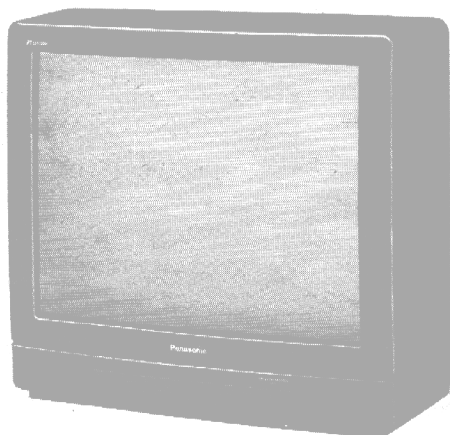


Service Manual

Colour Television

TC-26L1EE**M16M chassis**

Specifications

Power Source :	AC 220 V, 50 Hz	
Power Consumption :	150 W (Max.) 11 W (Stand-by condition)	
Aerial Impedance :	75 Ω unbalanced, Coaxial type	
Receiving System :	12 Systems	
Receiving Channels :		
VHF Band	2 - 12	(PAL / SECAM - B)
	1 - 12	(PAL / SECAM - D)
UHF Band	21 - 69	(PAL - G, I / SECAM - G)
	21 - 69	(SECAM - K)
	13 - 57	(PAL - D)
CATV	S1 - S20	
NTSC (3.58 MHz / 5.5 MHz)	VTR Playback only	
NTSC (4.43 MHz / 5.5 MHz)	VTR Playback only	
PAL 60 Hz VTR Playback only		
Intermediate Frequency :		
Video	38.0 MHz	
Sound	31.5 MHz	(D, K)
	32.0 MHz	(I)
	32.5 MHz	(B, G)
Colour	33.57 MHz	(PAL)
	33.60 MHz	(SECAM)
	33.75 MHz	(SECAM)

Video / Audio Terminals :

AV IN	Video (Phono)	1 Vp-p 75 Ω
	Audio (Phono)	Approx. 400mV
Monitor OUT	Video (Phono)	1 V p-p 75 Ω
	Audio (Phono)	Approx. 400mV

High Voltage : 31.0 kV at zero beam current

Picture Tube : M63JUA025XH
Type 26 (66 cm)
measured diagonally ,
110° deflection

Audio Output :
Internal Speaker 3 W (Max.)
Impedance 16 Ω

Speaker : 2 speaker system

Dimensions : Height : 56.3 cm
Width : 62.2 cm
Depth : 45.8 cm

Mass : 32.0 kg (Net)

Accessories supplied : Remote Controller x 1
" R6 " Battery x 2

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

Contents

• Safety Precautions	2
• Location of Controls	3
• Service Hints	4
• Adjustments	7
• Conductor Views	12
• Schematic Diagrams	15
• Parts Location	20
• Replacement Parts List	21

Safety Precautions

General Guide Lines

1. It is advisable to insert an isolation transformer in the AC supply before servicing a hot chassis.
2. When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
3. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shields, and isolation R-C combinations, are properly installed.
4. When the receiver is not to be used for a long period of time, unplug the power cord from the AC outlet.
5. Potential, as high as 31.0 kV, is present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the receiver chassis before handling the tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screwheads, aerials, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 4 M Ω and 20 M Ω . When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

Leakage Current Hot Check (See Fig. 1)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2 k Ω , 10W resistor, in series with an exposed metallic part on the receiver and an earth such as a water pipe.
3. Use an AC voltmeter, with high impedance type, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 1.4 V rms. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

Hot - Check Circuit

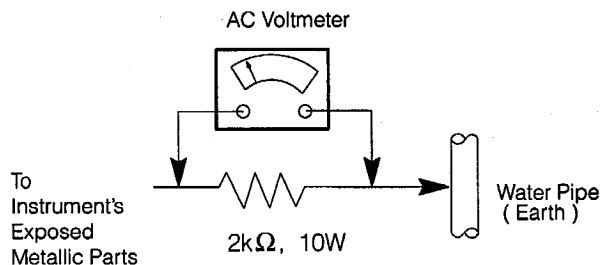


Fig. 1

X-Radiation

Warning :

1. The potential sources of X-Radiation in TV sets are the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 32.0 kV without causing X-Radiation.

Note : It is important to use an accurate periodically calibrated high voltage meter.

1. Set the brightness to minimum.
2. Set the service switch to the SERVICE position.
3. Measure the High Voltage. The meter reading should indicate 31.0 (+1.0, -1.0) kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

Shut Down Circuit Test

This test must be made as a final check before the set is returned to the customer.

1. Operates the TV set.
2. Set Controls :
Screen (on FBT) minimum
Contrast minimum
Colour minimum
3. Connect a DC voltmeter to cathode of D555, and confirm that the voltage reading is 23.8 V. (or less than.)
4. Supply 25.0 V DC to cathode of D555 and confirm that the shut down circuit does not operate.
5. Supply 28.4 V DC to cathode of D555, and confirm that the shut down circuit operates.

Location of Controls

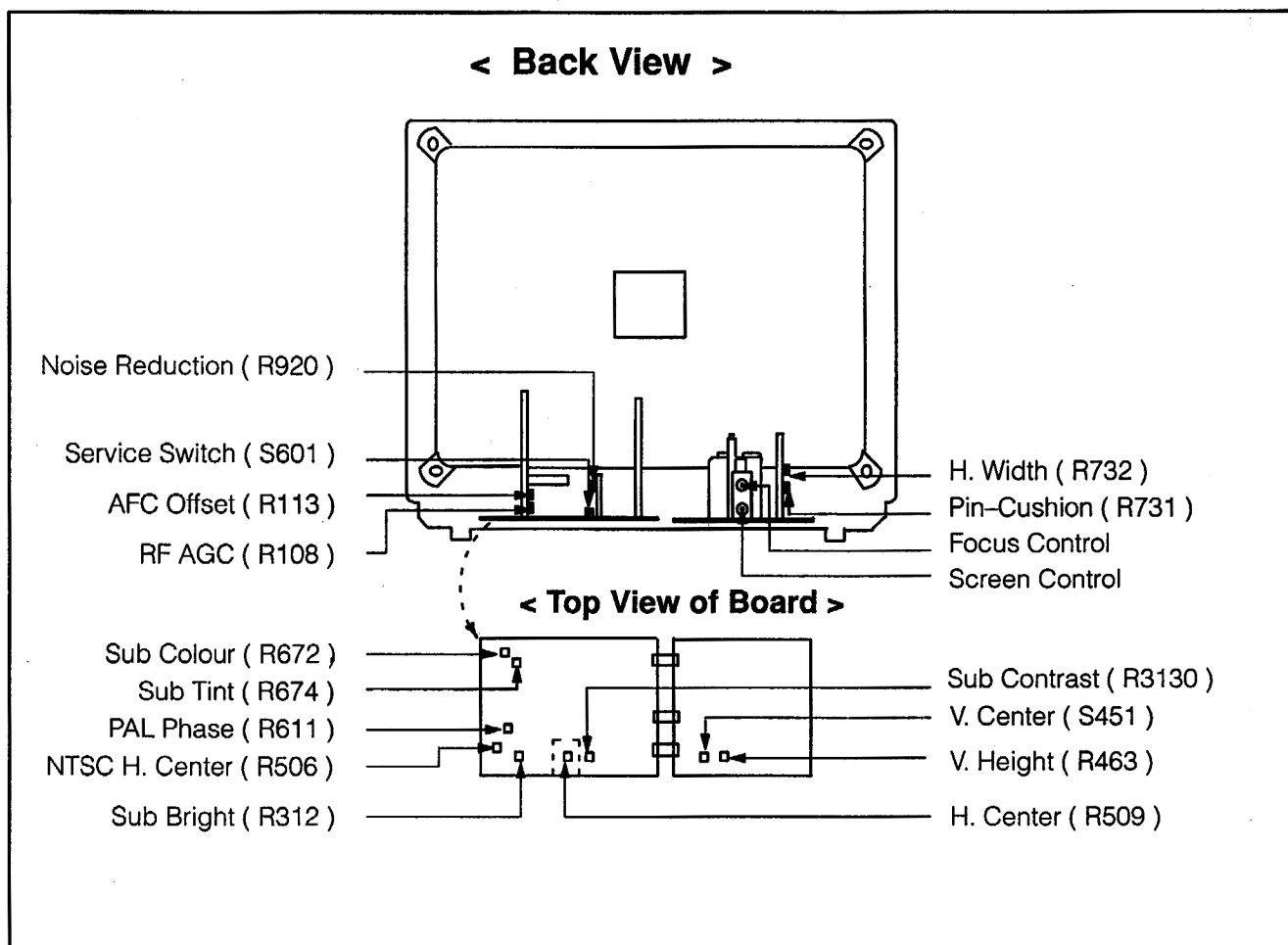
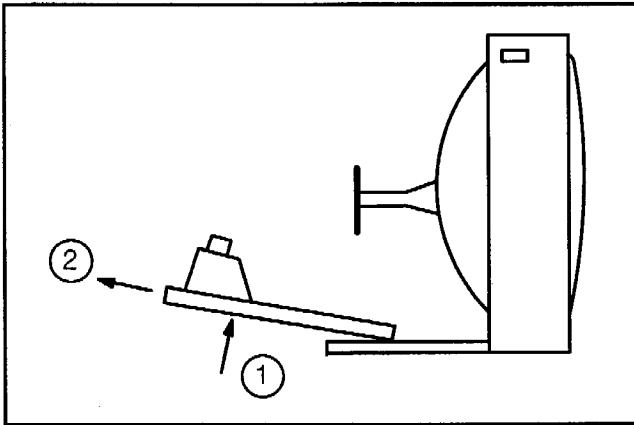
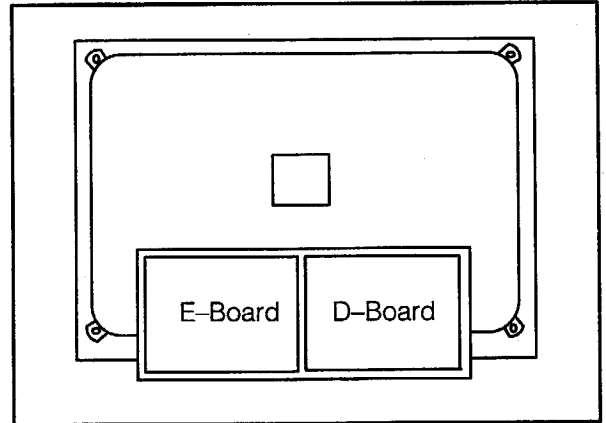


