HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL

BA-5D CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION	CHASSIS NO.
KV-27FS210	*RM-Y181*	*US*	*SCC-S65LA*
KV-27FS210	*RM-Y181*	*CANADA*	*SCC-S64HA*
KV-29FA210	*RM-Y180*	*LATIN NORTH*	*SCC-S62SA*
KV-29FA210	*RM-Y180*	*LATIN SOUTH*	*SCC-S62TA*
KV-32FS210	*RM-Y181*	*US*	*SCC-S65NA*
KV-32FS210	*RM-Y181*	*CANADA*	*SCC-S64KA*
KV-36FS210	*RM-Y181*	*US*	*SCC-S65PA*
KV-36FS210	*RM-Y181*	*HAWAII*	*SCC-S67DA*

ORIGINAL MANUAL ISSUE DATE: 5/2003

ALL REVISIONS AND UPDATES TO THE ORIGINAL MANUAL ARE APPENDED TO THE END OF THE PDF FILE.

REVISION DATE	REVISION TYPE	SUBJECT
5/2003	No revisions or updates are applicable at this time.	
5/2003	Correction-1	Replaced GK PWB Conductor Side (Page 51)

TRINITRON® COLOR TELEVISION

SONY®

9-965-941-02

Self Diagnosis Supported model

SERVICE MANUAL

BA-5D CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION	CHASSIS NO.
KV-27FS210	RM-Y181	US	SCC-S65LA
KV-27FS210	RM-Y181	CANADA	SCC-S64HA
KV-29FA210	RM-Y180	LATIN NORTH	SCC-S62SA
KV-29FA210	RM-Y180	LATIN SOUTH	SCC-S62TA
KV-32FS210	RM-Y181	US	SCC-S65NA
KV-32FS210	RM-Y181	CANADA	SCC-S64KA
KV-36FS210	RM-Y181	US	SCC-S65PA
KV-36FS210	RM-Y181	HAWAII	SCC-S67DA

KV-27FS210

RM-Y181

TRINITRON® COLOR TELEVISION

SONY®

9-965-941-02

TABLE OF CONTENTS

SPECIFICATIONS

	KV-29FA210 (N)	KV-29FA210 (S)	KV-27FS210	KV-32FS210	KV-36FS210
Power requirements	120V, 60Hz	220V, 50/60Hz	120V, 60Hz		
Number of Inputs/Outputs					
Video [1]	3		3		
S. Video [2]	1		1		
RF	1		1		
Y, P_B, P_R [3]	2		2		
Audio [4]	3		3		
Audio Out [5]	3		3		
Speaker Output	10W x 2		10W x 2		
External Subwoofer	20W				
Power Consumption (W)					
In use (Max)	175W		175W	195W	
In Standby	1W		1W	1W	
Dimensions (W/H/D)					
mm	784 x 601.5 x 520 mm		784 x 601.5 x 520 mm	898 x 682 x 584 mm	1020 x 760 x 640 mm
in	30 7/8 x 23 1/8 x 20 1/2 in		30 7/8 x 23 1/8 x 20 1/2 in	35 3/8 x 26 7/8 x 23 in	40 1/4 x 30 x 25 1/4 in
Mass					
kg	52.8 kg		46.8 kg	78.5 kg	101.2 kg
lbs	116 lbs 2 oz		103 lbs 8 oz	167 lbs 11 oz	223 lbs

1) 1 Vp-p 75 ohms unbalanced, sync negative
2) Y: 1 Vp-p 75 ohms unbalanced, sync negative
   C: 0.286 Vp-p (Burst signal), 75 ohms
3) Y: 1.0 Vp-p, 75 ohms, sync negative;
   PB: 0.7 Vp-p, 75 ohms
   PR: Vp-p, 75 ohms
4) 500 mVrms (100% modulation), Impedance: 47 kilohms
5) More than 408 mVrms at the maximum volume setting (variable)
   More than 408 mVrms (fix)

Television system

American TV standard, NTSC

Channel coverage

VHF: 2-13/ UHF: 14-69/ CATV: 1-125

Picture tube

FD Trinitron® tube

Visible screen size

27 inch picture measured diagonally (KV-27FS210/29FA210 Only)
32 inch picture measured diagonally (KV-32FS210 Only)
36 inch picture measured diagonally (KV-36FS210 Only)

Actual screen size

29 inch measured diagonally (KV-27FS210/29FA210 Only)
34 inch measured diagonally (KV-32FS210 Only)
38 inch measured diagonally (KV-36FS210 Only)

Antenna

75-ohm external antenna terminal for VHF/UHF

Supplied Accessories

Size AA (R6) batteries (2)
Remote Control RM-Y180 (1) (KV-29FA210 Only)
Remote Control RM-Y181 (1) (KV-27FS210/32FS210/36FS210 Only)

Optional Accessories

TV Stand: SU-27FS1 (KV-27FS210/29FA210 Only)
SU-32FS1 (KV-32FS210 Only)
SU-36FS1 (KV-36FS210 Only)

Design and specifications are subject to change without notice.

WARNING AND CAUTIONS

CAUTION

Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield, or carbon painted on the CRT, after removing the anode.

WARNING!!

An isolation transformer should be used during any service to avoid possible shock hazard, because of live chassis. The chassis of this receiver is directly connected to the ac power line.

⚠ SAFETY-RELATED COMPONENT WARNING!!

Components identified by shading and ⚠ mark on the schematic diagrams, exploded views, and in the parts list are critical for safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in supplements published by Sony. Circuit adjustments that are critical for safe operation are identified in this manual. Follow these procedures whenever critical components are replaced or improper operation is suspected.

ATTENTION!!

Apres avoir deconnecte le cap de l'anode, court-circuiter l'anode du tube cathodique et celui de l'anode du cap au chassis metallique de l'appareil, ou la couche de carbone peinte sur le tube cathodique ou au blindage du tube cathodique.

Afin d'eviter tout risque d'electrocution provenant d'un châssis sous tension, un transformateur d'isolement doit etre utilisé lors de tout dépannage. Le châssis de ce récepteur est directement raccordé à l'alimentation du secteur.

⚠ ATTENTION AUX COMPOSANTS RELATIFS A LA SECURITE!!

Les composants identifies par une trame et par une marque ⚠ sur les schemas de principe, les vues explosees et les listes de pieces sont d'une importance critique pour la securite du fonctionnement. Ne les remplacer que par des composants Sony dont le numero de piece est indique dans le present manuel ou dans des supplements publies par Sony. Les reglages de circuit dont l'importance est critique pour la securite du fonctionnement sont identifies dans le present manuel. Suivre ces procedures lors de chaque remplacement de composants critiques, ou lorsqu'un mauvais fonctionnement suspecte.

SAFETY CHECK-OUT

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

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are "pinched" or touching high-wattage resistors.

3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.

4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.

5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.

7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.

8. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

Leakage Test

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

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.

2. A battery-operated AC milliampmeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson's 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.

If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble-light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

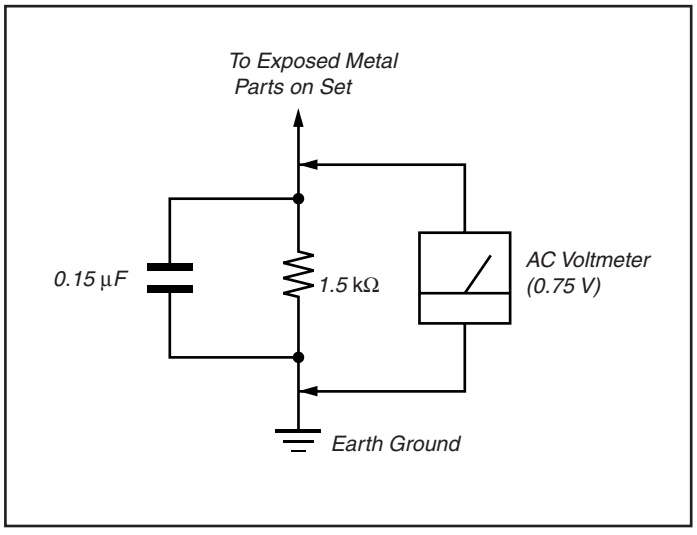


Figure A. Using an AC voltmeter to check AC leakage.

