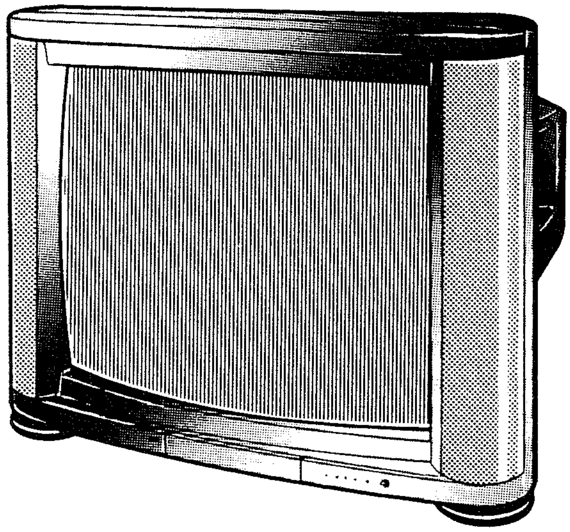
SERVICE DATA
FILE NO. 050-314
28-SYSTEM

TOSHIBA

COLOUR TELEVISION

2909XM



For service information not described in this manual, see the original service data for 2500XM (File No. 050-313).

SPECIFICATIONS

Input Power Rating:	140 watts (nominal), AC 110~245 volts, 50 / 60 Hz
Aerial Input Impedance:	75 ohm unbalanced type VHF and UHF
Receiving Channels:	**PAL B / G, SECAM B / G system**
	VHF channels .... channels 2 to 12
	UHF channels .... channels 21 to 69
	PAL D / K, SECAM D / K, K1 system
	VHF channels .... channels 1 to 12
	UHF channels .... channels 21 to 69
	PAL I system
	UHF channels .... channels 21 to 69
	NTSC standard (US M, JAPAN M) system
	VHF channels .... channels 2 to 13 / 1 to 12
	UHF channels .... channels 14 to 78 / 13 to 62
	CATV BAND
	PAL B/G, SECAM B/G .... X ~ Z (S1 ~ S3), M1 ~ M10 (S1 ~ S10), U1 ~ U10 (S11 ~ S20)
	NTSC-M .... A-6 ~ A-1, A ~ I, J ~ W
Intermediate Frequencies:	Picture I-F carrier frequency .... 38.0 MHz
	Sound I-F carrier frequency .... 33.5 / 32.5 / 32.0 / 31.5 MHz
Picture Tube:	29 inches, A68KHP96X (68 cm measured on diagonal of viewable picture area), 110° Deflection
Sound Output:	Main: 10 watts x 2 Woofer: 20 watts Surround: 10 watts
Speakers:	Main: 60 mm x 90 mm 4 pcs, 40 mm round 2 pcs Woofer: 120 mm 1 pc
Dimensions:	Height .... 584 mm
	Width .... 754 mm
	Depth .... 495 mm
Weight:	46 kg
Features:	Clearness tube, VIDEO and AUDIO input / output terminals, S-VIDEO input terminals, Surround audio system, Off timer, Remote Control

Specifications are subject to change without notice.

Printed in Japan Jun, 1990 (So)

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 30.4kV at zero beam current (minimum brightness) under 110 ~ 245V AC power source. The high voltage must not, under any circumstances, exceed 32kV.
   Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

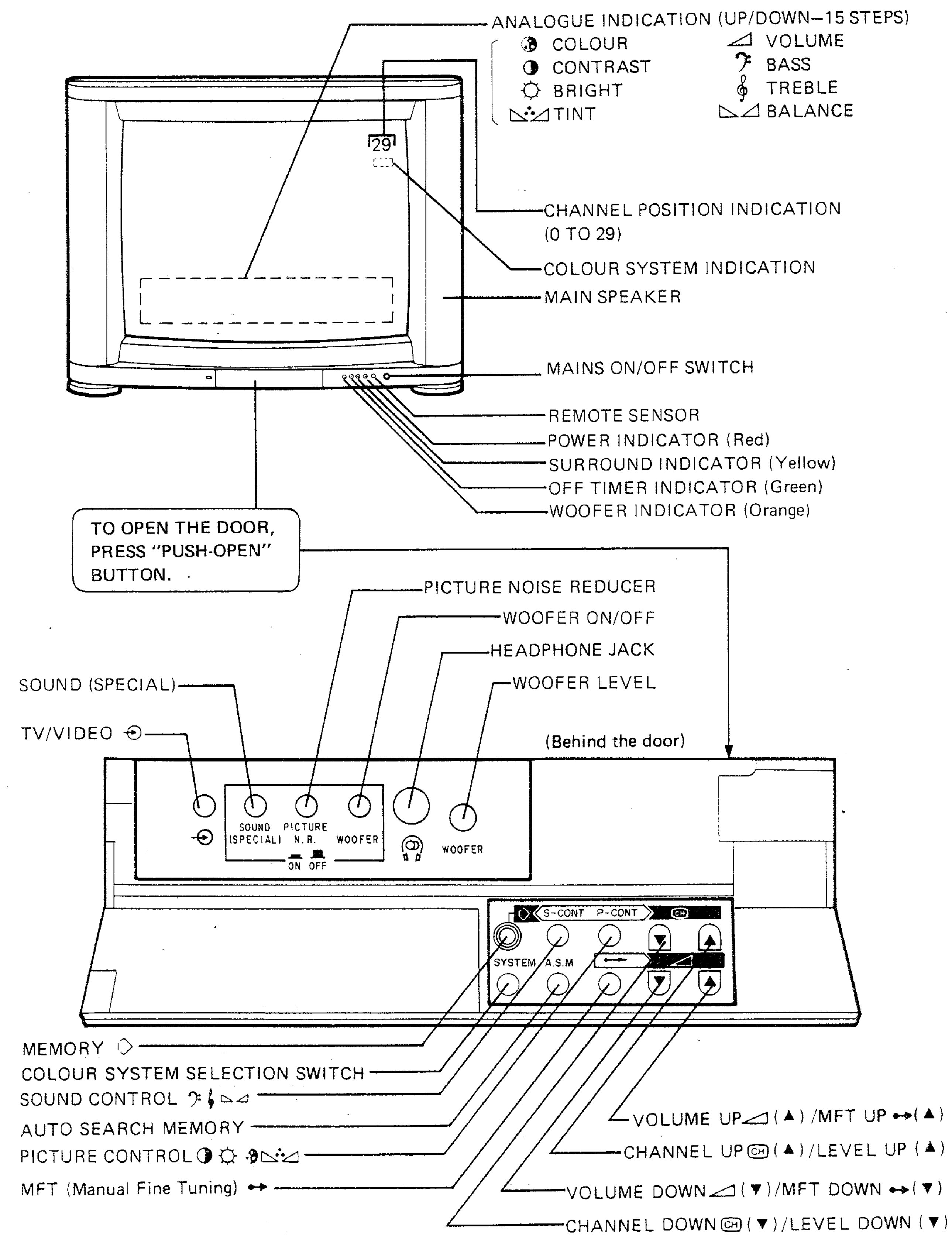
1. Potentials as high as 30.4kV are present when this receiver is operating. Operation of the receiver outside the cabinet or with back board removed involves a shock hazard from the receiver.
   1. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
   2. Alway discharge the picture tube anode to the receiver chassis to keep off the shock hazard before removing the anode cap.
   3. Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.
2. If any Fuse in this TV receiver is blown, replace it with the Fuse specified in the chassis parts list.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. This receiver can be operated under AC 110 ~ 245 volts, 50/60Hz. NEVER connect to DC supply or any other power.

PRODUCT SAFETY NOTICE

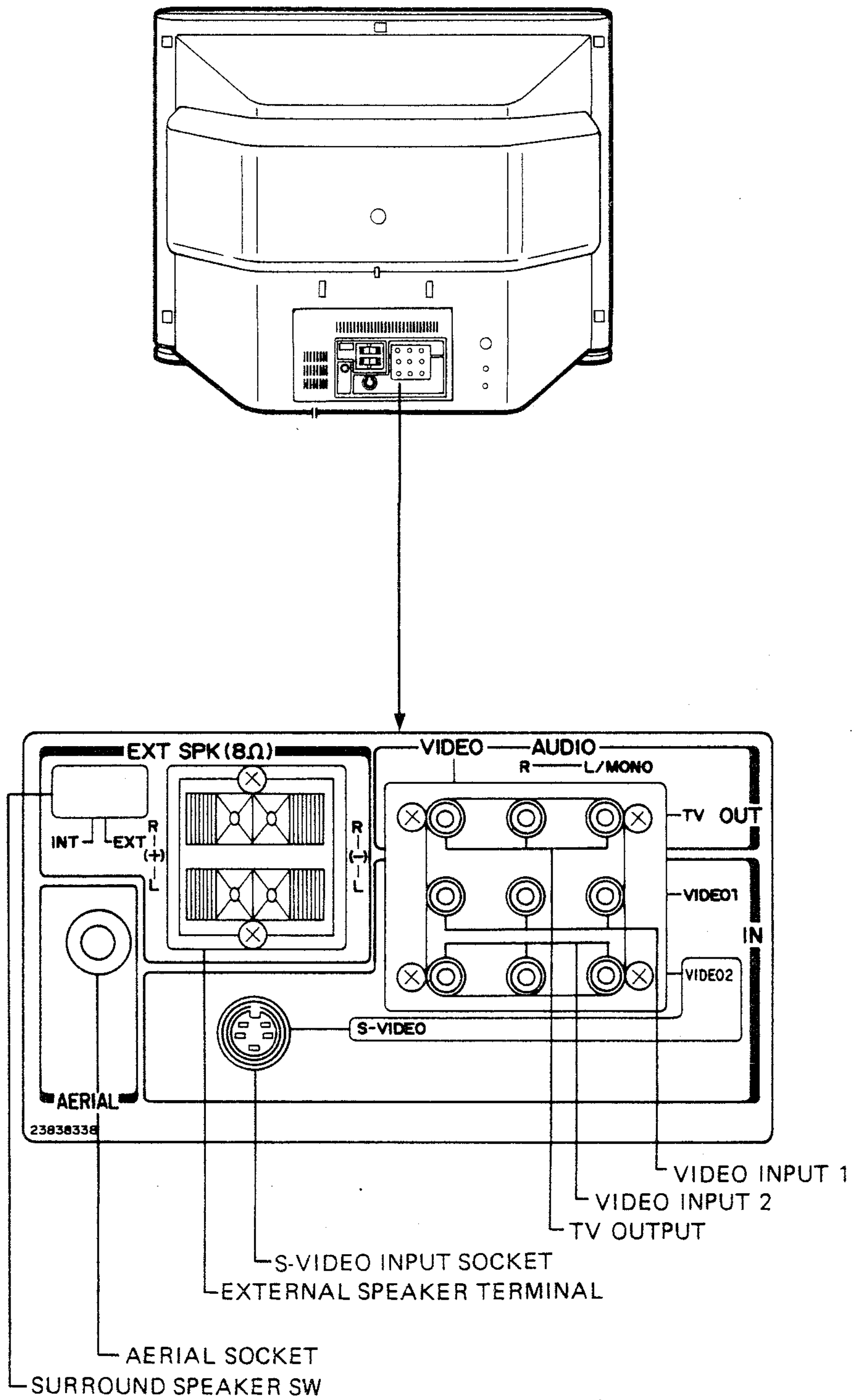
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

LOCATION OF CONTROLS

■ FRONT

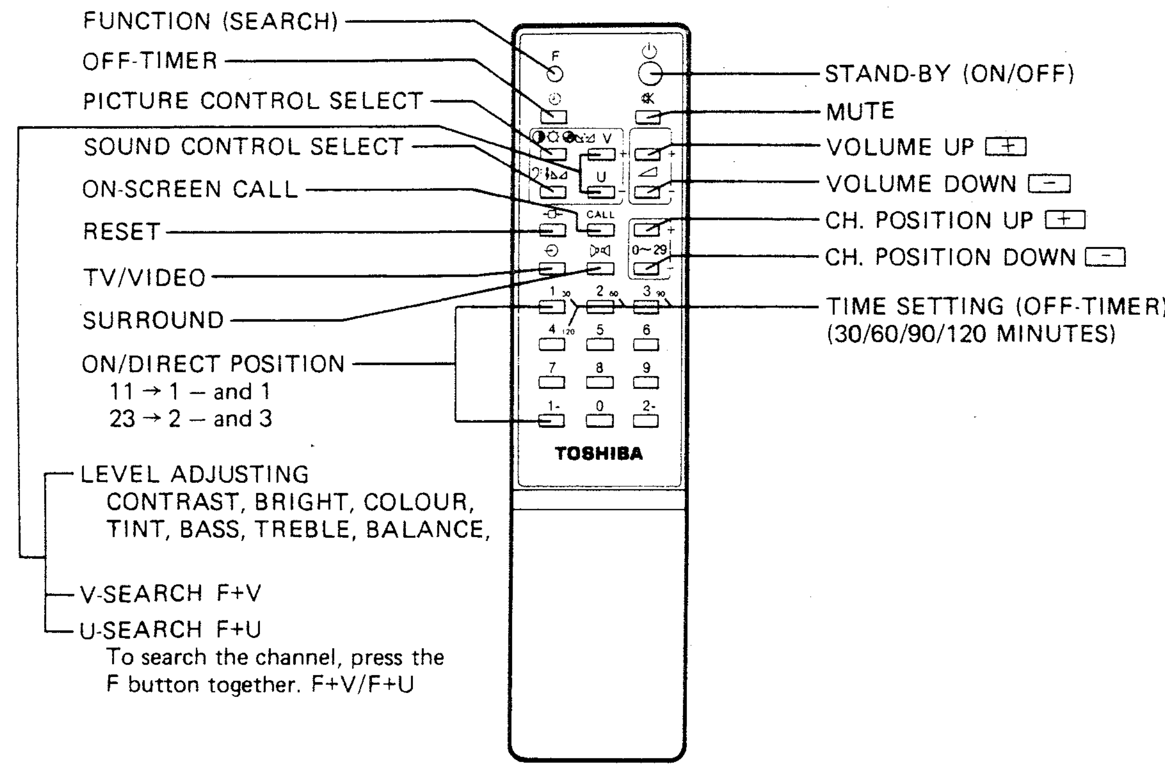


■ BACK



LOCATION OF CONTROLS

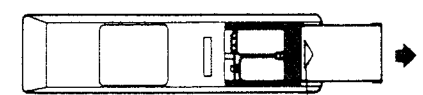
■ REMOTE CONTROL HAND UNIT



Before operating

INSTALLING THE BATTERIES

1. Remove the battery cover.
2. Insert the two "AA" (pencil size) 1.5V batteries making sure the polarity (+ or –) of the batteries matches the polarity marks inside the unit.
3. Close the battery cover.

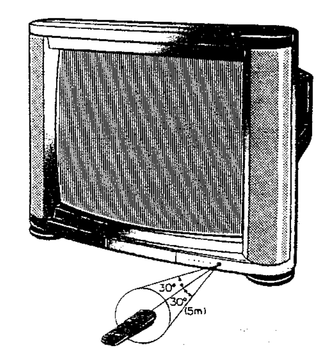


Press and slide to open.

TIPS FOR REMOTE OPERATION

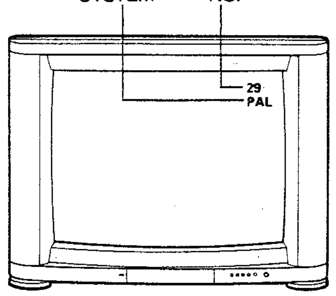
- If intermittent remote control operation occurs, replace the batteries according to "INSTALLING THE BATTERIES."
- The battery life should be about a year under normal use.
- When the Remote Control Hand Unit is not used for a long period of time or when the batteries are worn out, take out the batteries to prevent liquid leak.
- Do not throw the batteries into a fire. Dispose of used batteries in the specified places.
- Take care not to drop, dampen, disassemble the Remote Control Hand Unit.

Effective Range



SYSTEM SELECTION

This TV receiver can receive 28 systems.



SYSTEM SWITCH OPERATION

AUTO → PAL → SECAM → 443NTSC → 358NTSC

SOUND (SPECIAL) SWITCH

In reception of sound multi broadcast (NICAM SYSTEM), when disturbance occurs, the switch is set to the ON side.

Receiving Systems	
28 System	**Function**
1. PAL B/G	Reception of broadcast and playback for video cassette recorder
2. PAL I	
* 3. PAL D/K	
4. SECAM B/G	
* 5. SECAM D/K, K1	
6. NTSC M	
7. NTSC 4.43/5.5MHz	Playback for special video cassette recorder
8. NTSC 4.43/6.0MHz	
9. NTSC 4.43/6.5MHz	
10. NTSC 3.58/5.5MHz	
11. NTSC 3.58/6.0MHz	
12. NTSC 3.58/6.5MHz	
13. SECAM I (6.0MHz)	
14. SECAM L-Video In	
15. S-VIDEO IN PAL	
16. S-VIDEO IN SECAM	
17. S-VIDEO IN SECAM-L	
18. S-VIDEO IN 4.43NTSC	
19. S-VIDEO IN 3.58NTSC	
20. VIDEO IN 50/60	
21. S-VIDEO IN 50/60	
22. NTSC 3.58/4.5MHz/50Hz	Playback for special video disk, CDV player
23. PAL 5.5MHz/60Hz	
24. PAL 6.0MHz/60Hz	
25. PAL 6.5MHz/60Hz	
26. SECAM 5.5MHz/60Hz	
27. SECAM 6.0MHz/60Hz	
28. SECAM 6.5MHz/60Hz	

RECEIVING SYSTEM

- **AUTO** All signals of 28 systems can be received.
- **PAL** PAL Signal can be received.
- **SECAM** SECAM Signal can be received.
- **443NTSC** Signal from VCR on 4.43NTSC can be received.
- **358NTSC** 3.58NTSC signal can be received. U.S. CHANNEL, JAPAN CHANNEL (PHILIPPINES, KOREA)

Note:
Colour system indication is displayed in green when the TV is switched on automatic mode and in cyanic when switched on manual mode.

Receiving channels

- Regular TV VHF BAND
  2 – 12 (PAL/SECAM – B)
  1 – 12 (PAL/SECAM – D)
  2 – 9 (SECAM – K1)
  2 – 13 (NTSC – M) US
  1 – 12 (NTSC – M) JAPAN
- Regular TV UHF BAND
  21 – 69 (PAL/SECAM – G, PAL I)
  21 – 69 (SECAM – K)
  13 – 56 (PAL – K)
  14 – 78 (NTSC – M) US
  13 – 62 (NTSC – M) JAPAN
- CATV BAND
  X ~ Z (S01~S03)
  M1 ~ M10 (S1-S10) (PAL/SECAM – B, G)
  U1 ~ U10 (S11-S20)
  A-6 ~ A-1
  A ~ 1 (NTSC – M)
  J ~ W

Mark * indicates the case when the SOUND (SPECIAL) SWITCH is set to OFF.

COUNTERMEASURES AGAINST MALFUNCTION IN FRINGE AREA

1. In Case Abnormal Signals Were Memoried by Auto Search

If you mind this, reset the memory by MFT (Manual Fine Tuning) from the position after the one where the abnormal signals were memorized.

2. System Selection When System Malfunction Occurs

System malfunction may occur in auto maode when unfavourable receiving conditions prevail. In this event, use manual mode which matches the system of receiving signals.

Example:
(1) In the case of receiving successive channels.
(2) In using video tape reproduced repeatedly.
(3) When receiving different systems in the vicinity of border where receiving conditions are bad.
(4) In the area where strong and week electric fields are mixed in the channels.

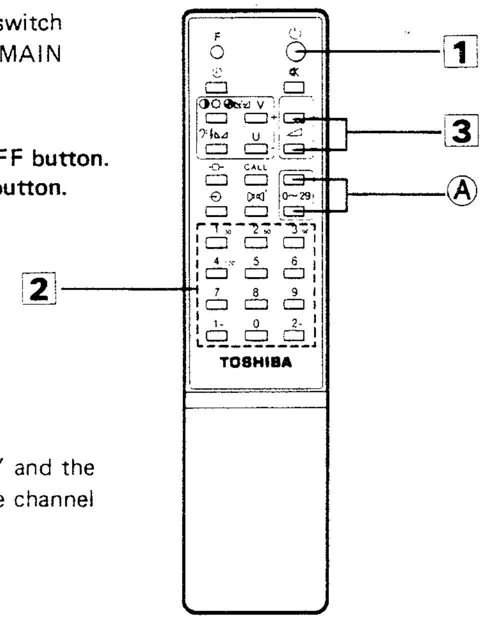
TV PROGRAM RECEPTION

WHEN USING REMOTE CONTROL HAND UNIT

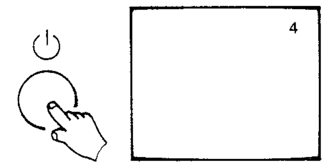
SET UP

Press the switch: Indicator lamp will be lit and the TV set is ready for viewing.
To turn off the TV: Press the button again.

- Once the MAIN ON/OFF switch is turned on, you can remote-control the TV set.
- If the TV turned off by pressing the MAIN ON/OFF switch on the TV set, it will be turned "on" by pressing the MAIN ON/OFF switch only.

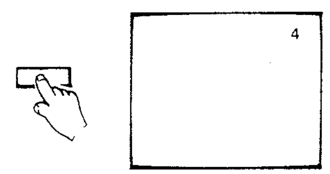


1 The TV set is turned on and off by pressing the ON/OFF button. Also it is turned "on" directly by pressing a POSITION button.



Press the button: The TV set will be turned "on" and the picture of previously viewed the channel is seen.
To turn off the TV: Press the button again.

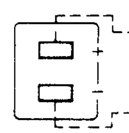
2 Channel is tuned by pressing the CHANNEL button.



The picture will be changed over, and you will have the position No. displayed on the screen for a few seconds.

- When position No. is in 2 digits (10 to 29), stay pressing 1- or 2- buttons and press the button of the last number.

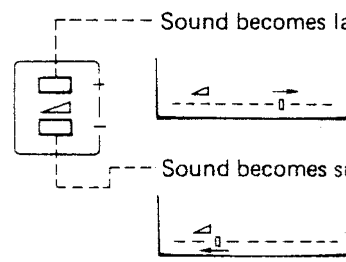
- Channel change can be performed by CHANNEL buttons Ⓐ as well.



Change will take place in the direction from 0 to 29 0 → 1 ------------ 28 → 29

Change will take place in the direction from 29 to 0. 29 → 28 ------------ 1 → 0

3 Sound volume is adjusted by VOLUME buttons



Sound becomes larger

Red square shifts rightwards, and the sound becomes larger.

Sound becomes smaller

Red square shifts leftwards, and the sound becomes smaller.