Fig. 2

Service Hints

How to move chassis into service position

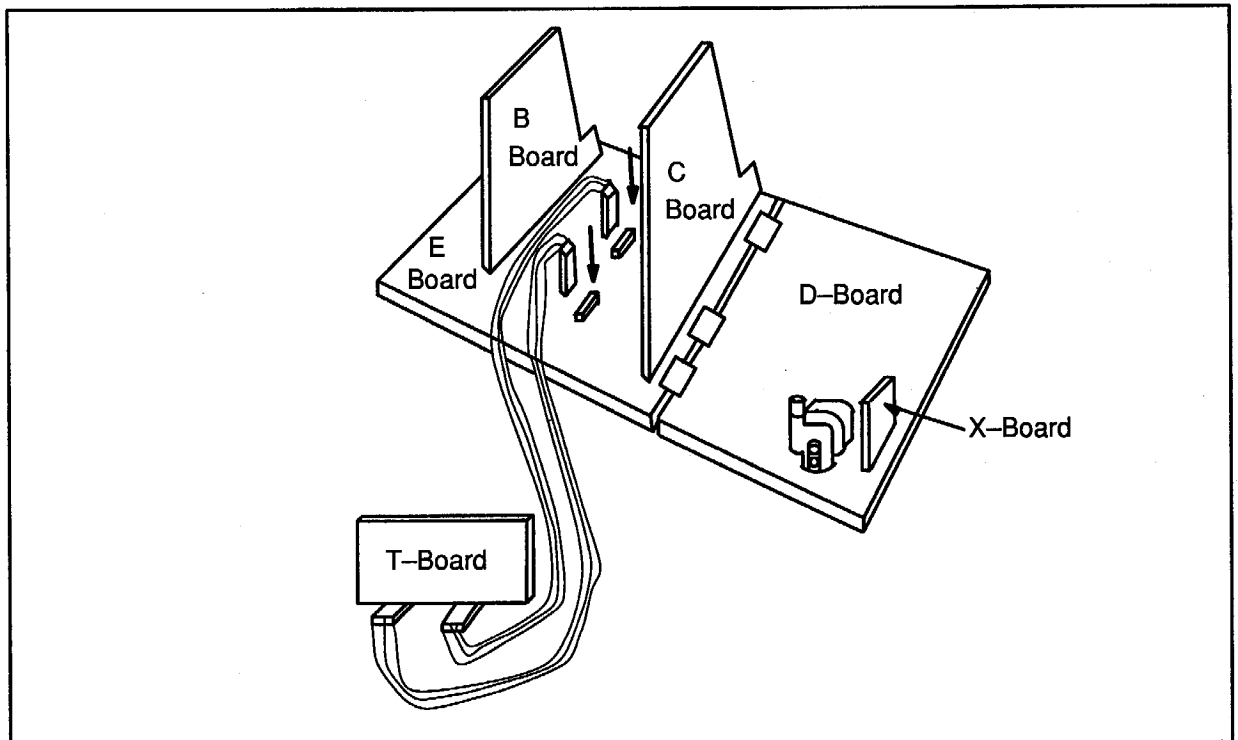
1. Lift up chassis slightly and draw out it toward you as shown in **Fig. 3**.
2. Stand chassis as shown in **Fig. 4**.

**Fig. 3****Fig. 4**

Service Position for B-Board / T-Board / C-Board / X-Board

1. Remove the each circuit board from E-Board or D-Board.
2. Connect extension lead wire between individual circuit board and E-Board or D-Board as shown in **Fig. 5**.

Note : Extension lead wires kit is supplied as service jig. (Parts No. TZS709008)

**Fig. 5**

How to disconnect E-Board – D-Board connector

1. Disconnect E-Board side of E-Board – D-Board connector as shown in **Fig. 6**.

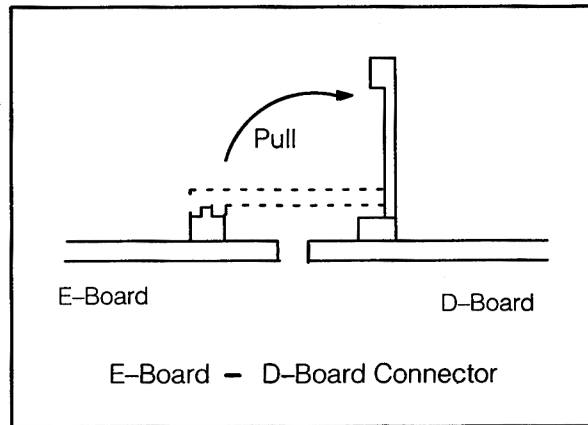


Fig. 6

Notice :

1. This TV set has Automatic Turn-off Function (Noise Timer).
If the TV set is not switched off when the TV station stops transmitting or noise picture condition.
It will automatically go to stand-by condition (except TV set is on AV mode condition) after 30 minutes.

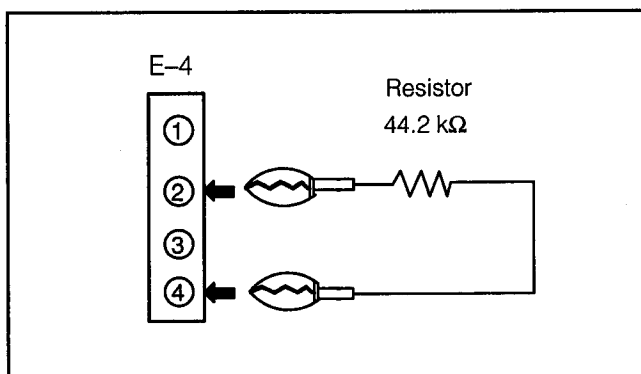
How to cancell the Automatic Turn-off Function

Connect a short jumper between pin (8) of IC1206 and earth.

2. When replace Memory IC (IC1211)

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

- 1) Touch a resistor (44.2 k Ω) to pin ② and ④ of connector E-4 on E-Board at one time, as shown in **Fig. 7**.
- 2) Picture will be white pattern.
- 3) Select PICTURE 1 by pushing PICTURE MENU button on remote controller.
- 4) Select CONTRAST from menu pushing by **[P]** button on remote controller.
- 5) Set CONTRAST level to " 47 " by pushing the " + " button or " - " button and push the **[N]** button.

**Fig. 7**

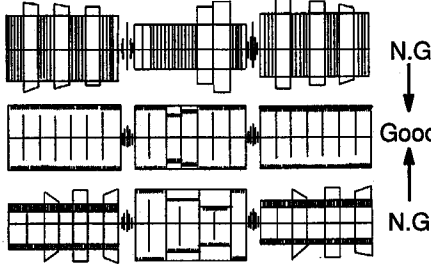
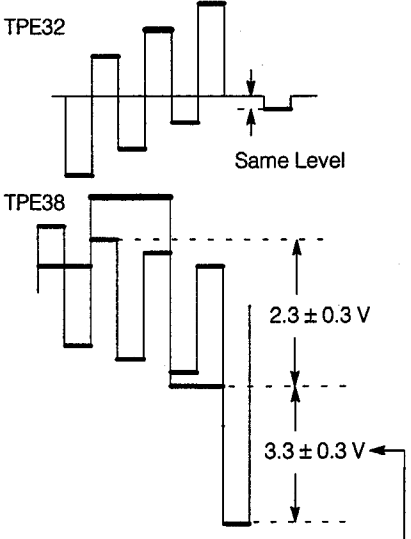
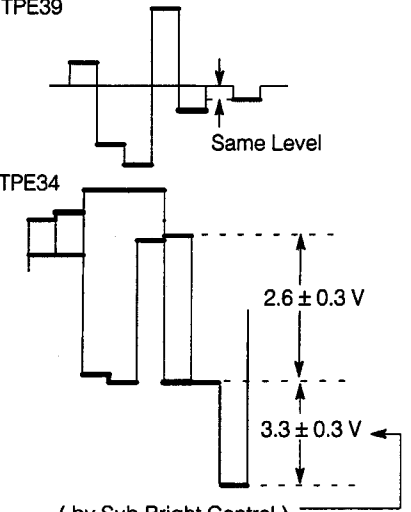
- 6) Set each functions level of PICTURE 2 and PICTURE 3 to following levels as same procedure of PICTURE 1.

	PICTURE 1	PICTURE 2	PICTURE 3
Colour	Fixed	32	27
NTSC-Tint	Fixed	32	32
Bright	Fixed	32	32
Contrast	47	Fixed	27
Sharpness	Fixed	32	22

- 7) Select SOUND MENU 2 by pushing SOUND MENU button and select BASS from menu by pushing **[S]** button.
- 8) Set BASS level to " 46 ", select TREBLE from menu and set TREBLE level " 50 ".
- 9) Push the **[N]** button, and select SOUND MENU 3 by pushing SOUND MENU button.
- 10) Set each levels of BASS and TREBLE to " 27 " by same as above procedure.
- 11) Push the **[N]** button.
- 12) Each setting levels are memorised by pushing the " OFF TIMER " button (Located on remote controller) and Volume Button " - " button (Located on front tray of TV set) 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.

Adjustments

Item / Preparation	Adjustment Procedure
<u>B Voltage</u> 1. Operate the TV set. 2. Set controls : Bright minimum Sub Bright minimum	1. Confirm that the indicated test points for the specified voltage: TPD1 : 139.6 ± 2.0 V TPD2 : 15.5 ± 1.0 V TPD3 : 12.0 ± 1.0 V TPD4 : 8.5 ± 1.0 V TPD 5 : 5.0 ± 0.5 V TPD 6 : 17.5 ± 2.0 V TPD 9 : 31.4 ± 1.5 V TPD10 : 223.0 ± 10.0 V
<u>RF AGC</u> 1. Receive a colour bar pattern. 2. Set the input level to 63 ± 2 dB. (75 Ω opened) 3. Connect an oscilloscope to TPB12 with DC mode.	1. Turn RF AGC control (R108) fully clockwise. 2. Slowly turn R108 counterclockwise to set it at the point just before voltage at TPB12 drops. 3. Increase the input level by 2 dB and confirm that the voltage changes.
<u>High Voltage</u> 1. Receive a crosshatch pattern. 2. Set controls : Bright minimum Contrast minimum Sub Bright minimum	1. Connect a DC voltage meter to TPD1 and confirm the voltage is 139.6 ± 2 V. 2. Connect a high voltage meter (Electrostatic Type) to an anode of the picture tube. 3. Confirm that the high voltage is within a range of 31.0 (+ 1.0, -1.0) kV.
<u>Noise Detect</u> 1. Operate the TV set. and confirm the B voltage. 2. Connect a frequency counter to TPT5.	1. Adjust R920 Reading of the counter : $15.675 \text{ KHz} \pm 150 \text{ Hz}$

