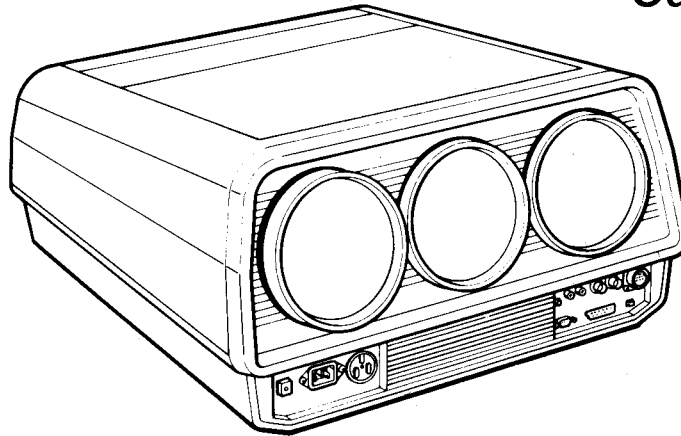


VPH-1031Q

SERVICE MANUAL

US Model
Canadian Model

Chassis No. SCC-731C-A



MULTISCAN

FEB 13 1988

SPECIFICATIONS

Optical

Projection system 3 picture tubes, 3 lenses, direct projection system
Picture tube 5.5-inch high-brightness monochrome tubes, with coolant sealed
Projection lens High-performance hybrid lenses F 1.0/130 mm
Projected picture size 67 - 250 inches measured diagonally
Factory-adjusted to 100 inches measured diagonally
Light output 300 lm

General

Color system NTSC, PAL, SECAM and NTSC4.43 systems, switched automatically
Resolution 1100 TV lines (RGB inputs)
650 TV lines (video input)
RGB inputs Character display capacity:
4050 characters at 24 kHz
(5 x 7 dots, 90 letters x 45 lines)
Graphic display capacity:
1024 x 500 dots
Horizontal frequency:
15 kHz to 36 kHz
Vertical frequency:
40 Hz to 150 Hz
Test signal Cross-hair test pattern generator is incorporated.
Speaker 8 cm (3 1/8 inches) dia., 2 units, total 3 W
Inputs

LINE

VIDEO IN: BNC connector
Composite video input,
1 Vp-p ± 2 dB, sync negative,
75 ohms terminated
AUDIO IN: phono jack
- 5 dBs (436 mVrms)
Impedance: more than
47 k ohms

Output

TO VPR-722 connector
Power requirements
Power consumption
Dimensions

Weight
Accessories supplied

RGB 1

RGB 1: D-sub 9-pin connector
Digital signal (TTL level)
See "Pin assignment".
AUDIO IN: phono jack
- 5 dBs (436 mVrms)
Impedance: more than
47 k ohms

RGB 2

RGB 2: D-sub 25-pin connector
See "Pin assignment".
VIDEO OUT: BNC connector
Composite video output,
1 Vp-p ± 2 dB, impedance
75 ohms, selected video output
With the remote controller:
video signal from the
controller
Without the remote controller:
video signal from the
VIDEO IN connector

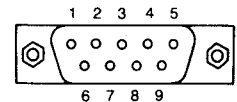
14-pin connector
See "Pin assignment".
120 V AC, 50/60 Hz
215 W max, 2.9 A max
Approx. 532 x 280 x 597 mm
(w/h/d)
(21 x 11 1/8 x 23 5/8 inches)
with the brackets pushed down,
incl. projecting parts and controls
Approx. 38 kg (83 lb 12 oz)
AC power cord (1)
Spacer for 72" projection
Spacer for 200" projection
Label of the RGB MODE SELECT
switch for the VPR-722 (1)

OPTIONAL ACCESSORIES

Remote controller VPR-722
Projector pedestal SU-722
Projector suspension support PSS-722, PSS-10
Screen VPS-100F1 (100" flat)
VPS-72HG1 (72" curved)
VPS-100HG1 (100" curved)
Carrying case VLC-1040
CCQ cables
Shielded cable SMF-0002, SMF-508

Signal assignment

RGB 1 connector
(D-sub 9-pin)



Digital signal (TTL level)

Pin No.	Signal assignment
1	Ground
2	Ground
3	Red input
4	Green input
5	Blue input
6	Intensity input
7	No connection
8	H. sync or composite sync input (positive/negative)
9	V. sync input (positive/negative)

— Continued on next page —

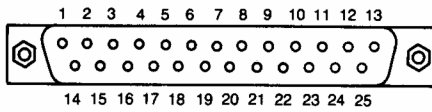
Design and specifications subject to change without notice.



COLOR VIDEO PROJECTOR
SONY

MON

RGB 2 connector (D-sub 25-pin)

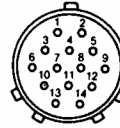


Pin No.	Signal	Signal level
1*	IBM select	High state (5V): IBM mode Low state (ground): 3 Bit normal mode
2	Audio select	High state (5 V or open): Audio input from pin 13 Low state (ground): Audio inputs from the AUDIO IN jack (LINE mode)
3	H.sync or composite sync input	Open state is selected at pin 9: Analog signal (1 Vp-p, 75 ohms terminated, Negative) Low state is selected at pin 9: Digital signal (TTL level, Positive/Negative acceptable)
4	Blue input	High state is selected at pin 9: Analog signal (0.7 Vp-p, 75 ohms terminated, Positive) Low state is selected at pin 9: Digital signal (TTL level, Positive)
5	Green input	High state is selected at pin 9: Analog signal (Green signal): 0.7 Vp-p, 75 ohms terminated, Positive/Green with sync signal: 1 Vp-p, 75 ohms terminated, Positive) Low state is selected at pin 9: Digital signal (TTL level Positive)
6	Red input	(Same as Pin 4)
7, 8	Not used	
9*	Analog/digital mode select	High state (open): Analog mode Low state (ground): Digital mode
10	RGB/VIDEO mode select	High state (5 V or open): RGB input from microcomputer Low state (ground): Composite video signal from VIDEO IN connector
11	V.sync input	Positive/Negative: Digital signal (TTL level)
12	Blanking input	High state (5 V or open): RGB inputs from a microcomputer only Low state (ground): Composite video input from VIDEO IN connector This control signal makes it possible to superimpose. You can select two switches (NORMAL/SUPER). By selecting SUPER mode, superimposition can be made.
13	Audio input	Input level - 5 dBs, input impedance more than 47 k ohms
14	Sync mode select	High state (open): Sync signal input from RGB 2 connector Low state (ground): Sync signal input from the VIDEO IN connector
15-24	Ground	
25*	Luminance signal	Digital signal (TTL level, Positive)

*Examples for microcomputer connections

Pin No.	1	9	25
Microcomputer			
SMC-70/SMC-70G	—	High state	—
IBM computer	High state	Low state	IBM luminance signal
TTL 3BIT computer	Low state	Low state	—

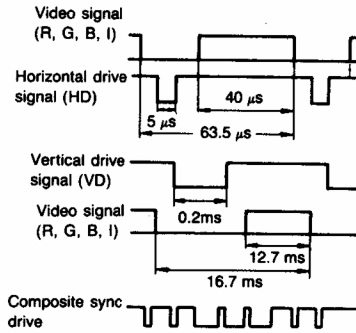
TO VPR-722 connector (14-pin)



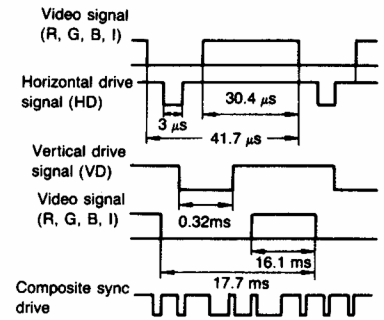
Pin No.	Signal	Pin No.	Signal
1	Ground	8	Input select
2	+28V-----60mA	9	Audio (incl. volume control)
3	Hue 1	10	Brightness
4	Hue 2	11	Sharpness
5	Hue 3	12	Color
6	Video	13	Picture
7	Ground (video)	14	Power ON: 12V OFF: 0V

Timing chart

15.75 kHz scanning frequency



24 kHz scanning frequency



Note

If the input signals are not the recommended ones, the dimensions of the character display area may change or the picture may be decentered due to the timing of the connected microcomputer. This is not a fault of the monitor.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.




This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.


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SAFETY-RELATED COMPONENT WARNING !!

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

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

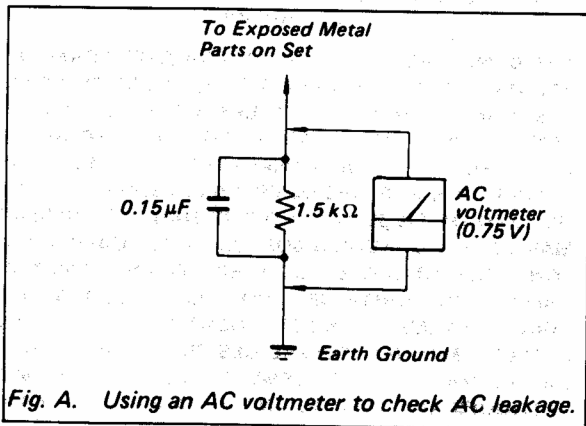
LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE  SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

SAFETY CHECK-OUT

(US Model Only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.



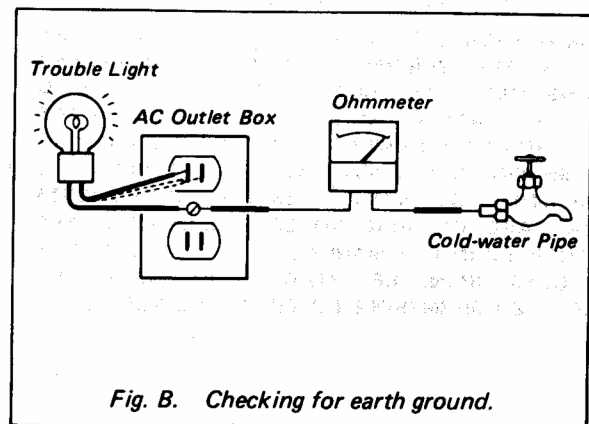
LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

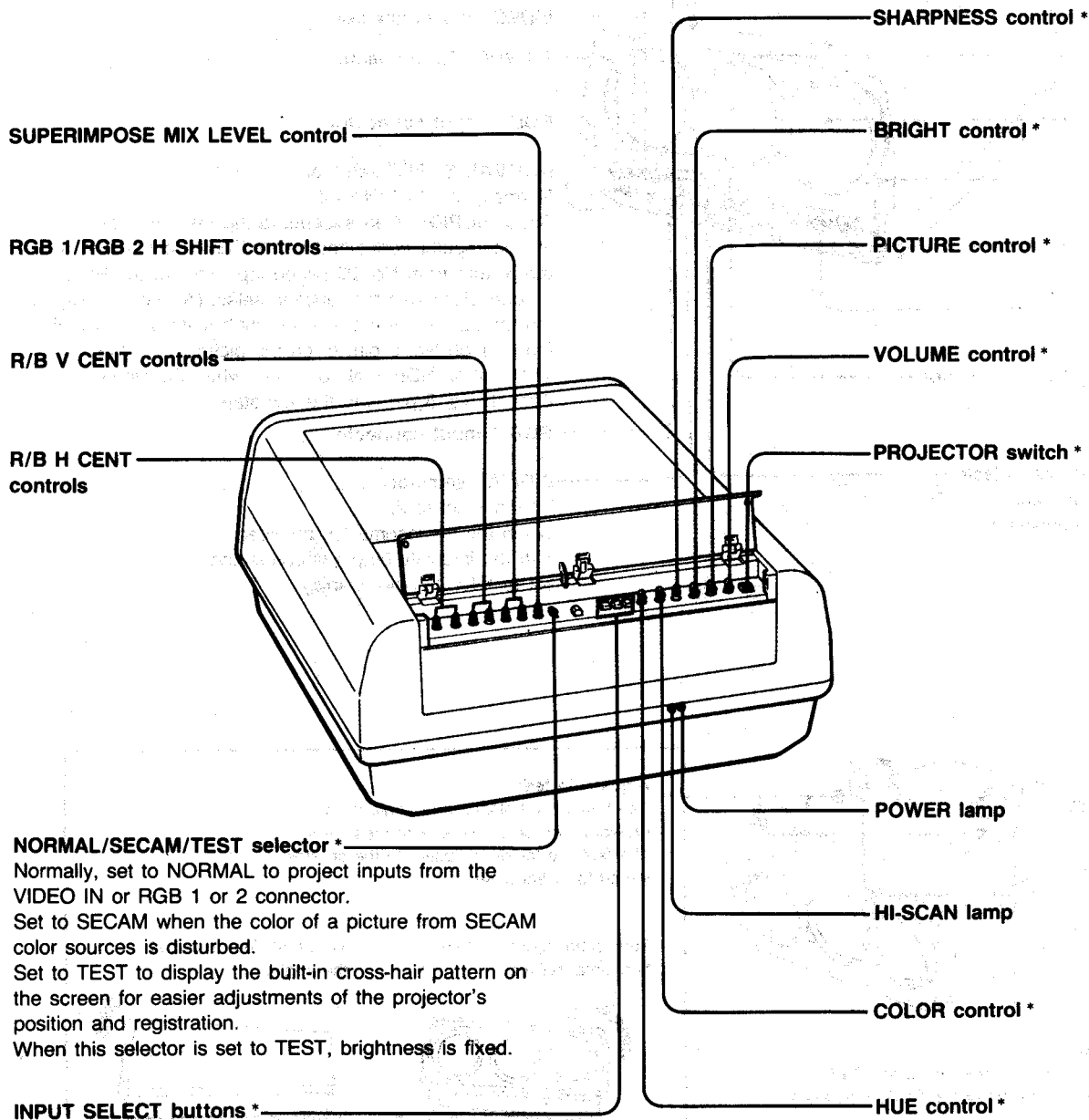
A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)



SECTION 1 GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS

Control panel

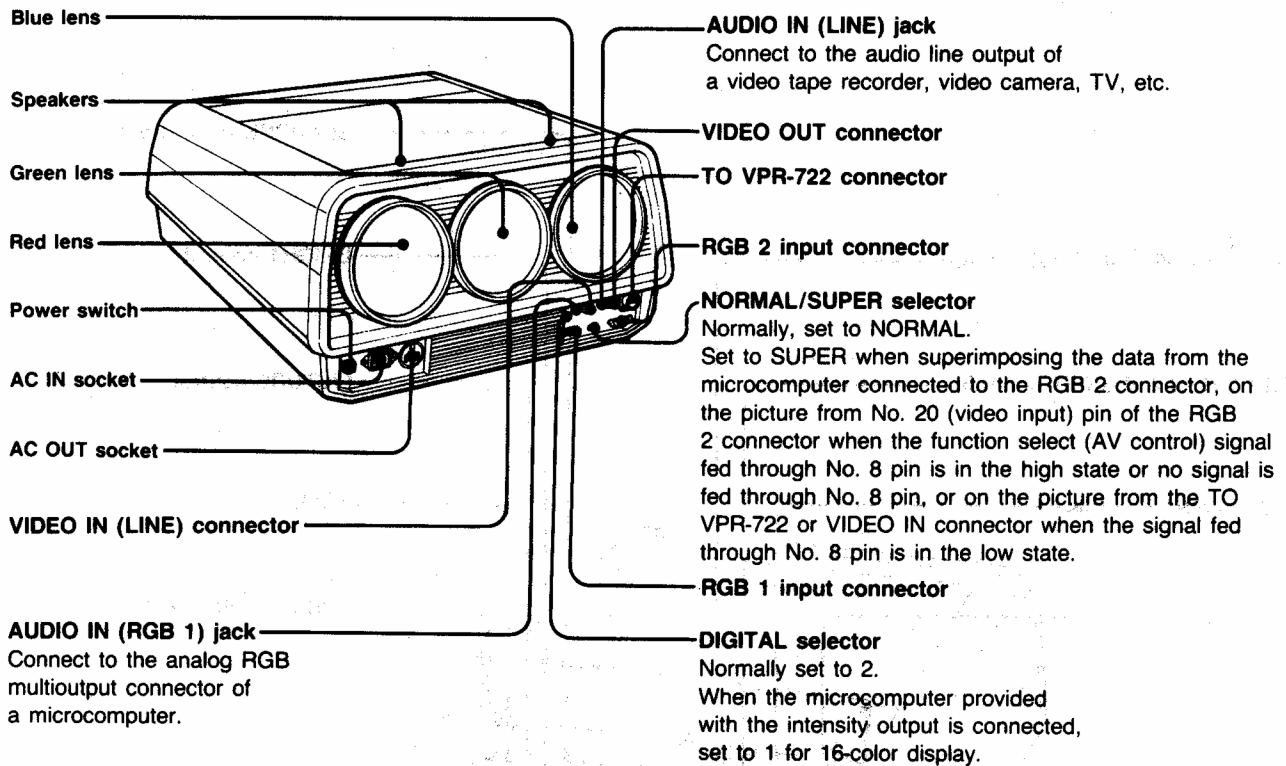


Notes

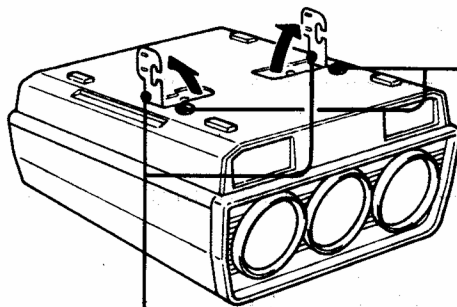
• SHARPNESS, COLOR and HUE controls do not function for RGB inputs.

• Controls and buttons with * do not function when the VPR-722 remote controller is connected to the TO VPR-722 connector. The same controls on the VPR-722 are operative.

Connector panel



Bottom



Brackets
For attaching the projector to the PSS-722 suspension support or the SU-722 pedestal.

Adjustable feet
The horizontal balance and angle of the projector can be adjusted with these feet. The feet are factory-adjusted to the shortest length for a flat base.

Turn either foot to obtain horizontal balance.

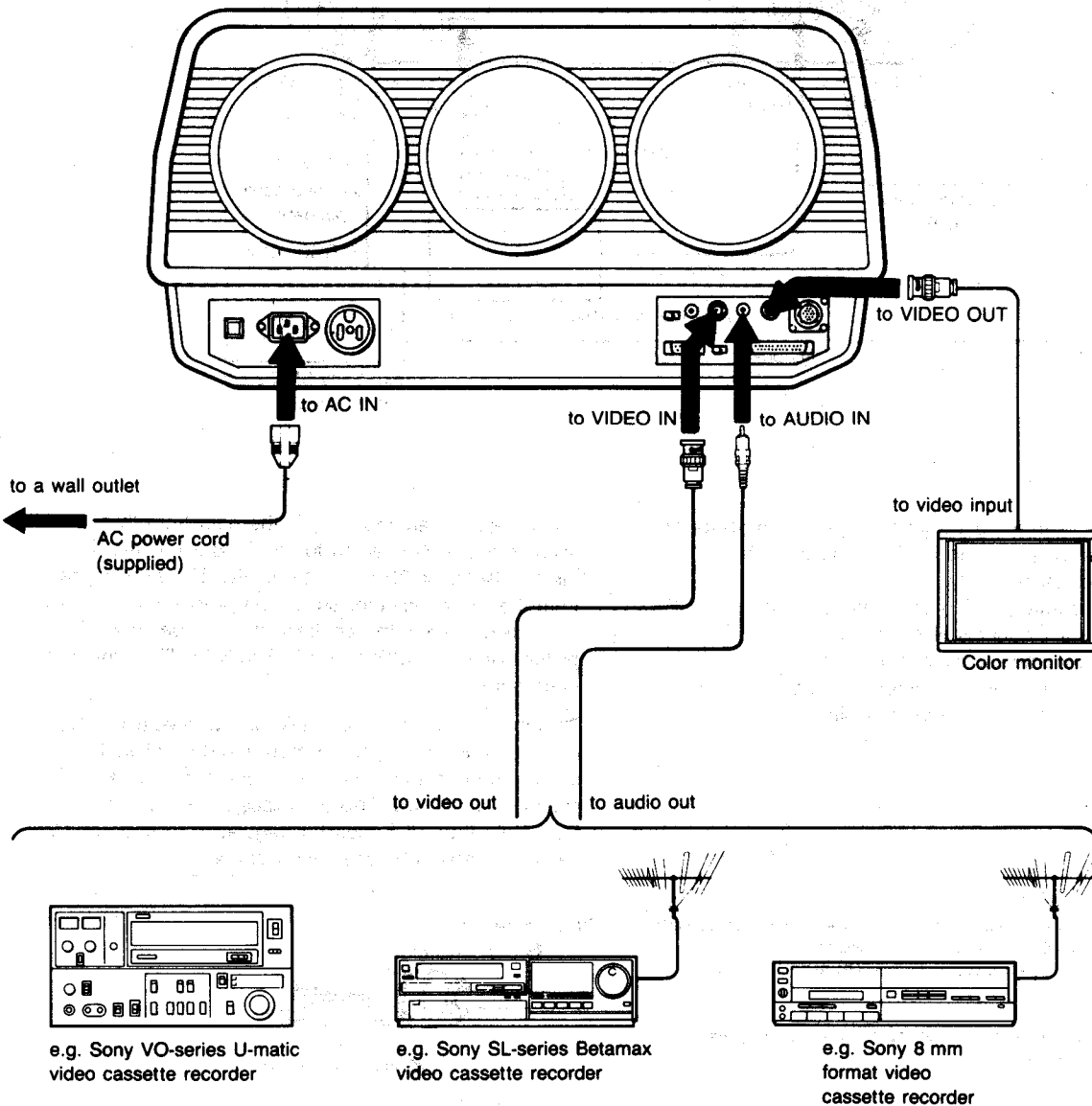
Turn both feet to adjust the angle.

1-2. SYSTEM CONNECTIONS

Connecting notes

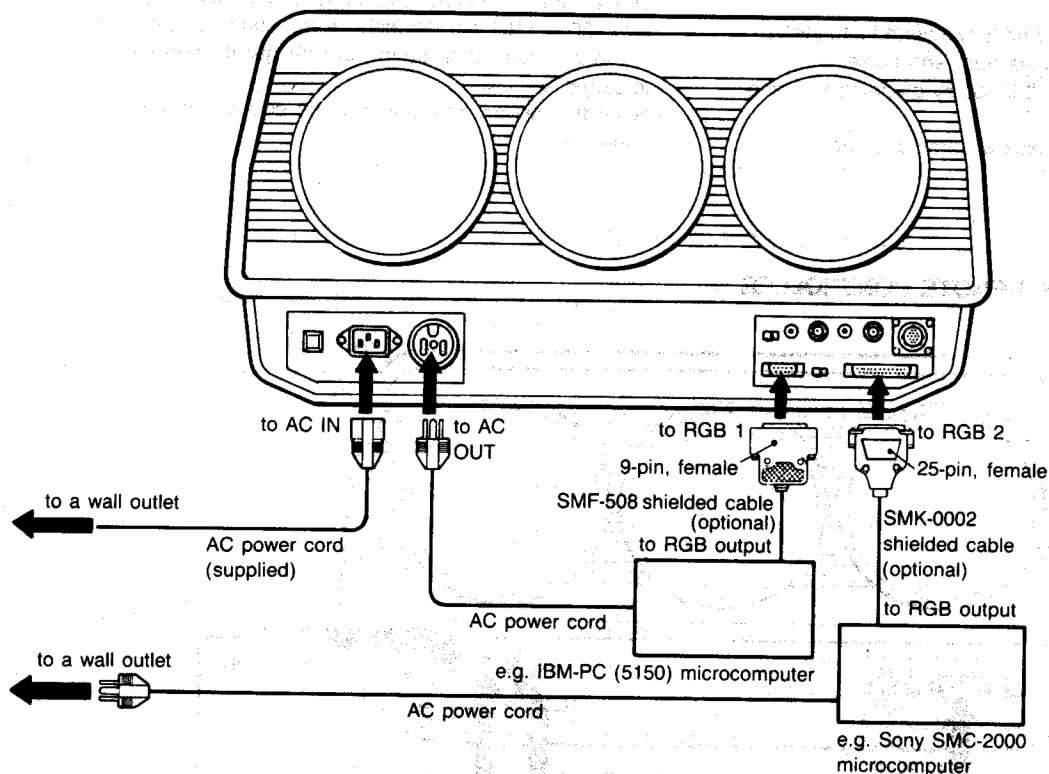
- First make sure that the power to each piece of equipment is turned off.
- The cable connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.
- To disconnect the cable, pull it out by grasping the plug. Never pull the cable itself.
- Use suitable connecting cables according to the equipment to be connected.
- For connection to the VIDEO IN and TO VPR-722 connectors, the connecting cable may be extended to max. 50 m (164 feet 1/2 inch). If the connecting cable is too long (longer than 50 m), picture quality may be impaired somewhat.
- Read the instruction manual of the equipment to be connected.

WITHOUT USING THE REMOTE CONTROLLER



To project the picture input from the VIDEO IN connector, press the LINE INPUT SELECT button.

CONNECTING A MICROCOMPUTER



- To project the picture input from the RGB 1 connector or RGB 2 connector, press the RGB 1 or RGB 2 INPUT SELECT button respectively. Adjust the horizontal position of the picture with the RGB 1/RGB 2 H SHIFT controls, if necessary.
- When the microcomputer connected to the RGB 1 connector is provided with the intensity output, set the DIGITAL selector to 1 for 16-color display.

- To perform superimposing of the data from the microcomputer connected to the RGB 2 connector, set the NORMAL/SUPER selector to SUPER. (The signal from the microcomputer should be processed for superimposition.) Adjust the contrast of the superimposed picture with the SUPERIMPOSE MIX LEVEL control, if necessary.

To avoid interference with radio or TV reception, always use the supplied AC power cord and the optional connecting cable as described in the connection configuration above. This is indispensable to comply FCC Rule Part 15 Subpart J, regulating to radio or TV reception caused by computing device.

- If your microcomputer is equipped with a composite video output, connect it to the VIDEO IN (LINE) connector on the projector.
- If necessary, connect an audio source to the RGB AUDIO IN jack.

Note

Do not leave a still picture from a microcomputer or video disc player projected for more than one hour.

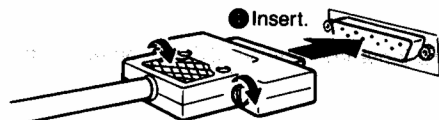
BNC connector

- Turn clockwise.



- Align and insert.

9-pin connector

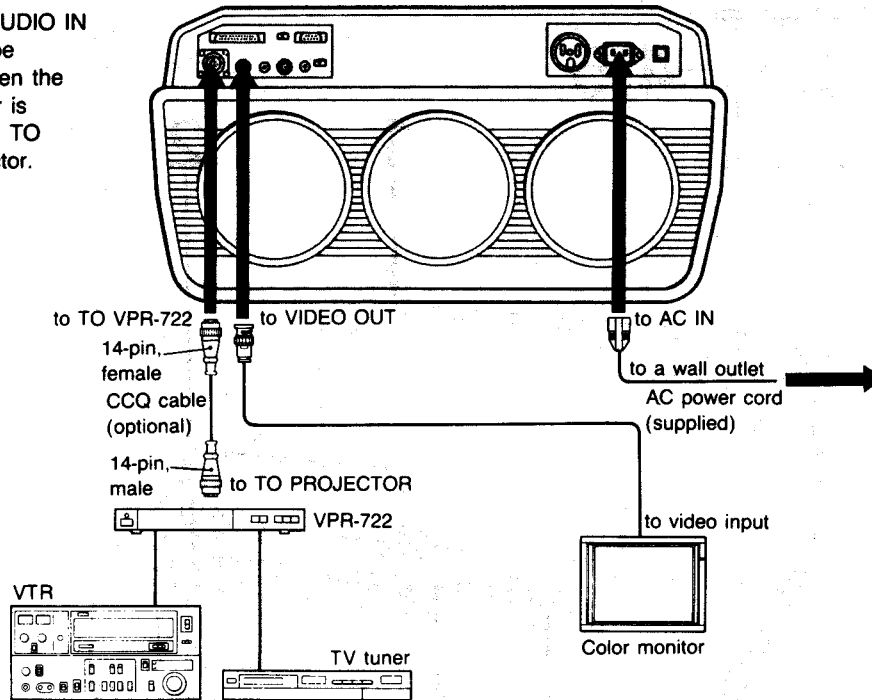


- Tighten the screws.