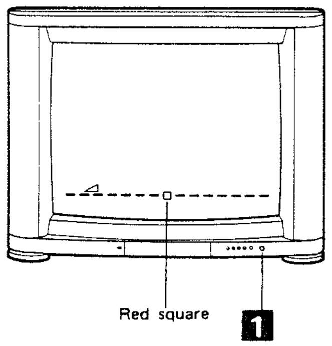
■ CONTROLLING THE TV SET PROPER

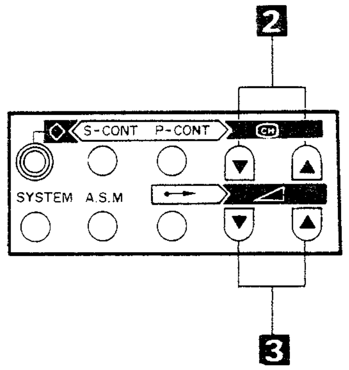
- In case the Remote Control Hand Unit is not near at hand, or batteries have been used up, you can control the TV on the receiver proper.

1 The TV set is turned on and off by operating the MAIN ON/OFF switch.

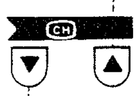
Press it: The TV set is turned on.
To turn off: Press the switch again.

Note: When the TV set is not turned on with the MAIN ON/OFF switch pressed, press the VOLUME buttons 3 or the CHANNEL buttons 2.





2 Channel is tuned by the CHANNEL buttons (behind the door)



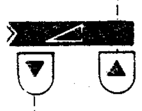
Change will take place in the direction from 0 to 29.

0 → 1 ············ 28 → 29

Change will take place in the direction from 29 to 0.

29 → 28 ············ 1 → 0

3 Sound volume is adjusted by VOLUME buttons (behind the door)



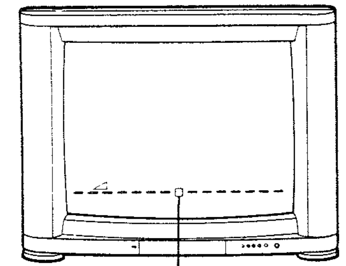
Sound becomes larger
The sound becomes larger, with the red square on the screen shifting rightwards.

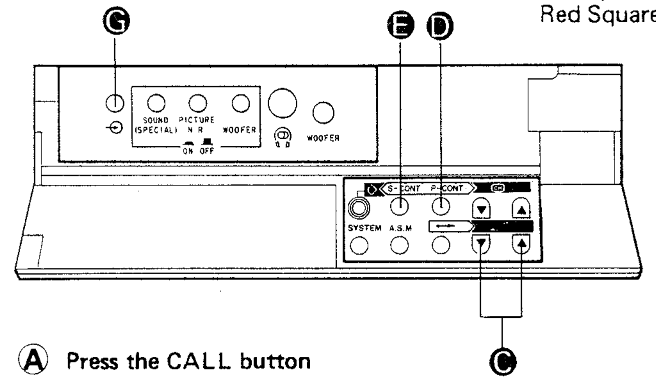
Sound becomes smaller
The sound becomes smaller, with the red square on the screen shifting leftwards.

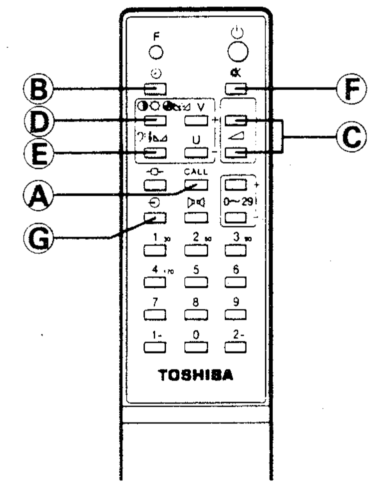
Notes:
- In operating the Remote Control Hand Unit, direct it toward the receiving section of the receiver.
- Even if power is turned off by pressing the POWER button on the Remote Control Hand Unit, a trace of electric current stays flowing in the TV set. If television is not viewed for a long time, turn off the MAIN ON/OFF switch. When going out, take out the power plug from the wall outlet.

AUXILIARY FUNCTIONS

■ YOU MAY HAVE OPERATING CONDITIONS DISPLAYED ON THE SCREEN

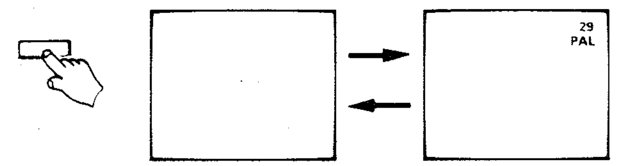






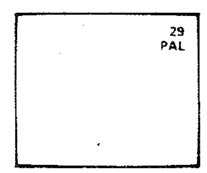
(A) Press the CALL button

- The display and erasure will alternate each time the pushbutton is pressed.

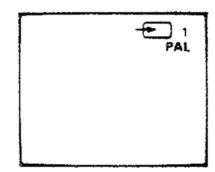


■ Displays on the screen:

Channel number
- Is displayed in position Nos. from 0 to 29.
  The receiving system at the time is also displayed.

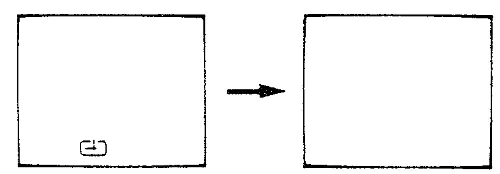


Video
- In video mode, display is made either by ⇥ 1 or ⇥ 2.
  The receiving system at the time is also displayed.

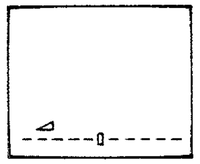


(B) Press OFF TIMER button

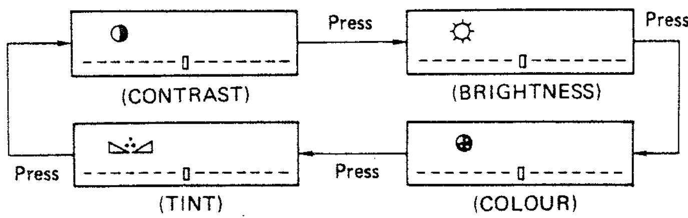
- The remaining time of the OFF TIMER will be displayed when the timer is reserved. And the display will disappear if you press the button again.



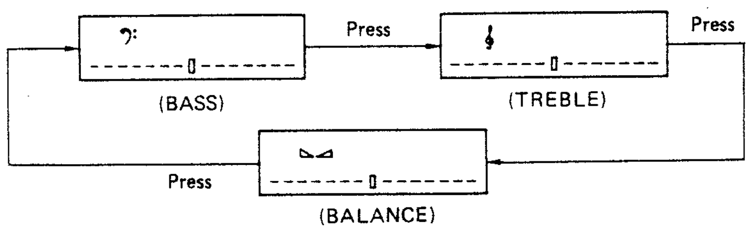
Ⓒ Sound Volume buttons



Ⓓ Press the PICTURE CONTROL button



Ⓔ Press the SOUND CONTROL INDICATION

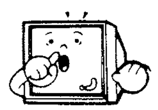


■ THE SOUND CAN BE MUTED TEMPORARILY

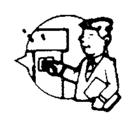
- **This feature is useful:**

During phone call.

Be silent!



When receiving a visitor.



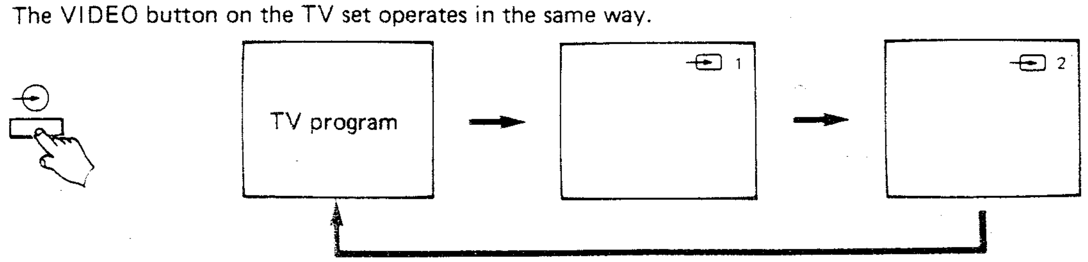
Ⓕ Press MUTE button

- The sound mute and restoration will alternate each time the button is pressed.
- The muting will be cancelled by pressing either POWER, CHANNEL, VOLUME, VIDEO, SURROUND LEVEL, SEARCH, ASM, or SYSTEM button.

■ IF YOU WANT TO ENJOY VIDEO APPLIANCES

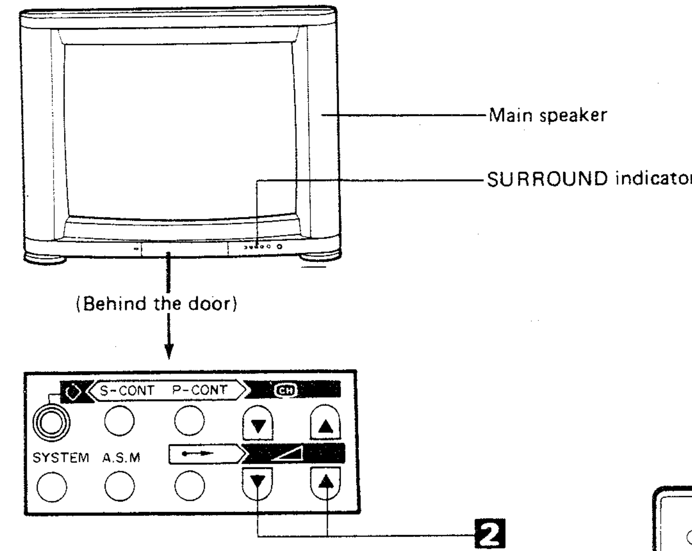
Ⓖ Press VIDEO button

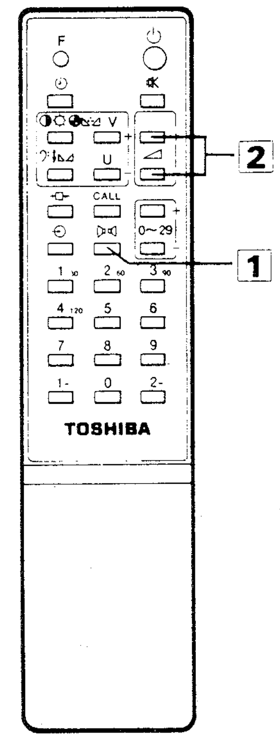
- Each time the video button is pressed, selection will be changed over in sequence.
- The VIDEO button on the TV set operates in the same way.



- If you press the CHANNEL button (0 to 29), the channel is changed over to the selected one.

SURROUND AUDIO SYSTEM





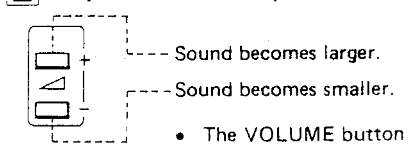
■ WHEN ENJOYING REALISM OF SPREADING SOUND (SURROUNDING EFFECT)

1 **Press the SURROUND button**

Press the button: The effect is turned on.
The indicator lamp comes on.

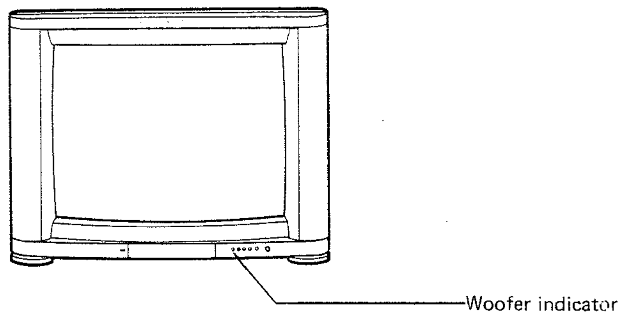
To turn off: Press the button again.

2 **Adjust sound volume by the VOLUME buttons.**

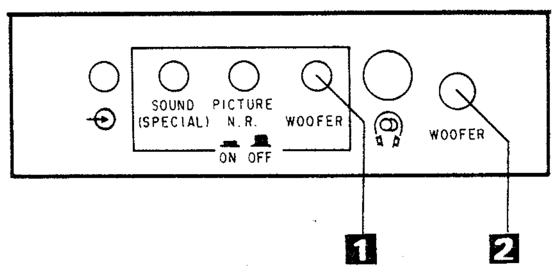


- The VOLUME button on the TV set operates in the same way.

SUPER WOOFER SYSTEM



(Behind the door)



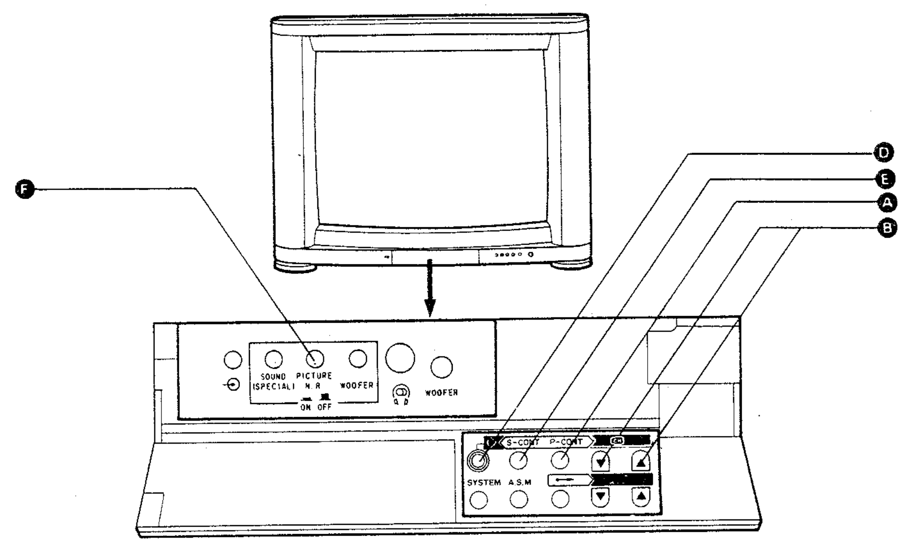
1 Press the WOOFER button.

Press the button: The effect is turned on.
The indicator lamp comes on.

To turn off: Press button again.

2 Adjust woofer level by the woofer volume.

PICTURE AND SOUND CONTROLS



■ PICTURE CONTROL

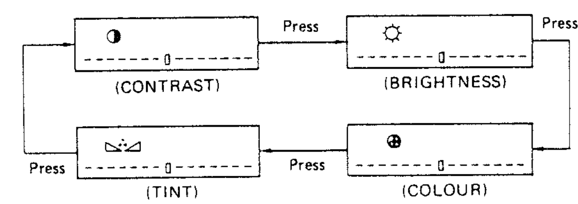
(CONTRAST, BRIGHTNESS, COLOUR, TINT)

To adjust picture for your preference, first select a function by the PICTURE Button Ⓐ A, then adjust the level by the LEVEL Buttons Ⓑ B.

- **FUNCTION SELECT**

  Press the PICTURE Button Ⓐ A to select a function to be adjusted among CONTRAST, BRIGHTNESS, COLOUR, TINT. One pressing shifts the function to the next one as shown below.

PICTURE CONTROL INDICATION



- **LEVEL ADJUSTMENT**

1. After the function selection above, immediately (within 4 seconds) press the ▲ (+) ▼ (–) Button of LEVEL Buttons Ⓑ B
   Press continuously to shift the level to the next step, and release the button at your preferred picture.
   The LEVEL Buttons are effective only during the selected function is displayed.
2. Above display will disappear if no additional pressing of CONTROL or LEVEL (▲ / ▼) Button is done within 4 seconds.
3. The last adjusted value will be stored into memory when LEVEL (▲ or ▼) Button is released.
4. The RESET (→□←) Button Ⓒ C resets the level corresponding to picture control function (CONTRAST, BRIGHTNESS, COLOUR and TINT) to the value which is previously programmed by customers.
   In order to program the reset value, press the MEMORY (○) Button Ⓓ after adjusting each function.
5. Adjustment steps and indication:
   Each function can be adjusted with 64 steps and it's approx. adjusted value is displayed with 15 steps.

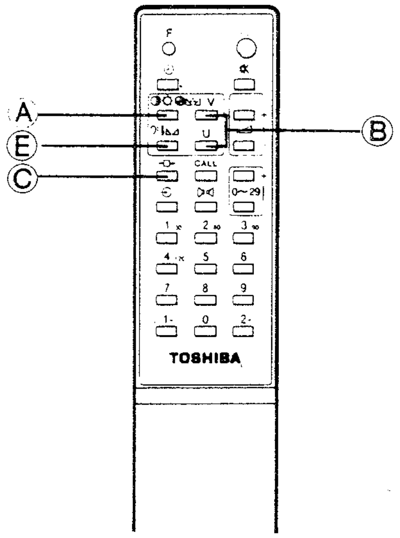
	FUNCTION	ON-SCREEN ADJUSTMENT DISPLAY (Red; Cyan guide line)	
		CONTROL DOWN ▼ Button (The Red square moves left)	CONTROL UP ▲ Button (The Red square moves right)
PICTURE CONTROL Button	CONTRAST	Weak	Strong
	BRIGHTNESS	Dark	Light
	COLOUR	Pale	Deep
	TINT	Purplish	Greenish

■ PICTURE NOISE REDUCER

Pressing the PICTURE N.R. button ❸ reduces noise in picture to provide a clear image.

 → 

N.R. Switch: OFF　　N.R. Switch: ON
(Under normal signal strength)



■ SOUND CONTROL

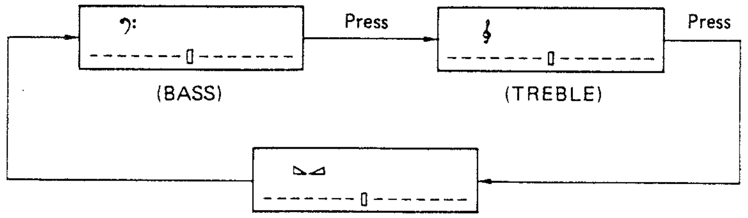
(BASS, TREBLE, BALANCE)

To adjust sound for your preference, first select a function by the SOUND Button❸ E, then adjust the level by the LEVEL Buttons❸ B .

- **FUNCTION SELECT**

  Press the SOUND Button❸ E to select a function to be adjusted among BASS, TREBLE and BALANCE. One pressing shifts the function to the next one as shown below.

SOUND CONTROL INDICATION



- **LEVEL ADJUSTMENT**

1. After the function selection above, immediately (within 4 seconds) press the ▲ (+) or ▼ (−) Button of LEVEL Buttons❸ B .
   Press continuously to shift the level to the next step, and release the button at your preferred sound.
   The LEVEL Buttons are effective only during the selected function is displayed.
2. Above display will disappear if no additional pressing of CONTROL or LEVEL (▲ / ▼) Button is done within 4 seconds.
3. The last adjusted value will be stored into memory when LEVEL (▲ / ▼) Button is released.
4. Adjustment steps and indication:
   Each function can be adjusted with 64 steps and it's adjusted approx. value is displayed with 15 steps.

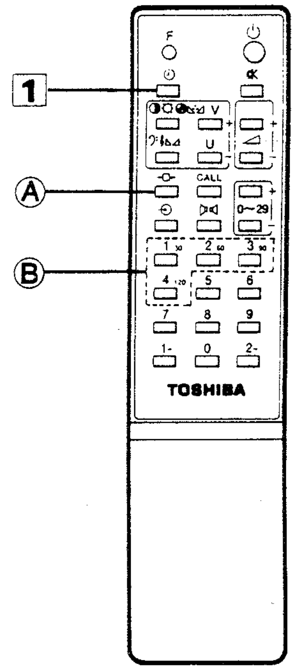
	FUNCTION	ON-SCREEN ADJUSTMENT DISPLAY (Red; Cyan guide line)	
		CONTROL DOWN ▼ Button (The red square moves left)	CONTROL ▲ UP Button (The red square moves right)
SOUND CONTROL Button	BASS	Low tones are weakened	Low tones are enhanced
	TREBLE	High tones are weakened	High tones are enhanced
	BALANCE	Lowers sound from the right speaker	Lowers sound from the left speaker

OFF TIMER OPERATION (Remote Control)

This feature allows you to set the TV to turn off automatically after elaspe of a time which you can reserve in 4 patterns: after 30, 60, 90 and 120 minutes.

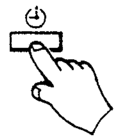
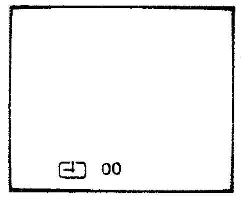
When you want to turn off the power switch at a time you want.
(Example)　To turn off the power 60 minutes later.

1 Set the timer to the desired time by pressing the OFF TIMER button.

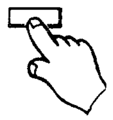
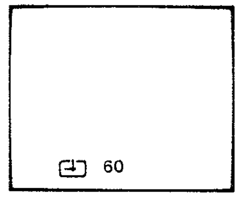


Example　　Set to OFF 60

1　Press the OFF TIMER button 1

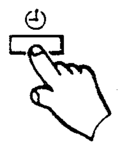
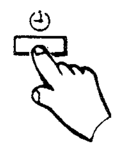
2　Press the TIME SELECT button Ⓑ .

NOTE:　If the power is turned off, the setting will be cancelled.

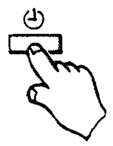
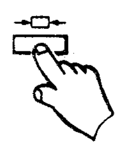
To change the time reservation.

Press the OFF TIMER button 1 , and then press the TIME SELECT button Ⓑ to set the time to which the change has been made.

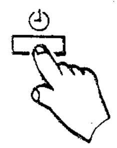
To cancel the reservation.

Press the OFF Timer button 1 , and then press the RESET button Ⓐ .

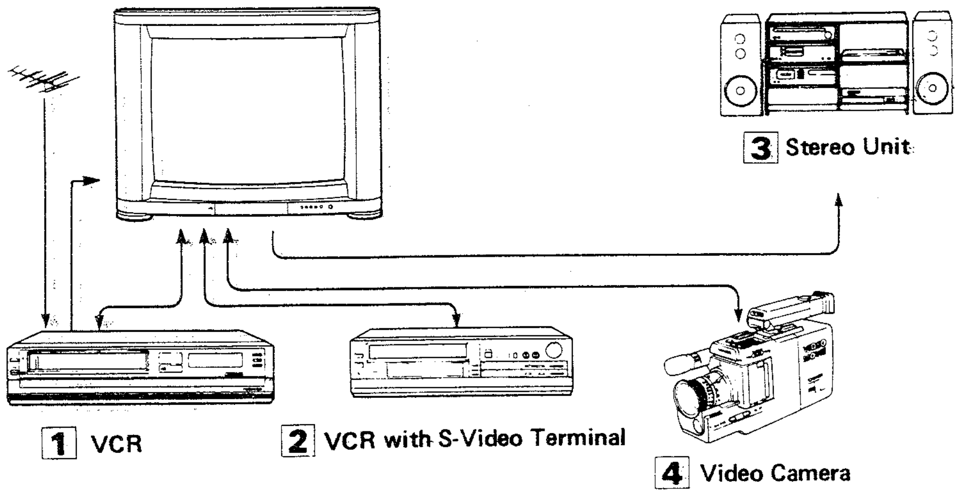
If you want to know the time remaining.

