

Service Manual



Video Projection Monitor
TC-43GF10M
 R12M Chassis
GA00

SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
CHASSIS BOARDS LAYOUT/РАСПОЛОЖЕНИЕ ПЛАТ ШАССИ
SERVICE HINTS/ПРИЕМЫ ТЕХНИЧЕСКОГО ОБСЛУЖИВАНИЯ
ADJUSTMENT METHOD/МЕТОД РЕГУЛИРОВКИ
CRT Set Up/УСТАНОВКА КИНЕСКОПА
FOCUS ADJUSTMENT/РЕГУЛИРОВКА ФОКУСА
AUTO CONVERGENCE FUNCTION/ФУНКЦИЯ АВТОМАТИЧЕСКОГО СВЕДЕНИЯ ЛУЧЕЙ
CONVERGENCE PRE-ADJUSTMENT WAVEFORM/ПРЕДУСТАНОВЛЕННЫЕ КРИВЫЕ СВЕДЕНИЯ ЛУЧЕЙ
GREEN RASTER ADJUSTMENT/РЕГУЛИРОВКА ЗЕЛЕННОГО РАСТРА
AUTO-STATIC CONVERGENCE ADJUSTMENT/РЕГУЛИРОВКА СТАТИЧЕСКОГО СВЕДЕНИЯ
COMPLETE DYNAMIC CONVERGENCE ADJUSTMENT/РЕГУЛИРОВКА ДИНАМИЧЕСКОГО СВЕДЕНИЯ
SERVICE ADJUSTMENT PROCEDURES/МЕТОДИКА НАСТРОЙКИ
SPECIAL SERVICING PROCEDURE/ПРОЦЕДУРА СПЕЦИАЛЬНОГО ОБСЛУЖИВАНИЯ
LOCATION OF LEAD WIRING/РАСПОЛОЖЕНИЕ ЭЛЕКТРИЧЕСКИХ КАБЕЛЕЙ И СОЕДИНЕНИЙ
BLOCK DIAGRAMS/БЛОК-СХЕМЫ
Power Supply/Питание
Video/Видео
Audio/Аудио
Deflection/Отклонение
Control/Управление
SCHEMATIC DIAGRAMS/ПРИНЦИПИАЛЬНЫЕ СХЕМЫ
Remote Controller/Пульт дистанционного управления
N-Board/Н-Плата
P1, P2, P4, P5-Boards/Р1, Р2, Р4, Р5-Платы
E-Board/Е-Плата
V-Board/В-Плата
D, DH-Boards/Д, ДН-Платы
A-Board/А-Плата
Q-Board/Q-Плата
AD, AR, VM-Boards/АД, АР, VM-Платы
LB, LR-Boards/LB, LR-Платы
LG-Board/LG-Плата
C-Board/С-Плата
U-Board/У-Плата
C1-Board/С1-Плата
C2-Board/С2-Плата
C3-Board/С3-Плата
C4-Board/С4-Плата
M-Board/М-Плата
G, K, R-Boards/Г, К, R-Платы
X-Board/Х-Плата
T-Board/Т-Плата
Waveform Pattern Table/Форма сигналов в контрольных точках
Interconnection/Соединение
EXPLODED VIEWS AND PARTS LIST/СБОРОЧНЫЕ ЧЕРТЕЖИ И СПИСОК ЗАПАСНЫХ ЧАСТЕЙ

Panasonic

Specifications

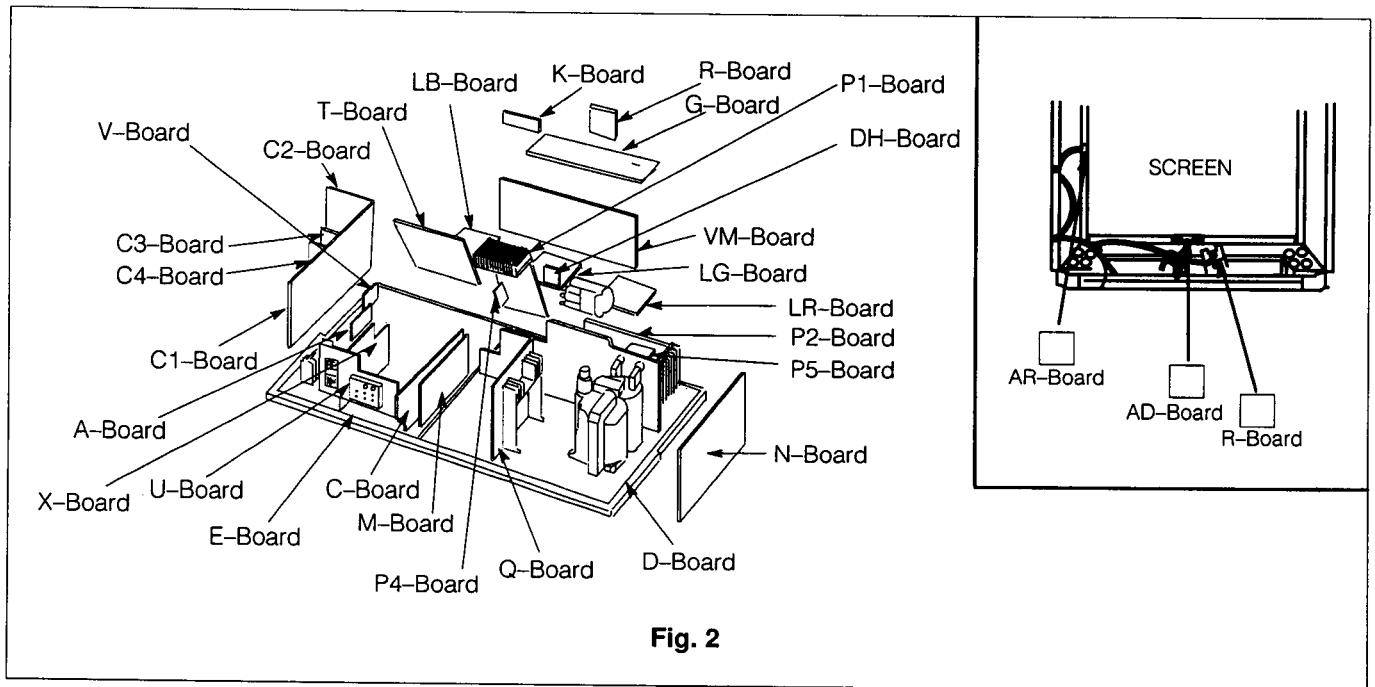
Power Source :	AC 120V, 127V, 220V– 240V 50 / 60 Hz
Power Consumption :	300 W 9.0 W (Stand-by condition)
Colour System :	4 Systems PAL SECAM NTSC 3.58 NTSC 4.43
Screen Size :	Diagonal : 1092 mm Height : 655 mm Width : 874 mm
Projection Tube :	TXFCRTBZAZ (B – ASSY) TXFCRTGZAZ (G – ASSY) TXFCRTRZAZ (R – ASSY) 80° deflection Three 17.78 cm High–Brightness Projection Tubes with Radial Face plate
High Voltage :	32.0 kV at zero beam current
Audio Output : Internal Speaker	12 W (Max.) x 2 Impedance 8 Ω
Headphones :	Impedance 8 Ω

Video / Audio Terminals :	
AV1, 2, 3 IN	Video (Phono) 1 Vp–p 75 Ω S–Video Y : 1.0 Vp–p 75 Ω C : 0.286Vp–p75 Ω Audio (Phono) Approx.500mV 47k Ω
Monitor OUT	Video (Phono) 1 V p–p 75 Ω Audio (Phono) Approx.500mV 47k Ω
Speaker :	Surround speaker impedance 8 ~ 16 Ω External speaker impedance 8~16 Ω
Dimensions :	Height : 1178 mm Width : 935 mm Depth : 450 mm
Mass :	60.0 kg (Net)
Accessories Supplied :	Remote Controller x 1(EUR50717) " R6 " Battery x 2

Specifications are subject to change without notice.
Mass and dimensions shown are approximate.

TC-43GF10M

Chassis Boards Layout

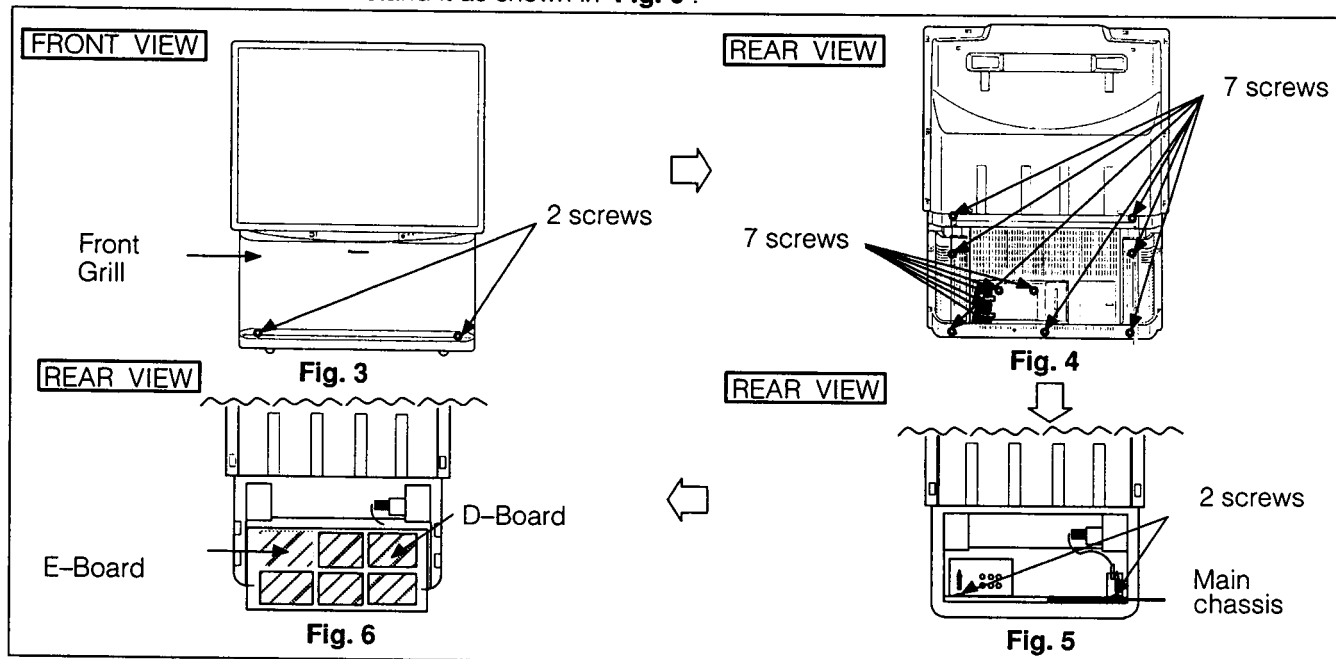


Board Name	Parts No.	Function
A-Board	TNP107950AD	Audio Control / Surround Sound
C-Board	TNP107929AH	Audio / Video input Switch
C1-Board	TNP111656	Dynamic Convergence Output
C2-Board	TNP111657	Dynamic Convergence Converter & Controls
C3-Board	TNP111472AZ	Sub Dynamic Convergence (1)
C4-Board	TNP111473AZ	Sub Dynamic Convergence (2)
D-Board	TNP190213AZ	Horizontal Deflection / High Voltage
DH-Board	TNP111680	Choking Coil
E-Board	TNP197077BF	Main Video Chroma, Deflection Processor MPU & E-P ROM memory
G-Board	TNP111430AZ	Customer Control Keyboard
K-Board	TNP111470AZ	L, E, D, Indicators
LR-Board	TNP111431	Red CRT Out put
LG-Board	TNP111432	Green CRT Out put
LB-Board	TNP111433	Blue CRT Out put
M-Board	TNP107930AE	Artificial Intelligence Control / Horizontal Sharpness Control
N-Board	TNP111516	AC Input / Power Relay Line Filter
P1-Board	TNP111598	Power Supply SW(1)
P2-Board	TNP111517	Power Supply SW(2)
P4-Board	TNP111596	Board (P1) Power Supply SW Control
P5-Board	TNP111597	Board (P2) Power Supply SW Control
Q-Board	TNP111442AZ	Board Vertical Deflection / EHT Protector
T-Board	TNP111478	Dynamic Focus Control Distributor
U-Board	TNP111500	Board Audio / Video Terminal
V-Board	TNP107910	Board Surround Sound Effect / Bass Boost Amp
VM-Board	TNP111434AZ	Velocity Modulator Process Auto W.B.
X-Board	TNP111446	Board Interconnection (E-D Board)
AR-Board	TNP111437	Auto Static Detect (Right)
AD-Board	TNP111440	Auto Static Detect (Bottom)
R-Board	TNP111476	Remote Receiver

Service Hints

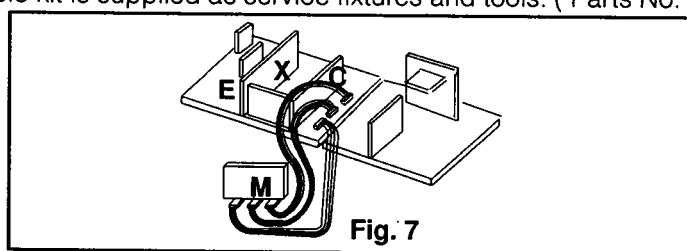
1. How to move chassis into service position

1. Remove the Front Grill by removing (2) screws as shown in **Fig. 3** .
2. Remove the bottom Rear Cover by removing (7) screws around its perimeter, and by removing (7) screws from around the AV terminal board as shown in **Fig. 4** .
3. Remove (2) screws that secure the main chassis assembly to cabinet bottom as shown in **Fig. 5** .
4. Remove lead wires and bundles from holders as necessary.
5. Pull out main chassis and stand it as shown in **Fig. 6** .



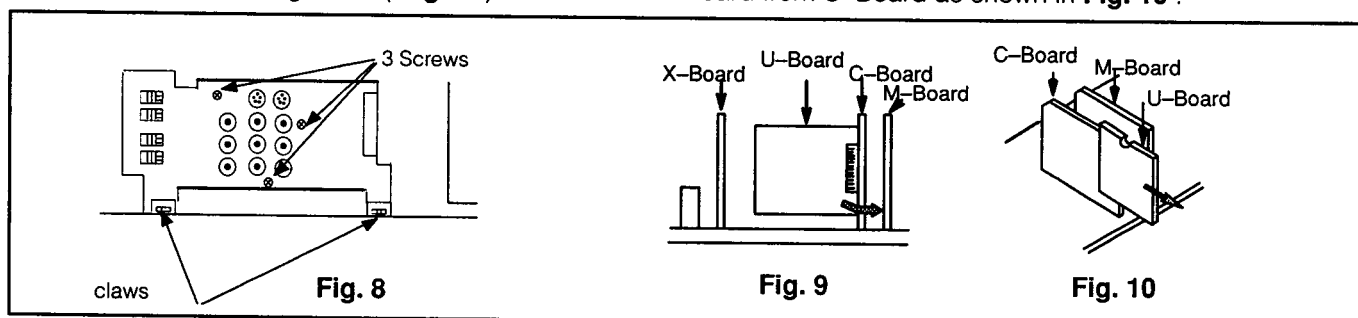
2. Service Position for X-Board / C-Board / M-Board

1. Remove the each circuit board from E-Board.
 2. Connect extension cables between individual circuit board and E-Board as shown in **Fig. 7** .
- Note :** Extension cable kit is supplied as service fixtures and tools. (Parts No. **TZS709010**)



3. How to remove U - Board

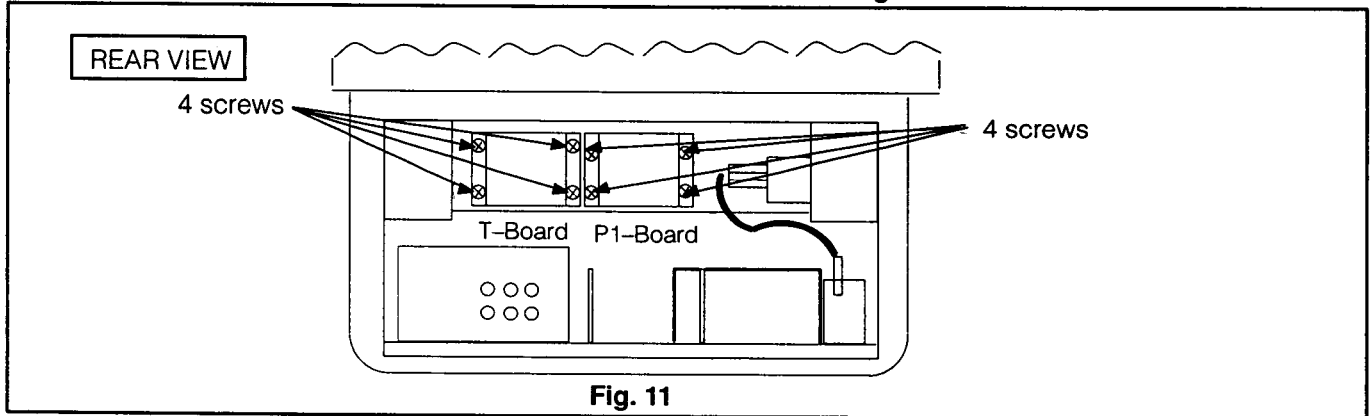
1. Remove 3 screws (C) and remove Audio / Video terminal mounting bracket by lift up claws as shown in **Fig. 8** .
2. Open U-Board to right side(**Fig. 9**) and remove U-Board from C-Board as shown in **Fig. 10** .



TC-43GF10M

4. Service Position for T-Board / P1-Board

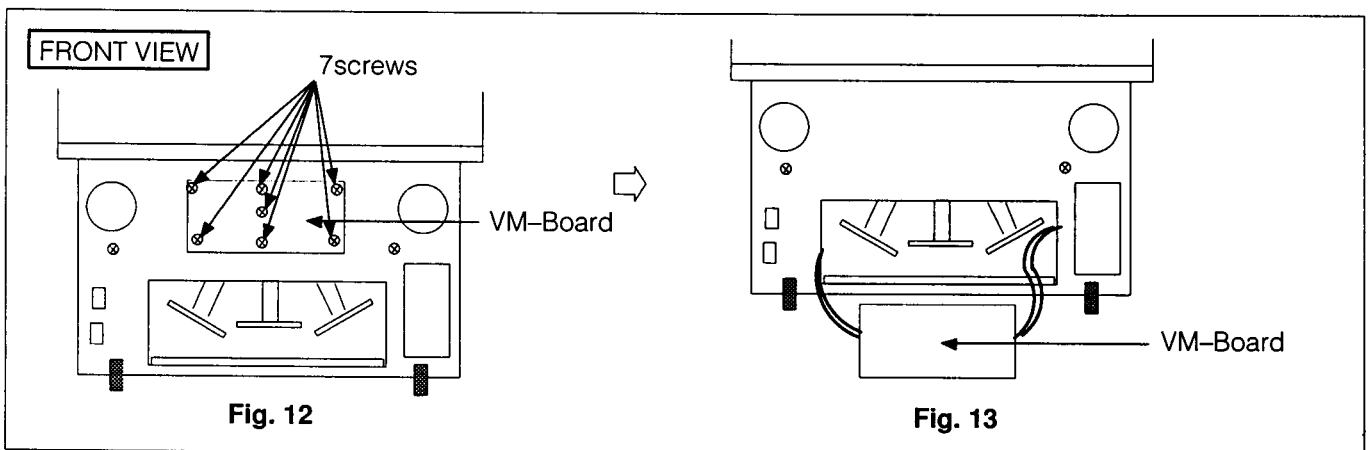
1. Remove (4) screws that secure T-Board for service.
2. Remove (4) screws that secure P1-Board for service as shown in **Fig. 11**.



3. Remove T / P4-Board ASSAY by removing screws as shown in **Fig. 11**.

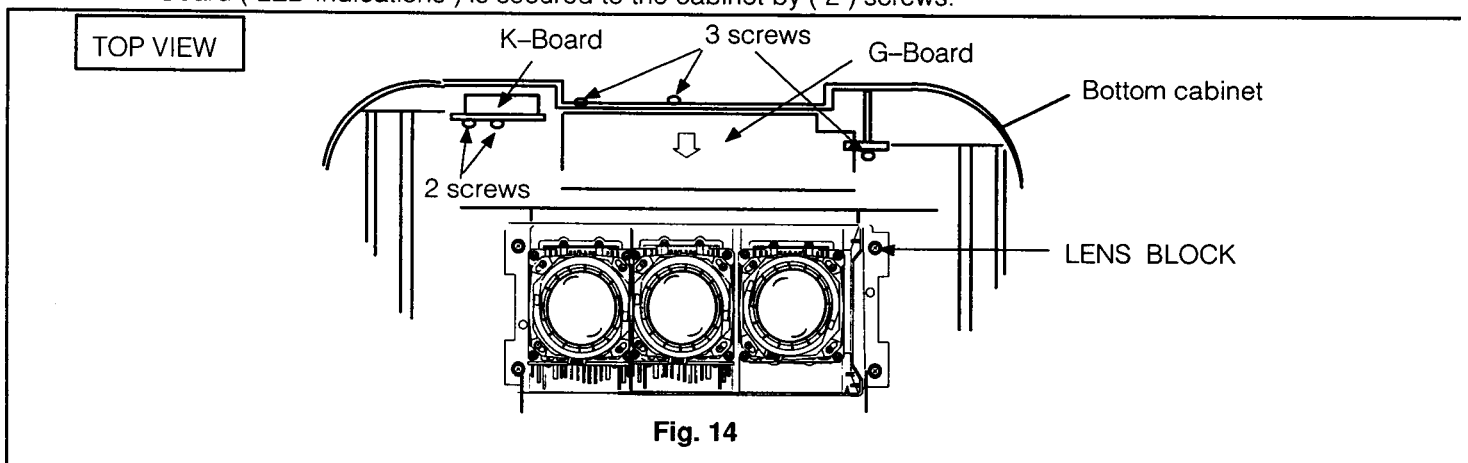
5. Service Position for VM-Boards

1. Remove (7) screws that secure the VM-Board as shown in **Fig. 12**.



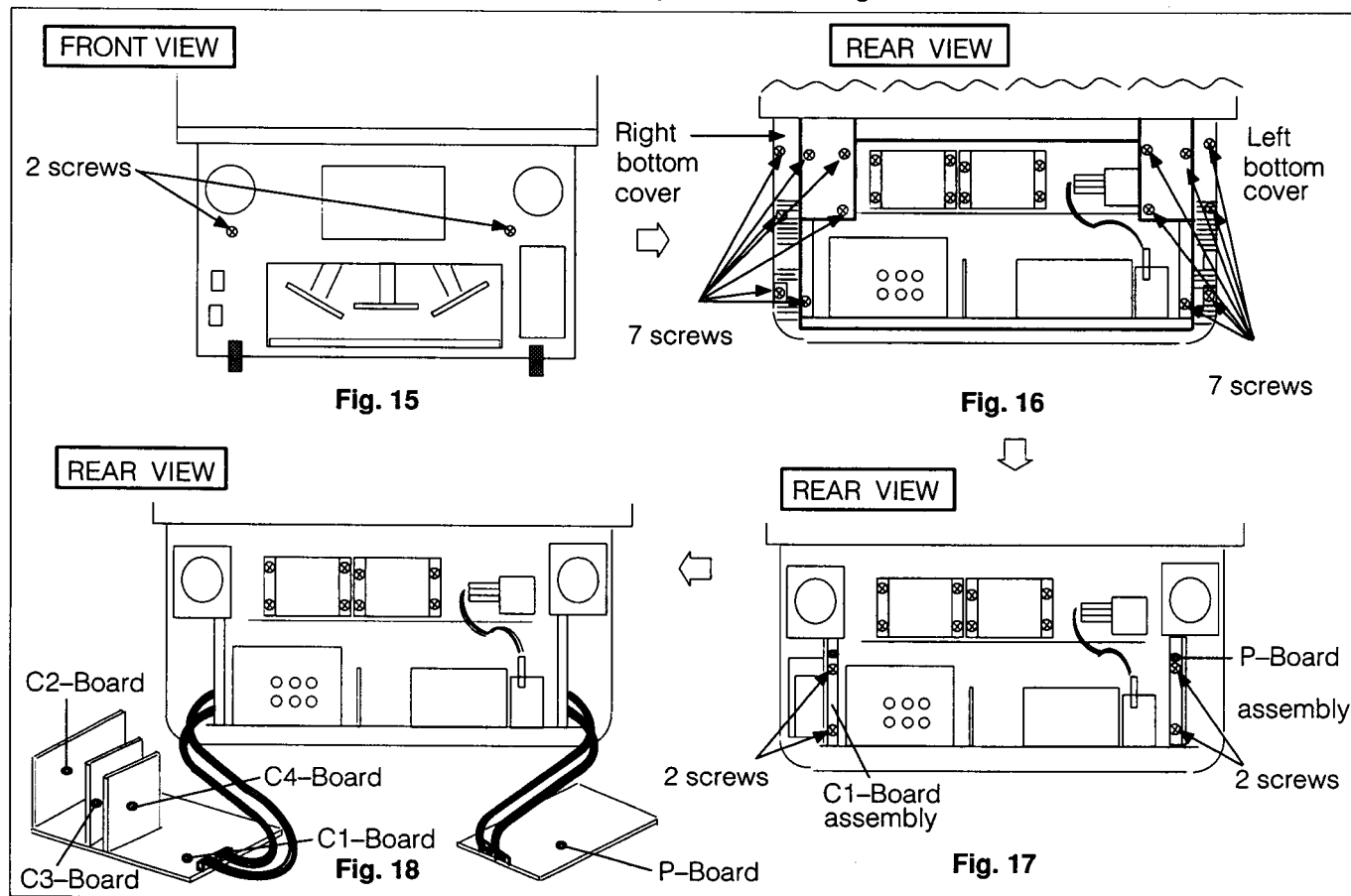
6. Service Position for G-Board and Control Panel

1. Remove top cabinet. (Refer to page 10)
2. Remove (3) screws that secure the control panel assembly (G-Board).
3. Slide the control panel and pull out it from the cabinet.
4. K-Board (LED Indications) is secured to the cabinet by (2) screws.



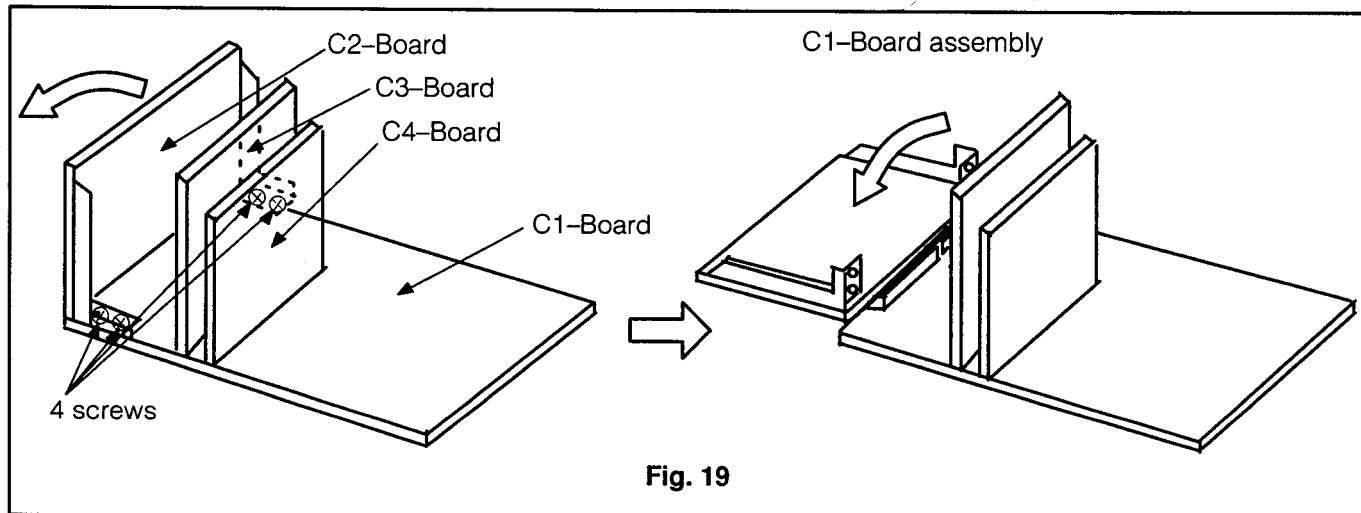
7. Service Position for C1/C2/C3/C4 Boards and P Board

1. Remove the Front Grill. (Refer to page 7)
2. Remove (2) screws that secure the P-Board / C1-Board assembly as shown in **Fig. 15** .
3. Remove right and left bottom Rear cover by removing (14) screws as shown in **Fig. 16** .
4. Remove C1-Board assembly by removing (2) screws as shown in **Fig. 17** .
5. Remove P-Board assembly by removing (2) screws as shown in **Fig. 17** .
6. Pull out C1-Board assembly and P-Board assembly as shown in **Fig. 18** .



8. Service Position for C2 / C3 / C4-Board

1. Remove (4) screws that secure the C1-Board and push down it as shown in **Fig. 19** .



TC-43GF10M

9. How to remove Screen

1. Remove Top Rear cover by removing (10) screws as shown in **Fig. 20** .
2. Remove R-Board by removing a screw **Fig. 21** .
3. Remove AR-Board and AD-Board by removing (4) screws, and remove lead wires and bands from holders as necessary.
4. Remove Top cabinet by removing (8) screws as shown in **Fig. 22** .
5. Remove 24 screws and screen holders, which secure the screen unit to the top cabinet. **Fig. 23** .
(see to next page 11)

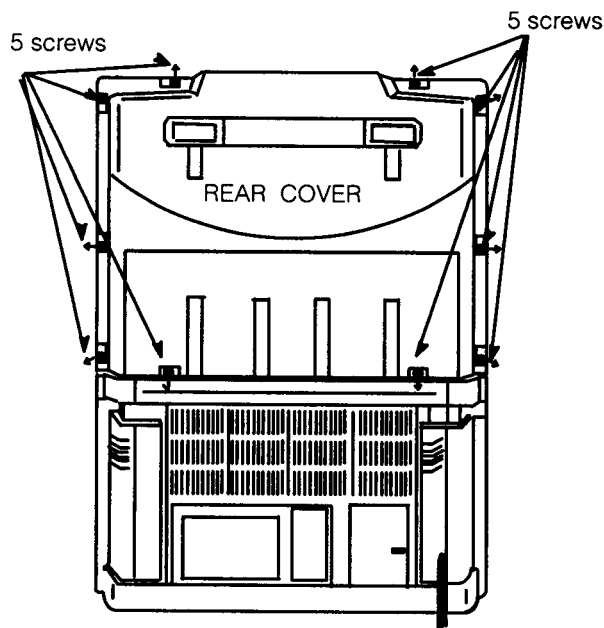


Fig. 20

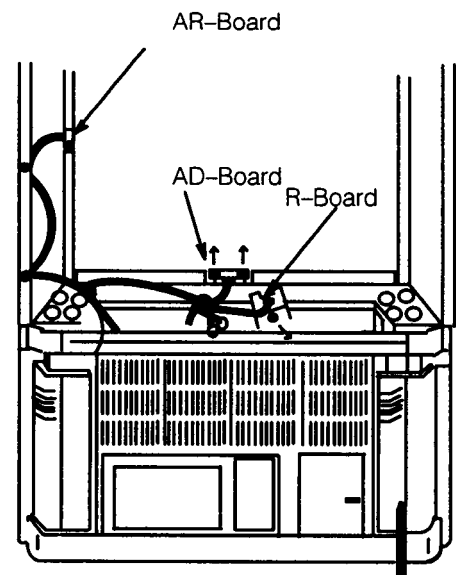


Fig. 21

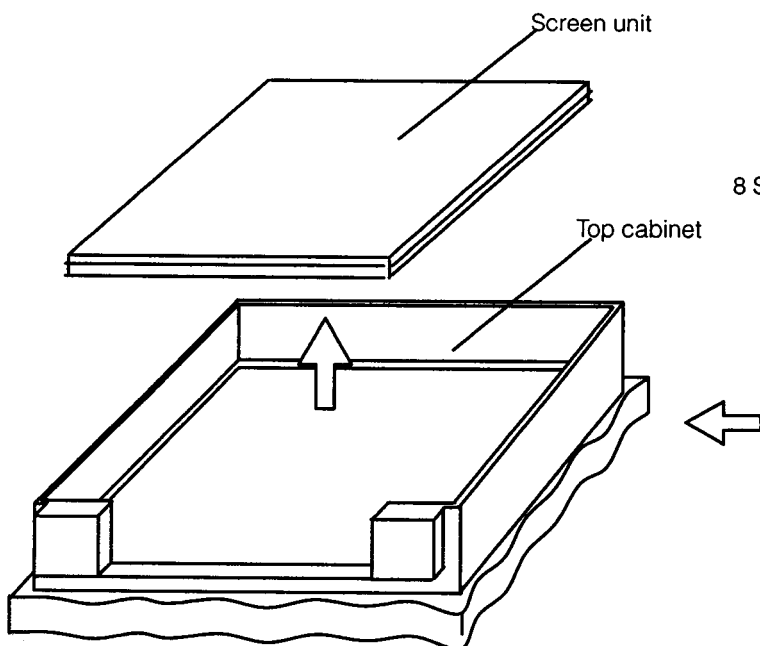


Fig. 23

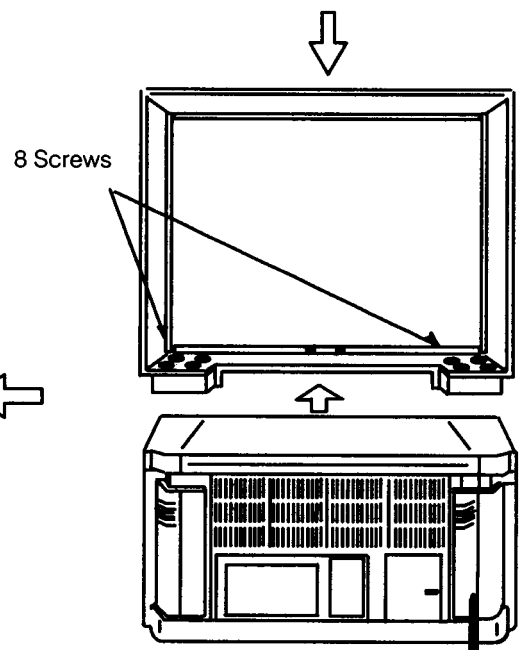
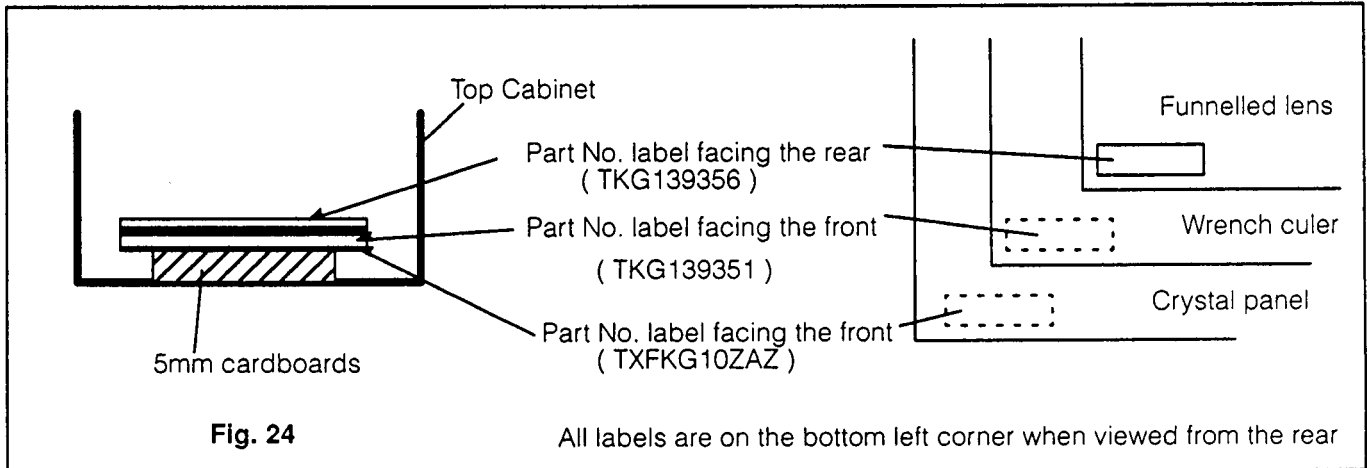


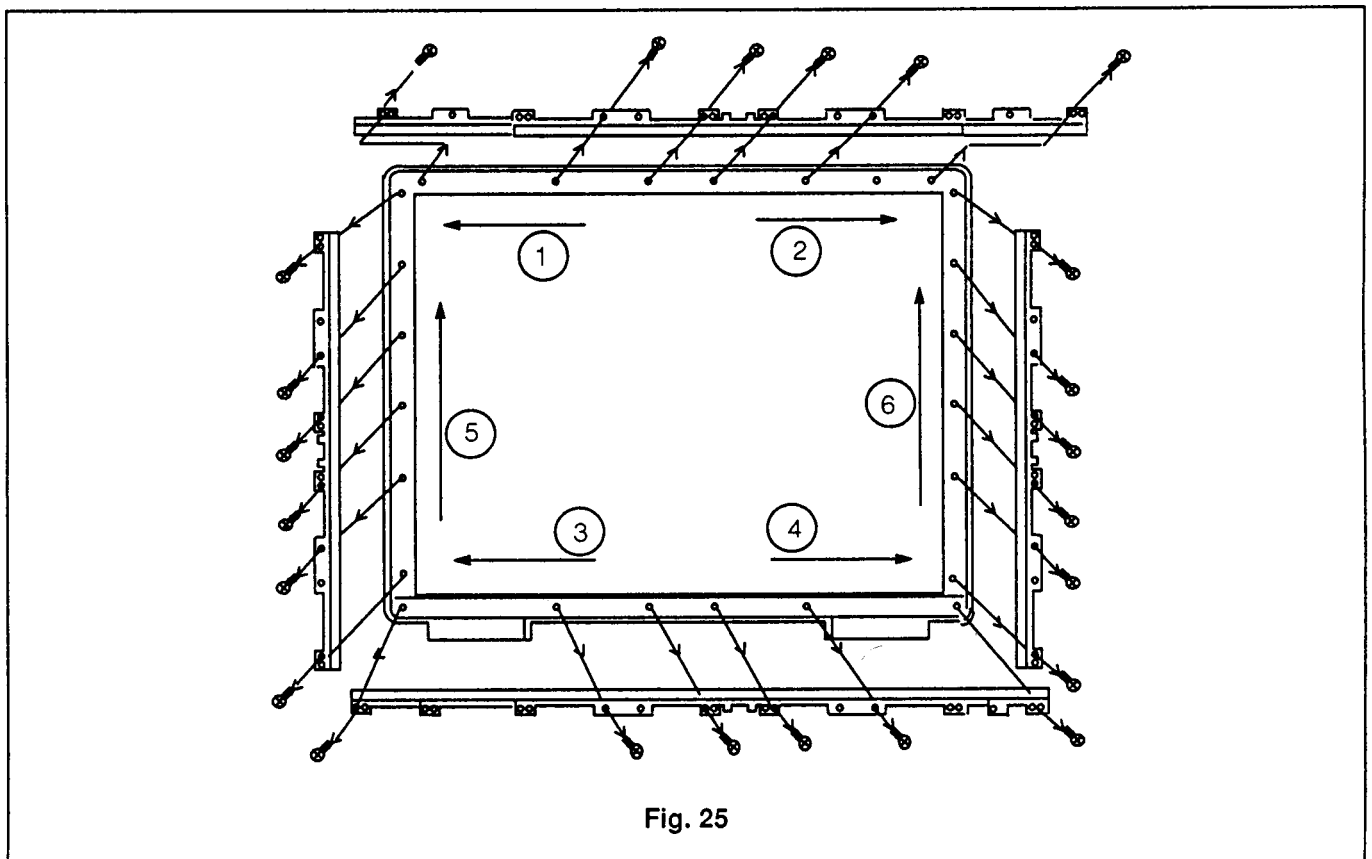
Fig. 22

10. How to assemble Screen

1. In order to prevent warping of the three panels when attaching the screen, lay 5mm board (cardboard) cut to the screen size, with a sheet placed on top as shown in **Fig. 24** .
2. When laying the sheet make sure no dust adheres to the sheet, and attach the panels in order of the " crystal panel ", followed. by the " wrench culer lens ", and finally the " funnelled lens ", while slightly bending the panels and allowing the air to escape(make sure to install with the front facing forwards rather than backwards.)