USING THE REMOTE CONTROLLER

Use the optional VPR-722 remote controller when the projector is installed on the ceiling or at a distance from your seat. Power ON/OFF, program selection and picture adjustments can be remotely controlled.

The VIDEO IN/AUDIO IN connectors will be disconnected when the remote controller is connected to the TO VPR-722 connector.



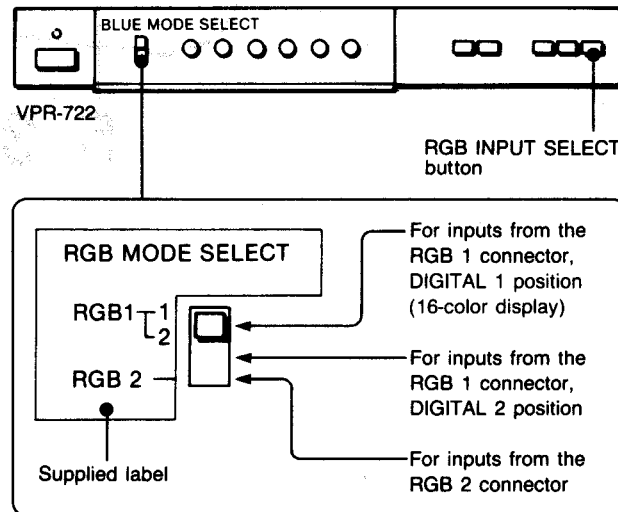
For detail on the connections, see the instruction manual of the VPR-722.

When the remote controller is connected, the PROJECTOR switch, INPUT SELECT buttons and controls for picture adjustments on this unit do not function. Keep the POWER switch on the projector ON and operate these functions with the remote controller.

Note on the BLUE MODE SELECT switch

When the VPR-722 is connected to this unit, the BLUE MODE SELECT switch on the VPR-722 functions as the RGB MODE SELECT switch. Attach the label supplied with this unit to the BLUE MODE SELECT switch.

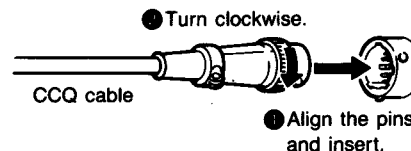
To project the signals connected to the RGB 1 or RGB 2 connector, first press the RGB INPUT SELECT button and set the RGB MODE SELECT switch as follows.



Notes

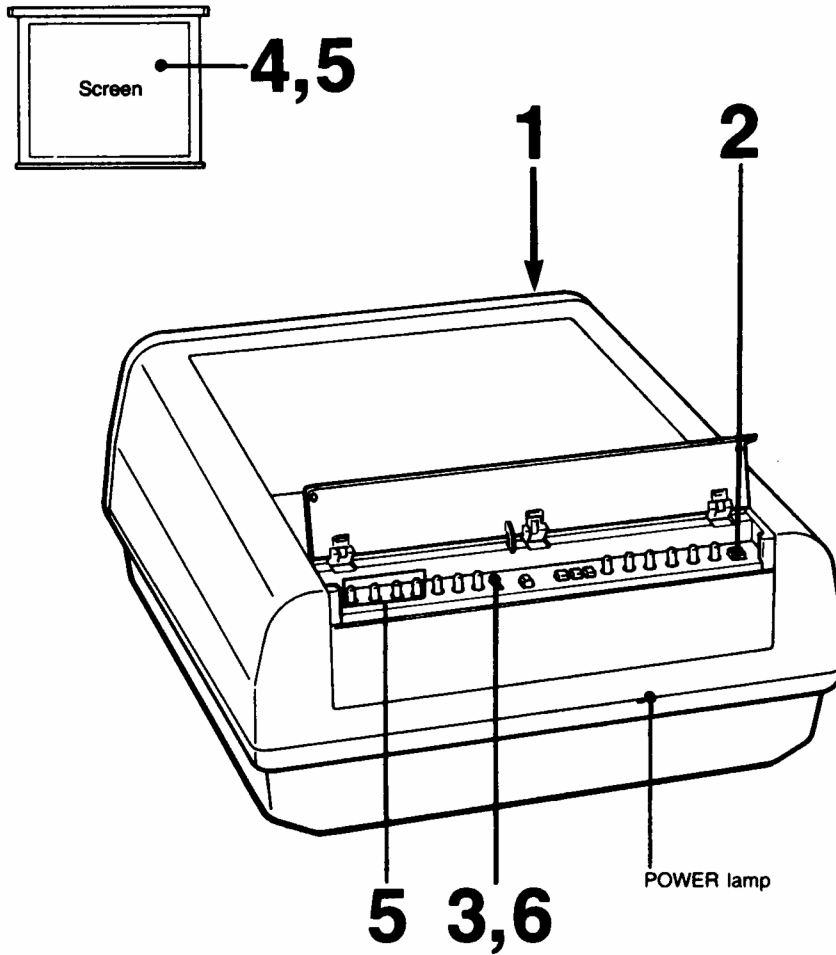
- When the remote controller is connected to the TO VPR-722 connector:
 - the VIDEO IN/AUDIO IN (LINE) connectors are disconnected automatically.
 - the PROJECTOR switch, INPUT SELECT buttons, RGB BLUE MODE SELECT switch and the controls for picture and sound adjustments (except H SHIFT and V HOLD) do not function.

14-pin connector



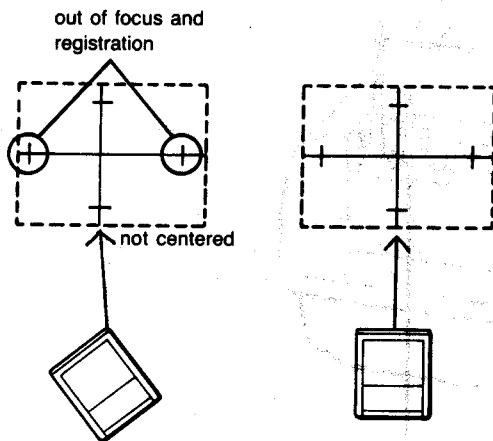
1-3. POSITION AND REGISTRATION ADJUSTMENTS

When the projector is installed on a desk or on the floor using the pedestal, it can be easily moved but it may be necessary to readjust the registration.

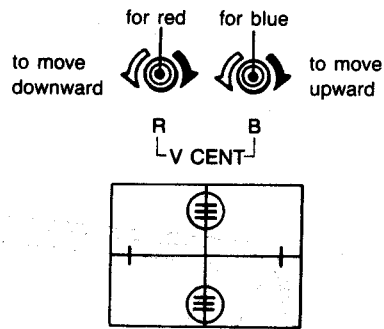


- 1 Depress the **POWER** switch (ON).
- 2 Depress the **PROJECTOR** switch (ON).
When the remote controller is used, turn the PROJECTOR switch on the remote controller on. The green POWER lamp will light.

- 3 Set the **NORMAL/SECAM/TEST** selector to **TEST**.
The built-in cross-hair pattern will be displayed.
- 4 Check the focus and centering.
If the test pattern is not centered and focused on the screen, move the projector slightly so that the pattern is displayed clearly.



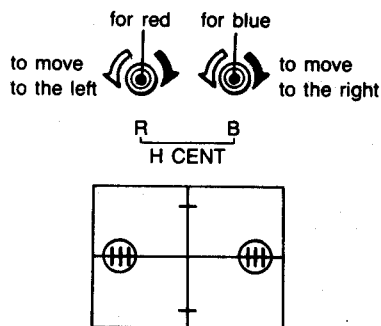
To move the red and blue horizontal lines



- 6 After the adjustment is complete, set the **NORMAL/SECAM/TEST** selector to **NORMAL**.

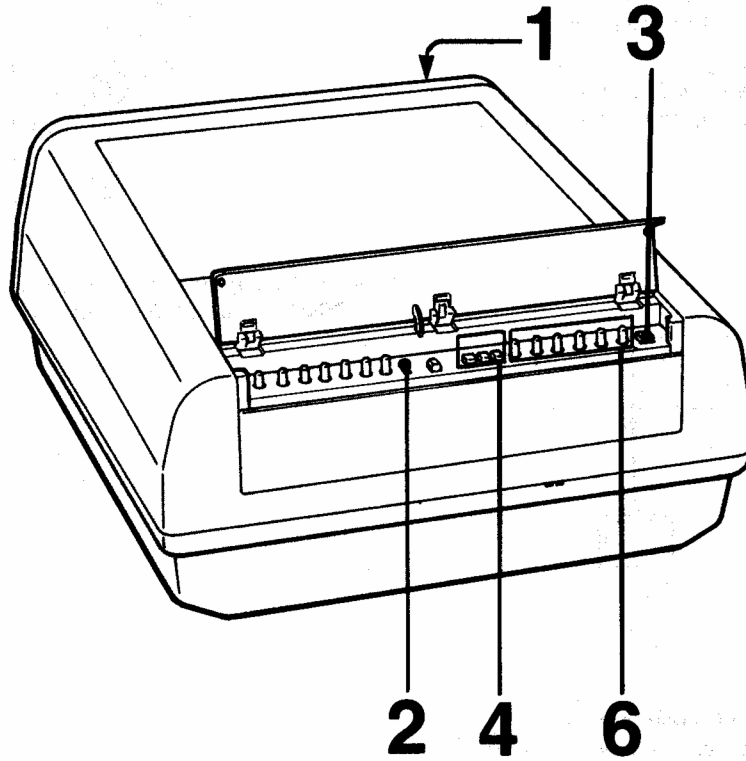
- 5 Check the convergence of red, green and blue.
If the red and blue lines do not converge with the green line, adjust the R/B H CENT and R/B V CENT controls so that the three lines converge and the pattern is seen as white.

To move the red and blue vertical lines



For the appropriate distance between the projector and the screen, see pages 15 to 19.

14. PROJECTING



OPERATION

- 1 Depress the **POWER** switch (ON).
- 2 Make sure that the **NORMAL/SECAM/TEST** selector is set to **NORMAL**.
- 3 Depress the **PROJECTOR** switch (ON).
- 4 Select the program to be projected by pressing the appropriate **INPUT SELECT** button.
- 5 Turn on the connected equipment.
The picture will be projected on the screen and the sound will be heard from the speaker.
- 6 Adjust the picture and sound to your preference.
See below.

To turn off the projector
Press the **PROJECTOR** switch again (OFF).

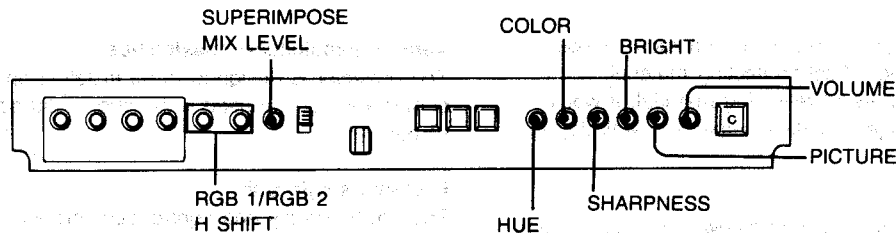
To turn off the power
Press the **POWER** switch (OFF).

OPERATION USING THE REMOTE CONTROLLER

When the optional Sony VPR-722 remote controller is connected to the TO VPR-722 connector, keep the **POWER** switch on the projector at **ON** and perform steps 3, 4 and 6 above on the controller. The controls on the projector do not function.

Note
R/B V CENT, R/B H CENT, H SHIFT and SUPERIMPOSE MIX LEVEL control adjustments cannot be operated with the controller.

PICTURE AND SOUND ADJUSTMENTS



VOLUME	Turn toward MAX to increase volume, and toward MIN to decrease it.
PICTURE	Turn clockwise to increase picture contrast, color intensity and brightness in the proper ratio, and counterclockwise to decrease them.
BRIGHT	Turn clockwise for more brightness, and counterclockwise for less.
SHARPNESS	Turn clockwise for sharp picture, and counterclockwise for soft picture.
COLOR	Turn clockwise for more color intensity, and counterclockwise for less.

HUE	(Effective only for a program of the NTSC or NTSC4.43 color system) Turn clockwise to make the skin tones greenish, and counterclockwise to make them purplish.
RGB1/RGB2 H SHIFT (horizontal shift) controls	Adjust the horizontal position of the picture input from the RGB 1 connector and RGB 2 connector, if necessary. The RGB 2 H SHIFT control does not function when the NORMAL/SUPER selector is set to SUPER.
SUPERIMPOSE MIX LEVEL control	Adjusts the contrast of the superimposed picture connected to the RGB 2 connector.

1-5. PRECAUTIONS

On safety

- Check that the operating voltage of your unit is identical with the voltage of your local power supply. If voltage adaptation is required, consult your Sony dealer or qualified personnel.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet or set the POWER switch to OFF if it is not to be used for several days.
- To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes. Be aware that room heat rises to the ceiling; check that temperature near the installation location is not excessive.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or humidity, mechanical vibration or shock.

On illumination

- To obtain a clear picture, the screen should not be exposed to illumination or sunlight directly from the front.
- Ceiling mounted spot lighting is recommended. Use a construction over light-scattering illumination such as fluorescent lamps.
- Cover the windows that face the screen with opaque draperies.
- It is desirable to install the projector in a room whose floor and walls are not of light-reflecting material. If the floor and walls are of reflecting material, it would be desirable to change to a dark carpet and wall paper.

On cleaning

- To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use strong solvents, such as thinner or benzine, or abrasive cleansers, since these will damage the cabinet.
- Avoid touching the lens. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner.

On repacking

Save the original shipping carton and packing material; they will come in handy if you ever have to ship your unit. For maximum protection, repack your unit as it was originally packed at the factory.

1-6. FEATURES

Multiscan projector

The projector accepts 15 kHz – 36 kHz horizontal scanning frequencies and 40 Hz – 150 Hz vertical scanning frequencies, and detects the frequencies automatically. In addition to VCRs, video cameras and TVs having the standard scanning frequency of 15.75 kHz, high-resolution picture from microcomputers can be projected.

Fine-detailed picture-resolution — 1100 lines

Newly-developed picture tubes incorporating a large-neck gun, a new phosphor screen and a colored coolant filter and hybrid F 1.0 lenses provide high resolution and brightness.

Sync on Green

When analog RGB signals are input through the RGB 2 connector, if a sync signal is input through the green input together with the green signal, this sync signal is used to control the picture.

If, however, a sync signal is input through the H. sync or composite sync input, this sync signal is used.

The following table indicates which sync signal has priority:

Signals input through the H. sync or composite sync input	Signals input through the green input	Sync signal with priority
Sync signal included	Sync signal included	The one input through the H. sync or composite sync input
Sync signal included	Sync signal not included	
Sync signal not included	Sync signal included	The one input through the green input

Various installation possibilities

The projector is designed to be installed on desk, floor or ceiling and can be used with either a flat screen or curved screen.

Portable single unit

The power supply and control sections are incorporated in one compact, easy-to-transport unit.

Illuminated control panel

When the panel cover is open, the control panel where the user controls are located is illuminated for easy operation in dim or dark places.

Other features

- NTSC, PAL, SECAM or NTSC^{4.43}* color system is selected automatically.
- Both digital and analog RGB connectors allow connection of microcomputers, video cameras or special adaptors for future videotex/teletext.
- Digital RGB selector allows 16-color display.

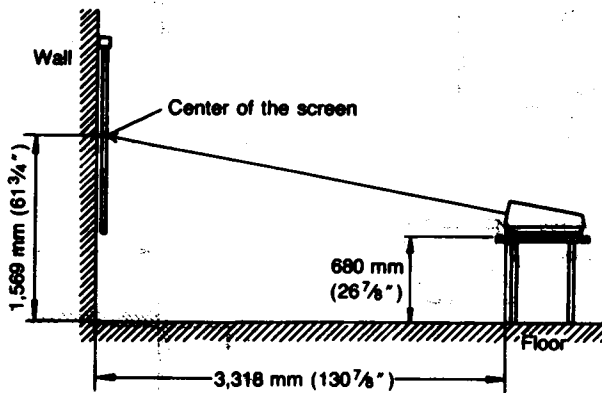
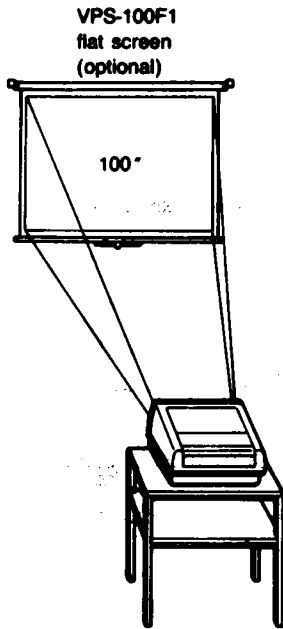
*A signal of NTSC^{4.43} system is obtained by playing back NTSC-recorded video tapes with a video tape recorder/player specially designed for use with this system.

1-7. INSTALLATION DIAGRAMS

For the same type of installation in another place, no readjustment is required, although the projector should be placed in the proper position.

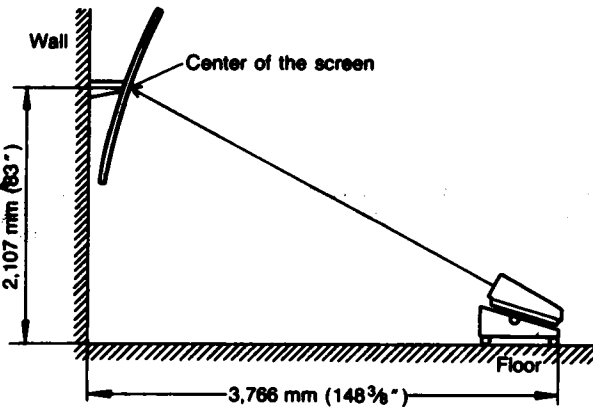
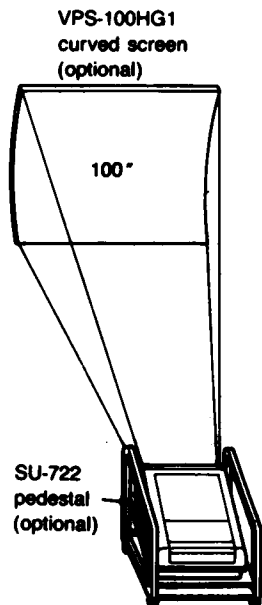
FOR 100" PROJECTION

Desk



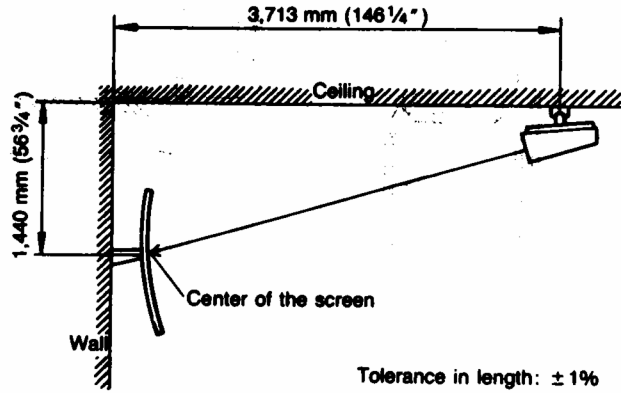
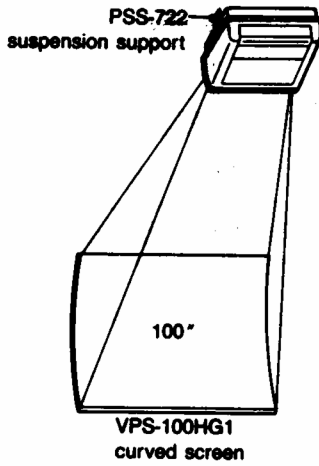
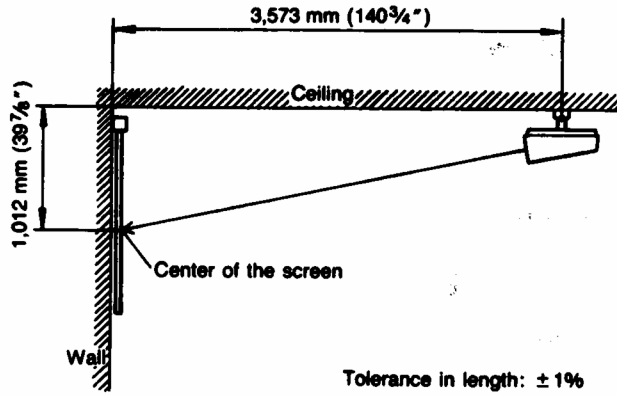
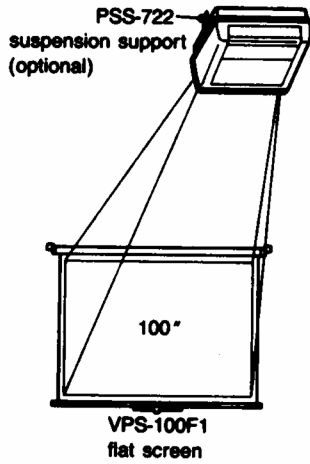
Tolerance in length: $\pm 1\%$

Floor

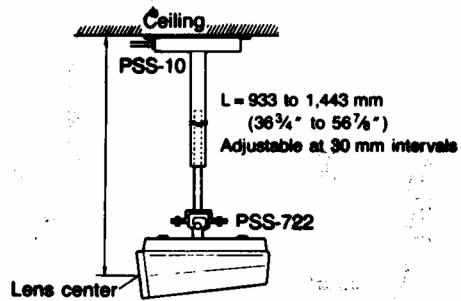


Tolerance in length: $\pm 1\%$

Ceiling

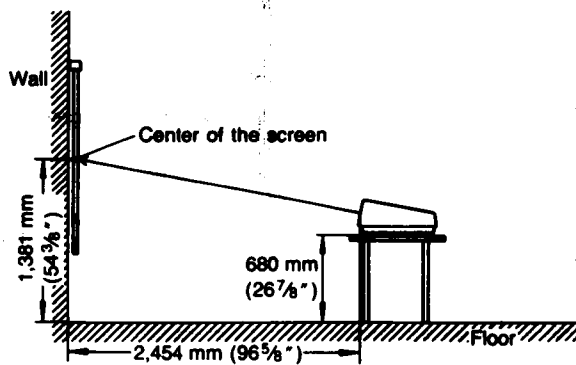
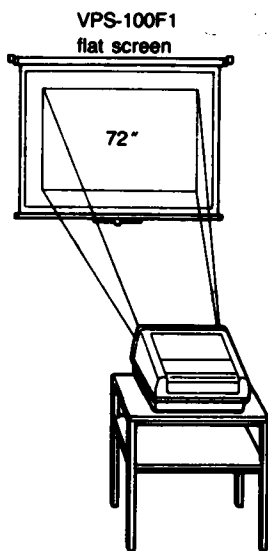


To adjust the distance between the ceiling and the projector, use the optional PSS-10 projector suspension support in combination with the PSS-722.



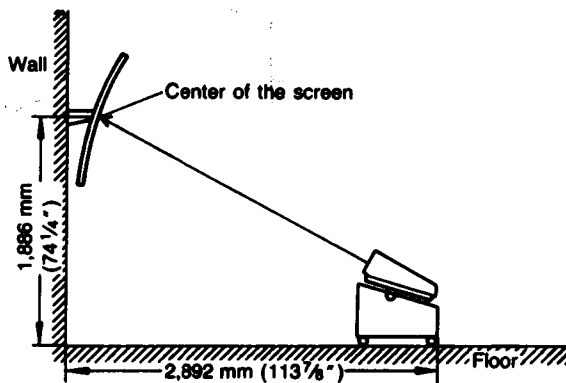
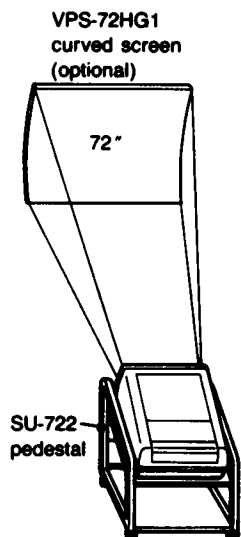
FOR 72" PROJECTION

Desk



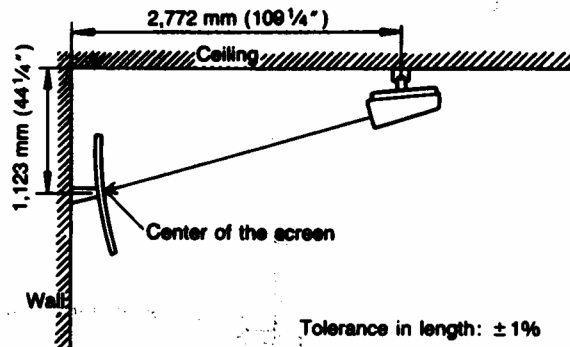
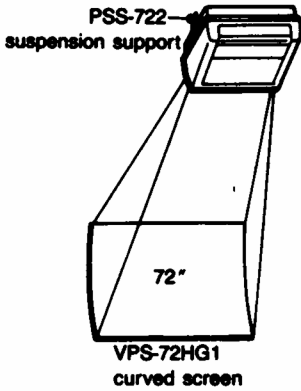
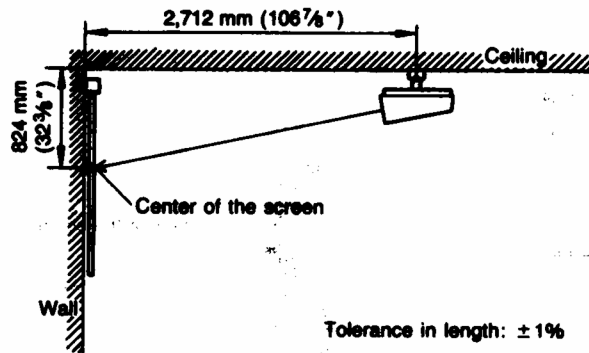
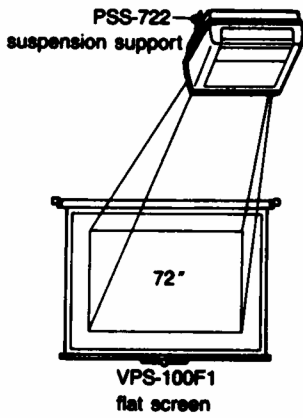
Tolerance in length: $\pm 1\%$

Floor



Tolerance in length: $\pm 1\%$

Ceiling



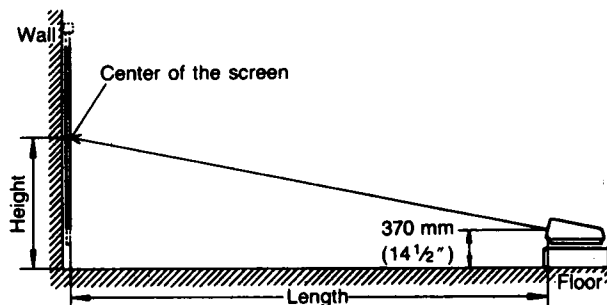
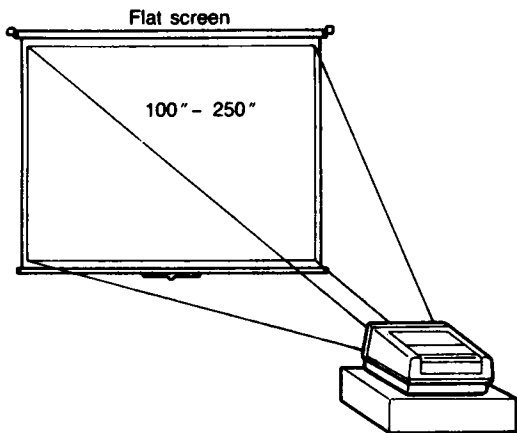
To transport the projector, use the VLC-1040 carrying case (optional).