Press the OFF TIMER button 1 to have the remaining time displayed on the screen.



EXTERNAL EQUIPMENT CONNECTIONS

Equipment connectable (This TV is provided with jacks for connecting several appliances)

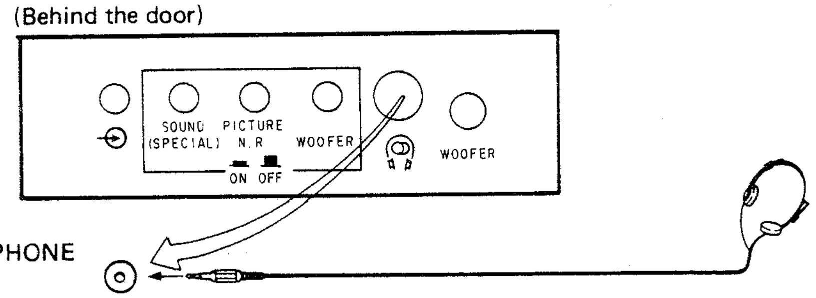


- This TV receiver is equipped with video input and output terminals for 2 systems, audio output terminal, surround speaker terminal and S-video input terminal for your entertainment in combination with various appliances.
- Apart from the above, such appliances as video disk, BS tuner, and video outputting MSX personal computer can be connected to the video input terminals of this TV set.

USE OF HEADPHONE

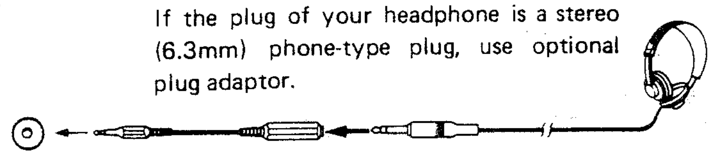
For private listening, connect a headphone (optional) to the HEADPHONE jack.
The sound from the speakers will be cut off automatically.

(Behind the door)

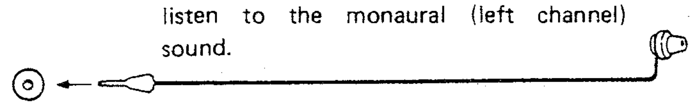


HEADPHONE
3.5mm
stereo mini-type

If the plug of your headphone is a stereo (6.3mm) phone-type plug, use optional plug adaptor.



An earphone can also be connected to listen to the monaural (left channel) sound.

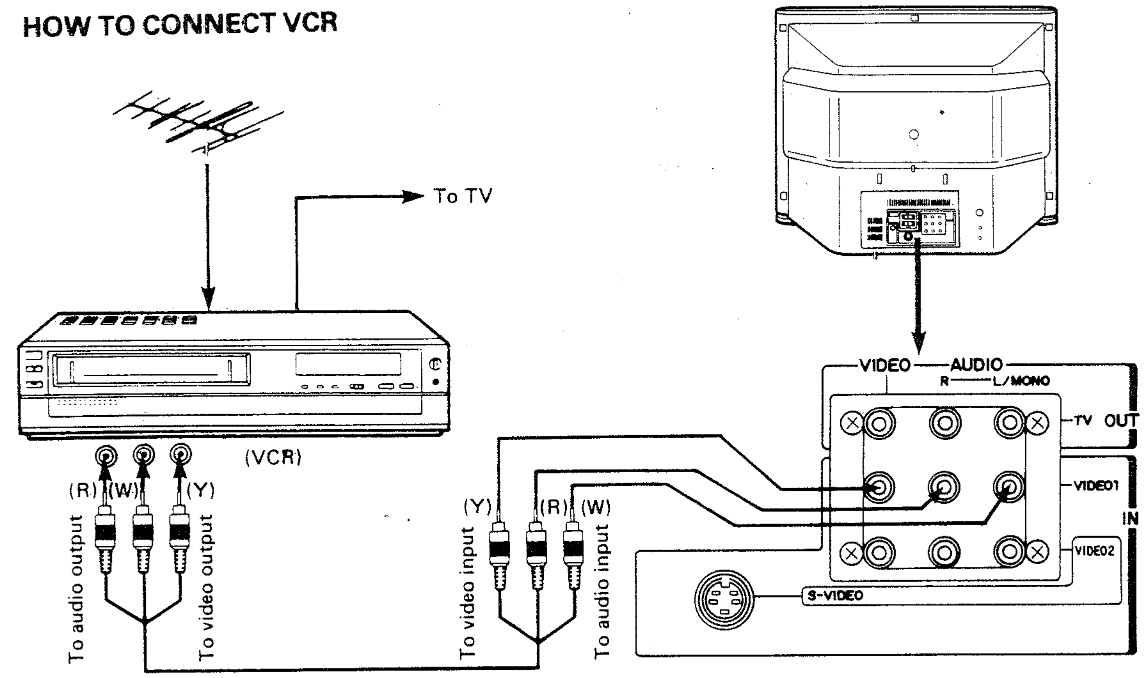


EXTERNAL EQUIPMENT CONNECTION (VCR)

1 TO CONNECT VCR FOR PICTURE RECORDING AND PLAY-BACK

- The connecting method illustrated below is for enjoying recording and play-back TV program, while monitoring it. Background TV program can be recorded as well.

HOW TO CONNECT VCR



HOW TO USE

When recording	When playing back
1 Select the TV program to be recorded on the side of VCR to put it in the recording position. 2 To monitor the recording condition, put the TV set in "VIDEO 1" mode by pressing VIDEO button on the TV.	1 Get into "VIDEO 1" mode by pressing VIDEO button on the TV set. 2 Set VCR in the play-back position. **Note:** To view a TV program after play-back, put in the "TV" position by pressing the TV/VIDEO button.

To record background TV program

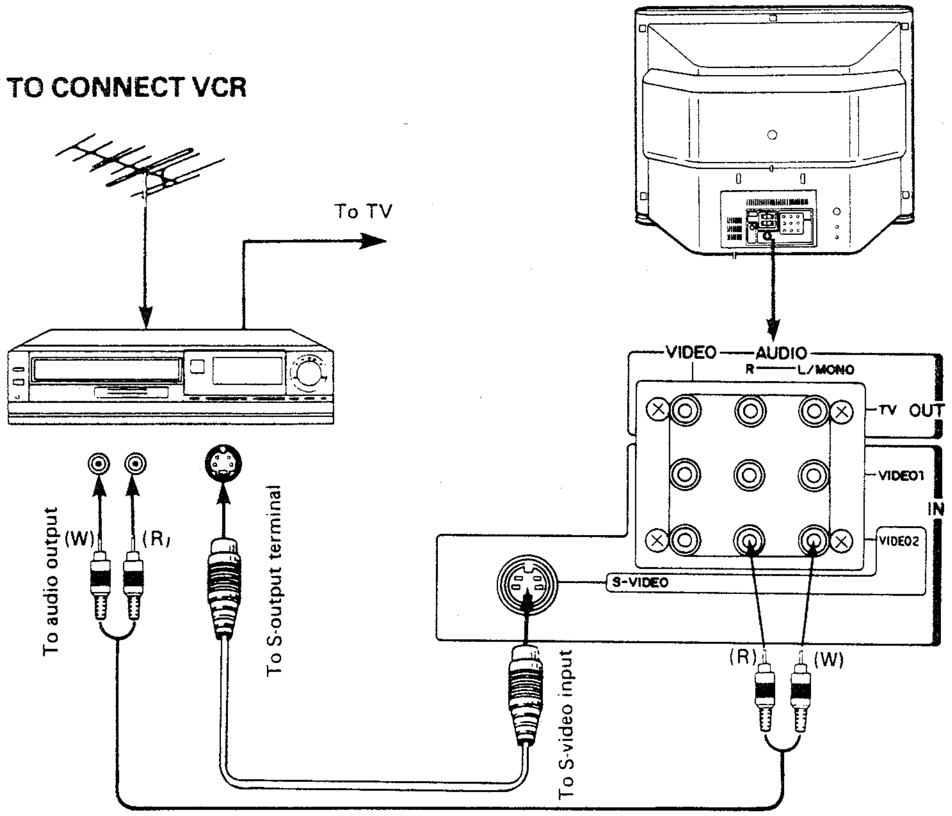
1 Set the VCR in the recording position by taking the steps as mentioned in the above "When recording."
2 Press the TV/VIDEO SELECTION button of VCR to put it into "TV" mode.
3 You may view TV program as you like by pressing CHANNEL button of the TV.

NOTE:
- Be sure to read the "Operation Manual" of the VCR you use as well.
- It is operable also with the video input terminal.
- When viewing TV program with the connection exemplified above (connection through VCR to antenna lead-in), turn off the power of VCR or press TV/VIDEO button to get into the "TV" mode.

2 WHEN CONNECTING VCR PROVIDED WITH S-VIDEO TERMINAL

- High quality picture can be viewed by connecting VCR provided with S-video terminal.

HOW TO CONNECT VCR



When recording	When playing back
1 Select the TV program to be recorded on the side of VCR to put it in the recording position. 2 To monitor the recording condition, put the TV set in "VIDEO 2" mode by pressing VIDEO button on the TV.	1 Get into "VIDEO 2" mode by pressing VIDEO button on the TV set. 2 Set VCR in the play-back position. **Note:** To view a TV program after play-back, put it in the "TV" position by pressing the TV/VIDEO button.

To record background TV program
1 Set the VCR in the recording position by taking the steps as mentioned in the above "When recording." 2 Press the TV/VIDEO SELECTION button of VCR to put it into "TV" mode. 3 You may view TV program as you like by pressing CHANNEL button of the TV.

NOTE:
- This connecting arrangement is confined to the VCR with S-video terminal. For VCRs in general, use the connection as illustrated in the preceeding page.
- S-video terminal is a separate TC signal terminal.
- Do not use the video terminal of the video input (VIDEO INPUT 2) terminal concurrently with the S-video input terminal.
- Use audio terminal of the video terminal of the video input (VIDEO INPUT 2).
- Be sure to read the "Operation Manual " of the VCR you use as well.

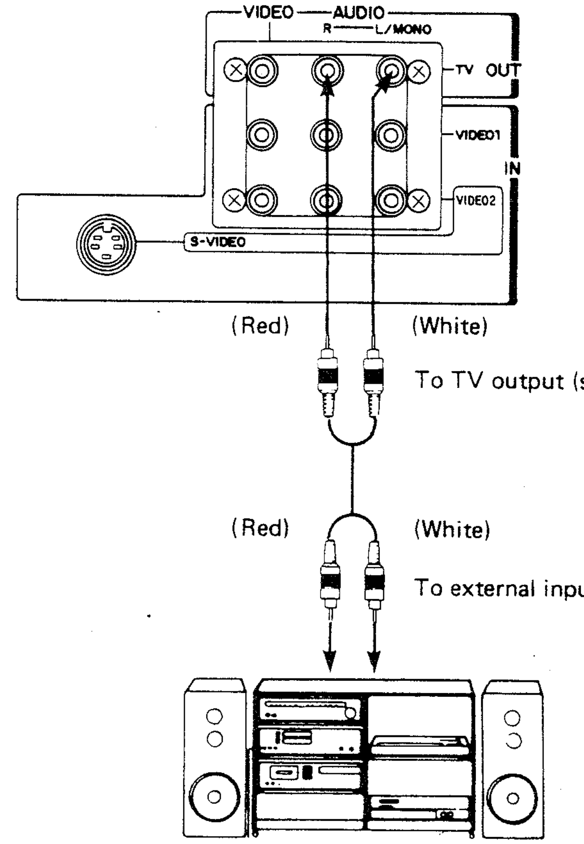
EXTERNAL EQUIPMENT CONNECTION (Stereo Video Camera)

3 WHEN CONNECTING STEREO UNIT

This connecting arrangement provides you with high quality picture of the TV set plus impressive sound of stereo unit.

Example: When using TV output terminal

- Sound volume is controlled in the side of stereo unit. (Useful when recording.)



Stereo unit

HOW TO USE

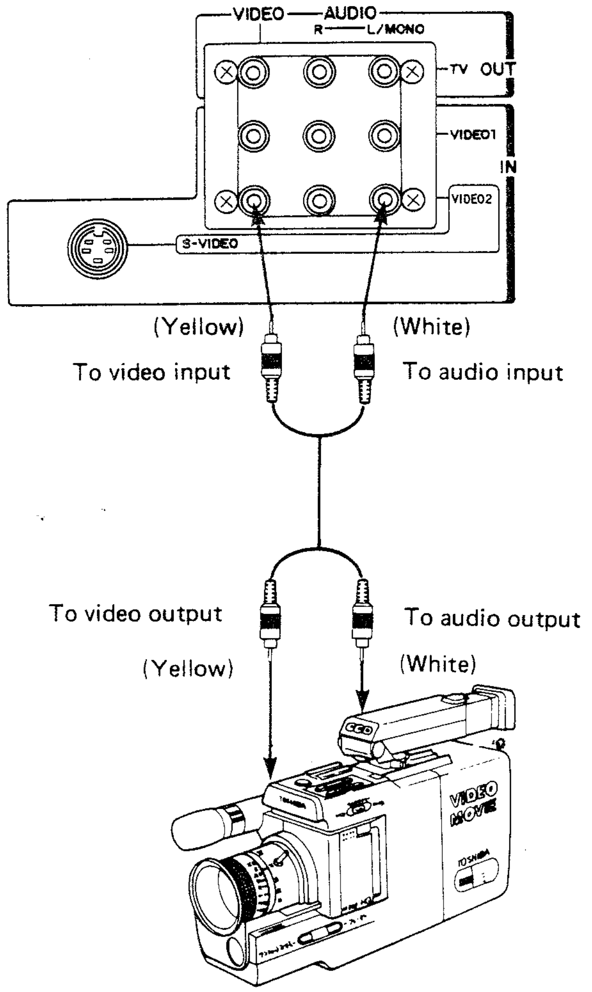
1 Mute the sound of TV speaker.

2 Sound volume should be adjusted in the stereo side.

NOTE:
- To avoid machine trouble, never use a set of speakers commonly for TV and stereo unit.
- Please read the "Operation Manual" of the stereo unit you use as well.

4 IF VIDEO CAMERA IS CONNECTED FOR PLAY-BACK

(Terminal on TV back)



Video Camera

HOW TO USE

When playing back

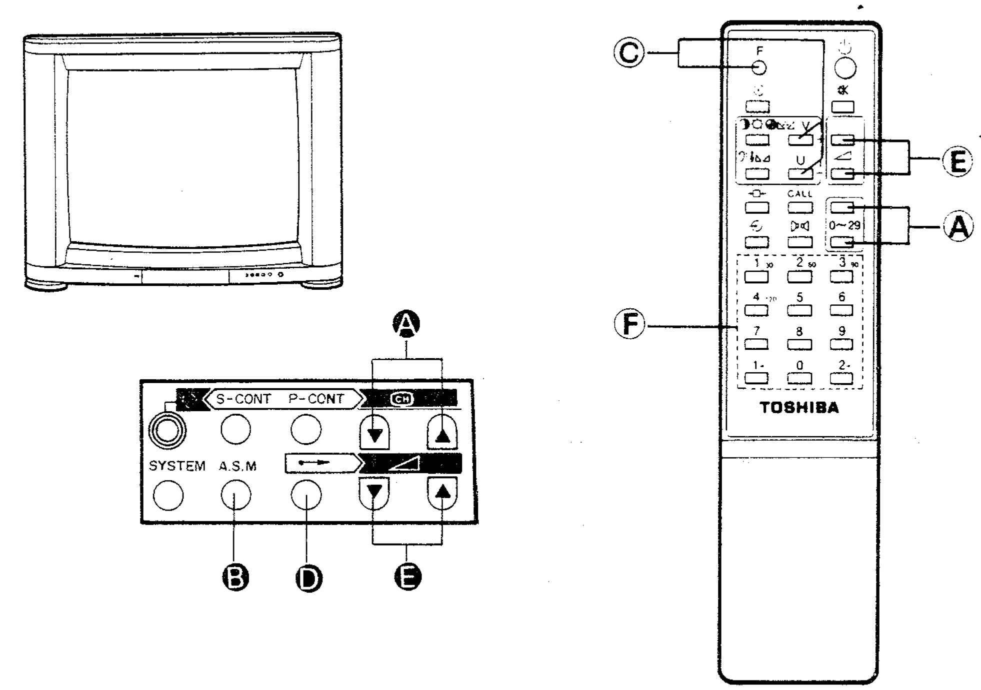
1 Press VIDEO button of either TV or Remote Control Hand Unit to put the set in "VIDEO 1" or "VIDEO 2" mode.

2 Set the VCR in the play-back position.

NOTE:

- In case audio output of the VCR is monaural, connect to Left/Mono terminal.
- If a speaker is place on the TV, unevenness of colour may result. In this event, put it away from the TV set.

CHANNEL MEMORIZATION



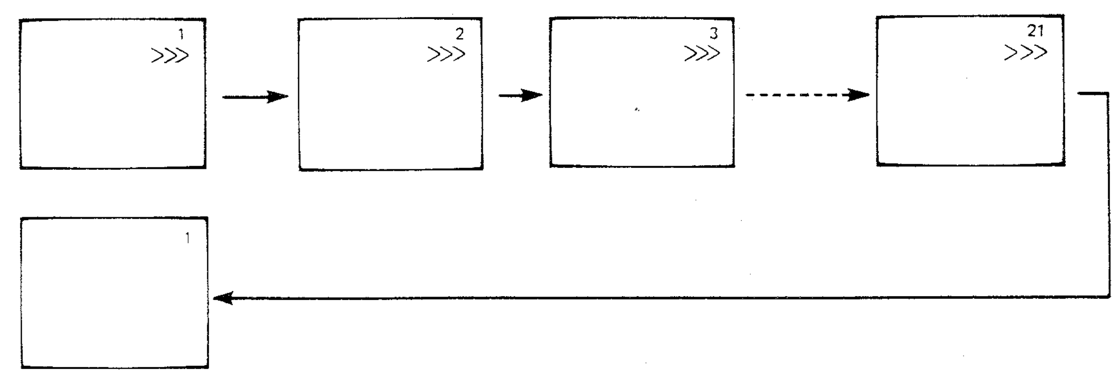
This TV receiver can memorize 30 channels of station on the desired position number, 3 ways of channel memorization are prepared; namely ASM, U/V SEARCH and MFT.

1 TO MEMORIZE ALL CHANNELS IN SEQUENCE AUTOMATICALLY

ASM: Free position Auto Search Memory

For example, to memorize channels from the position 1 automatically:

1. Select the position 1 with the DIRECT POSITION Button Ⓕ on remote hand unit or the CHANNEL UP/DOWN Button A Ⓐ on TV receiver.
2. Press once the AUTO SEARCH MEMORY Button B on the TV, and all active channels (stations) in you area are automatically memorized on the positions from smaller number to larger one in sequence.
During the operation of AUTO SEARCH MEMORY, ">>>" are indicated with flickering in 0.2 seconds interval.



3. After all channels are memorized, the search goes to the position 20 and returns to the position 1 to end the operation.
4. When you desire to memorize the same contents to the position 21 and larger, select the position 21 and press the AUTO SEARCH MEMORY Button B again. After the channels are memorized, the search goes to the position 29 and returns to the position 21 to end the operation.

2 TO MEMORIZE THE DESIRED CHANNEL ON A CERTAIN POSITION

V/U SEARCH

For example: The channel 3 on the position 3

(1) Select the position 3 with the DIRECT POSITION Button Ⓕ on the remote hand unit or the CHANNEL UP/DOWN Button Ⓐ Ⓐ on the TV.

(2) Press together the F and V Buttons Ⓒ on the remote hand unit.
Search begins on the channel 3.

(3) Press repeatedly the F and V Buttons Ⓒ until the desired position 3 is received on the screeen.

(4) When you desire to memorize the UHF channels, in the above procedure, press the F and U Buttons Ⓒ together.

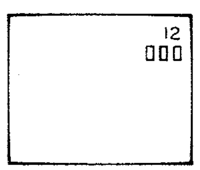
(5) During the search operation, ">>>" is indicated with flickering in 0.2 seconds interval.
When the search reaches to the lowest frequency of TV VHF/UHF band, the search stops and ">>>" will be indicated continuously (not flickering).
In this case, press the F and V Buttons Ⓒ or the F and U Buttons Ⓒ again to restart the search operation.

3 FINE TUNING

If the receiving condition in your area is poor, the detuning adjustment may be recommended for better viewing with the FINE TUNING Button.

Note: In the fine tuning mode, receiving picture may deviate slightly, because the automatic frequency control is deactivated.
At that time, readjust the fine tuning to correct the deviation.

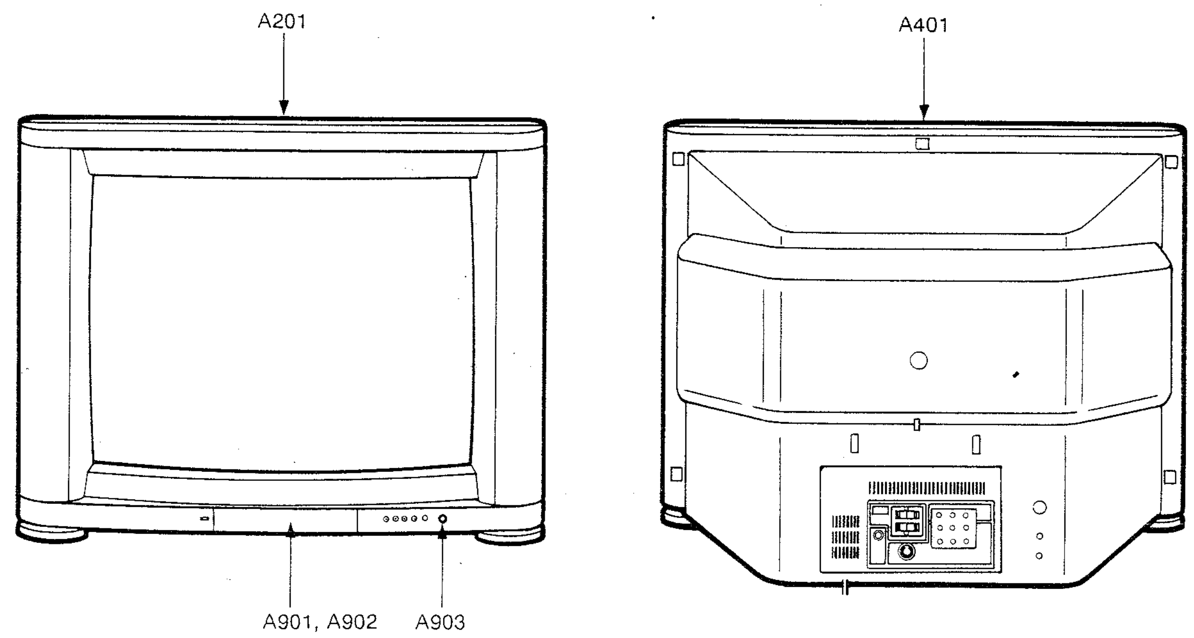
(1) Press the MFT (Manual Fine Tuning) Button Ⓓ on the TV.
"□□□" is indicated under the position number display.