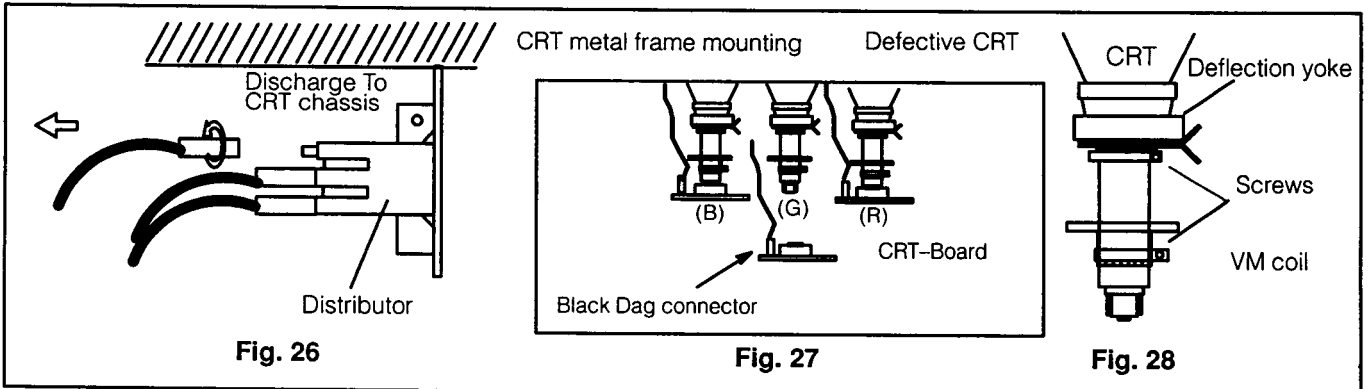
3. Allow the air between the panels to escape while pressing the panel lightly with the palm of your hand from the center out.
(If air remains in pockets, you will get a dimpled screen in that section)
4. Attach the screen holders, and tight the screen screws (24) in order as shown in **Fig. 25** .



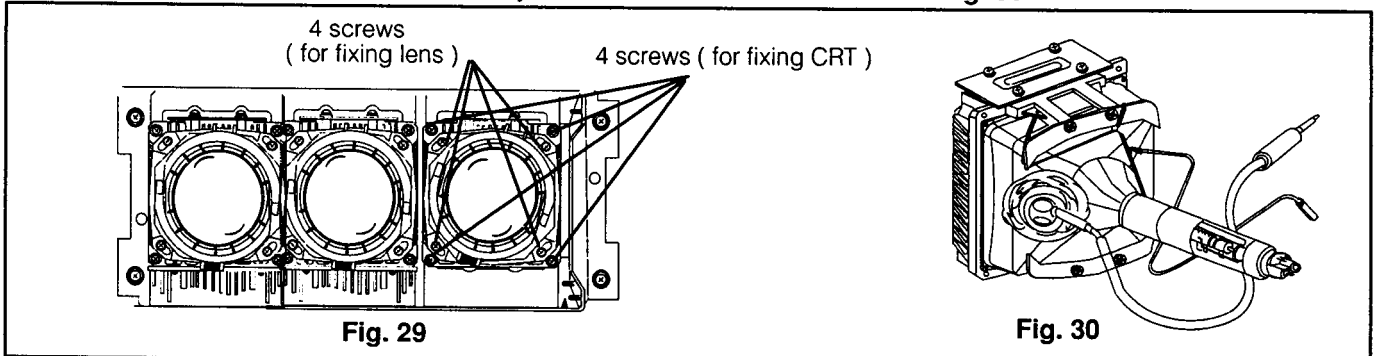
TC-43GF10M

11. Disassembly for CRT Removal

1. Remove the Top and Bottom rear covers and front Grill. (See page 7 and page 10)
2. Remove the defective CRT's anode lead from the distributor block that is secured to the CRT mounting metal frame as shown in **Fig. 26** .
(Grasp the anode lead protective cap body inside, and rotate 1/4 turn counter clockwise and pull anode lead sleeve out of the distributor as shown in **Fig. 26** .)
3. Discharge anode lead to CRT chassis metal frame as shown in **Fig. 26**.
4. Unplug the defective CRT black Dag(gnd) connector from the CRT Board as shown in **Fig. 27**.
5. Remove the CRT Board from the defective CTR neck as shown in **Fig. 27**.
6. Remove the deflection yoke and VM coil by losing Screws as shown in **Fig. 28**.



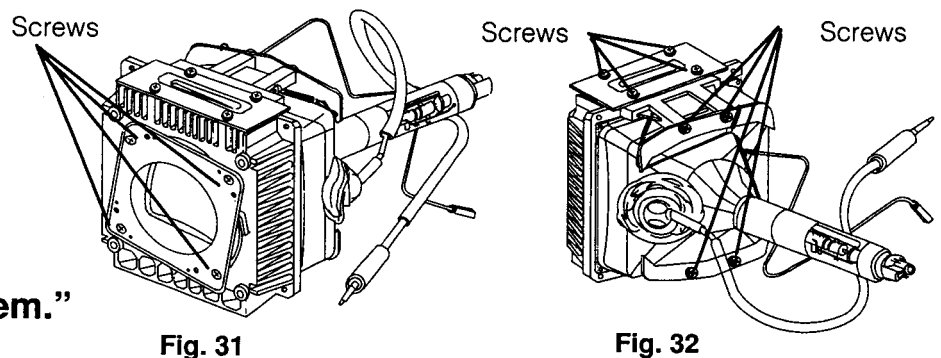
7. Remove (4) screws from the defective CRT as shown in **Fig. 29** .
8. Lift out CRT assembly with lens assembly and other CRT neck assemblies. **Fig. 30** .



Caution :

The white painted screws are for sealing the refrigerant.

"Do not unscrew them."



12. CRT Replacement

1. Assemble new CRT assembly to CRT chassis with (4) screws.
2. Connect CRT Board onto neck and connect black dag lead to board.
3. Reinsert the deflection yoke and VM coil to the CRT neck and fix them as they were originally.
4. Reinsert H.V. anode lead into H.V. distributor block.

Adjustment Method

After replacing parts, some adjustment will be necessary in accordance with replacement parts as following table.

○ : Adjustment is necessary after replacement.
 △ : Adjustment should be performed, if necessary.

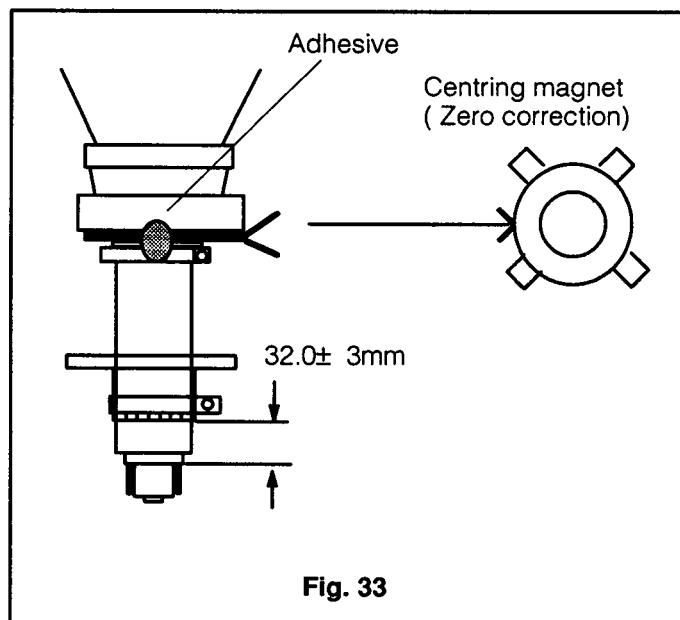
Adjustment Ref. page. Replacement parts	Focus	Auto- convergence (Service ADJ.)	Green raster	Dynamic convergence	Auto-static convergence	White balance	High voltage
	P.14	P.19	P.24	P.28	P.26	P.35	P.32
Memory(IC6907)		△	○	△	○		
Q-Board		△		△	△		○
Flyback Transformer High voltage transistor	△			△	△		○
Screen Focus unit	○	○				○	
Distributor	○	△		△	△		○
Horizontal transistor(Q551) High voltage transformer (T552)	△			△	△		
Deflection yoke				○	○		
Picture tube (Green)	○		○	○	○	○	○
Picture tube (Red, Blue)	○			○	○	○	○
Position sensor (AR-Board, AD-Board)		○			△		
Lens	○			△	△		
Screen	△	○			△		
Top Cabinet	△	○		△	△		

TC-43GF10M

CRT Set Up

Caution : Insure yoke plugs on T-Board are reconnected before turning the projection TV on to prevent damage to the horizontal out put transistor and/or CRTs.

1. Connect a test pattern generator to A/V terminal and set for crosshatch pattern.
2. Loosen yoke clamp, seat yoke against bell of CRT and rotate for correct yoke title(compare to adjacent CRT). Tighten yoke clamp.
3. Remove adhesive from centering magnet and set centering for zero correction.
4. Cover replacement CRT lens, not replaced if needed. Check size and linearity of pattern and adjust as required (see static Convergence controls).
5. Uncover replacement CRT lens and cover other two CRT lenses Adjust electrical focus on replacement CRT. Adjust optical focus (lens) if required.
6. Uncover all CRT lenses and use yoke centering magnet to converge replacement CRT (in center area of screen only) with other two CRTs. Disregard non-convergence in areas other than center area.
7. Check dynamic convergence. Adjust dynamic convergence controls (C1-Board) as required.
8. Perform White Balance procedure.



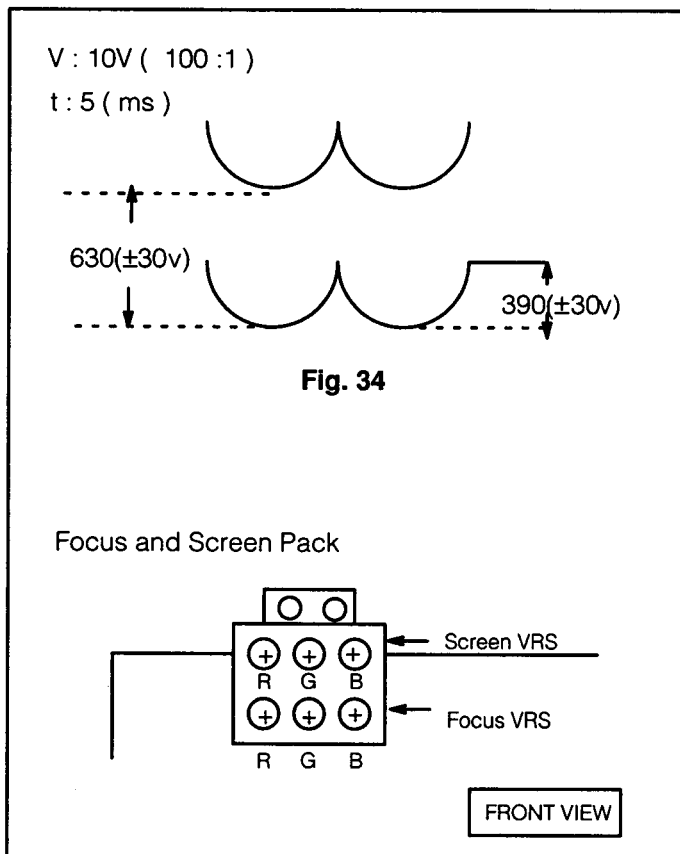
Focus Adjustment

Procedure

1. Focus adjustments should be performed after 1 hours of aging.
2. Select picture mode " DYNAMIC ".
3. Use oscilloscope with 100 : 1 probe.
4. Apply monoscope pattern.
5. Connect oscilloscope to connector TPT2 and TPT1(GND) on T-Board. Scope: $V=10V(100:1)$, $t=5\text{ms}$.
6. Confirm waveform as shown in **Fig. 34**.
7. Proceed with Focus Adjustments.

1. Focus-Electrical

1. Obtain a crosshatch pattern. Select picture mode ratio "DYNAMIC" mode.
2. Adjust the Red,Blue and Green focus pot on the focus block located on the H.V. Distributor for best focus of overall (viewing each CRT).
3. Cover the Red and Blue CRT, projecting green only. Adjust the Green Focus Pot for best focus of overall picture (viewing Screen).
4. Do the same for Red and Blue focus pots while viewing each individually on the receiver screen.



2. Focus Optical – Lens Adjustment

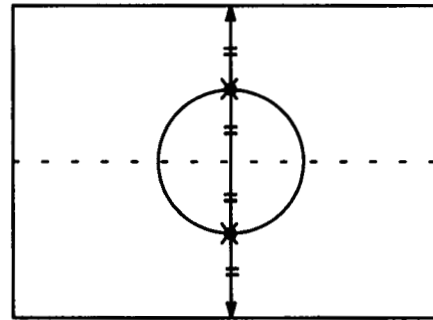
Caution : This adjustment normally should resetting unless the lens has been replaced or adjustment has changed.

1. Optical focus adjustment is located on the top of each CRT lens system. Loosen the adjustment knurled locking knobs shown in **Fig. 35**.
2. Turn the TV on and view a crosshatch pattern. Select picture "DYNAMIC" mode.
3. Cover the Red and Blue CRT, projecting green only. Rotate the Green lens for best focus around screen center area.
4. Do the same for the Red and Blue focus lens while projecting only Red and Blue.

3. Complete Focus Adjustment

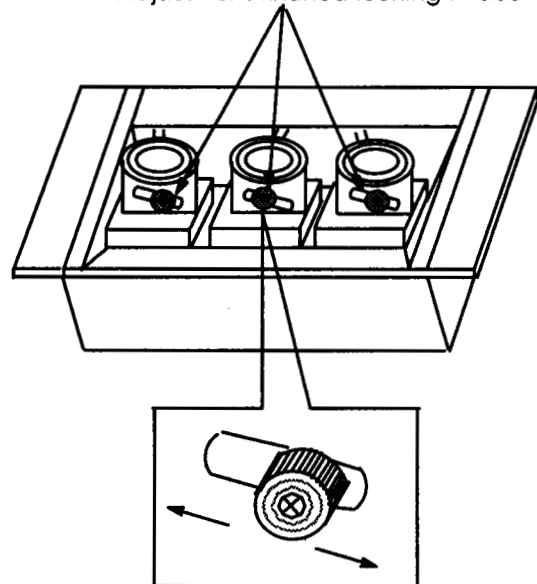
1. Cover Green and Blue CRT.
2. Adjust Red focus pot for best focus near mid circle area as shown in detail.
3. Adjust Red lens focus.
4. Adjust Red electrical focus again.
5. Cover Red and Blue CRT and adjust Green electric focus and lens the same as Red (Steps 2-4).
6. Cover Red and Green CRT and adjust Blue lens the same as Red (Steps 2-4).
7. After adjusting Red, Blue, Green Focus for the best point, Turn the Blue focus pot a little counterclockwise. (around 20 degrees C)

Raster of CRT or Raster of Screen



Make best focus around circle area.

Adjustment knurled locking knobs



Adjustment knurled locking knob.

Fig. 35

Auto Convergence Function

1. Auto convergence operation

Outline

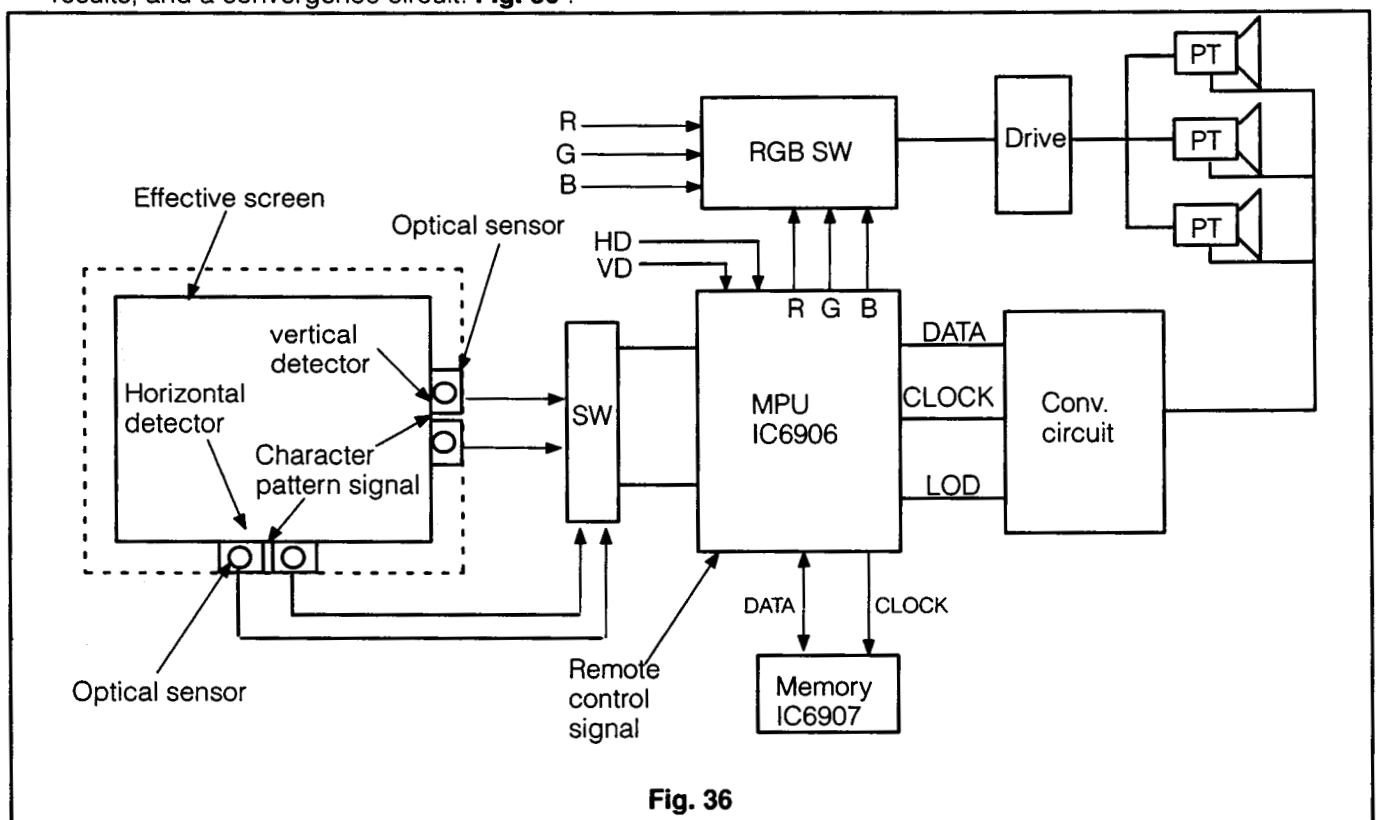
1. The Projection monitor static convergence may be thrown out of focus by temperature changes in the projection tube, as well as by geo-magnetic effects.
2. The present projection monitor, however, projects a colour off-balance detecting signal onto the screen area. Locations which are off-balance are then detected by optical sensor, with variation in the static convergence automatically corrected.

Caution during direction

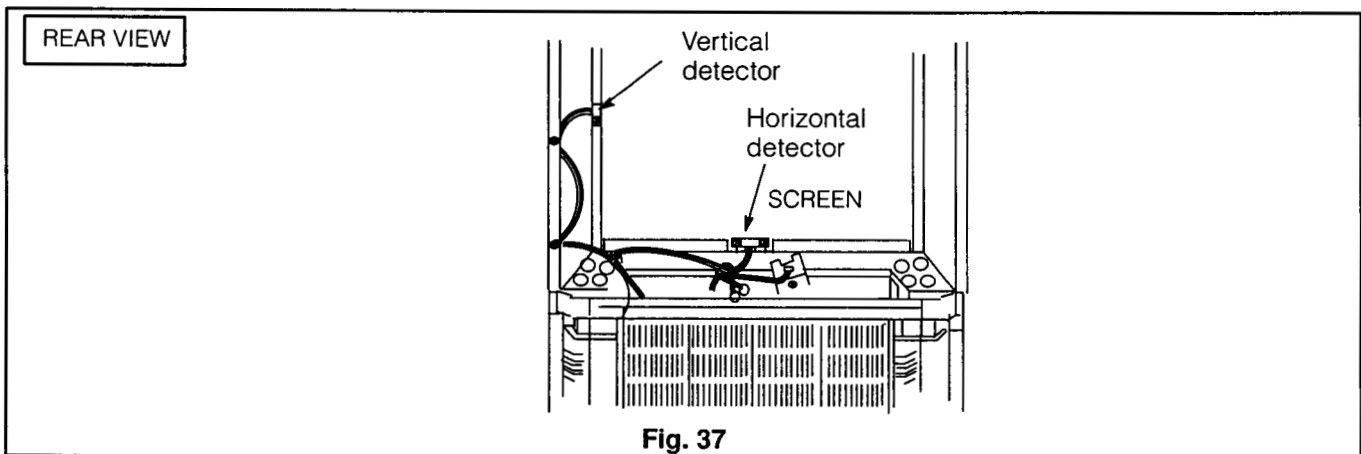
1. **Shipment setting :**
This Feature is set to ON at shipment.
2. **Power on :**
When the power is turned on, the colour deviation will be adjusted, and the picture location will jump around.
3. **Changing monitor direction :**
If the facing direction of the monitor is changed, colour deviation will result from geo-magnetic changes. If you change the facing direction while the power is on, you should turn the power off and back on once, so that the automatic static convergence circuit turns on.
When the power is turned back on, the colour deviation will be corrected, and the picture location will jump around.
4. **Input signal :**
Auto convergence function will operate with applying Interlaced standard signal and a stable synchronous signal.

Composition

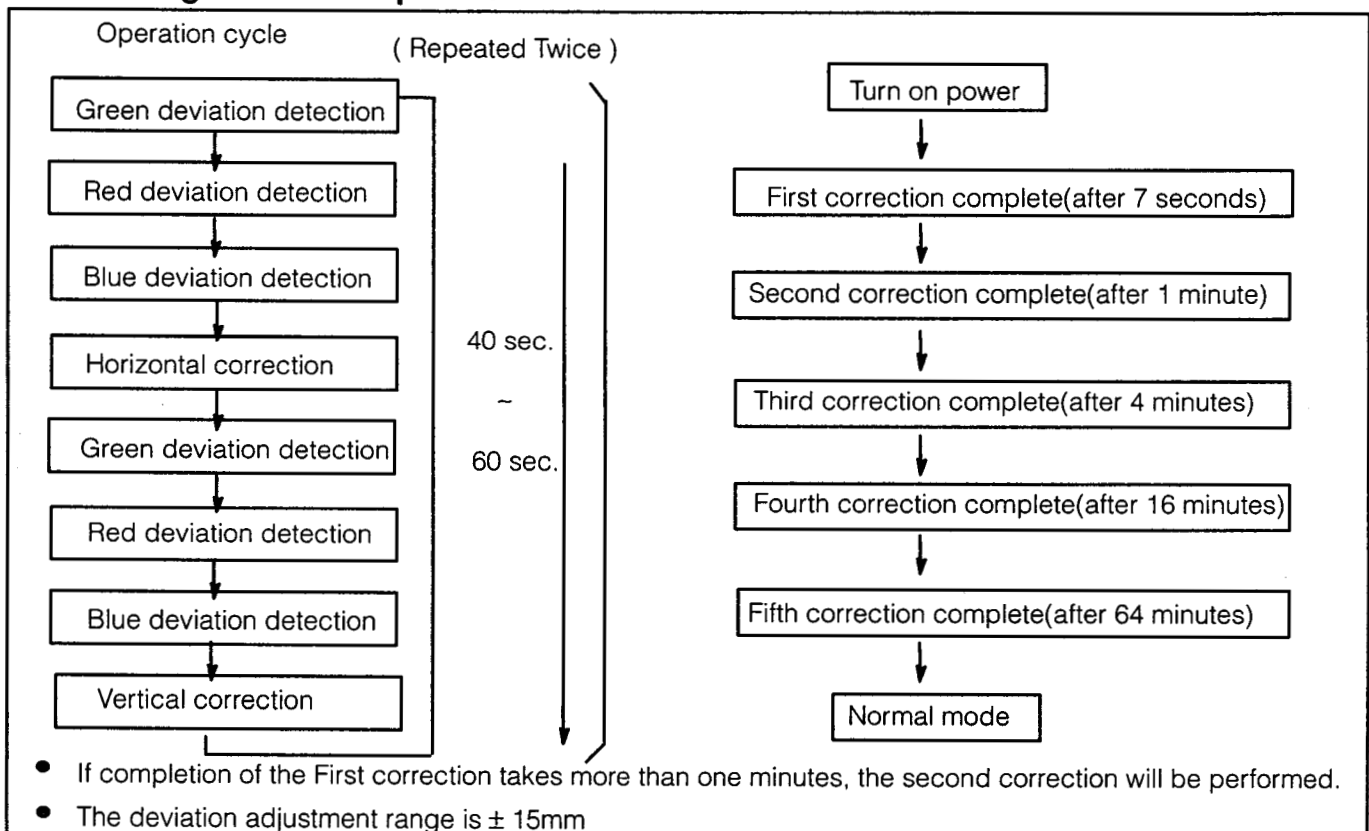
1. This device is composed of detection sections (photo-transistors) located at two places on the screen perimeter (outside the effective screen), which detect the amount of vertical and horizontal deviation, a microprocessor which generates a colour detection signal (on screen) for the purpose of detecting the amount of deviation, as well as searching for and calculating the amount of deviation, a memory bank which stores the calculated results, and a convergence circuit. **Fig. 36** .



- The location deviation detection optical sensors are attached on the right centre and the bottom centre outside of the effective screen, as shown in the picture **Fig. 37**.
- The standard location is set by a centring magnet with green (G) at the centre of the screen, which becomes the standard for convergence under no magnetic field. This green location is stored in memory, and the Red(R) and Blue (B) are also stored as standard values.
- When the colour deviation detection signal deviates from the middle of the optical sensor, searching continues with the colour deviation detecting signal moved in a horizontal or vertical direction until it is in the centre of the optical centre.
- In this fashion, the amount of colour deviation is detected, with the level of correction thereby calculated. The convergence deviation is then corrected by the convergence circuit. Horizontal and vertical location deviation detection are not carried out simultaneously, but rather alternately.



Auto-convergence basic operation



TC-43GF10M

Caution :

1. The auto-convergence operation begins automatically when the power is turned on.
Turn on the power and wait approximately 2 minutes. This will allow for static convergence to be performed twice in the direction in which the TV is facing.
Auto-static convergence operation will not operate if a stable synchronous signal and a interlaced standard signal is not obtained.
2. The colour deviation correction corrects colour deviation owing to geo-magnetism, as well as whole screen colour deviation owing to temperature changes, and does not completely correct all deviations in each area of the screen.
3. When operating, the basic signal (on-screen) for the purpose of verifying the deviation location can sometimes be seen at around 1-2mm on the center of the right side or bottom center of the set, where the optical sensor are located. This will disappear, however, when correction is completed. **Fig. 38** .

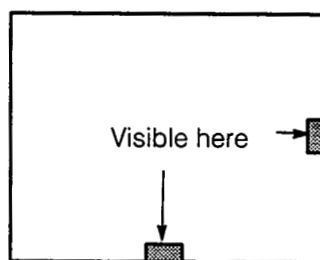
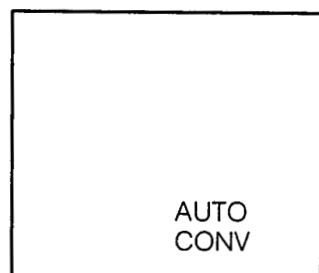


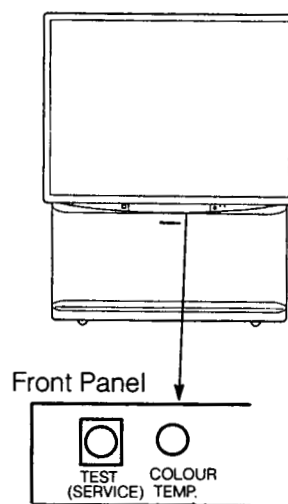
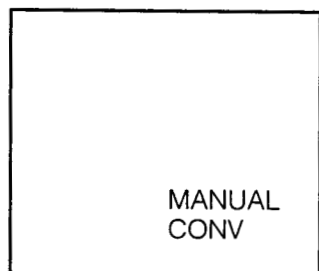
Fig. 38

2. Auto convergence and Manual convergence selection

1. While this unit is set at "auto" when shipped, it can be changed to manual mode when color correction need not be performed, or when dynamic convergence adjustment is to be performed.
2. While pressing the colour the "colour temperature" button inside the front door, press the " Recall " button on the remote control three times.

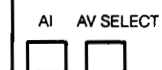


Press Colour temperature Button
&
Press Recall Button three times



Colour temperature Button

Remote controller



Recall Button

Fig. 39

3. Flow chart for Auto-Static convergence adjustment mode

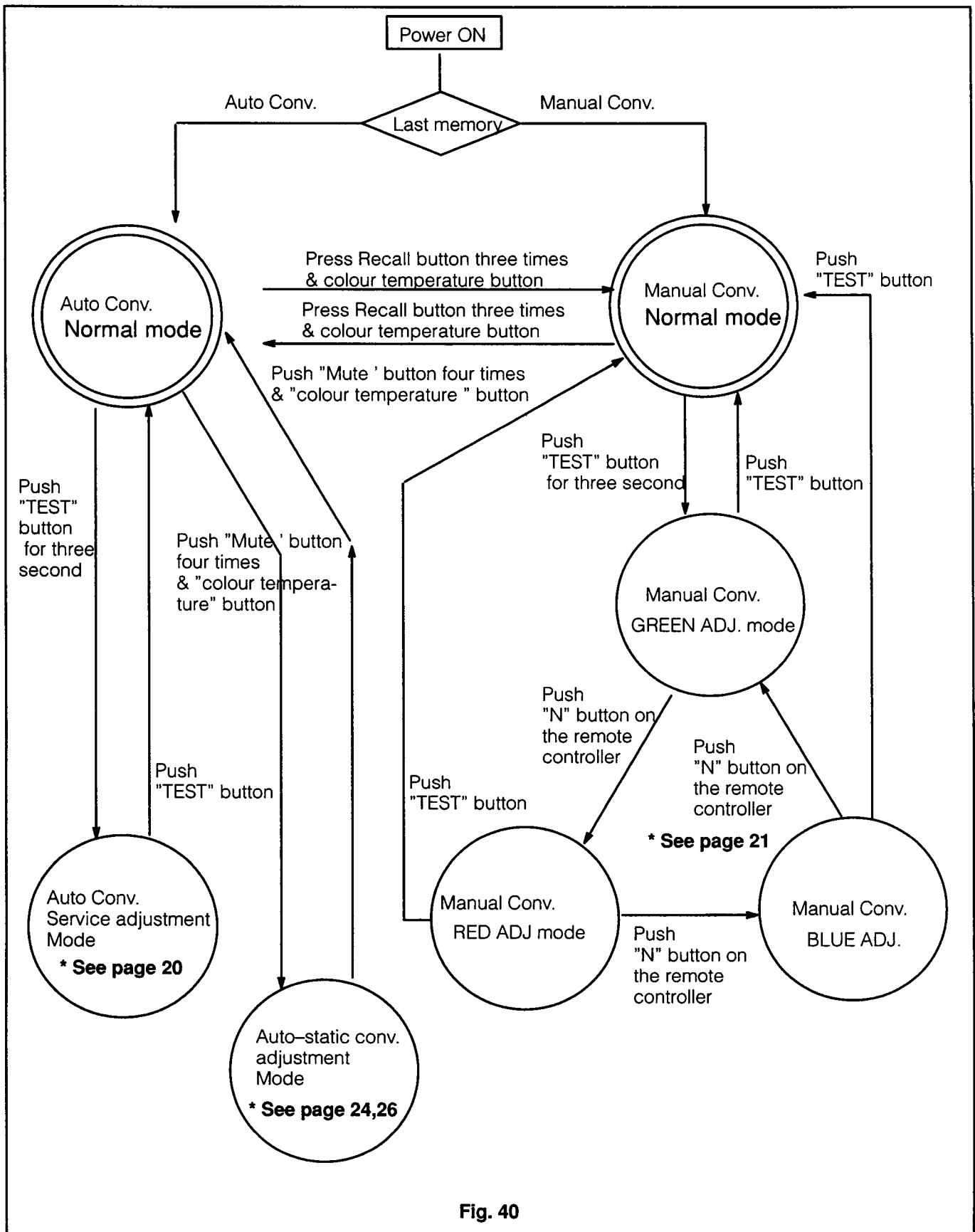


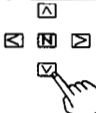
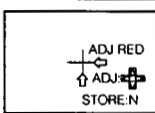
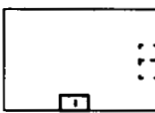
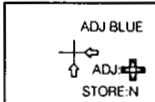
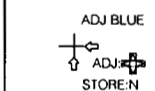
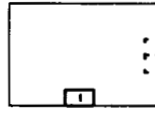
Fig. 40

TC-43GF10M

4. Auto-Convergence Adjustment Procedure

Before you try this adjustment, the following check on the set is require;

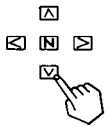
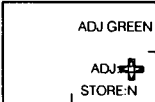
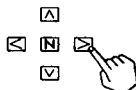
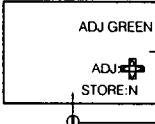
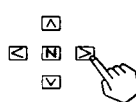
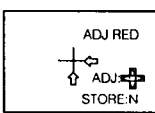
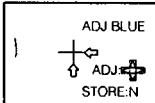
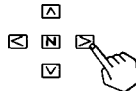
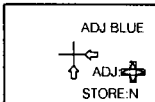
1. Connect the VCR to either AV terminals and power switch on the Monitor while Video play-back signal(PAL/NTSC) is being applied and leave the set untouched for more than 64 minutes.
2. After 64 minutes, check if the convergence adjustment is still needed.
3. If it is needed, carry out the following procedure 1 through 9 and following have to be carried out once with **PAL** signal and with **NTSC** signal.