FOR 100" - 250" PROJECTION

Decide the length and height according to the size of the screen to be used.
 For a screen not described in the tables, set the length approximately 1.6 times screen width.

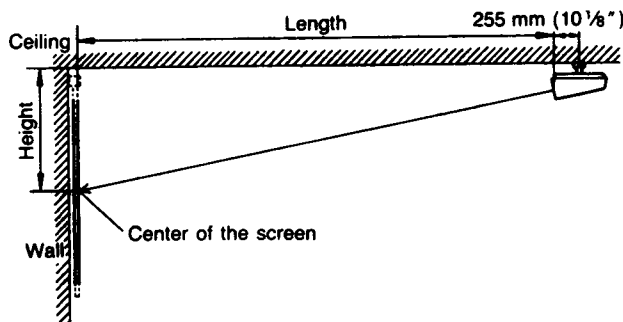
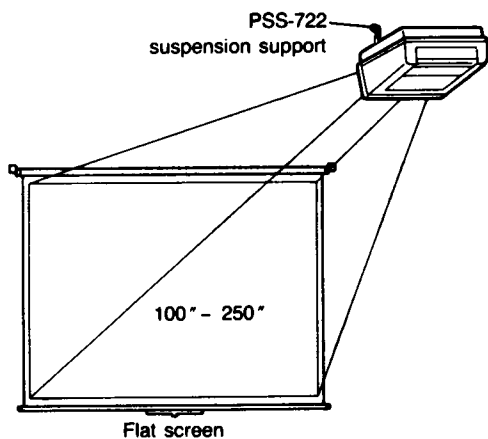
Floor



Screen size	150 inches	200 inches	250 inches
Length mm	4850 (191")	6410 (252 1/2")	7960 (313 1/2")
Height mm	1410 (55 1/2")	1740 (68 1/2")	2080 (82")

Tolerance in length: $\pm 1\%$

Ceiling



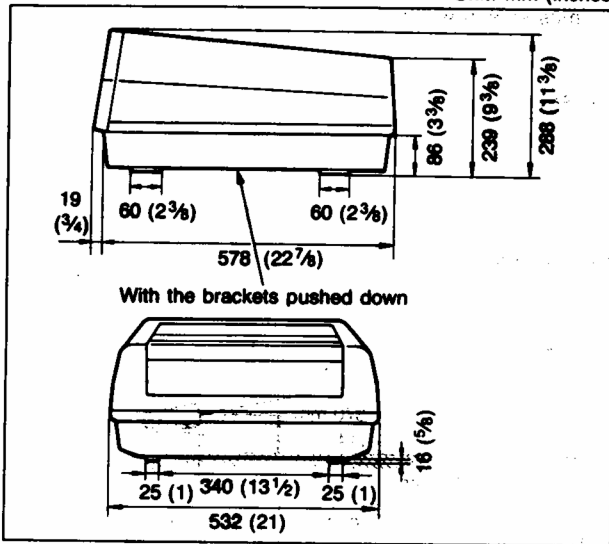
Screen size	150 inches	200 inches	250 inches
Length mm	4850 (191")	6410 (252 1/2")	7960 (313 1/2")
Height mm	1350 (53 1/4")	1680 (66 1/4")	2020 (79 1/2")

Tolerance in length: $\pm 1\%$

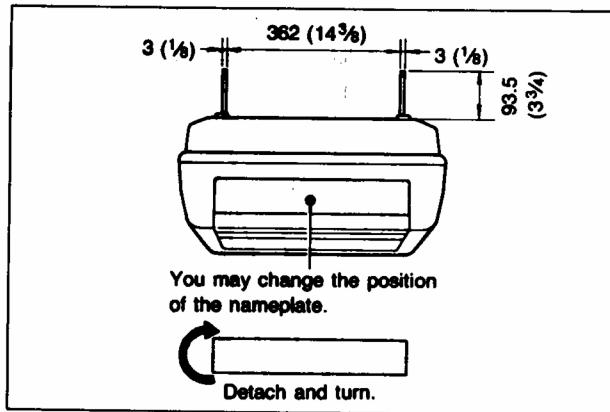
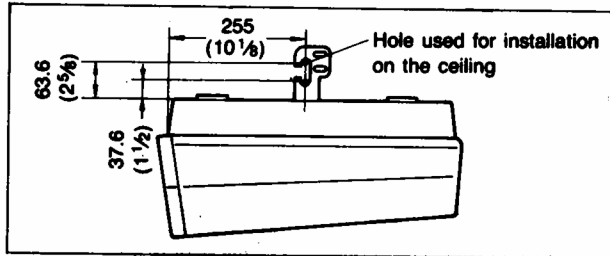
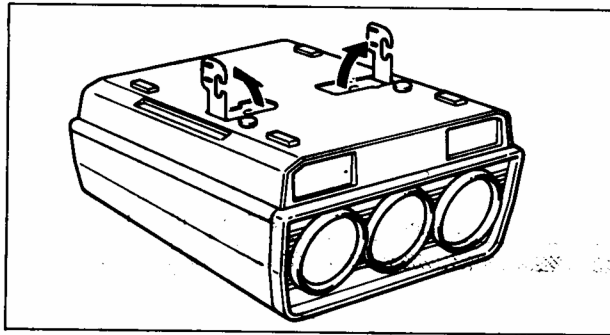
To use 150" to 250" screens, the projector should be converted for 200" projection. For conversion, consult the qualified Sony personnel.

**1-8. NOTES ON INSTALLATION
PROJECTOR'S DIMENSIONS**

Unit: mm (inches)

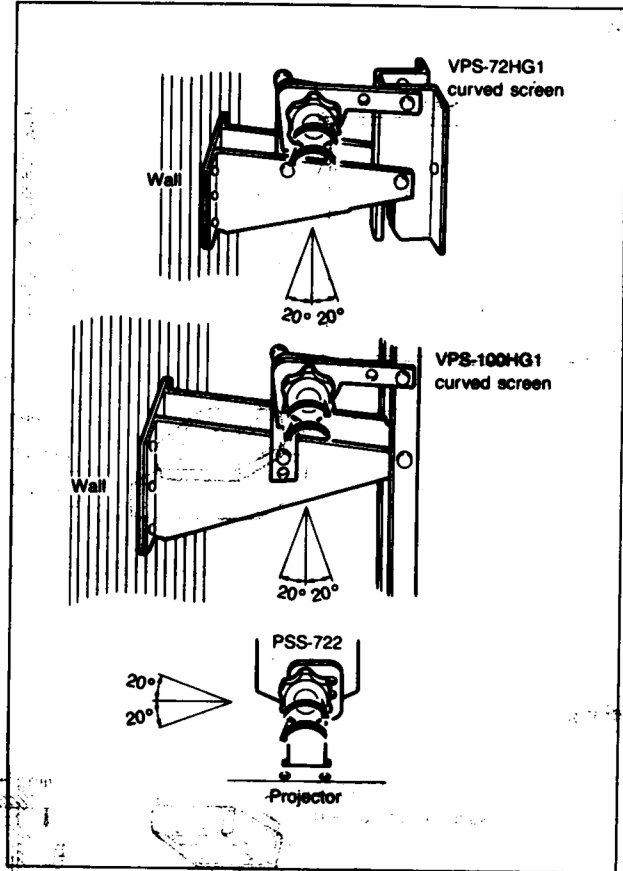


Raise the brackets when installing the projector on the ceiling or floor.

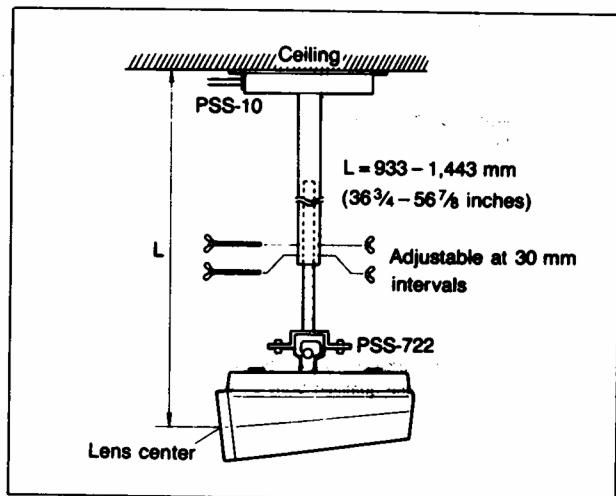


**TO ADJUST THE ANGLE OF THE SCREEN/
PROJECTOR**

Loosen the knobs, adjust the angle, then tighten the knobs down firmly.



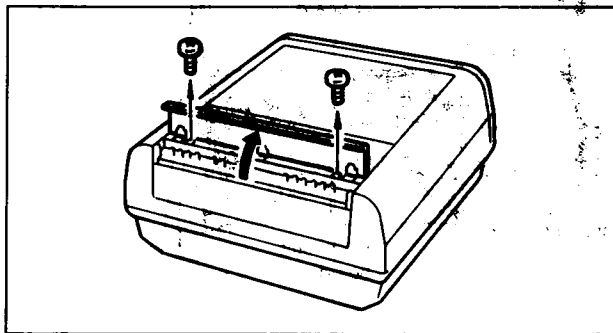
When the PSS-10 projector suspension support (optional) is used in combination with the PSS-722 The PSS-10 allows you to adjust the distance between the ceiling and the projector.



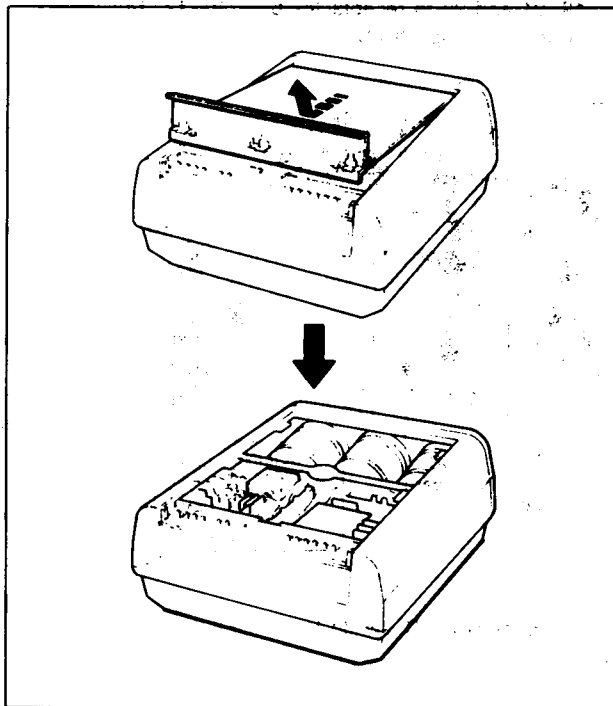
TO OPEN THE TOP PANEL

You will need a medium size Phillips head screwdriver.

- 1 Open the control panel cover.
- 2 Remove the two screws.

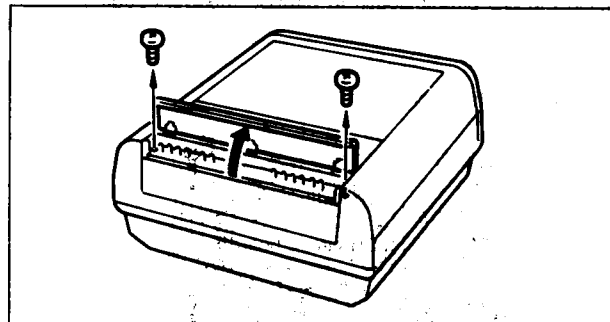


- 3 Pull the top panel slightly toward you and remove it.

**TO OPEN THE CABINET**

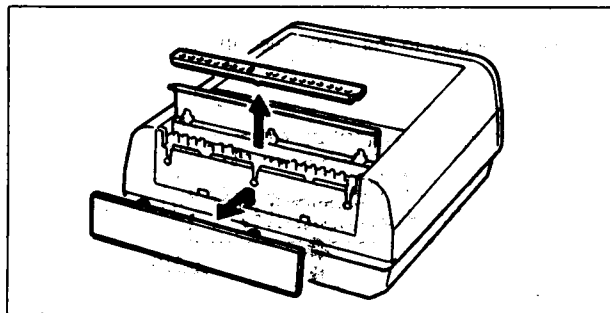
Open the cabinet when changing the polarity and when converting the unit for 72" or 200" projection.

- 1 Open the control panel cover.
- 2 Remove the two screws on the control panel.

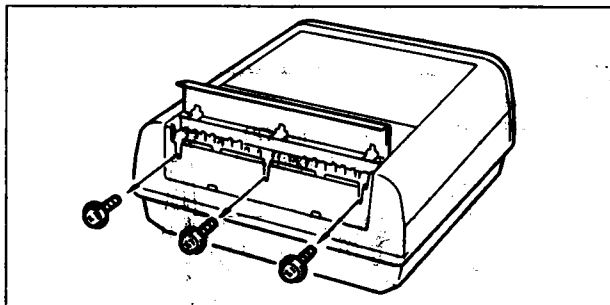


- 3 Slide the nameplate upward and pull it toward you to remove.

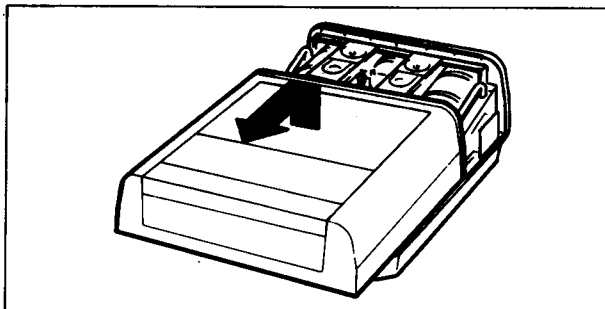
- 4 Remove the control panel.



- 5 Remove the three screws.



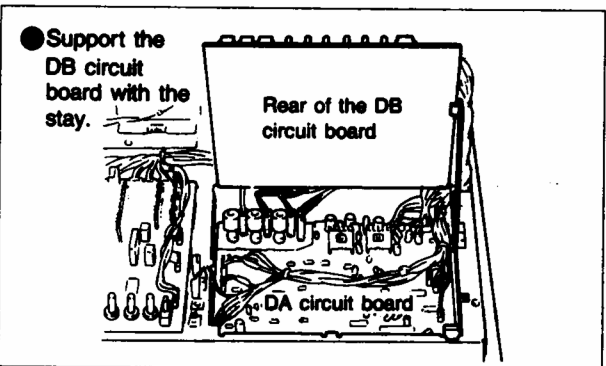
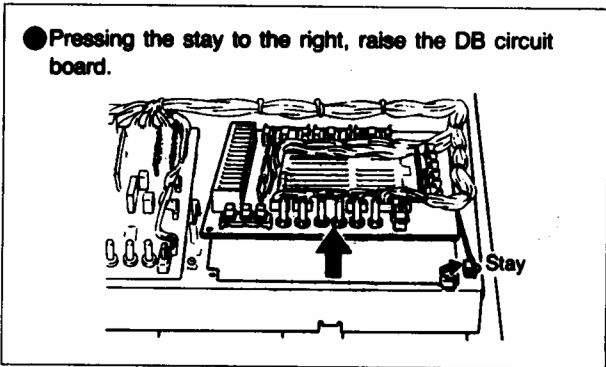
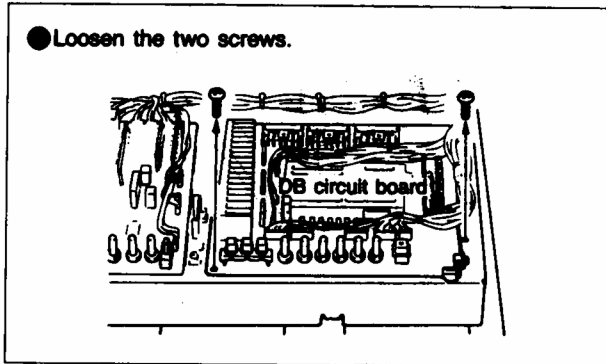
- 6 Slightly raise the cabinet and pull it toward you to remove.



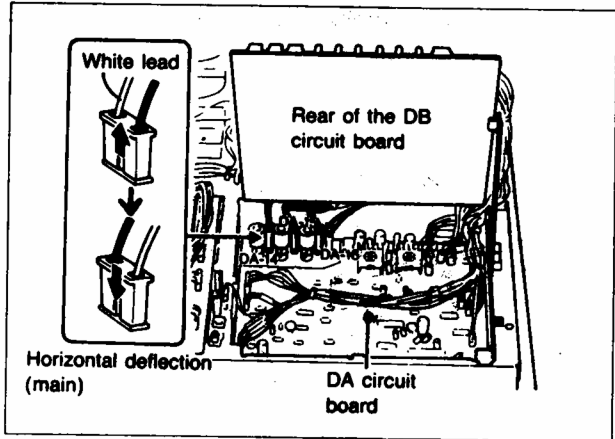
1-9. POLARITY CHANGE

The projector is preadjusted at the factory for use on desk or floor with the bracket side down. When the projector is installed on the ceiling with the bracket side up, the polarity should be changed.

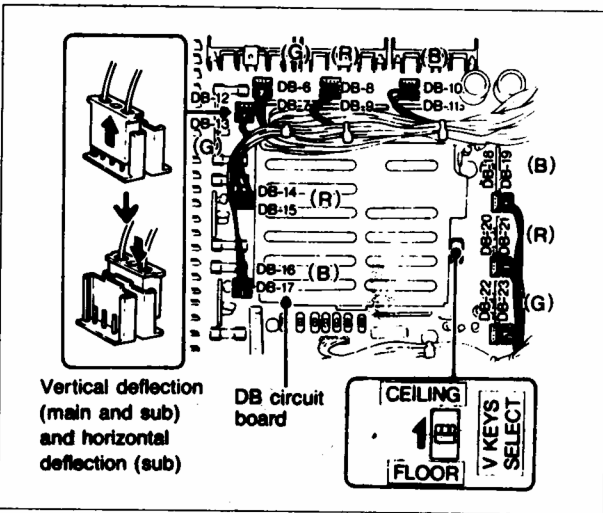
- 1 Make sure that power is not connected.
- 2 Open the cabinet. (See page 21.)
- 3 Raise the DB circuit board to expose the DA circuit board.



- 4 Reverse the polarity of connectors DA-14, 15 and 16.



- 5 Replace the DB circuit board.
- 6 Move the connectors from receptacles DB-7, 9, 11, 13, 15, 17, 19, 21 and 23 to receptacles 6, 8, 10, 12, 14, 16, 18, 20 and 22 respectively.

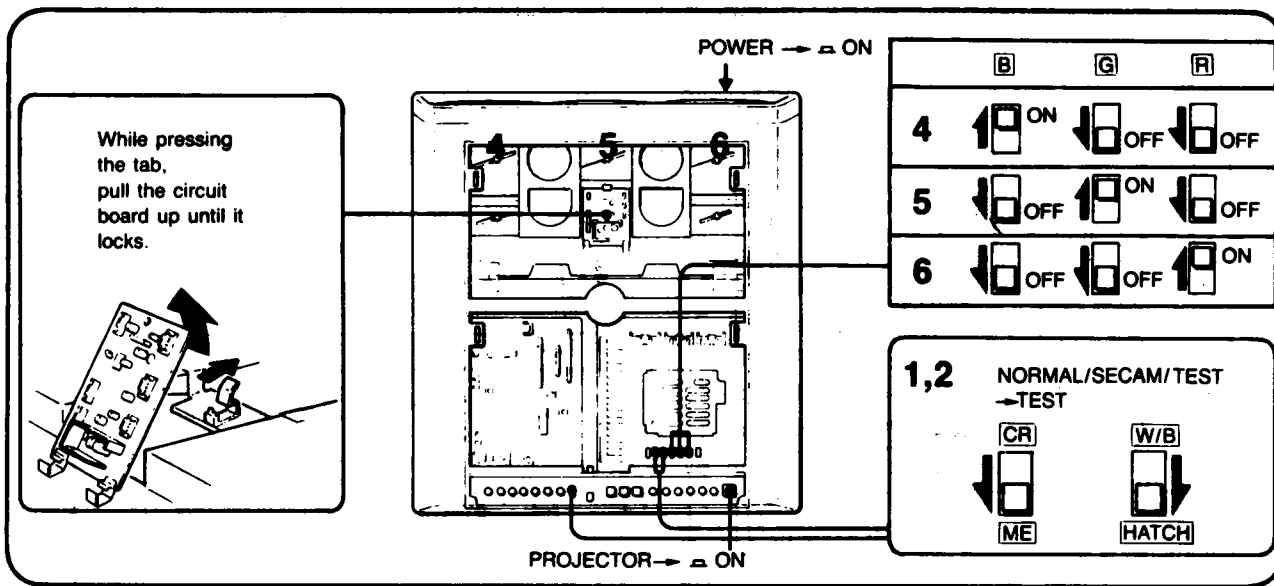


- 7 Set the V KEYS SELECT switch to the CEILING position.

Note
Check that the connectors are inserted firmly, then proceed to lens focus adjustment with the projector's cabinet removed.

1-10. LENS FOCUS ADJUSTMENT

The lens focus is preadjusted at the factory for 100" flat screen. For other type screens, the lens focus should be adjusted.

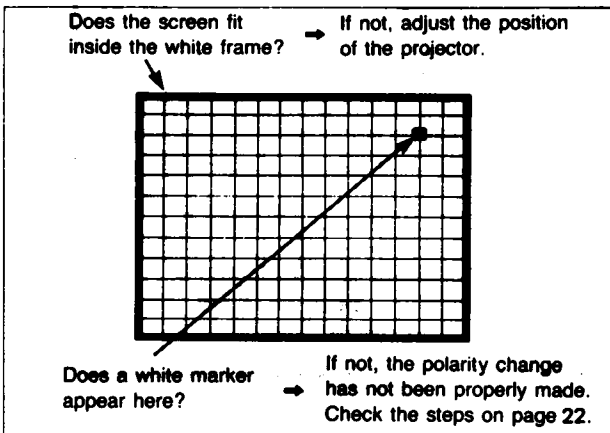


Preparations

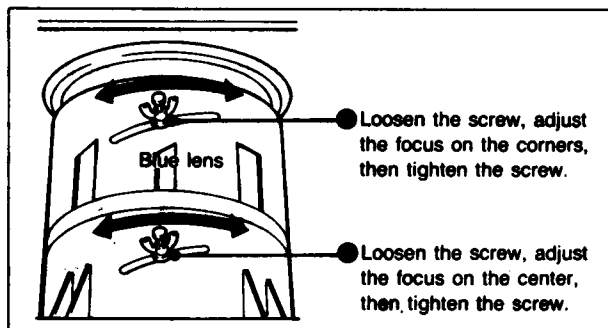
- Install the projector in the correct position on the floor or ceiling.
- Connect the supplied power cord to the AC IN socket and to an AC outlet, depress the POWER switch on the connector panel and the PROJECTOR switch. The green POWER lamp will light.
- Open the top panel. (See page 21.)

Adjustment

- 1 Set the NORMAL/SECAM/TEST selector to TEST.
- 2 Set the HATCH/W/B switch to HATCH and CR/ME switch to ME (mesh). A cross hatch pattern will be displayed.
- 3 Check the following.



- 4 Set the G (green) and R (red) switches to OFF, then adjust the focus of the blue lens.



- 5 Set only the G switch to ON, and the R and B switches to OFF, then adjust the focus of the green lens.
- 6 Set only the R switch to ON, and the G and B switches to OFF, then adjust the focus of the red lens.
- 7 Replace the top panel. (Reverse the steps given on page 21.)

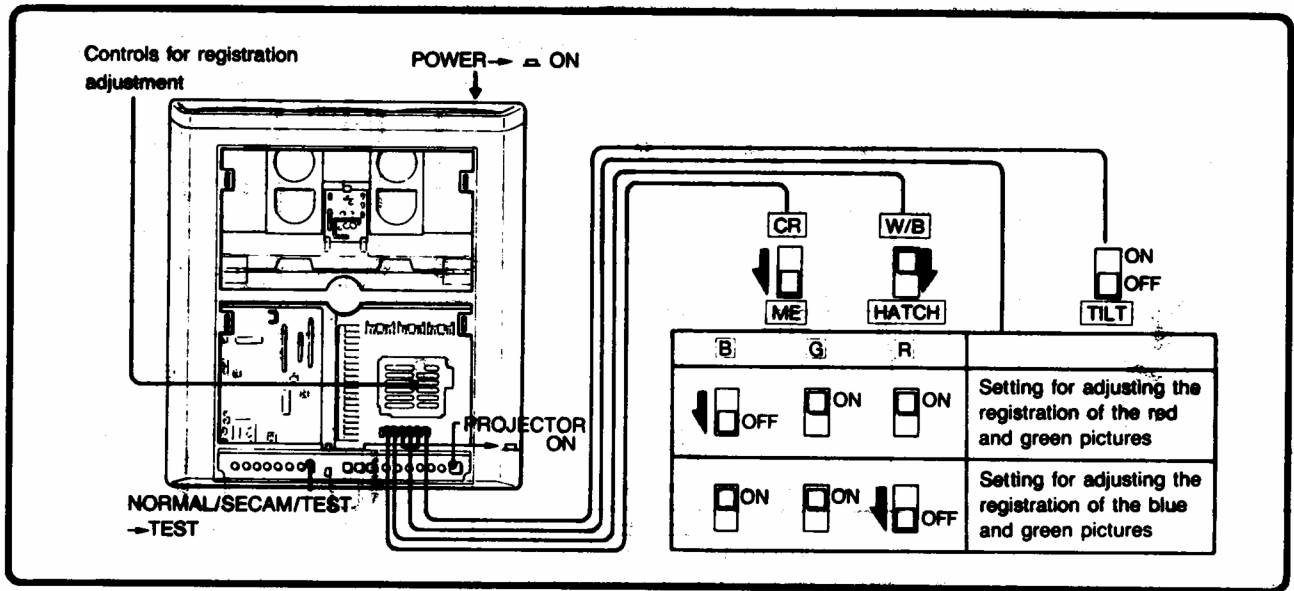
Proceed to registration adjustment.

