	S	S	–	O	–	–	–
	EXT	AUTO	O	S	–	S	–	–	–
		MONO	S	S	–	S	–	–	–
VITC OFF			–	–	–	–	–	S	–
VITC HOLD			–	–	–	–	–	O	S
TALLY ON			–	–	S	–	–	–	–

S: Short-circuit with pin No.8
O: Open
–: Either S or O

The assigned function can be controlled by short-circuiting the corresponding pin with pin 8.
Note that pin 3 is fixed to TALLY and pin 8 is fixed to GND.

The remote control operations have priority over the respective buttons and switches of the monitor.

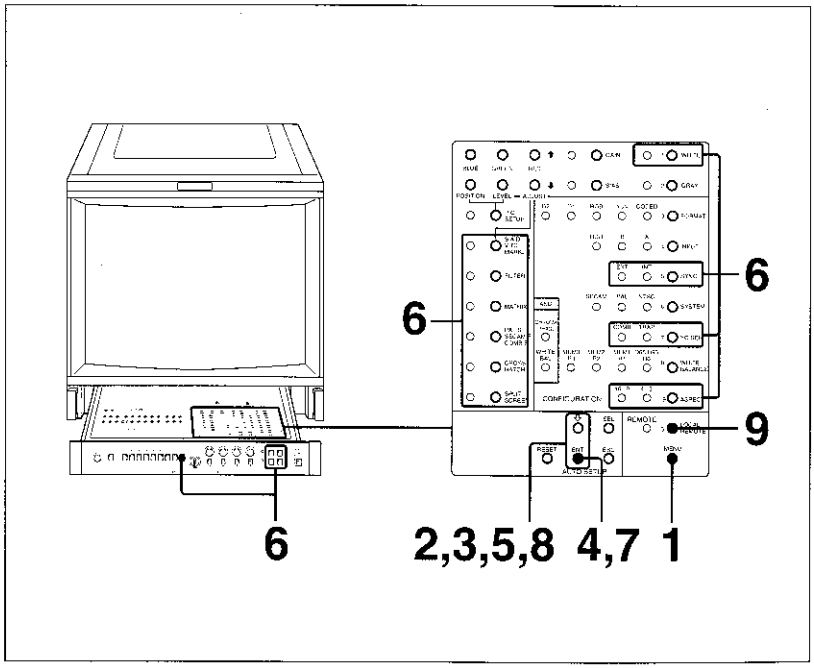
CONFIGURE PARALLEL mode

The functions of the buttons or switches on the front panel or in the drawer listed below can be assigned to pins 1, 2 and 4 through 7, as desired.

Front panel
INPUT selectors 2 to 4 (input selection)
MONO MODE switch (AUTO/MONO mode switching)

HY board inside the drawer
WHITE button (ON/OFF)
SYNC button (INT/EXT sync mode switching)
YC SEP button (COMB/TRAP filter switching)
ASPECT button (16:9/4:3 picture aspect switching)
S.A.D./VITC/MARKER button (S.A.D. or VITC ON/OFF)
FILTER button (ON/OFF)
MATRIX button (ON/OFF)
PAL S/SECAM F/COMB S button (mode or type switching)
CROSSHATCH button (ON/OFF)
SPLIT SCREEN button (ON/OFF)

Operation



1 Press the MENU button to display the initial menu.

2 Move the cursor to REMOTE CONTROL and press the ENT button.
The REMOTE CONTROL MENU is displayed.

```
REMOTE CONTROL MENU

■ SERIAL REMOTE
  STANDARD PARALLEL
  CONFIGURE PARALLEL


  SELECT AND PRESS ENT
```

Note that SERIAL REMOTE is for future use.

3 **To change the pin assignment of the REMOTE connector,** move the cursor to CONFIGURE PARALLEL and press the ENT button.
To resume the factory-set pin assignment, move the cursor to STANDARD PARALLEL and press the ENT button. (For the factory-set pin assignment, see page 1-33.)
The following display appears.

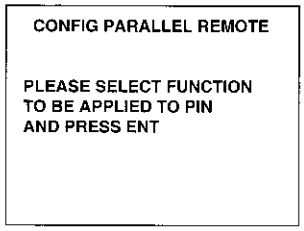
```
REMOTE CONTROL MENU

 WARNING !!
HARDWARE CHANGE REQUIRED
PLEASE CONSULT MANUAL

 PRESS ENT TO CONFIRM OR
 ESC TO QUIT
```

Hardware Change
When using STANDARD PARALLEL or CONFIGURE PARALLEL mode, the 8-pin connector must be connected to HY-4 of the HY board in the drawer. Although it must have been done at the factory, make sure that the connector is connected to HY-4 properly. If not, remove the connector from HY-2 and connect it to HY-4.

4 Press the ENT button again to confirm the mode change in step 3.
When STANDARD PARALLEL has been selected in step 3, the selected mode is now activated and the monitor returns to normal status.
When CONFIGURE PARALLEL has been selected, the CONFIG PARALLEL REMOTE menu is displayed.

```
 CONFIG PARALLEL REMOTE
■PIN 1          MONO
 PIN 2          INPUT SEL 2/1
 PIN 4          SYNC
 PIN 5
 PIN 6          VITC
 PIN 7          MARKER MOVE
 SAVE AND APPLY
  PIN 3 TALLY   PIN 8 GND
 SELECT AND PRESS ENT
```

5 Move the cursor with the ⇩ button to the pin whose assignment is to be changed, then press the ENT button.
The following message appears.



6 Press the button on the front panel or in the drawer (listed on page 1-34) whose function is to be assigned to the pin selected in step 5.

7 Press the ENT button.

Repeat steps 5, 6 and 7 for the other pins as desired.

8 When the pin assignment is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The massage "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

9 Press the LOCAL/REMOTE button to set the monitor to the remote control mode.

To cancel the operation
Press the ESC button before pressing the ENT button in step 8.

Notes

- When the INPUT selector 2, 3 or 4 is assigned to one of the REMOTE connector pins through CONFIGURE PARALLEL, the input signal for the assigned INPUT selector is selected by short-circuiting the pin to GND. In open status, the input signal of the INPUT selector 1 is selected.
- When two or more INPUT selectors are assigned to the REMOTE connector pins, be sure not to simultaneously short-circuit these pins to GND.

1-4-7. Defining the Monitor Configuration

In MONITOR CONFIG menu operation, the following operating conditions of the monitor can be defined.

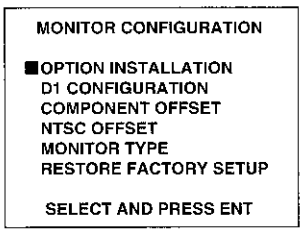
OPTION INSTALLATION: To specify the installed optional boards.
D1 CONFIGURATION: To specify the system in which D-1 signals are to be received.
COMPONENT OFFSET: To set the setup level for component signals
NTSC OFFSET: To set the setup level for NTSC signals.
MONITOR TYPE: To define the model of your monitor.

In addition, all the menu options you changed can be reset to the factory-set conditions using the **RESTORE FACTORY SETUP** option.

To start with the MONITOR CONFIG menu operation

1 Press the MENU button to display the initial menu.

2 Press the ⇩ button until the cursor reaches MONITOR CONFIG, then press the ENT button.
The MONITOR CONFIGURATION menu is displayed.



To specify the installed optional boards

1 Set the cursor to OPTION INSTALLATION on the MONITOR CONFIGURATION menu and press the ENT button.
The OPTION INSTALLATION menu 1 is displayed.

```
OPTION INSTALLATION 1
■AUTO SETUP          YES
 D1 OPTION           YES
 D2 OPTION           YES
 NTSC DECODER        YES
 NTSC COMB ADP       YES
 PAL DECODER         YES
 PAL COMB ADP        YES
 OTHER OPTIONS
  SELECT AND PRESS ENT
```

2 By pressing the ⇩ button, move the cursor to the board for which the YES/NO setting must be changed, and press the ENT button. YES must be displayed for the installed board and NO for uninstalled boards. Pressing the ENT button toggles the YES/NO setting.

Repeat step 2 for the other boards as necessary.

3 Move the cursor to OTHER OPTIONS and press the ENT button.
The OPTION INSTALLATION menu 2 is displayed.

```
OPTION INSTALLATION 2
■PAL-M DECODER       YES
 SECAM DECODER       YES
 RGB/COMP O/P        YES
 VITC BOARD          YES
 SAFE AREA           YES
 BLACK GENER         YES
 OTHER OPTIONS
 SAVE AND APPLY
  SELECT AND PRESS ENT
```

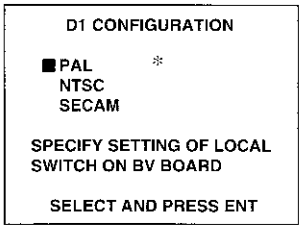
4 Set YES/NO for the boards listed in menu 2 in the same manner as with menu 1.

5 When the YES/NO setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To specify the system in which D-1 signals are to be received

Before starting the following procedure, set D1 OPTION of the above OPTION INSTALLATION menu 1 to YES.

1 Move the cursor with the ⇩ button to D1 CONFIGURATION on the MONITOR CONFIGURATION menu and press the ENT button.
The D1 CONFIGURATION menu is displayed.



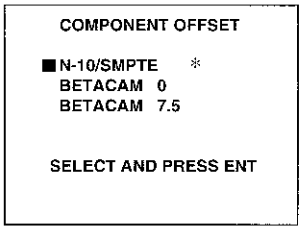
The asterisk indicates the current setting.

2 Move the cursor with the ⇩ button to the system matching setting of the local switch on the BV board.

3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level for component signals

1 Move the cursor with the ⇩ button to COMPONENT OFFSET on the MONITOR CONFIGURAITON menu and press the ENT button.
The COMPONENT OFFSET menu is displayed.



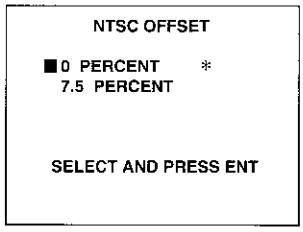
The asterisk indicates the current setting.

2 Move the cursor with the ⇩ button to the appropriate setup level.
N-10/SMPTE: When supplying the 100/0/100/0 component signals.
BETACAM 0: When supplying the 100/0/75/0 component signals.
BETACAM 7.5: When supplying the 100/7.5/75/7.5 component signals.

3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level of NTSC signals

1 Move the cursor with the ⇩ button to NTSC OFFSET on the MONITOR CONFIGURATION menu and press the ENT button. The NTSC OFFSET menu is displayed.



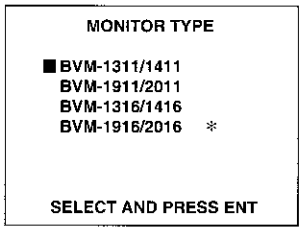
The asterisk indicates the current setting.

2 Move the cursor with the ⇩ button to the appropriate setup level.
0 PERCENT: When supplying 0 IRE NTSC signals.
7.5 PERCENT: When supplying the 7.5 IRE NTSC signals.

3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To define the model of your monitor

1 Move the cursor with the ⇩ button to MONITOR TYPE on the MONITOR CONFIGURATION menu and press the ENT button. The MONITOR TYPE menu is displayed.



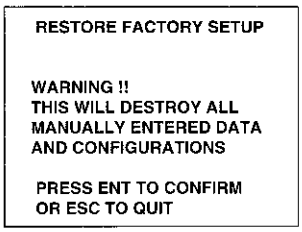
The asterisk indicates the current setting.

2 Move the cursor with the ⇩ button to the model name of your monitor.

3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor return to normal status.

To restore the factory setup

1 Move the cursor with the ⇩ button to RESTORE FACTORY SETUP in the MONITOR CONFIGURAITION menu and press the ENT button.
The following message is displayed.



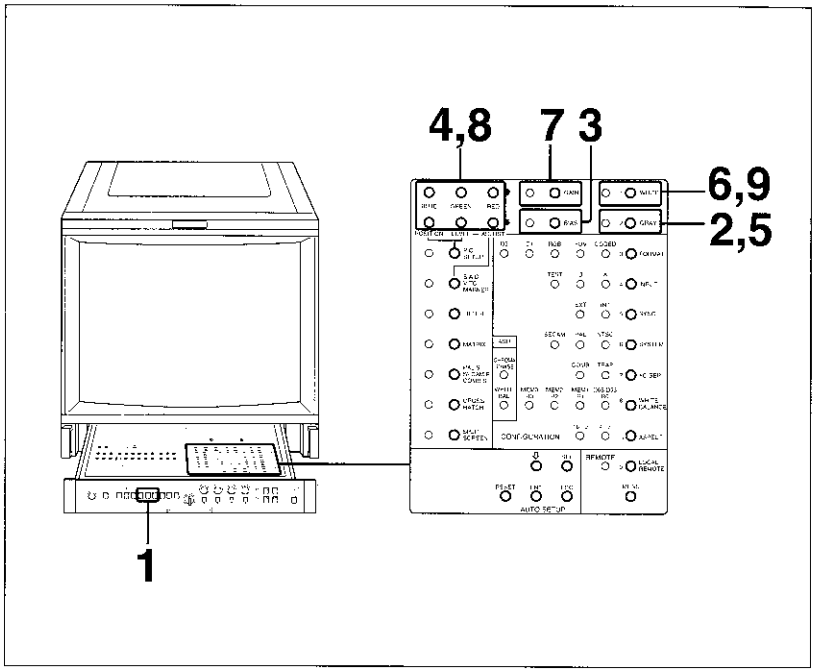
2 Press the ENT button.
All the changed menu options return to the factory-set conditions.

To cancel the restoration, press the ESC button before pressing the ENT button in step 2.

1-5. Picture Adjustments

1-5-1. White Balance Adjustment

During the adjustment, turn the red green and blue beams on and off with the SCREEN switches on the front panel as required.



1 Display a test signal on the screen.

2 Press the GRAY button.
The associated lamp lights and the internal gray signal is displayed on the screen.

3 Press the BIAS button.
The associated lamp lights.

4 Adjust the white balance at the lowlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.

5 Press the GRAY button again.
The associated lamp goes off and the internal gray signal disappears.

6 Press the WHITE button.
The associated lamp lights and the internal 100% white signal is displayed on the screen

7 Press the GAIN button.
The associated lamp lights.

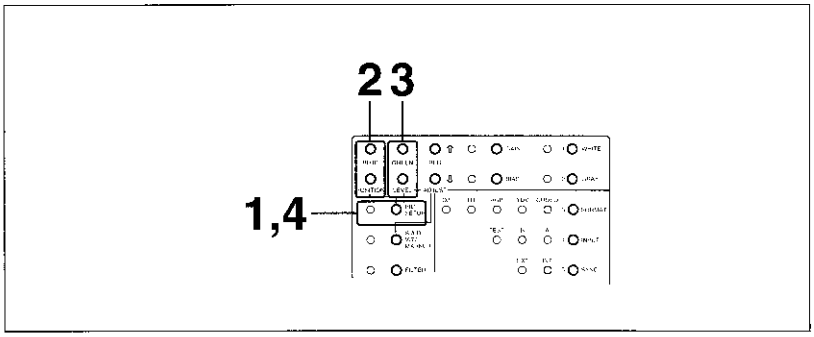
8 Adjust the white balance at the highlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.

9 When the adjustment is completed, press the WHITE button so that the lamp goes off and the white signal disappears.

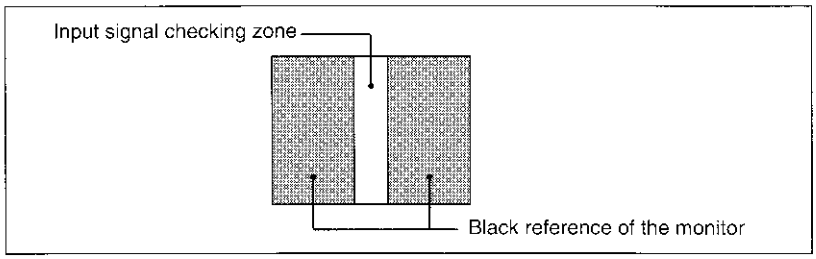
For white balance adjustment using a color analyzer or equivalent, see Section 2.

1-5-2. Black Level Adjustment

Match the black reference of the monitor with the black level of the input signal to be monitored.



1 Press the PIC SETUP button.
The associated lamp lights and a vertical picture band and the black reference of the monitor are displayed on the screen.



2 Press the POSITION buttons ↑ or ↓ to move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.

3 Press the LEVEL buttons ↑ or ↓ to match the brightness of the black reference area with that of the input black signal.

4 Press the PIC SETUP button again.

1-6. Specifications

General

System	BVM-1916: 525 lines per picture, 60 fields per second interlaced, NTSC BVM-2016P: 625 lines per picture, 50 fields per second interlaced, PAL
CRT	Fine Pitch Trinitron 0.4 mm aperture grille pitch, 90-degree deflection, 30.6 mm dia. in-line gun Effective picture size: 291 × 386 mm (h/w) (11 1/2 × 15 1/4 inches) 481 mm (19 inch) picture measured diagonally
Picture tube protection	EHT (Extremely High Tension) is shut off in the event of scan failure.
Warm up	30 min to meet specifications
Anode voltage	Properly adjusted HV 27 kV at zero beam current
Power consumption	Typical: 135 W Maximum: 175 W
Power requirements	BVM-1916: 100-120 V AC ±10%, 50/60 Hz BVM-2016P: 220-240 V AC ±10%, 50/60 Hz
Dimensions	448 × 455 × 584 mm (w/h/d) (17 3/4 × 18 × 23 inches) including projecting parts and controls
Mass	40.3 kg (88 lb 22 oz)

Inputs/outputs

Video inputs	BNC type (5 inputs with 5 loop-through outputs) VIDEO A/B, TEST, R/G/B: 0.7 Vp-p noncomposite vide signal or 1 Vp-p composite video signal, ±6 dB positive, high-impedance Y: Composite, 1.0 Vp-p±6 dB, high-impedance R-Y/B-Y: 0.7 Vp-p±6 dB, high-impedance
Sync input	EXT SYNC: BNC type (1 input with 1 loop-through output) 1 to 8 Vp-p negative, high-impedance
Input return loss	More than 46 dB (7 MHz with 75-ohm termination)
Hum rejection	Reduced by more than 50 dB Maximum hum: Less than 4 Vrms, where hum is applied to the monitor in floating ground mode

Video outputs	DECODER OUT: BNC type (3) Output decoded signals only when BKM-1440 is installed.
Remote control	REMOTE: 10-pin connector (1)
Auto set-up	AUTO SETUP PROBE: 12-pin connector (1)

Video signal

Luminance channel (RGB and composite signals)

Differential gain	Within 5% for a luminance from 0 to 103 cd/m^2
Differential phase	Within 5° for a luminance from 0 to 103 cd/m^2
Frequency response	Monochrome mode: 100 Hz to 6 MHz ±1 dB (aperture correction at 0) Color mode: Trap or comb filter removes frequency in 3.58 MHz region (BVM-1916) or 4.43 MHz (BVM-2016P) region RGB mode: 100 Hz to 6 MHz ±1 dB

Chrominance channel

Demodulation axis	R-Y, B-Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	±1° (standard input signal)
Phase control range	More than ±15° (standard input signal)
Chroma gain control range	More than ±6 dB

Chrominance/luminance

Time error	Less than 30 ns
Gain error	Less than 5%

Aperture correction	Adjustable continuously up to 6 dB boost at 4.5 MHz or 6.5 MHz (selectable)

DC restoration (RGB and composite signals)

Back porch type
Back porch level: Within 1% of peak luminance, 10% to 90% (average picture level)

Synchronization

AFC time constant	0.5 ms (fast), 2 ms (normal) or 7 ms (slow)

Line pull range/line hold range

More than ±500 Hz at 0.5 ms time constant

Vertical blanking time	Normal: Within 1 ms Underscan: Within 0.8 ms
Horizontal retrace time	Within 10 µs

Picture performance

Normal scan	5% overscan of CRT effective screen area (adjustable range more than ±15%)
Underscan	3% underscan of CRT effective screen area (adjustable range more than ±15%)
Linearity	Within a central area bounded by a circle whose diameter equals the picture height, within 1% of the picture height, out of area 2%
Color temperature	D65, adjustable to other color temperatures

Nominal chromaticity coordinates

BVM-1916: SMPTE C phosphor

	x	y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

BVM-2016P: EBU standard phosphor

	x	y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

Convergence error	Central area: Less than 0.5 mm Periphery: Less than 1.0 mm
Calibrated contrast	103 cd/m^2 at peak white of standard 1 Vp-p signal
Raster size stability	Less than 1% picture height, 0% to 100% APL at 103 cd/m^2 peak luminance
Scan delay	Horizontal: Approx. 1/4 line Vertical: Approx. 1/2 field
Resolution	More than 600 TV lines (center, at 103 cd/m^2 luminance)

Environment

Operating temperature	0° C to 40° C (32° F to 104° F)
Optimum temperature range	20° C to 30° C (68° F to 86° F)
Humidity	0 to 90%
Altitude	Approx. 3,050 m (10,000 feet) max.

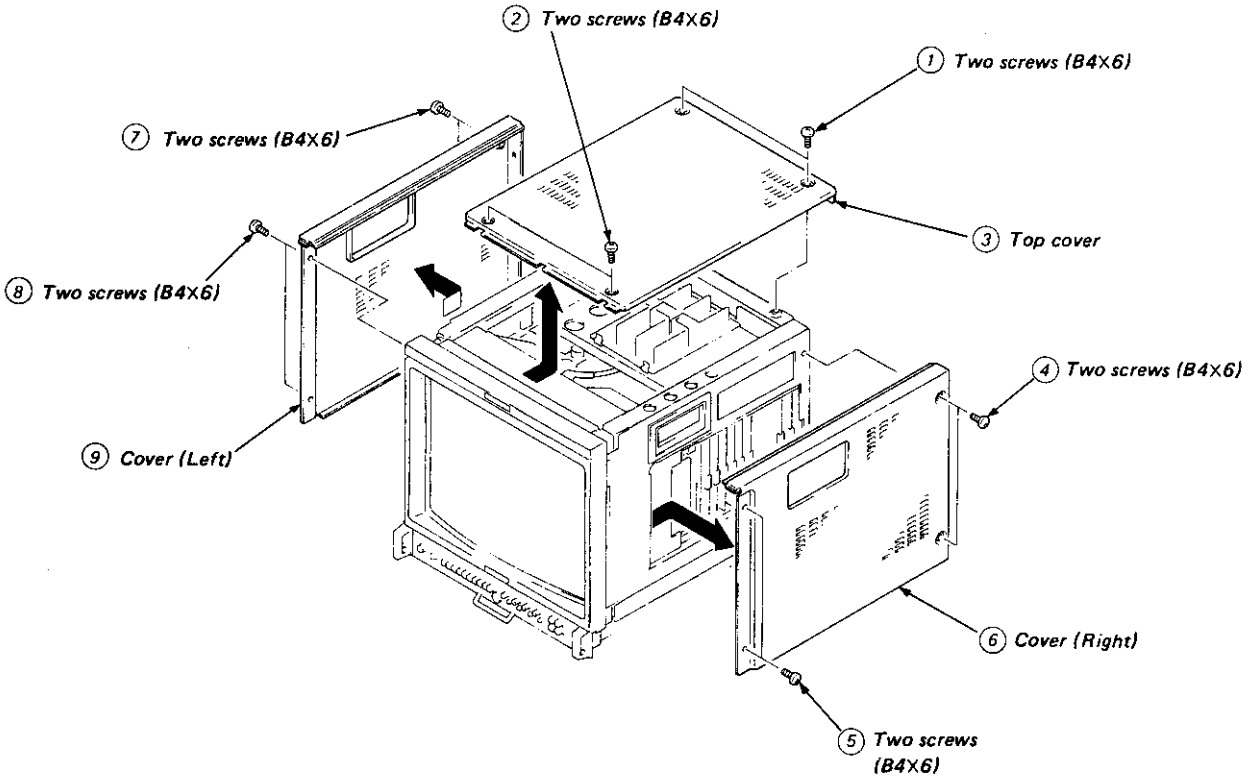
Supplied accessories

AC power cord (1)
Cord stopper (1)
Screwdriver (1)
Drawer keys (2)
Extension board (1)
10-pin connector (1)
Fuses (2)
Tally number plates (1 set)
Operation and maintenance manual (1)

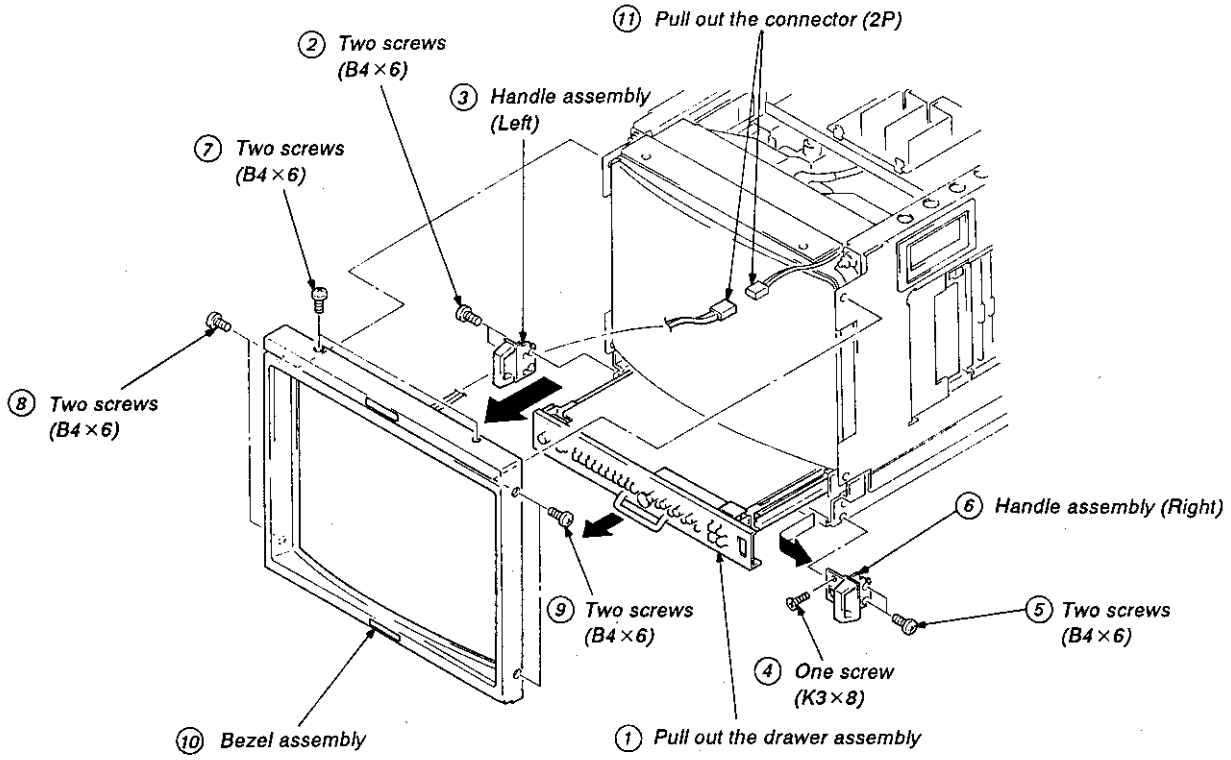
Design and specifications are subject to change without notice.

SECTION 2
DISASSEMBLY

2-1. COVER REMOVAL

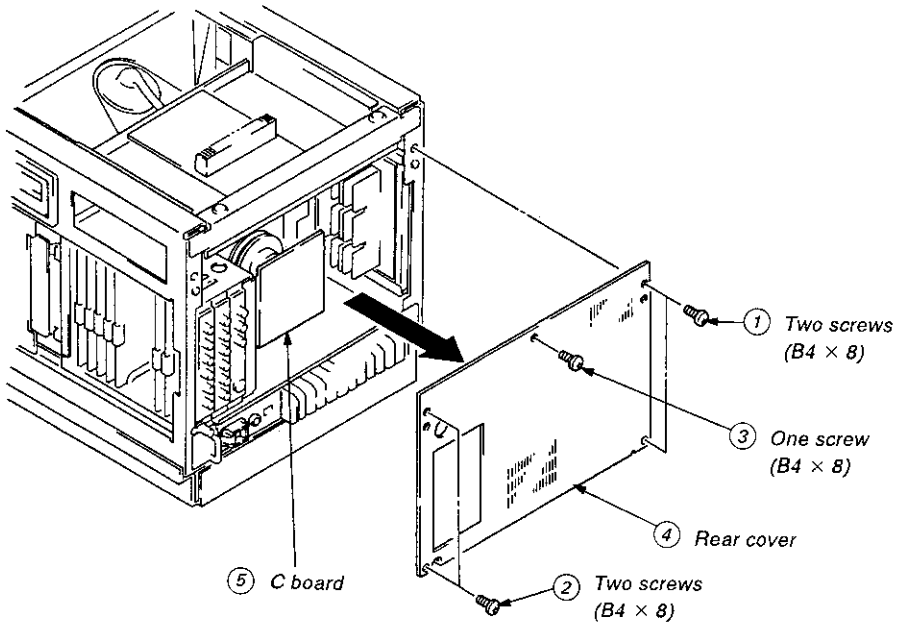


2-2. BEZEL ASSEMBLY REMOVAL



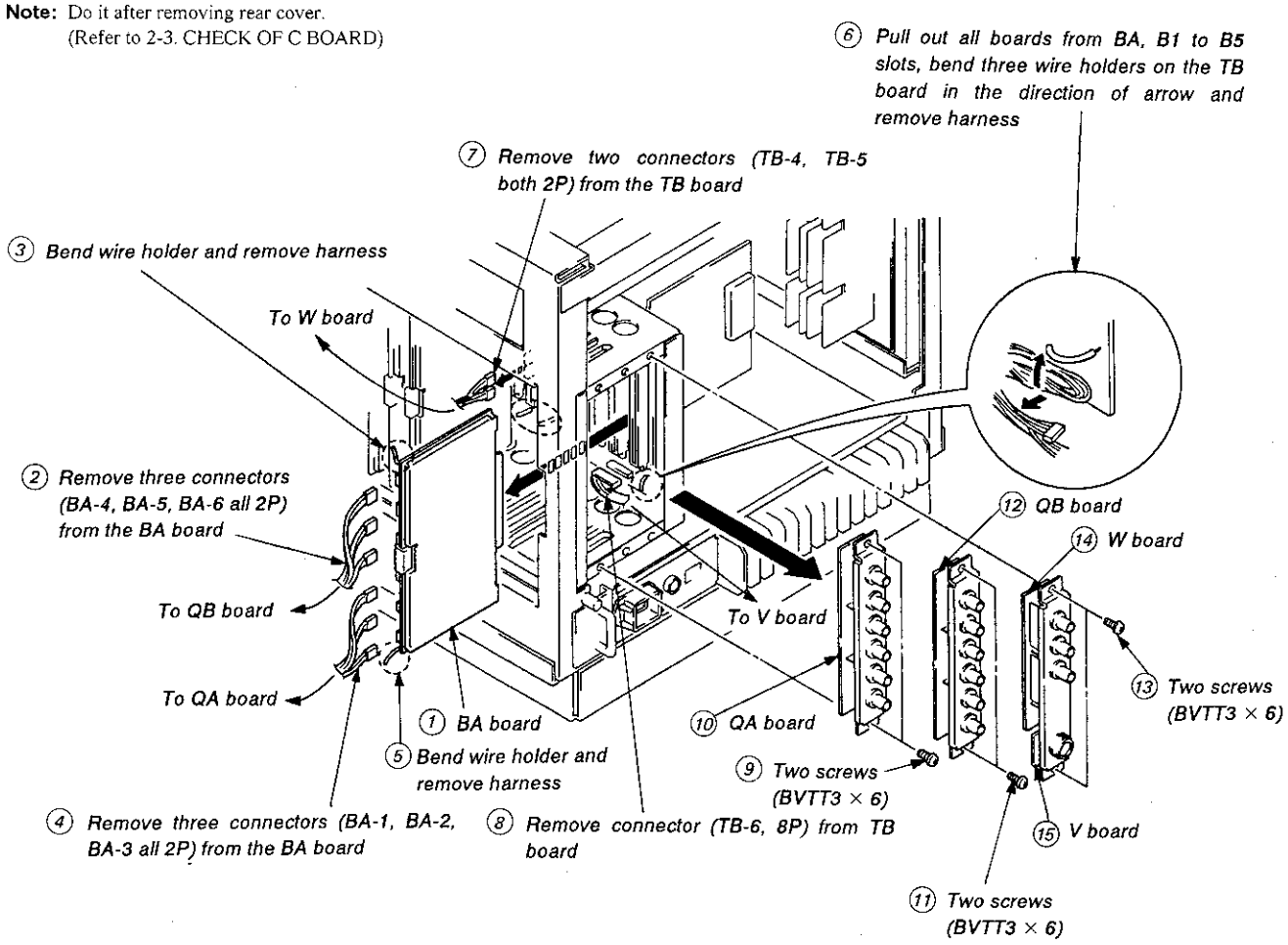
2-3. CHECK OF C BOARD

Note: Do it after removing cover (Right, Left)
(Refer to 2-1. COVER REMOVAL)

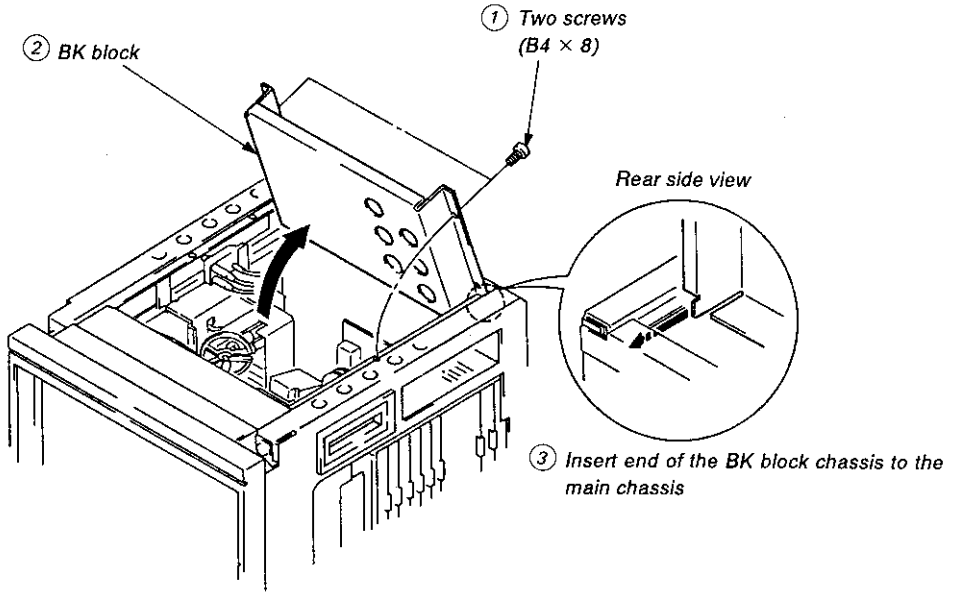


2-4. QA, QB, W AND V BOARDS REMOVAL

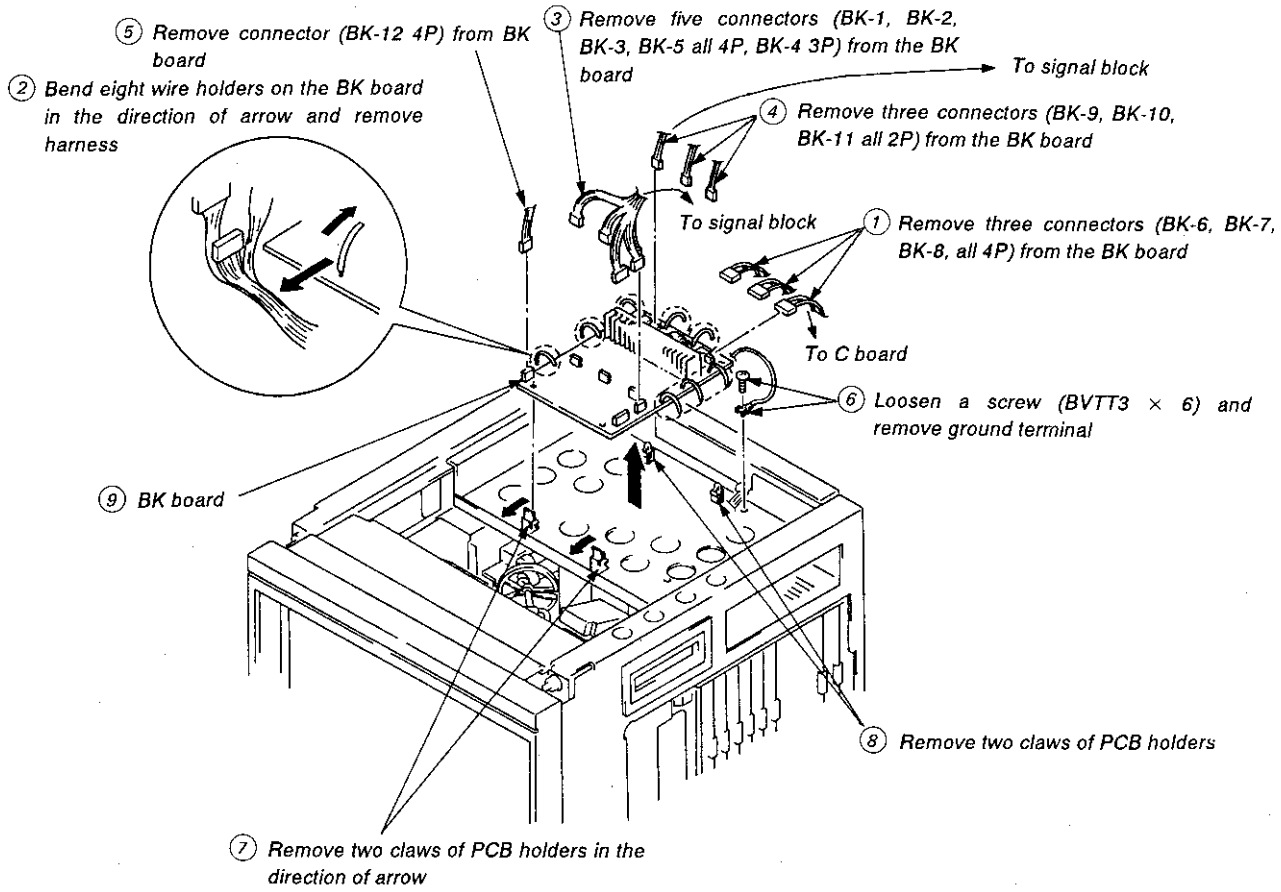
Note: Do it after removing rear cover.
(Refer to 2-3. CHECK OF C BOARD)



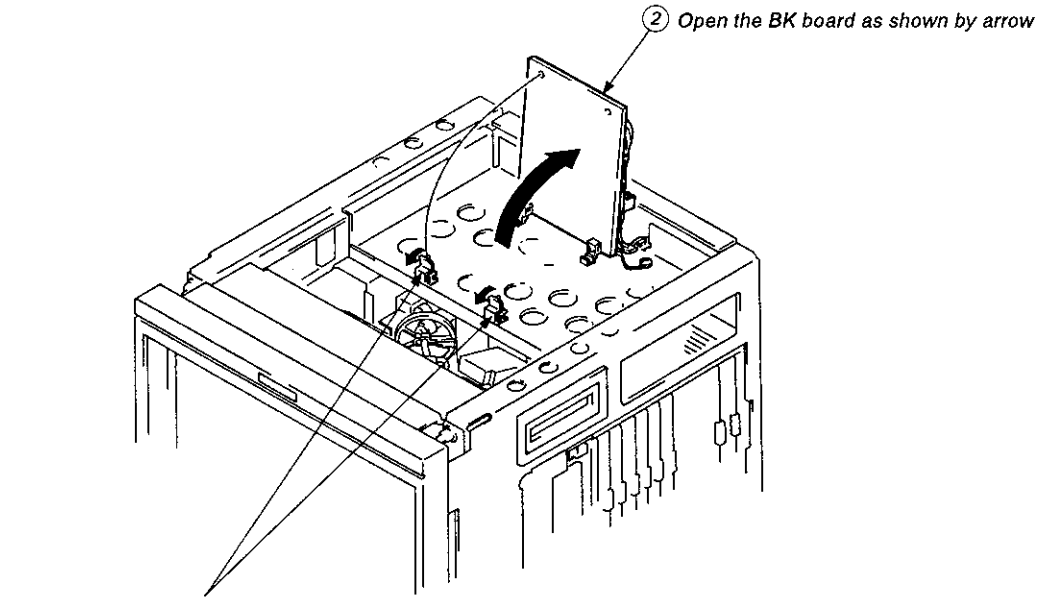
2-5. OPEN THE BK BLOCK



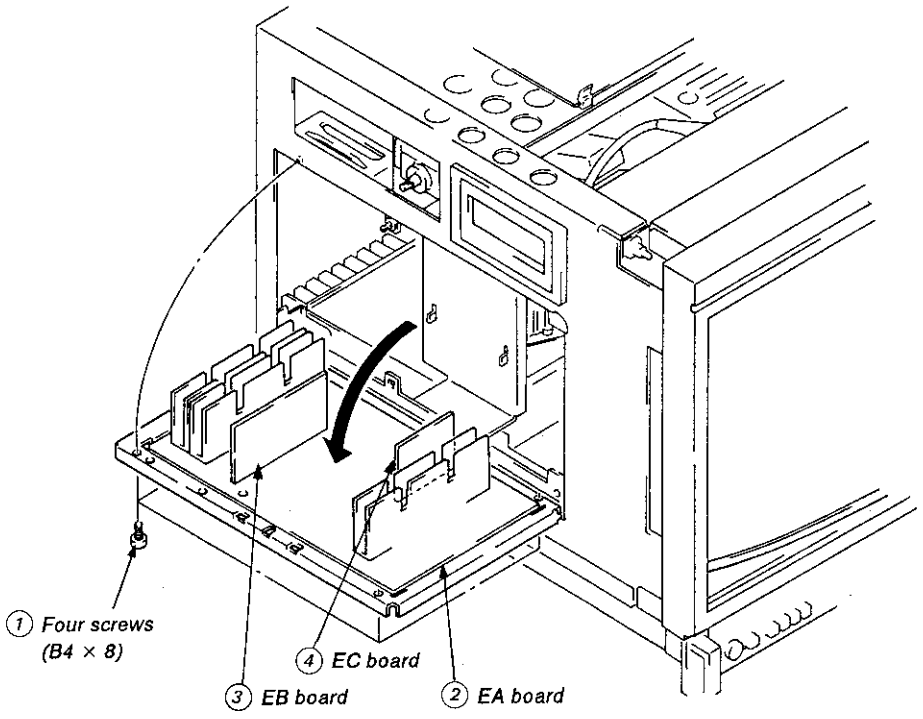
2-6. BK BOARD REMOVAL



2-7. CHECK OF BK BOARD



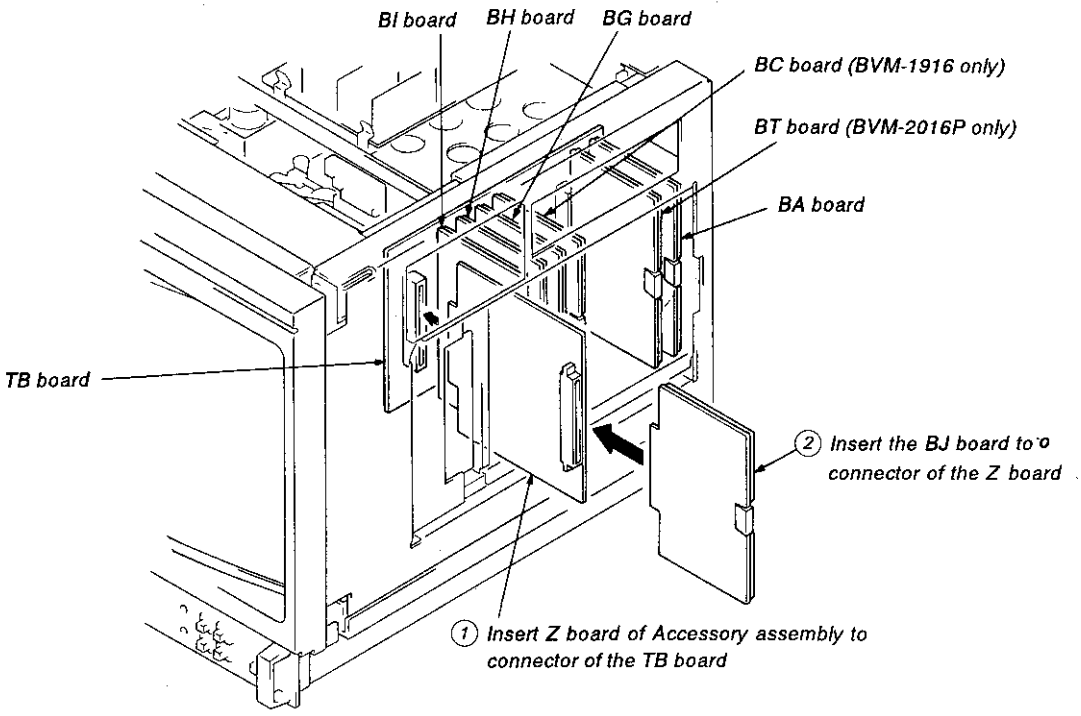
2-8. CHECK OF EA, EB AND EC BOARDS



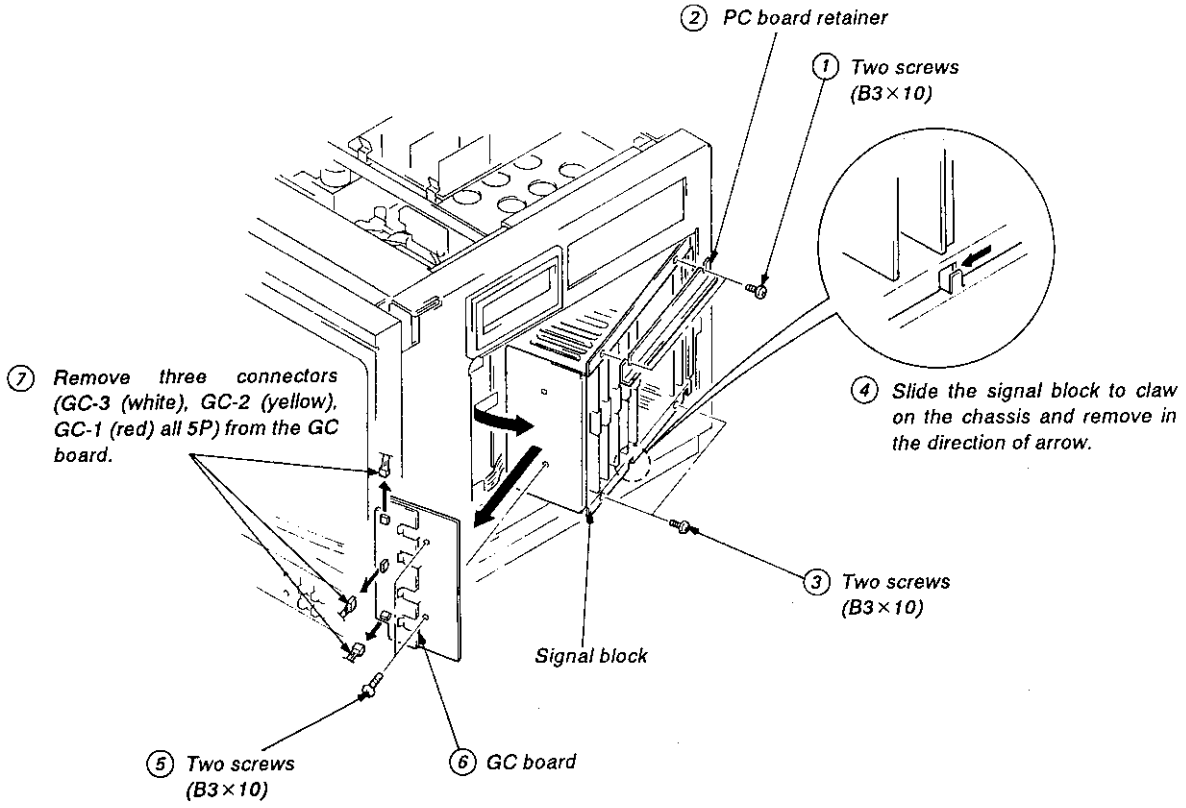
2-9. CHECK OF BJ BOARD

Note: PC board retainer is attach as anti-detach jig for the board. Remove the PC board retainer before checking.

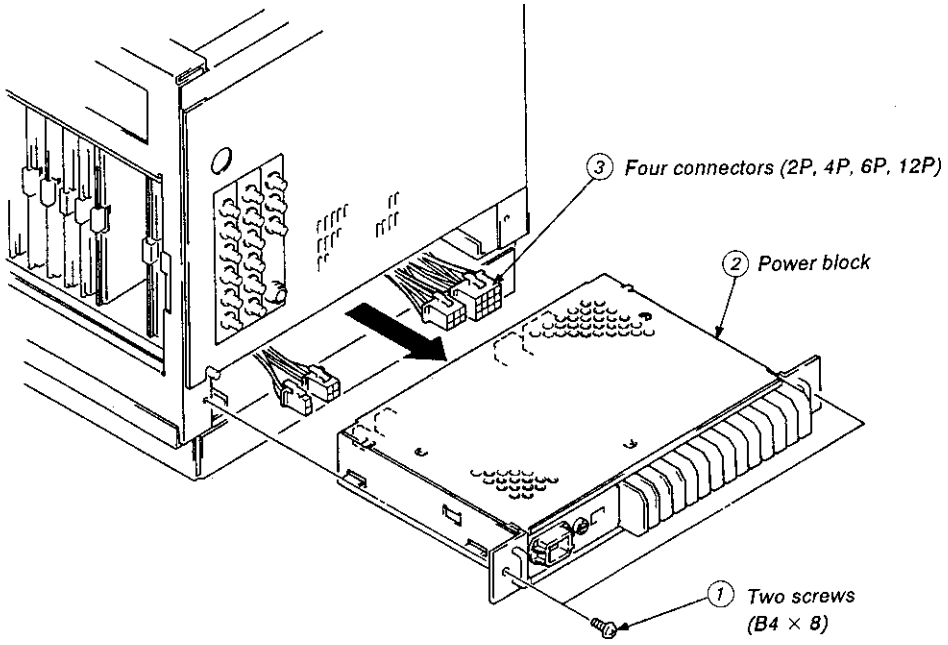
Note: BA, BC, BG, BH, BI and BT boards can be checked similarly.



2-10. GC BOARD REMOVAL

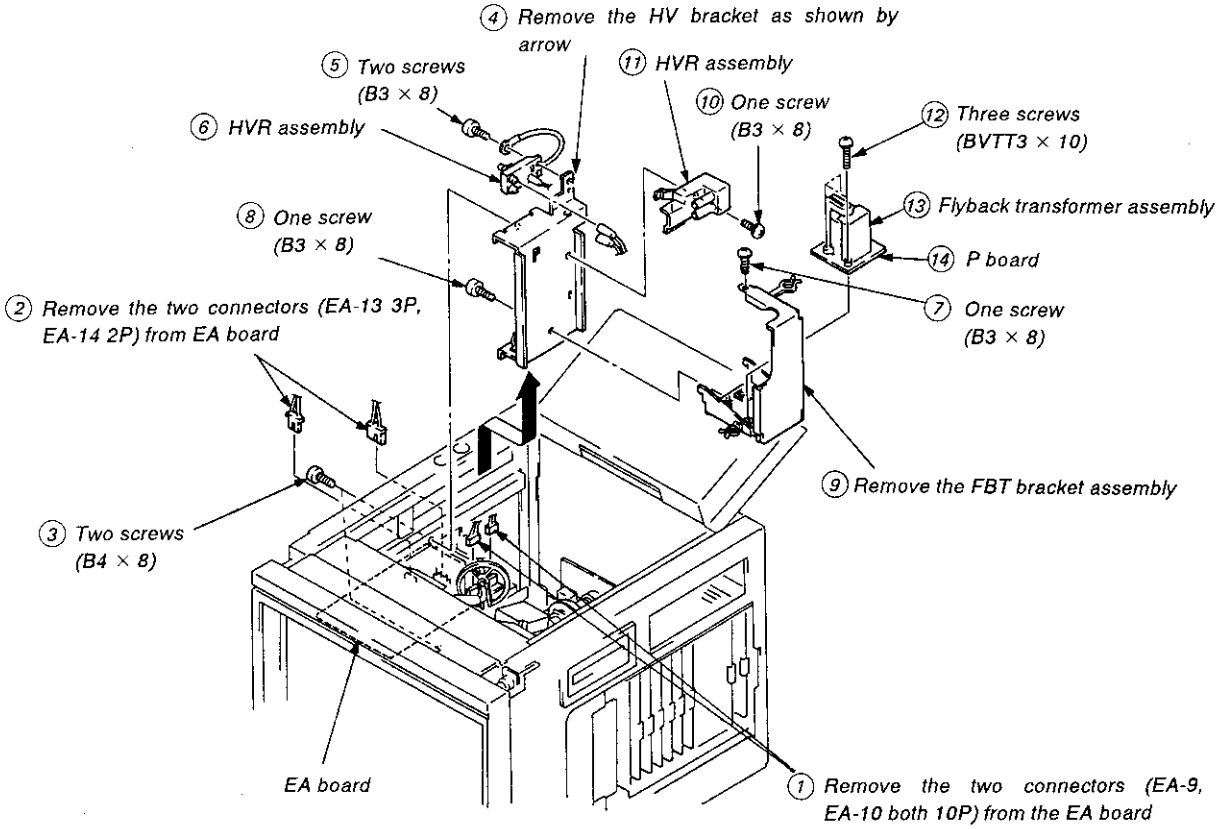


2-11. POWER BLOCK ASSEMBLY REMOVAL

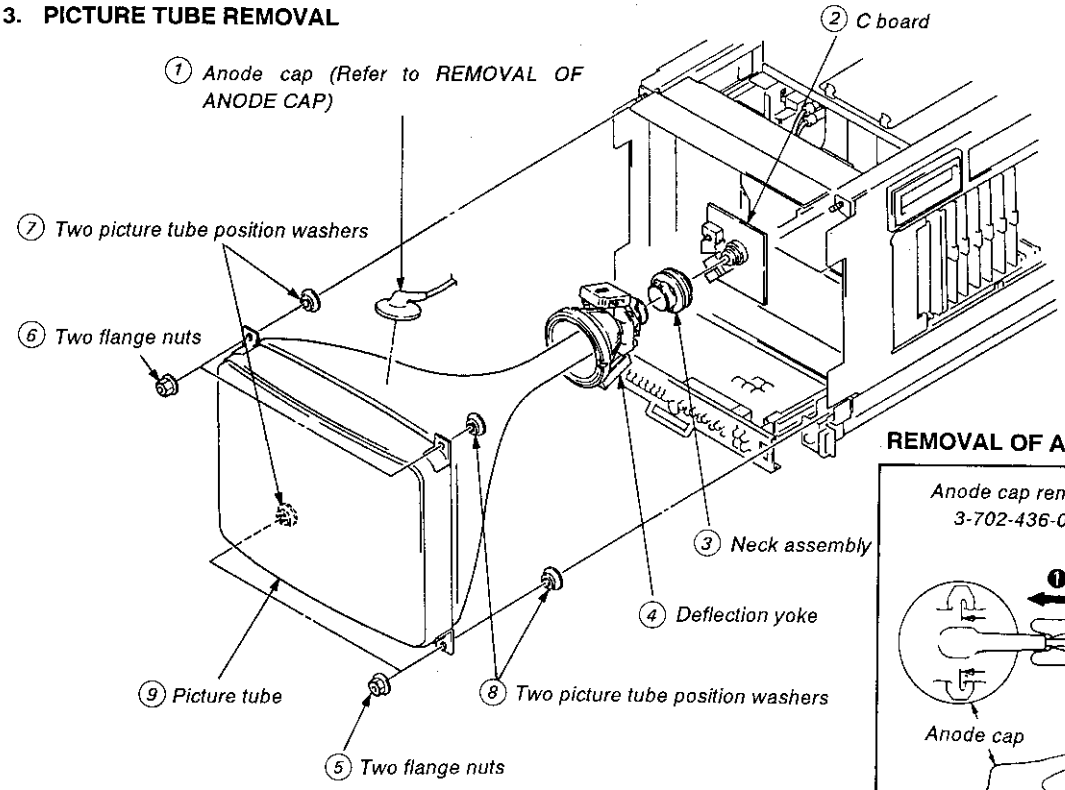


2-12. FLYBACK TRANSFORMER AND HIGH VOLTAGE BLOCK ASSEMBLY REMOVAL

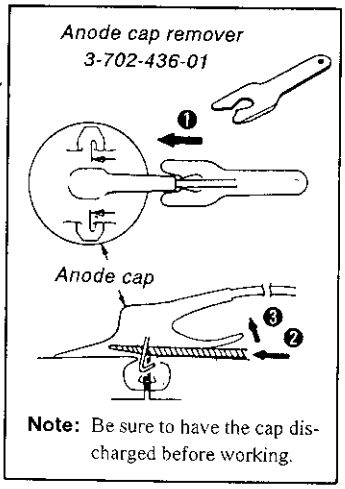
Note: Do it after opening EA board.
(Refer to 2-8. CHECK OF EA, EB AND EC BOARDS)



2-13. PICTURE TUBE REMOVAL

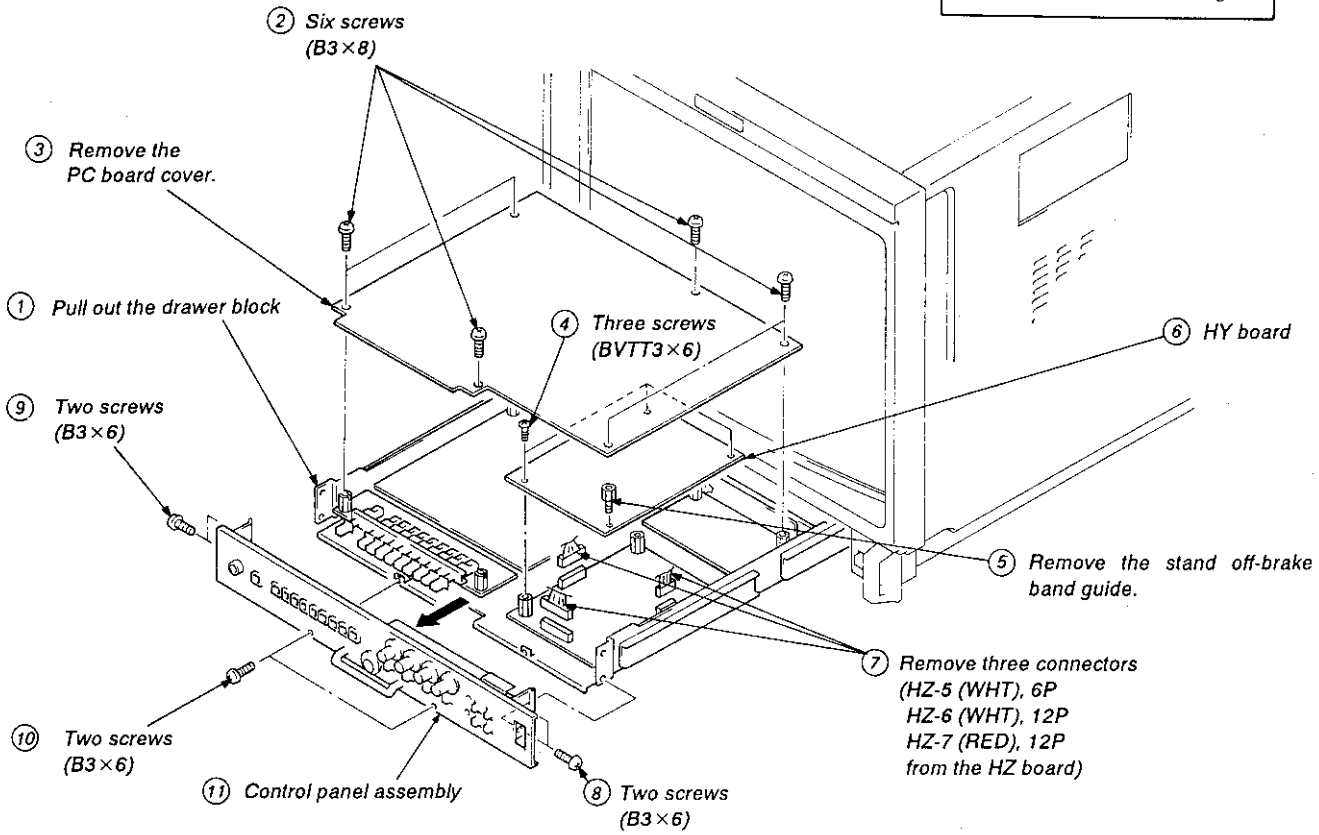


REMOVAL OF ANODE CAP



Note: Be sure to have the cap discharged before working.

2-14. CONTROL PANEL ASSEMBLY REMOVAL



SECTION 3
CIRCUIT DESCRIPTIONS

3-1. QA, QB, BA BOARDS

3-1-1. Input Circuit

Cable Compensation (QA, QB)

CABLE COMPENSATION is composed of inductance L and capacitor C1 (Figure 1) in QA board and performs return loss compensation.

Grounding or floating in input terminal can be selected by switch S1.

On floating mode, common mode rejection can be performed.

QB board also has same function.

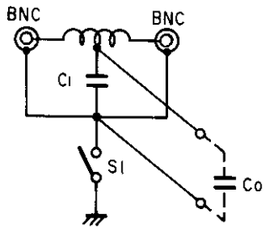


Figure 1

Hook Up Circuit (BA)

This circuit is composed of transistors Q101-105 and performs common mode rejection when SW S1 is selected to the floating mode.

In Figure 2, Gains of amplifier for input A and B are derived as follows.

$A = \frac{Rc}{Ri}$: Gain of amplifier for input A

$B = -\frac{Rc}{Ri}$: Gain of amplifier for input B

When input (ec + ei) is applied to input A and
input (ec – ei) to input B, then output eo is

$eo = \frac{Rc}{Ri}(ec + ei) + (-\frac{Rc}{Ri})(ec - ei) = 2\frac{Rc}{Ri}ei$

This equation indicates that ec is eliminated and there is no common mode signal in output signal.

On hook up circuit, NF Amplifier (Negative Feedback) is used to get frequency response flat.

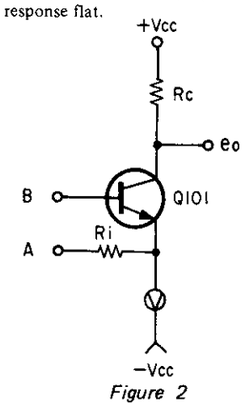


Figure 2

Input Select Sw, Sync Select SW (BA)

For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

3-1-2. Sync AGC Circuit

This circuit is composed of following components; LPF (Low Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712) and amplifier (Q706, 707), Figure 3 shows block diagram of this circuit.

An inverted composite video signal or composite sync signal (eo) is derived at the collector of transistor Q707.

The bias control circuit compares maximum value of eo with base voltage of Q708 (E1) and controls bias of amplifier so that they match.

Also the gain control circuit compares pedestal level of eo with base voltage of Q711 (E2), and controls variable gain amplifier so that they match.

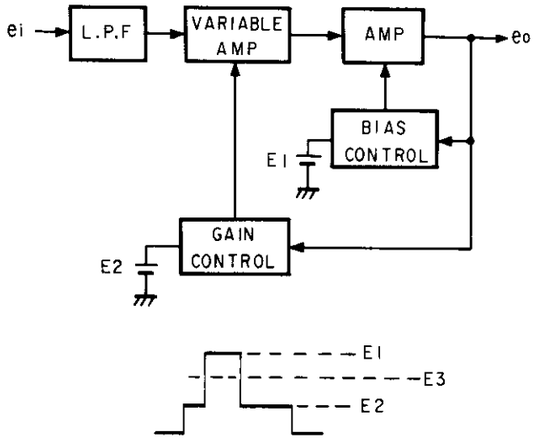


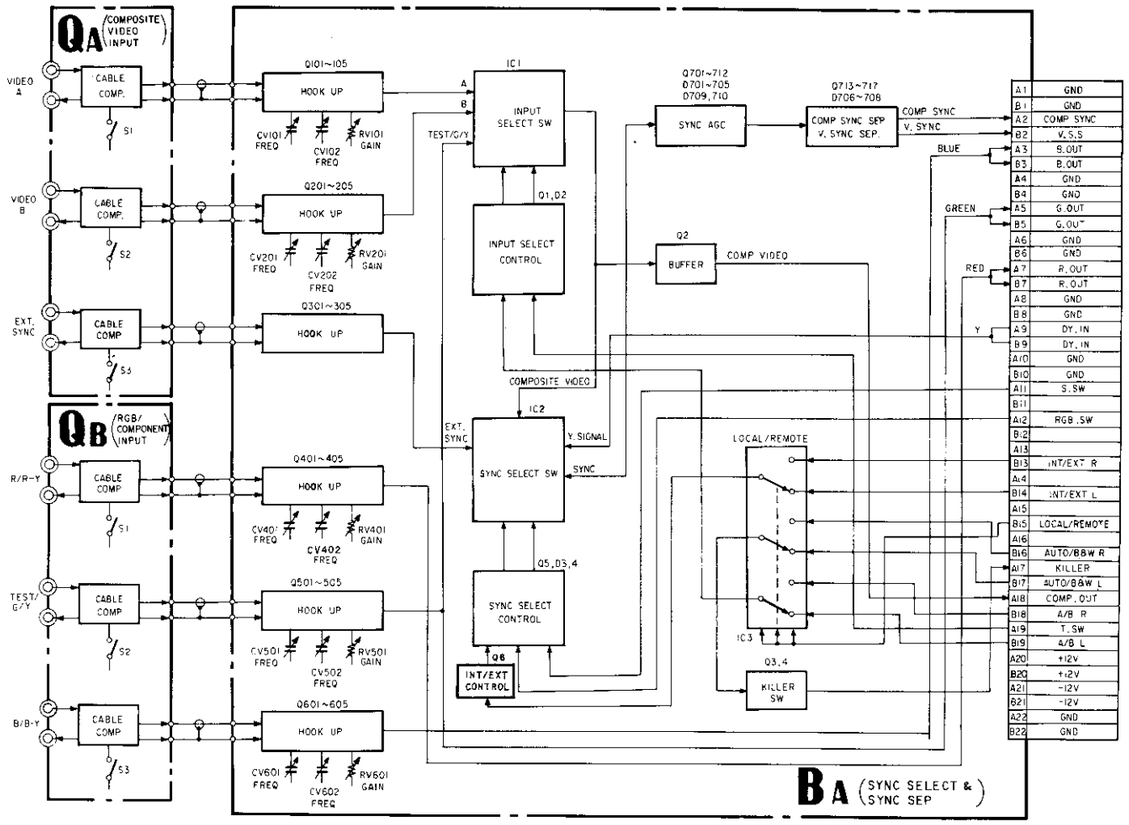
Figure 3

Composite Sync Separation, Vertical Sync Separation

Composite sync is separated from composite video signal or composite sync by comparing voltage eo with the base voltage of transistor Q713 (E3).

Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

BLOCK DIAGRAM OF QA, QB, BA BOARDS



3-2. BG BOARD

3-2-1. Luminance Signal Circuit

Filter SW
IC1 works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

Aperture Control
Aperture control circuit is composed of DL1 (delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor. Resistance value between Pin ① and ③ is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥.

Input signal: e_{T0},
Delayed signal by delay line: e_{T1}
Second delayed signal: e_{T2}

See Figure 4
e1 (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1.

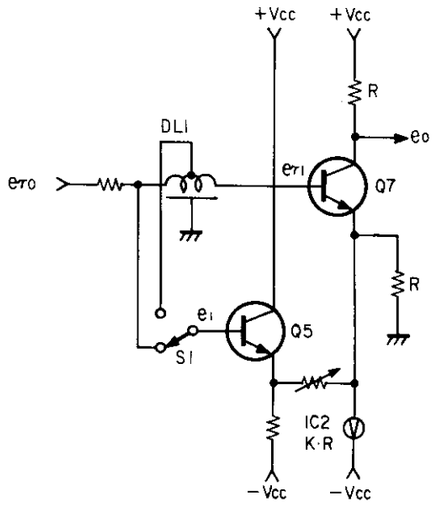


Figure 4

$e_1 = (e_{T0} + e_{T2})/2$

Therefore eo is

$$e_o = -\underbrace{(e_{T1}}_{\text{1st term}} + \frac{1}{K}\underbrace{(e_{T1} - \frac{1}{2}(e_{T0} + e_{T2}))}_{\text{2nd term}}$$

K: variable constant

In the above equation, 1st term shows waveform A in Figure 5 and 2nd term shows waveform B. When K is variable, amount of preshoot and overshoot can be varied.
Switch S1 is used for selection of boost frequency.

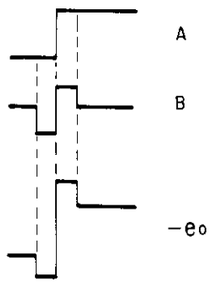


Figure 5

Y Delay, Y Buffer Amplifier
Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

3-2-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

R-Y Amplifier and Clamping
The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23 and IC3.

R-Y Gain Control Amplifiter
This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the pin ⑫ of IC4.

AGC Pulse Generator
Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

Gain Control Amplifier for AGC Pulse
Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin ⑧ of IC4.

Color Gain Control
AGC pulse, which is output signal of Gain control amplifier for AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied from CHROMA control on the front panel are compared and mached by IC7 (1/2) with controlling the above gain control amplifier. This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

3-2-3. G-Y MATRIX amplifier

G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

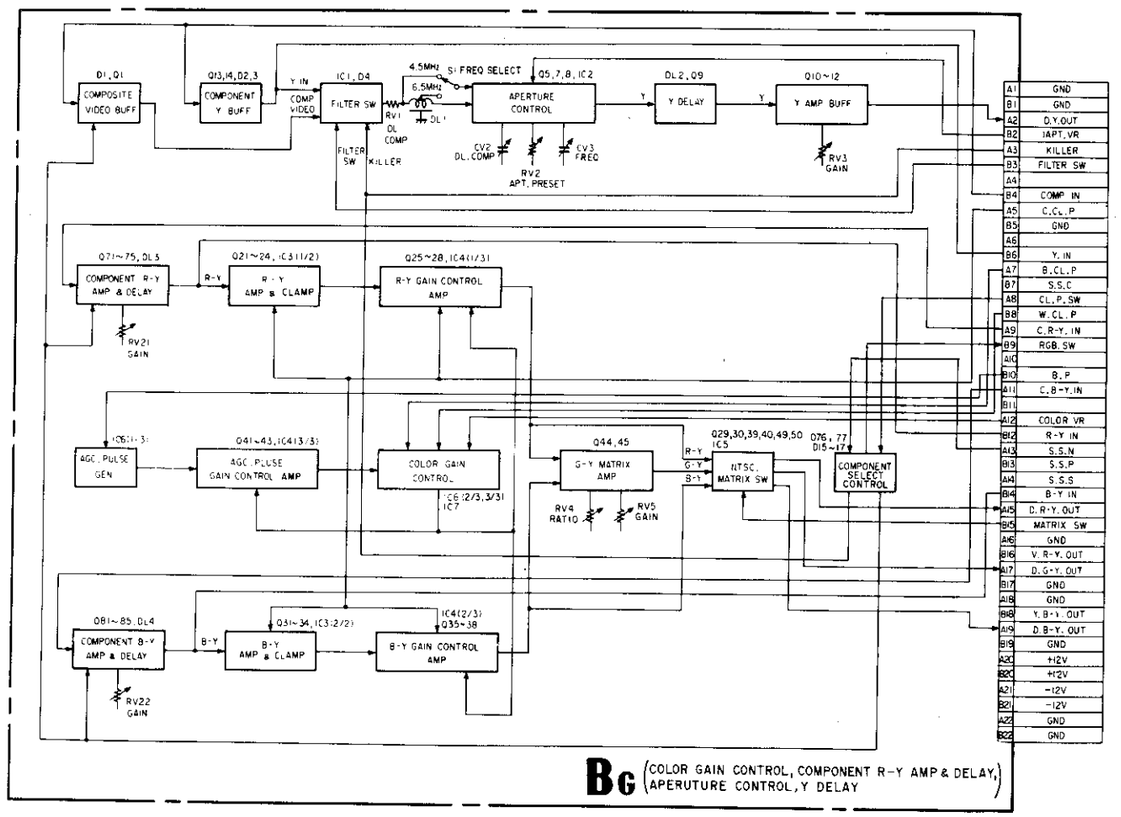
3-2-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit composed of resistor networks CP14-CP19, transistor Q29, Q30, Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing and IC5 works as a switch.

3-2-5. COMPONENT R-Y Amplifier and Delay Circuit

R-Y signal of COMPONENT signal is compensated with amplitude, porality and delay time to match the R-Y signal of decoder output.

BLOCK DIAGRAM OF BG BOARD



3-3. BH BOARD

3-3-1. Switching Circuit Between Y (Luminance) Signal, Color Difference Signal and RGB Signal, AGC Pulse Insertion, Y-C Matrix

Switching Circuit of Y Signal, Crosshatch Signal and SET UP Signal, Buffer

Y signal, crosshatch signal and SET UP signal are selected by the switcher (IC1 (1/3) (2/3)) and selected signal is output via buffer Q1.

Switching Circuit of R-Y Signal, Red Signal and SET UP Signal (Same as B-Y, G-Y Signal)

R-Y signal, Red signal, SET UP signal are selected by IC2 (1/3, 2/3) and selected signal is output via buffer Q4.

Y Signal Screening (Same as R-Y, B-Y, and G-Y Signals)

The signal is performed SAMPLE and HOLD (S/H) at the back porch of signal by transistor Q2 and IC5 (2/2). Y screening is performed by replacing S/H output signal, by the original signal.

For color difference signals screening is made at the Horizontal Sync portion.

Red Matrix, Blue Only SW, Buffer (Same as Green and Blue)

Red is obtained by Y-C matrix circuit composed of resistor network CP9 from color difference signals.

AGC pulse from pulse generator is inserted into Red signal for contrast control.

IC7 activates by the Blue only SW on the front panel. Blue only SW is used for the display of blue signal as a monochrome picture.

3-3-2. Contrast Control, Brightness Control, Peak Limitter

Red Contrast, and Brightness Control Amplifier (Same as Green and Blue)

This is a variable gain control amplifier composed of variable resistor element IC101 and transistor Q102 and Q103. By controlling the voltage at pin ④ of IC101, contrast control is performed, and brightness control is done by controlling the bias voltage of transistor Q102.

Red limitter (Same as Green and Blue)

When excess input signal comes in , amplitude is limitted by the limitter composed of transistors Q104 and Q105.

Red Contrast Control (Same as Green and Blue)

AGC pulse inserted in Red signal is clamped by transistor Q107 and sampled by transistor Q108.

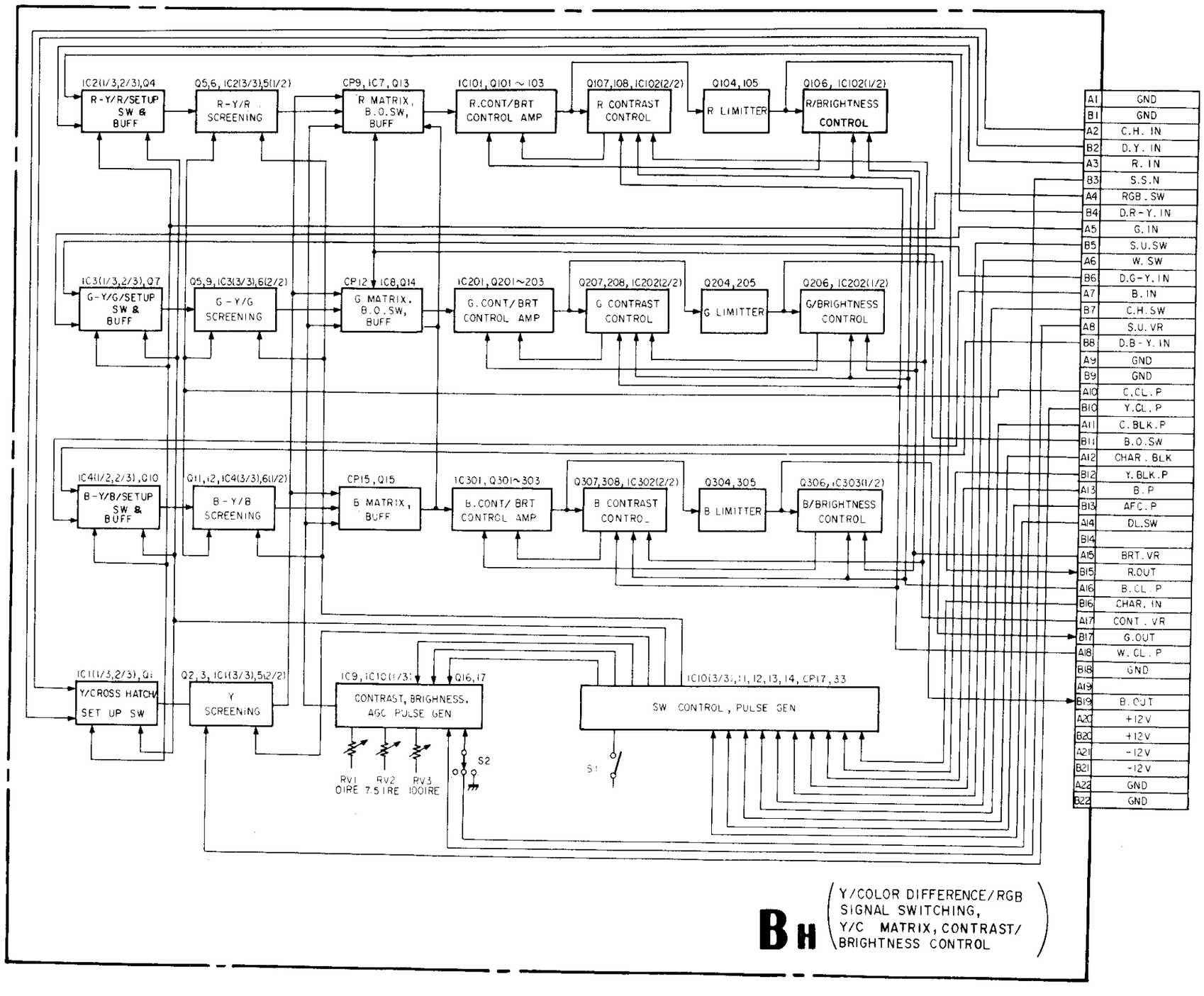
Amplitude of above AGC pulse is compared with the reference voltage applied from CONTRAST control on the front panel in IC102 (2/2).

Contrast control is performed by controlling the gain of Red contrast brightness control amplifier so that these voltages may match.

Red Brightness Control (Same as Green and Blue)

The black level of Red signal is performed SAMPLE and HOLD (S/H) by transistor Q106. This S/H voltage is compared with the reference voltage applied from Brightness control on the front panel in IC102 (1/2). Brightness control is performed by controlling the bias of Red contrast Brightness control amplifier so that these voltages may match.

BLOCK DIAGRAM OF BH BOARD



3-4. BI BOARD
(Same as Green and Blue)

3-4-1. Red Screen SW, AGC Pulse Insertion

Red signal can be cut off by RED SCREEN SW on the front panel. Horizontal rate AGC pulse is removed and the reference pulse is inserted in the signal for the GAIN and BIAS adjustment of video output amplifier and for the beam control circuit.

3-4-2. Red Limitter, Gain Bias Control Amplifier

This limitter is used for limiting the excess input level of the signal below 0V DC.

The GAIN/BIAS CONTROL amplifier is composed of variable resistor element and transistors as same as contrast control amplifier' (See section of BH board)

3-4-3. Red Feedback Amplifier, Red Gain Control Red Bias Control Circuit

RED FEEDBACK amplifier inverts the phase of the signal derived from VIDEO OUTPUT amplifier via NF BUFF (Negative Feedback Buffer) in BK board.

The BIAS of VIDEO OUTPUT AMPLIFIER is controlled by RED BIAS CONTROL circuit so that the black level of inverted signal may be 0V DC.

(This time, black level of VIDEO OUTPUT will be −90V DC.)

RED GAIN CONTROL circuit controls the gain of VIDEO OUTPUT AMPLIFIER so that the level of the reference pulse may match to the voltage at pin (3) of IC103.

(When GAIN control (RED) in the drawer is turned, the level of the reference pulse inserted in section 1 changes. And amplitude (Gain) of Red signal changes so that the amplitude of the reference pulse derived from RED FEEDBACK amplifier may be maintained constant by GAIN CONTROL circuit.)

3-4-4. Red Cathode Current Detection, Red Beam Current Control Circuit (I-V Conversion)

Refer to the BK board section of beam control circuit

3-4-5. ABL Detector, Drive Control, Over Drive

The reference level of GAIN CONTROL circuit is controlled by ABL detector and DRIVE CONTROL so that the cathode current of CRT exceeds the predetermined (Preset) value to prevent damage of CRT. OVER DRIVE circuit lights up the OVER LOAD LED on the front panel for warning.

3-4-6. G2 Control Circuit

Circuit diagram of G2 control circuit is shown in Figure 6.

The signal for BM. CURRENT control is fed to base of the transistor Q11 from RED BM. CURRENT control circuit. (Same as G and B)

sistors Q11-Q13 is turned on and is compared with the reference voltage of base voltage Q14.

And this circuit drives transistor Q3, Q2 located in C board so that Transistor Q3, Q2 in C board drives G2 voltage for adjusting cut off level of CRT.

Base voltage of transistor Q14 (reference voltage) is set so that the voltage of Black level at CATHORD electrode may be +120V DC and maintain Ekco (cut off voltage) +120V constant.

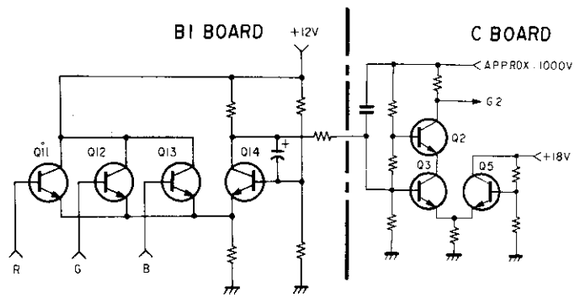
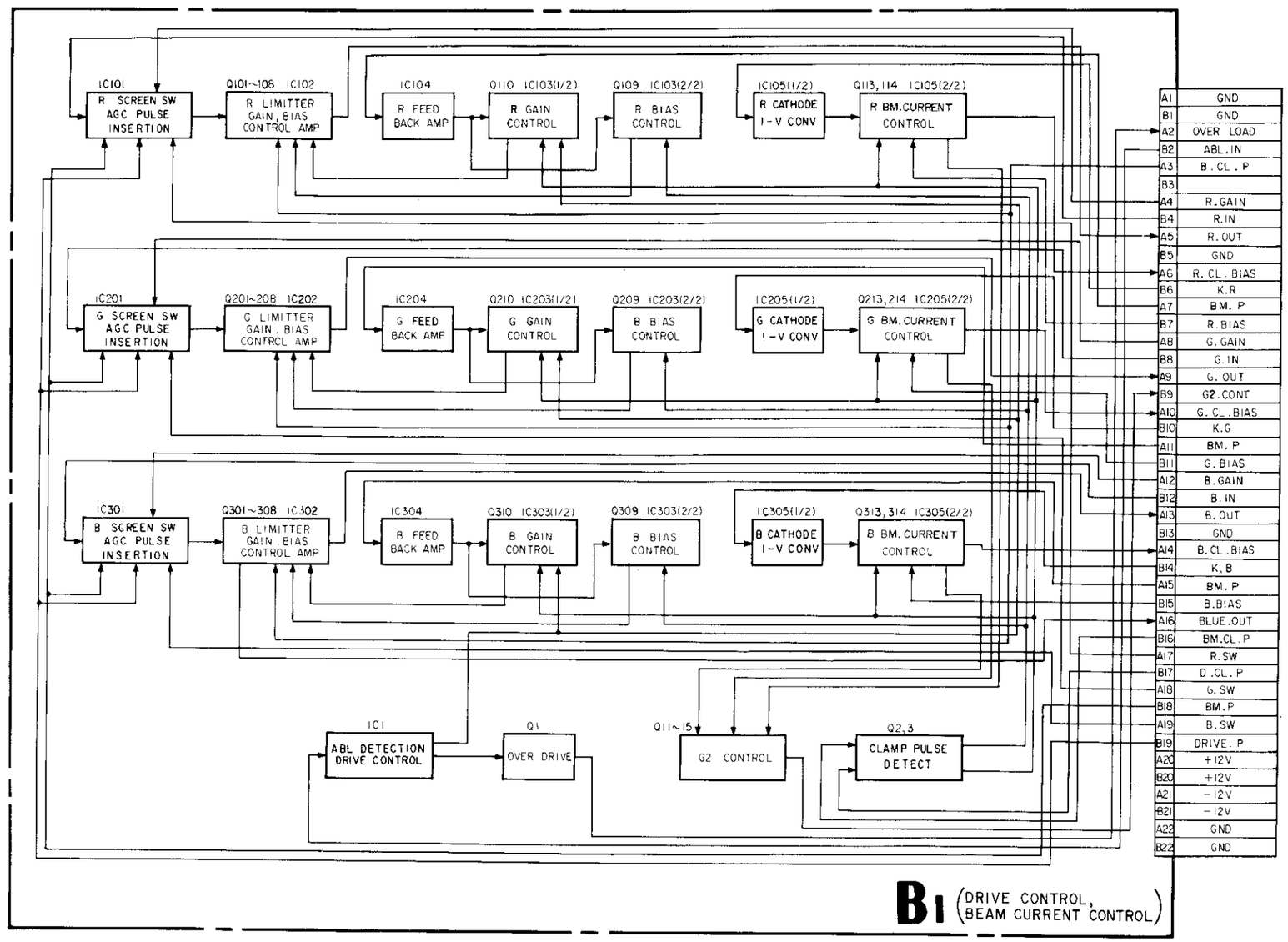


Figure 6

BLOCK DIAGRAM OF BI BOARD



3-5. SYNC PROCESSOR, PULSE GENERATOR (BJ BOARD)

3-5-1. 1H Pulse Processing

The composite sync is separated from incoming signal at BA board. And 1H sync is made by separating V sync and equalizing pulse from composite sync.
Also H sync which has constant pulse width is made from 1H sync.

3-5-2. 2fH Multivibrator

This circuit generates 2fH rate pulse from H rate flyback pulse.

3-5-3. Vertical Counter

The 2fH rate pulse is counted down to generate Vertical rate trigger pulse for vertical deflection circuit.
When there is no incoming signal, trigger pulse is generated by vertical counter (384H).
When there is incoming signal with V sync, this counter circuit is reset by V sync and generates trigger pulse synchronized with V sync.
Also in order to increase stability of vertical scanning, noise gating process is made during V sync period.

3-5-4. V Sync and Delay

V sync and V BLANKING pulses are generated by output trigger pulse from vertical counter.
And when V DELAY SW on the front panel is selected ON, these pulses are generated in a V/2 delayed position relative to the V sync position of incoming signal.

3-5-5. Crosshatch Generator

Internal crosshatch signal is made as follows.
The vertical lines are generated by approx. 18fH rate pulses synchronized with flyback pulse.
And flyback pulse is counted down to generate horizontal lines.

3-5-6. Burst Gate Pulse, Y-CLAMP Pulse, C-CLAMP Pulse Generator

The Burst Gate Pulse (B.G.P.), clamp pulse for luminance signal (Y.CL.P) and clamp pulse for color difference signal (C.CL.P) are generated from 1H sync via LCR network and transistors.

3-5-7. Picture Set Up Pulse Generator

This is the gate pulse generator for picture set-up function, and consists of mono multipliers.

3-5-8. Split, Y Blanking, C Blanking Pulse Generator

Y BLANKING pulse (Y BLK P) and C BLANKING pulse (C BLK P) are generated. These pulses are used for the purpose of DC restoration of color difference signal, Y signal and RGB signal. DC restoration is made by inserting the black reference signal during blanking period in the signal. Also C.BLK. pulse is mixed with vertical rate blanking signals for SPLIT display and for B/W display.

3-5-9. Horizontal Rate AGC and Clamp Pulse Generator

COLOR GAIN control, CONTRAST control and BRIGHTNESS control are stabilized by insertion of reference signal and using feedback circuit. Horizontal rate BLACK pulse (B.P), BLACK CLAMP pulse (B.CL.P) and WHITE CLAMP pulse (W. CL.P) are generated here.

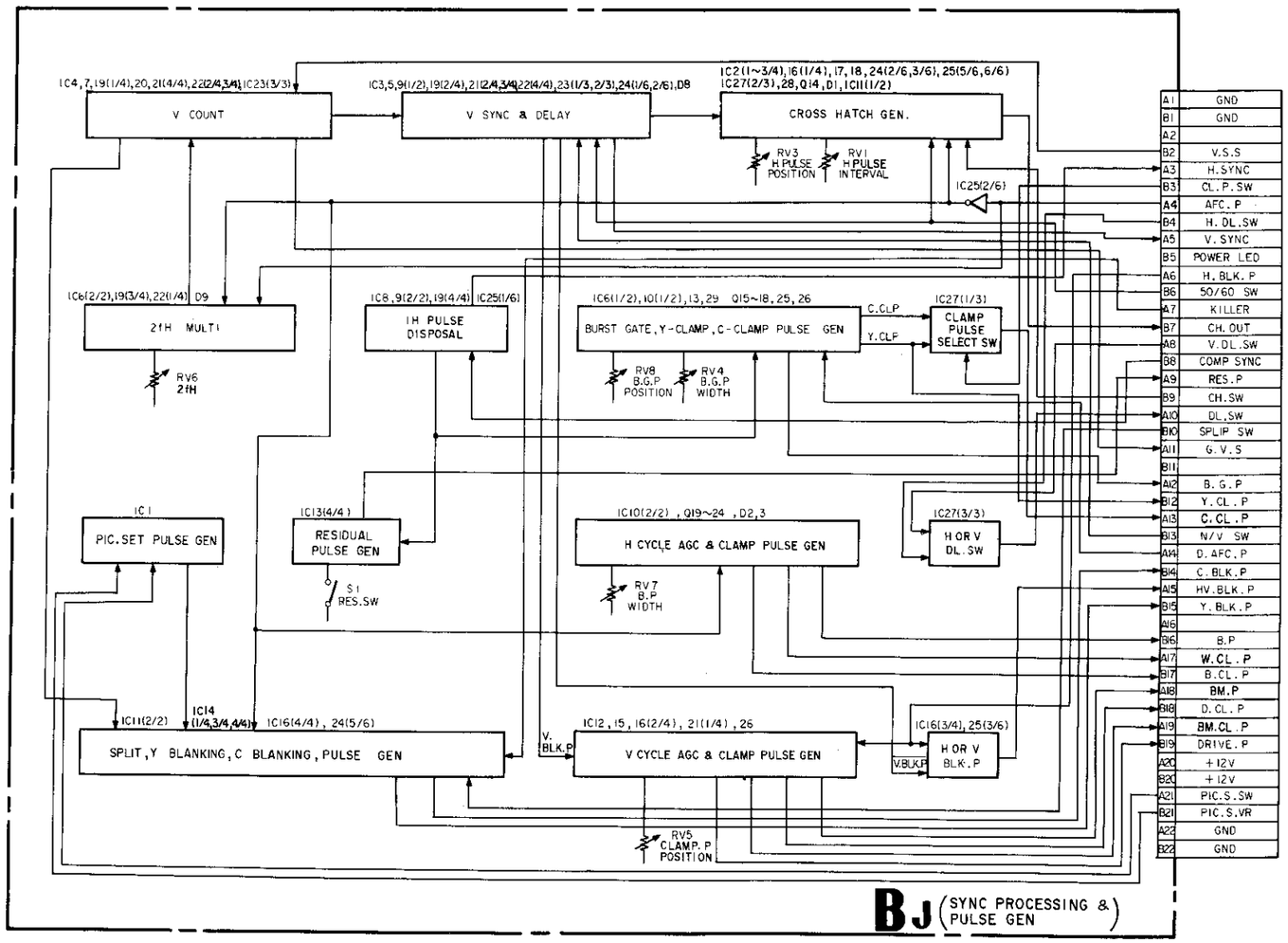
3-5-10. Vertical Rate AGC and Clamp Pulse Generator

In this model, BEAM CONTROL circuit is used for high stability in white balance.
The reference signal is inserted in the signal for gain control circuit in video output amplifier and for beam control circuit. Vertical rate pulses are used for this purpose.
Vertical rate BEAM PULSE (BM.P) DRIVE PULSE (DRIVE.P) and BEAM CLAMP PULSE (BM.CL.P) are generated here.

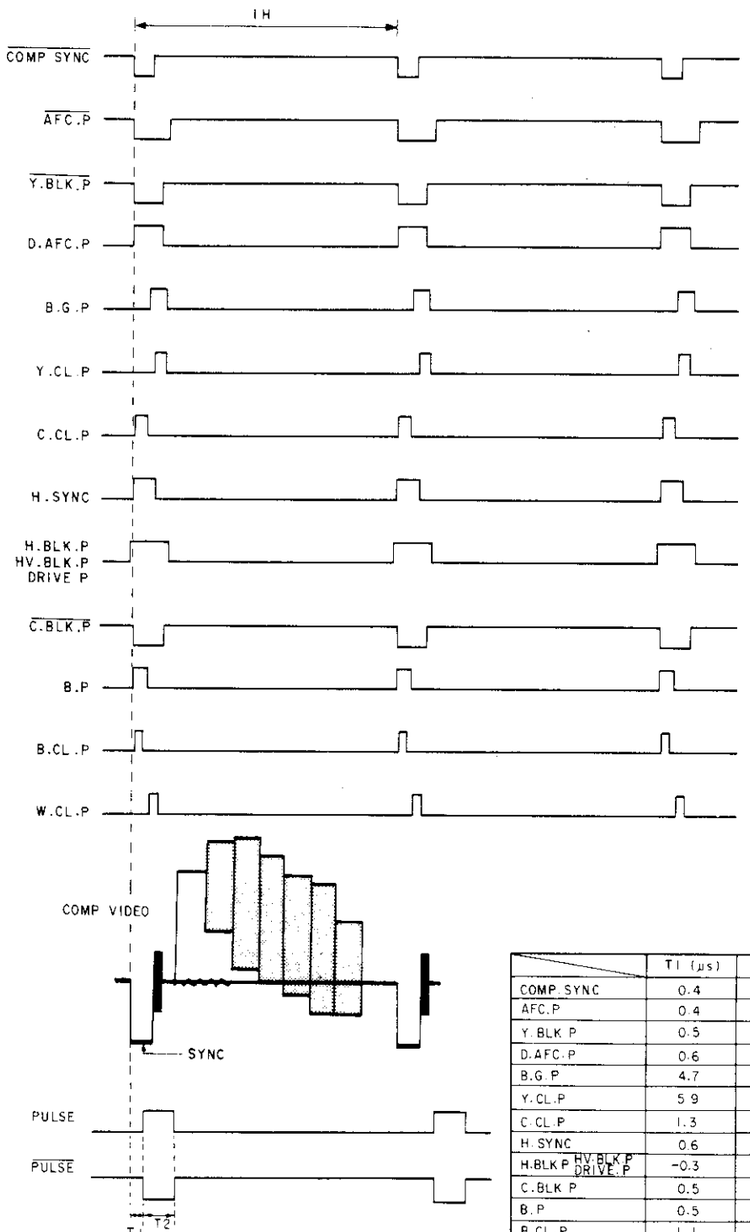
3-5-11. Others

Black reference is determined at the position of clamping in black reference insertion circuit for both color difference signal and RGB signal. Accordingly C.CL.P is used as clamp pulse for color difference signal processing and Y.CL.P is for RGB signal. CLAMP PULSE SELECTION SW switches C.CL.P.or Y CL.P to the clamp pulse for the insertion of black reference.

BLOCK DIAGRAM OF BJ BOARD



TIMING CHART OF MAJOR PULSE (BJ BOARD)



	T1 (μs)	T2 (μs)
COMP SYNC	0.4	4.8
AFC.P	0.4	9.0
Y.BLK.P	0.5	7.2
D.AFC.P	0.6	7.2
B.G.P	4.7	4.1
Y.CL.P	5.9	2.6
C.CL.P	1.3	3.0
H.SYNC	0.6	5.5
H.BLK.P HV.BLK.P DRIVE.P	-0.3	9.0
C.BLK.P	0.5	7.2
B.P	0.5	3.5
B.CL.P	1.1	1.8
W.CL.P	4.4	1.8

Figure 7

FIELD 1 VERTICAL BLANKING

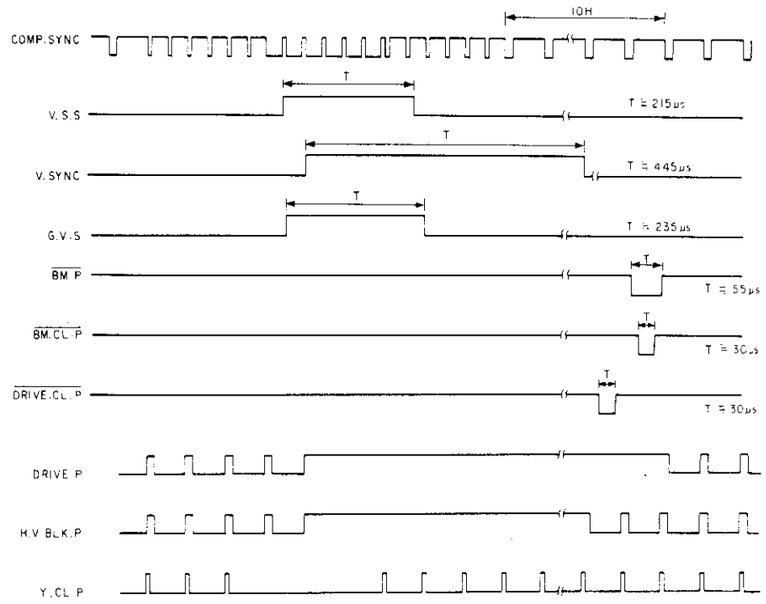


Figure 8

FIELD 2 VERTICAL BLANKING

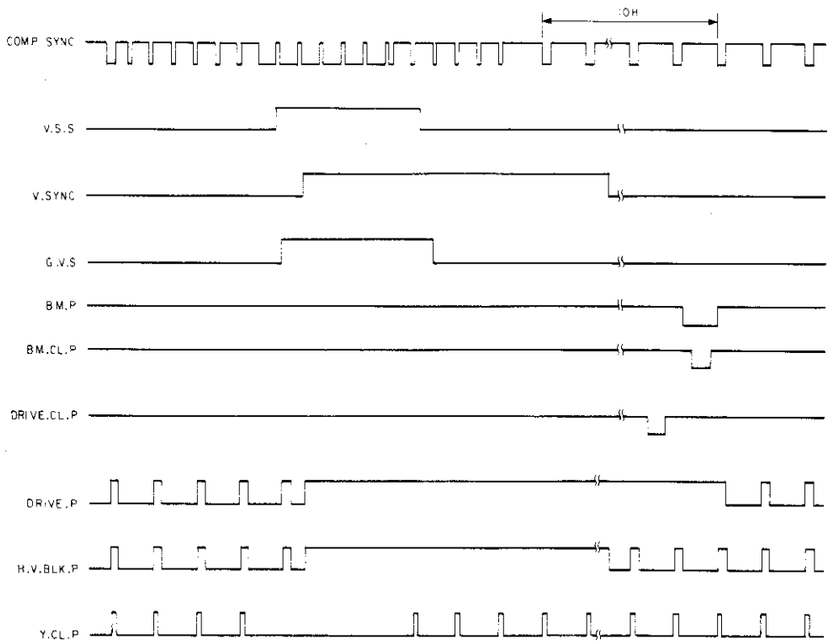


Figure 9

3-6. BK BOARD

Following are described about Red channal. Green and Blue channel are the SAME.

3-6-1. Red Drive Amplifier, Red Buffer

This circuit drives final stage of video output amplifier. Gain is approx. 2

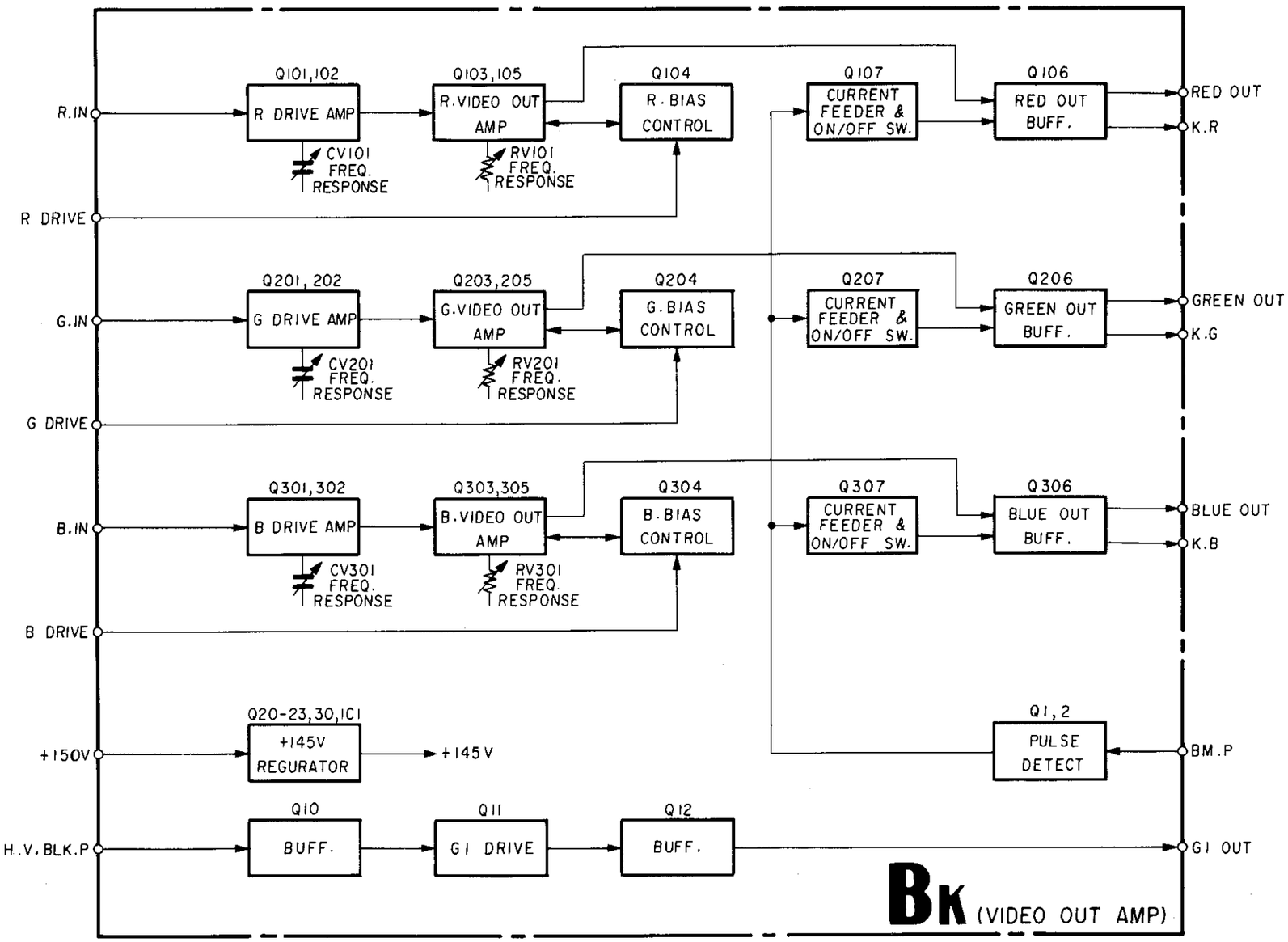
3-6-2. Red Video Output Amplifier and Buffer

This is the final stage amplifier to obtain amplitude enough to drive cathode of CRT.
Gain is approx. 11
The amplified signal is input to the RED cathode of CRT through the next stage's buffer. At this final stage's bufffer, the current source (Q107) is applied.
A BM.P signal of positive polarity is input to the base of Q107. For this BM.P period, Q107 is cut off, and the current is consequently not supplied to the buffer. So, the only current supplied from cathode is flown from emitter to collector of Q106 in this period.
This board outputs the Q106 collector current as K.R.

3-6-3. H.V. Blanking Circuit

H.V.BLK. pulse is amplified by G1 drive circuit and it is fed to the G1 of CRT through the buffer.

BLOCK DIAGRAM OF BK BOARD



3-7. Beam control Circuit (BI, BK BOARDS) (Same as Green and Blue)

Block diagram is shown in Figure 10.

3-7-1. Detection of Cathode Current and I-V Conversion (BI BOARD)

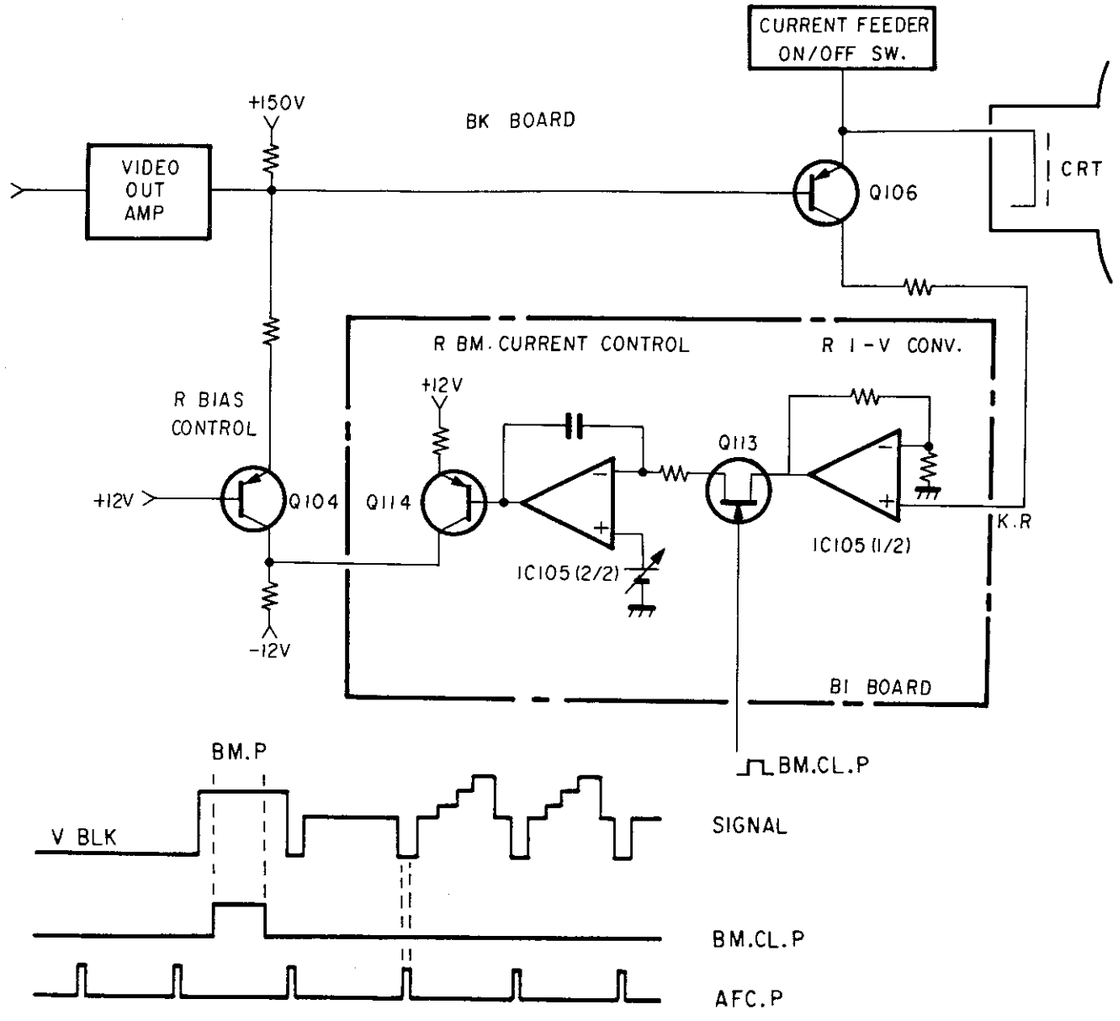
Cathode current is detected as a voltage by using IC105 (1/2)

3-7-2. Red BM. CURRENT Control (BI BOARD)

BMP is inserted in the signal during vertical blanking in BI board.
This BMP is detected as a cathode current and sampled by BM CLP applied to FET Q113.
This BM. CURRENT control circuit controls the base voltage of transistor Q114 so that converted voltage from cathode current and the reference voltage may match.

3-7-3. Red Bias Control Circuit (BK BOARD)

In the R BIAS control circuit on the BK board, emitter current of Q104 is controlled according to the variation of Q114 base voltage on the BI board.
Therefore, the base voltage of Q106 changes so that the black level of signal that is input to the cathode of CRT is controlled.



3-8. NTSC COMB FILTER (BT BOARD) (BVM-1916 ONLY)

3-8-1. 3 Line Dynamic Comb Filter (Fig. 10)

The fed video signal is band limited by a low-pass filter. (This signal is hereinafter referred to as the 0H signal.) The 0H signal becomes the signal which is 1H (63.556 μsec) delayed by the 1H delay circuit (1H delayed signal) and the signal which is 1H further delayed by the 1H delay circuit (2H delayed signal).

The 0H, 1H, and 2H signals are band limited by the respective band-pass filters (center frequency: fs) for delay of $\lambda/2$(140 nsec). The 1H signal is further $\lambda/2$ delayed. The 0H+$\lambda/2$, 1H, 1H+$\lambda/2$, 1H+λ and 2H+$\lambda/2$ (Ⓐ, Ⓑ, Ⓒ, Ⓓ and Ⓔ of the block diagram) at each point are separated into chroma signals only by the correlation circuit (IC501).

The luminance signal is separated with the chroma signal subtracted from the 1H signal.

3-8-2. 2 Line Symple Comb Filter

The chroma signal is separated with the 0H+$\lambda/2$ and 1H+$\lambda/2$ signal subtracted, and the luminance signal is separated by subtracting the chroma signal from the 0H signal.

3-8-3. 1H Delay Circuit (Fig. 11)

The 1H delay circuit consists of two CCD delay lines.

These CCD delay lines are used in parallel to attain 1H (63.556 μsec) signal delay.

3-8-4. Band-pass Filter (Fig. 12)

The band-pass filter consists of a delay line. It performs band limiting with the group delay kept constant.

3-8-5. Correlation Circuit (IC501) (Fig. 13)

The correlation circuit consists of a limiter circuit which is common to emitters to perform separation of a chroma signal.

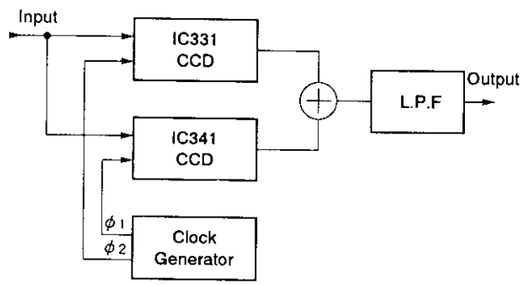


Figure 11

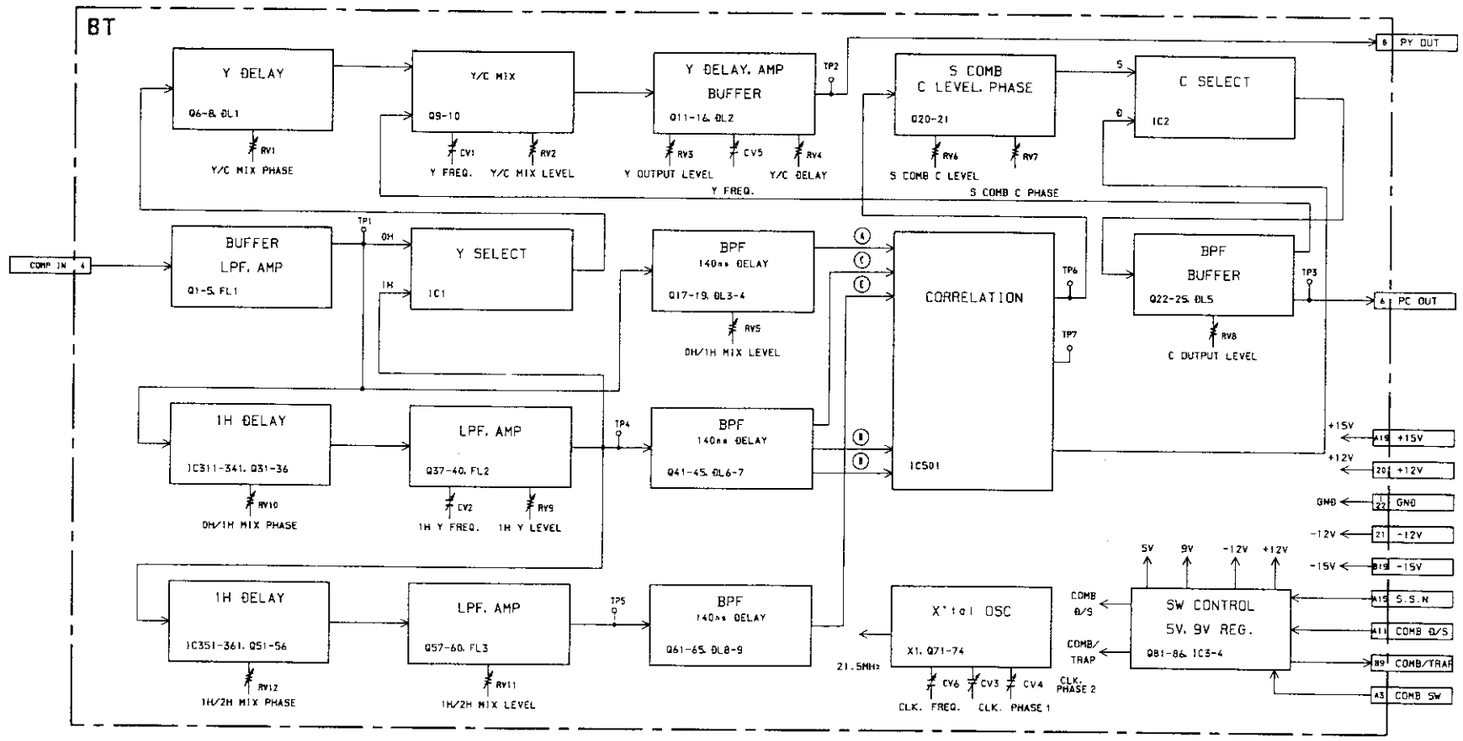


Figure 10

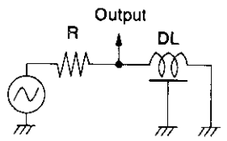
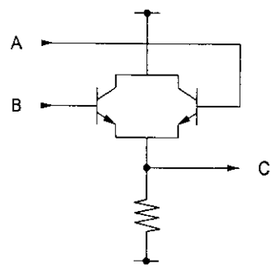


Figure 12



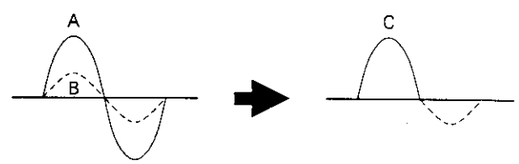


Figure 13

(BVM-1916 ONLY)

3-9. NTSC DEMODULATOR, Y TRAP CIRCUIT (BC BOARD)

The composite video signal (NTSC) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 3.58MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-9-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R18, capacitor C7, C8, inductor L3 and transistor Q5.

The center frequency of this filter is adjusted to the subcarrier frequency (3.58MHz) by L3, and chrominance signal is derived from Q5.

This circuit selects comb filter (BB board) mode or notch filter mode by a push of button on the front panel. When comb filter mode is selected, comb switch circuit composed of transistor Q103 and Q104 activates and base voltage of Q5 goes down to −12V and Q15 is cut off and then chrominance signal (Pure C) is provided from comb filter circuit to IC2.

3-9-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2 (Pin ⑦).

When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.

When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.

When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

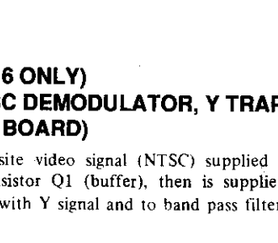


Figure 14

3-9-3. Chroma Amplifier Circuit

The level of chrominance signal from residual switch circuit (IC2 pin ④) is divided by resistor R85 and R86 and is fed to chroma amplifier circuit (Q6, Q7, Q8).

The gain of this amplifier is almost 1 and this amplifier has 2 outputs. They are non-inverted signal and inverted signal.

Non-inverted signal is fed to R-Y input terminal (IC1 pin ③) of demodulator and inverted signal to B-Y input terminal (IC1 pin ②).

3-9-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phase contrl circuit (Q9, Q10, Q11, Q12, D2).

In this circuit, a variable capacitance diode (D2) is used to control the phase of color burst signal.

Anode voltage of D2 is applied by variable resistor RV2 and preset adjustment of phase is made by this variable resistor.

When the PHASE control on the right side of the front panel is turned, DC level of phase contrl signal (board terminal A13) changes and this phase control signal is fed to the cathode of D2 via analog switcher (IC2 Pin ③). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase ontrol signal.

Analog switcher IC3 (2/3) activates to make short-circuit between input terminal pin ⑬ and output terminal pin ⑭ , only when COLOR STANDARD SELECTOR in the right side of drawer is selected to NTSC and otherwise pin ⑬ kept opn circuit.

As above phase controlled chrominance signal is derived from emitter of transistor Q12 and burst signal in this signal is gated by IC3 (1/3). The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

3-9-5. NTSC Demodulator

Block diagram of IC1 used for NTSC demodulator is shown in Figure 15.

This IC is designed for use of NTSC demodulator.

When chrominance signal is fed to pin ①, ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P) to pin ⑬. R-Y and B-Y color difference signals are obtained at output terminals pin ㉓ and pin ㉔.

The demodulation axes of this demodulator are R-Y axis and B-Y axis.

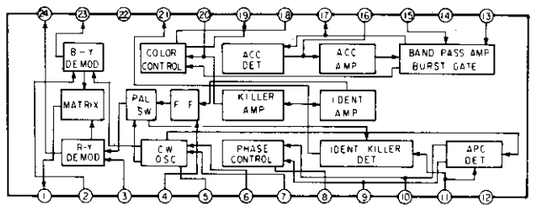
Variable capacitor CV1 is adjusted so that the phase angles between them are 90.

Local oscillator (3.58MHz) is formed by CW oscillator in IC1 connected to the terminal pin ⑤, ⑥, ⑦, ⑧ and external circuit.

The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrer frequency 3.579545MHz.

Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscill lator is controlled by APC circuit.

The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



Block diagram of NTSC demodulator

Figure 15

3-9-6. 3.58 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from emitter of transistor Q1 is fed to 3.58MHz trap circuit composed of resistor R5, R6, R7, capacitor C1 and inductor L1.

Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.

Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)

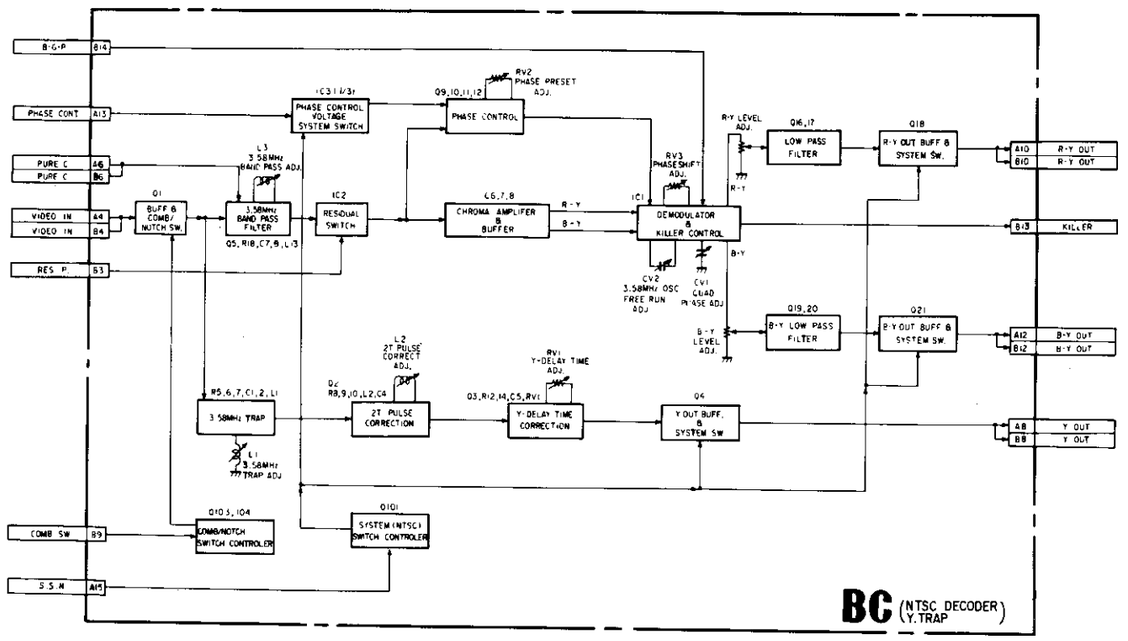
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-9-7. Color Standard Selector

When NTSC system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101 is cut off and +12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BC BOARD



(BVM-2016P ONLY)
3-10. PAL DEMODULATOR, Y TRAP CIRCUIT (BO BOARD:Serial NO.2000382 and Higher)

The composite video signal (PAL) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 4.43 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-10-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5.
The center frequency of this filter is adjusted to the subcarrier frequency (4.43 MHz) by L3, and chrominance signal is derivied from Q5.