(2) Press the VOLUME UP/DOWN Button Ⓔ Ⓔ to adjust the picture for better one.

(3) The fine tuning mode is released with the POSITION Button, TV/VIDEO Button or POWER ON/OFF Button pressed.

CABINET REPLACEMENT PARTS LIST



Location No.	Part No.	Description
A201	23418737	Front Cover
A202	23344136	Switch Unit, 10-key
A205	23805309	Leg
A208	23448173	Cover (In door)
A209	23035010	Screw, PBI4X16
A401	23423859	Back Cover
A433	23451234	Holder
A435	23742040	Screw, N4X.7SZN
A507	23030036	Screw, BTBW4X16SZN
A508	23035010	Screw, PBI4X16
A701	23523729	Carton Box
A702	23934206	Packing
A709	23931728	Separator
A901	23443376	Knob, POWER
A907	23421217	Piece (For dumper)
A908	70354038	Dumper
A909	23050790	Retainer
Y101	23994953	Owner's Guidebook
Y108	23122780	AC Adaptor, 2P
Y111	23164720	Connector, 75 ohm
Y120	23567181	Sticker
Y124	23293988	Adapter, Aerial Matching

CHASSIS REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The international hazard symbols in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

NOTICE: The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.

ABBREVIATIONS:

Capacitors.........	CD : Ceramic Disk	PF : Plastic Film	EL : Electrolytic
Resistors...........	CF : Carbon Film	CC : Carbon Composition	MF : Metal Film
	OMF : Oxide Metal Film	VR : Variable Resistor	FR : Fusible Resistor

(All CD and PF capacitors are ±5%, 50V and all resistors, ±5%, 1/6W unless otherwise noted.)

Location No.	Part No.	Description
CAPACITORS		
C173	24538104	PF, 0.1μF
C181	24232103	CD, 0.01μF, +80%, −20%
C182	24232103	CD, 0.01μF, +80%, −20%
C183	24232103	CD, 0.01μF, +80%, −20%
C184	24212102	CD, 1000pF, ±10%
C201	24636100	EL, 10μF, 50V
C202	24763471	EL, 470μF, ±20%, 16V
C203	24232103	CD, 0.01μF, +80%, −20%
C204	24797220	EL, 22μF, 50V
C205	24206478	EL, 0.47μF, 50V
C208	24212102	CD, 1000pF, ±10%
C209	24232103	CD, 0.01μF, +80%, −20%
C210	24636100	EL, 10μF, 50V
C212	24436271	CD, 270pF
C217	24203470	EL, 47μF, ±20%, 16V
C218	24203220	EL, 22μF, ±20%, 16V
C219	24436270	CD, 27pF
C220	24538474	PF, 0.47μF
C240	24794331	EL, 330μF, 16V
C301	24636229	EL, 2.2μF, 50V
C302	24212152	CD, 1500pF, ±10%
C303	24617915	EL, 1μF, ±10%, 50V
C304	24212102	CD, 1000pF, ±10%
C306	24693563	PF, 0.056μF, 100V
C307	24232103	CD, 0.01μF, +80%, −20%
C311	24796222	EL, 2200μF, 35V
C314	24214391	CD, 390pF, ±10%, 500V
C316	24795472	EL, 4700μF, 25V
C317	24617912	EL, 2.2μF, ±10%, 50V
C318	24082047	PF, 0.033μF, 100V
C319	24693272	PF, 2700pF, 100V
C320	24214152	CD, 1500pF, ±10%, 500V
C323	24592103	PF, 0.01μF, ±10%
C325	24796221	EL, 220μF, 35V
C330	24794471	EL, 470μF, 16V
C331	24095678	PF, 0.22μF, ±10%, 100V
C401	24636010	EL, 1μF, 50V
C402	24353271	CD, 270pF
C403	24636339	EL, 3.3μF, 50V
C405	24590203	PF, 0.02μF

Location No.	Part No.	Description
C406	24590203	PF, 0.02μF
C407	24590243	PF, 0.024μF
C408	24617929	EL, 18μF, ±20%, 50V
C409	24232103	CD, 0.01μF, +80%, −20%
C413	24590182	PF, 1800pF
C416	24214222	CD, 2200pF, ±10%, 500V
C417	24214331	CD, 330pF, ±10%, 500V
C418	24677100	EL, 10μF, ±20%, 160V
C420	24436331	CD, 330pF
⚠ C440	24095892	PF, 6800pF, ±3%, 1600V
C442	24214221	CD, 220pF, ±10%, 500V
⚠ C444	24095898	PF, 3900pF, ±3%, 1600V
C445	24828473	PF, 0.047μF, 200V
C446	24640962	EL, 33μF, ±20%, 200V
C447	24640968	EL, 10μF, 400V
C448	24754222	EL, 2200μF, 25V
⚠ C463	24212222	CD, 2200pF, ±10%
C466	24794471	EL, 470μF, 16V
C468	24538474	PF, 0.47μF
C470	24095790	PF, 0.22μF, 400V
C473	24095949	PF, 0.33μF, 200V
C474	24828303	PF, 0.03μF, 200V
C501	24763471	EL, 470μF, ±20%, 16V
C502	24636100	EL, 10μF, 50V
C503	24232103	CD, 0.01μF, +80%, −20%
C504	24353150	CD, 15pF
C505	24590273	PF, 0.027μF
C506	24590683	PF, 0.068μF
C507	24590103	PF, 0.01μF
C508	24085028	EL, 2.2μF, 25V, Non-Polar
C509	24353330	CD, 33pF
C510	24232103	CD, 0.01μF, +80%, −20%
C511	24232103	CD, 0.01μF, +80%, −20%
C512	24353200	CD, 20pF
C513	24436101	CD, 100pF
C514	24436101	CD, 100pF
C515	24636010	EL, 1μF, 50V
C516	24538104	PF, 0.1μF
C517	24538104	PF, 0.1μF
C518	24232103	CD, 0.01μF, +80%, −20%
C519	24232103	CD, 0.01μF, +80%, −20%

Location No.	Part No.	Description
C520	24206478	EL, 0.47μF, 50V
C521	24538474	PF, 0.47μF
C522	24538474	PF, 0.47μF
C523	24538474	PF, 0.47μF
C524	24232103	CD, 0.01μF, +80%, −20%
C525	24436820	CD, 82pF
C526	24436820	CD, 82pF
C527	24436820	CD, 82pF
C529	24353300	CD, 30pF
C530	24797220	EL, 22μF, 50V
C531	24636100	EL, 10μF, 50V
C532	24436101	CD, 100pF
C533	24436101	CD, 100pF
C534	24436101	CD, 100pF
C535	24206100	EL, 10μF, 50V
C536	24206478	EL, 0.47μF, 50V
C537	24203101	EL, 100μF, ±20%, 16V
C540	24436391	CD, 390pF
C541	24436391	CD, 390pF
C542	24436391	CD, 390pF
C544	24436101	CD, 100pF
C601	24436471	CD, 470pF
C602	24436471	CD, 470pF
C611	24634220	EL, 22μF, 25V
C612	24794101	EL, 100μF, 16V
C613	24795470	EL, 47μF, 25V
C614	24636010	EL, 1μF, 50V
C615	24636479	EL, 4.7μF, 50V
C616	24636479	EL, 4.7μF, 50V
C617	24636479	EL, 4.7μF, 50V
C618	24636229	EL, 2.2μF, 50V
C619	24590152	PF, 1500pF
C620	24538563	PF, 0.056μF
C621	24590682	PF, 6800pF
C624	24085031	EL, 1μF, ±20%, 25V, Non-Polar
C625	24797470	EL, 47μF, 50V
C626	24085031	EL, 1μF, ±20%, 25V, Non-Polar
C627	24590682	PF, 6800pF
C628	24538563	PF, 0.056μF
C629	24590152	PF, 1500pF
C630	24636100	EL, 10μF, 50V
C634	24590562	PF, 5600pF
C635	24794101	EL, 100μF, 16V
C636	24636478	EL, 0.47μF, 50V
C637	24795221	EL, 220μF, 25V
C638	24636478	EL, 0.47μF, 50V
C641	24590562	PF, 5600pF
C642	24794101	EL, 100μF, 16V
C643	24538104	PF, 0.1μF
C644	24797471	EL, 470μF, 50V
C645	24538104	PF, 0.1μF
C646	24795102	EL, 1000μF, 25V
C647	24795102	EL, 1000μF, 25V
C651	24093950	Variable Capacitor, 5.5 to 30pF, 100V
C661	24636479	EL, 4.7μF, 50V
C662	24636479	EL, 4.7μF, 50V
C663	24636010	EL, 1μF, 50V
C664	24636010	EL, 1μF, 50V
C670	24232103	CD, 0.01μF, +80%, −20%
C671	24232103	CD, 0.01μF, +80%, −20%
C672	24212102	CD, 1000pF, ±10%

Location No.	Part No.	Description
C673	24436471	CD, 470pF
C674	24436471	CD, 470pF
C675	24795101	EL, 100μF, 25V
C676	24436220	CD, 22pF
C677	24636010	EL, 1μF, 50V
C679	24232103	CD, 0.01μF, +80%, −20%
C680	24436470	CD, 47pF
C681	24436470	CD, 47pF
C682	24232103	CD, 0.01μF, +80%, −20%
C683	24232103	CD, 0.01μF, +80%, −20%
C684	24232103	CD, 0.01μF, +80%, −20%
C685	24794331	EL, 330μF, 16V
C686	24232103	CD, 0.01μF, +80%, −20%
C687	24353150	CD, 15pF
C688	24340220	CD, 22pF
C689	24353620	CD, 62pF
C690	24232103	CD, 0.01μF, +80%, −20%
C691	24436470	CD, 47pF
C692	24590562	PF, 5600pF
C693	24232103	CD, 0.01μF, +80%, −20%
C801	24095951	PF, 0.1μF, ±20%, AC250V
C802	24094654	CD, 470pF, ±20%, AC400V
C803	24094654	CD, 470pF, ±20%, AC400V
C804	24094654	CD, 470pF, ±20%, AC400V
C805	24094654	CD, 470pF, ±20%, AC400V
C806	24095951	PF, 0.1μF, ±20%, AC250V
C807	24797101	EL, 100μF, 50V
C808	24648339	EL, 3.3μF, 450V
C809	24092300	CD, 0.01μF, +80%, −20%, AC250V
C810	24538104	PF, 0.1μF
C811	24092281	CD, 4700pF, ±20%, AC250V
C812	24092281	CD, 4700pF, ±20%, AC250V
C813	24092281	CD, 4700pF, ±20%, AC250V
C814	24092281	CD, 4700pF, ±20%, AC250V
C815	24538104	PF, 0.1μF
C816	24794221	EL, 220μF, 16V
C817	24796471	EL, 470μF, 35V
C818	24086921	EL, 680μF, ±20%, 250V
C819	24086921	EL, 680μF, ±20%, 250V
C820	24636100	EL, 10μF, 50V
C824	24797221	EL, 220μF, 50V
C825	24212102	CD, 1000pF, ±10%
C826	24538104	PF, 0.1μF
C827	24598561	PF, 560pF
C828	24636100	EL, 10μF, 50V
C829	24757470	EL, 47μF, 100V
C830	24095931	PF, 2200pF, 1600V
C831	24633100	EL, 10μF, 16V
C832	24092336	CD, 180pF, ±10%, 2kV
C833	24086945	EL, 330μF, ±20%, 200V
C834	24538104	PF, 0.1μF
C835	24214221	CD, 220pF, ±10%, 500V
C836	24795222	EL, 2200μF, 25V
C837	24436561	CD, 560pF
C838	24598561	PF, 560pF
C839	24538474	PF, 0.47μF
C840	24636100	EL, 10μF, 50V
C844	24214221	CD, 220pF, ±10%, 500V
C845	24795101	EL, 100μF, 25V
C846	24214221	CD, 220pF, ±10%, 500V
C847	24797222	EL, 2200μF, 50V
C849	24214221	CD, 220pF, ±10%, 500V
C860	24797102	EL, 1000μF, 50V

Location No.	Part No.	Description
C861	24092340	CD, 390pF, ±10%, 2kV
C862	24636479	EL, 4.7μF, 50V
C863	24095951	PF, 0.1μF, ±20%, AC250V
C864	24092343	CD, 680pF, ±10%, 2kV
C865	24214391	CD, 390pF, ±10%, 500V
C866	24214391	CD, 390pF, ±10%, 500V
C867	24538474	PF, 0.47μF
C869	24636100	EL, 10μF, 50V
C871	24214391	CD, 390pF, ±10%, 500V
C872	24212101	CD, 100pF, ±10%
C901	24640987	EL, 2.2μF, 350V
C902	24095981	PF, 2200pF, 1600V
CA01	24794470	EL, 47μF, 16V
CA02	24232103	CD, 0.01μF, +80%, −20%
CA03	24633100	EL, 10μF, 16V
CA04	24436300	CD, 30pF
CA05	24436300	CD, 30pF
CA06	24232103	CD, 0.01μF, +80%, −20%
CA07	24633100	EL, 10μF, 16V
CA08	24636100	EL, 10μF, 50V
CA10	24636100	EL, 10μF, 50V
CA11	24436391	CD, 390pF
CA12	24436221	CD, 220pF
CA13	24636229	EL, 2.2μF, 50V
CA14	24232103	CD, 0.01μF, +80%, −20%
CA15	24538104	PF, 0.1μF
CA16	24538104	PF, 0.1μF
CA17	24538104	PF, 0.1μF
CA18	24636229	EL, 2.2μF, 50V
CA19	24636010	EL, 1μF, 50V
CA20	24794331	EL, 330μF, 16V
CA21	24636229	EL, 2.2μF, 50V
CA22	24794471	EL, 470μF, 16V
CA23	24591472	PF, 4700pF
CA28	24212102	CD, 1000pF, ±10%
CA35	24212561	CD, 560pF, ±10%
CA36	24436221	CD, 220pF
CA37	24212102	CD, 1000pF, ±10%
CA38	24636010	EL, 1μF, 50V
CB02	24436101	CD, 100pF
CB03	24436101	CD, 100pF
CD01	24796101	EL, 100μF, 35V
CD02	24095881	PF, 0.018μF, ±3%, 630V
CD05	24591102	PF, 1000pF
CD06	24668470	EL, 47μF, ±20%, 35V
CD07	24668471	EL, 470μF, ±20%, 35V
CD08	24538154	PF, 0.15μF
CD09	24538154	PF, 0.15μF
CD10	24206229	EL, 2.2μF, 50V
CD11	24640900	EL, 4.7μF, ±20%, 100V
CD14	24538103	PF, 0.01μF
CD15	24206010	EL, 1μF, 50V
CM01	24436201	CD, 200pF
CM02	24436201	CD, 200pF
CM05	24232103	CD, 0.01μF, +80%, −20%
CM06	24357270	CD, 27pF
CM07	24538563	PF, 0.056μF
CM08	24232103	CD, 0.01μF, +80%, −20%
CM09	24232103	CD, 0.01μF, +80%, −20%
CM10	24436270	CD, 27pF
CN10	24436101	CD, 100pF
CN11	24436330	CD, 33pF
CN13	24232103	CD, 0.01μF, +80%, −20%
CN14	24436470	CD, 47pF

Location No.	Part No.	Description
CN15	24436300	CD, 30pF
CN16	24436470	CD, 47pF
CN17	24436180	CD, 18pF
CN18	24232103	CD, 0.01μF, +80%, −20%
CN40	24232103	CD, 0.01μF, +80%, −20%
CN41	24436470	CD, 47pF
CN42	24436470	CD, 47pF
CS02	24538124	PF, 0.12μF
CS03	24636100	EL, 10μF, 50V
CS04	24636010	EL, 1μF, 50V
CS05	24538223	PF, 0.022μF
CS06	24232103	CD, 0.01μF, +80%, −20%
CS14	24232103	CD, 0.01μF, +80%, −20%
CS15	24636100	EL, 10μF, 50V
CS16	24636479	EL, 4.7μF, 50V
CS17	24636100	EL, 10μF, 50V
CS18	24636100	EL, 10μF, 50V
CS19	24636100	EL, 10μF, 50V
CS20	24203330	EL, 33μF, ±20%, 16V
CS21	24636100	EL, 10μF, 50V
CS22	24636100	EL, 10μF, 50V
CS29	24636010	EL, 1μF, 50V
CS37	24232103	CD, 0.01μF, +80%, −20%
CS39	24636229	EL, 2.2μF, 50V
CS40	24795471	EL, 470μF, 25V
CS41	24636010	EL, 1μF, 50V
CS42	24794101	EL, 100μF, 16V
CS43	24538473	PF, 0.047μF
CS44	24538473	PF, 0.047μF
CS45	24797101	EL, 100μF, 50V
CS46	24636010	EL, 1μF, 50V
CS47	24797220	EL, 22μF, 50V
CS48	24538104	PF, 0.1μF
CS49	24538104	PF, 0.1μF
CS50	24636229	EL, 2.2μF, 50V
CS54	24232103	CD, 0.01μF, +80%, −20%
CS59	24591333	PF, 0.033μF
CS60	24591183	PF, 0.018μF
CS61	24232103	CD, 0.01μF, +80%, −20%
CS64	24591183	PF, 0.018μF
CS65	24591183	PF, 0.018μF
CS66	24206229	EL, 2.2μF, 50V
CS67	24232103	CD, 0.01μF, +80%, −20%
CS68	24591102	PF, 1000pF
CS69	24591222	PF, 2200pF
CS70	24232103	CD, 0.01μF, +80%, −20%
CS80	24206229	EL, 2.2μF, 50V
CS81	24206229	EL, 2.2μF, 50V
CS82	24206229	EL, 2.2μF, 50V
CS83	24203100	EL, 10μF, ±20%, 16V
CS85	24206229	EL, 2.2μF, 50V
CV01	24206010	EL, 1μF, 50V
CV02	24206010	EL, 1μF, 50V
CV03	24203100	EL, 10μF, ±20%, 16V
CV04	24206010	EL, 1μF, 50V
CV05	24206010	EL, 1μF, 50V
CV06	24203100	EL, 10μF, ±20%, 16V
CV07	24232103	CD, 0.01μF, +80%, −20%
CV11	24206010	EL, 1μF, 50V
CV12	24206010	EL, 1μF, 50V
CV14	24232103	CD, 0.01μF, +80%, −20%
CV15	24203100	EL, 10μF, ±20%, 16V
CV16	24232103	CD, 0.01μF, +80%, −20%
CV17	24206010	EL, 1μF, 50V

Location No.	Part No.	Description
CV19	24436101	CD, 100pF
CV21	24203100	EL, 10μF, ±20%, 16V
CV22	24203220	EL, 22μF, ±20%, 16V
CV60	24203100	EL, 10μF, ±20%, 16V
CV63	24203100	EL, 10μF, ±20%, 16V
CV64	24206010	EL, 1μF, 50V
CV65	24206010	EL, 1μF, 50V
CV66	24202221	EL, 220μF, ±20%, 10V
CV67	24206010	EL, 1μF, 50V
CV68	24206010	EL, 1μF, 50V
CV69	24202221	EL, 220μF, ±20%, 10V
CV70	24232103	CD, 0.01μF, +80%, −20%
CV71	24232103	CD, 0.01μF, +80%, −20%
CX02	24538104	PF, 0.1μF
CX03	24538104	PF, 0.1μF
CX04	24538104	PF, 0.1μF
CX09	24206010	EL, 1μF, 50V
CX10	24793101	EL, 100μF, 10V
CZ01	24203220	EL, 22μF, ±20%, 16V
CZ02	24203101	EL, 100μF, ±20%, 16V
CZ04	24203100	EL, 10μF, ±20%, 16V
CZ05	24232103	CD, 0.01μF, +80%, −20%
CZ06	24436680	CD, 68pF
CZ07	24794101	EL, 100μF, 16V

RESISTORS

R173	24366102	CF, 1k ohm
R181	24366131	CF, 130 ohm
R182	24366680	CF, 68 ohm
R183	24366682	CF, 6800 ohm
R184	24366332	CF, 3300 ohm
R185	24366271	CF, 270 ohm
R186	24366223	CF, 22k ohm
R187	24366331	CF, 330 ohm
R206	24366471	CF, 470 ohm
R207	24366473	CF, 47k ohm
R208	24366101	CF, 100 ohm
R209	24366103	CF, 10k ohm
R210	24366203	CF, 20k ohm
R211	24366622	CF, 6200 ohm
R212	24366103	CF, 10k ohm
R213	24366101	CF, 100 ohm
R214	24366222	CF, 2200 ohm
R215	24366222	CF, 2200 ohm
R216	24366133	CF, 13k ohm
R217	24366101	CF, 100 ohm
R218	24366222	CF, 2200 ohm
R219	24366472	CF, 4700 ohm
R220	24366103	CF, 10k ohm
R221	24366103	CF, 10k ohm
R222	24366122	CF, 1200 ohm
R223	24366432	CF, 4300 ohm
R224	24366331	CF, 330 ohm
R226	24366362	CF, 3600 ohm
R227	24366102	CF, 1k ohm
R228	24366822	CF, 8200 ohm
R229	24366821	CF, 820 ohm
R230	24366821	CF, 820 ohm
R231	24366821	CF, 820 ohm
R240(U902)	24366153	CF, 15k ohm
R240(U903)	24366121	CF, 120 ohm
R241(U902)	24366682	CF, 6800 ohm
R241(U903)	24366102	CF, 1k ohm
R242	24552101	OMF, 100 ohm, 1/2W