Caution

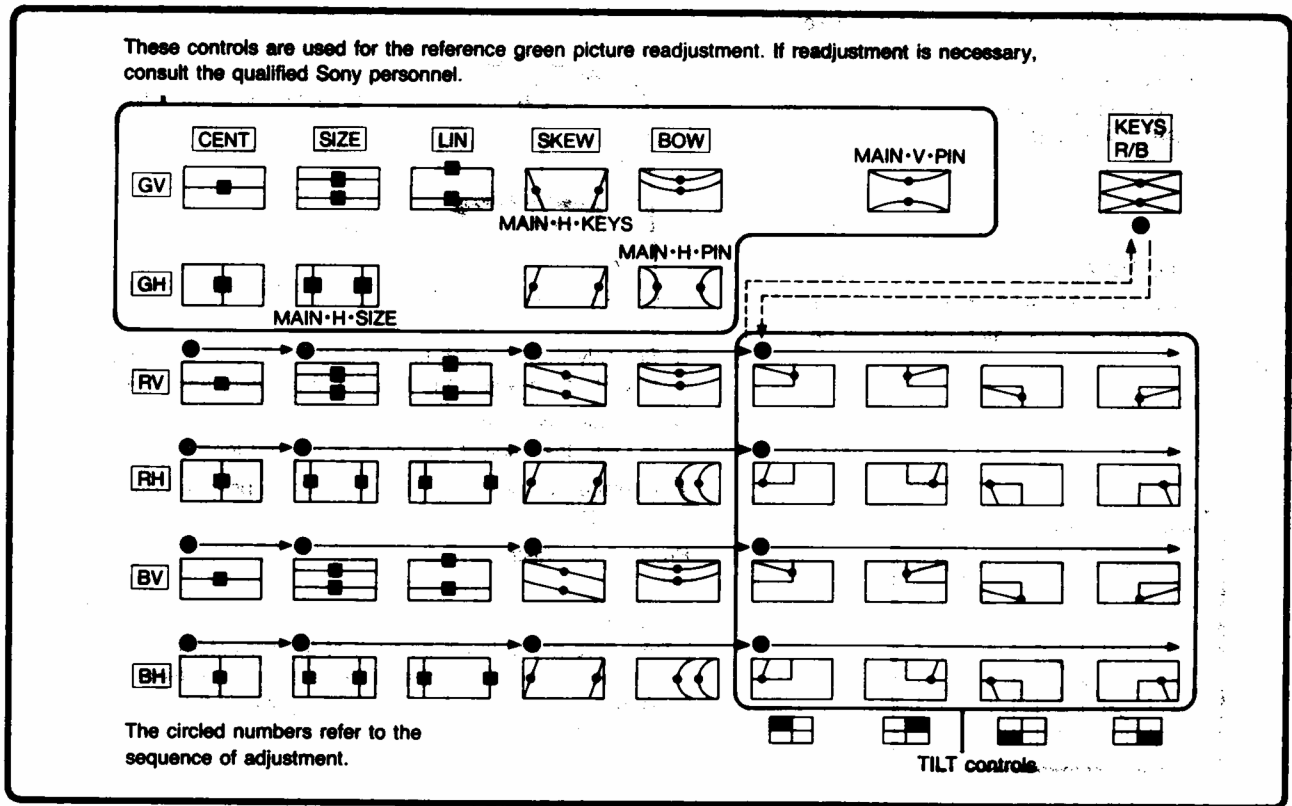
Take care not to touch portions of the projector other than those indicated above because dangerous high voltages are present. To change the polarity, first turn the POWER switch off.

1-11. REGISTRATION ADJUSTMENT

Use a small screwdriver to adjust the controls through the holes.



Controls for registration adjustment

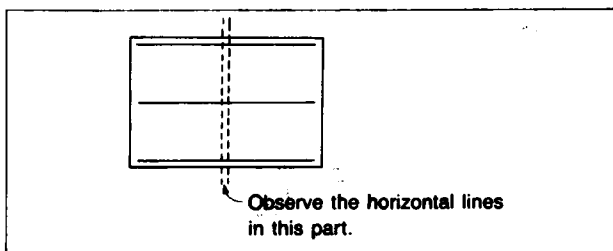


Preparations

- 1 Keep the G switch at ON and set the B and R switches to OFF. A green cross hatch pattern will be displayed.
- 2 Check the position of the projector, polarity and lens focus, referring to pages 22 and 23.

Vertical registration of the red and green pictures

- 1 Set the B switch to OFF and the G and R switches to ON.
- 2 Set the TILT switch to OFF (control panel side).
- 3 Adjust the RV CENT control so that the red horizontal lines and the green horizontal lines converge in the middle of the screen.
- 4 Adjust the RV SIZE control and RV LIN controls so that the red horizontal lines and the green horizontal lines converge at the upper and lower sides of the screen.

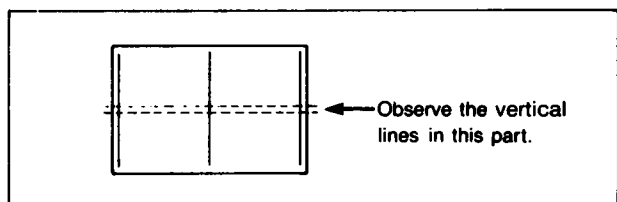


(Repeat steps 3 and 4 as necessary.)

- 5 Adjust the RV SKEW and RV BOW controls so that the red horizontal lines and the green horizontal lines converge in the middle of the screen.
- 6 Adjust the KEYS R/B control so that the red horizontal lines at the top and bottom of the screen are parallel.
- 7 Set the TILT switch to ON (lens side).
- 8 Adjust the RV TILT controls so that the red horizontal lines and the green horizontal lines converge in the corners of the screen.

Horizontal registration of the red and green pictures

- 9 Adjust the RH CENT control so that the red vertical lines and the green vertical lines converge in the middle of the screen.
- 10 Adjust the RH SIZE and RH LIN controls so that the red vertical lines and the green vertical lines converge at the right and left sides of the screen.



(Repeat steps 9 and 10 as necessary.)

- 11 Adjust the RH SKEW and RH BOW controls so that the red vertical lines and the green vertical lines converge in the middle of the screen.
- 12 Adjust the RH TILT controls so that the red vertical lines and the green vertical lines converge at the corners of the screen.

Proceed to the following adjustments in the same manner as with red and green registration, setting the R switch to OFF and the B and G switches to ON.

Vertical registration of the blue and green pictures

- 13 Set the TILT switch to OFF.
- 14 Adjust the BV CENT control.
- 15 Adjust the BV SIZE, and BV LIN if necessary. (Repeat steps 14 and 15 as necessary.)
- 16 Adjust the BV SKEW and BV BOW controls.
- 17 Set the TILT switch to ON.
- 18 Adjust the BV TILT controls.

Horizontal registration of the blue and green pictures

- 19 Adjust the BH CENT control.
- 20 Adjust the BH SIZE, and BH LIN. (Repeat steps 19 and 20 as necessary.)
- 21 Adjust the BH SKEW and BH BOW controls.
- 22 Adjust the BH TILT controls.

When registration is complete

Set the switches to the following positions

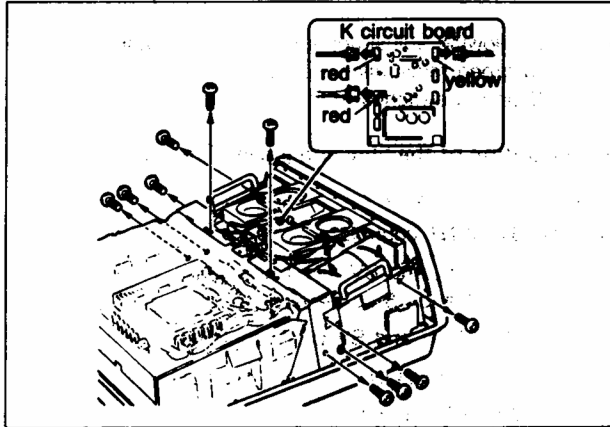
R, G, B switches	ON position
HATCH/W/B switch	HATCH
CR/ME switch	CR (cross)
TILT	ON position
NORMAL/SECAM/TEST	NORMAL

Replace the top panel. (Reverse the steps given on page 21.)

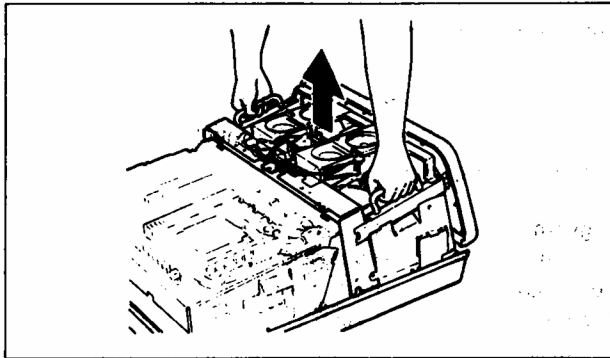
1-12. CONVERSION FOR 72" (67") or 200" (150"-250") PROJECTION

1 Separate the lens block from the main body.

- Open the cabinet. (See page 21.)
- Disconnect the 3 connectors on the K circuit board.
- Loosen the 10 screws.

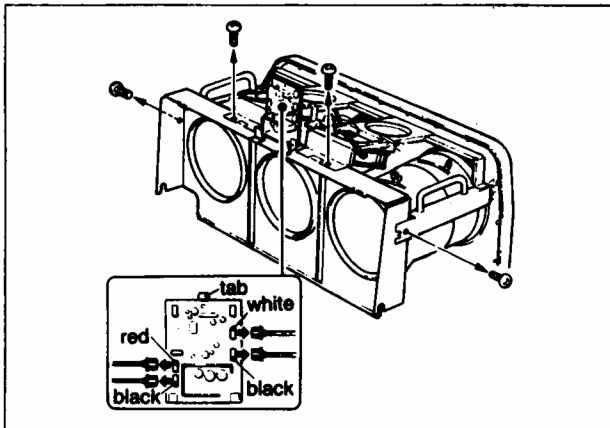


- Pull the lens block up and out.

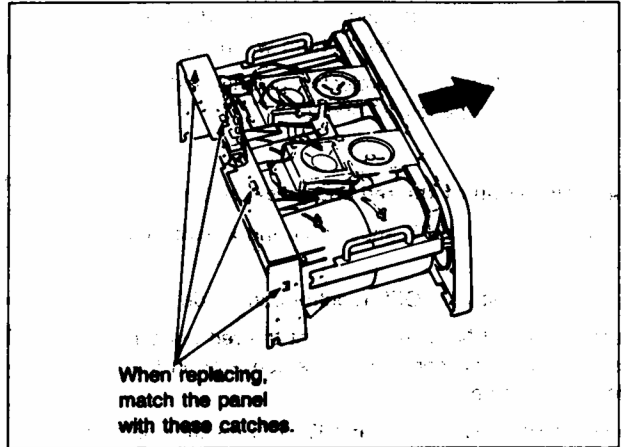


2 Disassemble the lens block.

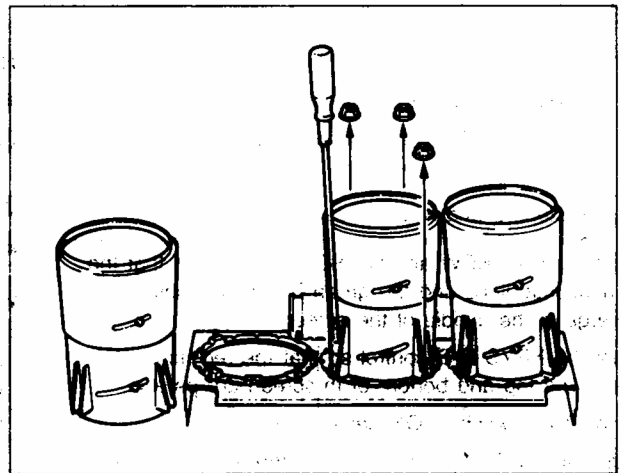
- Loosen the 4 screws.
- Disconnect the 4 connectors on the K circuit board.
- Pressing the tab, raise the K circuit board.



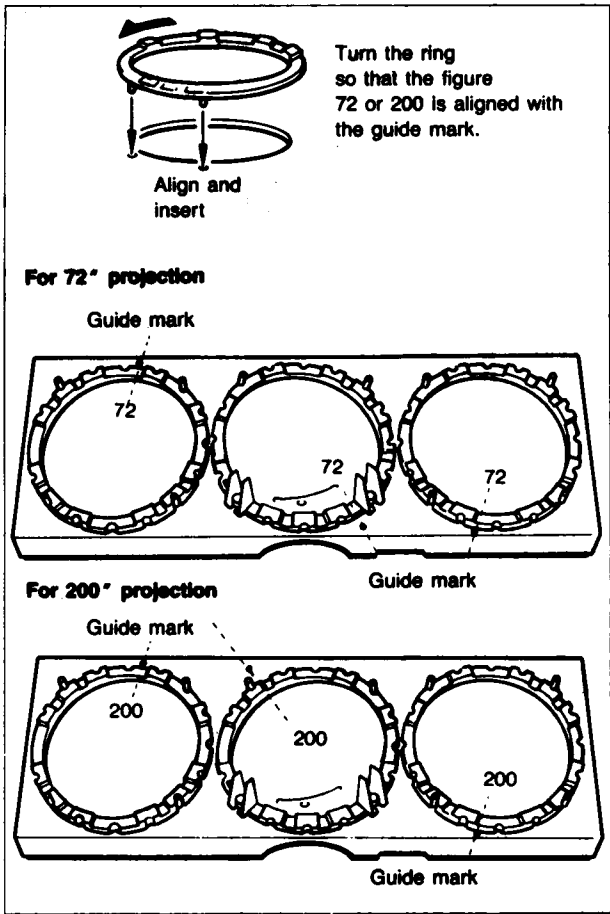
- Remove the lens panel.



- Loosen the 4 nuts and detach all lenses from the lens base.
Use an 8 mm nutdriver.



3 Change the positions of the lens rings.

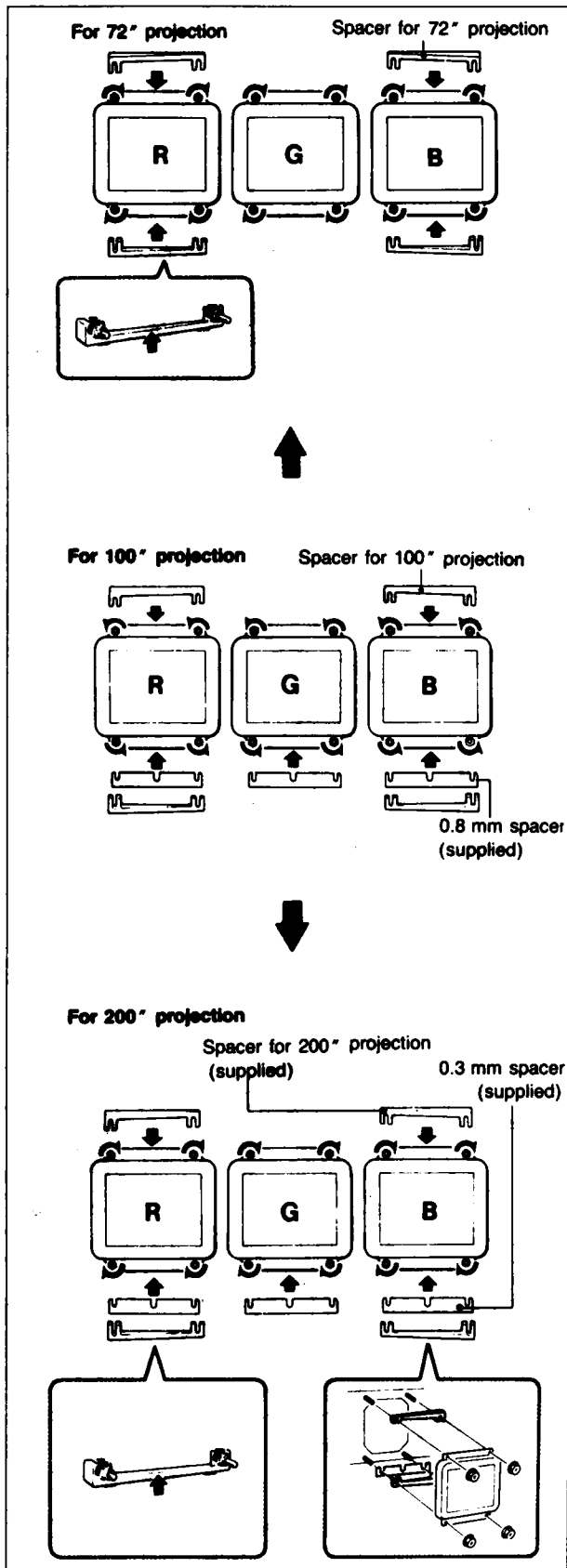


4 Adjust the mounting angles of the CRTs.

Use an 8 mm nutdriver.

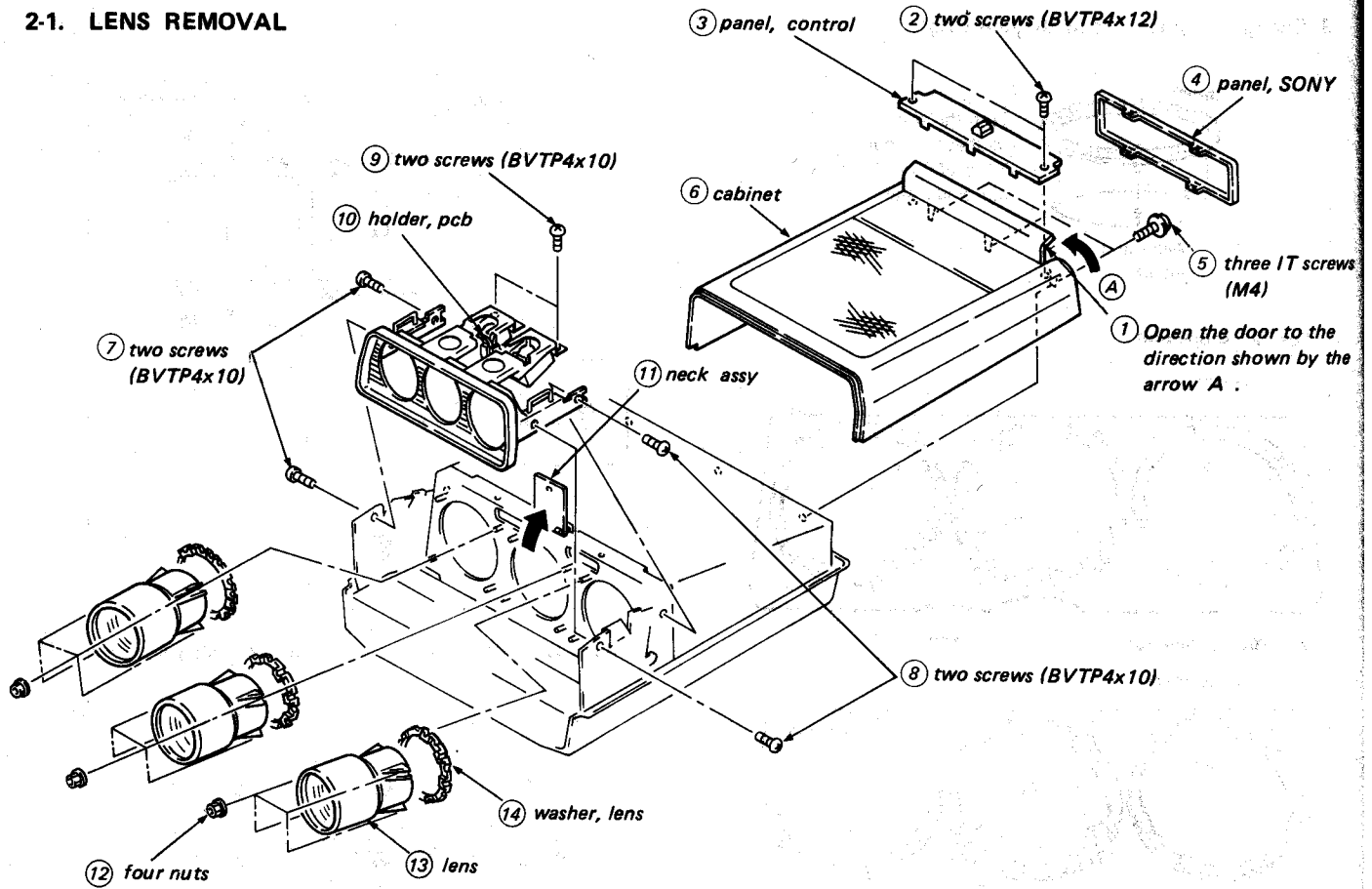
- Loosen the nuts and remove all the spacers from the top and bottom of each CRT.
- Insert the supplied spacers as illustrated. Insert the spacers with the thinner end toward the center CRT.
- Tighten all the nuts completely for accurate angles of the CRTs.

After adjustment is complete, replace the lens block in the main body and close the cabinet. (Reverse the steps given in section 1.)