3-10-2. Residual SW Circuit

The chrominance signal derivied at transistor Q5 is fed to analog switcher IC2.
When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.
When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.
When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

3-10-3. Chroma Amplifier Circuit

The chrominance signal from residual switch circuit (IC2 pin ④) is fed to chroma amplifier circuit (Q17, Q36).
After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin ③) and B-Y input terminal (IC1, pin ②) of the following demodulator circuit via the buffer (Q38).

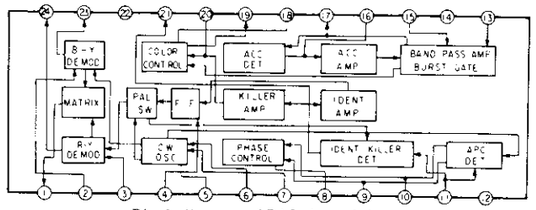
3-10-4. Phasa Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D10).
In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal.
Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor.
When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.
When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin ④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑨ kept open circuit.
As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

3-10-5. PAL Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure11. This IC is designed for use of NTSC demodulator.
When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ㉓ and pin ㉔
The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°.
Local oscillator (4.43 MHz) is formed by CW oscillator in IC1 connected to the terminal pin ⑤, ⑥, ⑦, ⑧ and external circuit.
The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrer frequency 4.433619 MHz.
Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit.
The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



Block diagram of PAL demodulator

Figure 16

3-10-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained.
R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF).
The signals input to Q21 are then input to pin ⑫ of the analog switcher (IC5). When PAL S has been selected, between pins ⑫ and ⑭ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF).
The signals input to Q20 are formed by IC7 and Q18.
Bias is controlled by a clamp circuit and is input to pin ① of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9.
IC3, driven by the 17.715 MHz clock signal generated by the clock generator circuit configured with X2, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑤.

The high frequency component of the signal thus output is removed by the low-pass filter configured with Q40, Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit.
The PAL-D matrix circuit is configured with R100, R101 and Q24. The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2.
The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ⑬ of IC5. When PAL-D is selected, between pins ⑬ and ⑭ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

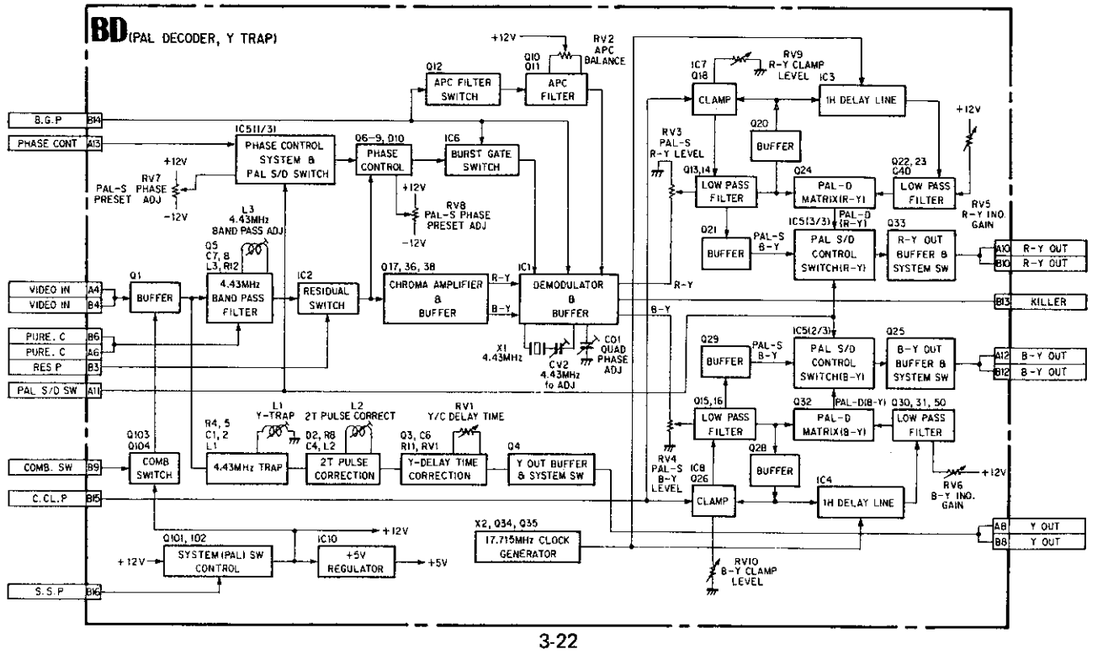
3-10-7. 4.43 MHz Trap Circuit, Phasa Compensation, Y Delay Conrrection Circuit

The composite video signal from the emitter of transistor Q1 is fed to 4.43 MHz trap circuit composed of resistor R3, R4, R5, capacitor C1, C2 and inductor L1.
Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.
Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R6, R7, R8, inductor L2 capacitor C4)
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.
Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-10-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BD (PAL) BOARD



3-11. DA BOARD

- **Waveform Generation circuit (IC2, 7, 8, 9, 11, 18, 24, 25)**

IC2 is a waveform generator. With the input of both horizontal and vertical sync signals, this IC generates the following signals:

- H rate saw tooth waveform signal (HS)
- H rate parabolic waveform signal (HP)
- V rate saw tooth waveform signal (VS)
- V rate parabolic waveform signal (VP)
- Modulated waveform signal
- H saw × V saw (HS × VS)
- H saw × V parabola (HS × VP)
- H parabola × V saw (HP × VP)
- H parabola × V parabola (HP × VP)
- H.SW PULSE, V.SW PULSE

H.SW and V.SW pulses are those which rise just in the middle of the trace period and fall in the retrace period.

- **Scan Switching circuit (IC3, 4, 5, 6)**

In the scan switching circuit, NORMAL, UNDER or SET-UP scanning is performed.

In H.SAW GEN. circuit, the H rate saw wave is output by the integrator of IC15 using the H.SW pulses from IC2 as reset pulses. The H rate saw thus generated is delayed about 1/2H as compared with that of the IC2.

- **H.BLK. GEN., H. DRIVE GEN. circuit (IC17, 18)**

In the H.BLK.GEN. circuit, the H.BLK.P required for horizontal blanking is generated from the H.SAW waveform signal which is output signal of IC13. The HV.DRIVE GEN. is the same. In the H.Delay and H.PHASE circuits, like H.BLK.GEN., the D.AFC.P is output by comparating the H.SAW output signals of IC13. Further, this circuit performs H. PHASE and H.DELAY by not changing the pulse width of D.AFC.P but changing only the position.

- **SIN. GEN., COS. GEN. circuits (IC7, 8)**

In the SIN.GEN. and COS.GEN. circuits, the SIN approximate wave is output by integrating the V rate parabola once and the COS spproximate wave is output by integrating it twice.

- **H.WIDTH circuit (IC3, 11)**

In the H.WIDTH circuit, the correction waveforms such as SIDE PIN, SIDE PIN TILT, H.WIDTH, etc. are output by adding VP, VS, H, SIZE, etc. (H.WIDTH)

- **H. LIN circuit (IC13)**

In the H.LIN circuit, correction waveforms such as H.LIN.GAIN, H. LIN. BALANCE, etc are output by adding HP, HS, etc. (H.LIN)

- **V SAW circuit (IC12)**

In the V.SAW circuit, the correction waveforms such as V cycle saw wave, V.LIN. GAIN, V.LIN. BALANCE, V GEN.T.X BOW, TOP BOTTOM PIN, etc. are output by adding VS, DC, V.SIN, VP, HS, HS × VS, etc. (V.SAW)

- **H.CENT circuit (IC16)**

In the H.CENT circuit, the correction waveforms of H.CENT, Y BOW, Y. TILT are output by adding DC, VP and VS.

- **X.CONV circuit (IC9, 14)**

In the X.CONV circuit, the correction waveform of vertical misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

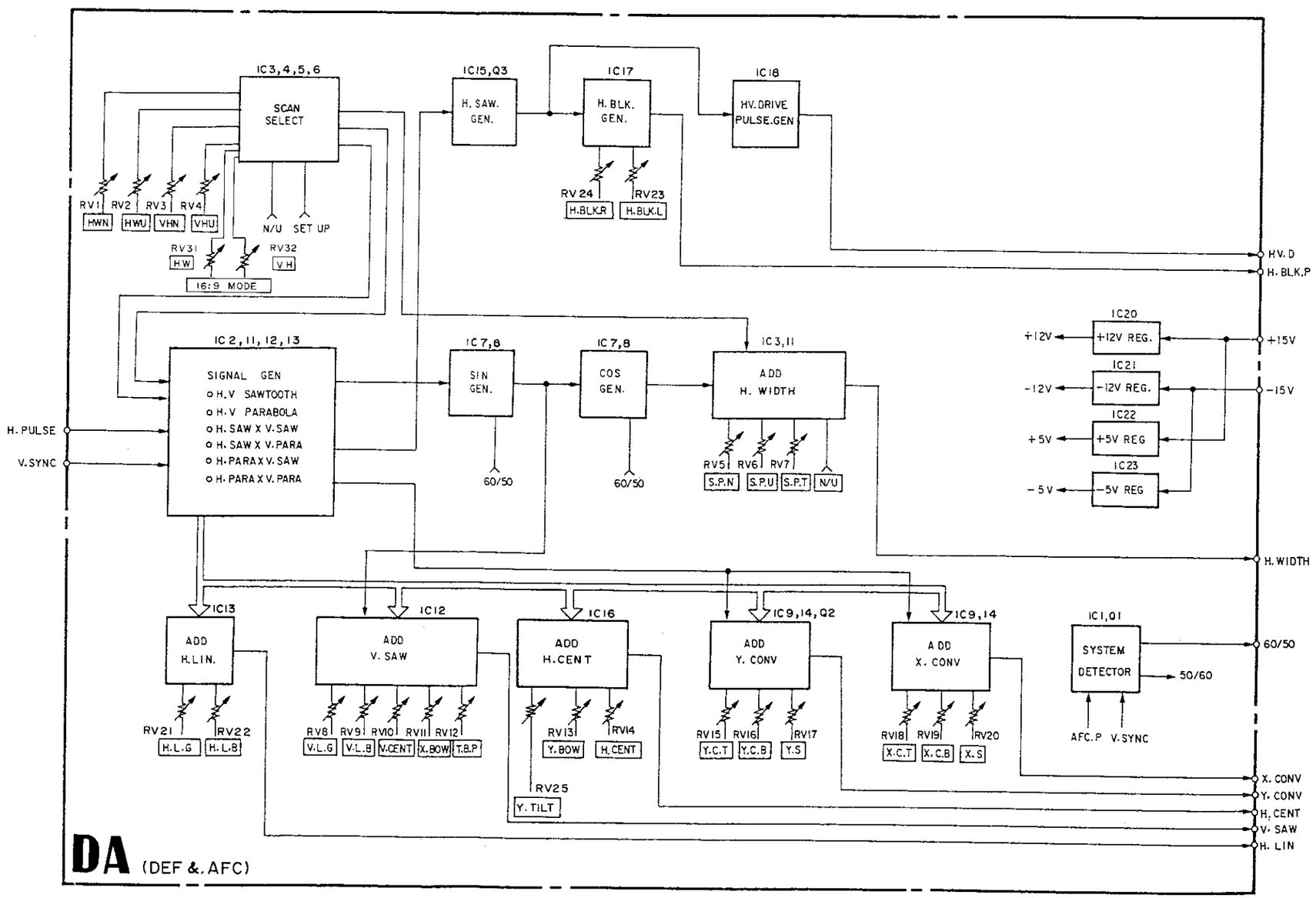
- **Y.CONV circuit (IC9, 14, Q2)**

In the Y.CONV circuit, the correction waveform of horizontal misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

- **System Detector circuit (IC1, Q1)**

With the input at both horizontal and vertical sync signals IC1 distingwishes between 525/60 and 625/50.

BLOCK DIAGRAM OF DA BOARD



3-12. HORIZONTAL AND VERTICAL DEFLECTION OUTPUT CIRCUIT AND HIGH VOLTAGE REGULATOR CIRCUIT (EA BLOCK)

3-12-1. Horizontal Deflection Output Circuit

The horizontal deflection output circuit controls H out of Q11, driving T2 at Q10 by the H drive pulse generated on the board DB.
The power supply circuit to H out improves the power supply efficiency using −150V and DC-DC converter with IC1 and Q7. IC1 consists of the error amplifier and the P.W.M. circuit. IC1, being supplied with the side pin-cushion correction waveform and the H. width adjusting voltage from the board DA controls the DC-DC converter output.

3-12-2. H. Center Adjusting Circuit

The H. center adjusting circuit, generating a ± power source from the secondary output of T3 (H.O.T.), flows the correction current of the horizontal center position and Y bow bend to the horizontal deflection yoke.

3-12-3. H. Linearity Correction Circuit

The H. LIN. circuit amplifies the H. LIN. correction waveform generated on the board DA by the SEPP amplifiers of Q2 to Q5, and supplies these to the horizontal deflection yoke from the capacitor for S curve correction.

3-12-4. Vertical Deflection Output Circuit

The vertical deflection output circuit consists of the SEPP AMP, directly connected to DC power and composed of Q201 to Q205 and the retrace pulse voltage boost-up circuit composed of Q207 and Q208.
This SEPP AMP receives, as an input the sawtooth wave voltage (added with the T&B pincushion compensating voltage and the vertical linearity compensating voltage) generated at the DA board.
Since the SEPP AMP is directly connected to the load (V.DY), the V. CENT circuit needs only DC current supplied to V sawtooth from ± power supply. The boost-up circuit is turned on by the V.D signal and supplies energy to the output circuit during the vertical retrace period.

3-12-5. High Voltage Regulator Circuit

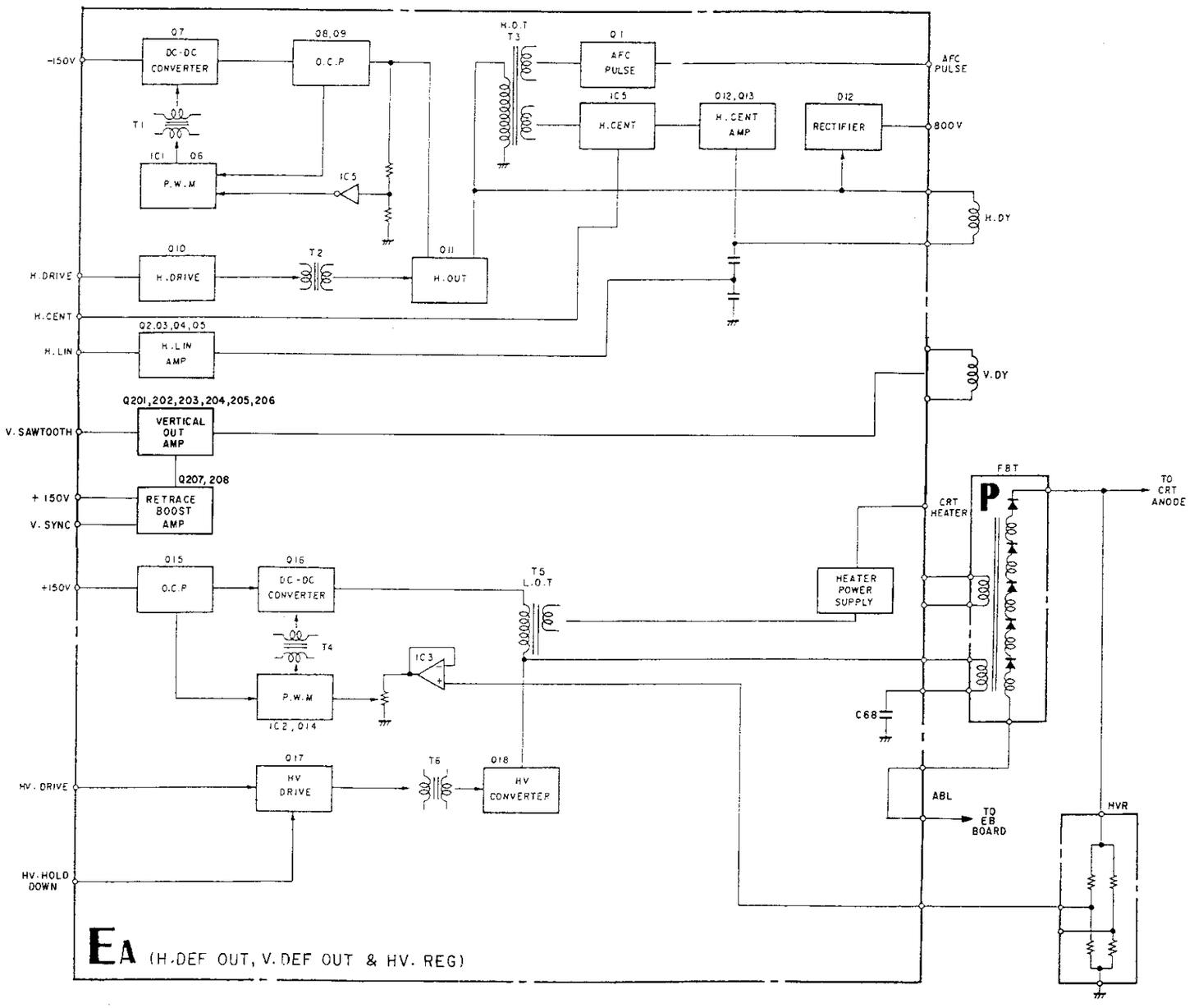
The high voltage regulator of this unit uses the DC-DC converter type power supply circuit in order to reduce power consumption. In general, the movement of the high voltage regulator is as follows:
The high voltage regulator consists of Q16, Q18, IC3 (1/2), IC2 (IC for P.W.M. control) and HVR.
The detection voltage is obtained by directly dividing HV voltage with resistors in HVR.
IC2 compares this detection voltage with the reference voltage located outside IC2 (error amplification) and performs P.W.M. modulation. Q16 is driven by output of IC2 which is made PWM modulation and controls the voltage supplied to the FBT drive circuit (Q17, Q18, FBT).
The HV voltage is adjusted by changing the detection voltage. Since the detection voltage of HVR drops when the anode current is increasing and the high voltage drops, then the ON period of Q16 is widened.
As a result of this, as the peak current of the corrector current of Q18 increases, the energy which is stored in C68 via FBT is enlarged and the high voltage is regulated by increasing electric potential of C68.

When Q18 is turned off, a flyback pulse is generated by the synthesized resonance action by inductance of L.O.T, F.B.T and the C65, C66, C67 then, the HV voltage is generated by transfered the flyback pulse to the secondary side. (See Figure)

3-12-6. CRT Heater Power Source

The CRT heater power source is supplied from the secondary winding of L.O.T.

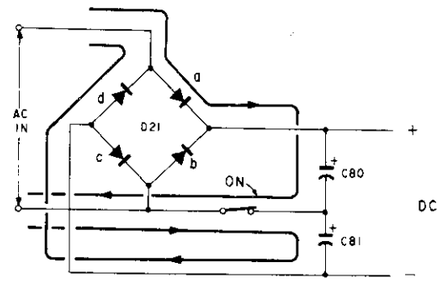
BLOCK DIAGRAM OF EA BOARD

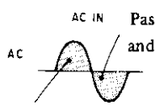


3-16. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

3-16-1. AC Power Supply, Rectifier Circuit

Voltage selector located at the rear side of the unit should be selected to the local line voltage (AC 100/120V or 220/240V).
In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a double multiple rectifier.
See Figure 17(a).
In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier.
See Figure 17(b).





Passes through D21d and charges to C81.

Passes through D21a and charges to C80.

Figure 17(a)

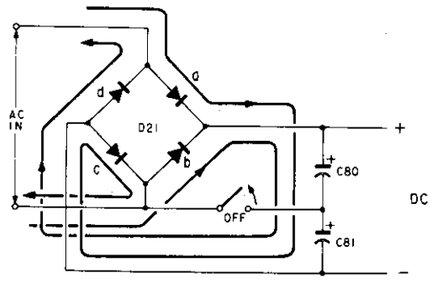


Figure 17(b)

3-16-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage selector.
This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically.
When power is turned ON, Automatic degaussing starts to work and a few seconds later stops automatically.
Also Manual degaussing is available if necessary after a few minutes power is turned on when posistor (PTH1 or PTH2) gets cool down. This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel.
When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by Q12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

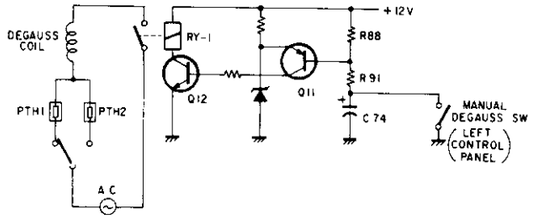


Figure 18

3-16-3. Starter Circuit

Blocking oscillator composed of integrated circuit IC1 and transformer T4 operates when power is turned on. DC voltage obtained by diode D7 and capacitor C57 as a rectifier at the secondary circuit of T4 is supplied to IC2 and IC3, when AC voltage is higher than 50 ~ 70V (voltage selector at 100/120V position). Then power supply regulator starts to work and +15V line power supply is provided to IC2 and IC3 via diode D20, also voltage from T4 stops providing power supply to IC2 and IC3 because blocking oscillator is shut down by voltage generated at primary windings of SRT (Switching Regulator Transformer).

3-16-4. Switching Regulator Circuit

Block diagram is shown in Figure 19. This is half bridge type of switching regulator in this model.

Following Description is the Theory of Half-Bridge Switching Regulator.

DC voltage E_{IN} rectified from AC voltage in AC power rectifier section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings of T1 (SRT) by switching transistor Q1 via T3 (Current Transformer).
Thus output voltages are generated at secondary windings of T1.

Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply, ±15V, ±18V and +5V. The other is for high voltage ±150V power supply.
Low voltages are generated by IC2, T1, T2, T3 and Q1.
High voltages are generated by IC3, T6, T7 and Q2
Refer to block diagram
Current Transformer T3 and T7 detects excess current in transistor Q1 and Q2 for the protection of damage.

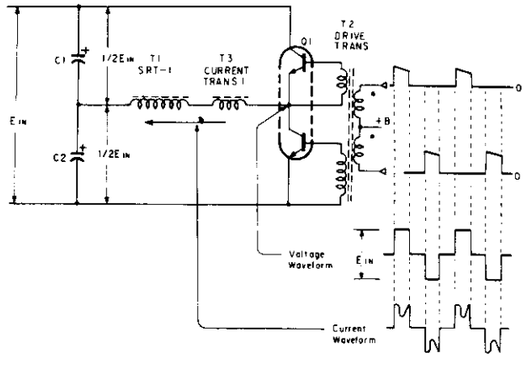
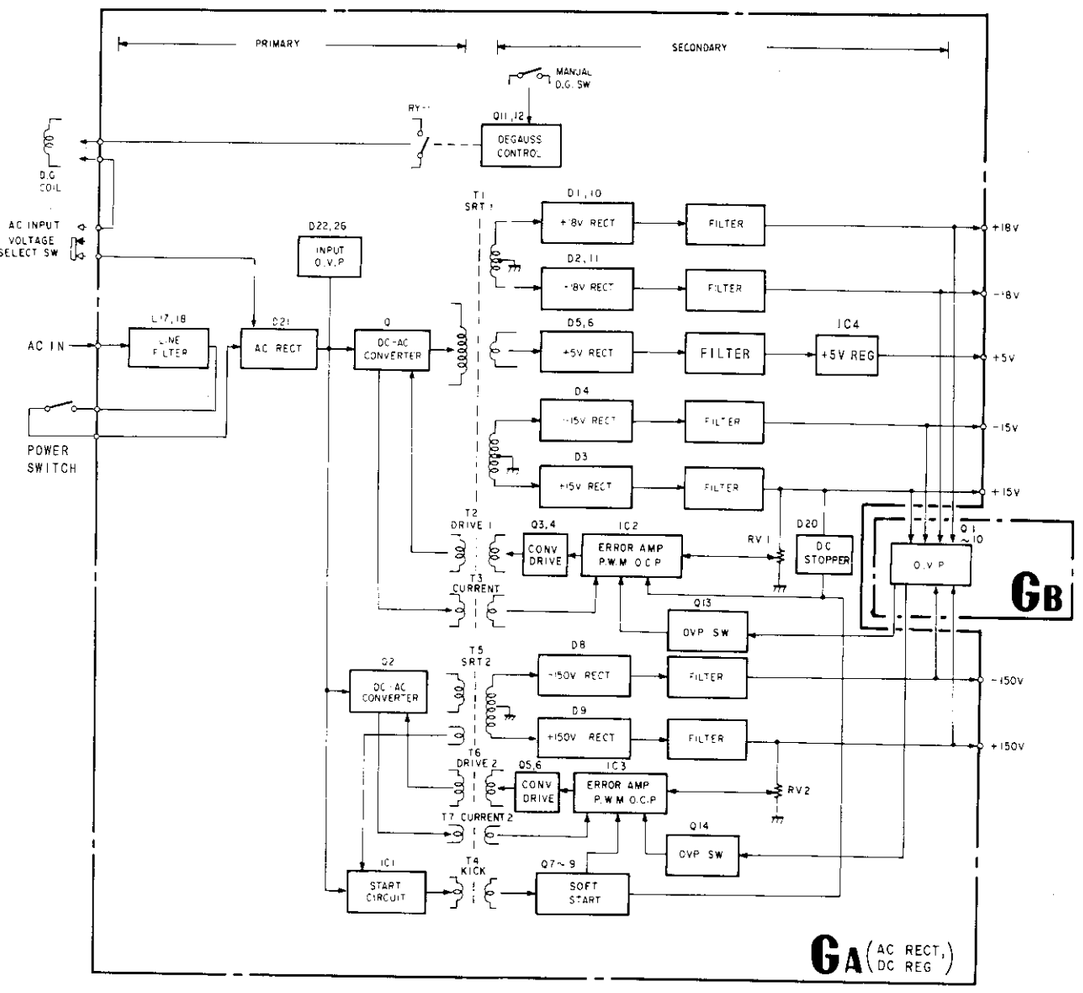


Figure 19

3-16-5. Over Voltage Protector

Daughter board GB is mounted in mother board GA.
GB board works for over voltage protection.
When output voltage gets higher value than predetermined value, over voltage protector activates to prevent damage of unit.

BLOCK DIAGRAM OF GA, GB BOARD



3-13. H. OSCILLATOR AND H.FREQUECY CONTROL (DB BOARD)

IC204 is an IC which incorporates the H.OSC and H.AFC circuits. In this IC, the frequency and phase of H.OSC are controlled by comparating the phases of D.AFC.P and H.SYNC. This unit can vary the AFC time constant by the AFC, sw.

3-14. HIGH VOLTAGE PROTECTOR CIRCUIT, BEAM CURRENT PROTECTOR CIRCUIT AND CRT PROTECTOR CIRCUIT (EB BOARD)

3-14-1. High Voltage Protector

The detection voltage for the high voltage protector is obtained by directly by dividing HV voltage with resistors in HVR.
For the high voltage protector circuit when this ditection voltage rises more than the reference voltage by the high voltage rise output of the comparator IC4 (1/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

3-14-2. Beam Current Protector ①

The anode current is converted to the voltage by resistor R121 in which the current flows in the secondary winding of FBT.
For the high voltage current protector, when the anode current increases extraordinarily, the output of comparator IC4 (2/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

3-14-3. Beam Current Protector ②

The anode current is converted to the voltage by resistor R124 in which the current flows in the secondary winding of FBT.
For the high voltage current protector, when the anode current increases extraordinarily, the output of comparator IC6 (1/2) becomes high and the drive pulse of the high voltage converter is cut off by making D51 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

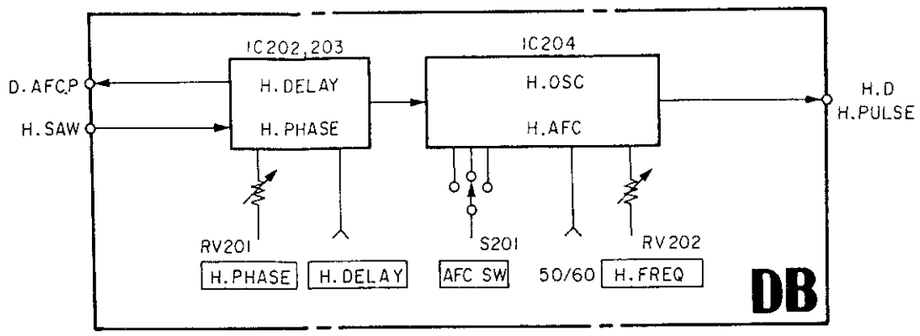
3-14-4. CRT Protector

The CRT protector circuit is to prevent the CRT from burning when the vertical deflection circuit is stopped by some causes.
For the CRT protector circuit, because the retrance pulse of V out disappears when the vertical deflection circuit is stopped, Q20 is turned off and the output of comparator IC6 (2/2) becomes high, then, with D27 (SCR) gated on to cut off the drive pulse of the high voltage converter circuit, the high voltage output circuit is stopped.

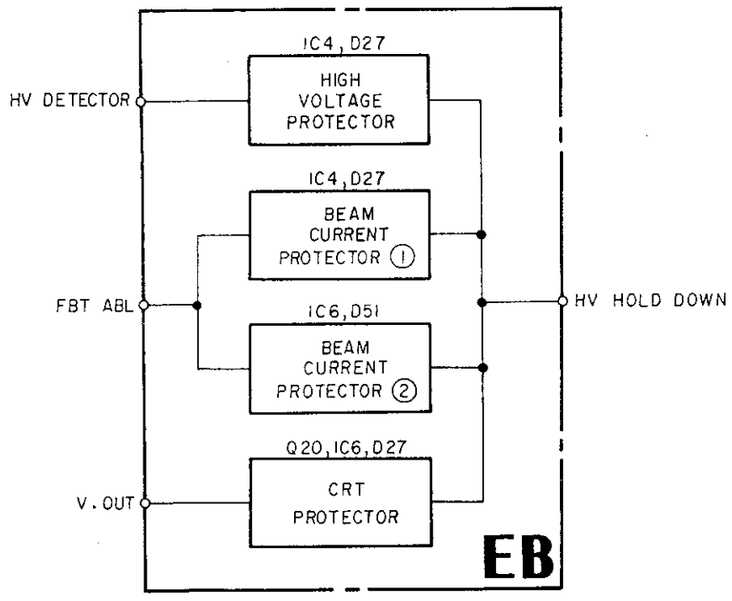
3-15. VERTICAL CONVERGENCE OUTPUT CIRCUIT (EC BOARD)

The vertical convergence output circuit drive the neck twist coil. The correction waveforms of vertical misconvergence is generated on the DA BOARD.

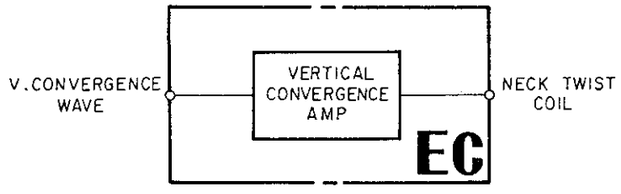
BLOCK DIAGRAM OF DB BOARD



BLOCK DIAGRAM OF EB BOARD

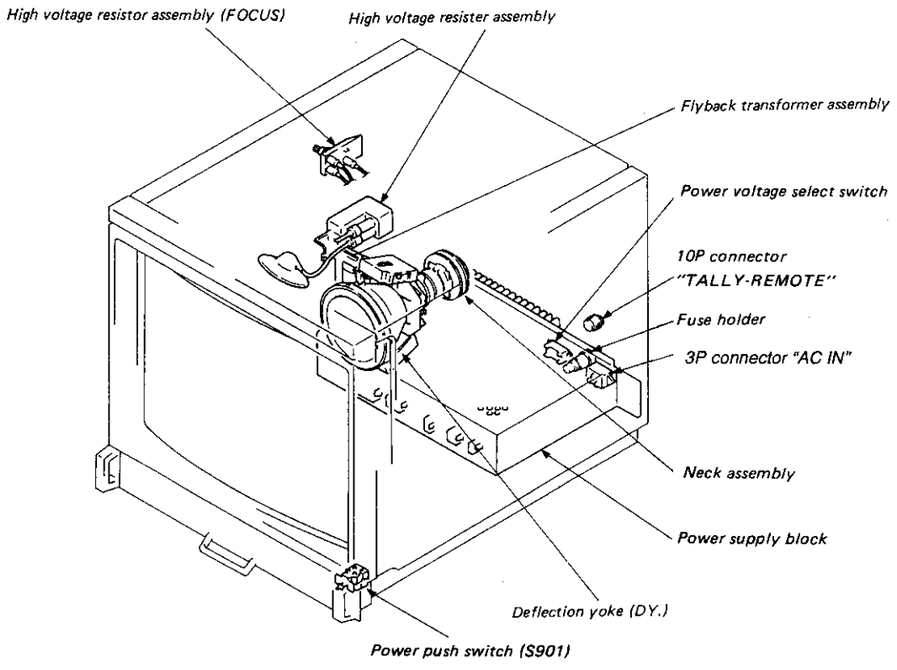


BLOCK DIAGRAM OF EC BOARD

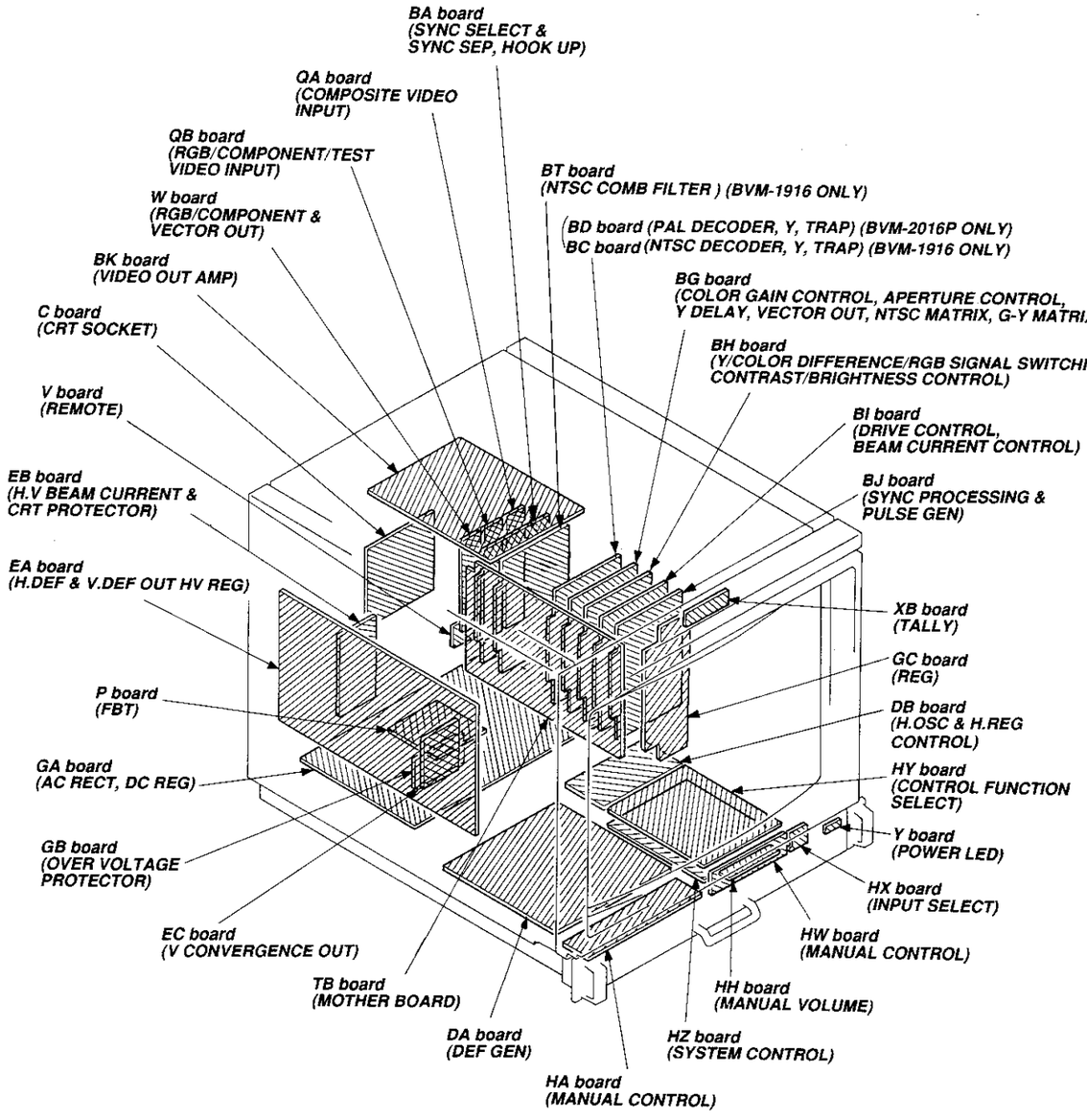


SECTION 4
ADJUSTMENTS

4-1. INTERNAL VIEW



4-2. CIRCUIT BOARDS LOCATION



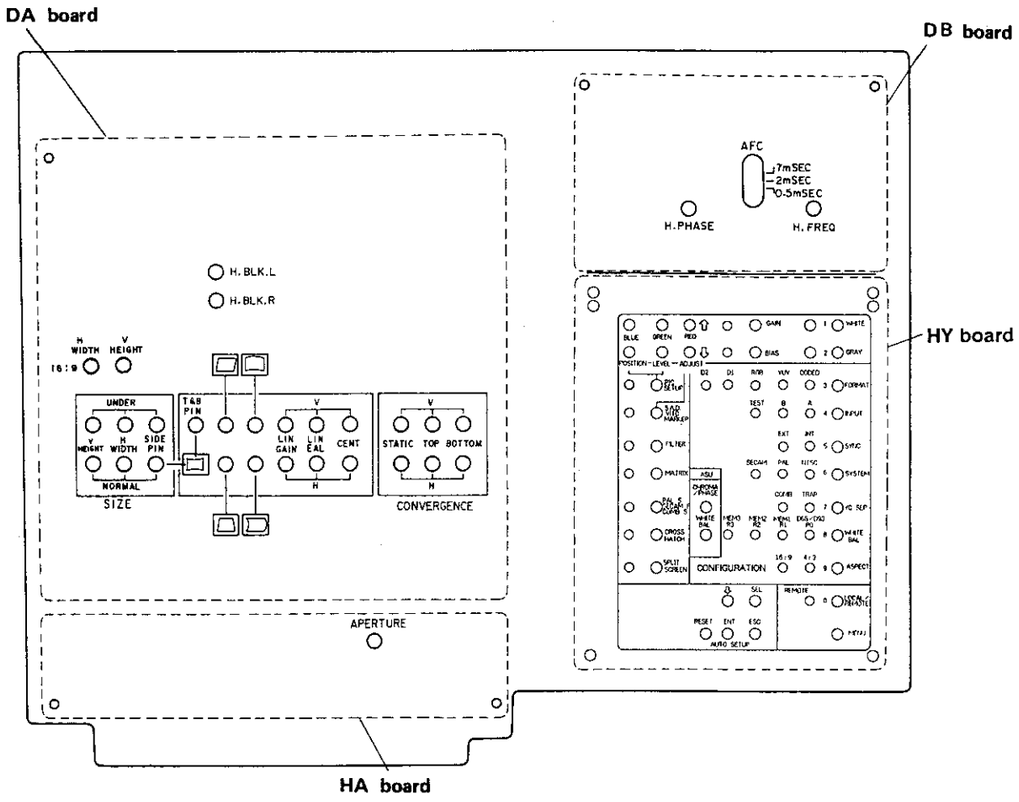
4-3. QUICK REFERENCE

SECTION \ BOARD	BA	BC	BD	BG	BH	BI	BJ	BK	BT	C	DA
CIRCUIT DESCRIPTION	3-1	3-19	3-21	3-3	3-5	3-7 3-15	3-9	3-13 3-15	3-17	—	3-23
ADJUSTMENTS	4-21 4-25	4-31	4-61	4-21 4-27	4-21	—	4-19 4-30 4-44	4-45	4-47	—	4-76 4-79
BLOCK DIAGRAM	3-2	3-20	3-22	3-4	3-5	3-7	3-9	3-13	3-17	—	3-23
MOUNTING DIAGRAM	5-15	5-25	5-33	5-35	5-43	5-45	5-53	5-55	5-20	5-71	5-63
SCHEMATIC DIAGRAM	5-17	5-27	5-30	5-37	5-40	5-47	5-51	5-57	5-23	5-66	5-60
ELECTRICAL PARTS LIST	7-1	7-4	7-5	7-8	7-11	7-13	7-16	7-18	7-20	7-24	7-24

SECTION \ BOARD	DB	EA	EB	EC	GA	GB	GC	HA	HH	HW	HX
CIRCUIT DESCRIPTION	3-27	3-25	3-27	3-27	3-29	3-29	—	—	—	—	—
ADJUSTMENTS	4-79	4-14	4-15	—	4-11	—	—	—	—	—	—
BLOCK DIAGRAM	3-28	3-25	3-28	3-28	3-30	3-30	—	—	—	—	—
MOUNTING DIAGRAM	5-65	5-69	5-71	5-71	5-73	5-72	5-91	5-78	5-78	5-78	5-79
SCHEMATIC DIAGRAM	5-60	5-66	5-66	5-56	5-75	5-75	5-93	5-81	5-81	5-81	5-81
ELECTRICAL PARTS LIST	7-26	7-27	7-29	7-39	7-31	7-33	7-34	7-34	7-34	7-34	7-35

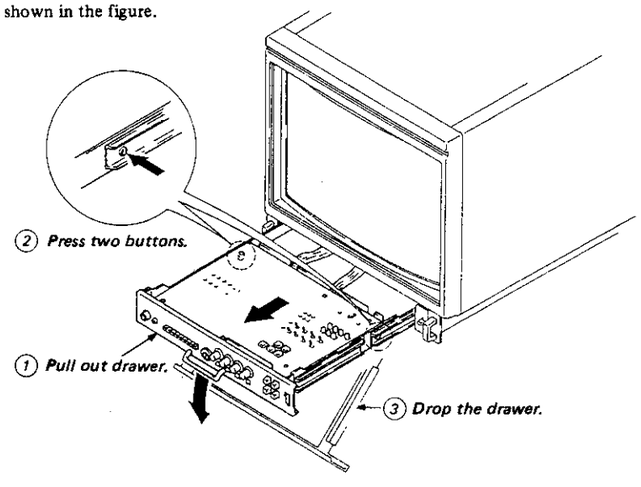
SECTION \ BOARD	HY	HZ	P	QA	QB	TB	V	W	XB	Y	Z
CIRCUIT DESCRIPTION	—	—	—	3-1	3-1	—	—	—	—	—	—
ADJUSTMENTS	—	—	—	—	—	—	—	—	—	—	—
BLOCK DIAGRAM	—	—	—	3-2	3-2	—	—	—	—	—	—
MOUNTING DIAGRAM	5-80	5-87	5-71	5-90	5-91	5-11	5-92	5-91	5-79	5-79	5-95
SCHEMATIC DIAGRAM	5-81	5-84	5-56	5-93	5-93	5-13	5-93	5-93	5-81	5-81	—
ELECTRICAL PARTS LIST	7-35	7-37	7-39	7-39	7-40	7-40	7-40	7-40	7-40	7-41	7-41

4-4. SUB CONTROL PANEL LOCATION



ADJUSTING METHOD OF DRAWER BLOCK

* Pull out sub-control panel and press two stopper buttons to drop it 60 ° as shown in the figure.



4-5. SETUP ADJUSTMENT IN CASE OF PICTURE TUBE REPLACEMENT

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by the potentiometers on the sub control panel.

[Jigs Tools and Measurement Equipment Required]

1. SIGNAL GENERATOR (TEKTRONIX 1410, 1411 Series)
2. COLOR ANALYZER
3. LUMINANCE METER

[Landing adjustment]

1. Connect signal generator and receive a white signal.
2. Set BRIGHTNESS and CONTRAST VRs to the preset position (□).
3. Face the CRT screen toward East (or West) and press the DEGAUSS switch.
4. Set the purity control to the center as shown in Fig. 1-1.

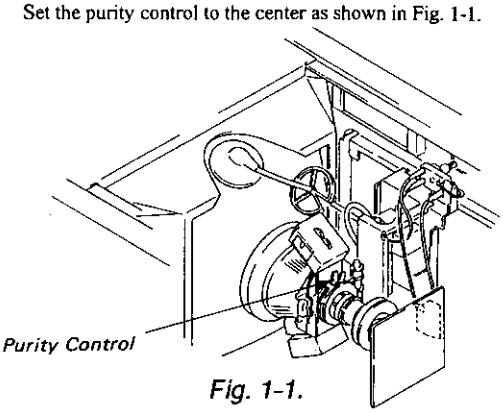


Fig. 1-1.

5. Slide DY (Deflection Yoke) as far forward as possible.
6. Set the neck assembly in the position shown in Fig. 1-2.

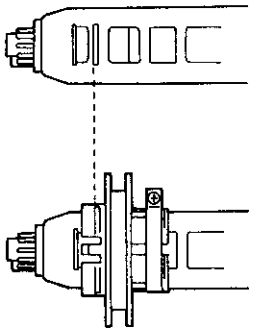


Fig. 1-2.

7. Set the screen to green only (R and B on the FRONT PANEL are in the IN position and G in the OUT position).
8. Turn purity knob as shown in Fig. 1-3 to bring the green on the center of the screen.

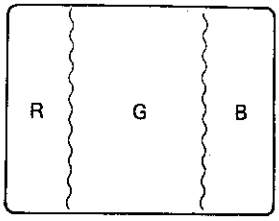


Fig. 1-3.

9. Slide DY back for uniform green raster.
10. Make the screen red only (G and B on the FRONT PANEL are in the IN position and R in the OUT position) and check landing.
11. Make the screen blue only (R and G on the FRONT PANEL are in the IN position and B in the OUT position) and check landing.
12. Adjust DY tilt and tighten DY set-screw.
13. Secure the DY with the spacers. (Fig. 1-4)

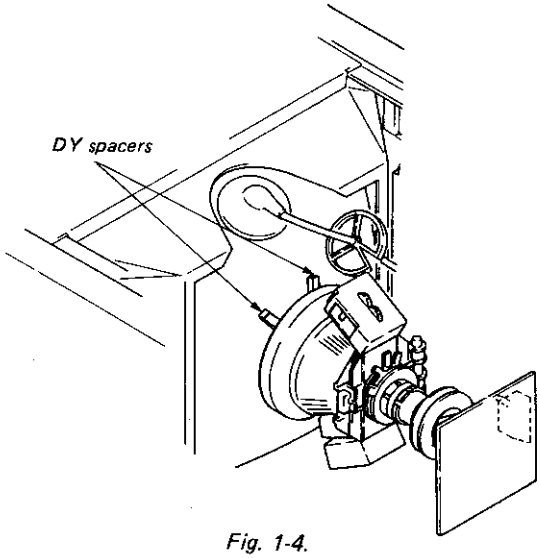
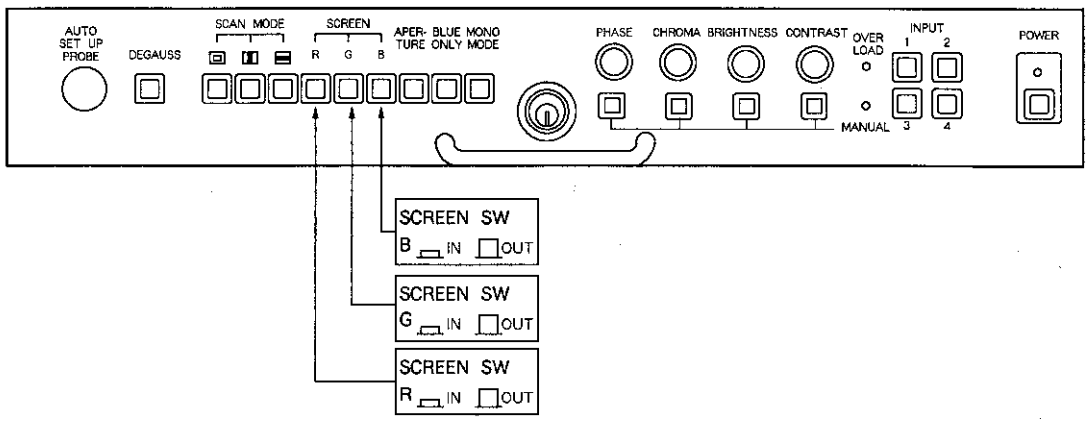


Fig. 1-4.

- **Final check**

  After adjustments, check that there is no mislanding by facing the CRT towards East, West, North and South directions.

FRONT PANEL



[Convergence adjustment]

Preparation:

1. Connect the signal generator to receive the dot signal and crosshatch signal.
2. Adjust with CONTRAST and BRIGHTNESS controls to set to easy-to-monitor position those signals.
3. Set H.STATIC VR (RV17) on the sub control panel of DA Board to the mechanical center.

(1) Horizontal and Vertical Static Convergence

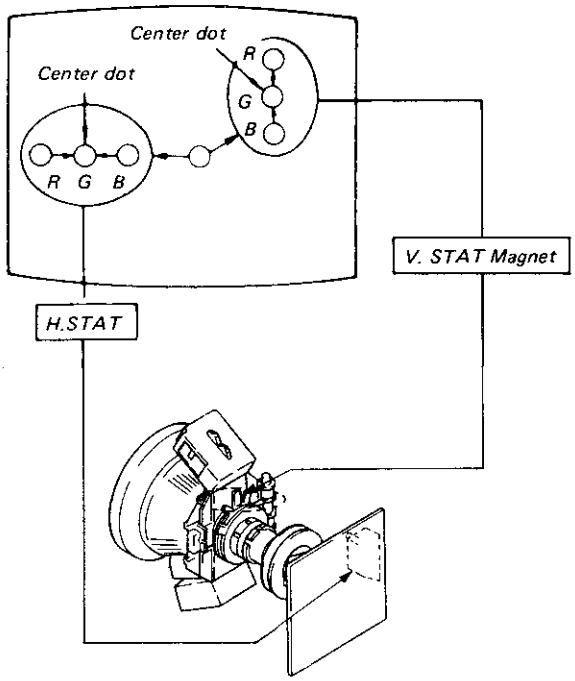
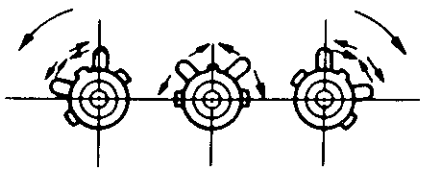


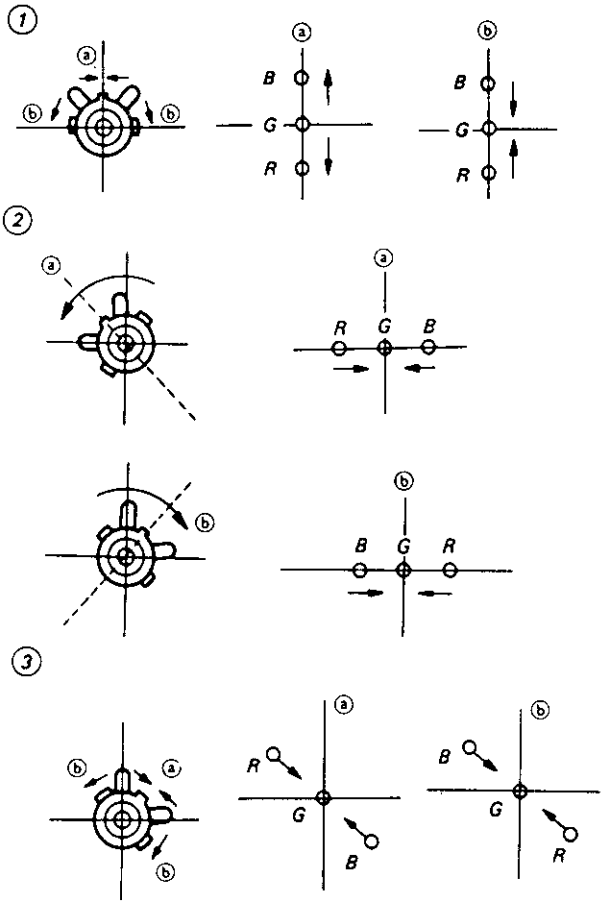
Fig. 1-5

1. Adjust H.STAT VR on the C Board to coincide red, green and blue dots on the center of screen (Horizontal movement)
2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen (Vertical movement)
3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below. (In this case, H. STAT VR and V. STAT magnet effect each other.)

- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.

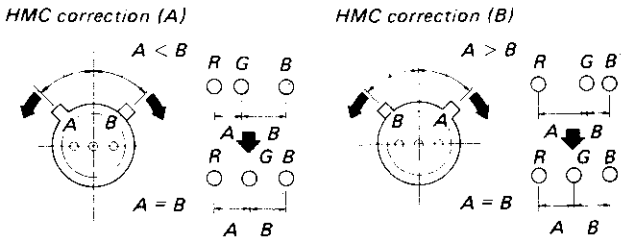


4. When the V. STAT magnet is moved in the direction of aroow (a) and (b), Red, Green and Blue dots move as shown below.

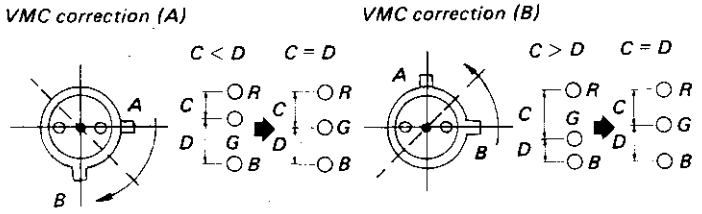


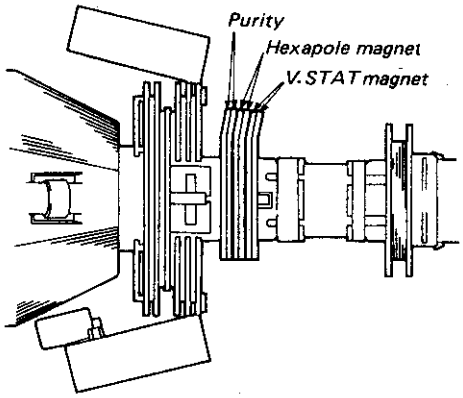
- **HMC and VMC correction for Hexapole Magnet.**

1. HMC (Horizontal. Mis. convergence) correction and motion of the Electron Beam with the Hexapole Magnet.



2. VMC (Vertical, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.





(2) Dynamic Convergence Adjustment

Preparation:

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown in Fig. 1-6.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

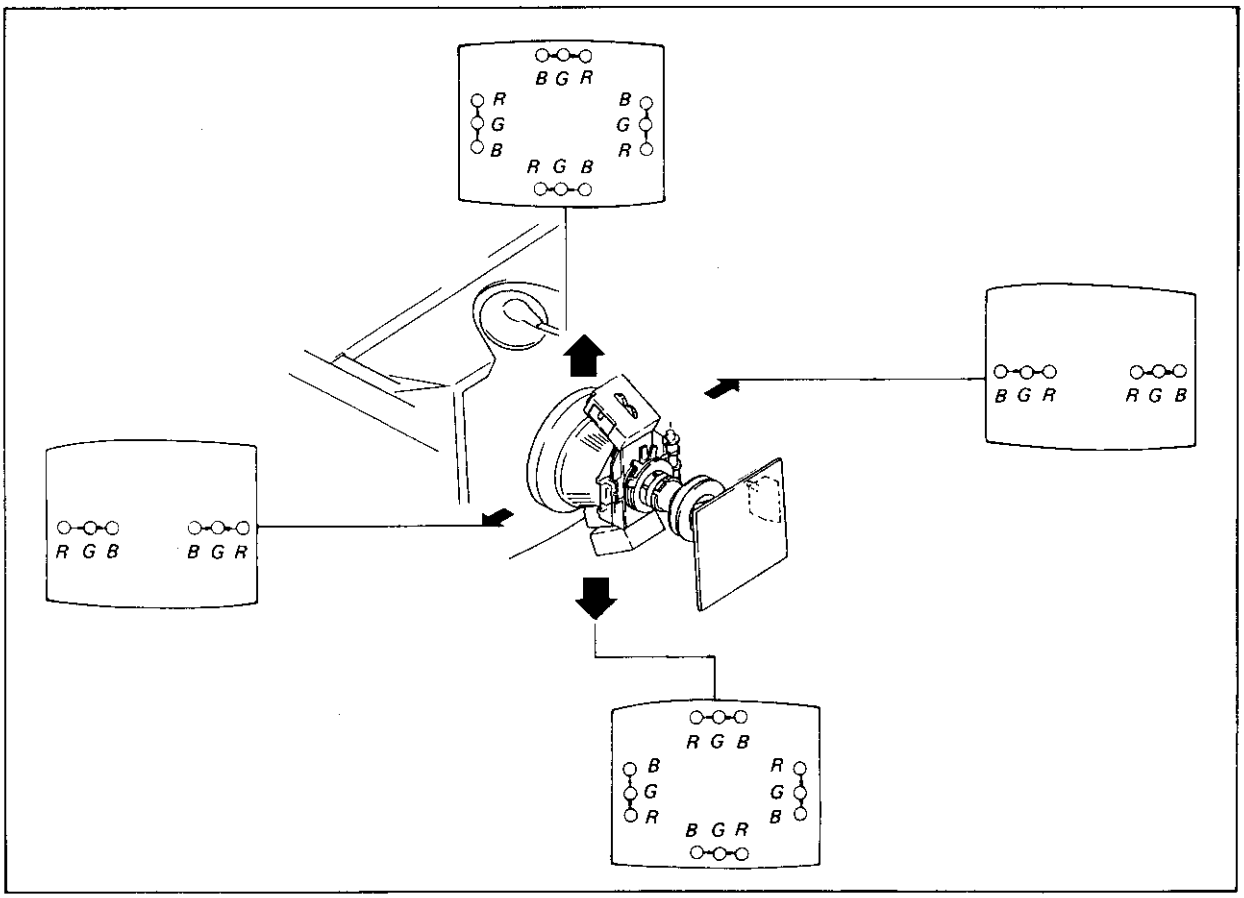
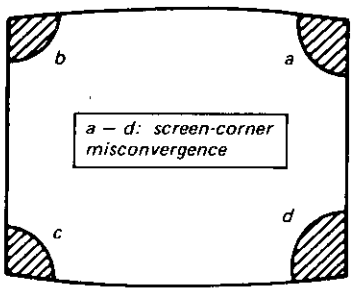
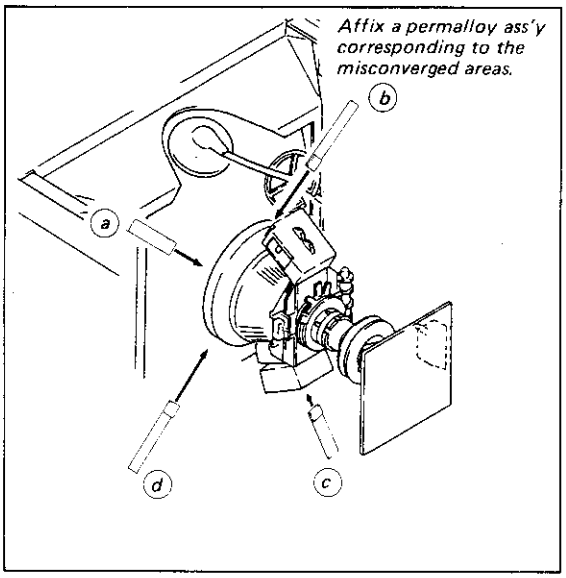
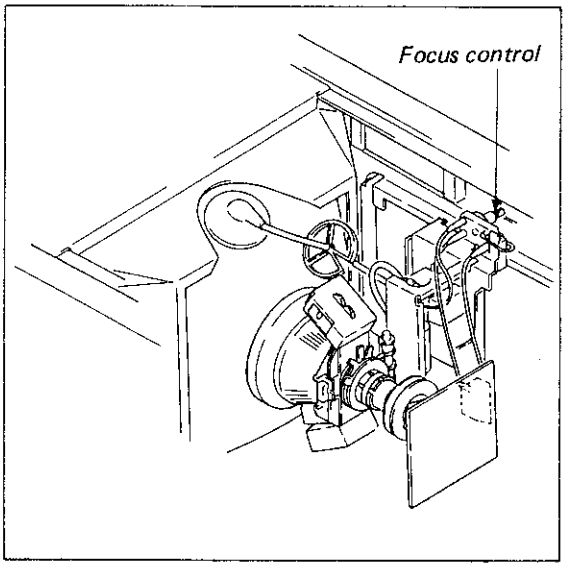


Fig. 1-6

(3) Screen-corner Convergence







[CONVERGENCE PROCESS]

1. UNDER SCAN switch ····· NOR (凹)
2. Adjust the vertical static convergence with RV20 (X.S) at the sub control panel (DA board) as shown in left of Fig. 1-7.
3. Adjust the horizontal static convergence with RV17 (Y.S) at the sub control panel (DA board) as shown in right of Fig. 1-7.

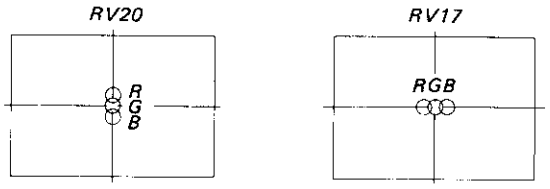


Fig. 1-7

4. Adjust the vertical convergence with RV18 (X. C. T) at the sub control panel (DA board) as shown in left upper corner of Fig. 1-8.
5. Adjust the vertical convergence with RV19 (X. C. B) at the sub control panel (DA board) as shown in left lower corner of Fig. 1-8.

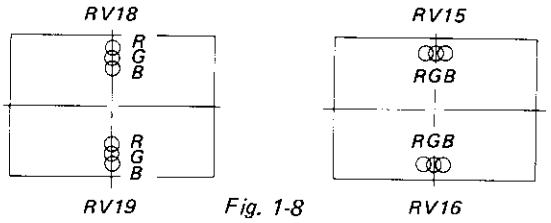


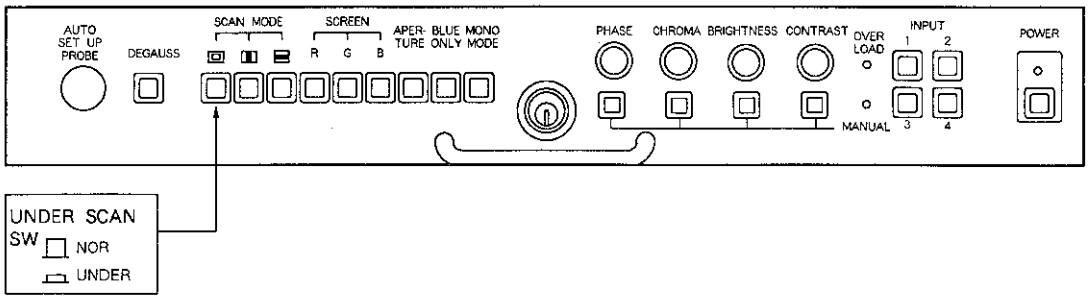
Fig. 1-8

6. Adjust the horizontal convergence with RV15 (Y.C.T) at the sub control panel (DA board) as shown in right upper corner of Fig. 1-8.
7. Adjust the horizontal convergence with RV16 (Y.C.B) at the sub control panel (DA board) as shown in right upper corner of Fig. 1-8.

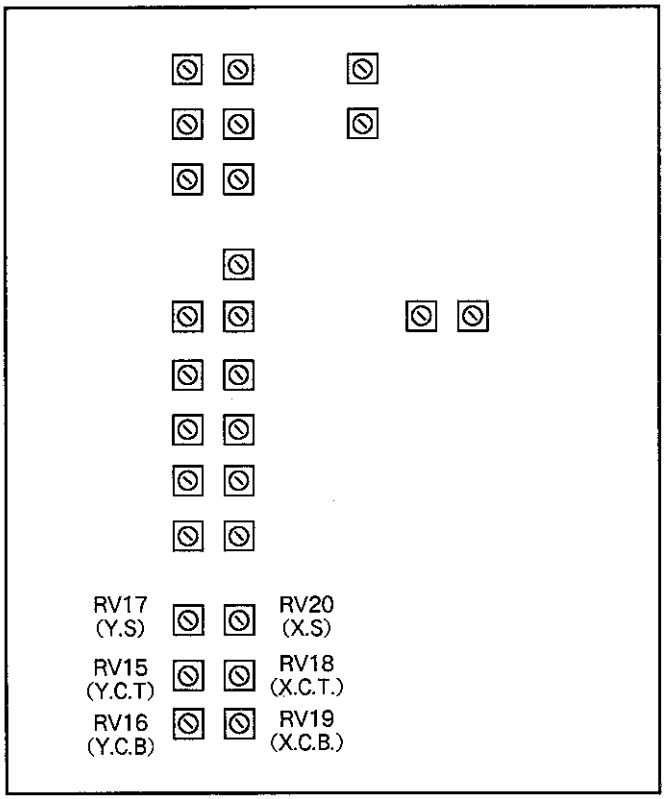
Focus adjustment

1. Input a dot or cross-hatch signals.
2. Adjust the FOCUS control for best focus in the central portion of the screen.

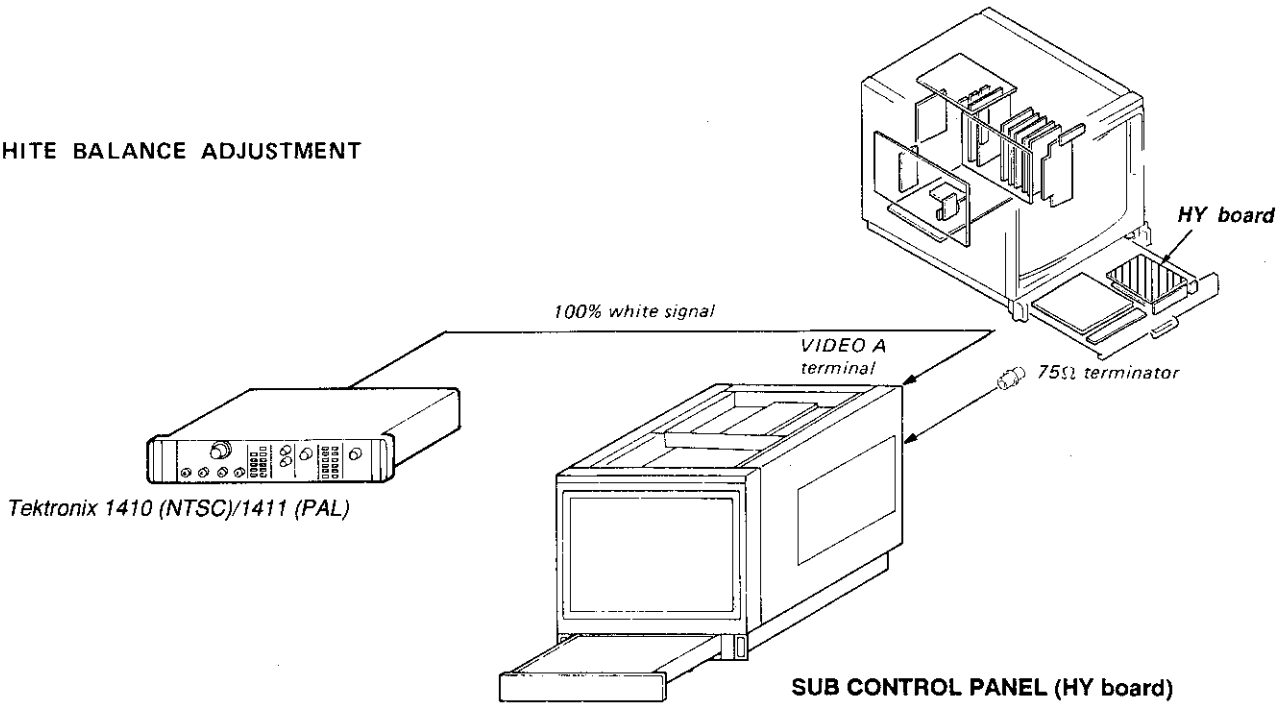
FRONT PANEL



DA board

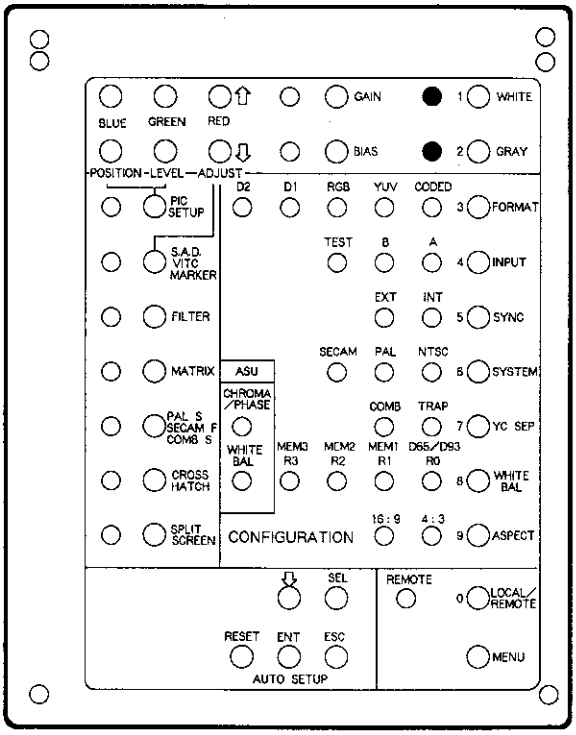


WHITE BALANCE ADJUSTMENT

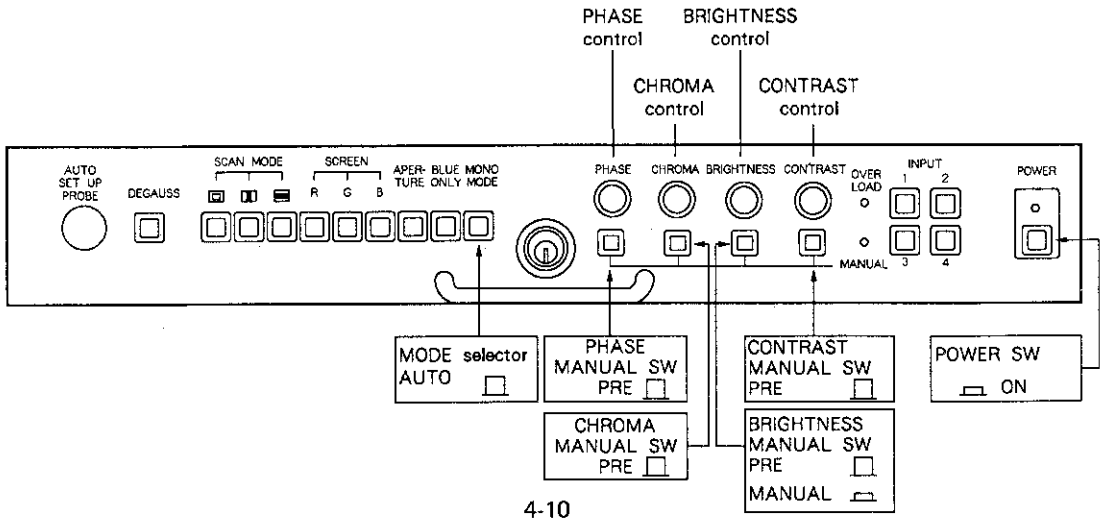


1. Input 100% white signal to VIDEO A connector.
2. Gray button ..... ON
3. BRIGHTNESS MANUAL switch ..... MANUAL. (⌐¬)
   CONTRAST MANUAL switch ..... MANUAL. (⌐¬)
4. Turn BRIGHT and CONTRAST to become 100 with PRESET MENU.
   SAVE the DATA.
5. Switch off the MANUAL swithes of CONTRAST and BRIGHT.
6. Turn BIAS controls (S21:Red, S23:Green, S32:Blue) on the HY board to adjust the BRIGHTNESS to 2.8cd/m² (nit) and white balance using COLOR ANALYZER and check 2.8cd/m² (nit) by LUMINANCE METER.
7. Gray button ..... OFF
8. Turn GAIN controls (S20:Red, S22:Green, S31:Blue) on The HY board to adjust the BRIGHTNESS at HIGH LIGHT to 103cd/m² (nit) and white balance using COLOR ANALYZER and check 103cd/m² (nit) by LUMINANCE METER.
9. Repeat procedure steps 6 to 8 if necessary.
10. Save the date with SAVE WHITE BALANCE MENU.

SUB CONTROL PANEL (HY board)



FRONT PANEL



4-6. SAFETY RELATED ADJUSTMENTS

+B PROTECTOR (⊠R52, R53)

When replacing the following components (marked ◪ on the schematic diagram), make this confirmation.

◪ GA Board ····· Q13, Q14, R52, R53
GB Board ····· Q3, Q4, Q5, D5, D6, D7, D8, R4, R5, R19, R20, R21, R22

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2and TP3 (GND) on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out⎍)
2. Short-circuit R55 on GA board.
3. Connect a 100 kΩ variable resistor between TP4 and TP3 (GND) on GA board.
4. Turn down the 100 kΩ variable resistor gradually from maximum to minimum and confirm that voltage at TP2 drops abruptly to 0V when the digital multimeter reading reaches 199.0 ± 17.0V.
5. If step 4 isn't satisfied, select resistance values of R52 and R53 which satisfy the specifications.
6. Restore these to their original states and confirm that the voltage at TP2 is 150.0 ± 1.0V.

+B MAX CONFIRMATION (⊠R67, R68)

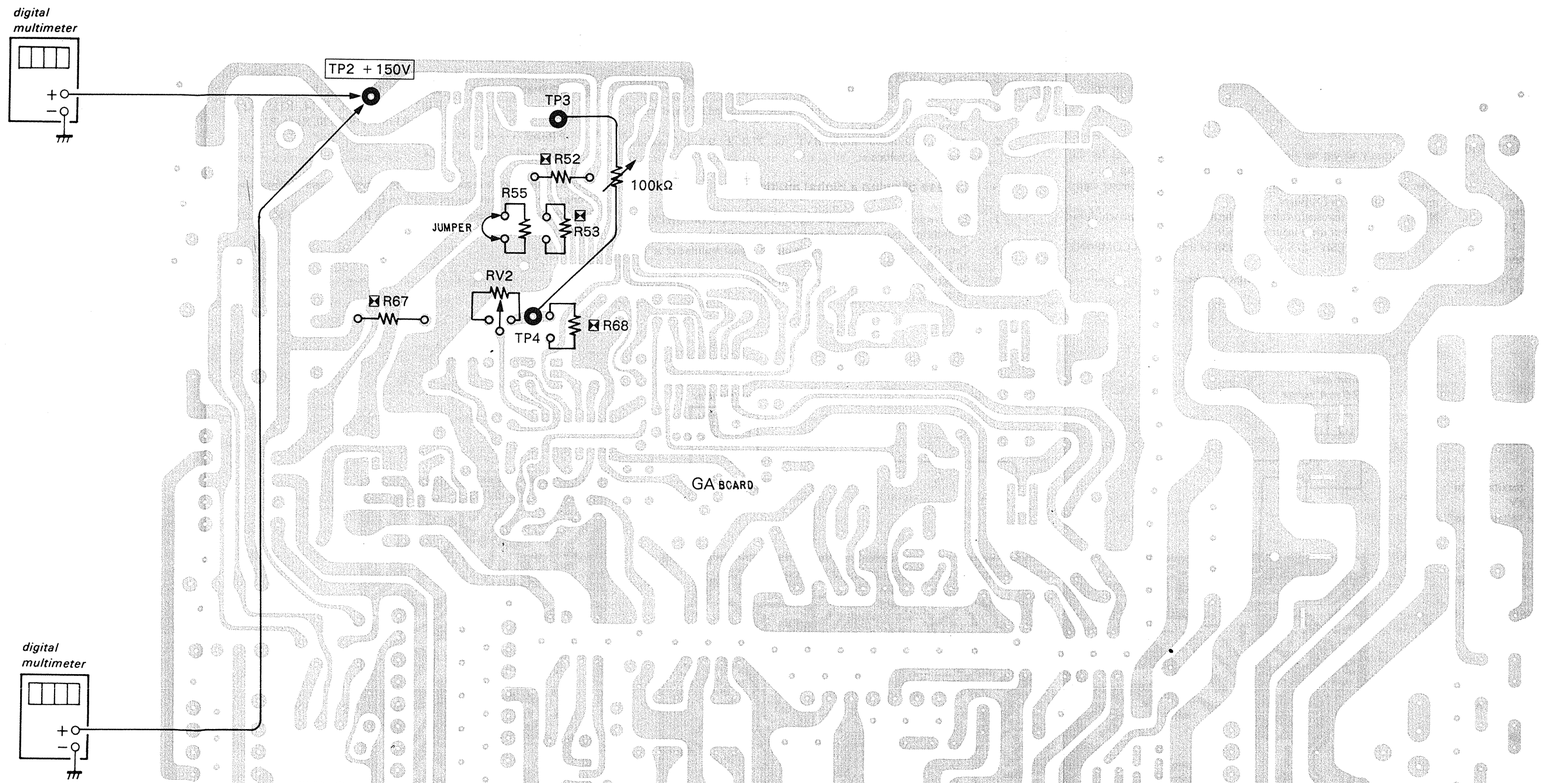
When replacing the following components (marked ◪ on the schematic diagram), make this confirmation.

◪ GA Board ····· IC3, C59, R67, R68, R78, RV2

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 and TP3 (GND) on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out⎍)
2. Confirm that the reading on the digital multimeter is +165.0V ± 13.0V when RV2 variable resistor is turned to fully clockwise.
3. If the specifications are not met, select resistance values for R67 and R68 which satisfy the specifications.
4. After confirmation, make the reading on the digital multimeter into 150.0V ± 1.0V by adjusting RV2 on GA Board.



HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION

(⊠R106, R108)

When replacing the following components (marked ◪ on the schematic diagram), make this adjustment.

◪ HVR
◪ EB Board ·····IC4, D24, D25, D27, R89, R90, R102, R103, R104, R105, R106, R107, R108, R111, R152

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.
Connect the DC current meter (3 mA range, accuracy of 1.0 class or more)
Even through an electrostatic voltmeter may not be used, connect digital multimeters to TP2 on EB Board. TP6 and TP5 (GND) on EA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9\Omega$ or more input impedance.
example: ESH− 27X or ESH− 23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is OUT ⎍)
2. Connect 200 kΩ variable resistor with R75 in parallel on EA Board.
3. Connect an electrostatic voltmeter to the CRT anode.
4. Turn down the variable resistor gradually from maximum to minimum until the anode voltage becomes 29.0 ± 0.1 kV.
5. Select the R106 or R108 resistance so that the anode voltage drops abruptly at 29.0 ± 0.1 kV.
6. Solder the selected resistor to R106 or R108.
7. Turn power on, turn down the variable resistor attached to R75 gradually from maximum to minimum and confirm that the anode voltage drops abruptly at 29.0 ± 0.5 kV.
8. Remove the variable resistor and confirm that the anode voltage is 27.0 ± 0.1 kV.
9. Detach the electrostatic voltmeter from the anode.

• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is OUT ⎍)
2. Connect the digital multimeter between TP2 on the EB board and GND.
3. Select the R106 or R108 resistance so that the digital multimeter reading becomes 16.89 ± 0.1V.
4. Connect the 200 k Ω variable resistor in parallel to R75 on the EA board.
5. Connect the digital multimeter between TP6 on the EA board and GND.
6. Turn down the variable resistor gradually from maximum to minimum and confirm that the picture disappears when voltage at TP2 goes beyond 16.89 ± 0.1V.

HIGH VOLTAGE REGULATOR CONFIRMATION

(⊠R73, R75)

When replacing the following components (marked ◪ on the schematic diagram), make this adjustment.

◪ HVR
◪ EA Board ·····IC2, IC3, R61, R62, R71, R72, R73, R74, R75, R88, RV1

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.
Even though an electrostatic voltmeter may not be used, connect digital multimeter to TP6 on EA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9\Omega$ or more input impedance.
example: ESH− 27X or ESH− 23X of the SIGNER COMPANY

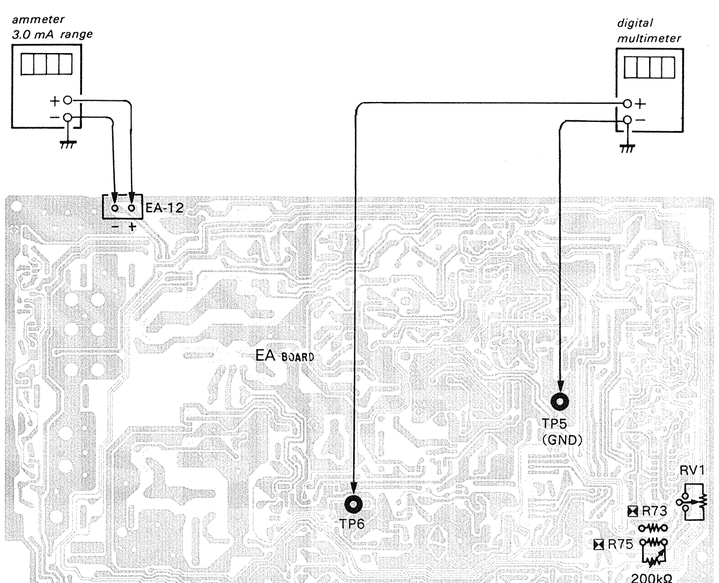
Use a digital multimeter which has 4 digit or more.

• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ⎍)
2. Turn RV1 on EA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Select the R73 and R75 resistance so that the electrostatic voltmeter reading becomes 27.35 ± 0.15 kV.
4. If step 3 is not satisfied, select the value of R73 and R75 and repeat above steps 2 through 3 .
5. After confirmation adjust RV1 for 27.0 ± 0.1 kV on the electrostatic voltmeter.

• In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ⎍)
2. Turn RV1 for a maximum reading on the digital multimeter at TP6 on EA Board. (Fully clockwise)
3. Select the R73 and R75 resistance so that voltage at TP6 becomes 15.70 ± 0.1V.



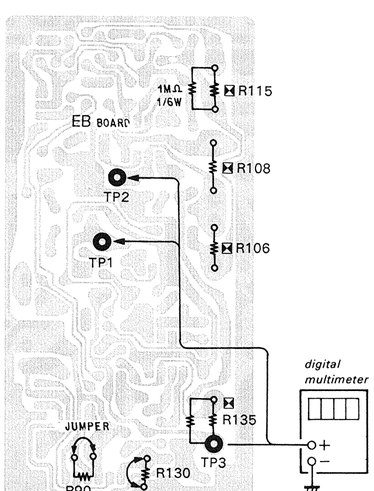
BEAM CURRENT PROTECTOR 1 CONFIRMATION

(⊠R115)

When replacing the following components (marked ◪ on the schematic diagram), make this confirmation.

◪ EB Board ·····IC4, D24, D26, D27, R89, R90, R102, R103, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R153
P Board ·····FBT
EB Board ·····IC4

It is necessary to use a regulated digital multimeter for this confirmation.
Connect the digital multimeters to TP1 on EB Board
Connect the current meter to EA-12. (3 mA Range, accuracy of 1.0 class or more)



1. Receive a color bar signal.
2. Remove the EA-12 connector and connect the DC ammeter.
3. Connect the digital multimeter between TP1 on the EB board and GND.
4. Short-circuit C1 on the BI board.
5. Short-circuit R130 on the EB board.
6. Turn power on, read voltage at TP1, then proceed as follows:
   - If 32.5V or over, solder the 1 MΩ (1/6W) metal-film resistor to R115 on the EB board.
   - If less than 32.5V, open R115.
7. Turn the BRIGHTNESS and CONTRAST controls (MANUAL button is IN ⎍) and confirm that the picture disappears when the DC ammeter reads 2.0 ± 0.4 mA.
8. If the condition in step 7 is not satisfied, select the R115 resistance accordingly.
9. Return the EA-12 connector, C1 on the BI board and R130 on the EB Board to their initial condition.
10. Set the BRIGHTNESS and CONTRAST controls to maximum and confirm that the OVERLOAD lamp lights.

BEAM CURRENT PROTECTOR 2 CONFIRMATION

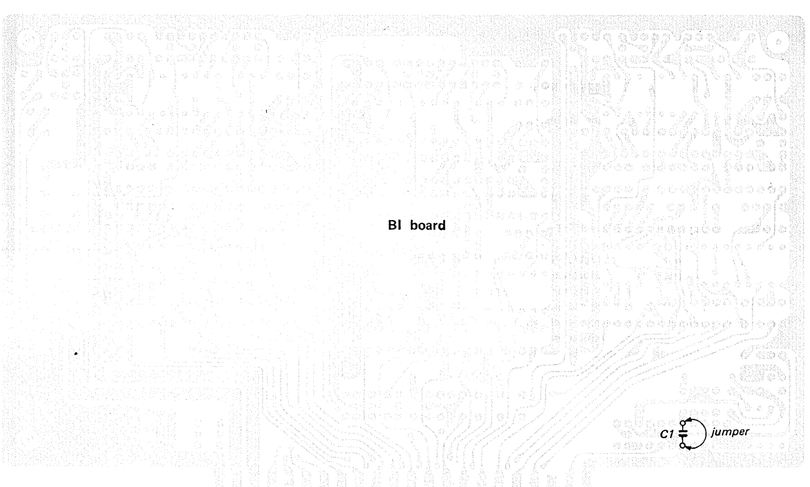
(⊠R135)

When replacing the following components (marked ◪ on the schematic diagram), make this confirmation.

◪ EB Board ·····IC6, D29, D51, R122, R123, R124, R130, R131, R132, R133, R134, R135, R136, R137, R138, R140, R141
P Board ·····FBT

It is necessary to use a regulated digital multimeter for this confirmation.
Connect the digital multimeters to TP3 on EB Board.
Connect the current meter to EA-12 (3 mA Range accuracy of 1.0 class or more)

1. Receive a color bar signal.
2. Remove the EA-12 connector and connect the DC ammeter.
3. Connect the digital multimeter between TP3 on the EB board and GND.
4. Short-circuit C1 on the BI board.
5. Short-circuit R90 on the EB board.
6. Turn power on, read voltage at TP3, then proceed as follows:
   - If 32.5V or over, solder the 1 MΩ (1/6W) metal-film resistor to R135 on the EB board.
   - If less than 32.5V, open R135.
7. Turn the BRIGHTNESS and CONTRAST controls (MANUAL button is in ⎍) and confirm that the picture disappears when the DC ammeter reads 2.0 ± 0.4 mA.
8. If the condition in step 7 is not satisfied, select R135 resistance accordingly.
9. Return the EA-12 connector, C1 on the BI board and R90 on the EB board to their initial condition.
10. Set the BRIGHTNESS and CONTRAST controls to maximum and confirm that the OVERLOAD lamp lights.



4-7. CIRCUIT ADJUSTMENTS

- To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

FRONT PANEL

- INPUT selector ..... 1 — HX board
- CONTRAST MANUAL switch ..... PRESET
- BRIGHTNESS MANUAL switch ... PRESET
- CHROMA MANUAL switch ..... PRESET — HW board
- PHASE MANUAL switch ..... PRESET
- SCAN MODE switch
  - ▣ UNDER SCAN ..... NOR
  - ▮▮ H. DELAY ..... NOR
  - ▬ V. DELAY ..... NOR
- SCREEN switch (R) ..... NOR — HA board
- SCREEN switch (G) ..... NOR
- SCREEN switch (B) ..... NOR
- APT switch ..... NOR
- BLUE ONLYswitch ..... NOR
- MODE selector ..... AUTO

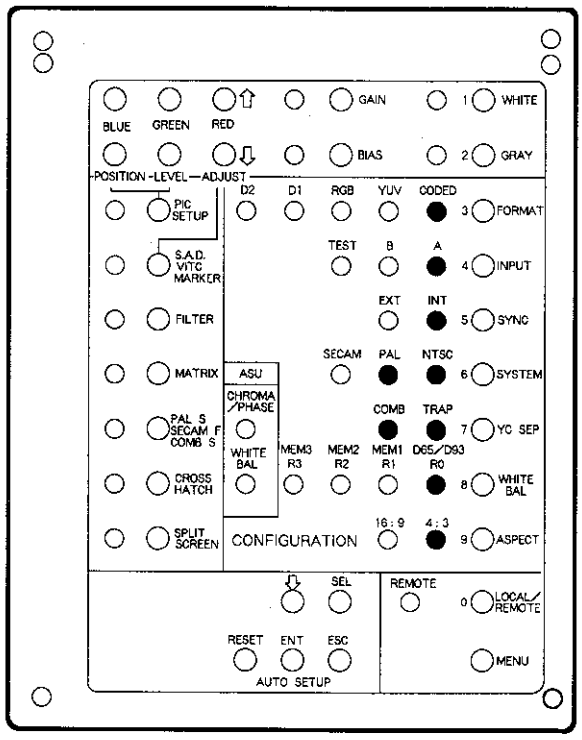
SUB CONTROL PANEL

- FORMAT button ..... CODED
- INPUT button ..... A
- SYNC button ..... INT
- COLOR SYSTEM button ..... NTSC (BVM-1916)
  PAL (BVM-2016P)
- YC SEP button ..... COMB (BVM-1916)
  TRAP (BVM-2016P)
- WHITE BALANCE button D65/D93
- ASPECT button ..... 4 : 3
- PIC SETUP button ..... OFF
- SAD/VITC/MARKERbutton ..... OFF
- FILTER button ..... OFF
- MATRIX button ..... OFF
- PAL S/SECAM F/COMB S button . ..... OFF
- CROSS HATCH button ..... OFF
- SPLIT SCREEN button ..... OFF
- WHITE button ..... OFF
- GRAY button ..... OFF
- AFC switch ..... 2m sec

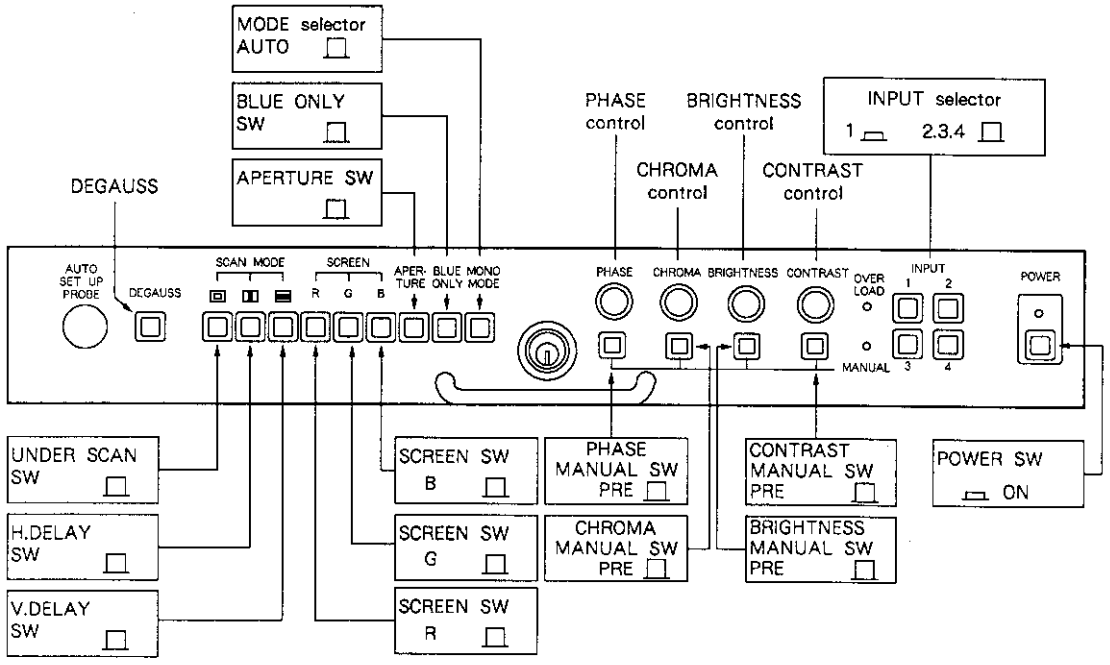
HY board

DA board

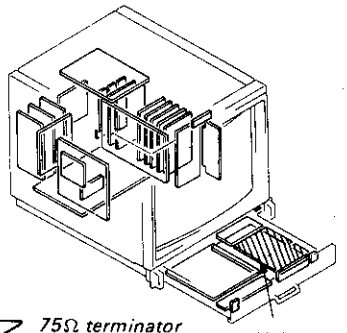
SUB CONTROL PANEL (HY board)

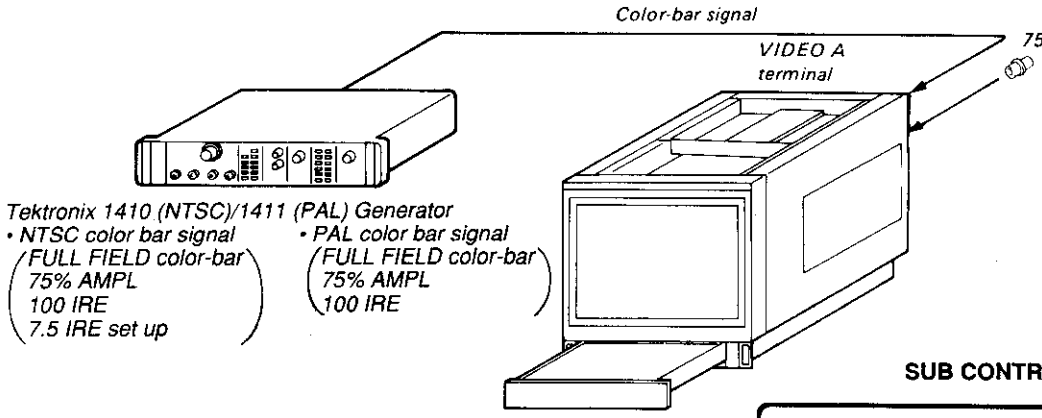


FRONT PANEL



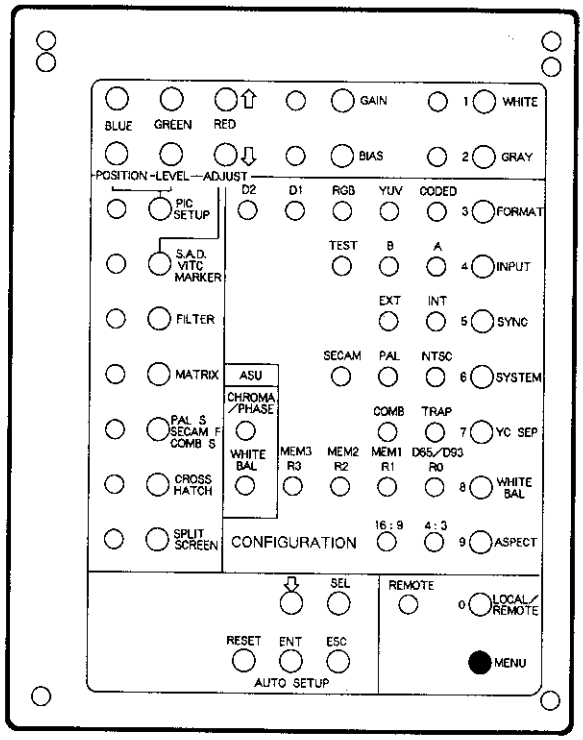
1. SUB CHROMA, SUB PHASE ADJUSTMENT



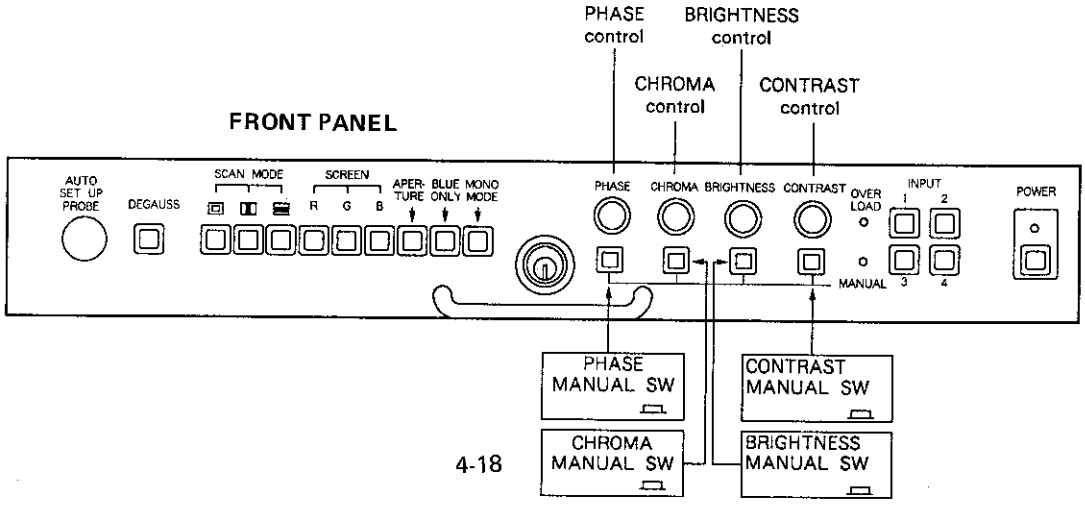


1. Press the MENU switch to select the PRESET menu.
2. CONTRAST, BRIGHT, CHROMA, PHASE MANUAL switch (FRONT PANEL)·····MANUAL
3. Turn each volume control to adjust so that the value on the screen becomes 100.
4. Save the DATA.

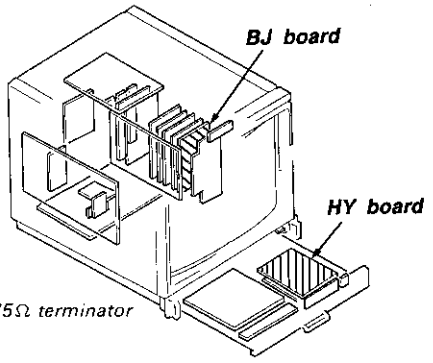
SUB CONTROL PANEL (HY board)

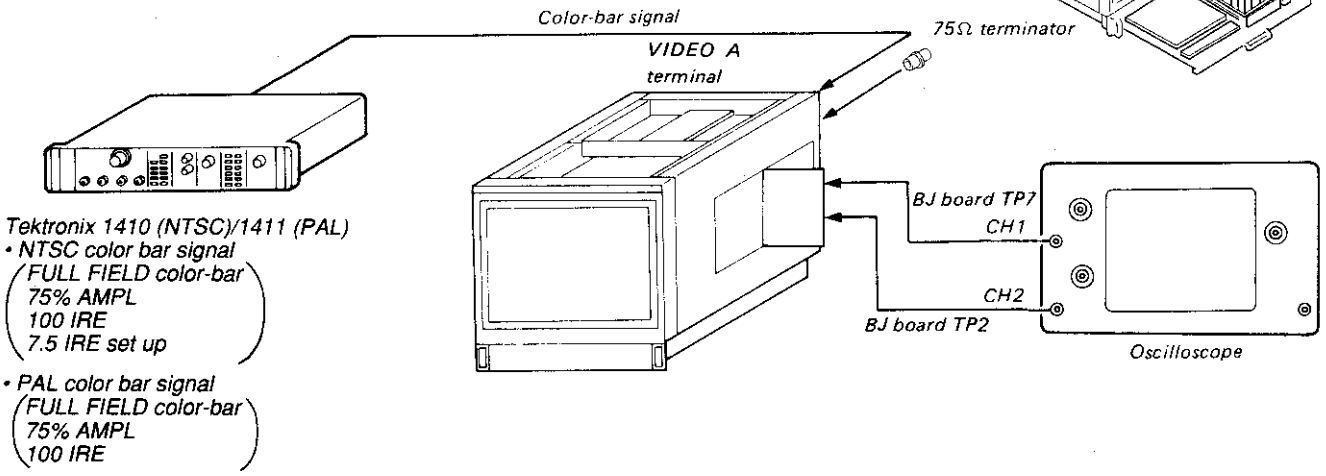


FRONT PANEL



2. BJ Board BRT PULSE ADJUSTMENT





Tektronix 1410 (NTSC)/1411 (PAL)
- *NTSC color bar signal*
  (*FULL FIELD color-bar*
  75% AMPL
  100 IRE
  7.5 IRE set up)
- *PAL color bar signal*
  (*FULL FIELD color-bar*
  75% AMPL
  100 IRE)

1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and oscilloscope (CH2 probe) to the TP2 of BJ board.
3. Adjust RV7 to obtain the waveform on the oscilloscope as shown in Fig. 2-1.

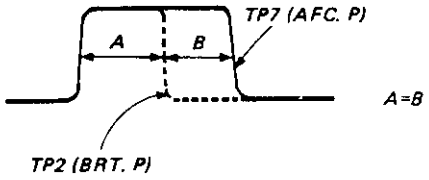
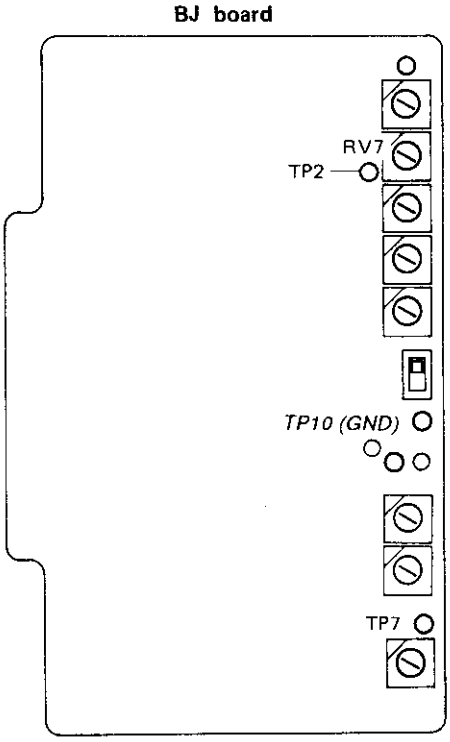
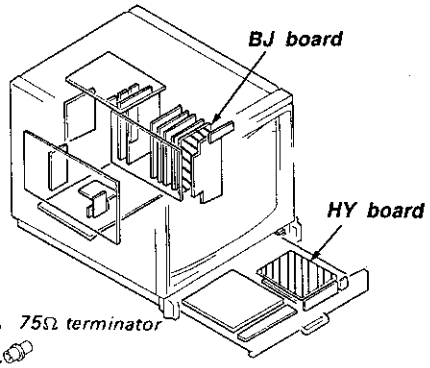
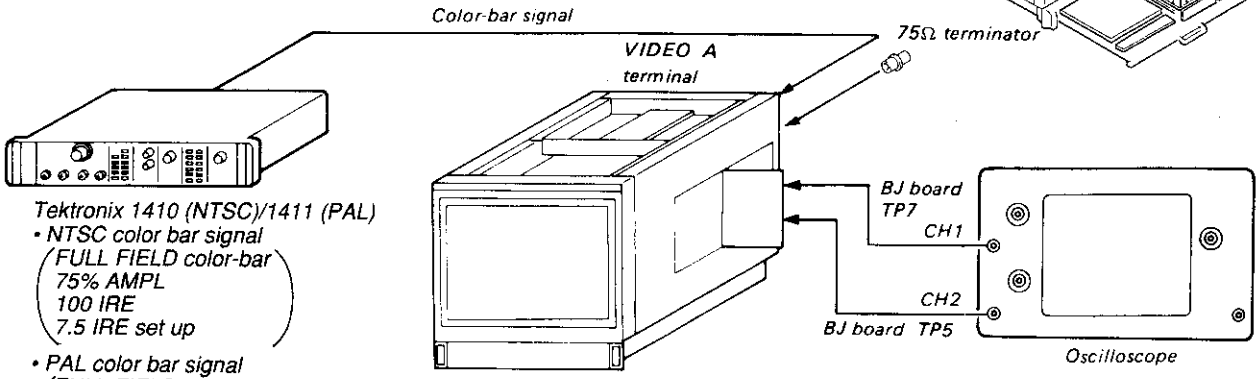


Fig. 2-1



BJ Board SUMPLING PULSE ADJUSTMENT





Tektronix 1410 (NTSC)/1411 (PAL)

- NTSC color bar signal
  (FULL FIELD color-bar
  75% AMPL
  100 IRE
  7.5 IRE set up)
- PAL color bar signal
  (FULL FIELD color-bar
  75% AMPL
  100 IRE)

1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an osilloscope (CH 1 probe) to the TP7 of BJ board and Connect an oscilloscope (CH 2 probe) to the TP5 of BJ board.
3. Adjust RV5 to obtain the waveform on the oscilloscope as shown in Fig. 2-2.

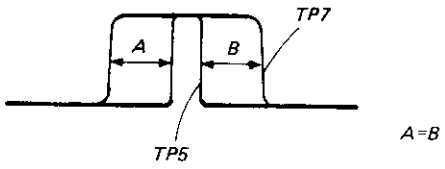
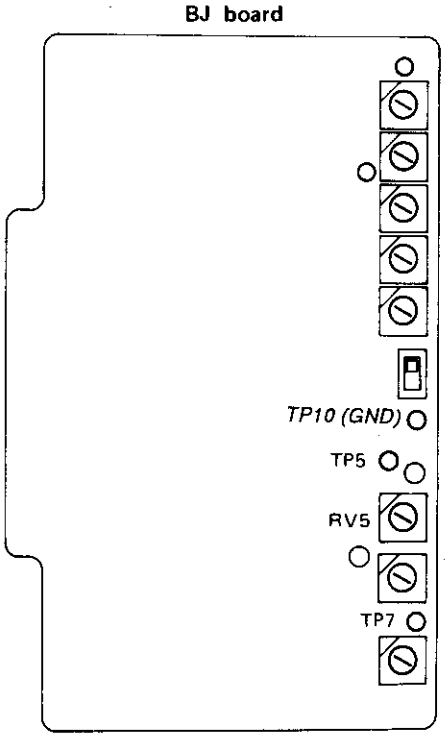
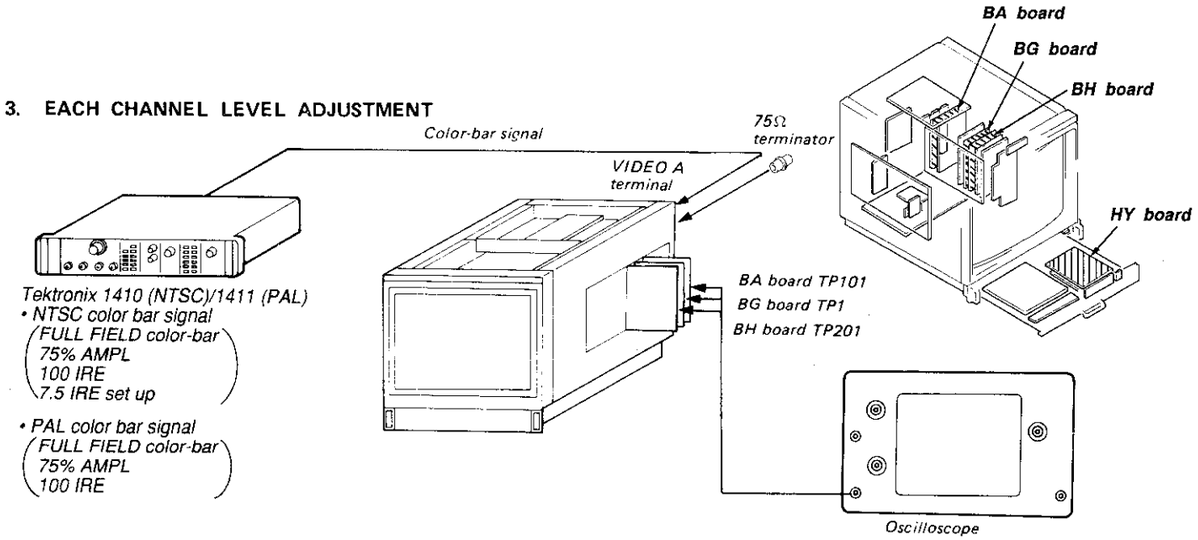


Fig. 2-2



3. EACH CHANNEL LEVEL ADJUSTMENT



- FILTER button (SUB CONTROL PANEL) ..... OFF
- MODE selector (FRONT PANEL) ..... MONO (⎓)
- INPUT selector (FRONT PANEL) ..... 1 (⎓)

BA board

1. Input a color-bar signal to VIDEO A terminal to the set.
2. Connect an oscilloscope to the TP101 of BA board.
3. Adjust to 1.0Vp-p with RV101 of BA board as shown in Fig. 3-1.

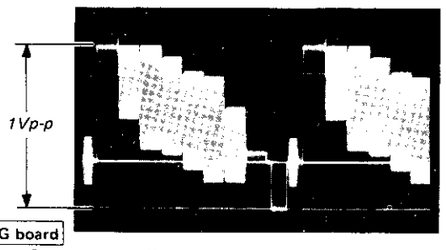


Fig. 3-1

BG board

4. Connect an oscilloscope to the TP1 of BG board.
5. Adjust to 1.0Vp-p with RV3 of BG board as shown in Fig. 3-1.
6. Connect an oscilloscope to the TP201 of BH board.

7. Adjust FRONT BRT VR so that Ⓐ (black level) is 0V DC as shown in Fig. 3-2.
8. Adjust FRONT CONT VR so that Ⓑ (100% whith level) is -0.7V DC as shown in Fig. 3-2.

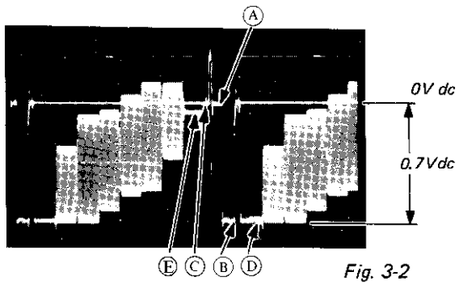


Fig. 3-2

Ⓐ . . . . . *Black level*
Ⓑ . . . . . *100% White level*
Ⓒ . . . . . *0 IRE level*
Ⓓ . . . . . *100 IRE level*
Ⓔ . . . . . *7.5 IRE level*

BH board

9. S2 (BH Board) . . . . 0 IRE
   Adjust RV1 of BH board so that the Ⓒ (0 IRE level) coincides with Ⓐ (Black level) as shown in Fig. 3-3.
10. Adjust RV3 of BH board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-3.

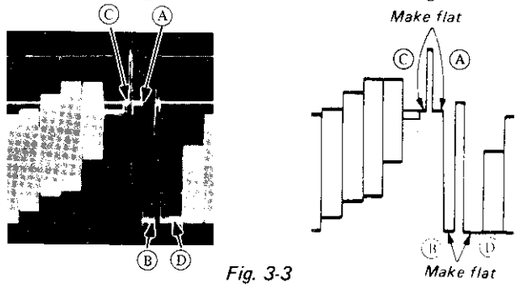


Fig. 3-3

BH board

11. S2 (BH Board) . . . . . 7.5 IRE
    Adjust RV2 of BH board so that the Ⓔ (7.5 IRE level) coincides with Ⓐ (Black level) as shown in Fig. 3-4.
12. Set S2 (BH Board) to AUTO.

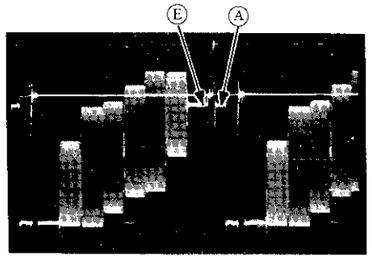
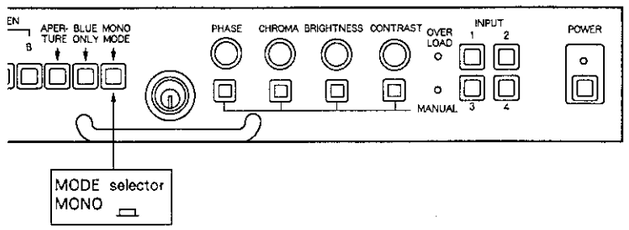
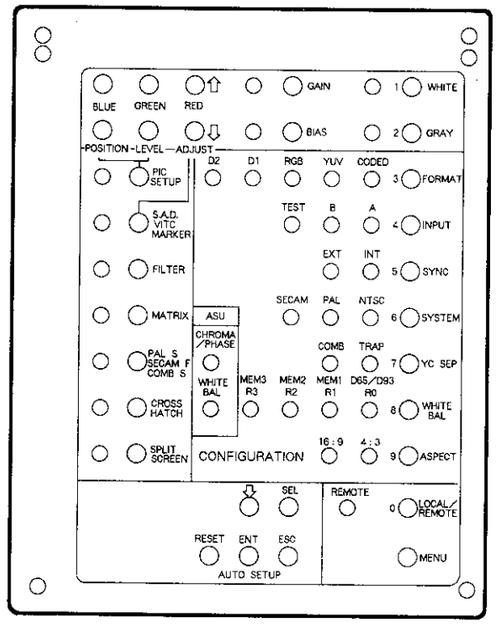


Fig. 3-4

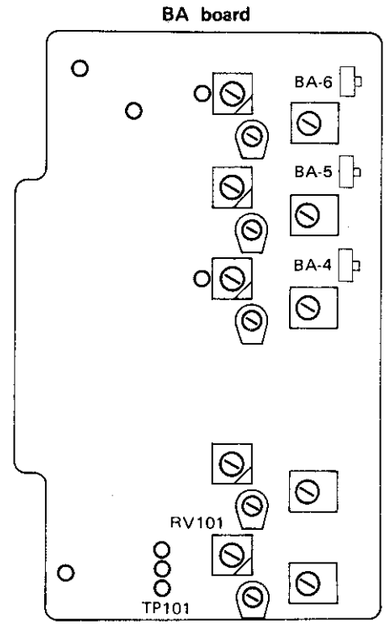
FRONT PANEL



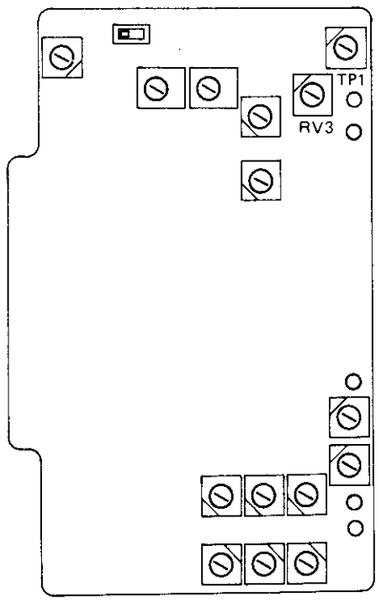
SUB CONTROL PANEL (HY board)



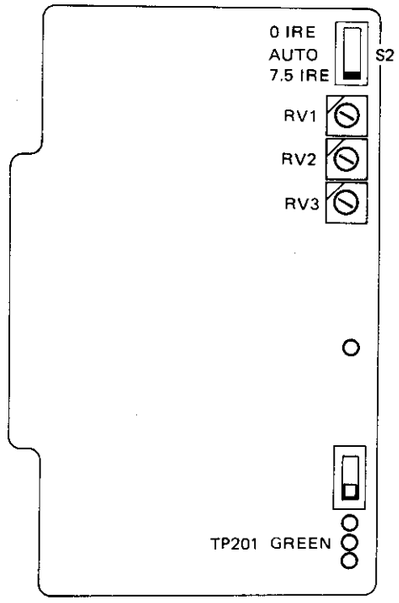
BA board



BG board

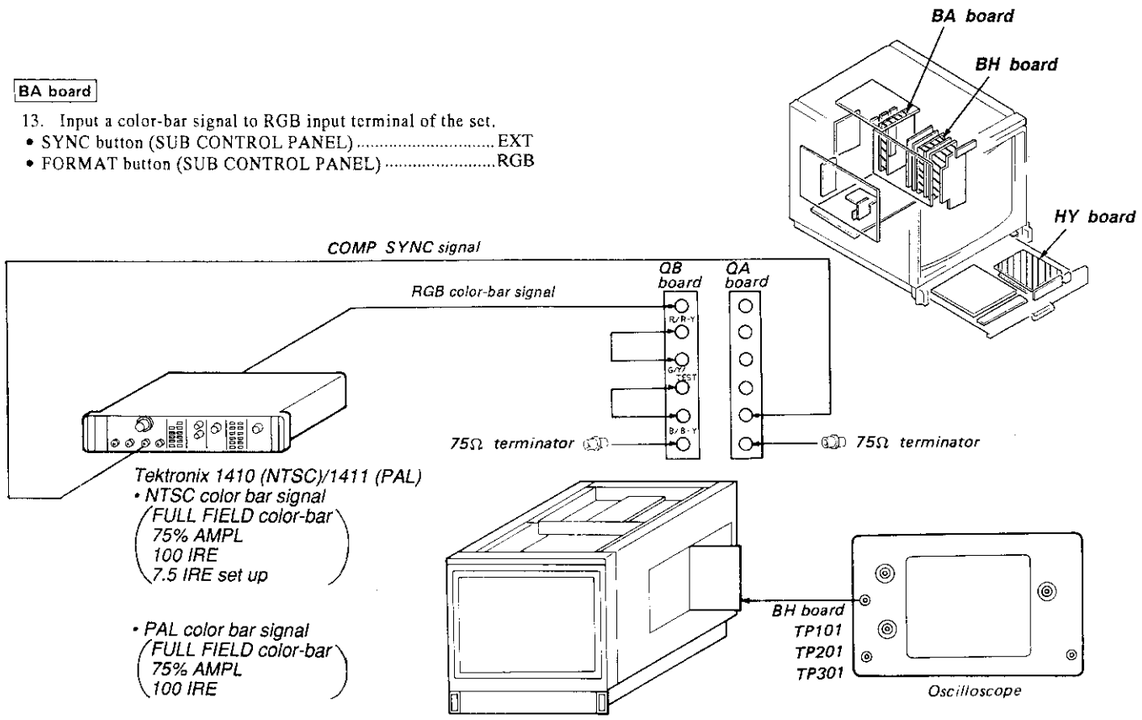


BH board



BA board

13. Input a color-bar signal to RGB input terminal of the set.
    - SYNC button (SUB CONTROL PANEL) ..... EXT
    - FORMAT button (SUB CONTROL PANEL) ..... RGB



14. Connect an oscilloscope to TP101 of BH board.
15. Adjust RV401 of BA board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-5.
16. Connect an oscilloscope to TP201 of BH board.
17. Adjust RV501 of BA board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-5.
18. Connect an oscilloscope to TP101 of BH board.
19. Adjust RV601 of BA board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-5.