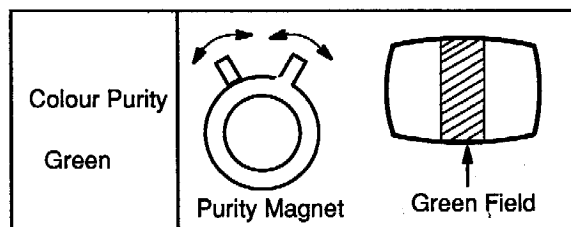
Item / Preparation	Adjustment Procedure	Waveform
Bell Filter / Line Discriminator 1. Receive SECAM colour bar pattern. 2. Connect an oscilloscope to TPE36 through 10 kΩ resistor. 3. Set the System II switch to 5.5 MHz. 4. Push the Normal button for normal condition.	1. Adjust L653 to obtain waveform as shown in Fig. 12. 2. Connect a DC voltmeter to TPE35. 3. Adjust L652 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. 12
SECAM Demodulator / Colour Output – Blue 1. Receive SECAM colour bar pattern. 2. Set the System I switch to SECAM. 3. Set the System II switch to 5.5 MHz. 4. Select PICTURE 1 (Standard) from picture menu and push the Normal button. 5. Connect an oscilloscope to TPE32 and TPE38.	1. Adjust L650 to obtain waveform at TPE38 as shown in Fig. 13. 2. Connect the oscilloscope to TPE32. 3. Adjust SECAM B-Colour Gain control (R651) : 2.3 ± 0.3 V 4. Connect the oscilloscope to TPE38. 5. Confirm that the waveform is as shown in Fig. 13.	 Fig. 13
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 TPE34 and TPE39.	1. Adjust L651 to obtain waveform at TPE39 as shown in Fig. 14. 2. Connect the oscilloscope to TPE34. 3. Adjust SECAM R-Colour Gain control (R652) : 2.6 ± 0.3 V 4. Connect the oscilloscope to TPE39. 5. Confirm that the waveform is as shown in Fig. 14.	 Fig. 14

Before Colour Purity, Convergence and White Balance adjustments are attempted, V. Hold, V. Height, H. Hold, H. Centre and Focus adjustments must be completed.

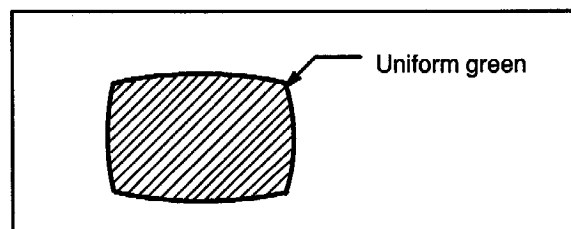
Colour Purity

1. Set Bright and Contrast controls to their maximum positions.
2. Operate the TV set over 15 minutes.
3. Fully degauss the picture tube by using an external degaussing coil.
4. Apply a crosshatch pattern signal and adjust roughly the static convergence magnets.
5. Receive a black and white signal.
6. Set Low Light controls as following :

Red (R354)		minimum
Green (R356)		maximum
Blue (R355)		minimum
7. Loosen a clamp screw for the deflection yoke and move the deflection yoke as close to the purity magnet as possible.
8. Adjust the purity magnet so that a vertical green field is obtained at centre of the screen.



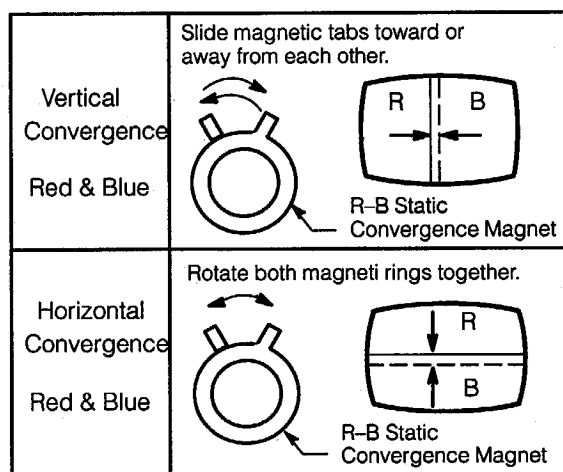
9. Slowly push the deflection yoke and set it where a uniform green field is obtained.



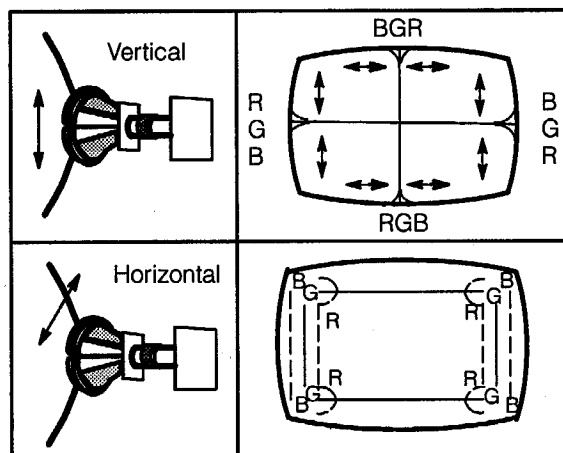
10. Adjust roughly the Low Light controls and make sure that a uniform white field is obtained.
11. Tighten the clamp screw.

Convergence

1. Apply a crosshatch pattern signal and set Contrast control to the maximum position.
2. Adjust Bright control to obtain a clear pattern.
3. Adjust Red and Blue line at centre of the screen by rotating R-B static convergence magnet.



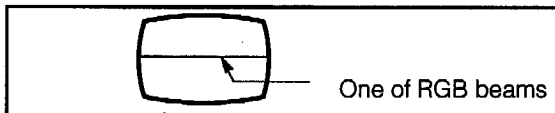
4. Adjust Red and Blue with Green line at centre of the screen by rotating (RB) – G static convergenc magnet.
5. Lock convergence magnets with silicone sealer.
6. Remove the DY wedges and slightly tilt the deflection yoke the vertically and horizontally to obtain the good overall convergence.



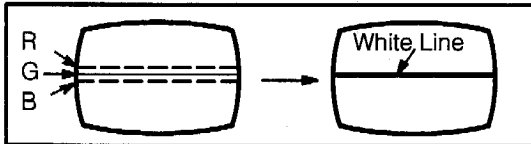
7. Fix the deflection yoke by reinserting the DY wedges. (See Fig. 16)
8. If purity error is found, repeat "Colour Purity" adjustment.

White Balance

1. Receive a black and white signal and operate the set more than 15 minutes.
2. Set controls as following :
 Contrast maximum
 Colour minimum
 Screen (on FBT) minimum
 R-Drive (R360) centre
 B-Drive (R361) centre
 R-Low Light (R354), G-Low Light (R356) and B-Low Light (R355) controls turn 45 ° clockwise from their fully counterclockwise positions on the foil side.
3. Set the service switch to the SERVICE position.
4. Connect an oscilloscope to TPY7 with DC mode.
5. Adjust Sub Bright control so that DC voltage on the oscilloscope becomes 190 V.
6. Slowly turn the screen control clockwise to the point where one of R, G, B beams just appears on the picture tube.



7. Leave the low light control of the colour which appeared at the step 6 as it is, and turn the remained low light controls clockwise, from the setting position at the step 2, so as to get a white horizontal line on the picture tube.



8. Reset the service switch to the NORMAL position.
9. Confirm the white balance according to following flow chart.

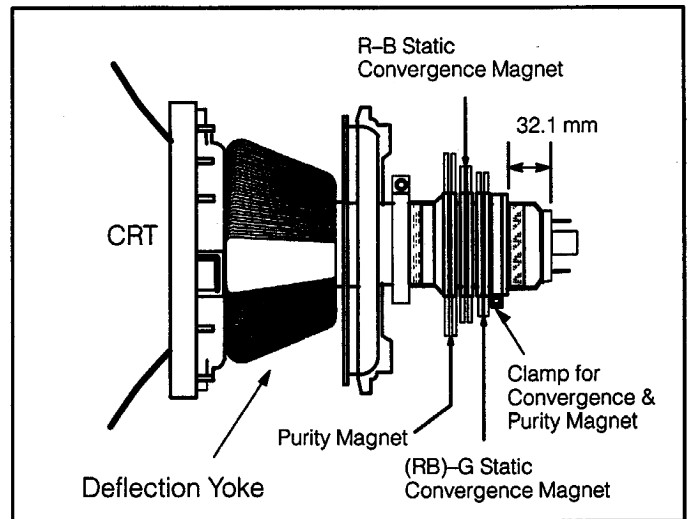
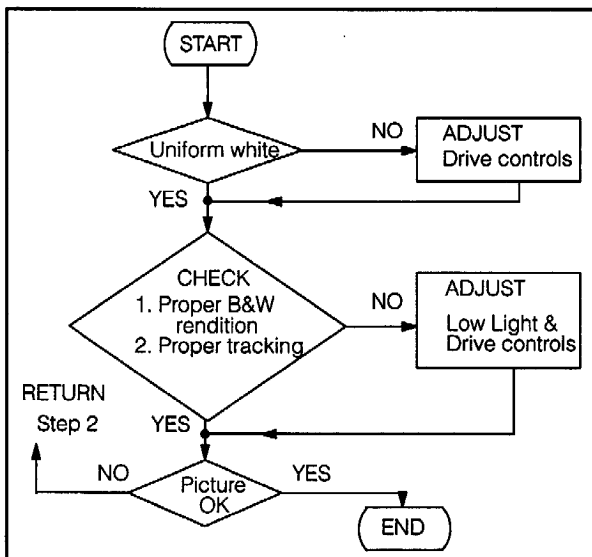


Fig. 15

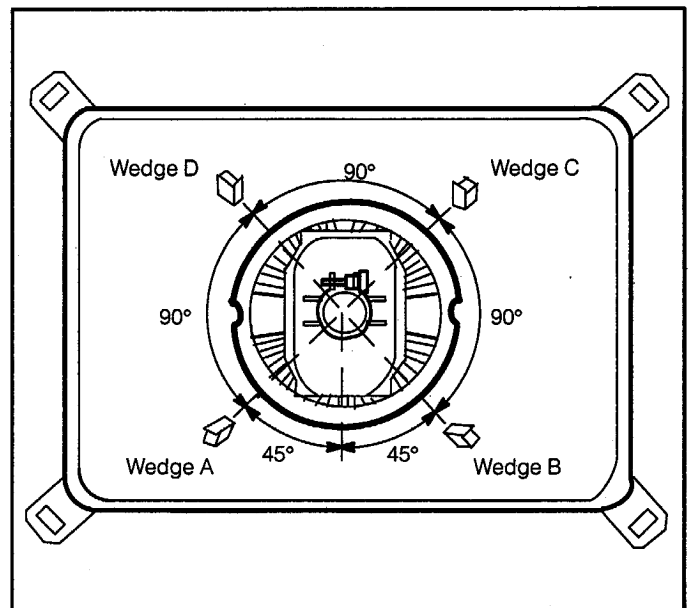


Fig. 16

Notes :

1. Wedge A shown in **Fig. 16** should be fixed within a range of 45 ° to the left of the vertical line as shown.
2. After inserting wedge A, insert wedges B, C and D. The wedges should be set 90° apart from each other.
3. Be certain that the four wedges are firmly fixed and the Deflection Yoke is tightly clamped in place. Otherwise the Deflection Yoke may shift its position and cause a loss of convergence and purity.