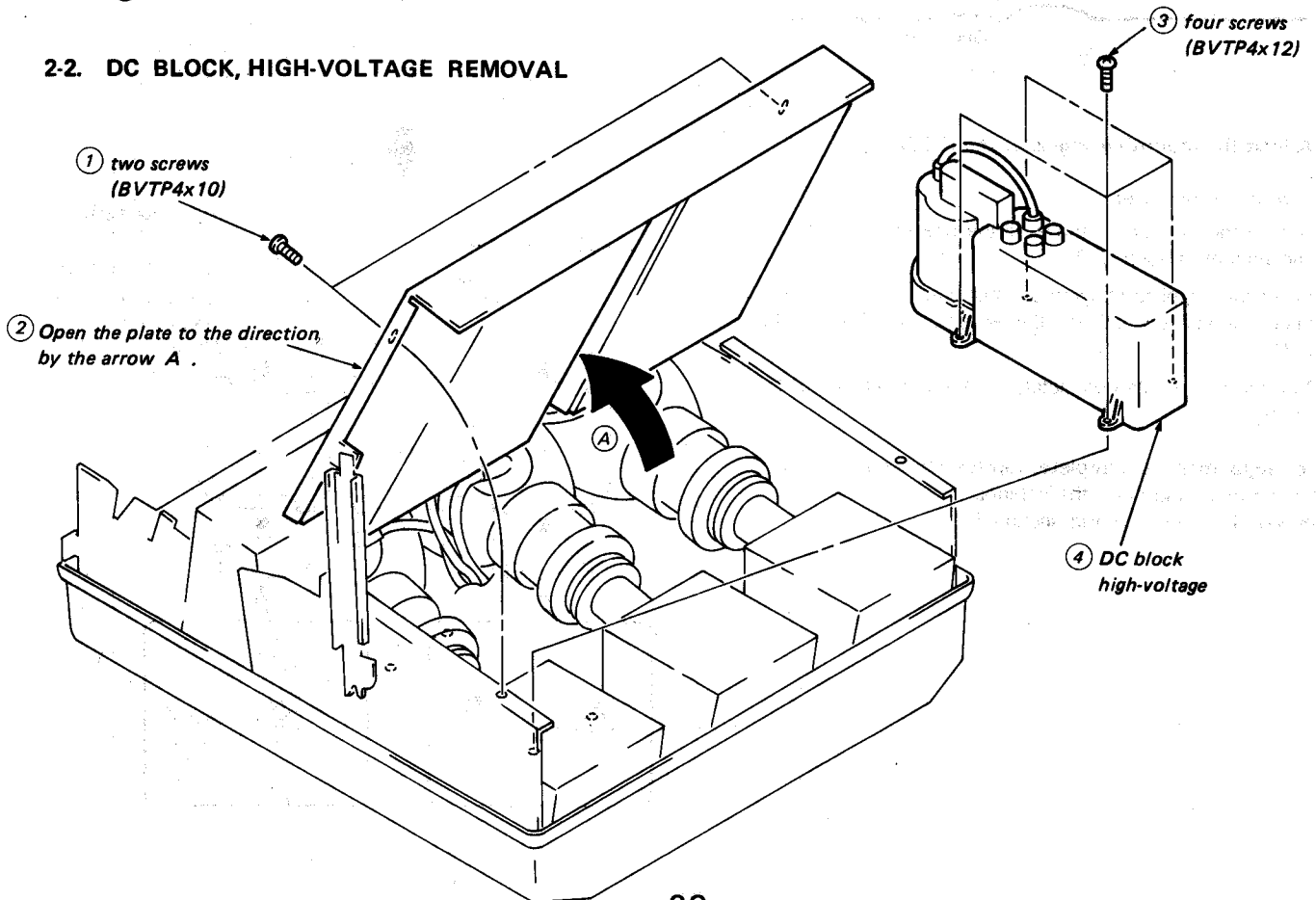


SECTION 2 DISASSEMBLY

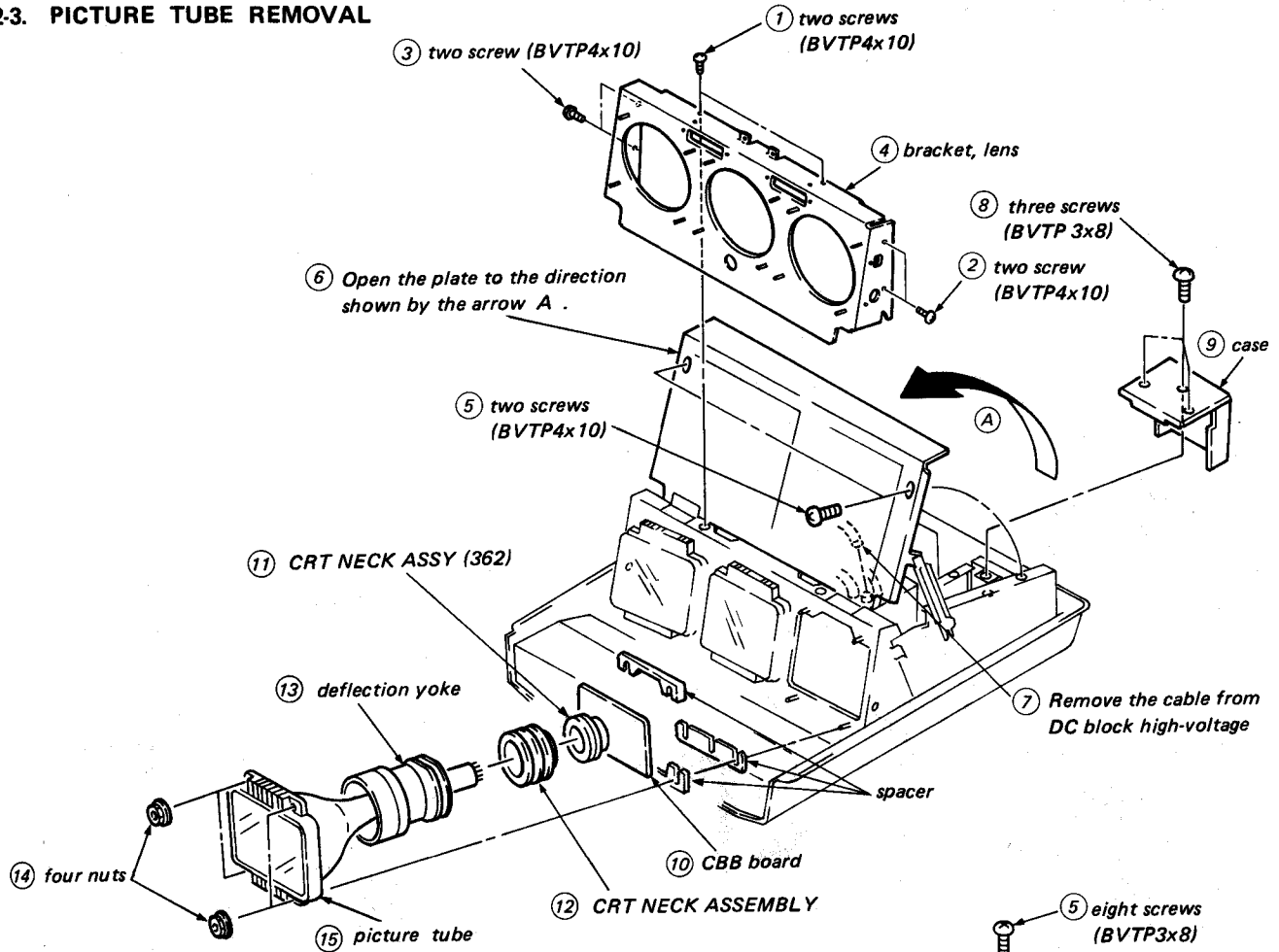
2-1. LENS REMOVAL



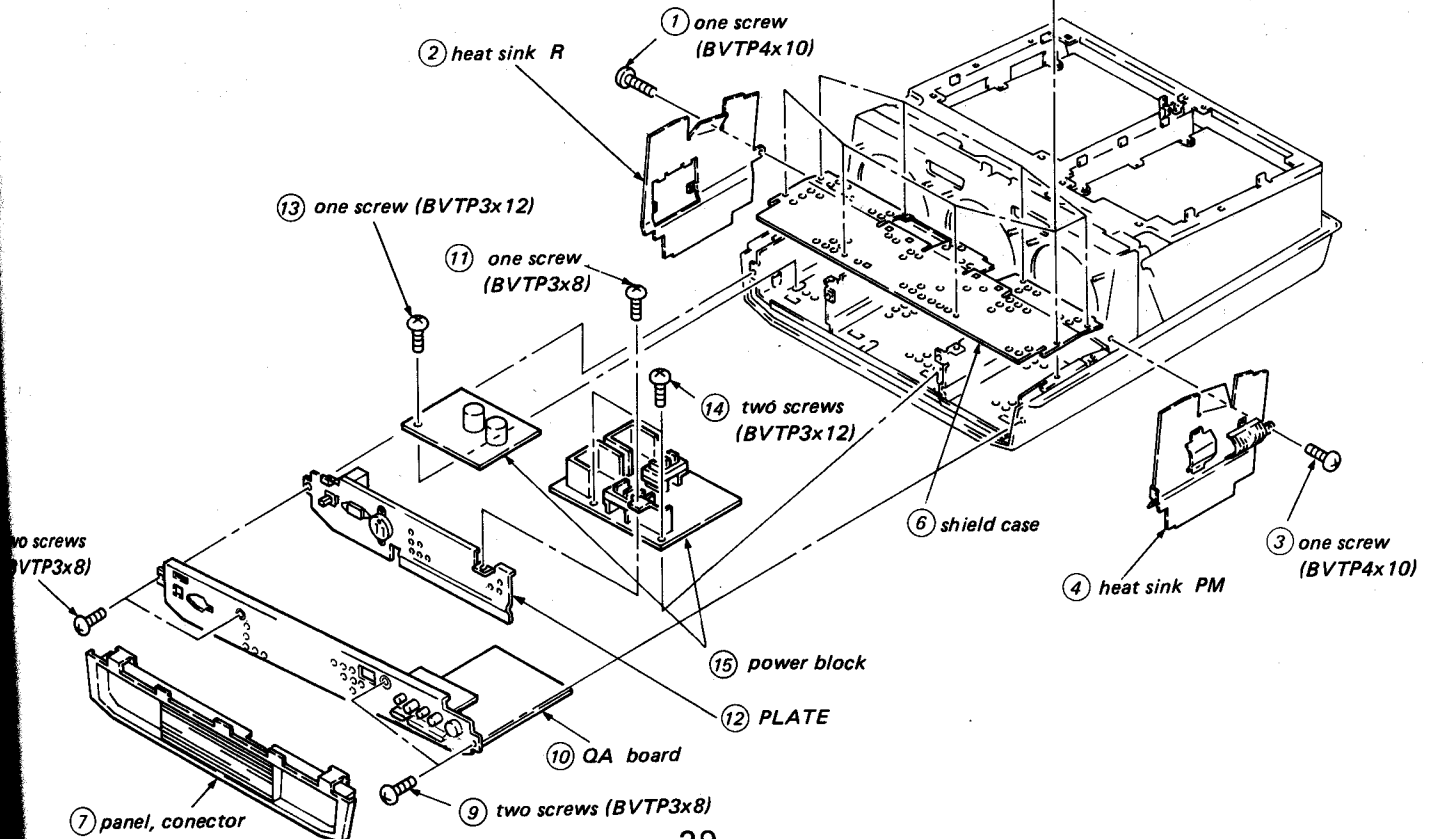
2-2. DC BLOCK, HIGH-VOLTAGE REMOVAL



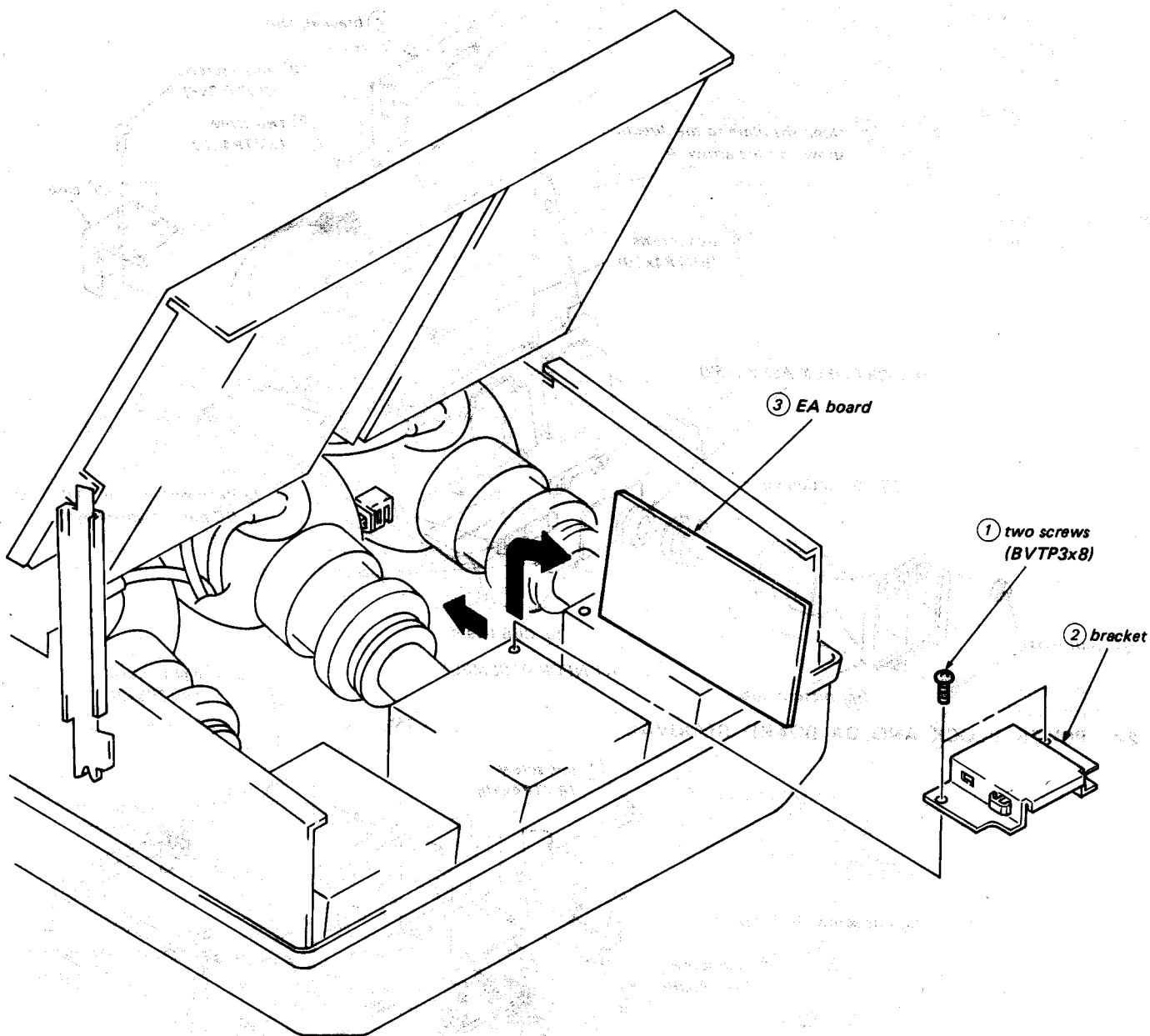
2.3. PICTURE TUBE REMOVAL



2.4. POWER BLOCK AND QA BOARD REMOVAL



2.5. EA BOARD REMOVAL



SECTION 3 CIRCUIT DESCRIPTIONS

3-1. H.V. REG

This is composed of the conventional series regulator. Pulse width is 7μsec and wave peak is 840-950Vp-p. At this time HV Reg out voltage is:

15kHz: 58-66V
26kHz: 104-117V

Drive factor is controlled by F-V conversion, the same as H. out.

3-2. PROTECTOR Circuit

HV Protector

The potential which is resistor divided by DC block 600MΩ and R31, 82, 83 is compared to the D8 potential. Normally D8 potential is high, so IC2 (2/2) pin ⑦ is low.

When high voltage rises and the potential goes over D8 potential, pin ⑦ goes high.

As a result, IC2 pin ⑤ becomes higher than pin ⑥, pin ⑦ also goes high and is held by D7.

This output enters IC3 (1/2) pin ⑤, pin ⑦ also goes high and turns on Q8.

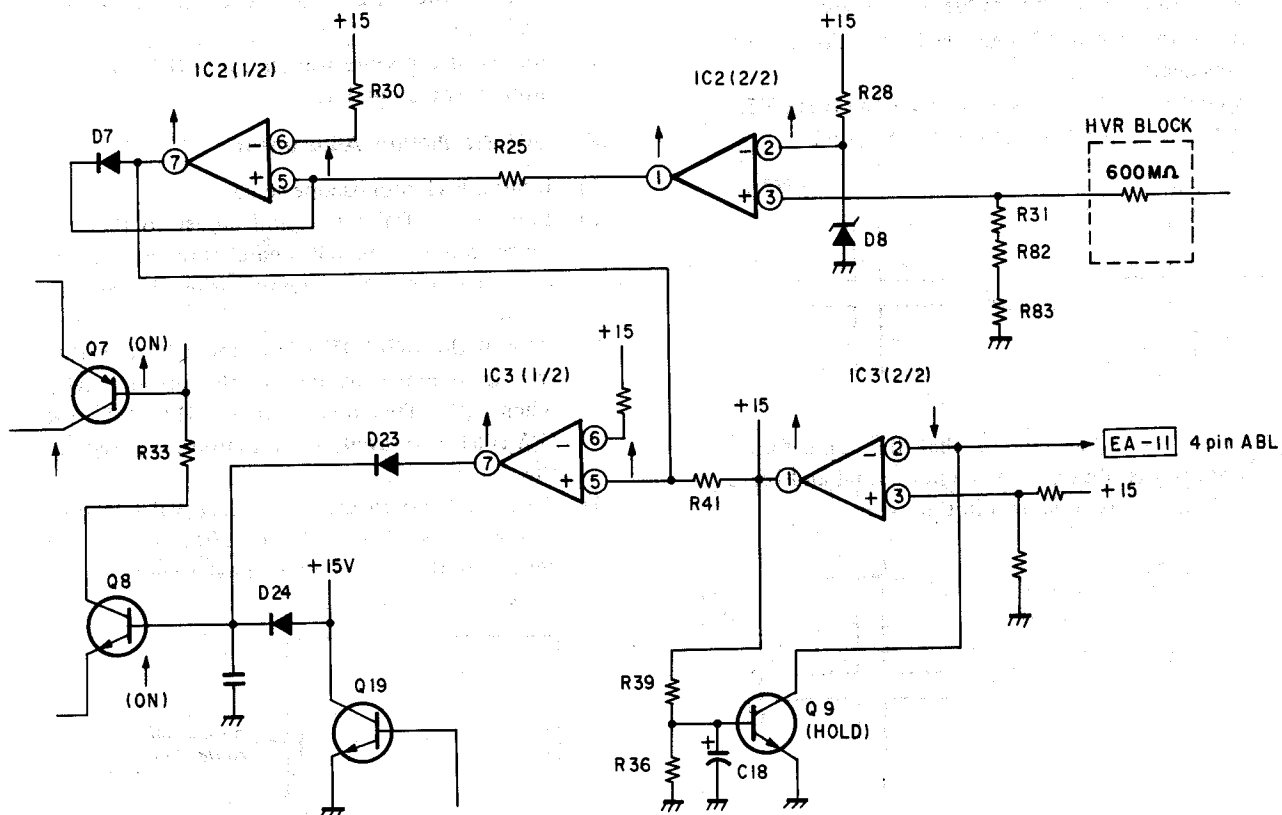
This causes Q7 to go on also, and the collector goes high.

This turns off the drive pulse for the converter.

When the CONV pulse disappears, DA board circuit operates, the relay is turned off and power is cut.

3-3. BEAM CURRENT PROTECTOR

When the beam flows, the potential at EA-11 connector ABL pin ④ drops. When ABL is passed (about 1500-1800μA), IC3 (2/2) pin ② potential drops below that of pin ③, and pin ⑦ goes high. Q9 is a hold circuit. Therefore, the same as above, IC3 pin ⑦ goes high, turning Q7 on, and high voltage is stopped.



SECTION 4 SET-UP ADJUSTMENTS

4-1. BASIC ADJUSTMENTS

Basic Adjustments

<Registration>

- 1) Degauss the entire chassis.
- 2) Set the variable resistor on the DB board to mechanical center. Also, set the BA board H CENT and V CENT to mechanical center.
- 3) Adjust the knobs and switches on the set as follows:

BRIGHT: fully clockwise (maximum)

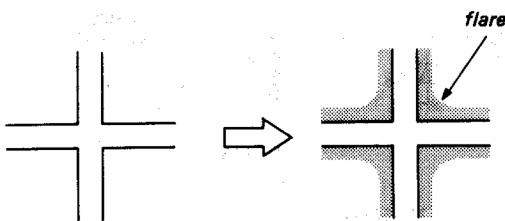
PICTURE: maximum

V. KEY SELECT (S2): Floor

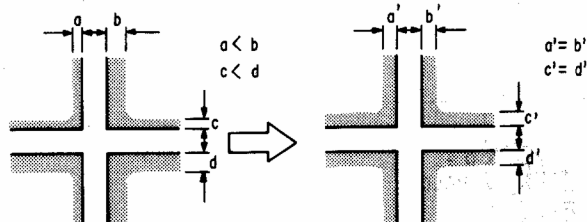
TILT SW (S1): OFF

4-2. GREEN FOCUS Adjustment

- 1) Receive a monoscope signal.
- 2) Cover the RED and BLUE lenses.
- 3) Set the GREEN lens SUB lens fully forward.
- 4) Rotate the MAIN lens and set for optimum focus on the screen.
- 5) Turn the GREEN focus VR on the focus pack and set for optimum conditions.
- 6) Rotate the MAIN lens for best focus in the center of the screen and temporarily tighten the lens screw.
- 7) Rotate the SUB lens for best focus in the center of the screen and tighten the lens screw.
- 8) Loosen the MAIN lens screw, fine adjust the focus, then tighten the MAIN lens screw.
- 9) Set to the crosshatch signal (with the unit internal signal).
- 10) Adjust to under focus with the green focus VR of the focus pack, as shown in the figure.



- 11) Adjust the 2-pole Mg so that the same flare condition is obtained in the horizontal and vertical directions, as shown in the figure.



- 12) Adjust to just focus with the green focus VR of the focus pack.

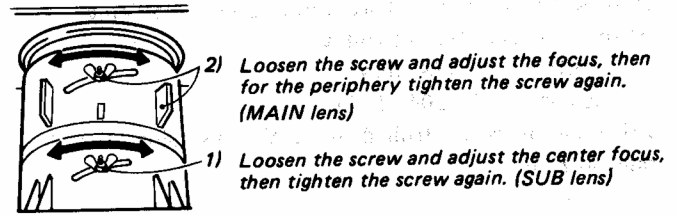


Figure 1-1

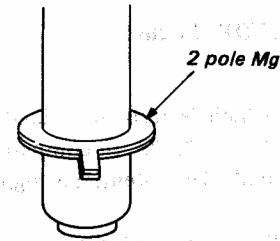


Figure 1-2

4-3. RED FOCUS Adjustment

- 1) Remove the RED lens cover and cover the GREEN and BLUE lenses.
- 2) Adjust in the same way as for GREEN FOCUS adjustment, steps 3-12.

4-4. BLUE FOCUS Adjustment

- 1) Remove the BLUE lens cover and cover the RED lens.
- 2) Adjust in the same way as for GREEN FOCUS adjustment, steps 3-12.

4-5. GREEN Picture Adjustment

- 1) Input a PAL monoscope signal.
- 2) Loosen the DY screw and adjust so that the center monoscope line is parallel to those at the left and right, then temporarily tighten the screw.
- 3) Loosen the SUB DY screw and adjust so that the signal moves parallel, to the left and right, when the DB board green H.CENT VR (RV106) is moved, then temporarily tighten the screw.
- 4) Adjust DB board green H.CENT VR (RV106) and green V.CENT VR (RV101) so that the center of the monoscope signal is lined up to the screen center mark.

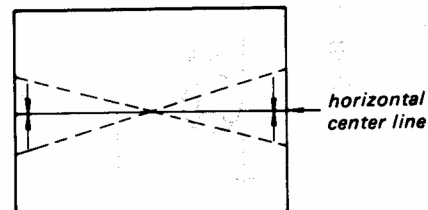


Figure 2

- 5) Tighten the screws after positioning the DY and SUB DY correctly.
- 6) Adjust DB board MAIN H.SIZE VR (RV107), green V.SIZE VR (RV102) and green V.LIN (RV103) and perform rough size adjustment.

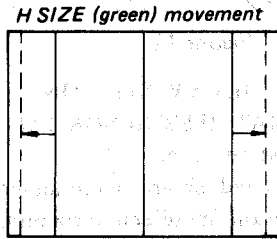


Figure 3

- 7) Adjust DB board MAIN V.PIN VR (RV2) so that the lines at the top and bottom of the signal are almost parallel with the screen.

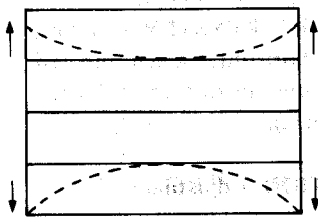


Figure 4

- 8) Receive an NTSC monoscope signal.
- 9) Adjust DB board green V.BOW (RV105) so that the monoscope signal horizontal center line is parallel with the screen horizontal center line, then adjust green V.CENT VR (RV101) again to match up to the center line.

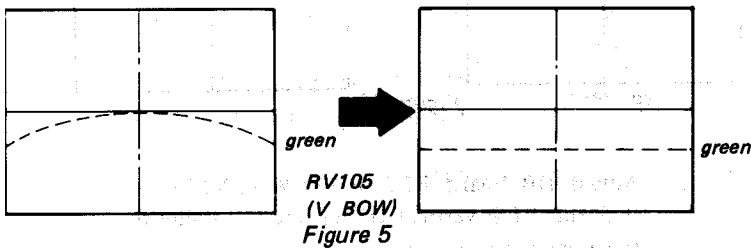


Figure 5

- 10) Receive a PAL monoscope signal.
- 11) Adjust DB board green V.LIN (RV103) so that the number of grids at the top and bottom of the signal are the same.

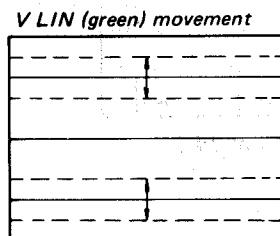


Figure 6

- 12) Adjust DB board green V.SIZE (RV102) so that there are about 11.0 grids at the top and bottom of the monoscope signal.

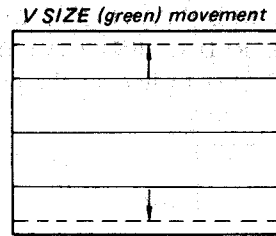


Figure 7

- 13) Adjust DB board MAIN V.PIN (RV2) so that the top and bottom monoscope signal lines are parallel with the screen frame.
- 14) Line up the monoscope signal center vertical line to the screen center vertical line by adjusting DB board green H.SKEW (RV108) and green H.CENT (RV106).

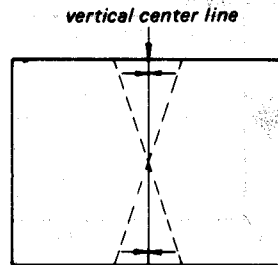


Figure 8

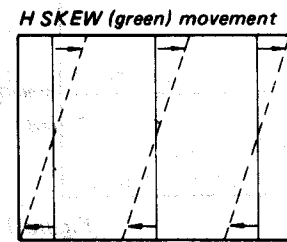


Figure 9

- 15) Adjust DB board MAIN H.KEYS (RV104) and MAIN H.PIN (RV109) so that the monoscope signal left and right vertical lines are parallel with the screen.
- 16) Adjust DB board MAIN H.SIZE (RV107) so that the number of grids to the left and right of the monoscope signal center vertical line is about 7.4 on each side.

4-6. BLK Adjustment

- 1) Receive a PAL monoscope signal.
- 2) Adjust the right/left BLK balance with the BLK BAL VR (RV504) on the DA board.
- 3) Adjust to just before the point where the eighth grid line disappears on the left and right with DA board BLK VR (RV501).
- 4) Adjust DA board BLK VR (RV503) so that the sixth grid at the top of the monoscope signal is visible and blanking is applied.
- 5) Adjust DA board BLK VR (RV502) so that the sixth grid at the bottom of the monoscope signal is visible and blanking is applied.

4-7. RED DY Adjustment

- 1) Turn DB board blue CUT OFF SW off and project green and red.
- 2) Adjust DB board RED V.CENT (RV110), RED V.LIN (RV113), RED H.CENT (RV120) and RED H.LIN (RV113) to line up the red and green monoscope centers.

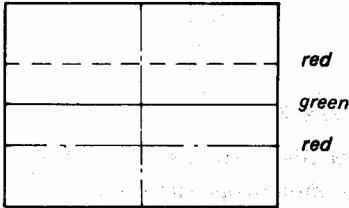


Figure 10

- 3) Loosen the RED DY screw.
- 4) Set the BA board HATCH SW to HATCH.
- 5) Adjust DB board RED V.BOW (RV115) so that the horizontal center line is straight.

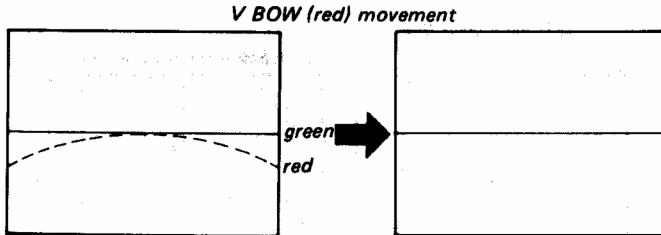


Figure 11

- 6) Rotate the RED DY until the horizontal center line is parallel with green, then tighten the screw.
- 7) Loosen the SUB DY screw, rotate the DY, and adjust so that the hatch moves parallel to the right and left, when the DB board RED H.CENT VR (RV120) is moved, then tighten the screw.

4-8. TILT Adjustment

- 1) Set BA board HATCH switch to HATCH.
- 2) Line up the red horizontal center line center with the center of the green horizontal center line by adjusting DB board RED V.CENT (RV110), RED V.BOW (RV115) and RED V.SKEW (RV114).
- 3) Line up the red top and bottom horizontal lines with the green top and bottom horizontal lines by adjusting DB board RED V.SIZE (RV112), RED V.LIN (RV113) and RED V.SKEW (RV114).

- 4) Set the RED V.TILT VR's 1-4 as shown below.

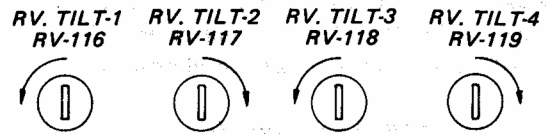


Figure 12

- 5) Turn DB board TILT SW (S1) to ON.
- 6) Set BA board HATCH SW to NORMAL.
- 7) Receive an all-white signal.
- 8) Check that the red or green luminescent line can not be seen on the screen horizontal center line.
If it is visible, adjust DB board KEYS CENT VR (RV1) until it disappears.
- 9) Turn the TILT SW to OFF.
- 10) Set the RED V.TILT VR's 1-4 to mechanical center.
- 11) Set BA board HATCH SW to HATCH.
- 12) Adjust RED and BLUE V.KEYS (RV147) until the top and bottom horizontal green and red lines match (minimum distortion balanced evenly at all four corners).

4-9. G-R H. REGISTRATION Adjustment

- 1) Adjust DB board RED H.BOW (RV124) so that the RED vertical center line is straight.

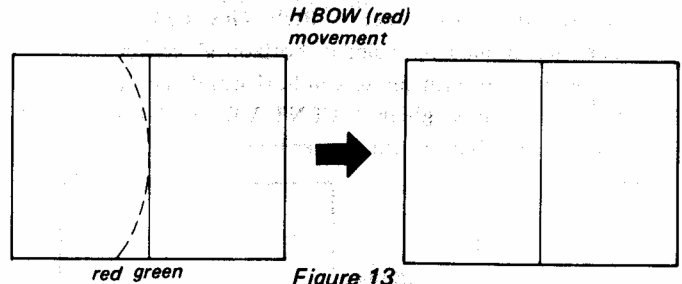


Figure 13

- 2) Adjust DB board RED H.SKEW (RV123) so that the RED vertical center line is parallel to the green vertical center line.

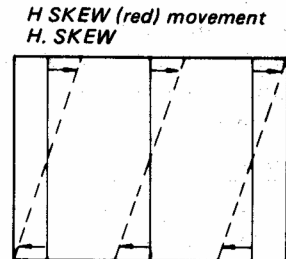


Figure 14

- 3) Adjust DB board RED H.CENT (RV120) so that the red and green vertical center lines match up.

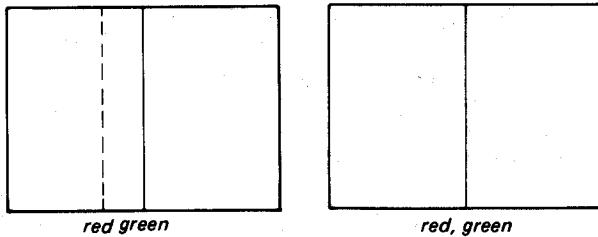
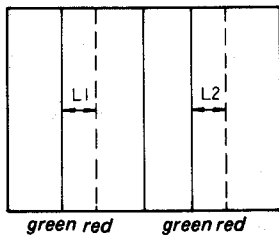


Figure 15

- 4) Adjust DA board RED H.SIZE (L801) and DB board RED H.LIN (RV122) so that the centers of the RED left and right vertical lines match up to the centers of the green left and right vertical lines.



(1) Adjust RV121 (R.H SIZE) so that the red and green vertical lines overlap at the left and right sides of the screen, or so that L1 and L2 are the same distances.

Figure 16

4-10. G-R TILT Adjustment

- 1) Turn DB board TILT SW (S1) to ON.
- 2) Adjust DB board RED V.TILT-1 (RV116) and line up the RED upper left horizontal line to green.
- 3) Adjust DB board RED V.TILT-2 (RV117) and line up the RED upper right horizontal line to green.
- 4) Adjust DB board RED V.TILT-3 (RV118) and line up the RED lower left horizontal line to green.
- 5) Adjust DB board RED V.TILT-4 (RV119) and line up the RED lower right horizontal line to green.
- 6) Adjust DB board RED H.TILT-1 (RV125) and line up the RED upper left vertical line to green.
- 7) Adjust DB board RED H.TILT-2 (RV126) and line up the RED upper right vertical line to green.
- 8) Adjust DB board RED H.TILT-3 (RV127) and line up RED lower left vertical line to green.
- 9) Adjust DB board RED H.TILT-4 (RV128) and line up RED lower right vertical line to green.

4-11. BLUE DY Adjustment

- 1) Set the BA board HATCH SW to NORMAL and receive a monoscope signal.
- 2) Turn the DB board RED CUT OFF SW to OFF and turn the BLUE CUT OFF SW to ON.
- 3) Line up the BLUE monoscope signal center to green center by adjusting DB board BLUE V.CENT (RV129), BLUE V.LIN (RV131), BLUE H.CENT (RV138) and BLUE H.LIN (RV140).
- 4) Loosen BLUE DY screw.
- 5) Set BA board HATCH SW to HATCH.
- 6) Adjust DB board BLUE V.BOW (RV133) so that the center horizontal line is straight.
- 7) Adjust BLUE DY so that the horizontal center line is parallel to green, then tighten the DY screw.
- 8) Loosen the SUB DY screw and rotate to adjust so that the hatch moves parallel to the left and right when DB board BLUE H.CENT VR (RV138) is moved, then tighten the screw.