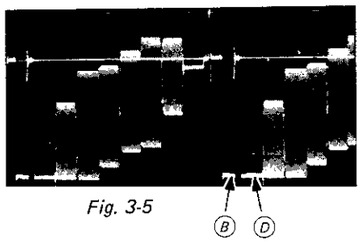
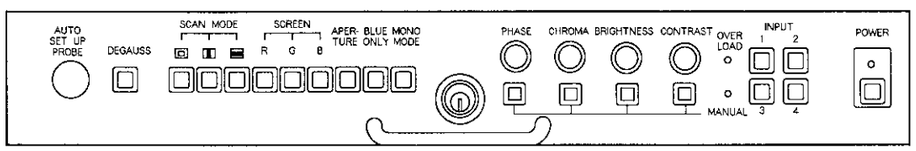
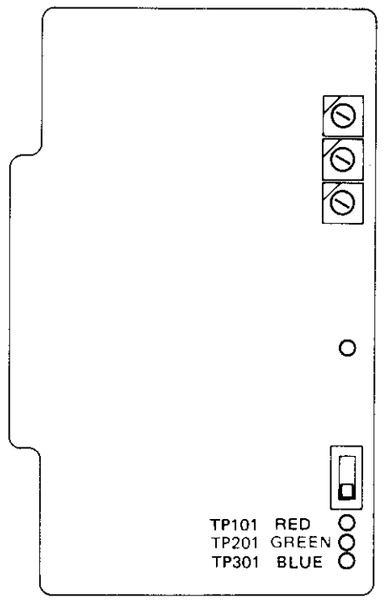


Fig. 3-5

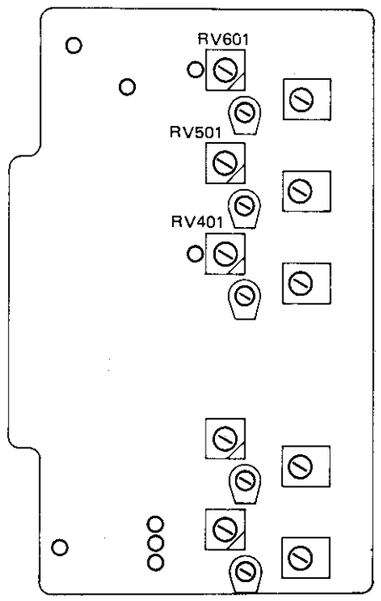
FRONT PANEL



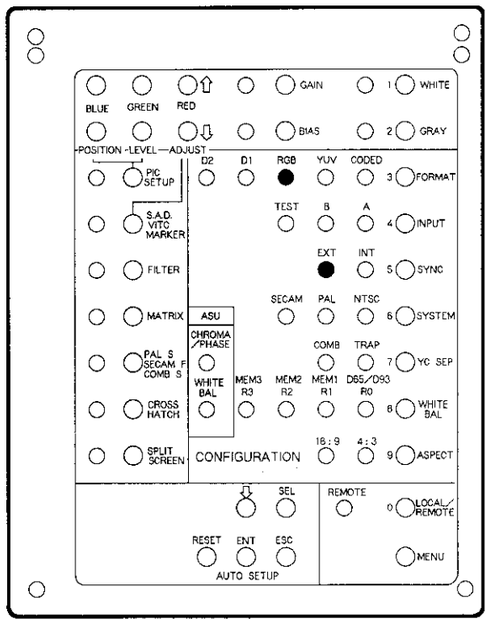
BH board



BA board



SUB CONTROL PANEL (HY board)



4. BA Board INPUT CIRCUIT FREQUENCY CHARACTERISTIC ADJUSTMENT

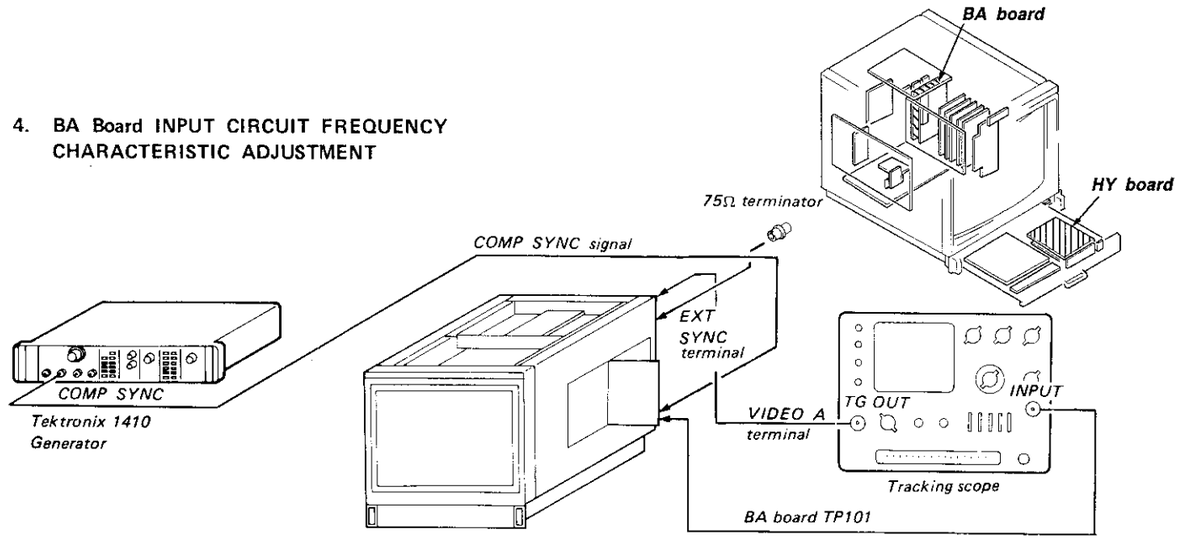


Fig. 4-1

1. Complete the connection as shown in Fig 4-1.
   - FORMAT button (SUB CONTROL PANEL) ..... CODED
   - INPUT selector (FRONT PANEL) 1
   - SYNC button (SUB CONTROL PANEL) ..... EXT
   - CONTRAST control (FRONT PANEL) ..... Minimum
   - BRIGHTNESS control (FRONT PANEL) ..... Minimum
2. Adjust CV101 so that minimum as shown in Fig. 4-2.

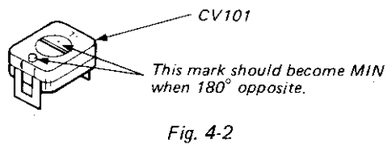


Fig. 4-2

3. Adjust output waveform peak to 12MHz with CV102 of the BA board as shown in Fig. 4-3.

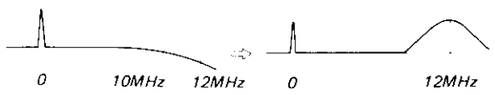


Fig. 4-3

4. Adjust CV101 of the BA board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 4-4.

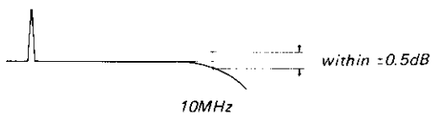
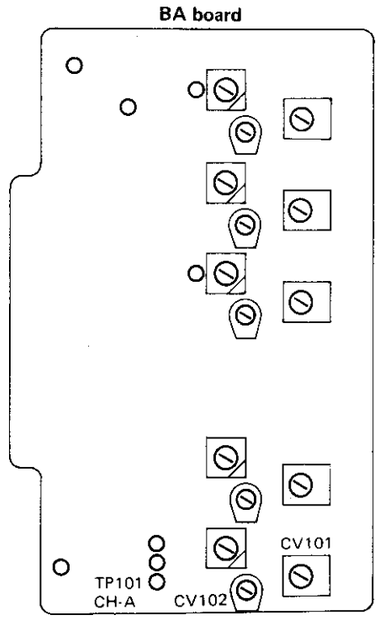
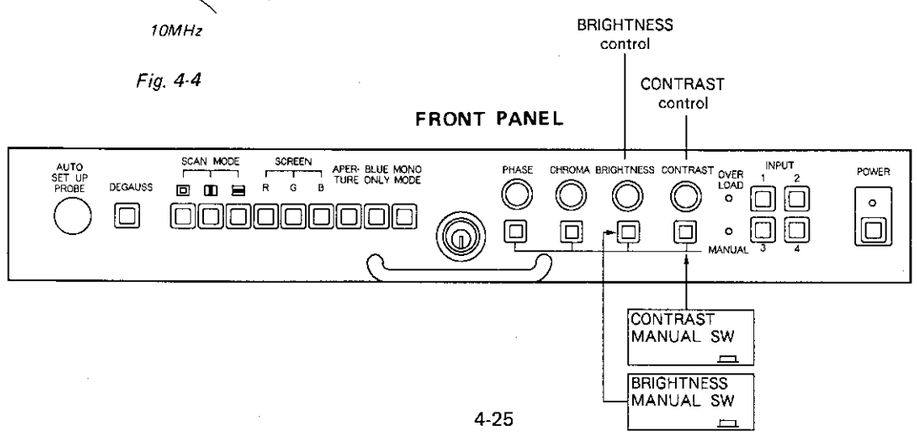


Fig. 4-4

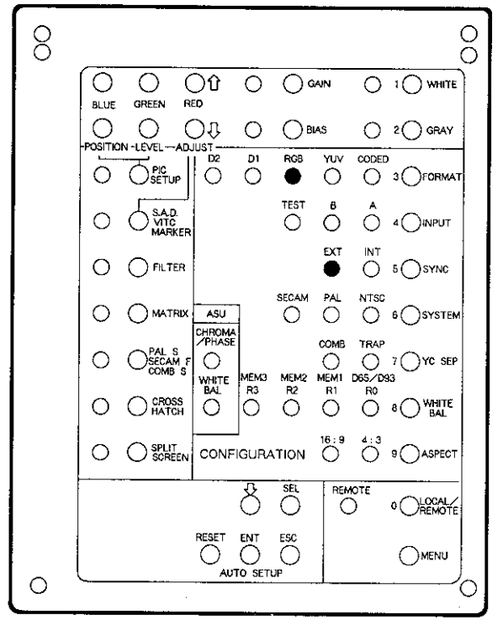


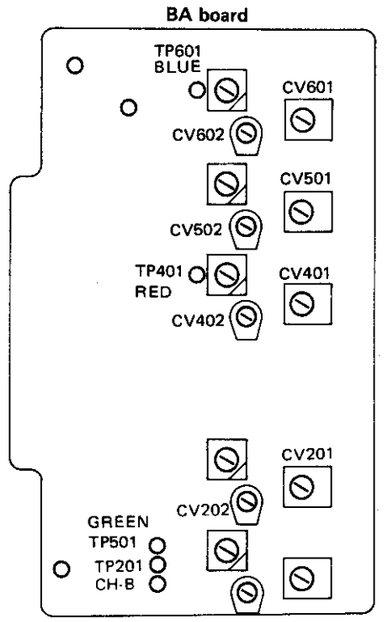


5. In the same way, perform the adjustment, under the following conditions.

INPUT	INPUT button	FORMAT button	TP (BA board)	CV (BA board)
	(SUB CONTROL PANEL)			
B	B	CODED	TP201	CV201, 202
R/R-Y		RGB	TP401	CV401, 402
G/Y/TEST		RGB	TP501	CV501, 502
B/B-Y		RGB	TP601	CV601, 602

SUB CONTROL PANEL (HY board)





5. BG Board FREQUENCY CHARACTERISTIC ADJUSTMENT

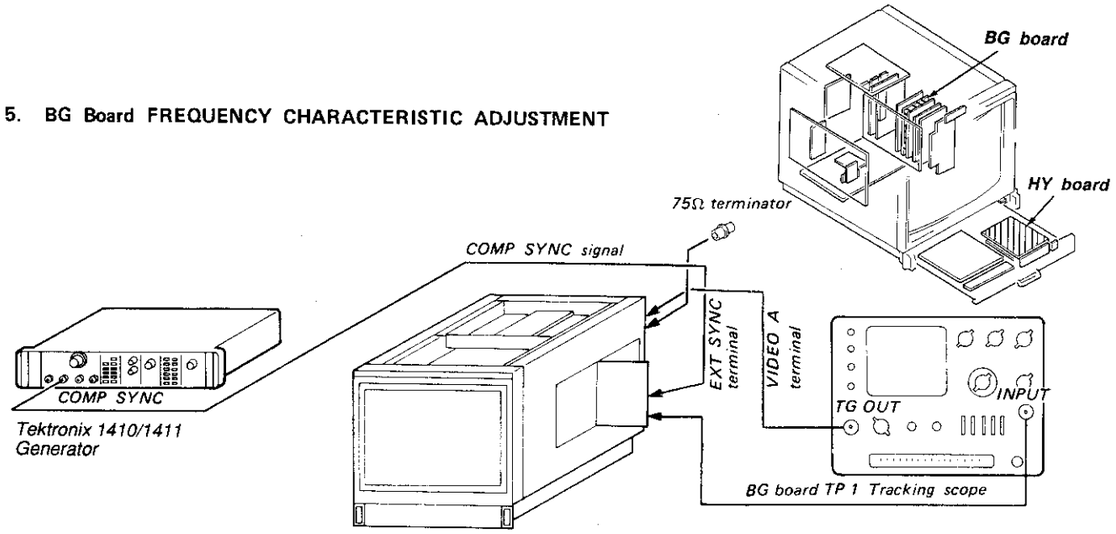
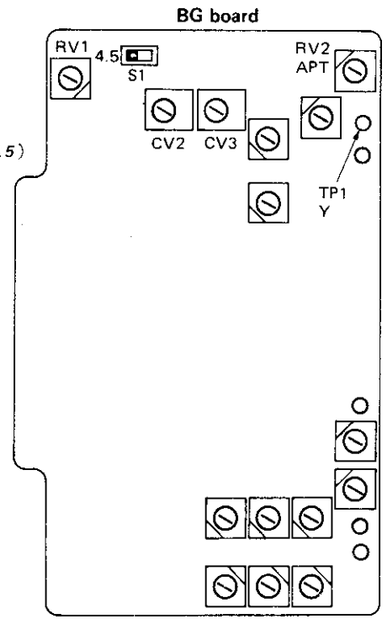


Fig. 5-1

1. Complete the connection as shown in Fig 5-1.
   - SYNC button (SUB CONTROL PANEL)····· EXT
   - CONTRAST control ..... Minimum
   - BRIGHTNESS control ..... Minimum
   - S1 (BG Board) ..... 4.5MHz (4.5 ⊡ 6.5)
2. Adjust RV1, CV2 and CV3 of the BG board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 5-2. (within 0±0.5dB)

   *Waveform movement by RV1, CV2, CV3

Fig. 5-2



3. Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.

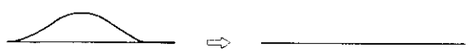
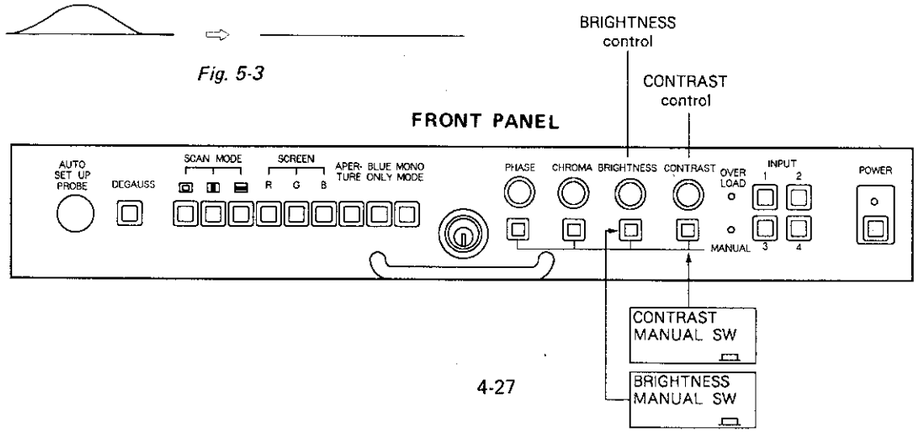


Fig. 5-3



6. COMPONENT INPUT LEVEL ADJUSTMENT

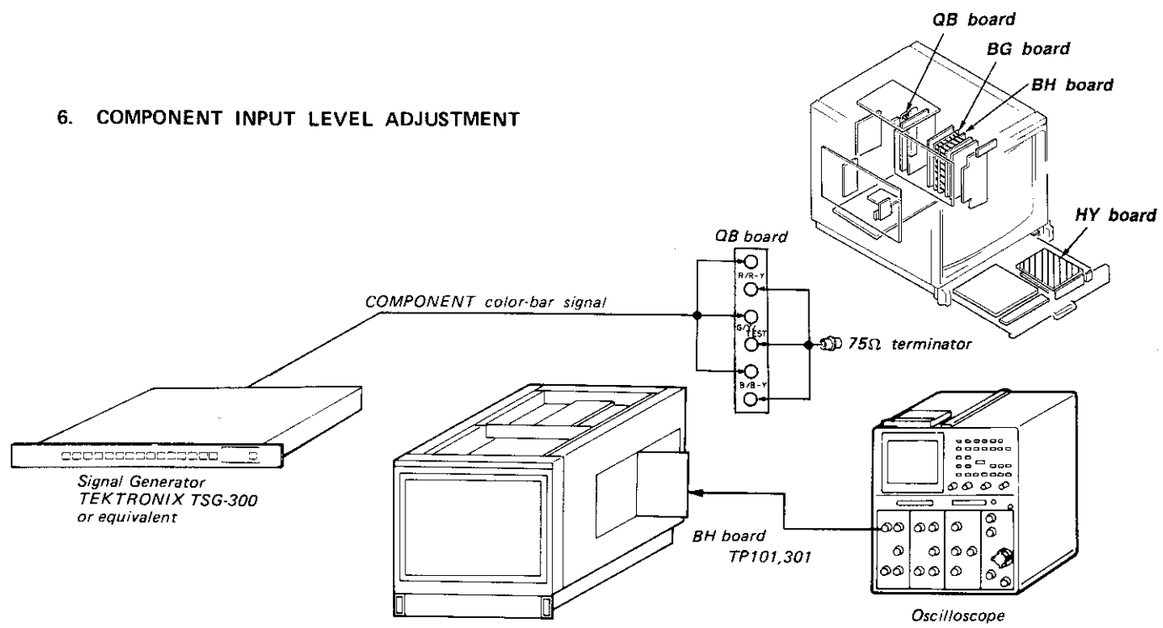


Fig. 6-1

1. Complete the connections as shown in Fig. 6-1.
   - FORMAT button (SUB CONTROL PANEL)····· YUV
2. Connect an oscilloscope to the TP-101 of BH board.
3. Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2)

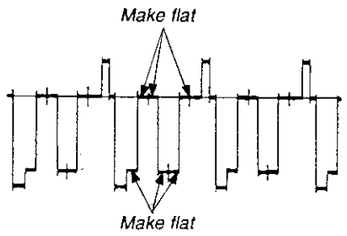


Fig. 6-2

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3)

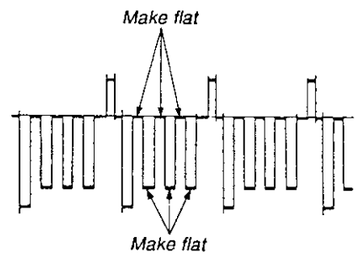
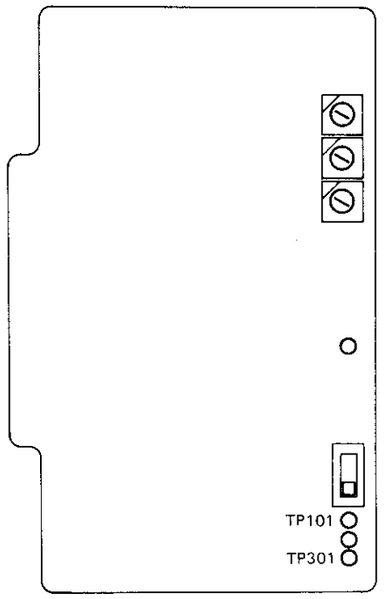
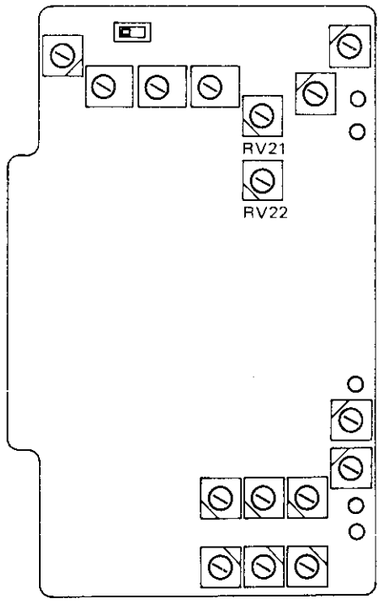


Fig. 6-3

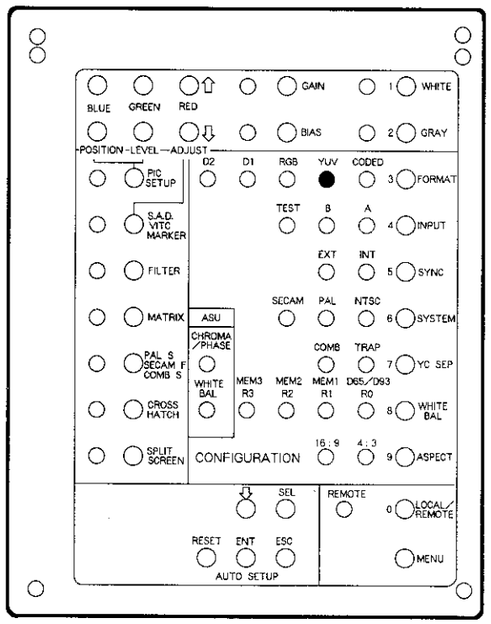
BH board



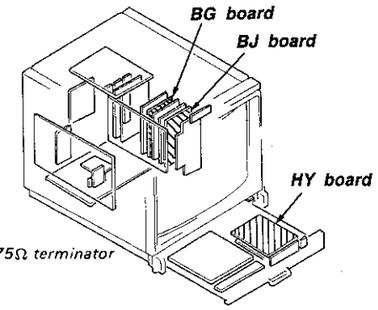
BG board

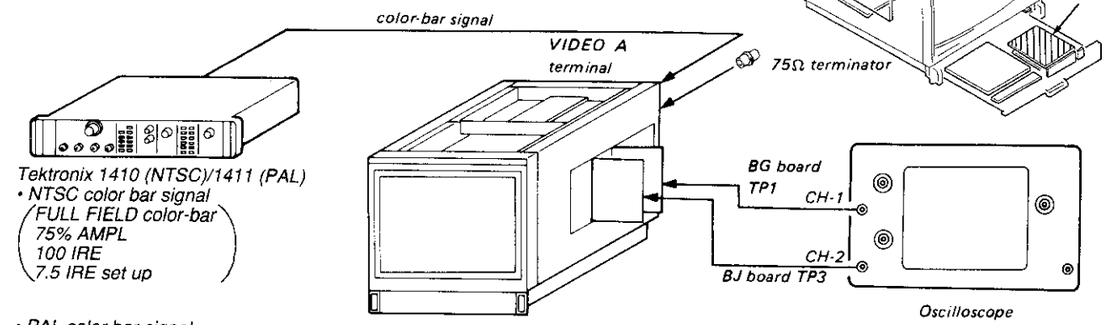


SUB CONTROL PANEL (HY board)

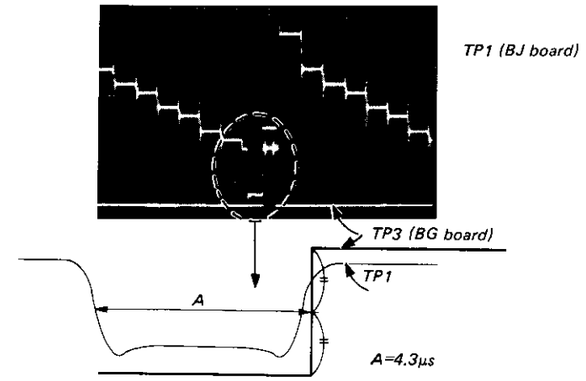


7. BJ Board BURST GATE PULSE ADJUSTMENT





1. Input a color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP3 of BJ board.
3. Adjust RV8 of BJ board so that the with A width is 4.3μs as shown in Fig. 7-1.



*Adjust (A), from SYNC fall to B.G.P. (BURST GATE PULSE) rise, to 4.3μs.

Fig. 7-1

4. Adjust RV4 of BJ board so that the burst gate pulse width is 3.9 μs as shown in Fig. 7-2.

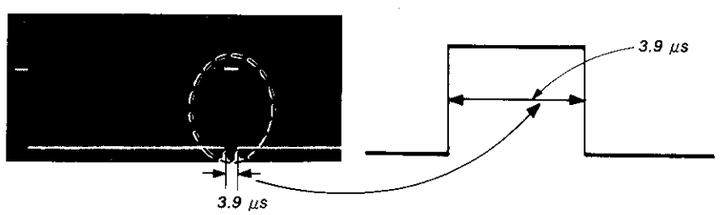
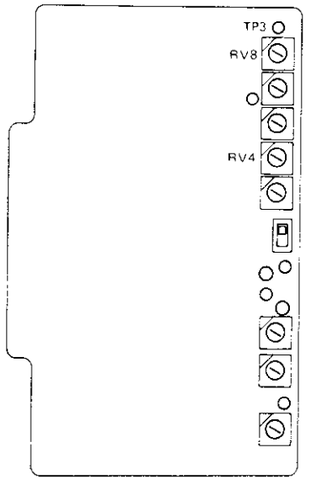
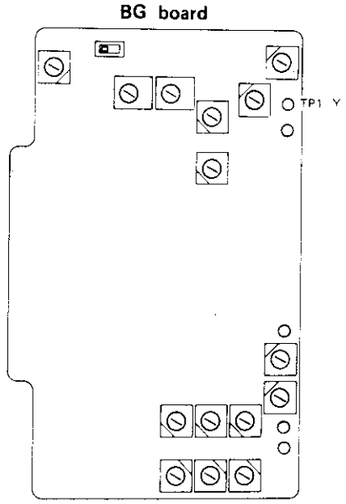


Fig. 7-2

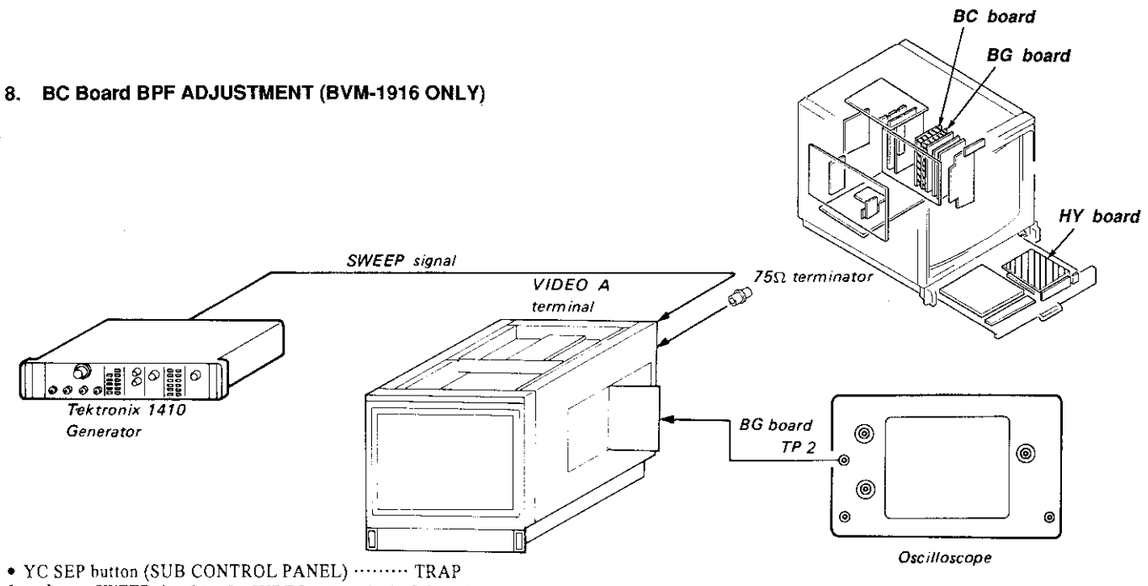
BJ board



BG board



8. BC Board BPF ADJUSTMENT (BVM-1916 ONLY)



• YC SEP button (SUB CONTROL PANEL) ····· TRAP

1. Input SWEEP signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the V/dw of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 8-1.

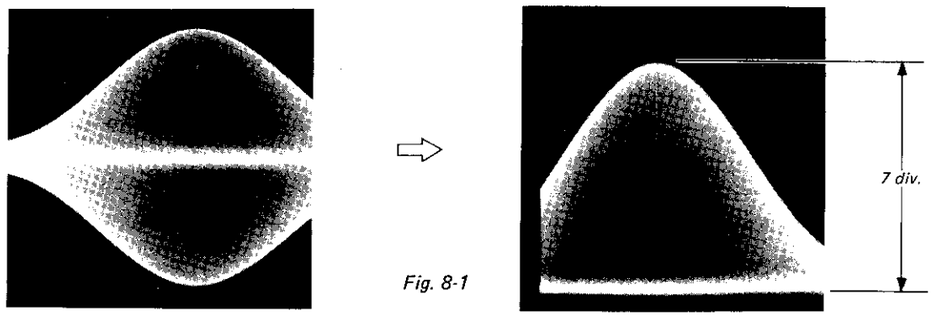
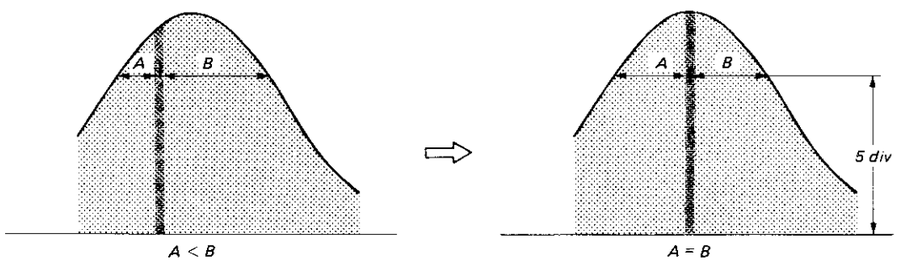


Fig. 8-1

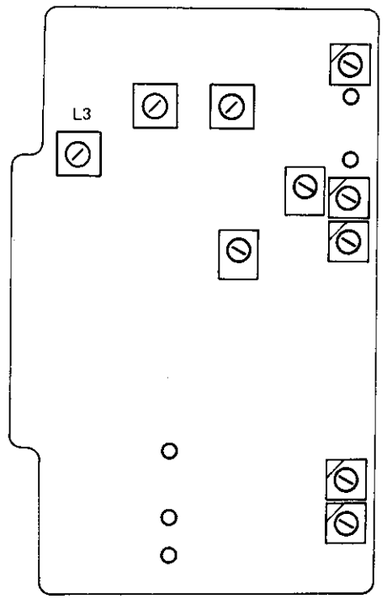
4. Adjust L3 on the BC board so that A is equal to B as shown in Fig. 8-2.



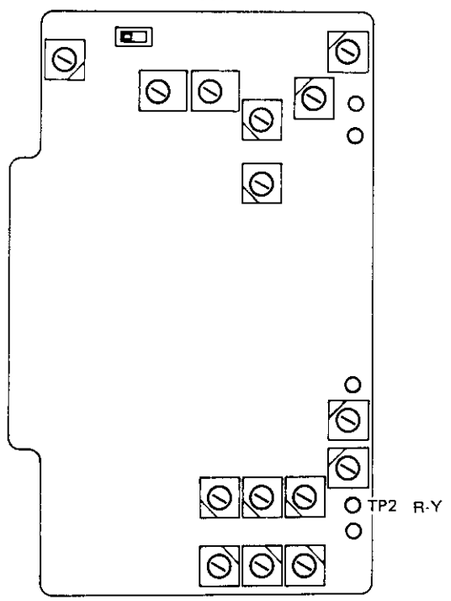
A is equal to B when the amplitude is 5 div.

Fig. 8-2

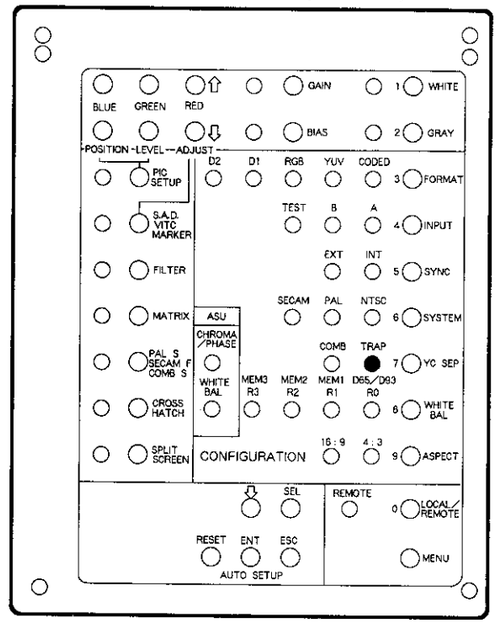
BC board



BG board



SUB CONTROL PANEL (HY board)



9. BC Board PHASE SHIFT ADJUSTMENT (BVM-1916 ONLY)

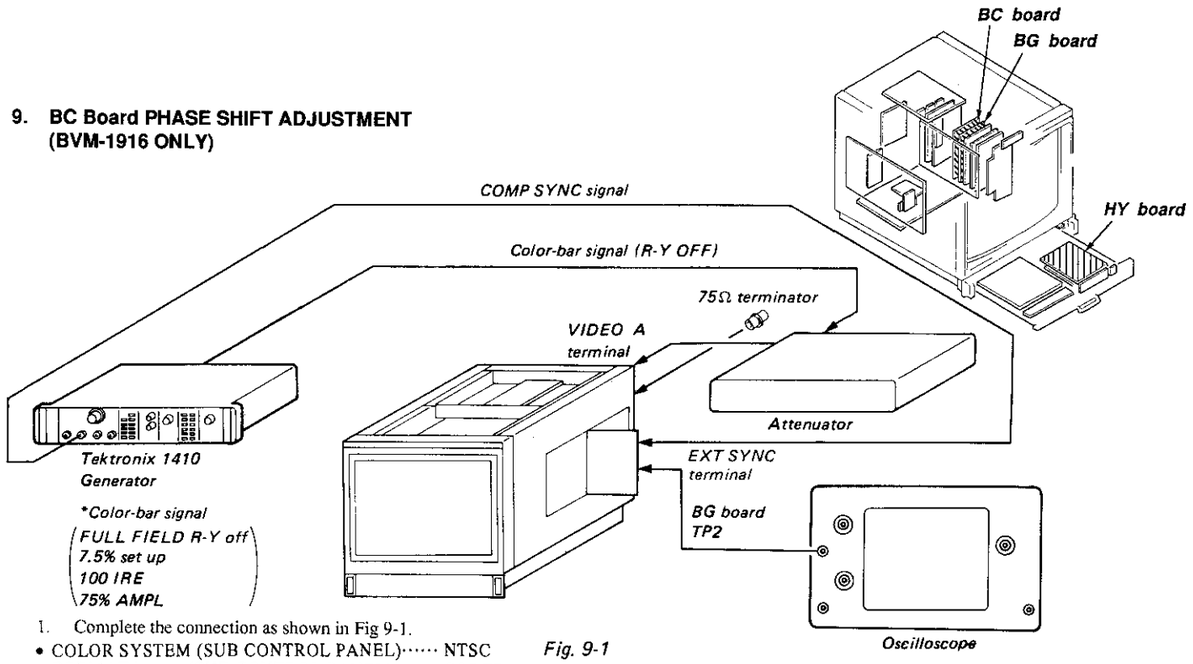


Fig. 9-1

1. Complete the connection as shown in Fig 9-1.
   - COLOR SYSTEM (SUB CONTROL PANEL)····· NTSC
   - FORMAT button (SUB CONTROL PANEL)..... CODED
   - YC SEP button (SUB CONTROL PANEL) ····· TRAP
   - SYNC button (SUB CONTROL PANEL)····· EXT
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel as shown in Fig. 9-2.
4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV3 on the BC board so that the output waveform becomes flat as shown in Fig. 9-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

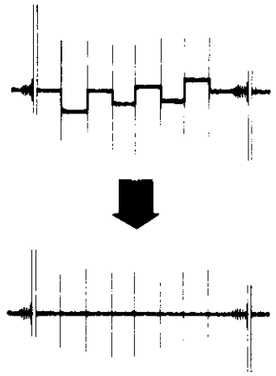
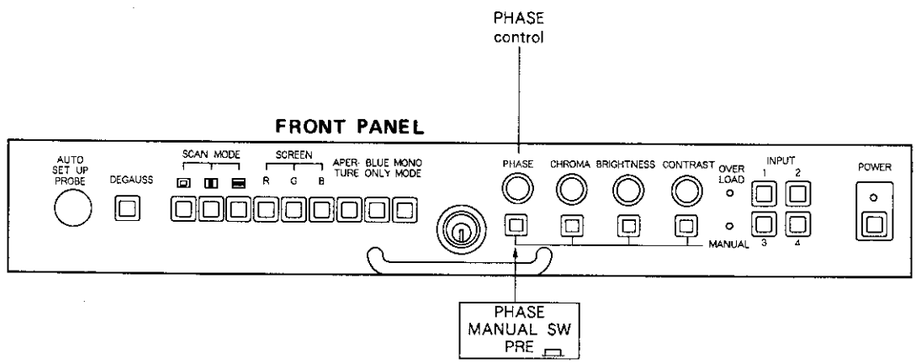
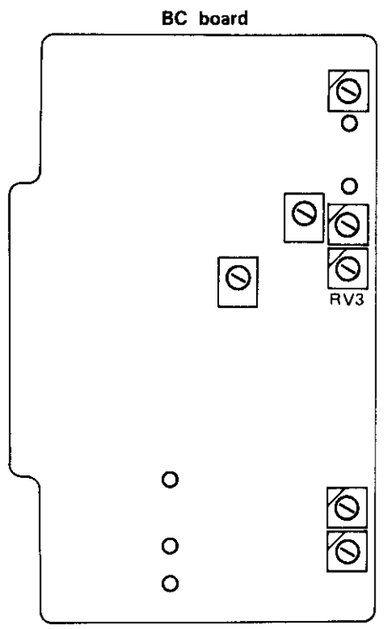
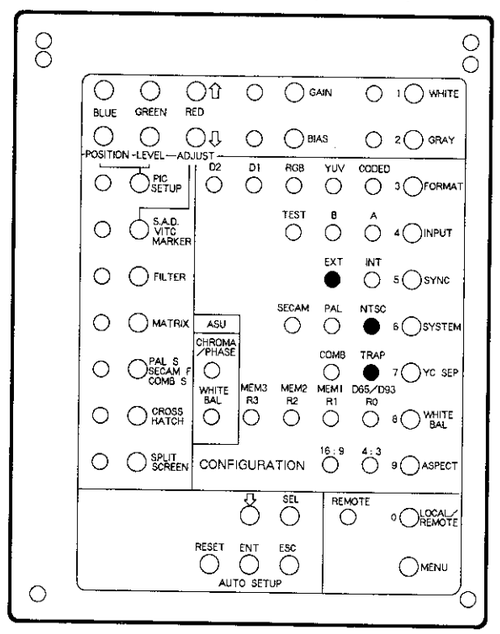
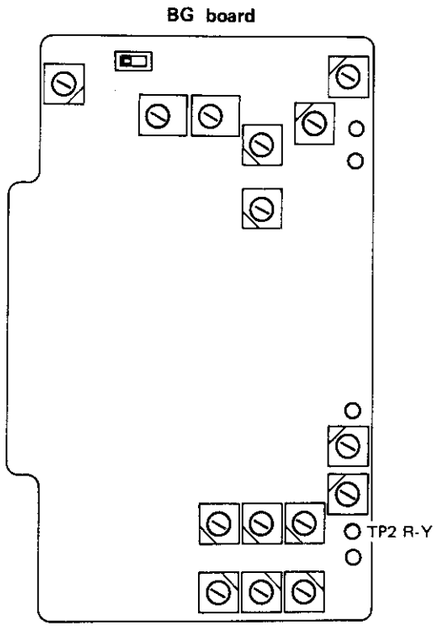


Fig. 9-2

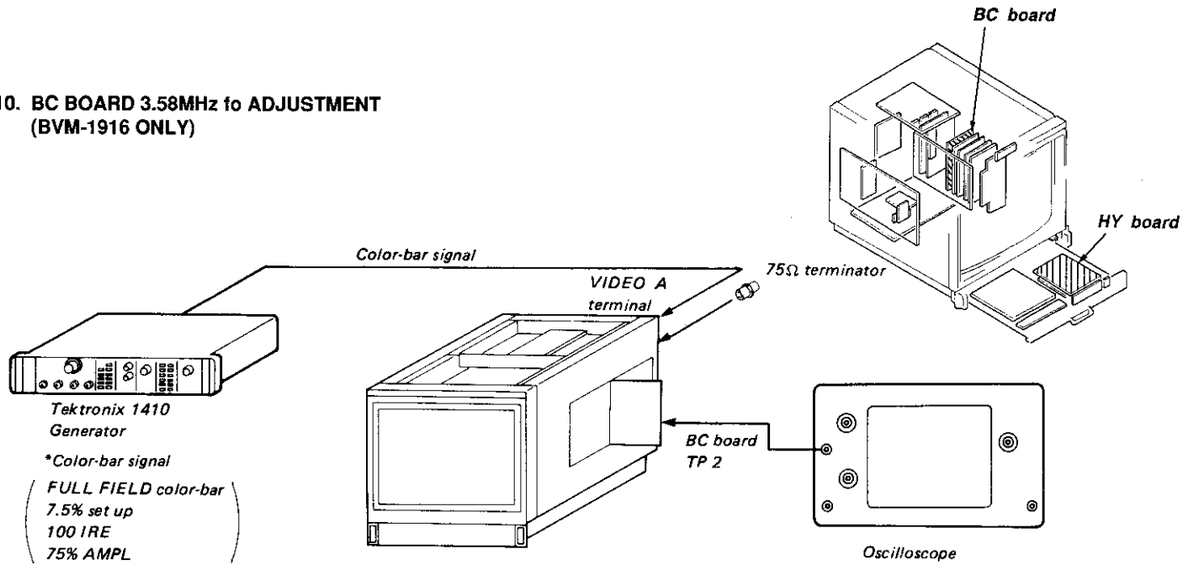








10. BC BOARD 3.58MHz fo ADJUSTMENT (BVM-1916 ONLY)



- YC SEP button (SUB CONTROL PANEL) ····· TRAP

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BC board.
3. Short-circuit between TP6 and TP7 of BC board with a jumper wire.
4. Adjust CV2 of BC board so that the output waveform is shifted slowly as shown in Fig. 10-1.
5. Turn off the power of this monitor, and disconnect TP6 and TP7 of BC board.

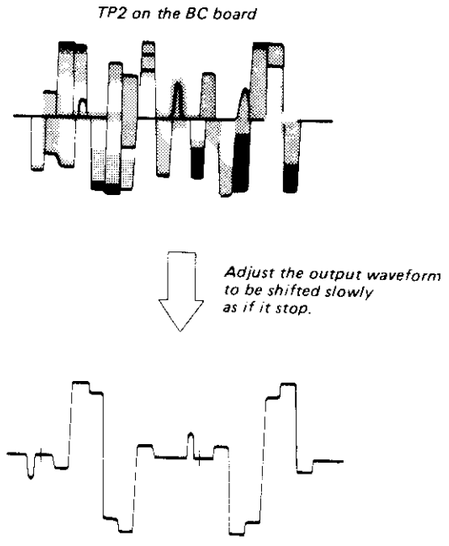
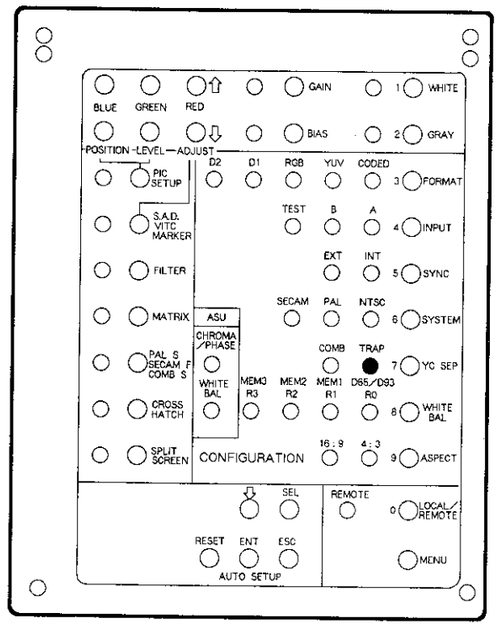
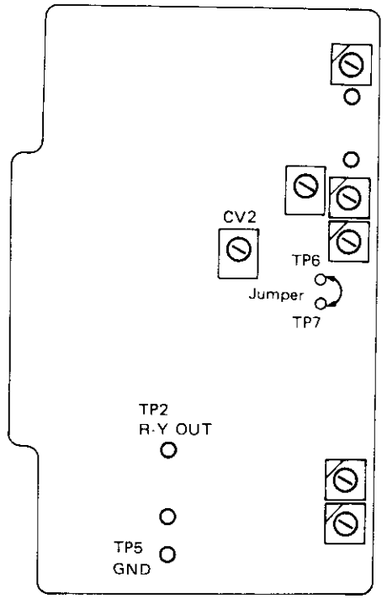


Fig. 10-1

SUB CONTROL PANEL (HY board)



BC board



11. BC Board COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1916 ONLY)

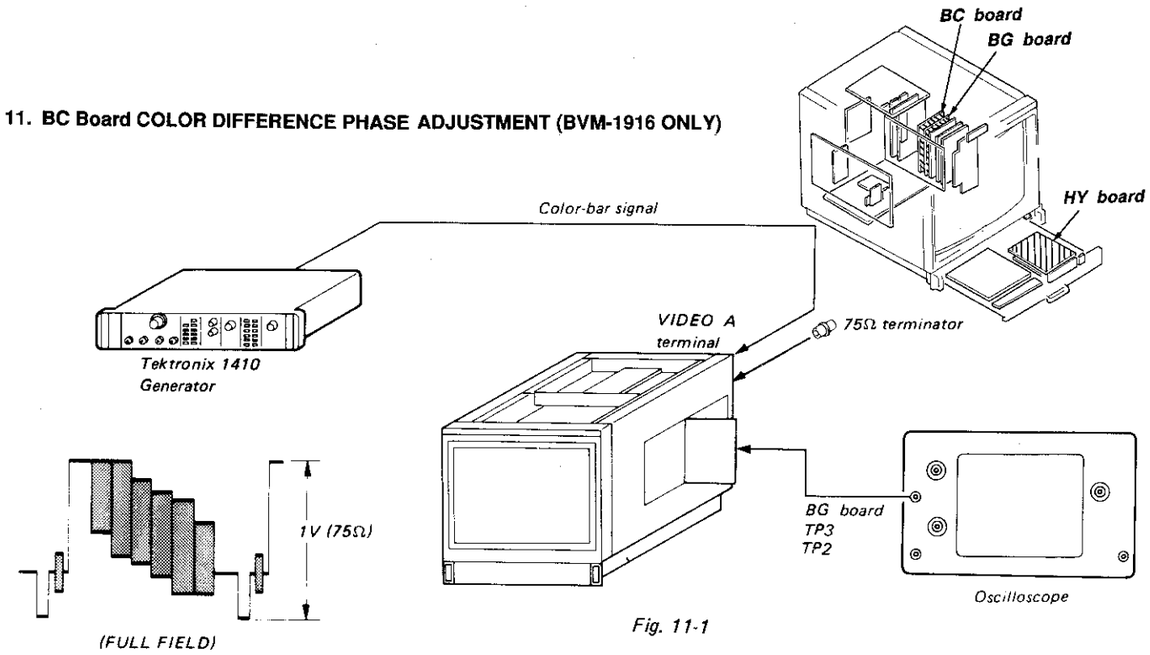


Fig. 11-1

- YC SEP button (SUB CONTROL PANEL) ····· TRAP

1. Complete the connections as shown in Fig. 11-1.
2 Turn on the power of this monitor.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BC board so that the ouput waveform is flat. (See Fig. 11-2.)

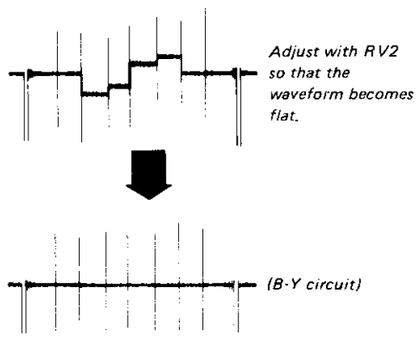


Fig. 11-2

Quad Adjustment

5. Connect the oscilloscope probe to TP2 on the BG board. Turn on the B-Y signal of the signal generator, and turn off the (R-Y) signal. Then adjust CV1 on the BC board so that the output waveform is flat. (See Fig. 11-3)
6. Repeat the steps 3 to 6.

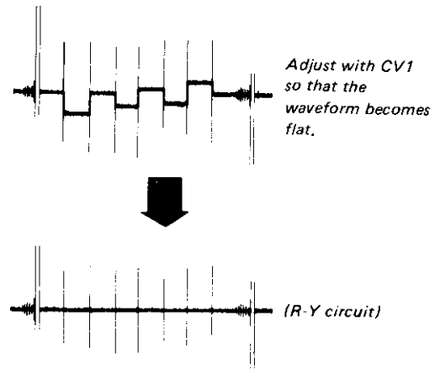
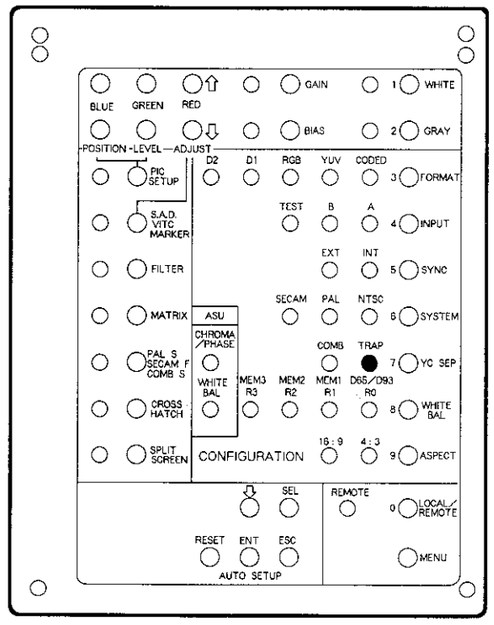
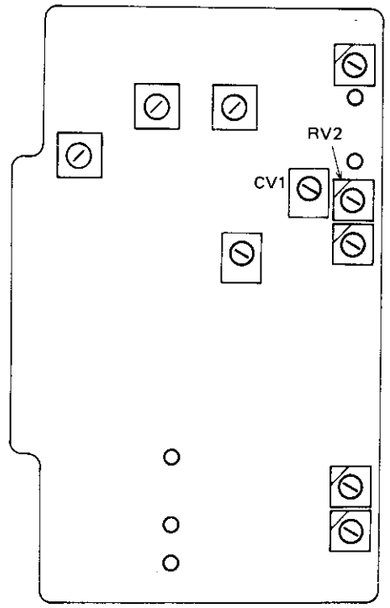


Fig. 11-3

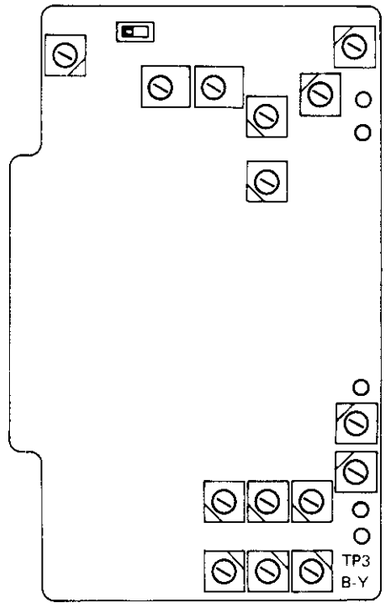
SUB CONTROL PANEL (HY board)



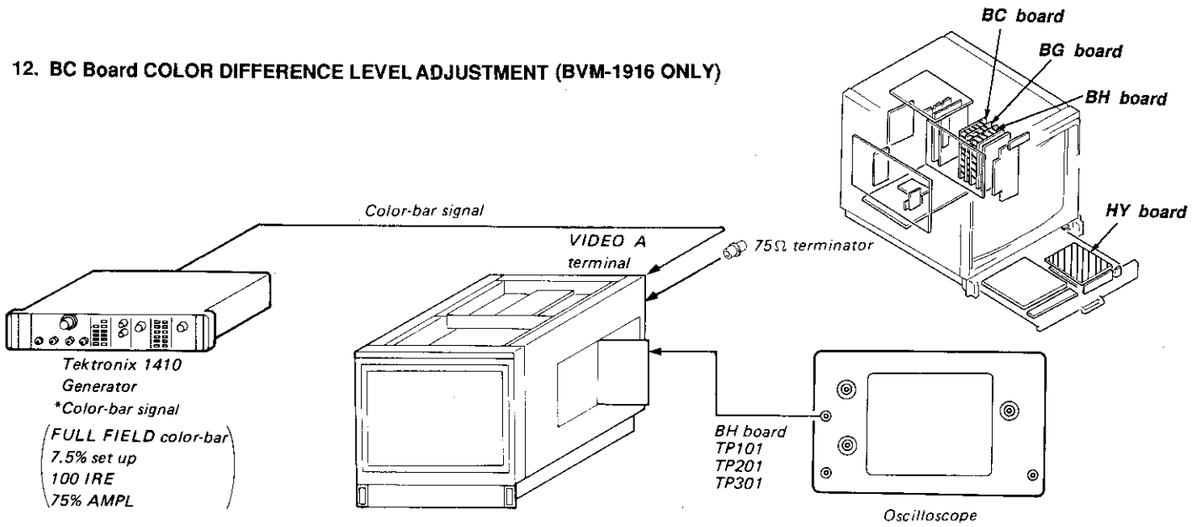
BC Board



BG Board

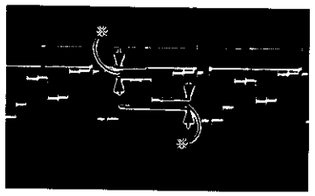


12. BC Board COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1916 ONLY)



• YC SEP button (SUB CONTROL PANEL) ····· TRAP

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP101 of BH board.
3. Adjust RV4 of BC board so that the levels with ✣ is flat as shown in Fig. 12-1.



TP101 R OUT

* *Adjust the levels with ✣ to be flat respectively useing RV4 of BC board.*

Fig. 12-1

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV5 of BC board so that the output waveform as shown in Fig. 12-2.

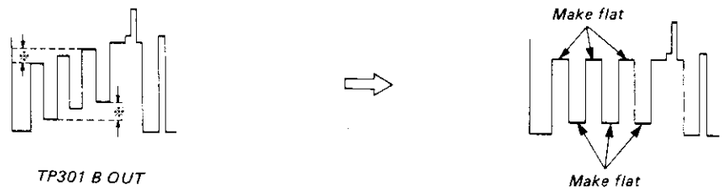
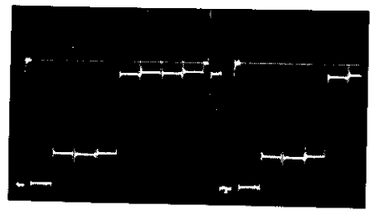


Fig. 12-2

6. Connect an oscilloscope to the TP201 of BH board.
7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 12-3.



TP201 G OUT

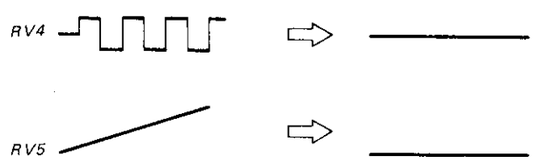
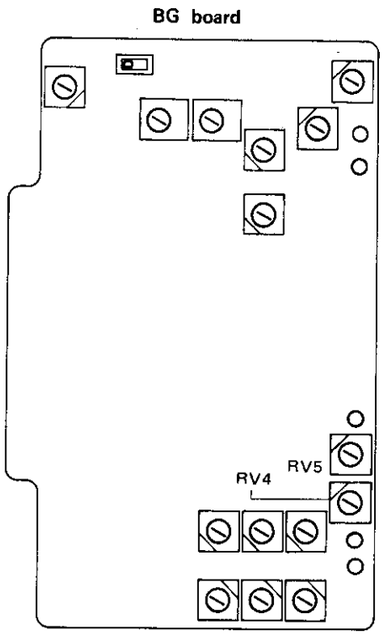
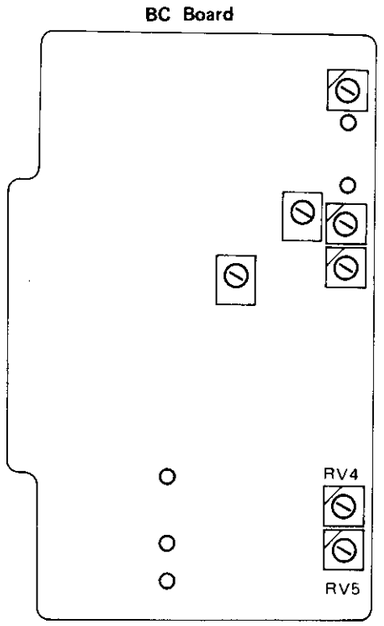
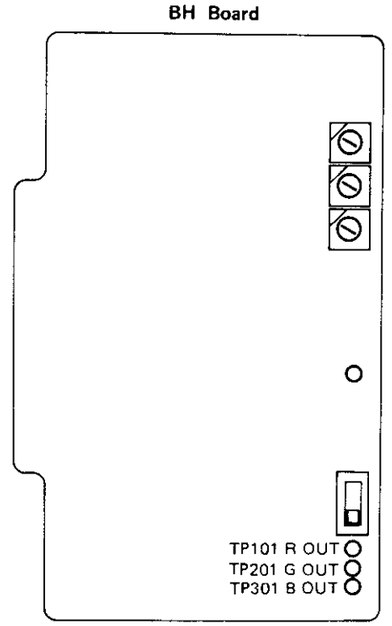


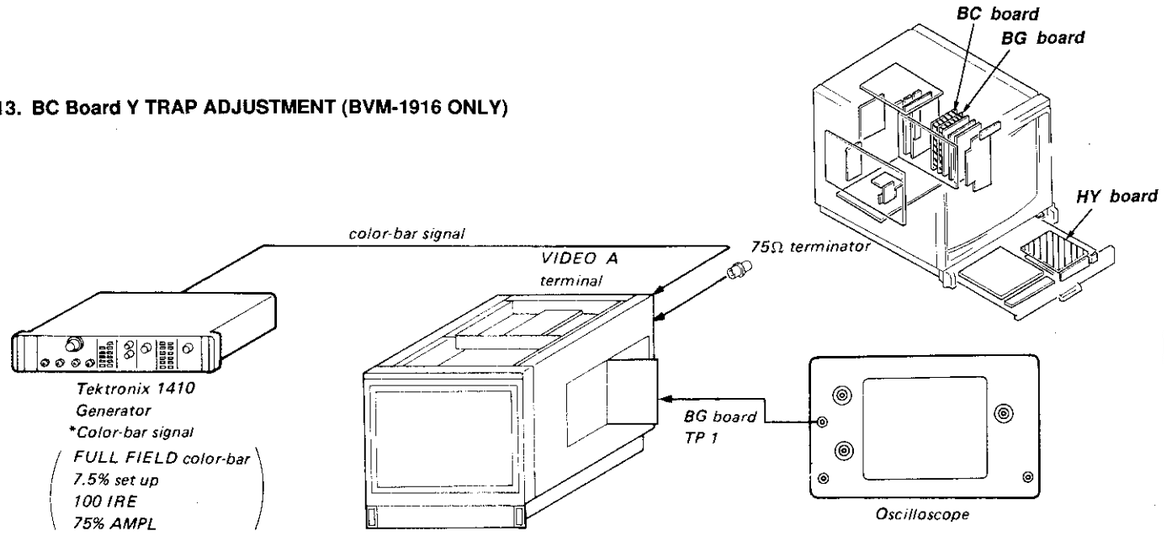
Fig. 12-3







13. BC Board Y TRAP ADJUSTMENT (BVM-1916 ONLY)



- COLOR SYSTEM button (SUB CONTROL PANEL)..... NTSC
- YC SEP button (SUB CONTROL PANEL) ..... TRAP

1. Input color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BC board so that 3.58MHz subcarrier is minimum as shown in Fig. 13-1.

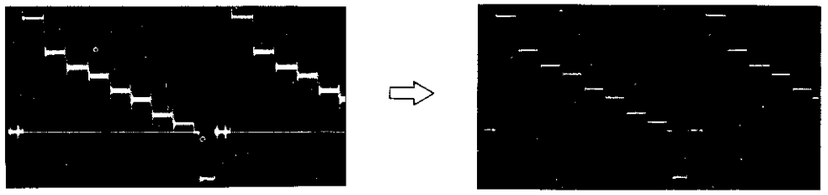
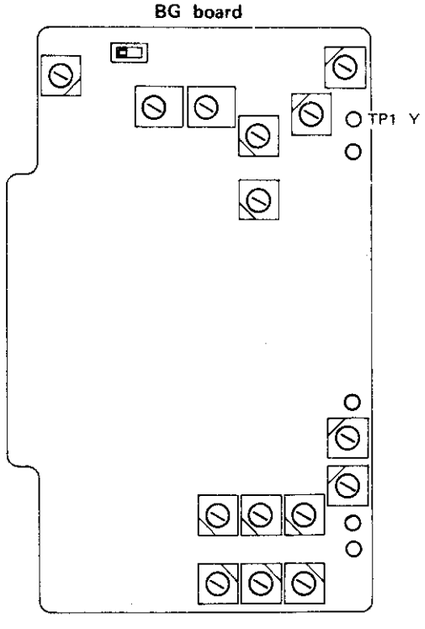
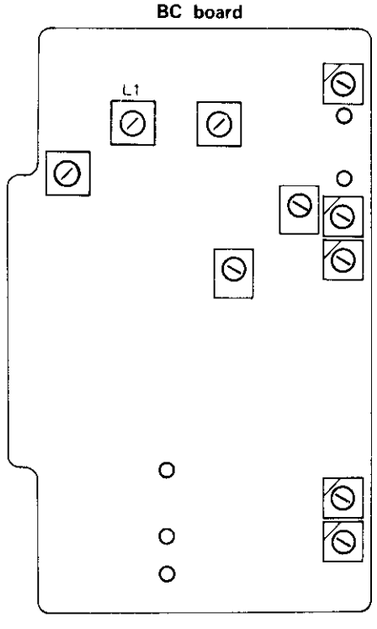
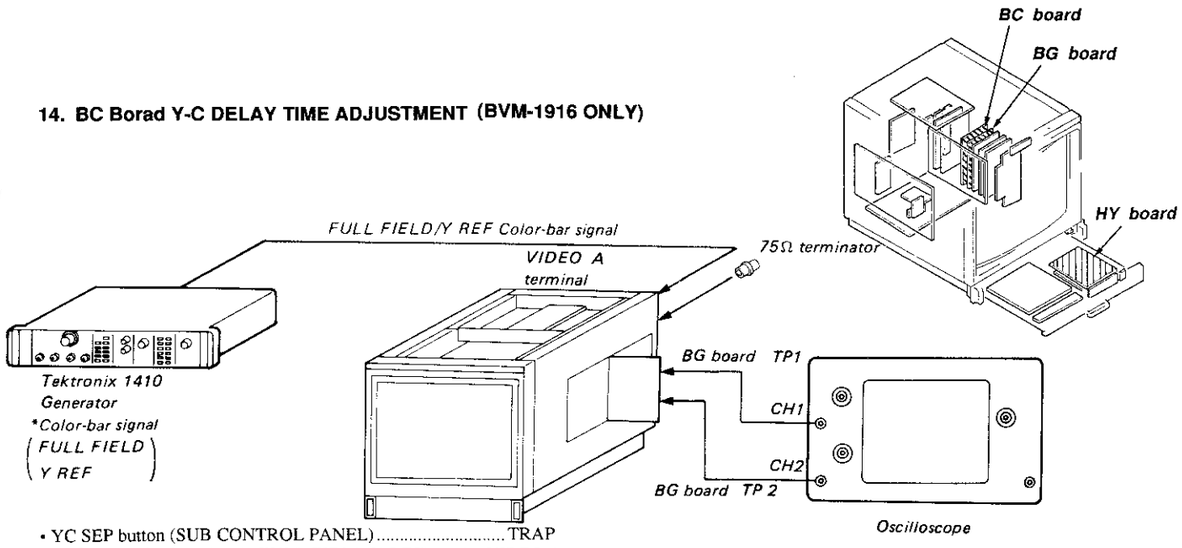


Fig. 13-1



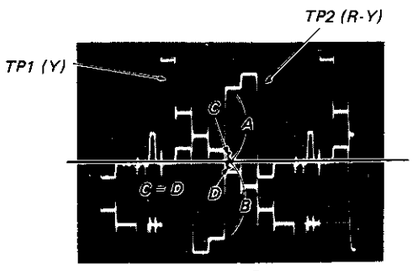


14. BC Borad Y-C DELAY TIME ADJUSTMENT (BVM-1916 ONLY)



- YC SEP button (SUB CONTROL PANEL).....TRAP

1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BC board so that the output waveform as shown in Fig. 14-1.



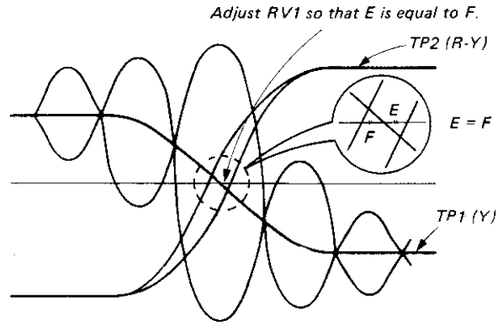
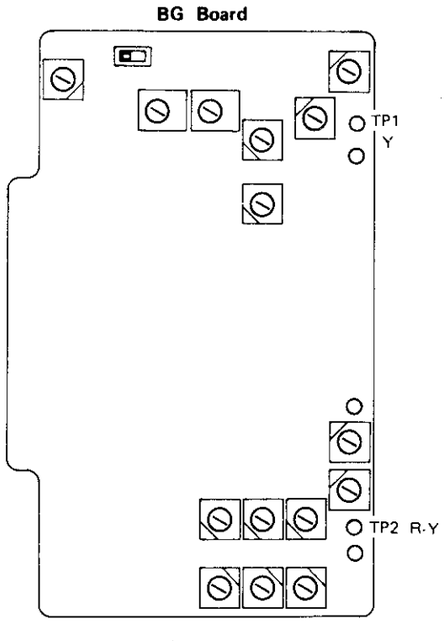
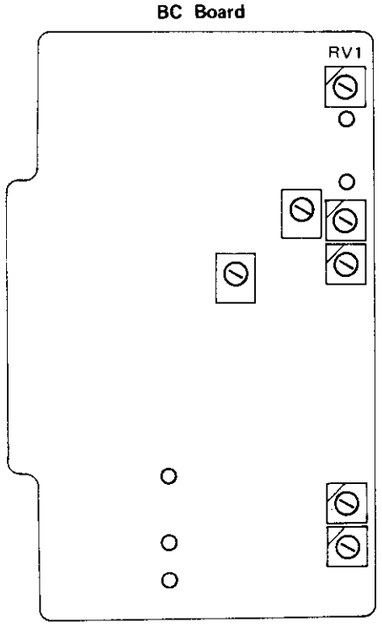
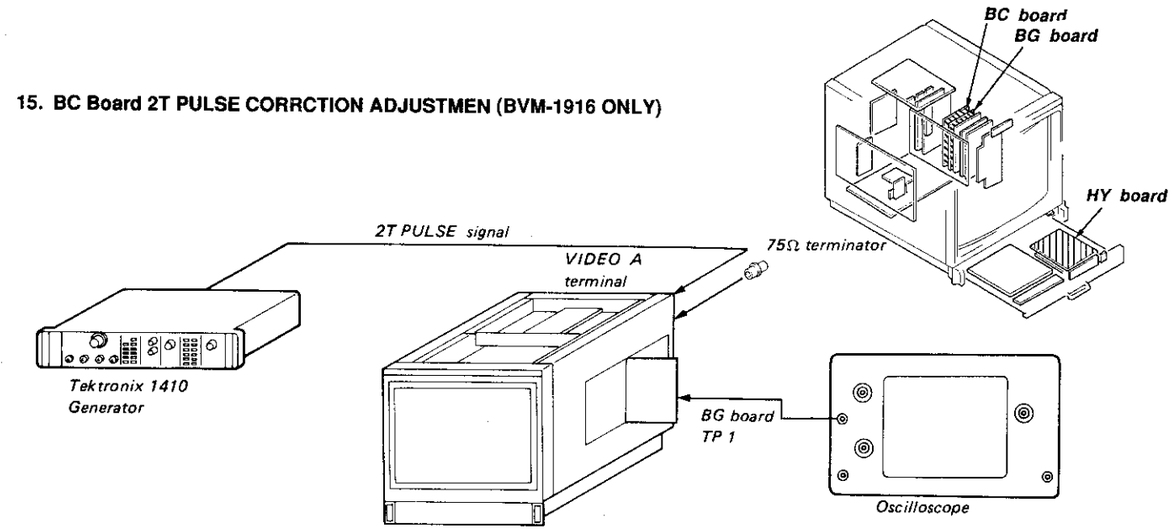


Fig. 14-1



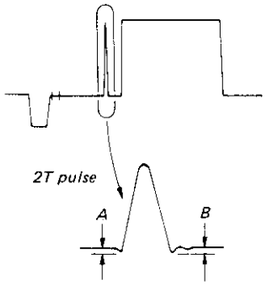


15. BC Board 2T PULSE CORRCTION ADJUSTMEN (BVM-1916 ONLY)

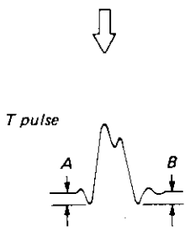


• YC SEP button (SUB CONTROL PANEL) ····· TRAP

1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BC board so that A is equal to B as shown in Fig. 15-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 15-1.



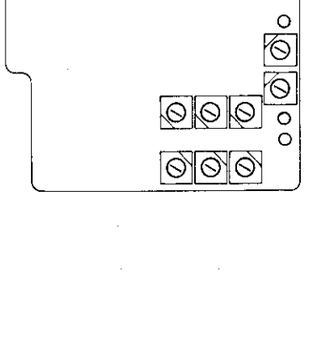
* Adjust L2 to obtain the condition A = B .



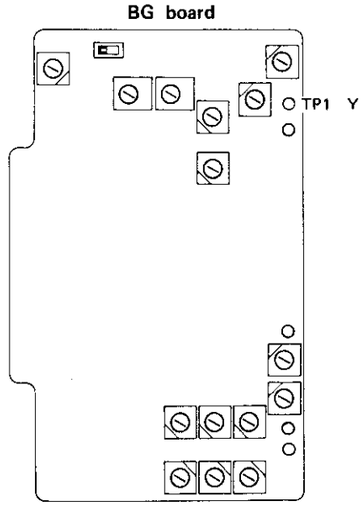
* The waveform balance should not be lost extremely.

Fig. 15-1

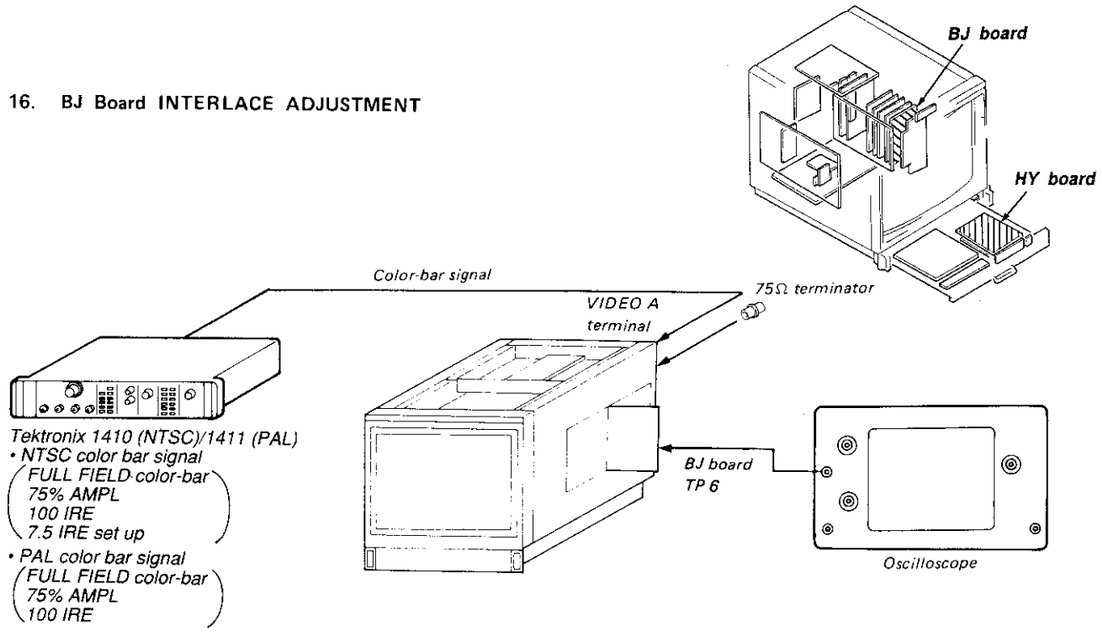
BC board



BG board

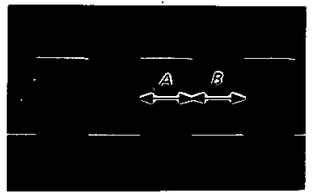


16. BJ Board INTERLACE ADJUSTMENT



• YC SEP button (SUB CONTROL PANEL) ····· TRAP

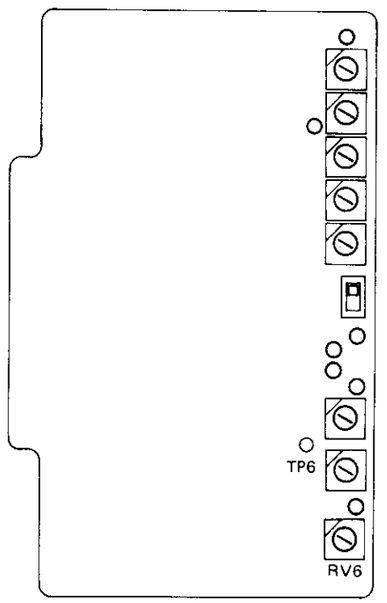
1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP6 on the BJ board.
3. Adjust RV6 to obtain the waveform on the oscilloscope as shown in Fig. 16-1.



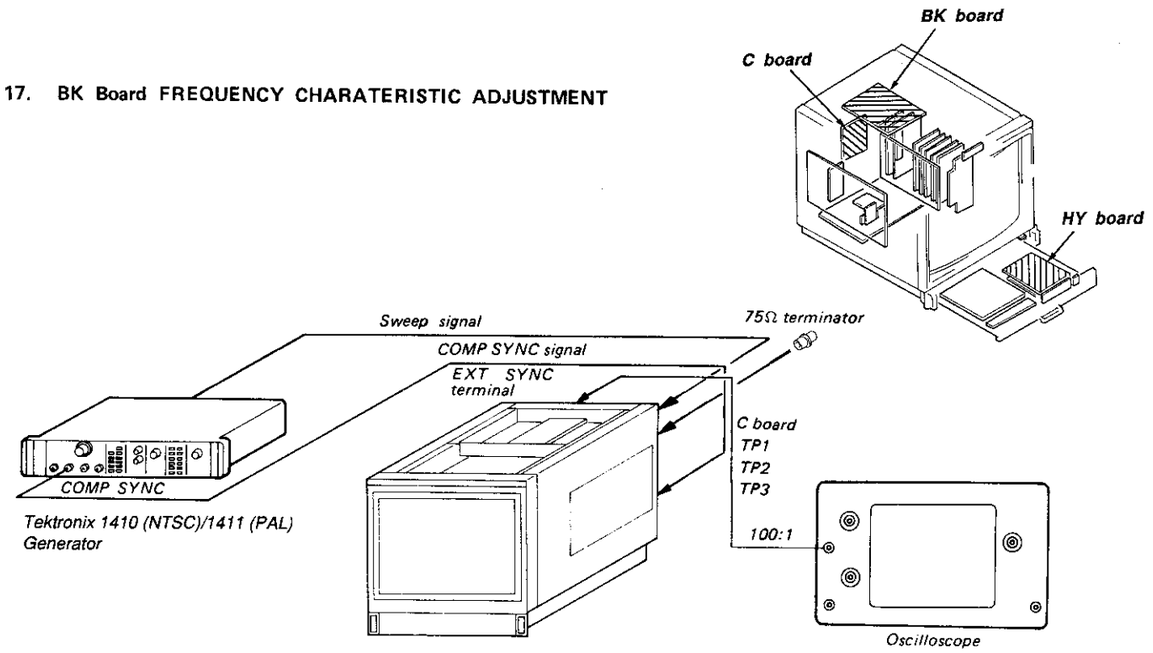
A=B

Fig. 16-1

BJ board



17. BK Board FREQUENCY CHARATERISTIC ADJUSTMENT



1. Input SWEEP signal to VIDEO A terminal of the set, and input COMP SYNC signal to EXT SYNC terminal of the set.
   - SYNC button (SUB CONTROL PANEL) ····· EXT
   - MODE selector (FRONT PANEL) ····· MONO (⊏)
   - FILTER button (SUB CONTROL PANEL) ··· OFF
2. Connect an oscilloscope to the TP1 on the C board.
   *Probe: 100:1
3. Adjust CV101 and RV101 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
4. Connect an osilloscope to the TP2 on the C board.
5. Adjust CV201 and RV201 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
6. Connect an osilloscope to the TP3 on the C board.
7. Adjust CV301 and RV301 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.

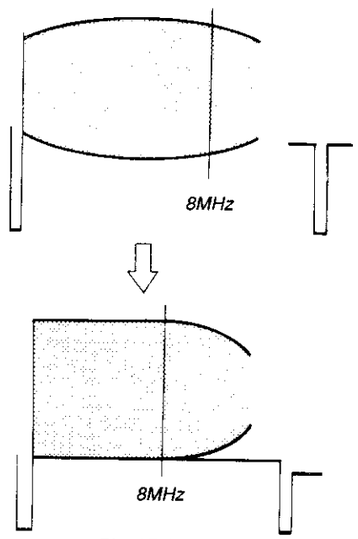
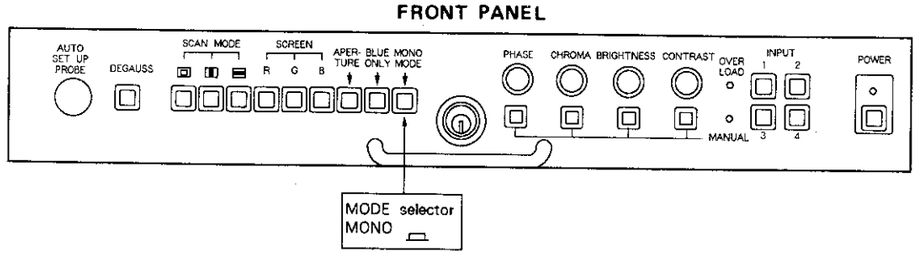
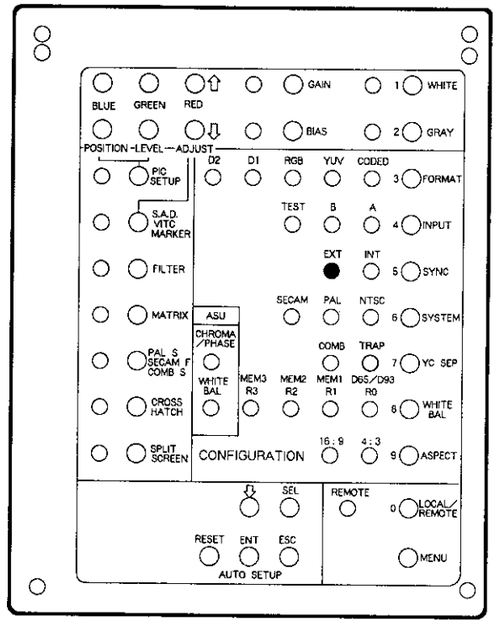


Fig. 17-1

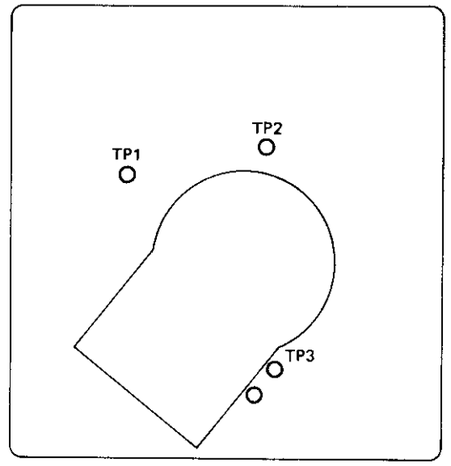
FRONT PANEL



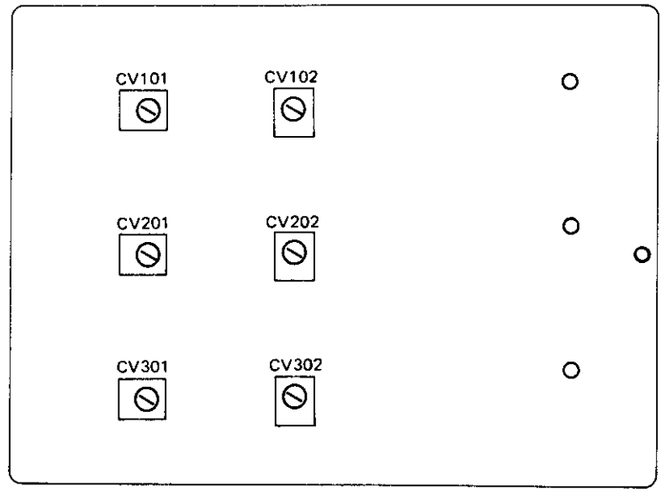
SUB CONTROL PANEL (HY board)



C board

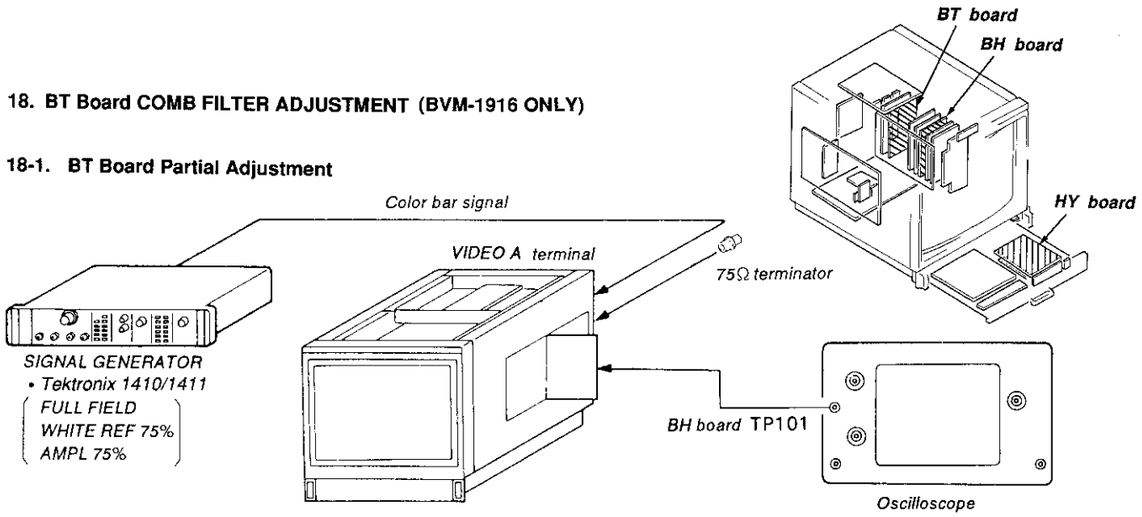


BK board



18. BT Board COMB FILTER ADJUSTMENT (BVM-1916 ONLY)

18-1. BT Board Partial Adjustment



Luminance Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button on the sub control panel to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-1 to the center of the oscilloscope using RV3 (luminance level) on the BT board.

Chroma Level Adjustment

1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP button on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-1 to the center of the oscilloscope using RV8 (chroma level) on the BT board.

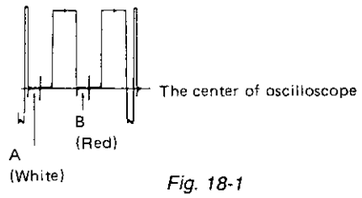
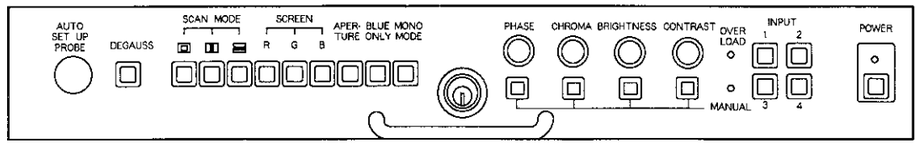


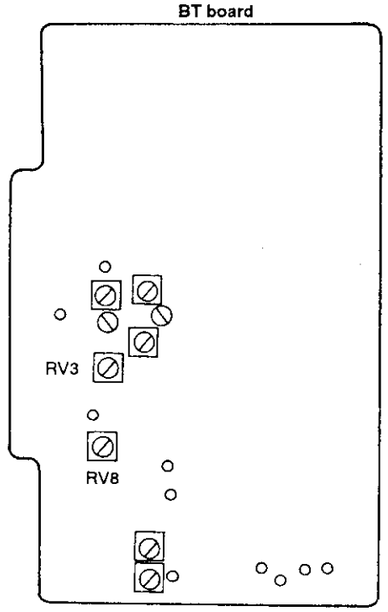
Fig. 18-1

Note: Never attempt to turn the following parts as these cannot be easily adjusted.
FL1, FL2, FL3, DL3, DL5, DL6, DL8

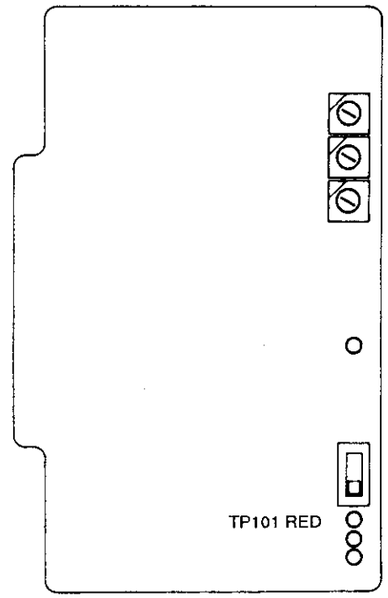
FRONT PANEL



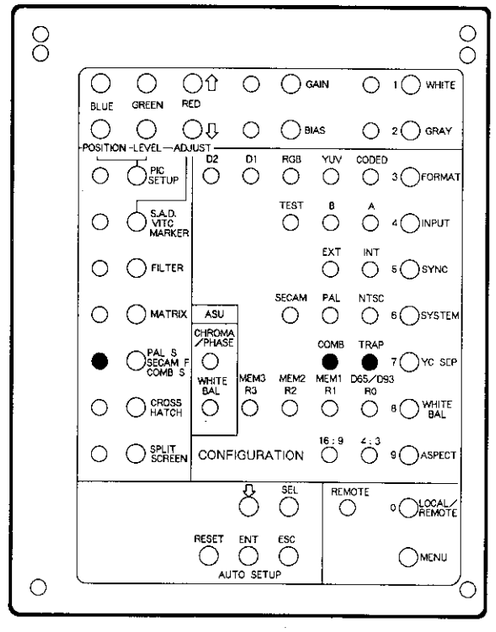
BT board



BH board

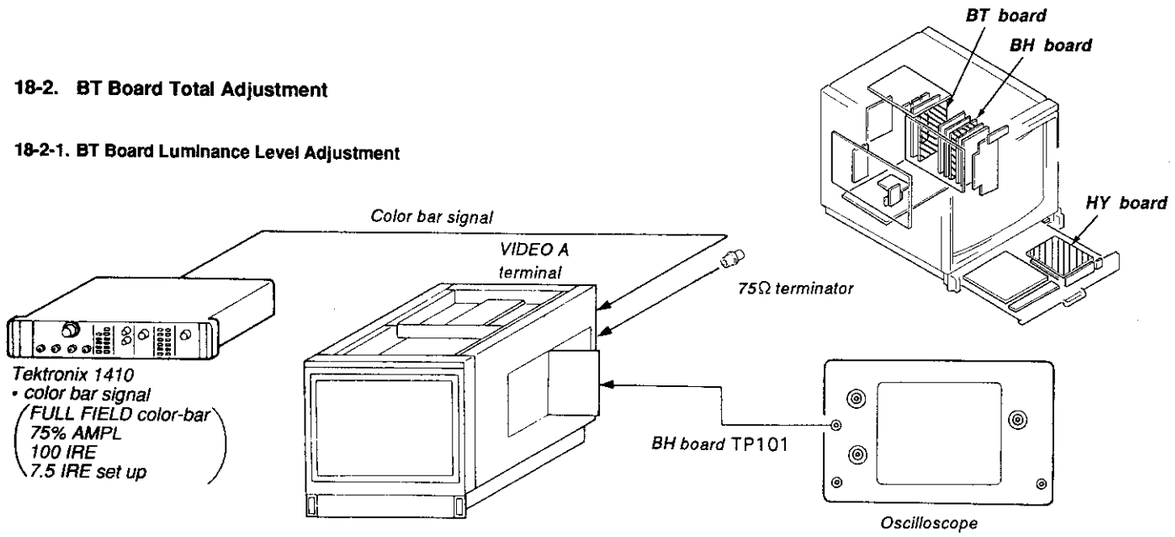


SUB CONTROL PANEL (HY board)



18-2. BT Board Total Adjustment

18-2-1. BT Board Luminance Level Adjustment



1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope until the portion A (white) of Fig. 18-2 is set to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV3 (luminance level) on the BT board.
8. Set the PAL S/SECAM F/COMB S button to the OFF.
9. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV9 (1H luminance level) on the BT board.

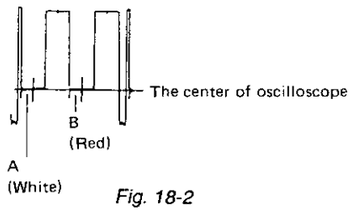
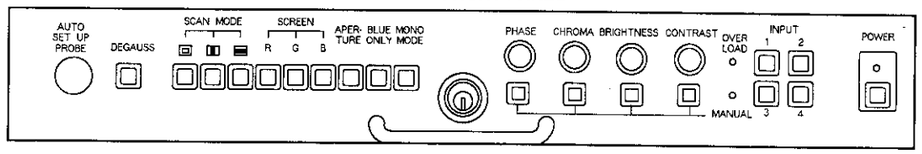
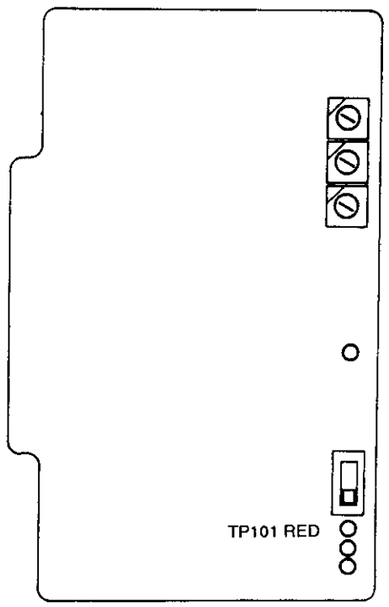


Fig. 18-2

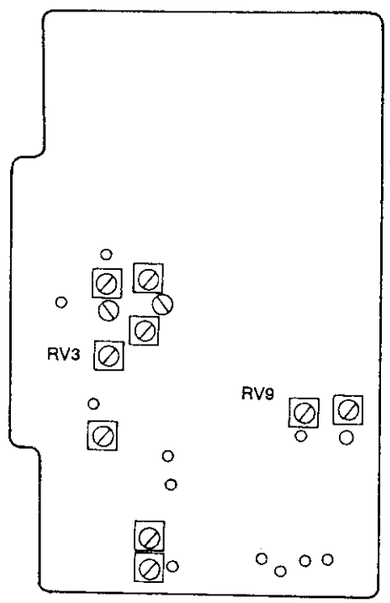
FRONT PANEL



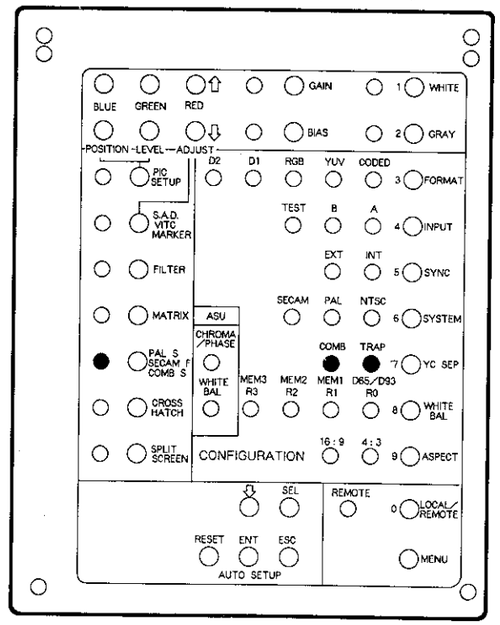
BH board



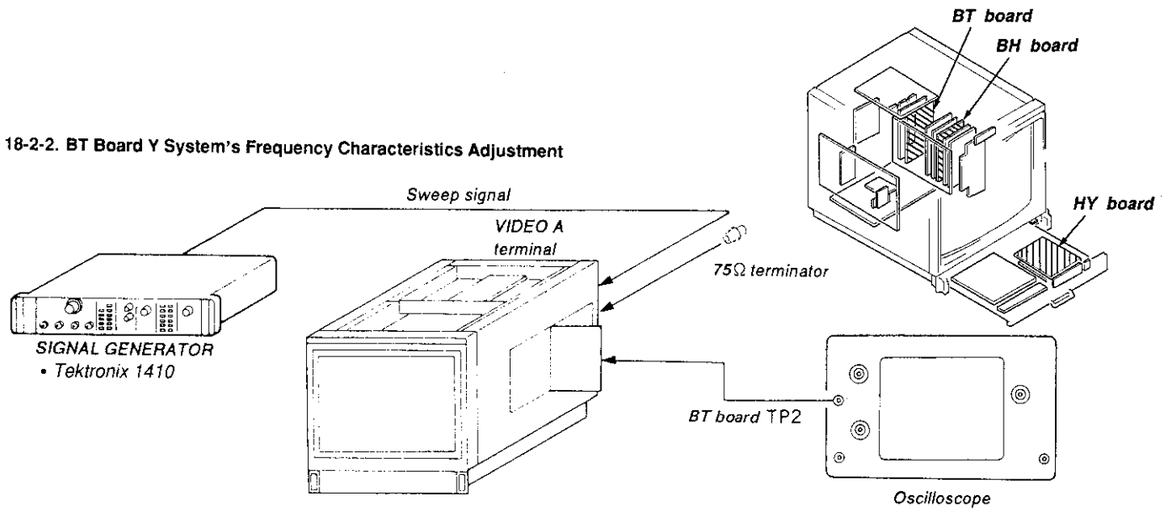
BT board



SUB CONTROL PANEL (HY board)



18-2-2. BT Board Y System's Frequency Characteristics Adjustment



1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the COMB position.
3. Connect the oscilloscope to TP2 on the BT board. (AC 0.1 V/div:V)
4. Set CV5 to the position as shown in Fig. 18-3.
5. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
6. Adjust the frequency characteristics until it is made flat using CV1 (Y FREQ) on the BT board. If it cannot be properly adjusted by using CV1, use CV5 (Y FREQ).
7. Set the PAL S/SECAM F/COMB S button to the OFF.
8. Adjust the frequency characteristics until it is made flat using CV2 (1H Y FREQ) on the BT board.
9. Set CV3 (CLK PHASE) and CV4 (CLK PHASE) on the BT board to the position as shown in Fig. 18-4.
10. Adjust the clock phase until it becomes just as shown in Fig. 18-5 using CV3.
11. If it cannot be adjusted with CV3, adjust with CV4 by returning CV3 to the position of Fig. 18-4.

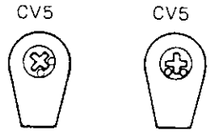


Fig. 18-3 Fig. 18-4

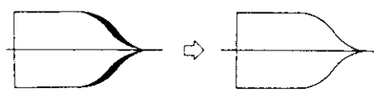
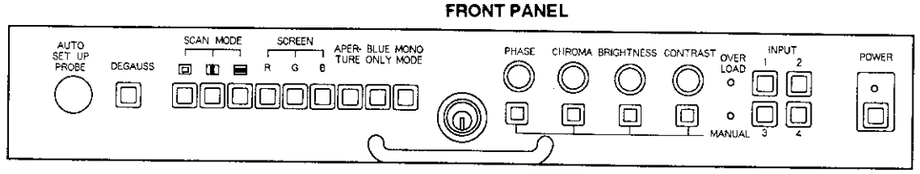
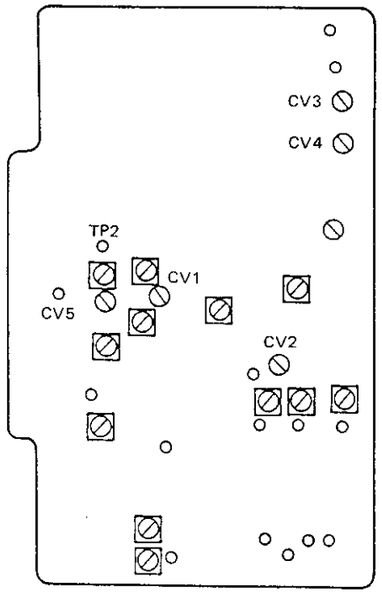


Fig. 18-5

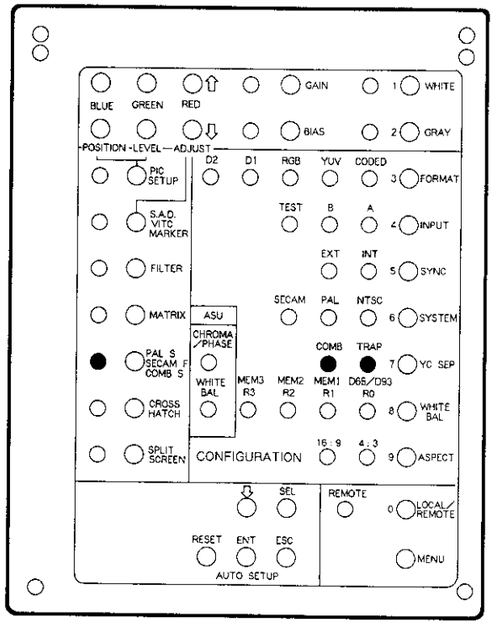
FRONT PANEL



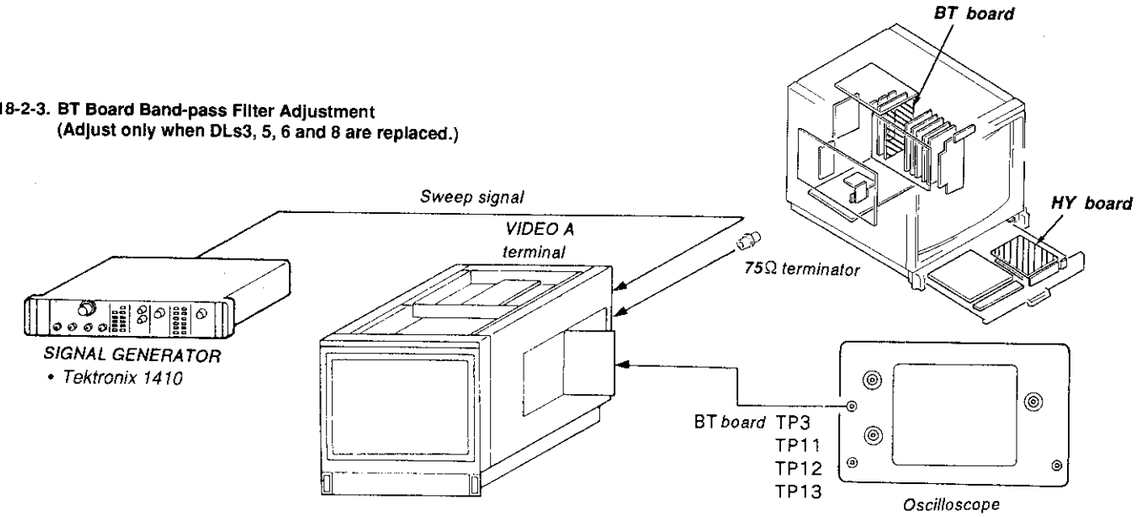
BT board



SUB CONTROL PANEL (HY board)



18-2-3. BT Board Band-pass Filter Adjustment
(Adjust only when DLs3, 5, 6 and 8 are replaced.)



1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the front panel to the ON.
3. Connect the oscilloscope to TP11.
4. Adjust the frequency characteristics using DL3 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
5. Connect the oscilloscope to TP12.
6. Adjust the frequency characteristics using DL6 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
7. Connect the oscilloscope to TP13.
8. Adjust the frequency characteristics using DL8 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
9. Connect the oscilloscope to TP3.
10. Adjust the frequency characteristics using DL5 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.

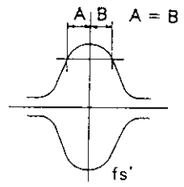
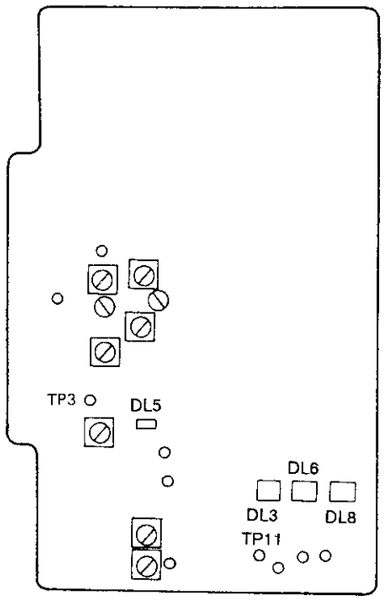
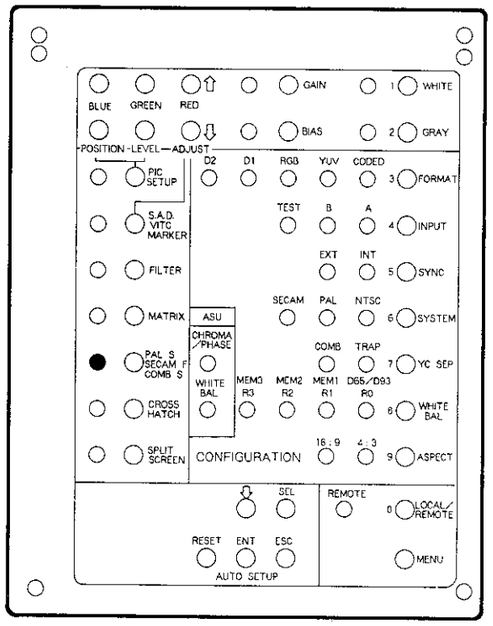


Fig. 18-6

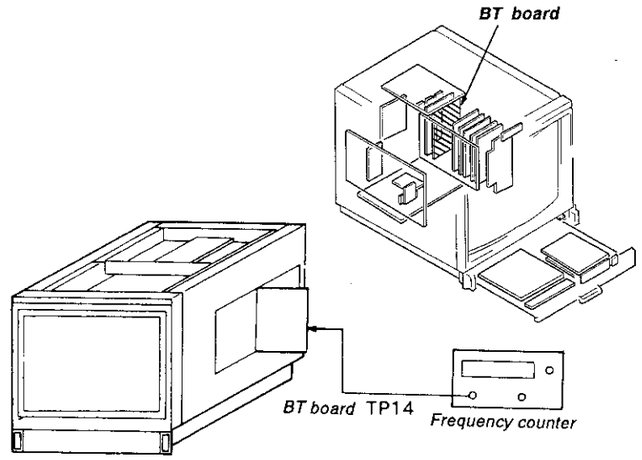
BT board



SUB CONTROL PANEL (HY board)

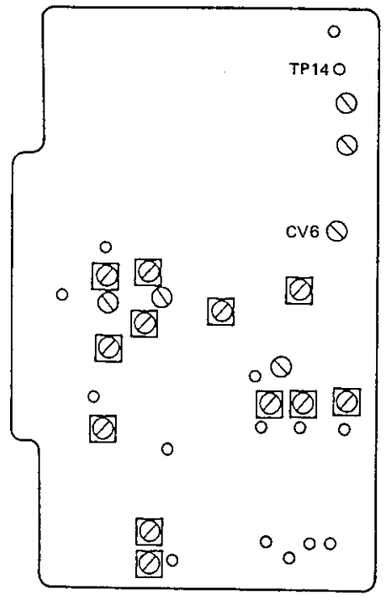


18-2-4. BT Board Clock fo Adjustment

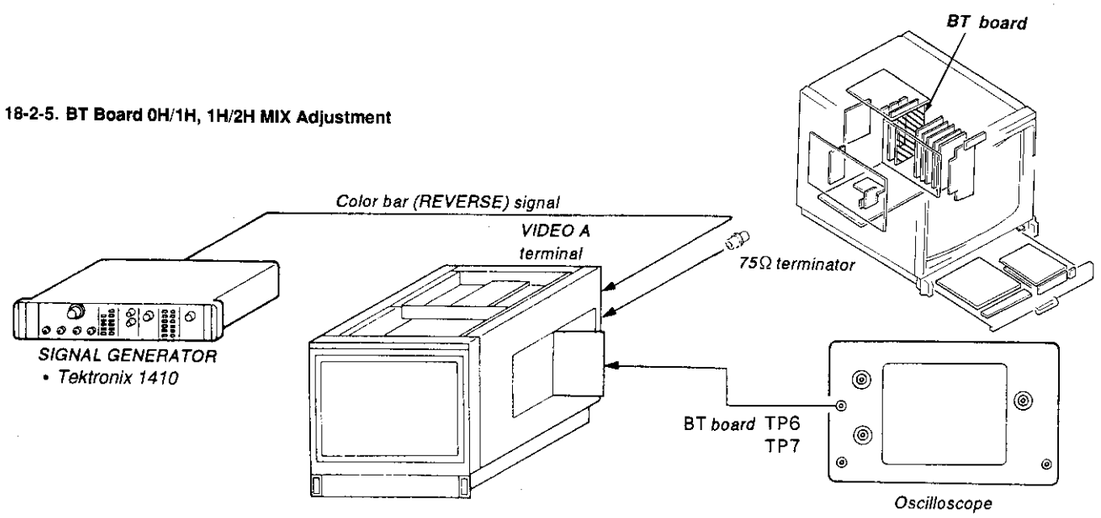


1. Connect the frequency counter to TP14.
2. Make adjustment as shown below using CV6 (CLK FREQ) on the BT board.
   • fo=21.477 MHz

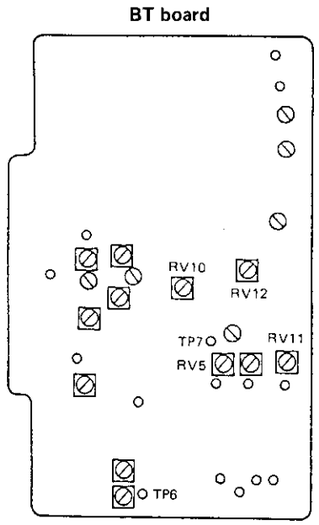
BT board



18-2-5. BT Board 0H/1H, 1H/2H MIX Adjustment



1. Feed a color bar signal (REVERSE) to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP6 to magnify the signal inverted area.
3. Turn RV5 (0H/1H MIX LEVEL) and RV10 (0H/1H MIX PHASE) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.
4. Connect the oscilloscope to TP7.
5. Turn RV12 (1H/2H MIX PHASE) and RV11 (1H/2H MIX LEVEL) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.



Enlarged view of inverted signal section

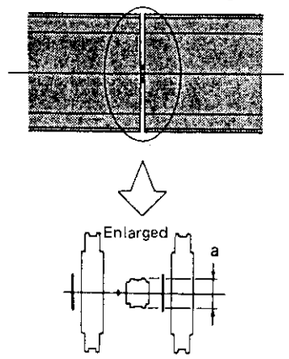
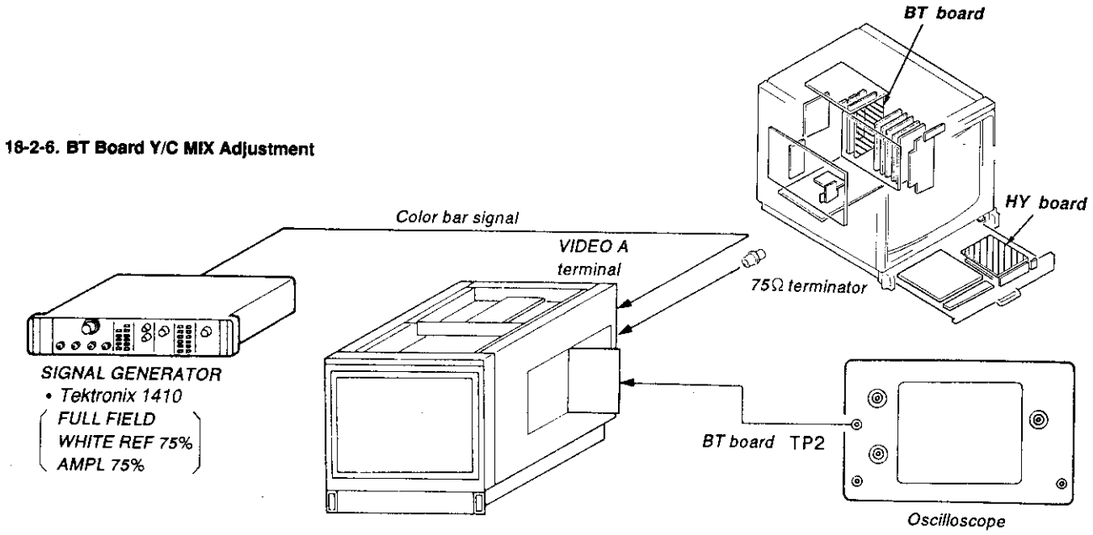


Fig. 18-7

18-2-6. BT Board Y/C MIX Adjustment



1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP2 on the BT board.
3. Set the PAL S/SECAM F/COMB S button on the sub control panel to the OFF.
4. Turn RV1 (Y/C MIX PHASE) and RV2 (Y/C MIX LEVEL) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.

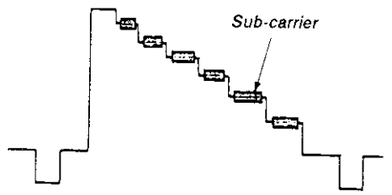
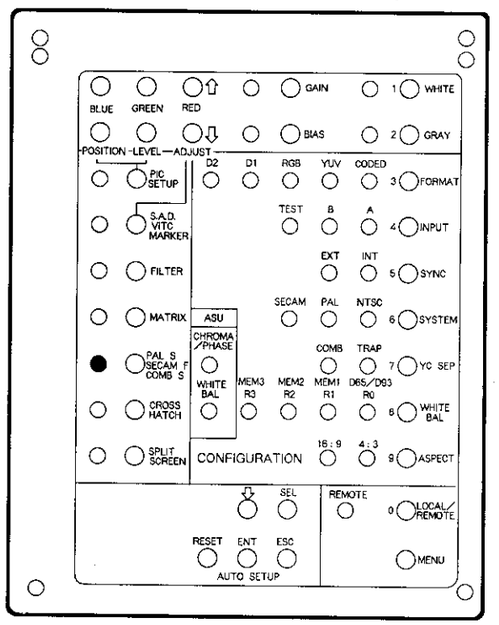


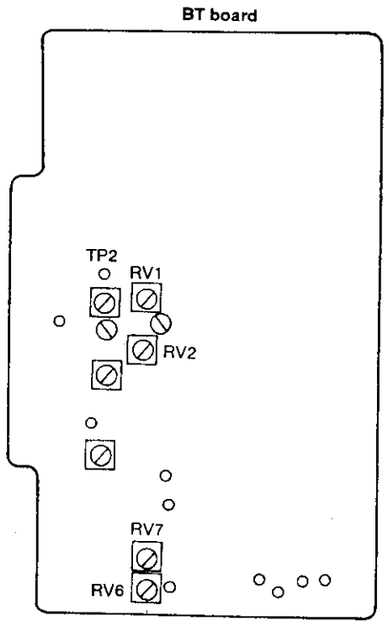
Fig. 18-8

SUB CONTROL PANEL (HY board)

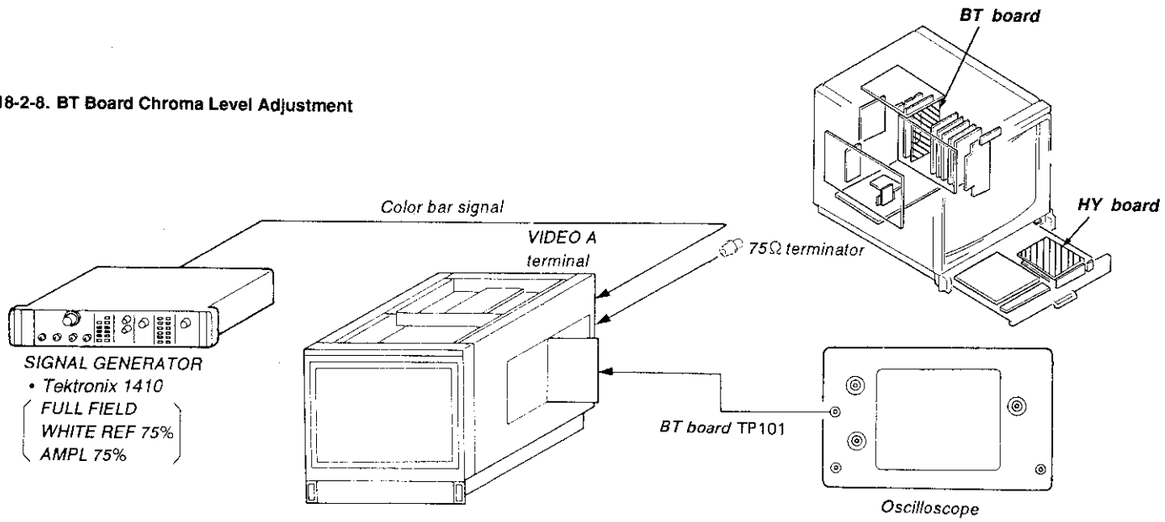


18-2-7. S COMB Adjustment

1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
3. Connect the oscilloscope to TP2 on the BT board.
4. Turn RV6 (S COMB C Level) and RV7 (S COMB C PHASE) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.



18-2-8. BT Board Chroma Level Adjustment



1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BT board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope to set the portion B (red) of Fig. 18-9 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-9 to the center of the oscilloscope using RV8 (C OUTPUT LEVEL) on the BT board.

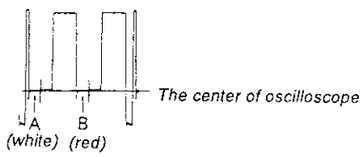
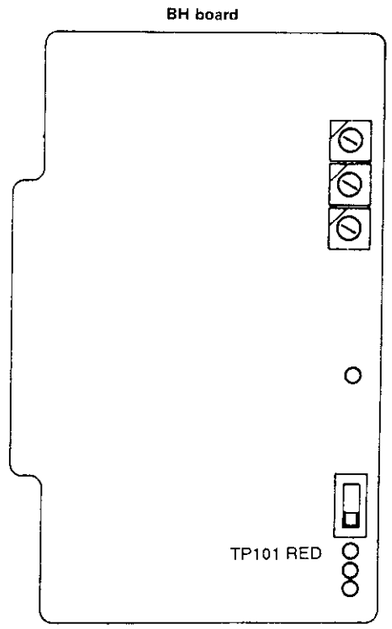
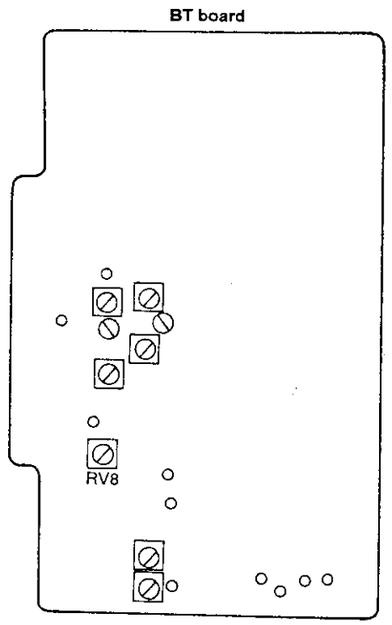
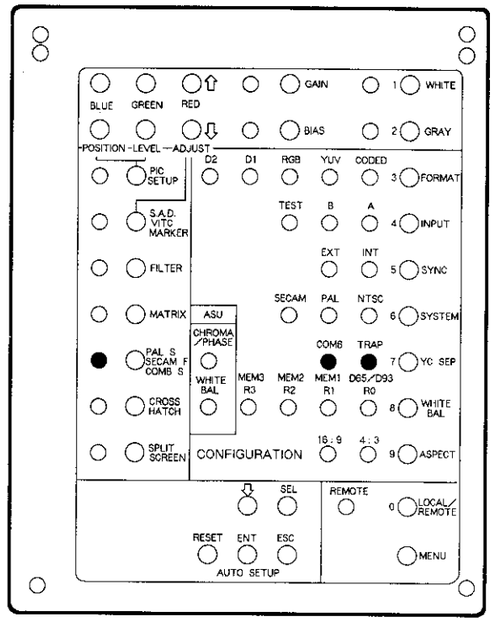


Fig. 18-9

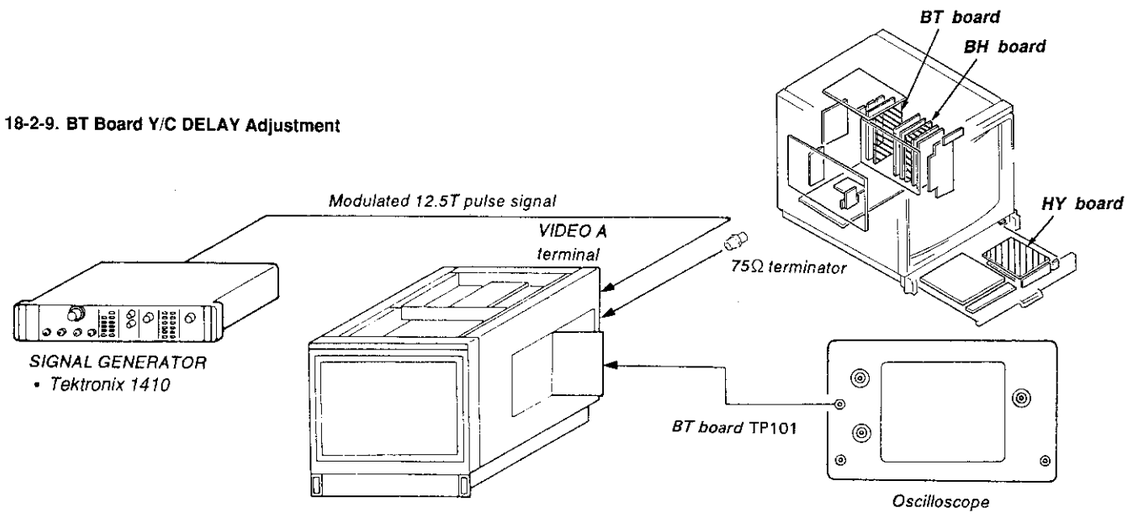




SUB CONTROL PANEL (HY board)



18-2-9. BT Board Y/C DELAY Adjustment



1. Feed a 12.5T pulse signal to the VIDEO A terminal of this set.
2. Set the PAL S/SECAM F/COMB S button to the ON.
3. Connect the oscilloscope to TP101 on the BH board.
4. Turn the CHROMA MANUAL control (on the front panel) until the chroma signal is adjusted as shown in Fig. 18-10.
5. After adjustment, turn RV4 (Y/C DELAY) on the BT board until the waveform is symmetrical.