Location No.	Part No.	Description
R243	24366201	CF, 200 ohm
R252	24061591	VR, 2k ohm, 1/8W
R253	24061591	VR, 2k ohm, 1/8W
R255	24066926	VR, 10k ohm, 1/10W
R290	24366101	CF, 100 ohm
R301	24366301	CF, 300 ohm
R302	24366244	CF, 240k ohm
R303	24366683	CF, 68k ohm
R304	24366102	CF, 1k ohm
R305	24366161	CF, 160 ohm
R306	24366203	CF, 20k ohm
R307	24366101	CF, 100 ohm
R308	24366561	CF, 560 ohm
R311	24552242	OMF, 2400 ohm, 1/2W
R312	24366113	CF, 11k ohm
R313	24366224	CF, 220k ohm
R318	24366102	CF, 1k ohm
R320	24366471	CF, 470 ohm
R322	24552472	OMF, 4700 ohm, 1/2W
R323	24323828	OMF, 0.82 ohm, 2W
R325	24366123	CF, 12k ohm
R327	24983629	MF, 6.2 ohm, 1W
R328	24552152	OMF, 1500 ohm, 1/2W
R329	24366123	CF, 12k ohm
R331	24366303	CF, 30k ohm
R332	24553122	OMF, 1200 ohm, 1W
R333	24366433	CF, 43k ohm
R334	24366103	CF, 10k ohm
R335	24366823	CF, 82k ohm
R336	24366684	CF, 680k ohm
R337	24553122	OMF, 1200 ohm, 1W
R340	24366472	CF, 4700 ohm
R341	24366103	CF, 10k ohm
R351	24066924	VR, 50k ohm, 1/10W
R386	24366102	CF, 1k ohm
R387	24366103	CF, 10k ohm
R401	24366472	CF, 4700 ohm
R402	24366273	CF, 27k ohm
R403	24366302	CF, 3k ohm
R405	24366511	CF, 510 ohm
R406	24366271	CF, 270 ohm
R407	24366151	CF, 150 ohm
R408	24366562	CF, 5600 ohm
R409	24366103	CF, 10k ohm
R410	24552432	OMF, 4300 ohm, 1/2W
R411	24366431	CF, 430 ohm
R412	24366151	CF, 150 ohm
R417	24007622	Cement, 5100 ohm, 5W
R418	24553682	OMF, 6800 ohm, 1W
R420	24366104	CF, 100k ohm
R440	24366103	CF, 10k ohm
R441	24366103	CF, 10k ohm
R443	24322109	OMF, 1 ohm, 1W
R444	24994828	MF, 0.82 ohm, ±10%, 2W
R448	24323189	OMF, 1.8 ohm, 2W
R451	24066951	VR, 20k ohm, 1/10W
R460	24552161	OMF, 160 ohm, 1/2W
R463	24553102	OMF, 1k ohm, 1W
R464	24366683	CF, 68k ohm
R465	24366433	CF, 43k ohm
R466	24366912	CF, 9100 ohm
R467	24366272	CF, 2700 ohm
R468	24366102	CF, 1k ohm
R471	24533151	FR, 150 ohm, 2W

Location No.	Part No.	Description
R502	24366334	CF, 330k ohm
R503	24366202	CF, 2k ohm
R504	24366471	CF, 470 ohm
R505	24366822	CF, 8200 ohm
R506	24366821	CF, 820 ohm
R507	24366822	CF, 8200 ohm
R508	24366821	CF, 820 ohm
R509	24366203	CF, 20k ohm
R510	24366101	CF, 100 ohm
R511	24366562	CF, 5600 ohm
R512	24366152	CF, 1500 ohm
R513	24366152	CF, 1500 ohm
R515	24366221	CF, 220 ohm
R516	24366221	CF, 220 ohm
R517	24366221	CF, 220 ohm
R518	24945475	CC, 4.7M ohm, ±10%, 1/4W
R519	24366333	CF, 33k ohm
R520	24366332	CF, 3300 ohm
R521	24366102	CF, 1k ohm
R522	24360185	CF, 1.8M ohm, 1/8W
R525	24366122	CF, 1200 ohm
R526	24366122	CF, 1200 ohm
R527	24366103	CF, 10k ohm
R528	24366103	CF, 10k ohm
R531	24366331	CF, 330 ohm
R532	24366241	CF, 240 ohm
R533	24366561	CF, 560 ohm
R535	24366431	CF, 430 ohm
R537	24366561	CF, 560 ohm
R538	24366471	CF, 470 ohm
R539	24366561	CF, 560 ohm
R541	24366102	CF, 1k ohm
R542	24366331	CF, 330 ohm
R543	24366103	CF, 10k ohm
R544	24366101	CF, 100 ohm
R547	24366101	CF, 100 ohm
R548	24366101	CF, 100 ohm
R549	24366101	CF, 100 ohm
R551	24066955	VR, 1k ohm, 1/10W
R557	24061591	VR, 2k ohm, 1/8W
R558	24061591	VR, 2k ohm, 1/8W
R559	24061591	VR, 2k ohm, 1/8W
R565	24366270	CF, 27 ohm
R566	24366270	CF, 27 ohm
R567	24366270	CF, 27 ohm
R568	24366102	CF, 1k ohm
R570	24366362	CF, 3600 ohm
R571	24366182	CF, 1800 ohm
R572	24366332	CF, 3300 ohm
R580	24366101	CF, 100 ohm
R591	24383133	OMF, 13k ohm, 2W
R592	24383133	OMF, 13k ohm, 2W
R593	24383133	OMF, 13k ohm, 2W
R602	24366472	CF, 4700 ohm
R603	24366101	CF, 100 ohm
R604	24366332	CF, 3300 ohm
R605	24366101	CF, 100 ohm
R606	24366332	CF, 3300 ohm
R620	24366102	CF, 1k ohm
R621	24366103	CF, 10k ohm
R622	24366103	CF, 10k ohm
R624	24366154	CF, 150k ohm
R625	24366154	CF, 150k ohm
R628	24366472	CF, 4700 ohm

Location No.	Part No.	Description
R629	24366184	CF, 180k ohm
R630	24366472	CF, 4700 ohm
R631	24366103	CF, 10k ohm
R632	24366562	CF, 5600 ohm
R633	24366562	CF, 5600 ohm
R634	24366103	CF, 10k ohm
R635	24366472	CF, 4700 ohm
R637	24366472	CF, 4700 ohm
R638	24366472	CF, 4700 ohm
R640	24366122	CF, 1200 ohm
R643	24366122	CF, 1200 ohm
R644	24366229	CF, 2.2 ohm
R645	24366229	CF, 2.2 ohm
R661	24366473	CF, 47k ohm
R662	24366473	CF, 47k ohm
R663	24366473	CF, 47k ohm
R664	24366473	CF, 47k ohm
R665	24552331	OMF, 330 ohm, 1/2W
R666	24552331	OMF, 330 ohm, 1/2W
R670	24366821	CF, 820 ohm
R671	24366272	CF, 2700 ohm
R672	24366152	CF, 1500 ohm
R674	24366471	CF, 470 ohm
R675	24366122	CF, 1200 ohm
R676	24366105	CF, 1M ohm
R677	24552331	OMF, 330 ohm, 1/2W
R678	24366152	CF, 1500 ohm
R679	24366473	CF, 47k ohm
R680	24366104	CF, 100k ohm
R681	24366102	CF, 1k ohm
R682	24366122	CF, 1200 ohm
R683	24366472	CF, 4700 ohm
R684	24366182	CF, 1800 ohm
R685	24366153	CF, 15k ohm
R686	24366101	CF, 100 ohm
R687	24366562	CF, 5600 ohm
R688	24366221	CF, 220 ohm
R689	24366102	CF, 1k ohm
R690	24366102	CF, 1k ohm
R691	24366223	CF, 22k ohm
R692	24552680	OMF, 68 ohm, 1/2W
R693	24366103	CF, 10k ohm
R694	24366752	CF, 7500 ohm
R695	24366103	CF, 10k ohm
R696	24366472	CF, 4700 ohm
R697	24366103	CF, 10k ohm
R698	24366103	CF, 10k ohm
R699	24552820	OMF, 82 ohm, 1/2W
R801	24942565	CC, 5.6M ohm, 1/2W
R802	24522390	Cement, 39 ohm, ±10%, 2W
R803	24007870	Cement, 1.5 ohm, 15W
R804	24366331	CF, 330 ohm
R805	24007870	Cement, 1.5 ohm, 15W
R806	24383333	OMF, 33k ohm, 2W
R807	24383333	OMF, 33k ohm, 2W
R808	24366362	CF, 3600 ohm
R810	24384823	OMF, 82k ohm, 3W
R812	24321689	OMF, 6.8 ohm, 1/2W
R813	24553471	OMF, 470 ohm, 1W
R814	24321338	OMF, 0.33 ohm, 1/2W
R815	24366683	CF, 68k ohm
R816	24367123	CF, 12k ohm, ±2%
R817	24007952	Cement, 6.8 ohm, 5W
R818	24366331	CF, 330 ohm

Location No.	Part No.	Description
R819	24327104	MF, 100k ohm, ±1%, 1/4W
R820	24366100	CF, 10 ohm
R821	24366101	CF, 100 ohm
R822	24322398	OMF, 0.39 ohm, 1W
R823	24007738	Cement, 330 ohm, 10W
R824	24322398	OMF, 0.39 ohm, 1W
R825	24366101	CF, 100 ohm
R826	24366331	CF, 330 ohm
R827	24007568	Cement, 1800 ohm, 5W
R828	24366103	CF, 10k ohm
R829	24383103	OMF, 10k ohm, 2W
R830	24552391	OMF, 390 ohm, 1/2W
R831	24366102	CF, 1k ohm
R832	24321338	OMF, 0.33 ohm, 1/2W
R833	24327134	MF, 130k ohm, ±1%, 1/4W
R834	24327222	MF, 2200 ohm, ±1%, 1/4W
R835	24366823	CF, 82k ohm
R836	24327913	MF, 91k ohm, ±1%, 1/4W
R837	24381100	OMF, 10 ohm, 1/2W
R838	24366103	CF, 10k ohm
R840	24366103	CF, 10k ohm
R841	24381562	OMF, 5600 ohm, 1/2W
R843	24366332	CF, 3300 ohm
R844	24366103	CF, 10k ohm
R845	24366332	CF, 3300 ohm
R847	24366102	CF, 1k ohm
R851	24066924	VR, 50k ohm, 1/10W
R852	24066925	VR, 20k ohm, 1/10W
R860	24366182	CF, 1800 ohm
R861	24982338	MF, 0.33 ohm, 1/2W
R863	24383152	OMF, 1500 ohm, 2W
R864	24383102	OMF, 1k ohm, 2W
R865	24366222	CF, 2200 ohm
R867	24366392	CF, 3900 ohm
R868	24366103	CF, 10k ohm
R869	24366102	CF, 1k ohm
R870	24366102	CF, 1k ohm
R871	24366222	CF, 2200 ohm
R872	24366103	CF, 10k ohm
R890	24000875	PTC Thermistor, 18 ohm, ±20%, 290V
R901	24946272	CC, 2700 ohm, ±10%, 1/2W
R902	24946272	CC, 2700 ohm, ±10%, 1/2W
R903	24946272	CC, 2700 ohm, ±10%, 1/2W
R920	24000880	FR, 5.1 ohm, 1W
RA01	24366472	CF, 4700 ohm
RA02	24366102	CF, 1k ohm
RA03	24366101	CF, 100 ohm
RA04	24366101	CF, 100 ohm
RA05	24366102	CF, 1k ohm
RA06	24366102	CF, 1k ohm
RA07	24366102	CF, 1k ohm
RA08	24366102	CF, 1k ohm
RA09	24366102	CF, 1k ohm
RA10	24366102	CF, 1k ohm
RA11	24366102	CF, 1k ohm
RA12	24366102	CF, 1k ohm
RA13	24366102	CF, 1k ohm
RA14	24366103	CF, 10k ohm
RA15	24366102	CF, 1k ohm
RA16	24366102	CF, 1k ohm
RA17	24366102	CF, 1k ohm
RA18	24366102	CF, 1k ohm
RA19	24366102	CF, 1k ohm

Location No.	Part No.	Description
RA20	24366123	CF, 12k ohm
RA21	24366102	CF, 1k ohm
RA22	24366102	CF, 1k ohm
RA23	24366102	CF, 1k ohm
RA24	24366471	CF, 470 ohm
RA25	24366102	CF, 1k ohm
RA26	24366102	CF, 1k ohm
RA27	24366102	CF, 1k ohm
RA28	24366103	CF, 10k ohm
RA29	24366102	CF, 1k ohm
RA30	24366223	CF, 22k ohm
RA31	24366102	CF, 1k ohm
RA32	24366102	CF, 1k ohm
RA33	24366471	CF, 470 ohm
RA34	24366101	CF, 100 ohm
RA35	24366473	CF, 47k ohm
RA36	24366221	CF, 220 ohm
RA37	24366563	CF, 56k ohm
RA38	24366333	CF, 33k ohm
RA39	24366223	CF, 22k ohm
RA41	24366103	CF, 10k ohm
RA42	24366102	CF, 1k ohm
RA46	24366202	CF, 2k ohm
RA47	24366392	CF, 3900 ohm
RA48	24366432	CF, 4300 ohm
RA49	24366432	CF, 4300 ohm
RA53	24366102	CF, 1k ohm
RA54	24366223	CF, 22k ohm
RA55	24366333	CF, 33k ohm
RA56	24366333	CF, 33k ohm
RA57	24366333	CF, 33k ohm
RA58	24366221	CF, 220 ohm
RA60	24366333	CF, 33k ohm
RA61	24366392	CF, 3900 ohm
RA64	24383510	OMF, 51 ohm, 2W
RA65	24366103	CF, 10k ohm
RA66	24366103	CF, 10k ohm
RA68	24366472	CF, 4700 ohm
RA69	24366392	CF, 3900 ohm
RA70	24366472	CF, 4700 ohm
RA76	24366153	CF, 15k ohm
RA77	24366472	CF, 4700 ohm
RA78	24366472	CF, 4700 ohm
RA81	24366223	CF, 22k ohm
RA82	24366333	CF, 33k ohm
RA83	24366431	CF, 430 ohm
RA87	24366333	CF, 33k ohm
RA88	24366152	CF, 1500 ohm
RA89	24366563	CF, 56k ohm
RA90	24366564	CF, 560k ohm
RA91	24366561	CF, 560 ohm
RA92	24366102	CF, 1k ohm
RA93	24366123	CF, 12k ohm
RB01	24366472	CF, 4700 ohm
RB02	24366302	CF, 3k ohm
RB04	24366103	CF, 10k ohm
RB05	24366332	CF, 3300 ohm
RB06	24366473	CF, 47k ohm
RB12	24366102	CF, 1k ohm
RB14	24366102	CF, 1k ohm
RB15	24366102	CF, 1k ohm
RB22	24366183	CF, 18k ohm
RB25	24945565	CC, 5.6M ohm, ±10%, 1/4W
RB26	24945565	CC, 5.6M ohm, ±10%, 1/4W

Location No.	Part No.	Description
RB27	24945565	CC, 5.6M ohm, ±10%, 1/4W
RB28	24945565	CC, 5.6M ohm, ±10%, 1/4W
RD01	24000665	FR, 15 ohm, 1/4W
RD02	24383100	OMF, 10 ohm, 2W
RD03	24366562	CF, 5600 ohm
RD05	24003924	MF, 330 ohm, 1/4W
RD06	24366272	CF, 2700 ohm
RD07	24366104	CF, 100k ohm
RD08	24366203	CF, 20k ohm
RD09	24366152	CF, 1500 ohm
RD10	24366102	CF, 1k ohm
RD11	24366224	CF, 220k ohm
RD12	24366822	CF, 8200 ohm
RD13	24366203	CF, 20k ohm
RD14	24366103	CF, 10k ohm
RD15	24366104	CF, 100k ohm
RD16	24366752	CF, 7500 ohm
RD17	24366223	CF, 22k ohm
RD18	24366472	CF, 4700 ohm
RD19	24366242	CF, 2400 ohm
RD50	24061669	VR, 5k ohm, 1/8W
RD51	24061667	VR, 20k ohm, 1/8W
RM03	24366182	CF, 1800 ohm
RM04	24366242	CF, 2400 ohm
RM05	24366151	CF, 150 ohm
RM06	24945475	CC, 4.7M ohm, ±10%, 1/4W
RM15	24360153	CF, 15k ohm, 1/8W
RM26	24366153	CF, 15k ohm
RN05	24366222	CF, 2200 ohm
RN12	24366122	CF, 1200 ohm
RN13	24366103	CF, 10k ohm
RN14	24366103	CF, 10k ohm
RN15	24366223	CF, 22k ohm
RN16	24366333	CF, 33k ohm
RN17	24366471	CF, 470 ohm
RN18	24366201	CF, 200 ohm
RN19	24366182	CF, 1800 ohm
RN21	24366102	CF, 1k ohm
RN22	24366333	CF, 33k ohm
RN24	24366103	CF, 10k ohm
RN25	24366364	CF, 360k ohm
RN26	24366103	CF, 10k ohm
RN28	24366514	CF, 510k ohm
RN29	24366473	CF, 47k ohm
RN30	24366473	CF, 47k ohm
RN31	24366103	CF, 10k ohm
RN32	24366392	CF, 3900 ohm
RN33	24366132	CF, 1300 ohm
RN34	24366273	CF, 27k ohm
RN40	24366821	CF, 820 ohm
RN41	24366103	CF, 10k ohm
RN42	24366103	CF, 10k ohm
RN43	24366222	CF, 2200 ohm
RN44	24366331	CF, 330 ohm
RS02	24366223	CF, 22k ohm
RS03	24366223	CF, 22k ohm
RS04	24366223	CF, 22k ohm
RS05	24366123	CF, 12k ohm
RS06	24366681	CF, 680 ohm
RS07	24366393	CF, 39k ohm
RS08	24366393	CF, 39k ohm
RS09	24366393	CF, 39k ohm
RS10	24366102	CF, 1k ohm
RS11	24366103	CF, 10k ohm

Location No.	Part No.	Description
RS12	24366683	CF, 68k ohm
RS21	24366223	CF, 22k ohm
RS22	24366223	CF, 22k ohm
RS23	24366223	CF, 22k ohm
RS24	24366223	CF, 22k ohm
RS29	24063730	VR, 10k ohm, 0.08W
RS30	24366182	CF, 1800 ohm
RS31	24366223	CF, 22k ohm
RS32	24366104	CF, 100k ohm
RS33	24366222	CF, 2200 ohm
RS34	24366472	CF, 4700 ohm
RS35	24366473	CF, 47k ohm
RS36	24366473	CF, 47k ohm
RS37	24366473	CF, 47k ohm
RS38	24366473	CF, 47k ohm
RS39	24366102	CF, 1k ohm
RS40	24366102	CF, 1k ohm
RS41	24366271	CF, 270 ohm
RS42	24366201	CF, 200 ohm
RS43	24366201	CF, 200 ohm
RS44	24366271	CF, 270 ohm
RS45	24366229	CF, 2.2 ohm
RS46	24366229	CF, 2.2 ohm
RS47	24366473	CF, 47k ohm
RS48	24366473	CF, 47k ohm
RS49	24366102	CF, 1k ohm
RS50	24366621	CF, 620 ohm
RS51	24366473	CF, 47k ohm
RS52	24366473	CF, 47k ohm
RS53	24366473	CF, 47k ohm
RS54	24366223	CF, 22k ohm
RS62	24366473	CF, 47k ohm
RS64	24366473	CF, 47k ohm
RS65	24366473	CF, 47k ohm
RS71	24366102	CF, 1k ohm
RS72	24366223	CF, 22k ohm
RS73	24366223	CF, 22k ohm
RS74	24366223	CF, 22k ohm
RS75	24366223	CF, 22k ohm
RS76	24366223	CF, 22k ohm
RS77	24366223	CF, 22k ohm
RS78	24366473	CF, 47k ohm
RS79	24366223	CF, 22k ohm
RS80	24366683	CF, 68k ohm
RS81	24366223	CF, 22k ohm
RS82	24366223	CF, 22k ohm
RS83	24366473	CF, 47k ohm
RS84	24366473	CF, 47k ohm
RS86	24366393	CF, 39k ohm
RS87	24366393	CF, 39k ohm
RS91	24366152	CF, 1500 ohm
RS92	24366473	CF, 47k ohm
RS93	24366473	CF, 47k ohm
RS94	24366223	CF, 22k ohm
RS95	24366223	CF, 22k ohm
RS96	24366223	CF, 22k ohm
RS97	24366223	CF, 22k ohm
RS98	24366223	CF, 22k ohm
RS99	24366223	CF, 22k ohm
RV03	24366101	CF, 100 ohm
RV04	24366102	CF, 1k ohm
RV05	24366103	CF, 10k ohm
RV06	24366101	CF, 100 ohm
RV08	24366101	CF, 100 ohm

Location No.	Part No.	Description
RV09	24366101	CF, 100 ohm
RV12	24366101	CF, 100 ohm
RV17	24366102	CF, 1k ohm
RV18	24366104	CF, 100k ohm
RV19	24366104	CF, 100k ohm
RV21	24366102	CF, 1k ohm
RV22	24366681	CF, 680 ohm
RV24	24366222	CF, 2200 ohm
RV25	24366222	CF, 2200 ohm
RV26	24366102	CF, 1k ohm
RV27	24366473	CF, 47k ohm
RV28	24366103	CF, 10k ohm
RV29	24366103	CF, 10k ohm
RV30	24366223	CF, 22k ohm
RV31	24366101	CF, 100 ohm
RV32	24366332	CF, 3300 ohm
RV33	24366332	CF, 3300 ohm
RV34	24552750	OMF, 75 ohm, 1/2W
RV35	24366101	CF, 100 ohm
RV36	24366102	CF, 1k ohm
RV37	24366103	CF, 10k ohm
RV38	24366473	CF, 47k ohm
RV39	24366473	CF, 47k ohm
RV40	24366102	CF, 1k ohm
RV41	24366102	CF, 1k ohm
RV42	24366223	CF, 22k ohm
RV43	24366223	CF, 22k ohm
RV44	24366103	CF, 10k ohm
RV45	24366820	CF, 82 ohm
RV46	24366820	CF, 82 ohm
RV60	24366910	CF, 91 ohm
RV62	24366473	CF, 47k ohm
RV63	24366102	CF, 1k ohm
RV64	24366473	CF, 47k ohm
RV65	24366102	CF, 1k ohm
RV66	24366910	CF, 91 ohm
RV68	24366473	CF, 47k ohm
RV69	24366102	CF, 1k ohm
RV70	24366473	CF, 47k ohm
RV71	24366102	CF, 1k ohm
RV72	24366103	CF, 10k ohm
RV73	24366180	CF, 18 ohm
RV74	24366473	CF, 47k ohm
RV75	24366102	CF, 1k ohm
RV76	24366473	CF, 47k ohm
RV77	24366102	CF, 1k ohm
RV78	24366102	CF, 1k ohm
RV79	24366102	CF, 1k ohm
RX03	24366103	CF, 10k ohm
RX05	24366101	CF, 100 ohm
RX06	24366681	CF, 680 ohm
RX09	24366681	CF, 680 ohm
RX13	24366102	CF, 1k ohm
RX16	24366152	CF, 1500 ohm
RX17	24366152	CF, 1500 ohm
RX18	24366683	CF, 68k ohm
RX19	24366222	CF, 2200 ohm
RX20	24366473	CF, 47k ohm
RX27	24366103	CF, 10k ohm
RX29	24366472	CF, 4700 ohm
RX31	24366103	CF, 10k ohm
RX32	24366103	CF, 10k ohm
RX33	24366473	CF, 47k ohm
RX34	24366224	CF, 220k ohm

Location No.	Part No.	Description
RX35	24366473	CF, 47k ohm
RX36	24366101	CF, 100 ohm
RX37	24366273	CF, 27k ohm
RX38	24366473	CF, 47k ohm
RX39	24366102	CF, 1k ohm
RX40	24366102	CF, 1k ohm
RZ01	24366112	CF, 1100 ohm
RZ02	24366122	CF, 1200 ohm
RZ03	24366332	CF, 3300 ohm
RZ04	24366103	CF, 10k ohm
RZ05	24366222	CF, 2200 ohm
RZ06	24366101	CF, 100 ohm
RZ08	24366102	CF, 1k ohm
RZ09	24366103	CF, 10k ohm
RZ10	24366103	CF, 10k ohm
RZ11	24366471	CF, 470 ohm
RZ13	24366104	CF, 100k ohm
RZ14	24366102	CF, 1k ohm
RZ15	24366102	CF, 1k ohm