4-12. G-B V. REGISTRATION Adjustment

- 1) Line up the blue horizontal center line to the green horizontal center line by adjusting DB board BLUE V.CENT (RV129), BLUE V.BOW (RV133) and BLUE V.SKEW (RV132).
- 2) Adjust DB board BLUE V.SIZE (RV130) and BLUE V.LIN (RV131) so that the centers of the blue top and bottom horizontal lines match up to the centers of the green top and bottom horizontal lines.

4-13. G-B H. REGISTRATION Adjustment

- 1) Adjust DB board BLUE H.BOW (RV142) so that the blue vertical center line is straight.
- 2) Adjust DB board BLUE H.SKEW (RV141) so that the blue vertical center line is parallel to the green vertical center line.
- 3) Adjust DB board BLUE H.CENT (RV138) so that the blue vertical center line matches up to the green vertical center line.
- 4) Adjust DA board BLUE H.SIZE (L803) and DB board BLUE H.LIN (RV140) so that the centers of left and right blue vertical lines match up to the centers of the green left and right vertical lines.

4-14. G-B TILT Adjustment

- 1) Line up the top left blue horizontal line to green by adjusting DB board BLUE V.TILT-1 (RV134).
- 2) Line up top right blue horizontal line to green by adjusting DB board BLUE V.TILT-2 (RV135).
- 3) Line up bottom left blue horizontal line to green by adjusting DB board BLUE V.TILT-3 (RV136).
- 4) Line up bottom right blue horizontal line to green by adjusting DB board BLUE V.TILT-4 (RV137).
- 5) Line up top left blue vertical line to green by adjusting DB board BLUE H.TILT-1 (RV143).
- 6) Line up to right blue vertical line to green with DB board BLUE H.TILT-2 (RV144).
- 7) Line up bottom left blue vertical line to green with DB board BLUE H.TILT-3 (RV145).
- 8) Line up bottom right blue vertical line to green with DB board BLUE H.TILT-4 (RV146).

4-15. V. KEYS SELECT SW Operation Check

- 1) Set DB board V.KEYS SELECT SW (S2) to CEILING.
- 2) Check that the crosshatch horizontal lines have green at the center with red and blue not lined up.
- 3) Confirm that registration is corrected when the V.KEYS SELECT SW is set to FLOOR.
- 4) Set BA board HATCH SW to NORMAL.

4-16. White Balance Adjustment

- 1) Turn the focus pack RED, GREEN and BLUE G2 VR's to minimum.
- 2) Set picture VR and color VR to minimum, set bright VR to mechanical center and receive a color bar signal.
- 3) Adjust so that the red bar glows faintly by adjusting focus pack GREEN G2 VR.
- 4) Set bright VR to minimum.
- 5) Adjust white balance with the RED and BLUE G2 VR's. When fine adjustment can not be done with the G2 VR's, adjust with the BA board RGB BKG VR's.
- 6) Set picture VR and bright VR to maximum.
- 7) Adjust white balance with BA board R DRIVE VR and B DRIVE VR.

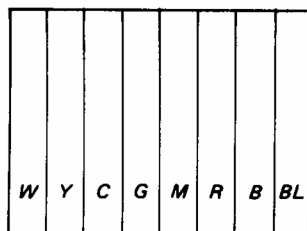


Figure 17

SECTION 5 SAFETY RELATED ADJUSTMENTS

5-1. EA BOARD ADJUSTMENTS

- When replacing the following components, make the HV HOLD DOWN, HV REG, Vcc REG, BEAM CURRENT PROTECTOR, and OVP CIRCUIT.

R82, R83 HV HOLD DOWN CHECK
 <EA Board> R23, R24, R28, R29, R31, R32, R33, R34, R38, R40, R82, R83, D8, D23, Q7, Q8, IC2, IC3, EA board complete HV BLOCK.

R84, R85 HV REGULATOR CHECK
 <EA Board> R65, R68, R70, R71, R72, R73, R74, R75, R84, R85, C36, C37, C39, C40, Q4, Q16, Q17, D17, D18, D19, D20, EA board complete
 <EB Board> T1, EB board mount HV BLOCK

R78 VCC REG CHECK
 <GA Board> IC604, GA board complete
 <DA Board> R61, R69, R70, R73, R74, R75, R76, R77, R78, D14, Q14, IC7, DA board complete

R43 BEAM CURRENT PROTECTOR CHECK
 <BB Board> R249, BB board complete
 <EA Board> R32, R33, R34, R38, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, D23, C20, Q7, Q8, IC3, EA board complete

OVP CIRCUIT CHECK
 <GA Board> R612, IC602, GA board complete
 <GB Board> R1, D9, GB board mount
 <EA Board> R32, R33, R35, R86, R88, D24, Q7, Q8, Q19, EA board complete

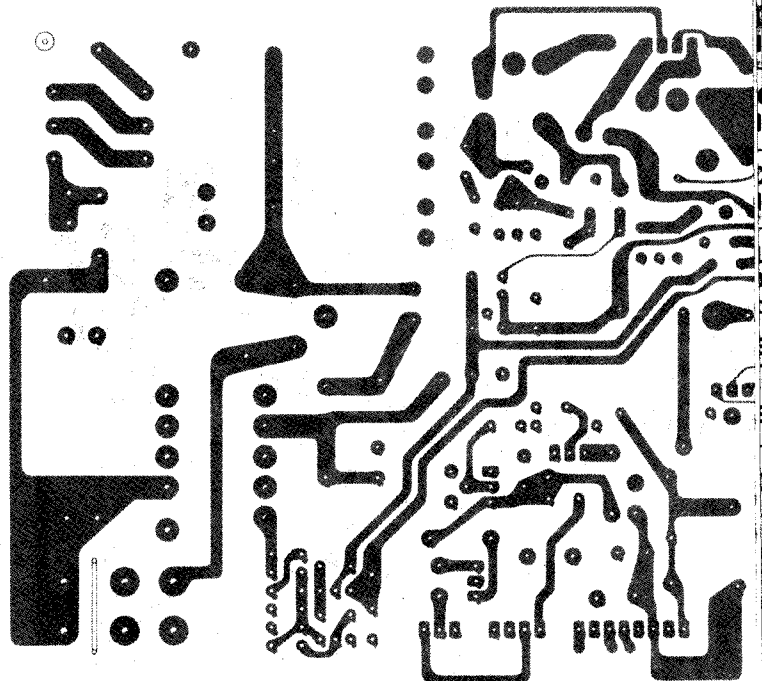
BEAM CURRENT PROTECTOR Check (R43)

1. Input monoscope (fH = 15.75KHz) signal.
 - AC 120V
2. Turn R.G.B BEAM SW ON.
3. Turn MAIN POWER SW and SUB POWER SW ON.
4. Turn the R.G.B G2 VRs (Focus Pack) BRIGHT VR and PICTURE VR each slowly and confirm that the ABL Current reading on the ammeter connected as shown in Fig. 1 is less than 1800µA, the PROTECTOR circuit operates and the raster disappears. (Fig. 1)

HV HOLD DOWN Circuit Check (R82, R83)

1. Confirm that the SUB POWER SW OFF.
2. Disconnect the EA-11 connector on the EA board and install the tool. (Fig. 1)
3. Connect a 330 kΩ semi-fixed VR between one side of R84 and one side of R85 on the EA board.
4. Connect the positive lead of the high tension meter to the HV. DC block and the negative lead to the ground lug beside the heat sink as shown in Fig.-2.
5. Receive a monoscope signal (15.75kHz) and turn the SUB POWER SW ON. (In this case, set BRIGHT (50%), PICTURE at MIN and input the monoscope signal.)
6. Set the G2 VR (Red, Green, Blue) at MIN and turn on the power.

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When the voltage at G2 is gradually increased, the current may stop temporarily (near 1.1mA) due to ABL saturation.

Set the PICTURE VR at MAX.

The VR (330kΩ) for high voltage is less than 32.8KV,

HV HOLD DOWN circuit operates and the raster appears.

HV Regulator Circuit Check (R84, R85)

1. Confirm that the MAIN POWER SW and SUB POWER SW are OFF.
2. Set PICTURE VR to 80% and BRIGHT VR to 50%.
 - R.G.B BEAM SW (S402, 403, 404): OFF
 - FOCUS pack R.G.B. G2: MIN
3. Receive a monoscope signal (15.75kHz and input 120V AC current.)
4. Remove the red anode lead from the HV. DC block, and connect the positive lead of the high tension meter to the HV. DC block and the negative lead to the ground lug beside the heat sink as shown in Fig.-2.
5. Confirm that high voltage is less than 31.30KV when the MAIN POWER SW and SUB POWER SW are turned ON.

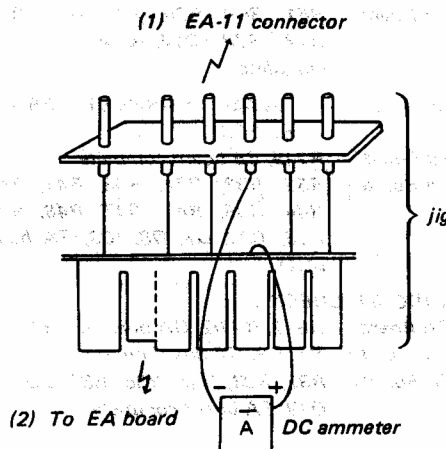
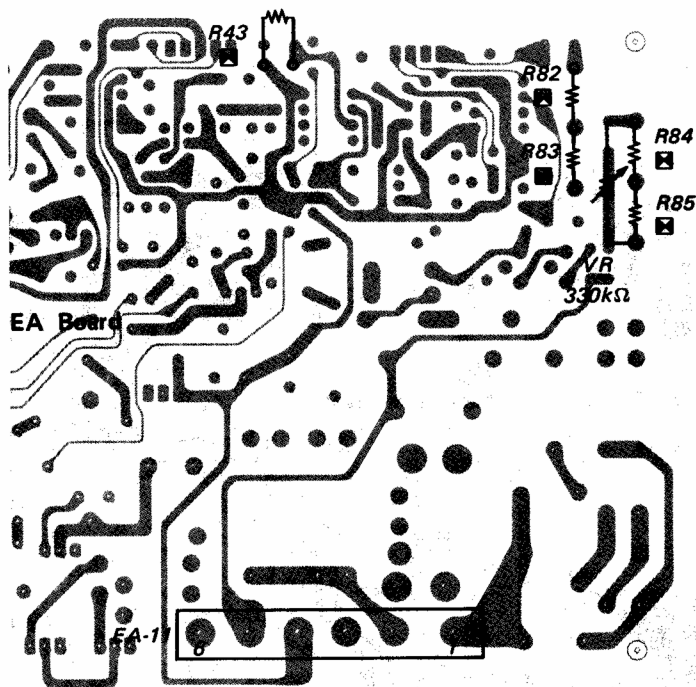


Fig. 1

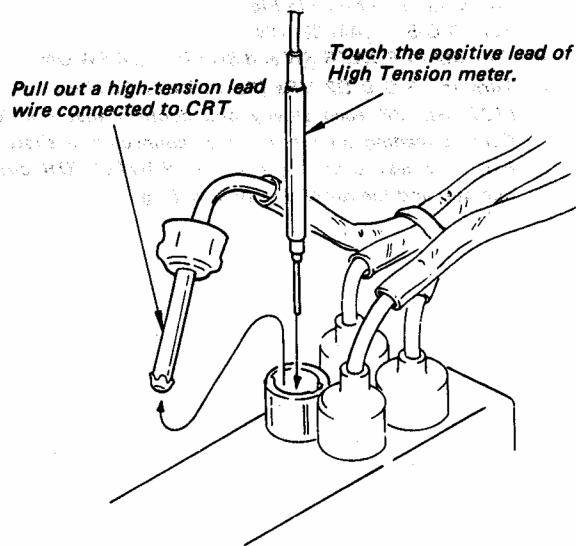


Fig. 2

5-2. EA BOARD ADJUSTMENTS — When a high tension meter is not available —

- When replacing the following components, make the HV HOLD DOWN, HV REG, Vcc REG, BEAM CURRENT PROTECTOR, and OVP CIRCUIT.

- ☑ R82, R83 HV HOLD DOWN CHECK
- ☑ <EA Board> R23, R24, R28, R29, R31, R32, R33, R34, R38, R40, R82, R83, D8, D23, Q7, Q8, IC2, IC3, EA board complete HV BLOK

- ☑ R84, R85 HV REGULATOR CHECK
- ☑ <EA Board> R65, R68, R70, R71, R72, R73, R74, R75, R84, R85, C36, C37, C39, C40, Q4, Q15, Q16, Q17, D17, D18, D19, D20, EA board complete
- <EB Board> T1, EB board mount HV BLOK

- ☑ R78 VCC REG
- ☑ <GA Board> IC604, GA board complete
- <DA Board> R61, R69, R70, R73, R74, R75, R76, R77, R78, D14, Q14, IC7, DA board complete

- ☑ R43 BEAM CURRENT PROTECTOR CHECK
- ☑ <BB Board> R249, BB board complete
- <EA Board> R32, R33, R34, R38, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, D23, C20, Q7, Q8, IC3, EA board complete

- OVP CIRCUIT CHECK**
- ☑ <GA Board> R612, IC602, GA board complete
 - <GB Board> R1, D9, GB board mount
 - <EA Board> R32, R33, R35, R86, R88, D24, Q7, Q8, Q19, EA board complete

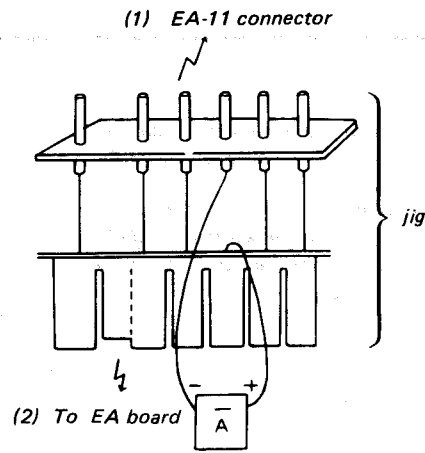


Fig. 1

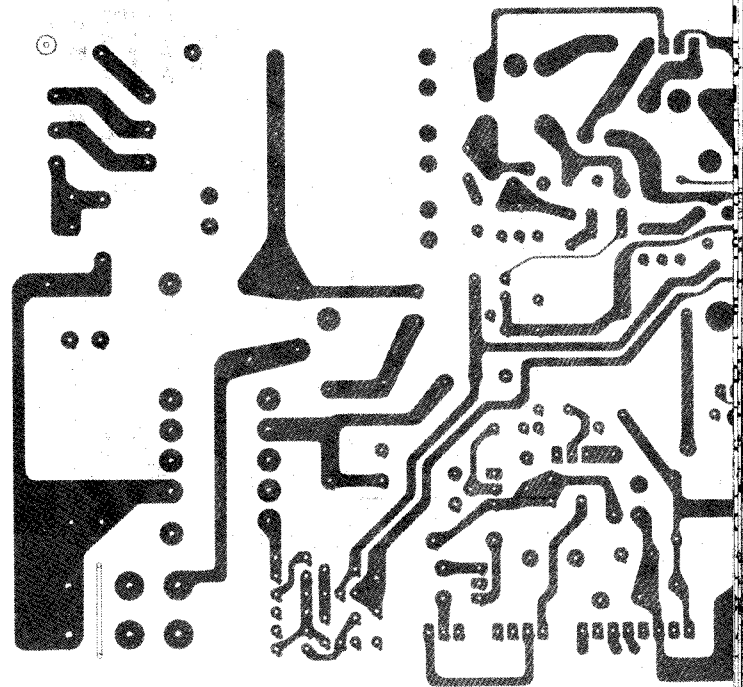
HV HOLD DOWN Circuit Check (☑ R82, R83)

1. Confirm that the POWER switch is OFF position.
2. Make the following network and connect a digital multimeter as shown in Fig. 2.

- * Diode (D1) : V30N (8-719-901-19)
- * Capacitors : (C1 to C6) 12000 F/1.2 KV, polyethylene
- * Digital Multimeter : Withstand voltage of 1000V or more

BEAM CURRENT PROTECTOR Check (☑ R43)

1. Input monoscope (fH = 15.75kHz) signal.
 - AC120V.
2. Disconnect the EA-11 connector on the EA board and install the tool shown in Fig. 1.
3. Turn R.G.B. BEAM SW ON.
4. Turn MAIN POWER SW and SUB POWER SW ON.
5. Turn the R.G.B G2 VRs (Focus Pack) BRIGHT VR and PICTURE VR each slowly and confirm that the ABL Current reading on the ammeter connected as shown in Fig. 1 is less than 1800μA, the PROTECTOR circuit operates and the raster disappears. (Fig. 1)



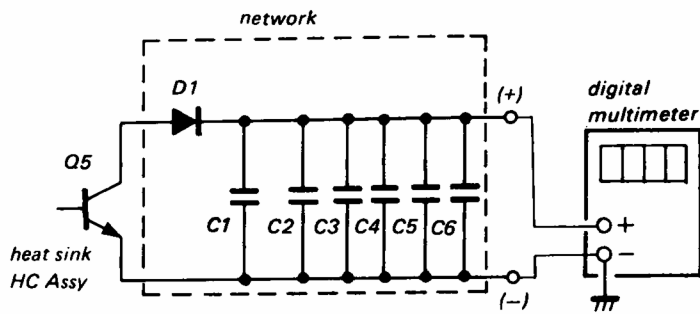


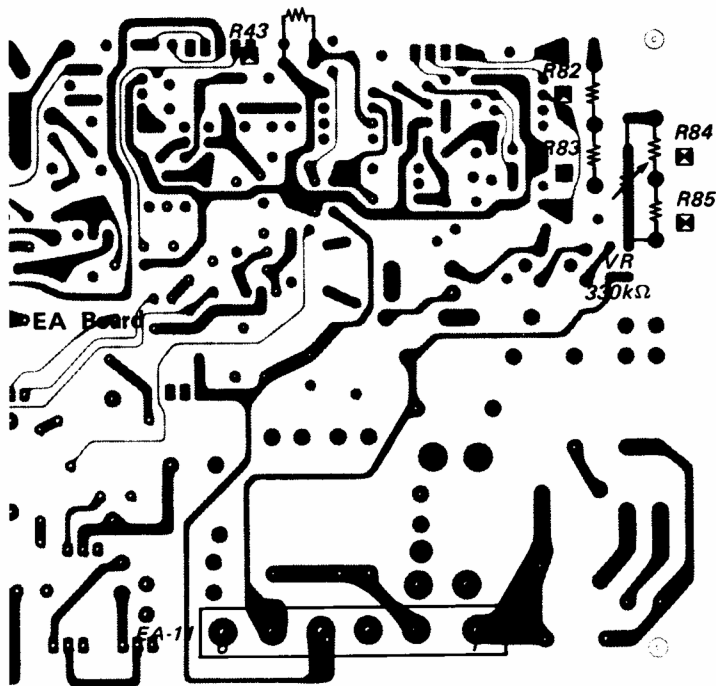
Fig. 2

3. Feed in monoscope pattern from a signal generator and turn the BRIGHT and PICTURE controls for maximum beam current.

4. Turn the POWER switch ON and confirm that the power is automatically turned off just when the voltage on the digital multimeter is $885 \pm 11V$ dc by connecting a resistor across R82 and R83. (HV HOLD DOWN circuit operates).
5. If necessary, select R82 and R83 (1/6W carbon resistor) and repeat above steps.
6. Turn the POWER switch OFF.
7. Disconnect the resistor.
8. Perform the HV REG adjustment from step 4.

HV Regulator Circuit Check (R84, R85)

1. Confirm that the POWER switch is OFF position.
2. Make the following network and connect a digital multimeter as shown in Fig. 2.
3. Feed in monoscope pattern from a signal generator and turn the BRIGHT and PICTURE controls for maximum beam current. (Be sure to synchronize the picture).
4. Turn the POWER switch ON and confirm that the voltage on the digital multimeter is $843V \pm 10V$ dc.
5. If necessary, select R84 and R85 (1/6W carbon resistor) and repeat above steps.
6. Turn the POWER switch OFF and disconnect the network and the digital multimeter.



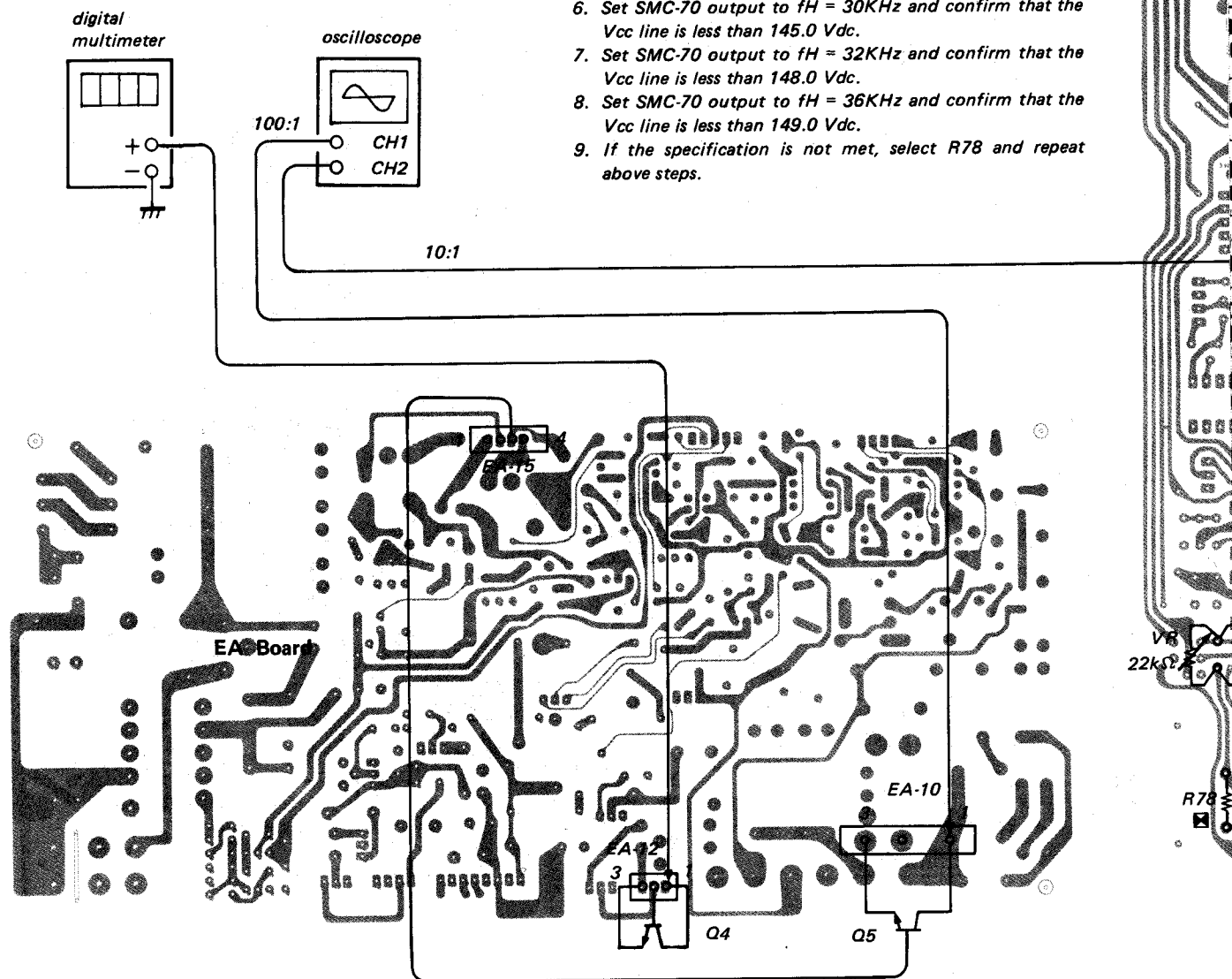
5-3. EA, DA AND DB BOARDS ADJUSTMENTS

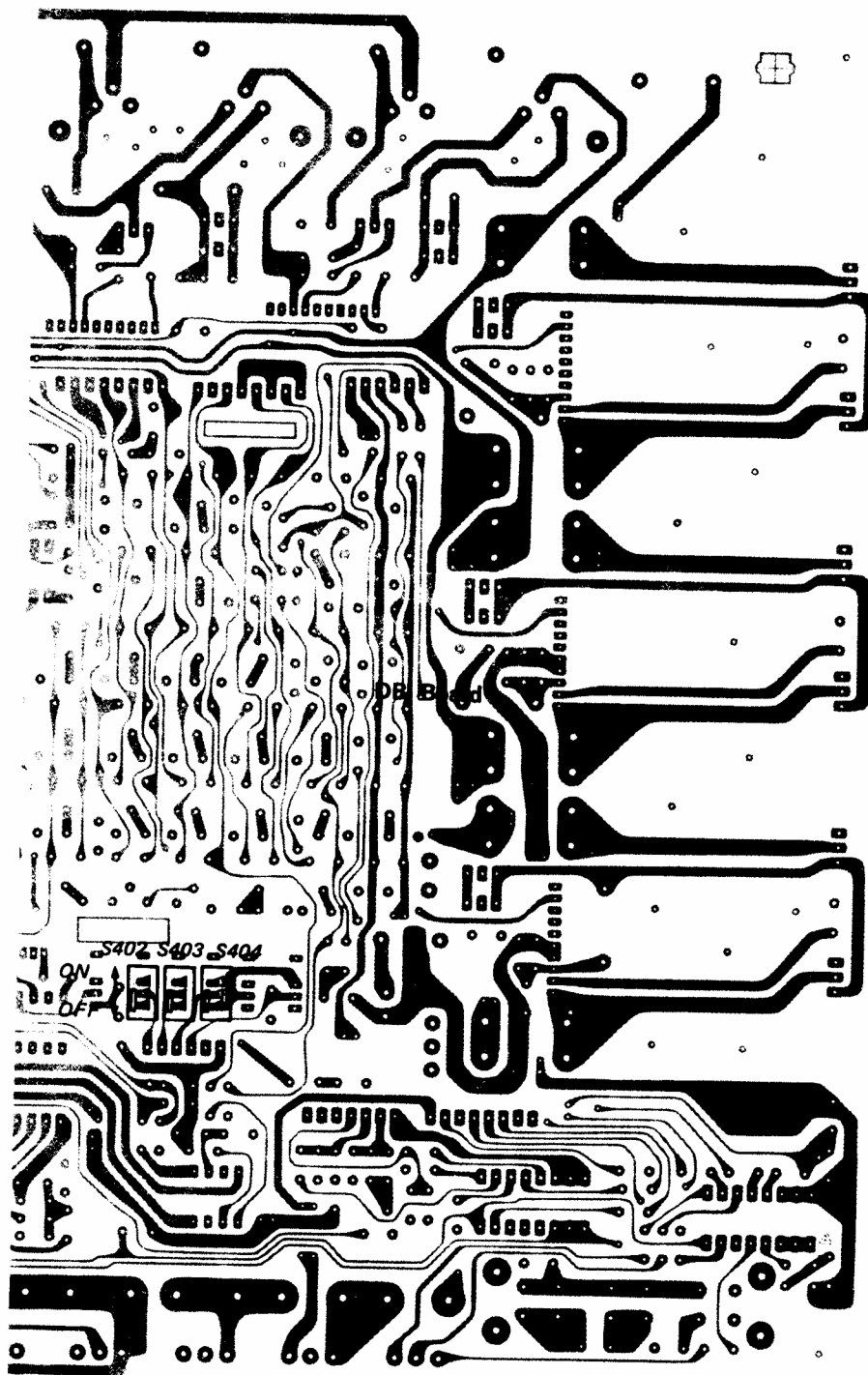
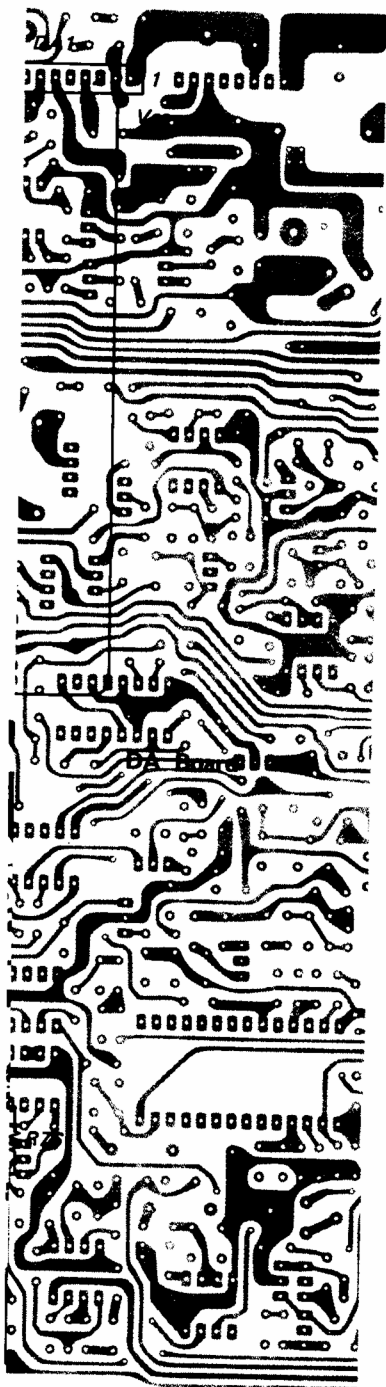
OVP Circuit Check

1. Receive an all-white signal (26kHz).
 R.G.B. BEAM SW (S402, 403, 404) OFF
 R.G.B. G2 VR (Focus pack) MIN
 AC 120V [AC]
2. Connect 22 kΩ variable resistor with R76 in parallel on DA board, confirm that the OVP circuit operates when the voltage at Vcc line voltage is less than 158V by turning slowly the 22 kΩ variable resistor.
 Also, confirm on the oscilloscope that the converter pulse drops first, before the Vcc line voltage.
 Oscilloscope connection :
 1. 100: 1 converter Tr (Q5) collector
 2. 10: 1 Vcc line

VCC REG Check (R78)

1. Connect SMC-70 and RGB Input signal.
 fH = 15.75KHz ... monoscope
 fH = 15KHz All-white
 fH = 26KHz All-white
 fH = 30KHz All-white
 fH = 32KHz All-white
 fH = 36KHz All-white
 - R.G.B BEAM SW (S402, S403, S404) ... OFF
 - R.G.B.G2 VRs (Focus Pack) Mine
 - AC 130V AC
2. Connect a digital multimeter across HV REG transistor (Q4 collector) and ground.
3. Set SMC-70 output to fH = 15.75KHz and confirm that the Vcc line is less than 74.5 Vdc.
4. Set SMC-70 output to fH = 26KHz and adjust R78 so that the Vcc line digital multimeter is less than 125.0 Vdc.
5. Set SMC-70 output to fH = 15KHz and confirm that the Vcc line is less than 71.3 Vdc.
6. Set SMC-70 output to fH = 30KHz and confirm that the Vcc line is less than 145.0 Vdc.
7. Set SMC-70 output to fH = 32KHz and confirm that the Vcc line is less than 148.0 Vdc.
8. Set SMC-70 output to fH = 36KHz and confirm that the Vcc line is less than 149.0 Vdc.
9. If the specification is not met, select R78 and repeat above steps.