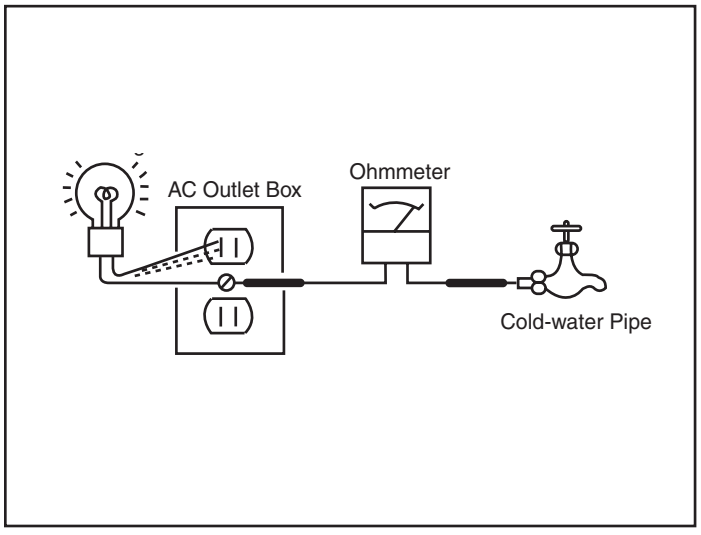


Figure B. Checking for earth ground.

SELF-DIAGNOSTIC FUNCTION

Self Diagnosis Supported model

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER LED will automatically begin to flash. The number of times the LED flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER LED flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the Remote Commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

Diagnostic Test Indicators

When an error occurs, the STANDBY/TIMER LED will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the LED will identify the first of the problem areas.

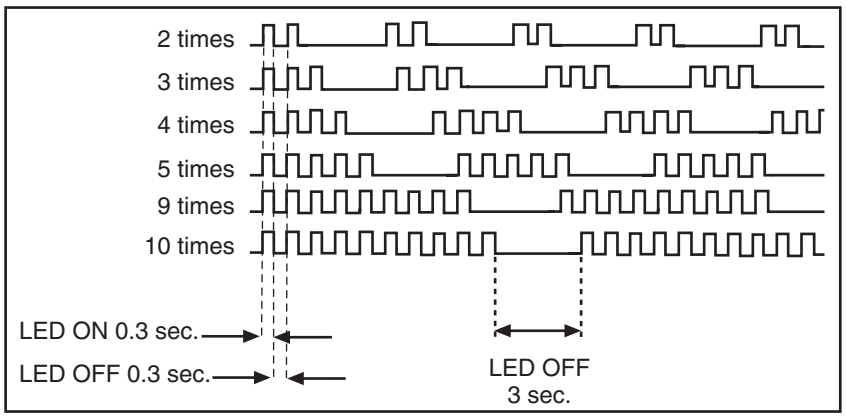
Results for all of the following diagnostic items are displayed on screen. If the screen displays a "0", an error has occurred.

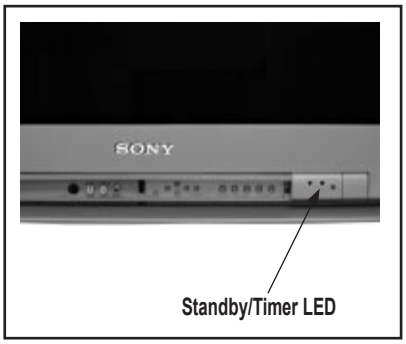
Diagnostic Item	No. of times STANDBY / TIMER lamp flashes	Probable Cause Location	Detected Symptoms
Power does not turn on	Does not light	• Power cord is not plugged in. • Fuse is burned out (F601). (GK Board)	• Power does not come on. • No power is supplied to the TV. • AC Power supply is faulty.
+B overcurrent (OCP)*	2 times	• H.OUT (Q502) is shorted. (A Board) • IC702 is shorted. (C Board)	• Power does not come on. • Load on power line shorted.
+B overvoltage (OVP)	3 times	• IC501 is faulty. (A Board) • If a high is supplied to pin 2 of IC501. (A Board)	• Has entered standby mode.
V-STOP	4 times	• +12V is not supplied. (A Board) • IC561 is faulty. (A Board)	• Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Power line is shorted or power supply is stopped.
IK (AKB)	5 times	• Video OUT (IC561) is faulty. (A Board) • IC702 is faulty. (C Board) • Screen (G2) is improperly adjusted. **	• No raster is generated. • CRT Cathode current detection reference pulse output is small.
Zero Cross	9 times	• No zero cross pulses on pin 45 IC1001. (A Board)	• Power does not come on.
9V Check	10 times	• Relay failed (RY600)	• Power does not come on.

* If a +B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously. The symptom that is diagnosed first by the microcontroller is displayed on the screen.

** Refer to Screen (G2) Adjustments in Section 2-4 of this manual

Display of Standby/Timer LED Flash Count





Diagnostic Item	Flash Count*
+B Overcurrent	2 times
+B Overvoltage	3 times
V-STOP	4 times
IK (AKB)	5 times
Zero Cross	9 times
9V	10 times

*One flash count is not used for self-diagnostic.

Stopping the Standby/Timer LED Flash
Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER LAMP from flashing.

Self-Diagnostic Screen Display
For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of failure on the screen for confirmation.

To Bring Up Screen Test
In standby mode, press buttons on the Remote Commander sequentially, in rapid succession, as shown below:

DISPLAY ➡ Channel 5 ➡ Sound volume - ➡ Power ON.

SELF DIAGNOSIS	
2: +B OCP	0
3: +B OVP	0
4: VSTOP	0
5: AKB	1
9: ZCD	0
10: 9VON	0
101: WDT	0
Serial: xxxxxxx	
Model: xxxxxxx	

Numeral “0” means that no fault was detected.
Numeral “1” means a fault was detected one time only.

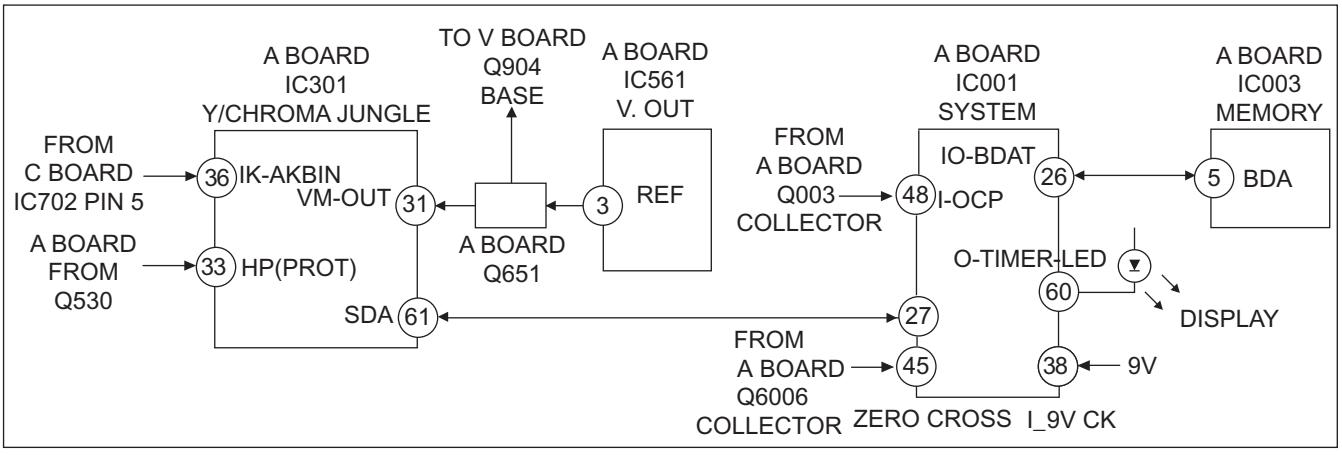
Handling of Self-Diagnostic Screen Display
Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.
Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

Clearing the Result Display
To clear the result display to “0”, press buttons on the Remote Commander sequentially when the diagnostic screen is displayed, as shown below:

Channel 8 ➡ ENTER

Quitting the Self-Diagnostic Screen
To quit the entire self-diagnostic screen, turn off the power switch on the Remote Commander or the main unit.