COILS & TRANSFORMERS

Location No.	Part No.	Description
L181	23261985	Coil, RF Choke, TRF9221
L203	23238914	Coil, Peaking, TRF4470AC
L240	23238928	Coil, Peaking, TRF4339AC
L241	23238923	Coil, Peaking, TRF4829AC
L243	23238984	Coil, Peaking, TRF4439AC
L311	23261974	Coil, Choke, HC5-035
L410	23238710	Coil, Peaking, TRF4220AJ
L411	23103859	Coil (Ferrite Bead), TEM2011
L412	23103859	Coil (Ferrite Bead), TEM2011
L413	23233089	Coil, Linearity, TLN2137
L462	23227409	Deflection Yoke, TDY-6296B
L463	23221684	Coil, Choke, TLN3191D
L465	23221894	Coil, Choke, TLN3063
L503	23238922	Coil, Peaking, TRF4100AC
L551	23250972	Coil, 1H-Delay Matching, TRF5418D
L580	23238562	Coil, Peaking, TRF4109AJ
L593	70131059	Coil, Signal Line, ZBF503D-00TA
L671	23262739	Coil, IF, TRF1126D
L672	23262739	Coil, IF, TRF1126D
L673	23238918	Coil, Peaking, TRF4220AC
L674	23232946	Coil, Variable, TRF3073D
L675	23237971	Coil, Peaking, TRF4221AC
L802	23221076	Coil, Choke, TLN1015R
L803	23261975	Coil, Choke, TRF9229
L804	23261975	Coil, Choke, TRF9229
L805	23222694	Coil, Width, TLN2026
L806	23103859	Coil (Ferrite Bead), TEM2011
L807	23103859	Coil (Ferrite Bead), TEM2011
L808	23222694	Coil, Width, TLN2026
L809	23222694	Coil, Width, TLN2026
L810	23222694	Coil, Width, TLN2026
L811	23103859	Coil (Ferrite Bead), TEM2011
L812	23238714	Coil, Peaking, TRF4100AJ
L813	23103859	Coil (Ferrite Bead), TEM2011
L814	23103859	Coil (Ferrite Bead), TEM2011
L901	23200686	Coil, Degaussing, TSB-2311AC
LA01	23238562	Coil, Peaking, TRF4109AJ
LA03	23221937	Coil, Choke, TLN3040
LB01	23262778	Coil, IF, TRF1112
LD02	23221885	Coil, Choke, TLN3072

Location No.	Part No.	Description
LD03	23103940	Coil (Ferrite Bead), TEM2001
LM01	23262797	Coil, IF, TRF1093D
LM02	23250865	Coil, IF, TRF5414DA
LM03	23250865	Coil, IF, TRF5414DA
LM04	23262798	Coil, IF, TRF1092D
LN02	23238920	Coil, Peaking, TRF4150AC
LN03	23238918	Coil, Peaking, TRF4220AC
LN40	23238921	Coil, Peaking, TRF4120AC
LN41	23237986	Coil, Peaking, TRF4120AC
LV02	23238918	Coil, Peaking, TRF4220AC
LZ01	23238923	Coil, Peaking, TRF4829AC
T181	23262895	Coil, PIF Trap, TRF1441
T182	23262843	Coil, PIF Trap, TRF1457D
⚠ T401	23224915	Transformer, Horiz. Drive, TLN1068
⚠ T461	23236234	Transformer, Flyback, TFB4092AD
T801	23211857	Line Filter, TRF3138
T802	23211857	Line Filter, TRF3138
T803	23213496	Transformer, Converter, TPW3148
T804	23224917	Transformer, Separation, TLN2122

SEMICONDUCTORS

Location No.	Part No.	Description
IC303	23119142	IC, AN5521
IC405	23318218	IC, μPC7812H
IC501	B0379470	IC, TA8659N
IC604	B0356190	IC, TA7630P
IC605	23318413	IC, LA4282
IC670	B0379150	IC, TA8615N
IC674	B0325290	IC, TA7337P
IC803	23318411	IC, TEA2164
IC806	23318299	IC, L78MR05-FA
IC807	23318412	IC, TEA5170
ICA01	23318445	IC, M50436-688SP
ICA02	23119182	IC, μPD6336C
ICA03	23318482	IC, M6M80011AP
ICA04	23119441	IC, LA7910
ICS03	23119228	IC, μPC1406HA
ICS04	B0350000	IC, TA75458P
ICS05	B0350000	IC, TA75458P
ICS06	B0350000	IC, TA75458P
ICS07	B0350000	IC, TA75458P
ICS12	B0350000	IC, TA75458P
ICS13	23318195	IC, AN7171NK
ICV01	B0383505	IC, TA8720AN
ICZ01	B0470532	IC, TC4053BP
Q171	A6317440	Transistor, 2SC1815N-Y
Q181	A6708871	Transistor, 2SC388ATM
Q203	A6342200	Transistor, 2SC2878-A
Q204	A6317440	Transistor, 2SC1815N-Y
Q205	A6317440	Transistor, 2SC1815N-Y
Q240	A6534040	Transistor, 2SA1015-Y
Q241	A6319300	Transistor, 2SC1959N-Y
Q301	A6317480	Transistor, 2SC1815N-BL
Q302	A6317440	Transistor, 2SC1815N-Y
Q304	A6317440	Transistor, 2SC1815N-Y
Q305	A6317440	Transistor, 2SC1815N-Y
Q402	A678971D	Transistor, 2SC1569 FA-5
⚠ Q404	A6868772	Transistor, 2SD1428
Q406	A6317440	Transistor, 2SC1815N-Y
Q502	A6534040	Transistor, 2SA1015-Y
Q503	A6534040	Transistor, 2SA1015-Y

Location No.	Part No.	Description
Q505	A6363200	Transistor, 2SC3619
Q506	23114552	Transistor, 2SC1685-Q
Q508	A6363200	Transistor, 2SC3619
Q509	23114552	Transistor, 2SC1685-Q
Q511	A6363200	Transistor, 2SC3619
Q512	23114552	Transistor, 2SC1685-Q
Q514	A6509120	Transistor, 2SA562TM-O
Q515	A6317440	Transistor, 2SC1815N-Y
Q570	A6317460	Transistor, 2SC1815-GR
Q601	A6534040	Transistor, 2SA1015-Y
Q606	A6317440	Transistor, 2SC1815N-Y
Q607	A6317440	Transistor, 2SC1815N-Y
Q608	A6317440	Transistor, 2SC1815N-Y
Q609	A6317440	Transistor, 2SC1815N-Y
Q661	A6342200	Transistor, 2SC2878-A
Q662	A6342200	Transistor, 2SC2878-A
Q671	A6317440	Transistor, 2SC1815N-Y
Q672	A6317440	Transistor, 2SC1815N-Y
Q673	A6509140	Transistor, 2SA562TMY
Q675	A6317440	Transistor, 2SC1815N-Y
Q801	23314519	Transistor (STR), STR81145L501
Q801E	23030211	Screw, 3X14SN
Q804	A6366908	Transistor, 2SC4288A FA-1
Q805	A6533760	Transistor, 2SA1013-O(C)
Q808	A7804500	SCR, SF5J42
Q809	A6317440	Transistor, 2SC1815N-Y
Q810	A6328333	Transistor, 2SC2383-Y(C)
Q811	A6534040	Transistor, 2SA1015-Y
Q814	A6546310	Transistor, 2SA1297Y
Q815	A6317440	Transistor, 2SC1815N-Y
Q816	A6867980	Transistor, 2SD1405-V
Q817	A6321240	Transistor, 2SC2120-Y
QA05	A6534040	Transistor, 2SA1015-Y
QA14	A6317440	Transistor, 2SC1815N-Y
QA17	A6317440	Transistor, 2SC1815N-Y
QA19	A6317440	Transistor, 2SC1815N-Y
QA22	A6534040	Transistor, 2SA1015-Y
QA26	A6534040	Transistor, 2SA1015-Y
QB01	A6317440	Transistor, 2SC1815N-Y
QB02	A6317440	Transistor, 2SC1815N-Y
QD01	A6533730	Transistor, 2SA1012-Y
QD02	23114528	Transistor, 2SC1740S-Q
QD03	23114530	Transistor, 2SA933S-Q
QD04	A6342200	Transistor, 2SC2878-A
QN01	A6002060	Transistor, RN1206
QN02	A6534040	Transistor, 2SA1015-Y
QN03	A6534040	Transistor, 2SA1015-Y
QN04	A6317440	Transistor, 2SC1815N-Y
QN05	A6317440	Transistor, 2SC1815N-Y
QN06	A6002040	Transistor, RN1204
QN07	A6317440	Transistor, 2SC1815N-Y
QN08	A6002040	Transistor, RN1204
QN09	A6317440	Transistor, 2SC1815N-Y
QN10	A6317440	Transistor, 2SC1815N-Y
QN11	A6002040	Transistor, RN1204
QN40	A6317440	Transistor, 2SC1815N-Y
QS01	A6317440	Transistor, 2SC1815N-Y
QS02	A6317440	Transistor, 2SC1815N-Y
QS08	A6317440	Transistor, 2SC1815N-Y
QS09	A6317440	Transistor, 2SC1815N-Y
QS10	A6317440	Transistor, 2SC1815N-Y
QS11	A6534040	Transistor, 2SA1015-Y
QS13B	23035308	Screw, BTB3X8SZN

Location No.	Part No.	Description
QS13C	23030211	Screw, 3X14SN
QS14	A6342200	Transistor, 2SC2878-A
QS15	A6317440	Transistor, 2SC1815N-Y
QV02	A6002040	Transistor, RN1204
QV03	A6342200	Transistor, 2SC2878-A
QV04	A6534040	Transistor, 2SA1015-Y
QV05	A6317440	Transistor, 2SC1815N-Y
QV06	A6534040	Transistor, 2SA1015-Y
QV07	A6342200	Transistor, 2SC2878-A
QV08	A6317440	Transistor, 2SC1815N-Y
QX01	A6317440	Transistor, 2SC1815N-Y
QX02	A6734585	Transistor, 2SC752GTM-O
QX06	A6534040	Transistor, 2SA1015-Y
QX07	A6317440	Transistor, 2SC1815N-Y
QX08	A6002040	Transistor, RN1204
QX09	A6002060	Transistor, RN1206
QZ02	A6534040	Transistor, 2SA1015-Y
QZ03	A6342200	Transistor, 2SC2878-A
D181	A7288601	Diode, 1S2186 FA-1
D182	A7288601	Diode, 1S2186 FA-1
D183	A7288601	Diode, 1S2186 FA-1
D241	A7150041	Diode, 1SS104
D302	A7568250	Diode, 1S1834
D303	23118977	Diode, ERC01-02FL
D315	A7116715	Diode, Zener, 04AZ7.5Y
D317	A7150258	Diode, 1SS176
D320	A7150258	Diode, 1SS176
D321	A7150258	Diode, 1SS176
D340	A7150258	Diode, 1SS176
D401	A7116925	Diode, Zener, 04AZ9.1Z
D402	A7117215	Diode, Zener, 04AZ12Y
D405	A7117715	Diode, Zener, 04AZ20Y
D406	A7978850	Diode, S5295G
D408	23118052	Diode, RU4Z
D410	A7116815	Diode, Zener, 04AZ8.2Y
D570	A7150258	Diode, 1SS176
D571	A7150258	Diode, 1SS176
D572	A7150258	Diode, 1SS176
D573	A7150258	Diode, 1SS176
D594	A7150258	Diode, 1SS176
D595	A7150258	Diode, 1SS176
D596	A7150258	Diode, 1SS176
D606	A7150258	Diode, 1SS176
D607	A7150258	Diode, 1SS176
D608	A7150258	Diode, 1SS176
D609	A7150258	Diode, 1SS176
D610	A7150258	Diode, 1SS176
D670	A7150258	Diode, 1SS176
D671	A7150258	Diode, 1SS176
D672	A7150258	Diode, 1SS176
D673	A7288601	Diode, 1S2186 FA-1
D674	A7150258	Diode, 1SS176
D675	A7150258	Diode, 1SS176
D801	A7568200	Diode, 1S1832
D802	A7568200	Diode, 1S1832
D803	23316275	Diode, RBV606 LF-A
D804	A7117815	Diode, Zener, 04AZ22Y
D807	A7978850	Diode, S5295G
D808	A7978850	Diode, S5295G
D809	A7978850	Diode, S5295G
D810	A7568300	Diode, 1S1835
D811	A7117415	Diode, Zener, 04AZ15Y
D812	A7978850	Diode, S5295G
D813	A7978850	Diode, S5295G

Location No.	Part No.	Description
D814	A7978850	Diode, S5295G
D815	A7978850	Diode, S5295G
D816	A7978850	Diode, S5295G
D817	23118451	Diode, RU4A
D818	23118338	Diode, RU4AM
D819	A7568300	Diode, 1S1835
D820	A7116615	Diode, Zener, 04AZ6.8Y
D821	A7150258	Diode, 1SS176
D822	A7275400	Diode, 1S2462
D824	A7150258	Diode, 1SS176
D826	A7568300	Diode, 1S1835
D828	23118052	Diode, RU4Z
D829	23118052	Diode, RU4Z
D830	A7150258	Diode, 1SS176
D832	A7116615	Diode, Zener, 04AZ6.8Y
D833	A7978850	Diode, S5295G
D834	A7116615	Diode, Zener, 04AZ6.8Y
D841	A7116415	Diode, Zener, 04AZ5.6Y
DA01	A7150258	Diode, 1SS176
DA02	A7150258	Diode, 1SS176
DA03	A7150258	Diode, 1SS176
DA04	A7150258	Diode, 1SS176
DA05	A7150258	Diode, 1SS176
DA06	A7150258	Diode, 1SS176
DA07	A7150258	Diode, 1SS176
DA08	A7150258	Diode, 1SS176
DA09	A7150258	Diode, 1SS176
DA10	23115878	Diode, Zener, μPC574J(L)
DA11	A7150258	Diode, 1SS176
DA12	A7150258	Diode, 1SS176
DA55	A8606431	Diode (LED), TLG153, Green
DB10	A7150258	Diode, 1SS176
DD01	A7568460	Diode, TVR-1B
DD02	23118943	Diode, ERC20-04
DD03	A7568752	Diode, 1S1887A
DD04	A7150258	Diode, 1SS176
DD05	A7150258	Diode, 1SS176
DD06	A7150258	Diode, 1SS176
DE55	A8636541	Diode (LED), TLS153, Red
DN06	A7288601	Diode, 1S2186 FA-1
DN07	A7288601	Diode, 1S2186 FA-1
DS02	A7116415	Diode, Zener, 04AZ5.6Y
DS03	A7150258	Diode, 1SS176
DS04	A7150258	Diode, 1SS176
DS05	A7150258	Diode, 1SS176
DS06	A7150258	Diode, 1SS176
DS07	A7150258	Diode, 1SS176
DS55	A8608781	Diode (LED), TLY153, Yellow
DV01	A7150258	Diode, 1SS176
DV02	A7150258	Diode, 1SS176
DV03	A7150258	Diode, 1SS176
DV04	A7150258	Diode, 1SS176
DV05	A7116915	Diode, Zener, 04AZ9.1Y
DV55	A8612100	Diode (LED), TLO153, Orange
DX03	A7150258	Diode, 1SS176
DX04	A7150258	Diode, 1SS176

MISCELLANEOUS

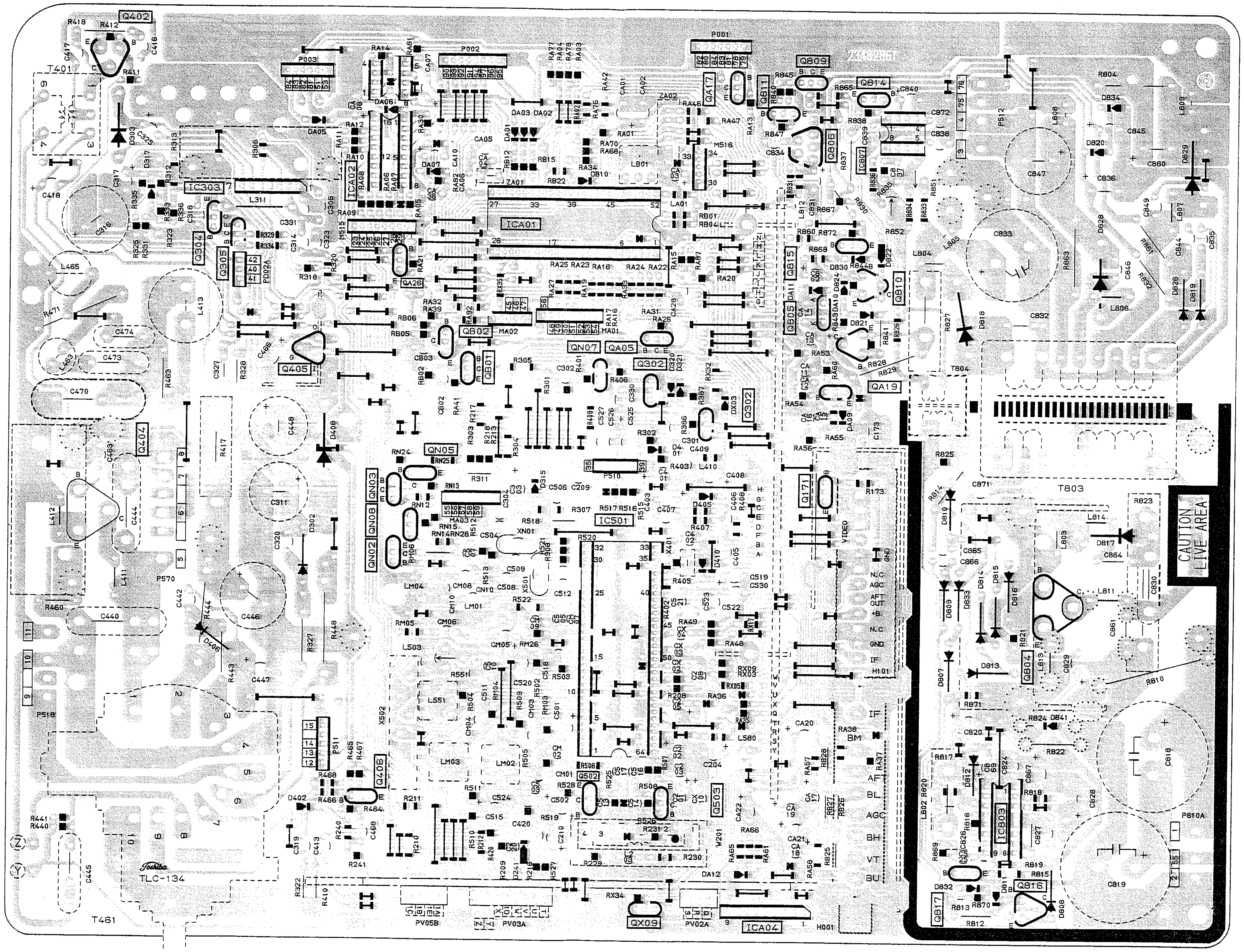
Location No.	Part No.	Description
B202	23864198	Back Frame
B205	23443504	Knob
B234	23712306	Screw, PP3X.5X6SZN
F801	23144867	Fuse, 4.0A

Location No.	Part No.	Description
F801A	23165102	Fuse Holder
K901	23120599	Remote Sensor, IR-9105-D
L462A	23993726	Compensator, DY, YH
L462B	23993622	Compensator, DY, TC-M
P002	23902600	Socket, 11P
P003	23161701	Terminal, 4P
P661	23363607	Headphone Jack, 3.5mm
P801	23176739	Power Cord
PV01	23365346	Jack, Phono, 9P
PV40	23365361	Jack, 4P
S001	23145412	Switch, Slide, 2C2P
S201	23145579	Switch, Push, 2C2P
S202	23145682	Switch, Lever, 1C3P
S301	23145542	Switch, Lever, 1C3P
S601	23145579	Switch, Push, 2C2P
S602	23145579	Switch, Push, 2C2P
S801	23145434	Switch, Power, 2C2P
SA10	23145538	Switch, Push, 2C1P
V901A	23902019	Socket, CRT, 10P
V901M	23102893	Magnet, Purity-Convergence, MAG-1037
W201	23250875	Delay Line, TRF2080
W660	23351041	Speaker, SPK-1314, 120x120mm, 8 ohm
W661	23351020	Speaker, SPK-1295, 60x90mm, 16 ohm
W662	23351020	Speaker, SPK-1295, 60x90mm, 16 ohm
W663	23351020	Speaker, SPK-1295, 60x90mm, 16 ohm
W664	23351020	Speaker, SPK-1295, 60x90mm, 16 ohm
W665	23351021	Speaker, SPK-1296, 40x40mm, 8 ohm
W666	23351021	Speaker, SPK-1296, 40x40mm, 8 ohm
X401	23153886	Ceramic Resonator, 503kHz, TCR1012
X501	23153979	Crystal, 4.43MHz
X502	23153797	1H-Delay Line, PAL/SECAM, ED645A41T
XN01	23153961	Crystal, 3.58MHz
Z240	23107658	Ceramic Video Trap, 5.74MHz, TCF1052
Z241	23107911	Ceramic Video Trap, 5.5 to 6MHz, TCF1019
Z671	23107947	Ceramic Filter, 5.5MHz, SFE5.5MBF
Z672	23107948	Ceramic Filter, 6.0MHz, SFE6.0MBF
Z673	23107949	Ceramic Filter, 6.5MHz, SFE6.5MBF
Z674	23153900	Ceramic Resonator, 500kHz, TCR1010
Z675	23107948	Ceramic Filter, 6.0MHz, SFE6.0MBF
Z676	23107980	Ceramic Filter, 4.5MHz, SFE4.5MB
ZA01	23153845	Ceramic Resonator, 4MHz, TCR1015
ZA02	24094651	Capacitor Block, 100pFx4, 50V
ZN01	23107913	Ceramic Video Trap, 6.5MHz, TCF1018