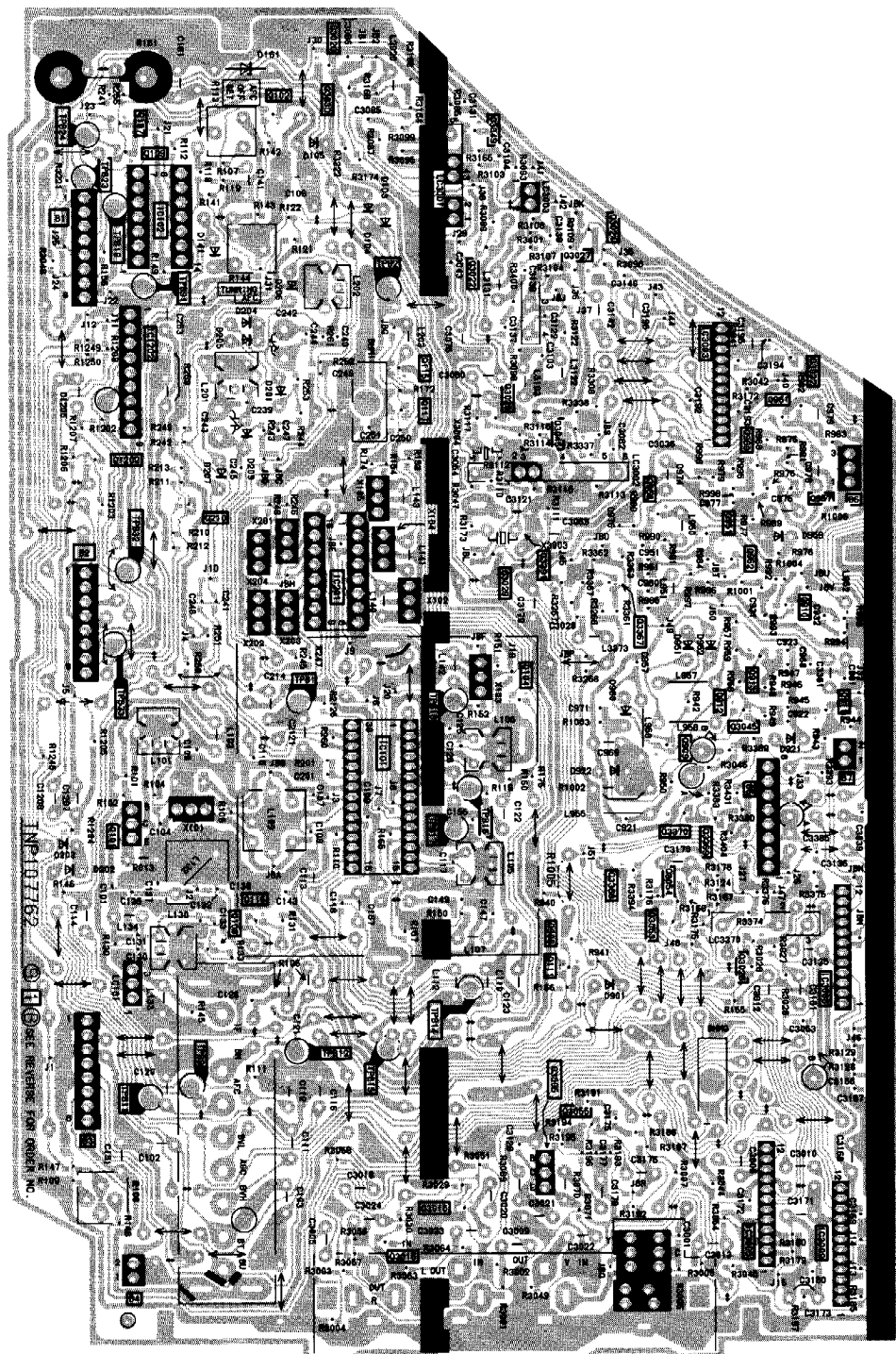
TC-26L1EE

CONDUCTOR VIEWS

B-BBOARD TNP107762

PARTS LOCATION

B-BBOARD	
IC	
IC101	B-3
IC102	A-5
IC201	B-3
IC1202	A-4
IC3003	C-4
IC3005	C-1
IC3008	C-2
IC3009	C-1
Transistor	
Q101	A-2
Q102	A-5
Q104	B-3
Q107	A-5
Q108	A-2
Q109	A-5
Q111	B-2
Q115	B-4
Q116	A-2
Q117	B-4
Q210	A-4
Q908	B-2
Q909	C-3
Q910	C-3
Q911	C-3
Q912	C-3
Q913	C-3
Q951	C-4
Q957	C-4
Q958	C-4
Q960	C-4
Q961	C-4
Q962	C-3
Q1202	A-4
Q3006	B-2
Q3015	B-1
Q3016	B-1
Q3020	B-5
Q3022	B-4
Q3024	C-5
Q3025	B-4
Q3026	C-2
Q3027	C-4
Q3029	B-3
Q3030	B-5
Q3032	C-4
Q3045	C-3
Q3049	B-5
Q3053	C-2
Q3054	C-2
Q3055	C-1
Q3367	C-3
Q3368	C-2
Q3369	C-2
Q3370	C-2
Q3391	B-3



INP107762
© 1987 SAMSUNG ELECTRONICS CO. LTD.
ALL RIGHTS RESERVED. FOR ORDER NO.

E-BOARD TNP197072AC

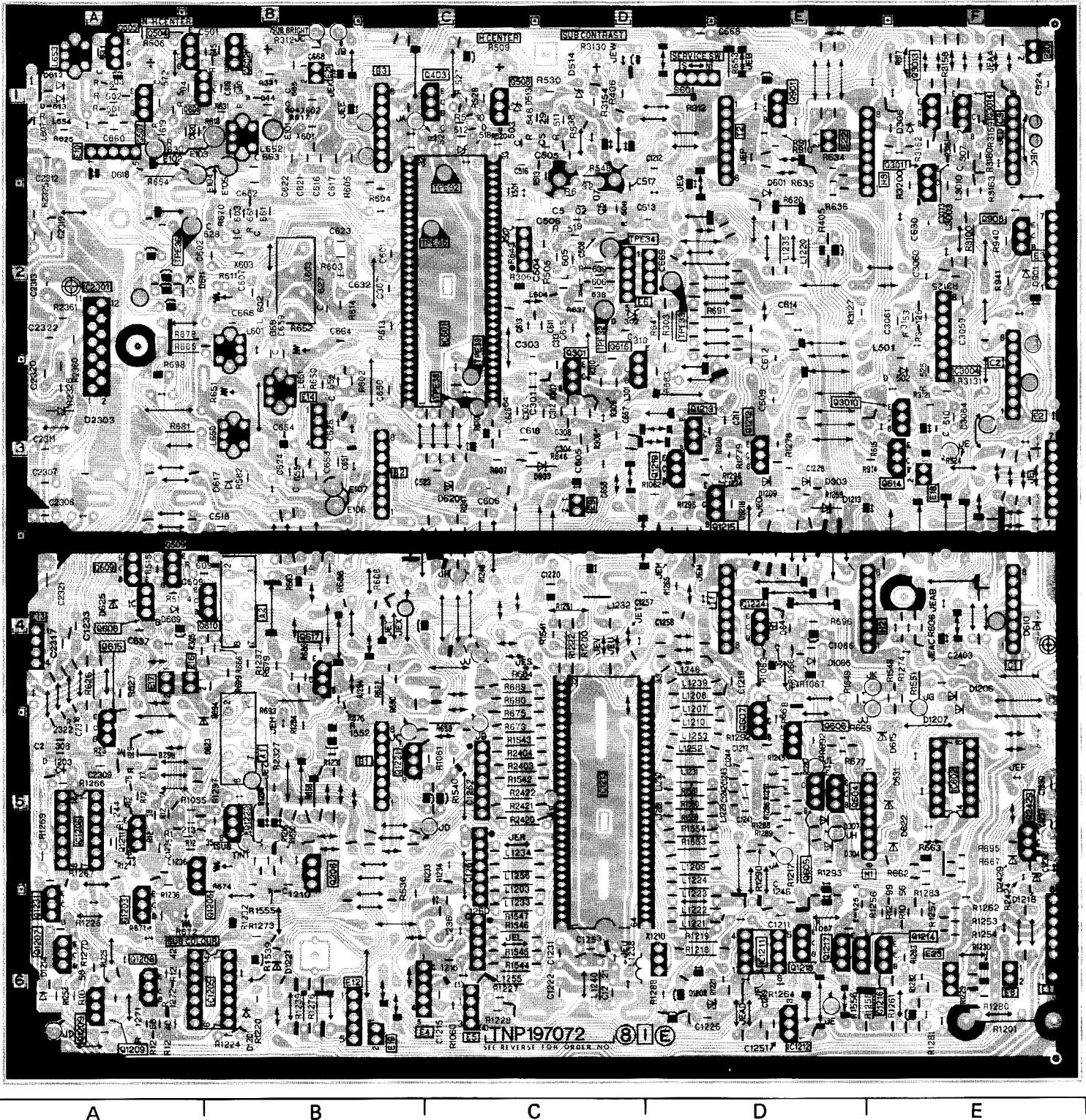
5

4

3

2

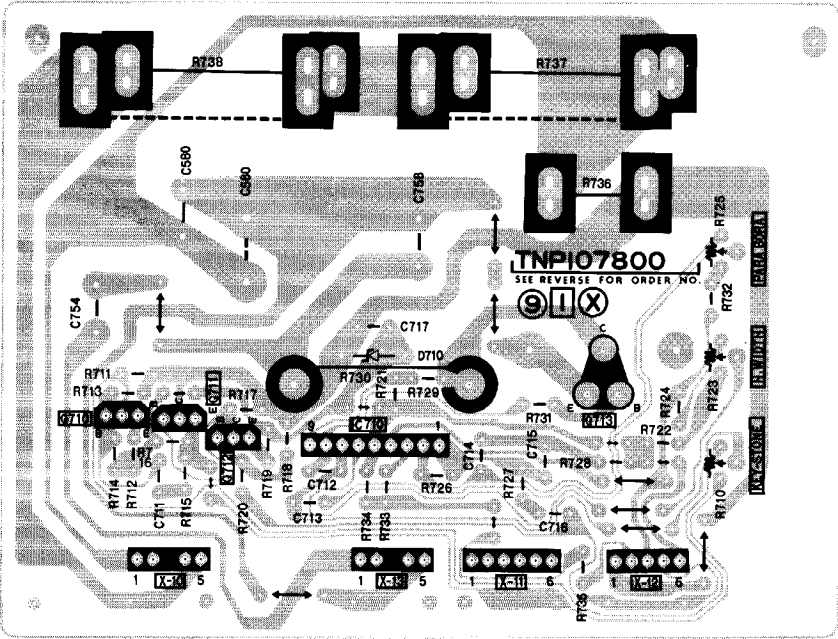
1



X-BOARD TNP107800AC

PARTS LOCATION

E-BOARD	
IC	
IC601	C-4
IC602	E-2
IC1205	B-1
IC1206	A-2
IC1211	D-1
IC1212	D-1
IC1213	C-2
IC2301	A-4
IC3004	E-4
TRANSISTOR	
Q206	B-2
Q301	C-4
Q403	C-5
Q504	A-5
Q505	A-5
Q507	A-5
Q508	C-5
Q509	A-3
Q601	A-5
Q602	B-5
Q604	D-2
Q605	D-2
Q606	D-2
Q607	D-2
Q608	A-3
Q609	A-3
Q610	B-3
Q614	E-3
Q615	A-3
Q616	C-4
Q617	B-3
Q901	D-5
Q908	E-4
Q1203	A-1
Q1205	B-1
Q1207	A-1
Q1208	A-1
Q1209	A-1
Q1211	A-2
Q1212	D-4
Q1213	D-4
Q1214	E-1
Q1215	D-3
Q1216	E-1
Q1217	D-1
Q1218	D-1
Q1219	D-3
Q1220	B-2
Q1221	B-2
Q1231	A-1
Q3010	D-4
Q3011	E-5
Q3013	E-5
Q3014	E-5