Self-Diagnostic Circuit



+B overcurrent (OCP)
Occurs when an overcurrent on the +B (135V) line is detected by pin 48 of IC001 (A Board). If the voltage of pin 48 of IC001 (A Board) is less than 1V when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.

+B overvoltage (OVP)
Occurs when a high is felt on pin 2 of IC501 (A Board).

V-STOP
Occurs when an absence of the vertical deflection pulse is detected by pin 31 of IC301 (A Board). Power supply will shut down when waveform interval exceeds 2 seconds.

IK (AKB)
If the RGB levels* do not balance within 2 seconds after the power is turned on, this error will be detected by IC301 (A Board). TV will stay on, but there will be no picture.

*(Refers to the RGB levels of the AKB detection Ref pulse that detects 1K).

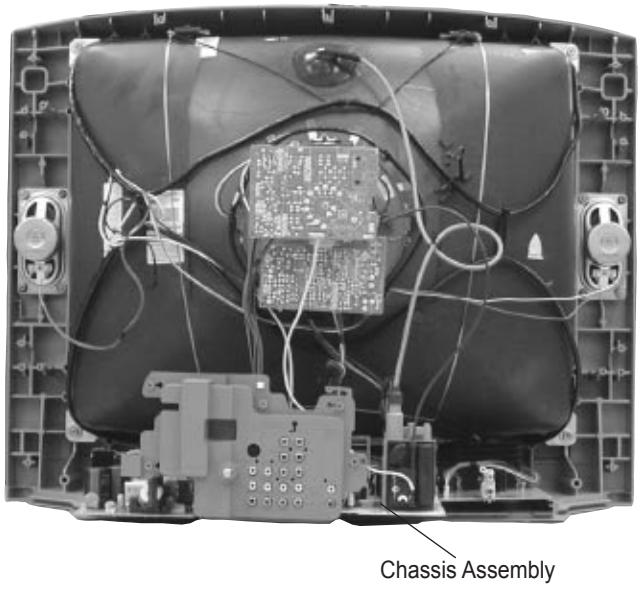
Zero Cross
Check Q691 collector (GK Board) 7.5V STBY goes to 0V when the set is turned on.

9V Check
Check Q691 collector (GK Board) 7.5V STBY goes to 0V when the set is turned on.

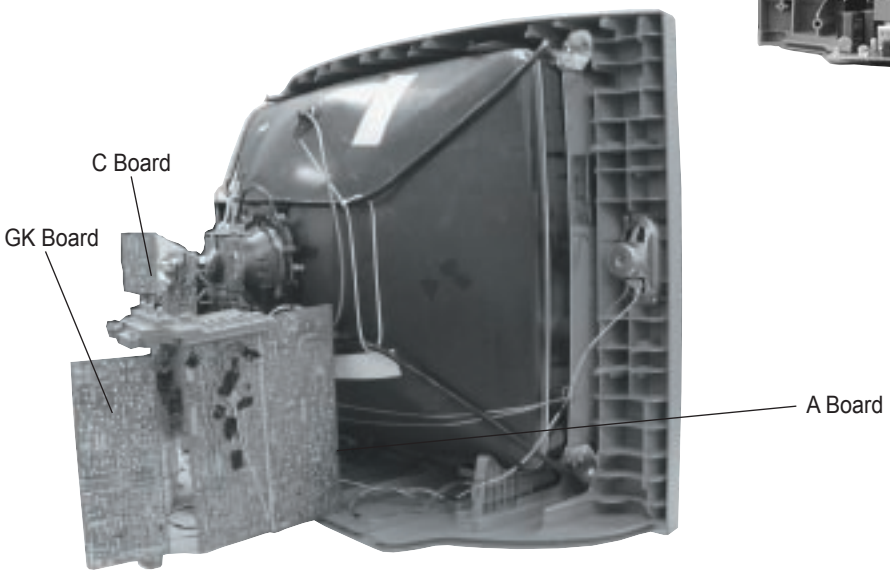
SECTION 1: DISASSEMBLY

1-1. REAR COVER REMOVAL

1-2. CHASSIS ASSEMBLY REMOVAL

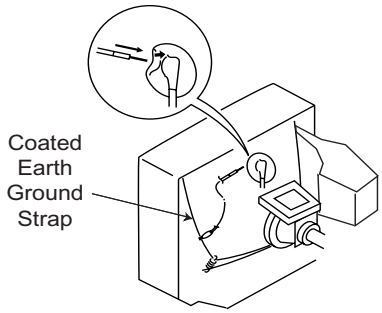


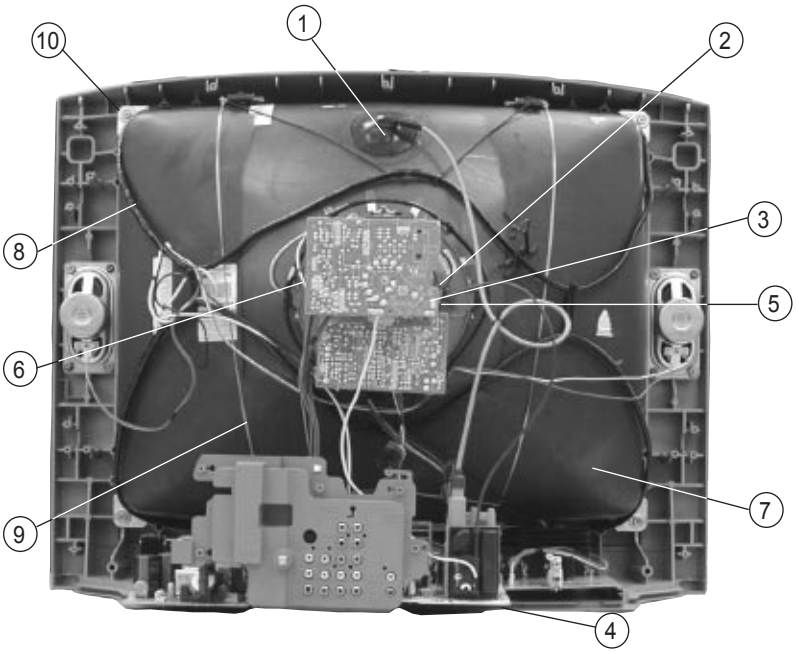
1-3. SERVICE POSITION



1-4. PICTURE TUBE REMOVAL

WARNING: BEFORE REMOVING THE ANODE CAP
High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT before attempting to remove the anode cap. Short between anode and CRT coated earth ground strap.





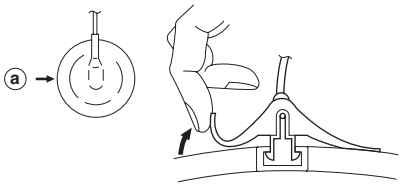
1. Discharge the anode of the CRT and remove the anode cap.
2. Unplug all interconnecting leads from the deflection yoke, neck assembly, degaussing coils and CRT grounding strap.
3. Remove the C Board from the CRT.
4. Remove the chassis assembly.
5. Loosen the neck assembly fixing screw and remove.
6. Loosen the deflection yoke fixing screw and remove.
7. Place the set with the CRT face down on a cushion and remove the degaussing coil holders.
8. Remove the degaussing coils.
9. Remove the CRT grounding strap and spring tension devices.
10. Unscrew the four CRT fixing screws [located on each CRT corner] and remove the CRT [Take care not to handle the CRT by the neck].