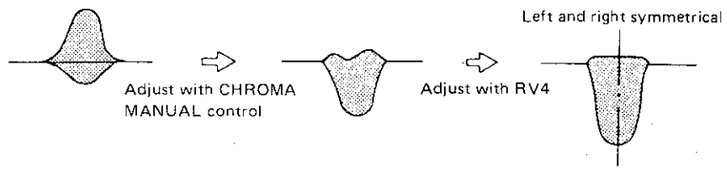
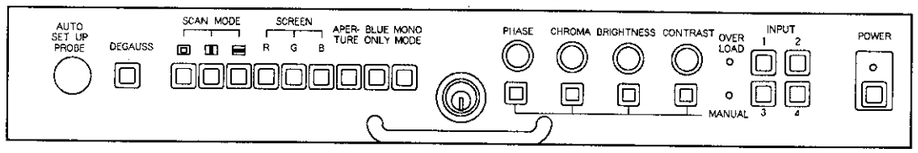
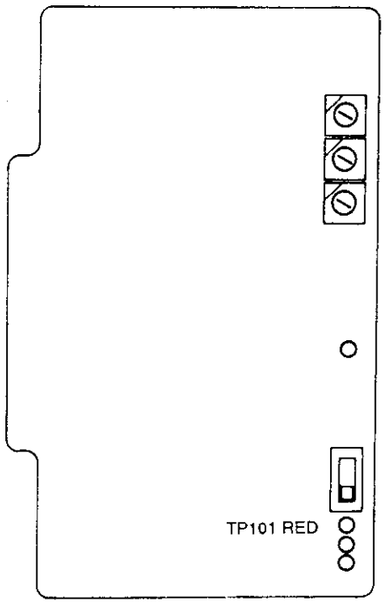


Fig. 18-10

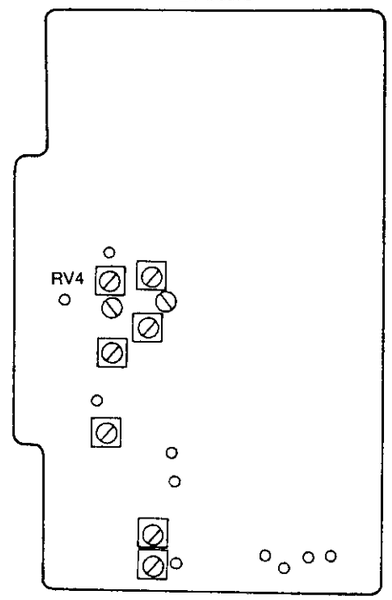
FRONT PANEL



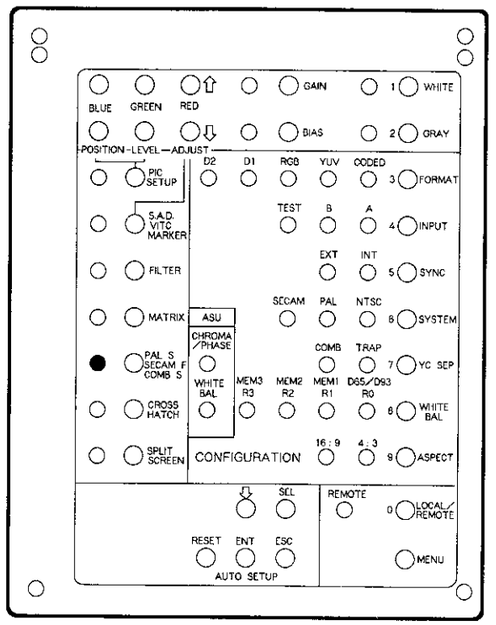
BH board



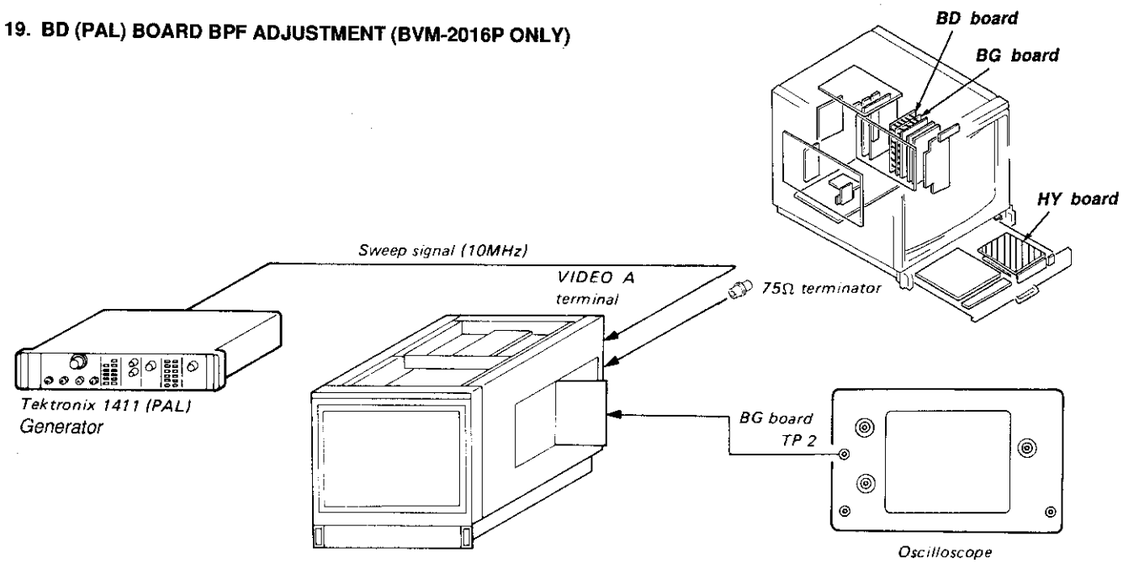
BT board



SUB CONTROL PANEL (HY board)



19. BD (PAL) BOARD BPF ADJUSTMENT (BVM-2016P ONLY)



- PAL S/SECAM F/COMB S button
  (SUB CONTROL PANEL)····· ON

1. Input SWEEP signal (10MHz) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the V/div of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 19-1.

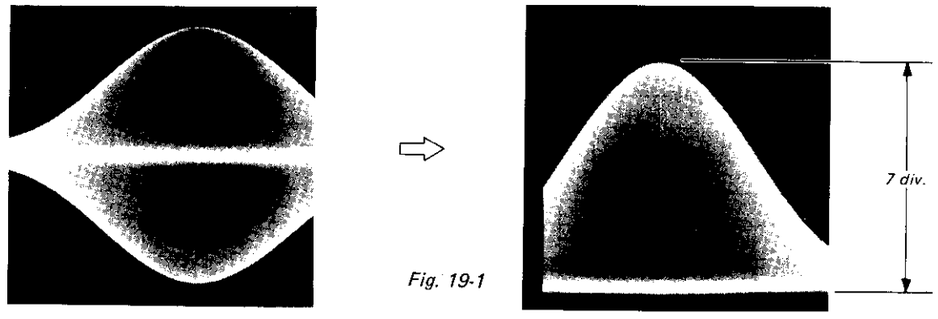
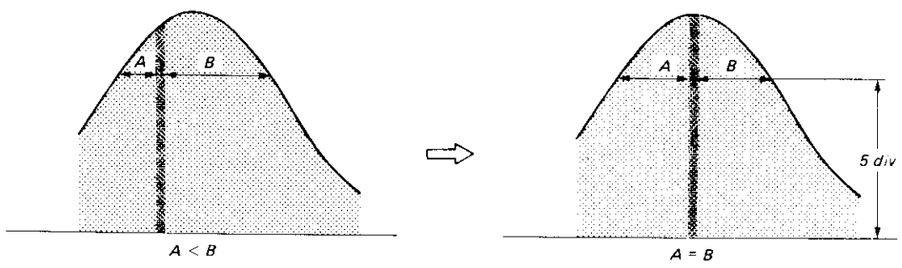


Fig. 19-1

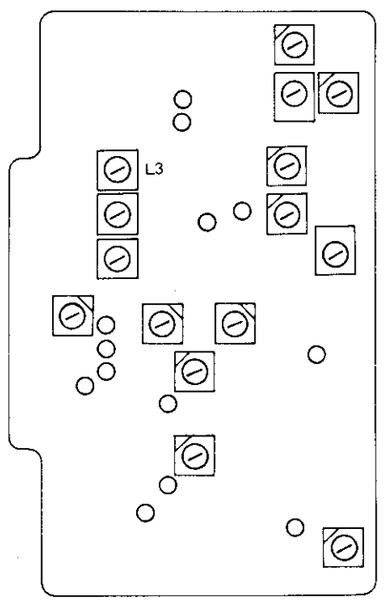
4. Adjust L3 on the BD board so that A is equal to B as shown in Fig. 8-2.



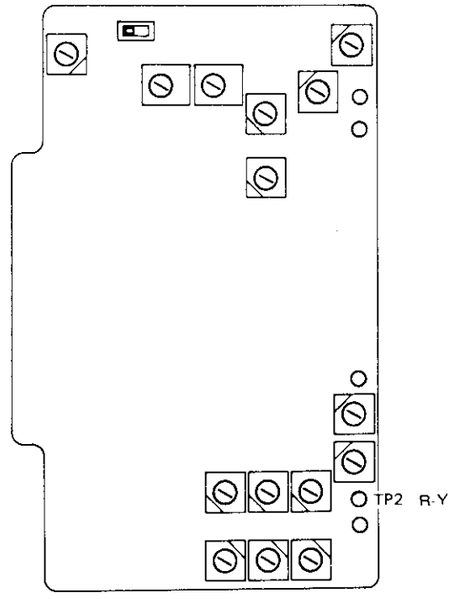
A is equal to B when the amplitude is 5 div.

Fig. 19-2

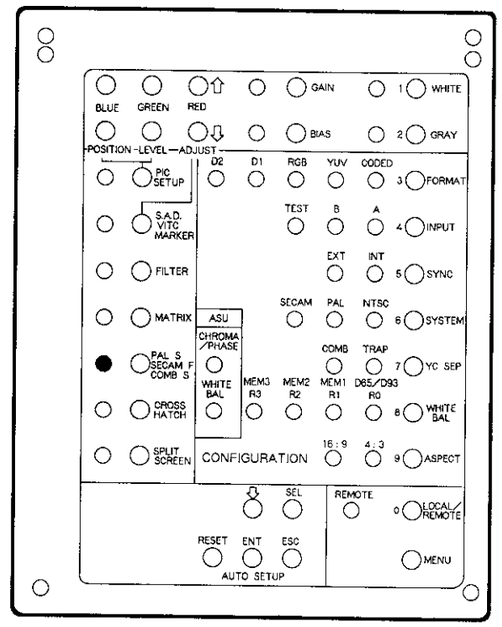
BD board



BG board



SUB CONTROL PANEL (HY board)



20. BD (PAL) BOARD PHASE SHIFT ADJUSTMENT (BVM-2016P ONLY)

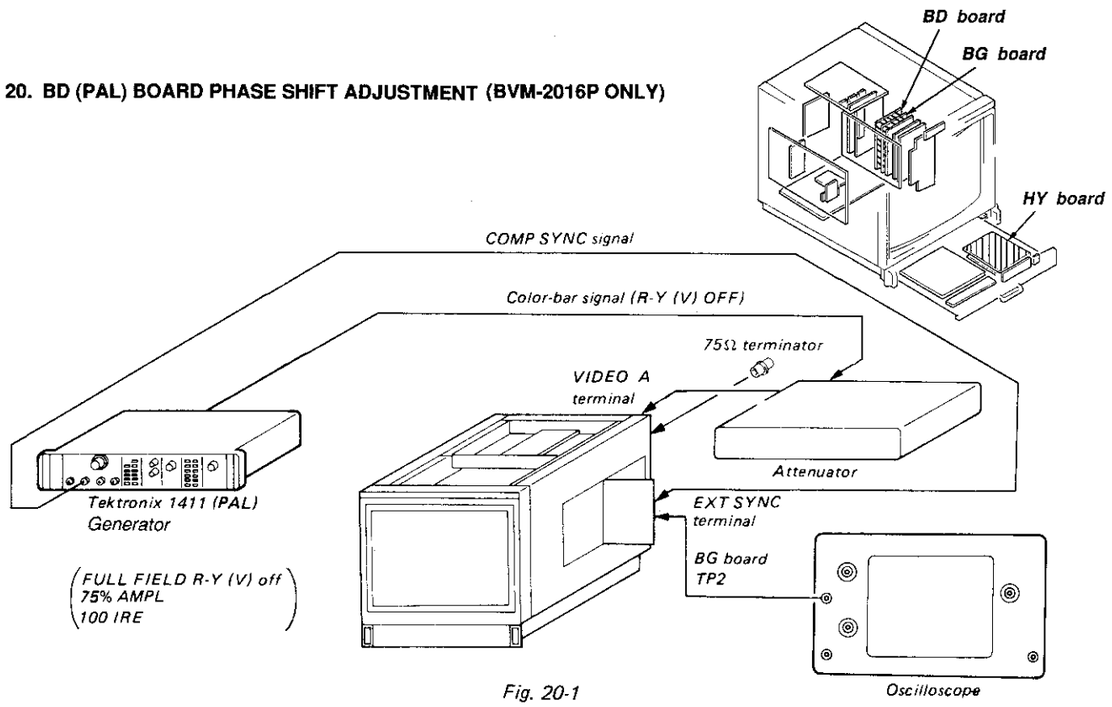


Fig. 20-1

- SYNC button (SUB CONTROL PANEL)····· EXT
- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)····· ON
- RV2 (BD BOARD)·····MECHANICAL CENTER
- CV1 (BD BOARD)·····MECHANICAL CENTER
- CV2 (BD BOARD)·····MECHANICAL CENTER

1. Complete the connection as shown in Fig. 20-1.
2. Connect an socilloscope to the TP2 on the BG board.
3. Make the waeform flat with the PHASE control of front panel (R) as shown in Fig. 20-2.
4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV2 on the BD board so that the output waveform becomes flat as shown in Fig. 20-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

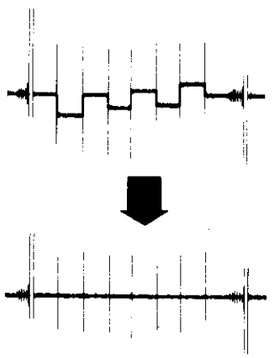
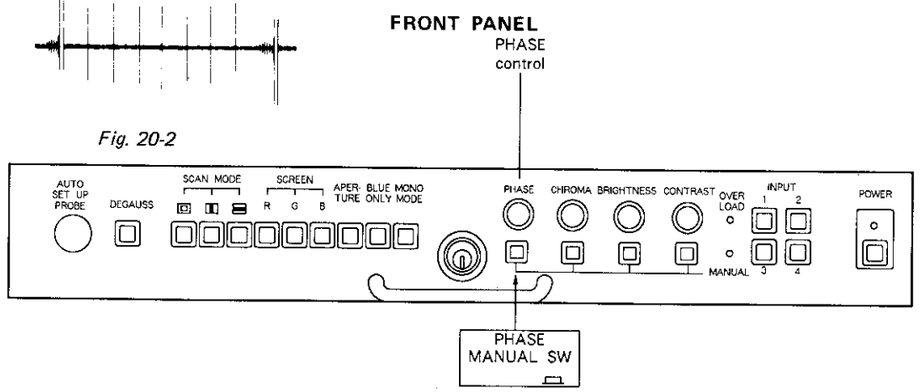
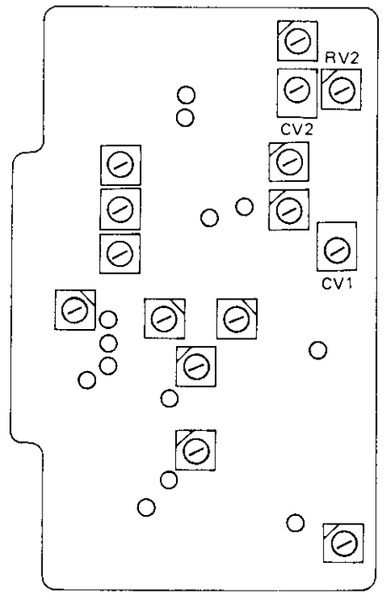


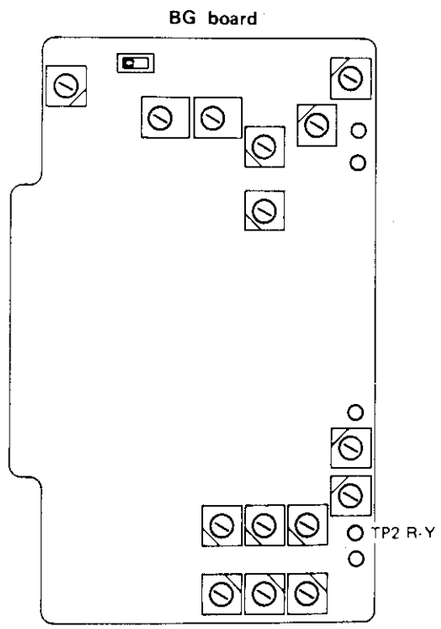
Fig. 20-2



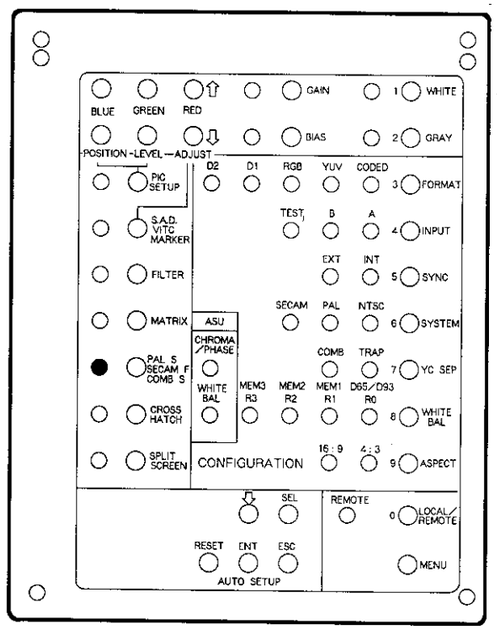
BD board



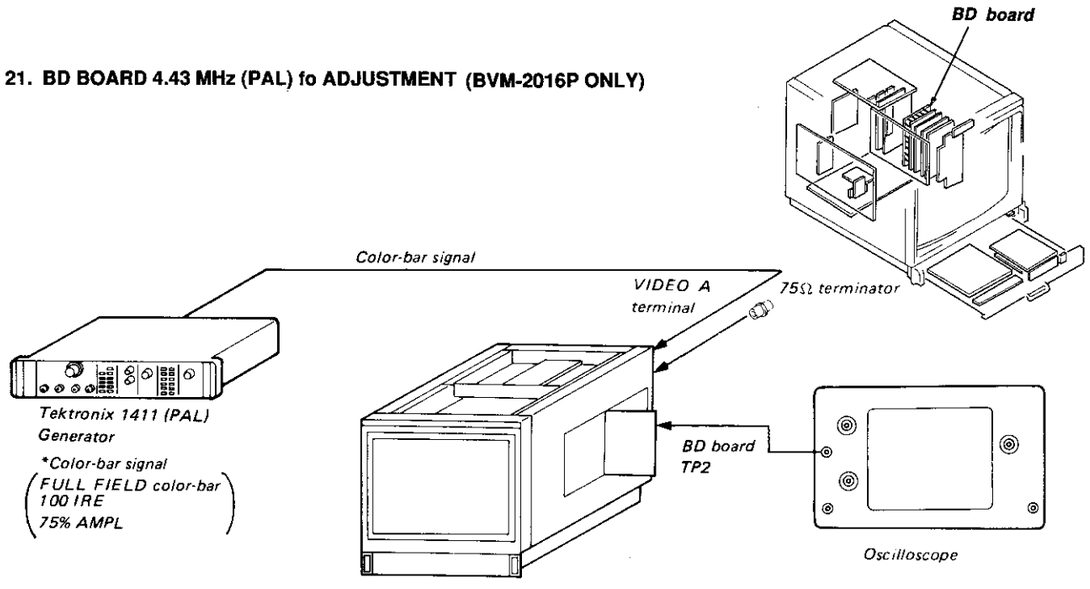
BG board



SUB CONTROL PANEL (HY board)



21. BD BOARD 4.43 MHz (PAL) fo ADJUSTMENT (BVM-2016P ONLY)



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BD board.
3. Short-circuit between TP11, 12 of BD board with a jumper wire.
4. Adjust CV2 of BD board so that the output waveform is shifted slowly as shown in Fig. 21-1.
5. Turn off the power of this monitor, and disconnect TP11, 12 of BD board.

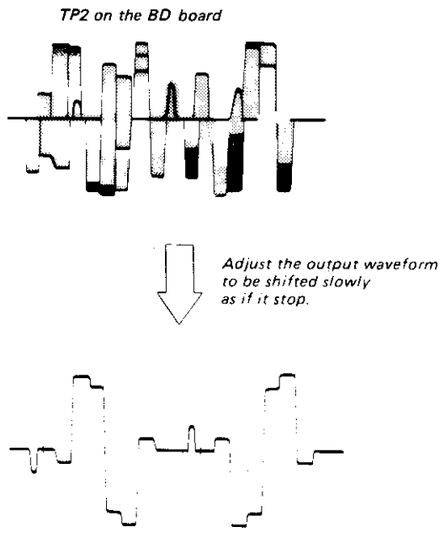
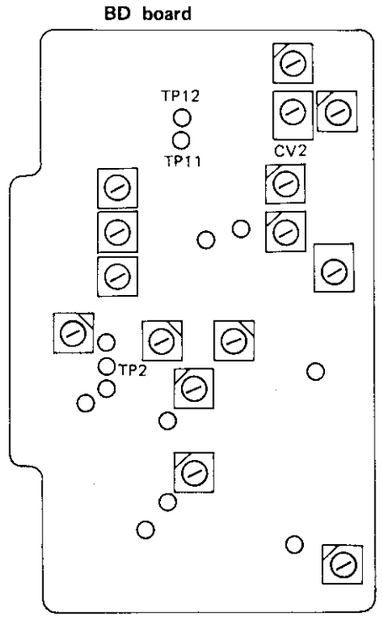


Fig. 21-1



22. BD BOARD (PAL) COLOR DIFFERNCE PHASE ADJUSTMENT (BVM-2016P ONLY)

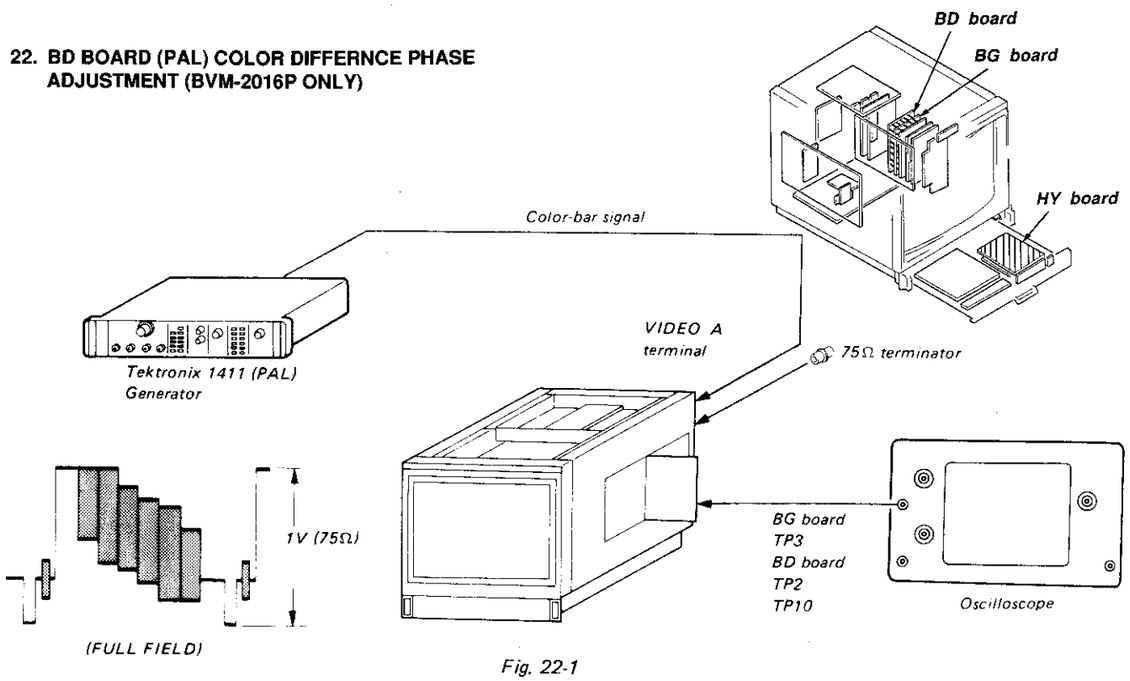


Fig. 22-1

1. Complete the connections as shown in Fig. 22-1.
2. Turn on the power of this monitor. Set the INPUT switch to the 1 position, the SYNC switch to the INT position, and the PAL S/SECAM F/COMB S button to the ON.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the U (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV8 on the BD board so that the output waveform is flat. (See Fig. 22-2.)

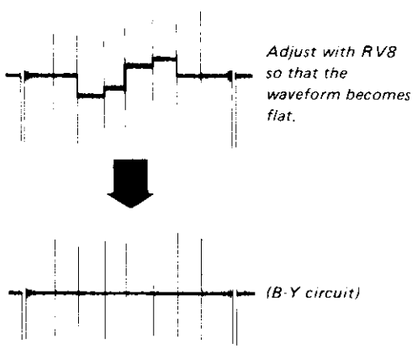
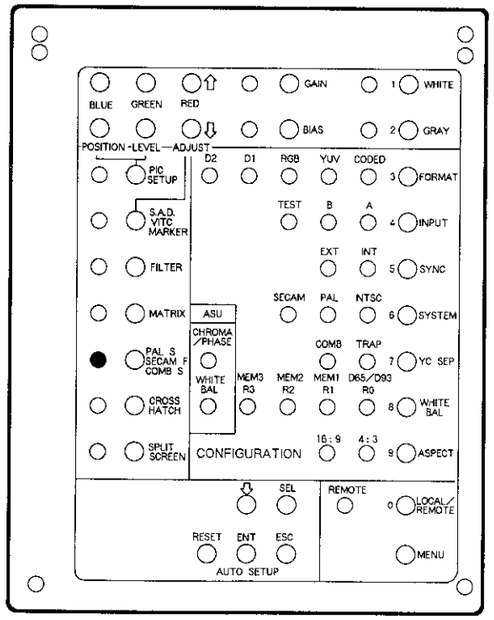


Fig. 22-2

SUB CONTROL PANEL (HY board)



Quad Adjustment

5. Connect the oscilloscope probe to TP on the BD board. Turn on the U signal of the signal generator, and turn off the V (R-Y) signal. Then adjust CV1 on the BD board so that the output waveform is flat. (See Fig. 22-3.)
6. Repeat the steps 3 to 6.

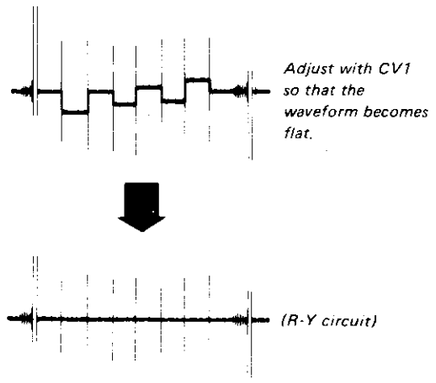
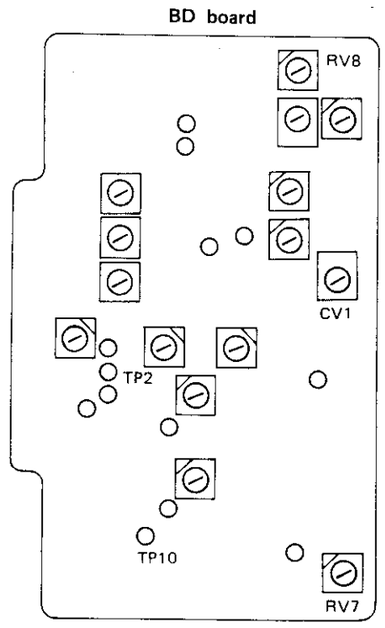
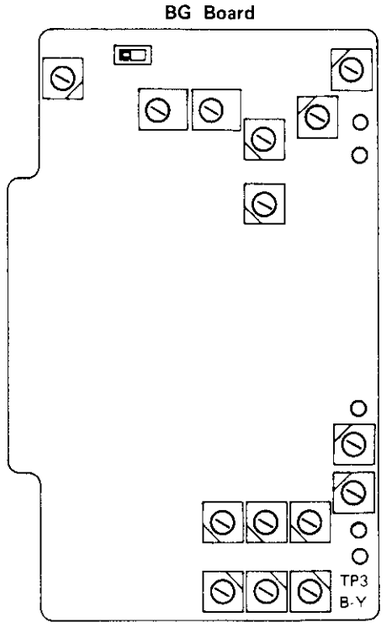


Fig. 22-3

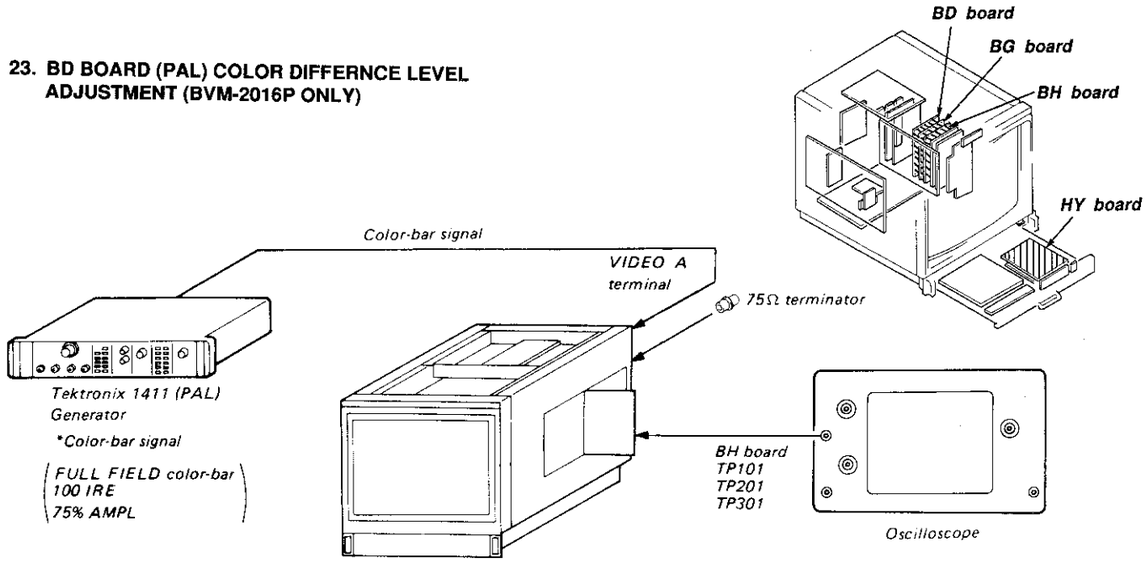


PAL-D Phase Adjustment

7. Set the PAL S/SECAM F/COMB S button to the OFF and turn on the V signal of the signal generator, and turn off U signal.
8. Connect the oscilloscope probe to TP10 on the BD board.
9. Adjust RV7 on the BD board so that the output waveform is flat. (See Fig. 22-2.)
10. Finally, perform the adjustments of 3 and 4 by directly mounting the BD board to the set, without using the extension board.

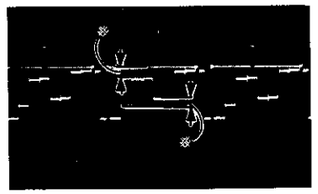


23. BD BOARD (PAL) COLOR DIFFERNCE LEVEL ADJUSTMENT (BVM-2016P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL)····· ON

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP101 of BH board.
3. Adjust RV3 of BD or BM board so that the levels with ※ is flat as shown in Fig. 23-1.

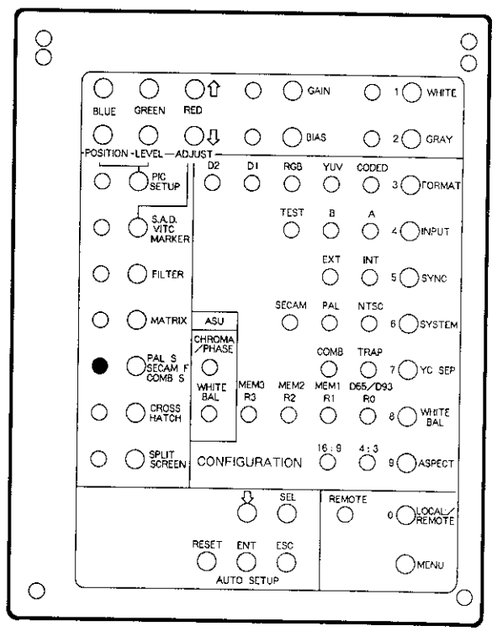


TP101 R OUT

* *Adjust the levels with ※ to be flat respectively useing RV3 of BD board*

Fig. 23-1

SUB CONTROL PANEL (HY board)



4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV4 of BD board so that the output waveform as shown in Fig. 23-2.

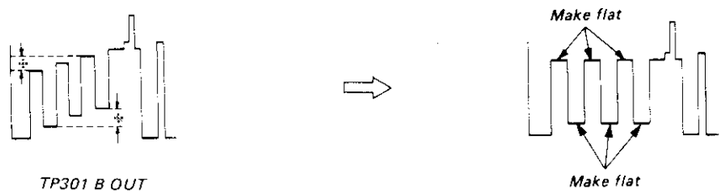
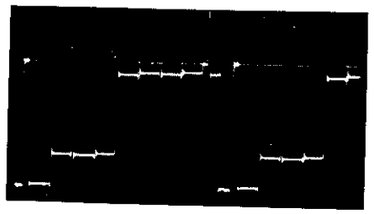


Fig. 23-2

6. Connect an oscilloscope to the TP201 of BH board.
7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 23-3.



TP201 G OUT

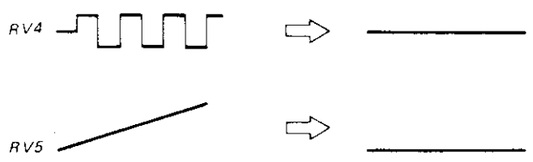
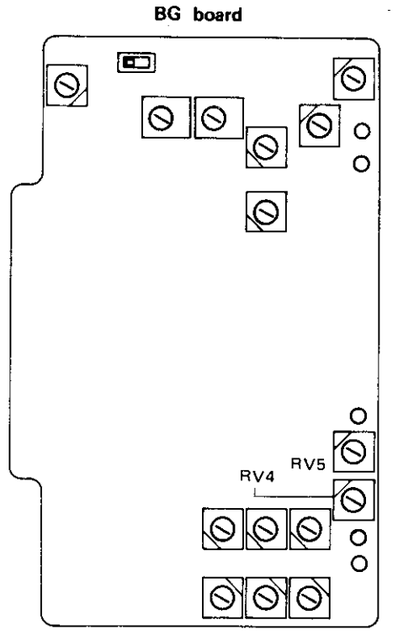
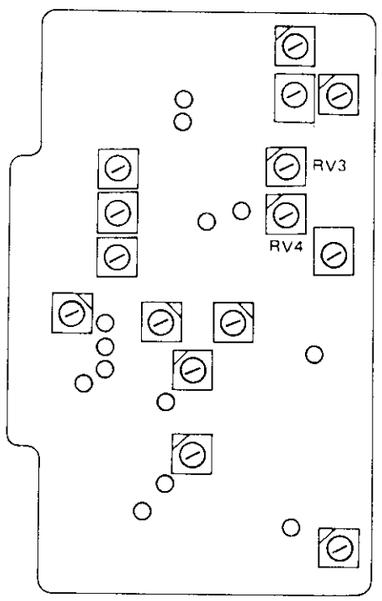


Fig. 23-3

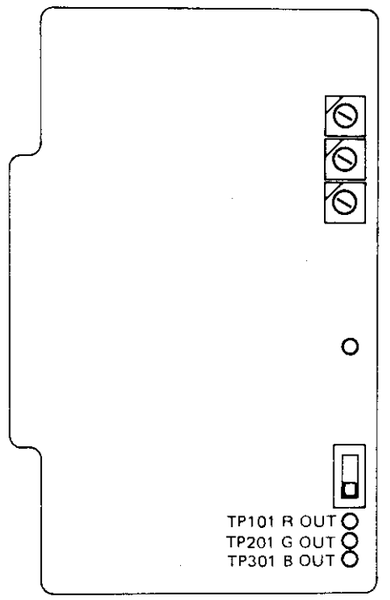
BG board



BD board



BH Board



24. BD BOARD (PAL) PAL-D GAIN AND CCD BIAS ADJUSTMANT (BVM-2016P ONLY)

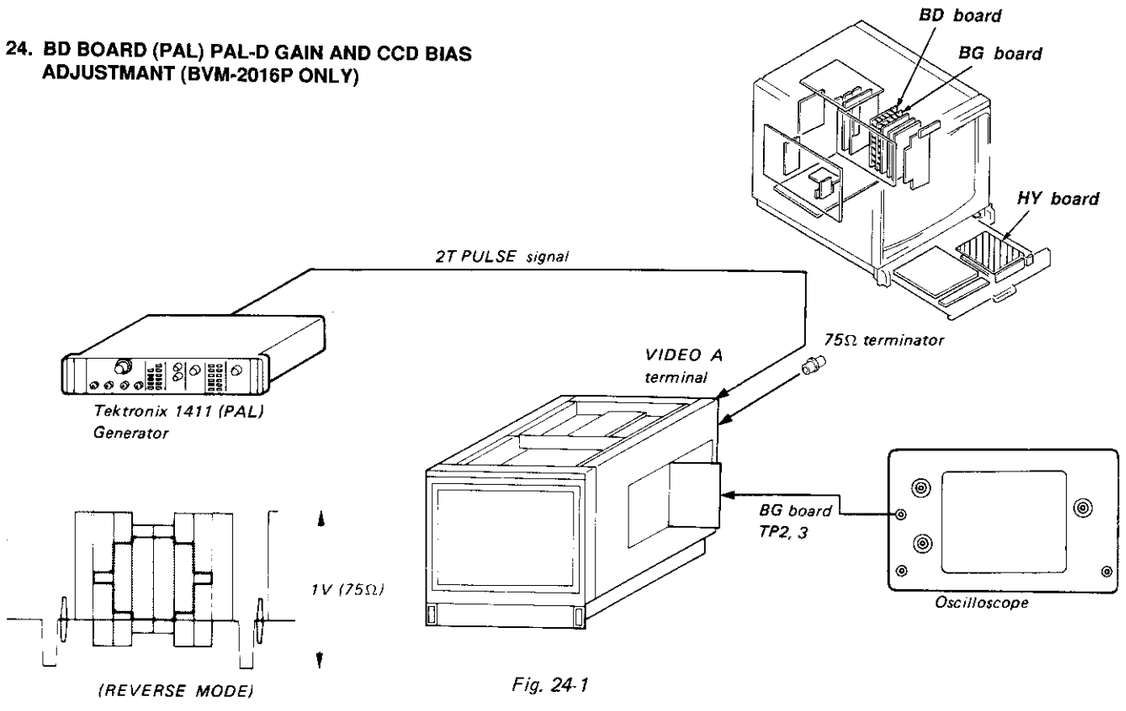


Fig. 24-1

- PAL S/SECAM F/COMB S button (SUB CONTPOL PANEL) ..... OFF

1. Complete the connection as shown in Fig. 24-1. Turn on the power of this monitor. Set the INPUT switch to the 1 position, and the SYNC switch to the INT position.
2. Connect the oscilloscope probe to TP2 on the BG board.
3. Turn RV5 and RV6 on the BD board fully clockwise.
4. By observing the waveform shown in Fig. 24-2, adjust RV9 on the BD board so that it becomes A=B.
5. Adjust RV5 on the BD board so that the waveform shown in Fig. 24-2 becomes flat.
6. Connect the probe of the oscilloscope to TP3 on the BG board and observe the section shwon in Fig. 24-3.
7. Adjust RV10 on the BD board so that the waveform of the oscilloscope becomes A=B.
8. Adjust RV6 on the BD board so that the waveform shown in Fig. 24-3 becomes flat.

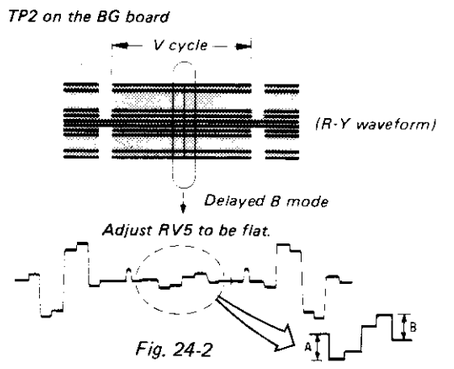


Fig. 24-2

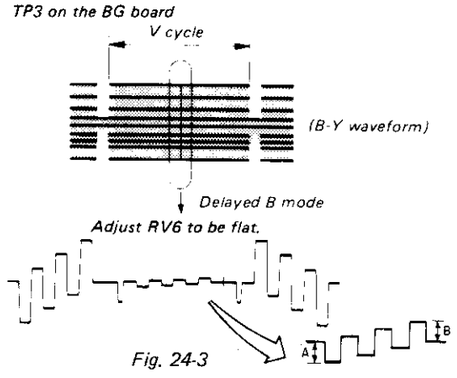
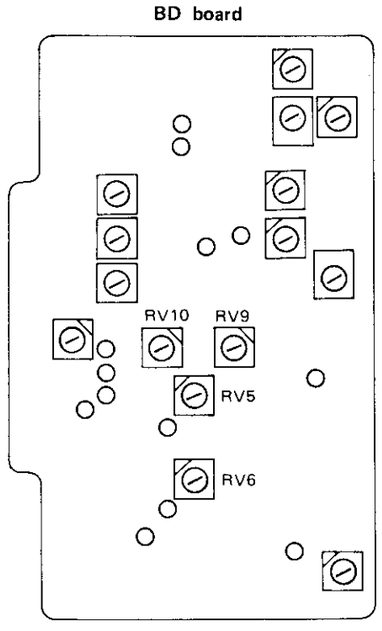
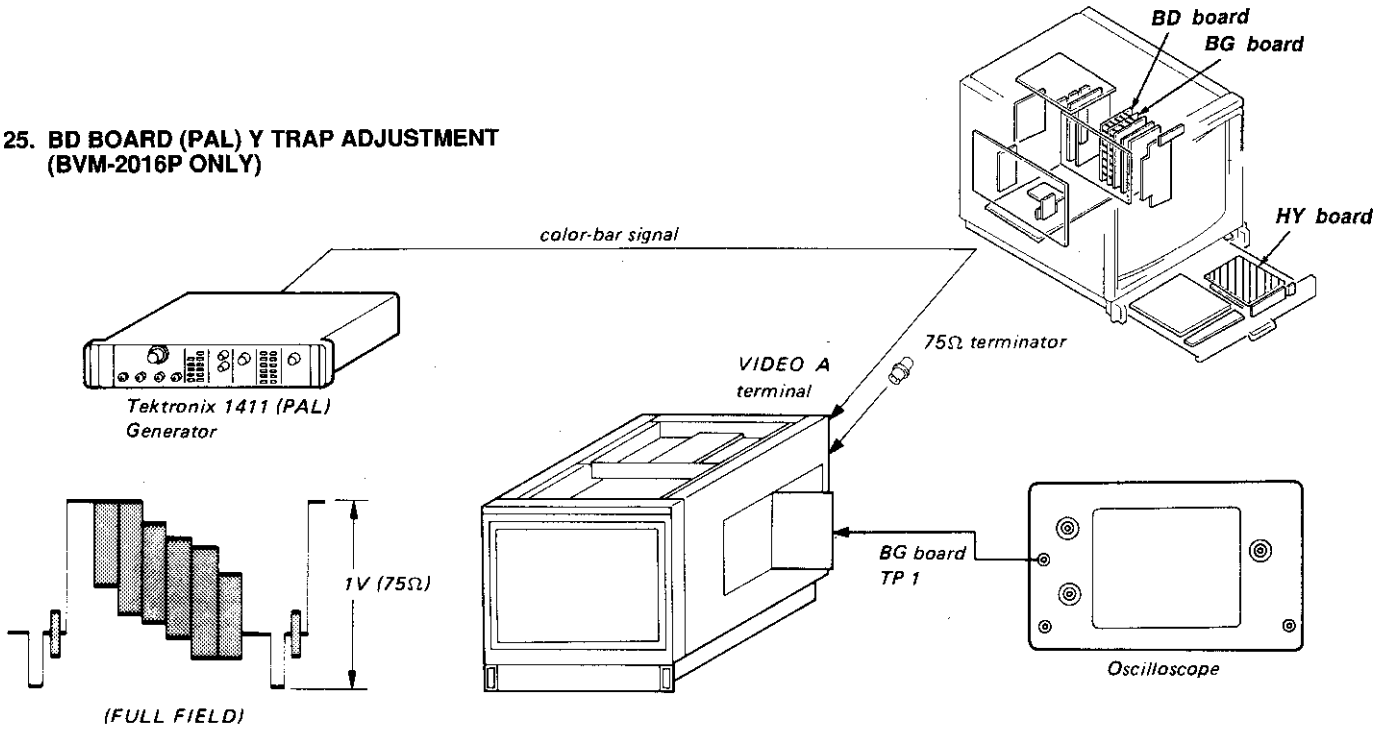


Fig. 24-3



25. BD BOARD (PAL) Y TRAP ADJUSTMENT (BVM-2016P ONLY)



1. Input color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. **Adjust L1 of BD board so that 4.43 MHz (PAL) subcarrier is minimum as shown in Fig. 25-1.**

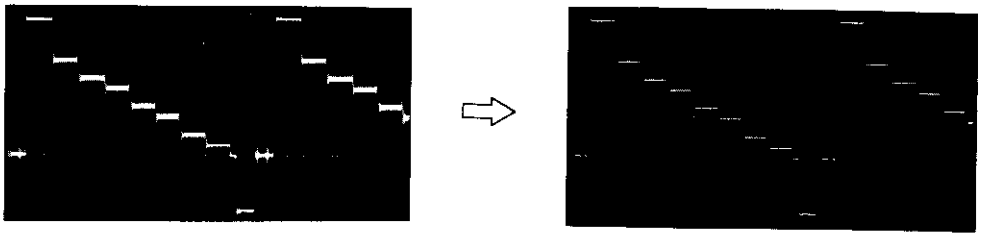
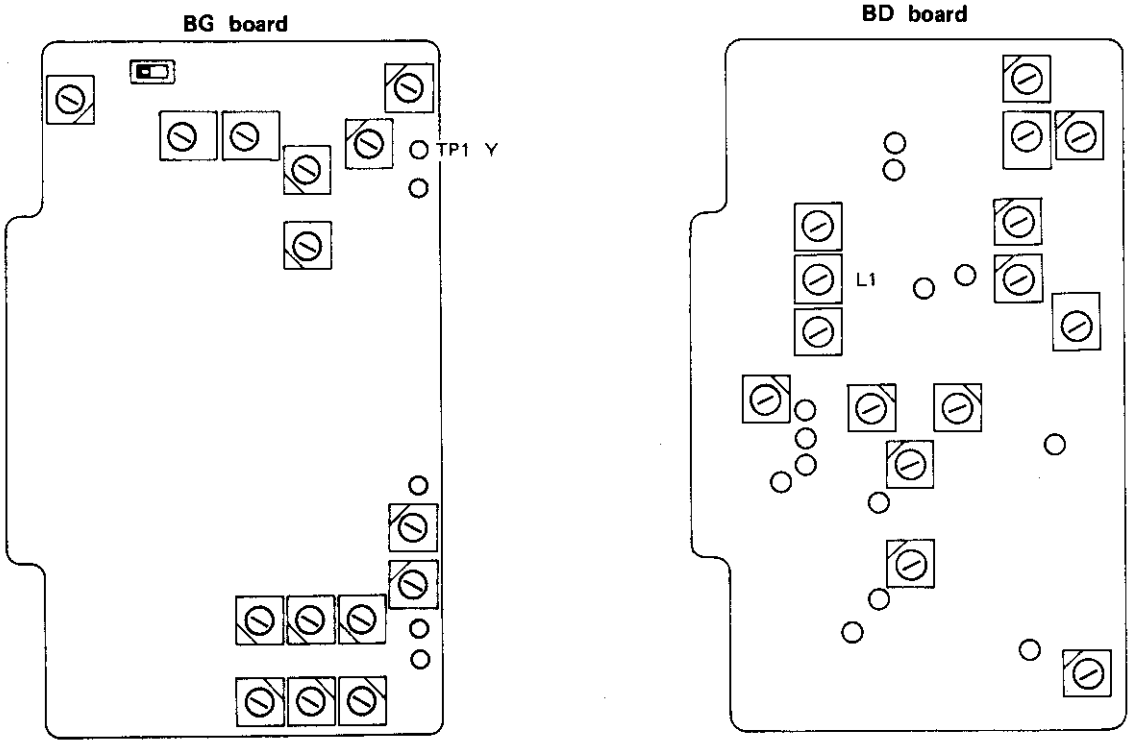
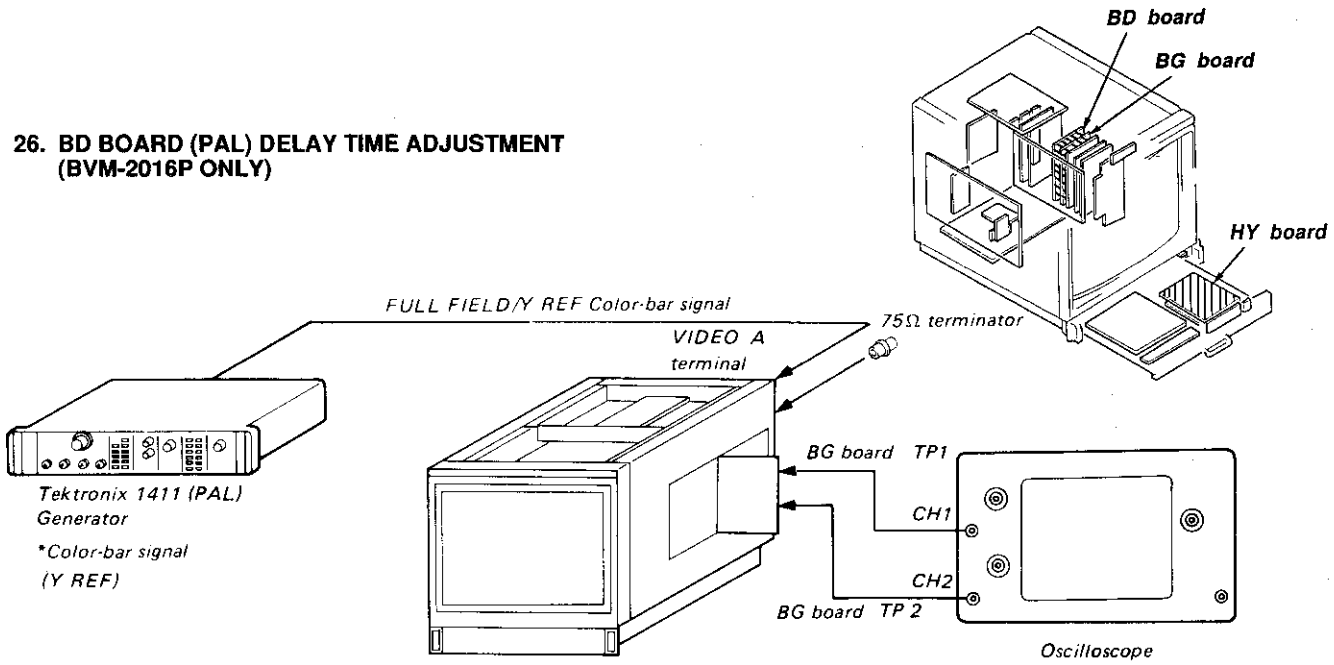


Fig. 25-1



26. BD BOARD (PAL) DELAY TIME ADJUSTMENT (BVM-2016P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTPOL PANEL) ..... ON

1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BD board so that output waveform as shown in Fig. 26-1.

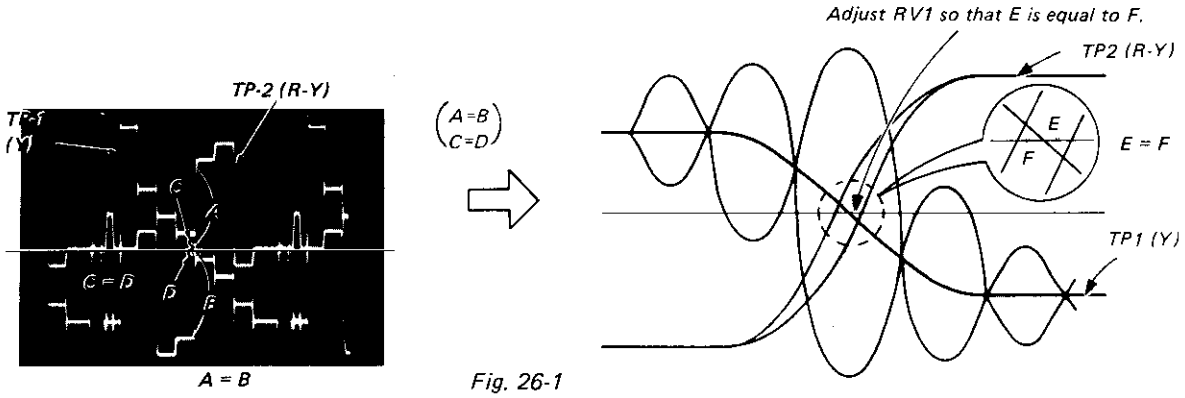
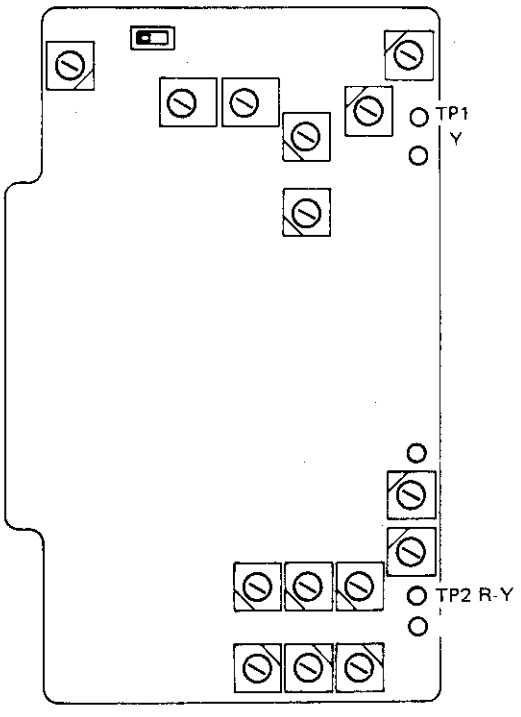
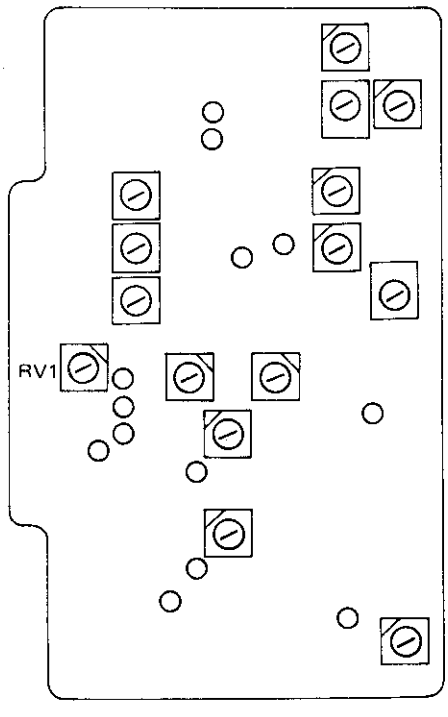
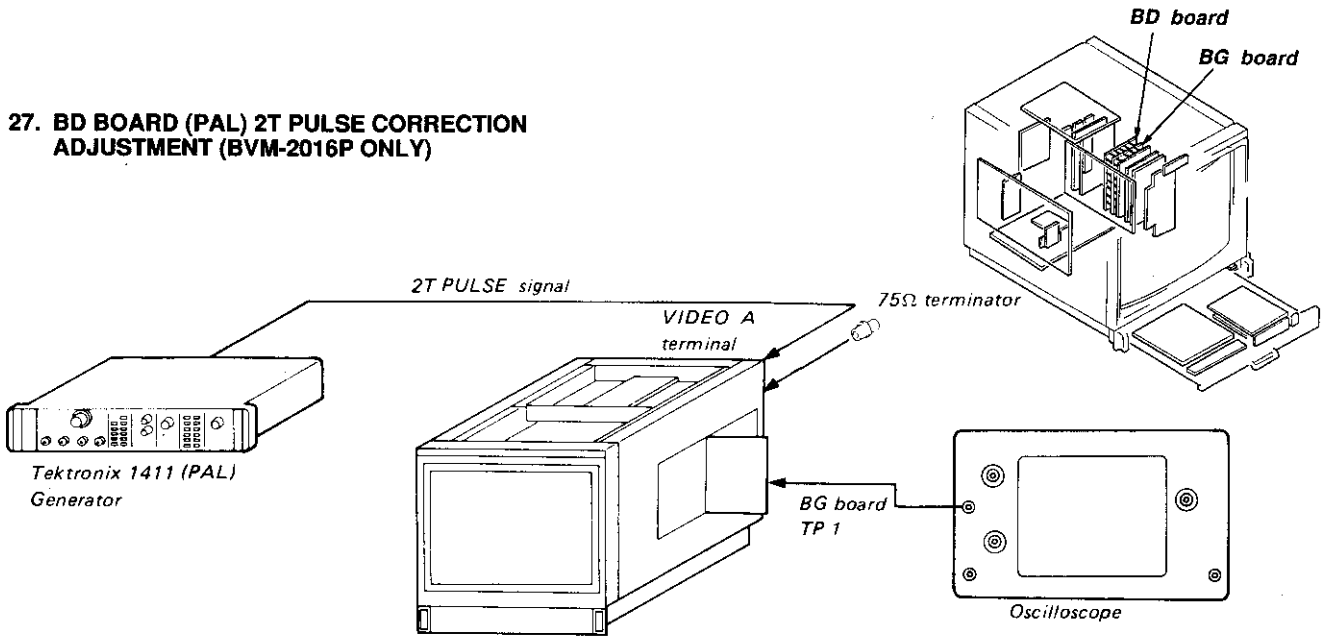


Fig. 26-1





27. BD BOARD (PAL) 2T PULSE CORRECTION ADJUSTMENT (BVM-2016P ONLY)



1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BD or BM board so that A is equal to B as shown in Fig. 27-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 27-1.

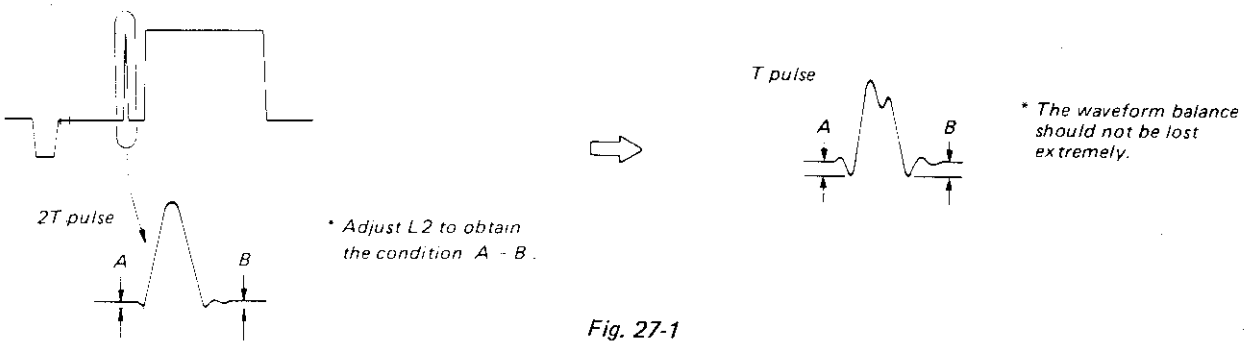
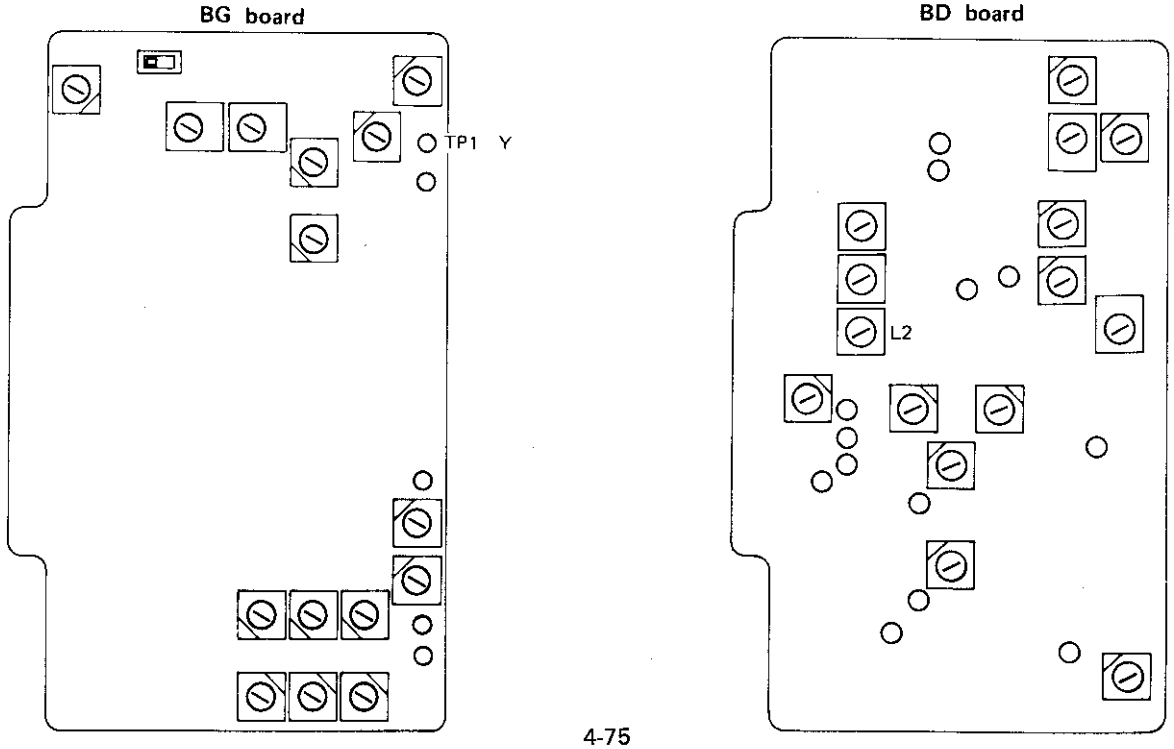
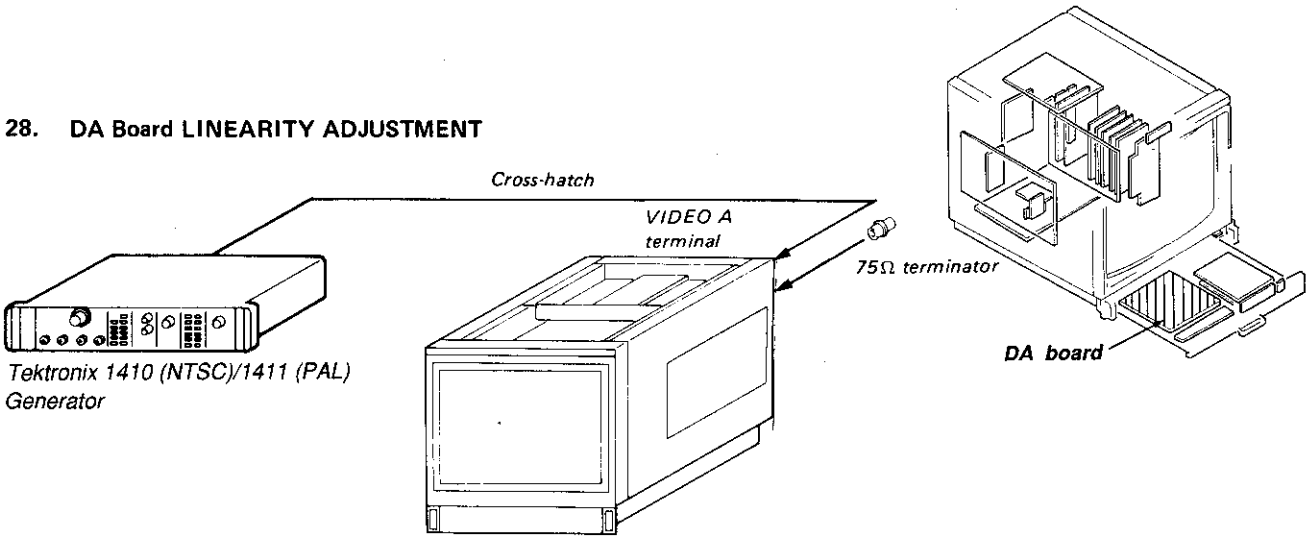


Fig. 27-1

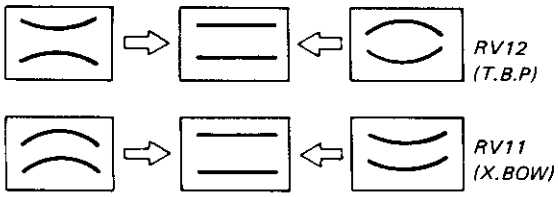


28. DA Board LINEARITY ADJUSTMENT



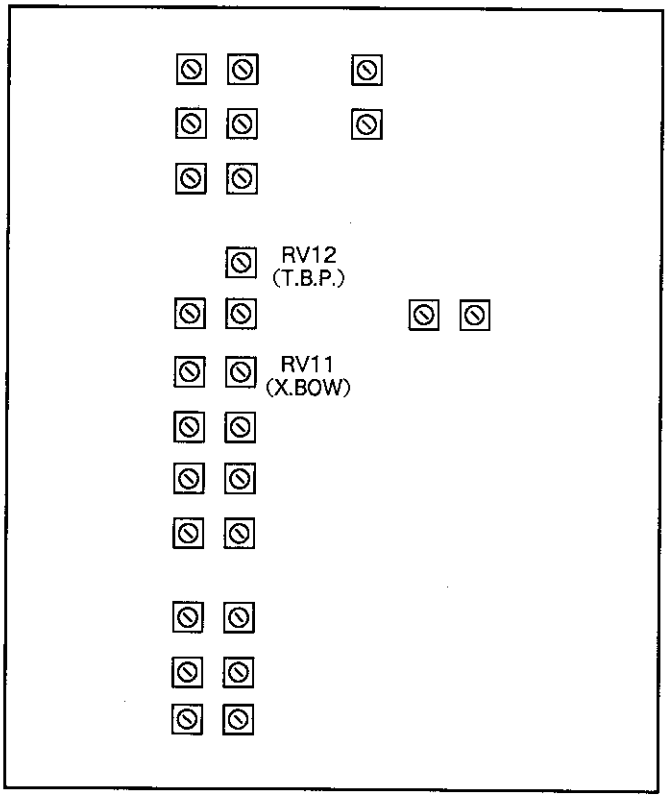
• Vertical Pincushion Adjustment

1. Input only the H line of cross-hatch signal.
2. Minimize the X.BOW distortion with X.BOW (RV11) on the DA board as shown in third from the top of Fig. 28-1.
3. Minimize the T and B pincushion distorion gain with T.B.P (RV12) on the DA board as shown in second from the top of Fig. 28-1.

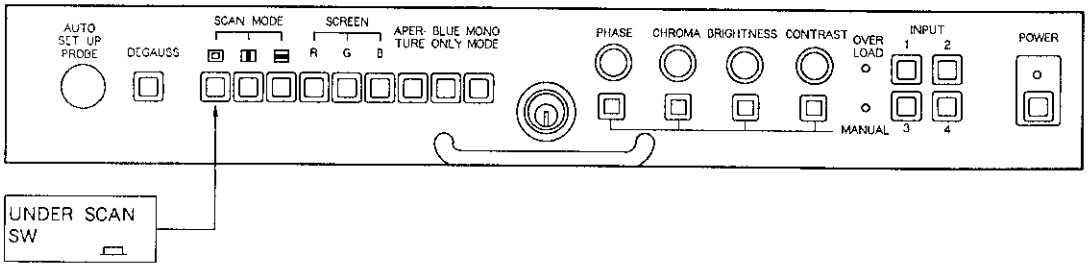


DA board

Fig. 28-1



FRONT PANEL



• Vertical Lineality Adjustment

1. Input only the H line of cross-hatch signal.
2. Adjust V center with V.CENTER (RV10) on the DA board.
3. Adjust the balance of V lineality with V.LB (RV9) on the DA board as shown in Fig. **28-2.**
4. Adjust the gain of V lineality with V.LG (RV8) on the DA board as shown in Fig. **28-3.**
5. Adjust the V.HEIGHT with V.H.N (RV3) on the DA board.
6. Mark tracking by repeating step 3. through 5.

RV9 ..... V LIN BALANCE

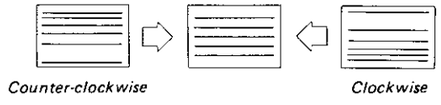


Fig. 28-2

RV8 ..... V LIN GAIN

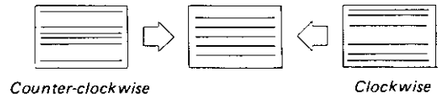


Fig. 28-3

Side Pincushion Adjustment

1. Input only the V line of cross-hatch signal.
2. Minimize the Y.BOW distortion with Y.BOW (RV13) on the DA board as shown in Fig. **28-7.**
3. Minimize the Y.TILT distortion with Y.TILT (RV25) on the DA board is shown in Fig. **28-7.**
4. Minimize the side pincushion distortion with S.P.N (RV5) on the DA board as shwon in Fig. **28-4.**
5. Minimize the side pincushion tilt distortion with S.P.T (RV7) on the DA board as shown in Fig. **28-5.**
6. Set the SCAN selector to UNDER position.
7. Minimize the side pincushion distortion with S.P.U (RV6) on the DA board as shown in Fig. **28-4.**

RV5 (S.P.N)
RV6 (S.P.U)

Fig. 28-4

RV7 (S.P.T)

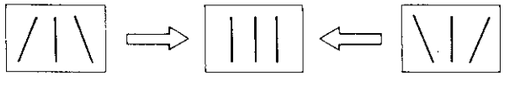


Fig. 28-5

RV25 (Y.TILT)

Fig. 28-6

RV13 (Y.BOW)

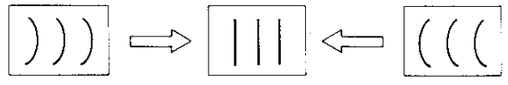


Fig. 28-7

• Horizontal Lineality Adjustment

1. Input only the V line of cross-hatch signal.
2. Adjust the horizontal centering with H CENTER (RV14) on the DA board.
3. Adjust the balance of H.lineality with H.L.B (RV22) on the DA board as shown in Fig. 28-8.
4. Adjust the gain of H.lineality with H.L.G (RV21) on the DA board as shown in Fig. 28-9.
5. Adjust the H.WIDTH with H.W.N (RV1) on the DA board.
6. Mark tracking by repeating step 3. through 5.
7. Set the SCAN selector to UNDER position.
8. Adjust the H.WIDTH with H.W.U (RV2) on the DA board.

RV28 (H.L.B)

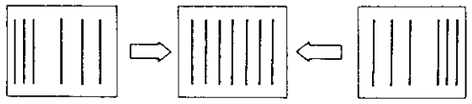


Fig. 28-8

RV27 (H.L.G)

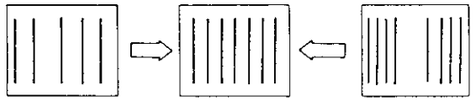
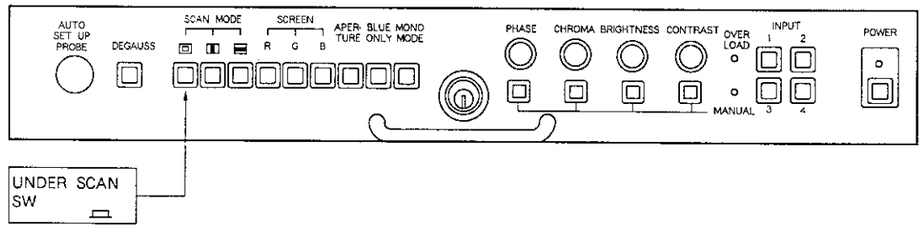
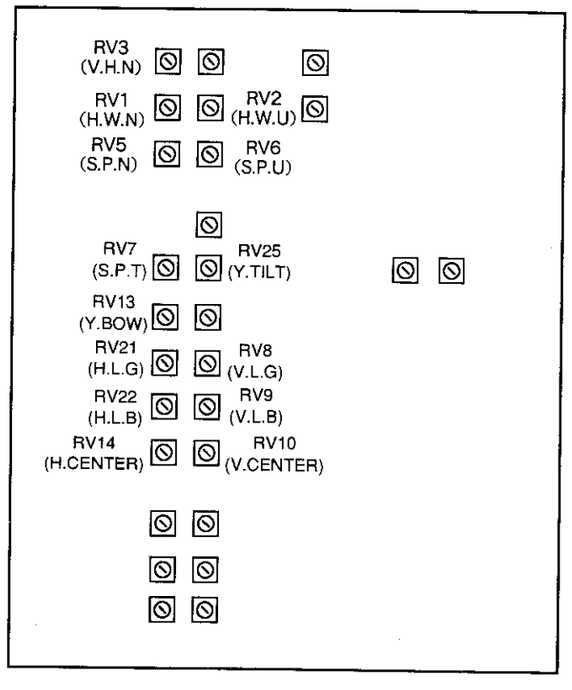


Fig. 28-9

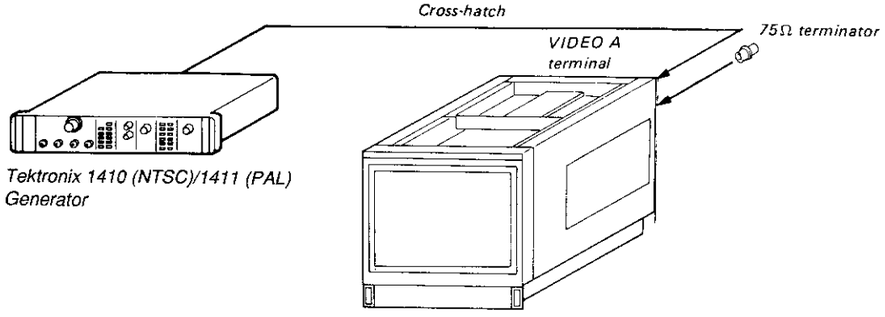
FRONT PANEL

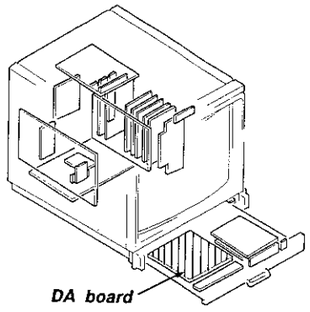


DA board



29. DA, DB Board LINEARITY ADJUSTMENT





• H.OSC Free-run Adjustment

1. Set the SYNC button to EXT.
2. Adjust H.FREQ. (RV202) on the DB board until the picture movement is still or slow.

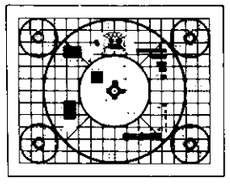


Fig. 29-1

3. Adjust H.PHASE (RV201) on the DB board for both sides of raster width without signal component coincidence.

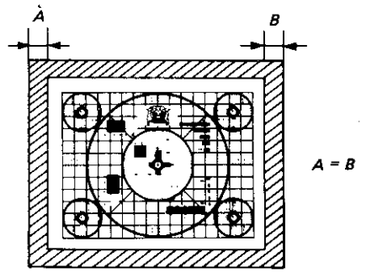


Fig. 29-3

• Horizontal Phase and Horizontal Blanking Adjustments

1. Set the SCAN seiector to UNDER position.
2. Turn the horizontal blanking controls H.BLK.R fully clockwise and H.BLK.L fully counterclockwise. (When the raster at both sides of screen are not appear completely, turn H.W.U (RV2) until obtaining the raster.)

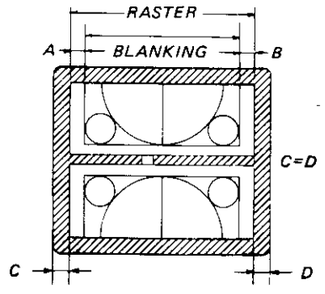


Fig. 29-2

4. Adjust H.BLK.R/H.BLK.L (RV24 and RV23) on the DA board so that the raster width without signal component become half.

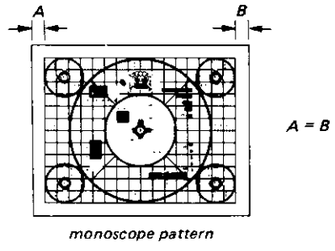
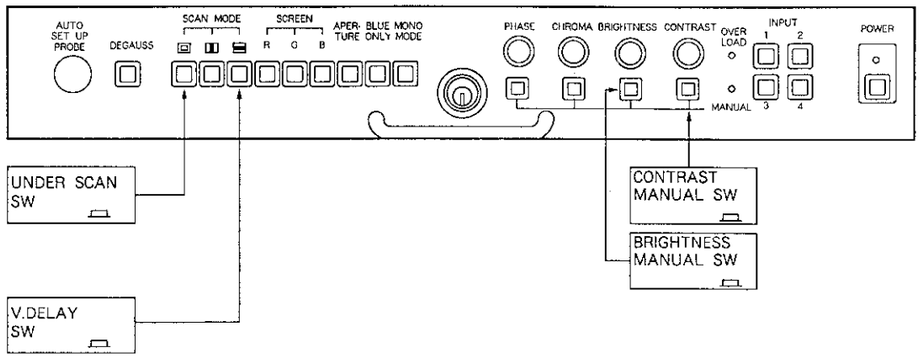
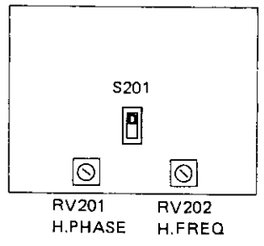


Fig. 29-4

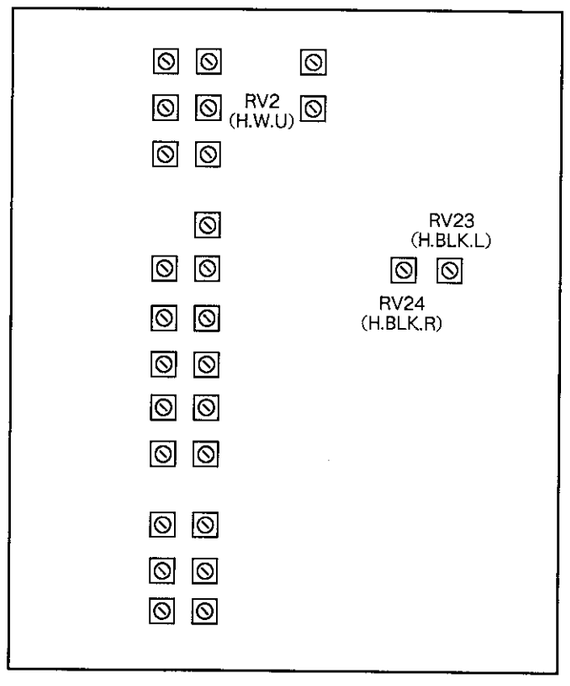
FRONT PANEL



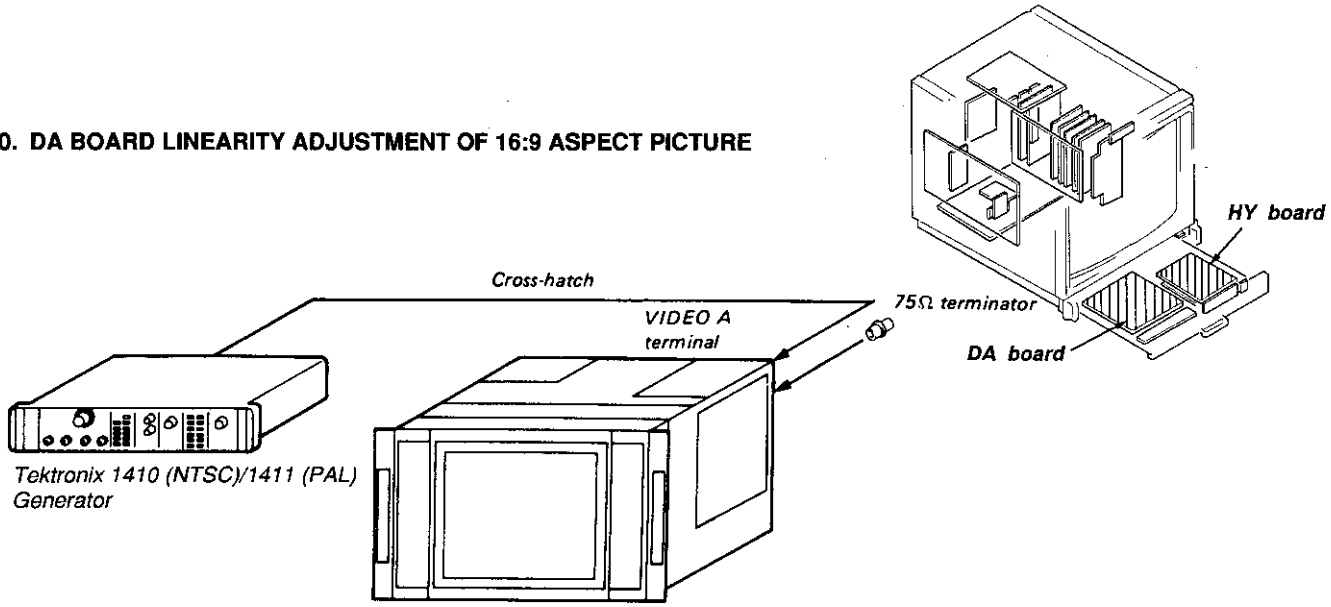
DB board



DA board



30. DA BOARD LINEARITY ADJUSTMENT OF 16:9 ASPECT PICTURE



1. ASPECT button (SUB CONTROL PANEL) 16:9

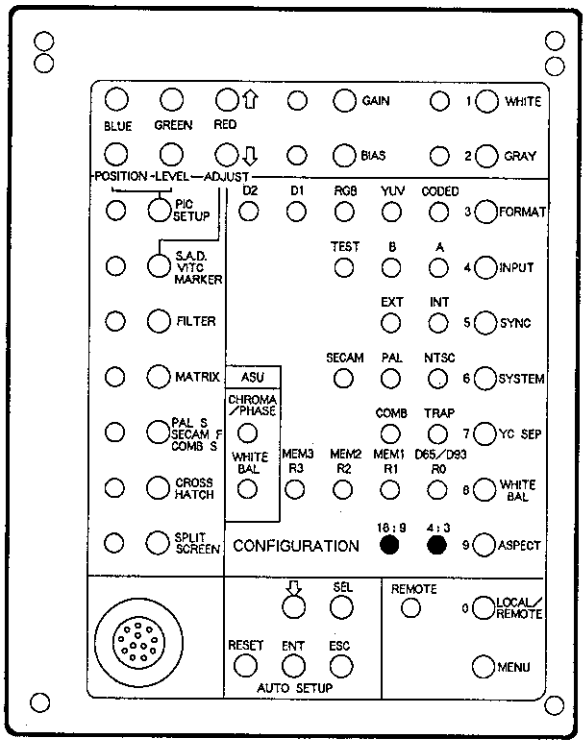
•Vertical Lineality Adjustment

1. Adjust the H. WIDTH with H. W (RV31) on the DA board.

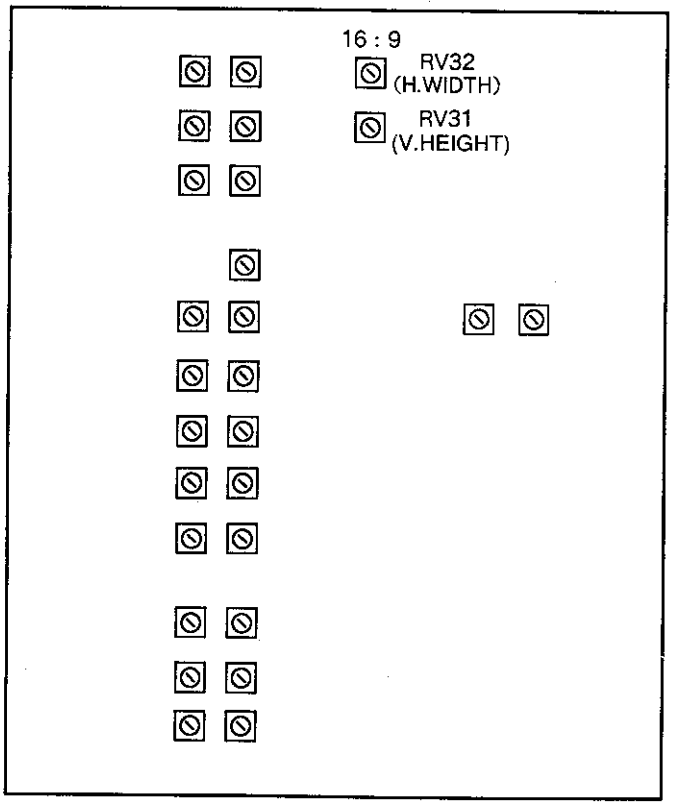
•Horizontal Lineality Adjustment

1. Adjust the V. HEIGHT with V.H (RV32) on the DA board.

SUB CONTROL PANEL (HY board)

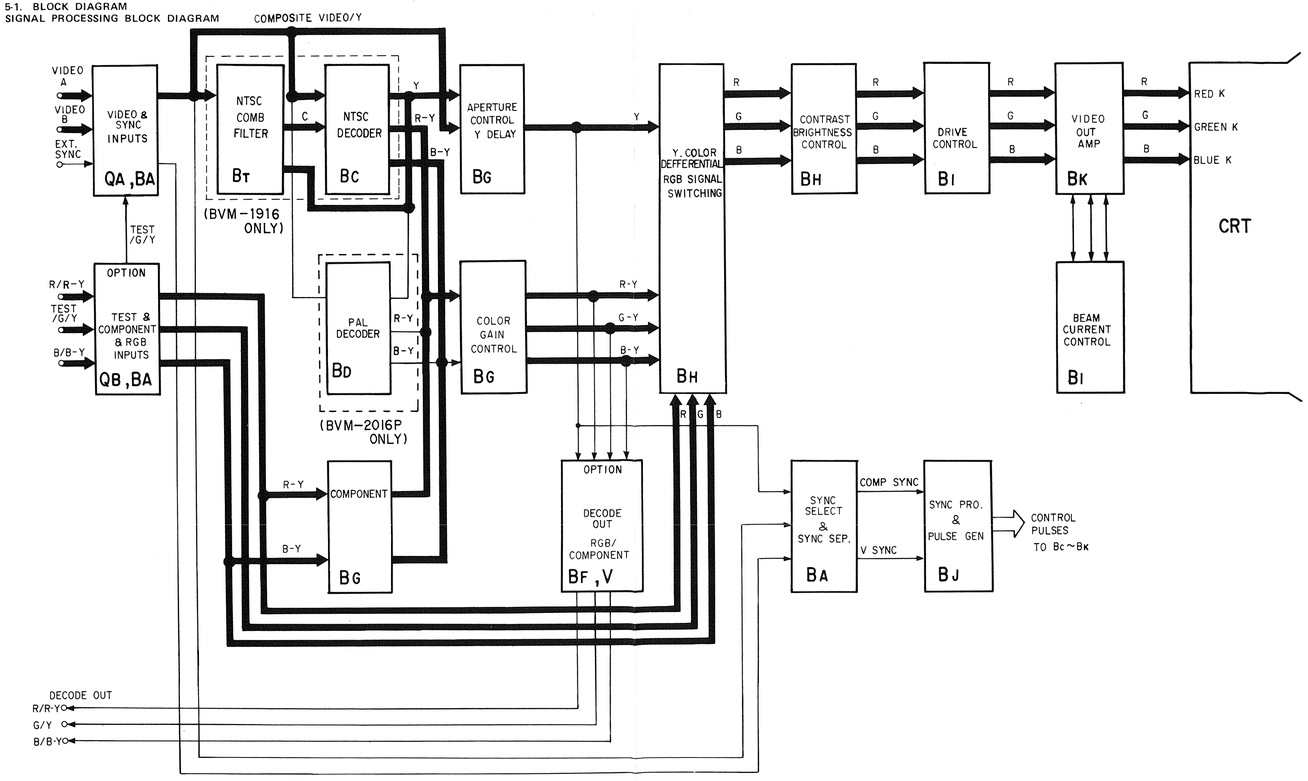


DA board



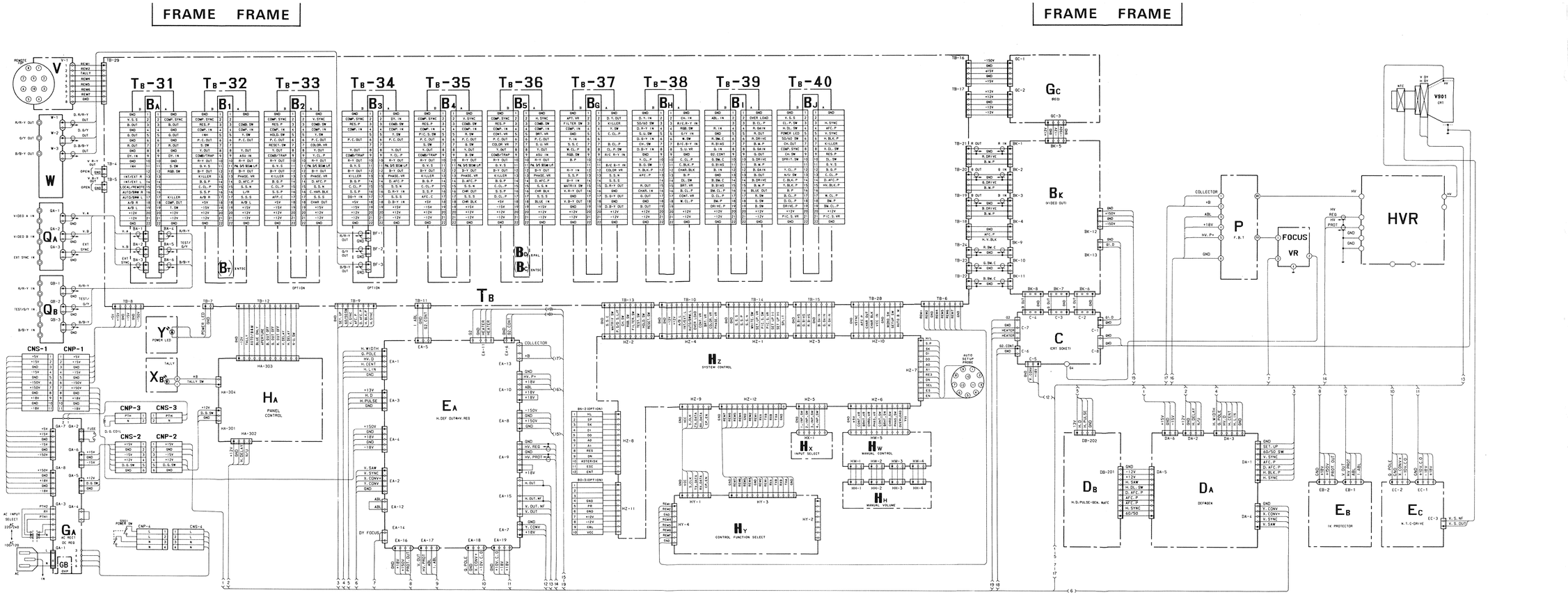
SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM
SIGNAL PROCESSING BLOCK DIAGRAM



BLOCK DIAGRAM BLOCK DIAGRAM

5-2. FRAME WIRING DIAGRAM



5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note:

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

Note: Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critiques pour la sécurité. Ne les remplacer que par des pièce de numéro spécifié.

- All capacitors are in µF unless otherwise noted. p : µµF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/10W on the BT, DC, HY and HZ boards and 1/4W on the rest of the boards unless oterwise specified.
  kΩ = 1000Ω, MΩ = 1000kΩ
- METAL FILM (:RN) resistors in 1%, 1/4 W unless otherwise secified.
- ▭ : nonflammable resistor.
- △ : internal component.
- ⏚ : direct connection to points marked ⏚ on the chassis
- ▭ : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ◪ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

  When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⧓ and repeat the adjustment until the specified value is achieved.
  Refer to R52, R53, R67, R68, R73, R75, R106, R108, R115 and R135.
  Adjust on page 4-11 ~ 4-16.
- When replacing the part in below table, be sure to parform the related adjustment.

Part replaced (◪)	Adjustment (⧓)
IC3, C59, R67, R68, R78, RV2 (GA board)	B+ MAX CONFIRMATION (R67, R68) Page 4-11.
Q13, Q14, R52, R53 (GA board) Q3, Q4, Q5, D5, D6, D7, D8, R4, R5, R19, R20, R21, R22 (GB boad)	B+ PROTECTER (R52, R53) Page 4-11.
IC2, IC3, R61, R62, R71, R71, R72, R73, R74, R75, R88, RV1 (EA board) HVR	HIGH VOLTAGE REGULATOR CONFIRMATION (R73, R75) Page 4-14, 15.
IC4, D24, D25, D27, R89, R90, R102, R103, R104, R105, R106, R107, R108, R111, R152 (EB board) HVR	HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION (R106, R108) Page 4-14.
IC4, D24, D26, D27, R89, R90, R102, R103, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R153 (EB board) FBT (P board)	BEAM CURRENT PROTECOR-1 CONFIRMATION (R115) Page 4-15, 16.
IC6, D29, D51, R122, R123, R124, R130, R131, R132, R133, R134, R135, R136, R137, R138, R140, R141 (EB board) FBT (P board)	BEAM CURRENT PROTECOR-2 CONFIRMATION (R135) Page 4-16.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE WIREWOUND
	: 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
	: AIR	HIGH RIPPLE

- ▭ : adjustment for repair.
- ▭ : B+ bus.
- ▭ : B- bus.
- Circled numbers are waveform references.
- Waveforms are taken with a color-bar signal input and with a 75Ω terminator connected to an open terminal.
- Switches and controls are as set as follows unless otherwise noted.

- Switches and controls are as set as follows unless otherwise noted.

FRONT PANEL

◦ INPUT selector	i	HX board
◦ CONTRAST MANUAL switch	PRESET	HW board
◦ BRIGHTNESS MANUAL switch	PRESET	
◦ CHROMA MANUAL switch	PRESET	
◦ PHASE MANUAL switch	PRESET	
◦ SCAN MODE switch		
▣ UNDER SCAN	NOR	
▥ H. DELAY	NOR	
▤ V. DELAY	NOR	
◦ SCREEN switch (R)	NOR	HA board
◦ SCREEN switch (G)	NOR	
◦ SCREEN switch (B)	NOR	
◦ APT switch	NOR	
◦ BLUE ONLY switch	NOR	
◦ MODE selector	AUTO	

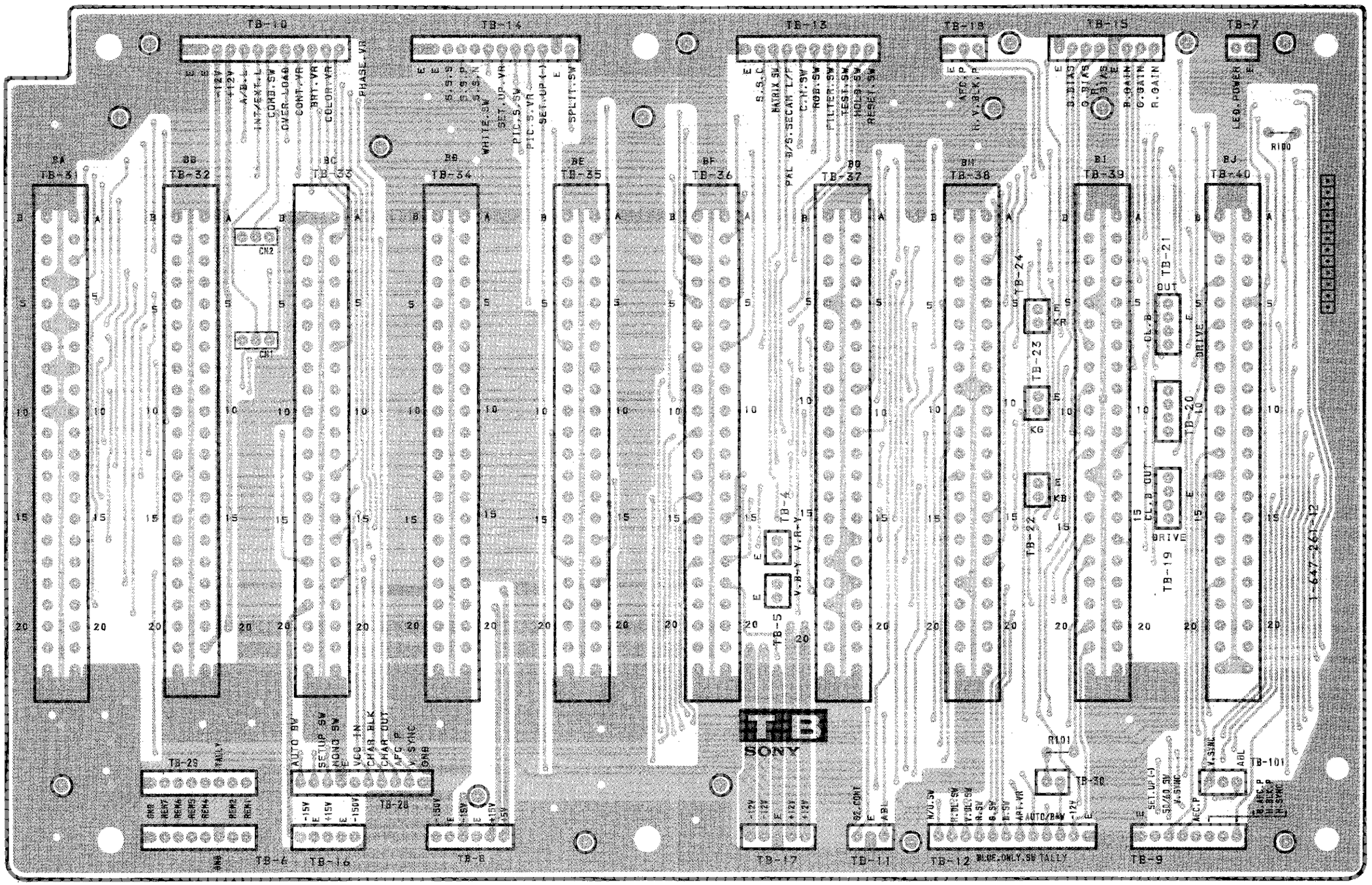
SUB CONTROL PANEL

◦ FORMAT button	CODED	HY board
◦ INPUT button	A	
◦ SYNC button	INT	
◦ COLOR SYSTEM button	NTSC (BVM-1910) PAL (BVM-2010P)	
◦ YC SEP button	COMB (BVM-1910) TRAP (BVM-2010P)	
◦ WHITE BALANCE button	D65/D93	
◦ ASPECT button	4:3	
◦ PIC SETUP button	OFF	
◦ SAD/VITC/MARKER button	OFF	
◦ FILTER button	OFF	
◦ MATRIX button	OFF	
◦ PAL S/SECAM F/COMB C button	ON	
◦ CROSS HATCH button	OFF	
◦ SPLIT SCREEN button	OFF	
◦ WHITE button	OFF	
◦ GRAY button	OFF	
◦ APC switch	2m sec	DA board

Note:

- ▭ : Pattern from the side which enables seeing.
- ▭ : Pattern of the rear side.

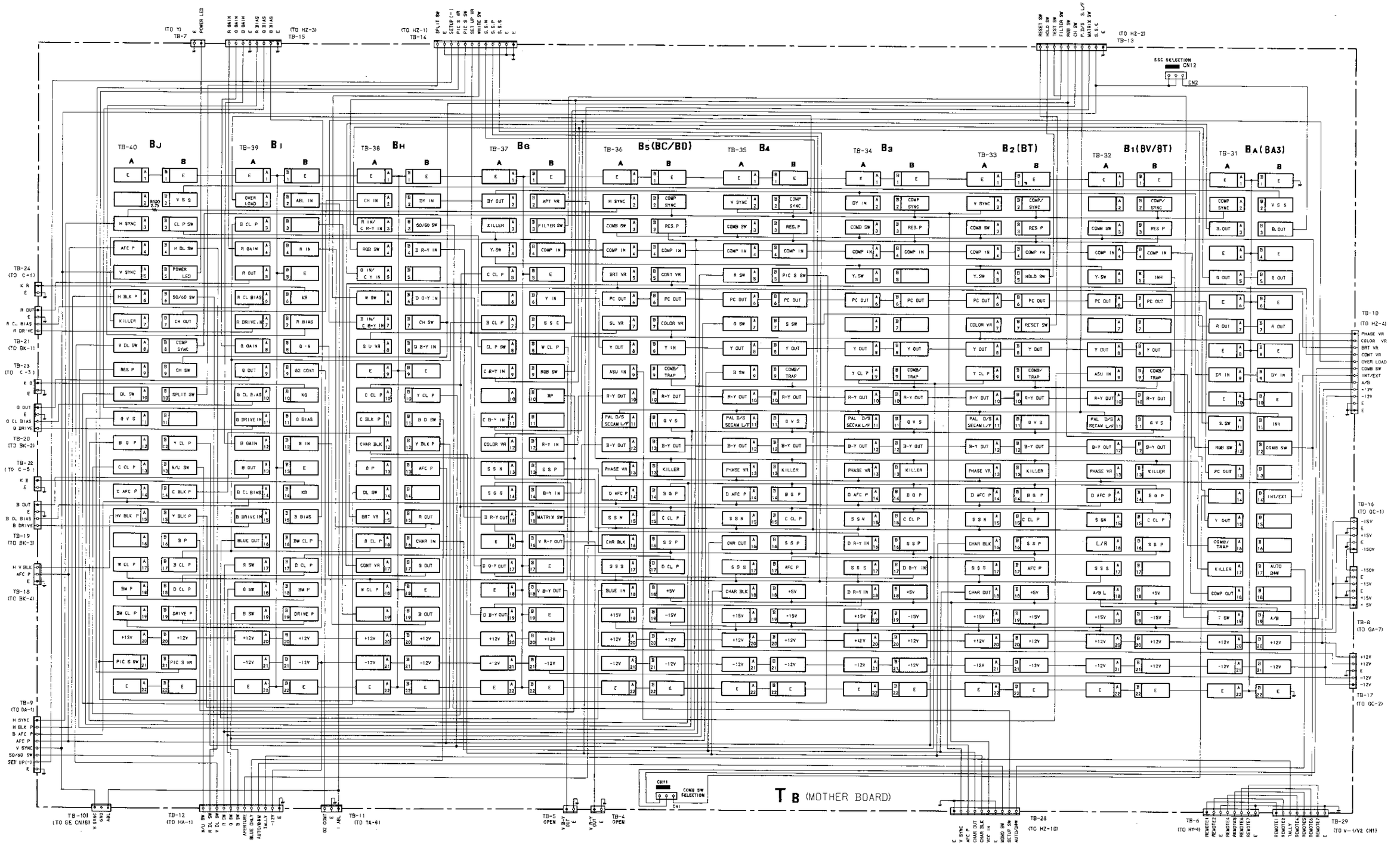
TB board (MOTHER BOARD)



: Pattern from the side which enables seeing.

: Pattern of the rear side.

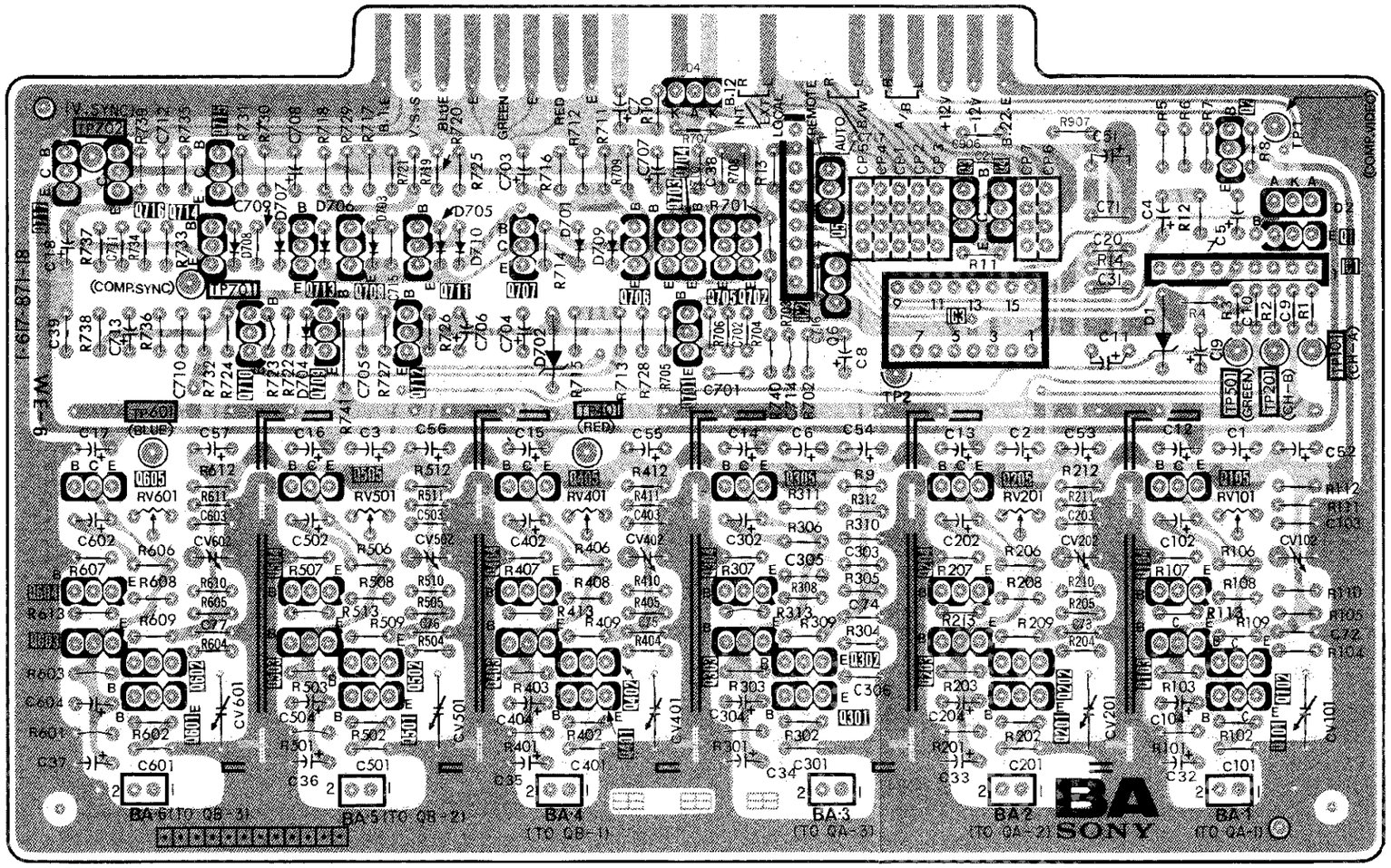
TB board (MOTHER BOARD)



BA BA

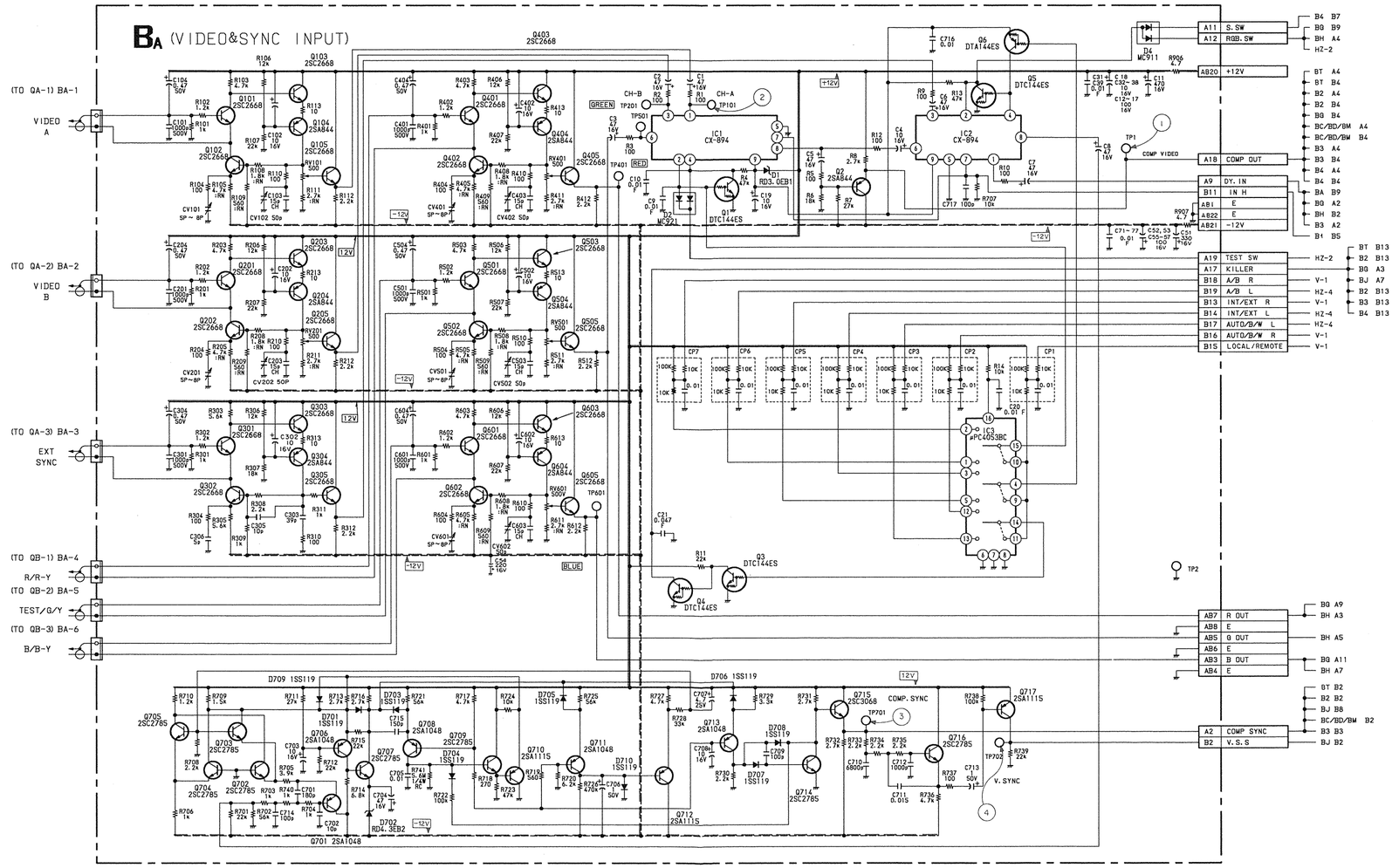
BA board (SYNC SELECT & SYNC SEP, HOOK UP)

IC	2	3	1
Q	717 716 715 714 713 708 711 710 709 712 707 704 706 703 705 702 701 605 604 603 602 601 505 504 503 502 501 405 404 403 402 401 305 304 303 302 301 205 204 203 202 201 105 104 103 102 101	5 6 3 4	2 1
D	708 707 706 704 703 705 710 101 709 702	4	2 1
TP ADJ	TP702 TP601 RV601 CV602 CV601 TP701 RV501 CV502 CV501 TR401 RV401 CV402 CV401 TP2 RV201 CV202 CV201 TP501 RV101 TP1 TP201 TP101 CV102 CV101		



: Pattern from the side which enables seeing.
: Pattern of the rear side.