D-BOARD TNP107755AS

6

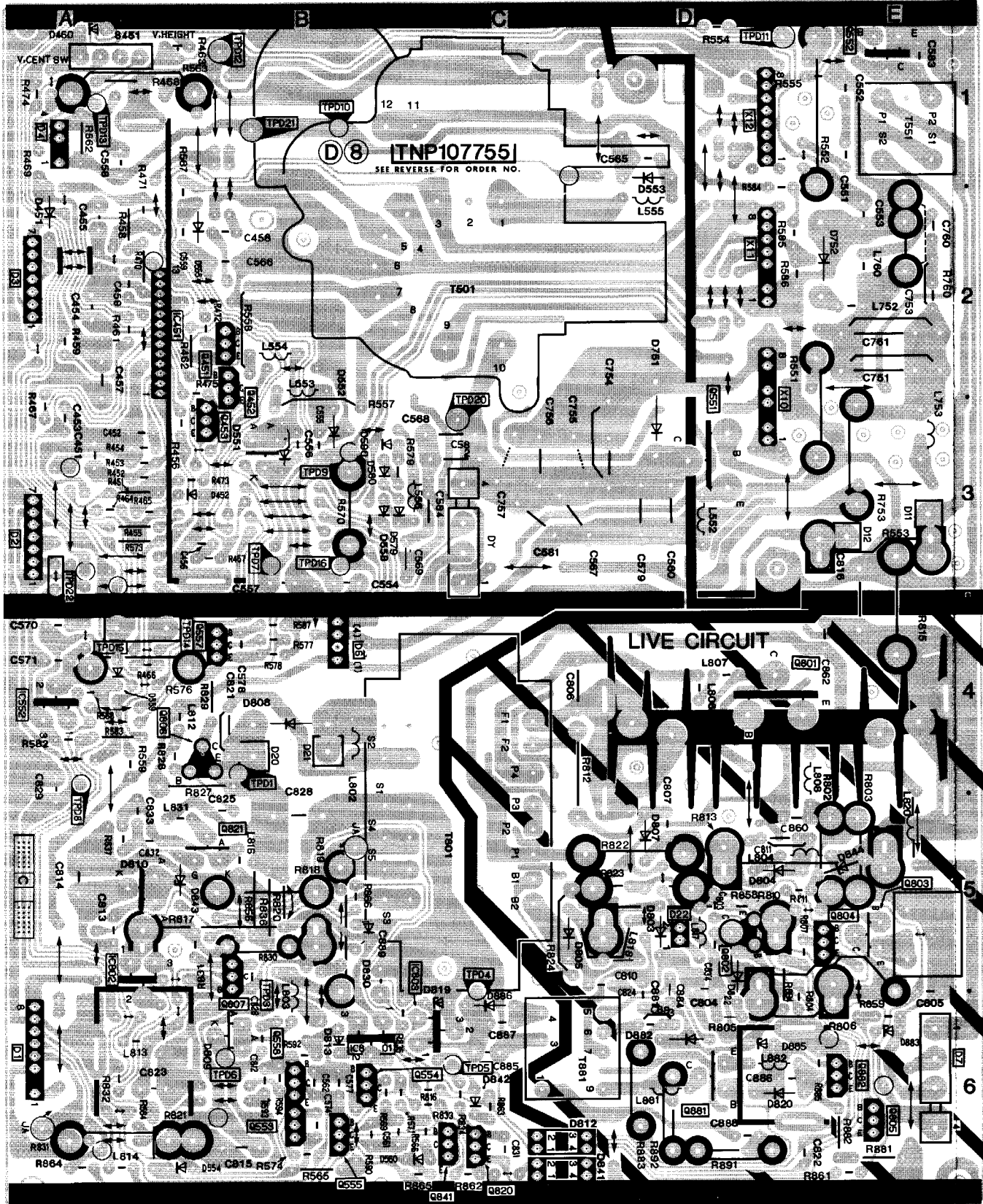
5

4

3

2

1



LIVE CIRCUIT

A

B

C

D

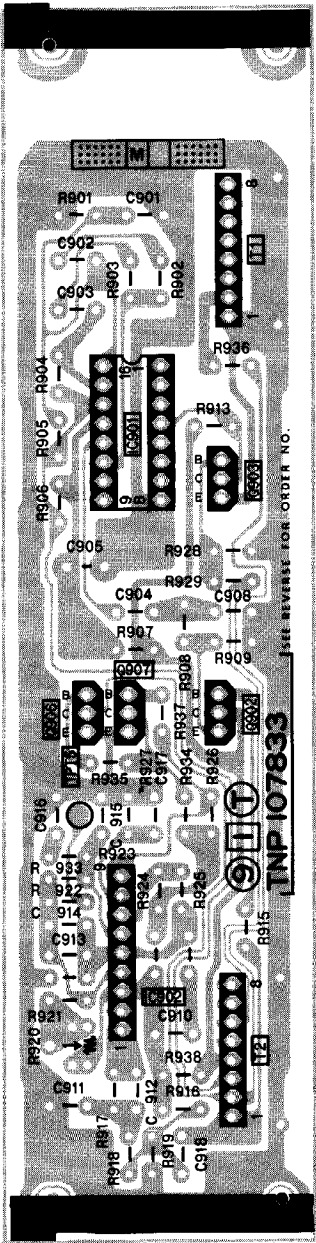
E

PARTS LOCATION

D-BOARD	
IC	
IC451	A-5
IC552	A-3
IC801	B-1
IC802	A-2
IC803	C-2
Transistor	
Q451	B-5
Q452	B-4
Q453	B-4
Q551	D-4
Q552	E-6
Q553	B-1
Q554	C-1
Q555	B-1
Q557	B-3
Q558	B-1
Q801	D-3
Q802	D-2
Q803	E-2
Q804	D-2
Q805	E-1
Q806	A-3
Q807	B-2
Q820	C-1
Q821	B-2
Q841	C-1
Q881	D-1
Q882	E-1

PARTS LOCATION

T-BOARD	
IC	
IC901	H-2
IC902	H-1
IC3501	H-3
IC3502	I-2
IC3503	I-3
IC3506	I-1
IC3507	I-3
Transistor	
Q902	G-2
Q903	H-2
Q906	H-1
Q907	H-1
Q3501	G-2
Q3502	G-2
Q3503	G-3
Q3504	G-3
Q3505	G-3
Q3506	G-2
Q3507	I-4
Q3513	G-1
Q3514	G-2
Q3515	G-2
Q3522	I-3
Q3523	H-4
Q3524	H-4
Q3566	H-1



Components identified by mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.

1. Resistor

Unit of resistance is OHM [Ω] (K=1,000 , M=1,000,000).

Unit of resistance is OHM [Ω] (K=1,000 , M=1,000,000).

- | | | | |
|---|----------------|---|---------------|
| ○ | : Nonflammable | ☒ | : Metal Oxide |
| △ | : Solid | ⊙ | : Metal Film |
| ▧ | : Wire Wound | ⊗ | : Fuse |

2. Capacitor

Unit of capacitance is μF , unless otherwise noted.

- | | | | |
|---|----------------------------|--|-------------------|
| ⊗ | : Temperature Compensation | +  | : Electrolytic |
| M | : Polyester | NP  | : Bipolar |
| Ⓜ | : Metalized Polyester | Ⓣ | : Dipped Tantalum |
| ⊠ | : Polypropylene | Ⓩ | : Z-Type |

3. Coil

Unit of inductance is μH , unless otherwise noted.

4. Test Point

- : Test Point position

5. Earth Symbol

-  : Chassis Earth (Cold)  : Line Earth (Hot)

6. Voltage Measurement

Conditions of the measurement are the following :

Power Source	AC 220V, 50Hz
Receiving Signal	Colour Bar signal (RF)
All customer's controls	Maximum positions

7. Number in red circle indicates waveform number.

(See waveform pattern table.)

8. When arrow mark () is found, connection is easily found from the direction of arrow.

9.  : Indicates the major signal flow.