ANODE CAP REMOVAL PROCEDURE

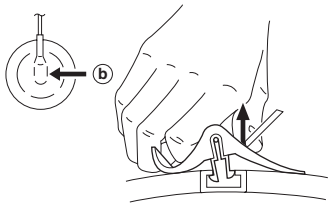
WARNING: High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT before attempting to remove the anode cap. After removing the anode cap, short circuit to either the metal chassis, CRT shield, or carbon painted on the CRT.

NOTE: After removing the anode cap, short circuit the anode of the picture tube and the anode cap to either the metal chassis, CRT shield or carbon painted on the CRT.

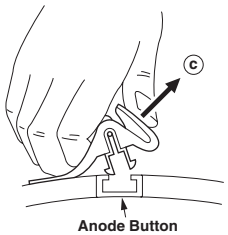
REMOVAL PROCEDURES



Turn up one side of the rubber cap in the direction indicated by arrow a .



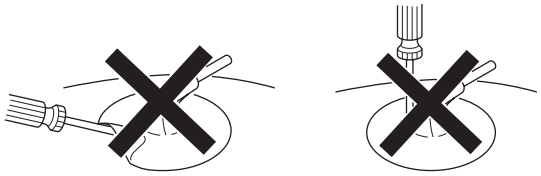
Use your thumb to pull the rubber cap firmly in the direction indicated by arrow b .



When one side of the rubber cap separates from the anode button, the anode cap can be removed by turning the rubber cap and pulling it in the direction of arrow c .

HOW TO HANDLE AN ANODE CAP

1. Do not use sharp objects which may cause damage to the surface of the anode cap.
2. To avoid damaging the anode cap, do not squeeze the rubber covering too hard. A material fitting called a shatter-hook terminal is built into the rubber.
3. Do not force turn the foot of the rubber cover. This may cause the shatter-hook terminal to protrude and damage the rubber.



SECTION 2: SET-UP ADJUSTMENTS

The following adjustments should be made when a complete realignment is required or a new picture tube is installed. These adjustments should be performed with rated power supply voltage unless otherwise noted.

The controls and switch should be set as follows unless otherwise noted:

PICTURE CONTROL: normal
BRIGHTNESS CONTROL: normal

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G2)/White Balance

Test Equipment Required:

1. Color Bar Pattern Generator
2. Degausser
3. DC Power Supply
4. Digital Multimeter
5. Oscilloscope
6. CRT Analyzer

2-1. BEAM LANDING

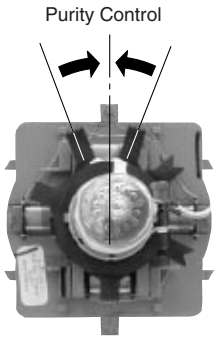
Preparation:

- Input a white pattern signal.
- Face the picture tube in an East or West direction to reduce the influence of geomagnetism.

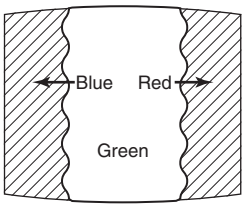
NOTE: Do not use the hand degausser; it magnetizes the CRT .

ADJUSTMENT PROCEDURE

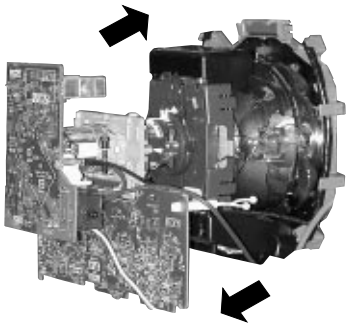
1. Input white pattern from pattern generator.
2. Loosen the deflection yoke mounting screw, and set the purity control to the center as shown below:



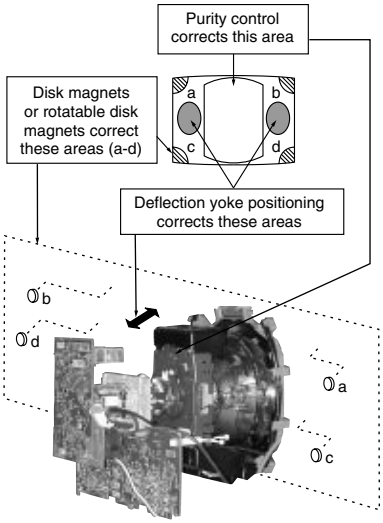
3. Input green pattern from pattern generator.
4. Move the deflection yoke backward, and adjust with the purity control so that green is in the center and red and blue are even on both sides.



5. Move the deflection yoke forward, and adjust so that the entire screen becomes green.



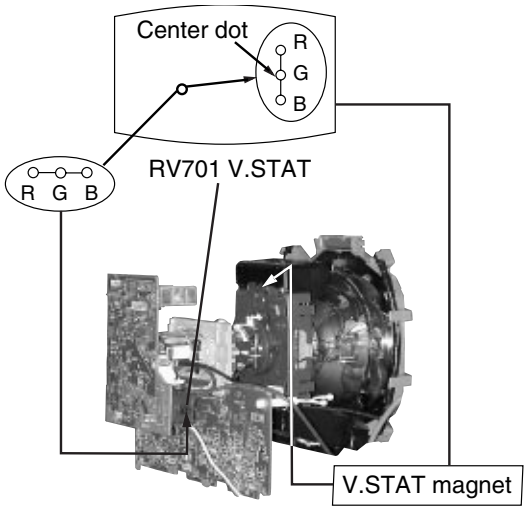
6. Switch over the raster signal to red and blue and confirm the condition.
7. When the position of the deflection yoke is determined, tighten it with the deflection yoke mounting screw.
8. When landing at the corner is not right, adjust by using the disk magnets.



2-2. CONVERGENCE

Preparation:

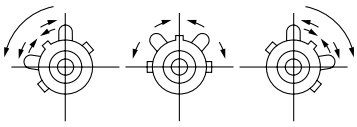
- Perform FOCUS, V. LIN and V. SIZE adjustments.
- Set BRIGHTNESS control to minimum.
- Input dot pattern.



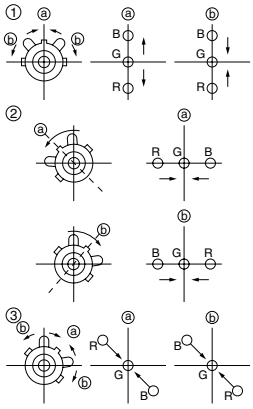
VERTICAL AND HORIZONTAL STATIC CONVERGENCE

1. Adjust V. STAT magnet to converge red, green and blue dots in the center of the screen (Vertical movement).

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



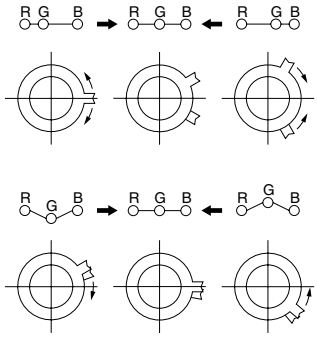
2. When the V. STAT magnet is moved in the direction of arrow a and b, red, green, and blue dots move as shown below:



OPERATION OF BMC (HEXPOLE) MAGNET

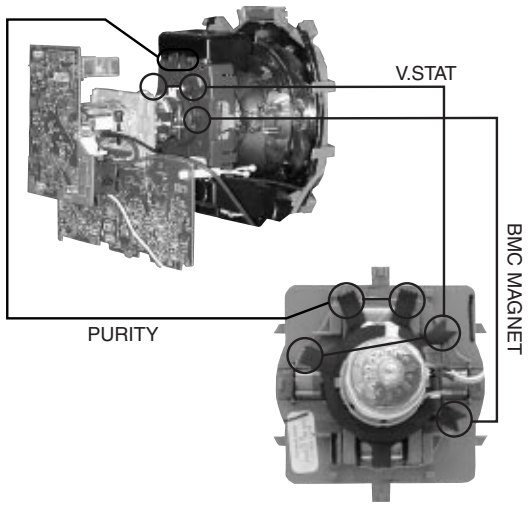
The respective dot positions resulting from moving each magnet interact, so perform adjustment while tracking.