1. Select Auto convergence Mode (see page 18)	
2. Push the "TEST" Button on the set for three second, and turn to the "TEST" screen.	 
3. Use the Position Up, DOWN, RIGHT and LEFT buttons of the remote control to align the Red and Green lines. (become Yellow lines).	 
4. Push the "N" button of the remote control to store Red . (start searching)	 
5. Push the "N" button of the remote control to store Red . (set Blue Adjustment mode.)	 
6. Use the Position UP, DOWN, RIGHT and LEFT buttons of the remote control to align the Blue and Yellow lines. (become White line)	 
7. Push the "N" button of the remote control to store Blue .(start searching)	 
8. Push the "N" button of the remote control to store Blue . (set Red Adjustment mode.)	 
9. Push the "TEST" Button again to return to the original screen.	
10. If convergence errors still remain follow the next instructions and then step by step complete convergence procedure,	

5. Manual Convergence Adjustment Procedure

Note :

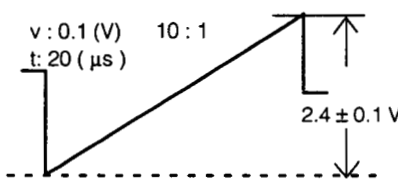
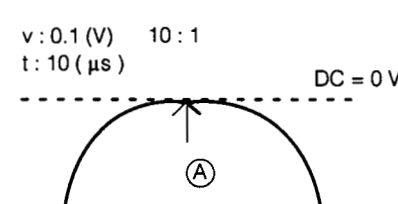
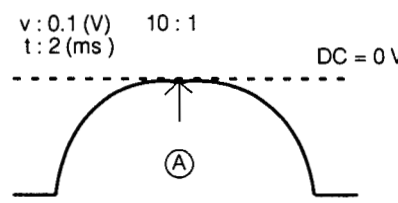
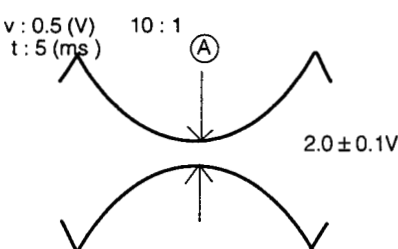
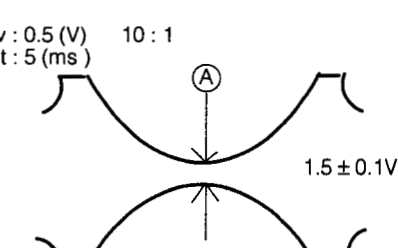
Manual convergence adjustment will be necessary, when auto convergence is not performed.

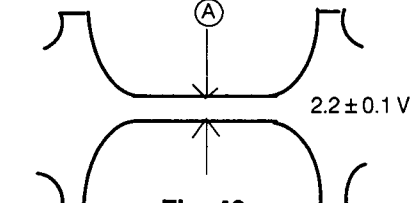
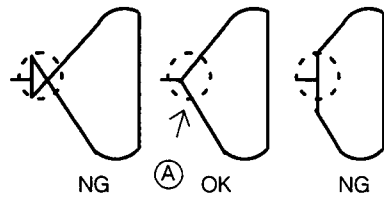
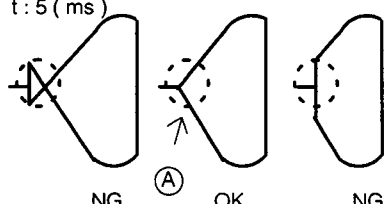
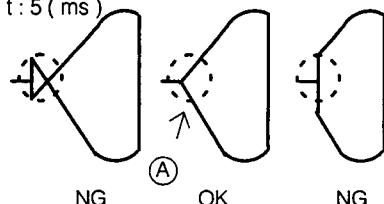
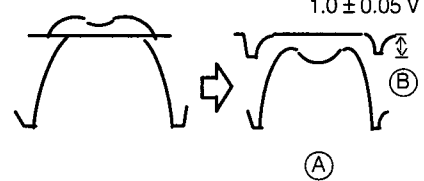
1. Select the Manual conv. mode. (see to page 18)	
2 Push the "TEST" Button on the set for three second, and turn to the "TEST" screen.	 
3 Use the Position Up, DOWN buttons of the remote control to align the Horizontal Green line and Vertical center marker at the right side of the screen.	  Vertical Centre marker
4 Use the Position RIGHT, LEFT buttons of the remote control to align the Vertical Green line and Horizontal center marker at the bottom side of the screen.	  Horizontal centre marker
5 Push the "N" button of the remote control to store Green .(Set Red adjustment mode)	 
6 Use the Position UP, DOWN, RIGHT and LEFT buttons of the remote control to align the Red and Green lines. (become Yellow line)	 
7 Push the "N" button of the remote control to store Red . (set Blue Adjustment mode.)	 
8 Use the Position UP, DOWN, RIGHT and LEFT buttons of the remote control to align the Blue and Yellow lines. (become White line)	 
9 Push the "N" button of the remote control to store Blue .	
10 Push the "TEST" Button again to return to the original screen.	
11 If convergence errors still remain follow the next instructions and then step by step complete convergence procedure,	

TC-43GF10M

Convergence Pre-adjustment Waveform

Note : Confirm waveform adjustment in sequence always.

Item / Preparation	Adjustment Procedure	Waveform
H. SAW 1. Apply a PAL signal. 2. Connect an oscilloscope to TPC3 and TPC1 (GND) on C1-Board.	1. Adjust R7100 (H. SAW) on C1-Board- for : $2.4 \text{ V} \pm 0.1 \text{ V}$	 $v : 0.1 \text{ (V)}$ $10 : 1$ $t : 20 \text{ (}\mu\text{s)}$ $2.4 \pm 0.1 \text{ V}$ Fig. 41
H. P. 1. Perform convergence waveform adjustment for H. SAW. 2. Connect an oscilloscope to TPC3 and TPC1 (GND) on C1-Board.	1. Apply a NTSC crosshatch pattern. 2. Adjust R7106 (H.P.) on C1-Board, so that the top point (A) of parabola waveform is : $\text{DC } 0 \text{ V} \pm 0.1 \text{ V}$ 3. Apply a PAL crosshatch pattern. 4. Adjust R7065 (H. P.) on C1-Board, so that the top point (A) of parabola waveform is : $\text{DC } 0 \text{ V} \pm 0.1 \text{ V}$	 $v : 0.1 \text{ (V)}$ $10 : 1$ $t : 10 \text{ (}\mu\text{s)}$ $\text{DC} = 0 \text{ V}$ Fig. 42
V. P. 1. Connect an oscilloscope to TPC5 and TPC1 (GND) on C1-Board. 2. Perform Vertical size adjustment for the appropriate picture height.	1. Apply a NTSC crosshatch pattern. 2. Adjust R7133 (V.P.) on C1-Board, so that the top point (A) of parabola waveform is : $\text{DC } 0 \text{ V} \pm 0.1 \text{ V}$ 3. Apply a PAL crosshatch pattern. 4. Adjust R7062 (V. P.) on C1-Board, so that the top point (A) of parabola waveform is : $\text{DC } 0 \text{ V} \pm 0.1 \text{ V}$	 $v : 0.1 \text{ (V)}$ $10 : 1$ $t : 2 \text{ (ms)}$ $\text{DC} = 0 \text{ V}$ Fig. 43
S. PIN. 1 1. Perform convergence waveform adjustment for H. SAW, H.P. and V.P. 2. Connect an oscilloscope to TPC31 (C3-Board) and TPC40 (C4-Board) (GND).	1. Apply PAL (or NTSC) crosshatch pattern. 2. Adjust R7562 on C3-Board, so that the point (A) of parabola waveform is : $2.0 \text{ V} \pm 0.1 \text{ V}$	 $v : 0.5 \text{ (V)}$ $10 : 1$ $t : 5 \text{ (ms)}$ $2.0 \pm 0.1 \text{ V}$ Fig. 44
S. PIN. 2 1. Perform convergence waveform adjustment for H. SAW, H.P. and V.P. 2. Connect an oscilloscope to TPC32(C3-Board) and TPC40 (GND) on C4-Board.	1. Apply PAL (or NTSC) crosshatch pattern. 2. Adjust R7551 on C3-Board so that the point (A) of parabola waveform is : $1.5 \text{ V} \pm 0.1 \text{ V}$	 $v : 0.5 \text{ (V)}$ $10 : 1$ $t : 5 \text{ (ms)}$ $1.5 \pm 0.1 \text{ V}$ Fig. 45

Item / Preparation	Adjustment Procedure	Waveform
S. PIN 3 1. Perform convergence waveform adjustment for H. SAW, H.P and V.P. 2. Connect an oscilloscope to TPC33(C3-Board) and TPC40. (GND) on C4-Board.	1. Apply a PAL crosshatch pattern. 2. Adjust R7489 (H.P.) on C3-Board, so that the point (A) of parabola waveform is : $2.2 \text{ V} \pm 0.1 \text{ V}$	v : 0.5 (V) 10 : 1 t : 2 (ms)  Fig. 46
V. KEY 1 1. Perform convergence waveform adjustments for H. SAW, H.P. and V.P. 2. Connect an oscilloscope to TPC12 and TPC1 on C1-Board (GND).	1. Apply a PAL crosshatch pattern. 2. Turn R7183 on C1-Board slowly so that the waveform is just (A).	v : 0.5 (V) 10 : 1 t : 5 (ms)  Fig. 47
T / B1 1. Perform convergence waveform adjustments for H. SAW, H.P. and V.P. 2. Connect an oscilloscope to TPC13 and TPC1 on C1-Board (GND).	1. Apply a PAL crosshatch pattern. 2. Turn R7755 on C4-Board slowly so that the waveform is just (A).	V : 0.5 (V) 10 : 1 t : 5 (ms)  Fig. 48
WAVE 1 1. Perform convergence waveform adjustments for H. SAW, H.P. and V.P. 2. Connect an oscilloscope to TPC11 and TPC1 (GND) on C1-Board.	1. Apply a PAL crosshatch pattern. 2. Turn R7770 on C4-Board slowly so that the waveform is just (A).	V : 0.5 (V) 10 : 1 t : 5 (ms)  Fig. 49
CORNER 1. Perform convergence waveform adjustments for H. SAW, H.P. and V.P. 2. Connect an oscilloscope to TPC10 and TPC1 (GND) on C1-Board.	1. Apply a PAL crosshatch pattern. 2. Turn R7195 on C1-Board slowly so that the waveform is just (A). 3. Turn R7120 on C1-Board so that the point (B) waveform is : $1.0 \text{ V} \pm 0.05 \text{ V}$	V : 1.0 (V) 10 : 1 T : 2 (ms)  Fig. 50

Green raster adjustment

Caution :

You must set the picture mode **PICTURE 3(MILD)**, when you adjust the green raster adjustment.

The following adjustment must be performed with applying a **interlaced standard signal**, and adjustment have to be carried out one with **PAL signal** and with **NTSC signal**.

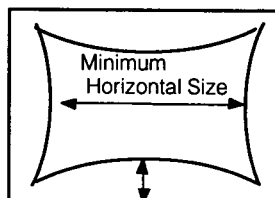
1. Horizontal centring adjustment

1. Preparation :

1. Cover the Red, Blue CRT lens, projecting Green only.
2. Apply crosshatch pattern.
3. Set the Manual Static Convergence Mode.

2. Procedure

1. Connect a short jumper wire between TVM3 and TVM4 on VM-Board.
2. Turn the monitor ON.
3. Remove the short jumper wire.
4. Turn the D-Board Horizontal Size (R535) counterclockwise, and set at minimum horizontal size. Turn the Q-Board Vertical size (R450) counterclockwise, and adjust so that the raster is appear as shown in **Fig. 51(a)**
5. Slide to the left until left side of the raster is a little off for the R509, Then shift to the left and adjust the left side vertical line from the screen edge is 2 cm.**Fig. 51 (b)**
6. While pushing the " colour temperature " button on the inside of the front panel, press the remote controller "Recall" button 3 times. The unit will enter the "Auto-convergence Mode."
7. While pushing the " colour temperature " button press the remote controller " Mute " button 4 times. The unit will enter the "Auto-convergence adjustment Mode"as shown in **Fig. 52**
8. Use the remote controller Left/ Right cursor control "◀▶" to set the screen left and right margins and the completely disappear. Then press "◀" once, align so that the vertical base signal is slightly to the left and press the Cursor center Key "■". **Fig. 53**
9. Use the remote controller Left/ Right cursor control "◀▶" to align the center mark "I" in the center area, and press the Cursor center Key "■" as shown in **Fig. 54**
10. Press the remote controller " Recall button ", and check the characters will disappear in the center of the screen.
11. Slowly rotate the position control (R693) on the VM-Board, and adjust so that you are able to see the horizontal base signal.
12. Press the colour temperature button. Then press the remote control " Mute button" 4 times to cancel the adjustment mode (colour temperature display and horizontal base signal will disappear).
13. Adjust with the Horizontal size (R535) on the D-Board so that the seventh vertical line from the center is hided behind the screen frame **Fig. 55**.
14. Adjust with the Q Module Vertical size(R450) so that the five point fiftieth horizontal line from the center is hidden behind the screen frame as shown in **Fig. 56**.



Adjust so that the lower portion of the raster is 2-3 cm

Fig. 51 (a)

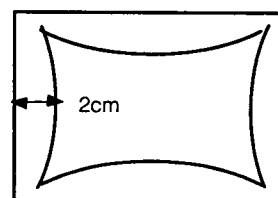


Fig. 51 (b)

Auto-conv. Adj. Mode

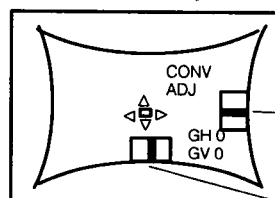


Fig. 52

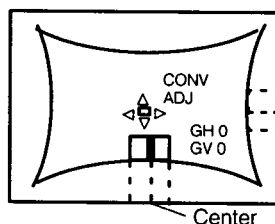


Fig. 53

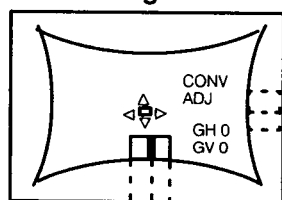


Fig. 54

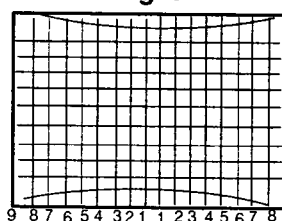


Fig. 55

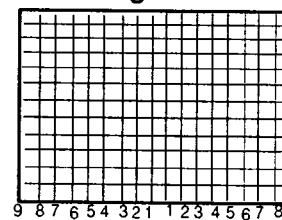
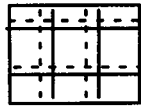
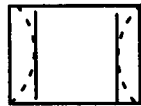
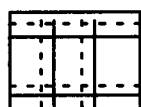
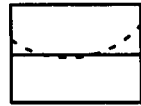
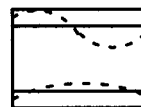
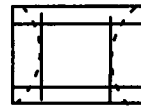
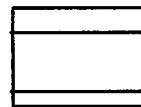
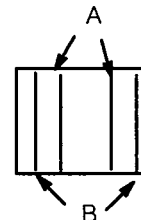


Fig. 56

2. Green raster adjustment (continued to the previous page)

This procedure prepares for complete CRT alignment in case all CRT are completely misaligned.
Adjustment

1. Horizontal and Vertical centre Adjust the centring magnet so that the pattern is centre.	Centring magnet (H. V. centre)	
2. Side Pincushion Adjust R6364 so that both of Side Vertical Lines are straight.	R6364 on C2-Board (Side Pin)	
3. H. V. Size / Lin. Adjust R535, R451 and R6403, R6260 for the appropriate picture height.	- R535 (H. Size) On D-Board, R451 (V Size) on Q-Board - R6403 (H. Lin.), • R6260 (V. Lin.) on C2-Board	
4. Horizontal Bow and Tilt Rotate the Green deflection yoke so that the Horizontal Centre Line is parallel to top and bottom screen edge, and tighten the deflection yoke damp screw. Adjust R6360 so that the horizontal center line is straight.	- Green D/Y (Tilt) - R6360 (Bow) on C2-Board	
5. Vertical Bow and Tilt Adjust R6300 and R6362 so that Vertical Centre Line is straight.	- R6300 (V. Tilt) - R6362 (V. Bow) on C2-Board	
6. V. Key, V T/B Adjust R6401, R6402 and R6361 so that the Top and Bottom Lines are Horizontal (5th lines from centre line)	- R6401, R6402 (V. Key) - R6361 (V T / B) on C2-Board	
7. Side Pincushion Adjust R6421, R6414, R6363 and R6404 so that the Ferris wheel lines (7th vertical lines from center line) are straight.	- R6421, R6414 (S. Pin) - R6363, R6404 (V. Key) on C2-Board	
8. Vertical Lines Adjust R6401 and R6361 so that the Lines (5th lines from the vertical centre line) are Horizontal. Adjust vertical linearity (R6260) and vertical size (R535) is correct. If turning vertical size, perform V.P. waveform adjustment	- R6401 (V. Key), R6361 (V. T / B) - R6260 (V. T / B), R535 (V. Size) on C2-Board	
9. Vertical Lines Adjust R6364 so that Vertical Lines (A region) are Vertical Adjust R6421, R6414, R6363, R6404 so that the Vertical Lines (B region) are Vertical. Adjust R535, R6403 for appropriate picture size.	- R6364, R6421, R6414 (S Pin) - R6363, R6460 (V Key) on C2-Board - R535 (H Size) on D-Board - R6403 (H Lin) on C2-Board	

Auto-Static Convergence Adjustment

Caution :

The following adjustment must be performed with a **Interlaced standard signal** and **stable synchronous signal**.
The following procedure have to carried out one with **PAL signal** and **NTSC signal**.

Preparation

1. Apply a Cross-Hatch Pattern.
2. Picture Menu " Standard.
3. " Colour Temperature " Standard.
4. " Picture Mode " Off ".

Procedure

Note : Re-adjust if you do not see the " OK " display.

1. While pushing the " Colour Temperature " button on the front panel, press the remote controller " Recall button " 3 times. The unit will enter the " Auto Convergence " mode.
2. Press the " Mute " button 4 times while pressing the " Colour Temperature " button. The unit will enter the " Auto-static convergence Adjustment " mode. At this time check that the Colour Temperature is at "Standard ".
3. Press the remote controller Cursor Centre " ■ " button once.
4. Adjust the Cursor Left Right " ◀▶ " button so that the horizontal base signal comes to the screen frame centre, and press the Cursor Center " ■ " button **Fig. 57**.
5. Press the " Recall " button, and verify that the on screen disappears, then press the button once again to display.

Fig. 58 .

6. Press the Cursor Up and Down " ▲▼ " button so that Vertical Location GV = 36.
7. Press the Cursor Centre " ■ " button and search for the Green location. After lowering the on-screen luminance, the Green location. After lowering the on-screen luminance, the on-screen will disappear, then check " OK " is displayed for both the GH and GV, [* **See the Note**].
8. Press the " Cursor Center ■ " button, and verify that the green static convergence is slightly off to the lower right.
9. Press the Cursor Left and Right " ◀▶ " button, and adjust so that the green horizontal base signal comes to the center (■) of the screen frame. Then press the Cursor Centre " ■ " button.
10. Verify that the green static convergence returns to its original location after 5 seconds, and that "OK " is displayed for both the GH and GV.[* **See the Note**]

11. Press the Cursor Centre " ■ " button, and verify that the " RH0 " and " RV0 " are displayed.

12. Verify that the red crosshatch pattern is superimposed on the green in the center of the screen. If not adjust with the " Cursor Up, Down, Left, and Right " buttons.

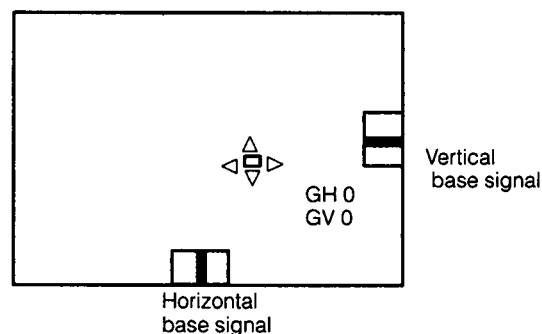


Fig. 57

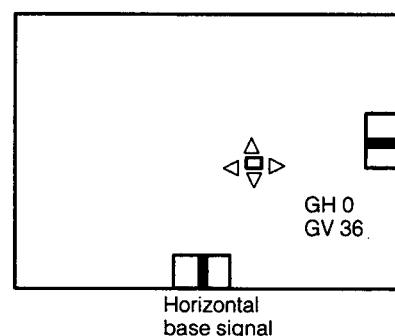
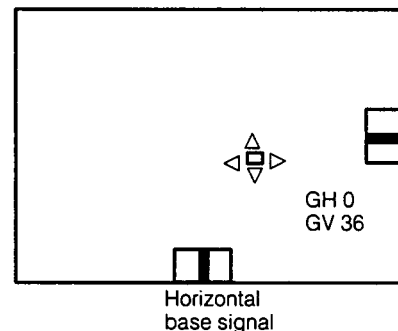


Fig. 58

13. Press the "Cursor Centre" button, and verify that "OK" is displayed after 5 seconds for the both the RH and RV. [* See the Note]
14. Press the Cursor Centre "■" button, and verify that the red static convergence is slightly off to the lower right.
15. Press the Cursor Left – Right "◀▶" button, and move the Red horizontal base signal approximately 2mm to the right from the centre of the screen, and press the Cursor Centre "■" button.
16. Verify that the Red static convergence returns to its original location after approximately 5 seconds, and that the RH and RV are both "OK". [* See the Note]
17. Press the "Cursor Centre ■" Button, and verify that the "BH0", and "BV0" are displayed.
18. Verify that the blue crosshatch pattern is superimposed on the green at the center of the screen. If not adjust with the "Cursor Up, Down, Left, Right" buttons.
However, if the DAC number exceed 110, return the DAC to 0, and align with the Green using the Blue centring magnet.
19. Press the Cursor Center "■" button and verify that "OK" is displayed for both the H and BV after 5 seconds.
[* See the Note]
20. Press the Cursor Centre "■" button and verify that Blue static convergence shifts to the lower right.
21. Press the Cursor Centre "■" button and return the blue static convergence to its original location.
Then verify that both the BH and BV are "OK".
22. While pressing the "Colour Temperature" button press the "Mute" button 4 times, and cancel the adjustment mode.
23. Press the "Colour Temperature" button 3 times, and verify that the color superimposing adjustment is displayed.
Then press again and cancel.
24. Turn the power off. Then turn the power back on and verify that the auto-static convergence adjustment is operating normally.

**Fig. 59**

Complete Dynamic Convergence Adjustment

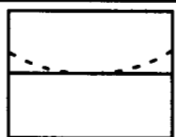
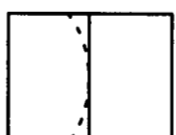
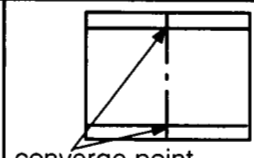
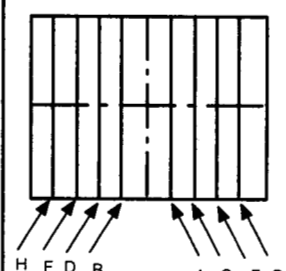
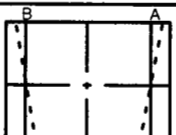
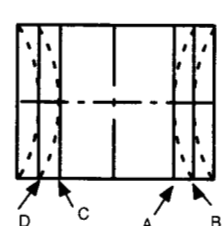
1. Complete Dynamic Convergence

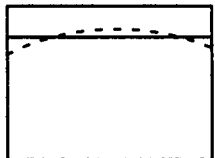
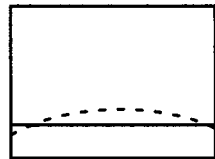
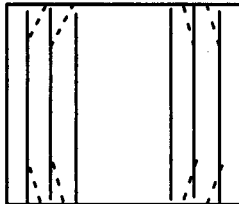
Caution : You must set the picture mode **PICTURE3(MILD)** when you adjust Dynamic Convergence.

Preparation

1. Perform Green raster adjustment, and set the "Manual static convergence Mode" (Auto convergence is OFF)
2. Due to interaction between controls, usually a back and forth adjustment procedure must be done.
3. First adjust the Red controls to convergence. Red lines with the Green lines, then adjust the Blue controls to converge Blue lines with the Green lines.
4. Cover the CRTs that is not being adjusted.

Note : Refer the Location of controls on Page 30

To Converge	Adjust Red.	Adjust Blue.	Effect	Screen
1. Center Horizontal line	RED yoke C magnet R6320 R6280	BLUE yoke C magnet R6240 R6200	TILT Static centre TILT BOW	
2. Center Vertical Line	R6325 R6285 C magnet	R6245 R6205 C magnet	TILT BOW Static centre	
3. Vertical lines Note : After adjusting R6282, adjust R6322.	R6282, R6322 R6321 R6281	R6202, R6242 R6241 R6201	V KEY V LIN V SIZE	
4. Horizontal Linearity Right Horizontal Linearity (A) Left Horizontal Linearity (B) Right Horizontal Linearity (C) Left Horizontal Linearity (D) Right Horizontal Linearity (E) Left Horizontal Linearity (F) Right Horizontal Linearity (G) Left Horizontal Linearity (H)	R6291 R6331 R6292 R6332 R6293 R6333 R6294 R6334	R6211 R6251 R6212 R6252 R6213 R6253 R6214 R6254	Sub-H-LIN Sub-H-LIN Sub-H-LIN Sub-H-LIN Sub-H-LIN Sub-H-LIN Sub-H-LIN Sub-H-LIN	
5. Confirm Centre Vertical Line and horizontal line. if not, perform step 2 ~ 4.				
6. Right side Horizontal keystone (A)	R6286	R6206	H KEY	
7. Left side Horizontal keystone (B)	R6326	R6246	H KEY	
8. Vertical line Vertical line (A) Right side vertical line (B) Left vertical line (C) Left side vertical line (D)	R6288 R6289 R6328 R6329	R6208 R6209 R6428 R6249	S PIN1 S PIN2 S PIN1 S PIN2	
Note : Do not Adjust R6290, R6330(SPIN3) at the same time. Confirm H LIN, if not, Readjust H LIN.				

To Converge	Adjust Red.	Adjust Blue.	Effect	Screen
<u>8. Upper side Horizontal line</u> Note : Adjust R6284 (6204) so upper left and right is straight, if not, adjust R6284 (R6204), and adjust R6337 (R6257) so right side line is straight.	R6284, R6337	R6204, R6257	WAVE	
<u>9. Upper horizontal Line</u>	R6282 R6283 R6321 R6281	R6202 R6203 R6241 R6201	V KEY V T/B V LIN V SIZE	
<u>10. Lower Horizontal Line</u> Note : If not, Adjust R6298 (R6218).	R6321 R6281 R6322 R6323 R6324	R6241 R6201 R6242 R6243 R6244	V. LIN V. SIZE V. KEY V. T/B WAVE	
<u>11. Side Pincushion</u> Note : Confirm H Lin, if not readjust H Lin	R6328, R6288 R6329, R6289 R6330, R6290	R6248, R6208 R6249, R6209 R6250, R6210	S PIN1 S PIN2 S PIN2	

TC-43GF10M

2. Location of convergence controls on C2-Board

Note : Ref. No. on this Board are 6000 series.

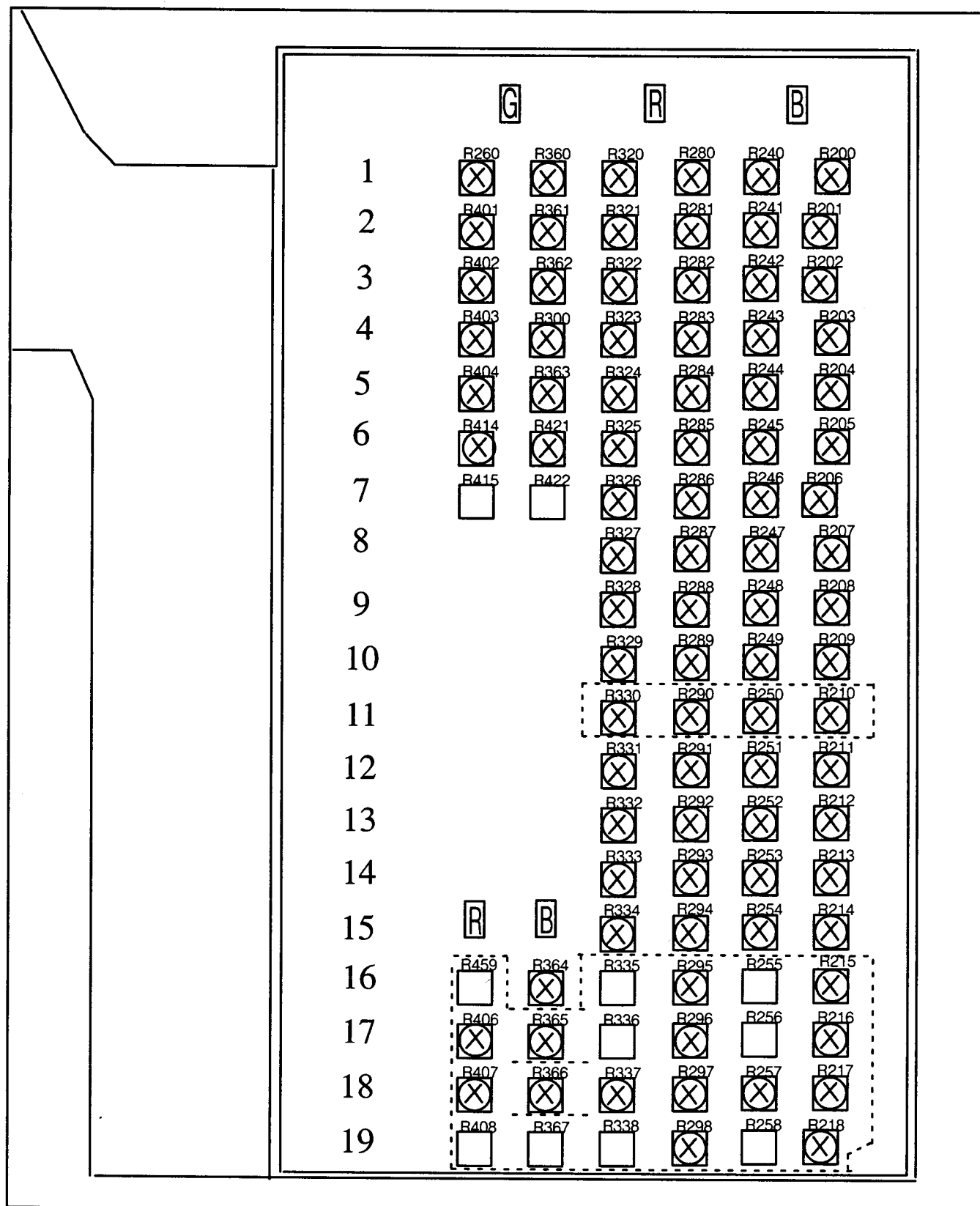


Fig. 60

3. Effect of convergence controls

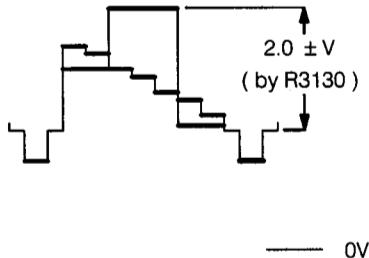
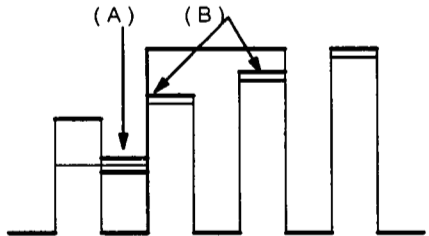
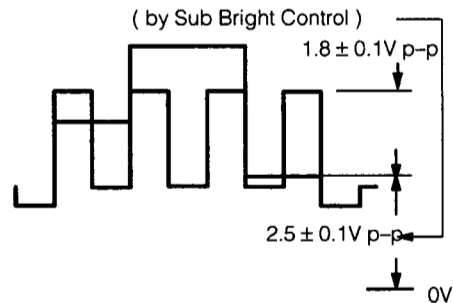
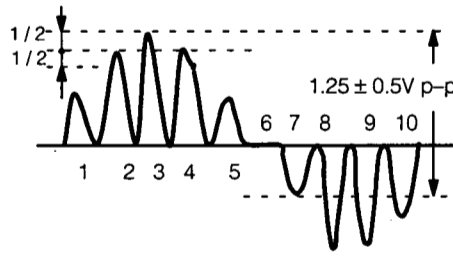
		G	R	B	
1					TILT/BOW
2					LIN/SIBE
3					V. KEY
4					T/G
5					WAYE
6					TILT/BOW
7					H. KEY 1
8					H. KEY 2
9					SPW 1
10					SPW 2
11					SPW 3
12					LIN 1
13					LIN 2
14					LIN 3
15					LIN 4
16					NTSC ONLY
17	NTSC ONLY				
18	NTSC ONLY				WAVE
19					WAVE

Fig. 61

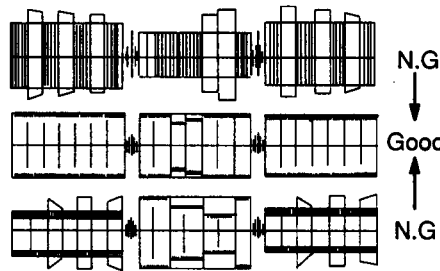
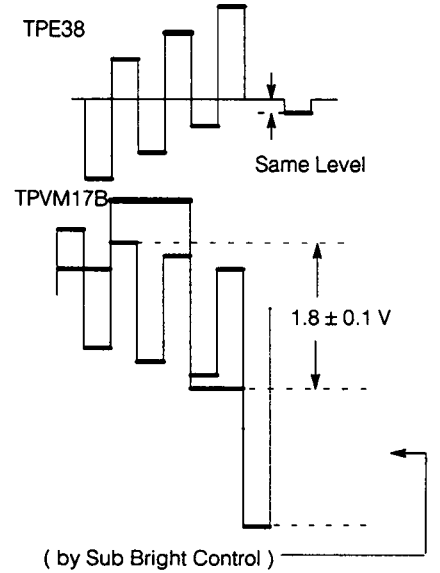
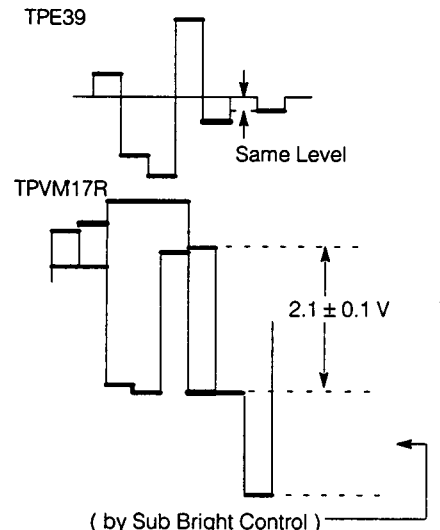
TC-43GF10M

Service Adjustment Procedures

Item / Preparation	Adjustment Procedure
<u>+B Voltage Adjustment</u> 1. Operate the Monitor set. 2. Set controls : Bright minimum Contrast minimum Volume minimum	1. Adjust R9213(P2-Board) so that +B voltage at TPX1 on X-Board is : TPX1 : $15.5 \pm 0.3 \text{ V}$
<u>+B Voltage Confirmation</u> 1. Operate the Monitor set. 2. Set controls : Bright minimum Contrast minimum Volume minimum	1. TPP1 on P1-Board : $115.5 \pm 1.0 \text{ V}$ 2. Pin 4 of connector P24 on P2-Board : $15.5 \pm 0.5 \text{ V}$ 3. Pin 1 of connector P24 on P2-Board : $-23.0 \pm 1.0 \text{ V}$ 4. Pin 6 of connector P24 on P2-Board : $25.0 \pm 1.0 \text{ V}$ 5. Pin 2 of connector P27 on P2-Board : $16.5 \pm 1.0 \text{ V}$ 6. Pin 3 of connector P27 on P2-Board : $31.0 \pm 2.0 \text{ V}$
<u>SOS Confirmation</u> 1. Operate the Monitor set. 2. Connect a DC voltage generator pin3 of connector X22 (+) and TPX2 (GND) on X-Board.	1. The Monitor unit should shut down (becomes SOS condition) when the DC voltage meter is $5.0 \pm 0.5 \text{ V}$ SOS condition is as follows : Main power indicator on the front panel (left side) 2. Confirm that the unit turn not turn ON by remote controller. 3. Turn OFF the DC voltage generator band the Monitor unit by the main switch. 4. confirm that the unit turned ON by the main switch.
<u>High Voltage protector adjustment</u> 1. Receive a monoscope pattern. 2. Set the Monitor controls normal. 3. R1933 (protector Adjustment VR) on Q-Board : Fully counter-clockwise. 4. Turn the Monitor set OFF : 5. Remove Red CRT anode lead from Distributor by grasping anode lead protectice cap top and squeeze it against the locking cap body under the protective cap. Rotate 1/4 turn and pull anode lead sleeve out of distributor connector. Discharge anode lead to CRT metal chassis. : 6. Connect DC voltmeter to TPQ3 and TPQ(GND) on Q-Board. 7. Insert a H.V. lead into the distributor until it makes a positive contact with the center connector. Connect other end to H.V. meter. 8. Turn the Monitor set ON.	1. Adjust R1908 (D-Board) so that high voltage is $34.0 \pm 0.3 \text{ kV}$ 2. Adjust the brightness and contrast control to obtain $16.5 \pm 0.5 \text{ V}$ on the voltage meter. 3. Turn R1933 on Q-Board slowly clockwise until shout down occurs and hold that position. 4. Turn off the power switch. 5. Adjust sub brightness control is minimum. 6. Turn on the power switch. 7. Adjust Brightness control until shout down occurs, High voltage should be $34.0 \pm 0.5 \text{ kV}$, and $16.5 \pm 0.5 \text{ V}$ on the voltage meter just before shout down. 8. If the reading in step 7 are not correct, repeat step 1 to 7. Note : Use only a Static Type of high voltage meter which has 5% tolerance at 40kV.
<u>High Voltage</u> 1. Receive a crosshatch pattern. 2. Adjust R1908 (High voltage VR adjustment VR) on D-Board so that the high voltage is : $32.0 \pm 0.3 \text{ kV}$.	1. Receive a monoscope pattern. 2. Set the picture controls " normal " 3. Confirm that high voltage is $32.0 + 0.3, -1.0 \text{ kV}$. 4. Fix R1908 and R1933 with bond .