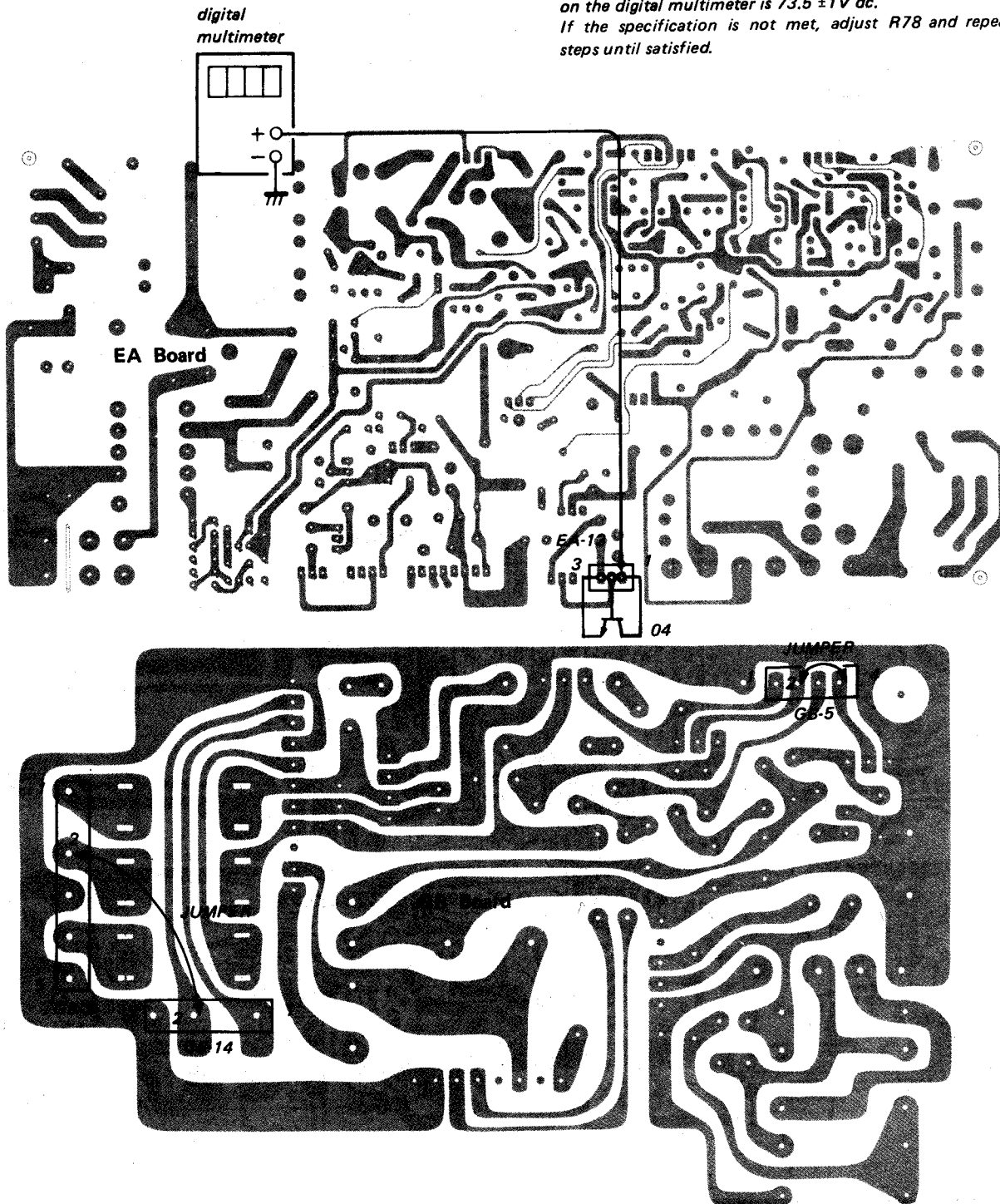
5.4. EA, DA AND DB BOARDS ADJUSTMENTS — When a high tension meter is not available —

OVP Circuit Check

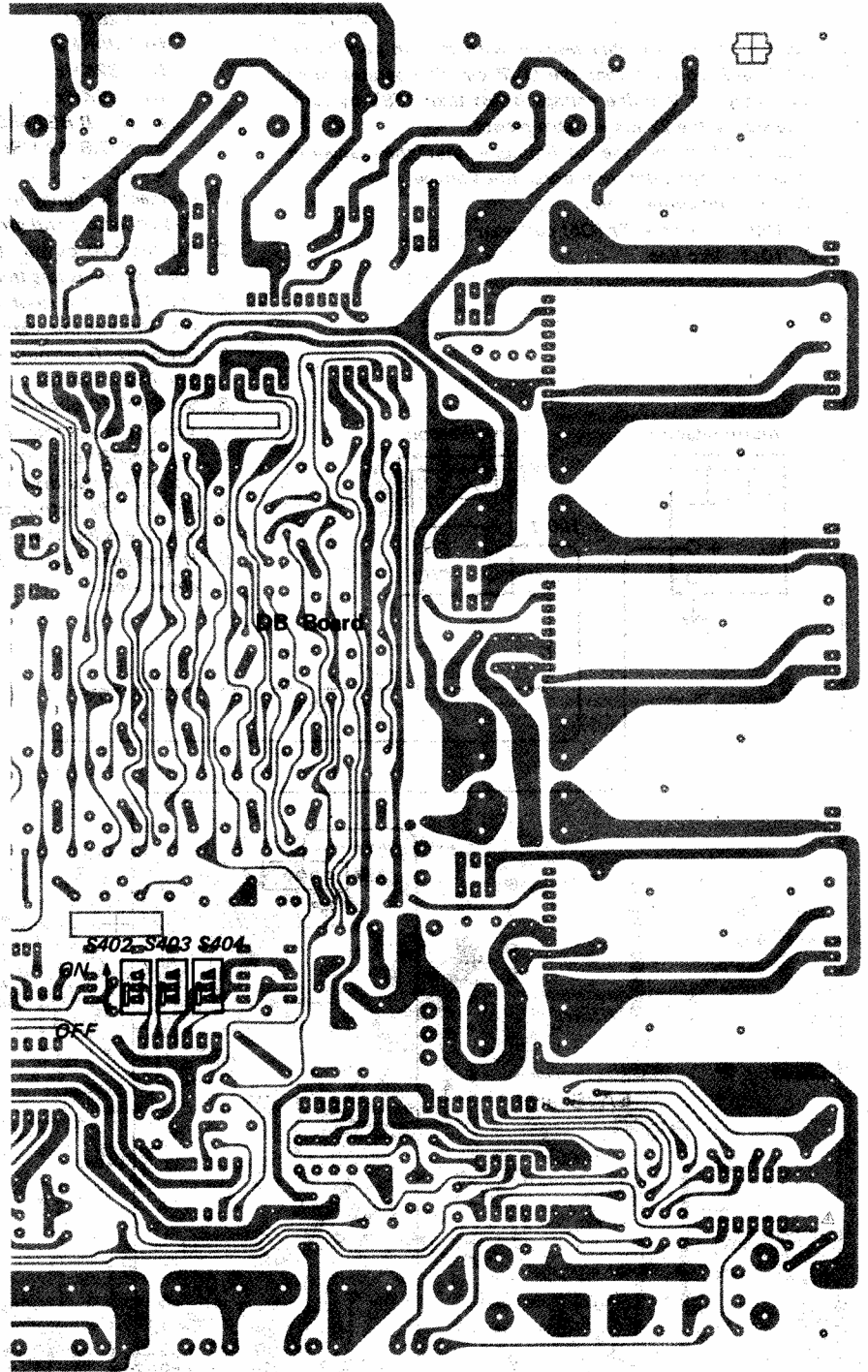
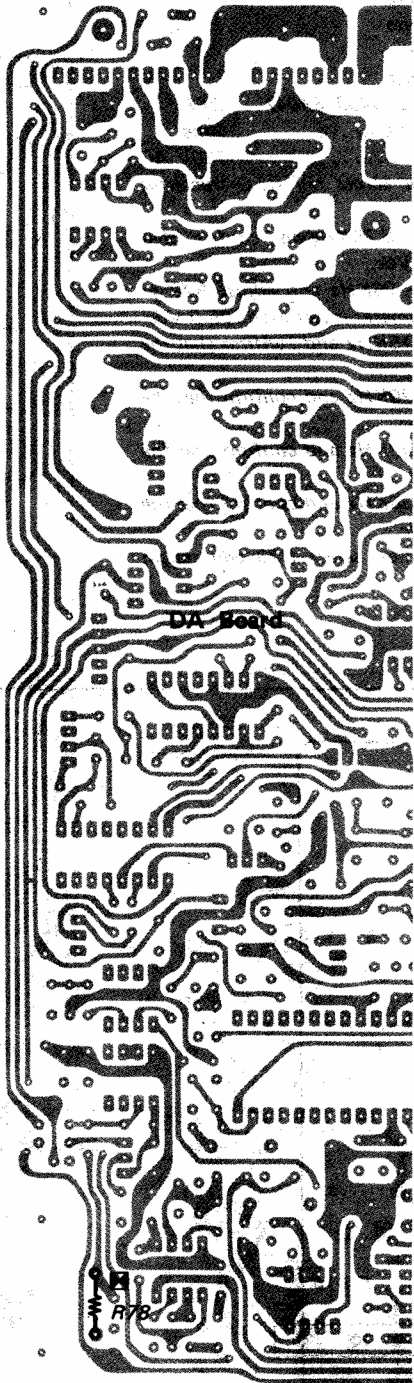
1. Feed in a monoscope signal. (fH = 15.75KHz)
R.G. B BEAM SW (S402, 403, 404) OFF
R.G. B G2 VR (Focus pack) MIN
2. Confirm that the main POWER switch is in OFF position, and short-circuit between pins ② and ④ of GB-5 connector on the GB board.
3. Turn the main POWER switch ON, and confirm that the high tension drops when short-circuited between pin ② of GB-14 connector and pin ② of GB-2 connector.

VCC REG Check (R78)

1. Input signal.
Connect SMC-70 and RGB.
fH = 15.75kHz . . . monoscope
R.G. B BEAM SW (S402, 403, 404) OFF
R.G. B G2 VR (Focus Pack) MIN
AC 130V[AC]
2. Connect a digital multimeter across HV REG transistor (Q4 collector) and ground.
3. Turn the power switch ON and confirm that the voltage on the digital multimeter is 73.5 ± 1V dc.
If the specification is not met, adjust R78 and repeat steps until satisfied.

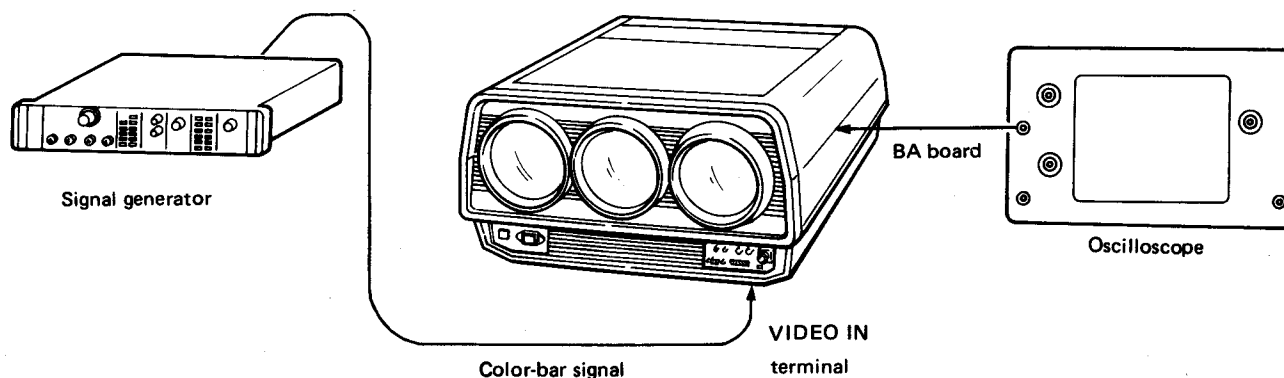


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SECTION 6 CIRCUIT ADJUSTMENTS

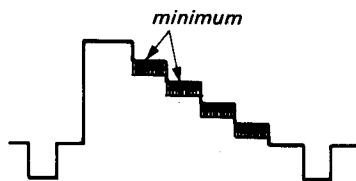
• CONNECTION



6-1. BA, AND BE BOARDS ADJUSTMENTS

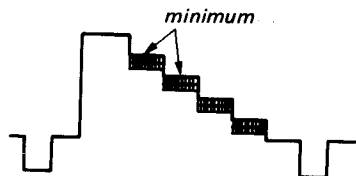
TRAP Adjustment (L111, L113)

1. Input a PAL color bar signal.
2. Observe Q127 emitter on the oscilloscope.
3. Turn L111 (4.43MHz TRAP) core and adjust so that the 4.43MHz carrier component is minimum.
4. Input a SECAM color bar.
5. Observe Q131 emitter on the oscilloscope.
6. Turn L113 (4.25MHz TRAP) core and adjust so that the 4.25MHz carrier component is minimum.



1H COMB Adjustment (L102, RV101)

1. Input an NTSC color bar signal.
2. Observe Q111 emitter on the oscilloscope.
3. White tracking with BA board L102 and RV101, adjust the 3.58MHz carrier component so that it is minimum.



VIDEO AGC (RV1 RV2)

1. Input a monoscope signal.
2. Turn the AGC SW (S702) off and check that Q11 emitter output level is $1.0 \pm 0.2V_{p-p}$.
3. Turn AGC SW (S702) on.
4. Turn SYNC AGC VR (RV1) counterclockwise and maximize Q11 emitter output level.
5. Turn PEAK AGC VR (RV2) and set Q11 emitter output level to $1.1 \pm 0.1V_{p-p}$.
6. Turn SYNC AGC VR (RV1) slowly and set at the point where Q11 output starts to go down.
7. Adjust Q11 emitter output level to $1.0 \pm 0.05V_{p-p}$ with PEAK AGC VR (RV2).

PAL Color Sync Fine Adjustment (RV305, RV306)

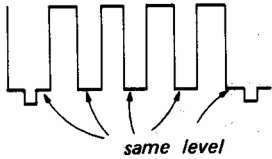
1. Input a PAL color bar.
2. Connect 100k resistor between IC301 Pin (13) and ground and release killer.
3. Connect 10uF/16V electrolytic capacitor between IC301 pin (16) and ground and cut the burst signal.
4. Connect IC3 pin (2) to the +12V line via a 2.2k resistor. (In this case, the state of IC3 pin (9) becomes "Low" mode; PAL mode is available.)
5. Adjust RV305 (APC-2 4.43MHz) to get color sync.
6. Remove the 2.2k resistor in step 4.
7. Input an NTSC color bar.
8. Ground Q23 base momentarily and get 3.58MHz mode. (In this case, the state of IC3 pin (9) becomes "HIGH" mode.)
9. Adjust RV306 (APC-1 3.58MHz) to get color sync.

KILLER Adjustment (RV304)

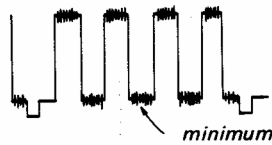
1. Set the TEST SW on the rear panel to "ON".
2. Connect 10uF/16V electrolytic capacitor between IC301 pin (13) and ground.
3. Adjust RV304 for voltage value of IC301 pin (13) is $8.0 \pm 0.05V$ dc.

Color Balance Adjustment (L401, L402)

1. Input a SECAM color bar signal. Connect the oscilloscope to Q401 emitter (B OUT) and adjust L402 so that the waveform is the same level.
2. Connect the oscilloscope to Q403 emitter (R OUT) and adjust L401 so that the waveform is the same level.

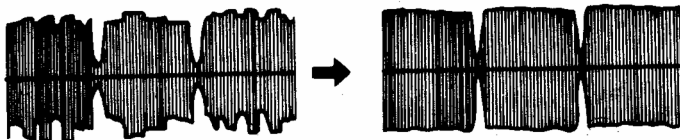


3. Turn S401 on, connect the oscilloscope to Q401 and Q403 emitters, and adjust with L401 and L403 so that the color component leak in the white and black level portions is minimum.



SECAM COLOR (L403, T401)

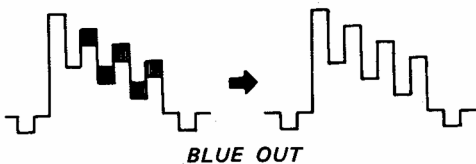
1. Bell Filter Adjustment
 - (1) Input a SECAM color bar signal.
 - (2) Observe IC401 pin (17) and adjust T401 so that the waveform level is uniform.



2. ID Adjustment
 - (1) Input a SECAM color bar.
 - (2) Adjust L403 so that IC401 pin (25) DC level is maximum.

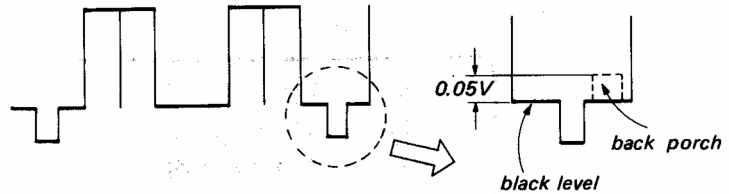
PAL MATRIX (RV303, T302)

1. Input a PAL color bar signal. Set the COLOR VR to the mechanical center.
2. With observing the waveform of the Q401 emitter (BLUE OUT), set variable range of the waveform to be minimum by adjusting RV303 and T302.



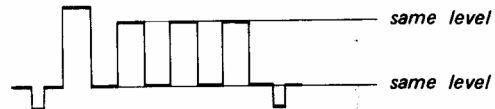
Back porch Level Adjustment (RV401, 402, 403)

1. Input a color bar signal (burst OFF signal).
2. Connect the oscilloscope to the RED (Q403 emitter), GREEN (Q402 emitter) and BLUE (Q401 emitter) measurement points and adjust RV401, 402 and 403 so that the DC levels of the black portion and back porch portion of the signal match.



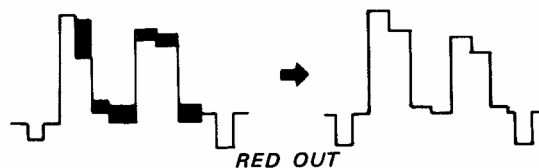
SUB COLOR (RV302, RV709)

1. Input a SECAM color bar signal and set the color VR to mechanical center.
2. Connect the oscilloscope to Q401 emitter (B OUT) and adjust RV709 so that the waveform is as shown in the diagram. Also, adjust RV302 so that the waveform is as shown in the diagram when a PAL color bar is input.



SUB HUE: ANTI (PAL RV303, RV708)

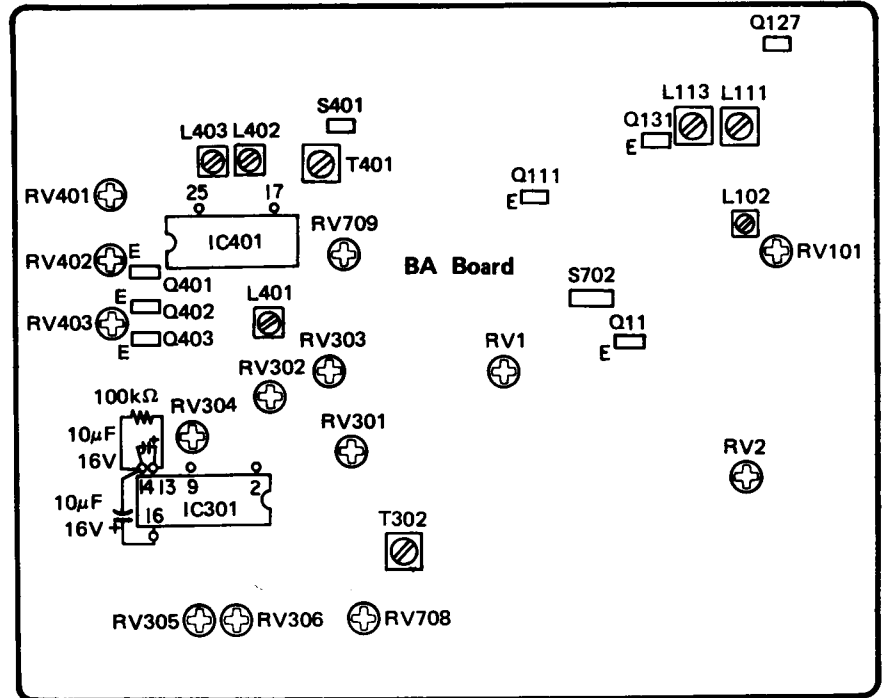
1. Input a special color bar signal. (PHILIPS COLOR PATTERN)
2. Set the color VR and HUE VR to mechanical center.
3. Observe the Q401 emitter (BLUE OUT) and Q403 emitter (RED OUT) waveforms, and adjust RV708 and RV303 so that the ANTI-PAL signal chroma component is minimum.
4. Input an NTSC signal and confirm that there is sufficient variable range when the HUE VR is turned.



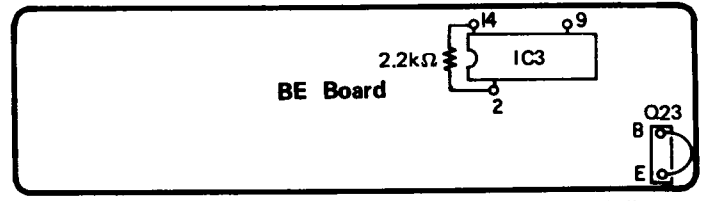
SUB PICTURE (RV301)

1. Input a PAL color bar signal.
 2. Adjust RV301 so that Q402 emitter (G OUT) output level is $0.85 \pm 0.05V_{p-p}$.
- Note: Be sure to perform this adjustment after back porch level adjustment.

(COMPONENT SIDE)



(COMPONENT SIDE)



NOTE: Q23 between Base and Collector momentarily shortcircuit.

6.2. DA BOARD ADJUSTMENTS

Multiscan Control Section

1. Preparations

Connect dummy power supply to DA-1, and digital voltmeter and dummy load to Vcc line.

Digital voltmeter to TP8.

Frequency counter to H. Pulse line.

Connect EA board to DA-13 and DY to DA-14 ~ 16.

Notes :

- 1) Use Y-Z power supply for dummy.
- 2) Dummy load is 350Ω/50W.

2. Input Signal

VIDEO monoscope (fH = 15.75kHz) and SMC-70 (fH = 15kHz, fH = 30kHz)

F-V Conversion Adjustment

- 1) Set RGB/VIDEO SW to RGB and set SMC-70 output to fH = 30kHz. At this time, choose R30 and 31 so that TP-8 digital voltmeter reading is 6.05 ± 0.05V.

Note: SMC-70

Press **SHIFT** + **F.5** at the same time.

- 2) Set SMC-70 output to fH = 15kHz and confirm that TP-8 reading is 2.99 ± 0.02V.

Note: SMC-70

Press **SHIFT** + **F.2** at the same time.

Vcc Adjustment

- 1) Set SMC-70 output to fH = 30kHz and adjust R78 so that the 145.0V dc.
- 2) Set SMC-70 output to fH = 15kHz and confirm that the Vcc line reading is less than 71.3V dc. If the specification is not met, adjust R78 and repeat steps 1, and 2, until satisfied.

AFC Adjustment

1. RGB Mode AFC Adjustment

- 1) Connect a 10μF/16V chemical capacitor between IC1 pin ① and GND.

Turn RV-1 fully to the left.

- 2) Set SMC-70 output to fH = 30kHz and adjust RV2 so that the frequency counter reading is 30.059kHz.
- 3) Set SMC-70 output to fH = 15kHz and adjust RV1 so that the frequency counter reading is 15.030kHz.