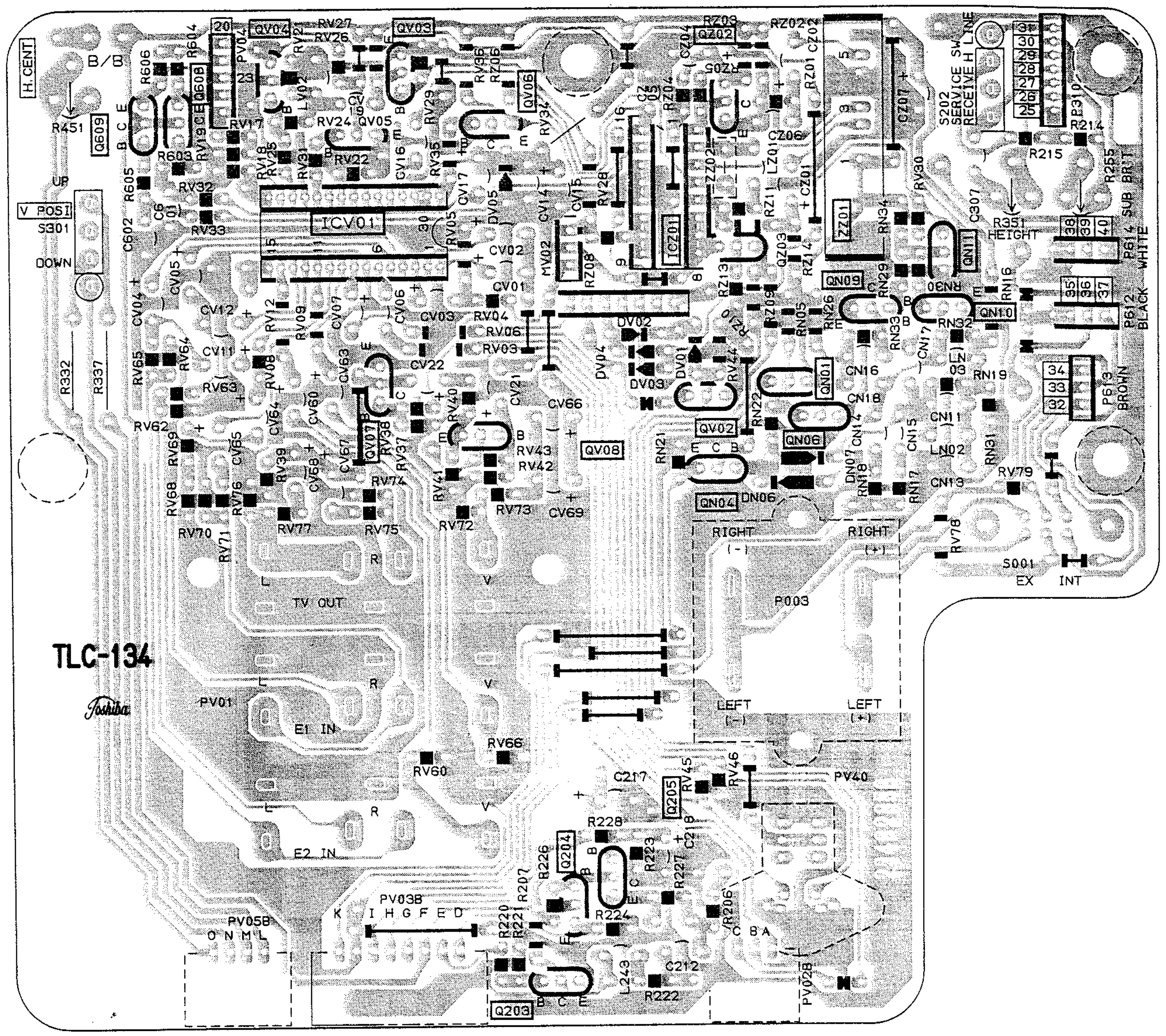
Location No.	Part No.	Description
ZN04	23107976	Ceramic Video Trap, 4.5MHz, TPS4.5MC2
ZZ01	23107611	Ceramic Filter, UGL-304KNT
ZZ02	23107849	Ceramic Video Trap, 4.43MHz, TCF1032
PC BOARD ASSEMBLIES		
U902	23336674	Main Board, PB0051
U903A	23336721	Back Terminal Board, PB0064-1
U903B	23336722	System SW. Board, PB0064-2
U904A	23336715	Power/Audio Out Board, PB0052-1
U904B	23336716	Audio/DPC Board, PB0052-2
U904C	23336717	CRT Drive Board, PB0052-3
U904D	23336718	LED/IR Amp Board, PB0052-4
U904E	23336719	Headphone/SW. Board, PB0052-5
U904F	23336720	Connector Board, PB0052-6
PICTURE TUBE		
⚠ V901	A5551539	Picture Tube, A68KHP96X, SVC
TUNER		
H001	23121729	Tuner, VHF/UHF, EG444V
REMOTE HAND SET PARTS		
K902	23120563	Remote Hand Unit, CT-9329
AT01	23300821	Upper Case
AT02	23300919	Lower Case
AT03	23300920	Battery Cover
AT04	23300921	Filter
ST01	23300937	Rubber Sheet
UT01	23334590	PC Board, PW6918
ZT01	23153736	Ceramic Resonator, CSB455EB20

MAIN BOARD PB0051

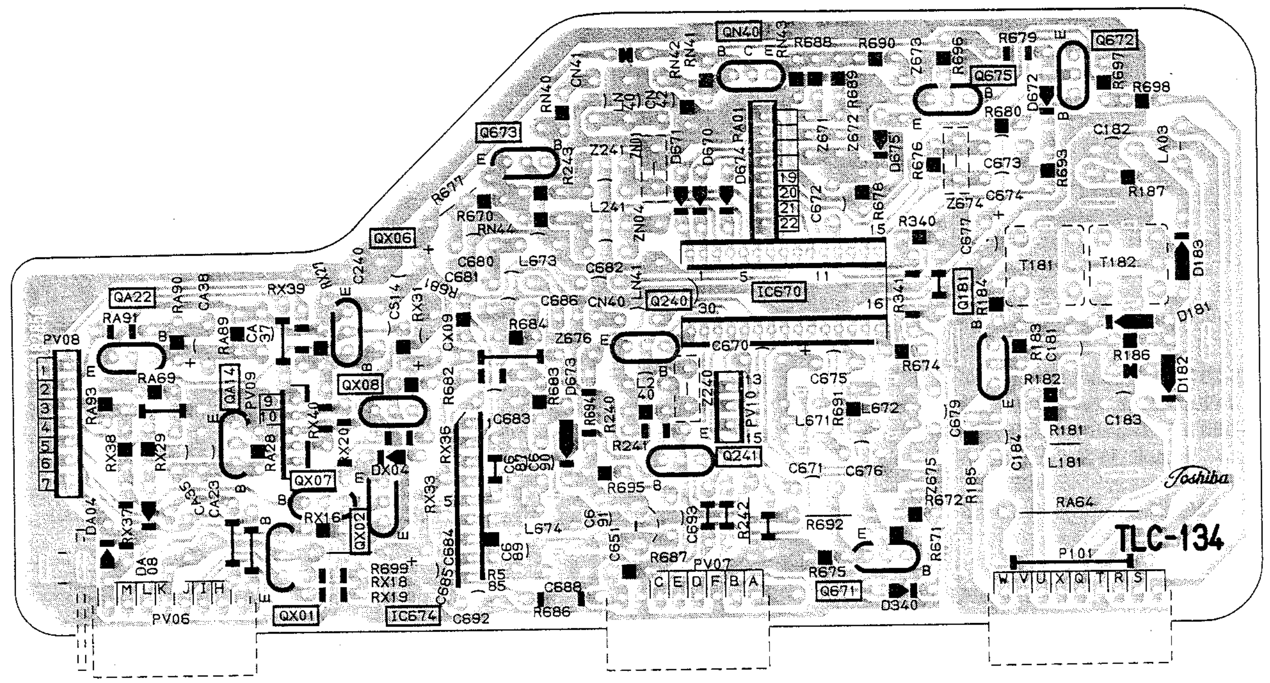
BOTTOM (FOIL) SIDE



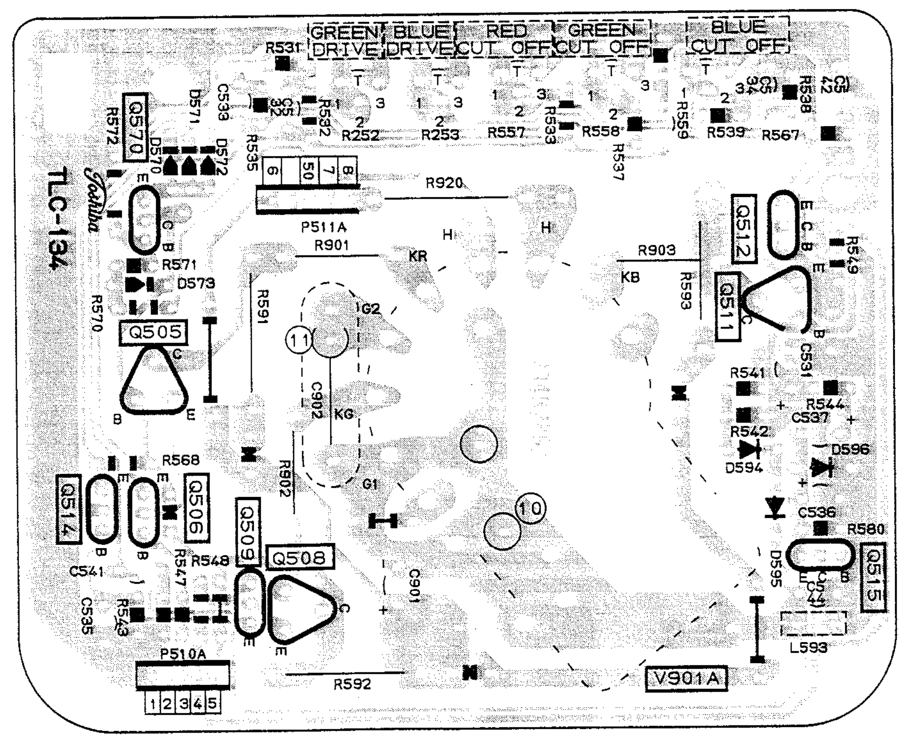
BACK TERMINAL BOARD PB0064-1
BOTTOM (FOIL) SIDE



SYSTEM SW. BOARD PB0064-2
BOTTOM (FOIL) SIDE

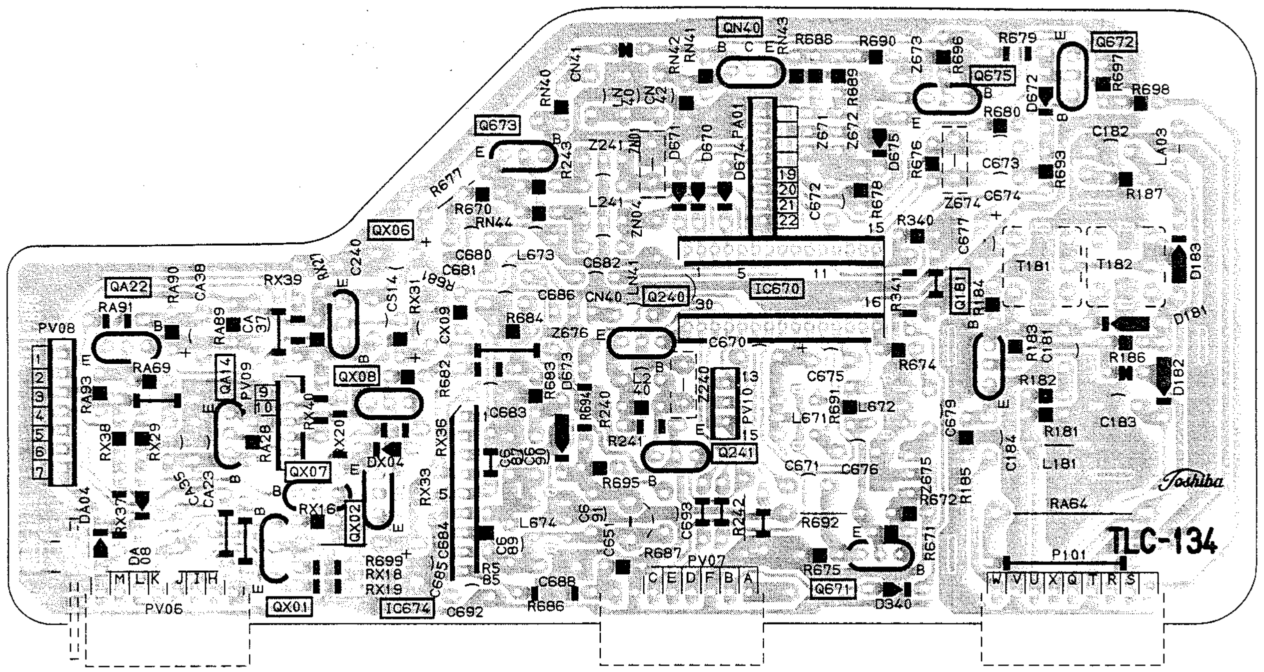


CRT DRIVE BOARD PB0052-3
BOTTOM (FOIL) SIDE



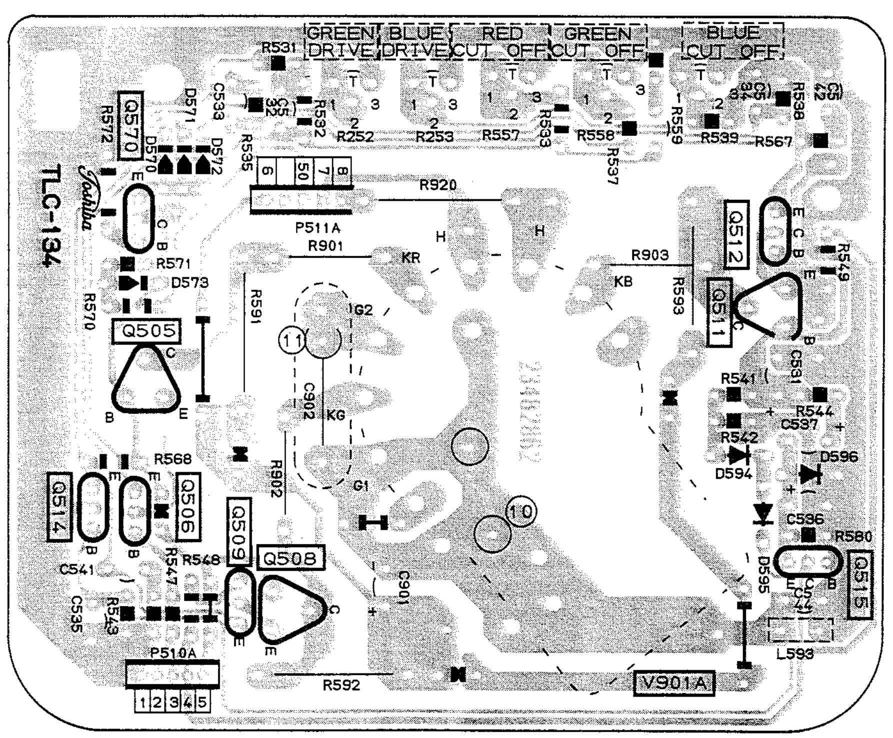
SYSTEM SW. BOARD PB0064-2

BOTTOM (FOIL) SIDE



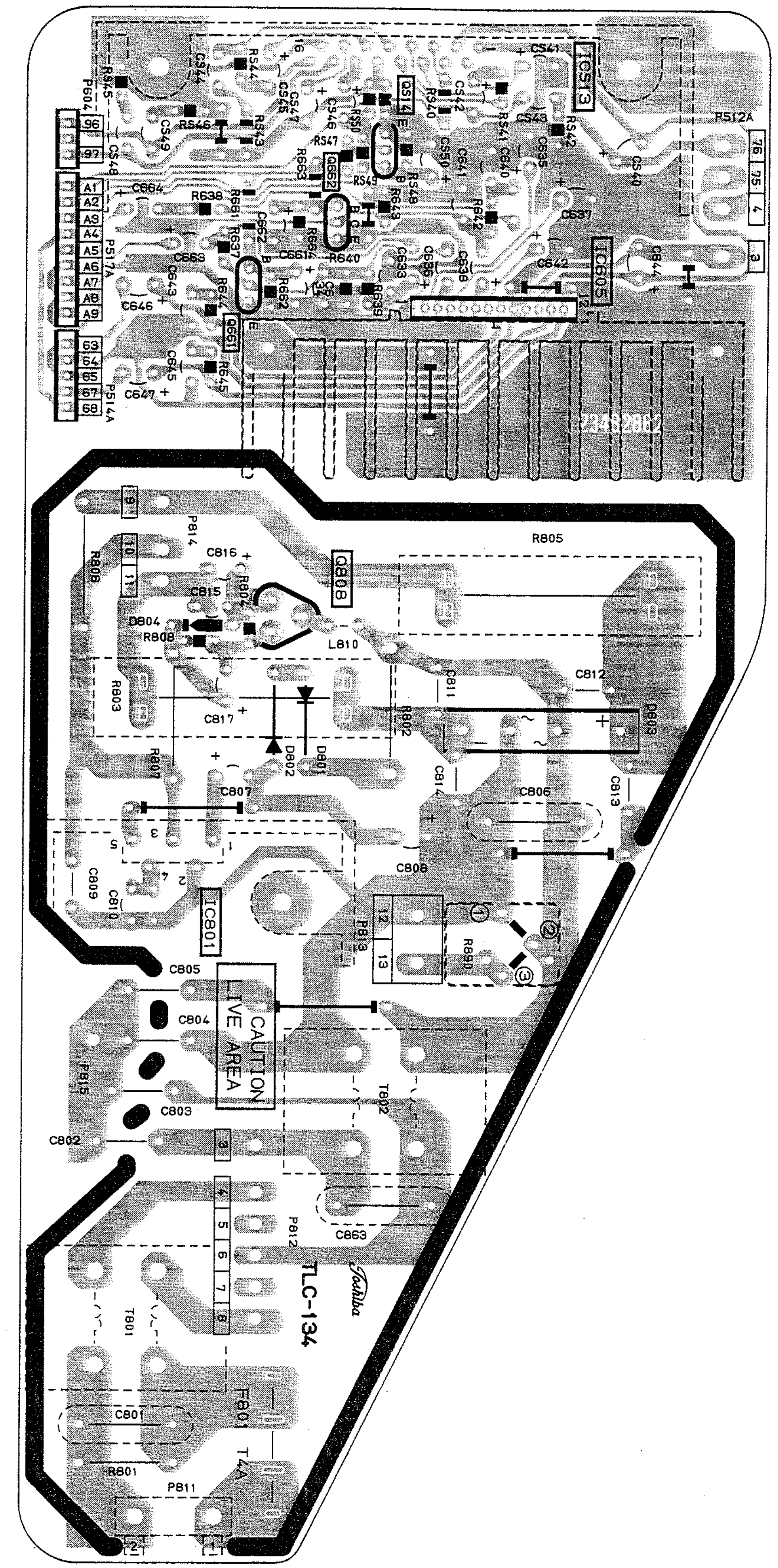
CRT DRIVE BOARD PB0052-3

BOTTOM (FOIL) SIDE



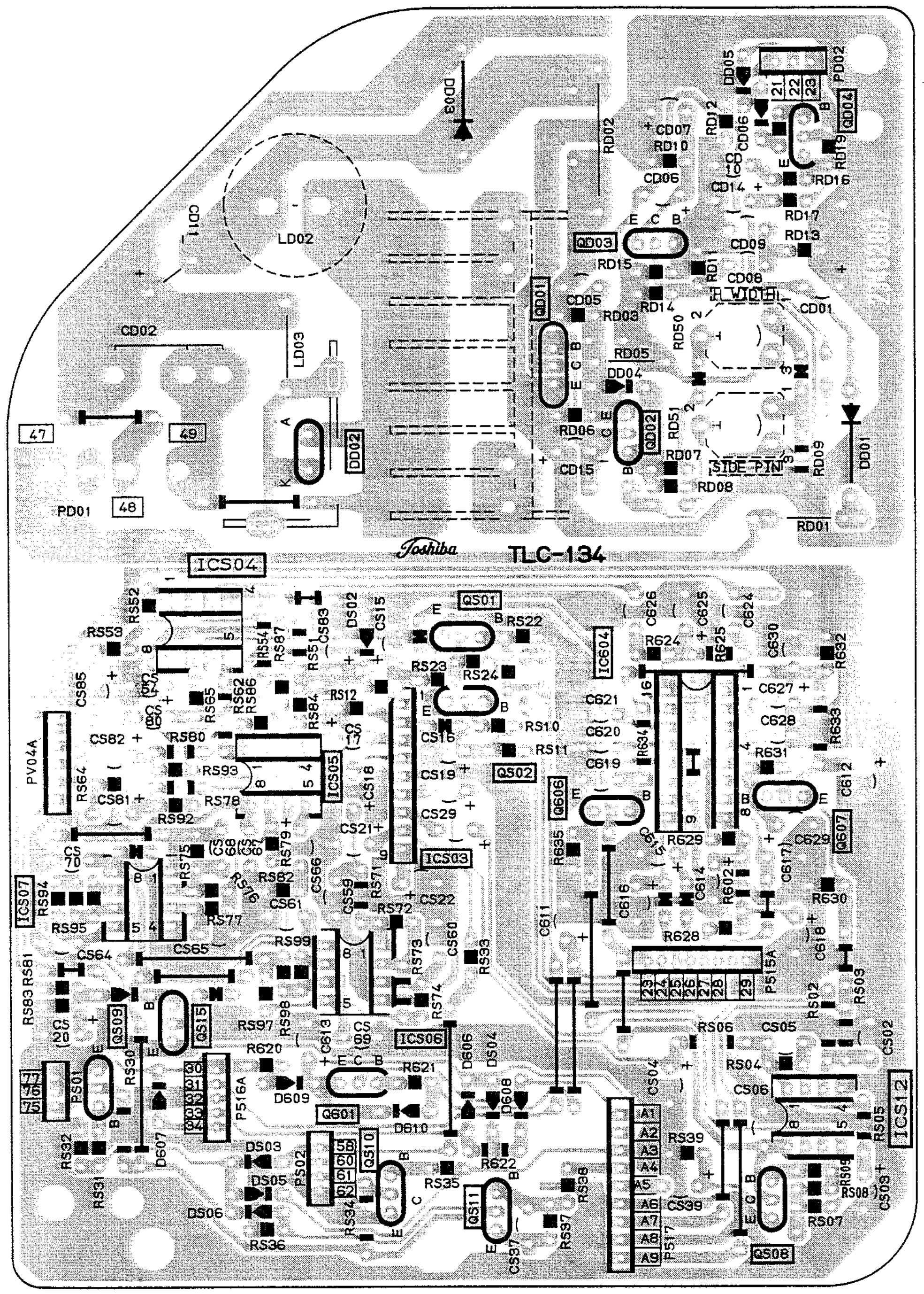
POWER AUDIO BOARD PB0052-1

BOTTOM (FOIL) SIDE



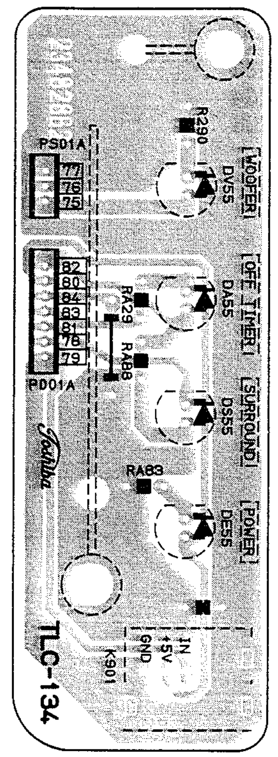
AUDIO / DPC BOARD PB0052-2

BOTTOM (FOIL) SIDE



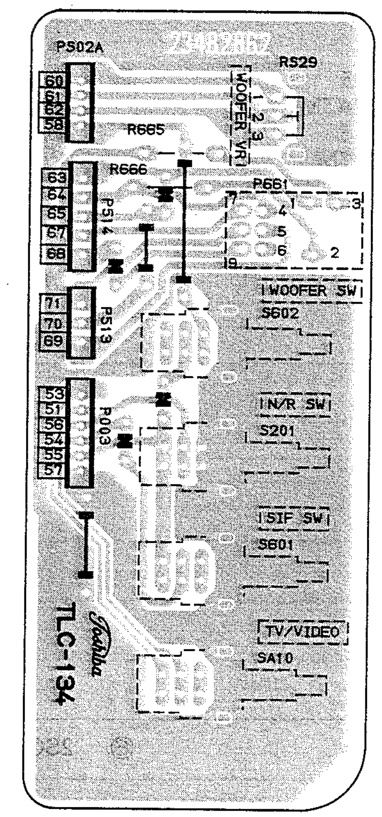
LED / IR AMP BOARD PB0052-4

BOTTOM (FOIL) SIDE



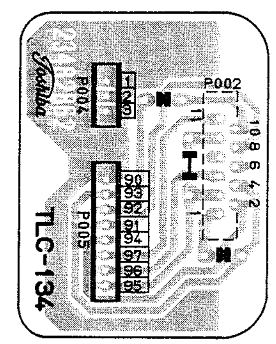
HEADPHONE / SW BOARD PB0052-5

BOTTOM (FOIL) SIDE



CONNECTOR BOARD PB0052-6

BOTTOM (FOIL) SIDE



SCHEMATIC DIAGRAM MODEL 2909XM (1/2)