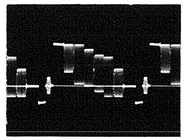
BA board (SYNC SELECT & SYNC SEP, HOOK UP)



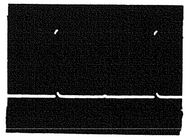
BA BOARD

IC1	CX894	INPUT SELECT
2	CX894	SYNC SELECT
3	MC14053BCP	LOCAL/REMOTE SW
Q1	DTC144ES	INPUT SELECT CONTROL
2	2SA844	BUFF
3	DTC144ES	KILLER
4	DTC144ES	KILLER
5	DTC144ES	SYNC SELECT CONTROL
6	DTA144ES	INT/EXT CONTROL
101	2SC2668	VIDEO A AMP
102	2SC2668	VIDEO A AMP
103	2SC2668	VIDEO A AMP
104	2SA844	VIDEO A AMP
105	2SC2668	VIDEO A AMP
201	2SC2668	VIDEO B AMP
202	2SC2668	VIDEO B AMP
203	2SC2668	VIDEO B AMP
204	2SA844	VIDEO B AMP
205	2SC2668	VIDEO B AMP
301	2SC2668	EXT SYNC AMP
302	2SC2668	EXT SYNC AMP
303	2SC2668	EXT SYNC AMP
304	2SA844	EXT SYNC AMP
305	2SC2668	EXT SYNC AMP
401	2SC2668	R-Y/R AMP
402	2SC2668	R-Y/R AMP
403	2SC2668	R-Y/R AMP
404	2SA844	R-Y/R AMP
405	2SC2668	R-Y/R AMP
501	2SC2668	TEST/Y/G AMP
502	2SC2668	TEST/Y/G AMP
503	2SC2668	TEST/Y/G AMP
504	2SA844	TEST/Y/G AMP
505	2SC2668	TEST/Y/G AMP
601	2SC2668	B-Y/B AMP
602	2SC2668	B-Y/B AMP

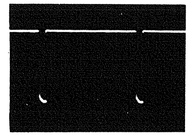
Q603	2SC2668	B-Y/B AMP
604	2SA844	B-Y/B AMP
605	2SC2668	B-Y/B AMP
701	2SA1048	SYNC AGC
702	2SC2785	SYNC AGC
703	2SC2785	SYNC AGC
704	2SC2785	SYNC AGC
705	2SC2785	SYNC AGC
706	2SA1048	SYNC AGC
707	2SC2785	SYNC AGC
708	2SA1048	SYNC AGC
709	2SC2785	SYNC AGC
710	2SA1115	SYNC AGC
711	2SA1048	SYNC AGC
712	2SA1115	SYNC AGC
713	2SA1048	COMP SYNC SEP
714	2SC2785	COMP SYNC SEP
715	2SC3068	COMP SYNC SEP
716	2SC2785	V SYNC SEP
717	2SA1115	V SYNC SEP
D1	RD3 0E-B1	+9V REG
2	MC921	INPUT SELECT CONTROL
4	MC911	SYNC SELECT CONTROL
701	1SS119	SYNC AGC
702	RD4 3E-B2	-7.5V REG
703	1SS119	SYNC AGC
704	1SS119	SYNC AGC
705	1SS119	SYNC AGC
706	1SS119	SYNC AGC
707	1SS119	COMP SYNC SEP
708	1SS119	COMP SYNC SEP
709	1SS119	SYNC AGC
710	1SS119	SYNC AGC



① 1Vp-p (H)
② 1Vp-p (H)



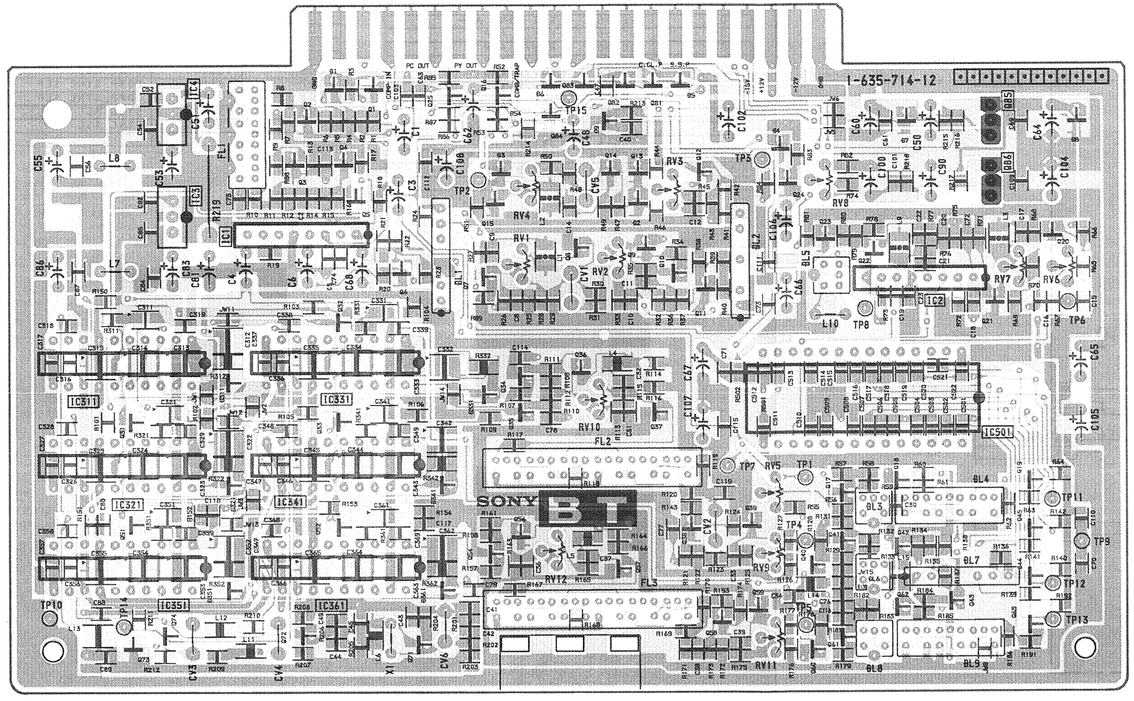
④ 12 Vp-p (V)



③ 12Vp-p (H)

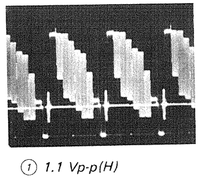
BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF)
(BVM-1916 ONLY)

IC	311 321 351 4 3 1 331 341 361 2 501
Q	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 51 52 54 56 57 58 59 60 61 62 65 72 73 74 83 82 81 85 84 86
D	311 321 351 1 341 361 331 3 6 9 2 5 4 7 8
ADJ	CV3 CV4 CV6 RV4 CV5 RV2 RV3 RV1 RV12 CV1 RV10 CV2 RV9 RV5 RV8 RV11 RV7 RV6
TP	10 14 2 15 7 3 4 1 5 8 11 6 9 13 12

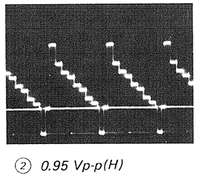


BT BOARD

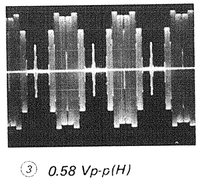
IC1	LA7016	Y SELECT
2	LA7016	C SELECT
3	NJM7809FA	9V REG
4	NJM7805FA	5V REG
331	CXL1009P	CCD
341	CXL1009P	CCD
361	CXL1009P	CCD
501	CXA1539P	CORRELATION
Q1	2SA812	BUFFER
2	2SC1623	BUFFER
3	2SA1226	AMP
4	2SC2757	AMP
5	2SC1623	AMP
6	2SC1623	Y DELAY
7	2SA1226	Y DELAY
8	2SA812	Y DELAY
9	2SA1226	Y/C MIX
10	2SC2757	Y/C MIX
11	2SC1623	Y AMP & BUFFER
12	2SA1226	Y AMP & BUFFER
13	2SC2757	Y AMP & BUFFER
14	2SC2757	Y DELAY
15	2SA812	Y DELAY
16	2SC3624A	BUFFER & SW
17	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)
18	2SA812	BPF 140 nsec(NTSC)110 nsec(PAL)
19	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)
20	2SC2757	S COMB C LEVEL, PHASE
21	2SC1623	S COMB C LEVEL, PHASE
22	2SC1623	BPF, BUFFER
23	2SC1623	BPF, BUFFER
24	2SA812	BPF, BUFFER
25	2SC3624A	BUFFER & SW
32	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
33	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
34	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
35	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
36	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)
37	2SC1623	AMP
38	2SA1226	AMP
39	2SC2757	AMP
40	2SC1623	AMP
41	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
42	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
43	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
44	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
45	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
52	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)
54	2SA812	1H DELAY(NTSC)2H DELAY(PAL)
56	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)
57	2SC1623	AMP
58	2SA1225	AMP
59	2SC2757	AMP
Q60	2SC1623	AMP
61	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
62	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
65	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
71	2SC2757	X'TAL OSC
72	2SA1226	X'TAL OSC
73	2SC2757	X'TAL OSC
74	2SA1226	X'TAL OSC
81	DTA144EK	SW CONTROL
82	DTC144EK	SW CONTROL
83	DTA144EK	SW CONTROL
84	DTA144EK	SW CONTROL
85	2SB734	SW CONTROL
86	2SD774	SW CONTROL
D1	1S2835	SW
2	RD5.6MB2	DC SHIFT
3	1S2837	SW
4	1S2837	SW
5	1S2837	SW CONTROL
6	1S2835	SW CONTROL
7	1S2837	SW CONTROL
8	1S2835	SW CONTROL
9	1S2835	SW CONTROL
331	1S2837	CLAMP
341	1S2837	CLAMP
361	1S2837	CLAMP



① 1.1 Vp-p(H)



② 0.95 Vp-p(H)

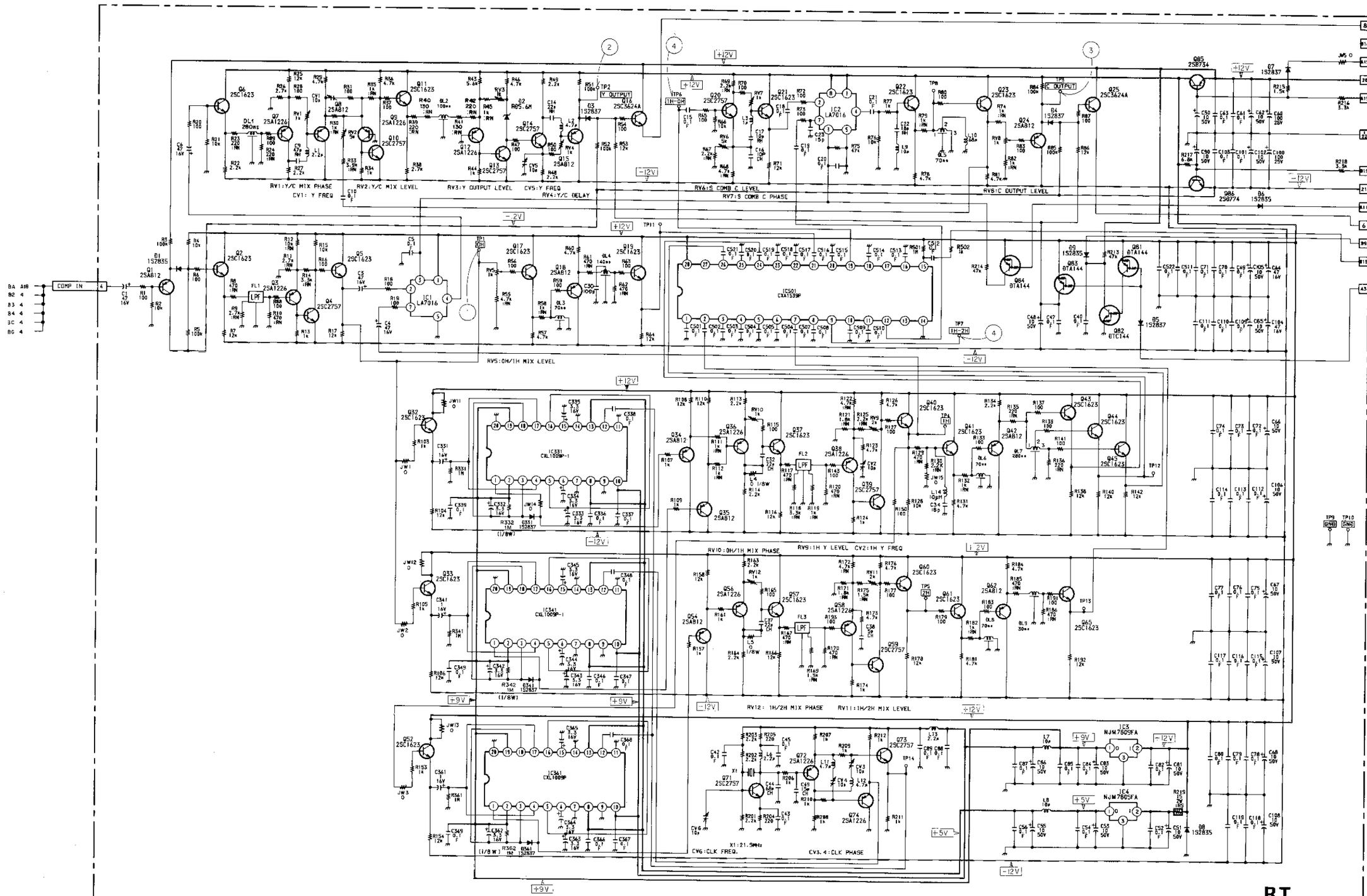


③ 0.58 Vp-p(H)
④ 1.9 Vp-p(H)

• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF)

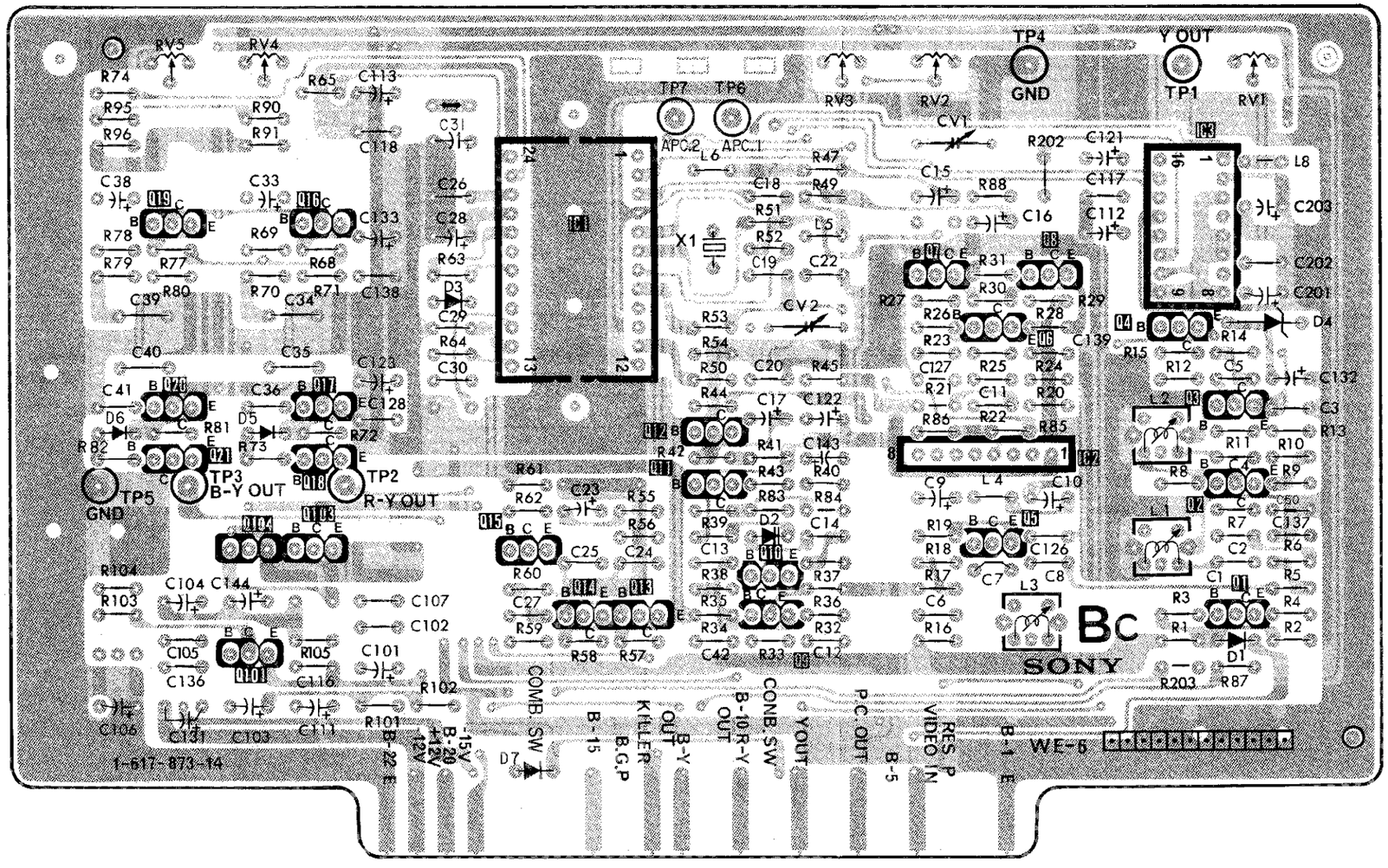
(BVM-1916 ONLY)



BT
(NTSC COMB FILTER)

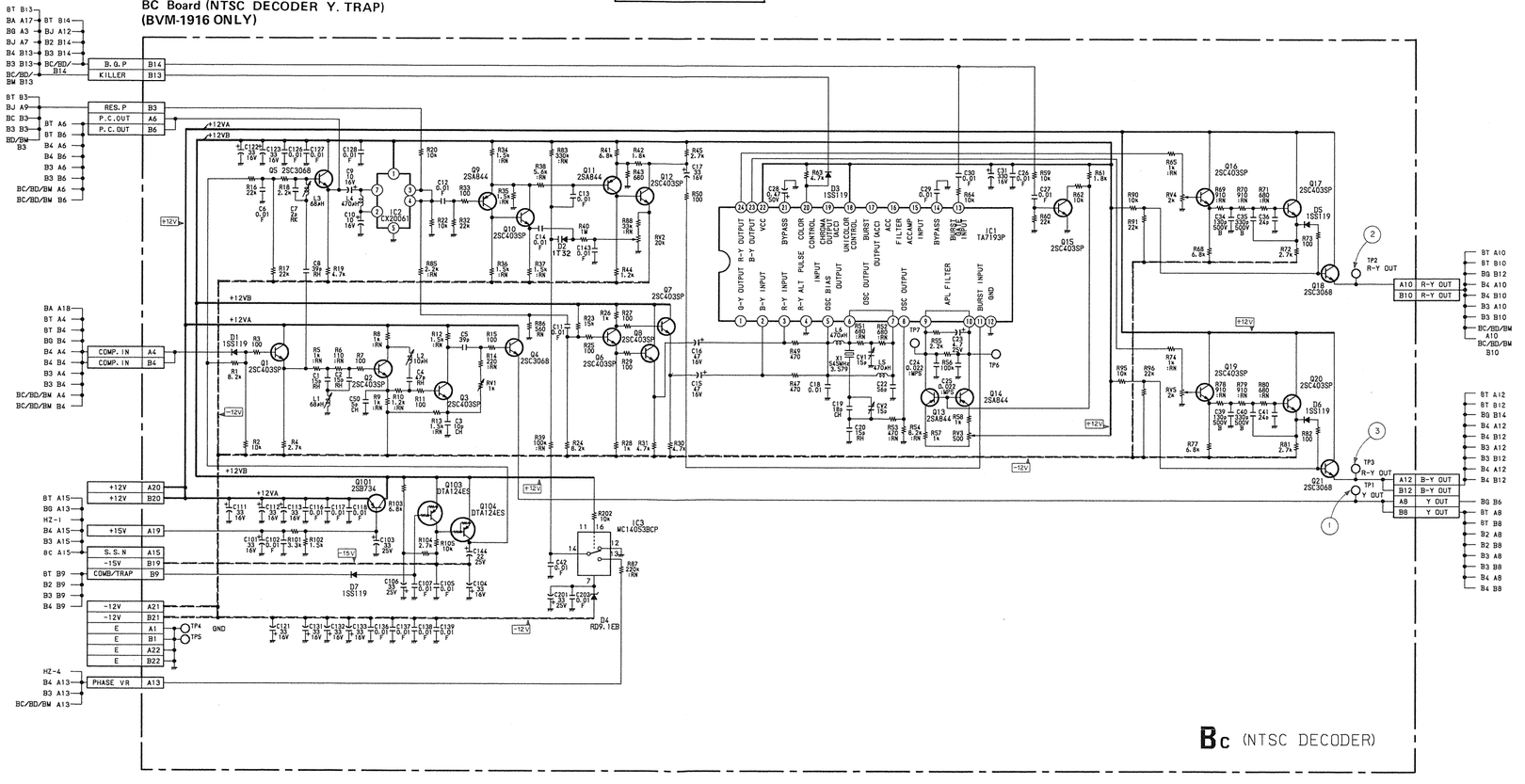
BC Board (NTSC DECODER Y. TRAP)
(BVM-1916 ONLY)

IC	1 2 3
Q	19 20 21 16 17 18 104 101 103 15 14 13 12 11 10 9 7 6 5 4 3 2 1
D	6 5 3 7 2 4 1
TP ADJ	RV5 RV4 TP7 TP6 RV3 CV2 RV2 CV1 TP4 TP1 RV1 TP5 TP3 TP2



: Pattern from the side which enables seeing.
: Pattern of the rear side.

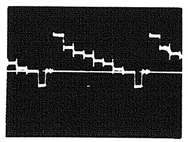
BC Board (NTSC DECODER Y. TRAP)
(BVM-1916 ONLY)



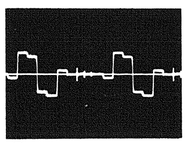
BC BOARD

IC1	TA7193P	DEMODULATOR
2	CX20061	RESIDUAL SWITCH
3	MC14053BCP	ANALOG SWITCH
Q1	2SC4035P	BUFF.
2	2SC4035P	ACTIVE FILTER
3	2SC4035P	Y-DELAY CORRECT
4	2SC3068	BUFF.
5	2SC3068	BUFF.
6	2SC4035P	AMP.
7	2SC4035P	BUFF.
8	2SC4035P	BUFF.
9	2SA844	PHASE CONTROL
10	2SC4035P	PHASE CONTROL
11	2SA844	PHASE CONTROL
12	2SC4035P	PHASE CONTROL
13	2SA844	APL FILTER

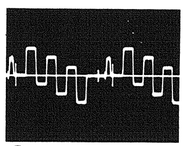
14	2SA844	APL FILTER
15	2SC4035P	APL FILTER
16	2SC4035P	LOW PASS FILTER
17	2SC4035P	LOW PASS FILTER
18	2SC3068	BUFF.
19	2SC4035P	LOW PASS FILTER
20	2SC4035P	LOW PASS FILTER
21	2SC3068	BUFF.
101	2SB734	SYSTEM SW.
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1T32	PHASE CONTROL
3	1SS119	KILLER SWITCH
4	RD9.1EB3	SWITCH BIAS.
5	1SS119	SYSTEM SWITCH
6	1SS119	SYSTEM SWITCH
7	1SS119	PROTECTOR



① 1Vp-p (H)

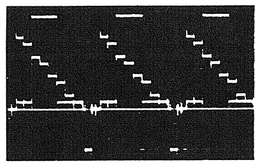


② 0.3Vp-p (H)

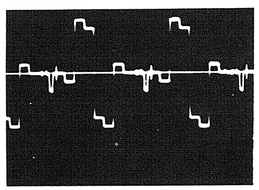


③ 0.36 Vp-p (H)

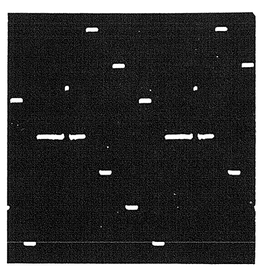
BD board (PAL DECODER Y.TRAP)
(BVM-2016P ONLY : Serial No. 2000382 and Higher)



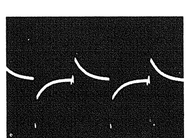
① 1Vp-p (H)



② 0.3Vp-p ④ 0.32Vp-p
③ 0.32Vp-p ⑤ 0.36Vp-p

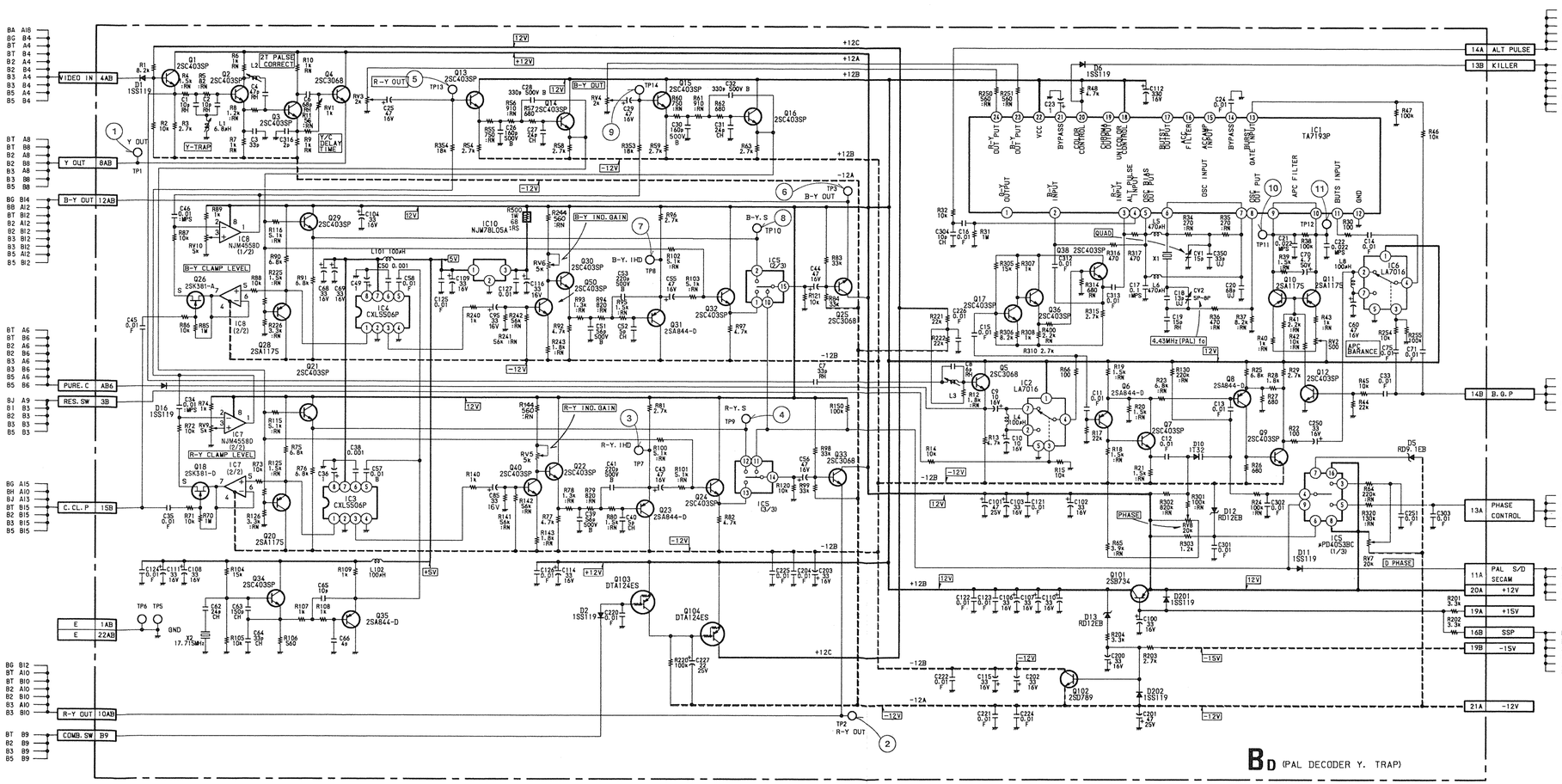


⑥ 0.38Vp-p ⑧ 0.39Vp-p
⑦ 0.38Vp-p ⑨ 0.42Vp-p



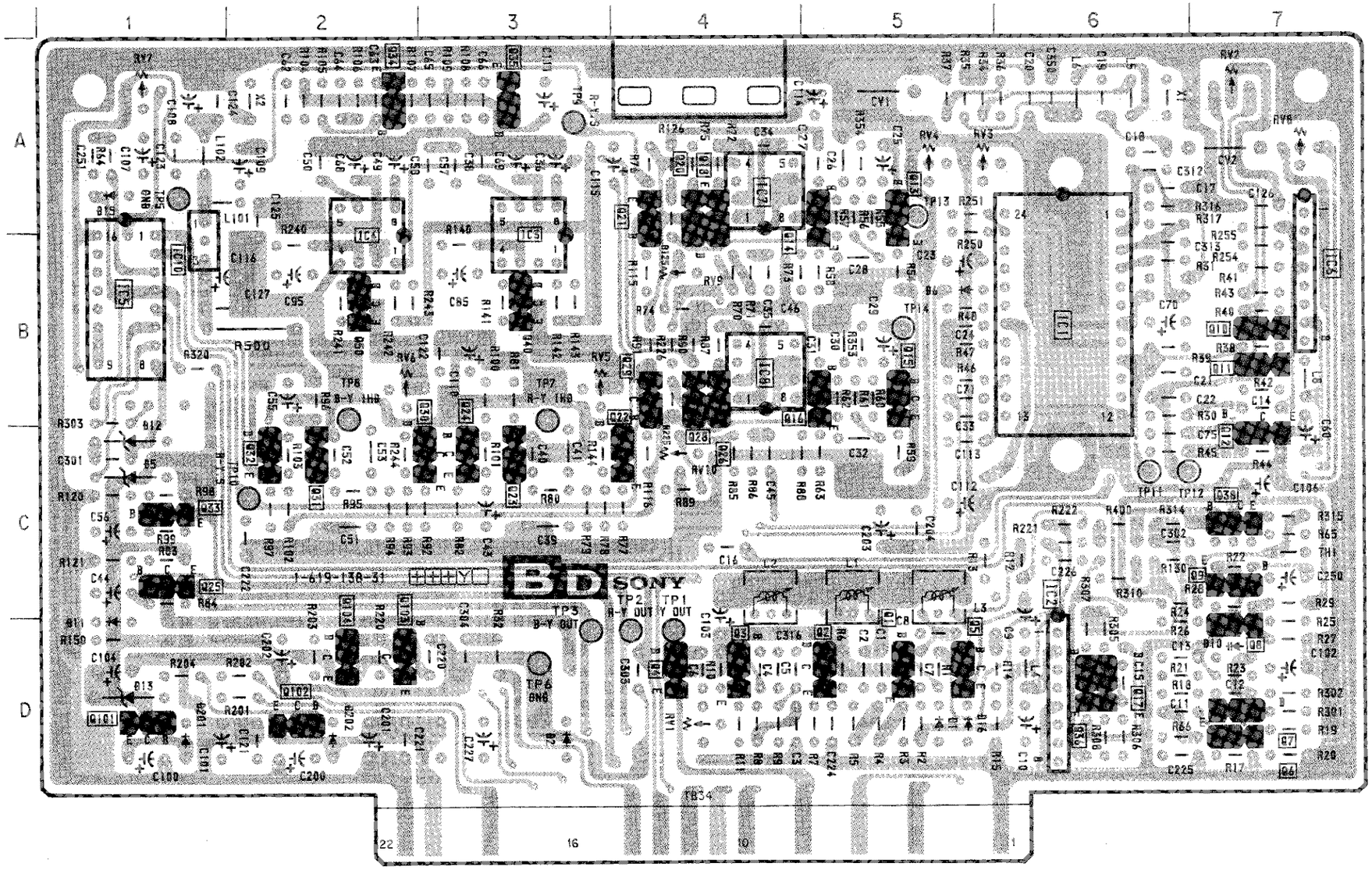
⑩ 0.26Vp-p (H)
⑪ 0.26Vp-p (H)

IC1	TA7193P	PAL DEMODULATOR
2	LA7016	RESIDUAL SWITCH
3	CXL5506P	1H DELAY LINE
4	CXL5506P	1H DELAY LINE
5	MPD4053BC	ANALOG SWITCHER
6	LA7016	BURST GATE
7	NJM4558D	R-Y CLAMP
8	NJM4558D	B-Y CLAMP
10	NJM78L05A	+5V REG
Q1	2SC403SP	BUFFER
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECTER
4	2SC3068	BUFFER
5	2SC3068	BUFFER
6	2SA844-D	PHASE CONTROLLER
7	2SC403SP	PHSAE CONTROLLER
8	2SA844-D	PHASE CONT. AMP.
9	2SC403SP	PHASE CONT. AMP.
10	2SA1175	APL FILTER
11	2SA1175	APL FILTER
12	2SC403SP	APL FILTER SWITCH
13	2SC403SP	R-Y L.P.F
14	2SC403SP	R-Y L.P.F
15	2SC403SP	B-Y L.P.F
16	2SC403SP	B-Y L.P.F
17	2SP403SP	AMPLIFIER
18	2SK381-A	R-Y CLAMP
20	2SA1175	BUFFER
21	2SC403SP	BUFFER
22	2SC403SP	CCD OUT L.P.F
23	2SA844-D	CCD OUT L.P.F.
24	2SC403SP	BUFFER
25	2SC3068	BUFFER
26	2SK381-A	B-Y CLAMP
28	2SA1175	BUFFER
29	2SC403SP	BUFFER
30	2SC403SP	CCD OUT L.P.F
31	2SAS844-D	CCD OUT L.P.F
32	2SC403SP	BUFFER
33	2SC3068	BUFFER
34	2SC403SP	CCD CLOCK GEN
35	2SA844-D	CCD CLOCK GEN
36	2SC403SP	BUFFER
38	2SC403SP	BUFFER
40	2SC403SP	CCD OUT L.P.F
50	2SC403SP	CCD OUT L.P.F
101	2SB734	SYSTEM SWITCH
102	2SD789	SYSTEM SWITCH
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1SS119	COMB. SWITCH
5	RD9.1EB2	SWITCH BIAS
6	1SS119	KILLER SWITCH
10	1T25	PHASE CONTROL
11	1SS119	PAL S/D SWITCH
12	RD12EB2	PHASE SWITCH
13	RD12EB2	SYSTEM SWITCH
16	1SS119	COMB SW
201	1SS119	PROTECTOR
202	1SS119	PROTECTOR



BD (PAL DECODER Y. TRAP)

BD board (PAL DECODER Y.TRAP)
(BVM-2016P ONLY : Serial No. 2000382 and Higher)



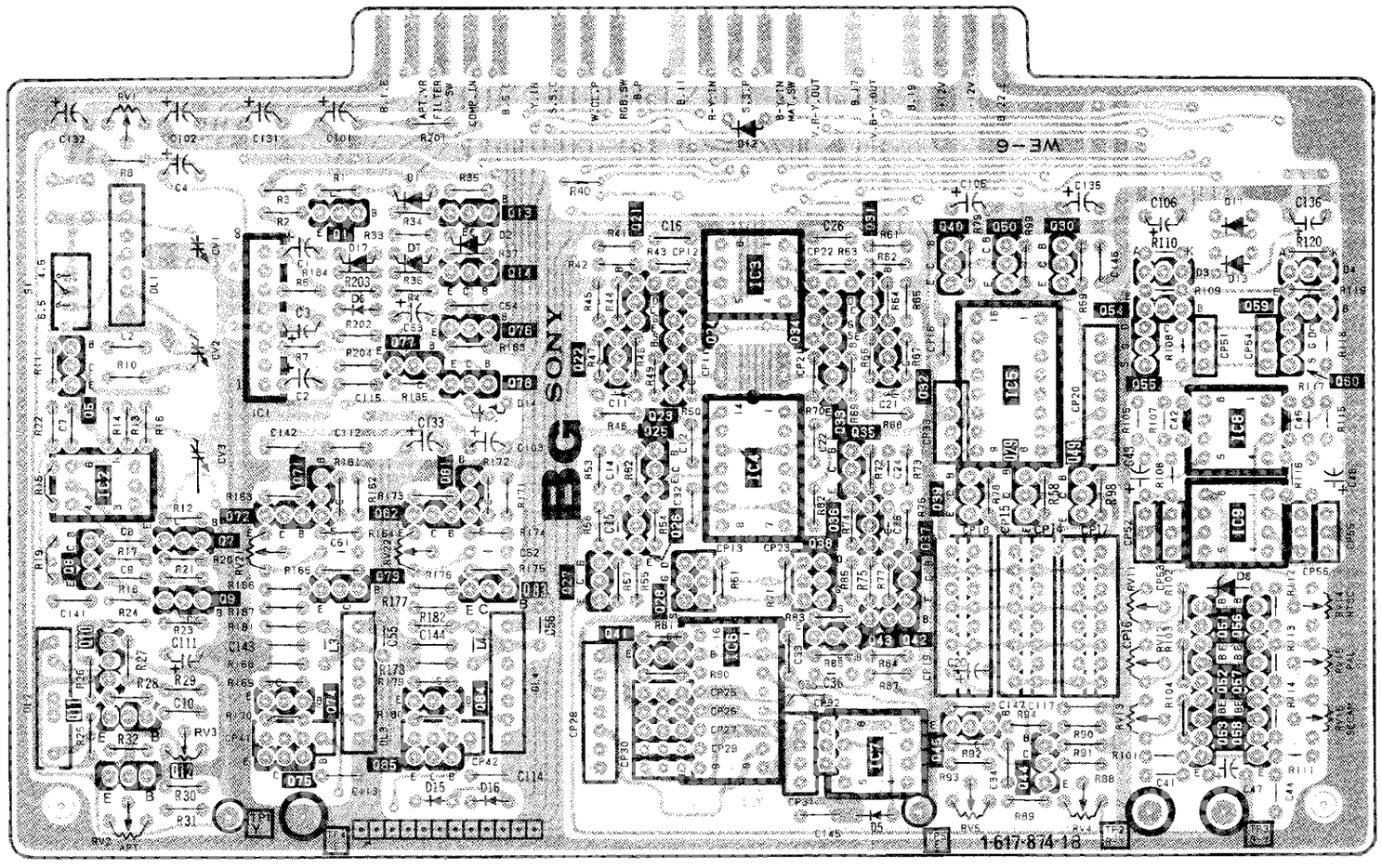
IC		DIODE	
IC1	B-6	D1	D-5
IC2	C-6	D2	D-3
IC3	B-3	D5	C-1
IC4	B-2	D6	B-5
IC5	B-1	D10	D-7
IC6	B-7	D11	D-1
IC7	A-4	D12	C-1
IC8	B-4	D13	D-1
IC10	B-1	D16	D-5
		D201	D-1
TRANSISTOR		D202	D-2
Q1	D-5	TRIMMER	
Q2	D-5	CV1	A-5
Q3	D-4	CV2	A-7
Q4	D-4	VARIABLE RESISTOR	
Q5	D-7	RV1	D-4
Q6	D-7	RV2	A-7
Q7	D-7	RV3	A-5
Q8	D-7	RV4	A-5
Q9	C-7	RV5	B-3
Q10	B-7	RV6	B-2
Q11	B-7	RV7	A-1
Q12	C-7	RV8	A-7
Q13	A-5	RV9	B-4
Q14	B-4	RV10	C-4
Q15	B-5	TEST POINT	
Q16	B-4	TP1	C-4
Q17	D-6	TP2	C-4
Q18	A-4	TP3	D-3
Q20	A-4	TP5	A-1
Q21	A-4	TP6	D-3
Q22	B-4	TP7	B-3
Q23	C-3	TP8	B-2
Q24	B-3	TP9	A-3
Q25	C-1	TP10	C-2
Q26	C-4	TP11	C-6
Q28	C-4	TP12	C-6
Q29	B-4	TP13	A-5
Q30	B-3	TP14	B-5
Q31	C-2		
Q32	C-2		
Q33	C-1		
Q34	A-2		
Q35	A-3		
Q36	D-6		
Q38	C-7		
Q40	B-3		
Q50	B-2		
Q101	D-1		
Q102	D-2		
Q103	C-2		
Q104	C-2		

: Pattern from the side which enables seeing.

• : Pattern of the rear side.

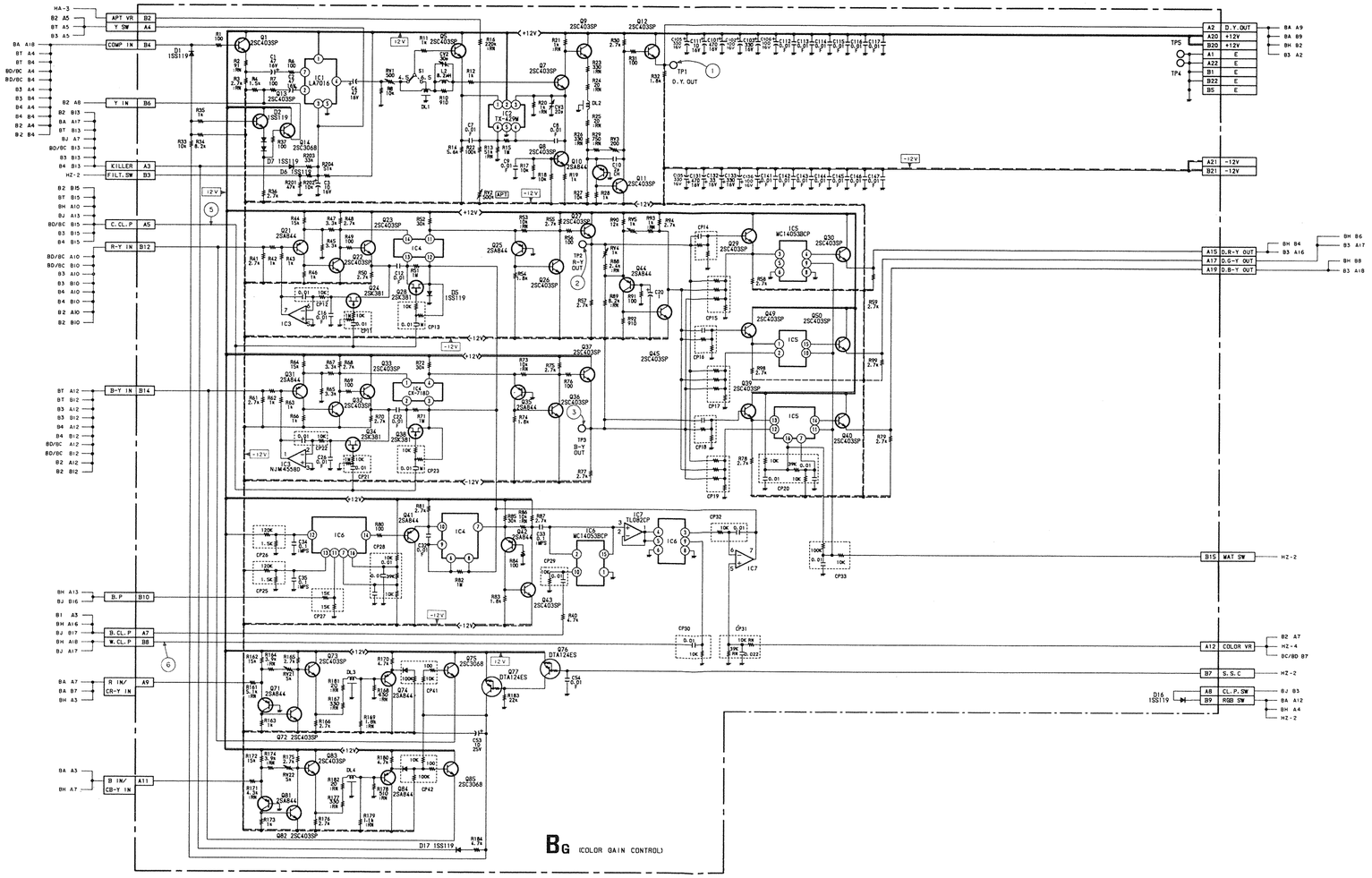
BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y, DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

IC	1 3 4 5 6 7
Q	1 5 7 8 9 10 11 12 13 14 71 72 73 74 75 76 77 81 82 83 84 85 21 22 23 24 25 26 27 28 41 30 31 32 33 34 35 36 37 38 39 40 42 43 44 45 49 50
D	1 2 5 6 7 15 16 17
TP ADJ	RV1 RV2 CV2 CV3 RV3 RV21 TP1 TP4 RV22 TP5 RV5 RV4 RV11 RV12 RV13 TP2 TP3 RV14 RV15 RV16



- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

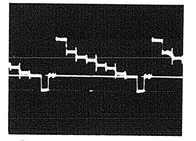
BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERUTURE CONTROL, Y, DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

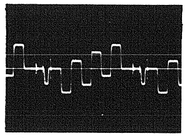


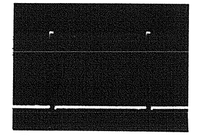
BG BOARD

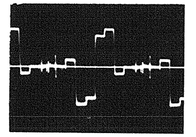
IC1	LA7016	FILTER SW
2	TX-429M	APERTURE
3	NJM4558D	COLOR DIFFERENCE CLAMP
4	CX-718D	CHROMA CONTROL
5	MC14053BCP	MATRIX SW
6	MC14053BCP	CHROMA CONTROL
7	TL082CP	CHROMA CONTROL
8	TL082CP	VECTOR OUTPUT
9	TL082CP	VECTOR OUTPUT
Q1	2SC403SP	BUFF
5	2SC403SP	APERTURE
7	2SC403SP	APERTURE
8	2SC403SP	APERTURE
9	2SC403SP	Y DELAY
10	2SA844	Y AMP
11	2SC403SP	Y AMP
12	2SC403SP	Y AMP
13	2SC403SP	BUFF
14	2SC3068	BUFF
21	2SA844	R-Y AMP
22	2SC403SP	R-Y AMP
23	2SC403SP	R-Y CLAMP
24	2SK381	R-Y CLAMP
25	2SA844	R-Y CHROMA CONTROL
26	2SC403SP	R-Y CHROMA CONTROL
27	2SC403SP	R-Y CHROMA CONTROL
28	2SK381	R-Y CHROMA CONTROL
29	2SC403SP	R-Y BUFF
30	2SC403SP	R-Y BUFF
31	2SA844	B-Y AMP
32	2SC403SP	B-Y AMP
33	2SC403SP	B-Y CLAMP
34	2SK381	B-Y CLAMP
35	2SA844	B-Y CHROMA CONTROL
36	2SC403SP	B-Y CHROMA CONTROL
37	2SC403SP	B-Y CHROMA CONTROL
38	2SK381	B-Y CHROMA CONTROL
39	2SC403SP	B-Y BUFF
40	2SC403SP	B-Y BUFF
41	2SA844	CHROMA CONTROL
42	2SA844	CHROMA CONTROL
43	2SC403SP	CHROMA CONTROL

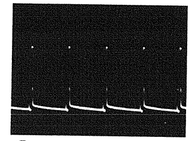
Q44	2SA844	CHROMA CONTROL
45	2SC403SP	CHROMA CONTROL
49	2SC403SP	G-Y BUFF
50	2SC403SP	G-Y BUFF
51	DTA124ES	GAIN CHANGE SW
52	DTA124ES	GAIN CHANGE SW
53	DTA124ES	GAIN CHANGE SW
54	2SC403SP	R-Y BUFF
55	2SK381	R-Y CLAMP
56	DTA124ES	GAIN CHANGE SW
57	DTA124ES	GAIN CHANGE SW
58	DTA124ES	GAIN CHANGE SW
59	2SC403SP	B-Y BUFF
60	2SK381	B-Y CLAMP
71	2SA844	R-Y AMP
72	2SC403SP	R-Y AMP
73	2SC403SP	R-Y AMP
74	2SA844	R-Y DELAY
75	2SC3068	R-Y BUFF
76	DTA124ES	COMPONENT SW
77	DTA124ES	COMPONENT SW
78	DTC144ES	COMPONENT SW
81	2SA844	B-Y AMP
82	2SC403SP	B-Y AMP
83	2SC403SP	B-Y AMP
84	2SA844	B-Y DELAY
85	2SC3068	B-Y BUFF
D1	1SS119	COMPONENT SW
2	1SS119	DC SHIFT SW
3	MC932	PROTECT
4	MC932	PROTECT
5	1SS119	PROTECT
6	1SS119	DC SHIFT
7	1SS119	FILTER SW
8	RD6.2E-B2	+6V REG
11	1SS119	GAIN CHANGE SW
12	1SS119	GAIN CHANGE SW
13	1SS119	GAIN CHANGE SW
14	1SS119	GAIN CHANGE SW
16	1SS119	R.G.B. SW
17	1SS119	KILLER


① 1.0Vp-p (H)


③ 1.7Vp-p (H)


⑤ 4.8Vp-p (H)

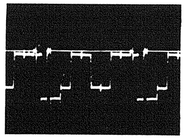

② 1.4Vp-p (H)


⑥ 12Vp-p (H)

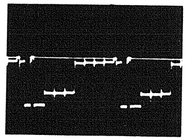
BH BOARD

IC1(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP & CROSS HATCH SW
(3/3)		SCREENING SW
2(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
3(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
4(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
5	NJM4558S	SAMPLE HOLD
6	NJM4558S	SAMPLE HOLD
7	LA7016	BLUE ONLY SW
8	LA7016	BLUE ONLY SW
9	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
10(1/2)	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(2/2)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
11(1/4)	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(3/4)		
(2/4)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
(4/4)		Y SCREENING PULSE GEN
12	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
13	MC14001BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
14	TC4030BP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
101	TX-429M	R CONTRAST CONTROL
102	TL082CP	R CONTRAST & BRIGHT CONTROL
201	TX-429M	G CONTRAST CONTROL
202	TL082CP	G CONTRAST & BRIGHT CONTROL
301	TX-429M	B CONTRAST CONTROL
302	TL082CP	B CONTRAST & BRIGHT CONTROL
Q1	2SC403SP	Y BUFF
2	2SK523	Y SAMPLE HOLD
3	2SA844	Y BUFF
4	2SC403SP	R-Y/R BUFF

Q5	2SK523	R-Y/Y SAMPLE HOLD
6	2SA844	R-Y/R BUFF
7	2SC403SP	G-Y/R BUFF
8	2SK523	G-Y/Y SAMPLE HOLD
9	2SA844	G-Y/G BUFF
10	2SC403SP	B-Y/B BUFF
11	2SK523	B-Y/B SAMPLE HOLD
12	2SA844	B-Y/B BUFF
13	2SA844	R BUFF
14	2SA844	G BUFF
15	2SA844	B BUFF
16	2SC3068	AGC PULSE BUFF
101	2SK381	R CONTRAST CONTROL
102	2SA844	R AMP
103	2SC403SP	R AMP
104	2SC403SP	R LIMITER
105	2SC403SP	R LIMITER
106	2SK381	R BRIGHT CONTROL
107	2SK381	R CONTRAST CONTROL
108	2SK381	R CONTRAST CONTROL
201	2SK381	G CONTRAST CONTROL
202	2SA844	G AMP
203	2SC403SP	G AMP
204	2SC403SP	G LIMITER
205	2SC403SP	G LIMITER
206	2SK381	G BRIGHT CONTROL
207	2SK381	G CONTRAST CONTROL
208	2SK381	G CONTRAST CONTROL
301	2SK381	B CONTRAST CONTROL
302	2SA844	B AMP
303	2SC403SP	B AMP
304	2SC403SP	B LIMITER
305	2SC403SP	B LIMITER
306	2SK381	B BRIGHT CONTROL
307	2SK381	B CONTRAST CONTROL
308	2SK381	B CONTRAST CONTROL
D1	1SS119	
101	1SS119	R LIMITER
102	1SS119	R PROTECT
201	1SS119	G LIMITER
202	1SS119	G PROTECT
301	1SS119	B LIMITER
302	1SS119	B PROTECT



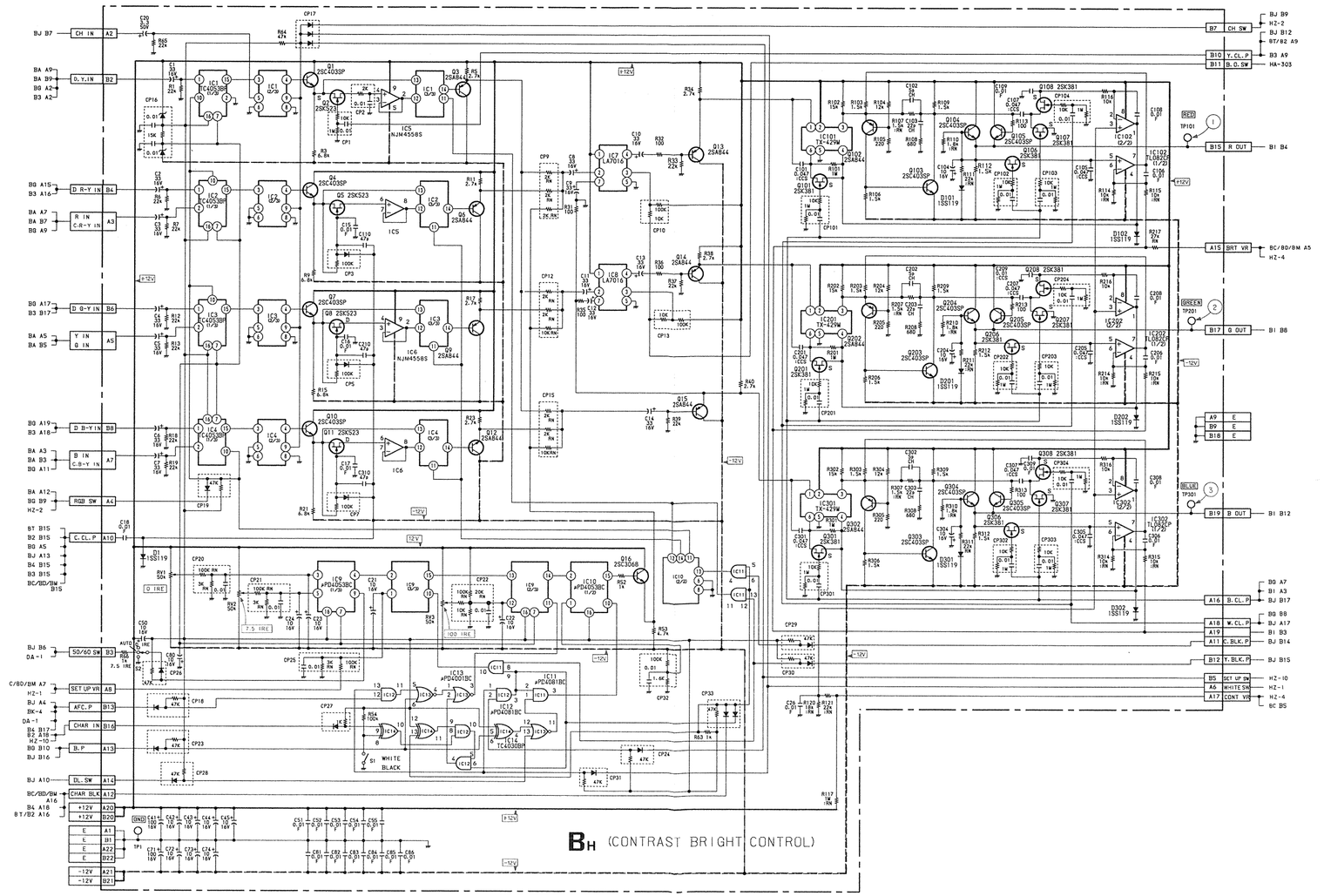
① 1.2Vp-p (H)



② 1.2Vp-p (H)

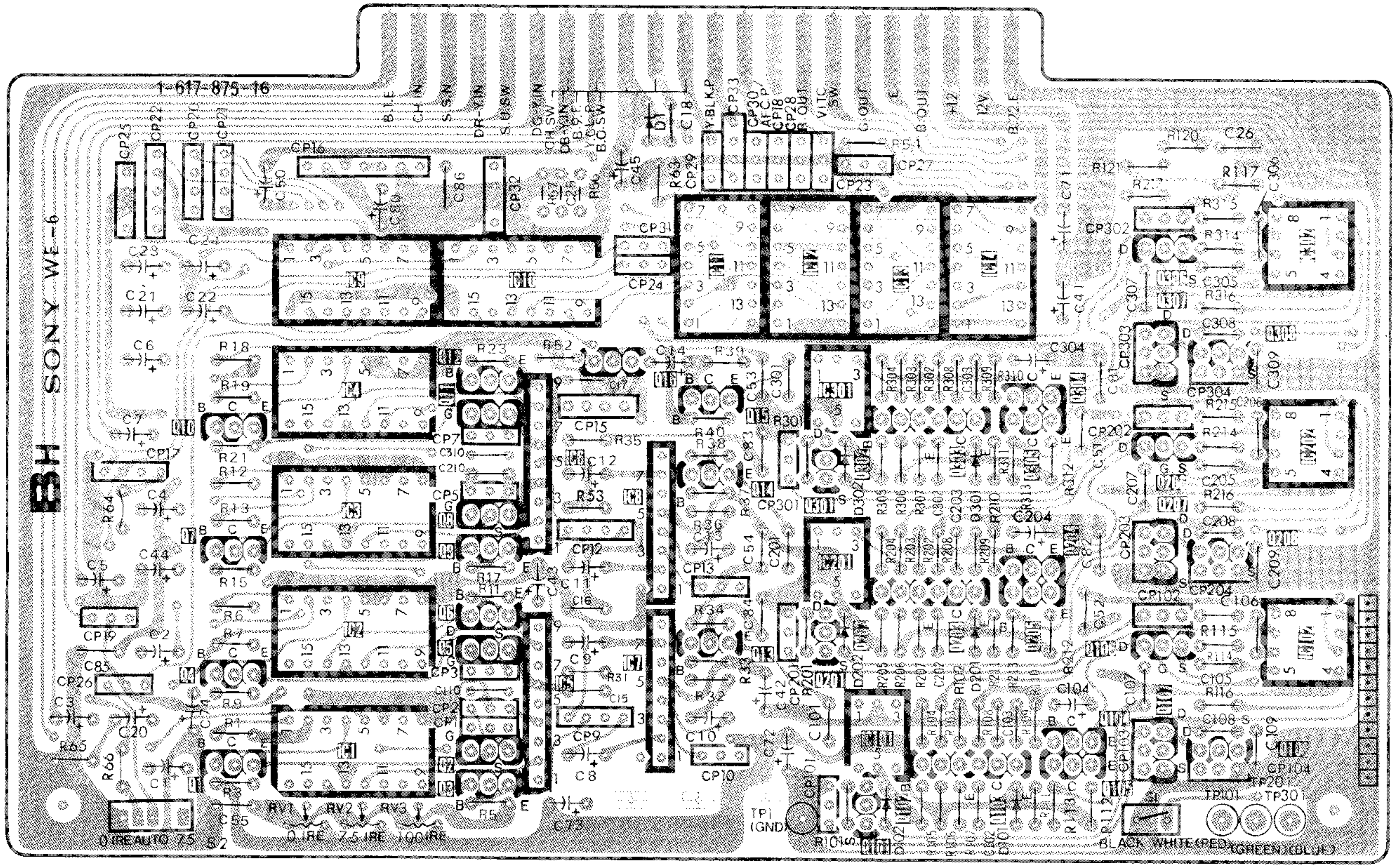
③ 1.2Vp-p (H)

BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

IC		9 4 3 2 1		10 6 5	8 7	11	12 301 201 101	13	14			102 202 302
Q	10 7 4 1		12 11 8 9 6 5 2 3		16	15 14 13	301 201 101	302 202 102	303 203 103	304 305 204 205 104 105	306 307 308 206 207 208 106 107 108	
D					1		302 202 102		301 201 101			
TP ADJ		RV1 RV2 RV3					TP1				TP201 TP101 TP301	

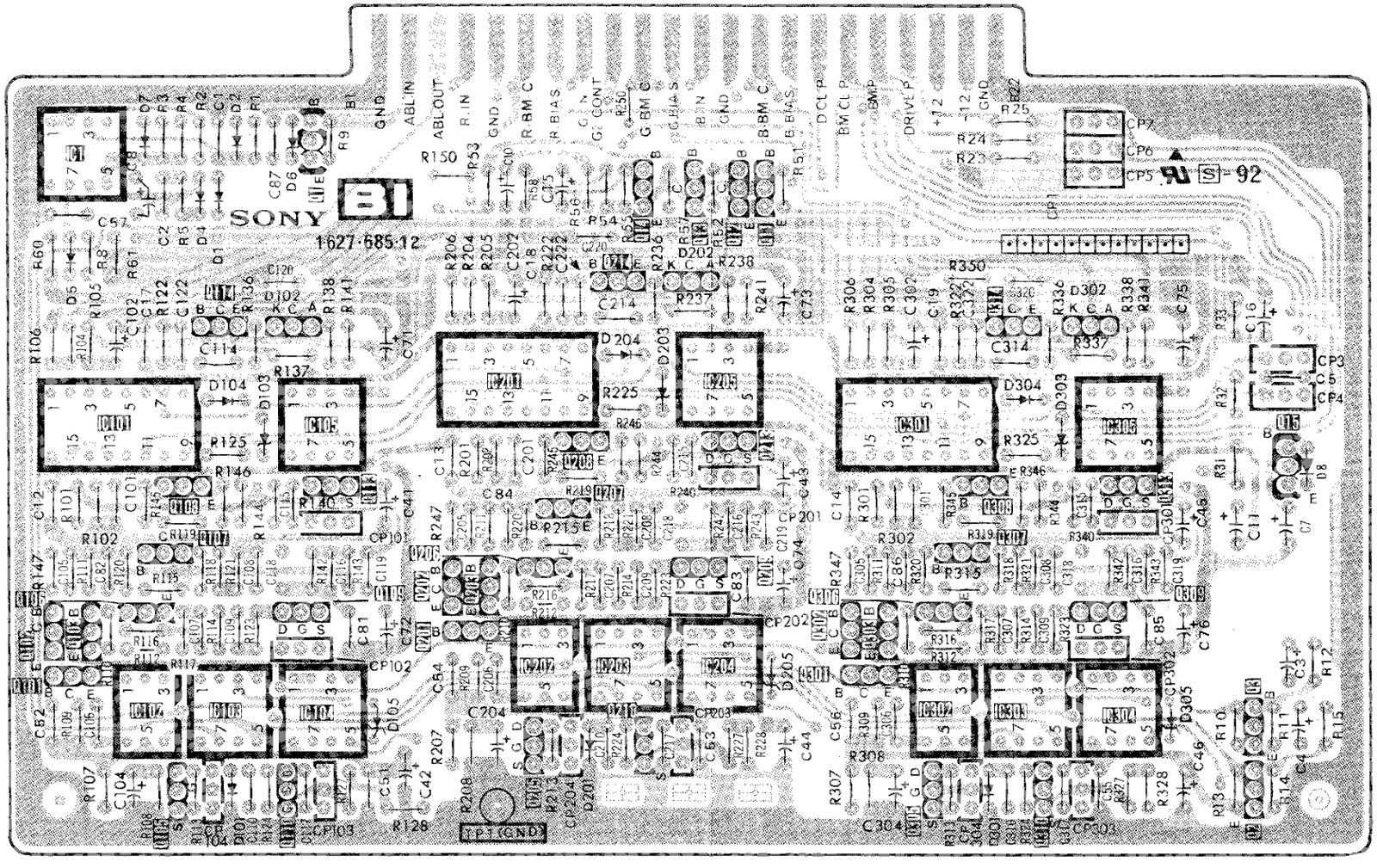


: Pattern from the side which enables seeing.

: Pattern of the rear side.

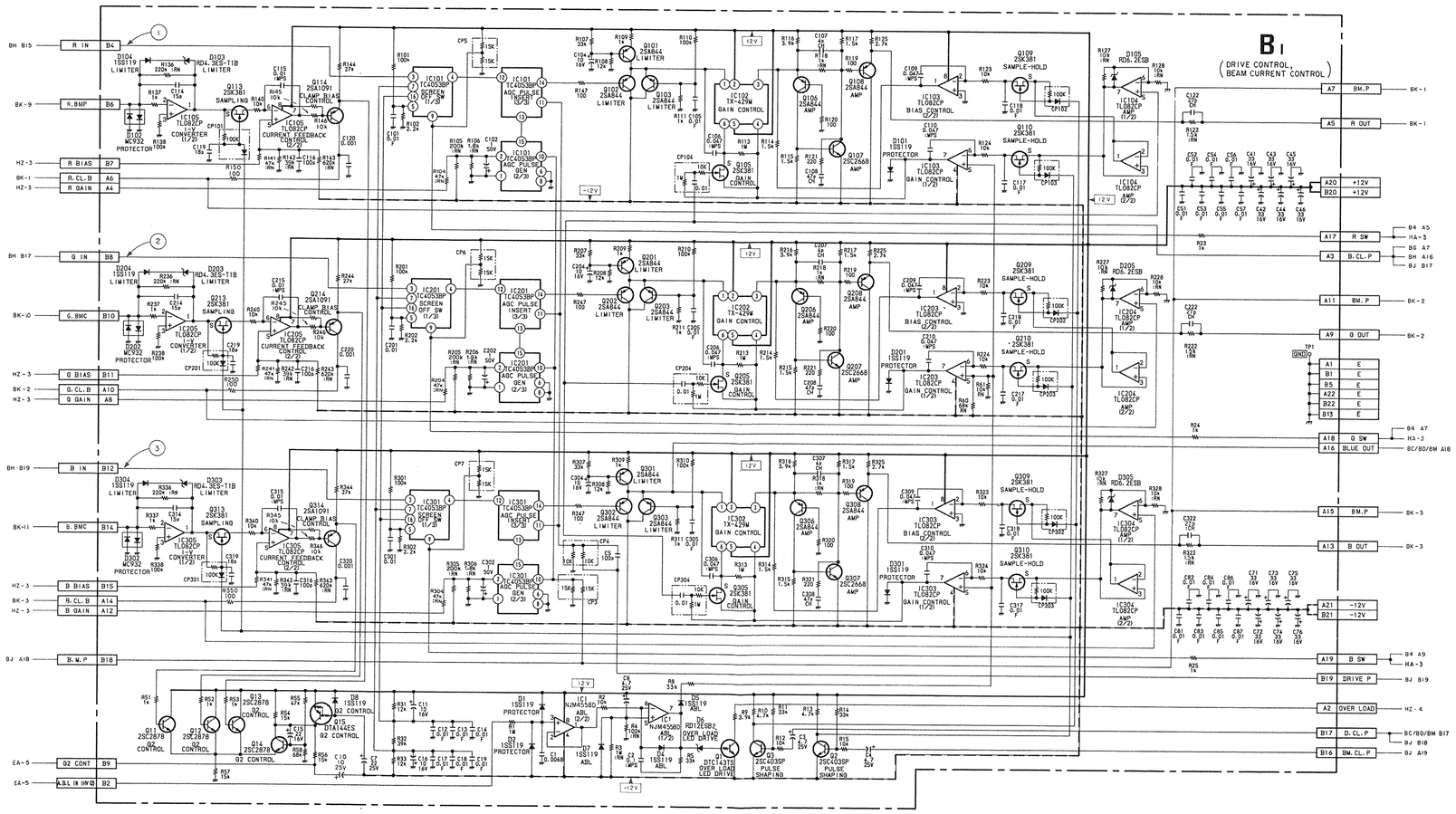
BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

IC	1 101 102 103 104 105 201 202 203 204 205 301 302 303 304 305
Q	1 14 13 12 11 214 114 113 213 314 313 15 108 208 308 107 109 207 209 307 309 102 103 106 202 203 206 302 303 306 3 101 105 110 201 205 210 301 305 310 2
D	7 4 1 2 6 5 102 104 103 105 101 202 204 203 205 201 302 304 303 305 301 8
TP	1



- : Pattern from the side which enables se
- : Pattern of the rear side.

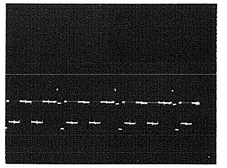
BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)



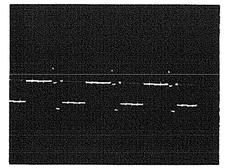
BI BOARD

IC1	NJM4558D	ABL
IC101(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
IC102	TX-429M	GAIN CONTROL
IC103(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
IC104	TL082CP	AMP
IC105(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
IC201(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
IC202	TX-429M	GAIN CONTROL
IC203(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
IC204	TL082CP	AMP
IC205(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
IC301(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
IC302	TX-429M	GAIN CONTROL
IC303(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
IC304	TL082CP	AMP
IC305(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
Q1	DTC143TS	OVER LOAD LED DRIVE
2	2SC403SP	PULSE SHAPING
3	2SC403SP	PULSE SHAPING
11	2SC2873	G2 CONTROL
12	2SC2878	G2 CONTROL
13	2SC2878	G2 CONTROL
14	2SC2878	G2 CONTROL
15	DTA144ES	G2 CONTROL
101	2SA844	LIMITER
102	2SA844	LIMITER
103	2SA844	LIMITER
105	2SK381	GAIN CONTROL
106	2SA844	AMP
107	2SC2668	AMP
108	2SA844	AMP
109	2SK381	SAMPLE-HOLD

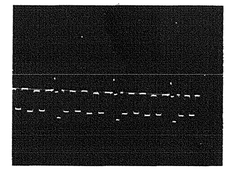
Q110	2SK381	SAMPLE-HOLD
113	2SK381	SAMPLING
114	2SA1091	CLAMP BIAS CONTROL
201	2SA844	LIMITER
202	2SA844	LIMITER
203	2SA844	LIMITER
205	2SK381	GAIN CONTROL
206	2SA844	AMP
207	2SC2668	AMP
208	2SA844	AMP
209	2SK381	SAMPLE-HOLD
210	2SK381	SAMPLE-HOLD
213	2SK381	SAMPLING
214	2SA1091	CLAMP BIAS CONTROL
301	2SA844	LIMITER
302	2SA844	LIMITER
303	2SA844	LIMITER
305	2SK381	GAIN CONTROL
306	2SA844	AMP
307	2SC2668	AMP
308	2SA844	AMP
309	2SK381	SAMPLE-HOLD
310	2SK381	SAMPLE-HOLD
313	2SK381	SAMPLING
314	2SA1091	CLAMP BIAS CONTROL
D1	1SS119	PROTECTOR
2	1SS119	PROTECTOR
4	1SS119	ABL
5	1SS119	ABL
6	RD12ESB2	OVER LOAD LED DRIVE
7	1SS119	ABL
8	1SS119	G2 CONTROL
101	1SS119	PROTECTOR
102	MC932	PROTECTOR
103	RD4.3ES-T1B	LIMITER
104	1SS119	LIMITER
D105	RD6.2ESB	LIMITER
201	1SS119	PROTECTOR
202	MC932	PROTECTOR
203	RD4.3ES-T1B	LIMITER
204	1SS119	LIMITER
D205	RD6.2ESB	LIMITER
301	1SS119	PROTECTOR
302	MC932	PROTECTOR
303	RD4.3ES-T1B	LIMITER
304	1SS119	LIMITER
D305	RD6 2ESB	LIMITER



(1) 1.2 Vp-p(H)



(2) 1.2 Vp-p(H)

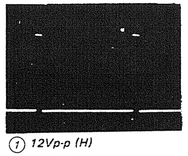


(3) 1.2 Vp-p(H)

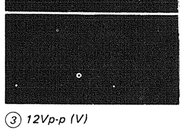
BJ BOARD

IC1	HD14538BP	PIC.SET.PULSE GEN
2	MC14001BCP	CROSS HATCH GEN
3	TC4040BP	V SYNC & DELAY
4	TC4040BP	V COUNT
5	TC5040278P	V SYNC & DELAY
6(1/2)	TC5040278P	CHROMA CLAMP PULSE GEN
(2/2)		2fH MULTI
7	TC5040278P	V COUNT
8	TC5040278P	1H PULSE PROCESS
9(1/2)	TC5042278P	V SYNC & DELAY
(2/2)		1H PULSE PROCESS
10(1/2)	HD14538BP	B.G.P GEN 2
(2/2)		H CYCLE
11(1/2)	HD14538BP	CROSS HATCH GEN
(2/2)		SPLIT Y BLK, C BLK PULSE GEN
12	HD14538BP	Y CYCLE AGC & CLAMP PULSE GEN
13(1/4)	MC14001BCP	CHROMA CLAMP PULSE GEN
(2/4)		Y.CL.P GEN
(3/4)		B.G.P GEN 2
(4/4)		RESIDUAL PULSE GEN
14(1/4)	MC14001BCP	SPLIT Y BLK: C BLK PULSE GEN
(3/4)		
(4/4)		
(2/4)		V CYCLY AGC & CLAMP PULSE GEN
15	MC14071BCP	V CYCLE AGC & CLAMP PULSE GEN
16(1/4)	MC14011BCP	CROSS HATCH GEN
(2/4)		Y CYCLE AGC & CLAMP PULSE GEN
(3/4)		H OR V BLK, P
(4/4)		SPLIT Y BLK, C BLK PULSE GEN
17	MC14011BCP	CROSS HATCH GEN
18	TC4023BP	CROSS HATCH GEN
19(1/4)	MC14081BCP	V COUNT
(2/4)		V SYNC & DELAY
(3/4)		2fH MULTI
(4/4)		1H PULSE PROCESS
20	MC14081BCP	V COUNT
21(1/4)	MC14071BCP	V CYCLE AGC & CLAMP PULSE GEN
(2/4)		V SYNC & DELAY
(3/4)		V COUNT
(4/4)		2fH MULTI
22(1/4)	MC14071BCP	V COUNT
(2/4)		
(3/4)		V SYNC & DELAY
(4/4)		

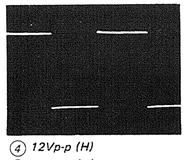
IC23(1/3)	TC4073BP	V SYNC & DELAY
(2/3)		V COUNT
(3/3)		
24(1/5)	MC14069UBCP	V SYNC & DELAY
(4/5)		CROSS HATCH GEN
(2/5)		V COUNT
(3/5)		
(5/5)		
25(1/6)	MC14069UBCP	1H PULSE PROCESS
(2/6)		INV
(3/6)		H OR V BLK.P
(4/6)		V CYCLE AGC & CLAMP PULSE GEN
(5/6)		CROSS HATCH GEN
(6/6)		
26	MC14175BCP	1H PULSE PROCESS
27(1/3)	MC14053BCP	CLAMP PULSE CHANGE SW
(2/3)		CROSS HATCH GEN
(3/3)		H OR V DL SW
28	TC4520BP	CROSS HATCH GEN
29(1/2)	HD14538BP	B.G.P GEN 1
(2/2)		Y.CL.P GEN
Q14	2SC2785	CROSS HATCH GEN
15	2SC2785	Y.CL.P GEN
16	2SC2785	Y.CL.P GEN
17	2SC2785	CHROMA CLAMP PULSE GEN
18	2SC2785	CHROMA CLAMP PULSE GEN
19	2SA1115	H CYCLE
20	2SC2785	H CYCLE
21	2SC2785	H CYCLE
22	2SC2785	H CYCLE
23	2SA1048	H CYCLE
24	2SC2785	H CYCLE
25	2SC2785	CHROMA CLAMP PULSE GEN
26	2SC2785	Y.CL.P GEN
D1	1SS119	CROSS HATCH GEN
2	1SS119	H CYCLE
3	1SS119	H CYCLE
7	1SS119	1H PULSE PROCESS
8	1SS119	V SYNC & DELAY
9	1SS119	2fH MULTI
11	MC932	PROT



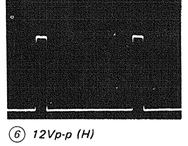
(1) 12Vp-p (H)
(2) 12Vp-p (H)



(3) 12Vp-p (V)

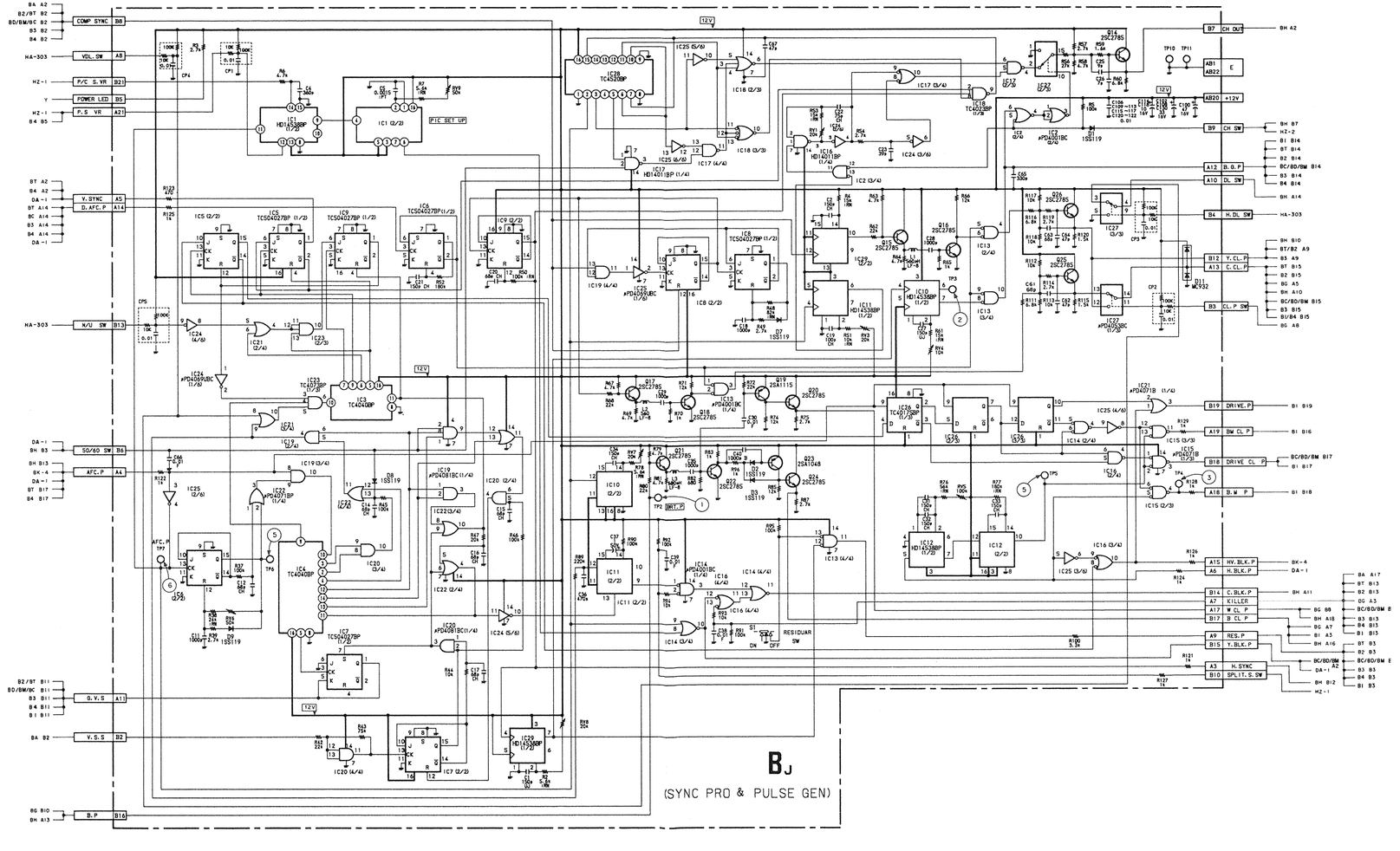


(4) 12Vp-p (H)
(5) 12Vp-p (H)



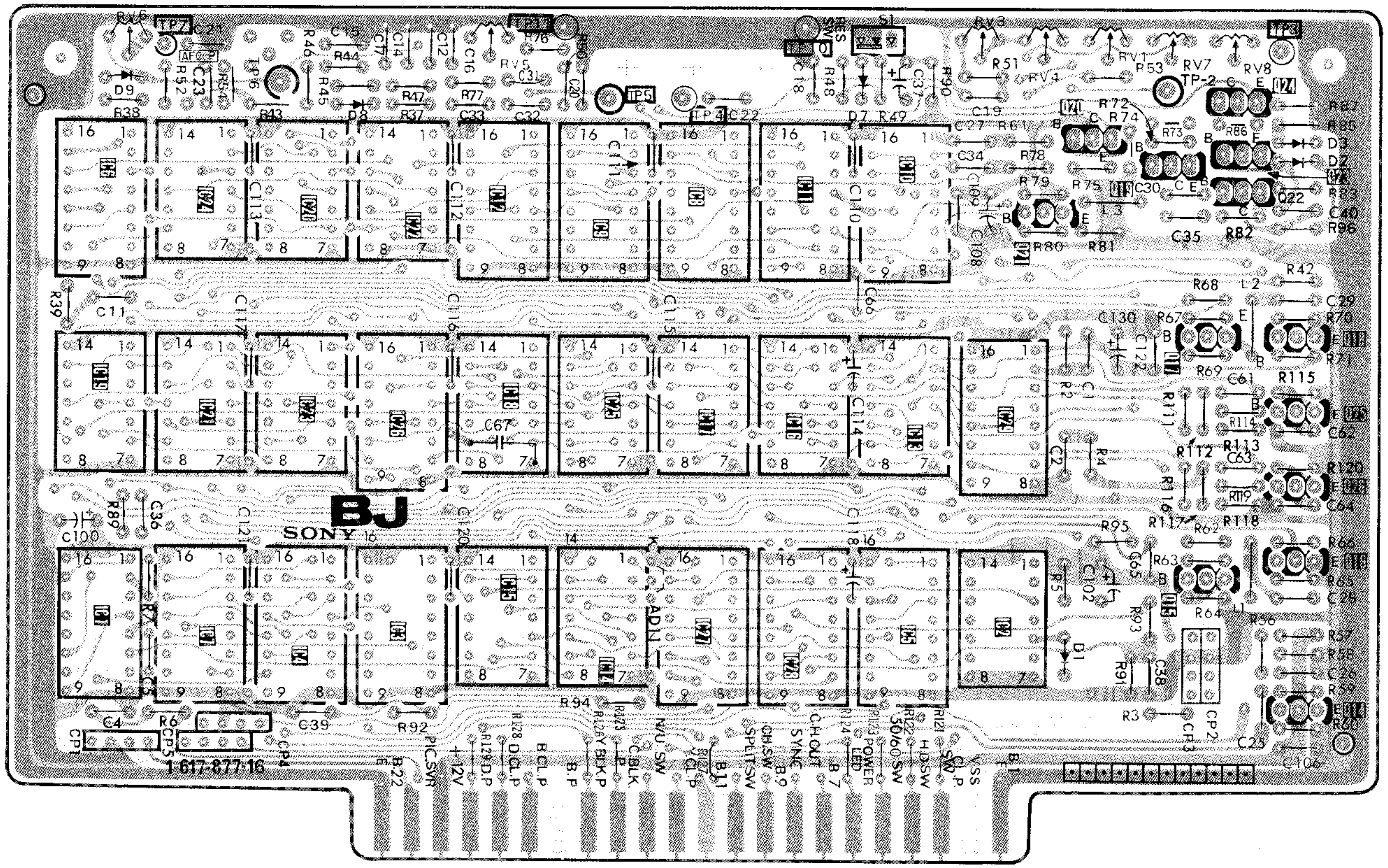
(6) 12Vp-p (H)

BJ board (SYNC PROCESSING & PULSE GEN)



BJ board (SYNC PROCESSING & PULSE GEN)

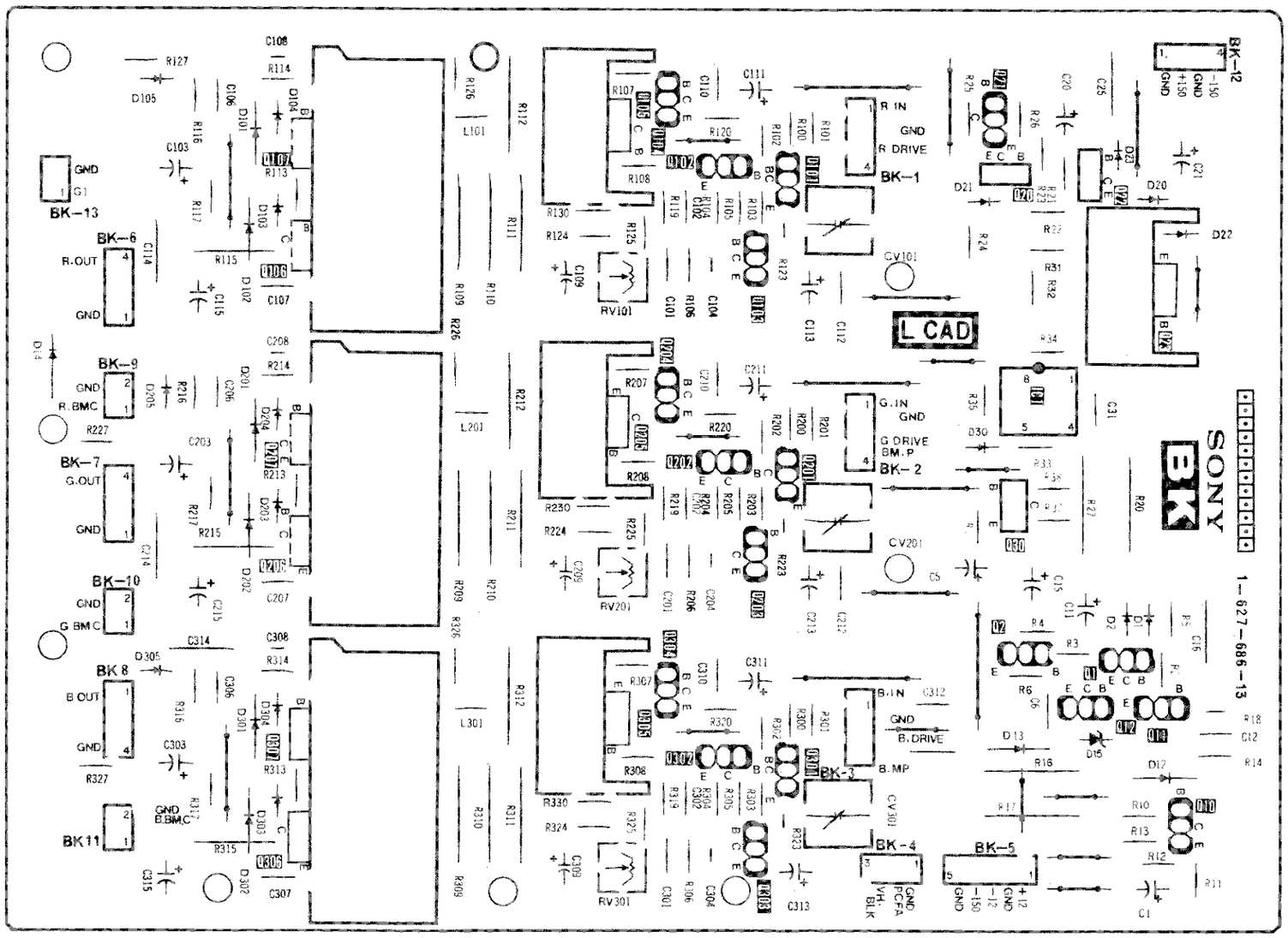
IC	6 19 1	24 21 7	20 23 4	22 26 3	12 18 15	9 25 14	8 17 27	11 16 28	10 13 5	29 2						
Q											21	20	19	17 15	24 23 22	18 25 26 16 14
D	9			8			11		7		1					3 2
TP ADJ	RV6	TP7	TP6		RV5	TP11 TP5	TP4	TP10		RV3	RV4	RV1	RV7 TP2	RV8		TP3



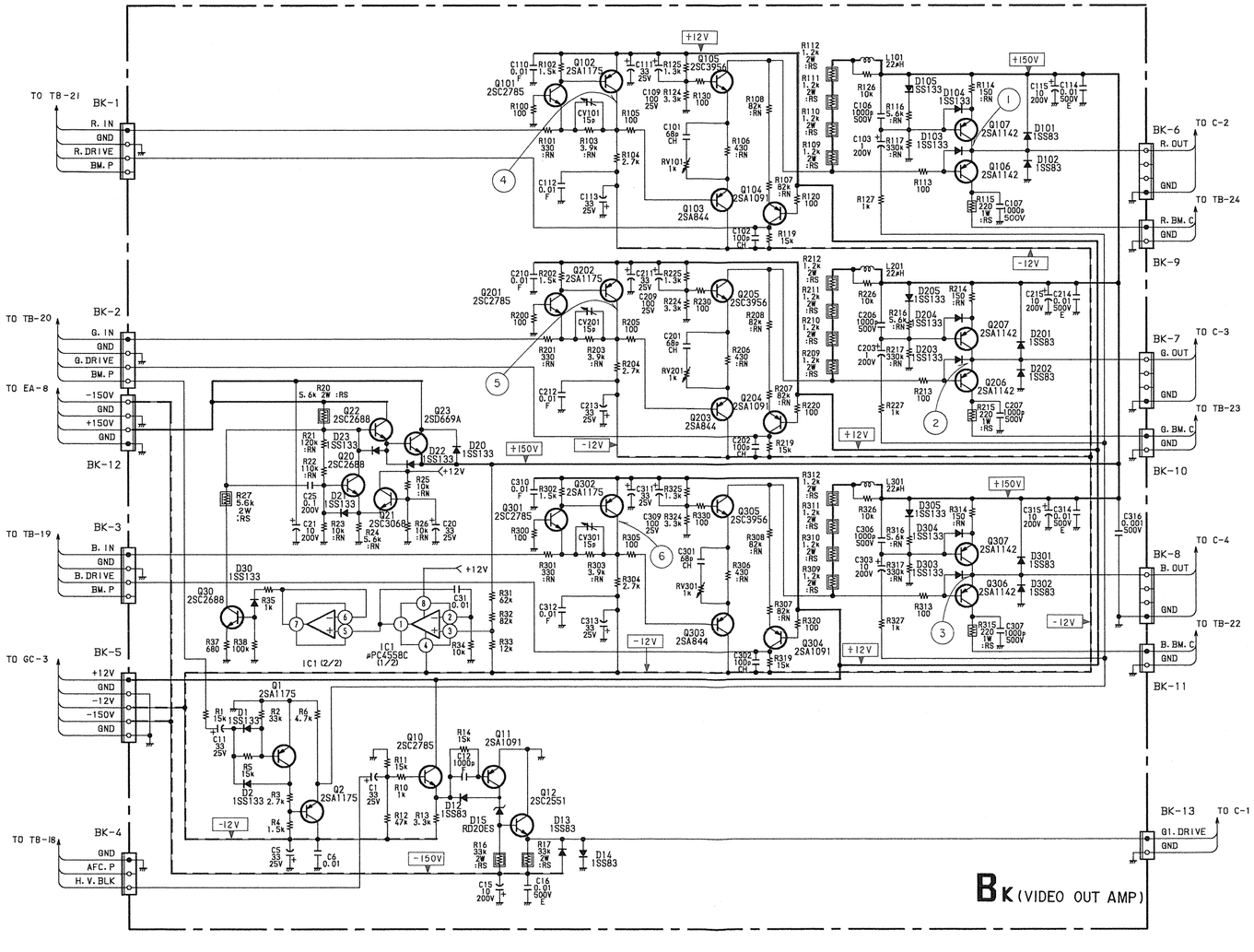
• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

BK board (VIDEO OUT AMP)

IC	1
Q	107 106 207 206 307 306 105 104 102 103 101 205 204 202 203 201 305 304 302 303 301 21 20 22 30 23 2 1 12 11 10
D	14 105 101 104 102 103 205 201 204 202 203 305 301 304 302 303 21 30 23 20 22 2 1 13 12 15
ADJ	RV101 RV201 CV101 CV201 RV301 CV301

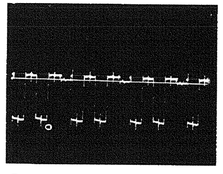


BK board (VIDEO OUT AMP)

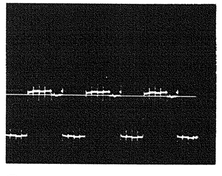


BK BOARD

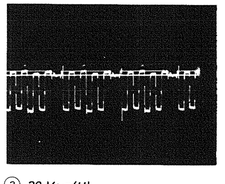
IC1	UPC4558C	LIPPLE FILTER
Q1	2SA1175	INVERTER
2	2SA1175	BUFF.
10	2SC2785	BUFF.
11	2SA1091	BUFF.
12	2SC2551	BUFF.
20	2SC2688	LIPPLE FILTER
21	2SC3068	LIPPLE FILTER
22	2SC2688	LIPPLE FILTER
23	2SD669A	LIPPLE FILTER
30	2SC2688	LIPPLE FILTER
101	2SC2785	R-PRE AMP.
102	2SA1175	R-PRE AMP.
103	2SA844	BUFF.
104	2SA1091	BUFF.
105	2SC3956	BUFF.
106	2SA1142	R-VIDEO OUT
107	2SA1142	R-VIDEO OUT
201	2SC2785	G-PRE AMP.
202	2SA1175	G-PRE AMP.
203	2SA844	BUFF.
204	2SA1091	BUFF.
205	2SC3956	BUFF.
206	2SA1142	G-VIDEO OUT
207	2SA1142	G-VIDEO OUT
301	2SC2785	B-PRE AMP.
302	2SA1175	B-PRE AMP.
303	2SA844	BUFF.
304	2SA1091	BUFF.
305	2SC3956	BUFF.
306	2SA1142	B-VIDEO OUT
307	2SA1142	B-VIDEO OUT
D1	1SS133	INVERTER
2	1SS133	INVERTER
12	1SS83	PROTECTOR
13	1SS83	BIAS
14	1SS83	PROTECTOR
15	RD20ES-TB	BIAS
20	1SS133	PROTECTOR
21	1SS133	PROTECTOR
22	1SS133	PROTECTOR
23	1SS133	PROTECTOR
30	1SS133	PROTECTOR
101	1SS83	PROTECTOR
102	1SS83	PROTECTOR
103	1SS133	PROTECTOR
104	1SS133	PROTECTOR
105	1SS133	BIAS
201	1SS83	PROTECTOR
202	1SS83	PROTECTOR
203	1SS133	PROTECTOR
204	1SS133	PROTECTOR
205	1SS133	BIAS
301	1SS83	PROTECTOR
302	1SS83	PROTECTOR
303	1SS133	PROTECTOR
304	1SS133	PROTECTOR
305	1SS133	BIAS



(1) 30 Vp-p(H)
(4) 3 Vp-p(H)

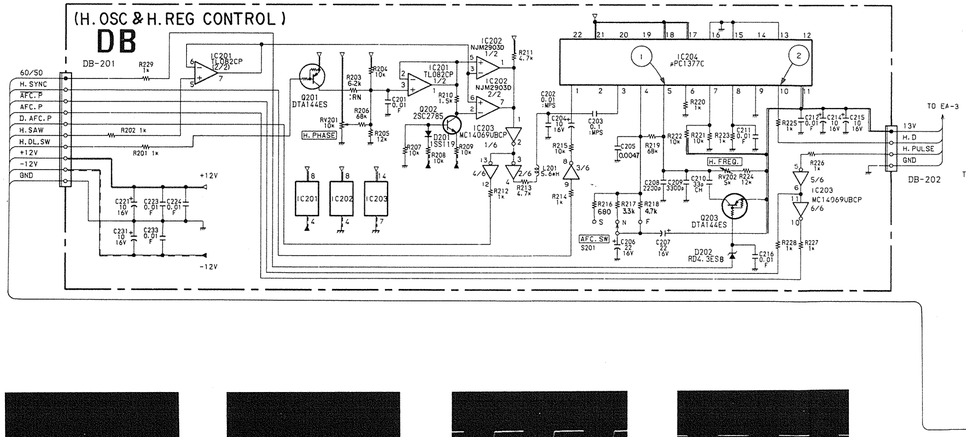


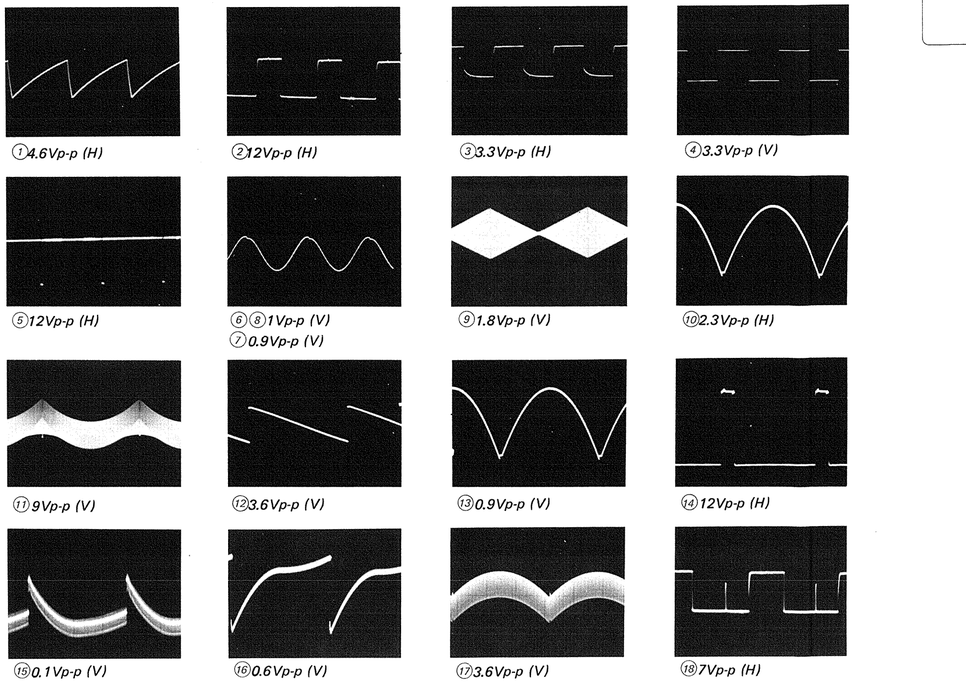
(2) 35 Vp-p(H)
(5) 3.5 Vp-p(H)



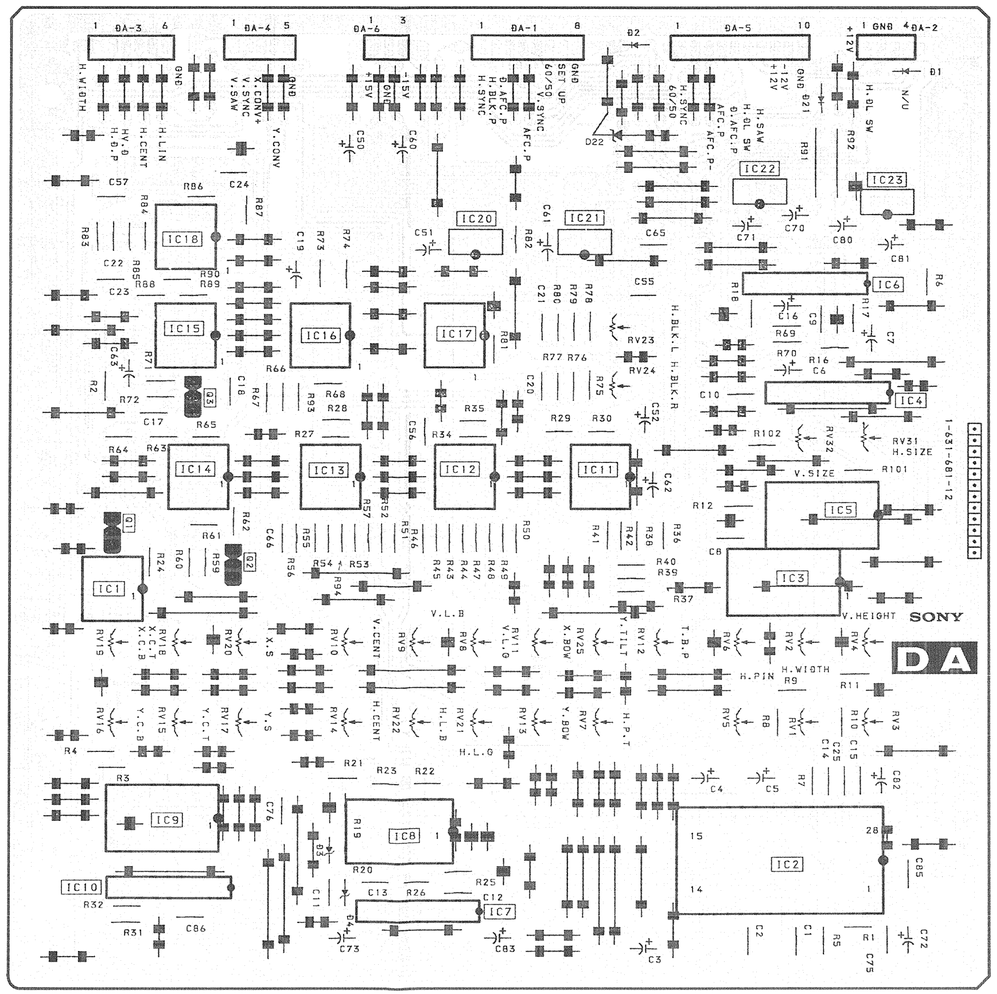
(3) 30 Vp-p(H)
(6) 3 Vp-p(H)

DA Board (DEF GEN)
DB Board (H.OSC & H.REG CONTROL)

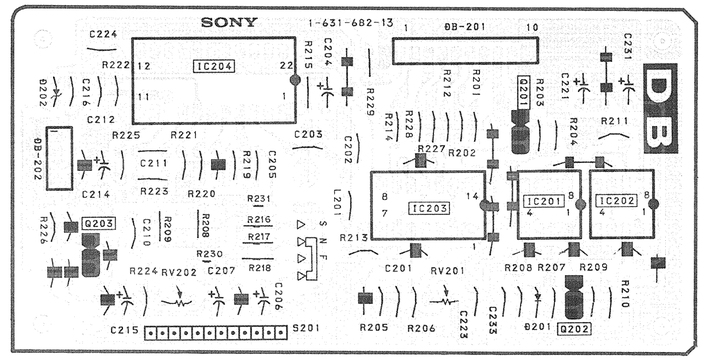




IC	Q	D	RV
		2	
		1	
		21	
			22
22			
23			
18,20,21			
6			
			23
15,16,17			
			24
4	3		
			32,31
14,13,12,11			
5			
	1		
	2		
1 3			
			19,10,11,6
			18,9,25,2
			20,8,12,4
			16,14,13,5
			15,22,7,1
			17,21 3
9,8			
2		3	
10			
7		4	



DB board (H.OSC & H.REG CONTROL)



DA board

IC	1	CX23025	SYSTEM DETECTOR
	2	CXA1268P	SIGNAL GEN.
	3	MC14053BCP	SCAN SELECT/ADD H.WIDTH
	4	NJM4558S	SCAN SELECT/ADD H.WIDTH
	5	MC14053BCP	SCAN SELECT/ADD H.WIDTH
	6	NJM4558S	SCAN SELECT/ADD H.WIDTH
	7	NJM4558S	SIN GEN./COS GEN.
	8	MC14066BCP	SIN GEN./COS GEN.
	9	MC14053BCP	ADD Y.CONV/ADD X.CONV
	10	NJM4558S	SIGNAL GEN.
	11	TL082CP	SIGNAL GEN./ADD H.WIDTH
	12	TL082CP	SIGNAL GEN./ADD V.SAW
	13	TL082CP	SIGNAL GEN./ADD H.LIN.
	14	NJM4558D	ADD Y CONV/ADD X.CONV
	15	TL082CP	H.SAW.GEN.
	16	NJM4558D	ADD H.CENT
	17	NJM2903D	H. BLK GEN.
	18	NJM2903D	H.V DRIVE PULSE GEN.
	20	NJM78M12FA	+12V REG
	21	NJM79M12FA	−12V REG
	22	NJM78M05FA	+5V REG
	23	NJM79M05FA	−5V REG
Q	1	DTC144ES	SYSTEM DETECTOR
	2	2SC2551	ADD Y CONV
	3	2SC2785	H.SAW.GEN.
D	1	1SS119	SCAN SELECT
	2	1SS119	SCAN SELECT
	3	RD7.5ES-B	LIMITER
	4	RD5.1ES-B	LIMITER
	21	1SS119	SCAN SELECT
	22	RD13ES-B3	SCAN SELECT

DB board

IC	201	TL082CP	H DELAY/H PHASE
	202	NJM2903D	H DELAY/H PHASE
	203	MC14069UBCP	H DELAY/H PHASE
	204	UPC1377C	H OSC/H AFC
Q	201	DTA144ES	H.PHASE
	202	2SC2785	H.PHASE
	203	DTA144ES	SYSTEM DETECTOR/AFC
D	201	1SS119	H. PHASE
	202	RD4.3ES-B1	SYSTEM DETECTOR/AFC

EA, EB, EC, C, P

EA board (H.DEF & V.DEF OUT, HV REG)
EB board (H.V , BEAM CURRENT & CRT PROTECTOR)
EC board (V CONVERGENCE OUT)
C board (CRT SOCKET)
P board (FBT)

EA board

IC	1	FA5301P	P.W.M CONTROL
	2	FA5301P	P.W.M CONTROL
	3	TL082CP	BUFF/COMPARATOR
	5	uPC4558D	H.CENT
Q	1	2SA1175	AFC PULSE
	2	2SA979	H.LIN AMP
	3	2SD669A-C	H.LIN AMP
	4	2SD1137	H.LIN AMP
	5	2SB860	H.LIN AMP
	6	2SC2688	P.W.M DRIVE
	7	2SC2542	P.W.M OUT
	8	2SC2551	O.C.P
	9	2SA1175	O.C.P
	10	2SC2688	H.DRIVE
	11	2SD1399	H.OUT
	12	2SD1134	H.CENT AMP
	13	2SB858	H.CENT AMP
	14	2SC2688	P.W.M
	15	2SA1091	O.C.P
	16	2SC2542	DC-DC CONVERTER
	17	2SC2688	HV DRIVE
	18	2SD1399	HV CONVERTER
	19	2SA1175	AFC PULSE
	201	2SA979	V.OUT AMP
	202	2SC3209	V.OUT AMP
	203	2SA1091-O	V.OUT AMP
	204	2SC2551	V.OUT AMP
	205	2SA1306B-O	V.OUT AMP
	206	2SC3298B	V.OUT AMP
	207	2SB861	RETRACE BOOST AMP
	208	2SC2551	RETRACE BOOST AMP
D	1	RD12ES-B	BIAS
	3	1SS119	BIAS
	4	1SS119	BIAS
	5	RH-1A	H.DRIVE
	6	CR02AM-4	PROTECTOR
	7	RH-1A	DC-DC CONV
	8	ERD28-04S	DC-DC CONV
	9	RH-1A	H.P. RECT
	10	RH-1A	H.P. RECT
	12	V11N	RECT
	13	RH-1A	HV CONV
	14	RH-1A	DC-DC CONV
	15	RH-1A	DC-DC CONV
	16	RH-1A	HV CONV
	28	1SS119	PROTECTOR
	30	1SS119	PROTECTOR
	32	RH-1A	PROTECTOR
	33	RH-1A	PROTECTOR
	35	1SS119	PROTECTOR
	37	1SS119	BIAS
	38	1SS119	BIAS
	39	RD12ES-B	BIAS
	40	RD18ES-B2	PROTECTOR
	41	RD3.3ES-B2	PROTECTOR
	42	RH-1A	RECT
	50	CR02AM-4	PROTECTOR
	201	GP080	RETRACE BOOST SW
	202	GP080	RETRACE BOOST SW
	203	1SS119	BIAS
	204	1SS119	BIAS
	205	1SS119	BIAS
	206	1SS119	PROTECTOR

EB board

IC	4	NJM2903D	HV PROT/BEAM CURRENT PROT1
	6	NJM2903D	CRT PROT/BEAM CURRENT PROT2
Q	20	2SC2785	CTR PROT
D	19	1SS119	PROTECTOR
	20	1SS119	MIXER
	24	UPC574J	32V REG
	25	1SS119	MIXER
	26	1SS119	MIXER
	27	CR02AM-4	PROTECTOR
	29	UPC574J	32V REG
	36	1SS119	PROTECTOR
	51	CR02AM-4	PROTECTOR

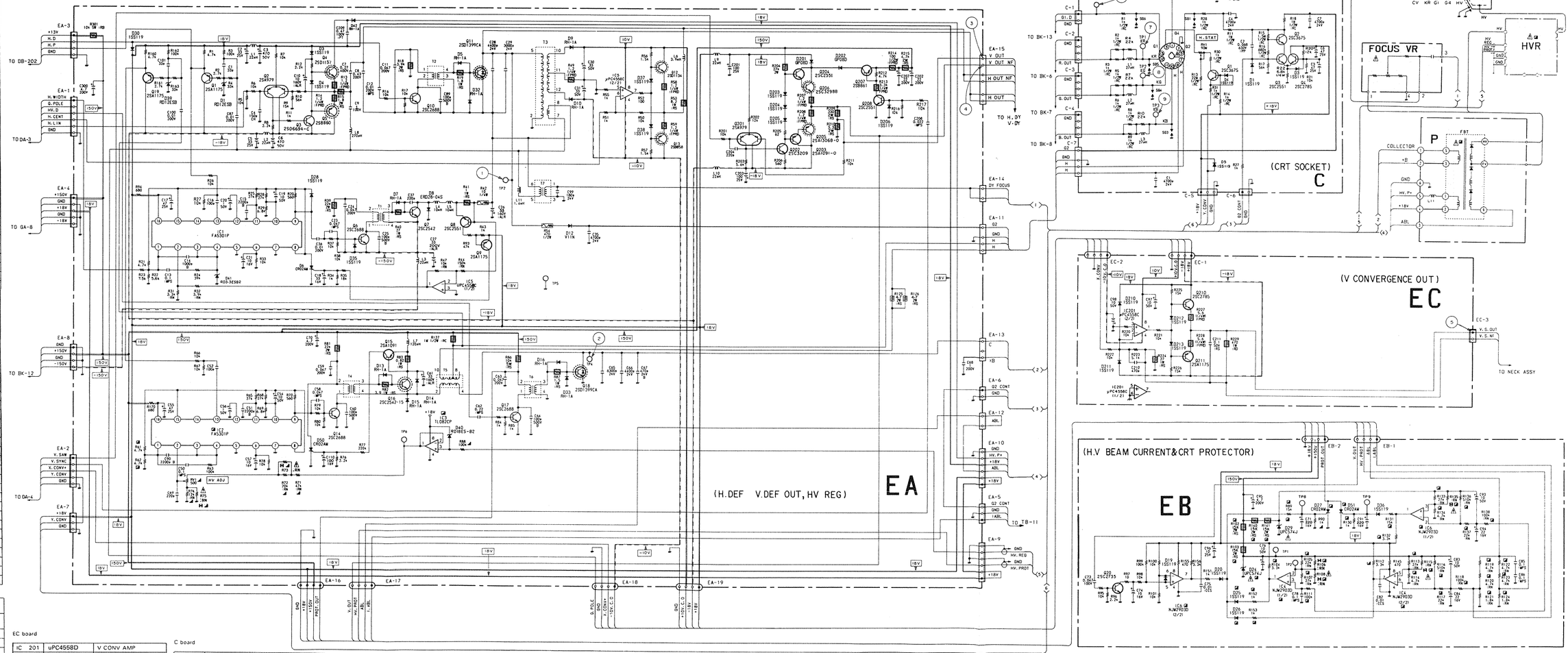
EC board

IC	201	uPC4558D	V CONV AMP
Q	210	2SC2785	V CONV AMP
	211	2SA1175	V CONV AMP
D	210	1SS119	PROTECTOR
	211	1SS119	PROTECTOR
	212	1SS119	BIAS
	213	1SS119	BIAS

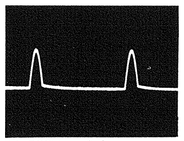
C board

Q	1	2SC3675	V.CON DRIVE
	2	2SC3675	G2 CONT
	3	2SC2551	G2 CONT
	4	2SC2785	G2 CONT
D	1	1SS119	PROTECTOR
	3	1SS119	PROTECTOR
	4	1SS119	PROTECTOR
	5	1SS119	PROTECTOR

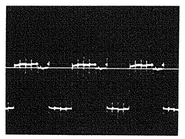
EA, EB, EC, C, P



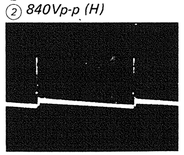
EA board (H.DEF & V DEF OUT, HV.REG)



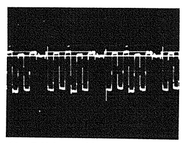
① 760Vp-p (H)
② 840Vp-p (H)



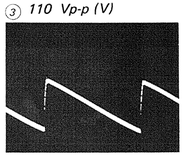
⑧ 76Vp-p (H)



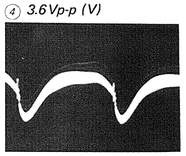
③ 110 Vp-p (V)



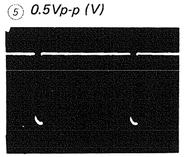
⑨ 54Vp-p (H)



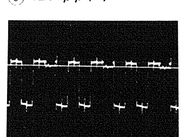
④ 3.6Vp-p (V)



⑤ 0.5Vp-p (V)



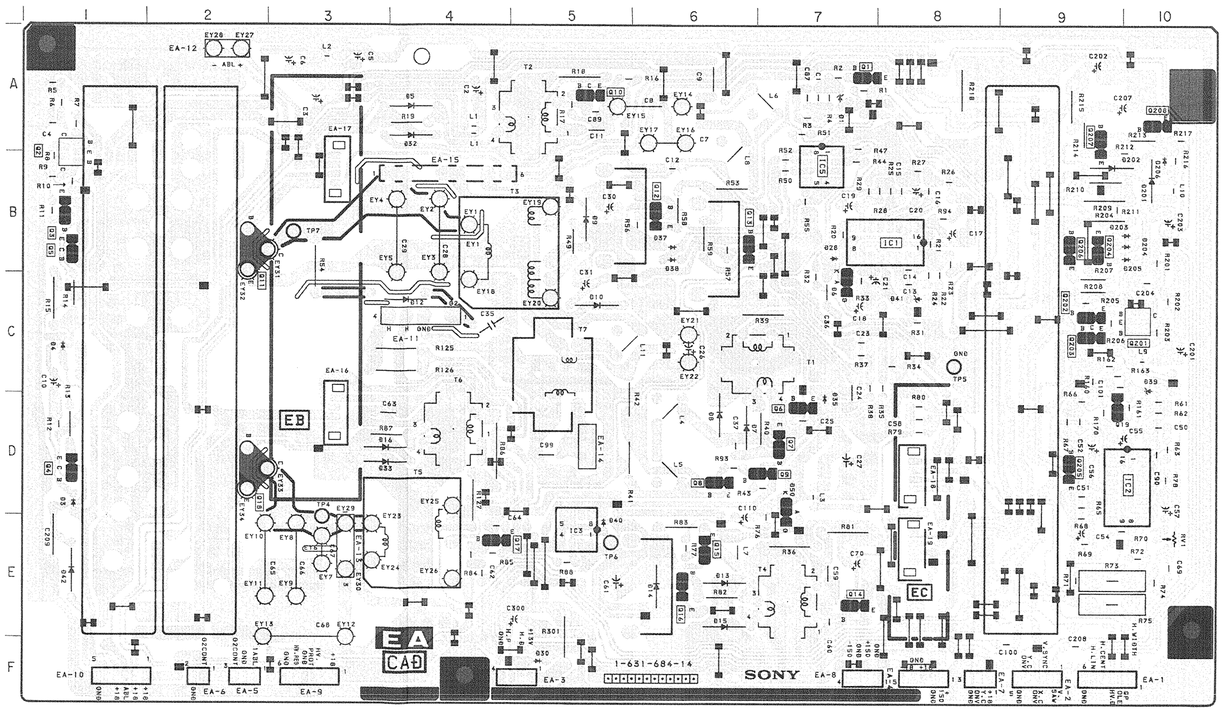
⑥ 124Vp-p (H)



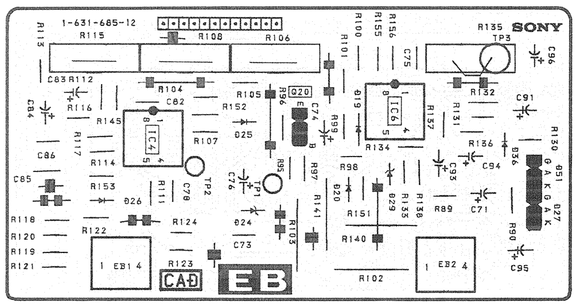
60Vp-p (H)

EA Board

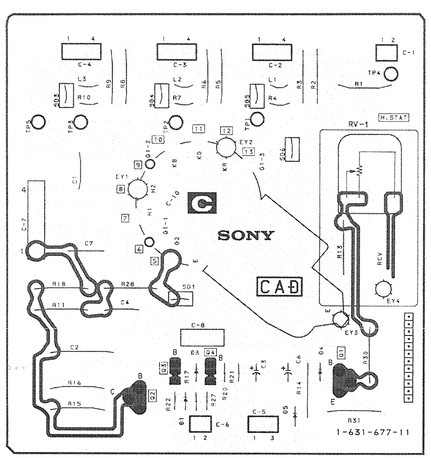
IC		D5	A-4
IC1	B-8	D6	C-7
IC2	D-10	D7	D-6
IC3	E-5	D8	D-6
IC5	B-7	D9	B-5
		D10	C-5
TRANSISTOR		D12	C-4
		D13	E-6
Q1	A-7	D14	E-6
Q2	B-1	D15	E-6
Q3	B-1	D16	D-3
Q4	D-1	D28	B-7
Q5	B-1	D30	F-5
Q6	D-7	D32	A-5
Q7	D-7	D33	D-3
Q8	D-6	D35	D-7
Q9	D-7	D37	B-6
Q10	A-5	D38	B-6
Q11	B-2	D39	C-10
Q12	B-6	D40	E-5
Q13	B-6	D41	C-8
Q14	E-7	D42	E-1
Q15	E-6	D50	D-7
Q16	E-6	D201	B-10
Q17	E-4	D202	B-9
Q18	D-2	D203	B-10
Q19	D-9	D204	B-10
Q201	C-10	D205	B-10
Q202	C-9	D206	B-10
Q203	C-9		
Q204	B-9	VARIABLE RESISTOR	
Q205	D-9		
Q206	B-9	RV1	E-10
Q207	A-9		
Q208	A-10	TEST POINT	
DIODE		TP4	E-3
		TP5	C-8
D1	A-7	TP6	E-5
D3	D-1	TP7	B-3
D4	C-1		



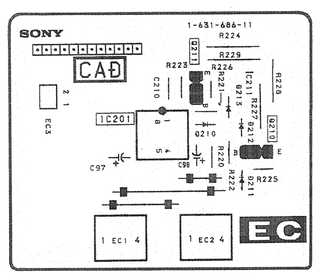
EB board (H.V, BEAM CURRENT & CRT PROTECTOR)



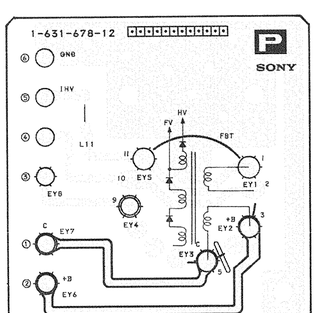
C board (CRT SOCKET)



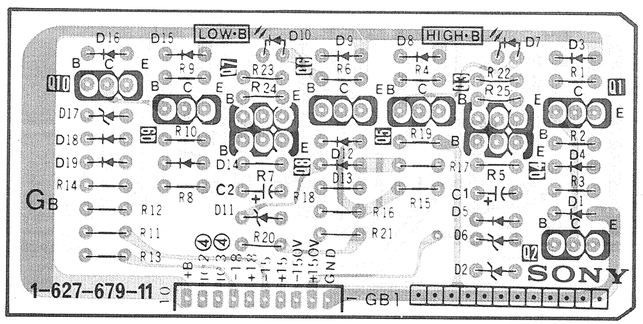
EC board (V CONVERGENCE OUT)



P board (FBT)

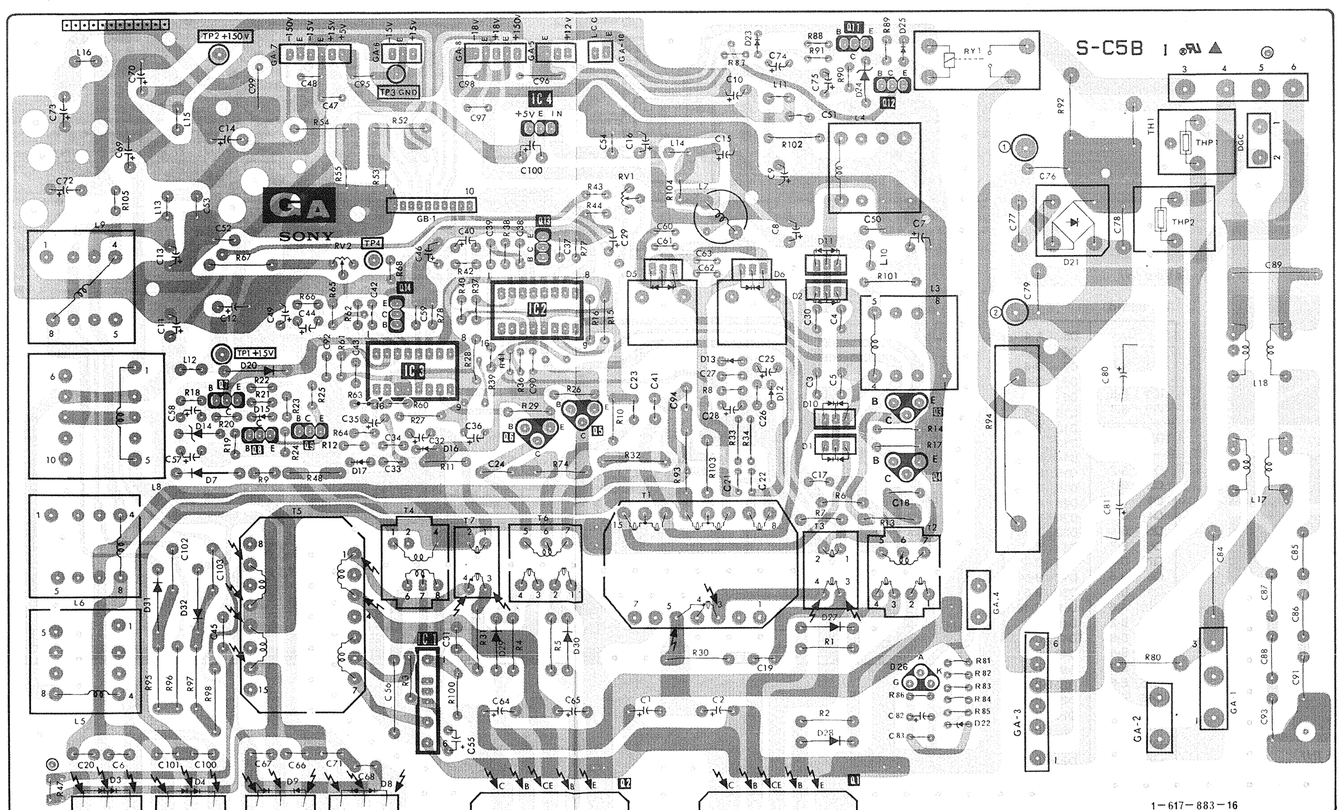


GB board (OVER VOLTAGE PROTECTOR)



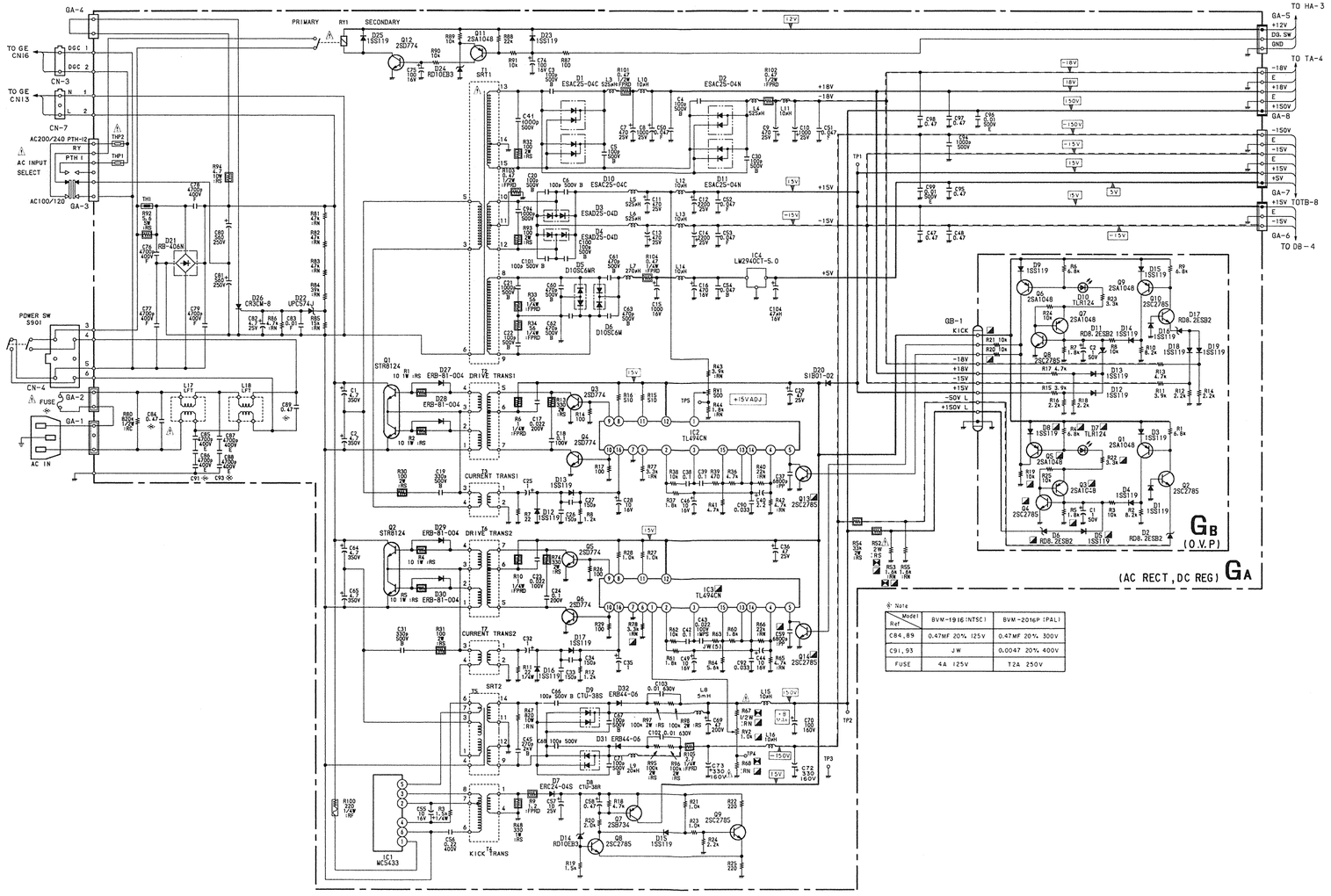
GA board (AC RECT, DC REG)

IC	Q	D	ADJ·TP
		23 25	
	11		TP2
		24	TP3
	12		
4			
			RV1
		21	
	13	11	RV2 TP4 TP5
		5 6	
		2	
2	14		
			TP1
3		20 13	
	7	12	
	9 6 5 3	15 10	
	8	14 16 1	
	4	17	
		7	
		31,32	
		29 27 30	
		26	
1			
		22	
		28	
		3 4 9 8	
	2 1		



• : Pattern from the side which enables seeing
• : Pattern of the rear side.

GA board (AC RECT, DC REG)
GB board (OVER VOLTAGE PROTECTOR)



Note

Ref. \ Model	BVM-1916(NTSC)	BVM-2016P(PAL)
C84,89	0.47MF 20% 125V	0.47MF 20% 300V
C91,93	J/W	0.0047 20% 400V
FUSE	4A 125V	T2A 250V

GA BOARD

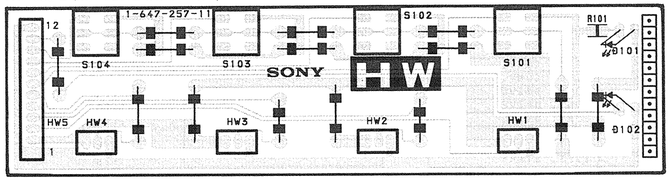
IC1	MC5433	STARTER
2	TL494CN	DC REG
3	TL494CN	DC REG
4	LM2940CT-5.0	+5V REG
Q1	STR8124	DC-DC CONV.
2	STR8124	DC-DC CONV.
3	2SD774	CONV. DRIVE
4	2SD774	CONV. DRIVE
5	2SD774	CONV. DRIVE
6	2SD774	CONV. DRIVE
7	2SB734	SOFT. START
8	2SC2785	SOFT. START
9	2SC2785	SOFT. START
11	2SA1048	D.G. CONTROL
12	2SD774	D.G. CONTROL
13	2SC2785	O.V.P SW
14	2SC2785	O.V.P SW
D1	ESAC25-04C	+18V RECT
2	ESAC25-04N	-18V RECT
3	ESAD25-04D	+15V RECT
4	ESAD25-04D	-15V RECT
5	D10SC6MR	+5V RECT
6	D10SC6M	+5V RECT
7	ERC24-04S	START. RECT
8	CTU-38R	-150V RECT
9	CTU-38S	+150V RECT
10	ESAC25-04C	+18V RECT
11	ESAC25-04N	-18V RECT
12	1SS119	O.C.P RECT
13	1SS119	O.C.P RECT
14	RD10EB3T	STARTER
15	1SS119	STARTER
16	1SS119	O.C.P RECT
17	1SS119	O.C.P RECT
20	SIB01-02	DC. STOPPER
21	RB406N	AC RECT
22	uPC574J	O.V.P
23	1SS119	DISCHARGE
24	RD10EB3T	+10V REG
25	1SS119	SW PROTECT
26	CR3CM-8	O.V.P
27	ERB81-004	CONV. DRIVE
28	ERB81-004	CONV. DRIVE
29	ERB81-004	CONV. DRIVE
30	ERB81-004	CONV. DRIVE
31	ERB44-06	
32	ERB44-06	

GB BOARD

Q1	2SA1048	O.V.P (-150V)
2	2SC2785	O.V.P (-150V)
3	2SA1048	O.V.P (+150V)
4	2SC2785	O.V.P (+150V)
5	2SA1048	O.V.P (+150V)
6	2SA1048	O.V.P (+15V +18V)
7	2SA1048	O.V.P (+15V +18V)
8	2SC2785	O.V.P (+15V +18V)
9	2SA1048	O.V.P (-15V -18V)
10	2SC2785	O.V.P (-15V -18V)
D1	1SS119	PROTECTOR
2	RD8.2ES-T1B2	REFERENCE
3	1SS119	PROTECTOR
4	1SS119	MIX.
5	1SS119	MIX.
6	RD8.2ES-T1B2	REFERENCE
7	TLR124	O.V.P INDICATE
8	1SS119	PROTECTOR
9	1SS119	PROTECTOR
10	TLR124	O.V.P INDICATE
11	RD8.2ES-T1B2	REFERENCE
12	1SS119	MIX.
13	1SS119	MIX.
14	1SS119	MIX.
15	1SS119	PROTECTOR
16	1SS119	PROTECTOR
17	RD8.2ES-T1B2	REFERENCE
18	1SS119	MIX.
19	1SS119	MIX.