1 Use the V.STAT tabs to adjust the red, green, and blue dots so they line up at the center of the screen (move the dots in a horizontal direction).



Y SEPARATION AXIS CORRECTION MAGNET ADJUSTMENT

1. Input cross-hatch pattern, adjust PICTURE to minimum and BRIGHTNESS to normal.
2. Adjust the deflection yoke upright so it touches the CRT.
3. Adjust so that the Y separation axis correction magnet on the neck assembly is symmetrical from top to bottom (open state).

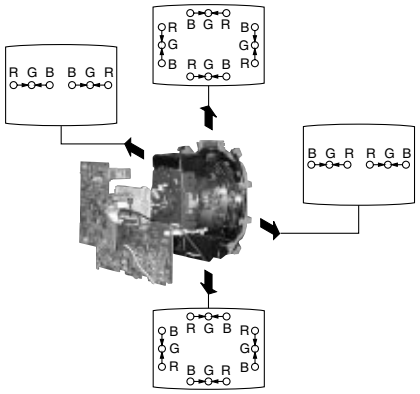


4. Return the deflection yoke to its original position.

DYNAMIC CONVERGENCE ADJUSTMENT

Before starting, perform Vertical and Horizontal Static Convergence Adjustment.

1. Slightly loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown below:

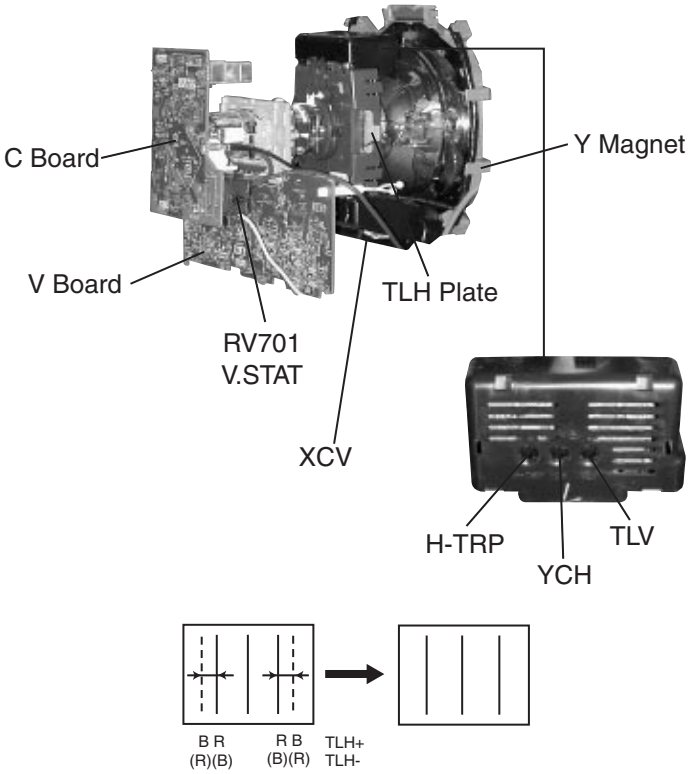


4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

TLH PLATE ADJUSTMENT

Preparation:

- Input crosshatch pattern.
- Adjust Picture Quality to standard, Picture and Brightness to 50%, and Other to standard.
- Adjust the Horizontal Convergence of red and blue dots by tilting the TLH plate on the deflection yoke.

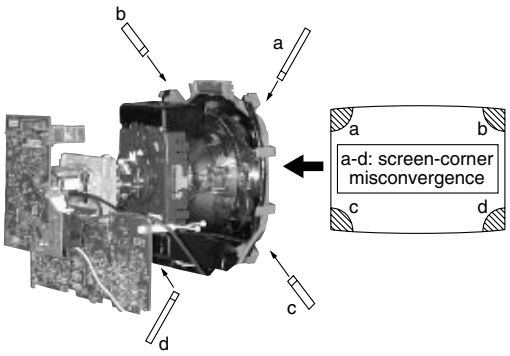


1. Adjust XCV core to balance X axis.
2. Adjust YCH VR to balance Y axis.
3. Adjust vertical red and blue convergence with V.TILT (TLV VR.) Perform adjustments while tracking items 1 and 2.
4. Adjust Y MAGNET to correct V.BOW Geometry Distortion.
5. Adjust H-TRP to correct H.Trapezoid Geometry Distortion.

After adjusting items 4 and 5, confirm overall geometry again.

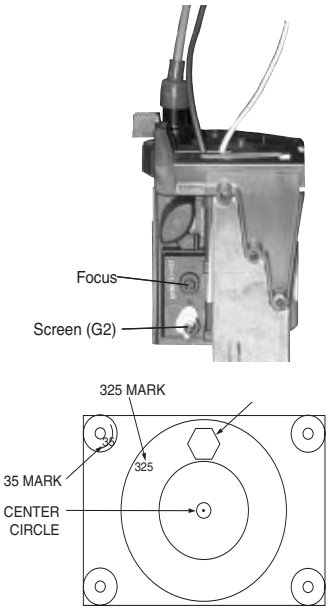
SCREEN-CORNER CONVERGENCE

1. Affix a permalloy assembly corresponding to the misconverged areas:



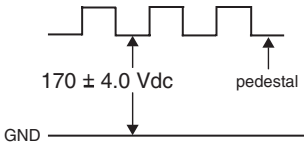
2-3. FOCUS

1. Input monoscope signal.
2. Set user controls to normal.
3. Set video mode to STANDARD.
4. Set the PICTURE to maximum.
5. Adjust at 325 Mark for best center/corner focus balance.
6. Receive an entire white signal. Make sure Magenta Ring is at an acceptable level.



2-4. SCREEN (G2)

1. Input dot pattern from the pattern generator.
2. Set the user controls to NORMAL.
3. Attach the G2-Jig to the C Board.
4. Adjust RCUT, GCUT, BCUT, and SBRT in service mode with an oscilloscope so that voltages on the red, green, and blue cathodes are 170 ± 4.0Vdc.
5. Observe the screen and adjust SCREEN (G2) VR to obtain the faintly visible background of dot signal.
6. Push the TEST + JUMP (+ Channel) to cut off the signal. The screen should be bright or dark. Brightness of raster must be increased when adjusting.
7. Adjust screen VR until the screen is slightly cut off, or scarcely lights up. A signal cannot be seen when the brightness of the raster is high.
8. Push the JUMP again to release the cut off.



2-5. WHITE BALANCE ADJUSTMENTS

Adj.	NO.	Disp.	Item	All Models
VID_ADJ	0	RDRV	Red Drive	41
VID_ADJ	1	GDRV	Green Drive	32
VID_ADJ	2	BDRV	Blue Drive	29
VID_ADJ	3	RCUT	Red Cut-off	31
VID_ADJ	4	GCUT	Green Cut-off	14
VID_ADJ	5	BCUT	Blue Cut-off	17
VP2	4	SBRT	Sub Bright	16

1. Set program palette to STANDARD and push RESET.
2. Input an entire white signal.
3. Set to Service Adjustment Mode.
4. Set the PICTURE and BRIGHT to minimum.
5. Adjust with SBRT if necessary.
6. Set RCUT to “14”.
7. Select GCUT and BCUT with 3 and 5 .
8. Adjust by pressing 1 and 4 for the best white balance.
9. Set the PICTURE and BRIGHT to maximum.
10. Select GDRV and BDRV with and .
11. Adjust with 3 and 6 for the best white balance.
12. Write into the memory by pressing 3 then 5.
13. Repeat steps 1-12 for GDR4, BDR4, GCU4 and BCU4 using Video 4 input.

* Use values from Sub Contrast Adjustments

White balance should be adjusted after Sub Contrast because RDRV is also used in Sub Contrast Adjustment. (See page 27).