Item / Preparation	Adjustment Procedure	Waveform
Sub Contrast 1. Input a PAL colour bar pattern signal 2. Connect an oscilloscope to TPVM17G on VM-Board. 3. Connect a short jumper between TPQ3(Q-Board) and TPD2.(D-Board) 4. Connect a short jumper between R1938. 5. Connect a short jumper between TPVM11 and TPVM2 on VM-Board. 6. Select the " PICTURE 2 " (DYNAMIC) by picture menu button and push Normal button. 7. Set AI to OFF position.	1. Adjust Sub bright (R312) controls on E-Board turn 45° clockwise from their fully counterclockwise positions on the foil side. Connect a short jumper between TPVM11 ~ TPVM2 on VM-Board. 2. Adjust Sub Contrast control (R3130) on E-Board : $2.0 \pm 0.1 \text{ V}$ (Waveform should not be saturated, if yes, Adjust Sub brightness on E-Board)	 Fig. 62
Delay Line 1. Input PAL colour bar pattern. 2. Connect an oscilloscope to TPVM17B on VM-Board 3. Select the " PICTURE 2 " (Dynamic) by picture menu button and push Normal button.	1. Adjust the position (A) shown in Fig. 63 to zero level by R611 on E-Board. 2. Minimize the difference (B) shown in Fig. 63 by L601 on E-Board.	 Fig. 63
PAL Colour Output 1. Receive PAL colour bar pattern. 2. Connect an oscilloscope to TPE32. 3. Connect a short jumper between TPD11 and TPD12 on D-Board. 4. Connect a short jumper between R1938 both side on D-Board. 5. Connect a short jumper between TPVM11 and TPVM2 on VM-Board 6. Select the " PICTURE 2 " (DYNAMIC) by picture menu button and push Normal button. 7. Set AI to OFF position.	1. Adjust Sub Bright Control (R312) on E-Board : $2.5 \pm 0.1 \text{ V}$ 2. Adjust Sub Colour control (R672) on E-Board : $1.8 \pm 0.1 \text{ V}$ 3. Connect the oscilloscope to TPVM17R on VM-Board. 4. Confirm that the amplitude of waveform $2.1 \pm 0.5 \text{ V}$	 Fig. 64
NTSC / Modified NTSC Colour Adjustment 1. Apply NTSC rainbow pattern. 2. Connect an oscilloscope to TPE34 on E-Board. 3. Connect a short jumper between TPD11 and TPD12 on D-Board. 4. Connect a short jumper between TPQ3(Q-Board) and TPD2(D-Board). 5. Select the " PICTURE 2 " (DYNAMIC) by picture menu button and push Normal button. 6. Connect a short jumper between R1938 both side on D-Board. 7. Set AI to OFF position.	1. Confirm that the amplitude of waveform $1.25 \pm 0.5 \text{ V o-p}$ 2. Set Colour control to maximum and confirm that the colour level is saturated enough. 3. Set Tint control (DAC) to center and adjust Sub Tint control (R674) on E-Board to obtain waveform at TPVM17R as shown in Fig. 65. 4. Set Tint control to maximum and confirm that the variable range is more than 15°. 5. Set Tint control to minimum and confirm that the variable range is more than 15°.	 Fig. 65

TC-43GF10M

Item / Preparation	Adjustment Procedure	Waveform
Bell Filter / Line Discriminator 1. Apply SECAM colour bar pattern. 2. Connect an oscilloscope to Pin No.18 of IC601 (E-Board) through 10 k Ω resistor. 3. Set System to SECAM. 4. Select the " PICTURE 2 " (DYNAMIC) by picture menu button and push Normal button.	1. Adjust L653 on E-Board to obtain waveform as shown in Fig. 66 . 2. Connect a DC voltmeter to TPE35 on E-Board. 3. Adjust L652 on E-Board to obtain voltage at TPE35 for maximum. 4. Make sure the voltage is more than 7V. 5. Confirm that the colour output is normal.	 Fig. 66
SECAM Demodulator / Colour Output – Blue 1. Receive SECAM colour bar pattern. 2. Set the Colour System to SECAM. 3. Select PICTURE 1 (Standard) from picture menu and push the Normal button. 4. Connect an oscilloscope to TPVM17B (VM-Board) and TPE38 (E-Board) 5. Connect a short jumper between R1938 both side on D-Board. 6. Connect a short jumper between TPQ3 (Q-Board) and TPD2 (D-Board). 7. Connect a short jumper between TPD11 and TPD12 on D-Board.	1. Adjust L650 to obtain waveform at TPE38 on E-Board as shown in Fig. 67 . 2. Connect the oscilloscope to TPVM17B on VM-Board. 3. Adjust SECAM B-Colour Gain control on E-Board. (R651) : 1.8 ± 0.1 V 4. Connect the oscilloscope to TPE38 on E-Board. 5. Confirm that the waveform is as shown in Fig. 67 .	 Fig. 67
SECAM Demodulator / Colour Output – Red Note : Before making this adjustment, " SECAM Demodulator / Colour Output- Blue " adjustment must be finished. 1. Receive SECAM colour bar pattern. 2. Push the Normal button for normal condition. 3. Connect an oscilloscope to TPVM17R (VM-Board) and TPE39 (E-Board).	1. Adjust L651 ON E-Board to obtain waveform at TPE39 as shown in Fig. 68 . 2. Connect the oscilloscope to TPVM17R. 3. Adjust SECAM R-Colour Gain control (E-Board) (R652) : 2.1 ± 0.1 V 4. Connect the oscilloscope to TPE39. 5. Confirm that the waveform is as shown in Fig. 68 .	 Fig. 68

White balance

Preparation

1. Connect signal generator and select NTSC colour bar pattern.
2. Set controls as following :
 Picture menu DYNAMIC
 Screen VR Fully counterclockwise
 Colour control min.
 R-Drive (R4281) centre (VM-Board)
 B-Drive (R4241) centre (VM-Board)
 R-Low Light (R4192), G-Low Light (R4172) and B-Low Light (R4152) controls on VM-Board turn 45 ° counterclockwise from their fully clockwise positions on the parts side.
 Colour temperature standard

Procedure

3. Connect an oscilloscope to TPLG1 on LG-Board with DC mode.
4. Adjust G-Low Light (R4172) on VM-Board so that DC voltage (black level) on the oscilloscope becomes $190 \pm 2V$.

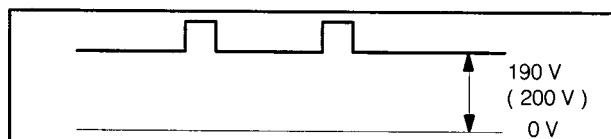


Fig. 69

5. Connect an oscilloscope to TPLR1 on LR-Board with DC mode.
6. Adjust R-Low Light (R4192) on VM-Board so that DC voltage (black level) on the oscilloscope becomes $190V \pm 2V$.
7. Connect an oscilloscope to TPLB1 on LB-Board with DC mode.
8. Adjust B-Low Light (R4152) on VM-Board so that DC voltage (black level) on the oscilloscope becomes $190 V \pm 2V$.
9. Increase the All Screen VRs to faint light.
10. Apply a black level pattern signal to AV input terminal.
11. Adjust All screen VRs to achieve as shown in Fig. 70.



Fig. 70

12. Adjust the RED (R4281) and BLUE (R4241) Drive VRs on VM-Board for white on white bar in pattern.
13. Adjust Red CUTOFF (R4192) and BLUE (R4152) on VM-Board for GRay on lowest gray bar in pattern.
14. Confirm LOW LIGHT and HI LIGHT adjustments. Touch up if needed.
15. Confirm SUB CONTRAST adjustment.
16. Apply a white pattern signal.
17. Reset the service switch to the NORMAL position.
18. Confirm the white balance according to following flow chart.

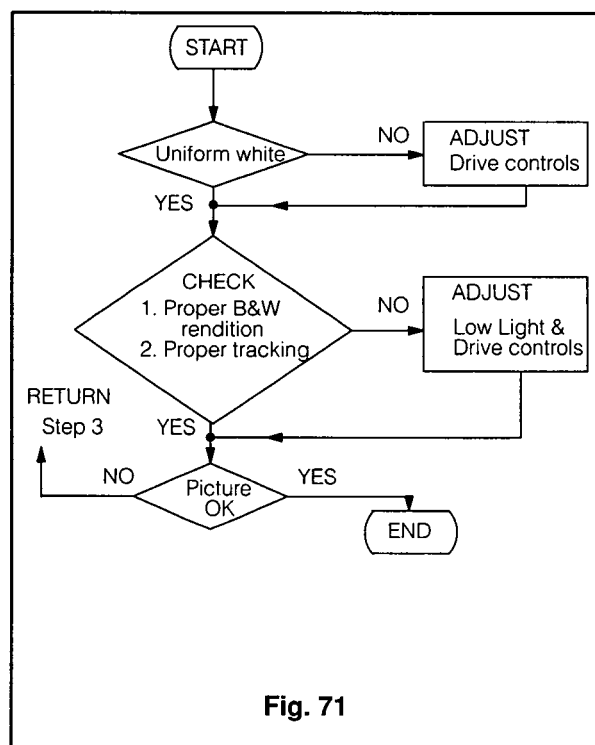


Fig. 71

Special Servicing Procedure

1. Self-Check Function

1. IC1211 (MEMORY)
2. Functional setting of IC1213 (MPU)

Procedure

1. Simultaneously press the Recall button on the remote control unit and the VOLUME DOWN button on the Monitor set.
2. The Monitor enters the self-check mode and the result are displayed on the screen (See below.)
Please note that the programme number will be changed to position 1 automatically.
3. Press any key to clear the self-check mode and return to the normal state.

On-Screen for SELF-CHECK mode in normal

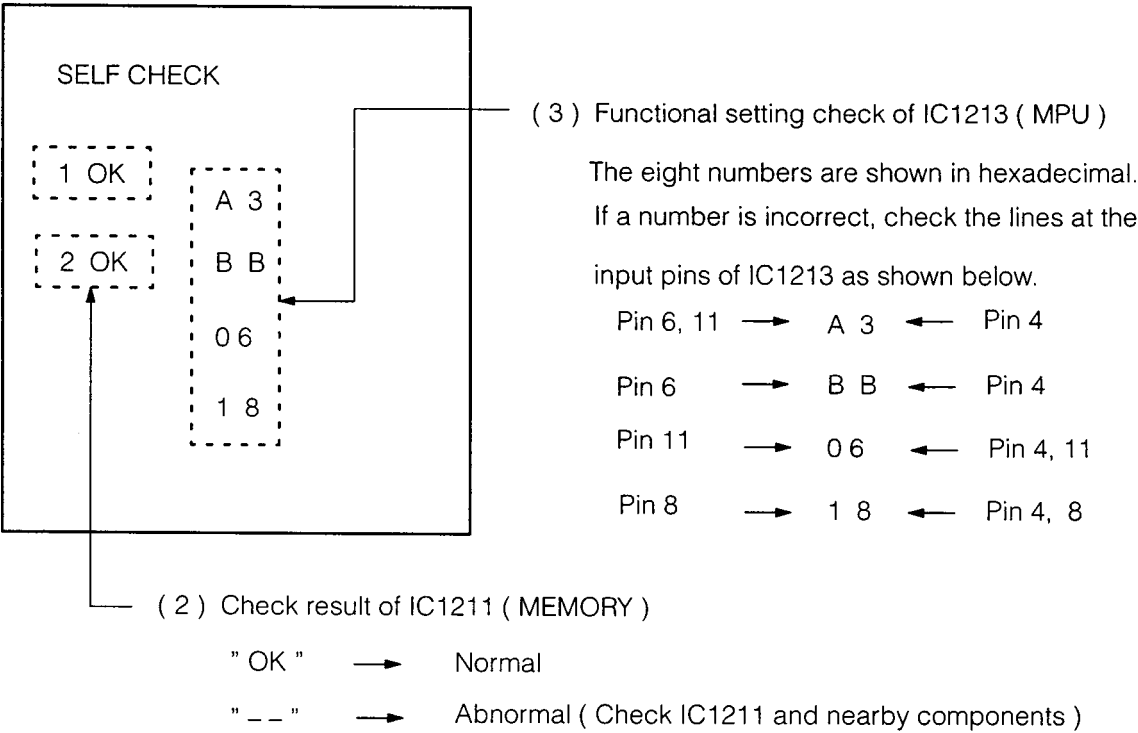
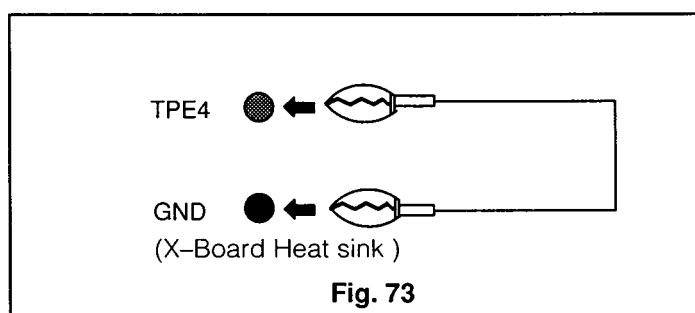


Fig. 72

2. Replacing Memory IC

If replaced Memory IC (IC1211), you must set normal level of picture menu and sound menu according to following steps.

- 1) Turn ON Monitor unit to and input a signal.
- 2) Touch a short jumper wire to TPE4 and GND on E-Board at one time, as shown in **Fig. 73**
- 3) Picture will be white pattern.
- 4) Select PICTURE 1 by pushing PICTURE MENU button on the remote controller.
- 5) Select CONTRAST from menu by pushing FEATURE MENU and POSITION buttons on the remote controller.
- 6) Set CONTRAST level to " 47 " by pushing POSITION LEFT or RIGHT button and push the **[N]** button.



- 7) Set each functions level of PICTURE 2 and PICTURE 3 to following levels as same procedure PICTURE 1.

	PICTURE 1 (standard)	PICTURE 2 (DYNAMIC)	PICTURE 3 (MILD)
Colour	Fixed (32)	32	32
NTSC-Tint	Fixed (32)	32	32
Bright	Fixed (32)	32	32
Contrast	47	Fixed (63)	32
Sharpness	Fixed (32)	32	22

- 8) Select SOUND MENU 1 by pushing SOUND MENU button and select BASS from menu by pushing FEATURE MENU and POSITION buttons on the remote controller.
- 9) Set BASS level to " 32 ", select TREBLE from menu and set TREBLE level " 45 ".
- 10) Push the **[N]** button, and select SOUND MENU 3 by pushing SOUND MENU button.
- 11) Set each functions level of SOUND MENU 2, SOUND MENU 3 and SOUND MENU4 to the following levels as same procedure of SOUND MENU 1.

	SOUND 1 (STANDARD)	PICTURE 2 (MUSIC)	SOUND 3 (SPEECH)	SOUND 4 (KARAOKE)
Bass	Fixed (32)	50	28	50
Treble	Fixed (32)	45	28	28

- 12) Each setting levels are memorized by pushing the " Recall " button (Located on remote controller) and Volume Button " - " button (Located on front panel) at same time.
- 13) The on-screen will appear " SELF CHECK " mode.
- 14) SELF CHECK mode is cancelled by pushing any function key and the on-screen change to normal picture.

TC-43GF10M

Location of Lead Wiring

1. X14 → 1 → I → C → D → H → D5
2. X4 → C → D → H → F → Q6
3. X5 → I → B → A → VM23 (VM-Board)
4. X9 → J → C → D → E → 2 → K → 3 → L → 4 → G → N4 (N-Board)
5. X10 → 1 → I → C → D → E → P27
6. X1 → I → C → D → E → P24
7. X12 → J → C → D → E → P25
8. X13 → 1 → I → B → C50 (C1-Board)
9. X24 → J → C → D → H → D24
10. X17 → 1 → I → C → D → H → F → O → N7 (N-Board)
11. D8, D9, P20 → P15 (P1-Board)

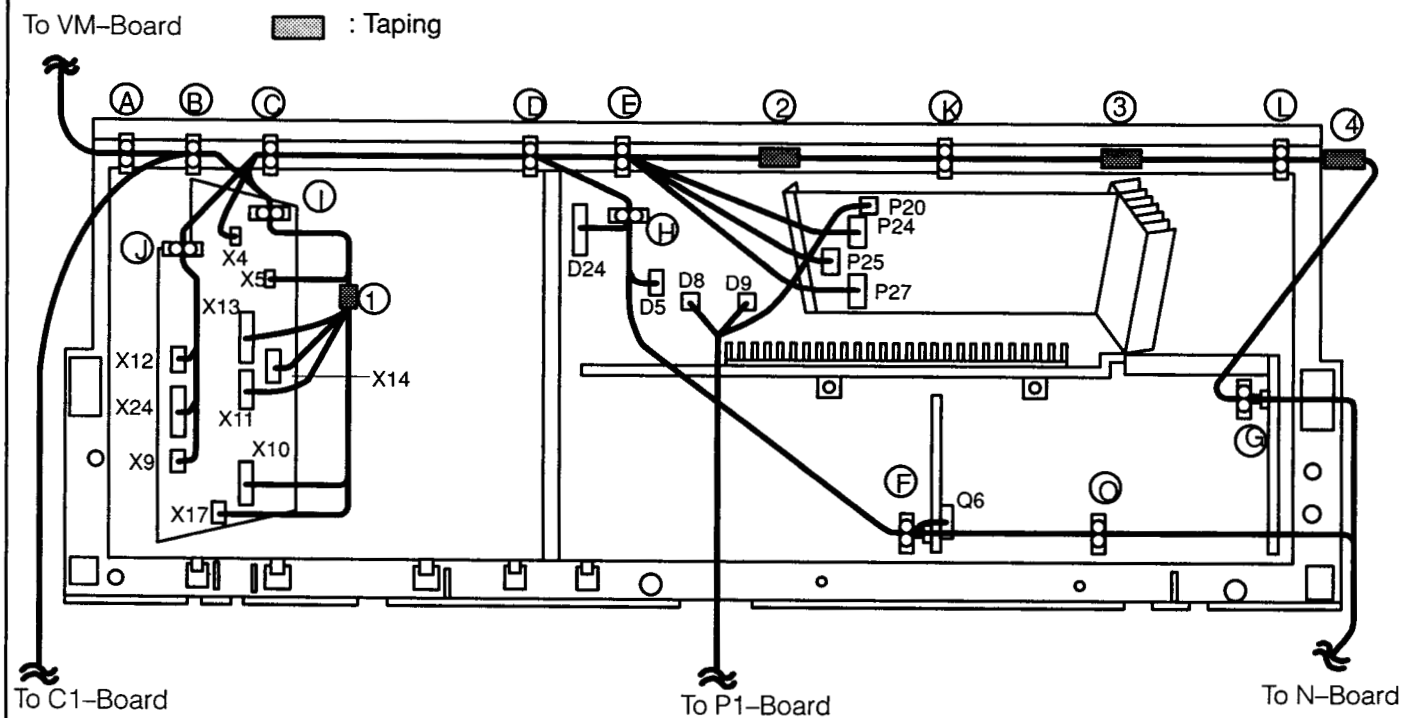


Fig. 74

1. P21 → G → N → 9 → N3
2. P23 → O → P14
3. D2 → 9 → N → N6
4. H7 → U → T → B → C → D → E → 2 → K → 3 → L → 4 → M → 10 → G → N → SP
5. Anode wire → S → Distributor
6. D18 → D19 → 9 → N → DH1
7. SP → U → H6
8. T2 → U → C52

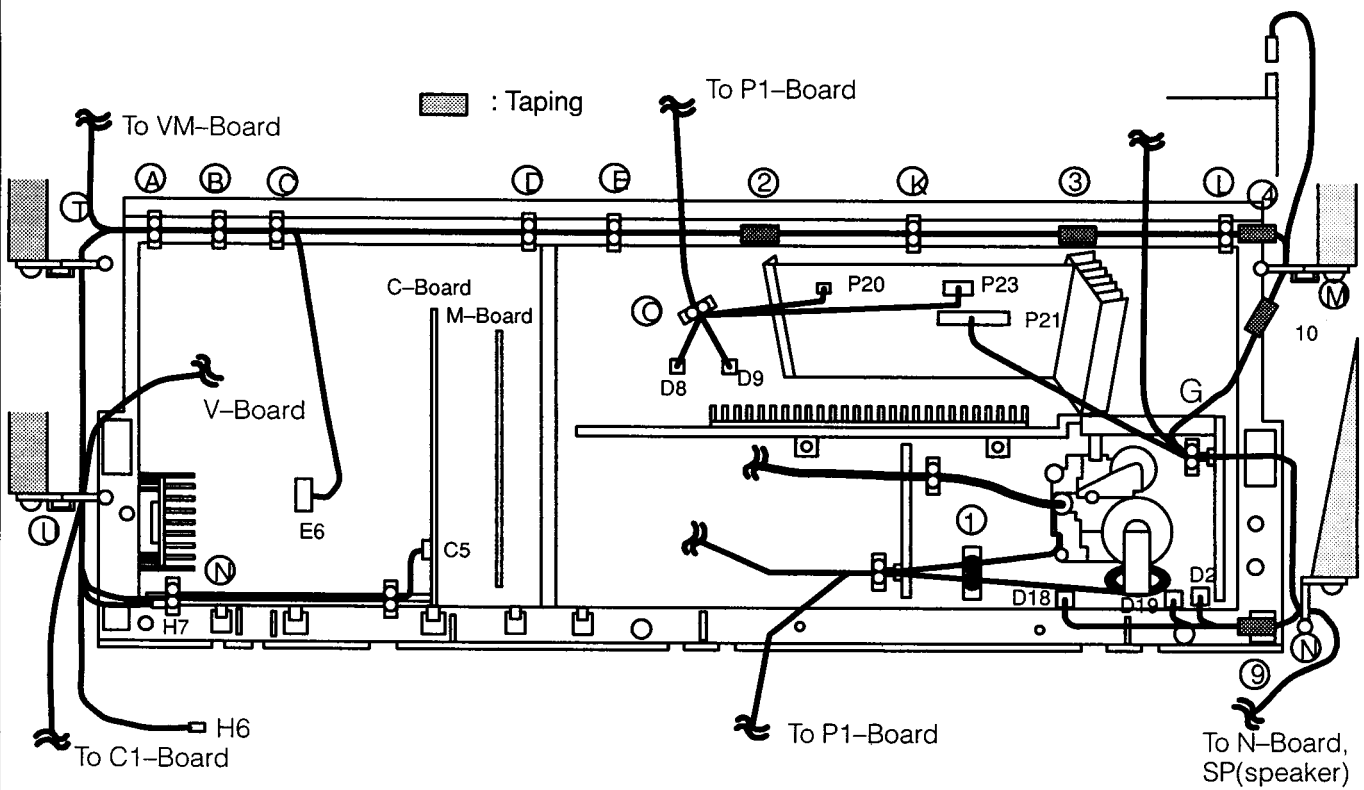
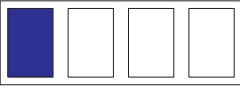
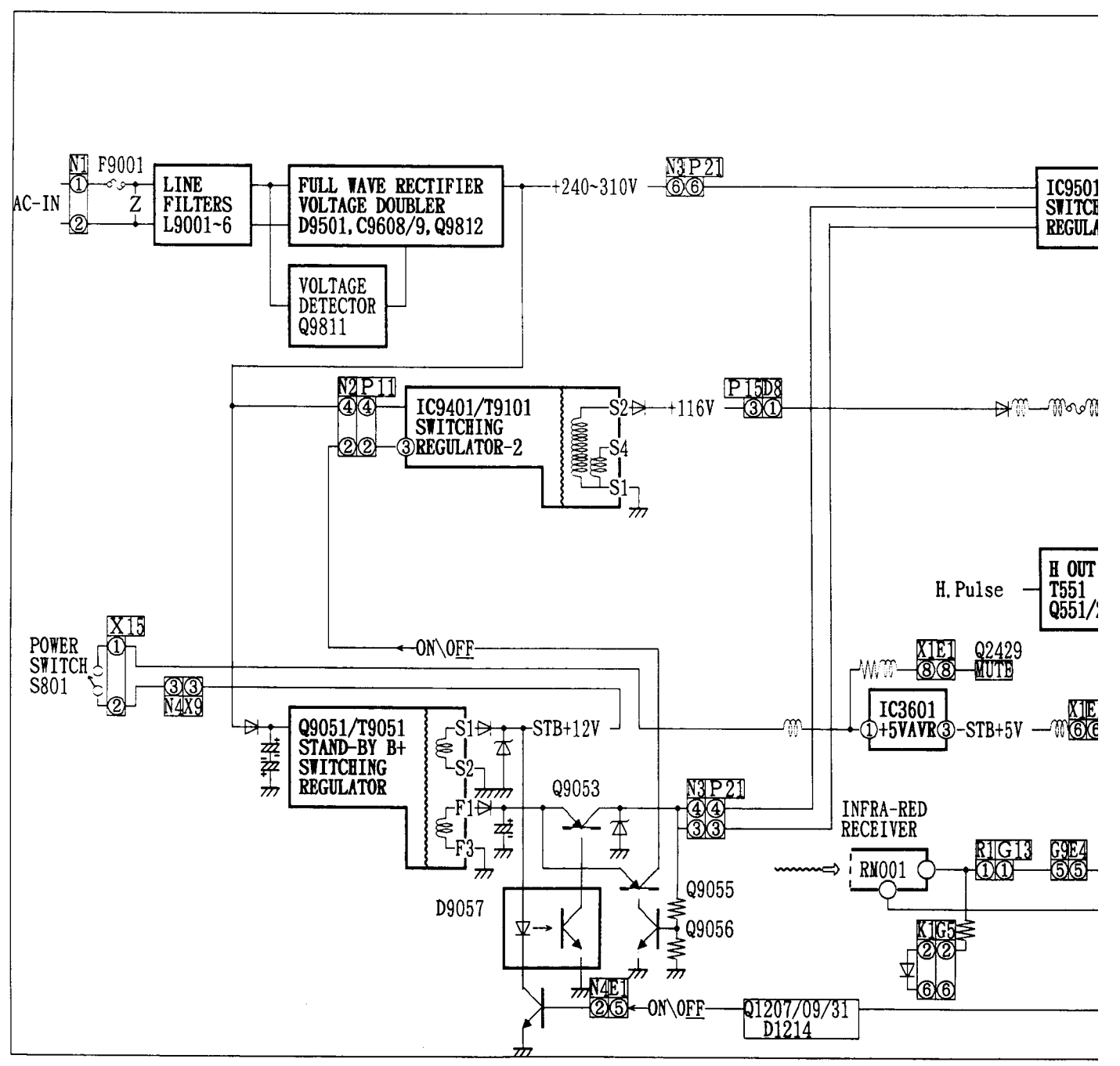
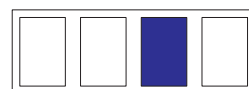
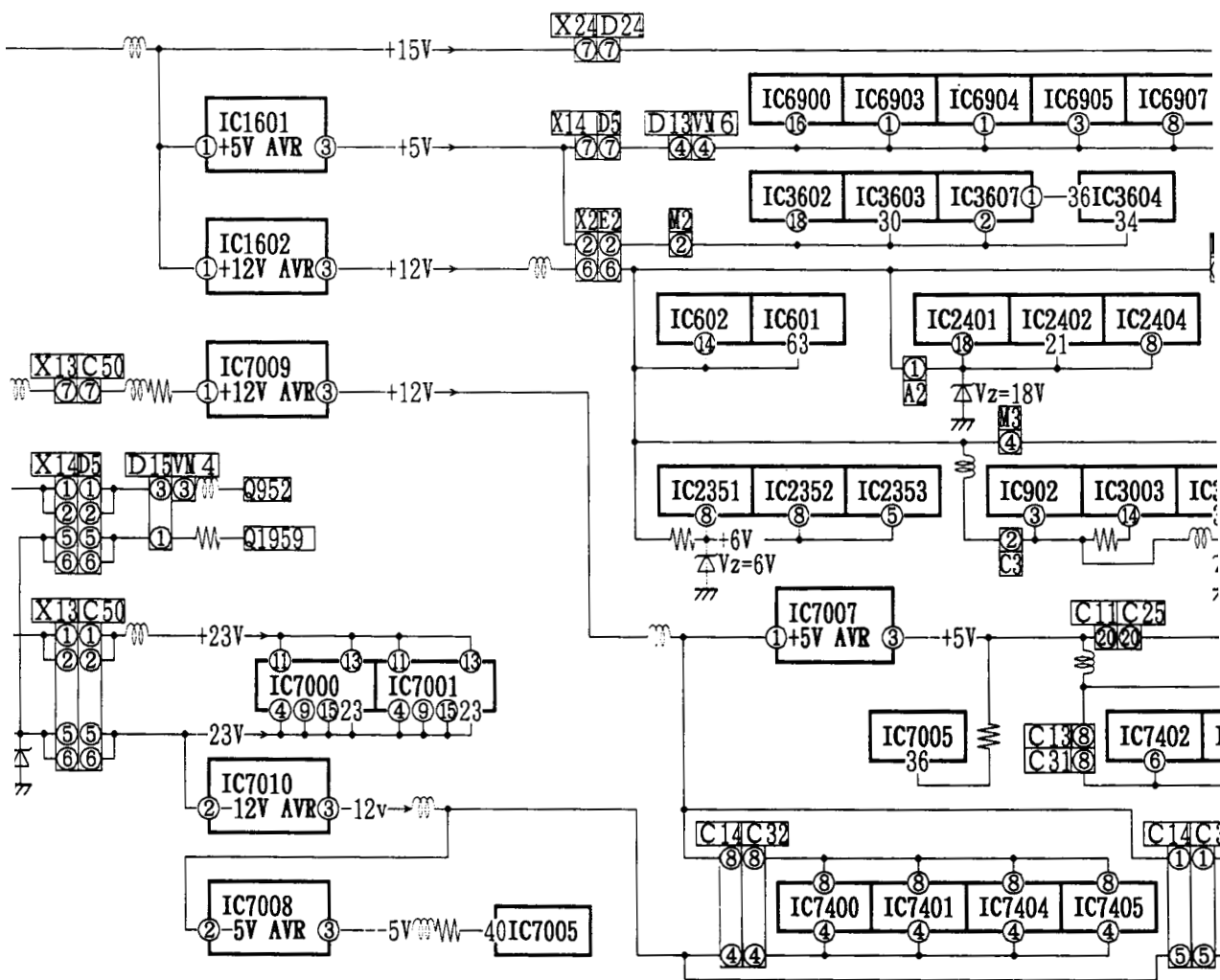


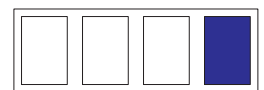
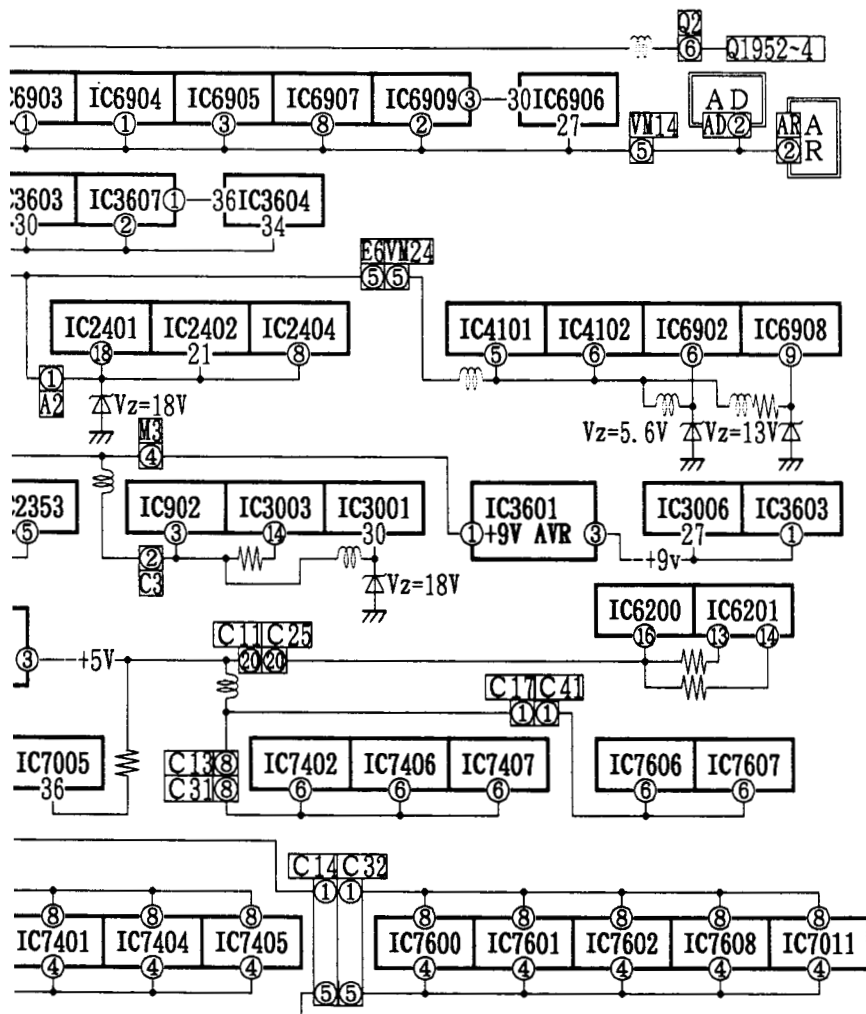
Fig. 75

Block Diagrams

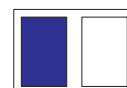
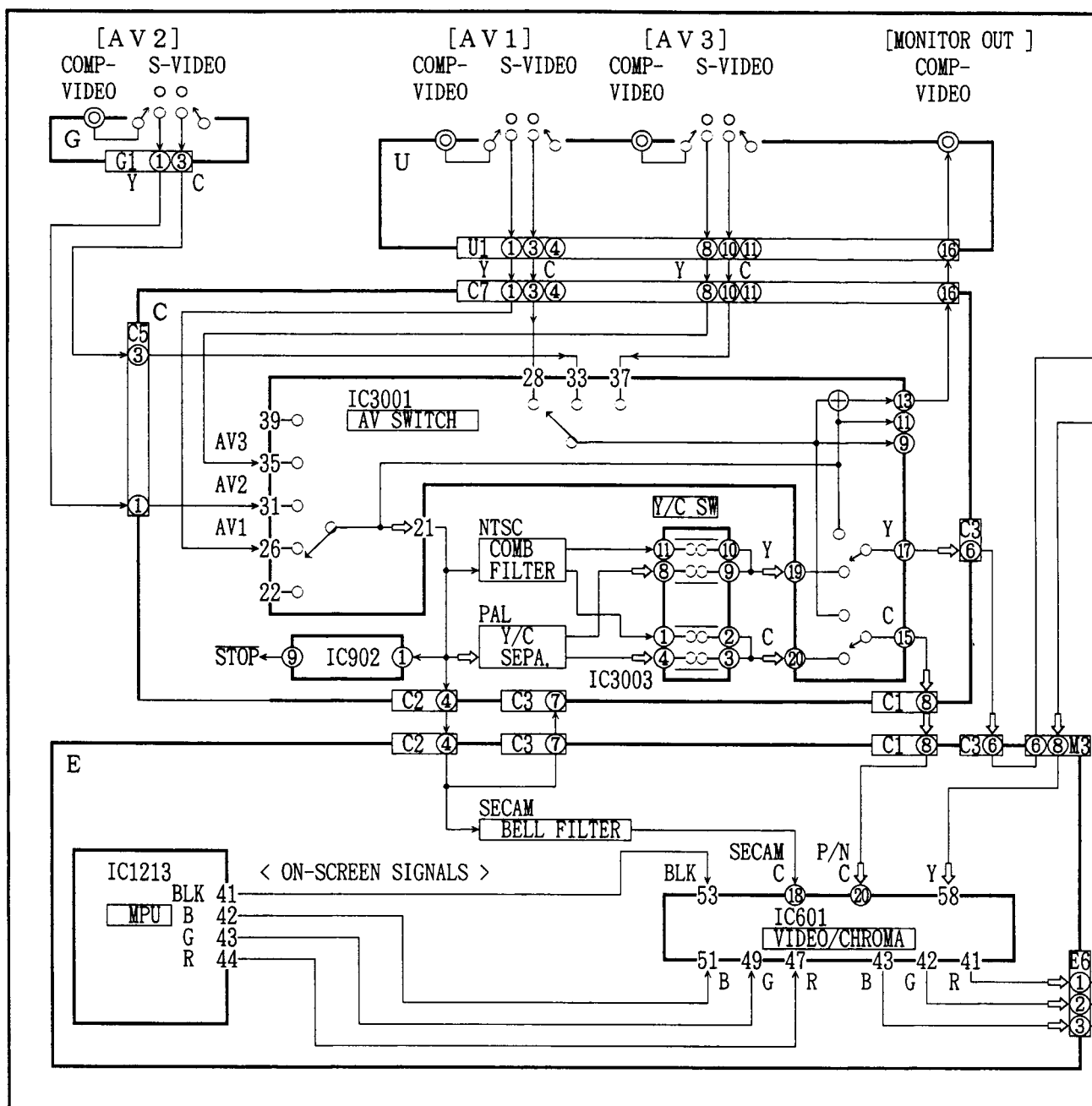
Power Supply Block