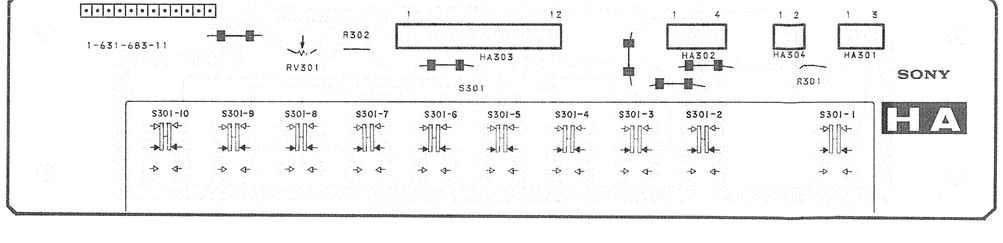
HA, HH, HW, HX, HY, XB, Y

HW board (MANUAL CONTROL)

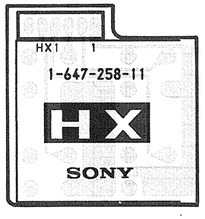


HH board (MANUAL VOLUME)

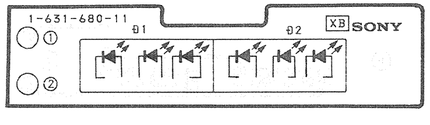
HA board (PANEL CONTROL)



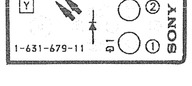
HX board (INPUT SELECT)



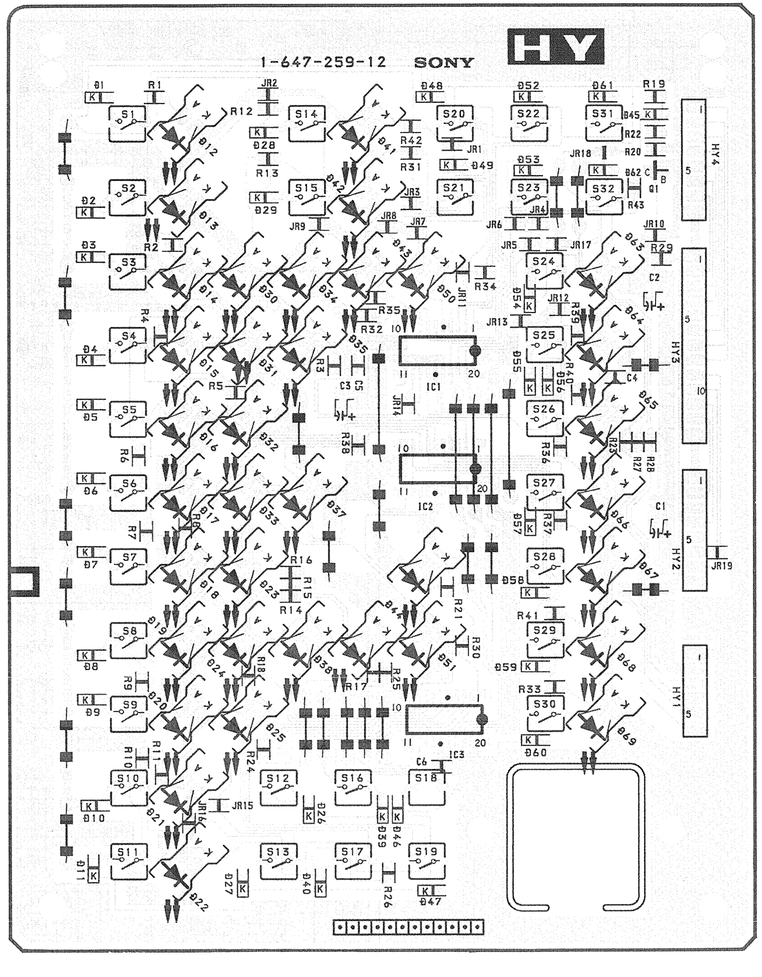
XB board (TALLY)



Y board (POWER LED)

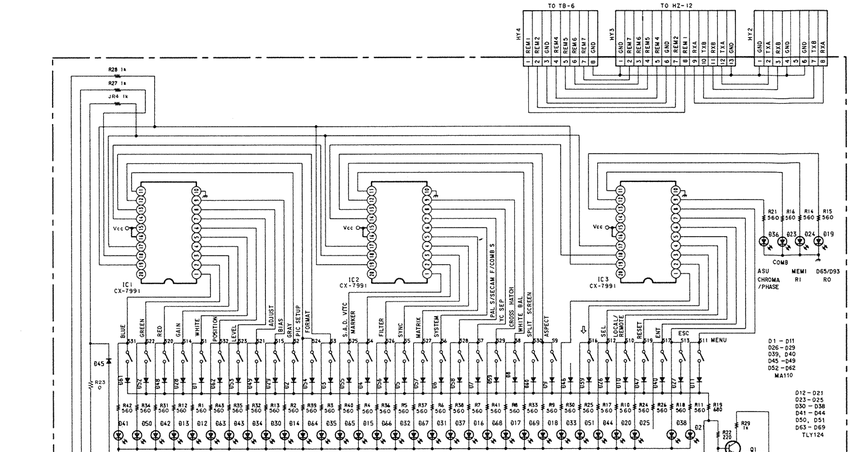


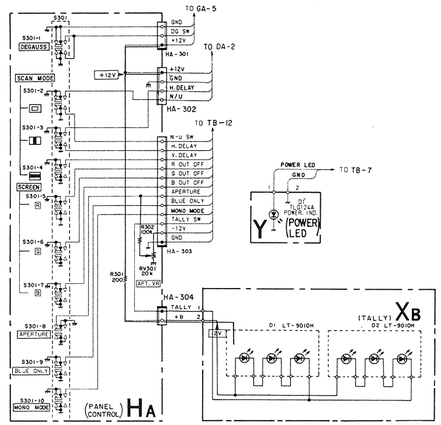
HY board (CONTROL FUNCTION SELECT)

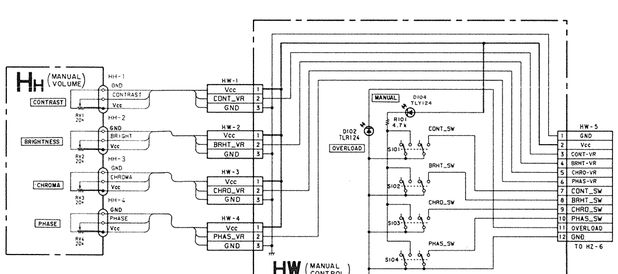


HA, HH, HW, HX, HY, XB, Y

HA board (PANEL CONTROL), HH board (MANUAL VOLUME), HW board (MANUAL CONTROL),
HX board (INPUT SELECT), HY board (CONTROL FUNCTION SELECT), XB board (TALLY), Y board (POWER LED)







HW BOARD

D101	TLY124	INDICATOR
102	TLR124	INDICATOR

Y BOARD

D1	TLG124A	POWER INDICATOR

XB BOARD

D1	LT-9010H	TALLY LAMP
D2	LT-9010H	TALLY LAMP

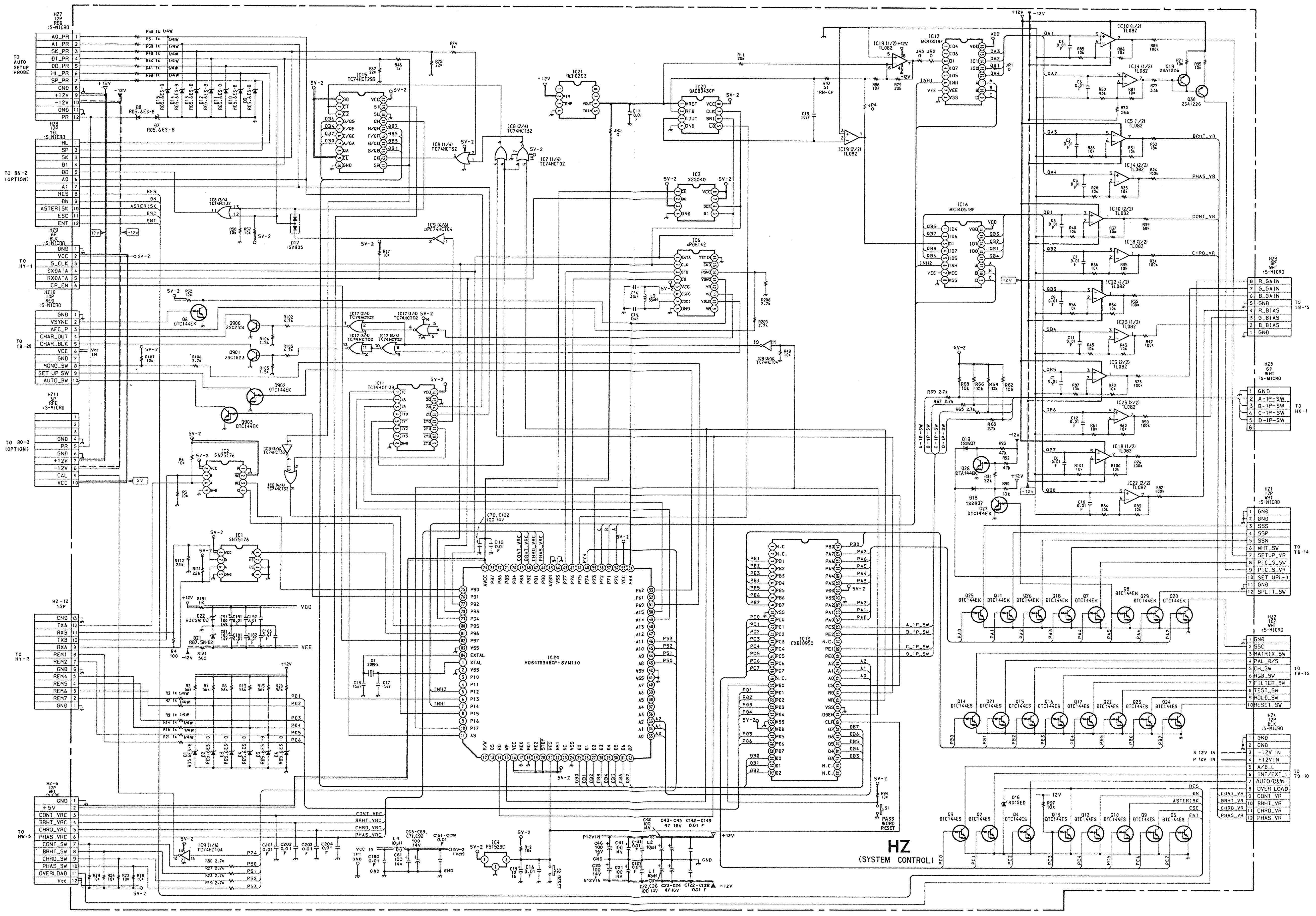
HY BOARD

IC1	CX-7991	KEY SCAN
2	CX-7991	KEY SCAN
3	CX-7991	KEY SCAN
Q1	2SC3624A	KEY DETECTION
D1	MA110	PROTECTION
2	MA110	PROTECTION
3	MA110	PROTECTION
4	MA110	PROTECTION
5	MA110	PROTECTION
6	MA110	PROTECTION
7	MA110	PROTECTION
8	MA110	PROTECTION
9	MA110	PROTECTION
10	MA110	PROTECTION
11	MA110	PROTECTION
12	TLY124	PROTECTION
13	TLY124	INDICATOR
14	TLY124	INDICATOR
15	TLY124	INDICATOR
16	TLY124	INDICATOR
17	TLY124	INDICATOR
18	TLY124	INDICATOR
19	TLY124	INDICATOR
20	TLY124	INDICATOR
21	TLY124	INDICATOR
23	TLY124	INDICATOR
24	TLY124	INDICATOR
25	TLY124	INDICATOR
26	MA110	PROTECTION
27	MA110	PROTECTION
28	MA110	PROTECTION
29	MA110	PROTECTION
30	TLY124	INDICATOR
31	TLY124	INDICATOR
32	TLY124	INDICATOR
33	TLY124	INDICATOR
34	TLY124	INDICATOR
D35	TLY124	INDICATOR
36	TLY124	INDICATOR
37	TLY124	INDICATOR
38	TLY124	INDICATOR
39	MA110	PROTECTION
40	MA110	PROTECTION
41	TLY124	INDICATOR
42	TLY124	INDICATOR
43	TLY124	INDICATOR
44	TLY124	INDICATOR
45	MA110	PROTECTION
46	MA110	PROTECTION
47	MA110	PROTECTION
48	MA110	PROTECTION
49	MA110	PROTECTION
50	TLY124	INDICATOR
51	TLY124	INDICATOR
52	MA110	PROTECTION
53	MA110	PROTECTION
54	MA110	PROTECTION
55	MA110	PROTECTION
56	MA110	PROTECTION
57	MA110	PROTECTION
58	MA110	PROTECTION
59	MA110	PROTECTION
60	MA110	PROTECTION
61	MA110	PROTECTION
62	MA110	PROTECTION
63	TLY124	PROTECTION
64	TLY124	INDICATOR
65	TLY124	INDICATOR
66	TLY124	INDICATOR
67	TLY124	INDICATOR
68	TLY124	INDICATOR
69	TLY124	INDICATOR

HZ board (SYSTEM CONTROL)

HZ BOARD

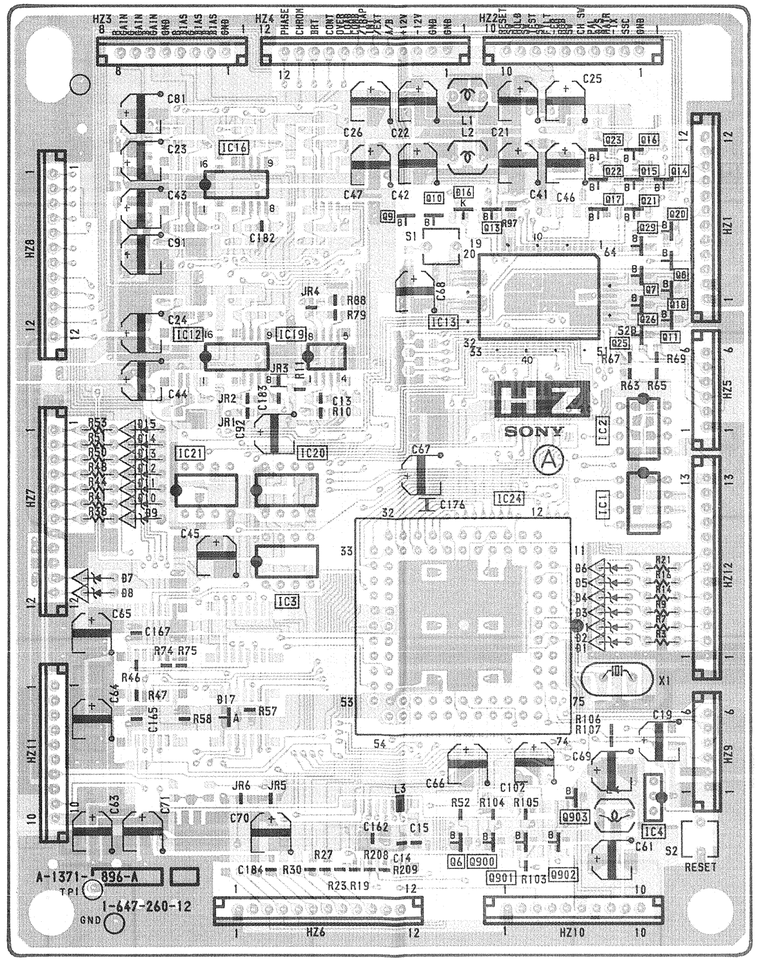
IC 1	SN75176BP	RECEIVER
2	SN75176BP	TRANSMITTER
3	X25040P	NV RAM
4	PST529C	RESET
5	TL082M	OP AMP
6	uPD6142G-101	ON SCREEN D
7	TC74HCT02AF	NOR GATE
8	TC74HCT32AF	OR GATE
9	TC74HCT04AF	INVERTOR
10	TL082M	SAMPLE HOLD
11	TC74HCT139AF	DECODER
12	MC14051BF	DE-MULTIPLEXER
13	CXD10950	I/O EXPANDER
14	TL082M	SAMPLE HOLD
15	TC74HC299AF	SHIFT REGISTER
16	MC14051BF	DE-MULTIPLEXER
17	TC74HCT02AF	NOR GATE
18	TL082M	SAMPLE HOLD
19	TL082M	SAMPLE HOLD
20	DAC8043GP	D/A CONNECTOR
21	REF02EZ	REF. VOLTAGE
22	TL082M	SAMPLE HOLD
23	TL082M	SAMPLE HOLD
24	HD6475368-BVM1.20	CPU
Q 2	DTC144EK	OUTPUT BUFFER
3	DTC144EK	OUTPUT BUFFER
4	DTC144EK	OUTPUT BUFFER
5	DTC144EK	OUTPUT BUFFER
6	DTC144EK	BUFFER
7	DTC144EK	OUTPUT BUFFER
8	DTC144EK	OUTPUT BUFFER
9	DTC144EK	OUTPUT BUFFER
10	DTC144EK	OUTPUT BUFFER
11	DTC144EK	OUTPUT BUFFER
12	DTC144EK	OUTPUT BUFFER
13	DTC144EK	OUTPUT BUFFER
14	DTC144EK	OUTPUT BUFFER
15	DTC144EK	OUTPUT BUFFER
16	DTC144EK	OUTPUT BUFFER
17	DTC144EK	OUTPUT BUFFER
18	DTC144EK	OUTPUT BUFFER
19	2SA1226	OUTPUT BUFFER
20	DTC144EK	OUTPUT BUFFER
21	DTC144EK	OUTPUT BUFFER
22	DTC144EK	OUTPUT BUFFER
23	DTC144EK	OUTPUT BUFFER
24	DTC144EK	OUTPUT BUFFER
25	DTC144EK	OUTPUT BUFFER
26	DTC144EK	OUTPUT BUFFER
27	DTC144EK	OUTPUT BUFFER
28	DTA144EK	OUTPUT BUFFER
29	DTC144EK	OUTPUT BUFFER
30	2SA1226	OUTPUT BUFFER
900	2SC2351	OUTPUT BUFFER
901	2SC1623	OUTPUT BUFFER
902	DTC144EK	OUTPUT BUFFER
903	DTC144EK	OUTPUT BUFFER
D 1	RD5.6ES-T1B	PROTECTION
2	RD5.6ES-T1B	PROTECTION
3	RD5.6ES-T1B	PROTECTION
4	RD5.6ES-T1B	PROTECTION
5	RD5.6ES-T1B	PROTECTION
6	RD5.6ES-T1B	PROTECTION
7	RD5.6ES-T1B	PROTECTION
8	RD5.6ES-T1B	PROTECTION
9	RD5.6ES-T1B	PROTECTION
10	RD5.6ES-T1B	PROTECTION
11	RD5.6ES-T1B	PROTECTION
12	RD5.6ES-T1B	PROTECTION
13	RD5.6ES-T1B	PROTECTION
14	RD5.6ES-T1B	PROTECTION
15	RD5.6ES-T1B	PROTECTION
16	RD15M-T1B	PROTECTION
17	1S2835	SWITCH
18	1S2837	SWITCH
19	1S2837	SWITCH
21	RD7.5M-T1B2	-7.5V REG
22	RD7.5M-T1B2	+7.5V REG



HZ board (SYSTEM CONTROL)

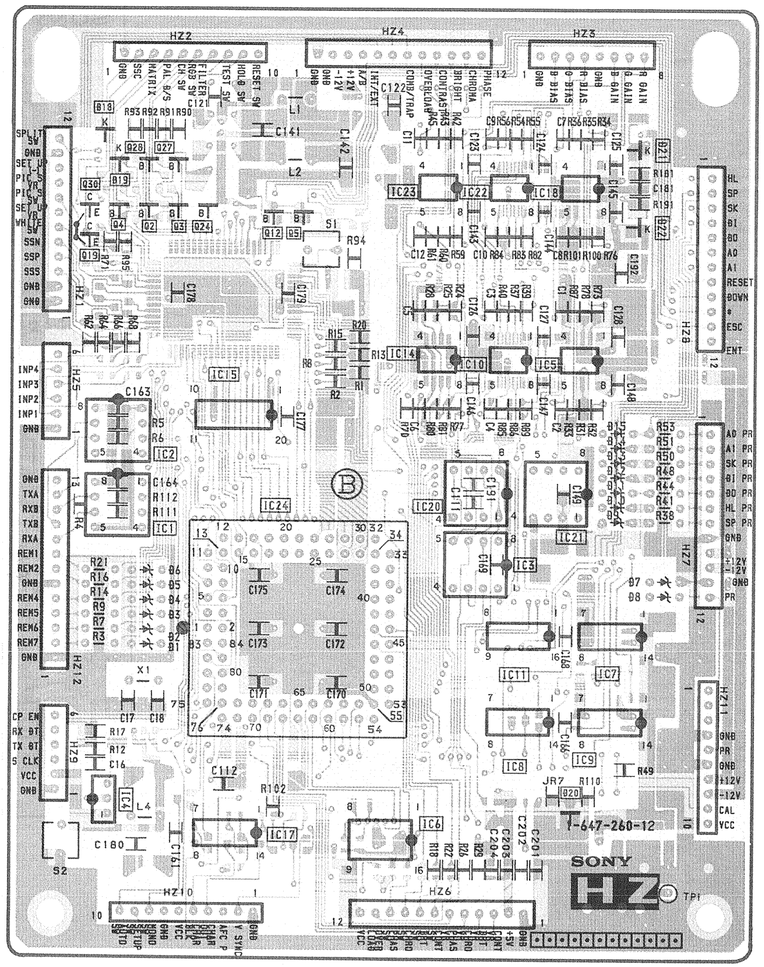
– CONDUCTOR SIDE –

IC	Q	D,TP
	23 16	
	22 15 14	
16		
	9 10 13 17 21	16
	20	
	29	
	8	
	7	
	18	
13		
	26	
	11	
	25	
12 19		
		15
		14
		13
2		12
21 20 1		11
		10
		9
3		7 6
		8 5
		4
24		3
		2
		1
		17
4	903	
	6 900 901 902	
		TP1



– COMPONENT SIDE –

IC	Q	D, TP
		18
		19 21
23 22 18	28,27	
	30 4 2 3 24	
	19 12 5	22
14 10 5		
		15
		14
		13
2 15		12
		11
		10
1 20 21		9
3		6 7
		5 4 8
24		3
		2
11 7		1
8 9		
		20
4		
17 6		
		TP1



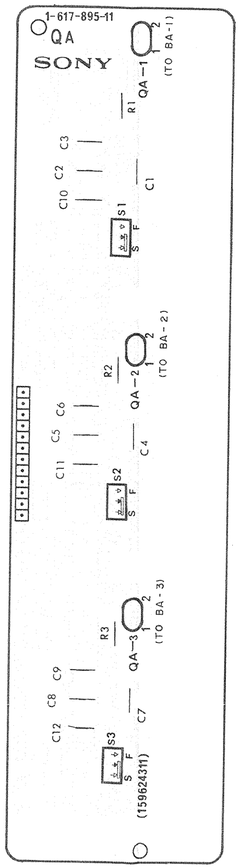
• : Pattern from the side which enables seeing.

• : Pattern of the rear side.

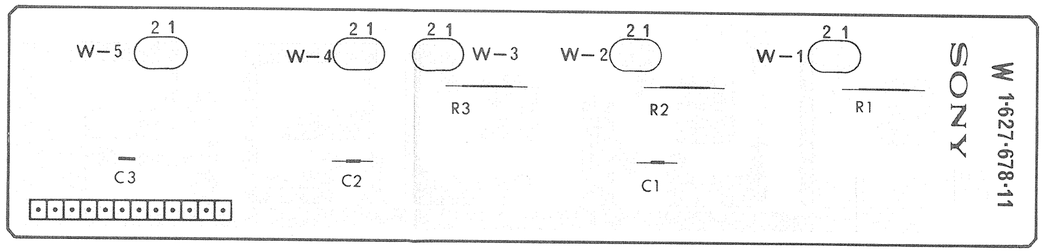
GC, QA, QB, V, W GC, QA, QB, V, W

5. DIAGRAMS

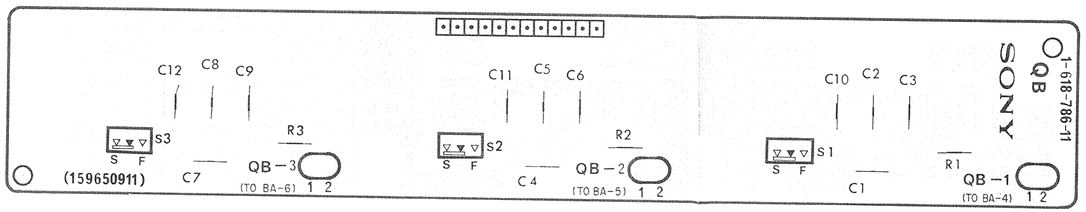
QA board (COMPOSITE VIDEO INPUT)



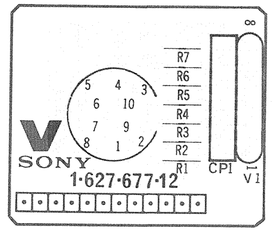
W board (RGB/COMPONENT OUT)



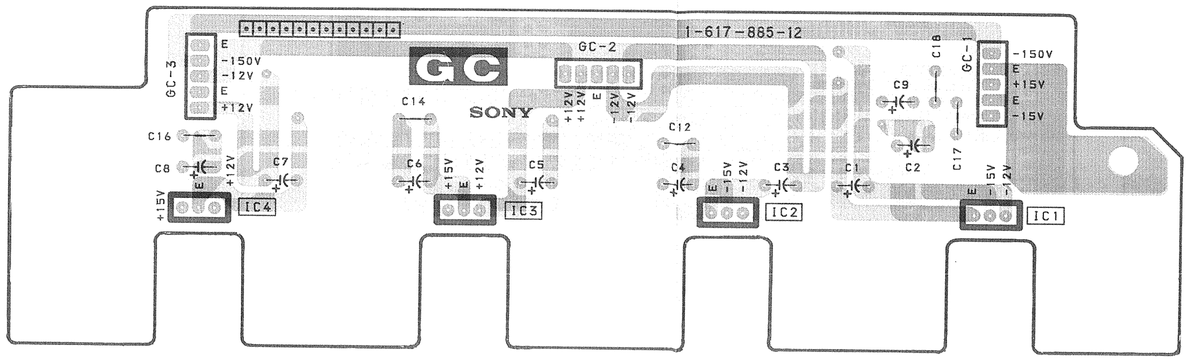
QB board (RGB/COMPONENT INPUT)



V board (REMOTE)



GC board (REG)

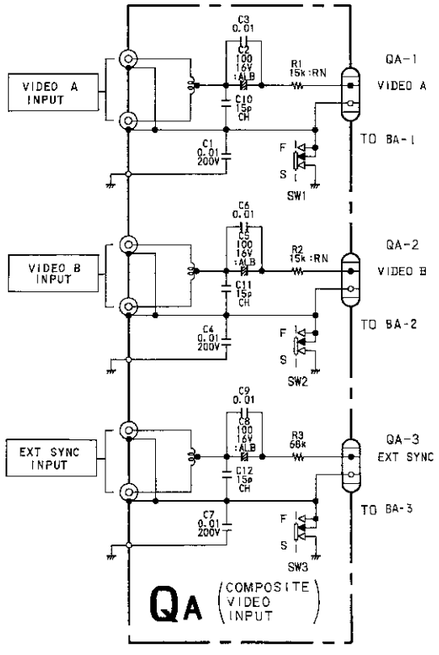


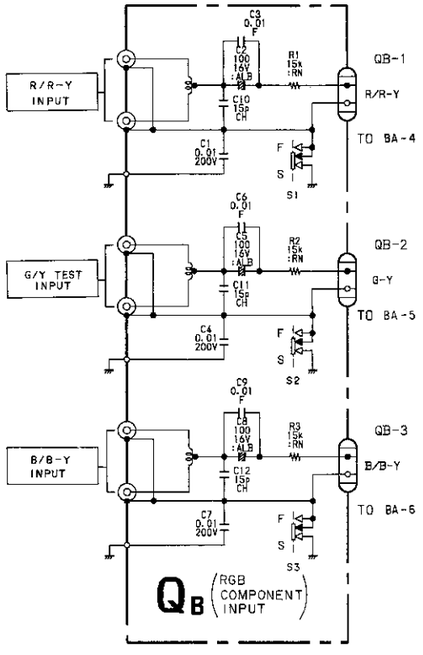
• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

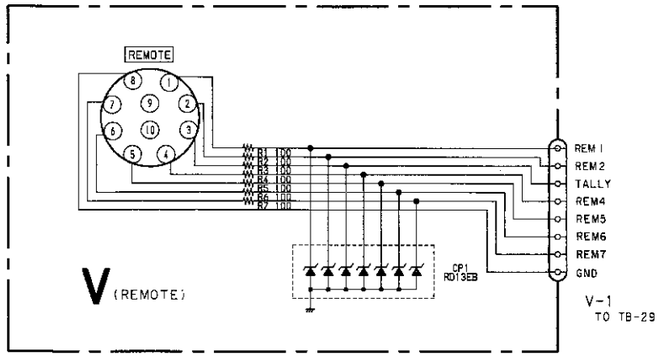
GC board (REG) QA board (COMPOSITE VIDEO INPUT) QB board (RGB/COMPONENT INPUT)
V board (REMOTE) W board (RGB/COMPONENT OUT)

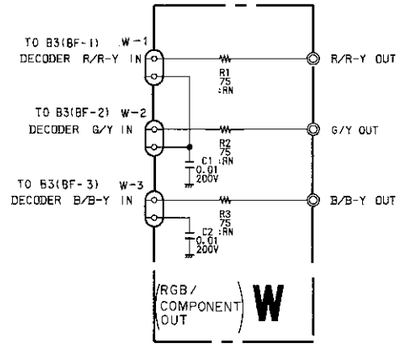
GC BOARD

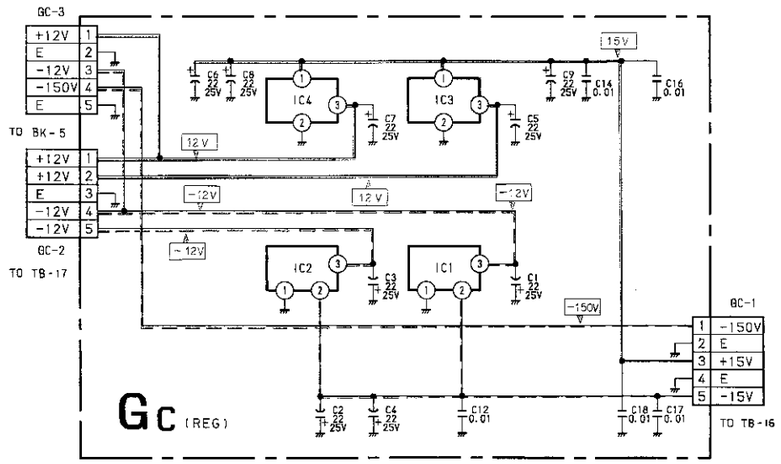
IC1	μPC7912H	-12V REG
2	μPC7912H	-12V REG
3	μPC2412HF	+12V REG
4	μPC2412HF	+12V REG



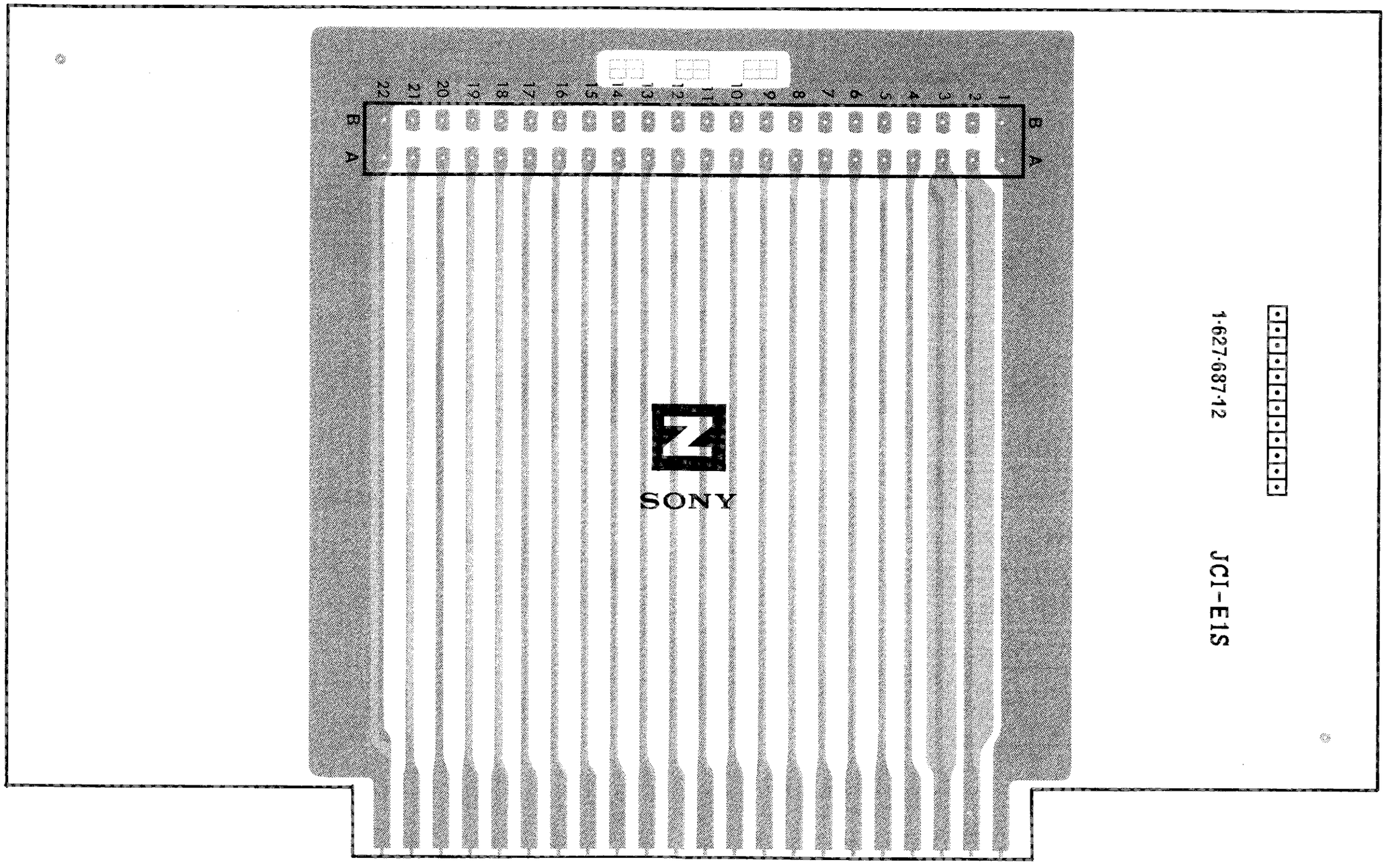








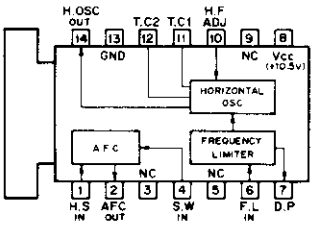
Z board (EXTENSION BOARD)



: Pattern from the side which enables seeing.
: Pattern of the rear side.

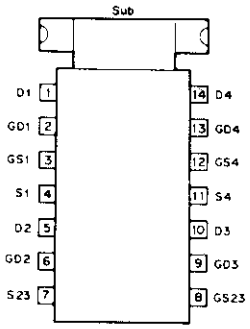
5-4. SEMICONDUCTORS

CX-158 (SONY)
HORIZONTAL DEFLECTION OSCILLATOR/FREQUENCY LIMITER
— TOP VIEW —

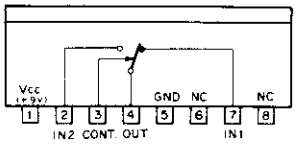


D.P ; DISCHARGE PROTECTION
F.L IN ; FREQUENCY LIMITTER IN
H.F ADJ ; HORIZONTAL FREQUENCY ADJ
H.OSC OUT ; HORIZONTAL OSCILLATOR OUT
H.S IN ; HORIZONTAL SYNC IN
S.W IN ; SAW WAVE IN
T.C 1/2 ; TIME CONSTANT 1/2

CX-7180 (SONY)
SRG FET IC
— TOP VIEW —

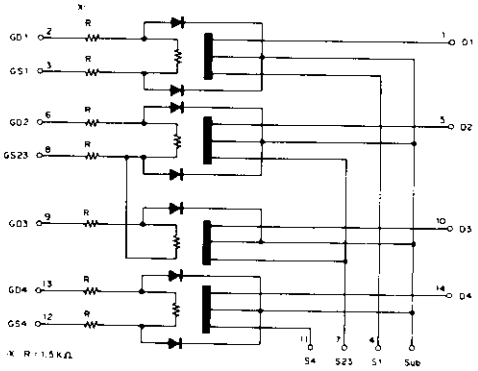


CX20061 (SONY)
ANALOG SWITCH
— SIDE VIEW —

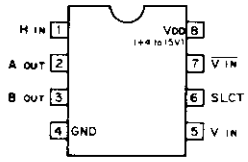


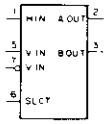
CONT.	SW
0	
1	

0 , LOW LEVEL
1 , HIGH LEVEL



CX23025 (SONY)
C-MOS TV·VTR SYNC SIGNAL DISCRIMINATOR
— TOP VIEW —





A OUT ; SYNC SIGNAL DISCRIMINATION OUTPUT
B OUT ; SYNC SIGNAL DISCRIMINATION OUTPUT
H IN ; HORIZONTAL SYNC INPUT
SLCT ; POWER ON INITIALIZED SELECT INPUT
V IN ; VERTICAL SYNC INPUT
$\overline{V}$ IN ; VERTICAL SYNC INPUT

POWER ON INITIALIZED

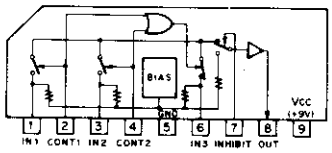
SLCT INPUT	A OUTPUT	B OUTPUT
1	0	1
0	1	0

DISCRIMINATION

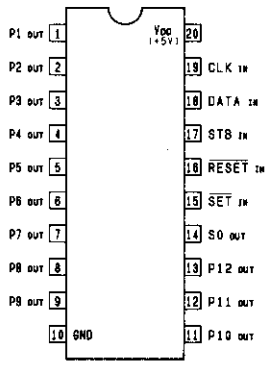
V SYNC INPUT FREQUENCY	OUTPUTS A	B
50Hz	0	1
60Hz	1	0

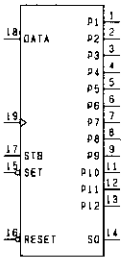
0 ; LOW LEVEL
1 ; HIGH LEVEL

CX894 (SONY)
3 INPUT SWITCH
— SIDE VIEW —



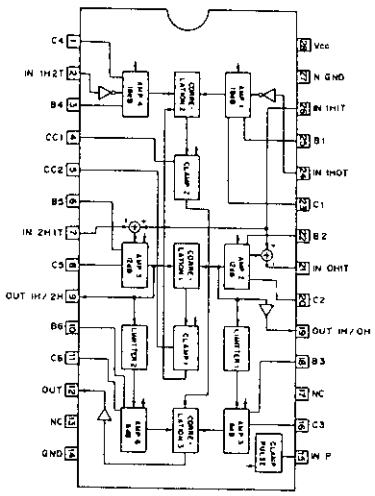
CX7991 (SONY)
C-MOS 12-BIT SERIAL TO PARALLEL CONVERTER
– TOP VIEW –



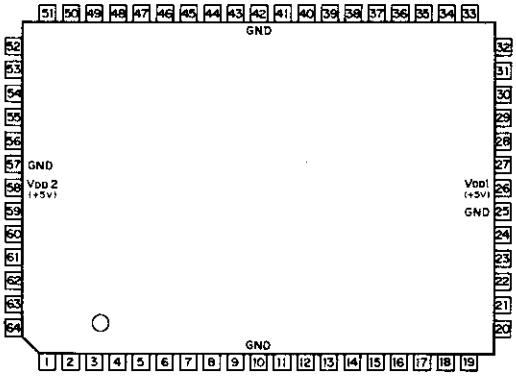


CLK ;CLOCK
DATA ;SERIAL DATA INPUT
P1-P12;PARALLEL DATA
RESET ;RESET SIGNAL
SET ;SET SIGNAL
SO ;SERIAL DATA OUTPUT
STB ;STROBE SIGNAL

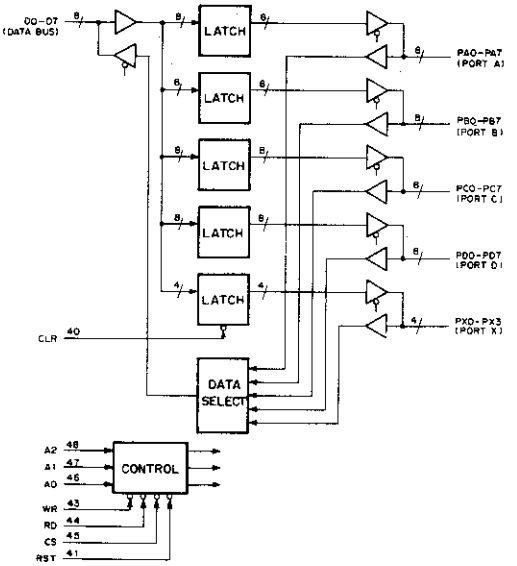
CXA1539P



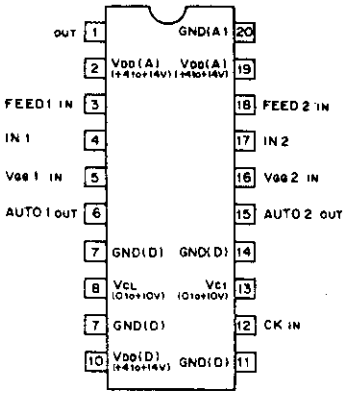
CXD1095Q (SONY) FLAT PACKAGE
C-MOS I/O PORT EXPANDER
— TOP VIEW —

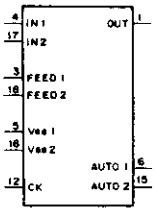


PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL
1			NC	17	○	○	PC6	33			NC	49	○	○	PX0
2			NC	18	○	○	PC7	34			NC	50	○	○	PX1
3	○	○	PB1	19			NC	35	○	○	D3	51			NC
4	○	○	PB2	20	○	○	PD0	36	○	○	D4	52	○	○	PX2
5	○	○	PB3	21	○	○	PD1	37	○	○	D5	53	○	○	PX3
6	○	○	PB4	22	○	○	PD2	38	○	○	D6	54	○	○	PA0
7	○	○	PB5	23	○	○	PD3	39	○	○	D7	55	○	○	PA1
8	○	○	PB6	24	○	○	PD4	40	○		CLR	56	○	○	PA2
9	○	○	PB7	25			GND	41	○		RST	57			GND
10			GND	26	○		VDD(+5V)	42			GND	58	○		VDD(+5V)
11	○	○	PC0	27	○	○	PD5	43	○		WR	59	○	○	PA3
12	○	○	PC1	28	○	○	PD6	44	○		RD	60	○	○	PA4
13	○	○	PC2	29	○	○	PD7	45	○		CS	61	○	○	PA5
14	○	○	PC3	30	○	○	D0	46	○		A0	62	○	○	PA6
15	○	○	PC4	31	○	○	D1	47	○		A1	63	○	○	PA7
16	○	○	PC5	32	○	○	D2	48	○		A2	64	○	○	PB0

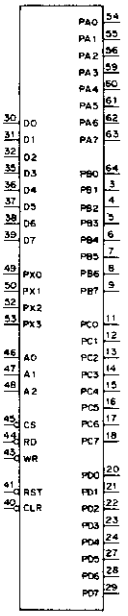


CXL1009P (SONY)
C-MOS CCD SIGNAL PROCESSOR FOR TBC
— TOP VIEW —





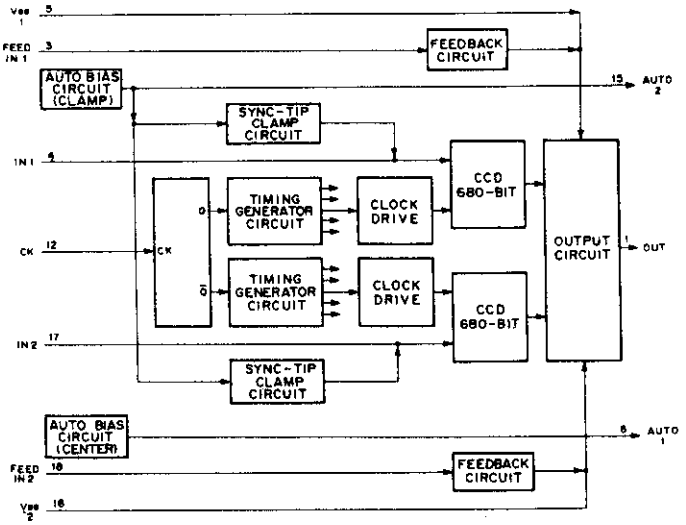
OUT	; OUT PUT
FEED 1/2 IN	; FEEDBACK INPUT 1/2
IN 1/2	; INPUT 1/2
VGG 1/2 IN	; GATE INPUT 1/2
AUTO 1/2 OUT	; AUTO BIAS OUTPUT 1/2
CK IN	; CLOCK INPUT
VCL	; POWER SUPPLY 2 (DIGITAL)
VDD(A)/(D)	; POWER SUPPLY 1 (ANALOG)/(DIGITAL)
GND(A)/(D)	; GROUND (ANALOG)/(DIGITAL)



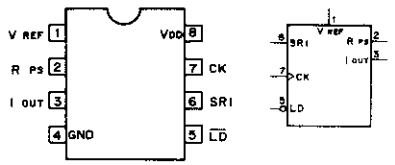
CS	RD	WR	A2	A1	A0	MODE
0	0	1	0	0	0	PORT A → DATA BUS
0	0	1	0	0	1	PORT B → DATA BUS
0	0	1	0	1	0	PORT C → DATA BUS
0	0	1	0	1	1	PORT D → DATA BUS
0	0	1	1	0	0	PORT X → DATA BUS
0	0	1	1	0	1	——
0	0	1	1	1	0	——
0	0	1	1	1	1	——
0	1	0	0	0	0	DATA BUS → PORT A
0	1	0	0	0	1	DATA BUS → PORT B
0	1	0	0	1	0	DATA BUS → PORT C
0	1	0	0	1	1	DATA BUS → PORT D
0	1	0	1	0	0	DATA BUS → PORT X
0	1	0	1	0	1	——
0	1	0	1	1	0	DATA BUS → CTL REG.1
0	1	0	1	1	1	DATA BUS → CTL REG.2
1	X	X	X	X	X	DATA BUS ; HI-Z

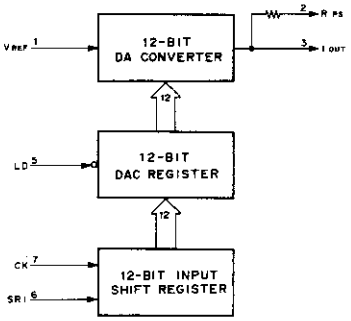
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

DO-D7 ; DATA BUS INPUTS/OUTPUTS
CS ; CHIP SELECT INPUT
RD ; READ STROBE INPUT
WR ; WRITE STROBE INPUT
A0-A2 ; ADDRESS INPUT
RST ; RESET INPUT
CLR ; CLEAR INPUT
PA0-PA7 ; PORT A INPUTS/OUTPUTS
PB0-PB7 ; PORT B INPUTS/OUTPUTS
PC0-PC7 ; PORT C INPUTS/OUTPUTS
PD0-PD7 ; PORT D INPUTS/OUTPUTS
PX0-PX3 ; PORT X INPUTS/OUTPUTS

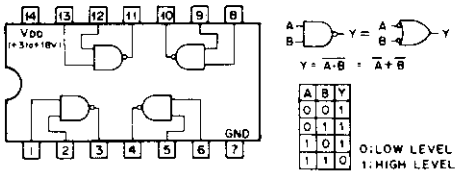


DAC-8043GP (PMI)
C-MOS 12-BIT SERIAL INPUT D/A CONVERTER
– TOP VIEW –

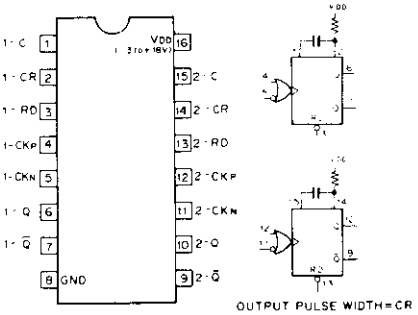




HD14011BP (HITACHI)
MC14011BCP (MOTOROLA)
TC4011BP (TOSHIBA)
μPD4011BC (NEC)
C-MOS 2-INPUT NAND GATE
– TOP VIEW –

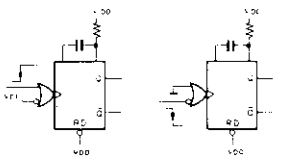


HD14538BP (HITACHI)
C-MOS DUAL RETRIGGERABLE NON RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
– TOP VIEW –

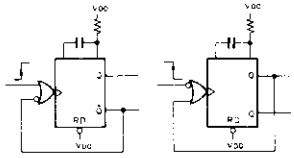


RETRIGGERABLE M.M.V

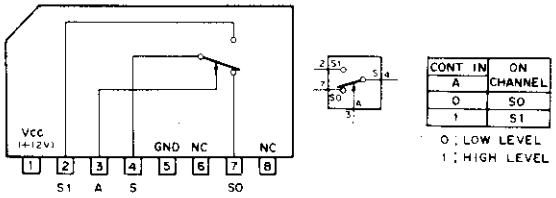
OUTPUT PULSE WIDTH=CR



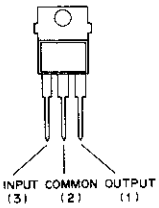
NON-RETRIGGERABLE M.M.V

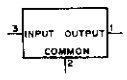


LA7016 (SANYO)
ELECTRONIC SWITCH
– SIDE VIEW –

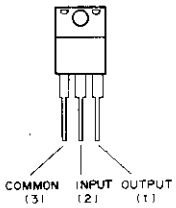


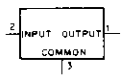
LM7812CT
POSITIVE VOLTAGE REGULATOR (500mA)
– FRONT VIEW –



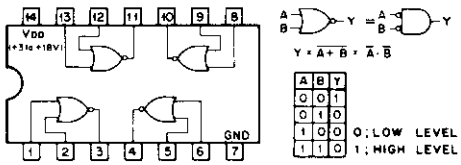


LM7912CT (NS) – 12V
NEGATIVE VOLTAGE REGULATOR
– FRONT VIEW –

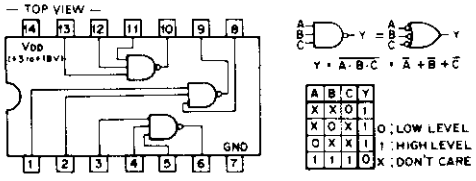




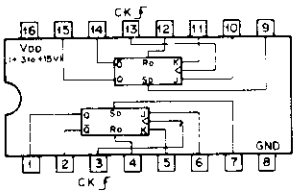
MC14001BCP (MOTOROLA)
μPD4001BC (NEC)
C-MOS 2-INPUT NOR GATE
– TOP VIEW –



MC14023BCP (MOTOROLA)
TC4023BP (TOSHIBA)
C-MOS 3-INPUT NAND GATE
– TOP VIEW –



MB840278 (FUJITSU)
TC5040278P (TOSHIBA)
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



DIRECT R-S FLIP FLOP

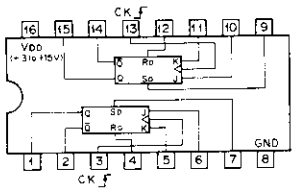
So	Ro	Q
0	0	Qn
0	1	0
1	0	1
1	1	1

J-K FLIP FLOP

tn		tn+1
J	K	Q
0	0	Qn
0	1	0
1	0	1
1	1	$\overline{Qn}$

0 ; LOW LEVEL
1 ; HIGH LEVEL
CK ; tn ; BEFORE CLOCK
tn+1 ; AFTER CLOCK

MC14027BCP (MOTOROLA)
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



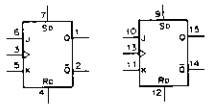
DIRECT R-S FLIP FLOP

So	Ro	Q
0	0	Qn
0	1	0
1	0	1
1	1	1

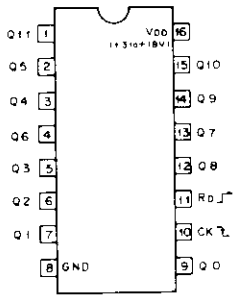
J-K FLIP FLOP

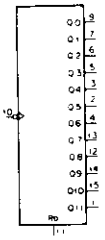
tn		tn+1
J	K	Q
0	0	Qn
0	1	0
1	0	1
1	1	$\overline{Qn}$

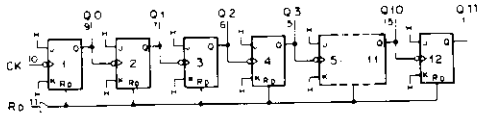
0 ; LOW LEVEL
1 ; HIGH LEVEL
CK ; tn ; BEFORE CLOCK
tn+1 ; AFTER CLOCK



MC14040BCP (MOTOROLA)
TC4040BP (TOSHIBA)
C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER-DRIVER
— TOP VIEW —





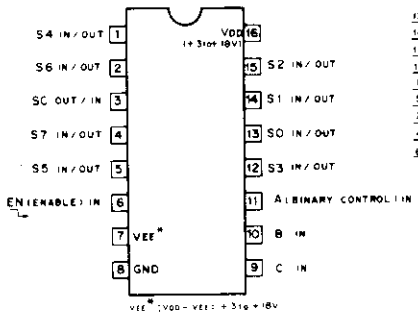


COUNT	Q11	Q10	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	1	0
3	0	0	0	0	0	0	0	0	0	0	1	1
4095	1	1	1	1	1	1	1	1	1	1	1	1

RD	Q11 ····· Q0
1	ALL LOW
0	COUNT

0 ; LOW LEVEL
1 ; HIGH LEVEL

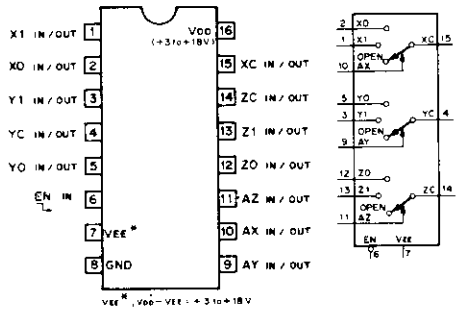
MC14051BF
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

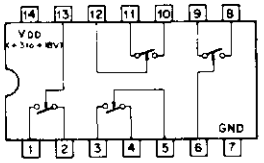
MC14053BCP (MOTOROLA)
TC4053BP
TC4053BPHB (TOSHIBA)
μPC4053BC
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



CONT INPUTS		ON
EN	A (X,Y,Z)	CHANNEL
0	0	0
0	1	1
1	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE.

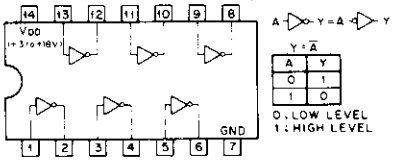
MC14066BCP
C-MOS BILATERAL ANALOG SWITCH
– TOP VIEW –



CONTROL	SWITCH
0	OFF
1	ON

0 ; LOW LEVEL
1 ; HIGH LEVEL

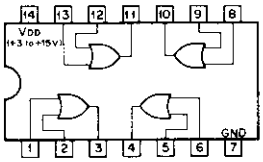
MC14069UBCP
μPD4069UBC (NEC)
– TOP VIEW –

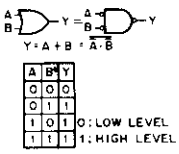


A	Y = $\overline{A}$
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

MC14071BCP (MOTOROLA)
TC4071BP (TOSHIBA)
uPD4071BC (NEC)
C-MOS 2-INPUT OR GATE
— TOP VIEW —

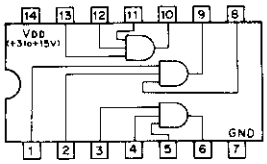


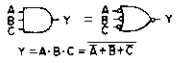


A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0 : LOW LEVEL
1 : HIGH LEVEL

MC14073BCP (MOTOROLA)
TC4073BP (TOSHIBA)
C-MOS 3-INPUT POSITIVE AND GATE
— TOP VIEW —

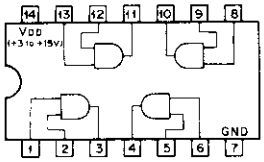


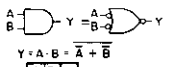


A	B	C	Y
X	X	0	0
X	0	X	0
0	X	X	0
1	1	1	1

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

MC14081BCP (MOTOROLA)
TC4081BP (TOSHIBA)
uPD4081BC (NEC)
C-MOS 2-INPUT AND GATE
— TOP VIEW —

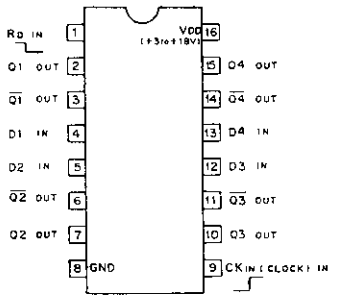


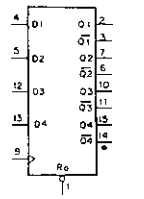


A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0 : LOW LEVEL
1 : HIGH LEVEL

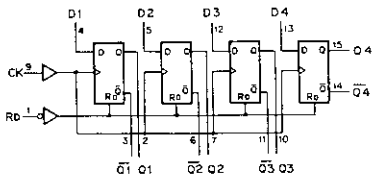
MC14175BCP (MOTOROLA)
C-MOS DECADE COUNTER/DIVIDER
— TOP VIEW —



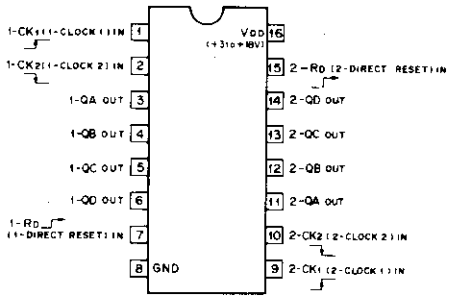


CK	D	RD	Q	Q̄
↑	0	1	0	1
↑	1	1	1	0
↓	X	1	Q0	Q̄0
X	X	0	0	1

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

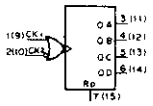


MC14520BCP (MOTOROLA)
TC4520BP (TOSHIBA)
C-MOS DUAL 4-BIT BINARY UP COUNTER
— TOP VIEW —



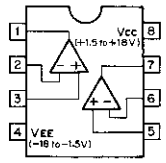
STATE	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

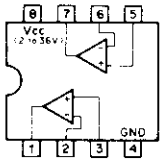


CK1	CK2	RD	ACTION
↓	1	0	INCREMENT COUNTER
0	↓	0	INCREMENT COUNTER
↑	X	0	NO CHANGE
X	↑	0	NO CHANGE
↓	0	0	NO CHANGE
1	↑	0	NO CHANGE
X	X	1	QA THRU QD = 0

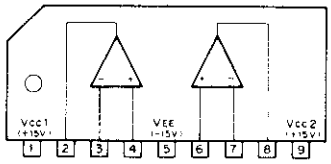
NJM082M (JRC) FLAT PACKAGE
uPC4082C
OPERATIONAL AMPLIFIER
(JFET INPUT)
– TOP VIEW –



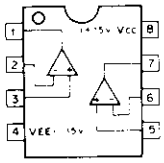
NJM2903D (JRC)
VOLTAGE COMPARATOR
— TOP VIEW —



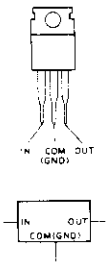
NJM4558S (JRC)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
— SIDE VIEW —



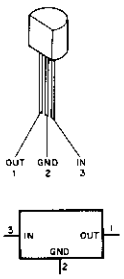
NJM4558D (JRC)
uPC4558C (NEC)
uPC4553C
OPERATIONAL AMPLIFIER
– TOP VIEW –



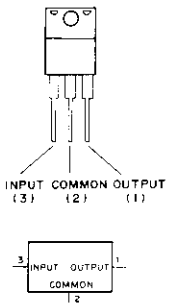
NJM7805FA
NJM7809FA
NJM7812FA
POSITIVE VOLTAGE REGULATOR (1A)
– SIDE VIEW –



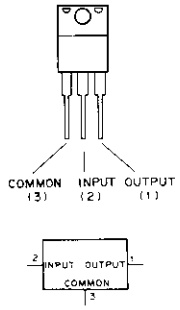
NJM78L05A (JRC) + 5V (100mA)
POSITIVE VOLTAGE REGULATOR



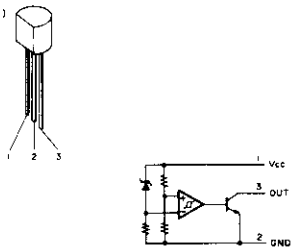
NJM78M05FA (JRC) + 5V
NJM78M12FA (JRC) + 12V
POSITIVE VOLTAGE REGULATOR
– FRONT VIEW –



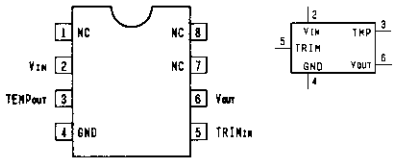
NJM79M05FA (JRC) – 5V
NJM79M12FA (JRC) – 12V
NEGATIVE VOLTAGE REGULATOR
– FRONT VIEW –



PST529C (MITSUMI) Vs = 4.5V
VOLTAGE DETECTOR,SYSTEM RESET
(MITSUMI)

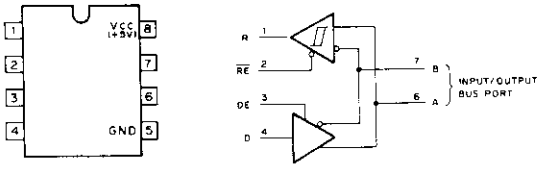


REF-02EZ (PMI)
REFERENCE/TEMPERATURE TRANSDUCER
– TOP VIEW –



VIN : INPUT VOLTAGE (+7V to +40V)
TEMPOUT : TEMPERATURE TRANSDUCER VOLTAGE OUTPUT (2.1mV/°C)
TRIMIN : OUTPUT SIGNAL TRIMMING
VOUT : OUTPUT VOLTAGE (+5V)

SN75176BP (TI)
TTL-DIFFERENTIAL BUS TRANSCEIVER
– TOP VIEW –



FUNCTION TABLE
– DRIVER –

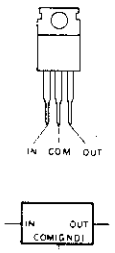
INPUT	ENABLE	OUTPUT	
D	DE	A	B
1	1	1	0
0	1	0	1
X	0	HI-Z	HI-Z

– RECEIVER –

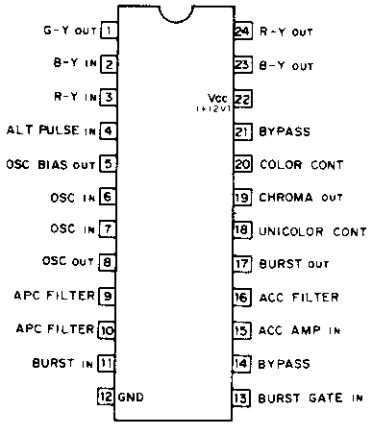
DIFFERENTIAL INPUTS	ENABLE	OUTPUT
A-B	$\overline{RE}$	R
VID > 0.2V	0	1
– 0.2V < VID < 0.2V	0	?
VID < – 0.2V	0	0
X	1	HI-Z

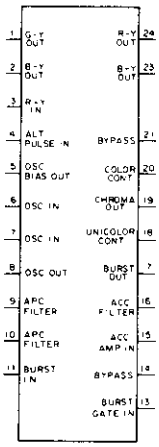
1 : HIGH LEVEL
0 : LOW LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE
? : INDETERMINATE

TA7812S
POSITIVE VOLTAGE REGULATOR (0.5A)
– SIDE VIEW –

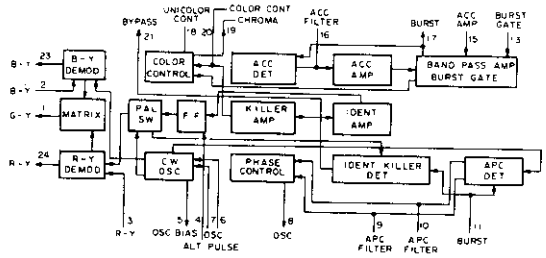


TA7193P (TOSHIBA)
TV CHROMA PROCESS (PAL)
— TOP VIEW —

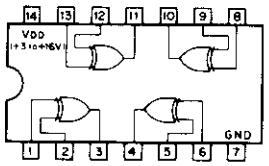




OUT ; OUTPUT
IN ; INPUT
CONT ; CONTROL



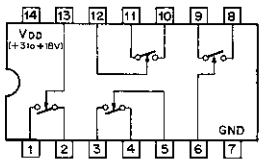
TC4030BP (TOSHIBA)
TC4030BPHB (TOSHIBA)
C-MOS EXCLUSIVE OR GATE
— TOP VIEW —

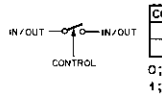


A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0;LOW LEVEL
1;HIGH LEVEL

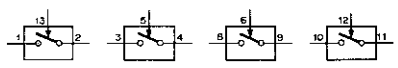
TC4066BPHB (TOSHIBA)
C-MOS QUAD BILATERAL ANALOG SWITCHES
— TOP VIEW —



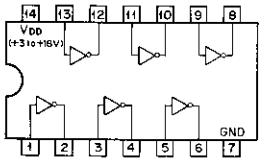


CONTROL	SWITCH
0	OFF
1	ON

0;LOW LEVEL
1;HIGH LEVEL



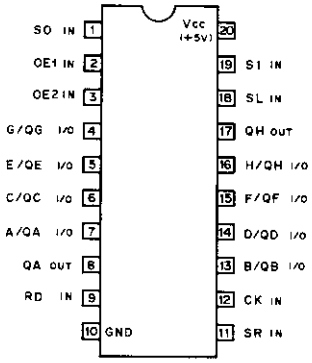
TC4069UBP (TOSHIBA)
C-MOS INVERTER
— TOP VIEW —

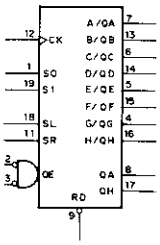


A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

TC74HC299AF
TTL 8-BIT UNIVERSAL SHIFT/STORAGE REGISTER
— TOP VIEW —



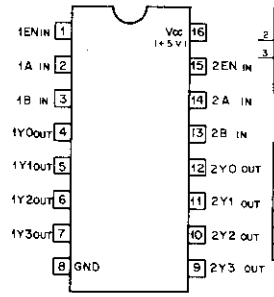


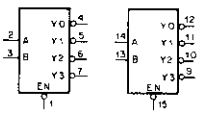
SO ; FUNCTION SELECT 0
S1 ; FUNCTION SELECT 1
SL ; SHIFT LEFT
SR ; SHIFT RIGHT
OE1, OE2 ; OUTPUT ENABLE .

MODE	INPUTS								INPUTS/OUTPUTS								OUTPUTS	
			FUNCTION		ENABLE		SHIFT		A	B	C	D	E	F	G	H		
	RD	CK	SO	S1	OE1	OE2	SL	SR	QA	QB	QC	QD	QE	QF	QG	QH	QA	QH
CLEAR	0	X	0	X	0	0	X	X	0	0	0	0	0	0	0	0	0	0
	0	X	X	0	0	0	X	X	0	0	0	0	0	0	0	0	0	0
HOLD	1	X	0	0	0	0	X	X	QAo	QBo	QCo	QDo	QEo	QFo	QGo	QHo	QAo	QHo
	1	0	X	X	0	0	X	X	QAo	QBo	QCo	QDo	QEo	QFo	QGo	QHo	QAo	QHo
SHIFT RIGHT	1	↑	1	0	0	0	X	1	1	QAn	QBn	QCn	QDn	QEn	QFn	QGn	1	QGn
	1	↑	1	0	0	0	X	0	0	QAn	QBn	QCn	QDn	QEn	QFn	QGn	0	QGn
SHIFT LEFT	1	↑	0	1	0	0	1	X	QBn	QCn	QDn	QEn	QFn	QGn	QHn	1	QBn	1
	1	↑	0	1	0	0	0	X	QBn	QCn	QDn	QEn	QFn	QGn	QHn	0	QBn	0
LOAD	1	↑	1	1	X	X	X	X	a	b	c	d	e	f	g	h	a	h
OUTPUT ENABLE	X	X	X	X	1	X	X	X	HIGH-IMPEDANCE (INTERNAL LOGIC IS NOT AFFECTED)								QA	QH
	X	X	X	X	X	1	X	X									QA	QH

a···h*The level of the steady-state input at inputs A through H respectively
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC74HCT139AF
TTL 2-TO-4-LINE DECODER/DEMULTIPLEXER
— TOP VIEW —

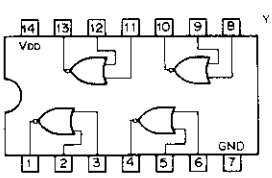


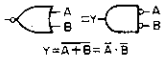


INPUTS			OUTPUTS			
EN	B	A	Y3	Y2	Y1	Y0
0	0	0	1	1	1	0
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1
1	X	X	1	1	1	1

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC74HCT02AF (TOSHIBA) FLAT PACKAGE
C-MOS QUAD 2-INPUT NOR GATES
– TOP VIEW –





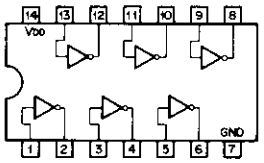
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

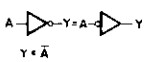
0: LOW LEVEL
1: HIGH LEVEL

NOTE :

TYPE	VDD
TC74AC02F	+2 to +5.5V
74ACT02SJ TC74ACT02F	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

TC74HCT04AF (TOSHIBA) FLAT PACKAGE





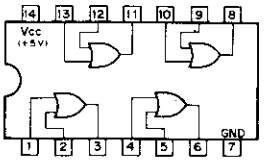
A	Y
0	1
1	0

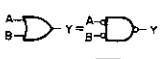
0: LOW LEVEL
1: HIGH LEVEL

NOTE :

TYPE	VDD
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

TC74HCT32AF
TTL 2-INPUT POSITIVE-OR GATE
– TOP VIEW –

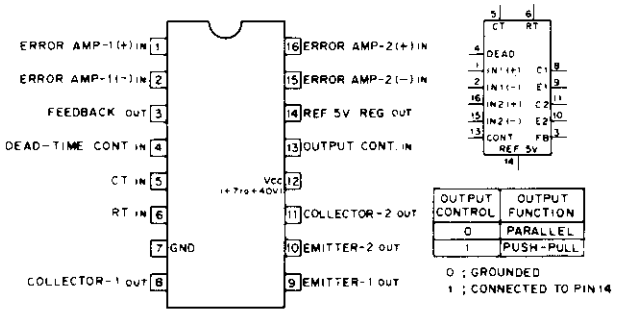




A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

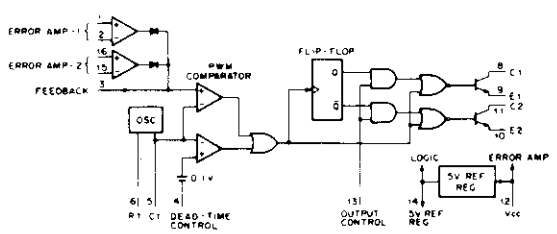
0: LOW LEVEL
1: HIGH LEVEL

TL494CN (TI)
PWM POWER CONTROL
– TOP VIEW –

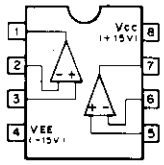


OUTPUT CONTROL	OUTPUT FUNCTION
0	PARALLEL
1	PUSH-PULL

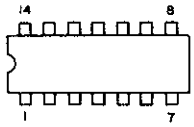
0 ; GROUNDED
1 ; CONNECTED TO PIN 14



TL082ACP
TL082CP
TL082M
OPERATIONAL AMPLIFIER
(J FET-INPUT)
– TOP VIEW –

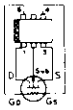


CXL5506P

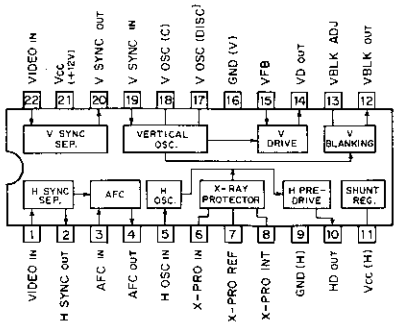


(TOP VIEW)

TOP VIEW

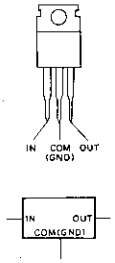


UPC1377C (NEC)
SYNCHRONIZATION SIGNAL PROCESSOR OF COLOR TV
– TOP VIEW –

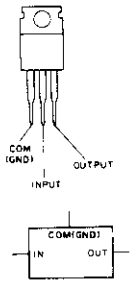



```
AFC IN      ; INPUT OF AFC DETECTOR
AFC OUT     ; OUTPUT OF AFC DETECTOR
GND(H)      ; GROUND OF HORIZONTAL PART
GND(V)      ; GROUND OF VERTICAL PART
HD OUT      ; OUTPUT OF HORIZONTAL PULSE
HOSC IN     ; INPUT OF HORIZONTAL OSCILLATION
HSYNC OUT   ; OUTPUT OF SYNCRONIZATION SIGNAL SEPARATOR
VBLK OUT    ; OUTPUT OF VERTICAL BLANKING PULSE
VBLKADJ     ; VERTICAL BLANKING PULSE DURATION ADJUST
VCC         ; VCC OF VERTICAL PART
VCC(H)      ; VCC OF HORIZONTAL PART
VD OUT      ; OUTPUT OF VERTICAL AMPLIFIER
VFB         ; VERTICAL FEEDBACK
VIDEO IN    ; INPUT OF HORIZONTAL/VERTICAL SYNCRONIZATION
              SIGNAL SEPARATOR
VOSC(C)     ; VERTICAL OSCILLATION (CHARGE)
VOSC(DISC)  ; VERTICAL OSCILLATION (DISCHARGE)
VSYNC IN    ; INPUT OF VERTICAL SYNCRONIZATION SIGNAL
VSYNC OUT   ; OUTPUT OF VERTICAL SYNCRONIZATION SIGNAL
              SEPARATOR
X-PRO IN    ; INPUT OF X-RAY PROTECTOR
X-PRO INT   ; INTEGRATION CIRCUIT OF X-RAY PROTECTOR
X-PRO REF   ; REFERENCE OF X-RAY PROTECTOR
```

UPC7812H (NEC) +12V
POSITIVE VOLTAGE REGULATOR (1A)
– SIDE VIEW –

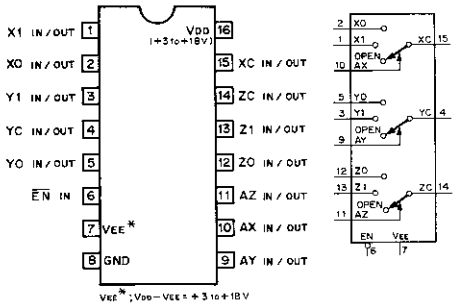


uPC7912H (NEC)
NEGATIVE VOLTAGE REGULATOR (1A)
— SIDE VIEW —



OUTPUT VOLTAGE	AN79??	FS79??	uA79??UC	uPC79??H	MC79??CT
-2V	------	------	--------	--------	MC7902CT
-5V	AN7905	FS7905	uA7905UC	uPC7905H	MC7905CT
-5.2V	------	------	--------	--------	MC7905.2CT
-6V	AN7906	------	uA7906UC	--------	MC7906CT
-7V	AN7907	------	--------	-------	--------
-8V	AN7908	------	uA7908UC	uPC7908H	MC7908CT
-9V	AN7909	------	--------	--------	--------
-10V	AN7910	------	--------	--------	--------
-12V	AN7912	------	uA7912UC	uPC7912H	MC7912CT
-15V	AN7915	------	uA7915UC	uPC7915H	MC7915CT
-18V	AN7918	------	uA7918UC	uPC7918H	MC7918CT
-20V	AN7920	------	--------	--------	--------
-24V	AN7924	------	uA7924UC	uPC7924H	MC7924CT

uPD4053BC (NEC)
C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS
– TOP VIEW –

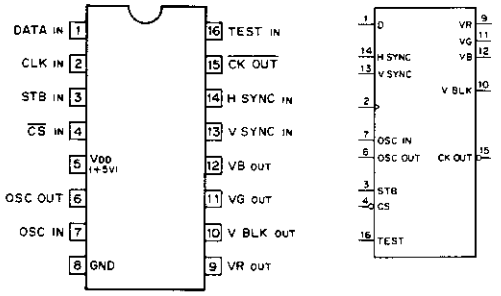


VEE*; VDD – VEE = +3 to +18V

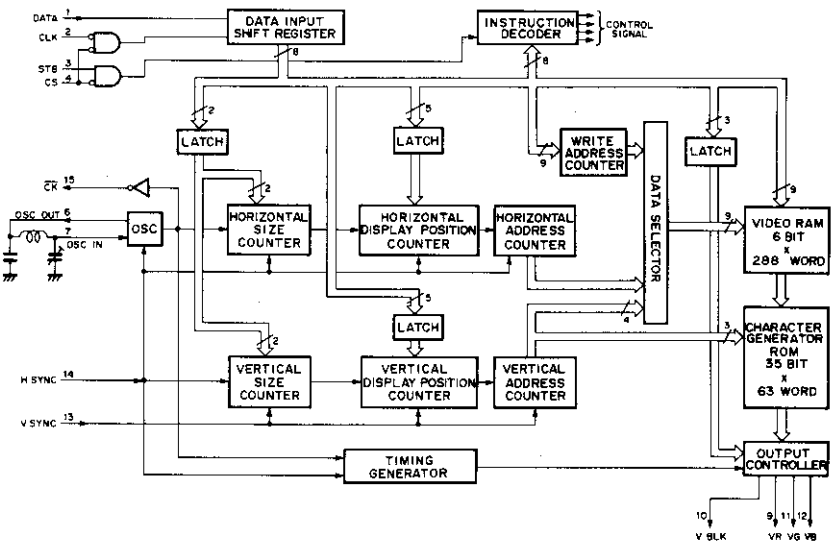
CONT. INPUTS EN	CONT. INPUTS A (X,Y,Z)	ON CHANNEL
0	0	0
0	1	1
1	X	OPEN

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

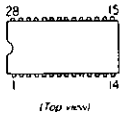
UPD6142G-101 (NEC) FLAT PACKAGE
C-MOS 8-BIT SERIALL INPUT CHARACTER DISPLAY
– TOP VIEW –



D; DATA INPUT
CK OUT; EQUAL TO OUTPUT OF OSC OUT
CLK; CLOCK INPUT
CS; CHIP SELECT INPUT
H SYNC; H SYNC INPUT
OSC IN, OUT; EXTERNAL TERMINAL FOR OSC
STB; STROBE INPUT
TEST; TEST CLOCK INPUT
VB; BLUE CHARACTER DATA OUTPUT
V BLK; V BLANKING OUTPUT
VG; GREEN CHARACTER DATA OUTPUT
VR; RED CHARACTER DATA OUTPUT
V SYNC; V SYNC INPUT

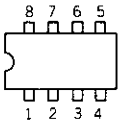


CXA1268P



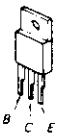
uPC574J

X25040



(Top view)

2SA473
2SB858
2SB860
2SB861
2SC3675
2SD1134



2SA812
2SA1162
2SA1226
2SC1623
2SC2757
2SC3624A
DTA144EK
DTC144EK

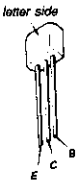
2SA844
2SA893A
2SA1091
2SC1890A
2SC2551
2SC2878
2SC3068

2SA979
2SA1306

2SA1048
2SA1115
2SC2688
2SC403SP
DTA124ES
DTA144ES
DTC143TS
DTC144ES
XDA124ES
XDA144ES
XDC144ES

2SA1142

2SA1175
2SC2785

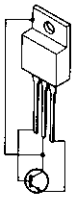


2SC3298
2SD669A

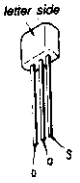
2SB734
2SD774

2SD789

2SD1137



2SK381



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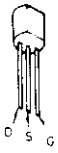

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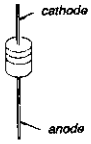
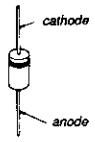
1S2837
MA152WK

1SS119
1SS83
WG713A



10E2
GP08D
RD10EB
RD12EB
RD12ES
RD20ES
RD3.0EB
RD3.0ES
RD4.3EB
RD4.3ES
RD5.1ES
RD5.6EB
RD5.6ES
RD6.2ES
RD7.5ES
RD8.2ES
RD9.1EB
RD9.1ES
RU-3AM



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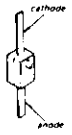

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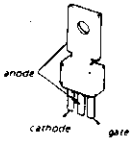
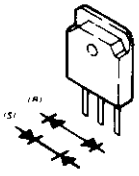
CR02AM-8

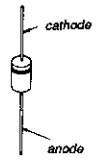
CR3CM-8



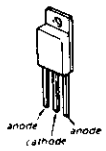
CTU-38R
CTU-38S



ERB44-06
ERB81-004
ERD28-04S
ERD28-08S
RH-1A
SIB01-02

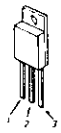


ESAC25-04C

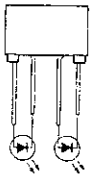


ESAC25-04N

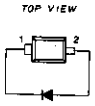
ESAC31-02D



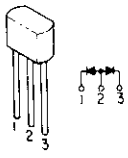
LT-9220H



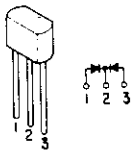
MA110



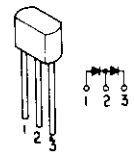
MC911



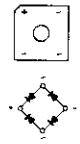
MC921



MC932

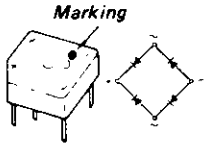


RB406N

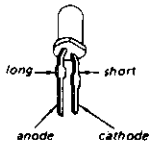


RD5.6M
RD7.5M

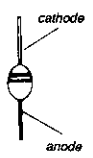
S3WB60Z



GL3HYB
TLG124A
TLR124
TLY124



V11N



SECTION 6
EXPLODED VIEWS

NOTE:

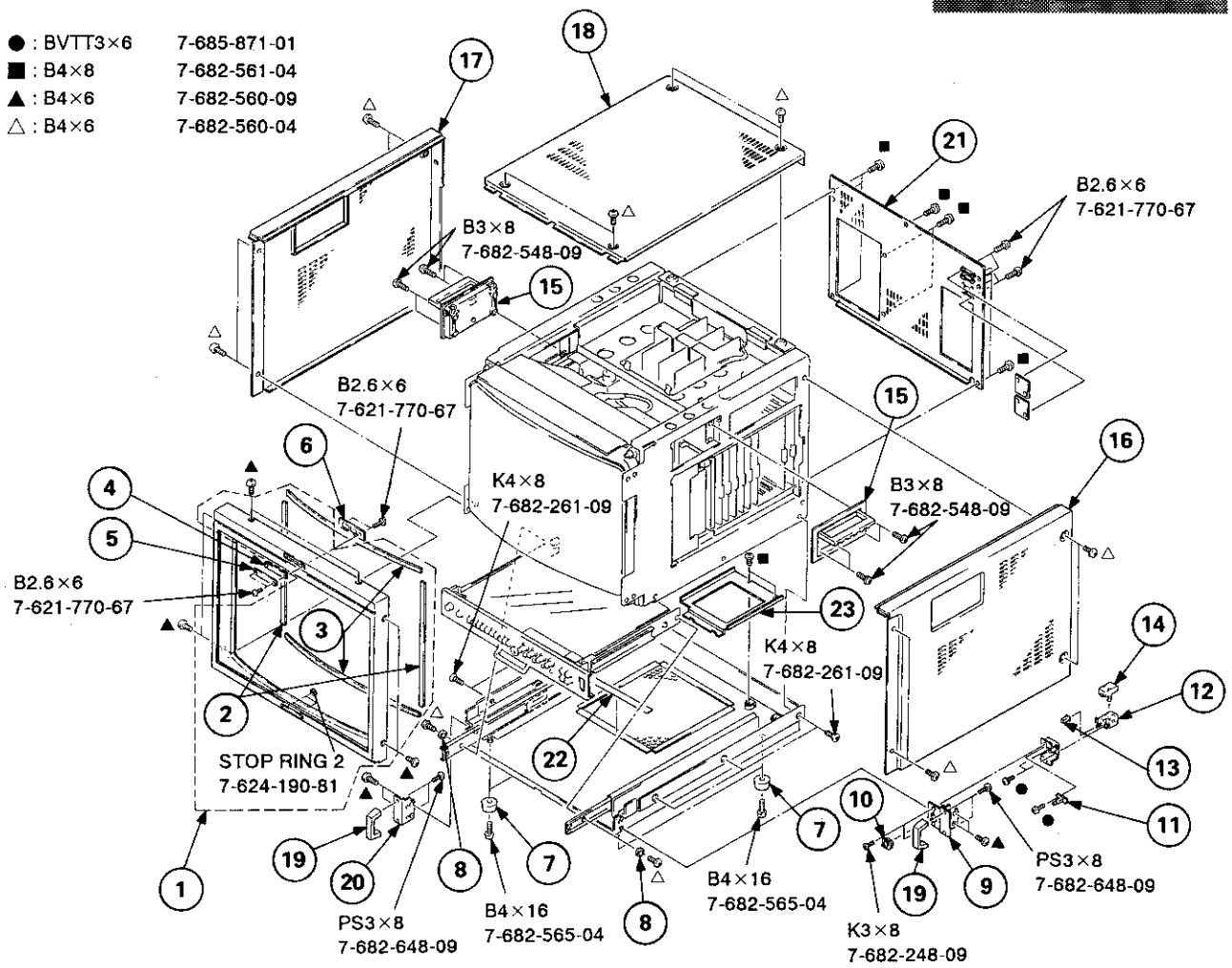
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

6-1. BEZEL AND COVERS

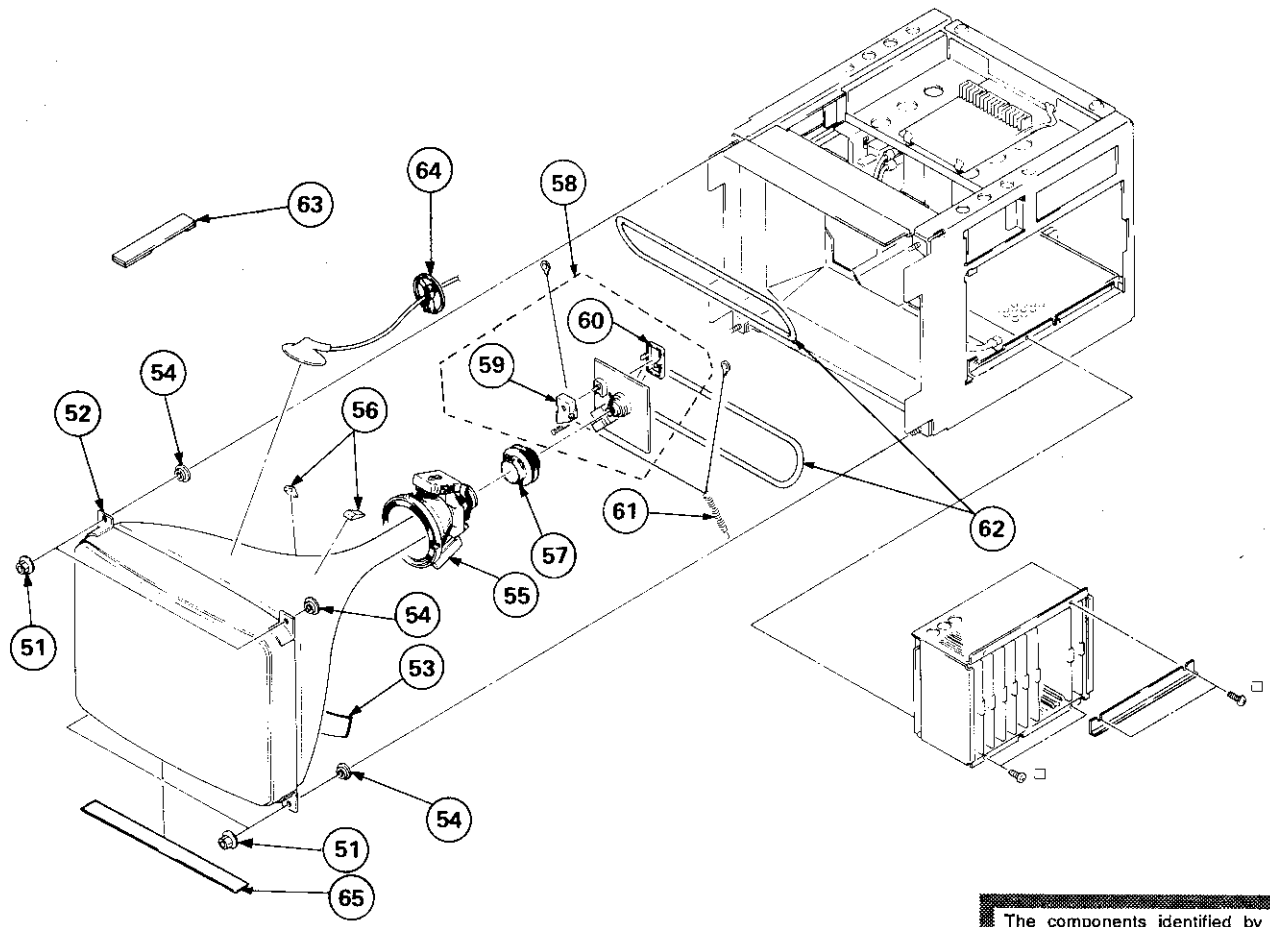
● : BVTT3×6 7-685-871-01
■ : B4×8 7-682-561-04
▲ : B4×6 7-682-560-09
△ : B4×6 7-682-560-04



REF.NO.	PART NO.	DESCRIPTION	REMARK
1	X-4379-412-1	BEZEL ASSY	2,3
2	4-308-878-XX	CUSHION (B), BEZEL	
3	4-308-878-XX	CUSHION (A), CRT	
4	*4-386-839-01	PLATE, TALLY	
5	*4-386-840-01	PLATE (B), TALLY	
6	*1-631-680-11	XB BOARD	
7	X-483-620-29	FOOT	
8	*4-379-499-01	SPACER	
9	*X-4379-408-1	PANEL ASSY, POWER SWITCH	
10	4-379-423-11	ESCUTCHEON (A)	
11	*1-631-679-11	Y BOARD	
12	⚠1-571-877-12	SWITCH, PUSH (AC POWER)	
13	4-374-839-01	BUTTON (A)	
14	*4-393-095-01	COVER, POWER SWITCH	
15	X-3642-018-0	HANDLE ASSY	
16	*4-386-832-01	COVER (RIGHT)	
17	*4-386-833-01	COVER (LEFT)	
18	*4-386-831-01	COVER (UPPER)	
19	*4-353-706-00	HANDLE	
20	*4-386-808-01	BRACKET (LEFT), HANDLE	
21	*4-391-239-01	COVER, REAR	
22	4-372-556-01	SHEET, BLOTTING	
23	4-386-814-03	BRACKET, POWER	

6-2. PICTURE TUBE

□ : B3×10 7-682-549-04



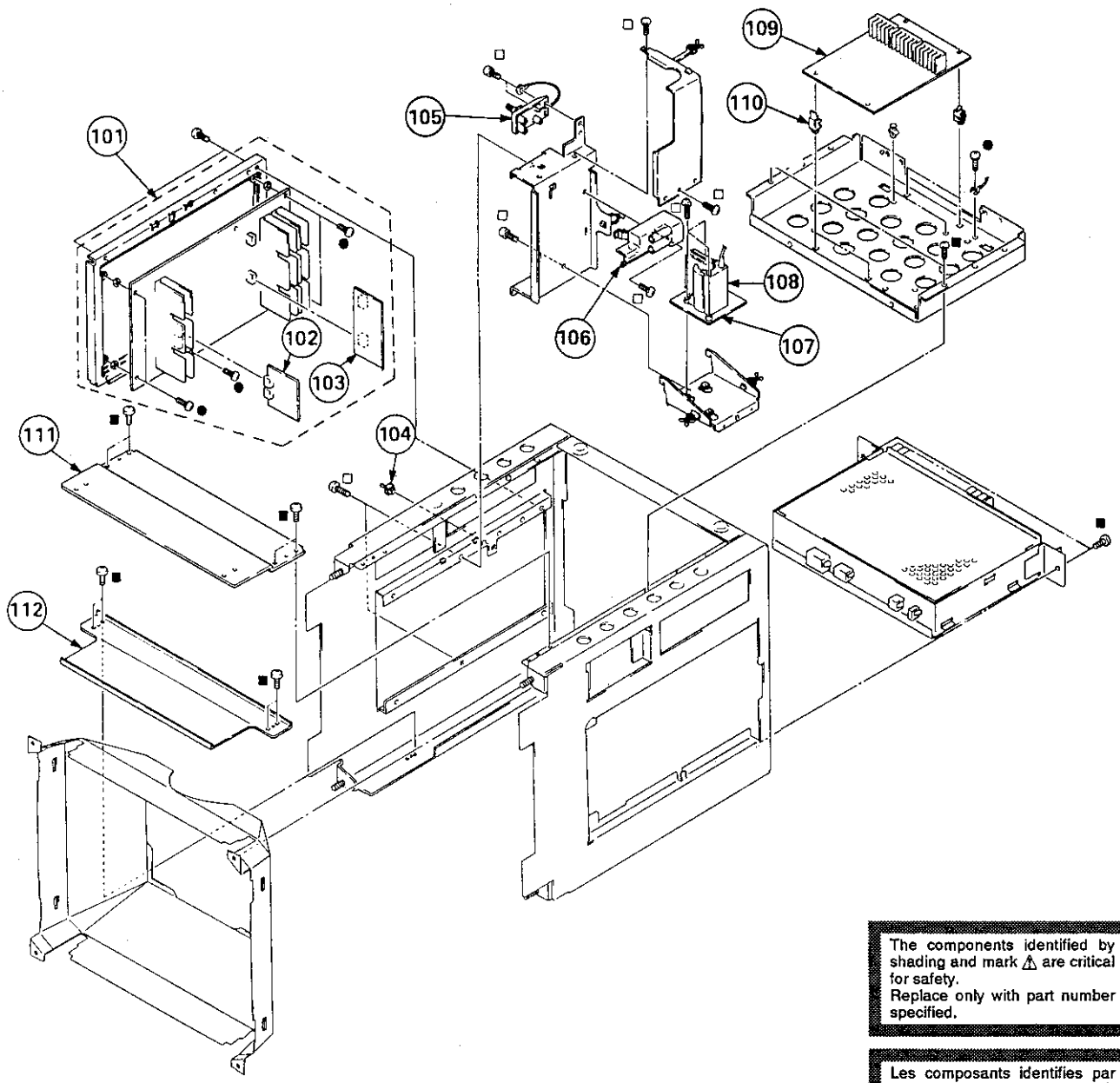
The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK
51	4-306-034-00	FLANGE NUT, (B) 5MM	
52	⚠ 8-736-121-05	CRT (M49KGH21X) (BVM-2016P ONLY)	
	⚠ 8-736-123-05	CRT (M49KGH20X) (BVM-1916 ONLY)	
53	3-831-441-11	CLOTH, BLOTTING	
54	4-348-567-00	WASHER, CRT POSITION	
55	⚠ 1-451-349-22	DEFLECTION YOKE (Y20FZA)	
56	3-703-003-00	SPACER, DY	
57	⚠ 1-452-337-22	NECK ASSY, CRT (NA304)	
58	*A-1331-020-A	C BOARD, COMPLETE	59,60
59	*4-379-167-01	COVER (MAIN), CV	
60	*4-379-160-01	COVER (REAR LID), CV	
61	4-303-774-XX	SPRING	
62	⚠ 1-426-460-11	COIL, DEMAGNETIZATION	
63	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	
64	*3-704-372-01	HOLDER, HV CABLE	
65	4-385-725-01	SHEET, BLOTTING	

6-3. CHASSIS

● : BVTT3×6 7-685-871-01
■ : B4×8 7-682-561-04
□ : B3×10 7-682-549-04



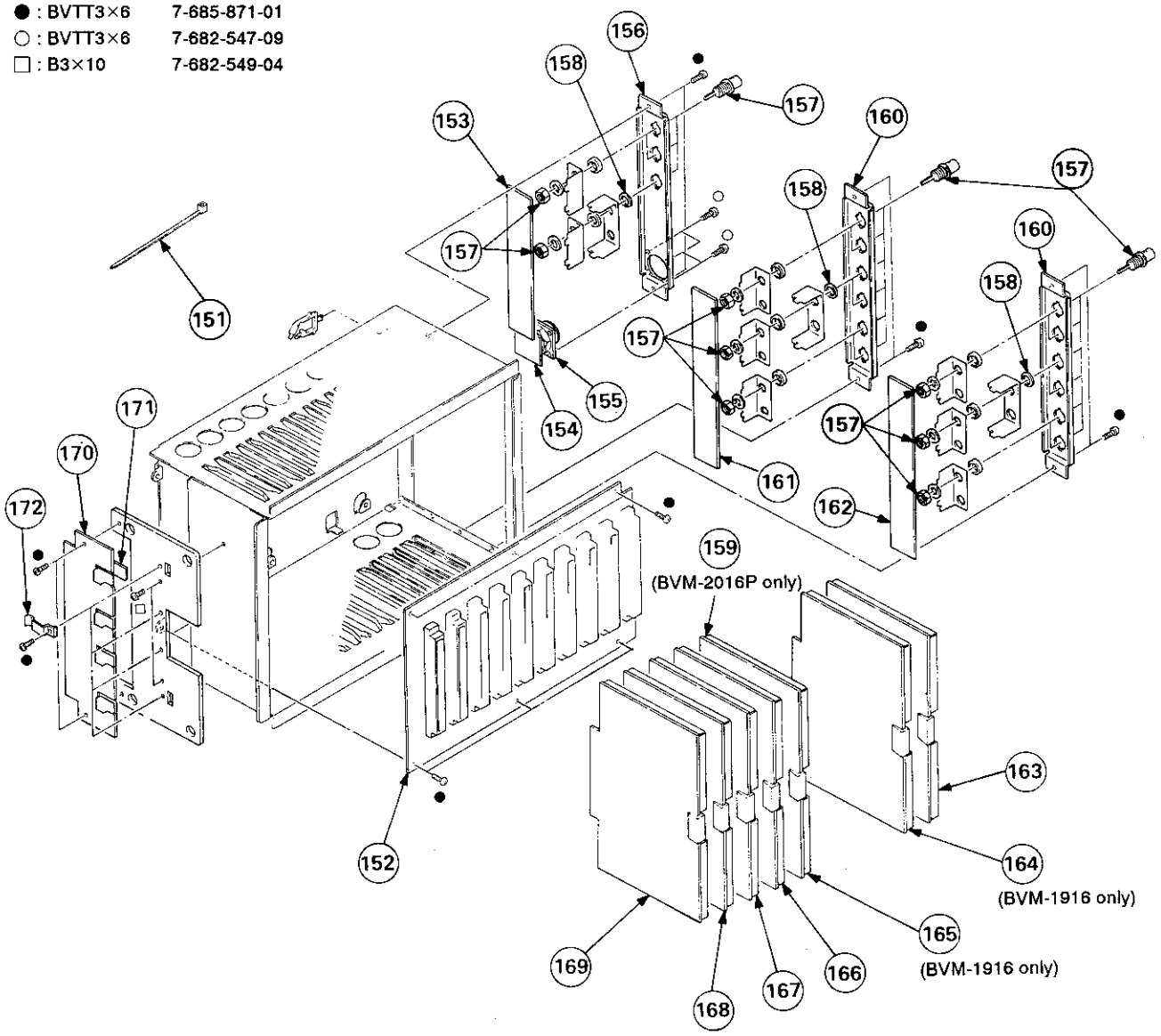
The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK
101	*A-1345-881-A	EA BOARD, COMPLETE	
102	*1-631-686-11	EC BOARD	
103	*1-631-685-11	EB BOARD	
104	*4-303-473-00	SUPPORT, PC	
105	⚠.1-237-165-13	RESISTOR ASSY, HIGH-VOLTAGE	
106	⚠.1-238-301-12	RESISTOR ASSY, HIGH-VOLTAGE	102,103
107	*1-631-678-11	P BOARD	
108	⚠.1-439-382-21	TRANSFORMER ASSY, FLYBACK	
109	*A-1135-523-A	BK BOARD, COMPLETE	
110	*3-703-141-00	HOLDER, PCB	
111	*4-386-819-02	STAY, FRONT	
112	*4-391-234-03	STAY, UNDER	

6-4. SIGNAL BLOCK

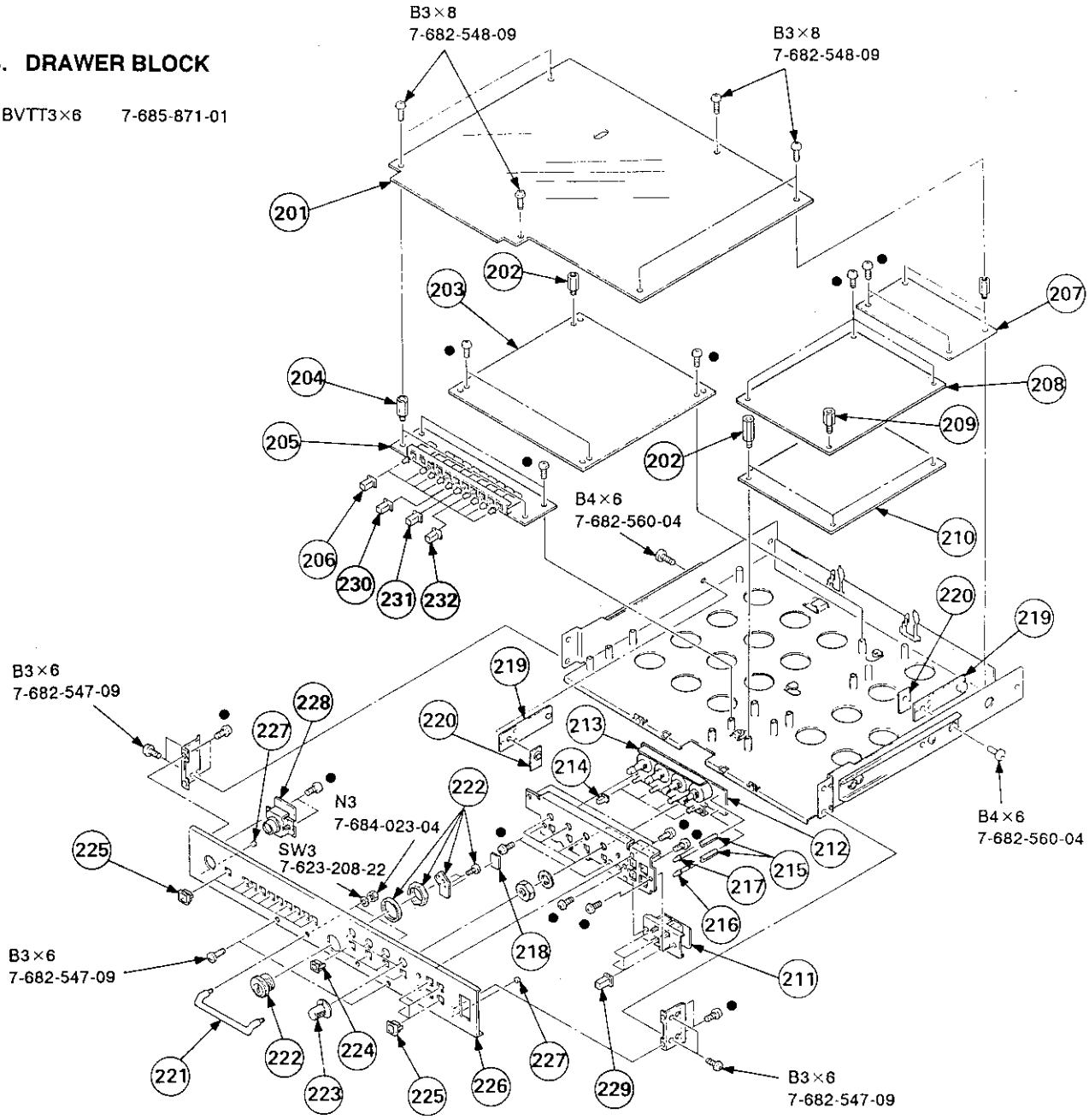
● : BVTT3×6 7-685-871-01
○ : BVTT3×6 7-682-547-09
□ : B3×10 7-682-549-04



REF.NO.	PART NO.	DESCRIPTION	REMARK
151	*3-337-402-01	BAND, BINDING	
152	*A-1390-344-A	TB BOARD, COMPLETE	
153	*1-627-678-11	W BOARD	
154	*1-627-677-11	V BOARD	
155	1-563-265-11	CONNECTOR, MULTIPLE 10P	
156	*4-391-220-01	PANEL (C), CONNECTOR	
157	1-565-791-11	CONNECTOR, BNC 1P	
158	*4-379-404-01	INSULATOR, BNC	
159	*A-1135-391-A	BD BOARD, COMPLETE (BVM-2016P ONLY)	
160	*4-379-439-01	PANEL (A), CONNECTOR	
161	*1-618-786-11	QB BOARD	
162	*1-617-895-11	QA BOARD	
163	*A-1135-355-A	BA BOARD, COMPLETE	
164	*A-1135-606-B	BT BOARD, COMPLETE (BVM-1916 ONLY)	
165	*A-1135-357-A	BC BOARD, COMPLETE (BVM-1916 ONLY)	
166	*A-1135-537-A	BG BOARD, COMPLETE	
167	*A-1135-359-A	BH BOARD, COMPLETE	
168	*A-1135-591-A	BI BOARD, COMPLETE	
169	*A-1135-361-A	BJ BOARD, COMPLETE	
170	*1-617-885-11	GC BOARD	
171	4-370-970-01	SPACER, TR	
172	*4-363-404-00	HOLDER, IC	

6-5. DRAWER BLOCK

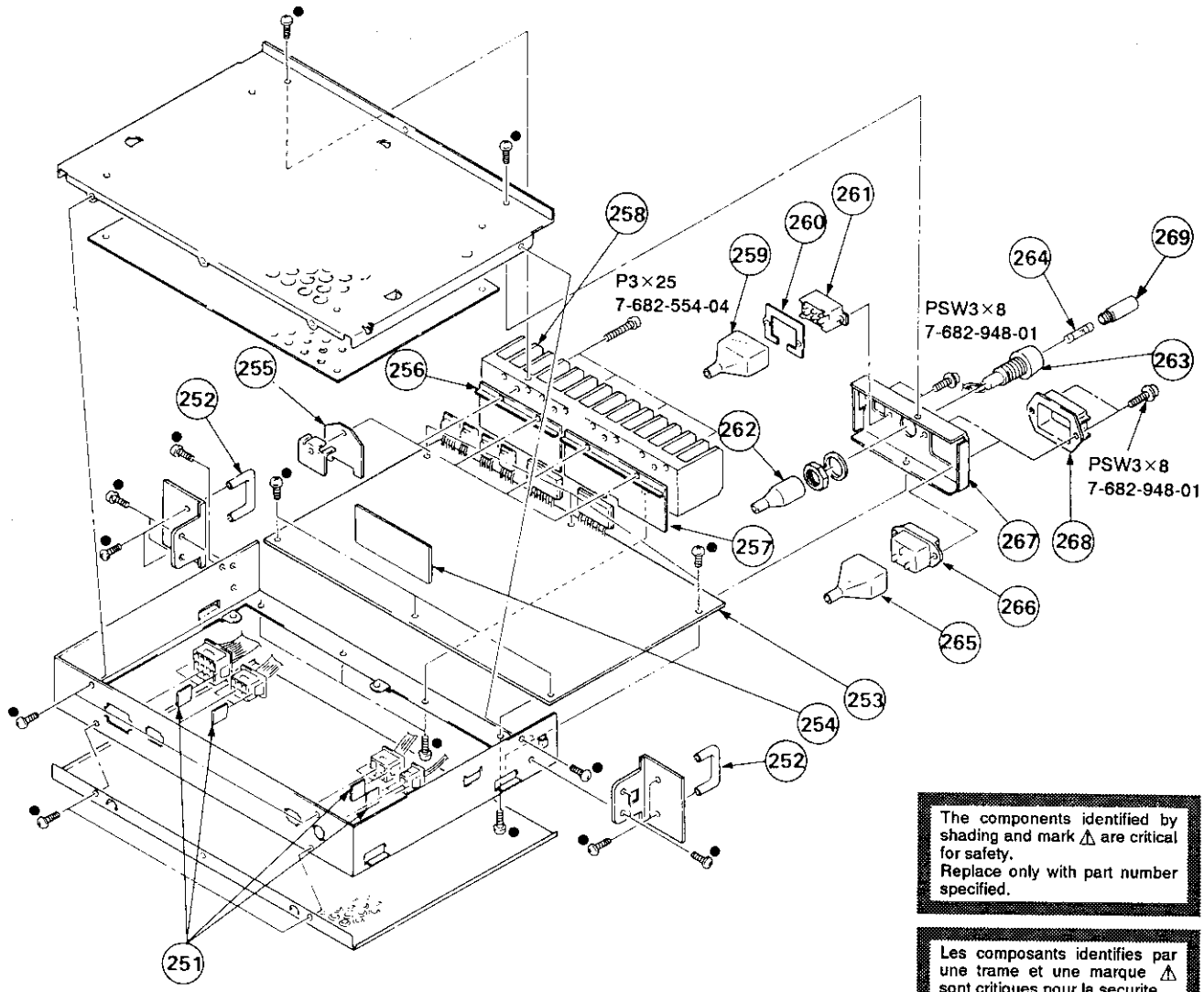
● : BVTT3×6 7-685-871-01



REF.NO.	PART NO.	DESCRIPTION	REMARK
201	*4-040-631-01	COVER, PCB	
202	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON	
203	*A-1345-882-B	DA BOARD, COMPLETE	
204	3-897-313-01	BOSS (17.2), RELAY	
205	*1-631-683-11	HA BOARD	
206	4-374-839-21	BUTTON (A)	
207	*A-1345-884-A	DB BOARD, COMPLETE	
208	A-1371-895-A	HY BOARD, COMPLETE	
209	*3-711-018-01	STAND OFF-BRAKE BAND GUIDE	
210	A-1375-121-A	HZ BOARD, COMPLETE	
211	*1-647-258-11	HX BOARD	
212	*1-647-257-11	HW BOARD	
213	*1-627-682-11	HH BOARD	
214	4-379-422-11	BUTTON (B)	
215	*4-026-910-00	HOLDER, LED	
216	8-719-812-42	DIODE TLY124	
217	8-719-812-41	DIODE TLR124	
218	4-337-209-11	PROTECTOR, SCRATCH	
219	*X-4379-407-1	STOPPER ASSY	
220	*4-386-844-01	NUT, PLATE	
221	4-386-802-01	HANDLE, DRAWER	
222	4-378-917-01	LOCK, CYLINDER	
223	X-3673-635-0	KNOB (1) ASSY, CONTROL	
224	4-379-424-11	ESCUTCHEON (B)	
225	4-379-423-11	ESCUTCHEON (A)	
226	4-386-822-21	PANEL, CONTROL	
227	4-911-672-01	FELT, COVER	
228	1-941-422-15	CONNECTOR ASSY (ROUND TYPE)12P	
229	4-039-982-01	BUTTON (U)	
230	4-374-839-31	BUTTON (A)(R)	
231	4-374-839-41	BUTTON (A)(G)	
232	4-374-839-51	BUTTON (A)(B)	

6-6. POWER BLOCK

● : BVTT3×6 7-685-871-01



The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK
251	3-675-469-00	SPACER, SOLENOID	
252	4-379-421-01	HANDLE, DRAWER	
253	*A-1316-089-A	GA BOARD, COMPLETE (BVM-1916 ONLY)	254
	*A-1316-090-A	GA BOARD, COMPLETE (BVM-2016P ONLY)	254
254	*1-627-679-11	GB BOARD	
255	*4-379-408-01	INSULATOR (G3)	
256	4-379-410-01	SPACER (G2), POLISHING	
257	4-379-403-01	SPACER (G1), POLISHING	
258	*4-347-706-02	HEAT SINK (TR)	
259	*4-371-879-02	COVER, AC SELECT	
260	*4-379-409-01	NUT, PLATE	
261	⚠ 1-570-173-22	SWITCH, VOLTAGE CHANGE	
262	*4-393-031-01	COVER, FUSE HOLDER	
263	⚠ 1-533-167-21	HOLDER, FUSE	
264	⚠ 1-532-746-11	FUSE, GLASS TUBE (4.0A/125V) (BVM-1916 ONLY)	
	⚠ 1-532-203-11	FUSE, TIME-LAG (2.0A/250V) (BVM-2016P ONLY)	
265	*4-601-466-11	COVER, 3P INLET	
266	⚠ 1-580-375-11	INLET 3P	
267	*4-379-430-01	PANEL, POWER	
268	2-990-241-02	HOLDER (A), PLUG	
269	⚠ 1-533-168-21	HOLDER, FUSE	

SECTION 7
ELECTRICAL PARTS LIST

BA

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F: nonflammable

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

CAPACITORS
- MF: μF, PF: μμF

COILS
- MMH: mH, UH: μH

- The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

REF.NO.	PART NO.	DESCRIPTION			REMARK
	*A-1135-355-A	BA BOARD, COMPLETE			
		**********			
	*4-353-708-00	HOOK, FINGER			
	7-682-547-09	SCREW +BVTT 3X6 (S)			
		<CONNECTOR>			
BA1	*1-566-054-11	PIN, CONNECTOR 2P			
BA2	*1-566-054-11	PIN, CONNECTOR 2P			
BA3	*1-566-054-11	PIN, CONNECTOR 2P			
BA4	*1-566-054-11	PIN, CONNECTOR 2P			
BA5	*1-566-054-11	PIN, CONNECTOR 2P			
BA6	*1-566-054-11	PIN, CONNECTOR 2P			
		<COMPOSITION CIRCUIT BLOCK>			
CP1	1-233-030-11	COMPOSITION CIRCUIT BLOCK			
CP2	1-233-030-11	COMPOSITION CIRCUIT BLOCK			
CP3	1-233-030-11	COMPOSITION CIRCUIT BLOCK			
CP4	1-233-030-11	COMPOSITION CIRCUIT BLOCK			
CP5	1-233-030-11	COMPOSITION CIRCUIT BLOCK			
CP6	1-233-030-11	COMPOSITION CIRCUIT BLOCK			
CP7	1-233-030-11	COMPOSITION CIRCUIT BLOCK			
		<CAPACITOR>			
C1	1-126-967-11	ELECT	47MF	20% 16V	
C2	1-126-967-11	ELECT	47MF	20% 16V	
C3	1-126-967-11	ELECT	47MF	20% 16V	
C4	1-126-964-11	ELECT	10MF	20% 16V	
C5	1-126-967-11	ELECT	47MF	20% 16V	
C6	1-126-967-11	ELECT	47MF	20% 16V	
C7	1-126-967-11	ELECT	47MF	20% 16V	
C8	1-126-967-11	ELECT	47MF	20% 16V	
C9	1-101-004-00	CERAMIC	0.01MF	50V	
C10	1-101-004-00	CERAMIC	0.01MF	50V	
C11	1-126-103-11	ELECT	470MF	20% 16V	
C12	1-126-101-11	ELECT	100MF	20% 16V	
C13	1-126-101-11	ELECT	100MF	20% 16V	
C14	1-126-101-11	ELECT	100MF	20% 16V	
C15	1-126-101-11	ELECT	100MF	20% 16V	
C16	1-126-101-11	ELECT	100MF	20% 16V	
C17	1-126-101-11	ELECT	100MF	20% 16V	
C18	1-126-964-11	ELECT	10MF	20% 16V	
C19	1-126-964-11	ELECT	10MF	20% 16V	
C20	1-101-004-00	CERAMIC	0.01MF	50V	
C21	1-101-006-00	CERAMIC	0.047MF	50V	
C31	1-101-004-00	CERAMIC	0.01MF	50V	
C32	1-126-964-11	ELECT	10MF	20% 16V	
C33	1-126-964-11	ELECT	10MF	20% 16V	
C34	1-126-964-11	ELECT	10MF	20% 16V	
C35	1-126-964-11	ELECT	10MF	20% 16V	
C36	1-126-964-11	ELECT	10MF	20% 16V	
C37	1-126-964-11	ELECT	10MF	20% 16V	
C38	1-126-964-11	ELECT	10MF	20% 16V	
C39	1-101-004-00	CERAMIC	0.01MF	50V	
C51	1-124-119-00	ELECT	330MF	20% 16V	
C52	1-126-101-11	ELECT	100MF	20% 16V	
C53	1-126-101-11	ELECT	100MF	20% 16V	
C54	1-124-120-11	ELECT	220MF	20% 16V	
C55	1-126-101-11	ELECT	100MF	20% 16V	
C56	1-126-101-11	ELECT	100MF	20% 16V	
C57	1-126-101-11	ELECT	100MF	20% 16V	
C71	1-101-004-00	CERAMIC	0.01MF	50V	
C72	1-101-004-00	CERAMIC	0.01MF	50V	
C73	1-101-004-00	CERAMIC	0.01MF	50V	
C74	1-101-004-00	CERAMIC	0.01MF	50V	
C75	1-101-004-00	CERAMIC	0.01MF	50V	
C76	1-101-004-00	CERAMIC	0.01MF	50V	
C77	1-101-004-00	CERAMIC	0.01MF	50V	
C101	1-102-038-00	CERAMIC	0.001MF	500V	
C102	1-126-964-11	ELECT	10MF	20% 16V	
C103	1-102-951-00	CERAMIC	15PF	5% 50V	
C104	1-124-902-00	ELECT	0.47MF	20% 50V	
C201	1-102-038-00	CERAMIC	0.001MF	500V	
C202	1-126-964-11	ELECT	10MF	20% 16V	
C203	1-102-951-00	CERAMIC	15PF	5% 50V	
C204	1-124-902-00	ELECT	0.47MF	20% 50V	
C301	1-102-038-00	CERAMIC	0.001MF	500V	
C302	1-126-964-11	ELECT	10MF	20% 16V	
C303	1-102-965-00	CERAMIC	39PF	5% 50V	
C304	1-124-902-00	ELECT	0.47MF	20% 50V	
C305	1-102-947-00	CERAMIC	10PF	0.5PF 50V	
C306	1-102-942-00	CERAMIC	5PF	1PF 50V	
C401	1-102-038-00	CERAMIC	0.001MF	500V	
C402	1-126-964-11	ELECT	10MF	20% 16V	
C403	1-102-951-00	CERAMIC	15PF	5% 50V	
C404	1-124-902-00	ELECT	0.47MF	20% 50V	
C501	1-102-038-00	CERAMIC	0.001MF	500V	
C502	1-126-964-11	ELECT	10MF	20% 16V	
C503	1-102-951-00	CERAMIC	15PF	5% 50V	
C504	1-124-902-00	ELECT	0.47MF	20% 50V	
C601	1-102-038-00	CERAMIC	0.001MF	500V	
C602	1-126-964-11	ELECT	10MF	20% 16V	
C603	1-102-951-00	CERAMIC	15PF	5% 50V	
C604	1-124-902-00	ELECT	0.47MF	20% 50V	
C701	1-102-976-00	CERAMIC	180PF	5% 50V	
C702	1-102-947-00	CERAMIC	10PF	0.5PF 50V	
C703	1-126-964-11	ELECT	10MF	20% 16V	
C704	1-126-967-11	ELECT	47MF	20% 16V	
C705	1-136-153-00	FILM	0.01MF	5% 50V	