SECTION 3: SAFETY RELATED ADJUSTMENTS

3-1. ⋈ R565 CONFIRMATION METHOD (HV HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

Always perform the following adjustments when replacing the following components marked with a ◪ mark on the schematic diagram:

Part Replaced (◪)	Adjustment (⋈)
A BOARD: R550, T503, T504, D519, IC501, R533, D521, R532, D520, C531, R529, R530, R531, C532 **GK BOARD:** IC600, PH602	**HV HOLD DOWN** R530, R531

PREPARATION BEFORE CONFIRMATION

1. Using a Variac, apply AC input voltage: 120 +/- 2.0 VAC.
2. Turn the POWER switch ON.
3. Input a white signal and set the PICTURE and BRIGHT controls to maximum.
4. Confirm that the voltage of more than 23.0 VDC appears between TP85 and ground on the A Board.

HOLD-DOWN OPERATION CONFIRMATION

1. Connect the current meter between Pin 11 of the FBT (T503) and the PWB land where Pin 11 would normally attach. (See Figure 1).
2. Input a dot signal and set PICTURE and BRIGHTNESS to minimum: IABL = 2175 + 100/ -325 µA.
3. Confirm the voltage of A Board TP91 is 135 ± 1.5 VDC.
4. Connect the digital voltmeter and the DC power supply to TP85 and ground. (See Figure 1 above).
5. Increase the DC power voltage gradually until the picture blanks out.
6. Turn DC power source off immediately.
7. Read the digital voltmeter indication (standard = 27.24 + 0.0/ - 0.1 VDC).
8. Input a white signal and set PICTURE and BRIGHTNESS to maximum: IABL = 2175 + 100/ -325 µA.
9. Repeat steps 4 to 7.

HOLD-DOWN READJUSTMENT

If the setting indicated in Step 2 of Hold-Down Operation Confirmation cannot be met, readjustment should be performed by altering the resistance value of R530, R531 component marked with ⋈.

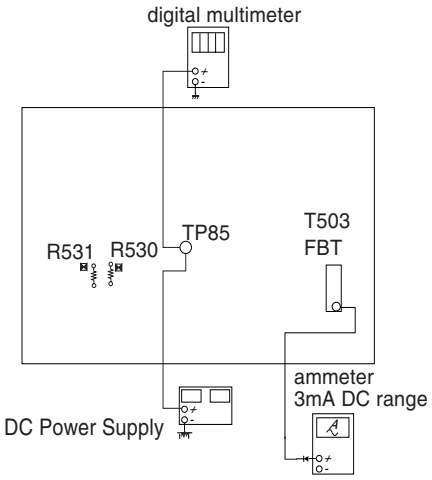


Figure 1

3-2. B+ VOLTAGE CONFIRMATION AND ADJUSTMENT

Always perform the following adjustments when replacing the following components, which are marked with ◪ on the schematic diagram on the GK Board:

Adjustment (◪)
GK BOARD: IC600, PH602

1. Using a Variac, apply AC input voltage: 130 + 2.0/-0.0 VAC
2. Input a monoscope signal.
3. Set the PICTURE control and the BRIGHT control to minimum.
4. Confirm the voltage on A Board between TP23 and ground is less than 136.5 VDC.
5. If step 4 is not satisfied, replace R530 and R531 on A Board and repeat the above steps.

SECTION 4: CIRCUIT ADJUSTMENTS

ELECTRICAL ADJUSTMENTS BY REMOTE COMMANDER

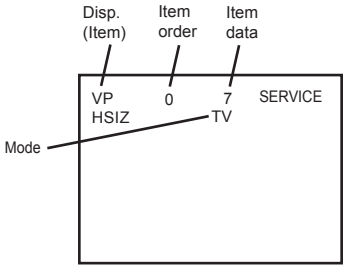
Use the Remote Commander (RM-Y180/RM-Y181) to perform the circuit adjustments in this section.

Test Equipment Required: 1. Pattern generator 2. Frequency counter 3. Digital multimeter 4. Audio oscillator

4-1. SETTING THE SERVICE ADJUSTMENT MODE

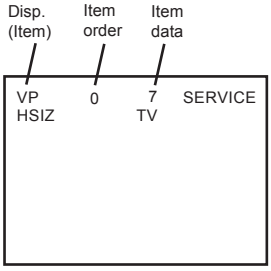
1. Standby mode (Power off).
2. Press the following buttons on the remote commander within a second of each other:
   DISPLAY → Channel 5 → Sound Volume + → Power

SERVICE ADJUSTMENT MODE ON

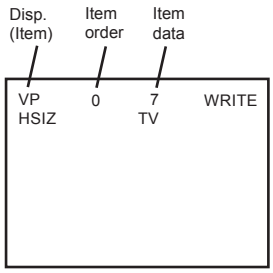


1. The CRT displays the item being adjusted.
2. Press 1 or 2 on the Remote Commander to select the item.
3. Press 3 or 6 on the Remote Commander to change the data.
4. Press MUTING then ENTER to write into memory.

SERVICE ADJUSTMENT MODE MEMORY



1. Press 8 then ENTER on the Remote Commander to initialize.



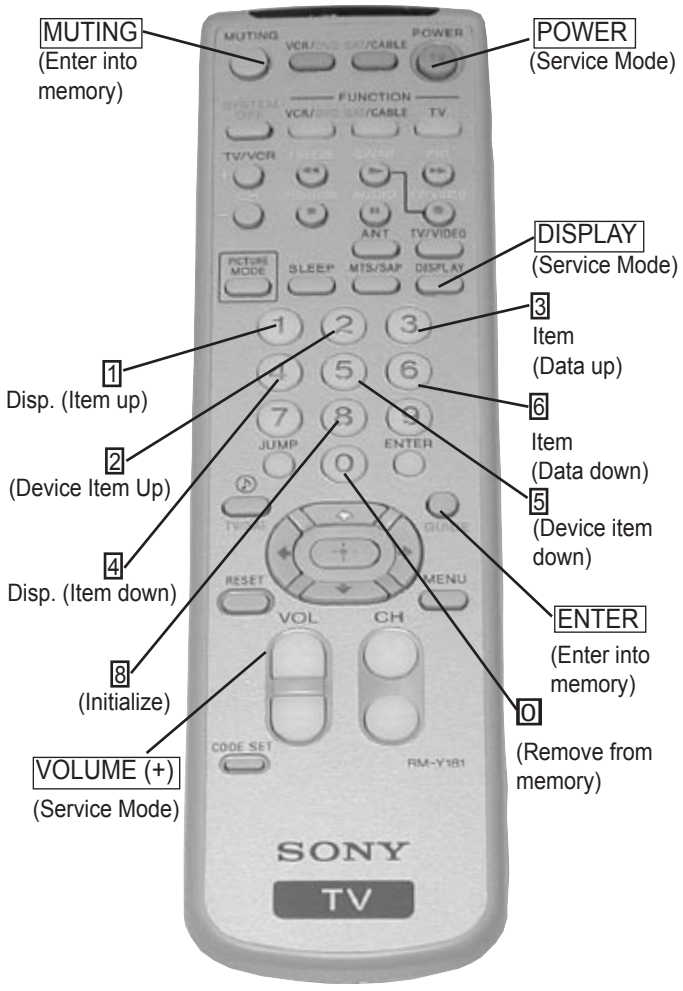
Carry out Step 1 when adjusting ID's 0-7 and when replacing and adjusting IC003.

2. Press MUTING then ENTER to write into memory.
3. DO NOT turn off set until SERVICE appears.

4-2. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, pull out the plug from the AC outlet, then replace the plug in the AC outlet again.
2. Turn the power switch ON and set to Service Mode.
3. Call the adjusted items again to confirm they were adjusted.