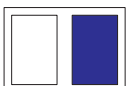
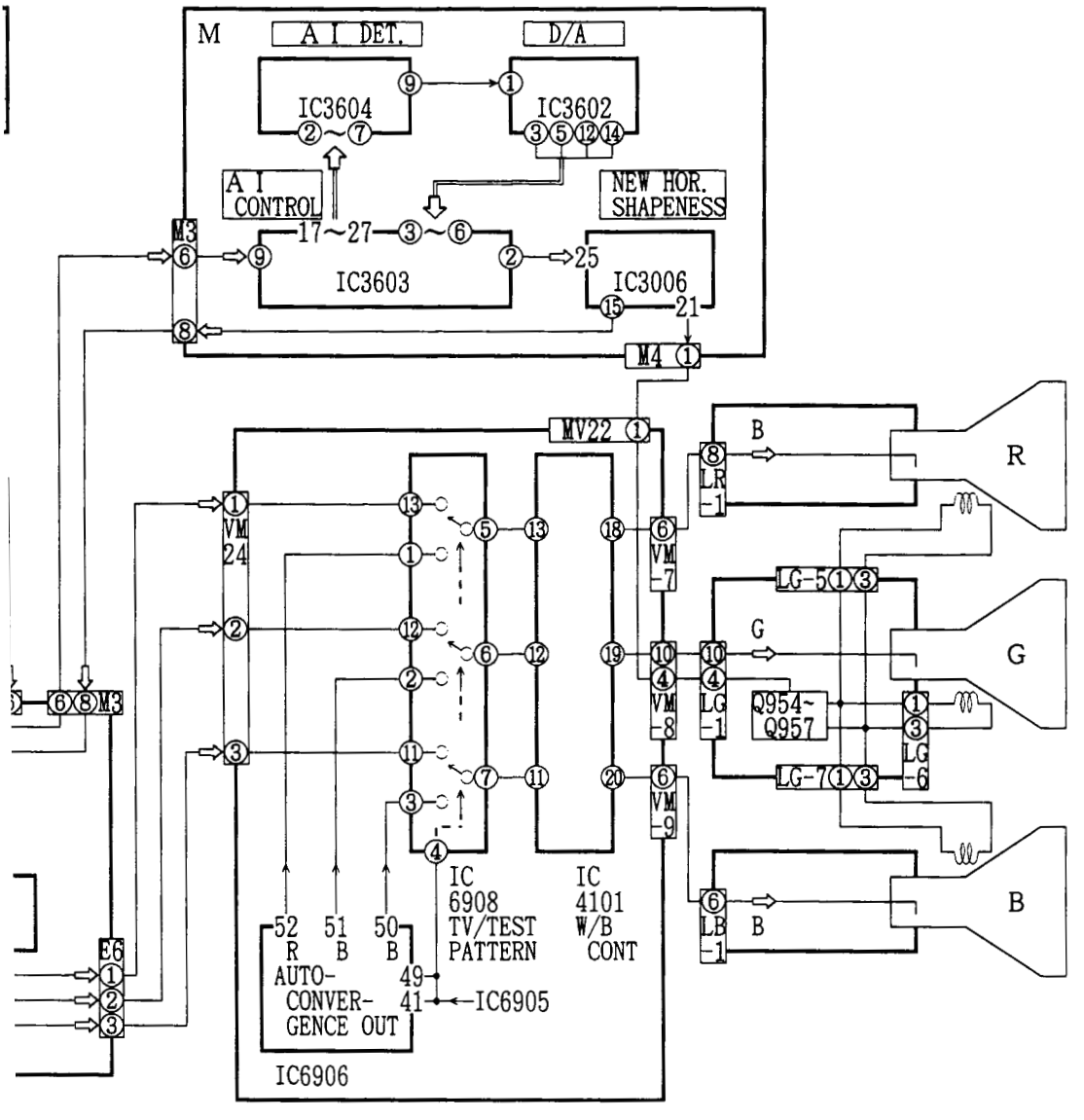




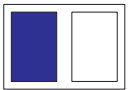
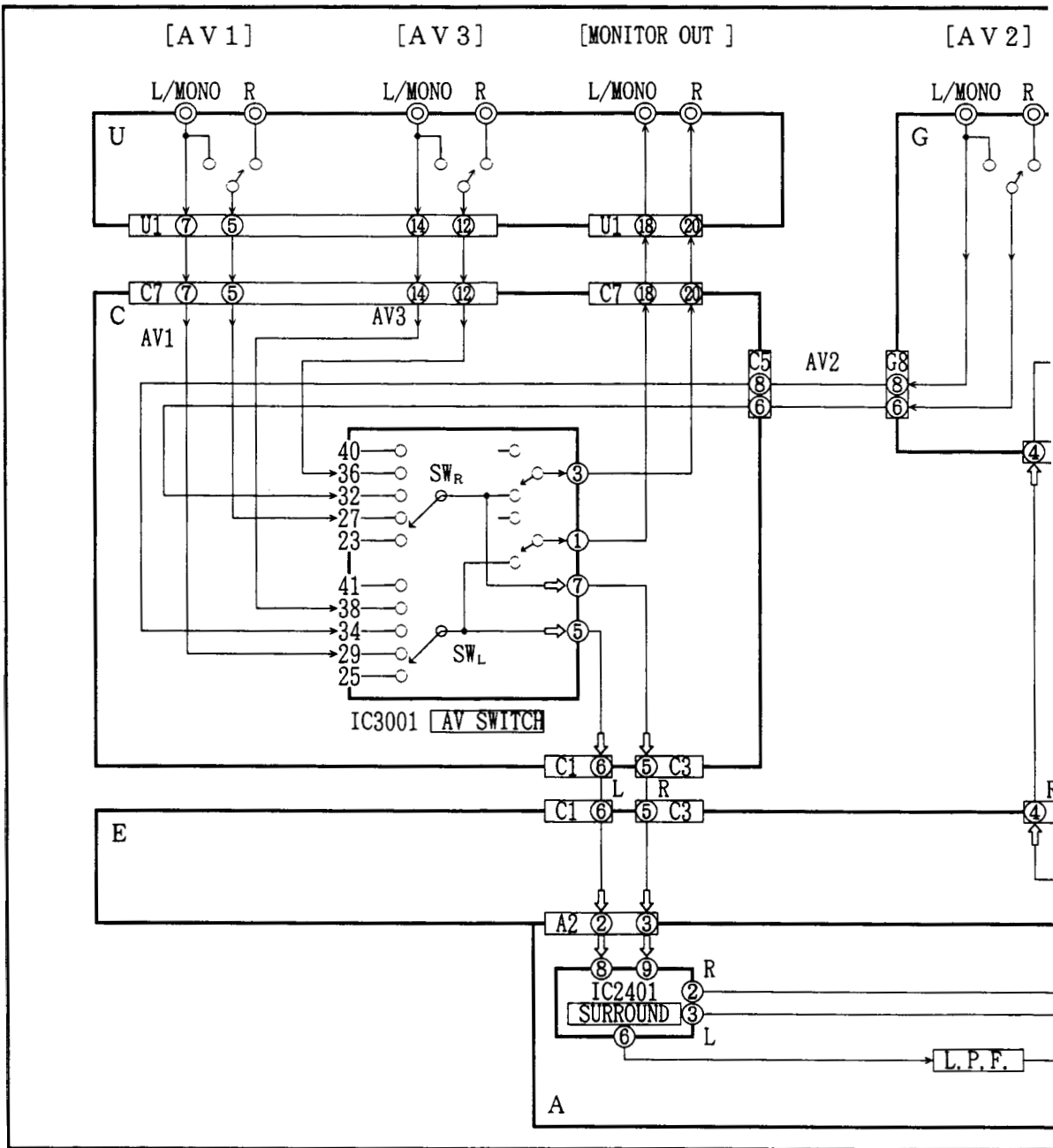
Video Block



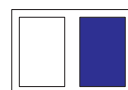
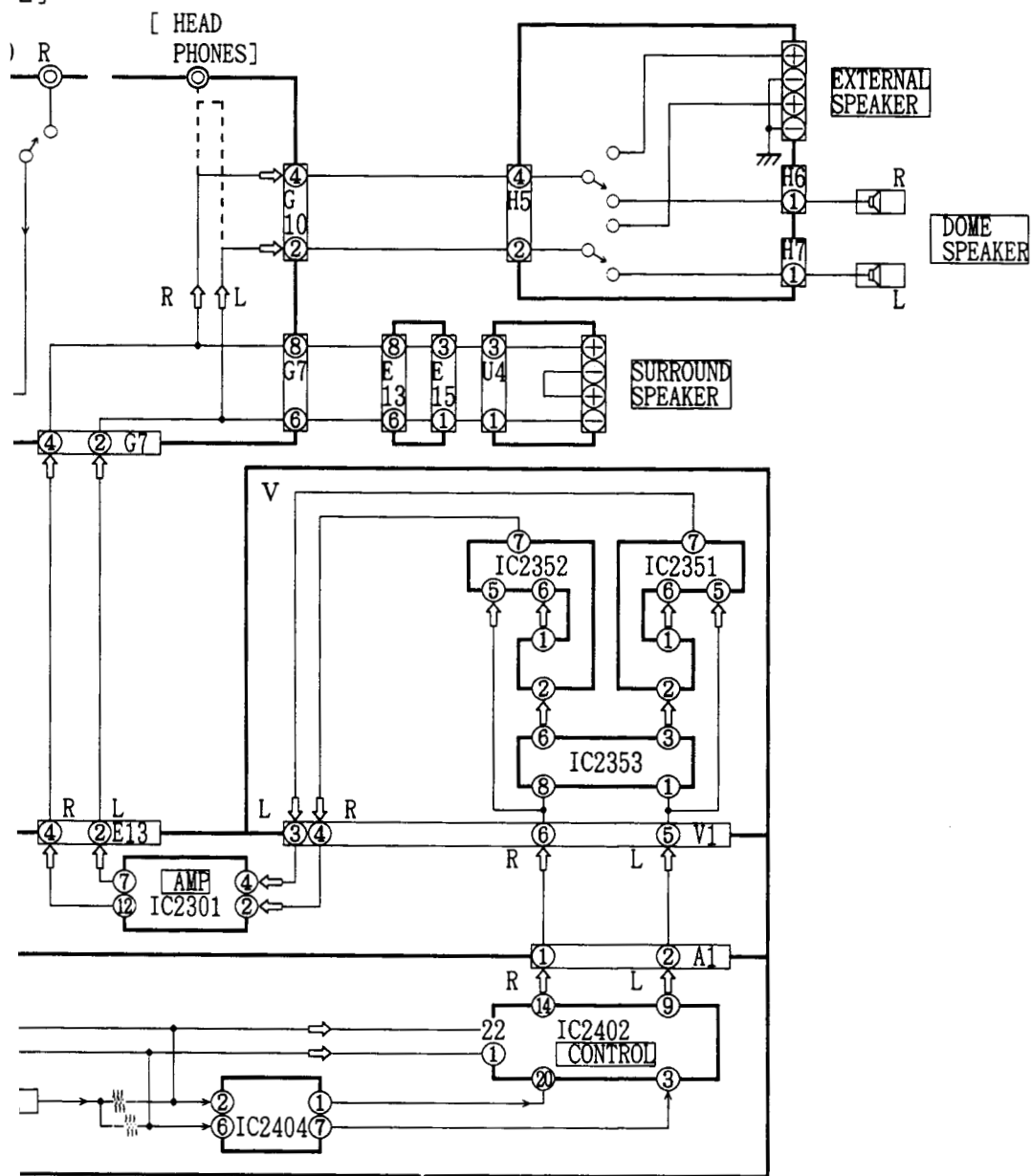
OUT]



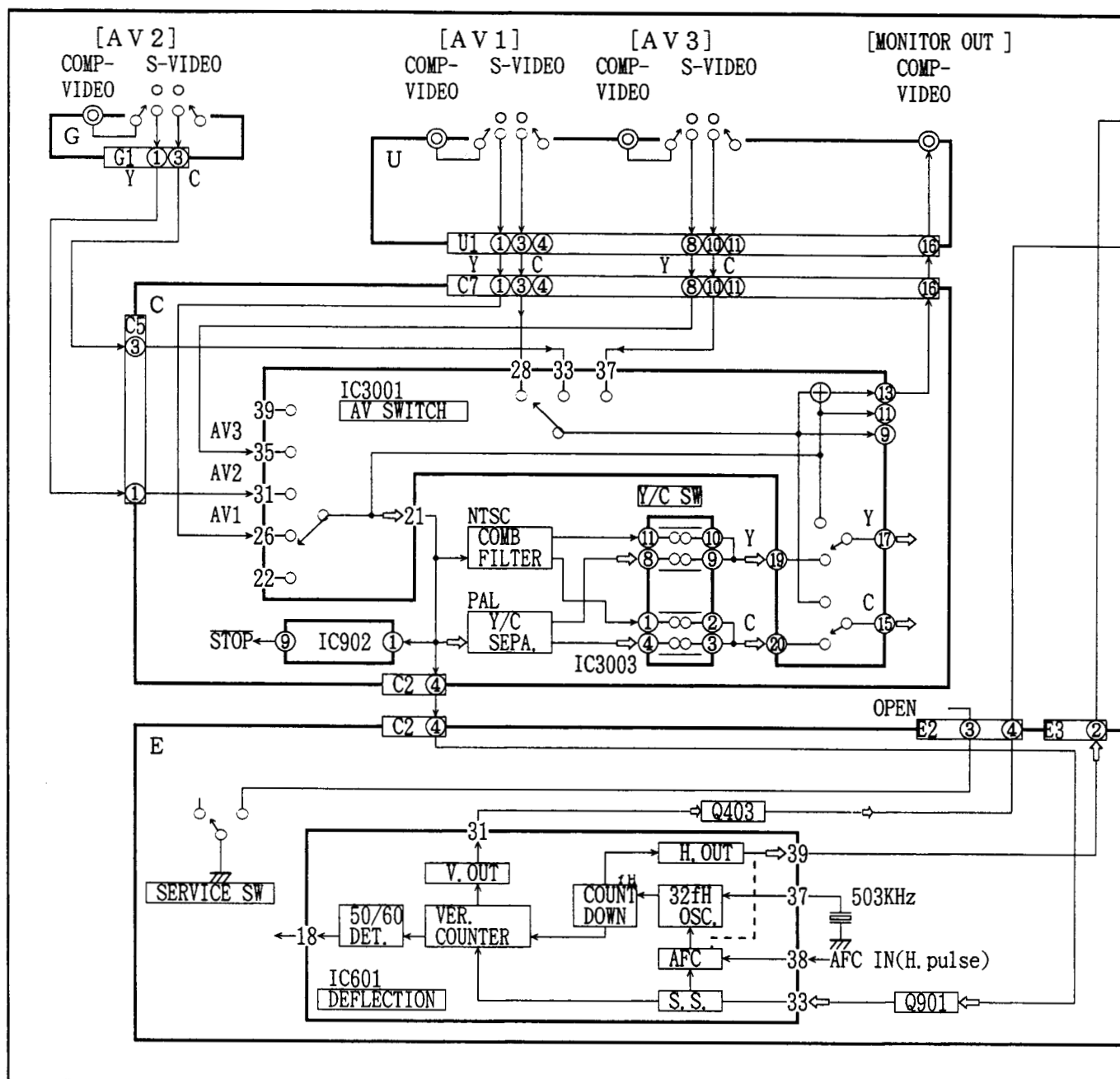
Audio Block

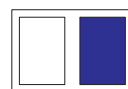
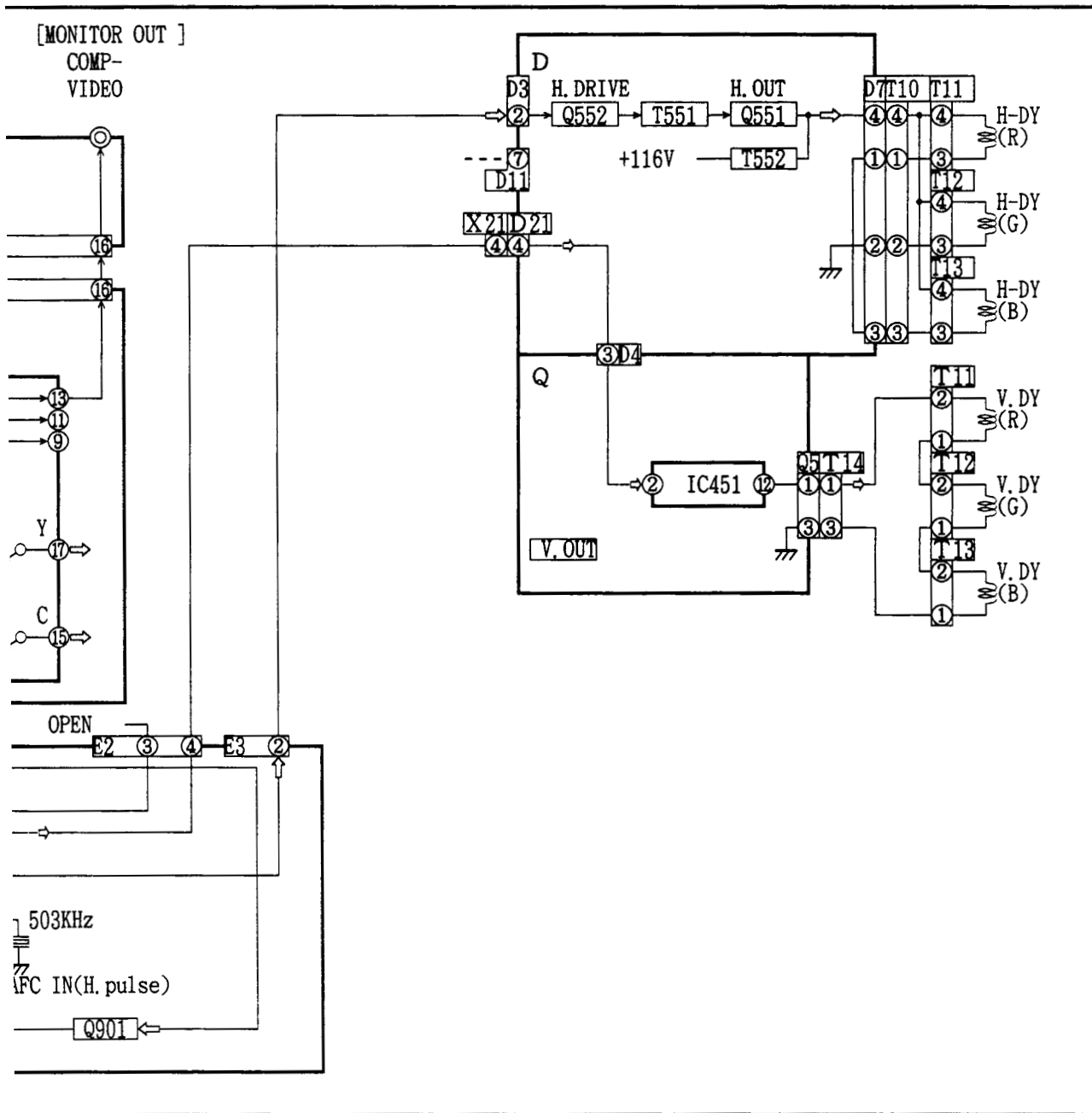


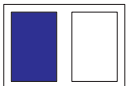
2]

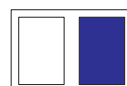
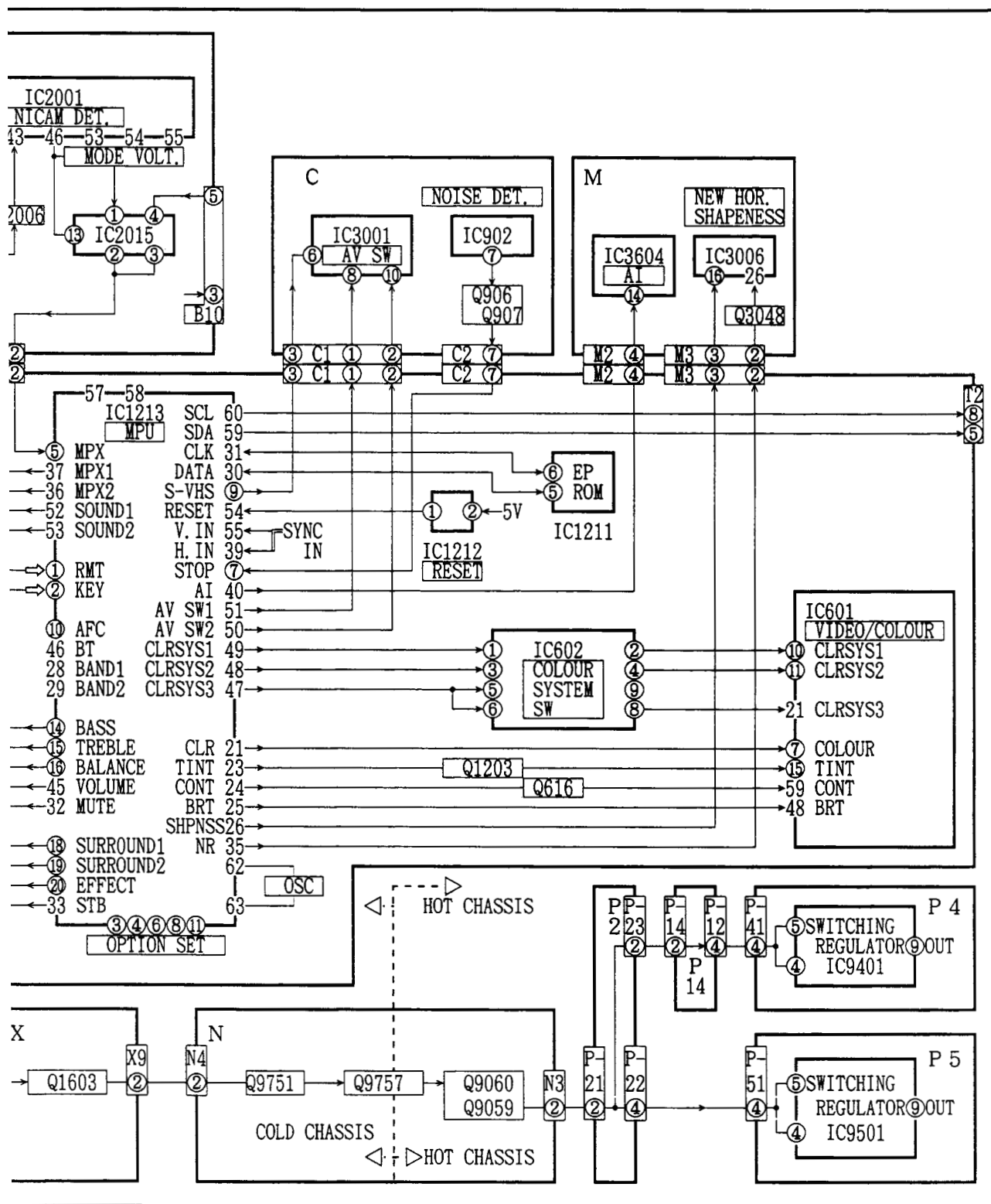


Deflection Block



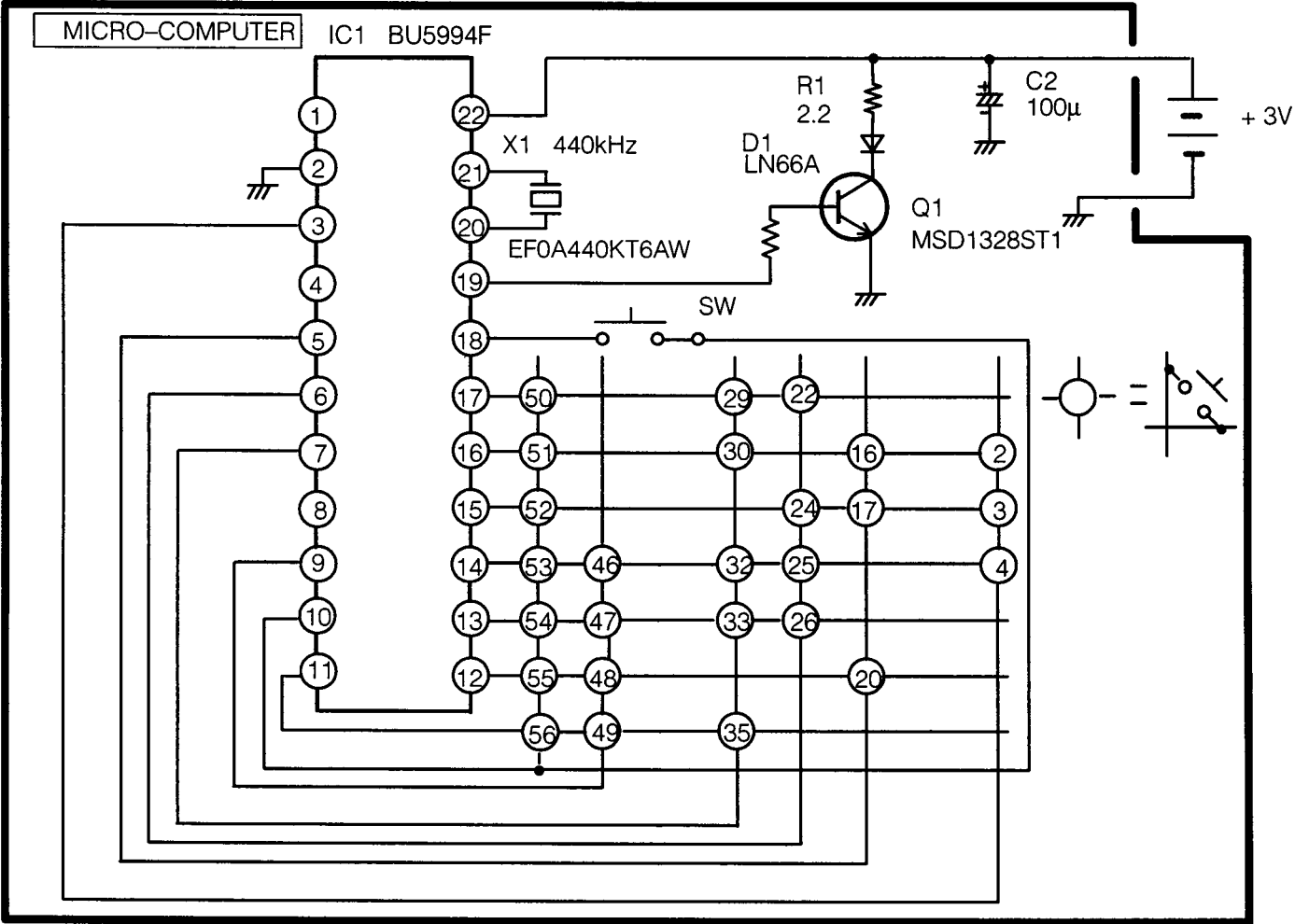






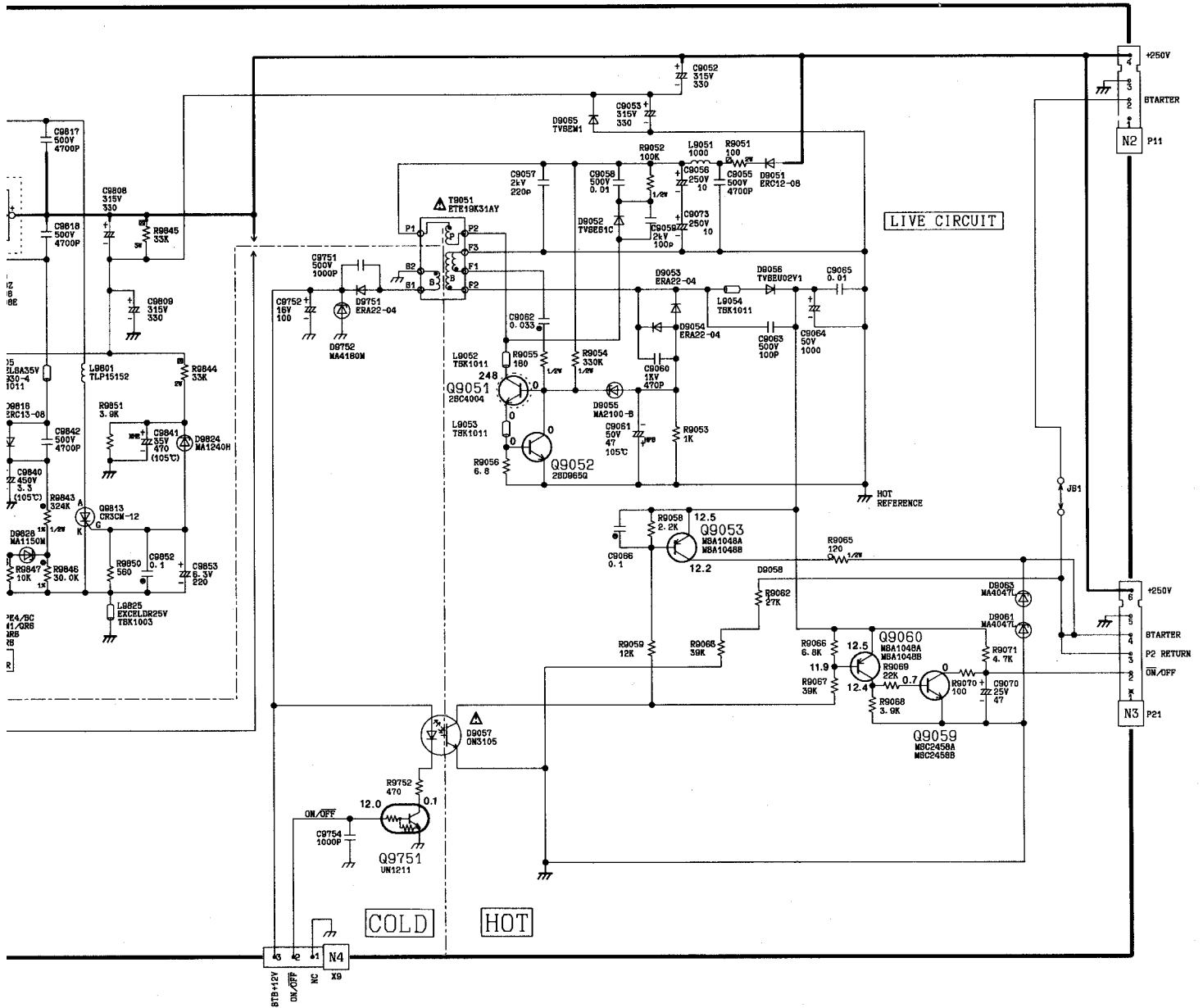
TC-43GF10M

Remote Controller EUR50717



Key Function Table

Key No.	Data Code	Function	Key No.	Data Code	Function	Key No.	Data Code	Function
2	05	AV SELECT	26	4A	POSITION UP.	49	00	VCR STOP
3	32	MUTE	29	51	SOUND MENU	50	06	VCR PAUSE
4	3D	TV POWER	30	4F	POS. RIGHT	51	0C	VCR ADVANCE
16	20	VOL. UP.	32	4E	POS. LEFT	52	08	VCR REC.
17	39	RECALL	33	4B	POSITION DN.	53	02	VCR REW.
20	21	VOL. DN.	35	7F	AI	54	0A	VCR PLAY.
22	49	NORMAL	46	23	VCR CH. DN.	55	03	VCR FF.
24	52	FEATURE MENU	47	22	VCR CH. UP.	56	3D	SOUND SELECT
25	50	PICTURE MENU	48	20	VCR POWER			

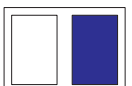


E

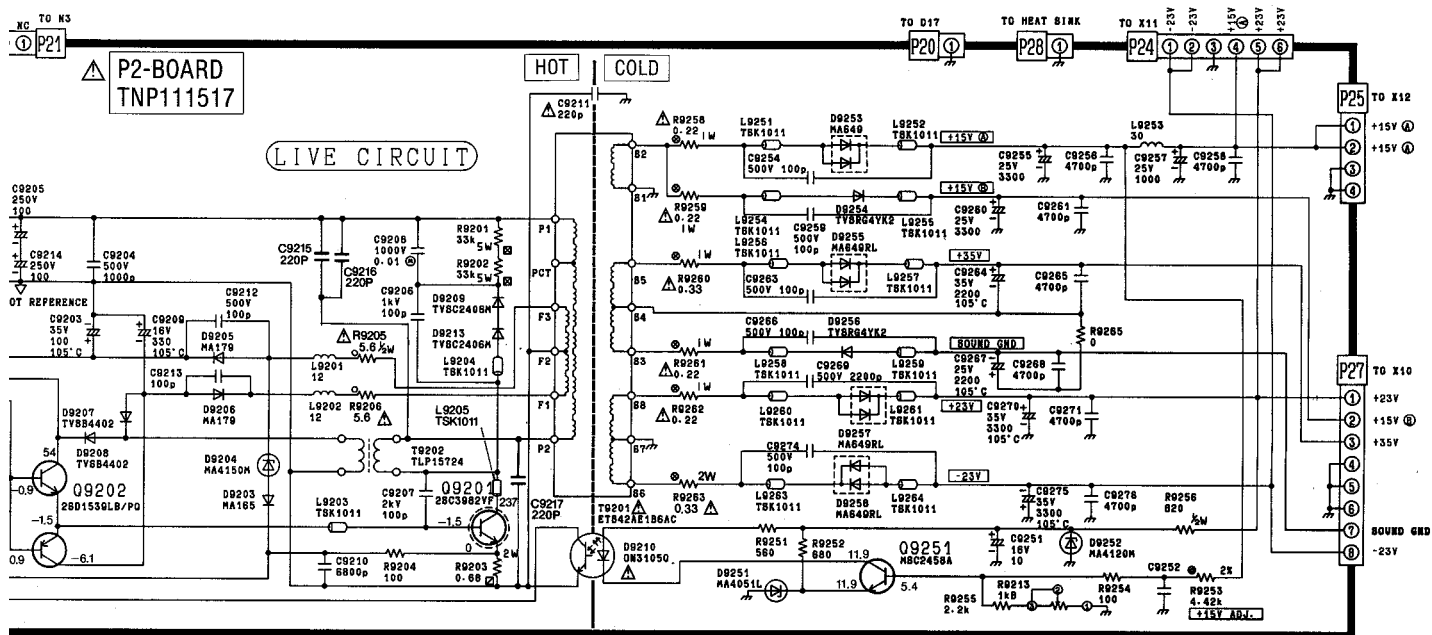
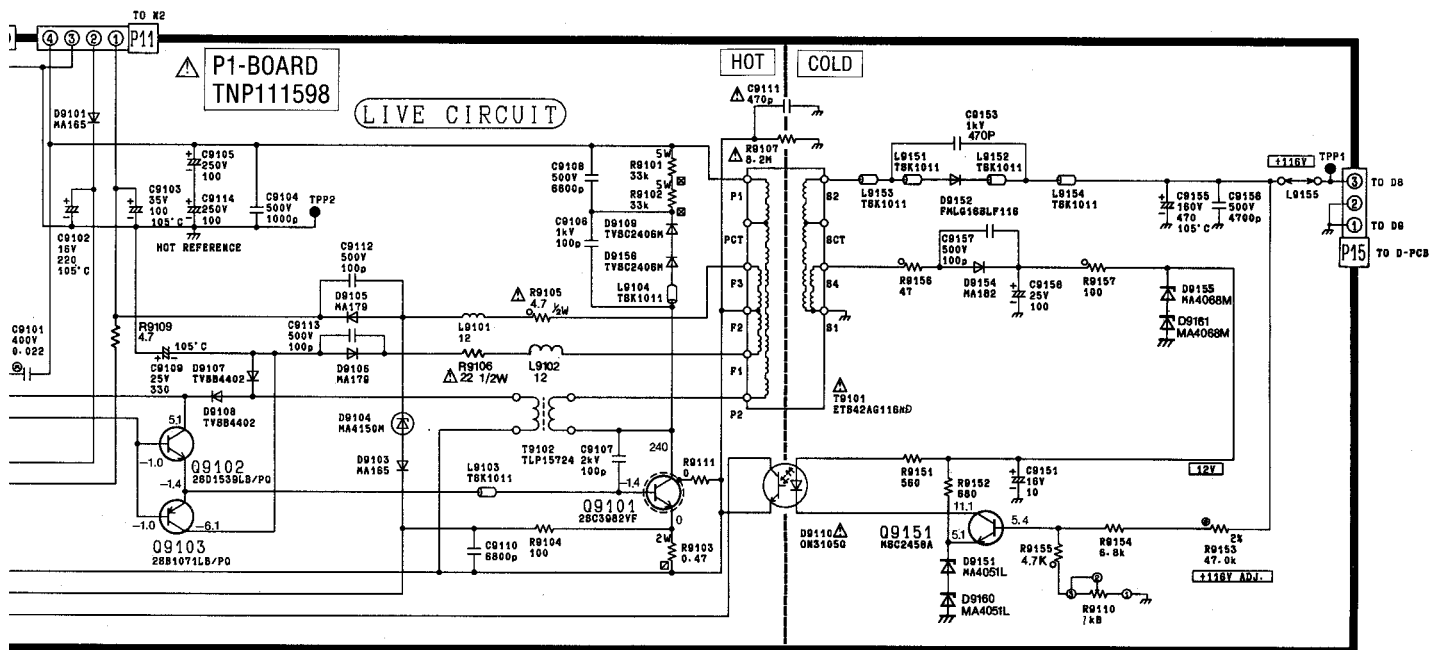
F