BA

REF.NO.	PART NO.	DESCRIPTION				REMARK
C706	1-124-903-11	ELECT	1MF	20%	50V	
C707	1-124-927-11	ELECT	4.7MF	20%	25V	
C708	1-126-964-11	ELECT	10MF	20%	16V	
C709	1-102-973-00	CERAMIC	100PF	5%	50V	
C710	1-130-481-00	MYLAR	0.0068MF	5%	50V	
C711	1-136-155-00	FILM	0.015MF	5%	50V	
C712	1-130-471-00	MYLAR	0.001MF	5%	50V	
C713	1-124-903-11	ELECT	1MF	20%	50V	
C714	1-102-973-00	CERAMIC	100PF	5%	50V	
C715	1-101-361-00	CERAMIC	150PF	5%	50V	
C716	1-136-153-00	FILM	0.01MF	5%	50V	
C717	1-102-973-00	CERAMIC	100PF	5%	50V	

<TRIMMER>

CV101	1-141-179-12	CAP, VAR, TRIMMER (5-8P)
CV102	1-141-260-00	TRIMAR, CERAMIC (50P)
CV201	1-141-179-12	CAP, VAR, TRIMMER (5-8P)
CV202	1-141-260-00	TRIMAR, CERAMIC (50P)
CV401	1-141-179-12	CAP, VAR, TRIMMER (5-8P)
CV402	1-141-260-00	TRIMAR, CERAMIC (50P)
CV501	1-141-179-12	CAP, VAR, TRIMMER (5-8P)
CV502	1-141-260-00	TRIMAR, CERAMIC (50P)
CV601	1-141-179-12	CAP, VAR, TRIMMER (5-8P)
CV602	1-141-260-00	TRIMAR, CERAMIC (50P)

<DIODE>

D1	8-719-109-63	DIODE RD3.0ESB2
D2	8-719-000-06	DIODE MC921
D4	8-719-000-04	DIODE MC911
D701	8-719-911-19	DIODE 1SS119
D702	8-719-109-75	DIODE RD4.3ESB2
D703	8-719-911-19	DIODE 1SS119
D704	8-719-911-19	DIODE 1SS119
D705	8-719-911-19	DIODE 1SS119
D706	8-719-911-19	DIODE 1SS119
D707	8-719-911-19	DIODE 1SS119
D708	8-719-911-19	DIODE 1SS119
D709	8-719-911-19	DIODE 1SS119
D710	8-719-911-19	DIODE 1SS119

<IC>

IC1	8-759-208-94	IC CX-894
IC2	8-759-208-94	IC CX-894
IC3	8-759-140-53	IC UPD4053BC

<TRANSISTOR>

Q1	8-729-900-89	TRANSISTOR DTC144ES
Q2	8-729-384-48	TRANSISTOR 2SA844-E
Q3	8-729-900-89	TRANSISTOR DTC144ES
Q4	8-729-900-89	TRANSISTOR DTC144ES
Q5	8-729-900-89	TRANSISTOR DTC144ES
Q6	8-729-900-65	TRANSISTOR DTA144ES
Q101	8-729-266-82	TRANSISTOR 2SC2668-0
Q102	8-729-266-82	TRANSISTOR 2SC2668-0
Q103	8-729-266-82	TRANSISTOR 2SC2668-0
Q104	8-729-384-48	TRANSISTOR 2SA844-E
Q105	8-729-266-82	TRANSISTOR 2SC2668-0
Q201	8-729-266-82	TRANSISTOR 2SC2668-0
Q202	8-729-266-82	TRANSISTOR 2SC2668-0
Q203	8-729-266-82	TRANSISTOR 2SC2668-0
Q204	8-729-384-48	TRANSISTOR 2SA844-E
Q205	8-729-266-82	TRANSISTOR 2SC2668-0
Q301	8-729-266-82	TRANSISTOR 2SC2668-0
Q302	8-729-266-82	TRANSISTOR 2SC2668-0
Q303	8-729-266-82	TRANSISTOR 2SC2668-0
Q304	8-729-384-48	TRANSISTOR 2SA844-E
Q305	8-729-266-82	TRANSISTOR 2SC2668-0
Q401	8-729-266-82	TRANSISTOR 2SC2668-0
Q402	8-729-266-82	TRANSISTOR 2SC2668-0
Q403	8-729-266-82	TRANSISTOR 2SC2668-0
Q404	8-729-384-48	TRANSISTOR 2SA844-E
Q405	8-729-266-82	TRANSISTOR 2SC2668-0
Q501	8-729-266-82	TRANSISTOR 2SC2668-0
Q502	8-729-266-82	TRANSISTOR 2SC2668-0
Q503	8-729-266-82	TRANSISTOR 2SC2668-0
Q504	8-729-384-48	TRANSISTOR 2SA844-E
Q505	8-729-266-82	TRANSISTOR 2SC2668-0
Q601	8-729-266-82	TRANSISTOR 2SC2668-0
Q602	8-729-266-82	TRANSISTOR 2SC2668-0
Q603	8-729-266-82	TRANSISTOR 2SC2668-0
Q604	8-729-384-48	TRANSISTOR 2SA844-E
Q605	8-729-266-82	TRANSISTOR 2SC2668-0
Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q702	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q703	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q704	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q705	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q706	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q707	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q708	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q709	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q710	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q711	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q712	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q713	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q714	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q715	8-729-800-10	TRANSISTOR 2SC3068
Q716	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q717	8-729-119-76	TRANSISTOR 2SA1175-HFE

<RESISTOR>

R1	1-247-807-31	CARBON	100	5%	1/4W
R2	1-247-807-31	CARBON	100	5%	1/4W
R3	1-247-807-31	CARBON	100	5%	1/4W
R4	1-249-437-11	CARBON	47K	5%	1/4W
R5	1-247-807-31	CARBON	100	5%	1/4W
R6	1-249-432-11	CARBON	18K	5%	1/4W
R7	1-249-434-11	CARBON	27K	5%	1/4W
R8	1-249-422-11	CARBON	2.7K	5%	1/4W
R9	1-247-807-31	CARBON	100	5%	1/4W
R10	1-247-807-31	CARBON	100	5%	1/4W
R11	1-249-433-11	CARBON	22K	5%	1/4W
R12	1-247-807-31	CARBON	100	5%	1/4W
R13	1-249-437-11	CARBON	47K	5%	1/4W
R14	1-249-429-11	CARBON	10K	5%	1/4W
R101	1-249-417-11	CARBON	1K	5%	1/4W
R102	1-249-418-11	CARBON	1.2K	5%	1/4W
R103	1-249-425-11	CARBON	4.7K	5%	1/4W
R104	1-247-807-31	CARBON	100	5%	1/4W
R105	1-215-437-00	METAL	4.7K	1%	1/4W
R106	1-249-430-11	CARBON	12K	5%	1/4W
R107	1-249-433-11	CARBON	22K	5%	1/4W
R108	1-215-427-00	METAL	1.8K	1%	1/4W

REF.NO.	PART NO.	DESCRIPTION				REMARK
R109	1-215-415-00	METAL	560	1%	1/4W	
R110	1-247-807-31	CARBON	100	5%	1/4W	
R111	1-215-431-00	METAL	2.7K	1%	1/4W	
R112	1-249-421-11	CARBON	2.2K	5%	1/4W	
R113	1-249-393-11	CARBON	10	5%	1/4W	
R201	1-249-417-11	CARBON	1K	5%	1/4W	
R202	1-249-418-11	CARBON	1.2K	5%	1/4W	
R203	1-249-425-11	CARBON	4.7K	5%	1/4W	
R204	1-247-807-31	CARBON	100	5%	1/4W	
R205	1-215-437-00	METAL	4.7K	1%	1/4W	
R206	1-249-430-11	CARBON	12K	5%	1/4W	
R207	1-249-433-11	CARBON	22K	5%	1/4W	
R208	1-215-427-00	METAL	1.8K	1%	1/4W	
R209	1-215-415-00	METAL	560	1%	1/4W	
R210	1-247-807-31	CARBON	100	5%	1/4W	
R211	1-215-431-00	METAL	2.7K	1%	1/4W	
R212	1-249-421-11	CARBON	2.2K	5%	1/4W	
R213	1-249-393-11	CARBON	10	5%	1/4W	
R301	1-249-417-11	CARBON	1K	5%	1/4W	
R302	1-249-418-11	CARBON	1.2K	5%	1/4W	
R303	1-249-426-11	CARBON	5.6K	5%	1/4W	
R304	1-247-807-31	CARBON	100	5%	1/4W	
R305	1-249-426-11	CARBON	5.6K	5%	1/4W	
R306	1-249-430-11	CARBON	12K	5%	1/4W	
R307	1-249-432-11	CARBON	18K	5%	1/4W	
R308	1-249-421-11	CARBON	2.2K	5%	1/4W	
R309	1-249-417-11	CARBON	1K	5%	1/4W	
R310	1-247-807-31	CARBON	100	5%	1/4W	
R311	1-249-417-11	CARBON	1K	5%	1/4W	
R312	1-249-421-11	CARBON	2.2K	5%	1/4W	
R313	1-249-393-11	CARBON	10	5%	1/4W	
R401	1-249-417-11	CARBON	1K	5%	1/4W	
R402	1-249-418-11	CARBON	1.2K	5%	1/4W	
R403	1-249-425-11	CARBON	4.7K	5%	1/4W	
R404	1-247-807-31	CARBON	100	5%	1/4W	
R405	1-215-437-00	METAL	4.7K	1%	1/4W	
R406	1-249-430-11	CARBON	12K	5%	1/4W	
R407	1-249-433-11	CARBON	22K	5%	1/4W	
R408	1-215-427-00	METAL	1.8K	1%	1/4W	
R409	1-215-415-00	METAL	560	1%	1/4W	
R410	1-247-807-31	CARBON	100	5%	1/4W	
R411	1-215-431-00	METAL	2.7K	1%	1/4W	
R412	1-249-421-11	CARBON	2.2K	5%	1/4W	
R413	1-249-393-11	CARBON	10	5%	1/4W	
R501	1-249-417-11	CARBON	1K	5%	1/4W	
R502	1-249-418-11	CARBON	1.2K	5%	1/4W	
R503	1-249-425-11	CARBON	4.7K	5%	1/4W	
R504	1-247-807-31	CARBON	100	5%	1/4W	
R505	1-215-437-00	METAL	4.7K	1%	1/4W	
R506	1-249-430-11	CARBON	12K	5%	1/4W	
R507	1-249-433-11	CARBON	22K	5%	1/4W	
R508	1-215-427-00	METAL	1.8K	1%	1/4W	
R509	1-215-415-00	METAL	560	1%	1/4W	
R510	1-247-807-31	CARBON	100	5%	1/4W	
R511	1-215-431-00	METAL	2.7K	1%	1/4W	
R512	1-249-421-11	CARBON	2.2K	5%	1/4W	
R513	1-249-393-11	CARBON	10	5%	1/4W	
R601	1-249-417-11	CARBON	1K	5%	1/4W	
R602	1-249-418-11	CARBON	1.2K	5%	1/4W	
R603	1-249-425-11	CARBON	4.7K	5%	1/4W	
R604	1-247-807-31	CARBON	100	5%	1/4W	
R605	1-215-437-00	METAL	4.7K	1%	1/4W	
R606	1-249-430-11	CARBON	12K	5%	1/4W	
R607	1-249-433-11	CARBON	22K	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R608	1-215-427-00	METAL	1.8K	1%	1/4W	
R609	1-215-415-00	METAL	560	1%	1/4W	
R610	1-247-807-31	CARBON	100	5%	1/4W	
R611	1-215-431-00	METAL	2.7K	1%	1/4W	
R612	1-249-421-11	CARBON	2.2K	5%	1/4W	
R613	1-249-393-11	CARBON	10	5%	1/4W	
R701	1-249-433-11	CARBON	22K	5%	1/4W	
R702	1-249-438-11	CARBON	56K	5%	1/4W	
R703	1-249-417-11	CARBON	1K	5%	1/4W	
R704	1-249-417-11	CARBON	1K	5%	1/4W	
R705	1-249-424-11	CARBON	3.9K	5%	1/4W	
R706	1-249-417-11	CARBON	1K	5%	1/4W	
R707	1-249-429-11	CARBON	10K	5%	1/4W	
R708	1-249-421-11	CARBON	2.2K	5%	1/4W	
R709	1-249-419-11	CARBON	1.5K	5%	1/4W	
R710	1-249-418-11	CARBON	1.2K	5%	1/4W	
R711	1-249-434-11	CARBON	27K	5%	1/4W	
R712	1-249-433-11	CARBON	22K	5%	1/4W	
R713	1-249-422-11	CARBON	2.7K	5%	1/4W	
R714	1-249-427-11	CARBON	6.8K	5%	1/4W	
R715	1-249-433-11	CARBON	22K	5%	1/4W	
R716	1-249-422-11	CARBON	2.7K	5%	1/4W	
R717	1-249-425-11	CARBON	4.7K	5%	1/4W	
R718	1-249-410-11	CARBON	270	5%	1/4W	
R719	1-249-414-11	CARBON	560	5%	1/4W	
R720	1-247-850-11	CARBON	6.2K	5%	1/4W	
R721	1-249-438-11	CARBON	56K	5%	1/4W	
R722	1-249-441-11	CARBON	100K	5%	1/4W	
R723	1-249-437-11	CARBON	47K	5%	1/4W	
R724	1-249-429-11	CARBON	10K	5%	1/4W	
R725	1-249-438-11	CARBON	56K	5%	1/4W	
R726	1-247-895-00	CARBON	470K	5%	1/4W	
R727	1-249-425-11	CARBON	4.7K	5%	1/4W	
R728	1-249-435-11	CARBON	33K	5%	1/4W	
R729	1-249-423-11	CARBON	3.3K	5%	1/4W	
R730	1-249-421-11	CARBON	2.2K	5%	1/4W	
R731	1-249-422-11	CARBON	2.7K	5%	1/4W	
R732	1-249-422-11	CARBON	2.7K	5%	1/4W	
R733	1-249-421-11	CARBON	2.2K	5%	1/4W	
R734	1-249-421-11	CARBON	2.2K	5%	1/4W	
R735	1-249-421-11	CARBON	2.2K	5%	1/4W	
R736	1-249-425-11	CARBON	4.7K	5%	1/4W	
R737	1-247-807-31	CARBON	100	5%	1/4W	
R738	1-249-441-11	CARBON	100K	5%	1/4W	
R739	1-249-433-11	CARBON	22K	5%	1/4W	
R740	1-249-417-11	CARBON	1K	5%	1/4W	
R741	1-202-473-00	SOLID	5.6M	5%	1/4W	
R906	1-249-389-11	CARBON	4.7	5%	1/4W	
R907	1-249-389-11	CARBON	4.7	5%	1/4W	

<VARIABLE RESISTOR>

RV101	1-237-514-21	RES, ADJ, CERMET 500
RV201	1-237-514-21	RES, ADJ, CERMET 500
RV401	1-237-514-21	RES, ADJ, CERMET 500
RV501	1-237-514-21	RES, ADJ, CERMET 500
RV601	1-237-514-21	RES, ADJ, CERMET 500

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BC

REF.NO.	PART NO.	DESCRIPTION			REMARK
	*A-1135-357-A	BC BOARD, COMPLETE (BVM-1916 ONLY)			
		**********			
	*4-353-708-00	HOOK, FINGER			
	7-682-950-01	SCREW +PSW 3X12			
	7-682-547-09	SCREW +BVTT 3X6			
		<CAPACITOR>			
C1	1-102-951-00	CERAMIC	15PF	5% 50V	
C2	1-102-951-00	CERAMIC	15PF	5% 50V	
C3	1-102-947-00	CERAMIC	10PF	0.5PF 50V	
C4	1-101-880-00	CERAMIC	47PF	5% 50V	
C5	1-102-965-00	CERAMIC	39PF	5% 50V	
C6	1-101-004-00	CERAMIC	0.01MF	50V	
C7	1-102-935-00	CERAMIC	2PF	0.25PF 50V	
C8	1-101-361-00	CERAMIC	39PF	5% 50V	
C9	1-126-964-11	ELECT	10MF	20% 16V	
C10	1-126-964-11	ELECT	10MF	20% 16V	
C11	1-101-004-00	CERAMIC	0.01MF	50V	
C12	1-101-004-00	CERAMIC	0.01MF	50V	
C13	1-101-004-00	CERAMIC	0.01MF	50V	
C14	1-101-004-00	CERAMIC	0.01MF	50V	
C15	1-126-967-11	ELECT	47MF	20% 16V	
C16	1-126-967-11	ELECT	47MF	20% 16V	
C17	1-104-792-51	ELECT	33MF	20% 16V	
C18	1-101-004-00	CERAMIC	0.01MF	50V	
C19	1-102-953-00	CERAMIC	18PF	5% 50V	
C20	1-102-951-00	CERAMIC	15PF	5% 50V	
C22	1-101-884-00	CERAMIC	56PF	5% 50V	
C23	1-247-927-11	ELECT	4.7MF	20% 25V	
C24	1-136-157-00	FILM	0.022MF	5% 50V	
C25	1-136-157-00	FILM	0.022MF	5% 50V	
C26	1-101-004-00	CERAMIC	0.01MF	50V	
C27	1-101-004-00	CERAMIC	0.01MF	50V	
C28	1-124-902-00	ELECT	0.47MF	20% 50V	
C29	1-101-004-00	CERAMIC	0.01MF	50V	
C30	1-101-004-00	CERAMIC	0.01MF	50V	
C31	1-124-119-00	ELECT	330MF	20% 16V	
C34	1-109-676-00	MICA	130PF	1% 500V	
C35	1-109-631-00	MICA	330PF	1% 500V	
C36	1-102-960-00	CERAMIC	24PF	5% 50V	
C39	1-109-676-00	MICA	130PF	1% 500V	
C40	1-109-631-00	MICA	330PF	1% 500V	
C41	1-102-960-00	CERAMIC	24PF	5% 50V	
C42	1-101-004-00	CERAMIC	0.01MF	50V	
C50	1-102-942-00	CERAMIC	5PF	0.5PF 50V	
C101	1-104-792-51	ELECT	33MF	20% 16V	
C102	1-101-004-00	CERAMIC	0.01MF	50V	
C103	1-126-966-11	ELECT	33MF	20% 25V	
C104	1-104-792-51	ELECT	33MF	20% 16V	
C105	1-101-004-00	CERAMIC	0.01MF	50V	
C106	1-126-966-11	ELECT	33MF	20% 25V	
C107	1-101-004-00	CERAMIC	0.01MF	50V	
C111	1-104-792-51	ELECT	33MF	20% 16V	
C112	1-104-792-51	ELECT	33MF	20% 16V	
C113	1-104-792-51	ELECT	33MF	20% 16V	
C116	1-101-004-00	CERAMIC	0.01MF	50V	
C117	1-101-004-00	CERAMIC	0.01MF	50V	
C118	1-101-004-00	CERAMIC	0.01MF	50V	
C121	1-104-792-51	ELECT	33MF	20% 16V	
C122	1-104-792-51	ELECT	33MF	20% 16V	
C123	1-104-792-51	ELECT	33MF	20% 16V	
C126	1-101-004-00	CERAMIC	0.01MF	50V	
C127	1-101-004-00	CERAMIC	0.01MF	50V	
C128	1-101-004-00	CERAMIC	0.01MF	50V	
C131	1-104-792-51	ELECT	33MF	20% 16V	
C132	1-104-792-51	ELECT	33MF	20% 16V	
C133	1-104-792-51	ELECT	33MF	20% 16V	
C136	1-101-004-00	CERAMIC	0.01MF	50V	
C137	1-101-004-00	CERAMIC	0.01MF	50V	
C138	1-101-004-00	CERAMIC	0.01MF	50V	
C139	1-101-004-00	CERAMIC	0.01MF	50V	
C143	1-101-004-00	CERAMIC	0.01MF	50V	
C144	1-124-916-11	ELECT	22MF	20% 25V	
C201	1-126-966-11	ELECT	33MF	20% 25V	
C202	1-101-004-00	CERAMIC	0.01MF	50V	
		<TRIMMER>			
CV1	1-141-171-00	CAP, TRIMMER 15P			
CV2	1-141-171-00	CAP, TRIMMER 15P			
		<DIODE>			
D1	8-719-911-19	DIODE 1SS119			
D2	8-719-949-46	DIODE 1T32			
D3	8-719-911-19	DIODE 1SS119			
D4	8-719-110-13	DIODE RD9.1ESB2			
D5	8-719-911-19	DIODE 1SS119			
D6	8-719-911-19	DIODE 1SS119			
D7	8-719-911-19	DIODE 1SS119			
		<IC>			
IC1	8-759-204-21	IC TA7193P			
IC2	8-752-006-12	IC CX20061			
IC3	8-759-140-53	IC UPD4053BC			
		<COIL>			
L1	1-408-533-00	COIL, VARIABLE			
L2	1-408-513-00	COIL (VARIABLE)			
L3	1-408-533-00	COIL, VARIABLE			
L4	1-408-429-00	INDUCTOR	470UH		
L5	1-408-429-00	INDUCTOR	470UH		
L6	1-408-429-00	INDUCTOR	470UH		
		<TRANSISTOR>			
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q4	8-729-800-10	TRANSISTOR 2SC3068			
Q5	8-729-800-10	TRANSISTOR 2SC3068			
Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q9	8-729-384-48	TRANSISTOR 2SA844-E			
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q11	8-729-384-48	TRANSISTOR 2SA844-E			
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q13	8-729-384-48	TRANSISTOR 2SA844-E			
Q14	8-729-384-48	TRANSISTOR 2SA844-E			
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q18	8-729-800-10	TRANSISTOR 2SC3068			
Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q21	8-729-800-10	TRANSISTOR 2SC3068			
Q101	8-729-140-97	TRANSISTOR 2SB734-34			

REF.NO.	PART NO.	DESCRIPTION				REMARK
Q103	8-729-900-63	TRANSISTOR DTA124ES				
Q104	8-729-900-63	TRANSISTOR DTA124ES				
		<RESISTOR>				
R1	1-249-428-11	CARBON	8.2K	5%	1/4W	
R2	1-249-429-11	CARBON	10K	5%	1/4W	
R3	1-247-807-31	CARBON	100	5%	1/4W	
R4	1-249-422-11	CARBON	2.7K	5%	1/4W	
R5	1-215-421-00	METAL	1K	1%	1/4W	
R6	1-215-398-00	METAL	110	1%	1/4W	
R7	1-247-807-31	CARBON	100	5%	1/4W	
R8	1-215-421-00	METAL	1K	1%	1/4W	
R9	1-215-421-00	METAL	1K	1%	1/4W	
R10	1-215-423-00	METAL	1.2K	1%	1/4W	
R11	1-247-807-31	CARBON	100	5%	1/4W	
R12	1-215-425-00	METAL	1.5K	1%	1/4W	
R13	1-215-425-00	METAL	1.5K	1%	1/4W	
R14	1-215-405-00	METAL	220	1%	1/4W	
R15	1-247-807-31	CARBON	100	5%	1/4W	
R16	1-249-433-11	CARBON	22K	5%	1/4W	
R17	1-249-433-11	CARBON	22K	5%	1/4W	
R18	1-249-421-11	CARBON	2.2K	5%	1/4W	
R19	1-249-425-11	CARBON	4.7K	5%	1/4W	
R20	1-249-429-11	CARBON	10K	5%	1/4W	
R22	1-249-429-11	CARBON	10K	5%	1/4W	
R23	1-249-431-11	CARBON	15K	5%	1/4W	
R24	1-249-428-11	CARBON	8.2K	5%	1/4W	
R25	1-247-807-31	CARBON	100	5%	1/4W	
R26	1-249-417-11	CARBON	1K	5%	1/4W	
R27	1-247-807-31	CARBON	100	5%	1/4W	
R28	1-249-417-11	CARBON	1K	5%	1/4W	
R29	1-247-807-31	CARBON	100	5%	1/4W	
R30	1-249-425-11	CARBON	4.7K	5%	1/4W	
R31	1-249-425-11	CARBON	4.7K	5%	1/4W	
R32	1-249-433-11	CARBON	22K	5%	1/4W	
R33	1-247-807-31	CARBON	100	5%	1/4W	
R34	1-215-425-00	METAL	1.5K	1%	1/4W	
R35	1-215-425-00	METAL	1.5K	1%	1/4W	
R36	1-215-425-00	METAL	1.5K	1%	1/4W	
R37	1-215-425-00	METAL	1.5K	1%	1/4W	
R38	1-215-439-00	METAL	5.6K	1%	1/4W	
R39	1-215-469-00	METAL	100K	1%	1/4W	
R40	1-247-903-91	CARBON	1M	5%	1/4W	
R41	1-249-427-11	CARBON	6.8K	5%	1/4W	
R42	1-249-420-11	CARBON	1.8K	5%	1/4W	
R43	1-249-415-11	CARBON	680	5%	1/4W	
R44	1-249-418-11	CARBON	1.2K	5%	1/4W	
R45	1-249-422-11	CARBON	2.7K	5%	1/4W	
R47	1-249-413-11	CARBON	470	5%	1/4W	
R49	1-249-413-11	CARBON	470	5%	1/4W	
R50	1-247-807-31	CARBON	100	5%	1/4W	
R51	1-215-417-00	METAL	680	1%	1/4W	
R52	1-215-417-00	METAL	680	1%	1/4W	
R53	1-215-413-00	METAL	470	1%	1/4W	
R54	1-215-443-00	METAL	8.2K	1%	1/4W	
R55	1-249-421-11	CARBON	2.2K	5%	1/4W	
R56	1-249-441-11	CARBON	100K	5%	1/4W	
R57	1-249-417-11	CARBON	1K	5%	1/4W	
R58	1-249-417-11	CARBON	1K	5%	1/4W	
R59	1-249-429-11	CARBON	10K	5%	1/4W	
R60	1-249-433-11	CARBON	22K	5%	1/4W	
R61	1-249-420-11	CARBON	1.8K	5%	1/4W	
R62	1-249-429-11	CARBON	10K	5%	1/4W	
R63	1-249-425-11	CARBON	4.7K	5%	1/4W	
R64	1-249-429-11	CARBON	10K	5%	1/4W	
R65	1-215-421-00	METAL	1K	1%	1/4W	
R68	1-249-427-11	CARBON	6.8K	5%	1/4W	
R69	1-215-420-00	METAL	910	1%	1/4W	
R70	1-215-420-00	METAL	910	1%	1/4W	
R71	1-215-417-00	METAL	680	1%	1/4W	
R72	1-249-422-11	CARBON	2.7K	5%	1/4W	
R73	1-247-807-31	CARBON	100	5%	1/4W	
R74	1-215-421-00	METAL	1K	1%	1/4W	
R77	1-249-427-11	CARBON	6.8K	5%	1/4W	
R78	1-215-420-00	METAL	910	1%	1/4W	
R79	1-215-420-00	METAL	910	1%	1/4W	
R80	1-215-417-00	METAL	680	1%	1/4W	
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	
R82	1-247-807-31	CARBON	100	5%	1/4W	
R83	1-215-481-00	METAL	330K	1%	1/4W	
R85	1-215-429-00	METAL	2.2K	1%	1/4W	
R86	1-215-415-00	METAL	560	1%	1/4W	
R87	1-215-477-00	METAL	220K	1%	1/4W	
R88	1-215-457-00	METAL	33K	1%	1/4W	
R90	1-249-429-11	CARBON	10K	5%	1/4W	
R91	1-249-433-11	CARBON	22K	5%	1/4W	
R95	1-249-429-11	CARBON	10K	5%	1/4W	
R96	1-249-433-11	CARBON	22K	5%	1/4W	
R101	1-249-423-11	CARBON	3.3K	5%	1/4W	
R102	1-249-419-11	CARBON	1.5K	5%	1/4W	
R103	1-249-427-11	CARBON	6.8K	5%	1/4W	
R104	1-249-422-11	CARBON	2.7K	5%	1/4W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R202	1-249-429-11	CARBON	10K	5%	1/4W	
		<VARIABLE RESISTOR>				
RV1	1-237-500-21	RES, ADJ, CERMET 1K				
RV2	1-237-504-21	RES, ADJ, CERMET 20K				
RV3	1-237-499-21	RES, ADJ, CERMET 500				
RV4	1-237-501-21	RES, ADJ, CERMET 2K				
RV5	1-237-501-21	RES, ADJ, CERMET 2K				
		<CRYSTAL>				
X1	1-567-505-11	OSCILLATOR, CRYSTAL				
		**********				
	*A-1135-391-A	BD BOARD, COMPLETE				
		**********				
	*4-353-708-00	HOOK, FINGER				
		<CAPACITOR>				
C1	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
C2	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
C3	1-102-963-00	CERAMIC	33PF	5%	50V	
C4	1-101-880-00	CERAMIC	47PF	5%	50V	
C6	1-101-888-00	CERAMIC	68PF	5%	50V	
C7	1-102-963-00	CERAMIC	33PF	5%	50V	
C8	1-102-943-00	CERAMIC	6PF	0.5PF	50V	
C9	1-126-964-11	ELECT	10MF	20%	16V	
C10	1-126-964-11	ELECT	10MF	20%	16V	
C11	1-101-004-00	CERAMIC	0.01MF		50V	
C12	1-101-004-00	CERAMIC	0.01MF		50V	
C13	1-101-004-00	CERAMIC	0.01MF		50V	
C14	1-101-004-00	CERAMIC	0.01MF		50V	
C15	1-101-004-00	CERAMIC	0.01MF		50V	
C16	1-101-004-00	CERAMIC	0.01MF		50V	

BD

REF.NO.	PART NO.	DESCRIPTION			REMARK
C17	1-136-165-00	FILM	0.1MF	5%	50V
C18	1-102-950-00	CERAMIC	13PF	5%	50V
C19	1-102-951-00	CERAMIC	15PF	5%	50V
C20	1-101-888-00	CERAMIC	68PF	5%	50V
C21	1-163-157-00	FILM	0.022MF	5%	50V
C22	1-163-157-00	FILM	0.022MF	5%	50V
C23	1-124-903-11	ELECT	1MF	20%	50V
C24	1-101-004-00	CERAMIC	0.01MF		50V
C25	1-126-967-11	ELECT	47MF	20%	16V
C26	1-109-628-00	MICA	160PF	1%	500V
C27	1-102-960-00	CERAMIC	24PF	5%	50V
C28	1-109-631-00	MICA	330PF	1%	500V
C29	1-126-967-11	ELECT	47MF	20%	16V
C30	1-109-628-00	MICA	160PF	1%	500V
C31	1-102-960-00	CERAMIC	24PF	5%	50V
C32	1-109-631-00	MICA	330PF	1%	500V
C33	1-101-004-00	CERAMIC	0.01MF		50V
C34	1-136-153-00	FILM	0.01MF	5%	50V
C35	1-101-004-00	CERAMIC	0.01MF		50V
C36	1-124-903-00	ELECT	1MF	20%	50V
C38	1-102-074-00	CERAMIC	0.001MF	10%	50V
C39	1-109-667-11	MICA	56PF	1%	500V
C40	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C41	1-109-621-00	MICA	220PF	1%	500V
C43	1-126-967-11	ELECT	47MF	20%	16V
C44	1-126-967-11	ELECT	47MF	20%	16V
C45	1-101-004-00	CERAMIC	0.01MF		50V
C46	1-136-153-00	FILM	0.01MF	5%	50V
C49	1-124-903-00	ELECT	1MF	20%	50V
C50	1-102-074-00	CERAMIC	0.001MF	10%	50V
C51	1-109-667-11	MICA	56PF	1%	500V
C52	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C53	1-109-621-00	MICA	220PF	1%	500V
C55	1-126-967-11	ELECT	47MF	20%	16V
C56	1-126-967-11	ELECT	47MF	20%	16V
C57	1-101-004-00	CERAMIC	0.01MF		50V
C58	1-101-004-00	CERAMIC	0.01MF		50V
C60	1-126-967-11	ELECT	47MF	20%	16V
C62	1-102-960-00	CERAMIC	24PF	5%	50V
C63	1-101-361-00	CERAMIC	150PF	5%	50V
C64	1-102-518-11	CERAMIC	33PF	5%	50V
C65	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C66	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C68	1-104-792-51	ELECT	33MF	20%	16V
C69	1-104-792-51	ELECT	33MF	20%	16V
C70	1-124-927-11	ELECT	4.7MF	20%	50V
C71	1-101-004-00	CERAMIC	0.01MF		50V
C75	1-101-004-00	CERAMIC	0.01MF		50V
C85	1-104-792-51	ELECT	33MF	20%	16V
C95	1-104-792-51	ELECT	33MF	20%	16V
C100	1-104-792-51	ELECT	33MF	20%	16V
C101	1-126-967-11	ELECT	47MF	20%	25V
C102	1-104-792-51	ELECT	33MF	20%	16V
C103	1-104-792-51	ELECT	33MF	20%	16V
C104	1-104-792-51	ELECT	33MF	20%	16V
C106	1-104-792-51	ELECT	33MF	20%	16V
C107	1-104-792-51	ELECT	33MF	20%	16V
C108	1-104-792-51	ELECT	33MF	20%	16V
C109	1-104-792-51	ELECT	33MF	20%	16V
C110	1-104-792-51	ELECT	33MF	20%	16V
C224	1-101-004-00	CERAMIC	0.01MF		50V
C225	1-101-004-00	CERAMIC	0.01MF		50V
C226	1-101-004-00	CERAMIC	0.01MF		50V
C227	1-124-916-11	ELECT	22MF	20%	25V
C250	1-104-792-51	ELECT	33MF	20%	16V
C251	1-101-004-00	CERAMIC	0.01MF		50V
C301	1-101-004-00	CERAMIC	0.01MF		50V
C302	1-101-004-00	CERAMIC	0.01MF		50V
C303	1-101-004-00	CERAMIC	0.01MF		50V
C304	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C312	1-101-004-00	CERAMIC	0.01MF		50V
C313	1-101-004-00	CERAMIC	0.01MF		50V
C316	1-102-935-00	CERAMIC	2PF	0.25PF	50V
C350	1-102-963-00	CERAMIC	33PF	5%	50V
		<TRIMMER>			
CV1	1-141-171-00	CAP, TRIMMER 15P			
CV2	1-141-179-12	CAP, VAR, TRIMMER			
		<DIODE>			
D1	8-719-911-19	DIODE 1SS119			
D2	8-719-911-19	DIODE 1SS119			
D5	8-719-910-13	DIODE RD9.1ESB2			
D6	8-719-911-19	DIODE 1SS119			
D10	8-719-949-46	DIODE 1T32			
D11	8-719-911-19	DIODE 1SS119			
D12	8-719-110-31	DIODE RD12ESB2			
D13	8-719-110-31	DIODE RD12ESB2			
D16	8-719-911-19	DIODE 1SS119			
D201	8-719-911-19	DIODE 1SS119			
D202	8-719-911-19	DIODE 1SS119			
		<IC>			
IC1	8-759-204-21	IC TA7193P			
IC2	8-759-800-81	IC LA7016			
IC3	8-752-340-28	IC CXL5506P			
	*1-526-652-21	SOCKET, IC <DP> 8P; IC3			
IC4	8-752-340-28	IC CXL5506P			
	*1-526-652-21	SOCKET, IC <DP> 8P; IC4			
IC5	8-759-140-53	IC UPD4053BC			
IC6	8-759-800-81	IC LA7016			
IC7	8-759-145-58	IC UPC4558C			
IC8	8-759-145-58	IC UPC4558C			
IC10	8-759-708-05	IC NJM78L05A			
		<COIL>			
L1	1-408-533-00	COIL, VARIABLE			
L2	1-408-532-00	COIL, VARIABLE			
L3	1-408-514-11	COIL (VARIABLE)			
L4	1-408-421-00	INDUCTOR	100UH		
L5	1-408-429-00	INDUCTOR	470UH		
L6	1-408-429-00	INDUCTOR	470UH		
L8	1-408-421-00	INDUCTOR	100UH		
L101	1-408-421-00	INDUCTOR	100UH		
L102	1-408-421-00	INDUCTOR	100UH		
		<TRANSISTOR>			
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q4	8-729-800-10	TRANSISTOR 2SC3068			

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q5	8-729-800-10	TRANSISTOR 2SC3068	
Q6	8-729-384-48	TRANSISTOR 2SA844	
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q8	8-729-384-48	TRANSISTOR 2SA844	
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q10	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q18	8-729-600-19	TRANSISTOR 2SK381-A	
Q20	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q23	8-729-384-48	TRANSISTOR 2SA844	
Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q25	8-729-800-10	TRANSISTOR 2SC3068	
Q26	8-729-600-19	TRANSISTOR 2SK381-A	
Q28	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q31	8-729-384-48	TRANSISTOR 2SA844	
Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q33	8-729-800-10	TRANSISTOR 2SC3068	
Q34	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q35	8-729-384-48	TRANSISTOR 2SA844	
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q38	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q50	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q101	8-729-140-97	TRANSISTOR 2SB734-34	
Q102	8-729-320-62	TRANSISTOR 2SD789-34	
Q103	8-729-900-63	TRANSISTOR DTA124ES	
Q104	8-729-900-63	TRANSISTOR DTA124ES	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION			REMARK
R1	1-249-428-11	CARBON	8.2K	5%	1/4W
R2	1-249-429-11	CARBON	10K	5%	1/4W
R3	1-249-422-11	CARBON	2.7K	5%	1/4W
R4	1-215-425-00	METAL	1.5K	1%	1/4W
R5	1-215-395-00	METAL	82	1%	1/4W
R6	1-215-421-00	METAL	1K	1%	1/4W
R7	1-215-421-00	METAL	1K	1%	1/4W
R8	1-215-423-00	METAL	1.2K	1%	1/4W
R9	1-215-421-00	METAL	1K	1%	1/4W
R10	1-215-421-00	METAL	1K	1%	1/4W
R11	1-215-391-00	METAL	56	1%	1/4W
R12	1-215-427-00	METAL	1.8K	1%	1/4W
R13	1-249-425-11	CARBON	4.7K	5%	1/4W
R14	1-249-429-11	CARBON	10K	5%	1/4W
R15	1-249-429-11	CARBON	10K	5%	1/4W
R17	1-249-433-11	CARBON	22K	5%	1/4W
R18	1-215-425-00	METAL	1.5K	1%	1/4W
R19	1-215-425-00	METAL	1.5K	1%	1/4W
R20	1-215-425-00	METAL	1.5K	1%	1/4W
R21	1-215-425-00	METAL	1.5K	1%	1/4W
R22	1-247-807-31	CARBON	100	5%	1/4W
R23	1-215-441-00	METAL	6.8K	1%	1/4W
R24	1-215-469-00	METAL	100K	1%	1/4W
R25	1-249-427-11	CARBON	6.8K	5%	1/4W
R26	1-249-415-11	CARBON	680	5%	1/4W
R27	1-249-415-11	CARBON	680	5%	1/4W
R28	1-249-420-11	CARBON	1.8K	5%	1/4W
R29	1-249-422-11	CARBON	2.7K	5%	1/4W
R30	1-247-807-11	CARBON	100	5%	1/4W
R31	1-247-903-31	CARBON	1M	5%	1/4W
R32	1-249-429-11	CARBON	10K	5%	1/4W
R34	1-215-407-00	METAL	270	1%	1/4W
R35	1-215-407-00	METAL	270	1%	1/4W
R36	1-215-413-00	METAL	470	1%	1/4W
R37	1-215-443-00	METAL	8.2K	1%	1/4W
R38	1-249-441-11	CARBON	100K	5%	1/4W
R39	1-215-425-00	METAL	1.5K	1%	1/4W
R40	1-215-421-00	METAL	1K	1%	1/4W
R41	1-215-429-00	METAL	2.2K	1%	1/4W
R42	1-215-445-00	METAL	10K	1%	1/4W
R43	1-215-421-00	METAL	1K	1%	1/4W
R44	1-249-433-11	CARBON	22K	5%	1/4W
R45	1-249-429-11	CARBON	10K	5%	1/4W
R46	1-249-429-11	CARBON	10K	5%	1/4W
R47	1-249-441-11	CARBON	100K	5%	1/4W
R48	1-249-425-11	CARBON	4.7K	5%	1/4W
R54	1-249-422-11	CARBON	2.7K	5%	1/4W
R55	1-215-418-00	METAL	750	1%	1/4W
R56	1-215-420-00	METAL	910	1%	1/4W
R57	1-249-415-11	CARBON	680	5%	1/4W
R58	1-249-422-11	CARBON	2.7K	5%	1/4W
R59	1-249-422-11	CARBON	2.7K	5%	1/4W
R60	1-215-418-00	METAL	750	1%	1/4W
R61	1-215-420-00	METAL	910	1%	1/4W
R62	1-249-415-11	CARBON	680	5%	1/4W
R63	1-249-422-11	CARBON	2.7K	5%	1/4W
R64	1-215-477-11	METAL	220K	1%	1/4W
R65	1-215-435-00	METAL	3.9K	1%	1/4W
R66	1-247-807-31	CARBON	100	5%	1/4W
R70	1-247-903-00	CARBON	1M	5%	1/4W
R71	1-249-429-11	CARBON	10K	5%	1/4W
R72	1-249-429-11	CARBON	10K	5%	1/4W
R73	1-249-429-11	CARBON	10K	5%	1/4W
R74	1-249-417-11	CARBON	1K	5%	1/4W
R75	1-249-427-11	CARBON	6.8K	5%	1/4W
R76	1-249-427-11	CARBON	6.8K	5%	1/4W
R77	1-249-425-11	CARBON	4.7K	5%	1/4W
R78	1-215-424-00	METAL	1.3K	1%	1/4W
R79	1-215-419-00	METAL	820	1%	1/4W
R80	1-215-425-00	METAL	1.5K	1%	1/4W
R81	1-249-422-11	CARBON	2.7K	5%	1/4W
R82	1-249-425-11	CARBON	4.7K	5%	1/4W
R83	1-249-435-11	CARBON	33K	5%	1/4W
R84	1-249-435-11	CARBON	33K	5%	1/4W
R85	1-247-903-00	CARBON	1M	5%	1/4W
R86	1-249-429-11	CARBON	10K	5%	1/4W
R87	1-249-429-11	CARBON	10K	5%	1/4W
R88	1-249-429-11	CARBON	10K	5%	1/4W
R89	1-249-417-11	CARBON	1K	5%	1/4W
R90	1-249-427-11	CARBON	6.8K	5%	1/4W
R91	1-249-427-11	CARBON	6.8K	5%	1/4W
R92	1-249-425-11	CARBON	4.7K	5%	1/4W

BD **BG**

REF.NO.	PART NO.	DESCRIPTION				REMARK
R93	1-215-424-00	METAL	1.3K	1%	1/4W	
R94	1-215-419-00	METAL	820	1%	1/4W	
R95	1-215-425-00	METAL	1.5K	1%	1/4W	
R96	1-249-422-11	CARBON	2.7K	5%	1/4W	
R97	1-249-425-11	CARBON	4.7K	5%	1/4W	
R98	1-249-435-11	CARBON	33K	5%	1/4W	
R99	1-249-435-11	CARBON	33K	5%	1/4W	
R100	1-215-438-00	METAL	5.1K	1%	1/4W	
R101	1-215-438-00	METAL	5.1K	1%	1/4W	
R102	1-215-438-00	METAL	5.1K	1%	1/4W	
R103	1-215-438-00	METAL	5.1K	1%	1/4W	
R104	1-249-431-11	CARBON	15K	5%	1/4W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R106	1-249-414-11	CARBON	560	5%	1/4W	
R107	1-249-417-11	CARBON	1K	5%	1/4W	
R108	1-249-417-11	CARBON	1K	5%	1/4W	
R109	1-249-417-11	CARBON	1K	5%	1/4W	
R115	1-215-438-00	METAL	5.1K	1%	1/4W	
R116	1-215-438-00	METAL	5.1K	1%	1/4W	
R120	1-249-429-11	CARBON	10K	5%	1/4W	
R121	1-249-429-11	CARBON	10K	5%	1/4W	
R125	1-215-425-00	METAL	1.5K	1%	1/4W	
R126	1-215-433-00	METAL	3.3K	1%	1/4W	
R130	1-215-477-00	METAL	220K	1%	1/4W	
R140	1-249-417-11	CARBON	1K	5%	1/4W	
R141	1-215-463-00	METAL	56K	1%	1/4W	
R142	1-215-463-00	METAL	56K	1%	1/4W	
R143	1-215-427-00	METAL	1.8K	1%	1/4W	
R144	1-215-415-00	METAL	560	1%	1/4W	
R150	1-249-441-11	CARBON	100K	5%	1/4W	
R201	1-249-423-11	CARBON	3.3K	5%	1/4W	
R202	1-249-423-11	CARBON	3.3K	5%	1/4W	
R203	1-249-422-11	CARBON	2.7K	5%	1/4W	
R204	1-249-423-11	CARBON	3.3K	5%	1/4W	
R220	1-249-441-11	CARBON	100K	5%	1/4W	
R221	1-249-433-11	CARBON	22K	5%	1/4W	
R222	1-249-433-11	CARBON	22K	5%	1/4W	
R225	1-215-425-00	METAL	1.5K	1%	1/4W	
R226	1-215-433-00	METAL	3.3K	1%	1/4W	
R240	1-249-417-11	CARBON	1K	5%	1/4W	
R241	1-215-463-00	METAL	56K	1%	1/4W	
R242	1-215-463-00	METAL	56K	1%	1/4W	
R243	1-215-427-00	METAL	1.8K	1%	1/4W	
R244	1-215-415-00	METAL	560	1%	1/4W	
R250	1-215-415-00	METAL	560	1%	1/4W	
R251	1-215-415-00	METAL	560	1%	1/4W	
R254	1-249-429-11	CARBON	10K	5%	1/4W	
R255	1-249-441-11	CARBON	100K	5%	1/4W	
R301	1-215-469-00	METAL	100K	1%	1/4W	
R302	1-215-491-00	METAL	820K	1%	1/4W	
R303	1-249-418-11	CARBON	1.2K	5%	1/4W	
R305	1-249-431-11	CARBON	15K	5%	1/4W	
R306	1-249-428-11	CARBON	8.2K	5%	1/4W	
R307	1-249-417-11	CARBON	1K	5%	1/4W	
R308	1-249-417-11	CARBON	1K	5%	1/4W	
R310	1-249-422-11	CARBON	2.7K	5%	1/4W	
R314	1-215-417-00	METAL	680	1%	1/4W	
R315	1-249-422-11	CARBON	2.7K	5%	1/4W	
R316	1-249-413-11	CARBON	470	5%	1/4W	
R317	1-249-413-11	CARBON	470	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R320	1-215-472-00	METAL	130K	1%	1/4W	
R353	1-249-432-11	CARBON	18K	5%	1/4W	
R354	1-249-432-11	CARBON	18K	5%	1/4W	
R400	1-215-429-00	METAL	2.2K	1%	1/4W	
R500	1-215-862-11	METAL OXIDE	68	5%	1W F	

<VARIABLE RESISTOR>

RV1	1-237-515-21	RES, ADJ, CERMET	1K		
RV2	1-238-783-11	RES, ADJ, CERMET	500		
RV3	1-238-785-21	RES, ADJ, CERMET	2K		
RV4	1-238-785-21	RES, ADJ, CERMET	2K		
RV5	1-238-801-11	RES, ADJ, CERMET	5K		
RV6	1-238-801-11	RES, ADJ, CERMET	5K		
RV7	1-238-788-11	RES, ADJ, CERMET	20K		
RV8	1-238-788-11	RES, ADJ, CERMET	20K		
RV9	1-237-517-21	RES, ADJ, CERMET	5K		
RV10	1-237-517-21	RES, ADJ, CERMET	5K		

<CRYSTAL>

X1	1-567-504-11	OSCILLATOR, CRYSTAL	
X2	1-760-461-11	VIBRATOR, CRYSTAL	

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*A-1135-537-A	BG BOARD, COMPLETE				
	**********				
*4-353-708-00	HOOK, FINGER				
7-682-547-09	SCREW +BVTT 3X6 (S)				

<CAPACITOR>

C1	1-126-967-11	ELECT	47MF	20%	16V
C2	1-126-967-11	ELECT	47MF	20%	16V
C3	1-126-964-11	ELECT	10MF	20%	16V
C4	1-126-967-11	ELECT	47MF	20%	16V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-101-004-00	CERAMIC	0.01MF		50V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-102-935-00	CERAMIC	2PF	0.25PF	50V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-101-004-00	CERAMIC	0.01MF		50V
C20	1-124-903-11	ELECT	1MF	20%	50V
C22	1-101-004-00	CERAMIC	0.01MF		50V
C26	1-101-004-00	CERAMIC	0.01MF		50V
C32	1-101-004-00	CERAMIC	0.01MF		50V
C33	1-136-165-00	FILM	0.1MF	5%	50V
C34	1-136-165-00	FILM	0.1MF	5%	50V
C35	1-136-165-00	FILM	0.1MF	5%	50V
C53	1-124-915-11	ELECT	10MF	20%	25V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C101	1-126-103-11	ELECT	470MF	20%	16V
C102	1-126-101-11	ELECT	100MF	20%	16V
C103	1-124-119-00	ELECT	330MF	20%	16V
C105	1-124-119-00	ELECT	330MF	20%	16V
C106	1-126-101-11	ELECT	100MF	20%	16V
C111	1-126-964-11	ELECT	10MF	20%	16V
C112	1-101-004-00	CERAMIC	0.01MF		50V
C113	1-101-004-00	CERAMIC	0.01MF		50V
C114	1-101-004-00	CERAMIC	0.01MF		50V
C115	1-101-004-00	CERAMIC	0.01MF		50V
C116	1-101-004-00	CERAMIC	0.01MF		50V

REF.NO.	PART NO.	DESCRIPTION			REMARK
C117	1-101-004-00	CERAMIC	0.01MF		50V
C131	1-126-103-11	ELECT	470MF	20%	16V
C132	1-126-101-11	ELECT	100MF	20%	16V
C133	1-124-119-00	ELECT	330MF	20%	16V
C135	1-124-119-00	ELECT	330MF	20%	16V
C136	1-126-101-11	ELECT	100MF	20%	16V
C141	1-101-004-00	CERAMIC	0.01MF		50V
C142	1-101-004-00	CERAMIC	0.01MF		50V
C143	1-101-004-00	CERAMIC	0.01MF		50V
C144	1-101-004-00	CERAMIC	0.01MF		50V
C145	1-101-004-00	CERAMIC	0.01MF		50V
C146	1-101-004-00	CERAMIC	0.01MF		50V
C147	1-101-004-00	CERAMIC	0.01MF		50V

<COMPOSITION CIRCUIT BLOCK>

CP11	1-232-726-11	COMPOSITION CIRCUIT BLOCK
CP12	1-232-728-11	COMPOSITION CIRCUIT BLOCK
CP13	1-232-726-11	COMPOSITION CIRCUIT BLOCK
CP14	1-233-018-11	COMPOSITION CIRCUIT BLOCK
CP15	1-233-019-11	COMPOSITION CIRCUIT BLOCK
CP16	1-233-031-11	COMPOSITION CIRCUIT BLOCK
CP17	1-233-032-11	COMPOSITION CIRCUIT BLOCK
CP18	1-233-013-11	COMPOSITION CIRCUIT BLOCK
CP19	1-233-017-11	COMPOSITION CIRCUIT BLOCK
CP20	1-232-752-11	COMPOSITION CIRCUIT BLOCK
CP21	1-232-726-11	COMPOSITION CIRCUIT BLOCK
CP22	1-232-728-11	COMPOSITION CIRCUIT BLOCK
CP23	1-232-726-11	COMPOSITION CIRCUIT BLOCK
CP25	1-232-730-11	COMPOSITION CIRCUIT BLOCK
CP26	1-232-730-11	COMPOSITION CIRCUIT BLOCK
CP27	1-231-765-00	COMPOSITION CIRCUIT BLOCK
CP28	1-232-752-11	COMPOSITION CIRCUIT BLOCK
CP29	1-232-728-11	COMPOSITION CIRCUIT BLOCK
CP30	1-232-728-11	COMPOSITION CIRCUIT BLOCK
CP31	1-232-734-11	COMPOSITION CIRCUIT BLOCK
CP32	1-232-728-11	COMPOSITION CIRCUIT BLOCK
CP33	1-232-738-11	COMPOSITION CIRCUIT BLOCK
CP41	1-233-014-11	COMPOSITION CIRCUIT BLOCK
CP42	1-233-014-11	COMPOSITION CIRCUIT BLOCK

<TRIMMER>

CV2	1-141-181-11	CAP, TRIMMER
CV3	1-141-171-00	CAP, TRIMMER 20P

<DIODE>

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D5	8-719-911-19	DIODE 1SS119
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D16	8-719-911-19	DIODE 1SS119
D17	8-719-911-19	DIODE 1SS119

<DELAY LINE>

DL1	1-415-477-11	DELAY LINE
DL2	1-415-458-11	DELAY LINE
DL3	1-406-769-11	DELAY LINE
DL4	1-406-769-11	DELAY LINE

<IC>

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC1	8-759-800-81	IC LA7016	
IC2	8-766-001-49	TRANSISTOR TX-429M	
IC3	8-759-145-58	IC UPC4558C	
IC4	8-757-182-14	IC CX-718D-1	
IC5	8-759-140-53	IC UPD4053BC	
IC6	8-759-140-53	IC UPD4053BC	
IC7	8-759-503-91	IC TL082ACP	

<COIL>

L2	1-408-408-00	INDUCTOR	8.2UH

<TRANSISTOR>

Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q10	8-729-384-48	TRANSISTOR 2SA844-E
Q11	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q14	8-729-800-10	TRANSISTOR 2SC3068
Q21	8-729-384-48	TRANSISTOR 2SA844-E
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q23	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q24	8-729-600-19	TRANSISTOR 2SK381-A
Q25	8-729-384-48	TRANSISTOR 2SA844-E
Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q28	8-729-600-19	TRANSISTOR 2SK381-A
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q31	8-729-384-48	TRANSISTOR 2SA844-E
Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q33	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q34	8-729-600-19	TRANSISTOR 2SK381-A
Q35	8-729-384-48	TRANSISTOR 2SA844-E
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q37	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q38	8-729-600-19	TRANSISTOR 2SK381-A
Q39	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q41	8-729-384-48	TRANSISTOR 2SA844-E
Q42	8-729-384-48	TRANSISTOR 2SA844-E
Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q44	8-729-384-48	TRANSISTOR 2SA844-E
Q45	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q49	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q50	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q71	8-729-384-48	TRANSISTOR 2SA844-E
Q72	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q73	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q74	8-729-384-48	TRANSISTOR 2SA844-E
Q75	8-729-800-10	TRANSISTOR 2SC3068
Q76	8-729-900-63	TRANSISTOR DTA124ES
Q77	8-729-900-63	TRANSISTOR DTA124ES
Q81	8-729-384-48	TRANSISTOR 2SA844-E
Q82	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q83	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q84	8-729-384-48	TRANSISTOR 2SA844-E
Q85	8-729-800-10	TRANSISTOR 2SC3068

BG

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R1	1-217-807-31	CARBON	100	5%	1/4W	
R2	1-215-396-00	METAL	91	1%	1/4W	
R3	1-215-431-00	METAL	2.7K	1%	1/4W	
R4	1-249-419-11	CARBON	1.5K	5%	1/4W	
R6	1-217-807-31	CARBON	100	5%	1/4W	
R7	1-217-807-31	CARBON	100	5%	1/4W	
R8	1-249-429-11	CARBON	10K	5%	1/4W	
R10	1-247-830-11	CARBON	910	5%	1/4W	
R11	1-249-417-11	CARBON	1K	5%	1/4W	
R12	1-249-417-11	CARBON	1K	5%	1/4W	
R13	1-215-462-00	METAL	51K	1%	1/4W	
R14	1-249-426-11	CARBON	5.6K	5%	1/4W	
R15	1-247-903-00	CARBON	1M	5%	1/4W	
R16	1-215-477-00	METAL	220K	1%	1/4W	
R17	1-249-429-11	CARBON	10K	5%	1/4W	
R18	1-249-429-11	CARBON	10K	5%	1/4W	
R19	1-249-417-11	CARBON	1K	5%	1/4W	
R20	1-215-421-00	METAL	1K	1%	1/4W	
R21	1-215-421-00	METAL	1K	1%	1/4W	
R22	1-249-441-11	CARBON	100K	5%	1/4W	
R23	1-215-409-00	METAL	330	1%	1/4W	
R24	1-215-380-00	METAL	20	1%	1/4W	
R25	1-215-380-00	METAL	20	1%	1/4W	
R26	1-215-409-00	METAL	330	1%	1/4W	
R27	1-249-429-11	CARBON	10K	5%	1/4W	
R28	1-249-417-11	CARBON	1K	5%	1/4W	
R29	1-215-418-00	METAL	750	1%	1/4W	
R30	1-249-422-11	CARBON	2.7K	5%	1/4W	
R31	1-217-807-31	CARBON	100	5%	1/4W	
R32	1-249-420-11	CARBON	1.8K	5%	1/4W	
R33	1-249-429-11	CARBON	10K	5%	1/4W	
R34	1-249-428-11	CARBON	8.2K	5%	1/4W	
R35	1-249-417-11	CARBON	1K	5%	1/4W	
R36	1-249-422-11	CARBON	2.7K	5%	1/4W	
R37	1-217-807-31	CARBON	100	5%	1/4W	
R40	1-249-425-11	CARBON	4.7K	5%	1/4W	
R41	1-249-422-11	CARBON	2.7K	5%	1/4W	
R42	1-249-417-11	CARBON	1K	5%	1/4W	
R43	1-249-417-11	CARBON	1K	5%	1/4W	
R44	1-249-431-11	CARBON	15K	5%	1/4W	
R45	1-249-423-11	CARBON	3.3K	5%	1/4W	
R46	1-249-417-11	CARBON	1K	5%	1/4W	
R47	1-249-423-11	CARBON	3.3K	5%	1/4W	
R48	1-249-422-11	CARBON	2.7K	5%	1/4W	
R49	1-217-807-31	CARBON	100	5%	1/4W	
R50	1-249-422-11	CARBON	2.7K	5%	1/4W	
R51	1-247-903-00	CARBON	1M	5%	1/4W	
R52	1-247-866-11	CARBON	30K	5%	1/4W	
R53	1-215-445-00	METAL	10K	1%	1/4W	
R54	1-249-420-11	CARBON	1.8K	5%	1/4W	
R55	1-249-422-11	CARBON	2.7K	5%	1/4W	
R56	1-217-807-31	CARBON	100	5%	1/4W	
R57	1-249-422-11	CARBON	2.7K	5%	1/4W	
R58	1-249-422-11	CARBON	2.7K	5%	1/4W	
R59	1-249-422-11	CARBON	2.7K	5%	1/4W	
R61	1-249-422-11	CARBON	2.7K	5%	1/4W	
R62	1-249-417-11	CARBON	1K	5%	1/4W	
R63	1-249-417-11	CARBON	1K	5%	1/4W	
R64	1-249-431-11	CARBON	15K	5%	1/4W	
R65	1-249-423-11	CARBON	3.3K	5%	1/4W	
R66	1-249-417-11	CARBON	1K	5%	1/4W	
R67	1-249-423-11	CARBON	3.3K	5%	1/4W	
R68	1-249-422-11	CARBON	2.7K	5%	1/4W	
R69	1-217-807-31	CARBON	100	5%	1/4W	
R70	1-249-422-11	CARBON	2.7K	5%	1/4W	
R71	1-247-903-00	CARBON	1M	5%	1/4W	
R72	1-247-866-11	CARBON	30K	5%	1/4W	
R73	1-215-445-00	METAL	10K	1%	1/4W	
R74	1-249-420-11	CARBON	1.8K	5%	1/4W	
R75	1-249-422-11	CARBON	2.7K	5%	1/4W	
R76	1-217-807-31	CARBON	100	5%	1/4W	
R77	1-249-422-11	CARBON	2.7K	5%	1/4W	
R78	1-249-422-11	CARBON	2.7K	5%	1/4W	
R79	1-249-422-11	CARBON	2.7K	5%	1/4W	
R80	1-217-807-31	CARBON	100	5%	1/4W	
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	
R82	1-247-903-00	CARBON	1M	5%	1/4W	
R83	1-249-420-11	CARBON	1.8K	5%	1/4W	
R84	1-217-807-31	CARBON	100	5%	1/4W	
R85	1-247-866-11	CARBON	30K	5%	1/4W	
R86	1-215-445-00	METAL	10K	1%	1/4W	
R87	1-249-422-11	CARBON	2.7K	5%	1/4W	
R88	1-215-430-00	METAL	2.4K	1%	1/4W	
R89	1-215-443-00	METAL	8.2K	1%	1/4W	
R90	1-249-430-11	CARBON	12K	5%	1/4W	
R91	1-217-807-31	CARBON	100	5%	1/4W	
R92	1-247-830-11	CARBON	910	5%	1/4W	
R93	1-215-421-00	METAL	1K	1%	1/4W	
R94	1-249-422-11	CARBON	2.7K	5%	1/4W	
R98	1-249-422-11	CARBON	2.7K	5%	1/4W	
R99	1-249-422-11	CARBON	2.7K	5%	1/4W	
R161	1-215-438-00	METAL	5.1K	1%	1/4W	
R162	1-249-431-11	CARBON	15K	5%	1/4W	
R163	1-249-417-11	CARBON	1K	5%	1/4W	
R164	1-215-435-00	METAL	3.9K	1%	1/4W	
R165	1-249-422-11	CARBON	2.7K	5%	1/4W	
R166	1-249-422-11	CARBON	2.7K	5%	1/4W	
R167	1-215-409-00	METAL	330	1%	1/4W	
R168	1-215-412-00	METAL	430	1%	1/4W	
R169	1-215-427-00	METAL	1.8K	1%	1/4W	
R170	1-249-425-11	CARBON	4.7K	5%	1/4W	
R171	1-215-436-00	METAL	4.3K	1%	1/4W	
R172	1-249-431-11	CARBON	15K	5%	1/4W	
R173	1-249-417-11	CARBON	1K	5%	1/4W	
R174	1-215-435-00	METAL	3.9K	1%	1/4W	
R175	1-249-422-11	CARBON	2.7K	5%	1/4W	
R176	1-249-422-11	CARBON	2.7K	5%	1/4W	
R177	1-215-409-00	METAL	330	1%	1/4W	
R178	1-215-414-00	METAL	510	1%	1/4W	
R179	1-215-422-00	METAL	1.1K	1%	1/4W	
R180	1-249-425-11	CARBON	4.7K	5%	1/4W	
R181	1-215-380-00	METAL	20	1%	1/4W	
R182	1-215-380-00	METAL	20	1%	1/4W	
R183	1-249-433-11	CARBON	22K	5%	1/4W	
R184	1-249-425-11	CARBON	4.7K	5%	1/4W	
R201	1-249-437-11	CARBON	47K	5%	1/4W	
R202	1-249-429-11	CARBON	10K	5%	1/4W	
R203	1-249-435-11	CARBON	33K	5%	1/4W	
R204	1-247-872-11	CARBON	51K	5%	1/4W	

<VARIABLE RESISTOR>

RV1	1-237-514-21	RES, ADJ, CERMET 500
RV2	1-237-508-21	RES, ADJ, CERMET 500K

REF.NO.	PART NO.	DESCRIPTION			REMARK
RV3	1-237-498-21	RES, ADJ, CERMET 200			
RV4	1-237-500-21	RES, ADJ, CERMET 1K			
RV5	1-237-500-21	RES, ADJ, CERMET 1K			
RV21	1-237-517-21	RES, ADJ, CERMET 5K			
RV22	1-237-517-21	RES, ADJ, CERMET 5K			
		<SWITCH>			
S1	1-570-857-11	SWITCH, SLIDE			
**********					
	*A-1135-359-A	BH BOARD, COMPLETE			
		**********			
	*4-353-708-00	HOOK, FINGER			
	7-682-547-09	SCREW +BVTT 3X6 (S)			
		<CAPACITOR>			
C1	1-104-792-51	ELECT	33MF	20%	16V
C2	1-104-792-51	ELECT	33MF	20%	16V
C3	1-104-792-51	ELECT	33MF	20%	16V
C4	1-104-792-51	ELECT	33MF	20%	16V
C5	1-104-792-51	ELECT	33MF	20%	16V
C6	1-104-792-51	ELECT	33MF	20%	16V
C7	1-104-792-51	ELECT	33MF	20%	16V
C8	1-104-792-51	ELECT	33MF	20%	16V
C9	1-104-792-51	ELECT	33MF	20%	16V
C10	1-104-792-51	ELECT	33MF	20%	16V
C11	1-104-792-51	ELECT	33MF	20%	16V
C12	1-104-792-51	ELECT	33MF	20%	16V
C13	1-104-792-51	ELECT	33MF	20%	16V
C14	1-104-792-51	ELECT	33MF	20%	16V
C15	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-101-004-00	CERAMIC	0.01MF		50V
C17	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V
C20	1-126-111-11	ELECT	3.3MF	20%	50V
C21	1-126-964-11	ELECT	10MF	20%	16V
C22	1-126-964-11	ELECT	10MF	20%	16V
C23	1-126-964-11	ELECT	10MF	20%	16V
C24	1-126-964-11	ELECT	10MF	20%	16V
C26	1-101-004-00	CERAMIC	0.01MF		50V
C41	1-124-119-00	ELECT	330MF	20%	16V
C42	1-124-119-00	ELECT	330MF	20%	16V
C43	1-124-119-00	ELECT	330MF	20%	16V
C44	1-126-964-11	ELECT	10MF	20%	16V
C45	1-126-964-11	ELECT	10MF	20%	16V
C50	1-126-964-11	ELECT	10MF	20%	16V
C51	1-101-004-00	CERAMIC	0.01MF		50V
C52	1-101-004-00	CERAMIC	0.01MF		50V
C53	1-101-004-00	CERAMIC	0.01MF		50V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C55	1-101-004-00	CERAMIC	0.01MF		50V
C71	1-124-119-00	ELECT	330MF	20%	16V
C72	1-124-119-00	ELECT	330MF	20%	16V
C73	1-124-119-00	ELECT	330MF	20%	16V
C74	1-126-964-11	ELECT	10MF	20%	16V
C80	1-126-964-11	ELECT	10MF	20%	16V
C81	1-101-004-00	CERAMIC	0.01MF		50V
C82	1-101-004-00	CERAMIC	0.01MF		50V
C83	1-101-004-00	CERAMIC	0.01MF		50V
C84	1-101-004-00	CERAMIC	0.01MF		50V
C85	1-101-004-00	CERAMIC	0.01MF		50V

REF.NO.	PART NO.	DESCRIPTION			REMARK
C86	1-101-004-00	CERAMIC	0.01MF		50V
C101	1-161-021-11	CERAMIC	0.047MF	10%	25V
C102	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C103	1-102-959-00	CERAMIC	22PF	5%	50V
C104	1-126-964-11	ELECT	10MF	20%	16V
C105	1-161-021-11	CERAMIC	0.047MF	10%	25V
C106	1-101-004-00	CERAMIC	0.01MF		50V
C107	1-161-021-11	CERAMIC	0.047MF	10%	25V
C108	1-101-004-00	CERAMIC	0.01MF		50V
C109	1-101-004-00	CERAMIC	0.01MF		50V
C110	1-101-880-00	CERAMIC	47PF	5%	50V
C201	1-161-021-11	CERAMIC	0.047MF	10%	25V
C202	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C203	1-102-959-00	CERAMIC	22PF	5%	50V
C204	1-126-964-11	ELECT	10MF	20%	16V
C205	1-161-021-11	CERAMIC	0.047MF	10%	25V
C206	1-101-004-00	CERAMIC	0.01MF		50V
C207	1-161-021-11	CERAMIC	0.047MF	10%	25V
C208	1-101-004-00	CERAMIC	0.01MF		50V
C209	1-101-004-00	CERAMIC	0.01MF		50V
C210	1-101-880-00	CERAMIC	47PF	5%	50V
C301	1-161-021-11	CERAMIC	0.047MF	10%	25V
C302	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C303	1-102-959-00	CERAMIC	22PF	5%	50V
C304	1-126-964-11	ELECT	10MF	20%	16V
C305	1-161-021-11	CERAMIC	0.047MF	10%	25V
C306	1-101-004-00	CERAMIC	0.01MF		50V
C307	1-161-021-11	CERAMIC	0.047MF	10%	25V
C308	1-101-004-00	CERAMIC	0.01MF		50V
C309	1-101-004-00	CERAMIC	0.01MF		50V
C310	1-101-880-00	CERAMIC	47PF	5%	50V
		<COMPOSITION CIRCUIT BLOCK>			
CP1	1-232-726-11	COMPOSITION CIRCUIT BLOCK			
CP2	1-232-727-11	COMPOSITION CIRCUIT BLOCK			
CP3	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
CP5	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
CP7	1-233-012-11	COMPOSITION CIRCUIT BLOCK			
CP9	1-232-735-11	COMPOSITION CIRCUIT BLOCK			
CP10	1-231-760-00	COMPOSITION CIRCUIT BLOCK			
CP12	1-232-735-11	COMPOSITION CIRCUIT BLOCK			
CP13	1-231-760-00	COMPOSITION CIRCUIT BLOCK			
CP15	1-232-735-11	COMPOSITION CIRCUIT BLOCK			
CP16	1-232-749-11	COMPOSITION CIRCUIT BLOCK			
CP17	1-232-096-00	COMPOSITION CIRCUIT BLOCK			
CP18	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP19	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP20	1-232-736-11	COMPOSITION CIRCUIT BLOCK			
CP21	1-232-736-11	COMPOSITION CIRCUIT BLOCK			
CP22	1-232-745-11	COMPOSITION CIRCUIT BLOCK			
CP23	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP24	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP25	1-233-144-11	COMPOSITION CIRCUIT BLOCK			
CP26	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP27	1-232-177-00	COMPOSITION CIRCUIT BLOCK			
CP28	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP29	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP30	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP31	1-233-011-11	COMPOSITION CIRCUIT BLOCK			
CP32	1-232-737-11	COMPOSITION CIRCUIT BLOCK			
CP33	1-231-938-00	COMPOSITION CIRCUIT BLOCK			
CP101	1-232-726-11	COMPOSITION CIRCUIT BLOCK			
CP102	1-232-726-11	COMPOSITION CIRCUIT BLOCK			

BH

REF.NO.	PART NO.	DESCRIPTION	REMARK
CP103	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP104	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP201	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP202	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP203	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP204	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP301	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP302	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP303	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
		<DIODE>	
D1	8-719-911-19	DIODE 1SS119	
D101	8-719-911-19	DIODE 1SS119	
D102	8-719-911-19	DIODE 1SS119	
D201	8-719-911-19	DIODE 1SS119	
D202	8-719-911-19	DIODE 1SS119	
D301	8-719-911-19	DIODE 1SS119	
D302	8-719-911-19	DIODE 1SS119	
		<IC>	
IC1	8-759-140-53	IC UPD4053BC	
IC2	8-759-140-53	IC UPD4053BC	
IC3	8-759-140-53	IC UPD4053BC	
IC4	8-759-140-53	IC UPD4053BC	
IC5	8-759-700-08	IC NJM4558S	
IC6	8-759-700-08	IC NJM4558S	
IC7	8-759-800-81	IC LA7016	
IC8	8-759-800-81	IC LA7016	
IC9	8-759-140-53	IC UPD4053BC	
IC10	8-759-140-53	IC UPD4053BC	
IC11	8-759-240-81	IC TC4081BP	
IC12	8-759-240-81	IC TC4081BP	
IC13	8-759-040-01	IC MC14001BCP	
IC14	8-759-207-73	IC TC4030BPHB	
IC101	8-766-001-49	TRANSISTOR TX-429M	
IC102	8-759-503-91	IC TL082ACP	
IC201	8-766-001-49	TRANSISTOR TX-429M	
IC202	8-759-503-91	IC TL082ACP	
IC301	8-766-001-49	TRANSISTOR TX-429M	
IC302	8-759-503-91	IC TL082ACP	
		<TRANSISTOR>	
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q2	8-729-105-71	TRANSISTOR 2SK523-K2	
Q3	8-729-384-48	TRANSISTOR 2SA844-E	
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q5	8-729-105-71	TRANSISTOR 2SK523-K2	
Q6	8-729-384-48	TRANSISTOR 2SA844-E	
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q8	8-729-105-71	TRANSISTOR 2SK523-K2	
Q9	8-729-384-48	TRANSISTOR 2SA844-E	
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q11	8-729-105-71	TRANSISTOR 2SK523-K2	
Q12	8-729-384-48	TRANSISTOR 2SA844-E	
Q13	8-729-384-48	TRANSISTOR 2SA844-E	
Q14	8-729-384-48	TRANSISTOR 2SA844-E	
Q15	8-729-384-48	TRANSISTOR 2SA844-E	
Q16	8-729-800-10	TRANSISTOR 2SC3068	
Q101	8-729-600-19	TRANSISTOR 2SK381-A	
Q102	8-729-384-48	TRANSISTOR 2SA844-E	
Q103	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q104	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q106	8-729-600-19	TRANSISTOR 2SK381-A	
Q107	8-729-600-19	TRANSISTOR 2SK381-A	
Q108	8-729-600-19	TRANSISTOR 2SK381-A	
Q201	8-729-600-19	TRANSISTOR 2SK381-A	
Q202	8-729-384-48	TRANSISTOR 2SA844-E	
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q204	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q205	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q206	8-729-600-19	TRANSISTOR 2SK381-A	
Q207	8-729-600-19	TRANSISTOR 2SK381-A	
Q208	8-729-600-19	TRANSISTOR 2SK381-A	
Q301	8-729-600-19	TRANSISTOR 2SK381-A	
Q302	8-729-384-48	TRANSISTOR 2SA844-E	
Q303	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q304	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q305	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q306	8-729-600-19	TRANSISTOR 2SK381-A	
Q307	8-729-600-19	TRANSISTOR 2SK381-A	
Q308	8-729-600-19	TRANSISTOR 2SK381-A	
		<RESISTOR>	
R1	1-249-433-11	CARBON 22K 5% 1/4W	
R3	1-249-427-11	CARBON 6.8K 5% 1/4W	
R5	1-249-422-11	CARBON 2.7K 5% 1/4W	
R6	1-249-433-11	CARBON 22K 5% 1/4W	
R7	1-249-433-11	CARBON 22K 5% 1/4W	
R9	1-249-427-11	CARBON 6.8K 5% 1/4W	
R11	1-249-422-11	CARBON 2.7K 5% 1/4W	
R12	1-249-433-11	CARBON 22K 5% 1/4W	
R13	1-249-433-11	CARBON 22K 5% 1/4W	
R15	1-249-427-11	CARBON 6.8K 5% 1/4W	
R17	1-249-422-11	CARBON 2.7K 5% 1/4W	
R18	1-249-433-11	CARBON 22K 5% 1/4W	
R19	1-249-433-11	CARBON 22K 5% 1/4W	
R21	1-249-427-11	CARBON 6.8K 5% 1/4W	
R23	1-249-422-11	CARBON 2.7K 5% 1/4W	
R31	1-247-807-31	CARBON 100 5% 1/4W	
R32	1-247-807-31	CARBON 100 5% 1/4W	
R33	1-249-433-11	CARBON 22K 5% 1/4W	
R34	1-249-422-11	CARBON 2.7K 5% 1/4W	
R35	1-247-807-31	CARBON 100 5% 1/4W	
R36	1-247-807-31	CARBON 100 5% 1/4W	
R37	1-249-433-11	CARBON 22K 5% 1/4W	
R38	1-249-422-11	CARBON 2.7K 5% 1/4W	
R39	1-249-433-11	CARBON 22K 5% 1/4W	
R40	1-249-422-11	CARBON 2.7K 5% 1/4W	
R52	1-249-417-11	CARBON 1K 5% 1/4W	
R53	1-249-425-11	CARBON 4.7K 5% 1/4W	
R54	1-249-441-11	CARBON 100K 5% 1/4W	
R63	1-249-417-11	CARBON 1K 5% 1/4W	
R64	1-249-437-11	CARBON 47K 5% 1/4W	
R65	1-249-433-11	CARBON 22K 5% 1/4W	
R66	1-249-417-11	CARBON 1K 5% 1/4W	
R101	1-247-903-00	CARBON 1M 5% 1/4W	
R102	1-249-431-11	CARBON 15K 5% 1/4W	
R103	1-249-419-11	CARBON 1.5K 5% 1/4W	
R104	1-249-430-11	CARBON 12K 5% 1/4W	
R105	1-249-409-11	CARBON 220 5% 1/4W	
R106	1-249-419-11	CARBON 1.5K 5% 1/4W	
R107	1-215-425-00	METAL 1.5K 1% 1/4W	
R108	1-249-415-11	CARBON 680 5% 1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R109	1-249-419-11	CARBON	1.5K	5%	1/4W	
R110	1-215-427-00	METAL	1.8K	1%	1/4W	
R111	1-215-453-00	METAL	22K	1%	1/4W	
R112	1-249-419-11	CARBON	1.5K	5%	1/4W	
R113	1-247-807-31	CARBON	100	5%	1/4W	
R114	1-215-445-00	METAL	10K	1%	1/4W	
R115	1-215-445-00	METAL	10K	1%	1/4W	
R116	1-249-429-11	CARBON	10K	5%	1/4W	
R117	1-215-493-00	METAL	1M	1%	1/4W	
R120	1-215-451-00	METAL	18K	1%	1/4W	
R121	1-215-453-00	METAL	22K	1%	1/4W	
R201	1-247-903-91	CARBON	1M	5%	1/4W	
R202	1-249-431-11	CARBON	15K	5%	1/4W	
R203	1-249-419-11	CARBON	1.5K	5%	1/4W	
R204	1-249-430-11	CARBON	12K	5%	1/4W	
R205	1-249-409-11	CARBON	220	5%	1/4W	
R206	1-249-419-11	CARBON	1.5K	5%	1/4W	
R207	1-215-425-00	METAL	1.5K	1%	1/4W	
R208	1-249-415-11	CARBON	680	5%	1/4W	
R209	1-249-419-11	CARBON	1.5K	5%	1/4W	
R210	1-215-427-00	METAL	1.8K	1%	1/4W	
R211	1-215-453-00	METAL	22K	1%	1/4W	
R212	1-249-419-11	CARBON	1.5K	5%	1/4W	
R213	1-247-807-31	CARBON	100	5%	1/4W	
R214	1-215-445-00	METAL	10K	1%	1/4W	
R215	1-215-445-00	METAL	10K	1%	1/4W	
R216	1-249-429-11	CARBON	10K	5%	1/4W	
R217	1-215-455-00	METAL	27K	1%	1/4W	
R301	1-247-903-00	CARBON	1M	5%	1/4W	
R302	1-249-431-11	CARBON	15K	5%	1/4W	
R303	1-249-419-11	CARBON	1.5K	5%	1/4W	
R304	1-249-430-11	CARBON	12K	5%	1/4W	
R305	1-249-409-11	CARBON	220	5%	1/4W	
R306	1-249-419-11	CARBON	1.5K	5%	1/4W	
R307	1-215-425-00	METAL	1.5K	1%	1/4W	
R308	1-249-415-11	CARBON	680	5%	1/4W	
R309	1-249-419-11	CARBON	1.5K	5%	1/4W	
R310	1-215-427-00	METAL	1.8K	1%	1/4W	
R311	1-215-453-00	METAL	22K	1%	1/4W	
R312	1-249-419-11	CARBON	1.5K	5%	1/4W	
R313	1-247-807-31	CARBON	100	5%	1/4W	
R314	1-215-445-00	METAL	10K	1%	1/4W	
R315	1-215-445-00	METAL	10K	1%	1/4W	
R316	1-249-429-11	CARBON	10K	5%	1/4W	

<VARIABLE RESISTOR>

RV1	1-237-505-21	RES, ADJ, CERMET 50K
RV2	1-237-505-21	RES, ADJ, CERMET 50K
RV3	1-237-505-21	RES, ADJ, CERMET 50K

<SWITCH>

S1	1-570-857-11	SWITCH, SLIDE
S2	1-570-851-11	SWITCH, SLIDE

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*A-1135-591-A	BI BOARD, COMPLETE	
	**********	
*4-353-708-00	HOOK, FINGER	
7-682-547-09	SCREW +BVTT 3X6 (S)	

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION			REMARK
C1	1-130-481-00	MYLAR	0.0068MF	5%	50V
C2	1-136-165-00	FILM	0.1MF	5%	50V
C3	1-124-927-11	ELECT	4.7MF	20%	25V
C4	1-124-927-11	ELECT	4.7MF	20%	25V
C5	1-102-973-00	CERAMIC	100PF	5%	50V
C7	1-124-916-11	ELECT	22MF	20%	25V
C8	1-124-927-11	ELECT	4.7MF	20%	25V
C10	1-124-915-11	ELECT	10MF	20%	50V
C11	1-126-964-11	ELECT	10MF	20%	16V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C13	1-101-004-00	CERAMIC	0.01MF		50V
C14	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-126-233-11	ELECT	22MF	20%	16V
C16	1-126-964-11	ELECT	10MF	20%	16V
C17	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V
C19	1-101-004-00	CERAMIC	0.01MF		50V
C41	1-104-792-51	ELECT	33MF	20%	16V
C42	1-104-792-51	ELECT	33MF	20%	16V
C43	1-104-792-51	ELECT	33MF	20%	16V
C44	1-104-792-51	ELECT	33MF	20%	16V
C45	1-104-792-51	ELECT	33MF	20%	16V
C46	1-104-792-51	ELECT	33MF	20%	16V
C51	1-101-004-00	CERAMIC	0.01MF		50V
C52	1-101-004-00	CERAMIC	0.01MF		50V
C53	1-101-004-00	CERAMIC	0.01MF		50V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C55	1-101-004-00	CERAMIC	0.01MF		50V
C56	1-101-004-00	CERAMIC	0.01MF		50V
C57	1-101-004-00	CERAMIC	0.01MF		50V
C71	1-104-792-51	ELECT	33MF	20%	16V
C72	1-104-792-51	ELECT	33MF	20%	16V
C73	1-104-792-51	ELECT	33MF	20%	16V
C74	1-104-792-51	ELECT	33MF	20%	16V
C75	1-104-792-51	ELECT	33MF	20%	16V
C76	1-104-792-51	ELECT	33MF	20%	16V
C81	1-101-004-00	CERAMIC	0.01MF		50V
C82	1-101-004-00	CERAMIC	0.01MF		50V
C83	1-101-004-00	CERAMIC	0.01MF		50V
C84	1-101-004-00	CERAMIC	0.01MF		50V
C85	1-101-004-00	CERAMIC	0.01MF		50V
C86	1-101-004-00	CERAMIC	0.01MF		50V
C87	1-101-004-00	CERAMIC	0.01MF		50V
C101	1-101-004-00	CERAMIC	0.01MF		50V
C102	1-124-903-11	ELECT	1MF	20%	50V
C104	1-126-964-11	ELECT	10MF	20%	16V
C105	1-101-004-00	CERAMIC	0.01MF		50V
C106	1-136-161-00	FILM	0.047MF	5%	50V
C107	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C108	1-101-880-00	CERAMIC	47PF	5%	50V
C109	1-136-161-00	FILM	0.047MF	5%	50V
C110	1-136-161-00	FILM	0.047MF	5%	50V
C114	1-102-951-00	CERAMIC	15PF	5%	50V
C115	1-136-153-00	FILM	0.01MF	5%	50V
C116	1-102-973-00	CERAMIC	100PF	5%	50V
C117	1-101-004-00	CERAMIC	0.01MF		50V
C118	1-101-004-00	CERAMIC	0.01MF		50V
C119	1-102-953-00	CERAMIC	18PF	5%	50V
C120	1-102-973-00	CERAMIC	100PF	5%	50V
C122	1-102-961-00	CERAMIC	27PF	5%	50V
C201	1-101-004-00	CERAMIC	0.01MF		50V
C202	1-124-903-11	ELECT	1MF	20%	50V
C204	1-126-964-11	ELECT	10MF	20%	16V

REF.NO.	PART NO.	DESCRIPTION			REMARK
C205	1-101-004-00	CERAMIC	0.01MF		50V
C206	1-136-161-00	FILM	0.047MF	5%	50V
C207	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C208	1-101-880-00	CERAMIC	47PF	5%	50V
C209	1-136-161-00	FILM	0.047MF	5%	50V
C210	1-136-161-00	FILM	0.047MF	5%	50V
C214	1-102-951-00	CERAMIC	15PF	5%	50V
C215	1-136-153-00	FILM	0.01MF	5%	50V
C216	1-102-973-00	CERAMIC	100PF	5%	50V
C217	1-101-004-00	CERAMIC	0.01MF		50V
C218	1-101-004-00	CERAMIC	0.01MF		50V
C219	1-102-953-00	CERAMIC	18PF	5%	50V
C220	1-102-973-00	CERAMIC	100PF	5%	50V
C222	1-102-961-00	CERAMIC	27PF	5%	50V
C301	1-101-004-00	CERAMIC	0.01MF		50V
C302	1-124-903-11	ELECT	1MF	20%	50V
C304	1-126-964-11	ELECT	10MF	20%	16V
C305	1-101-004-00	CERAMIC	0.01MF		50V
C306	1-136-161-00	FILM	0.047MF	5%	50V
C307	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C308	1-101-880-00	CERAMIC	47PF	5%	50V
C309	1-136-161-00	FILM	0.047MF	5%	50V
C310	1-136-161-00	FILM	0.047MF	5%	50V
C314	1-102-951-00	CERAMIC	15PF	5%	50V
C315	1-136-153-00	FILM	0.01MF	5%	50V
C316	1-102-973-00	CERAMIC	100PF	5%	50V
C317	1-101-004-00	CERAMIC	0.01MF		50V
C318	1-101-004-00	CERAMIC	0.01MF		50V
C319	1-102-953-00	CERAMIC	18PF	5%	50V
C320	1-102-973-00	CERAMIC	100PF	5%	50V
C322	1-102-961-00	CERAMIC	27PF	5%	50V

<COMPOSITION CIRCUIT BLOCK>

CP3	1-231-765-00	COMPOSITION CIRCUIT BLOCK
CP4	1-231-765-00	COMPOSITION CIRCUIT BLOCK
CP5	1-231-765-00	COMPOSITION CIRCUIT BLOCK
CP6	1-231-765-00	COMPOSITION CIRCUIT BLOCK
CP7	1-231-765-00	COMPOSITION CIRCUIT BLOCK
CP101	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP102	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP103	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP104	1-232-726-11	COMPOSITION CIRCUIT BLOCK
CP201	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP202	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP203	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP204	1-232-726-11	COMPOSITION CIRCUIT BLOCK
CP301	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP302	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP303	1-233-012-11	COMPOSITION CIRCUIT BLOCK
CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK

<DIODE>

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-911-19	DIODE 1SS119
D6	8-719-110-31	DIODE RD12ESB2
D7	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D101	8-719-911-19	DIODE 1SS119
D102	8-719-016-42	DIODE MC932
D103	8-719-109-74	DIODE RD4.3ESB1
D104	8-719-911-19	DIODE 1SS119
D105	8-719-109-93	DIODE RD6.2ESB2
D201	8-719-911-19	DIODE 1SS119
D202	8-719-016-42	DIODE MC932
D203	8-719-109-74	DIODE RD4.3ESB1
D204	8-719-911-19	DIODE 1SS119
D205	8-719-109-93	DIODE RD6.2ESB2
D301	8-719-911-19	DIODE 1SS119
D302	8-719-016-42	DIODE MC932
D303	8-719-109-74	DIODE RD4.3ESB1
D304	8-719-911-19	DIODE 1SS119
D305	8-719-109-93	DIODE RD6.2ESB2

<IC>

IC1	8-759-145-58	IC UPC4558C
IC101	8-759-140-53	IC UPD4053BC
IC102	8-766-001-49	TRANSISTOR TX-429M
IC103	8-759-503-91	IC TL082ACP
IC104	8-759-503-91	IC TL082ACP
IC105	8-759-503-91	IC TL082ACP
IC201	8-759-140-53	IC UPD4053BC
IC202	8-766-001-49	TRANSISTOR TX-429M
IC203	8-759-503-91	IC TL082ACP
IC204	8-759-503-91	IC TL082ACP
IC205	8-759-503-91	IC TL082ACP
IC301	8-759-140-53	IC UPD4053BC
IC302	8-766-001-49	TRANSISTOR TX-429M
IC303	8-759-503-91	IC TL082ACP
IC304	8-759-503-91	IC TL082ACP
IC305	8-759-503-91	IC TL082ACP

<TRANSISTOR>

Q1	8-729-900-74	TRANSISTOR DTC143TS
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q11	8-729-231-55	TRANSISTOR 2SC2878-AB
Q12	8-729-231-55	TRANSISTOR 2SC2878-AB
Q13	8-729-231-55	TRANSISTOR 2SC2878-AB
Q14	8-729-231-55	TRANSISTOR 2SC2878-AB
Q15	8-729-900-65	TRANSISTOR DTA144ES
Q101	8-729-384-48	TRANSISTOR 2SA844
Q102	8-729-384-48	TRANSISTOR 2SA844
Q103	8-729-384-48	TRANSISTOR 2SA844
Q105	8-729-600-19	TRANSISTOR 2SK381-A
Q106	8-729-384-48	TRANSISTOR 2SA844
Q107	8-729-266-82	TRANSISTOR 2SC2668-O
Q108	8-729-384-48	TRANSISTOR 2SA844
Q109	8-729-600-19	TRANSISTOR 2SK381-A
Q110	8-729-600-19	TRANSISTOR 2SK381-A
Q113	8-729-600-19	TRANSISTOR 2SK381-A
Q114	8-729-200-17	TRANSISTOR 2SA1091-O
Q201	8-729-384-48	TRANSISTOR 2SA844
Q202	8-729-384-48	TRANSISTOR 2SA844
Q203	8-729-384-48	TRANSISTOR 2SA844
Q205	8-729-600-19	TRANSISTOR 2SK381-A
Q206	8-729-384-48	TRANSISTOR 2SA844
Q207	8-729-266-82	TRANSISTOR 2SC2668-O
Q208	8-729-384-48	TRANSISTOR 2SA844
Q209	8-729-600-19	TRANSISTOR 2SK381-A
Q210	8-729-600-19	TRANSISTOR 2SK381-A
Q213	8-729-600-19	TRANSISTOR 2SK381-A

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q214	8-729-200-17	TRANSISTOR 2SA1091-O	
Q301	8-729-384-48	TRANSISTOR 2SA844	
Q302	8-729-384-48	TRANSISTOR 2SA844	
Q303	8-729-384-48	TRANSISTOR 2SA844	
Q305	8-729-600-19	TRANSISTOR 2SK381-A	
Q306	8-729-384-48	TRANSISTOR 2SA844	
Q307	8-729-266-82	TRANSISTOR 2SC2668-O	
Q308	8-729-384-48	TRANSISTOR 2SA844	
Q309	8-729-600-19	TRANSISTOR 2SK381-A	
Q310	8-729-600-19	TRANSISTOR 2SK381-A	
Q313	8-729-600-19	TRANSISTOR 2SK381-A	
Q314	8-729-200-17	TRANSISTOR 2SA1091-O	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R1	1-247-903-00	CARBON	1M	5%	1/4W	
R2	1-249-429-11	CARBON	10K	5%	1/4W	
R3	1-215-493-00	METAL	1M	1%	1/4W	
R4	1-215-469-00	METAL	100K	1%	1/4W	
R5	1-249-435-11	CARBON	33K	5%	1/4W	
R8	1-249-435-11	CARBON	33K	5%	1/4W	
R9	1-249-424-11	CARBON	3.9K	5%	1/4W	
R10	1-249-425-11	CARBON	4.7K	5%	1/4W	
R11	1-249-435-11	CARBON	33K	5%	1/4W	
R12	1-249-429-11	CARBON	10K	5%	1/4W	
R13	1-249-425-11	CARBON	4.7K	5%	1/4W	
R14	1-249-435-11	CARBON	33K	5%	1/4W	
R15	1-249-429-11	CARBON	10K	5%	1/4W	
R23	1-249-417-11	CARBON	1K	5%	1/4W	
R24	1-249-417-11	CARBON	1K	5%	1/4W	
R25	1-249-417-11	CARBON	1K	5%	1/4W	
R31	1-249-430-11	CARBON	12K	5%	1/4W	
R32	1-249-436-11	CARBON	39K	5%	1/4W	
R33	1-249-430-11	CARBON	12K	5%	1/4W	
R51	1-249-417-11	CARBON	1K	5%	1/4W	
R52	1-249-417-11	CARBON	1K	5%	1/4W	
R53	1-249-417-11	CARBON	1K	5%	1/4W	
R54	1-249-431-11	CARBON	15K	5%	1/4W	
R55	1-249-437-11	CARBON	47K	5%	1/4W	
R56	1-249-431-11	CARBON	15K	5%	1/4W	
R57	1-249-431-11	CARBON	15K	5%	1/4W	
R58	1-249-439-11	CARBON	68K	5%	1/4W	
R60	1-215-465-00	METAL	68K	1%	1/4W	
R61	1-215-445-00	METAL	10K	1%	1/4W	
R101	1-249-441-11	CARBON	100K	5%	1/4W	
R102	1-249-421-11	CARBON	2.2K	5%	1/4W	
R104	1-215-461-00	METAL	47K	1%	1/4W	
R105	1-215-476-00	METAL	200K	1%	1/4W	
R106	1-215-427-00	METAL	1.8K	1%	1/4W	
R107	1-249-435-11	CARBON	33K	5%	1/4W	
R108	1-249-430-11	CARBON	12K	5%	1/4W	
R109	1-249-417-11	CARBON	1K	5%	1/4W	
R110	1-249-441-11	CARBON	100K	5%	1/4W	
R111	1-249-417-11	CARBON	1K	5%	1/4W	
R113	1-247-903-00	CARBON	1M	5%	1/4W	
R114	1-249-419-11	CARBON	1.5K	5%	1/4W	
R115	1-249-419-11	CARBON	1.5K	5%	1/4W	
R116	1-249-424-11	CARBON	3.9K	5%	1/4W	
R117	1-249-419-11	CARBON	1.5K	5%	1/4W	
R118	1-215-421-00	METAL	1K	1%	1/4W	
R119	1-247-807-31	CARBON	100	5%	1/4W	
R120	1-247-807-31	CARBON	100	5%	1/4W	
R121	1-249-409-11	CARBON	220	5%	1/4W	
R122	1-215-425-00	METAL	1.5K	1%	1/4W	
R123	1-249-429-11	CARBON	10K	5%	1/4W	
R124	1-249-429-11	CARBON	10K	5%	1/4W	
R125	1-249-422-11	CARBON	2.7K	5%	1/4W	
R127	1-215-445-00	METAL	10K	1%	1/4W	
R128	1-215-445-00	METAL	10K	1%	1/4W	
R136	1-215-477-00	METAL	220K	1%	1/4W	
R137	1-249-417-11	CARBON	1K	5%	1/4W	
R138	1-249-441-11	CARBON	100K	5%	1/4W	
R140	1-249-429-11	CARBON	10K	5%	1/4W	
R141	1-215-461-00	METAL	47K	1%	1/4W	
R142	1-215-459-00	METAL	39K	1%	1/4W	
R143	1-215-488-00	METAL	620K	1%	1/4W	
R144	1-249-434-11	CARBON	27K	5%	1/4W	
R145	1-249-429-11	CARBON	10K	5%	1/4W	
R146	1-249-429-11	CARBON	10K	5%	1/4W	
R147	1-247-807-31	CARBON	100	5%	1/4W	
R150	1-247-807-31	CARBON	100	5%	1/4W	
R201	1-249-441-11	CARBON	100K	5%	1/4W	
R202	1-249-421-11	CARBON	2.2K	5%	1/4W	
R204	1-215-461-00	METAL	47K	1%	1/4W	
R205	1-215-476-00	METAL	200K	1%	1/4W	
R206	1-215-427-00	METAL	1.8K	1%	1/4W	
R207	1-249-435-11	CARBON	33K	5%	1/4W	
R208	1-249-430-11	CARBON	12K	5%	1/4W	
R209	1-249-417-11	CARBON	1K	5%	1/4W	
R210	1-249-441-11	CARBON	100K	5%	1/4W	
R211	1-249-417-11	CARBON	1K	5%	1/4W	
R213	1-247-903-91	CARBON	1M	5%	1/4W	
R214	1-249-419-11	CARBON	1.5K	5%	1/4W	
R215	1-249-419-11	CARBON	1.5K	5%	1/4W	
R216	1-249-424-11	CARBON	3.9K	5%	1/4W	
R217	1-249-419-11	CARBON	1.5K	5%	1/4W	
R218	1-215-421-00	METAL	1K	1%	1/4W	
R219	1-247-807-31	CARBON	100	5%	1/4W	
R220	1-247-807-31	CARBON	100	5%	1/4W	
R221	1-249-409-11	CARBON	220	5%	1/4W	
R222	1-215-425-00	METAL	1.5K	1%	1/4W	
R223	1-249-429-11	CARBON	10K	5%	1/4W	
R224	1-249-429-11	CARBON	10K	5%	1/4W	
R225	1-249-422-11	CARBON	2.7K	5%	1/4W	
R227	1-215-445-00	METAL	10K	1%	1/4W	
R228	1-215-445-00	METAL	10K	1%	1/4W	
R236	1-215-477-00	METAL	220K	1%	1/4W	
R237	1-249-417-11	CARBON	1K	5%	1/4W	
R238	1-249-441-11	CARBON	100K	5%	1/4W	
R240	1-249-429-11	CARBON	10K	5%	1/4W	
R241	1-215-461-00	METAL	47K	1%	1/4W	
R242	1-215-459-00	METAL	39K	1%	1/4W	
R243	1-215-488-00	METAL	620K	1%	1/4W	
R244	1-249-434-11	CARBON	27K	5%	1/4W	
R245	1-249-429-11	CARBON	10K	5%	1/4W	
R246	1-249-429-11	CARBON	10K	5%	1/4W	
R247	1-247-807-31	CARBON	100	5%	1/4W	
R250	1-247-807-31	CARBON	100	5%	1/4W	
R301	1-249-441-11	CARBON	100K	5%	1/4W	
R302	1-249-421-11	CARBON	2.2K	5%	1/4W	
R304	1-215-461-00	METAL	47K	1%	1/4W	
R305	1-215-476-00	METAL	200K	1%	1/4W	
R306	1-215-427-00	METAL	1.8K	1%	1/4W	
R307	1-249-435-11	CARBON	33K	5%	1/4W	
R308	1-249-430-11	CARBON	12K	5%	1/4W	
R309	1-249-417-11	CARBON	1K	5%	1/4W	
R310	1-249-441-11	CARBON	100K	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R311	1-249-417-11	CARBON	1K	5%	1/4W	
R313	1-247-903-91	CARBON	1M	5%	1/4W	
R314	1-249-419-11	CARBON	1.5K	5%	1/4W	
R315	1-249-419-11	CARBON	1.5K	5%	1/4W	
R316	1-249-424-11	CARBON	3.9K	5%	1/4W	
R317	1-249-419-11	CARBON	1.5K	5%	1/4W	
R318	1-215-421-00	METAL	1K	1%	1/4W	
R319	1-247-807-31	CARBON	100	5%	1/4W	
R320	1-247-807-31	CARBON	100	5%	1/4W	
R321	1-249-409-11	CARBON	220	5%	1/4W	
R322	1-215-425-00	METAL	1.5K	1%	1/4W	
R323	1-249-429-11	CARBON	10K	5%	1/4W	
R324	1-249-429-11	CARBON	10K	5%	1/4W	
R325	1-249-422-11	CARBON	2.7K	5%	1/4W	
R327	1-215-445-00	METAL	10K	1%	1/4W	
R328	1-215-445-00	METAL	10K	1%	1/4W	
R336	1-215-477-00	METAL	220K	1%	1/4W	
R337	1-249-417-11	CARBON	1K	5%	1/4W	
R338	1-249-441-11	CARBON	100K	5%	1/4W	
R340	1-249-429-11	CARBON	10K	5%	1/4W	
R341	1-215-461-00	METAL	47K	1%	1/4W	
R342	1-215-459-00	METAL	39K	1%	1/4W	
R343	1-215-488-00	METAL	620K	1%	1/4W	
R344	1-249-434-11	CARBON	27K	5%	1/4W	
R345	1-249-429-11	CARBON	10K	5%	1/4W	
R346	1-249-429-11	CARBON	10K	5%	1/4W	
R347	1-247-807-31	CARBON	100	5%	1/4W	
R350	1-247-807-31	CARBON	100	5%	1/4W	

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*A-1135-361-A BJ BOARD, COMPLETE
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*4-353-708-00 HOOK, FINGER
7-682-547-09 SCREW +BVTT 3X6 (S)

<CAPACITOR>

C1	1-101-361-00	CERAMIC	150PF	5%	50V
C2	1-101-361-00	CERAMIC	150PF	5%	50V
C4	1-102-821-00	CERAMIC	360PF	5%	50V
C5	1-130-473-00	MYLAR	0.0015MF	5%	50V
C11	1-104-302-11	POLYSTYRENE	0.001MF	5%	50V
C12	1-102-525-11	CERAMIC	68PF	5%	50V
C14	1-102-525-11	CERAMIC	68PF	5%	50V
C15	1-102-525-11	CERAMIC	68PF	5%	50V
C16	1-102-525-11	CERAMIC	68PF	5%	50V
C17	1-102-525-11	CERAMIC	68PF	5%	50V
C18	1-104-302-11	POLYSTYRENE	0.001MF	5%	50V
C19	1-102-973-00	CERAMIC	100PF	5%	50V
C20	1-102-525-11	CERAMIC	68PF	5%	50V
C21	1-101-361-00	CERAMIC	150PF	5%	50V
C22	1-101-890-00	CERAMIC	75PF	5%	50V
C23	1-102-965-00	CERAMIC	39PF	5%	50V
C25	1-102-946-00	CERAMIC	9PF	1PF	50V
C26	1-102-944-00	CERAMIC	7PF	1PF	50V
C27	1-101-361-00	CERAMIC	150PF	5%	50V
C28	1-130-471-00	MYLAR	0.001MF	5%	50V
C29	1-130-471-00	MYLAR	0.001MF	5%	50V
C30	1-101-004-00	CERAMIC	0.01MF		50V
C31	1-101-361-00	CERAMIC	150PF	5%	50V
C32	1-101-361-00	CERAMIC	150PF	5%	50V
C33	1-101-361-00	CERAMIC	150PF	5%	50V
C34	1-101-361-00	CERAMIC	150PF	5%	50V

REF.NO.	PART NO.	DESCRIPTION				REMARK
C35	1-130-471-00	MYLAR	0.001MF	5%	50V	
C36	1-102-824-00	CERAMIC	470PF	5%	50V	
C37	1-124-903-11	ELECT	1MF	20%	50V	
C38	1-101-004-00	CERAMIC	0.01MF		50V	
C39	1-101-004-00	CERAMIC	0.01MF		50V	
C40	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C61	1-101-888-00	CERAMIC	68PF	5%	50V	
C62	1-101-880-00	CERAMIC	47PF	5%	50V	
C63	1-101-888-00	CERAMIC	68PF	5%	50V	
C64	1-101-880-00	CERAMIC	47PF	5%	50V	
C65	1-102-820-00	CERAMIC	330PF	5%	50V	
C66	1-101-004-00	CERAMIC	0.01MF		50V	
C67	1-101-880-00	CERAMIC	47PF	5%	50V	
C100	1-126-967-11	ELECT	47MF	20%	16V	
C102	1-104-792-51	ELECT	33MF	20%	16V	
C106	1-101-004-00	CERAMIC	0.01MF		50V	
C108	1-104-792-51	ELECT	33MF	20%	16V	
C109	1-101-004-00	CERAMIC	0.01MF		50V	
C110	1-101-004-00	CERAMIC	0.01MF		50V	
C111	1-101-004-00	CERAMIC	0.01MF		50V	
C112	1-101-004-00	CERAMIC	0.01MF		50V	
C113	1-101-004-00	CERAMIC	0.01MF		50V	
C114	1-126-964-11	ELECT	10MF	20%	16V	
C115	1-101-004-00	CERAMIC	0.01MF		50V	
C116	1-101-004-00	CERAMIC	0.01MF		50V	
C117	1-101-004-00	CERAMIC	0.01MF		50V	
C118	1-126-964-11	ELECT	10MF	20%	16V	
C120	1-101-004-00	CERAMIC	0.01MF		50V	
C121	1-101-004-00	CERAMIC	0.01MF		50V	
C122	1-101-004-00	CERAMIC	0.01MF		50V	
C130	1-104-792-51	ELECT	33MF	20%	16V	

<COMPOSITION CIRCUIT BLOCK>

CP1	1-232-738-11	COMPOSITION CIRCUIT BLOCK
CP2	1-232-738-11	COMPOSITION CIRCUIT BLOCK
CP3	1-232-738-11	COMPOSITION CIRCUIT BLOCK
CP4	1-232-738-11	COMPOSITION CIRCUIT BLOCK
CP5	1-232-738-11	COMPOSITION CIRCUIT BLOCK

<DIODE>

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119
D11	8-719-016-42	DIODE MC932

<IC>

IC1	8-759-345-38	IC HD14538BP
IC2	8-759-040-01	IC MC14001BCP
IC3	8-759-240-40	IC TC4040BP
IC4	8-759-240-40	IC TC4040BP
IC5	8-759-000-35	IC MC14027BCP
IC6	8-759-000-35	IC MC14027BCP
IC7	8-759-000-35	IC MC14027BCP
IC8	8-759-000-35	IC MC14027BCP
IC9	8-759-000-35	IC MC14027BCP
IC10	8-759-345-38	IC HD14538BP
IC11	8-759-345-38	IC HD14538BP
IC12	8-759-345-38	IC HD14538BP

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC13	8-759-040-01	IC MC14001BCP	
IC14	8-759-040-01	IC MC14001BCP	
IC15	8-759-240-71	IC TC4071BP	
IC16	8-759-140-11	IC UPD4011BC	
IC17	8-759-140-11	IC UPD4011BC	
IC18	8-759-000-32	IC MC14023BCP	
IC19	8-759-240-81	IC TC4081BP	
IC20	8-759-240-81	IC TC4081BP	
IC21	8-759-240-71	IC TC4071BP	
IC22	8-759-240-71	IC TC4071BP	
IC23	8-759-040-73	IC TC4073BP	
IC24	8-759-240-69	IC TC4069UBP	
IC25	8-759-240-69	IC TC4069UBP	
IC26	8-759-041-75	IC MC14175BCP	
IC27	8-759-140-53	IC UPD4053BC	
IC28	8-759-208-04	IC TC4520BPHB	
IC29	8-759-345-38	IC HD14538BP	

<COIL>

L1	1-408-098-00	INDUCTOR	560UH
L2	1-408-098-00	INDUCTOR	560UH
L3	1-407-715-11	INDUCTOR	680UH

<TRANSISTOR>

Q14	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q15	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q16	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q17	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q18	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q19	8-729-119-76	TRANSISTOR	2SA1175-HFE
Q20	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q21	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q22	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q23	8-729-119-76	TRANSISTOR	2SA1175-HFE
Q24	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q25	8-729-119-78	TRANSISTOR	2SC2785-HFE
Q26	8-729-119-78	TRANSISTOR	2SC2785-HFE

<RESISTOR>

R2	1-215-439-00	METAL	5.6K	1%	1/4W
R3	1-249-422-11	CARBON	2.7K	5%	1/4W
R4	1-215-449-00	METAL	15K	1%	1/4W
R5	1-249-441-11	CARBON	100K	5%	1/4W
R6	1-249-425-11	CARBON	4.7K	5%	1/4W
R7	1-215-439-00	METAL	5.6K	1%	1/4W
R37	1-249-441-11	CARBON	100K	5%	1/4W
R38	1-215-454-00	METAL	24K	1%	1/4W
R39	1-249-422-11	CARBON	2.7K	5%	1/4W
R42	1-249-433-11	CARBON	22K	5%	1/4W
R43	1-247-876-11	CARBON	75K	5%	1/4W
R44	1-249-429-11	CARBON	10K	5%	1/4W
R45	1-249-441-11	CARBON	100K	5%	1/4W
R46	1-249-441-11	CARBON	100K	5%	1/4W
R47	1-247-862-11	CARBON	20K	5%	1/4W
R48	1-215-467-00	METAL	82K	1%	1/4W
R49	1-249-422-11	CARBON	2.7K	5%	1/4W
R50	1-215-469-00	METAL	100K	1%	1/4W
R51	1-215-445-00	METAL	10K	1%	1/4W
R52	1-247-885-00	CARBON	180K	5%	1/4W
R53	1-215-449-00	METAL	15K	1%	1/4W
R54	1-249-422-11	CARBON	2.7K	5%	1/4W

REF.NO.	PART NO.	DESCRIPTION			REMARK
R56	1-249-434-11	CARBON	27K	5%	1/4W
R57	1-249-422-11	CARBON	2.7K	5%	1/4W
R58	1-249-425-11	CARBON	4.7K	5%	1/4W
R59	1-247-836-11	CARBON	1.6K	5%	1/4W
R60	1-249-427-11	CARBON	6.8K	5%	1/4W
R61	1-215-449-00	METAL	15K	1%	1/4W
R62	1-249-433-11	CARBON	22K	5%	1/4W
R63	1-249-425-11	CARBON	4.7K	5%	1/4W
R64	1-249-425-11	CARBON	4.7K	5%	1/4W
R65	1-249-417-11	CARBON	1K	5%	1/4W
R66	1-249-430-11	CARBON	12K	5%	1/4W
R67	1-249-425-11	CARBON	4.7K	5%	1/4W
R68	1-249-433-11	CARBON	22K	5%	1/4W
R69	1-249-425-11	CARBON	4.7K	5%	1/4W
R70	1-249-417-11	CARBON	1K	5%	1/4W
R71	1-249-430-11	CARBON	12K	5%	1/4W
R72	1-249-433-11	CARBON	22K	5%	1/4W
R74	1-249-430-11	CARBON	12K	5%	1/4W
R75	1-249-422-11	CARBON	2.7K	5%	1/4W
R76	1-215-463-00	METAL	56K	1%	1/4W
R77	1-215-475-00	METAL	180K	1%	1/4W
R78	1-215-439-00	METAL	5.6K	1%	1/4W
R79	1-249-425-11	CARBON	4.7K	5%	1/4W
R80	1-249-433-11	CARBON	22K	5%	1/4W
R81	1-249-425-11	CARBON	4.7K	5%	1/4W
R82	1-249-415-11	CARBON	680	5%	1/4W
R83	1-249-417-11	CARBON	1K	5%	1/4W
R85	1-249-430-11	CARBON	12K	5%	1/4W
R87	1-249-422-11	CARBON	2.7K	5%	1/4W
R89	1-247-887-00	CARBON	220K	5%	1/4W
R90	1-249-441-11	CARBON	100K	5%	1/4W
R91	1-249-441-11	CARBON	100K	5%	1/4W
R92	1-249-441-11	CARBON	100K	5%	1/4W
R93	1-249-429-11	CARBON	10K	5%	1/4W
R94	1-249-429-11	CARBON	10K	5%	1/4W
R95	1-249-441-11	CARBON	100K	5%	1/4W
R96	1-249-417-11	CARBON	1K	5%	1/4W
R100	1-249-423-11	CARBON	3.3K	5%	1/4W
R111	1-249-427-11	CARBON	6.8K	5%	1/4W
R112	1-249-429-11	CARBON	10K	5%	1/4W
R113	1-249-429-11	CARBON	10K	5%	1/4W
R114	1-249-422-11	CARBON	2.7K	5%	1/4W
R115	1-249-419-11	CARBON	1.5K	5%	1/4W
R116	1-249-427-11	CARBON	6.8K	5%	1/4W
R117	1-249-429-11	CARBON	10K	5%	1/4W
R118	1-249-429-11	CARBON	10K	5%	1/4W
R119	1-249-422-11	CARBON	2.7K	5%	1/4W
R120	1-249-419-11	CARBON	1.5K	5%	1/4W
R121	1-249-417-11	CARBON	1K	5%	1/4W
R122	1-249-417-11	CARBON	1K	5%	1/4W
R123	1-249-413-11	CARBON	470	5%	1/4W
R124	1-249-417-11	CARBON	1K	5%	1/4W
R125	1-249-417-11	CARBON	1K	5%	1/4W
R126	1-249-417-11	CARBON	1K	5%	1/4W
R127	1-249-417-11	CARBON	1K	5%	1/4W
R128	1-249-417-11	CARBON	1K	5%	1/4W
R129	1-249-417-11	CARBON	1K	5%	1/4W

<VARIABLE RESISTOR>

RV1	1-237-504-21	RES, ADJ, CERMET 20K
RV3	1-237-504-21	RES, ADJ, CERMET 20K
RV4	1-237-503-21	RES, ADJ, CERMET 10K
RV5	1-237-506-21	RES, ADJ, CERMET 100K

REF.NO.	PART NO.	DESCRIPTION	REMARK
RV6	1-237-505-21	RES, ADJ, CERMET 50K	
RV7	1-237-504-21	RES, ADJ, CERMET 20K	
RV8	1-237-504-21	RES, ADJ, CERMET 20K	
RV9	1-237-505-21	RES, ADJ, CERMET 50K	
		<SWITCH>	
S1	1-570-857-11	SWITCH, SLIDE	
**********			
	*A-1135-523-A	BK BOARD, COMPLETE	
		**********	
	*4-353-770-00	HEAT SINK (TYPE 220)	
	7-682-948-01	SCREW +PSW 3X8	
	7-682-548-04	SCREW +BVTT 3X8 (S)	
		<CONNECTOR>	
BK1	*1-566-056-11	PIN, CONNECTOR 4P	
BK2	*1-566-056-11	PIN, CONNECTOR 4P	
BK3	*1-566-056-11	PIN, CONNECTOR 4P	
BK4	*1-566-055-11	PIN, CONNECTOR 3P	
BK5	*1-566-057-11	PIN, CONNECTOR 5P	
BK6	*1-566-043-11	PIN, CONNECTOR 4P	
BK7	*1-566-043-11	PIN, CONNECTOR 4P	
BK8	*1-566-043-11	PIN, CONNECTOR 4P	
BK9	*1-566-054-11	PIN, CONNECTOR 2P	
BK10	*1-566-054-11	PIN, CONNECTOR 2P	
BK11	*1-566-054-11	PIN, CONNECTOR 2P	
BK12	*1-566-056-11	PIN, CONNECTOR 4P	
BK13	*1-566-054-11	PIN, CONNECTOR 2P	
		<CAPACITOR>	
C1	1-124-482-11	ELECT 33MF 20% 25V	
C5	1-124-482-11	ELECT 33MF 20% 25V	
C6	1-101-004-00	CERAMIC 0.01MF 50V	
C11	1-124-482-11	ELECT 33MF 20% 25V	
C12	1-101-001-00	CERAMIC 0.001MF 50V	
C15	1-123-939-00	ELECT 10MF 20% 200V	
C16	1-102-050-00	CERAMIC 0.01MF 99% 500V	
C20	1-124-482-11	ELECT 33MF 20% 25V	
C21	1-123-939-00	ELECT 10MF 20% 200V	
C25	1-108-704-11	MYLAR 0.1MF 10% 200V	
C31	1-136-153-00	FILM 0.01MF 5% 50V	
C101	1-102-525-11	CERAMIC 68PF 5% 50V	
C102	1-102-973-00	CERAMIC 100PF 5% 50V	
C103	1-124-341-00	ELECT 1MF 20% 200V	
C106	1-102-038-00	CERAMIC 0.001MF 500V	
C107	1-102-038-00	CERAMIC 0.001MF 500V	
C109	1-124-478-11	ELECT 100MF 20% 25V	
C110	1-101-004-00	CERAMIC 0.01MF 50V	
C111	1-124-482-11	ELECT 33MF 20% 25V	
C112	1-101-004-00	CERAMIC 0.01MF 50V	
C113	1-124-482-11	ELECT 33MF 20% 25V	
C114	1-102-050-00	CERAMIC 0.01MF 99% 500V	
C115	1-123-939-00	ELECT 10MF 20% 200V	
C201	1-102-525-11	CERAMIC 68PF 5% 50V	
C202	1-102-973-00	CERAMIC 100PF 5% 50V	
C203	1-124-341-00	ELECT 1MF 20% 200V	
C206	1-102-038-00	CERAMIC 0.001MF 500V	
C207	1-102-038-00	CERAMIC 0.001MF 500V	
C209	1-124-478-11	ELECT 100MF 20% 25V	
C210	1-101-004-00	CERAMIC 0.01MF 50V	
C211	1-124-482-11	ELECT 33MF 20% 25V	
C212	1-101-004-00	CERAMIC 0.01MF 50V	
C213	1-124-482-11	ELECT 33MF 20% 25V	
C214	1-102-050-00	CERAMIC 0.01MF 99% 500V	
C215	1-123-939-00	ELECT 10MF 20% 200V	
C301	1-102-525-11	CERAMIC 68PF 5% 50V	
C302	1-102-973-00	CERAMIC 100PF 5% 50V	
C303	1-124-341-00	ELECT 1MF 20% 200V	
C306	1-102-038-00	CERAMIC 0.001MF 500V	
C307	1-102-038-00	CERAMIC 0.001MF 500V	
C309	1-124-478-11	ELECT 100MF 20% 25V	
C310	1-101-004-00	CERAMIC 0.01MF 50V	
C311	1-124-482-11	ELECT 33MF 20% 25V	
C312	1-101-004-00	CERAMIC 0.01MF 50V	
C313	1-124-482-11	ELECT 33MF 20% 25V	
C314	1-102-050-00	CERAMIC 0.01MF 99% 500V	
C315	1-123-939-00	ELECT 10MF 20% 200V	
C316	1-102-038-00	CERAMIC 0.001MF 500V	
		<TRIMMER>	
CV101	1-141-171-00	CAP, TRIMMER 15P	
CV201	1-141-171-00	CAP, TRIMMER 15P	
CV301	1-141-171-00	CAP, TRIMMER 15P	
		<DIODE>	
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D12	8-719-901-83	DIODE 1SS83	
D13	8-719-901-83	DIODE 1SS83	
D14	8-719-901-83	DIODE 1SS83	
D15	8-719-110-53	DIODE RD20ESB2	
D20	8-719-911-19	DIODE 1SS119	
D21	8-719-911-19	DIODE 1SS119	
D22	8-719-911-19	DIODE 1SS119	
D23	8-719-911-19	DIODE 1SS119	
D30	8-719-911-19	DIODE 1SS119	
D101	8-719-901-83	DIODE 1SS83	
D102	8-719-901-83	DIODE 1SS83	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D105	8-719-911-19	DIODE 1SS119	
D201	8-719-901-83	DIODE 1SS83	
D202	8-719-901-83	DIODE 1SS83	
D203	8-719-911-19	DIODE 1SS119	
D204	8-719-911-19	DIODE 1SS119	
D205	8-719-911-19	DIODE 1SS119	
D301	8-719-901-83	DIODE 1SS83	
D302	8-719-901-83	DIODE 1SS83	
D303	8-719-911-19	DIODE 1SS119	
D304	8-719-911-19	DIODE 1SS119	
D305	8-719-911-19	DIODE 1SS119	
		<IC>	
IC1	8-759-145-58	IC UPC4558C	
		<COIL>	
L101	1-408-413-00	INDUCTOR 22UH	
L201	1-408-413-00	INDUCTOR 22UH	
L301	1-408-413-00	INDUCTOR 22UH	