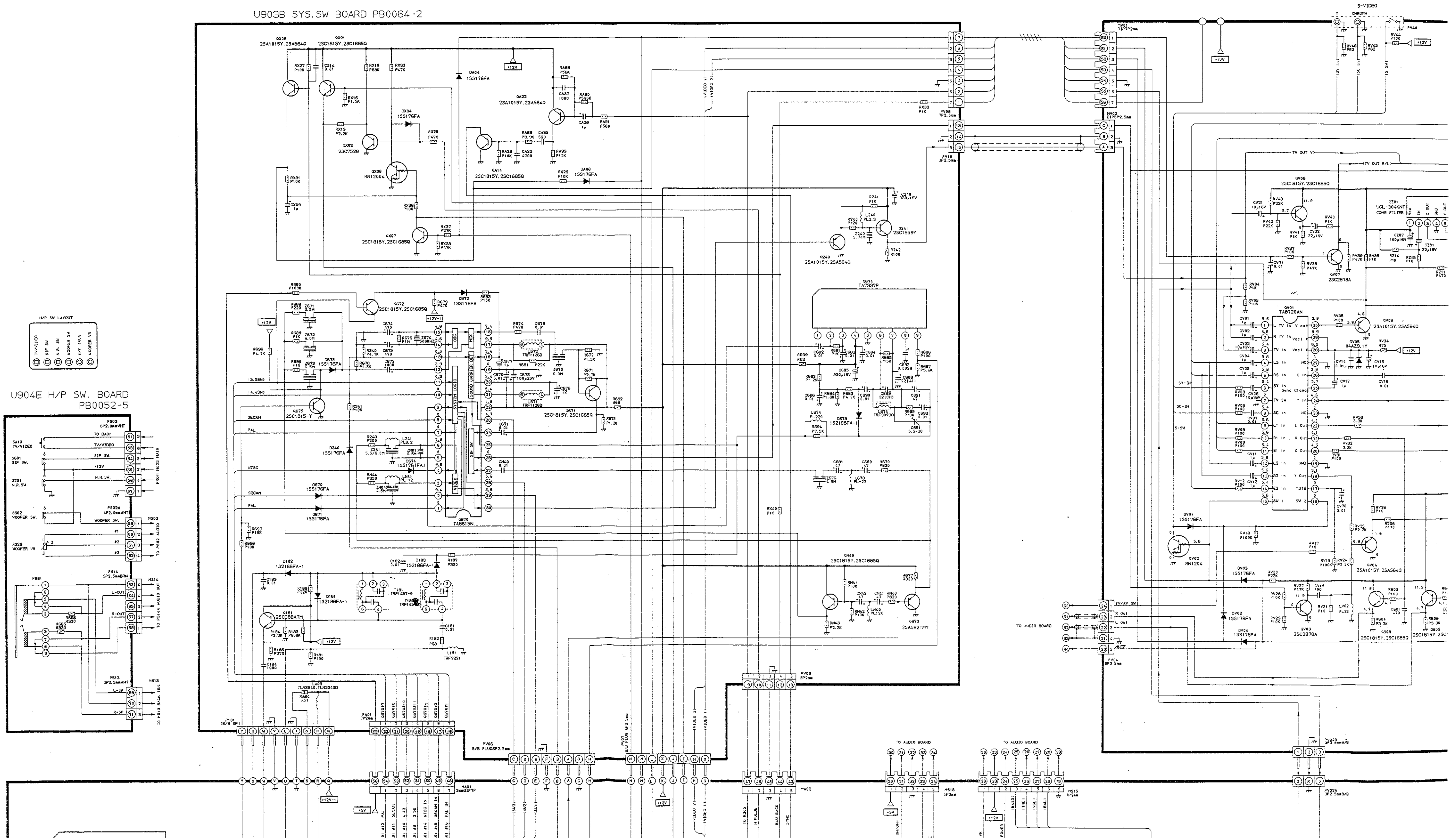
NOTE: The parts identified by the international hazard symbols are critical for safety. Replace only with part number specified.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal.
2. Voltages reading may vary ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe
5. Check FINE TUNING, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.

NOTES:

1. D.C. resistance value of a gram. These are measured f
2. The circuits are subject to c
3. : Solder links.



NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. : Solder links.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=1,000,000
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.

RESISTOR

Table 1

Type	Mark
Carbon Composition	S
Oxide Metal Film	R
Insulated Carbon Film	P
Wire Wound	W
Cement	No Mark
Variable Resistor	
Positive Thermistor	
Negative Thermistor	
Fusible Resistor	FR

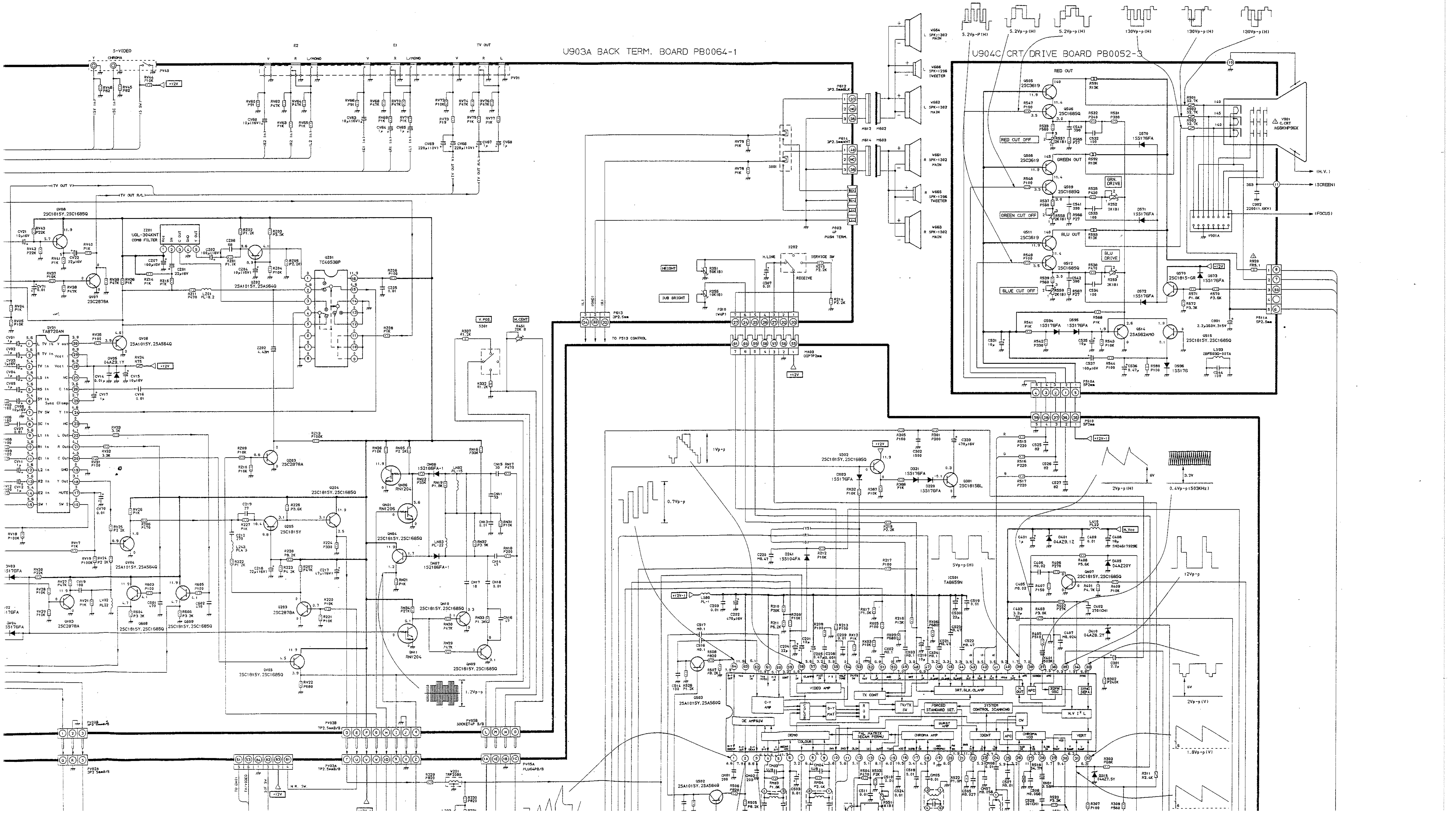
Table 2

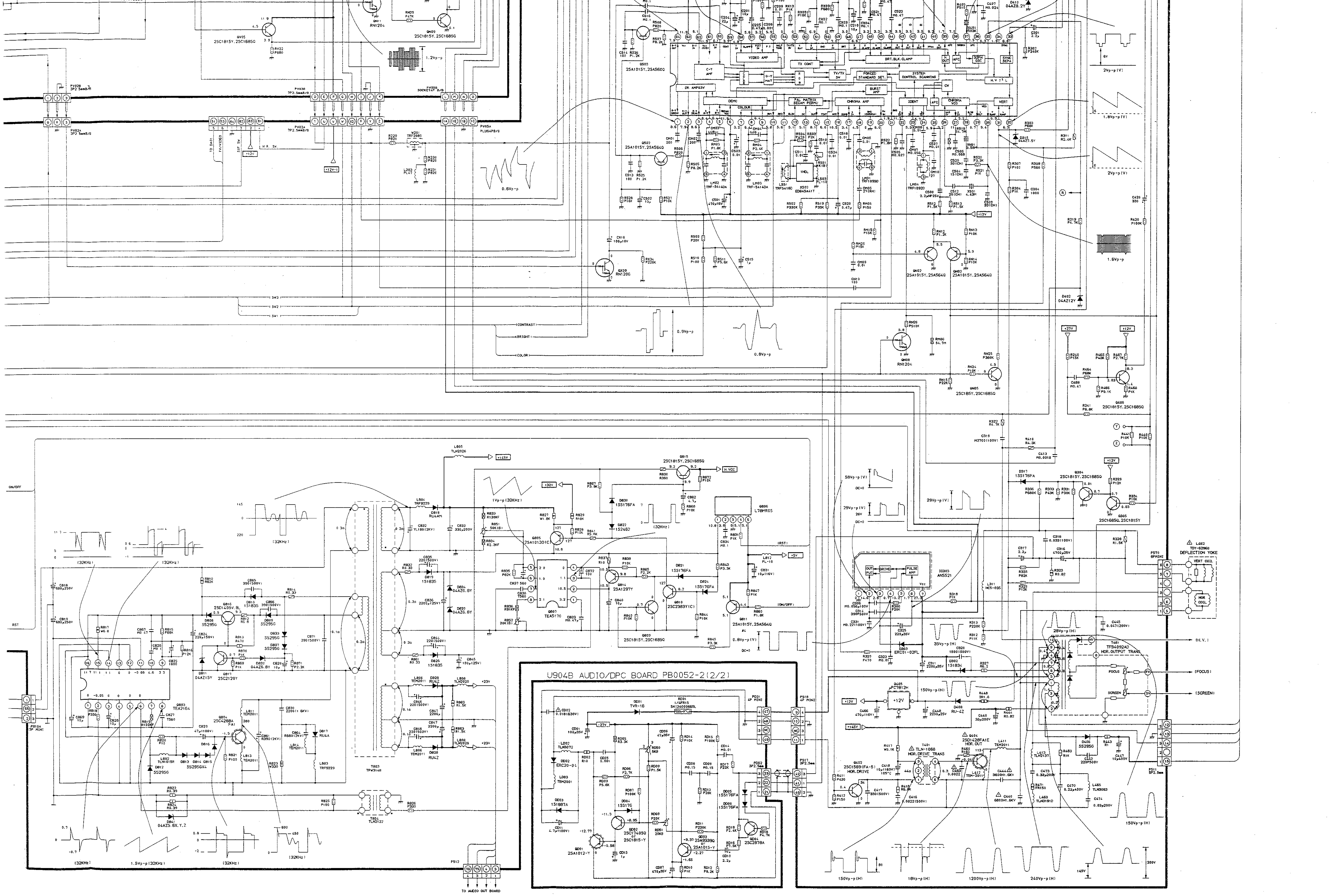
Watt	Mark	Watt	Mark
1/6 W		3 W	3
1/8 W		5 W	5
1/4 W		10 W	10
1/2 W		15 W	15
1 W	1	20 W	20
2 W	2	25 W	25

CAPACITOR

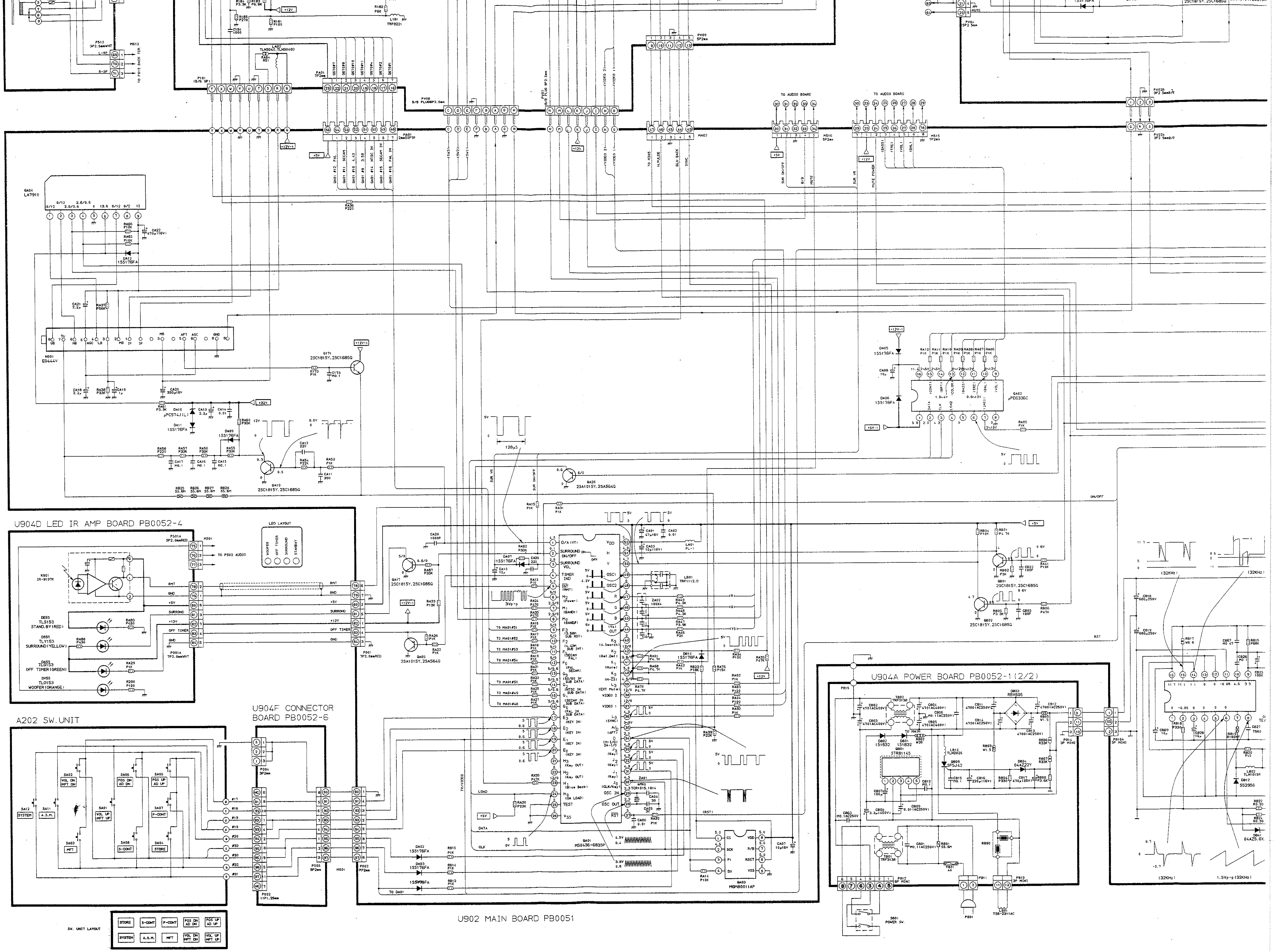
Table 3

Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	

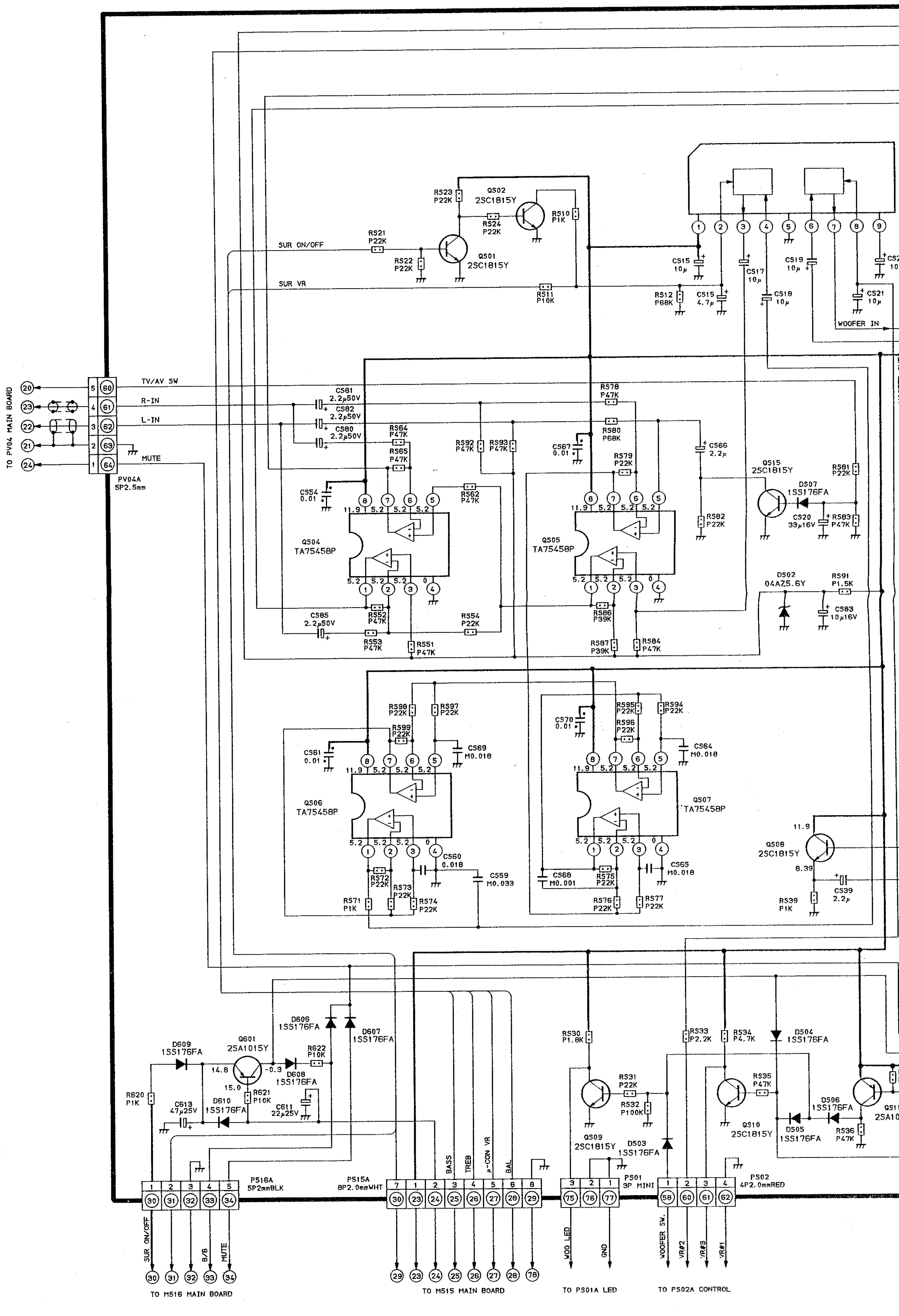




U904B AUDIO/DPC BOARD PB0052-2(2/2)
VIDEO AMP
TX CONT
BRT.BLK.CLAMP
SYNC SEPA
FORCED STANDARD SET
SYSTEM CONTROL SCANNING
BURST AMP
PAL MATRIX SECAM PERMU
CHROMA AMP
IDENT
VERT
DEMO
COLOUR
(CONTRAST)
(BRIGHT)
(COLOR)
DEFLECTION YOKE
VERT COIL
HOR COIL
HOR.OUTPUT TRANS
HOR.DRIVE TRANS
HOR.DRIVE
HOR.OUT
(H.V.)
(FOCUS)
(SCREEN)
TEA2164
TEA5170
AN5521
L78MR05
TO AUDIO OUT BOARD


U904D LED IR AMP BOARD PB0052-4
LED LAYOUT
U904F CONNECTOR BOARD PB0052-6
A202 SW.UNIT
SW. UNIT LAYOUT
U902 MAIN BOARD PB0051
U904A POWER BOARD PB0052-1(2/2)
TO AUDIO BOARD
TO AUDIO BOARD

U904B AUDIO BOARD PB0052-2(1/2)



ARD PB0052-2(1/2)

U904A AUDIO OUT BOARD PB0052-1(1/2)