10. This schematic diagram is the latest at the time of printing and subject to change without notice.

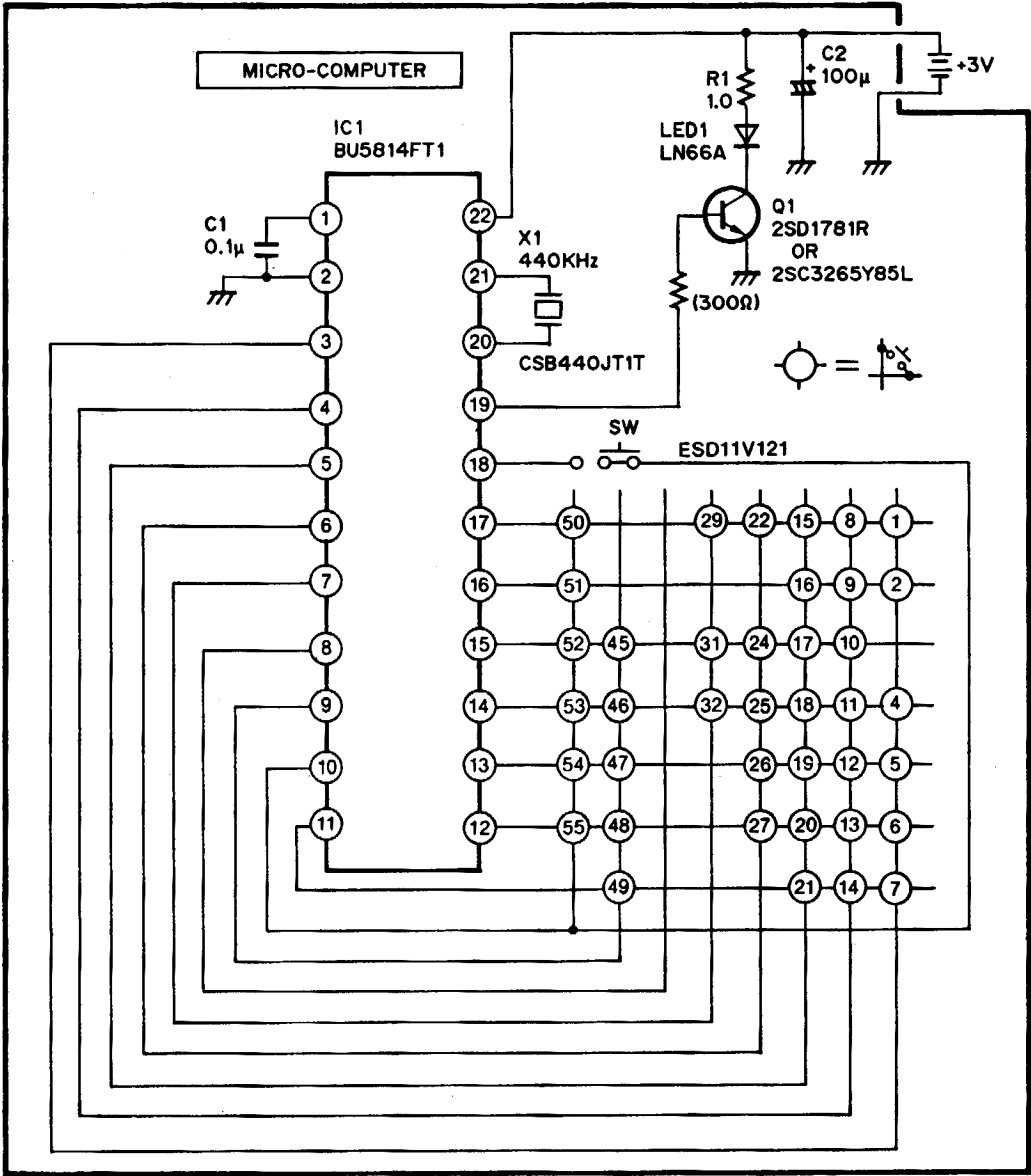
Remarks :

1. The Power Circuit contains a circuit area which uses a separate power supply to isolate the earth connection. The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions. All circuits, except the Power Circuit, are cold.
- Precautions

- Do not touch the hot part or the hot and cold parts at the same time or you may be shocked.
- Do not short-circuit the hot and cold circuits or a fuse may blow and parts may break.
- Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously or a fuse may blow. Connect the earth of instruments to the earth connection of the circuit being measured.
- Make sure to disconnect the power plug before removing the chassis.

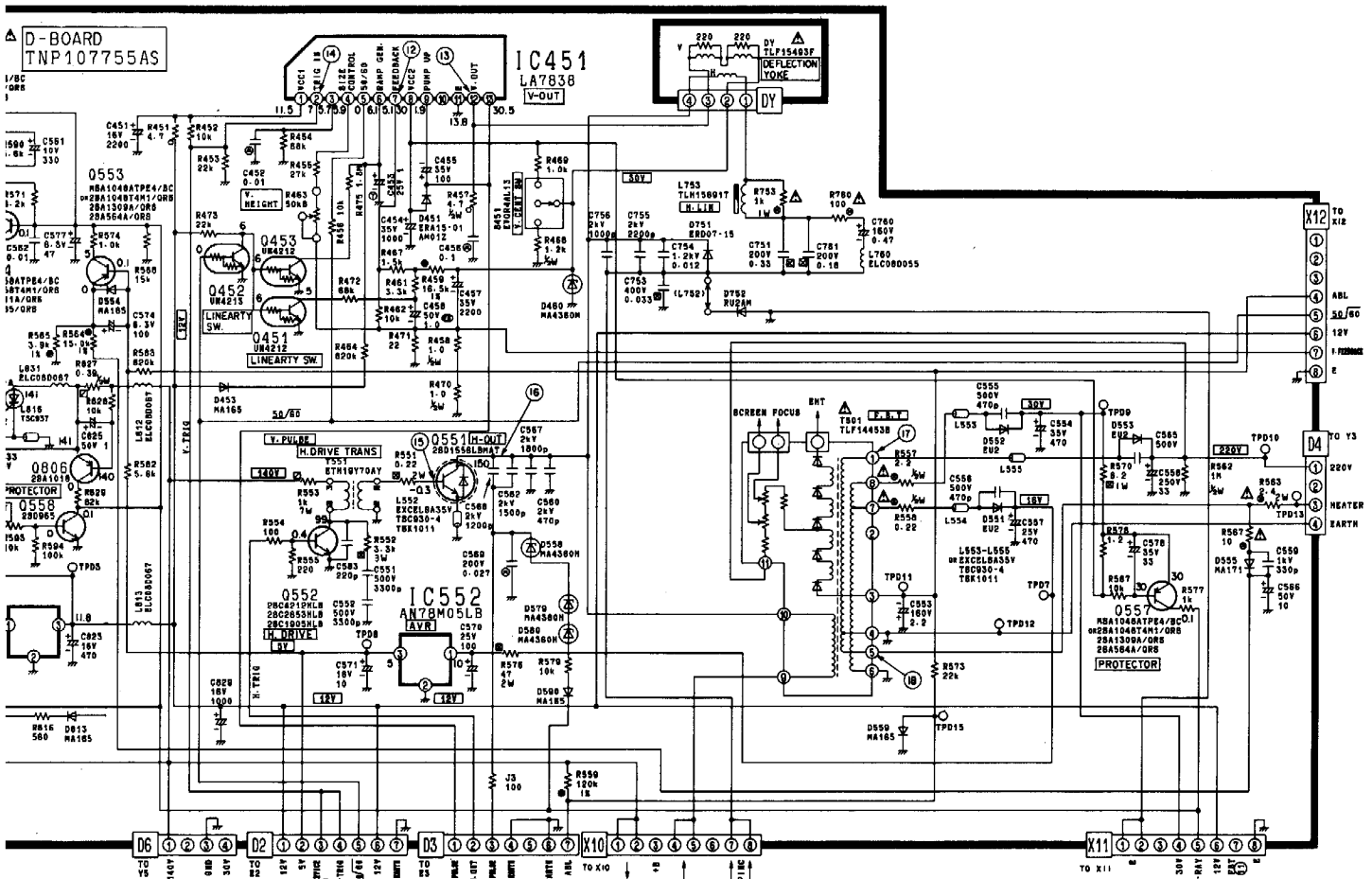
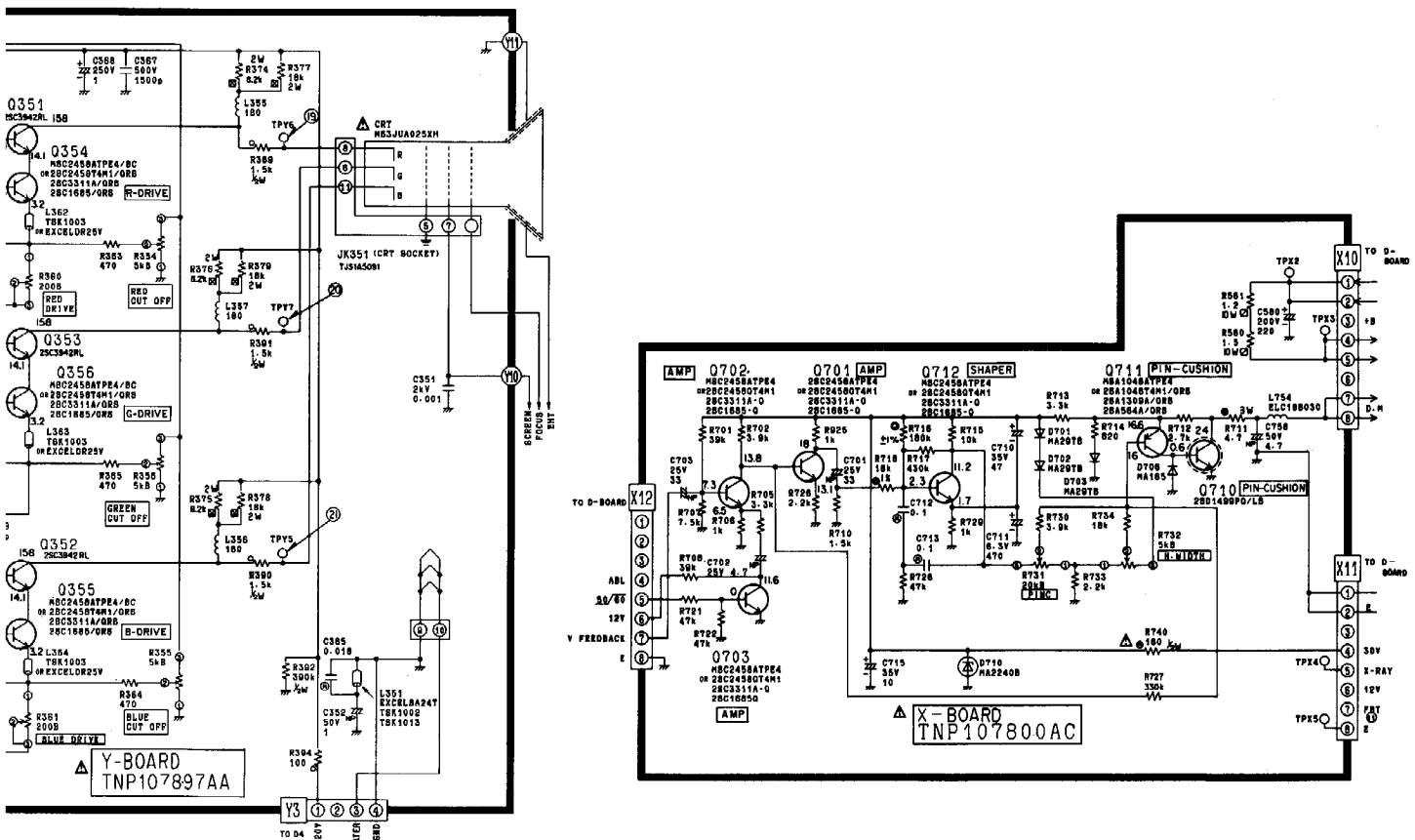
2. Following diodes are interchangeable.
MA150 – MA162 (Replacement part)