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<TRANSISTOR>	
Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q2	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q11	8-729-200-17	TRANSISTOR 2SA1091-O	
Q12	8-729-255-12	TRANSISTOR 2SC2551-O	
Q20	8-729-119-80	TRANSISTOR 2SC2688-LK	
Q21	8-729-800-10	TRANSISTOR 2SC3068	
Q22	8-729-119-80	TRANSISTOR 2SC2688-LK	
Q23	8-729-306-92	TRANSISTOR 2SD669A-C	
Q23H	*4-363-146-00	HEAT SINK, V.OUT	
Q23S	4-370-970-01	SPACER, TR	
Q30	8-729-119-80	TRANSISTOR 2SC2688-LK	
Q101	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q102	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q103	8-729-384-48	TRANSISTOR 2SA844-E	
Q104	8-729-200-17	TRANSISTOR 2SA1091-O	
Q105	8-729-822-47	TRANSISTOR 2SC3956-E	
Q105H	*4-363-146-00	HEAT SINK, V.OUT	
Q105S	4-370-970-01	SPACER, TR	
Q106	8-729-802-71	TRANSISTOR 2SA1407-D	
Q106S	4-370-970-01	SPACER, TR	
Q107	8-729-802-71	TRANSISTOR 2SA1407-D	
Q107S	4-370-970-01	SPACER, TR	
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q202	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q203	8-729-384-48	TRANSISTOR 2SA844-E	
Q204	8-729-200-17	TRANSISTOR 2SA1091-O	
Q205	8-729-822-47	TRANSISTOR 2SC3956-E	
Q205H	*4-363-146-00	HEAT SINK, V.OUT	
Q205S	4-370-970-01	SPACER, TR	
Q206	8-729-802-71	TRANSISTOR 2SA1407-D	
Q206S	4-370-970-01	SPACER, TR	
Q207	8-729-802-71	TRANSISTOR 2SA1407-D	
Q207S	4-370-970-01	SPACER, TR	
Q301	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q302	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q303	8-729-384-48	TRANSISTOR 2SA844-E	
Q304	8-729-200-17	TRANSISTOR 2SA1091-O	
Q305	8-729-822-47	TRANSISTOR 2SC3956-E	
Q305H	*4-363-146-00	HEAT SINK, V.OUT	
Q305S	4-370-970-01	SPACER, TR	
Q306	8-729-802-71	TRANSISTOR 2SA1407-D	
Q306S	4-370-970-01	SPACER, TR	
Q307	8-729-802-71	TRANSISTOR 2SA1407-D	
Q307S	4-370-970-01	SPACER, TR	
		<RESISTOR>	
R1	1-249-431-11	CARBON 15K 5% 1/4W	
R2	1-249-435-11	CARBON 33K 5% 1/4W	
R3	1-249-422-11	CARBON 2.7K 5% 1/4W	
R4	1-249-419-11	CARBON 1.5K 5% 1/4W	
R5	1-249-431-11	CARBON 15K 5% 1/4W	
R6	1-249-425-11	CARBON 4.7K 5% 1/4W	
R10	1-249-417-11	CARBON 1K 5% 1/4W	
R11	1-249-431-11	CARBON 15K 5% 1/4W	
R12	1-249-437-11	CARBON 47K 5% 1/4W	
R13	1-249-423-11	CARBON 3.3K 5% 1/4W	
R14	1-249-431-11	CARBON 15K 5% 1/4W	
R16	1-215-901-00	METAL OXIDE 33K 5% 2W	F
R17	1-215-901-00	METAL OXIDE 33K 5% 2W	F
R20	1-216-461-00	METAL OXIDE 5.6K 5% 2W	F
R21	1-215-471-00	METAL 120K 1% 1/4W	
R22	1-215-470-00	METAL 110K 1% 1/4W	
R23	1-215-445-00	METAL 10K 1% 1/4W	
R24	1-215-439-00	METAL 5.6K 1% 1/4W	
R25	1-215-445-00	METAL 10K 1% 1/4W	
R26	1-215-445-00	METAL 10K 1% 1/4W	
R27	1-216-461-00	METAL OXIDE 5.6K 5% 2W	F
R31	1-247-874-11	CARBON 62K 5% 1/4W	
R32	1-249-440-11	CARBON 82K 5% 1/4W	
R33	1-249-430-11	CARBON 12K 5% 1/4W	
R34	1-249-429-11	CARBON 10K 5% 1/4W	
R35	1-249-417-11	CARBON 1K 5% 1/4W	
R37	1-249-415-11	CARBON 680 5% 1/4W	
R38	1-249-441-11	CARBON 100K 5% 1/4W	
R100	1-247-807-31	CARBON 100 5% 1/4W	
R101	1-215-409-00	METAL 330 1% 1/4W	
R102	1-249-419-11	CARBON 1.5K 5% 1/4W	
R103	1-215-435-00	METAL 3.9K 1% 1/4W	
R104	1-249-422-11	CARBON 2.7K 5% 1/4W	
R105	1-247-807-31	CARBON 100 5% 1/4W	
R106	1-215-412-00	METAL 430 1% 1/4W	
R107	1-215-467-00	METAL 82K 1% 1/4W	
R108	1-215-467-00	METAL 82K 1% 1/4W	
R109	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R110	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R111	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R112	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R113	1-247-807-31	CARBON 100 5% 1/4W	
R114	1-215-401-11	METAL 150 1% 1/4W	
R115	1-215-865-11	METAL OXIDE 220 5% 1W	F
R116	1-215-439-00	METAL 5.6K 1% 1/4W	
R117	1-215-481-00	METAL 330K 1% 1/4W	
R119	1-249-431-11	CARBON 15K 5% 1/4W	
R120	1-247-807-31	CARBON 100 5% 1/4W	
R124	1-249-423-11	CARBON 3.3K 5% 1/4W	
R125	1-247-834-11	CARBON 1.3K 5% 1/4W	
R126	1-249-429-11	CARBON 10K 5% 1/4W	
R127	1-249-417-11	CARBON 1K 5% 1/4W	
R130	1-247-807-31	CARBON 100 5% 1/4W	
R200	1-247-807-31	CARBON 100 5% 1/4W	
R201	1-215-409-00	METAL 330 1% 1/4W	
R202	1-249-419-11	CARBON 1.5K 5% 1/4W	
R203	1-215-435-00	METAL 3.9K 1% 1/4W	
R204	1-249-422-11	CARBON 2.7K 5% 1/4W	
R205	1-247-807-31	CARBON 100 5% 1/4W	
R206	1-215-412-00	METAL 430 1% 1/4W	
R207	1-215-467-00	METAL 82K 1% 1/4W	
R208	1-215-467-00	METAL 82K 1% 1/4W	
R209	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R210	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R211	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R212	1-216-457-00	METAL OXIDE 1.2K 5% 2W	F
R213	1-247-807-31	CARBON 100 5% 1/4W	
R214	1-215-401-11	METAL 150 1% 1/4W	
R215	1-215-865-11	METAL OXIDE 220 5% 1W	F
R216	1-215-439-00	METAL 5.6K 1% 1/4W	
R217	1-215-481-00	METAL 330K 1% 1/4W	
R219	1-249-431-11	CARBON 15K 5% 1/4W	
R220	1-247-807-31	CARBON 100 5% 1/4W	
R224	1-249-423-11	CARBON 3.3K 5% 1/4W	
R225	1-247-834-11	CARBON 1.3K 5% 1/4W	
R226	1-249-429-11	CARBON 10K 5% 1/4W	

BK **BT**

REF.NO.	PART NO.	DESCRIPTION				REMARK
R227	1-249-417-11	CARBON	1K	5%	1/4W	
R230	1-247-807-31	CARBON	100	5%	1/4W	
R300	1-247-807-31	CARBON	100	5%	1/4W	
R301	1-215-409-00	METAL	330	1%	1/4W	
R302	1-249-419-11	CARBON	1.5K	5%	1/4W	
R303	1-215-435-00	METAL	3.9K	1%	1/4W	
R304	1-249-422-11	CARBON	2.7K	5%	1/4W	
R305	1-247-807-31	CARBON	100	5%	1/4W	
R306	1-215-412-00	METAL	430	1%	1/4W	
R307	1-215-467-00	METAL	82K	1%	1/4W	
R308	1-215-467-00	METAL	82K	1%	1/4W	
R309	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R310	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R311	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R312	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R313	1-247-807-31	CARBON	100	5%	1/4W	
R314	1-215-401-11	METAL	150	1%	1/4W	
R315	1-215-865-11	METAL OXIDE	220	5%	1W	F
R316	1-215-439-00	METAL	5.6K	1%	1/4W	
R317	1-215-481-00	METAL	330K	1%	1/4W	
R319	1-249-431-11	CARBON	15K	5%	1/4W	
R320	1-247-807-31	CARBON	100	5%	1/4W	
R324	1-249-423-11	CARBON	3.3K	5%	1/4W	
R325	1-247-834-11	CARBON	1.3K	5%	1/4W	
R326	1-249-429-11	CARBON	10K	5%	1/4W	
R327	1-249-417-11	CARBON	1K	5%	1/4W	
R330	1-247-807-31	CARBON	100	5%	1/4W	

<VARIABLE RESISTOR>

RV101	1-237-515-21	RES, ADJ, CERMET 1K	
RV201	1-237-515-21	RES, ADJ, CERMET 1K	
RV301	1-237-515-21	RES, ADJ, CERMET 1K	

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*A-1135-606-B	BT BOARD, COMPLETE (BVM-1916 ONLY)		
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*4-353-708-00	HOOK, FINGER		
7-682-547-09	SCREW +BVTT 3X6 (S)		

<CAPACITOR>

C1	1-124-477-11	ELECT	47MF	20%	16V
C3	1-124-477-11	ELECT	47MF	20%	16V
C4	1-124-477-11	ELECT	47MF	20%	16V
C5	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C6	1-124-477-11	ELECT	47MF	20%	16V
C9	1-163-369-11	CERAMIC CHIP	47PF	5%	50V
C10	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C14	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C15	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C16	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C17	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C18	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C19	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C20	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C21	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C22	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C23	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C30	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C32	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C34	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C37	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C38	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C40	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C42	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C43	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C44	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C45	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C47	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C48	1-124-907-11	ELECT	10MF	20%	50V
C49	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C50	1-124-907-11	ELECT	10MF	20%	50V
C51	1-124-667-11	ELECT	10MF	20%	50V
C52	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C53	1-124-667-11	ELECT	10MF	20%	50V
C54	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C55	1-124-667-11	ELECT	10MF	20%	50V
C56	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C60	1-124-478-11	ELECT	100MF	20%	25V
C61	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C62	1-124-907-11	ELECT	10MF	20%	50V
C63	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C64	1-124-477-11	ELECT	47MF	20%	16V
C65	1-124-907-11	ELECT	10MF	20%	50V
C66	1-124-907-11	ELECT	10MF	20%	50V
C67	1-124-907-11	ELECT	10MF	20%	50V
C68	1-124-907-11	ELECT	10MF	20%	50V
C69	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C70	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C71	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C72	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C73	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C74	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C75	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C76	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C77	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C78	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C79	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C80	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C81	1-124-667-11	ELECT	10MF	20%	50V
C82	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C83	1-124-667-11	ELECT	10MF	20%	50V
C84	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C85	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C86	1-124-667-11	ELECT	10MF	20%	50V
C87	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C88	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C89	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C90	1-124-907-11	ELECT	10MF	20%	50V
C100	1-124-478-11	ELECT	100MF	20%	25V
C101	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C102	1-124-907-11	ELECT	10MF	20%	50V
C103	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C104	1-124-477-11	ELECT	47MF	20%	16V
C105	1-124-907-11	ELECT	10MF	20%	50V
C106	1-124-907-11	ELECT	10MF	20%	50V
C107	1-124-907-11	ELECT	10MF	20%	50V
C108	1-124-907-11	ELECT	10MF	20%	50V
C109	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C110	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C111	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C112	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C113	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C114	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C115	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C116	1-163-038-00	CERAMIC CHIP	0.1MF		25V

REF.NO.	PART NO.	DESCRIPTION		REMARK
C117	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C118	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C119	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C331	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C332	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C333	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C334	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C335	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C336	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C337	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C338	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C339	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C341	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C342	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C343	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C344	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C345	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C346	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C347	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C348	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C349	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C361	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C362	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C363	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C364	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C365	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C366	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C367	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C368	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C369	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C501	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C502	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C503	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C504	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C505	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C506	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C507	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C508	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C509	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C510	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C511	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C512	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C513	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C514	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C515	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C516	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C517	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C518	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C519	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C520	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C521	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C522	1-163-038-00	CERAMIC CHIP 0.1MF		25V

<TRIMMER>

CV1	1-141-304-21	TRIMMER, CERAMIC
CV2	1-141-304-21	TRIMMER, CERAMIC
CV3	1-141-304-21	TRIMMER, CERAMIC
CV4	1-141-304-21	TRIMMER, CERAMIC
CV5	1-141-304-21	TRIMMER, CERAMIC
CV6	1-141-304-21	TRIMMER, CERAMIC

<DIODE>

REF.NO.	PART NO.	DESCRIPTION	REMARK
D1	8-719-104-34	DIODE 1S2836	
D2	8-719-105-91	DIODE RD5.6M-B2	
D3	8-719-801-78	DIODE 1SS184	
D4	8-719-801-78	DIODE 1SS184	
D5	8-719-801-78	DIODE 1SS184	
D6	8-719-104-34	DIODE 1S2836	
D7	8-719-801-78	DIODE 1SS184	
D8	8-719-104-34	DIODE 1S2836	
D9	8-719-104-34	DIODE 1S2836	
D331	8-719-801-78	DIODE 1SS184	
D341	8-719-801-78	DIODE 1SS184	
D361	8-719-801-78	DIODE 1SS184	

<DELAY LINE>

DL1	1-415-348-21	DELAY LINE
DL2	1-415-477-11	DELAY LINE
DL3	1-415-700-11	DELAY LINE
DL4	1-415-654-12	DELAY LINE
DL5	1-415-700-11	DELAY LINE
DL6	1-415-700-11	DELAY LINE
DL7	1-415-348-21	DELAY LINE
DL8	1-415-700-11	DELAY LINE
DL9	1-415-727-11	DELAY LINE

<FILTER>

FL1	1-236-562-11	FILTER, LOW PASS
FL2	1-236-561-11	FILTER, LOW PASS
FL3	1-236-732-11	FILTER, LOW PASS

<IC>

IC1	8-759-800-81	IC LA7016
IC2	8-759-800-81	IC LA7016
IC3	8-759-701-78	IC NJM7809FA
IC4	8-759-701-75	IC NJM7805FA
IC331	8-752-334-78	IC CXL1009P-1
IC341	8-752-334-78	IC CXL1009P-1
IC361	8-752-330-14	IC CXL1009P
IC501	8-752-053-68	IC CXA1539P

<IC SOCKET>

ICS331*	1-526-656-00	SOCKET, IC (DP) 20P
ICS341*	1-526-656-00	SOCKET, IC (DP) 20P
ICS361*	1-526-656-00	SOCKET, IC (DP) 20P
ICS501*	1-526-659-00	SOCKET, IC (DP) 28P

<COIL>

L1	1-410-196-11	INDUCTOR CHIP	2.2UH	
L2	1-410-200-31	INDUCTOR CHIP	4.7UH	
L3	1-410-192-51	INDUCTOR CHIP	1UH	
L4	1-216-296-00	METAL GLAZE	0 5%	1/8W
L5	1-216-296-00	METAL GLAZE	0 5%	1/8W
L6	1-410-196-11	INDUCTOR CHIP	2.2UH	
L7	1-410-470-11	INDUCTOR	10UH	
L8	1-410-470-11	INDUCTOR	10UH	
L9	1-410-204-31	INDUCTOR CHIP	10UH	
L10	1-408-419-00	INDUCTOR	68UH	
L11	1-410-200-31	INDUCTOR CHIP	4.7UH	
L12	1-410-200-31	INDUCTOR CHIP	4.7UH	
L13	1-410-196-11	INDUCTOR CHIP	2.2UH	

BT

REF.NO.	PART NO.	DESCRIPTION	REMARK
L14	1-410-204-31	INDUCTOR CHIP 10UH	
L15	1-410-216-31	INDUCTOR CHIP 100UH	
		<TRANSISTOR>	
Q1	8-729-216-22	TRANSISTOR 2SA1162-G	
Q2	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q4	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q5	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q6	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q7	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q8	8-729-216-22	TRANSISTOR 2SA1162-G	
Q9	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q10	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q11	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q12	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q13	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q14	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q15	8-729-216-22	TRANSISTOR 2SA1162-G	
Q16	8-729-422-29	TRANSISTOR 2SD601A-S	
Q17	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q18	8-729-216-22	TRANSISTOR 2SA1162-G	
Q19	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q20	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q21	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q22	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q23	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q24	8-729-216-22	TRANSISTOR 2SA1162-G	
Q25	8-729-422-29	TRANSISTOR 2SD601A-S	
Q32	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q33	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q34	8-729-216-22	TRANSISTOR 2SA1162-G	
Q35	8-729-216-22	TRANSISTOR 2SA1162-G	
Q36	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q37	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q38	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q39	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q40	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q41	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q42	8-729-216-22	TRANSISTOR 2SA1162-G	
Q43	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q44	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q45	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q52	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q54	8-729-216-22	TRANSISTOR 2SA1162-G	
Q56	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q57	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q58	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q59	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q60	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q61	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q62	8-729-216-22	TRANSISTOR 2SA1162-G	
Q65	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q71	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q72	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q73	8-729-175-72	TRANSISTOR 2SC2757-T33	
Q74	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q81	8-729-901-06	TRANSISTOR DTA144EK	
Q82	8-729-901-01	TRANSISTOR DTC144EK	
Q83	8-729-901-06	TRANSISTOR DTA144EK	
Q84	8-729-901-06	TRANSISTOR DTA144EK	
Q85	8-729-140-97	TRANSISTOR 2SB734-34	
Q86	8-729-140-96	TRANSISTOR 2SD774-34	

REF.NO.	PART NO.	DESCRIPTION			REMARK
		<RESISTOR>			
JW1	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW2	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW3	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW5	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW11	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW12	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW13	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW14	1-216-295-00	METAL GLAZE	0	5% 1/10W	
JW15	1-216-295-00	METAL GLAZE	0	5% 1/10W	
R1	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R2	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R3	1-216-097-00	METAL GLAZE	100K	5% 1/10W	
R4	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R5	1-216-097-00	METAL GLAZE	100K	5% 1/10W	
R6	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R7	1-216-075-00	METAL GLAZE	12K	5% 1/10W	
R8	1-216-643-11	METAL CHIP	470	0.50% 1/10W	
R9	1-216-661-11	METAL CHIP	2.7K	0.50% 1/10W	
R10	1-216-643-11	METAL CHIP	470	0.50% 1/10W	
R11	1-216-661-11	METAL CHIP	2.7K	0.50% 1/10W	
R12	1-216-675-11	METAL CHIP	10K	0.50% 1/10W	
R13	1-216-049-00	METAL GLAZE	1K	5% 1/10W	
R14	1-216-663-11	METAL CHIP	3.3K	0.50% 1/10W	
R15	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R16	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R17	1-216-075-00	METAL GLAZE	12K	5% 1/10W	
R18	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R19	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R20	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R21	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R22	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R23	1-216-635-11	METAL CHIP	220	0.50% 1/10W	
R24	1-216-635-11	METAL CHIP	220	0.50% 1/10W	
R25	1-216-075-00	METAL GLAZE	12K	5% 1/10W	
R26	1-216-059-00	METAL GLAZE	2.7K	5% 1/10W	
R27	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R28	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R29	1-216-065-00	METAL GLAZE	4.7K	5% 1/10W	
R30	1-216-651-11	METAL CHIP	1K	0.50% 1/10W	
R31	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R33	1-216-665-11	METAL CHIP	3.9K	0.50% 1/10W	
R34	1-216-049-00	METAL GLAZE	1K	5% 1/10W	
R35	1-216-651-11	METAL CHIP	1K	0.50% 1/10W	
R36	1-216-065-00	METAL GLAZE	4.7K	5% 1/10W	
R37	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R38	1-216-059-00	METAL GLAZE	2.7K	5% 1/10W	
R39	1-216-635-11	METAL CHIP	220	0.50% 1/10W	
R40	1-216-630-11	METAL CHIP	130	0.50% 1/10W	
R41	1-216-630-11	METAL CHIP	130	0.50% 1/10W	
R42	1-216-635-11	METAL CHIP	220	0.50% 1/10W	
R43	1-216-067-00	METAL GLAZE	5.6K	5% 1/10W	
R44	1-216-049-00	METAL GLAZE	1K	5% 1/10W	
R45	1-216-651-11	METAL CHIP	1K	0.50% 1/10W	
R46	1-216-065-00	METAL GLAZE	4.7K	5% 1/10W	
R47	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R48	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R49	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R50	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R51	1-216-097-00	METAL GLAZE	100K	5% 1/10W	
R52	1-216-097-00	METAL GLAZE	100K	5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R53	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R54	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R55	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R56	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R57	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R58	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R59	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R60	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R61	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R62	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R63	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R64	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R65	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R66	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R67	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R68	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R69	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R70	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R71	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R72	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R73	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R74	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R75	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R76	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R77	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R78	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R79	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R80	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R81	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R82	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R83	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R84	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R85	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R86	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R87	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R88	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R89	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R103	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R104	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R105	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R106	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R107	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R108	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R109	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R110	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R111	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R112	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R113	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R114	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R115	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R116	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R117	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R118	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R119	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R120	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R121	1-216-657-11	METAL CHIP	1.8K	0.50%	1/10W	
R122	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R123	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R124	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R125	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R126	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R127	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R128	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R129	1-216-643-11	METAL CHIP	470	0.50%	1/10W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R130	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R131	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R132	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R133	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R134	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R135	1-216-635-11	METAL CHIP	220	0.50%	1/10W	
R136	1-216-635-11	METAL CHIP	220	0.50%	1/10W	
R137	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R138	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R139	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R140	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R141	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R142	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R143	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R150	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R153	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R154	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R157	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R158	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R161	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R163	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R164	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R165	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R166	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R167	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R169	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W	
R170	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R171	1-216-657-11	METAL CHIP	1.8K	0.50%	1/10W	
R172	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R173	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R174	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R175	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W	
R176	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R177	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R178	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R179	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R181	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R182	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R183	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R184	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R185	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R186	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R191	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R192	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R193	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R201	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R202	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R203	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R204	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R205	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R206	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R207	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R208	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R209	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R210	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R211	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R212	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R213	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R214	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R215	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R216	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R217	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R218	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R219	1-215-881-11	METAL OXIDE	15	5%	2W	F
R331	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R332	1-216-270-00	METAL GLAZE	1M	5%	1/8W	
R341	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R342	1-216-270-00	METAL GLAZE	1M	5%	1/8W	
R361	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R362	1-216-270-00	METAL GLAZE	1M	5%	1/8W	
R501	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R502	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
		<VARIABLE RESISTOR>				
RV1	1-237-515-21	RES, ADJ, CERMET 1K				
RV2	1-237-517-21	RES, ADJ, CERMET 5K				
RV3	1-237-515-21	RES, ADJ, CERMET 1K				
RV4	1-237-515-21	RES, ADJ, CERMET 1K				
RV5	1-237-515-21	RES, ADJ, CERMET 1K				
RV6	1-237-517-21	RES, ADJ, CERMET 5K				
RV7	1-237-515-21	RES, ADJ, CERMET 1K				
RV8	1-237-515-21	RES, ADJ, CERMET 1K				
RV9	1-237-516-21	RES, ADJ, CERMET 2K				
RV10	1-237-515-21	RES, ADJ, CERMET 1K				
RV11	1-237-516-21	RES, ADJ, CERMET 2K				
RV12	1-237-515-21	RES, ADJ, CERMET 1K				
		<CRYSTAL>				
X1	1-567-790-11	VIBRATOR, CRYSTAL				
		**********				
	*A-1331-020-A	C BOARD, COMPLETE				
		**********				
	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P				
	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
	⚠1-526-798-37	SOCKET, CRT				
	*1-566-054-11	PIN, CONNECTOR 2P				
	*1-566-055-11	PIN, CONNECTOR 3P				
	*1-566-056-11	PIN, CONNECTOR 4P				
	*4-379-160-01	COVER (REAR LID), CV				
	*4-379-167-01	COVER (MAIN), CV				
		<CAPACITOR>				
C1	1-162-114-00	CERAMIC	0.0047MF		2KV	
C2	1-129-724-00	FILM	0.068MF	10%	630V	
C3	1-126-967-11	ELECT	47MF	20%	25V	
C4	1-162-114-00	CERAMIC	0.0047MF		2KV	
C6	1-126-967-11	ELECT	47MF	20%	25V	
C7	1-162-114-00	CERAMIC	0.0047MF		2KV	
		<DIODE>				
D1	8-719-911-19	DIODE 1SS119				
D3	8-719-911-19	DIODE 1SS119				
D4	8-719-911-19	DIODE 1SS119				
D5	8-719-911-19	DIODE 1SS119				
		<COIL>				
L1	1-408-414-00	INDUCTOR	27UH			
L2	1-408-414-00	INDUCTOR	27UH			
L3	1-408-414-00	INDUCTOR	27UH			

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<TRANSISTOR>				
Q1	8-729-804-48	TRANSISTOR 2SC3675				
Q2	8-729-804-48	TRANSISTOR 2SC3675				
Q3	8-729-255-12	TRANSISTOR 2SC2551-O				
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<RESISTOR>				
R1	1-202-818-00	SOLID	1K	10%	1/2W	
R2	1-202-818-00	SOLID	1K	10%	1/2W	
R3	1-202-818-00	SOLID	1K	10%	1/2W	
R4	1-249-433-11	CARBON	22K	5%	1/4W	
R5	1-202-818-00	SOLID	1K	10%	1/2W	
R6	1-202-818-00	SOLID	1K	10%	1/2W	
R7	1-249-433-11	CARBON	22K	5%	1/4W	
R8	1-202-818-00	SOLID	1K	10%	1/2W	
R9	1-202-818-00	SOLID	1K	10%	1/2W	
R10	1-249-433-11	CARBON	22K	5%	1/4W	
R11	1-202-719-00	SOLID	1M	10%	1/2W	
R13	1-202-735-00	SOLID	22M	10%	1/2W	
R14	1-202-818-00	SOLID	1K	10%	1/2W	
R15	1-202-721-00	SOLID	1.5M	10%	1/2W	
R16	1-202-848-00	SOLID	680K	10%	1/2W	
R17	1-249-438-11	CARBON	56K	5%	1/4W	
R18	1-202-719-00	SOLID	1M	10%	1/2W	
R20	1-249-430-11	CARBON	12K	5%	1/4W	
R21	1-249-429-11	CARBON	10K	5%	1/4W	
R22	1-249-427-11	CARBON	6.8K	5%	1/4W	
R27	1-249-417-11	CARBON	1K	5%	1/4W	
R28	1-202-818-00	SOLID	1K	10%	1/2W	
R30	1-202-818-00	SOLID	1K	10%	1/2W	
R31	1-202-818-00	SOLID	1K	10%	1/2W	
		<VARIABLE RESISTOR>				
RV1	1-230-798-11	RES, ADJ, METAL GLAZE 90M				
		<SPARK GAP>				
SG1	1-519-422-11	GAP, SPARK				
SG3	1-519-422-11	GAP, SPARK				
SG4	1-519-422-11	GAP, SPARK				
SG5	1-519-422-11	GAP, SPARK				
SG6	1-519-422-11	GAP, SPARK				
		**********				
	*A-1345-882-B	DA BOARD, COMPLETE				
		**********				
	*1-566-055-11	PIN, CONNECTOR 3P				
	*1-566-056-11	PIN, CONNECTOR 4P				
	*1-566-057-11	PIN, CONNECTOR 5P				
	*1-566-058-11	PIN, CONNECTOR 6P				
	*1-566-060-11	PIN, CONNECTOR 8P				
	*1-566-062-11	PIN, CONNECTOR 10P				
		<CAPACITOR>				
C1	1-136-153-00	FILM	0.01MF	5%	50V	
C2	1-136-165-00	FILM	0.1MF	5%	50V	
C3	1-126-163-11	ELECT	4.7MF	20%	16V	
C4	1-126-160-11	ELECT	1MF	20%	50V	
C5	1-126-160-11	ELECT	1MF	20%	50V	
C6	1-126-160-11	ELECT	1MF	20%	50V	

REF.NO.	PART NO.	DESCRIPTION			REMARK
C7	1-126-160-11	ELECT	1MF	20%	50V
C8	1-101-004-00	CERAMIC	0.01MF		50V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-101-004-00	CERAMIC	0.01MF		50V
C11	1-102-973-00	CERAMIC	100PF	5%	50V
C12	1-136-153-00	FILM	0.01MF	5%	50V
C13	1-136-153-00	FILM	0.01MF	5%	50V
C14	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-126-160-11	ELECT	1MF	20%	50V
C17	1-102-820-00	CERAMIC	330PF	5%	50V
C18	1-136-153-00	FILM	0.01MF	5%	50V
C19	1-126-160-11	ELECT	1MF	20%	50V
C20	1-101-004-00	CERAMIC	0.01MF		50V
C21	1-101-004-00	CERAMIC	0.01MF		50V
C22	1-101-004-00	CERAMIC	0.01MF		50V
C23	1-101-004-00	CERAMIC	0.01MF		50V
C24	1-102-978-00	CERAMIC	220PF	5%	50V
C25	1-101-004-00	CERAMIC	0.01MF		50V
C50	1-124-242-00	ELECT	33MF	20%	25V
C51	1-124-589-11	ELECT	47MF	20%	16V
C52	1-126-157-11	ELECT	10MF	20%	16V
C55	1-101-004-00	CERAMIC	0.01MF		50V
C56	1-101-004-00	CERAMIC	0.01MF		50V
C57	1-101-004-00	CERAMIC	0.01MF		50V
C60	1-124-242-00	ELECT	33MF	20%	25V
C61	1-124-589-11	ELECT	47MF	20%	16V
C62	1-126-157-11	ELECT	10MF	20%	16V
C63	1-126-157-11	ELECT	10MF	20%	16V
C65	1-101-004-00	CERAMIC	0.01MF		50V
C66	1-101-004-00	CERAMIC	0.01MF		50V
C70	1-124-242-00	ELECT	33MF	20%	25V
C71	1-126-157-11	ELECT	10MF	20%	16V
C72	1-126-157-11	ELECT	10MF	20%	16V
C73	1-124-589-11	ELECT	47MF	20%	16V
C75	1-101-004-00	CERAMIC	0.01MF		50V
C76	1-101-004-00	CERAMIC	0.01MF		50V
C80	1-124-242-00	ELECT	33MF	20%	25V
C81	1-126-157-11	ELECT	10MF	20%	16V
C82	1-126-157-11	ELECT	10MF	20%	16V
C83	1-126-157-11	ELECT	10MF	20%	16V
C85	1-101-004-00	CERAMIC	0.01MF		50V
C86	1-101-004-00	CERAMIC	0.01MF		50V

<DIODE>

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-110-03	DIODE RD7.5ESB2
D4	8-719-109-84	DIODE RD5.1ESB1
D21	8-719-911-19	DIODE 1SS119
D22	8-719-110-37	DIODE RD13ES-B3

<IC>

IC1	8-759-909-70	IC CX23025
IC2	8-752-033-68	IC CXA1268P
IC3	8-759-140-53	IC UPD4053BC
IC4	8-759-700-08	IC NJM4558S
IC5	8-759-140-53	IC UPD4053BC
IC6	8-759-700-08	IC NJM4558S
IC7	8-759-700-08	IC NJM4558S
IC8	8-759-000-49	IC MC14066BCP
IC9	8-759-140-53	IC UPD4053BC
IC10	8-759-700-08	IC NJM4558S
IC11	8-759-503-91	IC TL082ACP
IC12	8-759-503-91	IC TL082ACP
IC13	8-759-503-91	IC TL082ACP
IC14	8-759-145-58	IC UPC4558C
IC15	8-759-503-91	IC TL082ACP
IC16	8-759-145-58	IC UPC4558C
IC17	8-759-729-03	IC NJM2903D
IC18	8-759-729-03	IC NJM2903D
IC20	8-759-929-62	IC LM7812CT
IC21	8-759-929-65	IC LM7912CT
IC22	8-759-701-56	IC NJM78M05FA
IC23	8-759-701-65	IC NJM79M05FA

<TRANSISTOR>

Q1	8-729-900-89	TRANSISTOR DTC144ES
Q2	8-729-255-12	TRANSISTOR 2SC2551-O
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE

<RESISTOR>

R1	1-249-441-11	CARBON	100K	5%	1/4W
R2	1-249-423-11	CARBON	3.3K	5%	1/4W
R3	1-249-423-11	CARBON	3.3K	5%	1/4W
R4	1-249-429-11	CARBON	10K	5%	1/4W
R5	1-249-429-11	CARBON	10K	5%	1/4W
R6	1-249-431-11	CARBON	15K	5%	1/4W
R7	1-249-429-11	CARBON	10K	5%	1/4W
R8	1-249-431-11	CARBON	15K	5%	1/4W
R9	1-249-431-11	CARBON	15K	5%	1/4W
R10	1-249-431-11	CARBON	15K	5%	1/4W
R11	1-249-431-11	CARBON	15K	5%	1/4W
R12	1-249-441-11	CARBON	100K	5%	1/4W
R16	1-249-429-11	CARBON	10K	5%	1/4W
R17	1-249-429-11	CARBON	10K	5%	1/4W
R18	1-249-441-11	CARBON	100K	5%	1/4W
R19	1-249-429-11	CARBON	10K	5%	1/4W
R20	1-249-429-11	CARBON	10K	5%	1/4W
R21	1-247-891-00	CARBON	330K	5%	1/4W
R22	1-247-903-00	CARBON	1M	5%	1/4W
R23	1-249-439-11	CARBON	68K	5%	1/4W
R24	1-249-435-11	CARBON	33K	5%	1/4W
R25	1-247-891-00	CARBON	330K	5%	1/4W
R26	1-249-439-11	CARBON	68K	5%	1/4W
R27	1-249-429-11	CARBON	10K	5%	1/4W
R28	1-249-429-11	CARBON	10K	5%	1/4W
R29	1-249-429-11	CARBON	10K	5%	1/4W
R30	1-249-429-11	CARBON	10K	5%	1/4W
R31	1-249-429-11	CARBON	10K	5%	1/4W
R32	1-249-429-11	CARBON	10K	5%	1/4W
R34	1-249-429-11	CARBON	10K	5%	1/4W
R35	1-249-429-11	CARBON	10K	5%	1/4W
R36	1-249-420-11	CARBON	1.8K	5%	1/4W
R37	1-249-433-11	CARBON	22K	5%	1/4W
R38	1-249-435-11	CARBON	33K	5%	1/4W
R39	1-249-437-11	CARBON	47K	5%	1/4W
R40	1-249-433-11	CARBON	22K	5%	1/4W
R41	1-249-437-11	CARBON	47K	5%	1/4W
R42	1-249-429-11	CARBON	10K	5%	1/4W
R43	1-249-440-11	CARBON	82K	5%	1/4W
R44	1-249-441-11	CARBON	100K	5%	1/4W
R45	1-249-441-11	CARBON	100K	5%	1/4W
R46	1-247-887-00	CARBON	220K	5%	1/4W
R47	1-249-439-11	CARBON	68K	5%	1/4W

DA **DB**

REF.NO.	PART NO.	DESCRIPTION				REMARK
R48	1-249-439-11	CARBON	68K	5%	1/4W	
R49	1-249-426-11	CARBON	5.6K	5%	1/4W	
R50	1-249-429-11	CARBON	10K	5%	1/4W	
R51	1-249-434-11	CARBON	27K	5%	1/4W	
R52	1-249-433-11	CARBON	22K	5%	1/4W	
R53	1-249-425-11	CARBON	4.7K	5%	1/4W	
R54	1-249-425-11	CARBON	4.7K	5%	1/4W	
R55	1-249-433-11	CARBON	22K	5%	1/4W	
R56	1-249-429-11	CARBON	10K	5%	1/4W	
R57	1-249-429-11	CARBON	10K	5%	1/4W	
R59	1-247-895-00	CARBON	470K	5%	1/4W	
R60	1-249-439-11	CARBON	68K	5%	1/4W	
R61	1-249-429-11	CARBON	10K	5%	1/4W	
R62	1-247-895-00	CARBON	470K	5%	1/4W	
R63	1-249-429-11	CARBON	10K	5%	1/4W	
R64	1-249-441-11	CARBON	100K	5%	1/4W	
R65	1-249-429-11	CARBON	10K	5%	1/4W	
R66	1-247-885-00	CARBON	180K	5%	1/4W	
R67	1-247-891-00	CARBON	330K	5%	1/4W	
R68	1-249-429-11	CARBON	10K	5%	1/4W	
R69	1-249-429-11	CARBON	10K	5%	1/4W	
R70	1-249-429-11	CARBON	10K	5%	1/4W	
R71	1-215-445-00	METAL	10K	1%	1/4W	
R72	1-249-429-11	CARBON	10K	5%	1/4W	
R73	1-249-429-11	CARBON	10K	5%	1/4W	
R74	1-249-429-11	CARBON	10K	5%	1/4W	
R75	1-249-439-11	CARBON	68K	5%	1/4W	
R76	1-249-430-11	CARBON	12K	5%	1/4W	
R77	1-249-429-11	CARBON	10K	5%	1/4W	
R78	1-249-439-11	CARBON	68K	5%	1/4W	
R79	1-249-429-11	CARBON	10K	5%	1/4W	
R80	1-249-430-11	CARBON	12K	5%	1/4W	
R81	1-249-423-11	CARBON	3.3K	5%	1/4W	
R82	1-249-417-11	CARBON	1K	5%	1/4W	
R83	1-249-429-11	CARBON	10K	5%	1/4W	
R84	1-249-426-11	CARBON	5.6K	5%	1/4W	
R85	1-249-428-11	CARBON	8.2K	5%	1/4W	
R86	1-249-423-11	CARBON	3.3K	5%	1/4W	
R87	1-249-417-11	CARBON	1K	5%	1/4W	
R88	1-249-429-11	CARBON	10K	5%	1/4W	
R89	1-249-429-11	CARBON	10K	5%	1/4W	
R90	1-249-429-11	CARBON	10K	5%	1/4W	
R91	1-215-862-11	METAL OXIDE	68	5%	1W	F
R92	1-215-862-11	METAL OXIDE	68	5%	1W	F
R93	1-247-885-00	CARBON	180K	5%	1/4W	
R94	1-249-426-11	CARBON	5.6K	5%	1/4W	
R101	1-249-431-11	CARBON	15K	5%	1/4W	
R102	1-249-428-11	CARBON	8.2K	5%	1/4W	

<VARIABLE RESISTOR>

RV1	1-237-518-21	RES, ADJ, CERMET	10K
RV2	1-237-518-21	RES, ADJ, CERMET	10K
RV3	1-237-518-21	RES, ADJ, CERMET	10K
RV4	1-237-518-21	RES, ADJ, CERMET	10K
RV5	1-237-518-21	RES, ADJ, CERMET	10K
RV6	1-237-518-21	RES, ADJ, CERMET	10K
RV7	1-237-518-21	RES, ADJ, CERMET	10K
RV8	1-237-518-21	RES, ADJ, CERMET	10K
RV9	1-237-518-21	RES, ADJ, CERMET	10K
RV10	1-237-518-21	RES, ADJ, CERMET	10K
RV11	1-237-518-21	RES, ADJ, CERMET	10K
RV12	1-237-518-21	RES, ADJ, CERMET	10K
RV13	1-237-518-21	RES, ADJ, CERMET	10K
RV14	1-237-518-21	RES, ADJ, CERMET	10K
RV15	1-237-518-21	RES, ADJ, CERMET	10K
RV16	1-237-518-21	RES, ADJ, CERMET	10K
RV17	1-237-518-21	RES, ADJ, CERMET	10K
RV18	1-237-518-21	RES, ADJ, CERMET	10K
RV19	1-237-518-21	RES, ADJ, CERMET	10K
RV20	1-237-518-21	RES, ADJ, CERMET	10K
RV21	1-237-518-21	RES, ADJ, CERMET	10K
RV22	1-237-518-21	RES, ADJ, CERMET	10K
RV23	1-237-518-21	RES, ADJ, CERMET	10K
RV24	1-237-518-21	RES, ADJ, CERMET	10K
RV25	1-237-518-21	RES, ADJ, CERMET	10K
RV31	1-237-518-21	RES, ADJ, CERMET	10K
RV32	1-237-518-21	RES, ADJ, CERMET	10K

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*A-1345-884-A DB BOARD, COMPLETE
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*1-566-056-11 PIN, CONNECTOR 4P
*1-566-062-11 PIN, CONNECTOR 10P

<CAPACITOR>

C201	1-101-004-00	CERAMIC	0.01MF		50V
C202	1-136-153-00	FILM	0.01MF	5%	50V
C203	1-136-165-00	FILM	0.1MF	5%	50V
C204	1-126-157-11	ELECT	10MF	20%	16V
C205	1-130-479-00	MYLAR	0.0047MF	5%	50V
C206	1-124-234-00	ELECT	22MF	20%	16V
C207	1-124-234-00	ELECT	22MF	20%	16V
C208	1-130-475-00	MYLAR	0.0022MF	5%	50V
C209	1-130-477-00	FILM	0.0033MF	5%	50V
C210	1-102-518-11	CERAMIC	33PF	5%	50V
C211	1-101-004-00	CERAMIC	0.01MF		50V
C212	1-101-004-00	CERAMIC	0.01MF		50V
C214	1-126-157-11	ELECT	10MF	20%	16V
C215	1-126-157-11	ELECT	10MF	20%	16V
C216	1-101-004-00	CERAMIC	0.01MF		50V
C221	1-126-157-11	ELECT	10MF	20%	16V
C223	1-101-004-00	CERAMIC	0.01MF		50V
C224	1-101-004-00	CERAMIC	0.01MF		50V
C231	1-126-157-11	ELECT	10MF	20%	16V
C233	1-101-004-00	CERAMIC	0.01MF		50V

<DIODE>

D201	8-719-911-19	DIODE 1SS119
D202	8-719-109-74	DIODE RD4.3ESB1

<IC>

IC201	8-759-503-91	IC TL082ACP
IC202	8-759-729-03	IC NJM2903D
IC203	8-759-240-69	IC TC4069UBP
IC204	8-759-100-60	IC UPC1377C

<COIL>

L201	1-410-068-11	INDUCTOR	5.6MMH

<TRANSISTOR>

Q201	8-729-900-65	TRANSISTOR DTA144ES

REF.NO.	PART NO.	DESCRIPTION				REMARK
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q203	8-729-900-65	TRANSISTOR DTA144ES				
		<RESISTOR>				
R201	1-249-417-11	CARBON	1K	5%	1/4W	
R202	1-249-417-11	CARBON	1K	5%	1/4W	
R203	1-215-440-00	METAL	6.2K	1%	1/4W	
R204	1-249-429-11	CARBON	10K	5%	1/4W	
R205	1-249-430-11	CARBON	12K	5%	1/4W	
R206	1-249-439-11	CARBON	68K	5%	1/4W	
R207	1-249-429-11	CARBON	10K	5%	1/4W	
R208	1-249-429-11	CARBON	10K	5%	1/4W	
R209	1-249-429-11	CARBON	10K	5%	1/4W	
R210	1-249-419-11	CARBON	1.5K	5%	1/4W	
R211	1-249-425-11	CARBON	4.7K	5%	1/4W	
R212	1-249-417-11	CARBON	1K	5%	1/4W	
R213	1-249-425-11	CARBON	4.7K	5%	1/4W	
R214	1-249-417-11	CARBON	1K	5%	1/4W	
R215	1-249-429-11	CARBON	10K	5%	1/4W	
R216	1-249-415-11	CARBON	680	5%	1/4W	
R217	1-249-423-11	CARBON	3.3K	5%	1/4W	
R218	1-249-425-11	CARBON	4.7K	5%	1/4W	
R219	1-249-439-11	CARBON	68K	5%	1/4W	
R220	1-249-417-11	CARBON	1K	5%	1/4W	
R221	1-249-429-11	CARBON	10K	5%	1/4W	
R222	1-249-429-11	CARBON	10K	5%	1/4W	
R223	1-249-417-11	CARBON	1K	5%	1/4W	
R224	1-249-430-11	CARBON	12K	5%	1/4W	
R225	1-249-417-11	CARBON	1K	5%	1/4W	
R226	1-249-417-11	CARBON	1K	5%	1/4W	
R227	1-249-417-11	CARBON	1K	5%	1/4W	
R228	1-249-417-11	CARBON	1K	5%	1/4W	
R229	1-249-417-11	CARBON	1K	5%	1/4W	
		<VARIABLE RESISTOR>				
RV201	1-237-518-21	RES, ADJ, CERMET 10K				
RV202	1-237-517-21	RES, ADJ, CERMET 5K				
		<SWITCH>				
S201	1-571-908-11	SWITCH, SLIDE				
**********						
	*A-1345-881-A	EA BOARD, COMPLETE				
		**********				
	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P				
	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P				
	*1-566-054-11	PIN, CONNECTOR 2P				
	*1-566-041-11	PIN, CONNECTOR 2P				
	*1-566-055-11	PIN, CONNECTOR 3P				
	*1-566-056-11	PIN, CONNECTOR 4P				
	*1-566-057-11	PIN, CONNECTOR 5P				
	*1-566-058-11	PIN, CONNECTOR 6P				
	*1-568-536-11	PLUG (MINIATURE DY) 6P				
	*4-309-378-00	SPACER				
	*4-043-154-01	HOLDER, IC				
	*4-381-904-01	SPRING (C)				
	*4-381-907-01	INSULATOR (A)				
	*4-381-908-01	INSULATOR (B)				
	7-682-547-09	SCREW +BVTT 3X6 (S)				

REF.NO.	PART NO.	DESCRIPTION			REMARK
		<CAPACITOR>			
C1	1-102-963-00	CERAMIC	33PF	5%	50V
C2	1-124-482-11	ELECT	33MF	20%	25V
C3	1-126-329-11	ELECT	470MF	20%	50V
C4	1-101-361-00	CERAMIC	150PF	5%	50V
C5	1-124-482-11	ELECT	33MF	20%	25V
C6	1-126-329-11	ELECT	470MF	20%	50V
C7	1-136-121-00	FILM	0.27MF	5%	400V
C8	1-136-108-00	FILM	0.43MF	5%	200V
C9	1-130-789-00	FILM	1MF	5%	100V
C10	1-104-965-11	ELECT	10MF		160V
C11	1-108-700-11	MYLAR	0.047MF	10%	200V
C12	1-108-692-11	MYLAR	0.01MF	10%	200V
C13	1-136-165-00	FILM	0.1MF	5%	50V
C14	1-102-074-00	CERAMIC	0.001MF	10%	50V
C15	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C16	1-102-973-00	CERAMIC	100PF	5%	50V
C17	1-124-477-11	ELECT	47MF	20%	25V
C18	1-104-792-51	ELECT	33MF	20%	16V
C19	1-124-907-11	ELECT	10MF	20%	50V
C20	1-124-903-11	ELECT	1MF	20%	50V
C21	1-126-964-11	ELECT	10MF	20%	16V
C23	1-136-161-00	FILM	0.047MF	5%	50V
C24	1-108-700-11	MYLAR	0.047MF	10%	200V
C25	1-162-117-00	CERAMIC	100PF	10%	500V
C26	1-123-024-21	ELECT	33MF		160V
C27	1-123-949-00	ELECT	33MF	20%	200V
C28	1-136-069-00	FILM	0.0044MF	3%	2KV
C29	1-136-066-00	FILM	0.003MF	3%	2KV
C30	1-124-512-11	ELECT	33MF	20%	50V
C31	1-124-512-11	ELECT	33MF	20%	50V
C35	1-162-114-00	CERAMIC	0.0047MF		2KV
C36	1-108-692-11	MYLAR	0.01MF	10%	200V
C37	1-102-978-00	CERAMIC	220PF	5%	50V
C50	1-136-165-00	FILM	0.1MF	5%	50V
C51	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C52	1-102-973-00	CERAMIC	100PF	5%	50V
C54	1-124-907-11	ELECT	10MF	20%	50V
C55	1-124-477-11	ELECT	47MF	20%	25V
C56	1-124-903-11	ELECT	1MF	20%	50V
C57	1-126-964-11	ELECT	10MF	20%	16V
C58	1-136-161-00	FILM	0.047MF	5%	50V
C59	1-108-700-11	MYLAR	0.047MF	10%	200V
C60	1-162-117-00	CERAMIC	100PF	10%	500V
C61	1-123-024-21	ELECT	33MF		160V
C62	1-136-169-00	FILM	0.22MF	5%	50V
C63	1-108-700-11	MYLAR	0.047MF	10%	200V
C64	1-162-117-00	CERAMIC	100PF	10%	500V
C65	1-136-072-00	FILM	0.0063MF	3%	2KV
C66	1-136-069-00	FILM	0.0044MF	3%	2KV
C67	1-162-134-11	CERAMIC	470PF	10%	2KV
C68	1-136-111-00	FILM	1MF	5%	200V
C69	1-102-978-00	CERAMIC	220PF	5%	50V
C70	1-124-666-11	ELECT	4.7MF	20%	200V
C87	1-108-692-11	MYLAR	0.01MF	10%	200V
C89	1-162-117-00	CERAMIC	100PF	10%	500V
C90	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C99	1-162-130-11	CERAMIC	180PF	10%	2KV
C100	1-108-692-11	MYLAR	0.01MF	10%	200V
C101	1-102-963-00	CERAMIC	33PF	5%	50V
C110	1-126-101-11	ELECT	100MF	20%	16V

EA

REF.NO.	PART NO.	DESCRIPTION				REMARK
C201	1-124-478-11	ELECT	100MF	20%	25V	
C202	1-124-340-00	ELECT	22MF	20%	200V	
C203	1-124-478-11	ELECT	100MF	20%	25V	
C204	1-102-978-00	CERAMIC	220PF	5%	50V	
C207	1-124-340-00	ELECT	22MF	20%	200V	
C208	1-136-157-00	FILM	0.022MF	5%	50V	
C209	1-108-646-00	MYLAR	0.47MF	10%	100V	
C300	1-124-666-11	ELECT	4.7MF	20%	200V	
		<DIODE>				
D1	8-719-110-31	DIODE RD12ESB2				
D3	8-719-911-19	DIODE 1SS119				
D4	8-719-911-19	DIODE 1SS119				
D5	8-719-300-76	DIODE RH-1A				
D6	8-719-000-28	THYRISTOR CR02AM-8				
D7	8-719-300-76	DIODE RH-1A				
D8	8-719-928-08	DIODE ERD28-08S				
D9	8-719-300-76	DIODE RH-1A				
D10	8-719-300-76	DIODE RH-1A				
D12	8-719-901-19	DIODE V11N				
D13	8-719-300-76	DIODE RH-1A				
D14	8-719-300-76	DIODE RH-1A				
D15	8-719-300-76	DIODE RH-1A				
D16	8-719-300-76	DIODE RH-1A				
D28	8-719-911-19	DIODE 1SS119				
D30	8-719-911-19	DIODE 1SS119				
D32	8-719-300-76	DIODE RH-1A				
D33	8-719-300-76	DIODE RH-1A				
D35	8-719-911-19	DIODE 1SS119				
D37	8-719-911-19	DIODE 1SS119				
D38	8-719-911-19	DIODE 1SS119				
D39	8-719-110-31	DIODE RD12ESB2				
D40	8-719-110-49	DIODE RD18ES-B2				
D41	8-719-109-66	DIODE RD3.3ESB2				
D42	8-719-300-76	DIODE RH-1A				
D50	8-719-000-28	THYRISTOR CR02AM-8				
D201	8-719-908-03	DIODE GP08D				
D202	8-719-908-03	DIODE GP08D				
D203	8-719-911-19	DIODE 1SS119				
D204	8-719-911-19	DIODE 1SS119				
D205	8-719-911-19	DIODE 1SS119				
D206	8-719-911-19	DIODE 1SS119				
		<CONNECTOR>				
EA3	*1-566-056-11	PIN, CONNECTOR 4P				
EA7	*1-566-055-11	PIN, CONNECTOR 3P				
EA10	*1-566-058-11	PIN, CONNECTOR 6P				
EA16	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P				
EA17	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P				
EA18	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P				
EA19	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P				
		<IC>				
IC1	8-759-947-49	IC FA5301P				
IC2	8-759-947-49	IC FA5301P				
IC3	8-759-503-91	IC TL082ACP				
IC5	8-759-145-58	IC UPC4558C				
		<COIL>				
L1	1-459-433-00	COIL (WITH CORE)				
L2	1-459-433-00	COIL (WITH CORE)				
L3	1-459-433-00	COIL (WITH CORE)				
L4	1-459-111-00	COIL, DRAM CORE (CDI)				
L5	1-459-111-00	COIL, DRAM CORE (CDI)				
L6	1-459-087-00	COIL, HCC DUST CORE 3.9MMH				
L7	1-459-215-00	COIL (WITH CORE)				
L8	1-459-207-00	COIL, CORE				
L9	1-459-433-00	COIL (WITH CORE)				
L10	1-459-433-00	COIL (WITH CORE)				
L11	1-459-123-00	COIL, DUST CORE(PAC)				
		<TRANSISTOR>				
Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q2	8-729-697-92	TRANSISTOR 2SA979-G				
Q3	8-729-306-92	TRANSISTOR 2SD669A-C				
Q4	8-729-208-71	TRANSISTOR 2SC3298B-O				
Q5	8-729-385-82	TRANSISTOR 2SB858-C				
Q6	8-729-119-80	TRANSISTOR 2SC2688-LK				
Q7	8-729-906-53	TRANSISTOR 2SC2542-15				
Q8	8-729-255-12	TRANSISTOR 2SC2551-O				
Q9	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q10	8-729-119-80	TRANSISTOR 2SC2688-LK				
Q11	8-729-800-80	TRANSISTOR 2SD1399-CA				
Q12	8-729-313-42	TRANSISTOR 2SD1134-C				
Q13	8-729-385-82	TRANSISTOR 2SB858-C				
Q14	8-729-119-80	TRANSISTOR 2SC2688-LK				
Q15	8-729-200-17	TRANSISTOR 2SA1091-O				
Q16	8-729-906-53	TRANSISTOR 2SC2542-15				
Q17	8-729-119-80	TRANSISTOR 2SC2688-LK				
Q18	8-729-800-80	TRANSISTOR 2SD1399-CA				
Q19	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q201	8-729-697-92	TRANSISTOR 2SA979-G				
Q202	8-729-140-96	TRANSISTOR 2SD774-34				
Q203	8-729-200-17	TRANSISTOR 2SA1091-O				
Q204	8-729-255-12	TRANSISTOR 2SC2551-O				
Q205	8-729-017-05	TRANSISTOR 2SA1837				
Q206	8-729-208-71	TRANSISTOR 2SC3298B-O				
Q207	8-729-386-12	TRANSISTOR 2SB861-C				
Q208	8-729-255-12	TRANSISTOR 2SC2551-O				
		<CONNECTOR>				
R73	*1-506-371-00	PIN, CONNECTOR 2P				
R75	*1-506-371-00	PIN, CONNECTOR 2P				
		<RESISTOR>				
R1	1-249-425-11	CARBON	4.7K	5%	1/4W	
R2	1-249-422-11	CARBON	2.7K	5%	1/4W	
R3	1-249-441-11	CARBON	100K	5%	1/4W	
R4	1-249-435-11	CARBON	33K	5%	1/4W	
R5	1-249-429-11	CARBON	10K	5%	1/4W	
R6	1-249-429-11	CARBON	10K	5%	1/4W	
R7	1-249-429-11	CARBON	10K	5%	1/4W	
R8	1-249-421-11	CARBON	2.2K	5%	1/4W	
R9	1-249-431-11	CARBON	15K	5%	1/4W	
R10	1-249-438-11	CARBON	56K	5%	1/4W	
R11	1-249-417-11	CARBON	1K	5%	1/4W	
R12	1-249-421-11	CARBON	2.2K	5%	1/4W	
R13	1-249-448-11	CARBON	1.2	5%	1/4W	F
R14	1-249-448-11	CARBON	1.2	5%	1/4W	F
R15	1-216-372-11	METAL OXIDE	1.8	5%	2W	F

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

EA **EB**

REF.NO.	PART NO.	DESCRIPTION				REMARK
R16	1-249-429-11	CARBON	10K	5%	1/4W	
R17	1-249-429-11	CARBON	10K	5%	1/4W	
R18	1-216-460-11	METAL OXIDE	3.9K	5%	2W	F
R19	1-216-352-11	METAL OXIDE	1.8	5%	1W	F
R20	1-249-414-11	CARBON	560	5%	1/4W	
R21	1-249-425-11	CARBON	4.7K	5%	1/4W	
R22	1-249-426-11	CARBON	5.6K	5%	1/4W	
R23	1-247-852-11	CARBON	7.5K	5%	1/4W	
R24	1-249-436-11	CARBON	39K	5%	1/4W	
R25	1-249-434-11	CARBON	27K	5%	1/4W	
R26	1-249-429-11	CARBON	10K	5%	1/4W	
R27	1-249-429-11	CARBON	10K	5%	1/4W	
R28	1-249-434-11	CARBON	27K	5%	1/4W	
R29	1-249-427-11	CARBON	6.8K	5%	1/4W	
R31	1-215-433-00	METAL	3.3K	1%	1/4W	
R32	1-215-435-00	METAL	3.9K	1%	1/4W	
R33	1-249-429-11	CARBON	10K	5%	1/4W	
R34	1-249-417-11	CARBON	1K	5%	1/4W	
R35	1-249-432-11	CARBON	18K	5%	1/4W	
R37	1-249-429-11	CARBON	10K	5%	1/4W	
R38	1-249-429-11	CARBON	10K	5%	1/4W	
R39	1-215-900-11	METAL OXIDE	22K	5%	2W	F
R40	1-216-423-11	METAL OXIDE	27	5%	1W	F
R41	1-216-349-00	METAL OXIDE	1	5%	1W	F
R42	1-212-857-00	FUSIBLE	10	5%	1/4W	F
R43	1-249-417-11	CARBON	1K	5%	1/4W	
R44	1-215-473-00	METAL	150K	1%	1/4W	
R47	1-215-445-00	METAL	10K	1%	1/4W	
R49	1-249-448-11	CARBON	1.2	5%	1/4W	F
R50	1-249-429-11	CARBON	10K	5%	1/4W	
R51	1-249-417-11	CARBON	1K	5%	1/4W	
R52	1-247-807-31	CARBON	100	5%	1/4W	
R53	1-216-360-11	METAL OXIDE	8.2	5%	1W	F
R54	1-212-998-00	FUSIBLE	470	5%	1/2W	F
R55	1-249-417-11	CARBON	1K	5%	1/4W	
R56	1-249-419-11	CARBON	1.5K	5%	1/4W	
R57	1-249-419-11	CARBON	1.5K	5%	1/4W	
R58	1-249-448-11	CARBON	1.2	5%	1/4W	F
R59	1-249-448-11	CARBON	1.2	5%	1/4W	F
R61	1-249-425-11	CARBON	4.7K	5%	1/4W	
R62	1-249-425-11	CARBON	4.7K	5%	1/4W	
R63	1-249-441-11	CARBON	100K	5%	1/4W	
R65	1-249-434-11	CARBON	27K	5%	1/4W	
R66	1-249-429-11	CARBON	10K	5%	1/4W	
R67	1-249-429-11	CARBON	10K	5%	1/4W	
R68	1-249-434-11	CARBON	27K	5%	1/4W	
R69	1-249-427-11	CARBON	6.8K	5%	1/4W	
R70	1-249-414-11	CARBON	560	5%	1/4W	
R71	1-215-461-00	METAL	47K	1%	1/4W	
R72	1-215-452-00	METAL	20K	1%	1/4W	
☒R73 ⚠		METAL			1/4W	
R74	1-215-447-00	METAL	12K	1%	1/4W	
☒R75 ⚠		METAL			1/4W	
R76	1-249-421-11	CARBON	2.2K	5%	1/4W	
R77	1-247-887-00	CARBON	220K	5%	1/4W	
R78	1-249-429-11	CARBON	10K	5%	1/4W	
R79	1-249-429-11	CARBON	10K	5%	1/4W	
R80	1-249-429-11	CARBON	10K	5%	1/4W	
R81	1-215-900-11	METAL OXIDE	22K	5%	2W	F
R82	1-216-356-00	METAL OXIDE	3.9	5%	1W	F
R83	1-216-348-00	METAL OXIDE	0.82	5%	1W	F
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-249-417-11	CARBON	1K	5%	1/4W	
R86	1-215-948-00	METAL OXIDE	10K	5%	5W	F
R87	1-216-351-00	METAL OXIDE	1.5	5%	1W	F
R88	1-249-441-11	CARBON	100K	5%	1/4W	
R93	1-249-437-11	CARBON	47K	5%	1/4W	
R94	1-249-415-11	CARBON	680	5%	1/4W	
R125	1-216-377-11	METAL OXIDE	4.7	5%	2W	F
R126	1-216-377-11	METAL OXIDE	4.7	5%	2W	F
R127	1-202-719-00	SOLID	1M	10%	1/2W	
R160	1-249-425-11	CARBON	4.7K	5%	1/4W	
R161	1-249-422-11	CARBON	2.7K	5%	1/4W	
R162	1-249-441-11	CARBON	100K	5%	1/4W	
R163	1-249-435-11	CARBON	33K	5%	1/4W	
R170	1-249-415-11	CARBON	680	5%	1/4W	
R201	1-249-429-11	CARBON	10K	5%	1/4W	
R202	1-249-430-11	CARBON	12K	5%	1/4W	
R203	1-249-426-11	CARBON	5.6K	5%	1/4W	
R204	1-216-465-11	METAL OXIDE	27K	5%	2W	F
R205	1-247-802-11	CARBON	62	5%	1/4W	
R206	1-249-414-11	CARBON	560	5%	1/4W	
R207	1-249-382-11	CARBON	1.2	5%	1/4W	F
R208	1-249-382-11	CARBON	1.2	5%	1/4W	F
R209	1-215-889-00	METAL OXIDE	330	5%	2W	F
R210	1-216-375-00	METAL OXIDE	3.3	5%	2W	F
R211	1-249-429-11	CARBON	10K	5%	1/4W	
R212	1-249-425-11	CARBON	4.7K	5%	1/4W	
R213	1-247-719-11	CARBON	3.3K	5%	1/4W	F
R214	1-247-739-11	CARBON	100	5%	1/2W	F
R215	1-215-896-00	METAL OXIDE	4.7K	5%	2W	F
R216	1-249-429-11	CARBON	10K	5%	1/4W	
R217	1-249-429-11	CARBON	10K	5%	1/4W	
R301	1-215-948-00	WIREWOUND	10K	10%	5W	F

<VARIABLE RESISTOR>

RV1	1-237-514-21	RES, ADJ, CERMET 500				

<TRANSFORMER>

T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE				
T2	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE				
T3	1-439-383-11	HOT				
T4	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE				
T5	1-439-384-11	LOT				
T6	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE				
T7	1-407-849-00	TRANSFORMER, D.F				

****

*1-631-685-11	EB BOARD				
	********				
*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P				

<CAPACITOR>

C71	1-124-120-11	ELECT	220MF	20%	16V
C73	1-108-634-11	MYLAR	0.047MF	10%	100V
C74	1-126-964-11	ELECT	10MF	20%	16V
C75	1-161-051-00	CERAMIC	0.01MF	10%	50V
C76	1-124-667-11	ELECT	10MF	20%	50V
C78	1-136-165-00	FILM	0.1MF	5%	50V
C82	1-161-051-00	CERAMIC	0.01MF	10%	50V
C83	1-124-907-11	ELECT	10MF	20%	50V
C84	1-126-233-11	ELECT	22MF	20%	16V
C85	1-136-165-00	FILM	0.1MF	5%	50V

EB **EC**

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REF.NO.	PART NO.	DESCRIPTION				REMARK
C86	1-136-165-00	FILM	0.1MF	5%	50V	
C91	1-124-120-11	ELECT	220MF	20%	16V	
C93	1-124-907-11	ELECT	10MF	20%	50V	
C94	1-126-233-11	ELECT	22MF	20%	16V	
C95	1-124-666-11	ELECT	4.7MF	20%	200V	
C96	1-124-915-11	ELECT	10MF	20%	25V	
		<DIODE>				
D19	8-719-911-19	DIODE 1SS119				
D20	8-719-911-19	DIODE 1SS119				
D24	⚠8-759-157-40	IC UPC574J				
D25	8-719-911-19	DIODE 1SS119				
D26	8-719-911-19	DIODE 1SS119				
D27	8-719-000-28	THYRISTOR CR02AM-8				
D29	⚠8-759-157-40	IC UPC574J				
D36	8-719-911-19	DIODE 1SS119				
D51	8-719-000-28	THYRISTOR CR02AM-8				
		<CONNECTOR>				
EB1	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P				
EB2	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P				
		<IC>				
IC4	8-759-729-03	IC NJM2903D				
IC6	8-759-729-03	IC NJM2903D				
		<TRANSISTOR>				
Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<CONNECTOR>				
R106	*1-506-371-00	PIN, CONNECTOR 2P				
R108	*1-506-371-00	PIN, CONNECTOR 2P				
R115	*1-506-371-00	PIN, CONNECTOR 2P				
R135	*1-506-371-00	PIN, CONNECTOR 2P				
		<RESISTOR>				
R89	1-249-431-11	CARBON	15K	5%	1/4W	
R90	1-249-417-11	CARBON	1K	5%	1/4W	
R95	1-249-429-11	CARBON	10K	5%	1/4W	
R96	1-249-421-11	CARBON	2.2K	5%	1/4W	
R97	1-249-393-11	CARBON	10	5%	1/4W	
R98	1-249-429-11	CARBON	10K	5%	1/4W	
R99	1-249-441-11	CARBON	100K	5%	1/4W	
R100	1-249-429-11	CARBON	10K	5%	1/4W	
R101	1-249-429-11	CARBON	10K	5%	1/4W	
R102	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R103	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R104	1-249-423-11	CARBON	3.3K	5%	1/4W	
R105	1-215-453-00	METAL	22K	1%	1/4W	
⊠R106	⚠	METAL			1/4W	
R107	1-215-455-00	METAL	27K	1%	1/4W	
⊠R108	⚠	METAL			1/4W	
R111	1-249-441-11	CARBON	100K	5%	1/4W	
R112	1-249-423-11	CARBON	3.3K	5%	1/4W	
R113	1-215-455-00	METAL	27K	1%	1/4W	
R114	1-215-437-00	METAL	4.7K	1%	1/4W	
⊠R115	⚠	METAL			1/4W	
R116	1-215-486-00	METAL	510K	1%	1/4W	
R117	1-215-453-00	METAL	22K	1%	1/4W	
R118	1-215-469-00	METAL	100K	1%	1/4W	
R119	1-215-437-00	METAL	4.7K	1%	1/4W	
R120	1-215-437-00	METAL	4.7K	1%	1/4W	
R121	1-215-427-00	METAL	1.8K	1%	1/4W	
R122	1-215-437-00	METAL	4.7K	1%	1/4W	
R123	1-215-437-00	METAL	4.7K	1%	1/4W	
R124	1-215-427-00	METAL	1.8K	1%	1/4W	
R130	1-249-417-11	CARBON	1K	5%	1/4W	
R131	1-249-431-11	CARBON	15K	5%	1/4W	
R132	1-249-423-11	CARBON	3.3K	5%	1/4W	
R133	1-215-455-00	METAL	27K	1%	1/4W	
R134	1-215-437-00	METAL	4.7K	1%	1/4W	
⊠R135	⚠	METAL			1/4W	
R136	1-215-486-00	METAL	510K	1%	1/4W	
R137	1-215-453-00	METAL	22K	1%	1/4W	
R138	1-215-469-00	METAL	100K	1%	1/4W	
R140	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R141	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R145	1-249-413-11	CARBON	470	5%	1/4W	
R151	1-249-417-11	CARBON	1K	5%	1/4W	
R152	1-249-417-11	CARBON	1K	5%	1/4W	
R153	1-249-417-11	CARBON	1K	5%	1/4W	
R155	1-249-413-11	CARBON	470	5%	1/4W	
R156	1-249-423-11	CARBON	3.3K	5%	1/4W	
**********						
	*1-631-686-11	EC BOARD				
		********				
	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P				
	*1-566-041-11	PIN, CONNECTOR 2P				
		<CAPACITOR>				
C97	1-124-907-11	ELECT	10MF	20%	50V	
C98	1-124-907-11	ELECT	10MF	20%	50V	
C210	1-102-824-00	CERAMIC	470PF	5%	50V	
C211	1-136-165-00	FILM	0.1MF	5%	50V	
		<DIODE>				
D210	8-719-911-19	DIODE 1SS119				
D211	8-719-911-19	DIODE 1SS119				
D212	8-719-911-19	DIODE 1SS119				
D213	8-719-911-19	DIODE 1SS119				
		<CONNECTOR>				
EC1	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P				
EC2	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P				
		<IC>				
IC201	8-759-145-58	IC UPC4558C				
		<TRANSISTOR>				
Q210	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q211	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		<RESISTOR>				
R220	1-249-429-11	CARBON	10K	5%	1/4W	

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EC GA

REF.NO.	PART NO.	DESCRIPTION				REMARK
R221	1-249-429-11	CARBON	10K	5%	1/4W	
R222	1-249-429-11	CARBON	10K	5%	1/4W	
R223	1-247-848-11	CARBON	5.1K	5%	1/4W	
R224	1-216-423-11	METAL OXIDE	27	5%	1W	F
R225	1-249-431-11	CARBON	15K	5%	1/4W	
R226	1-249-431-11	CARBON	15K	5%	1/4W	
R227	1-249-456-11	CARBON	5.6	5%	1/4W	F
R228	1-249-456-11	CARBON	5.6	5%	1/4W	F
R229	1-215-867-00	METAL OXIDE	470	5%	1W	F
		**********				
	*A-1316-089-A	GA BOARD, COMPLETE (BVM-1916 ONLY)				
		**********				
	*A-1316-090-A	GA BOARD, COMPLETE (BVM-2016P ONLY)				
		**********				
		(INCLUDING GB BOARD)				
	⚠1-533-167-21	HOLDER, FUSE				
	⚠1-533-168-21	HOLDER, FUSE				
	⚠1-570-173-22	SWITCH, VOLTAGE CHANGE				
	⚠1-580-375-11	INLET 3P				
	2-990-241-02	HOLDER (A), PLUG				
	*3-337-402-01	BAND, BINDING				
	*4-347-706-00	HEAT SINK (TR)				
	*4-371-879-02	COVER, AC SELECT				
	4-379-403-01	SPACER (G1), POLISHING				
	*4-379-408-01	INSULATOR (G3)				
	*4-379-409-01	NUT, PLATE				
	4-379-410-01	SPACER (G2), POLISHING				
	*4-379-430-01	PANEL, POWER				
	*4-386-847-01	HEAT SINK (S.R.T)				
	*4-386-848-01	BAND (S.R.T)				
	*4-393-031-01	COVER, FUSE HOLDER				
	*4-601-466-11	COVER, 3P INLET				
	7-432-114-11	SCREW, LOCK				
	7-682-150-01	SCREW +P 3X12				
	7-682-552-04	SCREW +P 3X16				
	7-682-554-04	SCREW +P 3X25				
	7-682-560-04	SCREW +P 4X6				
	7-682-247-04	SCREW +K 3X6				
	7-682-547-04	SCREW +B 3X6				
	7-682-948-01	SCREW +PSW 3X8				
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3				
	7-682-547-09	SCREW +BVTT 3X6 (S)				
		<CAPACITOR>				
C1	1-124-024-00	ELECT	4.7MF	20%	350V	
C2	1-124-024-00	ELECT	4.7MF	20%	350V	
C3	1-162-117-00	CERAMIC	100PF	10%	500V	
C4	1-162-117-00	CERAMIC	100PF	10%	500V	
C5	1-162-117-00	CERAMIC	100PF	10%	500V	
C6	1-162-117-00	CERAMIC	100PF	10%	500V	
C7	1-126-104-11	ELECT	470MF	20%	25V	
C8	1-126-105-11	ELECT	1000MF	20%	25V	
C9	1-126-104-11	ELECT	470MF	20%	25V	
C10	1-126-105-11	ELECT	1000MF	20%	25V	
C11	1-126-104-11	ELECT	470MF	20%	25V	
C12	1-124-602-00	ELECT	2200MF	20%	25V	
C13	1-126-104-11	ELECT	470MF	20%	25V	
C14	1-124-602-00	ELECT	2200MF	20%	25V	
C15	1-126-183-11	ELECT	1000MF	20%	16V	
C16	1-126-103-11	ELECT	470MF	20%	16V	
C17	1-106-375-12	MYLAR	0.022MF	10%	200V	
C18	1-108-638-11	MYLAR	0.1MF	10%	100V	

REF.NO.	PART NO.	DESCRIPTION				REMARK
C19	1-102-030-00	CERAMIC	330PF	10%	500V	
C20	1-162-117-00	CERAMIC	100PF	10%	500V	
C21	1-102-038-00	CERAMIC	0.001MF		500V	
C22	1-162-117-00	CERAMIC	100PF	10%	500V	
C23	1-106-375-12	MYLAR	0.022MF	10%	100V	
C24	1-108-704-11	MYLAR	0.1MF	10%	200V	
C25	1-124-903-11	ELECT	1MF	20%	50V	
C26	1-101-361-00	CERAMIC	150PF	5%	50V	
C27	1-101-361-00	CERAMIC	150PF	5%	50V	
C28	1-126-964-11	ELECT	10MF	20%	16V	
C29	1-126-967-11	ELECT	47MF	20%	25V	
C30	1-162-117-00	CERAMIC	100PF	10%	500V	
C31	1-102-030-00	CERAMIC	330PF	10%	500V	
C32	1-124-903-11	ELECT	1MF	20%	50V	
C33	1-101-361-00	CERAMIC	150PF	5%	50V	
C34	1-101-361-00	CERAMIC	150PF	5%	50V	
C35	1-124-903-11	ELECT	1MF	20%	50V	
C36	1-126-967-11	ELECT	47MF	20%	25V	
C37	1-130-734-00	FILM	0.0068MF	5%	50V	
C38	1-136-165-00	FILM	0.1MF	5%	50V	
C39	1-136-165-00	FILM	0.1MF	5%	50V	
C40	1-124-925-11	ELECT	2.2MF	20%	50V	
C41	1-102-038-00	CERAMIC	0.001MF		500V	
C42	1-136-165-00	FILM	0.1MF	5%	50V	
C43	1-136-165-00	FILM	0.1MF	5%	50V	
C44	1-126-966-11	ELECT	10MF	20%	16V	
C45	1-162-132-00	CERAMIC	270PF	10%	2KV	
C46	1-126-964-11	ELECT	10MF	20%	16V	
C47	1-136-173-00	FILM	0.47MF	5%	50V	
C48	1-136-173-00	FILM	0.47MF	5%	50V	
C49	1-126-964-11	ELECT	10MF	20%	16V	
C50	1-101-006-00	CERAMIC	0.047MF		50V	
C51	1-101-006-00	CERAMIC	0.047MF		50V	
C52	1-101-006-00	CERAMIC	0.047MF		50V	
C53	1-101-006-00	CERAMIC	0.047MF		50V	
C54	1-101-006-00	CERAMIC	0.047MF		50V	
C55	1-126-964-11	ELECT	10MF	20%	16V	
C56	1-136-201-11	FILM	0.22MF	5%	400V	
C57	1-124-915-11	ELECT	10MF	20%	25V	
C58	1-124-902-00	ELECT	0.47MF	20%	50V	
C59	1-130-734-00	FILM	0.0068MF	5%	50V	
C60	1-102-228-00	CERAMIC	470PF	10%	500V	
C61	1-102-228-00	CERAMIC	470PF	10%	500V	
C62	1-102-228-00	CERAMIC	470PF	10%	500V	
C63	1-102-228-00	CERAMIC	470PF	10%	500V	
C64	1-124-024-00	ELECT	4.7MF	20%	350V	
C65	1-124-024-00	ELECT	4.7MF	20%	350V	
C66	1-162-117-00	CERAMIC	100PF	10%	500V	
C67	1-162-117-00	CERAMIC	100PF	10%	500V	
C68	1-162-117-00	CERAMIC	100PF	10%	500V	
C69	1-124-562-11	ELECT	47MF	20%	200V	
C70	1-124-171-00	ELECT	100MF	20%	160V	
C71	1-162-117-00	CERAMIC	100PF	10%	500V	
C72	1-107-948-11	ELECT	330MF	20%	160V	
C73	1-107-948-11	ELECT	330MF	20%	160V	
C74	1-104-665-11	ELECT	100MF	20%	16V	
C75	1-104-665-11	ELECT	100MF	20%	16V	
C76	⚠1-161-953-52	CERAMIC	0.0047MF	20%	400V	
C77	⚠1-161-953-52	CERAMIC	0.0047MF	20%	400V	
C78	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
C79	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
C80	1-125-658-11	ELECT	560MF	20%	250V	
C81	1-125-658-11	ELECT	560MF	20%	250V	

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION				REMARK
C82	1-124-927-11	ELECT	4.7MF	20%	25V	
C83	1-101-004-00	CERAMIC	0.01MF		50V	
C84	⚠1-136-311-51	FILM	0.47MF	20%	125V	
					(BVM-1916 ONLY)	
	⚠1-136-311-61	FILM	0.47MF	20%	300V	
					(BVM-2016P ONLY)	
C85	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V	
C86	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V	
C87	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V	
C88	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V	
C89	⚠1-136-311-51	FILM	0.47MF	20%	125V	
					(BVM-1916 ONLY)	
	⚠1-136-311-61	FILM	0.47MF	20%	300V	
					(BVM-2016P ONLY)	
C90	1-136-159-00	FILM	0.033MF	5%	50V	
C91	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
					(BVM-2016P ONLY)	
C92	1-136-159-00	FILM	0.033MF	5%	50V	
C93	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
					(BVM-2016P ONLY)	
C94	1-102-038-00	CERAMIC	0.001MF		500V	
C95	1-136-173-00	FILM	0.47MF	5%	50V	
C96	1-102-050-00	CERAMIC	0.01MF	99%	500V	
C97	1-136-173-00	FILM	0.47MF	5%	50V	
C98	1-136-173-00	FILM	0.47MF	5%	50V	
C99	1-102-050-00	CERAMIC	0.01MF	99%	500V	
C100	1-162-117-00	CERAMIC	100PF	10%	500V	
C101	1-162-117-00	CERAMIC	100PF	10%	500V	
C102	1-136-601-11	FILM	0.01MF	5%	630V	
C103	1-136-601-11	FILM	0.01MF	5%	630V	
C104	1-124-477-11	ELECT	47MF	20%	16V	
		<DIODE>				
D1	8-719-912-51	DIODE ESAC25-04C				
D2	8-719-918-73	DIODE ESAC25-04N				
D3	8-719-901-73	DIODE ESAD25-04D				
D4	8-719-901-73	DIODE ESAD25-04D				
D5	8-719-988-31	DIODE D10SC6MR				
D6	8-719-510-09	DIODE D10SC6M				
D7	8-719-300-33	DIODE RU-3AM				
D8	8-719-300-52	DIODE CTU-38R				
D9	8-719-300-53	DIODE CTU-38S				
D10	8-719-912-51	DIODE ESAC25-04C				
D11	8-719-918-73	DIODE ESAC25-04N				
D12	8-719-911-19	DIODE 1SS119				
D13	8-719-911-19	DIODE 1SS119				
D14	8-719-100-58	DIODE RD10EB3				
D15	8-719-911-19	DIODE 1SS119				
D16	8-719-911-19	DIODE 1SS119				
D17	8-719-911-19	DIODE 1SS119				
D20	8-719-200-02	DIODE 10E-2				
D21	⚠8-719-300-07	DIODE RB406N				
D22	8-759-157-40	IC UPC574J				
D23	8-719-911-19	DIODE 1SS119				
D24	8-719-100-58	DIODE RD10EB3				
D25	8-719-911-19	DIODE 1SS119				
D26	8-719-003-08	THYRISTOR CR3CM-8				
D27	8-719-982-04	DIODE ERB81-004				
D28	8-719-982-04	DIODE ERB81-004				
D29	8-719-982-04	DIODE ERB81-004				
D30	8-719-982-04	DIODE ERB81-004				
D31	8-719-300-33	DIODE RU-3AM				
D32	8-719-300-33	DIODE RU-3AM				
		<CONNECTOR>				
GA1	1-506-348-XX	PIN, CONNECTOR 3P				
GA2	*1-506-371-00	PIN, CONNECTOR 2P				
GA3	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P				
GA4	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
GA5	*1-566-055-11	PIN, CONNECTOR 3P				
GA6	*1-566-055-11	PIN, CONNECTOR 3P				
GA7	*1-566-058-11	PIN, CONNECTOR 6P				
GA8	*1-566-057-11	PIN, CONNECTOR 5P				
		<IC>				
IC1	1-806-805-11	IC MC5433				
IC2	8-759-904-94	IC TL494CN				
IC3	8-759-904-94	IC TL494CN				
IC4	8-759-925-54	IC μPC2405HF				
		<COIL>				
L3	1-459-643-11	COIL, CHOKE 525UH				
L4	1-459-643-11	COIL, CHOKE 525UH				
L5	1-459-643-11	COIL, CHOKE 525UH				
L6	1-459-643-11	COIL, CHOKE 525UH				
L7	1-459-207-00	COIL, CORE				
L8	1-403-581-11	COIL, CHOKE 5MMH				
L9	1-459-645-11	COIL, CHOKE 20MMH				
L10	1-421-329-00	COIL, CHOKE				
L11	1-421-329-00	COIL, CHOKE				
L12	1-421-329-00	COIL, CHOKE				
L13	1-421-329-00	COIL, CHOKE				
L14	1-421-329-00	COIL, CHOKE				
L15	1-421-329-00	COIL, CHOKE				
L16	1-421-329-00	COIL, CHOKE				
L17	⚠1-421-590-11	TRANSFORMER, LINE FILTER (BVM-1916 ONLY)				
	⚠1-423-937-11	TRANSFORMER, LINE FILTER (LFT) (BVM-2016P ONLY)				
L18	⚠1-421-590-11	TRANSFORMER, LINE FILTER (BVM-1916 ONLY)				
	⚠1-423-937-11	TRANSFORMER, LINE FILTER (BVM-2016P ONLY)				
		<TRANSISTOR>				
Q1	8-729-301-76	TRANSISTOR STR8124-R				
Q2	8-729-301-76	TRANSISTOR STR8124-R				
Q3	8-729-140-96	TRANSISTOR 2SD774-34				
Q4	8-729-140-96	TRANSISTOR 2SD774-34				
Q5	8-729-140-96	TRANSISTOR 2SD774-34				
Q6	8-729-140-96	TRANSISTOR 2SD774-34				
Q7	8-729-140-97	TRANSISTOR 2SB734-34				
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q12	8-729-140-96	TRANSISTOR 2SD774-34				
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<RESISTOR>				
R1	1-215-857-11	METAL OXIDE	10	5%	1W	F
R2	1-215-857-11	METAL OXIDE	10	5%	1W	F
R3	1-247-715-11	CARBON	1.5K	5%	1/4W	
R4	1-215-857-11	METAL OXIDE	10	5%	1W	F
R5	1-215-857-11	METAL OXIDE	10	5%	1W	F
R6	1-249-447-11	CARBON	1	5%	1/4W	F
R7	1-247-692-11	CARBON	22	5%	1/4W	
R8	1-249-418-11	CARBON	1.2K	5%	1/4W	
R9	1-249-382-11	CARBON	1.2	5%	1/4W	F
R10	1-249-447-11	CARBON	1	5%	1/4W	F
R11	1-247-692-11	CARBON	22	5%	1/4W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

• The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

GA **GB**

REF.NO.		PART NO.	DESCRIPTION				REMARK
R12		1-249-418-11	CARBON	1.2K	5%	1/4W	
R13		1-215-889-00	METAL OXIDE	330	5%	2W	F
R14		1-247-700-11	CARBON	100	5%	1/4W	
R15		1-247-709-11	CARBON	510	5%	1/4W	
R16		1-247-709-11	CARBON	510	5%	1/4W	
R17		1-247-700-11	CARBON	100	5%	1/4W	
R18		1-249-425-11	CARBON	4.7K	5%	1/4W	
R19		1-249-419-11	CARBON	1.5K	5%	1/4W	
R20		1-247-838-00	CARBON	2K	5%	1/4W	
R21		1-249-417-11	CARBON	1K	5%	1/4W	
R22		1-249-409-11	CARBON	220	5%	1/4W	
R23		1-249-417-11	CARBON	1K	5%	1/4W	
R24		1-249-421-11	CARBON	2.2K	5%	1/4W	
R25		1-249-409-11	CARBON	220	5%	1/4W	
R26		1-247-700-11	CARBON	100	5%	1/4W	
R27		1-247-713-11	CARBON	1K	5%	1/4W	
R28		1-247-713-11	CARBON	1K	5%	1/4W	
R29		1-247-700-11	CARBON	100	5%	1/4W	
R30		1-215-886-11	METAL OXIDE	100	5%	2W	F
R31		1-215-886-11	METAL OXIDE	100	5%	2W	F
R32		1-215-886-11	METAL OXIDE	100	5%	2W	F
R33		1-247-697-11	CARBON	56	5%	1/4W	F
R34		1-247-697-11	CARBON	56	5%	1/4W	F
R36		1-249-425-11	CARBON	4.7K	5%	1/4W	
R37		1-249-420-11	CARBON	1.8K	5%	1/4W	
R38		1-249-429-11	CARBON	10K	5%	1/4W	
R39		1-249-413-11	CARBON	470	5%	1/4W	
R40		1-215-453-00	METAL	22K	1%	1/4W	
R41		1-249-425-11	CARBON	4.7K	5%	1/4W	
R42		1-215-437-00	METAL	4.7K	1%	1/4W	
R43		1-215-435-00	METAL	3.9K	1%	1/4W	
R44		1-215-427-00	METAL	1.8K	1%	1/4W	
R47		1-216-995-11	METAL	820	1%	10W	
R48		1-215-866-11	METAL OXIDE	330	5%	1W	F
⊠R52	⚠		METAL OXIDE			2W	F
⊠R53	⚠		METAL			1/4W	
R54		1-215-901-00	METAL OXIDE	33K	5%	2W	F
R55		1-215-426-00	METAL	1.6K	1%	1/4W	
R60		1-249-420-11	CARBON	1.8K	5%	1/4W	
R61		1-249-420-11	CARBON	1.8K	5%	1/4W	
R62		1-249-429-11	CARBON	10K	5%	1/4W	
R64		1-249-426-11	CARBON	5.6K	5%	1/4W	
R65		1-215-437-00	METAL	4.7K	1%	1/4W	
R66		1-215-453-00	METAL	22K	1%	1/4W	
⊠R67	⚠		METAL			1/2W	
⊠R68	⚠		METAL			1/4W	
R74		1-215-889-00	METAL OXIDE	330	5%	2W	F
R77		1-215-433-00	METAL	3.3K	1%	1/4W	
R78		1-215-433-00	METAL	3.3K	1%	1/4W	
R80	⚠	1-202-643-35	SOLID	820K	10%	1/2W	
R81		1-215-461-00	METAL	47K	1%	1/4W	
R82		1-215-461-00	METAL	47K	1%	1/4W	
R83		1-215-461-00	METAL	47K	1%	1/4W	
R84		1-215-459-00	METAL	39K	1%	1/4W	
R85		1-215-449-00	METAL	15K	1%	1/4W	
R86		1-215-437-00	METAL	4.7K	1%	1/4W	
R87		1-247-807-31	CARBON	100	5%	1/4W	
R88		1-249-433-11	CARBON	22K	5%	1/4W	
R89		1-249-429-11	CARBON	10K	5%	1/4W	
R90		1-249-429-11	CARBON	10K	5%	1/4W	
R91		1-249-429-11	CARBON	10K	5%	1/4W	
R92	⚠	1-217-295-11	WIREWOUND	5.6	10%	5W	F
R93		1-215-886-11	METAL OXIDE	100	5%	2W	F
R94		1-205-538-00	WIREWOUND	4.7	10%	10W	
R95		1-215-904-11	METAL OXIDE	100K	5%	2W	F
R96		1-215-904-11	METAL OXIDE	100K	5%	2W	F
R97		1-215-904-11	METAL OXIDE	100K	5%	2W	F
R98		1-215-904-11	METAL OXIDE	100K	5%	2W	F
R100		1-212-889-00	FUSIBLE	220	5%	1/4W	F
R101		1-249-470-11	CARBON	0.47	5%	1/2W	F
R102		1-249-470-11	CARBON	0.47	5%	1/2W	F
R103		1-249-470-11	CARBON	0.47	5%	1/2W	F
R104		1-249-377-11	CARBON	0.47	5%	1/4W	F
R105		1-249-386-11	CARBON	2.7	5%	1/4W	F

<VARIABLE RESISTOR>

RV1		1-237-514-21	RES, ADJ, CERMET 500
RV2		1-237-515-21	RES, ADJ, CERMET 1K

<RELAY>

RY1	⚠	1-515-805-11	RELAY, POWER

<TRANSFORMER>

T1	⚠	1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)
T2	⚠	1-447-106-11	TRANSFORMER, DRIVE
T3	⚠	1-421-624-12	TRANSFORMER, CURRENT
T4	⚠	1-447-426-12	TRANSFORMER, CONVERTER
T5	⚠	1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)
T6	⚠	1-447-106-11	TRANSFORMER, DRIVE
T7	⚠	1-421-624-12	TRANSFORMER, CURRENT

<THERMISTOR>

TH1	⚠	1-809-531-11	THERMISTOR, POWER
THP1	⚠	1-806-387-12	THERMISTOR (POSITIVE)
THP2	⚠	1-800-686-33	THERMISTOR (POSITIVE)

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*1-627-679-11 GB BOARD
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<CAPACITOR>

C1	1-124-903-11	ELECT	1MF	20%	50V
C2	1-124-903-11	ELECT	1MF	20%	50V

<DIODE>

D1	8-719-911-19	DIODE 1SS119
D2	8-719-110-08	DIODE RD8.2ESB2
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-911-19	DIODE 1SS119
D6	8-719-110-08	DIODE RD8.2ESB2
D7	8-719-812-41	DIODE TLR124
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119
D10	8-719-812-41	DIODE TLR124
D11	8-719-110-08	DIODE RD8.2ESB2
D12	8-719-911-19	DIODE 1SS119
D13	8-719-911-19	DIODE 1SS119
D14	8-719-911-19	DIODE 1SS119
D15	8-719-911-19	DIODE 1SS119
D16	8-719-911-19	DIODE 1SS119
D17	8-719-110-08	DIODE RD8.2ESB2
D18	8-719-911-19	DIODE 1SS119
D19	8-719-911-19	DIODE 1SS119

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<CONNECTOR>				
GA1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P				
		<TRANSISTOR>				
Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q3	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q5	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q6	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q7	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q9	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<RESISTOR>				
R1	1-249-427-11	CARBON	6.8K	5%	1/4W	
R2	1-249-428-11	CARBON	8.2K	5%	1/4W	
R3	1-249-429-11	CARBON	10K	5%	1/4W	
R4	1-249-427-11	CARBON	6.8K	5%	1/4W	
R5	1-249-420-11	CARBON	1.8K	5%	1/4W	
R6	1-249-427-11	CARBON	6.8K	5%	1/4W	
R7	1-249-420-11	CARBON	1.8K	5%	1/4W	
R8	1-249-429-11	CARBON	10K	5%	1/4W	
R9	1-249-427-11	CARBON	6.8K	5%	1/4W	
R10	1-249-428-11	CARBON	8.2K	5%	1/4W	
R11	1-249-424-11	CARBON	3.9K	5%	1/4W	
R12	1-249-421-11	CARBON	2.2K	5%	1/4W	
R13	1-249-425-11	CARBON	4.7K	5%	1/4W	
R14	1-249-421-11	CARBON	2.2K	5%	1/4W	
R15	1-249-424-11	CARBON	3.9K	5%	1/4W	
R16	1-249-421-11	CARBON	2.2K	5%	1/4W	
R17	1-249-425-11	CARBON	4.7K	5%	1/4W	
R18	1-249-421-11	CARBON	2.2K	5%	1/4W	
R19	1-249-429-11	CARBON	10K	5%	1/4W	
R20	1-249-429-11	CARBON	10K	5%	1/4W	
R21	1-249-429-11	CARBON	10K	5%	1/4W	
R22	1-249-423-11	CARBON	3.3K	5%	1/4W	
R23	1-249-423-11	CARBON	3.3K	5%	1/4W	
R24	1-249-429-11	CARBON	10K	5%	1/4W	
R25	1-249-429-11	CARBON	10K	5%	1/4W	
**********						
	*1-617-885-11	GC BOARD				
		********				
		<CAPACITOR>				
C1	1-124-916-11	ELECT	22MF	20%	25V	
C2	1-124-916-11	ELECT	22MF	20%	25V	
C3	1-124-916-11	ELECT	22MF	20%	25V	
C4	1-124-916-11	ELECT	22MF	20%	25V	
C5	1-124-916-11	ELECT	22MF	20%	25V	
C6	1-124-916-11	ELECT	22MF	20%	25V	
C7	1-124-916-11	ELECT	22MF	20%	25V	
C8	1-124-916-11	ELECT	22MF	20%	25V	
C9	1-124-916-11	ELECT	22MF	20%	25V	
C12	1-101-004-00	CERAMIC	0.01MF		50V	
C14	1-101-004-00	CERAMIC	0.01MF		50V	
C16	1-101-004-00	CERAMIC	0.01MF		50V	
C17	1-101-004-00	CERAMIC	0.01MF		50V	
C18	1-101-004-00	CERAMIC	0.01MF		50V	

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<CONNECTOR>				
GC1	*1-566-044-11	PIN, CONNECTOR 5P				
GC2	*1-566-057-11	PIN, CONNECTOR 5P				
GC3	*1-566-044-11	PIN, CONNECTOR 5P				
		<IC>				
IC1	8-759-012-71	IC MC7912CT				
IC2	8-759-012-71	IC MC7912CT				
IC3	8-759-146-55	IC μPC2412HF				
IC4	8-759-146-55	IC μPC2412HF				
**********						
	*1-631-683-11	HA BOARD				
		********				
		<CONNECTOR>				
HA301	*1-566-055-11	PIN, CONNECTOR 3P				
HA302	*1-566-056-11	PIN, CONNECTOR 4P				
HA303	*1-566-064-11	PIN, CONNECTOR 12P				
HA304	*1-566-054-11	PIN, CONNECTOR 2P				
		<RESISTOR>				
R301	1-247-814-11	CARBON	200	5%	1/4W	
R302	1-215-469-00	METAL	100K	1%	1/4W	
		<VARIABLE RESISTOR>				
RV301	1-237-519-21	RES, ADJ, CERMET 20K				
		<SWITCH>				
S301	1-570-565-11	SWITCH, PUSH (10 KEY)				
**********						
	*1-627-682-11	HH BOARD				
		********				
	*1-566-614-11	PLUG (L TYPE) 3P				
		<VARIABLE RESISTOR>				
RV1	1-238-332-11	RES, VAR, CARBON 20K				
RV2	1-238-332-11	RES, VAR, CARBON 20K				
RV3	1-238-332-11	RES, VAR, CARBON 20K				
RV4	1-238-332-11	RES, VAR, CARBON 20K				
**********						
	*1-647-257-11	HW BOARD				
		********				
	7-682-547-09	SCREW +BVTT 3X6 (S)				
		<HOLDER>				
D1	*4-026-910-00	HOLDER, LED				
D2	*4-026-910-00	HOLDER, LED				
		<DIODE>				
D101	8-719-812-42	DIODE TLY124				
D102	8-719-812-41	DIODE TLR124				

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<RESISTOR>	
R101	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
		<SWITCH>	
S101	1-570-566-11	SWITCH, PUSH (4 KEY)	
		**********	
	*1-647-258-11	HX BOARD	
		********	
		<SWITCH>	
S1	1-692-470-11	SWITCH, PUSH (4 KEY)	
		**********	
	A-1371-895-A	HY BOARD, COMPLETE	
		**********	
		<CAPACITOR>	
C1	1-124-584-00	ELECT 100MF 20% 10V	
C2	1-124-584-00	ELECT 100MF 20% 10V	
C3	1-124-584-00	ELECT 100MF 20% 10V	
C4	1-163-031-11	CERAMIC CHIP 0.01MF 50V	
C5	1-163-031-11	CERAMIC CHIP 0.01MF 50V	
C6	1-163-031-11	CERAMIC CHIP 0.01MF 50V	
		<DIODE>	
D1	8-719-404-46	DIODE MA110	
D2	8-719-404-46	DIODE MA110	
D3	8-719-404-46	DIODE MA110	
D4	8-719-404-46	DIODE MA110	
D5	8-719-404-46	DIODE MA110	
D6	8-719-404-46	DIODE MA110	
D7	8-719-404-46	DIODE MA110	
D8	8-719-404-46	DIODE MA110	
D9	8-719-404-46	DIODE MA110	
D10	8-719-404-46	DIODE MA110	
D11	8-719-404-46	DIODE MA110	
D12	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D12	
D13	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D13	
D14	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D14	
D15	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D15	
D16	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D16	
D17	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D17	
D18	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D18	
D19	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D19	
D20	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D20	
D21	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D21	
D23	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D23	
D24	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D24	
D25	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D25	
D26	8-719-404-46	DIODE MA110	
D27	8-719-404-46	DIODE MA110	
D28	8-719-404-46	DIODE MA110	
D29	8-719-404-46	DIODE MA110	
D30	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D30	
D31	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D31	
D32	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D32	
D33	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D33	
D34	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D34	
D35	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D35	
D36	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D36	
D37	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D37	
D38	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D38	
D39	8-719-404-46	DIODE MA110	
D40	8-719-404-46	DIODE MA110	
D41	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D41	
D42	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D42	
D43	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D43	
D44	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D44	
D45	8-719-404-46	DIODE MA110	
D46	8-719-404-46	DIODE MA110	
D47	8-719-404-46	DIODE MA110	
D48	8-719-404-46	DIODE MA110	
D49	8-719-404-46	DIODE MA110	
D50	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D50	
D51	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D51	
D52	8-719-404-46	DIODE MA110	
D53	8-719-404-46	DIODE MA110	
D54	8-719-404-46	DIODE MA110	
D55	8-719-404-46	DIODE MA110	
D56	8-719-404-46	DIODE MA110	
D57	8-719-404-46	DIODE MA110	
D58	8-719-404-46	DIODE MA110	
D59	8-719-404-46	DIODE MA110	
D60	8-719-404-46	DIODE MA110	
D61	8-719-404-46	DIODE MA110	
D62	8-719-404-46	DIODE MA110	
D63	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D63	
D64	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D64	
D65	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D65	

REF.NO.	PART NO.	DESCRIPTION	REMARK
D66	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D66	
D67	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D67	
D68	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D68	
D69	8-719-812-42	DIODE TLY124	
	*4-374-937-01	HOLDER, LED; D69	
		<CONNECTOR>	
HY1	*1-566-045-11	PIN, CONNECTOR 6P	
HY2	*1-566-047-11	PIN, CONNECTOR 8P	
HY3	*1-566-052-11	PIN, CONNECTOR 13P	
HY4	*1-566-047-11	PIN, CONNECTOR 8P	
		<IC>	
IC1	8-757-991-00	IC CX-7991	
IC2	8-757-991-00	IC CX-7991	
IC3	8-757-991-00	IC CX-7991	
		<TRANSISTOR>	
Q1	8-729-422-29	TRANSISTOR 2SD601A-S	
		<RESISTOR>	
JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR4	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
JR5	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR6	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR7	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR8	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR9	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR10	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR11	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR12	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR13	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR14	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR15	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR16	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR17	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR18	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR19	1-216-295-00	METAL GLASE 0 5% 1/10W	
R1	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R2	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R3	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R4	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R5	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R6	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R7	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R8	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R9	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R10	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R11	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R12	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R13	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R14	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R15	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R16	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R17	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R18	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R19	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R20	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R21	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R22	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R23	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R24	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R25	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R26	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R27	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R28	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R29	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R30	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R31	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R32	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R33	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R34	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R35	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R36	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R37	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R38	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R39	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R40	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R41	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R42	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R43	1-216-043-00	METAL GLAZE 560 5% 1/10W	
		<SWITCH>	
S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S3	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S4	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S5	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S6	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S7	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S8	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S9	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S10	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S11	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S12	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S13	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S14	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S15	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S16	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S17	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S19	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S20	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S21	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S22	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S23	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S24	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S25	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S26	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S27	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S28	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S29	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S30	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S31	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
S32	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	

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REF.NO.	PART NO.	DESCRIPTION		REMARK
	A-1375-121-A	HZ BOARD, COMPLETE **********		
		<CAPACITOR>		
C1	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C2	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C3	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C4	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C5	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C6	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C7	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C8	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C9	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C10	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C11	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C12	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C13	1-163-227-11	CERAMIC CHIP 10PF	0.5PF	50V
C14	1-163-239-11	CERAMIC CHIP 33PF	5%	50V
C15	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C16	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C17	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C18	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C19	1-124-779-00	ELECT CHIP 10MF	20%	16V
C21	1-126-769-21	ELECT CHIP 100MF	20%	14V
C22	1-126-769-21	ELECT CHIP 100MF	20%	14V
C23	1-126-204-11	ELECT CHIP 47MF	20%	16V
C24	1-126-204-11	ELECT CHIP 47MF	20%	16V
C25	1-126-769-21	ELECT CHIP 100MF	20%	14V
C26	1-126-769-21	ELECT CHIP 100MF	20%	14V
C41	1-126-769-21	ELECT CHIP 100MF	20%	14V
C42	1-126-769-21	ELECT CHIP 100MF	20%	14V
C43	1-126-204-11	ELECT CHIP 47MF	20%	16V
C44	1-126-204-11	ELECT CHIP 47MF	20%	16V
C45	1-126-204-11	ELECT CHIP 47MF	20%	16V
C46	1-126-769-21	ELECT CHIP 100MF	20%	14V
C47	1-126-769-21	ELECT CHIP 100MF	20%	14V
C61	1-126-769-21	ELECT CHIP 100MF	20%	14V
C63	1-126-769-21	ELECT CHIP 100MF	20%	14V
C64	1-126-769-21	ELECT CHIP 100MF	20%	14V
C65	1-126-769-21	ELECT CHIP 100MF	20%	14V
C66	1-126-769-21	ELECT CHIP 100MF	20%	14V
C67	1-126-769-21	ELECT CHIP 100MF	20%	14V
C68	1-126-769-21	ELECT CHIP 100MF	20%	14V
C69	1-126-769-21	ELECT CHIP 100MF	20%	14V
C70	1-126-769-21	ELECT CHIP 100MF	20%	14V
C71	1-126-769-21	ELECT CHIP 100MF	20%	14V
C81	1-126-769-21	ELECT CHIP 100MF	20%	14V
C91	1-126-769-21	ELECT CHIP 100MF	20%	14V
C92	1-126-769-21	ELECT CHIP 100MF	20%	14V
C102	1-126-769-21	ELECT CHIP 100MF	20%	14V
C111	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C112	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C121	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C122	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C123	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C124	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C125	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C126	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C127	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C128	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C129	1-136-161-00	FILM 0.047MF	5%	50V
C141	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C142	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C143	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C144	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C145	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C146	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C147	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C148	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C149	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C150	1-136-161-00	FILM 0.047MF	5%	50V
C161	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C162	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C163	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C164	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C165	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C166	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C167	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C168	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C169	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C170	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C171	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C172	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C173	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C174	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C175	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C176	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C177	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C178	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C179	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C180	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C181	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C182	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C183	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C191	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C192	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C201	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C202	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C203	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C204	1-163-031-11	CERAMIC CHIP 0.01MF		50V
		<DIODE>		
D1	8-719-109-88	DIODE RD5.6ESB1		
D2	8-719-109-88	DIODE RD5.6ESB1		
D3	8-719-109-88	DIODE RD5.6ESB1		
D4	8-719-109-88	DIODE RD5.6ESB1		
D5	8-719-109-88	DIODE RD5.6ESB1		
D6	8-719-109-88	DIODE RD5.6ESB1		
D7	8-719-109-88	DIODE RD5.6ESB1		
D8	8-719-109-88	DIODE RD5.6ESB1		
D9	8-719-109-88	DIODE RD5.6ESB1		
D10	8-719-109-88	DIODE RD5.6ESB1		
D11	8-719-109-88	DIODE RD5.6ESB1		
D12	8-719-109-88	DIODE RD5.6ESB1		
D13	8-719-109-88	DIODE RD5.6ESB1		
D14	8-719-109-88	DIODE RD5.6ESB1		
D15	8-719-109-88	DIODE RD5.6ESB1		
D16	8-719-106-88	DIODE RD15M-B1		
D17	8-719-104-34	DIODE 1S2836		
D18	8-719-801-78	DIODE 1SS184		
D19	8-719-801-78	DIODE 1SS184		
D21	8-719-106-23	DIODE RD7.5M-B2		
D22	8-719-106-23	DIODE RD7.5M-B2		
		<CONNECTOR>		
HZ1	*1-566-064-11	PIN, CONNECTOR 12P		
HZ2	*1-566-062-11	PIN, CONNECTOR 10P		
HZ3	*1-566-060-11	PIN, CONNECTOR 8P		

REF.NO.	PART NO.	DESCRIPTION	REMARK
HZ4	*1-566-064-11	PIN, CONNECTOR 12P	
HZ5	*1-566-058-11	PIN, CONNECTOR 6P	
HZ6	*1-566-064-11	PIN, CONNECTOR 12P	
HZ7	*1-566-064-11	PIN, CONNECTOR 12P	
HZ8	*1-566-064-11	PIN, CONNECTOR 12P	
HZ9	*1-566-058-11	PIN, CONNECTOR 6P	
HZ10	*1-566-062-11	PIN, CONNECTOR 10P	
HZ11	*1-566-062-11	PIN, CONNECTOR 10P	
HZ12	*1-566-065-11	PIN, CONNECTOR 13P	
		<IC>	
IC1	8-759-939-25	IC SN75176BP	
IC2	8-759-939-25	IC SN75176BP	
IC3	8-759-164-54	IC X25040	
IC4	8-759-995-76	IC PST529C	
IC5	8-759-981-48	IC TL082M	
IC6	8-759-112-72	IC UPD6142G-101	
IC7	8-759-239-88	IC TC74HCT02AF	
IC8	8-759-240-03	IC TC74HCT32AF	
IC9	8-759-233-66	IC TC74HCT04AF	
IC10	8-759-981-48	IC TL082M	
IC11	8-759-240-65	IC TC74HCT139AF	
IC12	8-759-009-05	IC MC14051BF	
IC13	8-759-938-68	IC CXD1095Q	
IC14	8-759-981-48	IC TL082M	
IC15	8-759-238-69	IC TC74HC299AF-TP1	
IC16	8-759-009-05	IC MC14051BF	
IC17	8-759-239-88	IC TC74HCT02AF	
IC18	8-759-981-48	IC TL082M	
IC19	8-759-981-48	IC TL082M	
IC20	8-759-518-73	IC DAC8043GP	
IC21	8-759-518-76	IC REF02EZ	
IC22	8-759-981-48	IC TL082M	
IC23	8-759-981-48	IC TL082M	
IC24	8-759-255-38	IC HD6475368-BVM1.20	
		<IC SOCKET>	
ICS3	1-526-652-21	SOCKET, IC (DP) 8P	
ICS24	1-540-069-11	SOCKET, IC (IC113) 84P	
		<COIL>	
L1	1-408-409-00	INDUCTOR 10UH	
L2	1-408-409-00	INDUCTOR 10UH	
L3	1-410-210-21	INDUCTOR CHIP 33UH	
L4	1-408-409-00	INDUCTOR 10UH	
		<TRANSISTOR>	
Q2	8-729-901-01	TRANSISTOR DTC144EK	
Q3	8-729-901-01	TRANSISTOR DTC144EK	
Q4	8-729-901-01	TRANSISTOR DTC144EK	
Q5	8-729-901-01	TRANSISTOR DTC144EK	
Q6	8-729-901-01	TRANSISTOR DTC144EK	
Q7	8-729-901-01	TRANSISTOR DTC144EK	
Q8	8-729-901-01	TRANSISTOR DTC144EK	
Q9	8-729-901-01	TRANSISTOR DTC144EK	
Q10	8-729-901-01	TRANSISTOR DTC144EK	
Q11	8-729-901-01	TRANSISTOR DTC144EK	
Q12	8-729-901-01	TRANSISTOR DTC144EK	
Q13	8-729-901-01	TRANSISTOR DTC144EK	
Q14	8-729-901-01	TRANSISTOR DTC144EK	
Q15	8-729-901-01	TRANSISTOR DTC144EK	
Q16	8-729-901-01	TRANSISTOR DTC144EK	
Q17	8-729-901-01	TRANSISTOR DTC144EK	
Q18	8-729-901-01	TRANSISTOR DTC144EK	
Q19	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q20	8-729-901-01	TRANSISTOR DTC144EK	
Q21	8-729-901-01	TRANSISTOR DTC144EK	
Q22	8-729-901-01	TRANSISTOR DTC144EK	
Q23	8-729-901-01	TRANSISTOR DTC144EK	
Q24	8-729-901-01	TRANSISTOR DTC144EK	
Q25	8-729-901-01	TRANSISTOR DTC144EK	
Q26	8-729-901-01	TRANSISTOR DTC144EK	
Q27	8-729-901-01	TRANSISTOR DTC144EK	
Q28	8-729-901-06	TRANSISTOR DTA144EK	
Q29	8-729-901-01	TRANSISTOR DTC144EK	
Q30	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q900	8-729-101-11	TRANSISTOR 2SC2351-R2R3	
Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q902	8-729-901-01	TRANSISTOR DTC144EK	
Q903	8-729-901-01	TRANSISTOR DTC144EK	
		<RESISTOR>	
JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR4	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR5	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R1	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R2	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R3	1-249-417-11	CARBON 1K 5% 1/4W	
R4	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R5	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R6	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R7	1-249-417-11	CARBON 1K 5% 1/4W	
R8	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R9	1-249-417-11	CARBON 1K 5% 1/4W	
R10	1-216-620-11	METAL CHIP 51 0.50% 1/10W	
R11	1-216-080-00	METAL GLAZE 20K 5% 1/10W	
R12	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R13	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R14	1-249-417-11	CARBON 1K 5% 1/4W	
R15	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R16	1-249-417-11	CARBON 1K 5% 1/4W	
R17	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R18	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R19	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R20	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R21	1-249-417-11	CARBON 1K 5% 1/4W	
R22	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R23	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R24	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R25	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R26	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R27	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R28	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R29	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R30	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R31	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R32	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R33	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R34	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R35	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R36	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

HZ | P | QA

REF.NO.	PART NO.	DESCRIPTION				REMARK
R37	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R38	1-249-417-11	CARBON	1K	5%	1/4W	
R39	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R40	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R41	1-249-417-11	CARBON	1K	5%	1/4W	
R42	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R43	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R44	1-249-417-11	CARBON	1K	5%	1/4W	
R45	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R46	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R47	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R48	1-249-417-11	CARBON	1K	5%	1/4W	
R49	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R50	1-249-417-11	CARBON	1K	5%	1/4W	
R51	1-249-417-11	CARBON	1K	5%	1/4W	
R52	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R53	1-249-417-11	CARBON	1K	5%	1/4W	
R54	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R55	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R56	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R57	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R58	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R59	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R60	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R61	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R62	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R63	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R64	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R65	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R66	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R67	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R68	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R69	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R70	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R71	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R73	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R74	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R75	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R76	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R77	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R78	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R79	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R80	1-216-088-00	METAL GLAZE	43K	5%	1/10W	
R81	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R82	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R83	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R84	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R85	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R86	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R87	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R88	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R89	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R90	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R91	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R92	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R93	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R94	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R95	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R100	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R101	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R102	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R103	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R104	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R105	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R106	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R107	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R111	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R112	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R181	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R191	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R208	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R209	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
		<SWITCH>				
S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)				
S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)				
		<CRYSTAL>				
X1	1-577-121-11	VIBRATOR, CRYSTAL				
**********						
*1-631-678-11		P BOARD				
		*******				
⚠1-439-382-21		TRANSFORMER ASSY, FLYBACK				
		<COIL>				
L11	1-459-215-00	COIL (WITH CORE)				
**********						
*1-617-895-11		QA BOARD				
		********				
		<CAPACITOR>				
C1	1-108-692-11	MYLAR	0.01MF	10%	200V	
C2	1-126-235-11	ELECT	100MF	20%	16V	
C3	1-101-004-00	CERAMIC	0.01MF		50V	
C4	1-108-692-11	MYLAR	0.01MF	10%	200V	
C5	1-126-235-11	ELECT	100MF	20%	16V	
C6	1-101-004-00	CERAMIC	0.01MF		50V	
C7	1-108-692-11	MYLAR	0.01MF	10%	200V	
C8	1-126-235-11	ELECT	100MF	20%	16V	
C9	1-101-004-00	CERAMIC	0.01MF		50V	
C10	1-102-951-00	CERAMIC	15PF	5%	50V	
C11	1-102-951-00	CERAMIC	15PF	5%	50V	
C12	1-102-951-00	CERAMIC	15PF	5%	50V	
		<RESISTOR>				
R1	1-215-449-00	METAL	15K	1%	1/4W	
R2	1-215-449-00	METAL	15K	1%	1/4W	
R3	1-249-439-11	CARBON	68K	5%	1/4W	
		<SWITCH>				
S1	1-570-857-11	SWITCH, SLIDE				
S2	1-570-857-11	SWITCH, SLIDE				
S3	1-570-857-11	SWITCH, SLIDE				
**********						

REF.NO.	PART NO.	DESCRIPTION				REMARK
	*1-618-786-11	QB BOARD				
		********				
		<CAPACITOR>				
C1	1-108-692-11	MYLAR	0.01MF	10%	200V	
C2	1-126-235-11	ELECT	100MF	20%	16V	
C3	1-101-004-00	CERAMIC	0.01MF		50V	
C4	1-108-692-11	MYLAR	0.01MF	10%	200V	
C5	1-126-235-11	ELECT	100MF	20%	16V	
C6	1-101-004-00	CERAMIC	0.01MF		50V	
C7	1-108-692-11	MYLAR	0.01MF	10%	200V	
C8	1-126-235-11	ELECT	100MF	20%	16V	
C9	1-101-004-00	CERAMIC	0.01MF		50V	
C10	1-102-951-00	CERAMIC	15PF	5%	50V	
C11	1-102-951-00	CERAMIC	15PF	5%	50V	
C12	1-102-951-00	CERAMIC	15PF	5%	50V	
		<RESISTOR>				
R1	1-215-449-00	METAL	15K	1%	1/4W	
R2	1-215-449-00	METAL	15K	1%	1/4W	
R3	1-215-449-00	METAL	15K	1%	1/4W	
		<SWITCH>				
S1	1-570-857-11	SWITCH, SLIDE				
S2	1-570-857-11	SWITCH, SLIDE				
S3	1-570-857-11	SWITCH, SLIDE				
**********						
	*A-1390-344-A	TB BOARD, COMPLETE				
		**********				
		<CONNECTOR>				
CN1	*1-564-431-11	POST, CONNECTOR 3P				
CN2	*1-564-431-11	POST, CONNECTOR 3P				
CN11	*1-561-724-00	SOCKET, CONNECTOR 2P				
CN12	*1-561-724-00	SOCKET, CONNECTOR 2P				
		<RESISTOR>				
R100	1-249-422-11	CARBON	2.7K	5%	1/4W	
R101	1-249-413-11	CARBON	470	5%	1/4W	
		<CONNECTOR>				
TB4	*1-566-054-11	PIN, CONNECTOR 2P				
TB5	*1-566-054-11	PIN, CONNECTOR 2P				
TB6	*1-566-060-11	PIN, CONNECTOR 8P				
TB7	*1-566-054-11	PIN, CONNECTOR 2P				
TB8	*1-566-058-11	PIN, CONNECTOR 6P				
TB9	*1-566-060-11	PIN, CONNECTOR 8P				
TB10	*1-566-064-11	PIN, CONNECTOR 12P				
TB11	*1-566-055-11	PIN, CONNECTOR 3P				
TB12	*1-566-064-11	PIN, CONNECTOR 12P				
TB13	*1-566-062-11	PIN, CONNECTOR 10P				
TB14	*1-566-064-11	PIN, CONNECTOR 12P				
TB15	*1-566-060-11	PIN, CONNECTOR 8P				
TB16	*1-566-057-11	PIN, CONNECTOR 5P				
TB17	*1-566-057-11	PIN, CONNECTOR 5P				
TB18	*1-566-055-11	PIN, CONNECTOR 3P				
TB19	*1-566-056-11	PIN, CONNECTOR 4P				
TB20	*1-566-056-11	PIN, CONNECTOR 4P				
TB21	*1-566-056-11	PIN, CONNECTOR 4P				
TB22	*1-566-054-11	PIN, CONNECTOR 2P				
TB23	*1-566-054-11	PIN, CONNECTOR 2P				
TB24	*1-566-054-11	PIN, CONNECTOR 2P				
TB28	*1-566-062-11	PIN, CONNECTOR 10P				
TB29	*1-566-060-11	PIN, CONNECTOR 8P				
TB30	*1-566-054-11	PIN, CONNECTOR 2P				
TB31	*1-561-337-00	CONNECTOR, MULTI				
TB32	*1-561-337-00	CONNECTOR, MULTI				
TB33	*1-561-337-00	CONNECTOR, MULTI				
TB34	*1-561-337-00	CONNECTOR, MULTI				
TB35	*1-561-337-00	CONNECTOR, MULTI				
TB36	*1-561-337-00	CONNECTOR, MULTI				
TB37	*1-561-337-00	CONNECTOR, MULTI				
TB38	*1-561-337-00	CONNECTOR, MULTI				
TB39	*1-561-337-00	CONNECTOR, MULTI				
TB40	*1-561-337-00	CONNECTOR, MULTI				
**********						
	*1-627-677-11	V BOARD				
		*******				
	1-563-265-11	CONNECTOR, MULTIPLE 10P				
		<COMPOSITION CIRCUIT BLOCK>				
CP1	1-232-350-11	COMPOSITION CIRCUIT BLOCK				
		<RESISTOR>				
R1	1-247-807-31	CARBON	100	5%	1/4W	
R2	1-247-807-31	CARBON	100	5%	1/4W	
R3	1-247-807-31	CARBON	100	5%	1/4W	
R4	1-247-807-31	CARBON	100	5%	1/4W	
R5	1-247-807-31	CARBON	100	5%	1/4W	
R6	1-247-807-31	CARBON	100	5%	1/4W	
R7	1-247-807-31	CARBON	100	5%	1/4W	
**********						
	*1-627-678-11	W BOARD				
		*******				
		<CAPACITOR>				
C1	1-108-692-11	MYLAR	0.01MF	10%	200V	
C2	1-108-692-11	MYLAR	0.01MF	10%	200V	
		<RESISTOR>				
R1	1-214-702-00	METAL	75	1%	1/4W	
R2	1-214-702-00	METAL	75	1%	1/4W	
R3	1-214-702-00	METAL	75	1%	1/4W	
**********						
	*1-631-680-11	XB BOARD				
		********				
		<DIODE>				
D1	8-719-901-49	DIODE LT-9010H				
D2	8-719-901-49	DIODE LT-9010H				
**********						

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

Y Z

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*1-631-679-11	Y BOARD *******	
		<DIODE>	
D1	8-719-812-43	DIODE TLG124A	
	*1-627-687-11	Z BOARD *******	
	*1-561-337-21	CONNECTOR, MULTI	
		MISCELLANEOUS *************	
	⚠1-237-165-13	RESISTOR ASSY, HIGH-VOLTAGE	
	⚠1-238-301-12	RESISTOR ASSY, HIGH-VOLTAGE	
	⚠1-426-460-11	COIL, DEMAGNETIZATION	
	⚠1-451-349-22	DEFLECTION YOKE (Y20FZA)	
	⚠1-452-337-22	NECK ASSY, CRT (NA304)	
	⚠1-532-203-11	FUSE, TIME-LAG (2.0A/250V)	(BVM-2016P ONLY)
	⚠1-532-746-11	FUSE, GLASS TUBE (4.0A/125V)	(BVM-1916 ONLY)
	1-565-791-11	CONNECTOR, BNC 1P	
	⚠1-571-877-12	SWITCH, PUSH (AC POWER)	
	1-941-422-15	CONNECTOR ASSY (ROUND TYPE) 12P	
	⚠8-736-121-05	CRT (M49KGH21X)	(BVM-2016P ONLY)
	⚠8-736-123-05	CRT (M49KGH20X)	(BVM-1916 ONLY)

ACCESSORIES & PACKING MATERIALS
****

PART NO.	DESCRIPTION	REMARK
⚠1-532-203-11	FUSE, TIME-LAG (2.0A/250V)	
⚠1-532-746-11	FUSE, GLASS TUBE (4.0A/125V)	
⚠1-551-812-11	CORD, POWER (7.0A/125V)	(BVM-1916 ONLY)
1-560-776-00	SOCKET, CONNECTOR 10P	
⚠1-590-151-11	CORD SET, POWER (10.0A/250V)	(BVM-2016P ONLY)
2-990-242-01	HOLDER (B), PLUG	(BVM-1916 ONLY)
*3-170-078-01	HOLDER (B), PLUG	(BVM-2016P ONLY)
4-040-435-11	MANUAL, O&M	
*4-361-988-02	BAG, PROTECTION	(BVM-1916 ONLY)
4-378-901-01	KEY	
4-386-841-01	LABEL, TALLY NUMBER	
4-386-841-11	LABEL, TALLY NUMBER	
*4-386-858-01	CUSHION (UPPER)	
*4-386-875-01	CUSHION (FRONT LOWER)	
*4-386-876-01	CUSHION (REAR LOWER)	
*4-040-404-01	INDIVIDUAL CARTON	(BVM-2016P ONLY)
*4-391-252-01	INDIVIDUAL CARTON	(BVM-1916 ONLY)
*4-361-988-02	BAG, PROTECTION	(BVM-2016P ONLY)
7-700-731-03	DRIVER, VR ADJUSTMENT	

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