2. VIDEO Mode AFC Adjustment

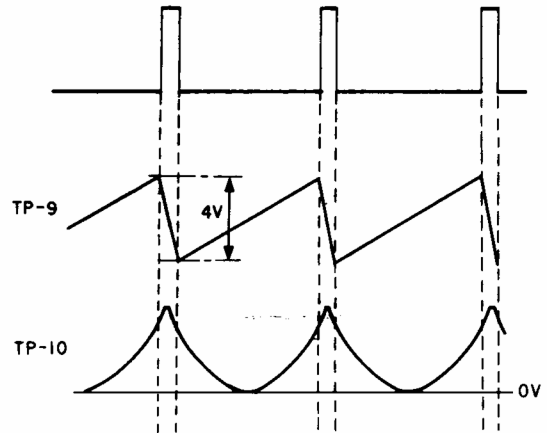
- 1) Set RGB/VIDEO SW to VIDEO and adjust R92.93 so that the frequency counter reading is 15.734kHz.
- 2) Confirm that Vcc line digital voltmeter reading is less than 73.5V dc.

H. SAW, H. PARA Check

- 1. Observe DA-8 H. Pulse and TP-9 H. SAW on the oscilloscope.

Confirm that the phases of the two waveforms match and that the amplitude of TP-9 waveform is 4Vp-p ± 0.5V by VIDEO MODE.

- 2. Observe TP-10 instead of TP-9 and compare the phase with H. Pulse. The amplitude at this time should be more than 3V by VIDEO MODE.

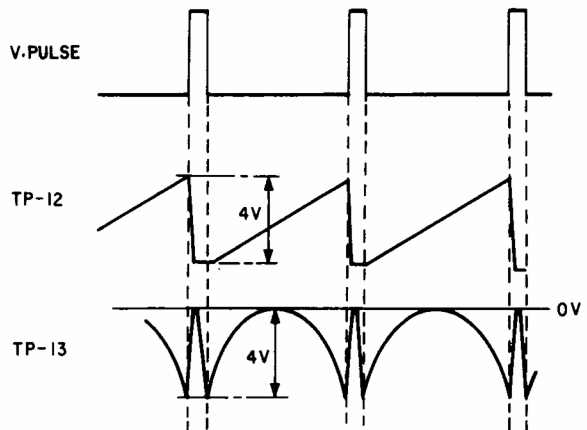


V. SAW, V PARA Check

- 1. Observe DA-7 V. Pulse and TP-12 V. SAW on the oscilloscope.

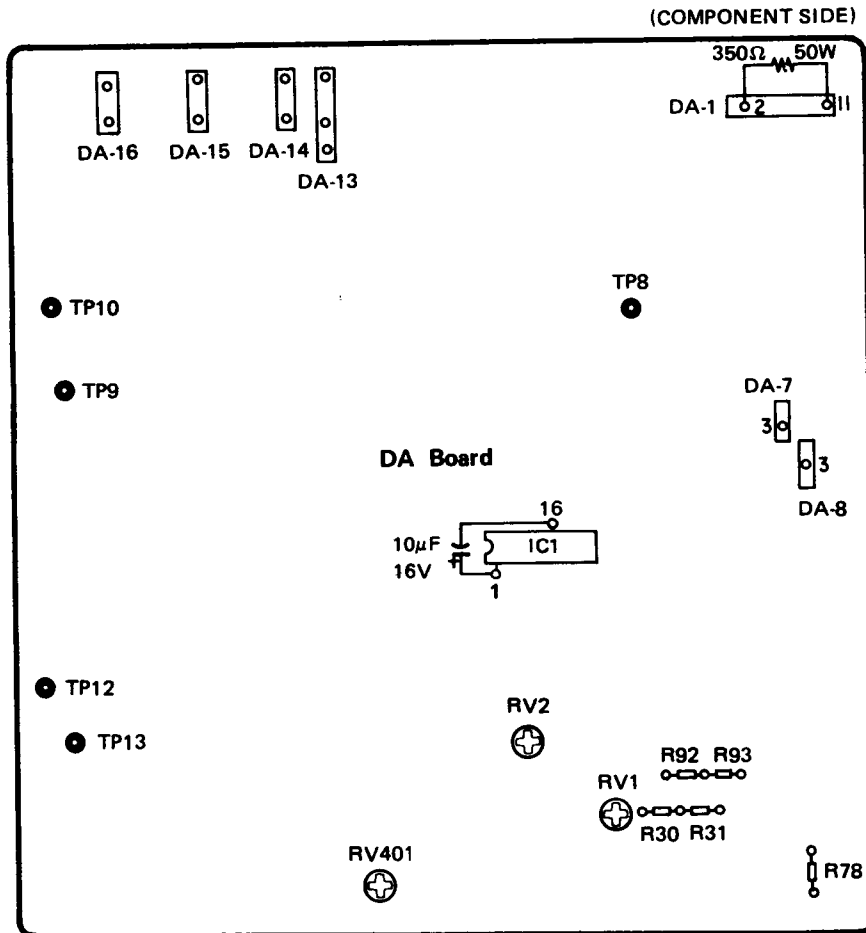
Confirm that the phases of the two waveforms match and that the amplitude of TP-12 Waveform is 4Vp-p ± 0.5V by VIDEO MODE.

- 2. Observe TP-13 instead of TP-12 and confirm that the phase matches that of V. Pulse, and that the amplitude is 4Vp-p ± 0.5V by VIDEO MODE.



Interlace Adjustment

1. Receive an NTSC monoscope signal.
2. Adjust for optimum condition with DA board V.INTER VR (RV401).



SECTION 8 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.

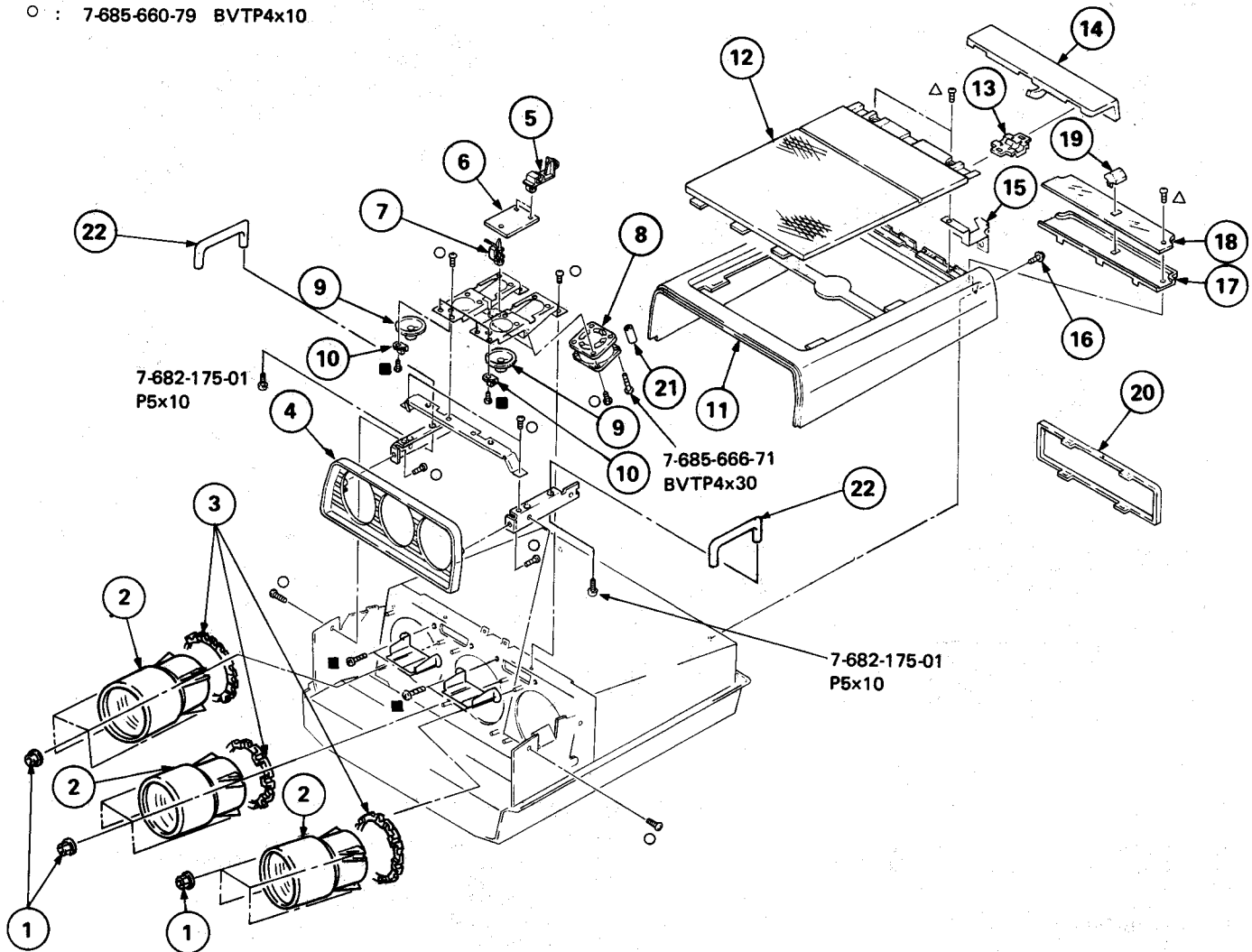
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

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

Les composants identifiés par une trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-1. LENS

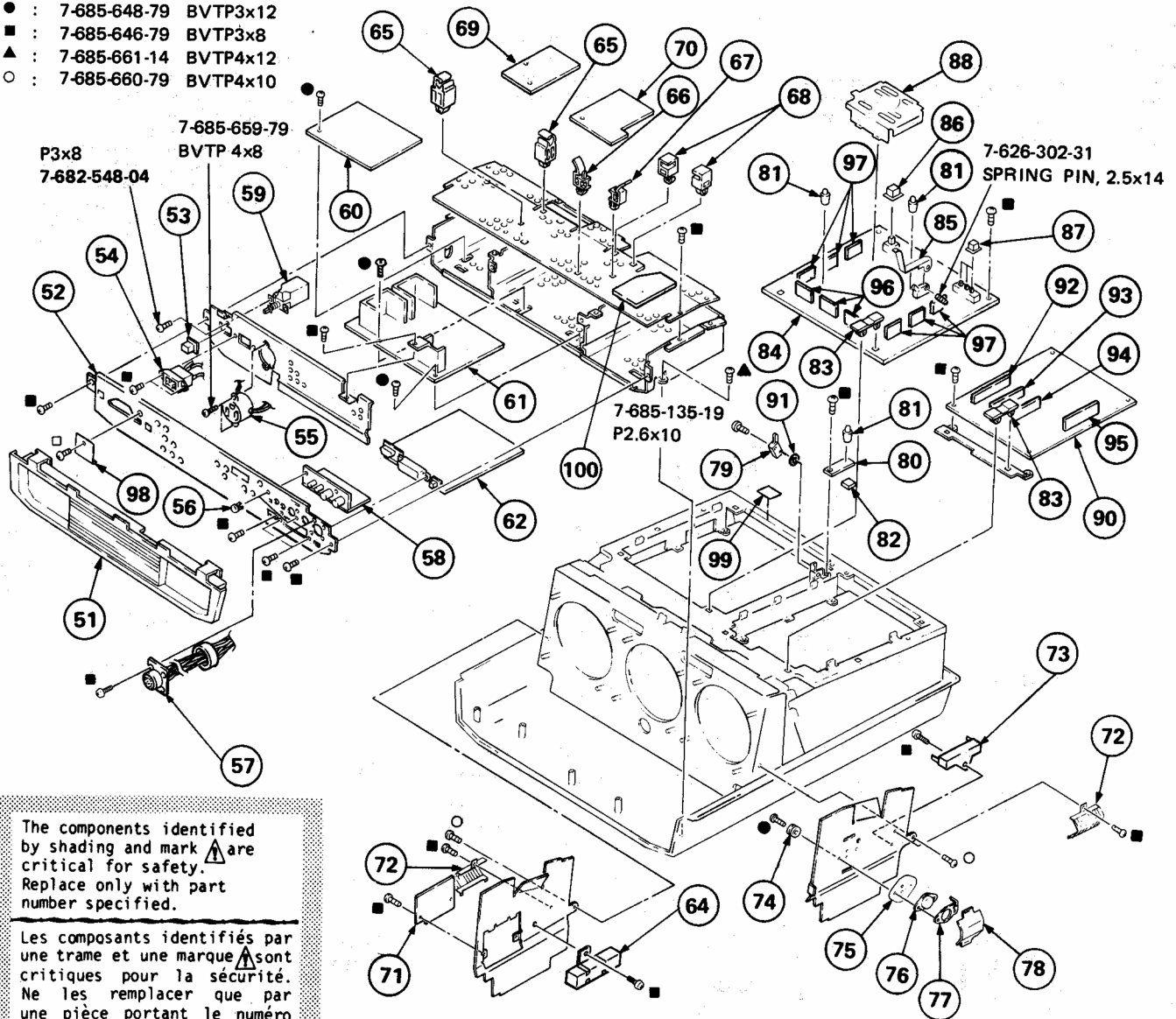
- : 7-685-646-79 BVTP3x8
- △ : 7-685-661-79 BVTP4x12
- : 7-685-660-79 BVTP4x10



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	4-304-749-00	NUT, FLANGE		12	X-4378-606-1	PLATE ASSY, TOP	
2	4-383-089-01	LENS, HD6		13	3-659-618-00	HINGE, SPRING	13,14
3	*4-378-642-01	WASHER, LENS		14	X-4378-603-1	DOOR ASSY	
4	4-378-657-01	PANEL, LENS		15	*4-378-670-01	BRACKET, MESH EARTH	
5	*3-682-612-00	CLIP (B), ANCHOR		16	3-703-251-00	SCREW (+M4), IT TAPPING	
6	*1-617-560-11	K BOARD		17	*4-378-648-01	PANEL, CONTROL	
7	*3-703-141-00	HOLDER, PCB		18	4-378-646-02	PLATE, ORNAMENTAL, CONTROL	
8	1-541-324-11	FAN, DC		19	4-378-613-01	CAP, LAMP	
9	1-503-344-21	SPEAKER		20	4-378-650-01	PANEL, SONY	
10	*4-378-615-01	RETAINER, SPEAKER		21	*3-703-309-11	SPACER (5X16)	
11	4-378-655-01	CABINET		22	*2-254-727-00	HANDLE	

8-2. DB BOARD

- : 7-685-648-79 BVTP3x12
- : 7-685-646-79 BVTP3x8
- ▲ : 7-685-661-14 BVTP4x12
- : 7-685-660-79 BVTP4x10



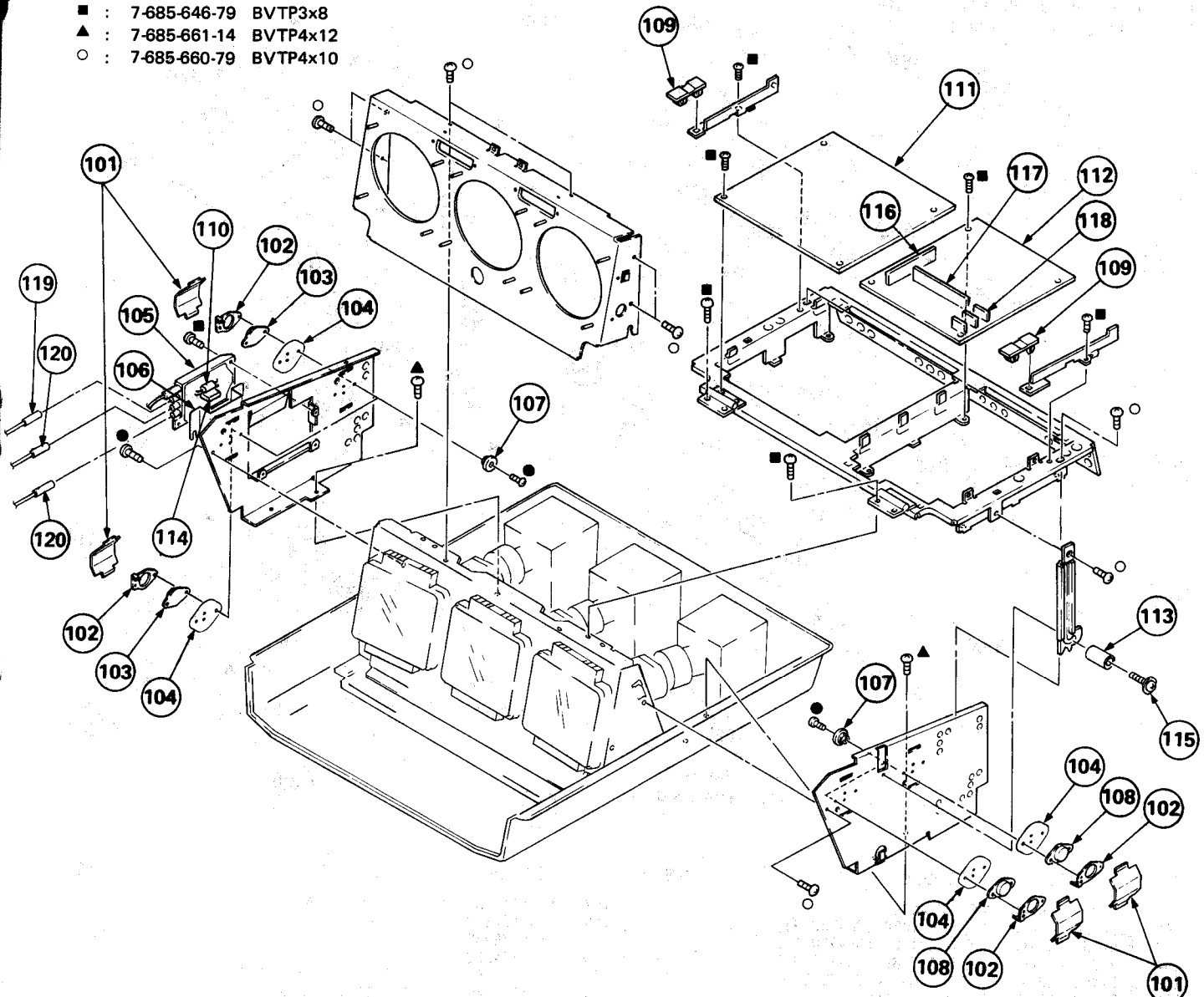
The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	4-378-659-01	PANEL, CONNECTOR		76	8-729-311-42	TRANSISTOR 2SC1114	
52	4-383-094-01	PLATE (AC), CONNECTOR		77	*4-314-938-01	RETAINER (TO-3), TRANSISTOR COVER, TR	
53	4-362-811-00	BUTTON, MAIN POWER		78	4-378-620-01	COVER, TR	
54	▲ 1-509-547-11	3P INLET		79	▲ 1-552-437-11	SWITCH, LEVER	
55	▲ 1-509-841-12	OUTLET AC		80	*1-617-563-11	X BOARD	
56	4-374-303-01	RIVET, NYLON		81	1-518-590-11	LAMP, PILOT (WITH HOLDER)	
57	▲ 1-558-365-11	CONNECTOR ASSY, ROUND TYPE 14P		82	9-911-840-XX	CUSHION	
58	*1-617-562-11	QB BOARD		83	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
59	▲ 1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)		84	*A-1165-029-A	DB BOARD, COMPLETE	96,97
60	*1-620-493-11	FA BOARD		85	*4-378-608-01	ACTUATOR	
61	*A-1316-061-A	GA BOARD, COMPLETE		86	4-362-808-00	BUTTON, POWER	
62	*A-1275-080-A	QA BOARD, COMPLETE		87	4-362-809-00	BUTTON, SELECT	
64	▲ 1-217-183-11	RES. WIREWOUND 2.7 10% 15W		88	*4-378-633-01	COVER, ADJUSTMENT	
65	*3-659-681-00	HOLDER, PC BOARD		90	*A-1135-376-A	BA BOARD, COMPLETE	92-95
66	*3-703-141-00	HOLDER, PCB		91	*4-309-378-00	SPACER	
67	*4-321-929-00	HOLDER, PC BOARD		92	*1-617-537-11	BE BOARD	
68	*3-701-903-00	HOLDER, PC BOARD		93	*1-617-536-11	BD BOARD	
69	*1-620-494-11	FC BOARD		94	*1-617-535-11	BC BOARD	
70	*1-623-485-11	GB BOARD		95	*1-617-538-11	BF BOARD	
71	*1-617-556-11	FB BOARD		96	*1-617-550-11	DC BOARD	
72	*4-378-671-01	SPRING		97	*1-617-551-11	DD BOARD	
73	▲ 1-570-258-32	SWITCH, THERMAL REED		98	*4-373-139-01	COVER, AC	
74	4-313-734-00	BUSHING TR, Y		99	9-911-838-XX	SHEET	
75	3-701-353-00	SPACER, MICA		100	*1-619-628-11	GC BOARD	

8-3. DA BOARD

- : 7-685-648-79 BVTP3x12
- : 7-685-646-79 BVTP3x8
- ▲ : 7-685-661-14 BVTP4x12
- : 7-685-660-79 BVTP4x10



No.	Part No.	Description	Remark
101	4-378-620-01	COVER, TR	
102	*4-314-938-01	RETAINER (TO-3), TRANSISTOR	
103	8-729-302-02	TRANSISTOR 2SD905	
104	3-701-353-00	SPACER, MICA	
105	▲ 1-230-089-22	RESISTOR ASSY, HIGH-VOLTAGE	
106	*4-378-614-01	COVER, FOCUS BLOCK	
107	3-703-320-00	BUSHING (A), TRANSISTOR	
108	8-729-311-62	TRANSISTOR 2SC1116	
109	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
110	1-202-723-00	RES, SOLID 2.2M 10% 1/2W	
111	*A-1165-028-A	DA BOARD, COMPLETE	

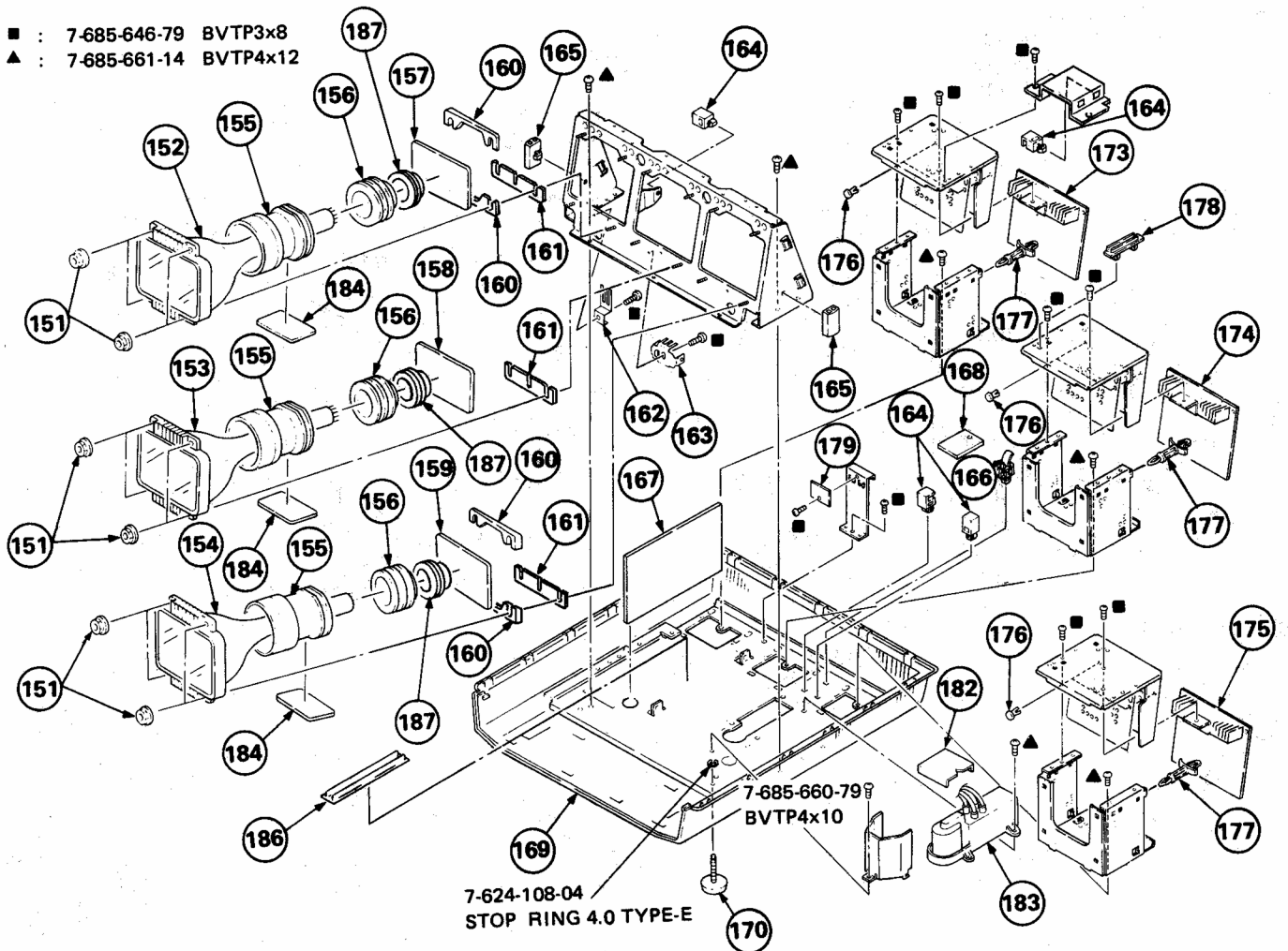
No.	Part No.	Description	Remark
112	*A-1135-433-A	BB BOARD, COMPLETE	116-118
113	3-659-365-00	SPACER (4X3)	
114	1-519-063-XX	DISCHARGING GAP	
115	3-703-251-00	SCREW (+M4), IT TAPPING	
116	*1-617-541-11	BI BOARD	
117	*1-617-540-11	BH BOARD	
118	*1-617-539-11	BG BOARD	
119	1-556-880-51	LEAD ASSY, HIGH-VOLTAGE	
120	1-556-880-81	LEAD ASSY, HIGH-VOLTAGE	

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

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-4. BASE ASSY

- : 7-685-646-79 BVTP3x8
- ▲ : 7-685-661-14 BVTP4x12



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	4-304-749-00	NUT, FLANGE		167	*A-1345-682-A	EA BOARD, COMPLETE	
152	▲ 8-736-053-09	PICTURE TUBE (SD-130(R))		168	*1-617-553-11	EB BOARD	170
153	▲ 8-736-051-05	PICTURE TUBE (SD-130(G))		169	X-4378-605-1	BASE ASSY	
154	▲ 8-733-022-05	PICTURE TUBE (SD-187(B))		170	4-378-622-01	ADJUSTOR	
155	▲ 1-451-283-11	DEFECTION YOKE (SY-130M)		173	*A-1330-691-A	CA R BOARD, COMPLETE	
156	▲ 1-452-302-31	CRT NECK ASSEMBLY		174	*A-1330-692-A	CA G BOARD, COMPLETE	
157	*1-617-545-11	CBR BOARD		175	*A-1330-693-A	CA B BOARD, COMPLETE	
158	*1-617-546-11	CBG BOARD		176	4-812-134-11	RIVET NYLON, 3.5	
159	*1-617-547-11	CBB BOARD		177	*3-681-127-00	HOLDER, PC BOARD	
160	*4-378-603-01	SPACER (100"), CRT		178	*3-680-613-11	SUPPORT, PC BOARD	
161	*4-378-602-01	SPACER, 100"		179	*1-617-564-11	Y BOARD	
162	4-332-209-00	SPRING		182	*4-362-889-01	SHEET (G), INSULATING	
163	*4-309-624-00	TERMINAL, EARTH		183	▲ 1-453-095-15	DC BLOCK, HIGH-VOLTAGE (F-BLT)	
164	*3-701-903-00	HOLDER, PC BOARD		184	*1-617-554-11	EC BOARD	
165	*4-026-507-00	SPACER		186	*3-680-613-01	SUPPORT, PC BOARD	
166	*3-703-141-00	HOLDER, PCB		187	▲ 1-452-261-41	CRT NECK ASSY (362)	

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

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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