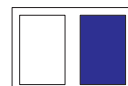
G

H

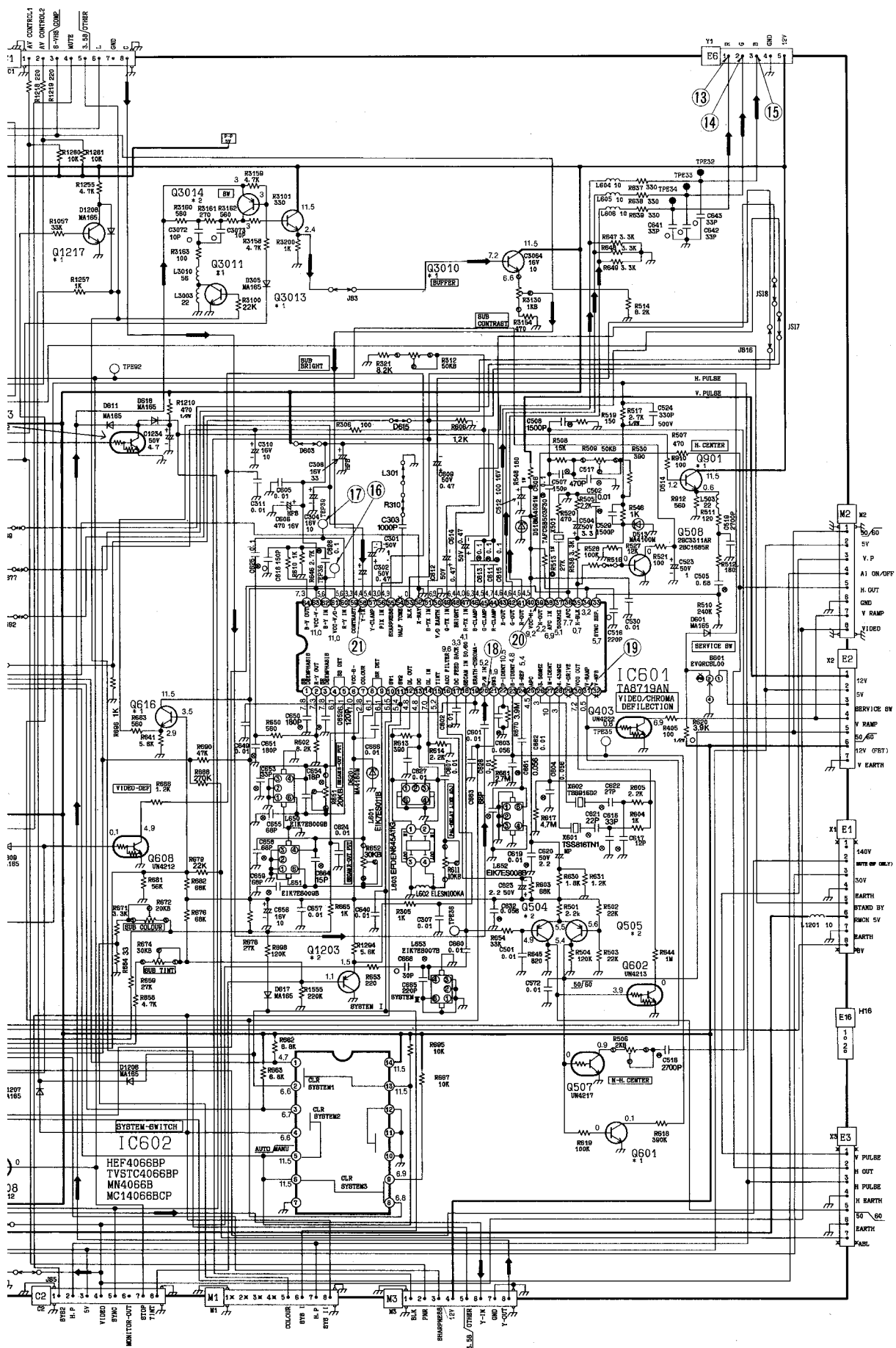


TC-43GF10M





TC-43GF10M



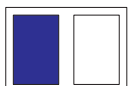
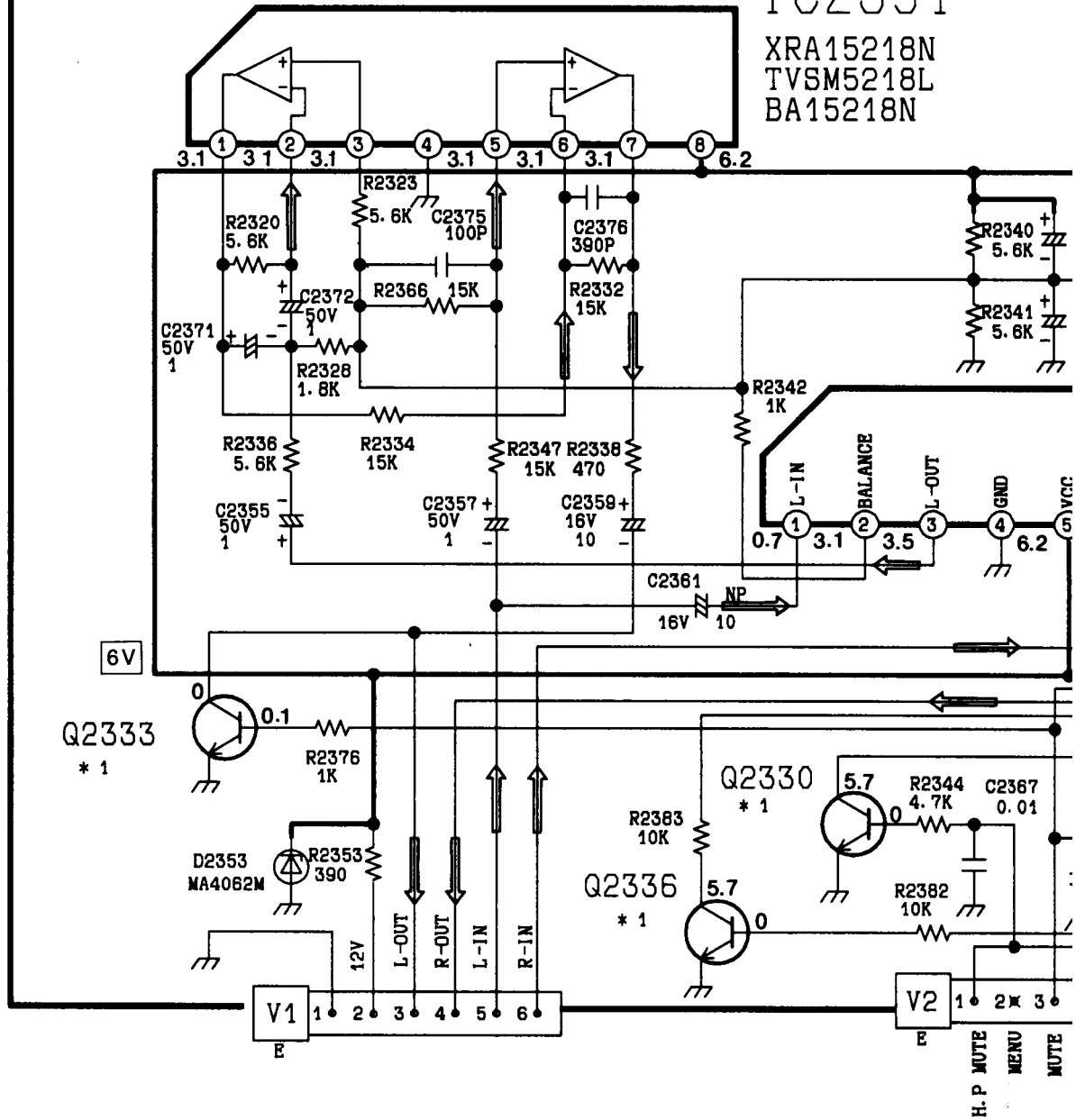
1



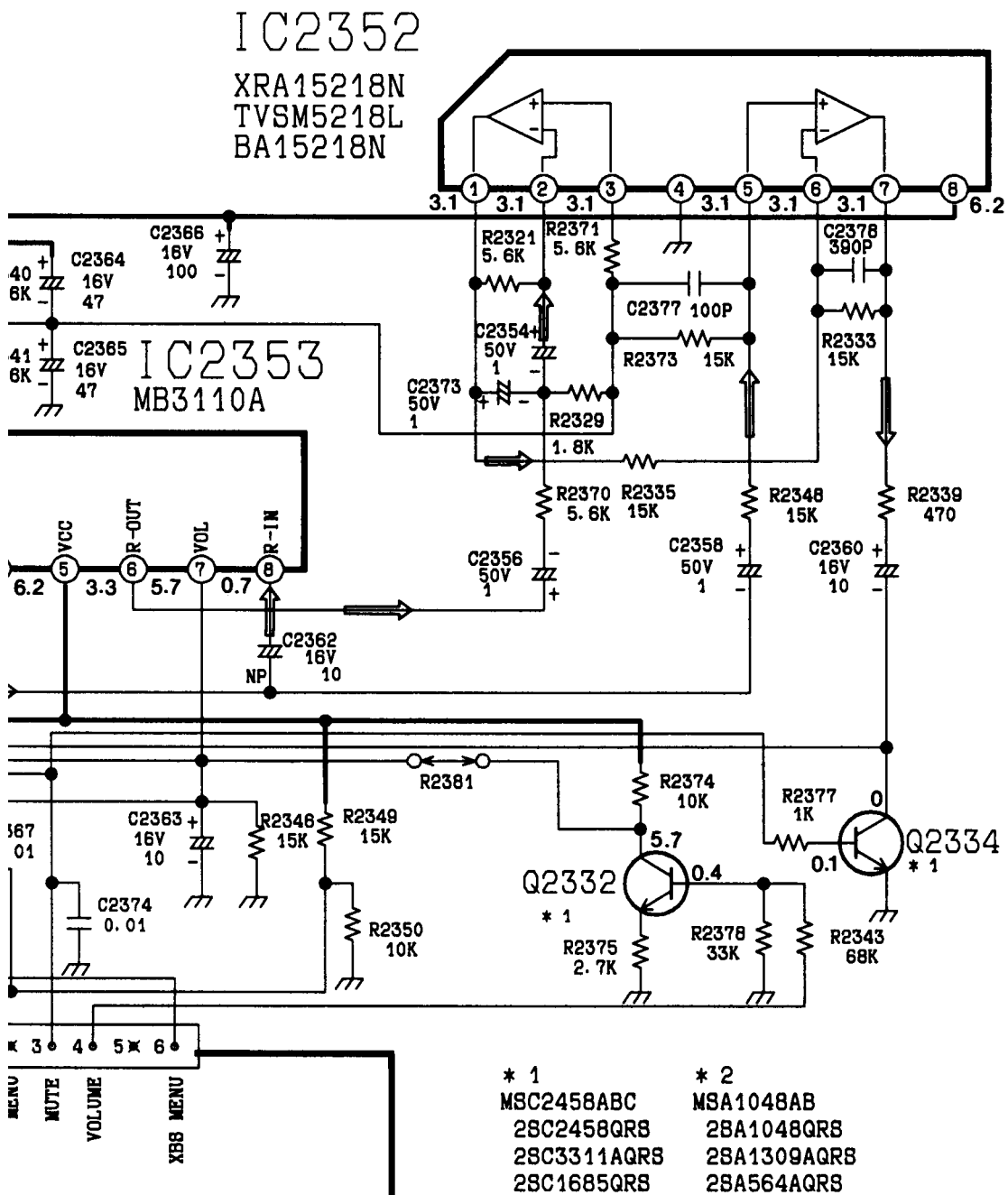
⚠ V-BOARD TNP107910

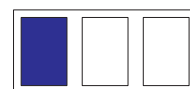
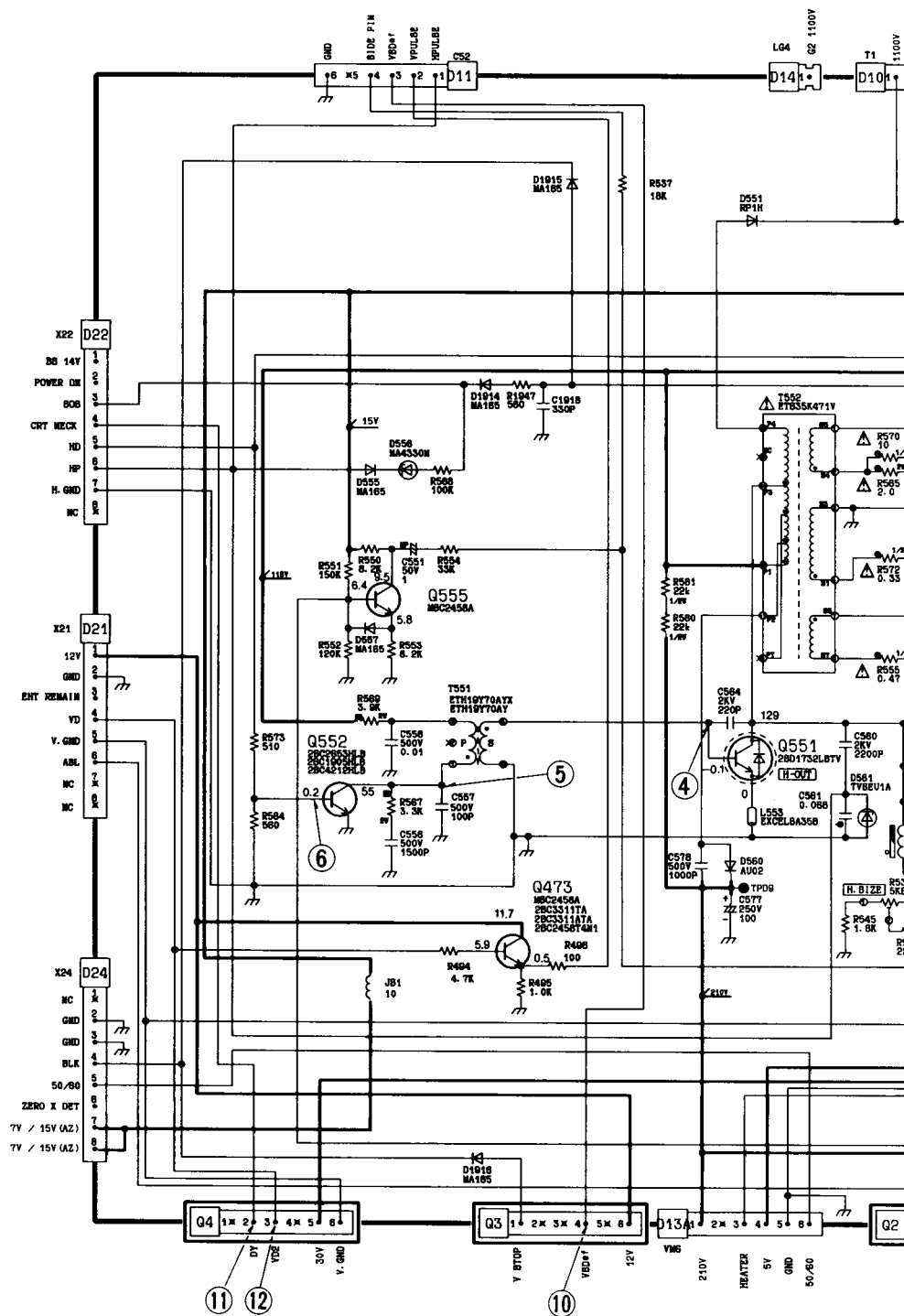
IC2351

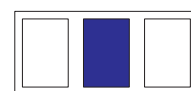
XRA15218N
TVSM5218L
BA15218N



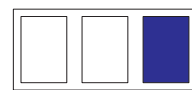
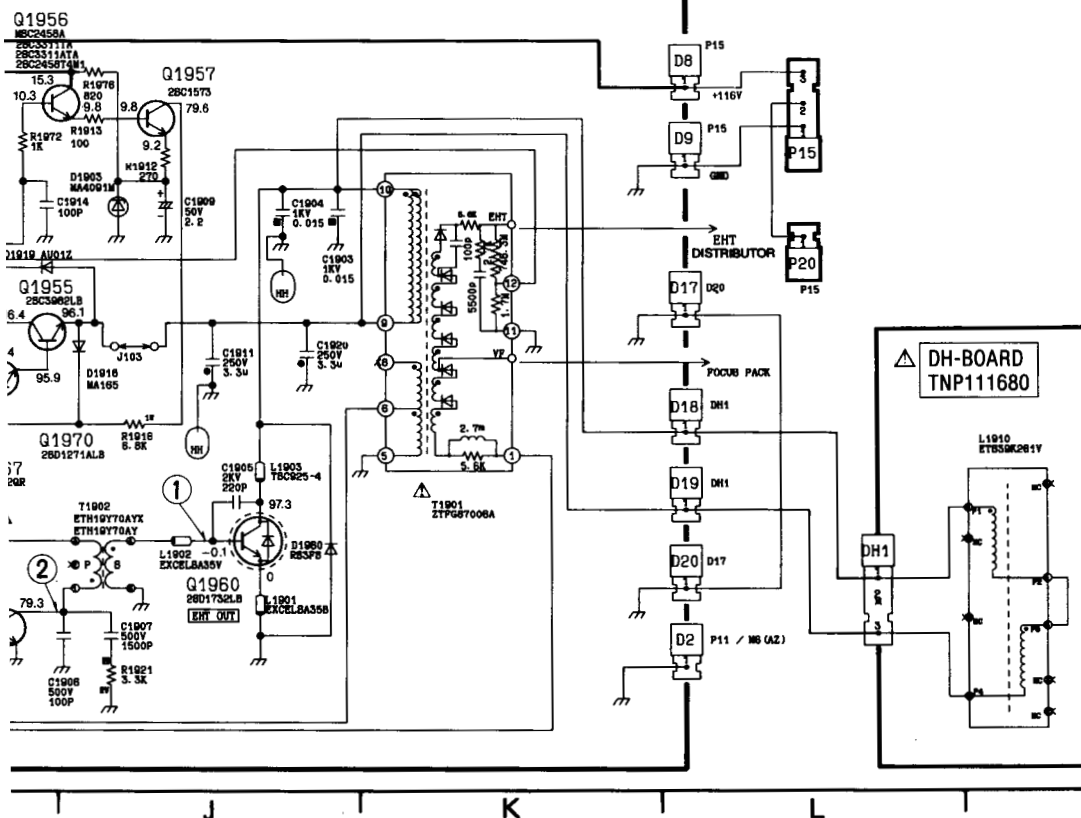
TC-43GF10M



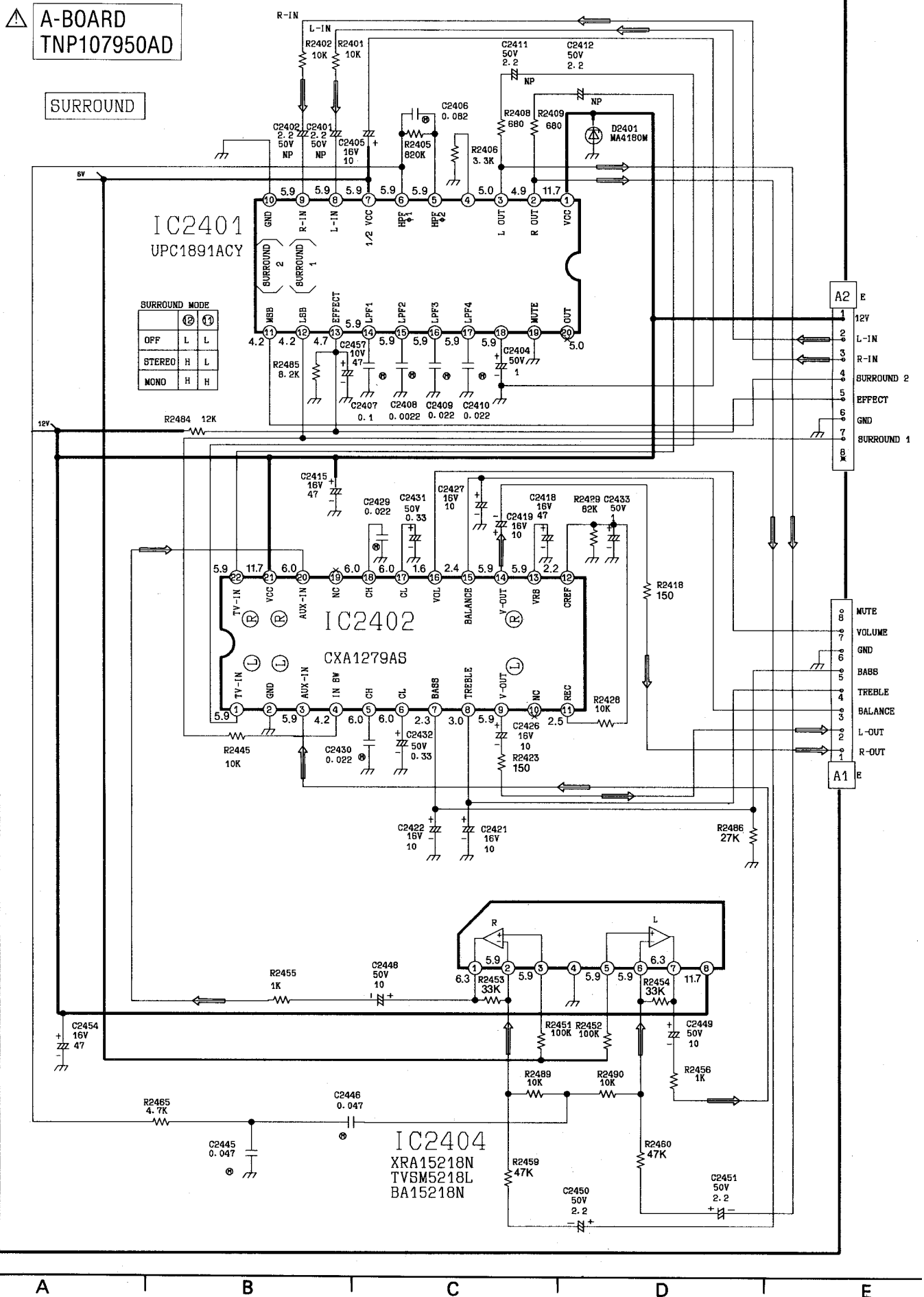


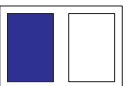
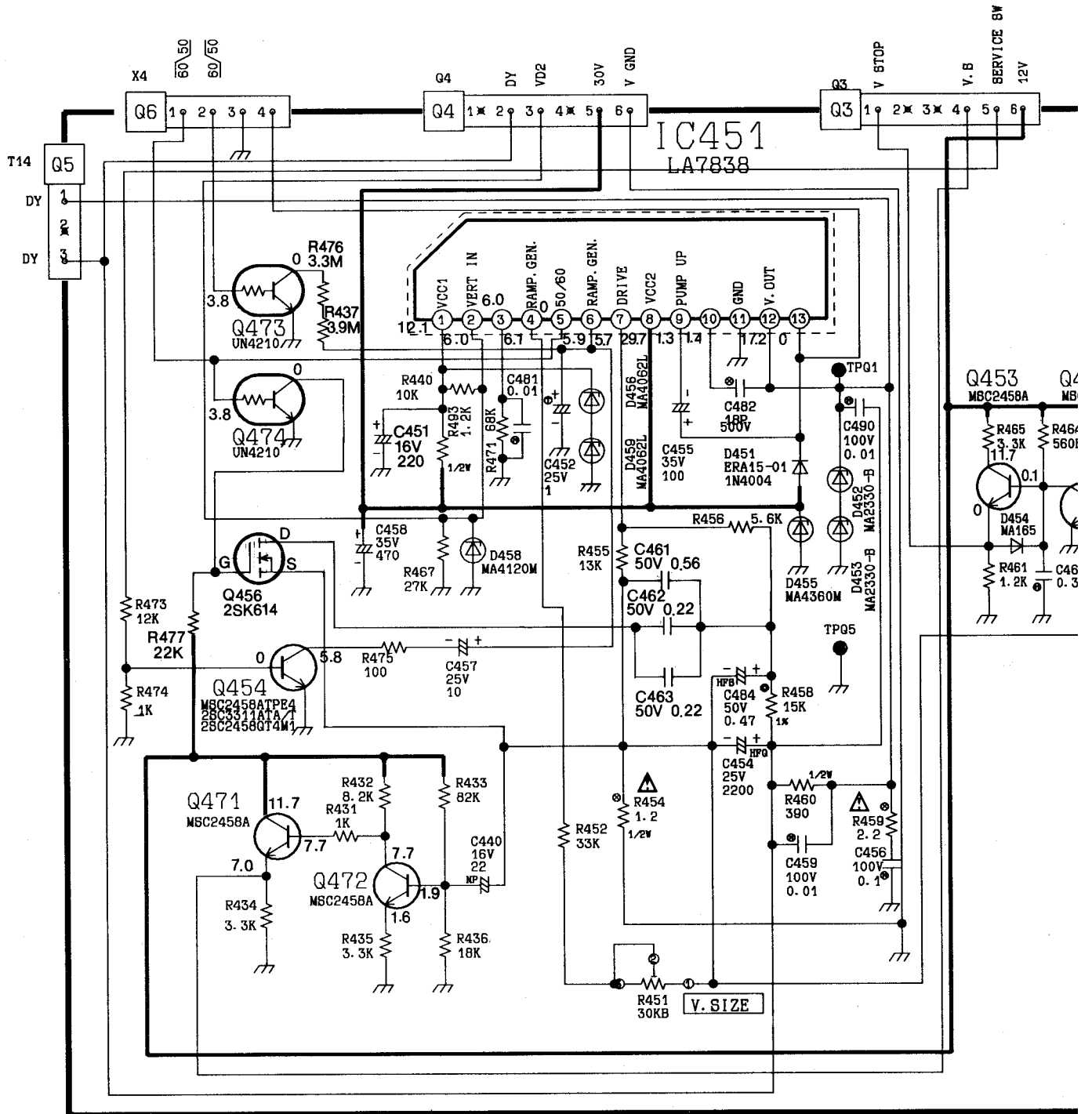


△ D-BOARD
TNP190213AZ
TNP190213BZ (For Hong Kong)

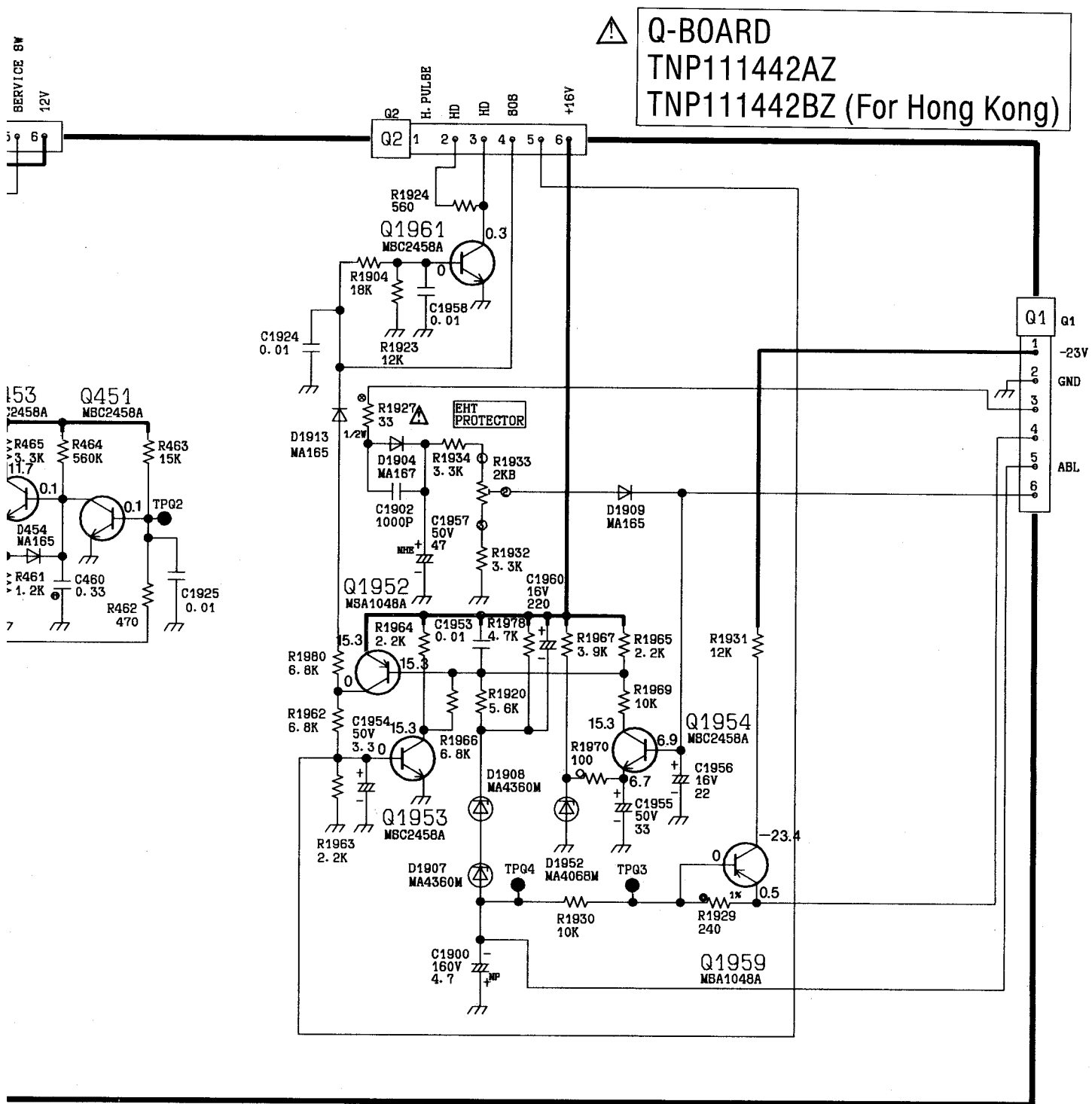


TC-43GF10M

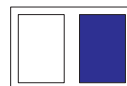


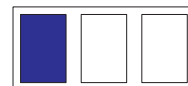
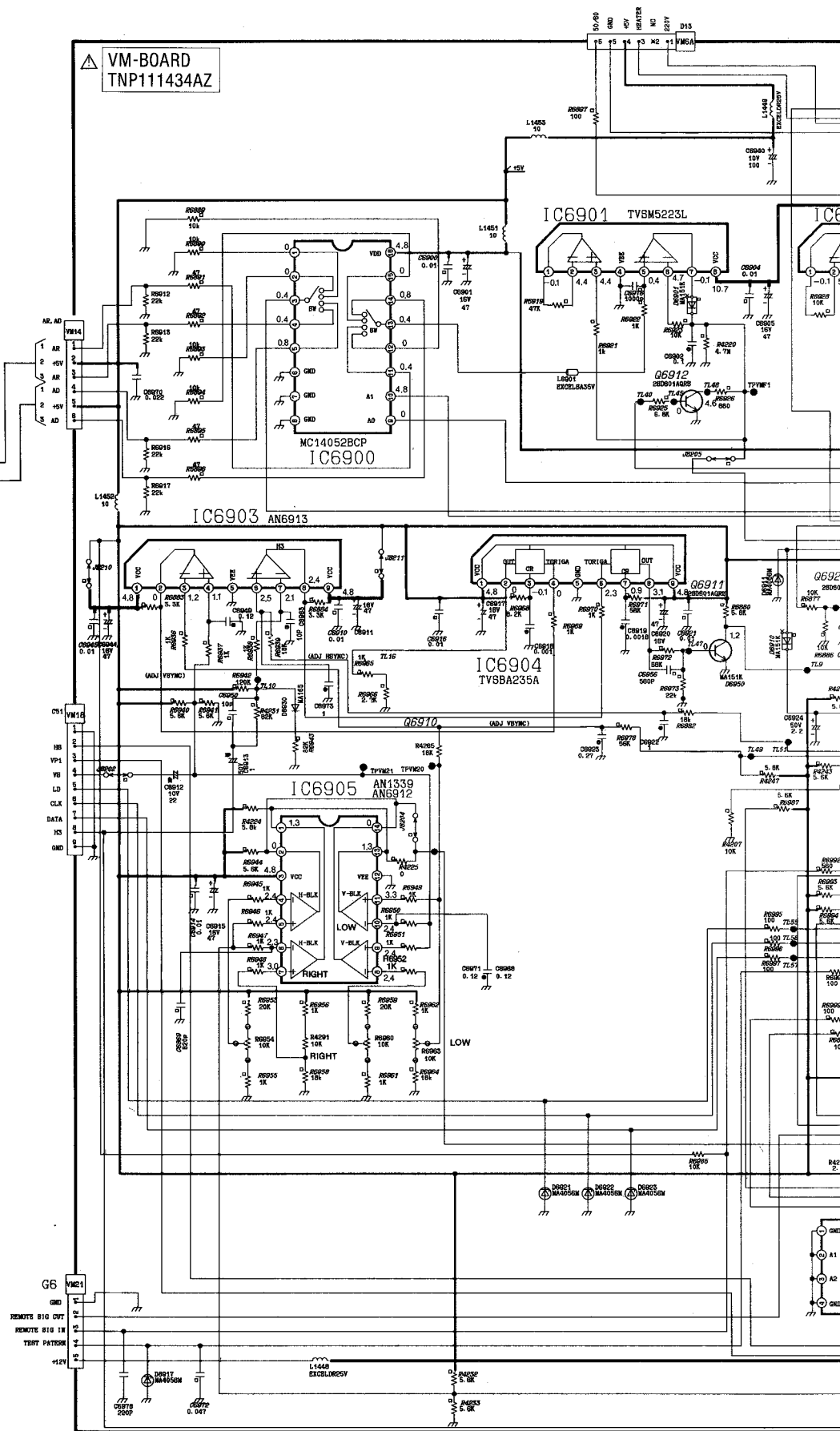
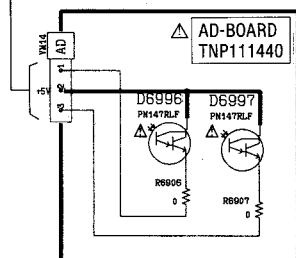


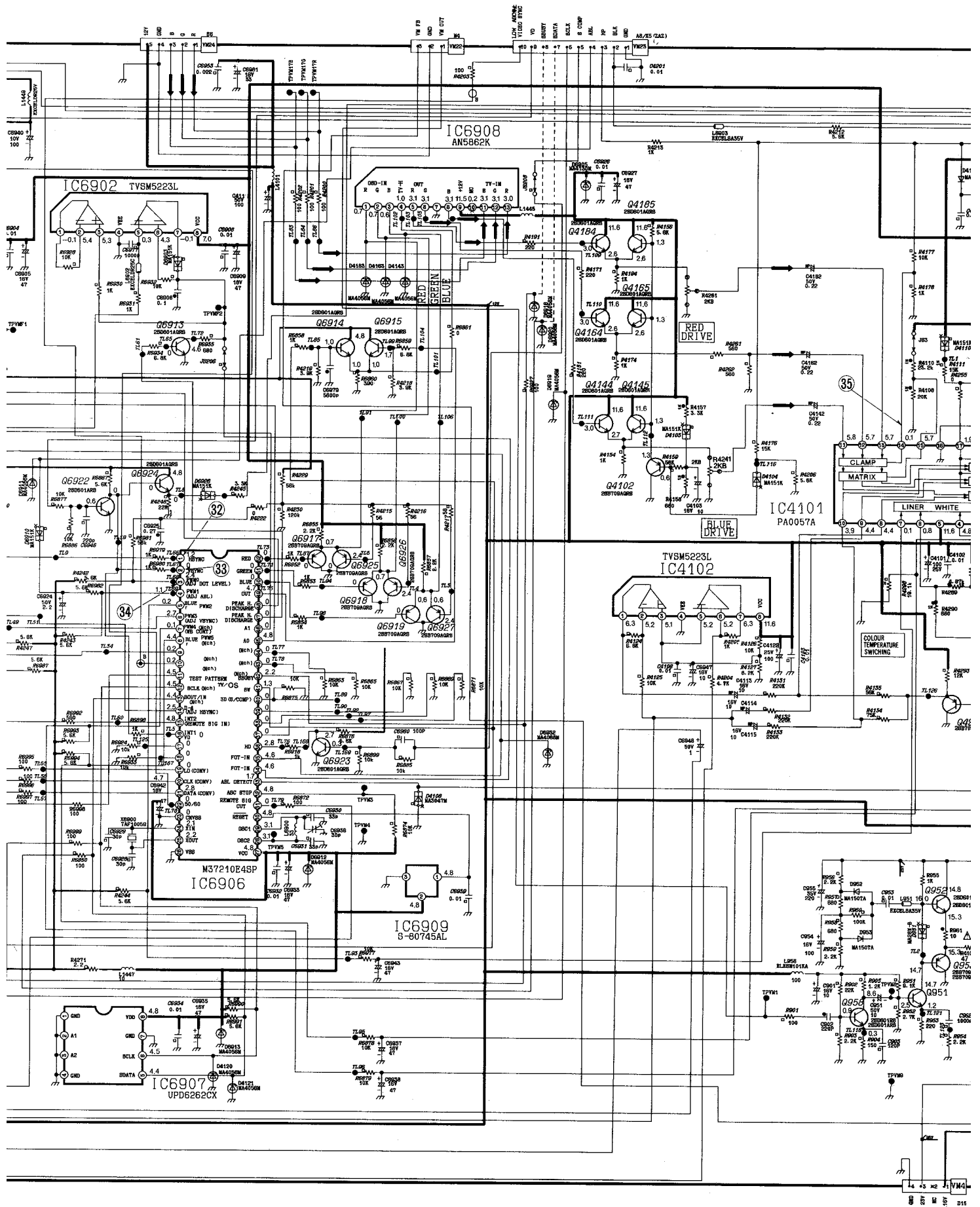
TC-43GF10M



N







F

G

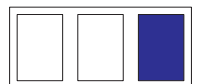
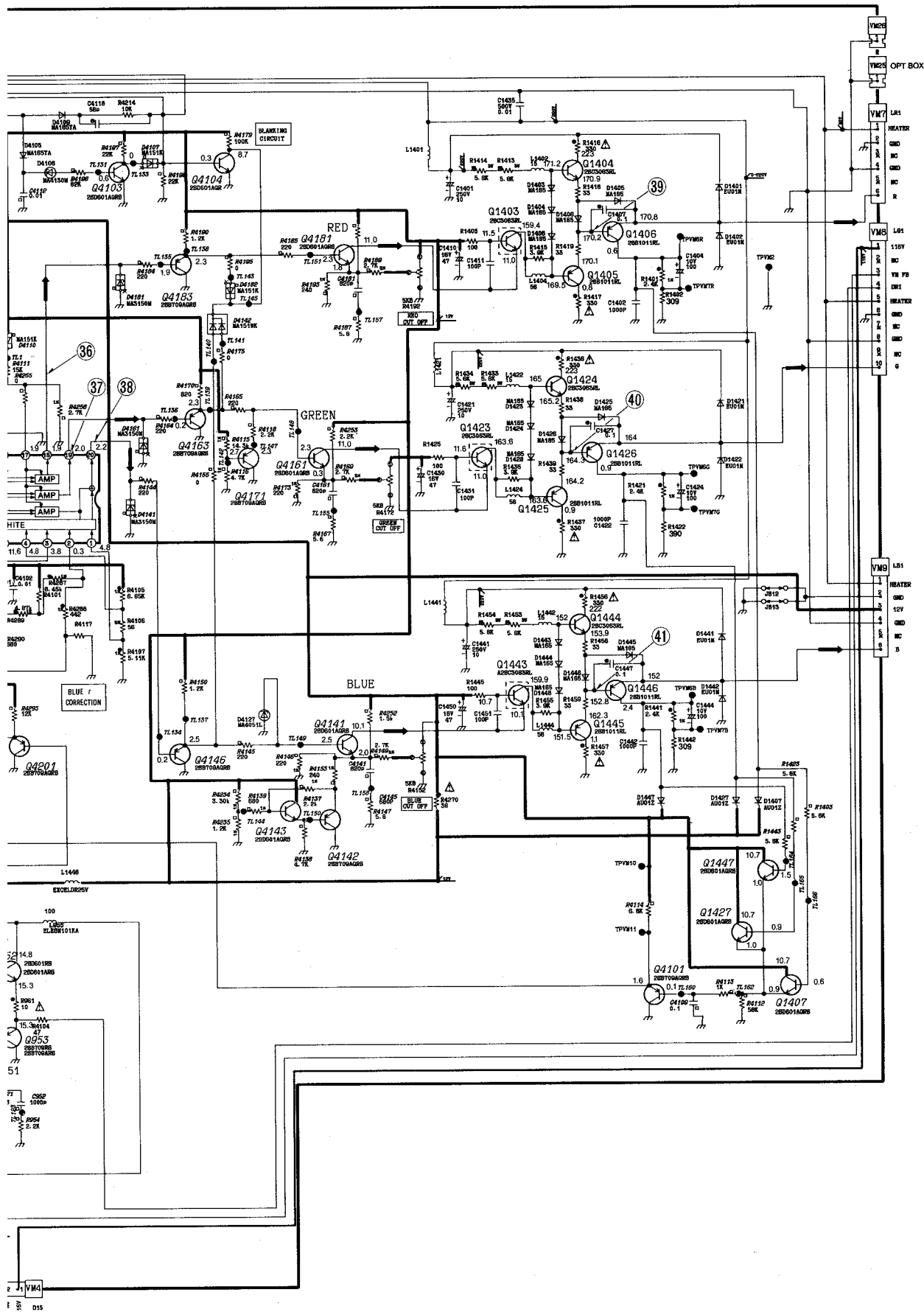
H