Remote Controller EUR50705

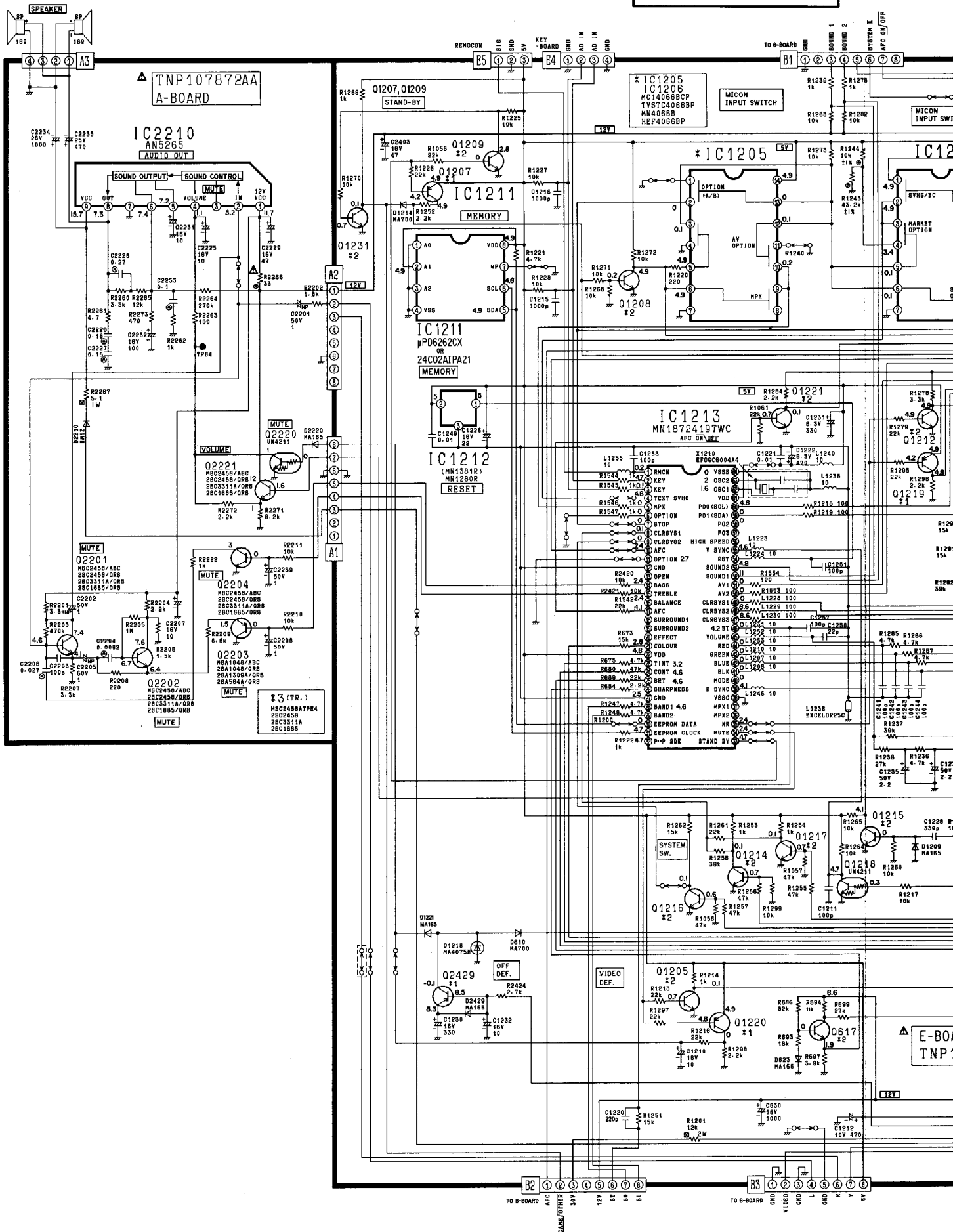


KEY FUNCTION TABLE

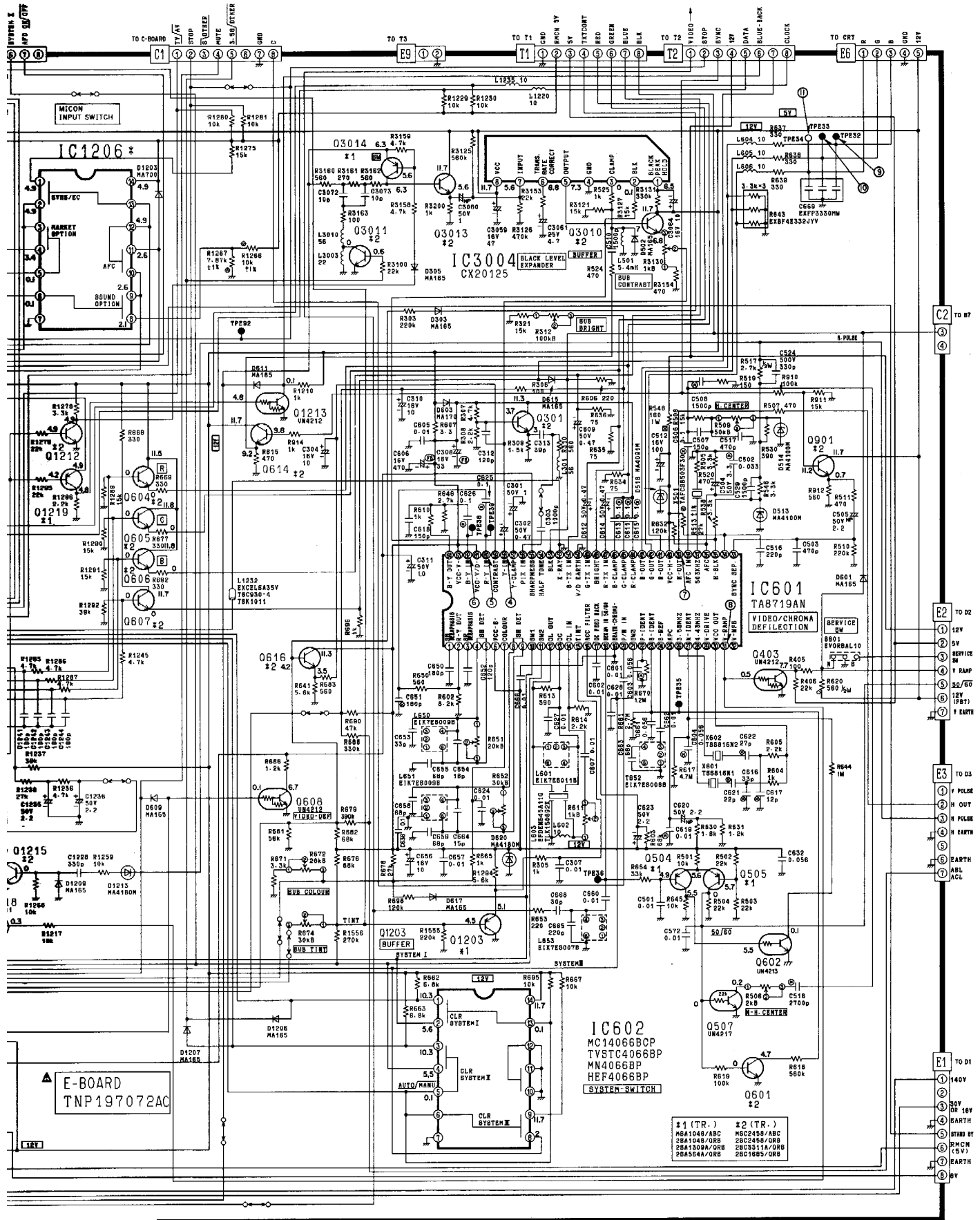
KEY NO.	DATA CODE	FUNCTION	KEY NO.	DATA CODE	FUNCTION	KEY NO.	DATA CODE	FUNCTION
1	0F	OFF TIMER	16	20	VOL. UP.	45	33	SOUND SELECT
2	05	TV/AV	17	39	RECALL	46	35	VCR CH. DN.
—	—	—	18	19	0	47	34	VCR CH. UP.
4	3D	POWER	19	3B	- / - - (2DIGIT)	48	3D	VCR POWER
5	10	1	20	21	VOL. DN.	49	00	VCR STOP
6	11	2	21	07	SOUND FUNC.	50	06	VCR PAUSE
7	12	3	22	08	FUNC. UP.	51	0C	VCR ADVANCE
8	34	CH. UP.	24	0A	NR	52	08	VCR REC.
9	13	4	25	32	MUTE	53	02	VCR REW.
10	14	5	26	06	PICTURE FUNC.	54	0A	VCR PLAY
11	15	6	27	09	FUNC. DN.	55	03	VCR F.F.
12	35	CH. DN.	29	50	PICTURE MENU			
13	16	7	—	—	—			
14	17	8	31	31	SURROUND			
15	18	9	32	0C	NORMAL			

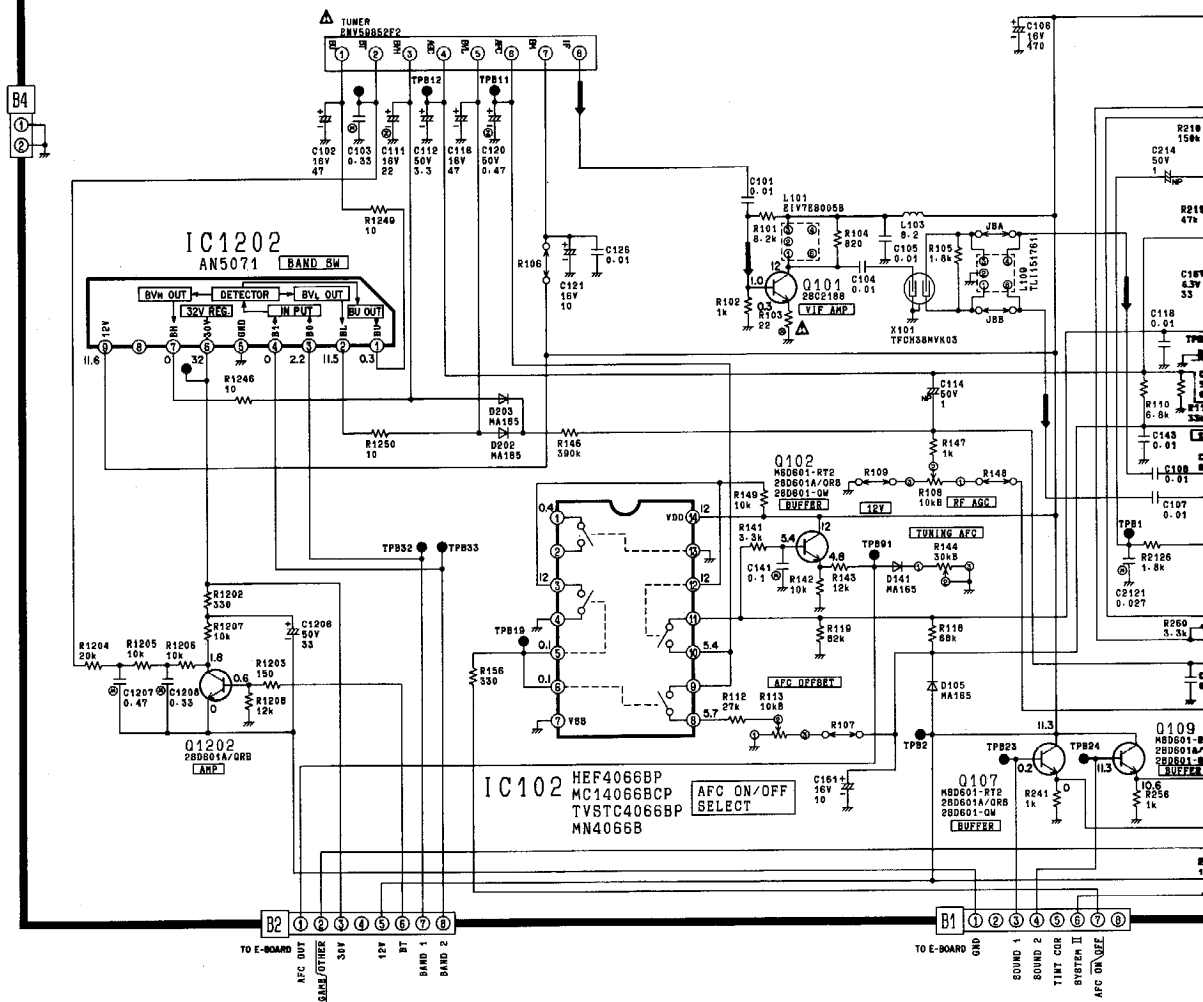
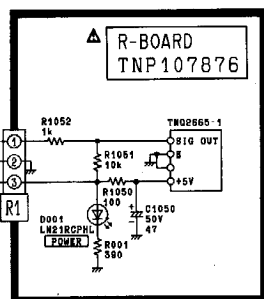