4-3. REMOTE ADJUSTMENT BUTTONS AND INDICATORS



RM-Y181

4-4. SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
VERSION	Fix	0	VER	Microprocessor version information	=

Service Group	Fix/ Var	No.	Name	Description	Common Init Data	NTSC / PAL-M Init Data	PAL-N Init Data
VP1	Var	0	HSIZ	H SIZE (11/ 2-7)			
	Var	1	HPOS	HPOS (12 / 2-7)			
	Var	2	VBOW	AFC BOW (16 / 4-7)			
	Var	3	VANG	AFC ANGLE (16 / 0-3)			
	Var	4	VTRP	TRAPEZIUM (20 / 3-7)			
	Var	5	HTRP	H. TRAPEZOID (15 / 4-7)			
	Var	6	TROT	TILT ROTATION (0-63)			
	Var	7	PAMP	PIN AMP (13 / 2-7)			
	Var	8	UPIN	UP-CPIN (14 / 2-7)			
	Var	9	LPIN	LO-CPIN (1C / 2-7)			
	Var	10	VSIZ	V SIZE (0E / 2-7)			
	Var	11	VPOS	V POSITION (0E / 2-7)			
	Var	12	VLIN	V LINEARITY (10 / 0-3)			
	Var	13	SCOR	S CORRECTION (10 / 4-7)			
	Fix	14	VZOM	16:9 CRT Z Mode on/off	0		
	Var	15	EHT	Vertical High-Voltage Compensation	7		
	Fix	16	ASP	Aspect Ratio control (4:3 Mode)	47		
	Fix	17	ASP1	Aspect Ratio control (16:9 Mode)	47		
	Fix	18	SCRL	16:9 CRT Z Mode Trans. Scroll	31		
	Fix	19	HBLK	Horizontal Blanking on/off	1		
	Fix	20	LBLK	Left Blanking Adjustment			
	Fix	21	RBLK	Right Blanking Adjustment			
	Fix	22	HDW	Horizontal Drive Pulse Width	1		
	Fix	23	EWDC	"Parabola" EW, D.C. Adjustment	0		
	Fix	24	LVLN	Lower Screen BTM Vertical Line Adj.	0		
	Fix	25	UVLN	Upper Screen BTM Vertical Line Adj.	0		
	Fix	26	INTL	INTERLACE	0		
	Fix	27	HOSC	Horizontal VCO Oscillation Freq.	7		
	Fix	28	VSS	Vertical Sync Slice Level	0		
	Fix	29	HSS	Horizontal Sync Slice Level	0		
	Fix	30	HMSK	For Macro Vision	0		
	Fix	31	VTMS	Select Signal VTIM Pin	0		
	Fix	32	TCMD	Vertical Count Down Mode Switching (for TV)	1		
	Fix	33	VCMD	Vertical Count Down Mode Switching (for Video)	3		
	Fix	34	AFC	AFC Loop Gain Switching	0		
	Fix	35	FIFR	Field Frequency	1		
	Fix	36	VBLK	VBLKW	0		
	Fix	37	HTSW	H-Trap Switch : NEW	0		

27FS	32FS	36FS	29FA
14	15	11	14
7	5	2	4

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data	NTSC Init Data	PAL-M Init Data	PAL-N Init Data
VP2	Fix	0	REFP	REFP	0			
	Fix	1	JPSW	Jump SW	=			
	Var	2	SHUE	Sub HUE adjustment				
	Var	3	SCOL	Sub COLOR adjustment				
	Var	4	SBRT	Sub BRIGHTNESS adjustment				
	Fix	5	SBRO	Sub BRIGHTNESS adjustment for YUV	4			
	Fix	6	AXPL	Axis PAL	0			
	Fix	7	AXNT	Axis NTSC	1			
	Fix	8	CBPF	Chroma BPF on/off	1			
	Fix	9	CTRP	Y TRAP FILTER on/off	1			
	Fix	10	COFF	Color On/off	=			
	Fix	11	KOFF	Set Color Killer	0			
	Fix	12	SSHR	Sub SHARPNESS for RF	5			
	Fix	13	SSHV	Sub SHARPNESS for Video	5			
	Fix	14	SHP4	Sub SHARPNESS for YUV	5			
	Fix	15	TSPF	SHARPNESS Circuit Fo (for TV)	2			
	Fix	16	VSPF	SHARPNESS Circuit Fo (for Video)	3			
	Fix	17	PREL	Pre-Shoot/ Over-Shoot	1			
	Fix	18	ABLM	ABL Mode Switch	1			
	Fix	19	VTH	ABL CD VHT Switching	=			
	Fix	20	YDEC	Y Delay Time Control (Video4, SVideo1, SVideo2)	0			
	Fix	21	YDYS	Y Delay Time Control (RF, Video1, Video2, Video3)	0			
	Fix	22	NCOL	No Color ID	1			
	Fix	23	FSC	FSC Out on/off	1			
	Fix	24	KID	Killer ID Control on/off	0			
	Fix	25	SHOF	Offset for sharpness	0			

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data	NTSC Init Data	PAL-M Init Data	PAL-N Init Data
VID_ADJUSTMENT	Fix	0	RDRV	R DRIVE (0A / 7-2)	41			
	Var	1	GDRV	G DRIVE (0B / 7-2)				
	Var	2	BDRV	B DRIVE (0C / 7-2)				
	Fix	3	RCUT	R CUT OFF (07 / 7-2)	31			
	Var	4	GCUT	G CUT OFF (08 / 7-2)				
	Var	5	BCUT	B CUT OFF (09 / 7-2)				
	Var	6	SCON	Sub Contrast adjustment				
	Fix	7	CHUE	Sub HUE adjustment for TV	16			
	Var	8	HUE4	Sub HUE adjustment for YUV				
	Fix	9	CCOL	Sub COLOR adjustment for TV		14	18	23
	Var	10	COL4	Sub COLOR adjustment for YUV				
	Var	11	UOFS	YUV U offset				
	Var	12	VOFS	YUV V offset				
	Fix	13	RON	R ON (01 / 3)	=			
	Fix	14	GON	G ON (01 / 2)	=			
	Fix	15	BON	B ON (01 / 1)	=			
	Var	16	HUEV	Sub HUE adjustment for Video				
	Var	17	COLV	Sub COLOR adjustment for Video		7	7	7

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
ENCODER	Fix	0	RDR4	R DRIVE (0A / 7-2)	42
	Var	1	GDR4	G DRIVE (0B / 7-2)	
	Var	2	BDR4	B DRIVE (0C / 7-2)	
	Fix	3	RCU4	R CUT OFF (07 / 7-2)	31
	Var	4	GCU4	G CUT OFF (08 / 7-2)	
	Var	5	BCU4	B CUT OFF (09 / 7-2)	
	Fix	6	CON4	Sub Contrast adjustment	7
	Fix	7	EHUE	Sub HUE adjustment for TV	8
	Fix	8	ECOL	Sub COLOR adjustment for TV	7
	Fix	9	HPO4	HPOS (12 / 2-7)	23
	Fix	10	CDL4	Encoder CDL 3D Register	6
	Fix	11	YNR4	Encoder YNRL 3D Register	0
	Fix	12	CNR4	Encoder CNRL 3D Register	0
	Fix	13	NRM4	Encoder VAPG 3D Register	3
	Fix	14	VAP4	Encoder NRMD 3D Register	3
	Var	15	ESHU	Sub HUE adjustment for Video	7
	Var	16	ESCO	Sub COLOR adjustment for Video	7
	Fix	17	HCN4	Encoder HCNT 3D Register	0
	Fix	18	YPGE	Encoder YPGE 3D Register	0

Does not apply to FS models

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
COL_TMP	Fix	0	GDOF	G DRIVE Offset	4
	Fix	1	BDOF	B DRIVE Offset	15
	Fix	2	GCOF	G CUT Offset	5
	Fix	3	BCOF	B CUT Offset	12
	Fix	4	DCOL	Dynamic Color	=