I

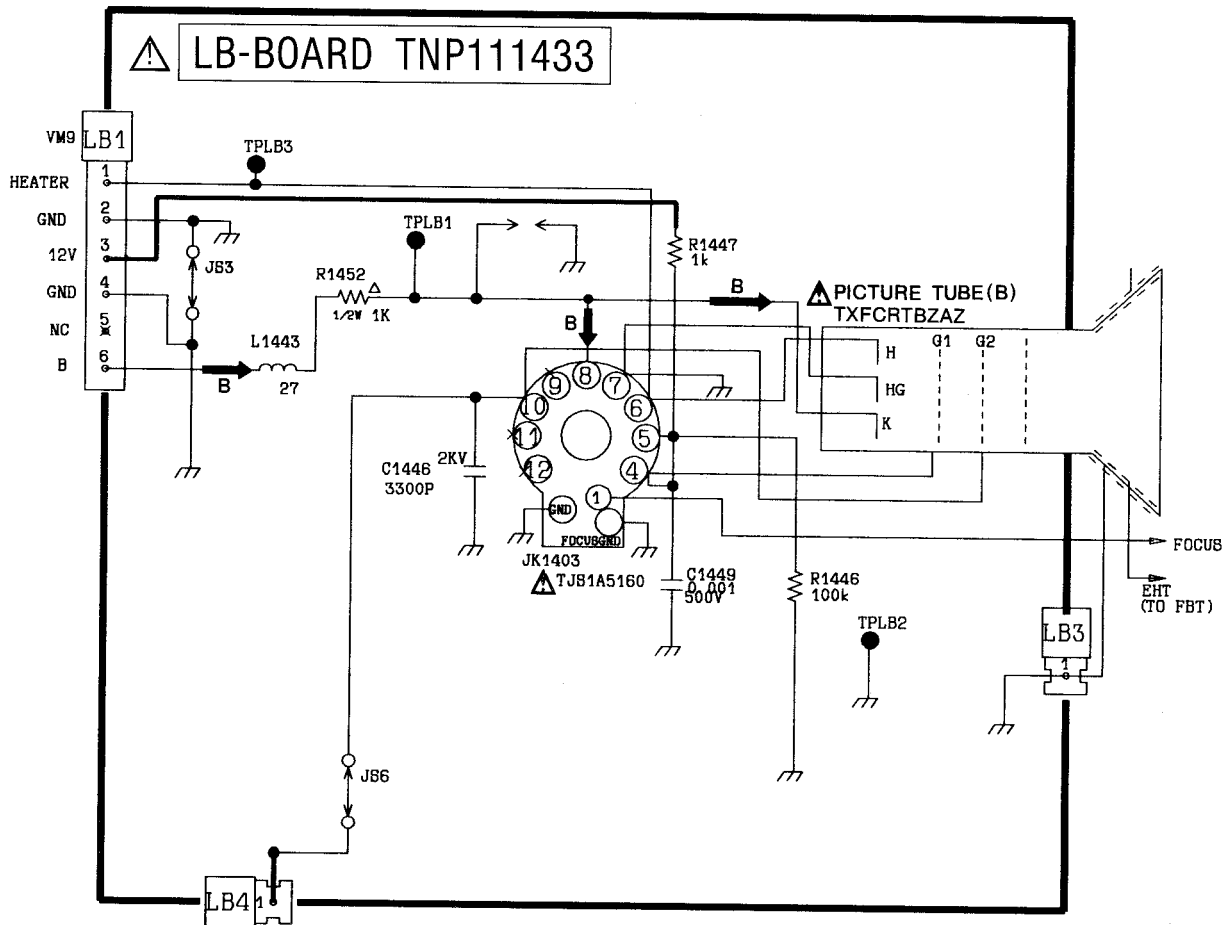
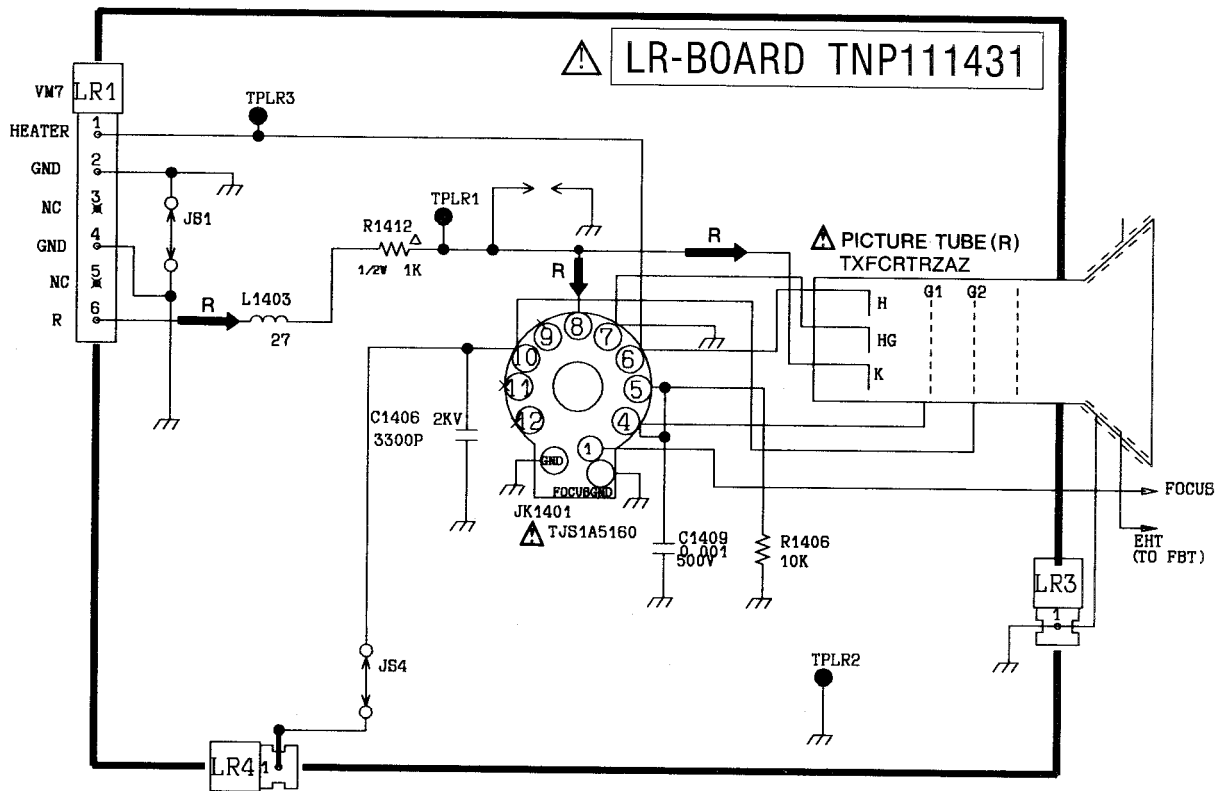
J



TC-43GF10M

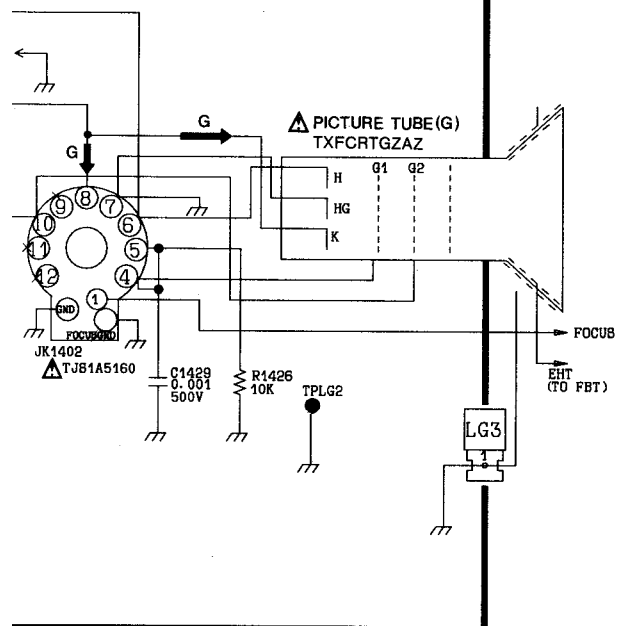
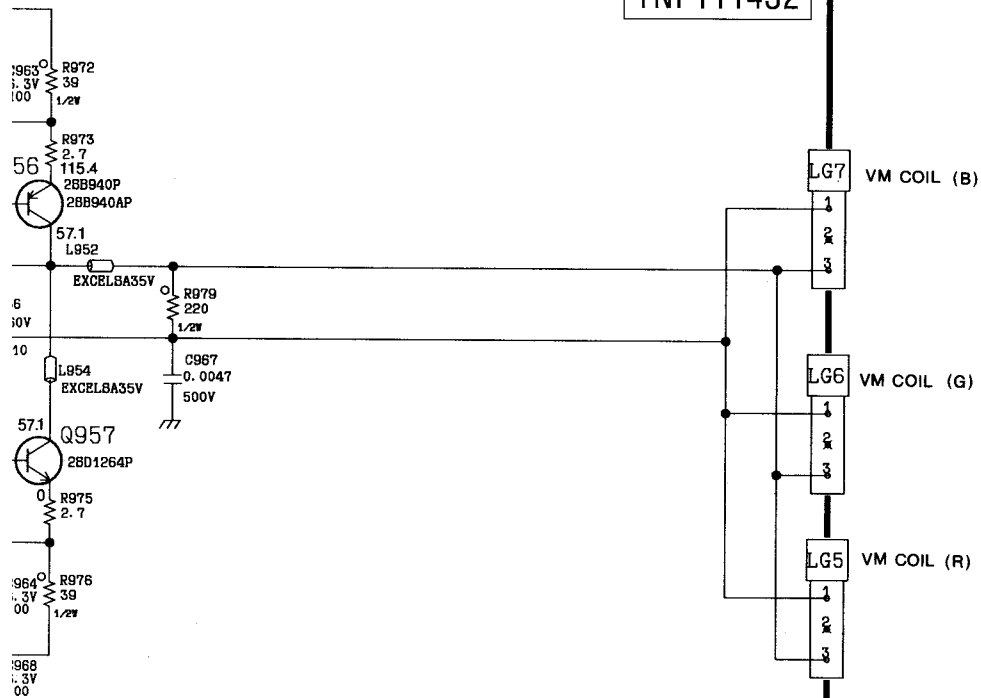


TC-43GF10M

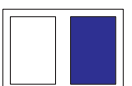


TC-43GF10M

⚠ LG-BOARD
TNP111432



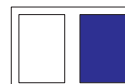
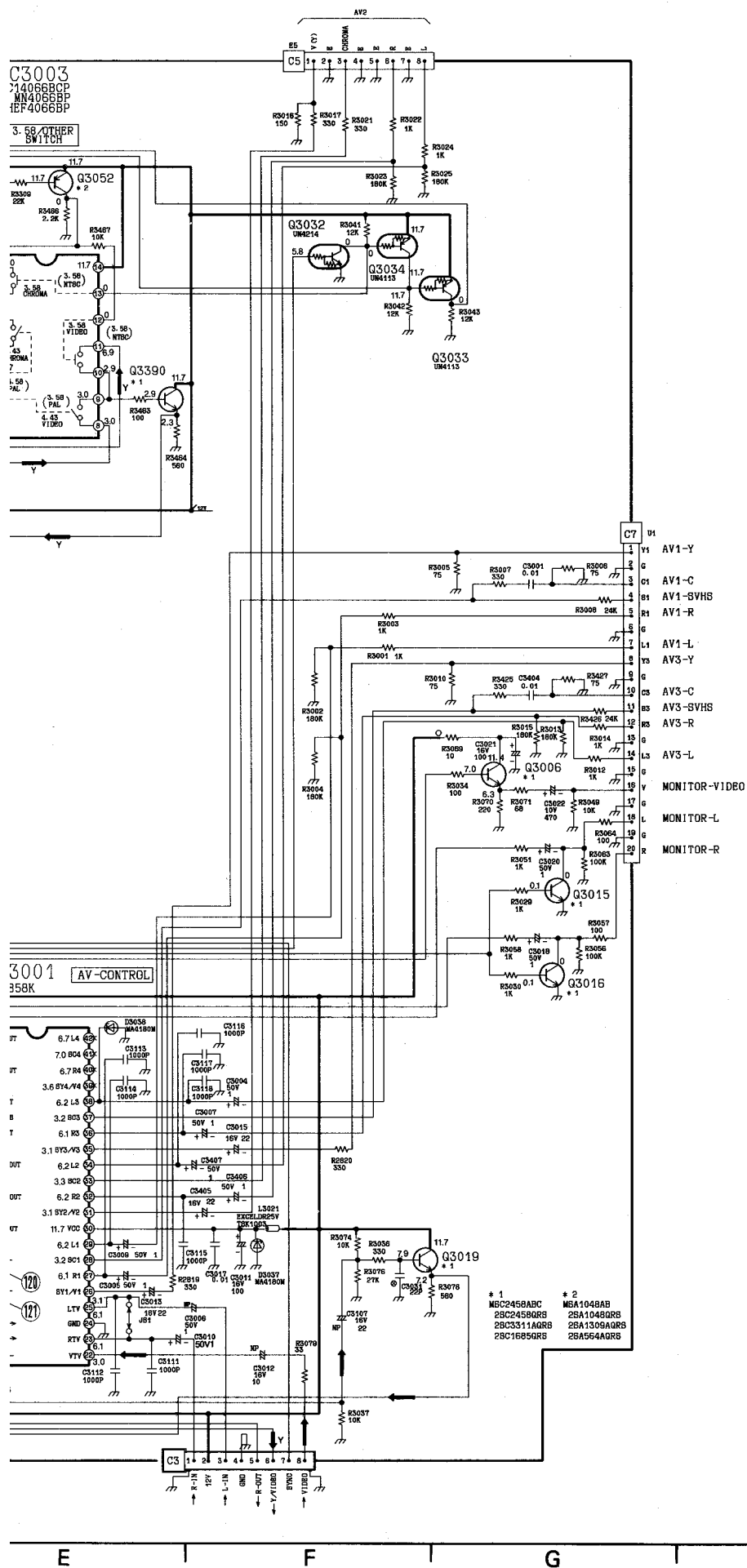
J | K | L | M

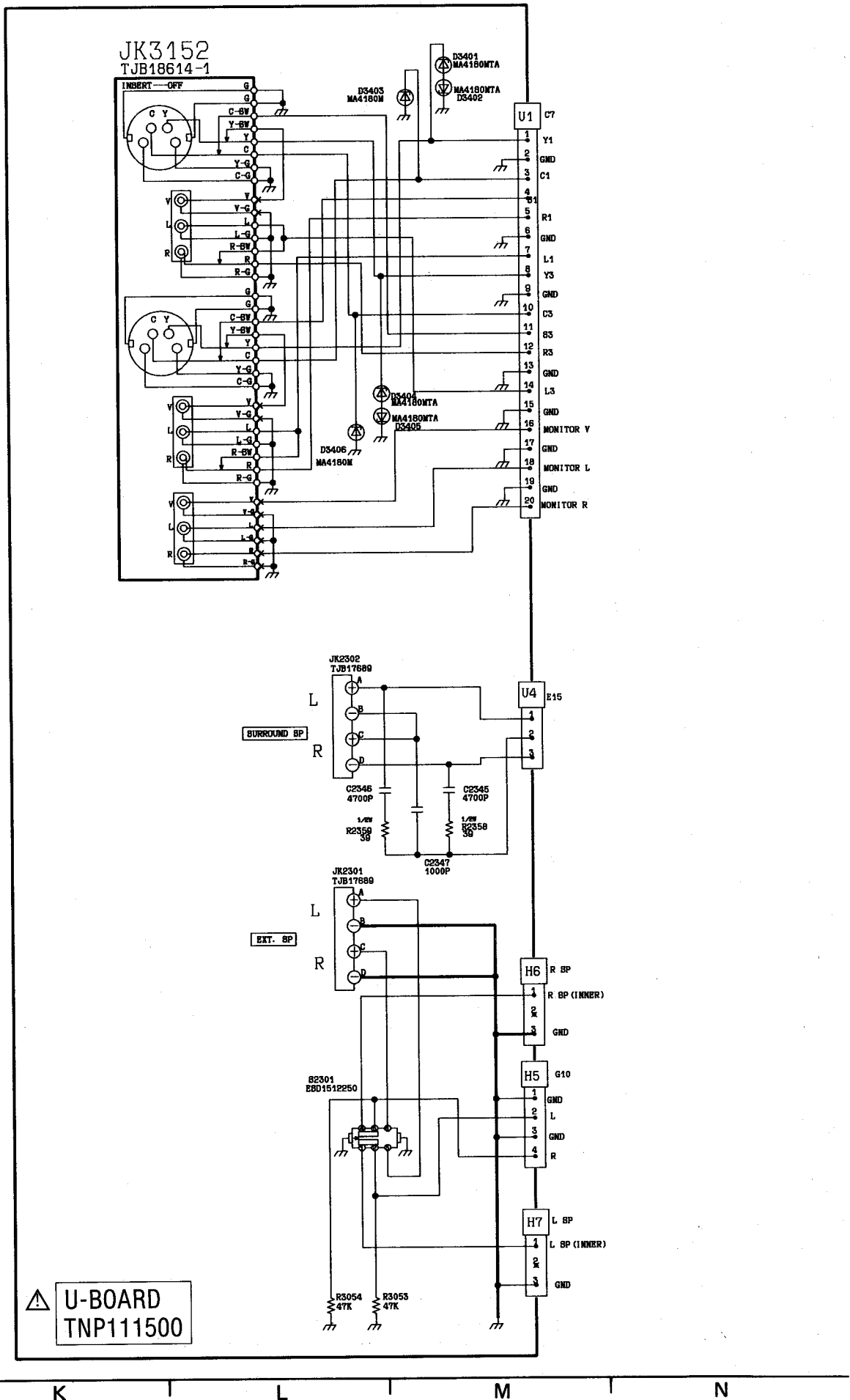


IC3003
MC14066BCP
MN4066BP
HEF4066BP

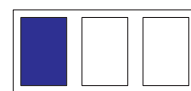
IC3001 AV-CO
AN5858K







1

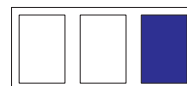


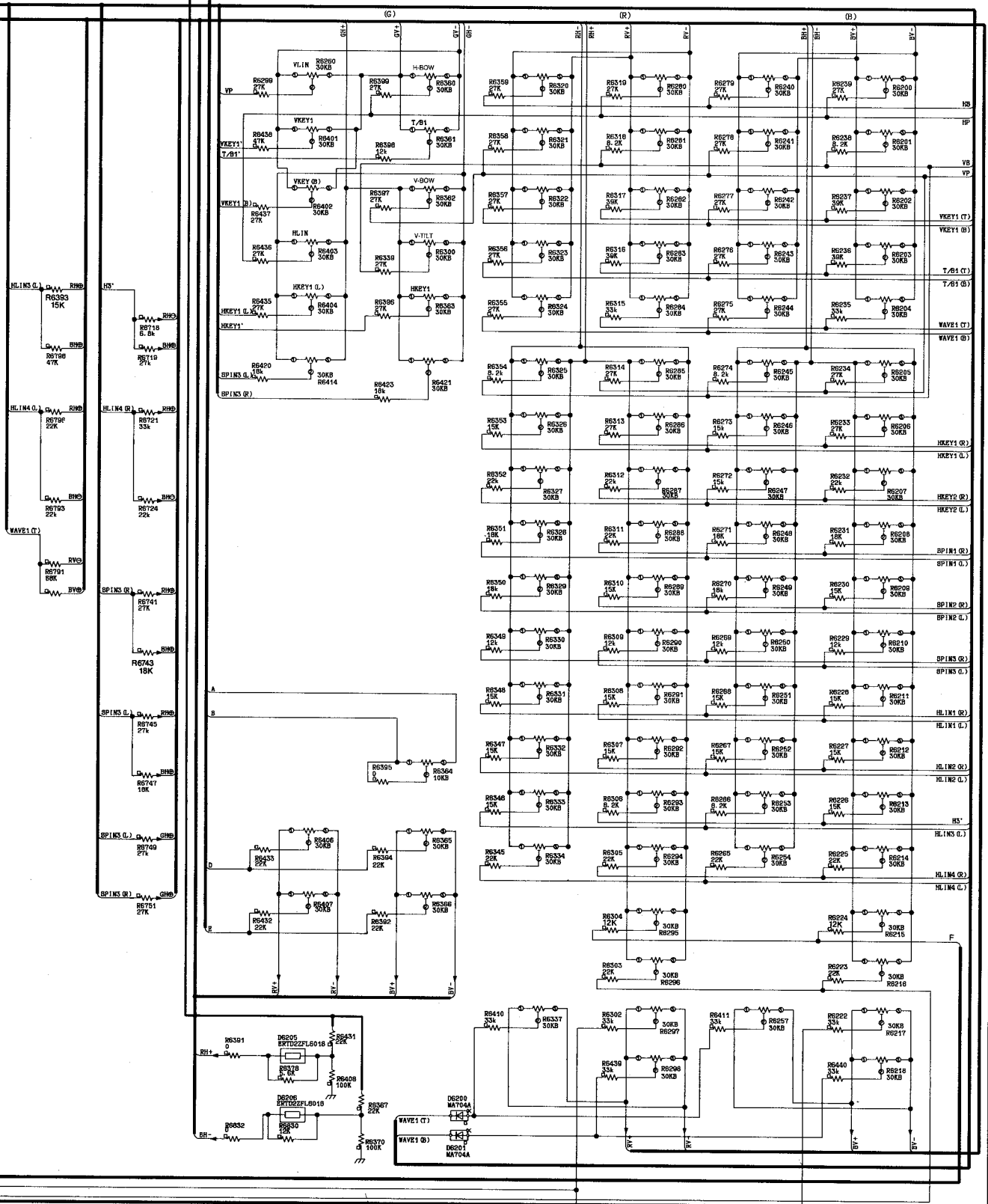


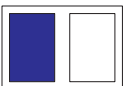
K

L

M



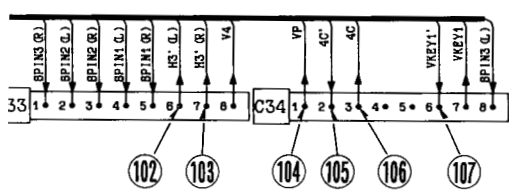
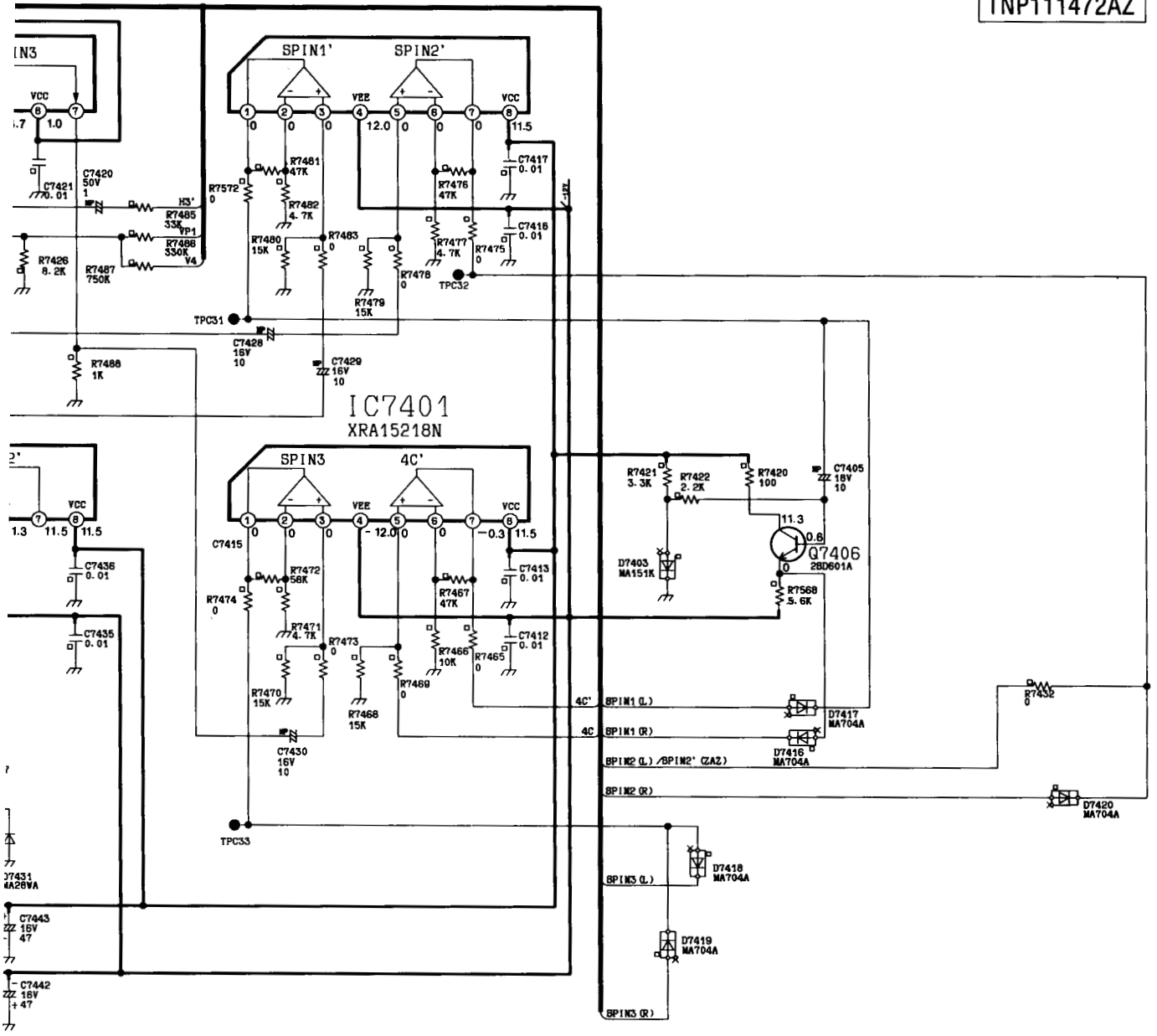


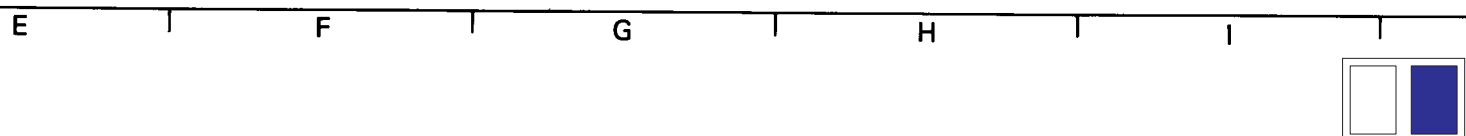


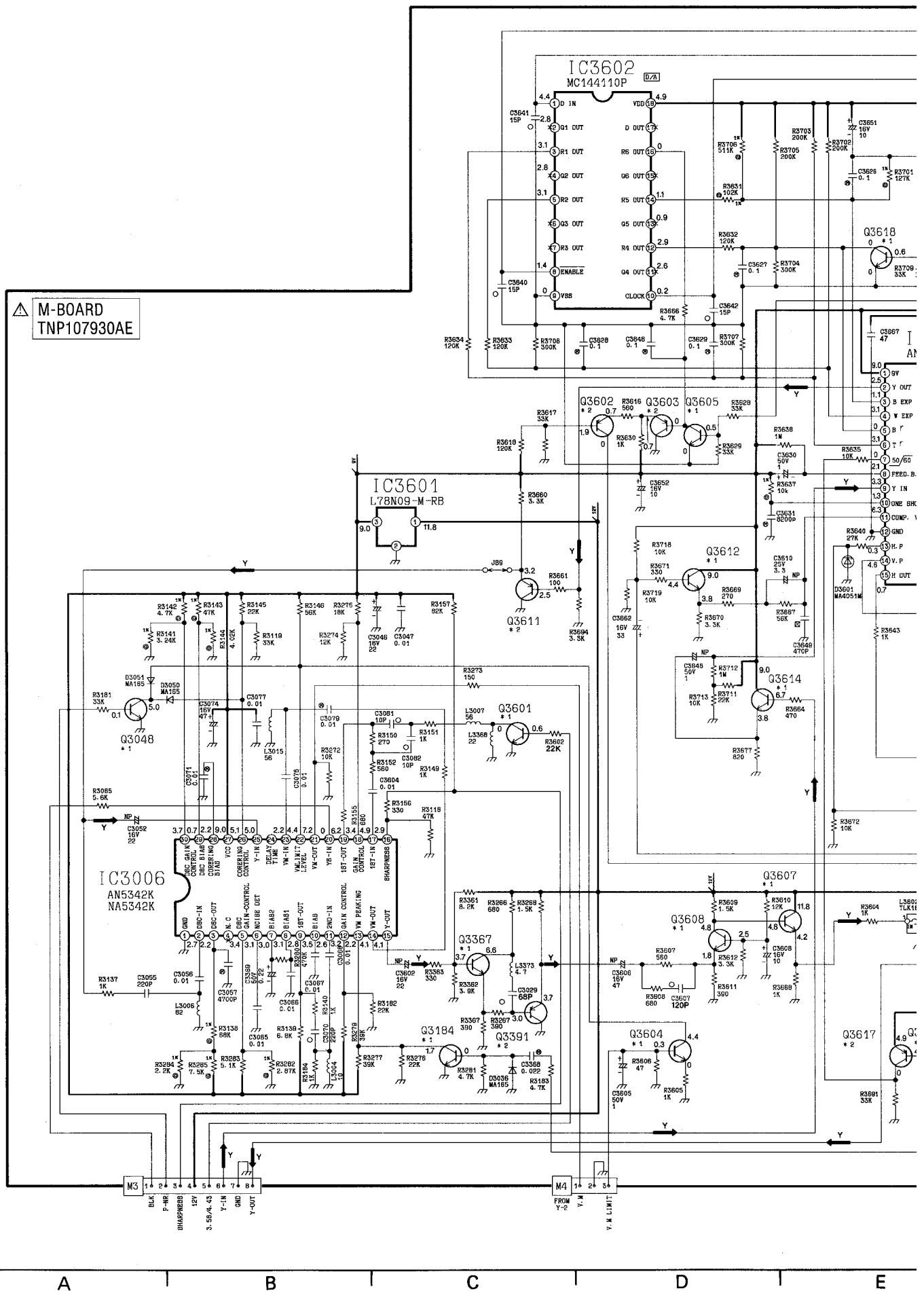
TC-43GF10M

IC7400
XRA15218N

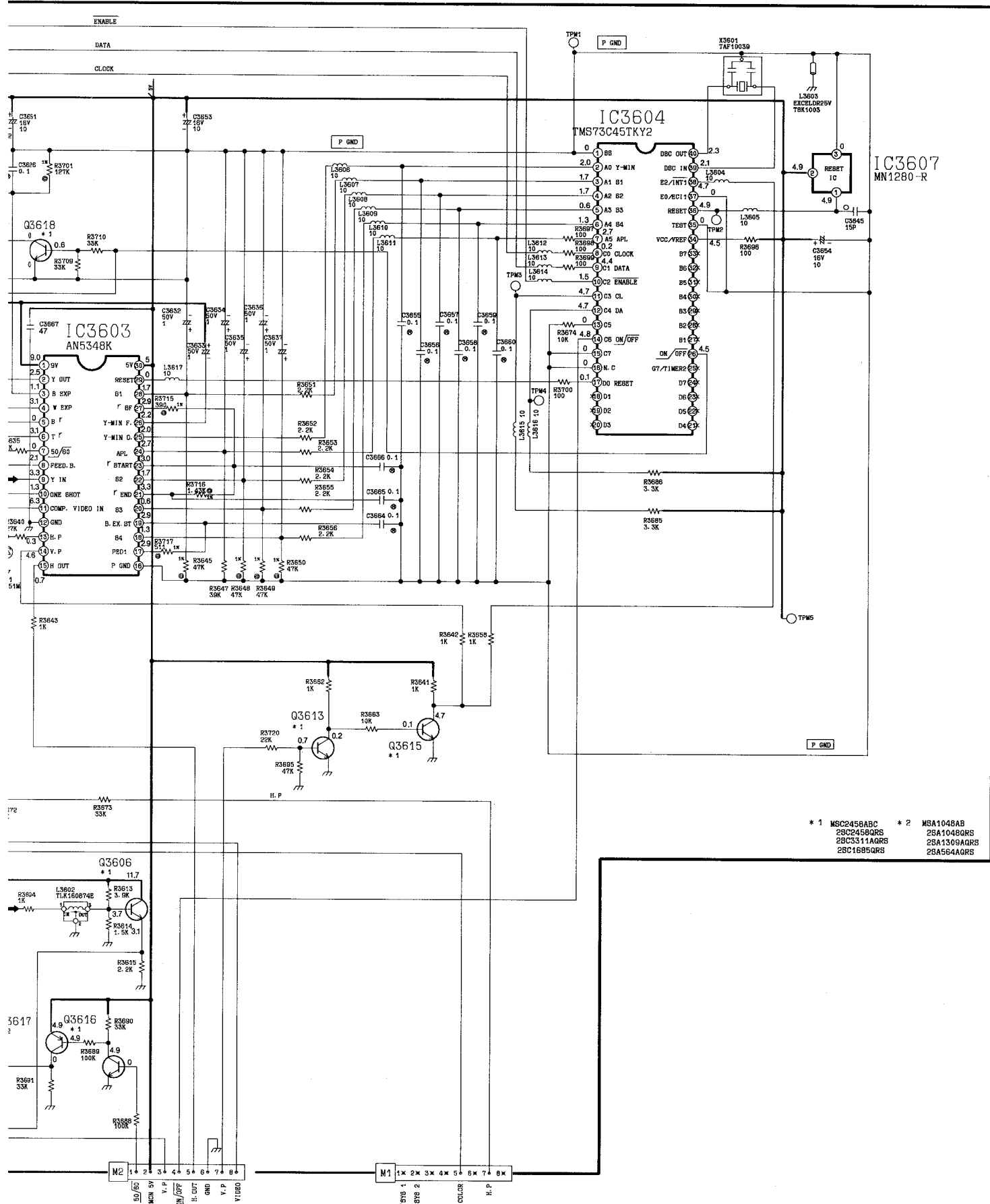
⚠ C3-BOARD
TNP111472AZ

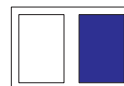


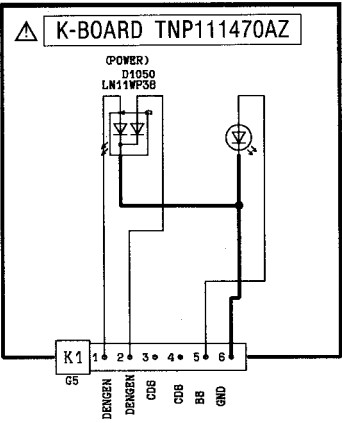


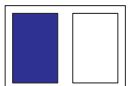
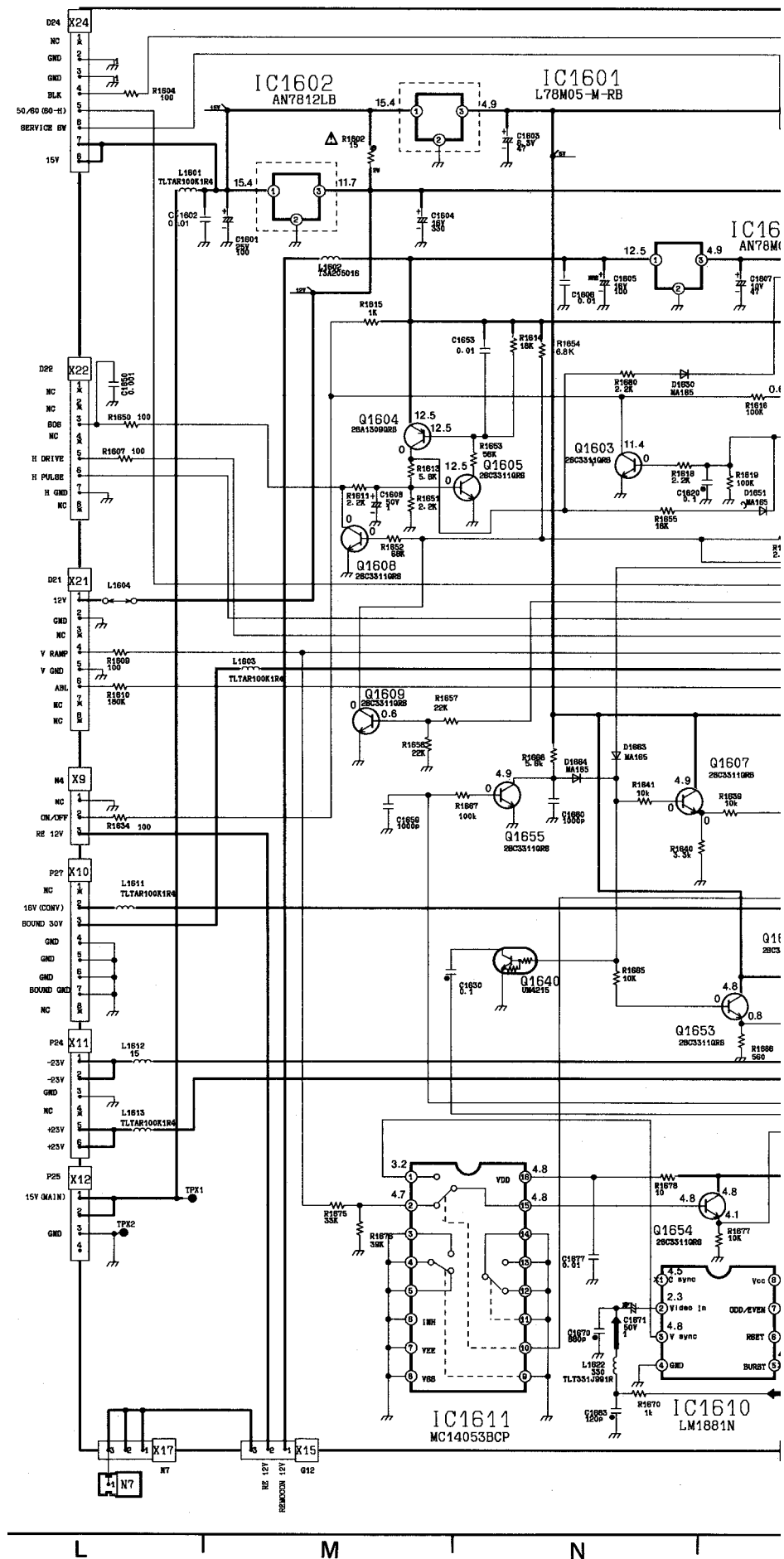