TC-26L1EE



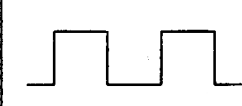
TC-26L1EE



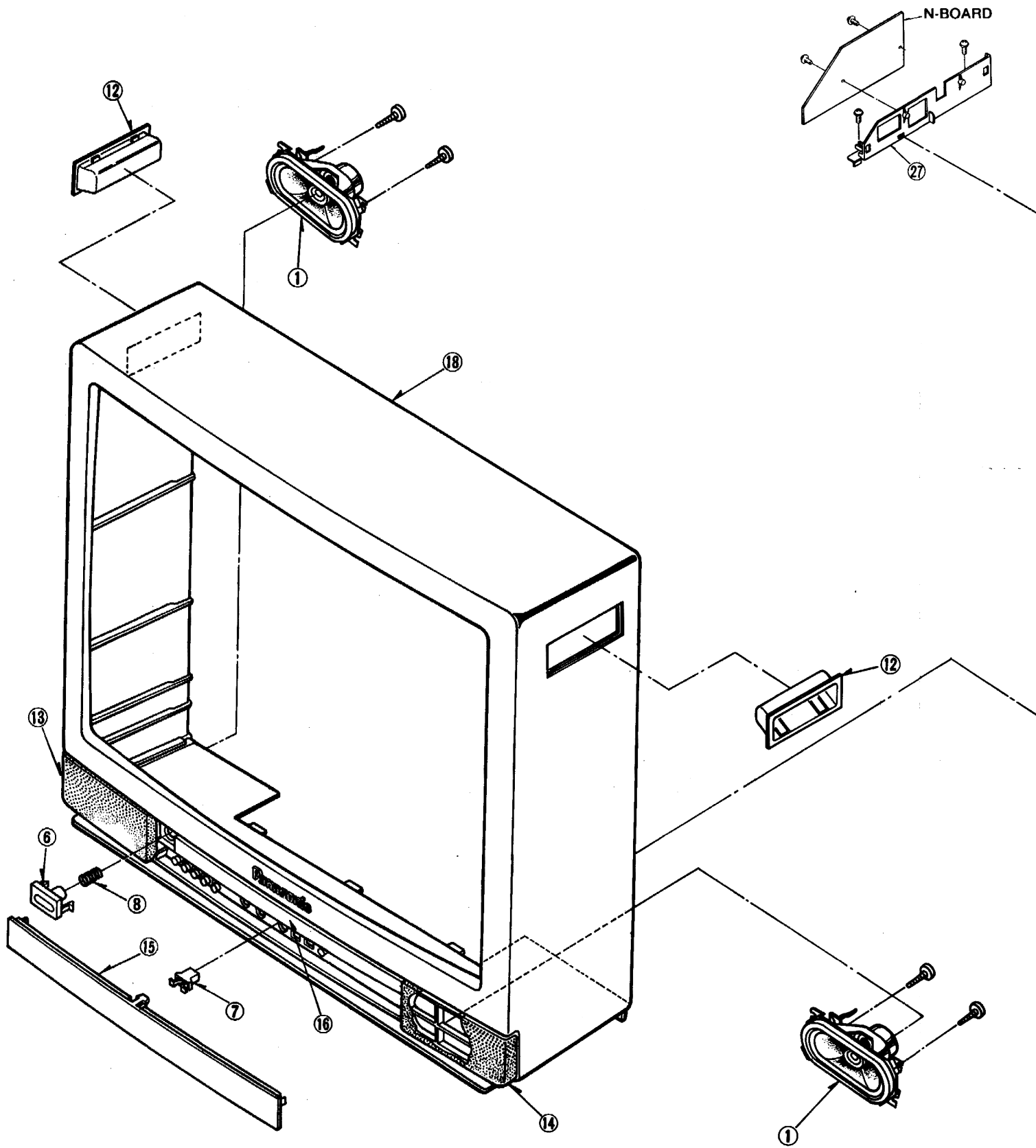


E

WAVEFORM PATTERN TABLE

①  2.5Vp-p (20μs)	②  2.7Vp-p (20μs)	③  0.3Vp-p (20μs)	④  0.5Vp-p (20μs)
⑤  1.2Vp-p (20μs)	⑥  0.76Vp-p (20μs)	⑦  5Vp-p (20μs)	⑧  10Vp-p (5ms)
⑨  3.0Vp-p (20μs)	⑩  3.8Vp-p (20μs)	⑪  4.0Vp-p (20μs)	⑫  3Vp-p (5ms)
⑬  70Vp-p (5ms)	⑭  7Vp-p (5ms)	⑮  15Vp-p (20μs)	⑯  1900Vp-p (20μs)
⑰  500Vp-p (20μs)	⑱  30Vp-p (20μs)	⑲  140Vp-p (20μs)	⑳  148Vp-p (20μs)
㉑  144Vp-p (20μs)			

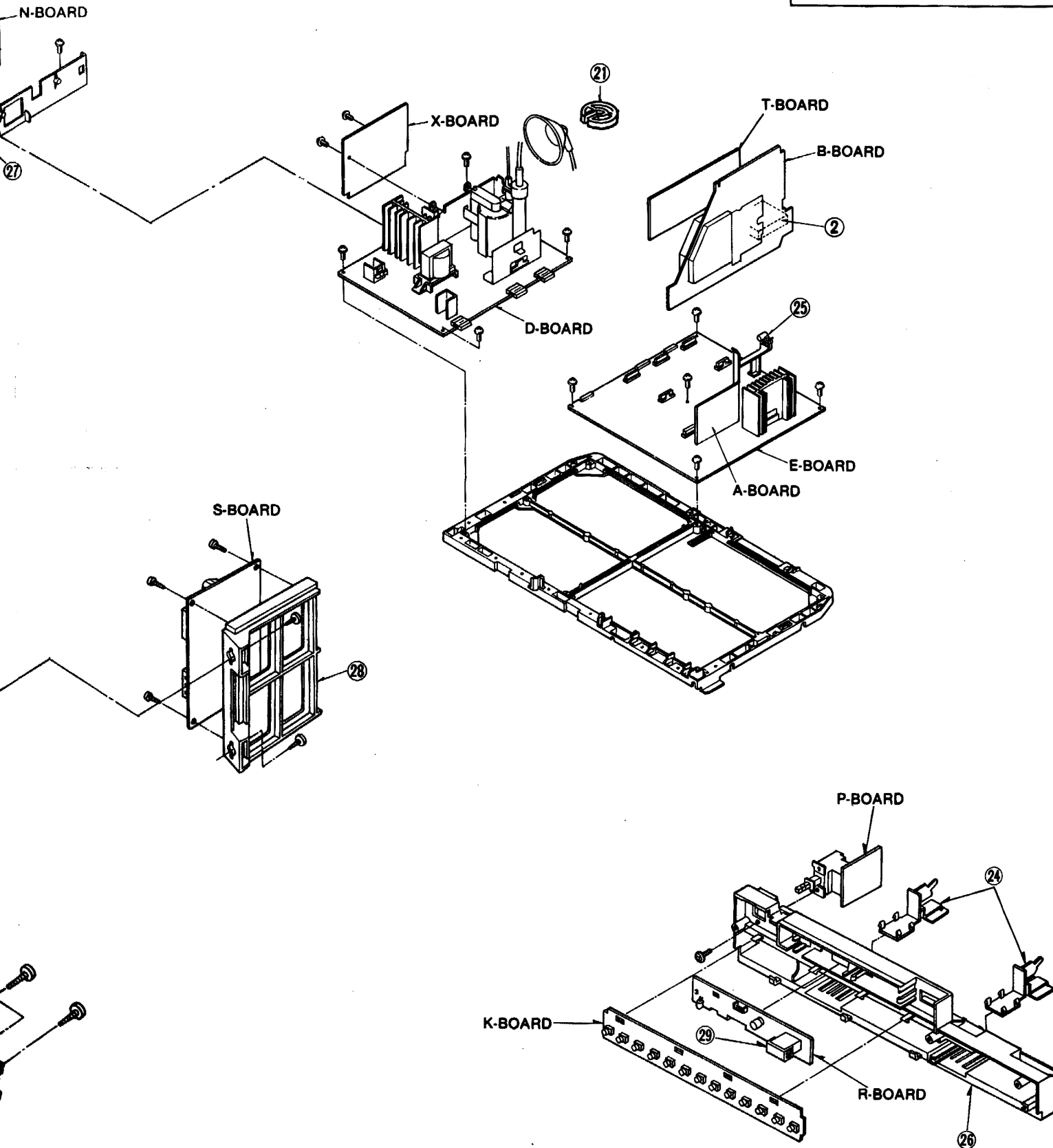
TC-26L1EE



TC-26L1EE

PARTS LIST

Note : The number on mechanical
Replacement Parts List.



PARTS LOCATION

on mechanical parts indicates Ref. No. of
Parts List.