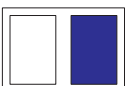
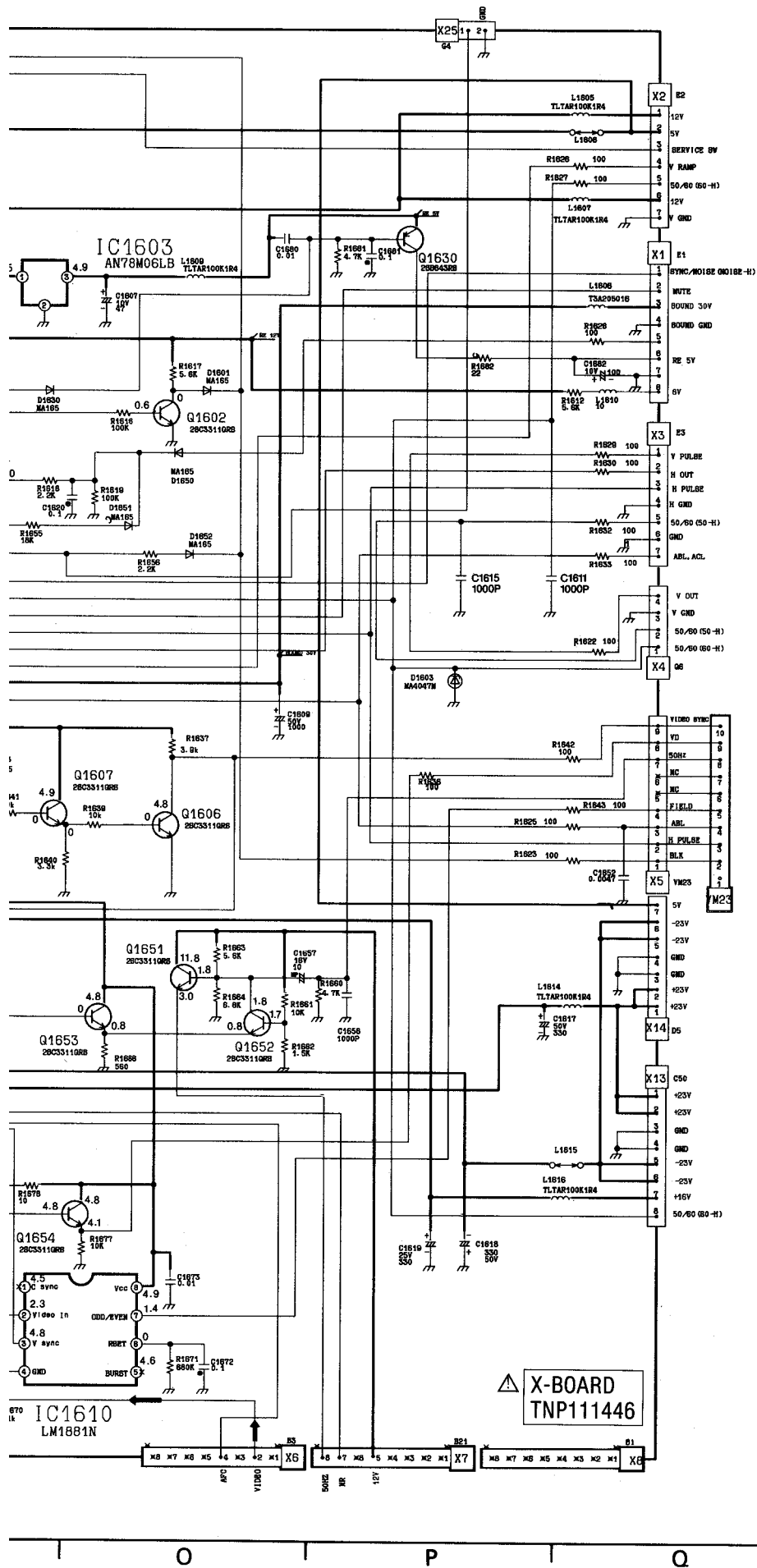
TC-43GF10M



1







TC-43GF10M

6

5

4

3

2

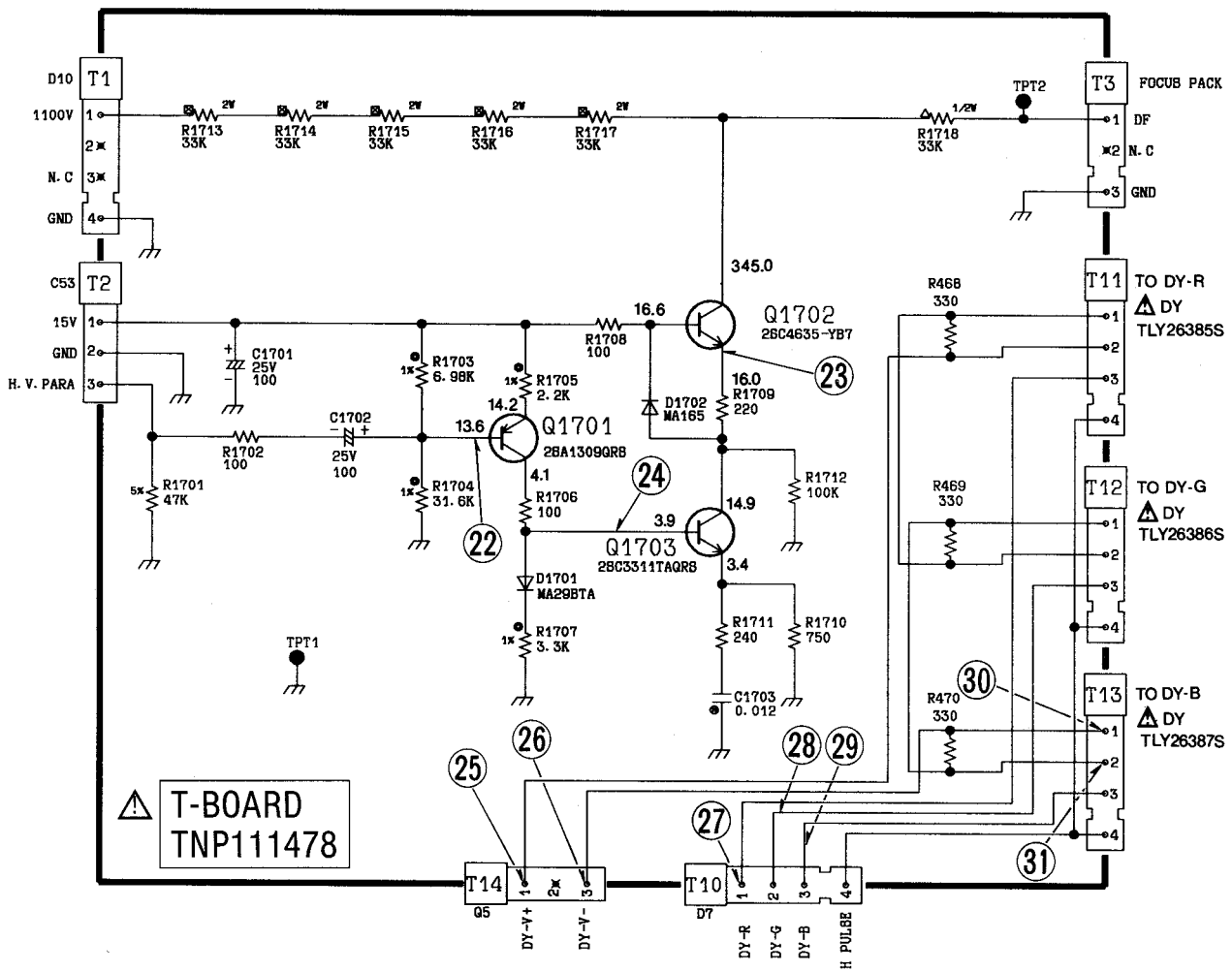
1

A

B

C

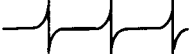
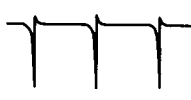
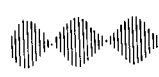
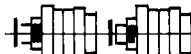
D



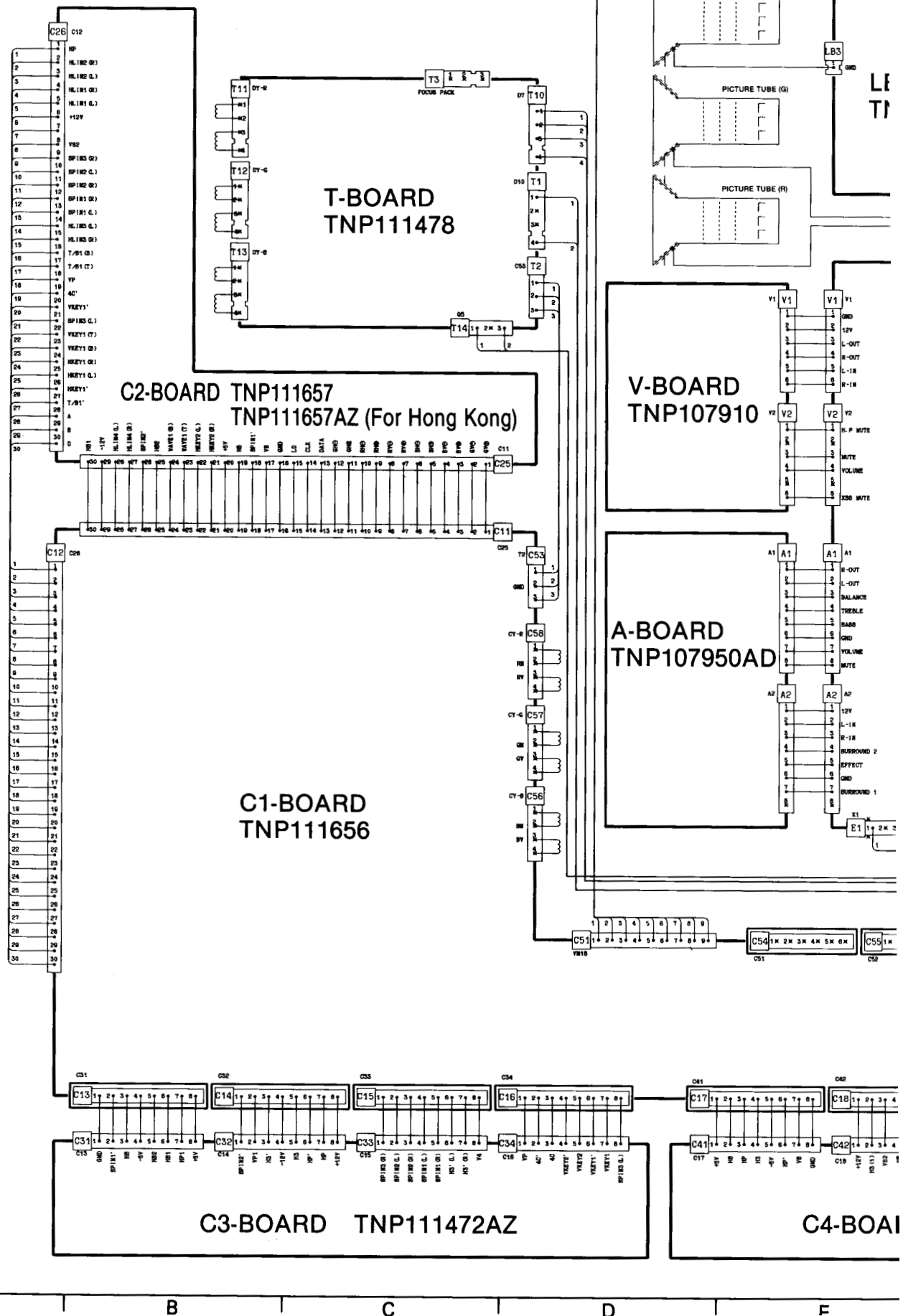
Waveform Pattern Table

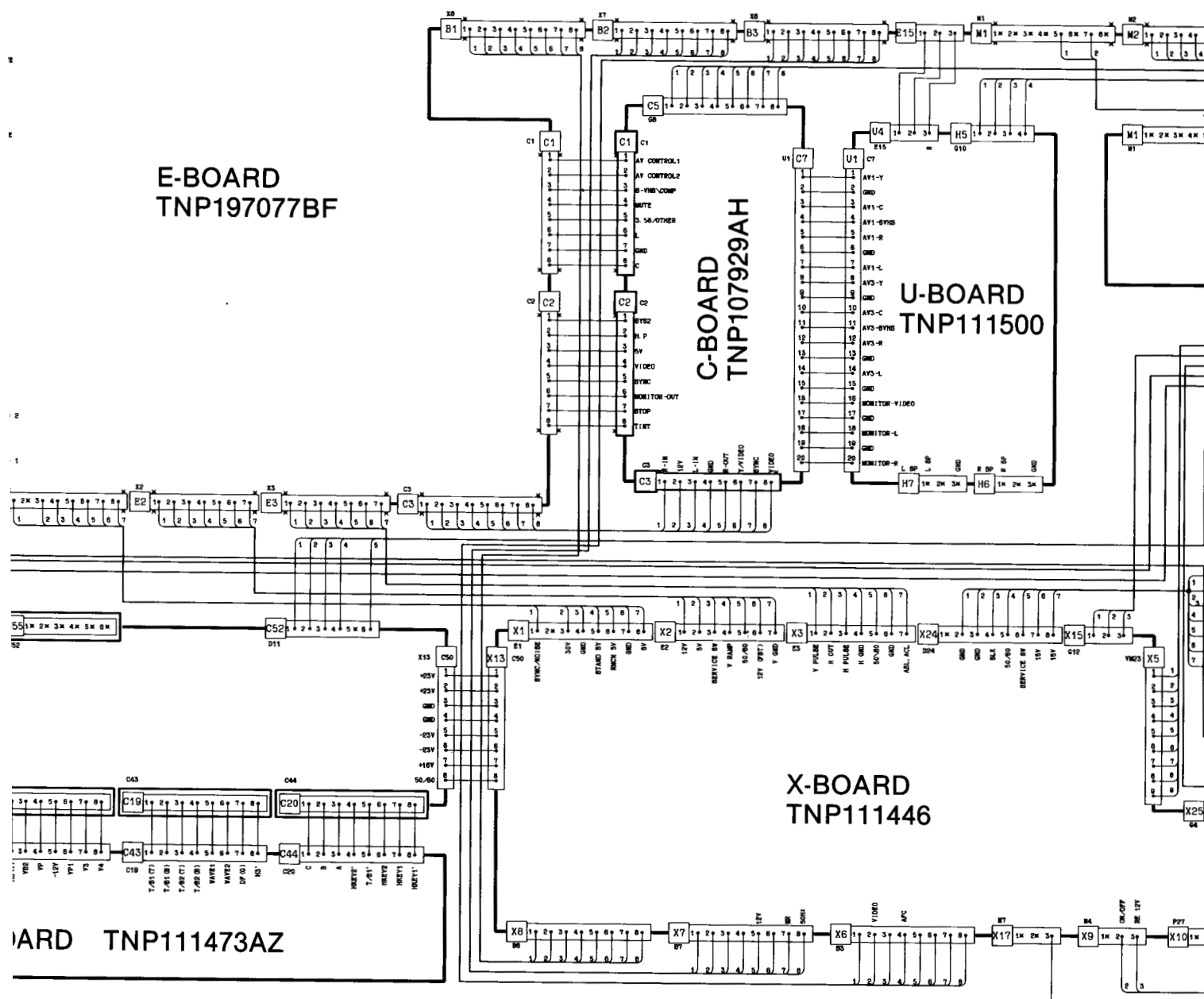
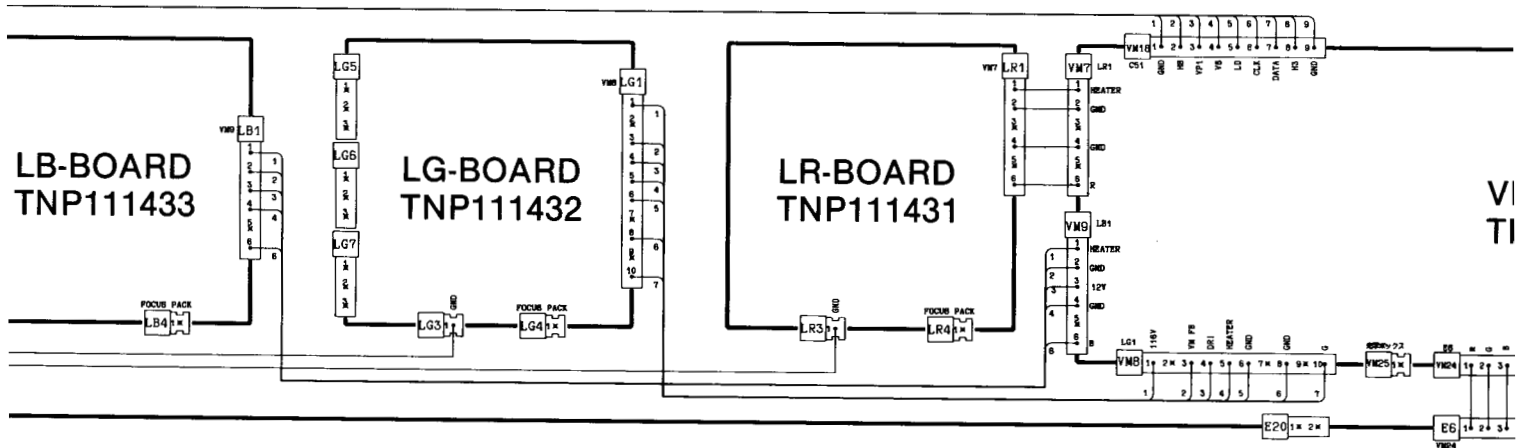
D-BOARD				
① 17.5Vp-p (20µs)	② 190Vp-p (20µs)	③ 1.8Vp-p (20µs)	④ 22Vp-p (20µs)	⑤ 140Vp-p (20µs)
⑥ 1.5Vp-p (20µs)	⑦ 28Vp-p (20µs)	⑧ 3.4Vp-p (20µs)	⑨ 0.4Vp-p (20µs)	⑩ 6.4Vp-p (5ms)
⑪ 4.4Vp-p (5ms)	⑫ 7.4Vp-p (5ms)			
E-BOARD				
⑬ 4Vp-p (20µs)	⑭ 3.8Vp-p (20µs)	⑮ 3.8Vp-p (20µs)	⑯ 1.2Vp-p (20µs)	⑰ 2.5Vp-p (20µs)
⑱ 1.2Vp-p (20µs)	⑲ 10Vp-p (5ms)	⑳ 6Vp-p (20µs)	㉑ 0.8Vp-p (20µs)	
T-BOARD				
㉒ 4Vp-p (20µs)	㉓ 0.68Vp-p (20µs)	㉔ 5.4Vp-p (20µs)	㉕ 52Vp-p (5ms)	㉖ 3.8Vp-p (5ms)
㉗ 219Vp-p (5ms)	㉘ 219Vp-p (5ms)	㉙ 219Vp-p (5ms)	㉚ 4.1Vp-p (5ms)	㉛ 21Vp-p (5ms)
VM-BOARD				
㉜ 5.0Vp-p (20µs)	㉝ 5.1Vp-p (5ms)	㉞ 4.7Vp-p (10µs)	㉟ 2.0Vp-p (20µs)	㊱ 2.0Vp-p (20µs)
㊲ 1.8Vp-p (20µs)	㊳ 2.8Vp-p (20µs)	㊴ 129Vp-p (20µs)	㊵ 123Vp-p (20µs)	㊶ 156Vp-p (20µs)

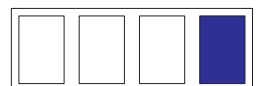
C1-BOARD				
42 3.9Vp-p (20μs)	43 2.9Vp-p (5ms)	44 2.4Vp-p (5ms)	45 1.8Vp-p (5ms)	46 2.2Vp-p (5ms)
47 1.8Vp-p (5ms)	48 2.0Vp-p (20μs)	49 1.8Vp-p (20μs)	50 1.0Vp-p (5ms)	51 0.7Vp-p (5ms)
52 0.9Vp-p (5ms)	53 1.3Vp-p (5ms)	54 2.8Vp-p (20μs)	55 2.6Vp-p (20μs)	56 46Vp-p (5ms)
57 46Vp-p (5ms)	58 40Vp-p (5ms)	59 42Vp-p (5ms)	60 47Vp-p (5ms)	61 32Vp-p (5ms)
62 2.2Vp-p (5ms)	63 16Vp-p (5ms)	64 2.6Vp-p (20μs)	65 8.7Vp-p (5ms)	66 5.5Vp-p (5ms)
67 11Vp-p (5ms)	68 8.7Vp-p (5ms)	69 11.5Vp-p (20μs)	70 7Vp-p (5ms)	71 3.5Vp-p (20μs)
72 3.5Vp-p (20μs)	73 13.3Vp-p (20μs)	74 11.3Vp-p (20μs)	75 11.3Vp-p (20μs)	76 8.6Vp-p (20μs)
77 12.3Vp-p (20μs)	78 5.3Vp-p (20μs)	79 9.9Vp-p (5ms)	80 7.3Vp-p (5ms)	81 13.3Vp-p (5ms)
82 7.3Vp-p (5ms)	83 7.9Vp-p (5ms)	84 7.3Vp-p (5ms)	85 4.9Vp-p (20μs)	86 4.2Vp-p (20μs)

C1-BOARD				
87  6.6Vp-p (5ms)	88  9.5Vp-p (5ms)	89  7.9Vp-p (5ms)	90  3.9Vp-p (5ms)	91  11.9Vp-p (5ms)
92  7.9Vp-p (5ms)	93  11.4Vp-p (5ms)	94  7.8Vp-p (5ms)	95  11.5Vp-p (5ms)	96  8.2Vp-p (5ms)
97  11.3Vp-p (5ms)	98  10.1Vp-p (5ms)	99  1.1Vp-p (5ms)		
C3-BOARD				
100  12.2Vp-p (20μs)	101  2.5Vp-p (20μs)	102  2.0Vp-p (20μs)	103  2.0Vp-p (20μs)	104  2.4Vp-p (5ms)
105  4.0Vp-p (5ms)	106  0.7Vp-p (5ms)	107  11.3Vp-p (5ms)		
C4-BOARD				
108  2.6Vp-p (20μs)	109  10.7Vp-p (5ms)	110  6.2Vp-p (5ms)	111  11.0Vp-p (5ms)	112  1.8Vp-p (5ms)
113  5.1Vp-p (5ms)	114  6.6Vp-p (5ms)	115  1.2Vp-p (5ms)	116  9.1Vp-p (5ms)	117  10.1Vp-p (5ms)
118  12.6Vp-p (5ms)	119  11.8Vp-p (5ms)			
C-B-BOARD				
120  0.8Vp-p (20μs)	121  1.7Vp-p (20μs)			

Interconnections

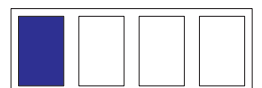
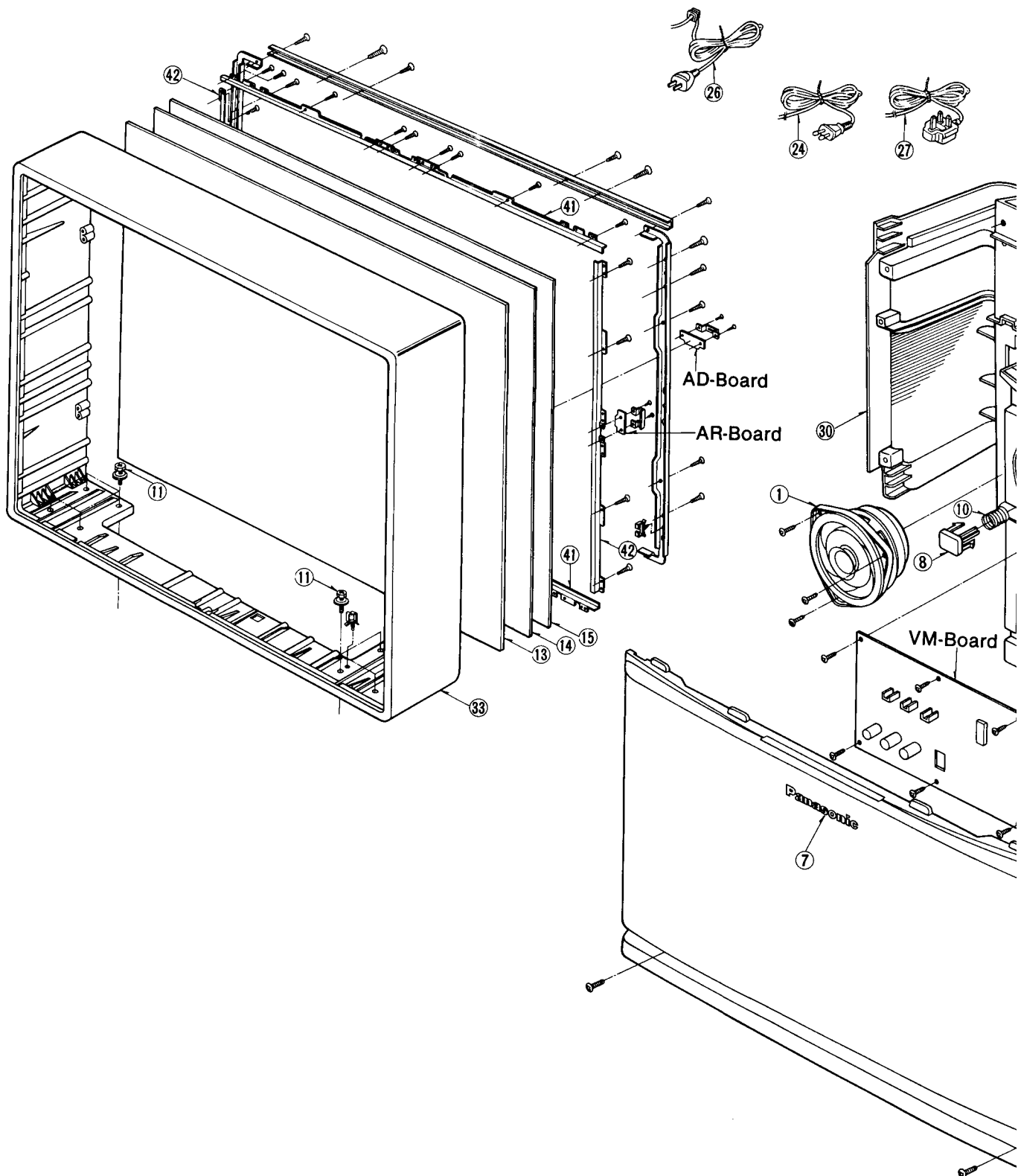






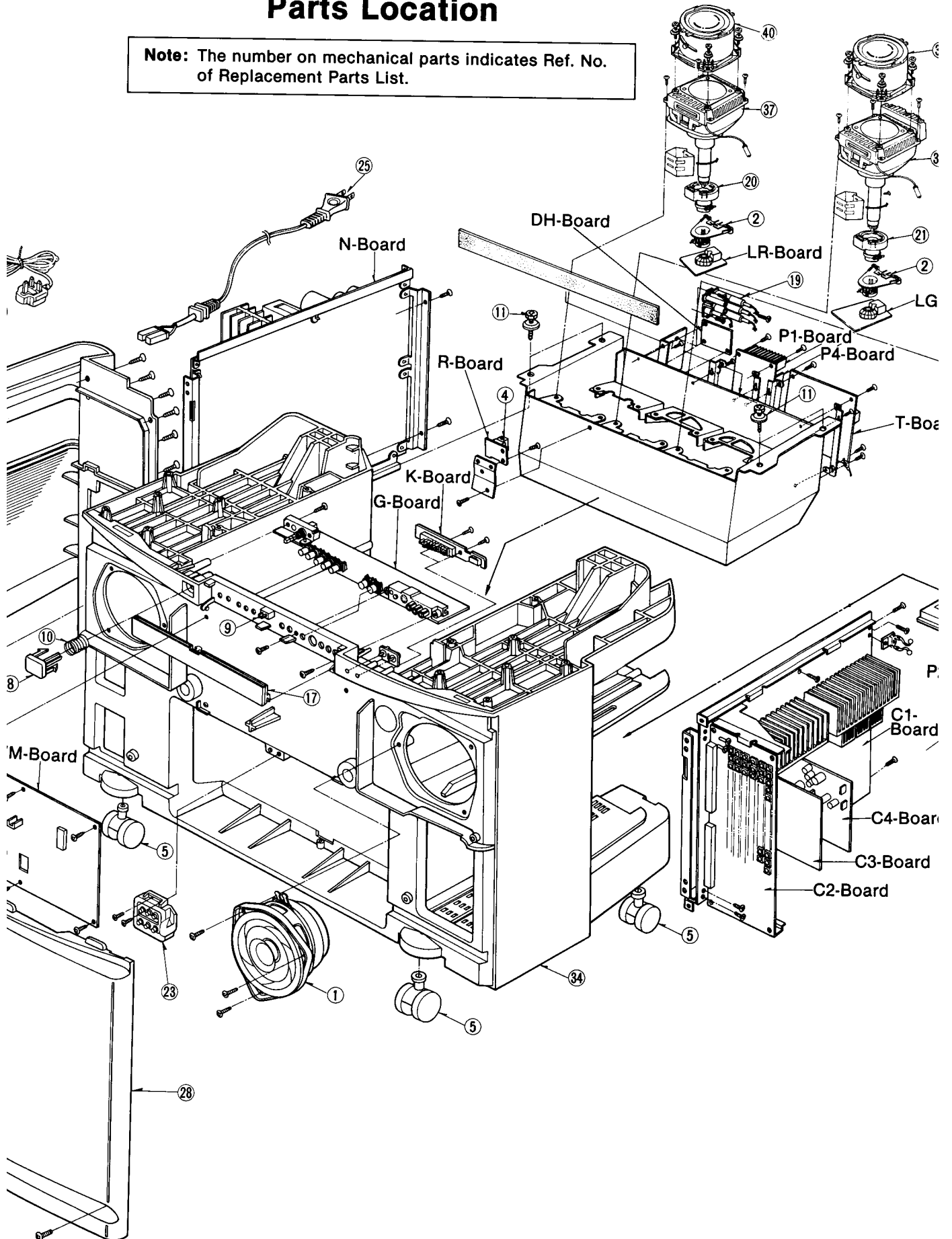
TC-43GF10M

TC-43GF10M

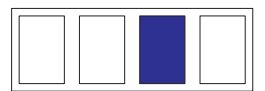
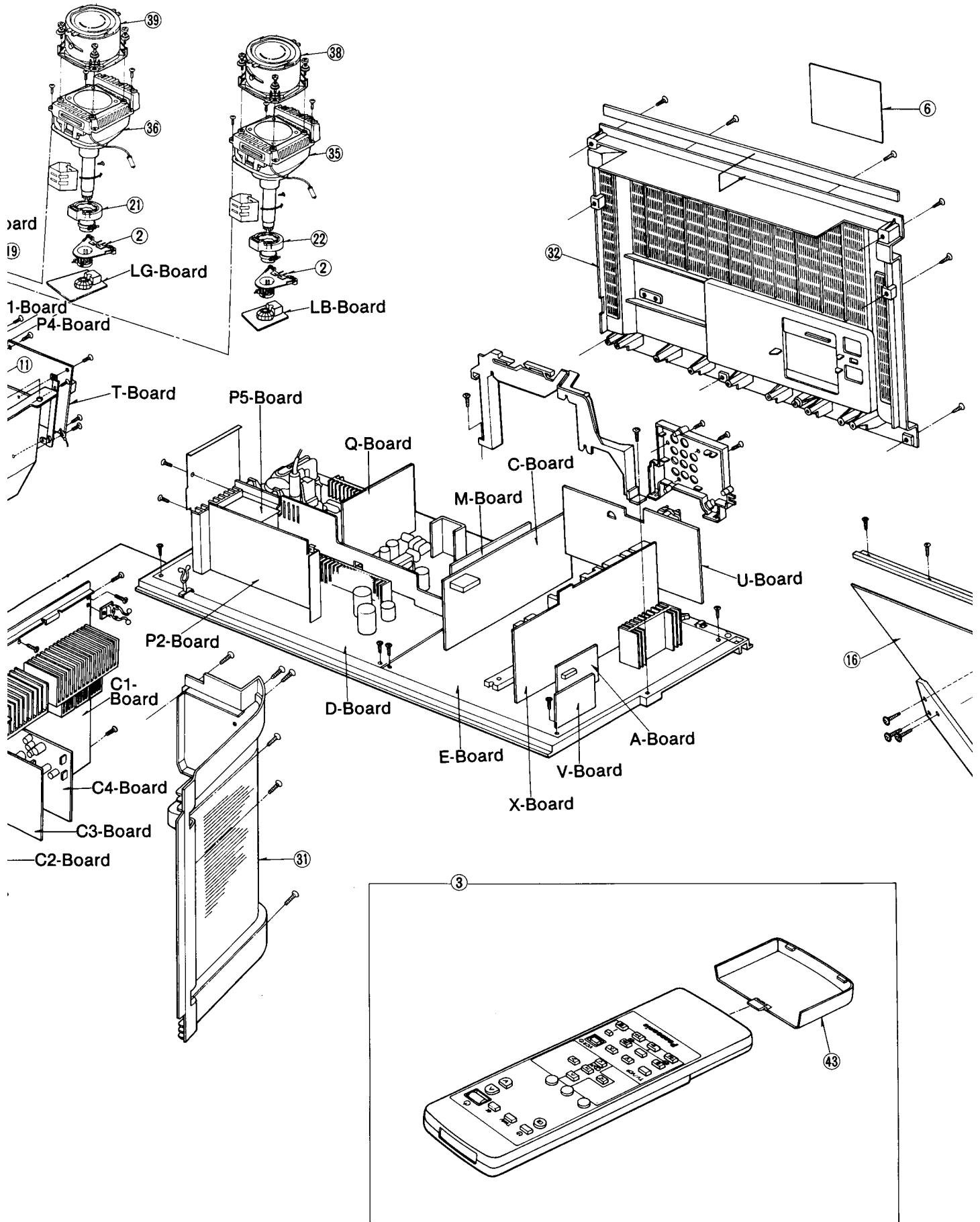


Parts Location

Note: The number on mechanical parts indicates Ref. No. of Replacement Parts List.



TC-43GF10M



M

TC-43GF10M

⑥