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
PIC_IMP	Fix	0	BLAD	Black area detect (01 / 6-7)	0
	Fix	1	SRTS	SRT level (01 / 4-5)	3
	Fix	2	YNR	YNR(01 / 2)	1
	Fix	3	GIRE	Gamma correction(01 / 0-1)	3
	Fix	4	DAC1	DAC1(02 / 7)	0
	Fix	5	DAC2	DAC2(02 / 6)	0
	Fix	6	VMGA	VM on 1226 (02/5-4)	0
	Fix	7	GCUR	Gamma curve(02 / 2)	1
	Fix	8	BLKC	Black Compensation (02 / 1)	1
	Fix	9	TEST	TEST(03 / 6-7)	3
	Fix	10	RS	RS (03 / 3-5)	0
	Fix	11	RTCH	RTC(03 / 0-2)	4
	Fix	12	RTCL	RTC(03 / 0-2)	4
	Fix	13	RTCO	RTC(03 / 0-2)	4
	Fix	14	APAH	APAC	0
	Fix	15	APAL	APAC	0
	Fix	16	APAO	APAC	0
	Fix	17	SRTH	SRT bit for Dynablack = High	1
	Fix	18	SRTL	SRT bit for Dynablack = Low	1
	Fix	19	SRTO	SRT bit for Dynablack = Off	0
	Fix	20	SHPH	Sharpness level for Dynablack = High	52
	Fix	21	SHPL	Sharpness level for Dynablack = Low	45
	Fix	22	SHPO	Sharpness level for Dynablack = Off	0

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	VIVID Init Data	STANDARD Init Data	MOVIE Init Data	PRO Init Data
PALETTE	Fix	0	VPIC	User picture setting 0:min, 63: max	63	50	38	31
	Fix	1	VBRT	User brightness setting 0:min, 63: max	25	27	29	31
	Fix	2	VCOL	User color setting 0:min, 63: max	33	31	31	31
	Fix	3	VSHP	User sharpness setting 0:min, 63: max	31	32	32	31
	Fix	4	VVM	0: OFF, 1: Low, 2: High, 3: N/A	2	1	0	0
	Fix	5	VTRI	0: Cool, 1: Neutral, 2: Warm, 3: N/A	0	1	2	1
	Fix	6	VGMA	0: OFF, 1: Low, 2: Mid, 3: Max	2	1	1	0
	Fix	7	VNRM	0: 3D, 1: 2D	0	0	0	0
	Fix	8	VYDC	DC Transmission Ratio 0,1: 100%, 2: 92%, 3: 85	3	2	1	1
	Fix	9	VVEN	Vertical; Enhancement	6	4	4	0
	Fix	10	VHK0	Horizontal Peaking 0:On, 1:Off	0	0	0	0
	Fix	11	VDBK	User Dynablack 0: OFF, 1: Low, 2: High, 3: N/A	2	0	1	0
	Fix	12	VYPL	Y-Peaking Limit	0	0	0	0
	Fix	13	VAPG	Y-peaking limit	3	3	4	3

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
3L_COMB	Fix	0	FUNN	Function (0 / 7-6) for NTSC	3
	Fix	1	FUNP	Function (0 / 7-6) for PALM, PALN	3
	Fix	2	DRNG	DRANG (0 / 2)	0
	Fix	3	YCSM	Y/C Sep Mode (0 / 1-0)	0
	Fix	4	CNRK	CNRK (1 / 7-6)	1
	Fix	5	CNRL	CNR Lim (1 / 5-4)	1
	Fix	6	CLPF	C-LPF(1 / 3)	1
	Fix	7	SLPF	SelC-LPF(1 / 2)	0
	Fix	8	MODE	Mode1 (1 / 1)	0
	Fix	9	YPG	Y - Peaking Gain (2 / 7-6)	3
	Fix	10	PDSC	Pds. Clip (2 / 3)	0
	Fix	11	YLPF	Y-LPF(2 / 2)	1
	Fix	12	VENL	V-Emph N.L (3 / 4-2)	6
	Fix	13	VEC	V - Emph Core (3 / 1-0)	3

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
3D_COMB	Fix	0	COUT	COUTS(00 / 2-3)	3
	Fix	1	YAPS	YAPS(00 / 0-1)	1
	Fix	2	NSDS	NSDS(01 / 4-5)	0
	Fix	3	MSS	MSS(01 / 2-3)	0
	Fix	4	KILS	KILS (01 / 1-0)	1
	Fix	5	DYC	DYCOS (02 / 7-6)	2
	Fix	6	EXAD	EXADINS(02 / 5)	0
	Fix	7	EXCS	EXCSS(02 / 1- 0)	1
	Fix	8	CPP	CPP(03 / 6)	0
	Fix	9	HDP	HDP(03 / 3-5)	6
	Fix	10	CDL	CDL(03 / 0-2)	6
	Fix	11	DYCO	DYCOR(04 / 4-7)	3
	Fix	12	DYGA	DYGAIN(04 / 0-3)	10
	Fix	13	DCCO	DCCOR(05 / 4-7)	3
	Fix	14	DCGA	DCGAIN(05 / 0-3)	6
	Fix	15	YNRL	YNRLIM(06 / 4-5)	1
	Fix	16	CNRL	CNRLIM(06 / 0-1)	1
	Fix	17	ID1O	ID1ON(07 / 7)	0
	Fix	18	ID1W	ID1W0A1(07 / 6)	0
	Fix	19	ID1N	ID1W0A2(07 / 5)	0
	Fix	20	WSC	WSC(08 / 6-7)	1
	Fix	21	VTRH	VTRH(08 / 4-5)	1
	Fix	22	VTRR	VTRR(08 / 2-3)	1
	Fix	23	LDSR	LDSR(08 / 0-1)	2
	Fix	24	WSS	WSS (09 / 7)	0
	Fix	25	ID1E	ID1ECON (09 / 6)	1
	Fix	26	TT	TT (09 / 4 -5)	0
	Fix	27	FELC	FELCHK (09 / 3)	1
	Fix	28	TH	TH (09 / 1 -2)	0
	Fix	29	VAPG	VAPGAIN(0A / 5-7)	3
	Fix	30	VAPI	VAPINV(0A / 0-4)	25
	Fix	31	YPFT	YPFT(0B / 4-5)	3
	Fix	32	YPFG	YPFG(0B / 0-3)	8
	Fix	33	V1PS	V1PS(0C / 6-7)	3
	Fix	34	VEGS	VEGS(0C / 4-5)	2
	Fix	35	CC3N	CC3N(0C / 3)	0
	Fix	36	C0HS	C0HS(0C / 2)	0
	Fix	37	SEL2	SELD2FH(0C / 0)	1
	Fix	38	SEL1	SELD1FL(0D / 5)	1
	Fix	39	YHCO	YHCOR(10 / 6-7)	0
	Fix	40	YHCG	YHCGAIN(10 / 5)	1
	Fix	41	OVST	+OVST(10 / 3)	0
	Fix	42	CSHD	CSHDT(10 / 2)	0
	Fix	43	KCTT	KCTT(10 / 0-1)	0
	Fix	44	SHT	SHT(11 / 7-6)	0
	Fix	45	VCT	VCT(11/ 5)	0
	Fix	46	CGAT	CLKGAT (11 / 4)	0
	Fix	47	CG2D	CLK2D (11 / 3)	1
	Fix	48	CGGT	CLKGGT (11 / 2)	0
	Fix	49	CGEB	CLKGEB (11 / 1)	0

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
3D_COMB	Fix	50	CGT	CLKGT (11 / 0)	0
	Fix	51	HPLL	HPLLFS(12 / 7)	1
	Fix	52	BPLL	BPLLFS (12 / 6)	0
	Fix	53	FSCF	FSCFG(12 /5)	0
	Fix	54	PLLF	PLLFG(12 / 4)	1
	Fix	55	KILR	KILR(12 / 0-3)	3
	Fix	56	HSSL	HSSL(13 / 4-7)	12
	Fix	57	VSSL	VSSL(13 / 0-3)	8
	Fix	58	BGPS	BGPS(14 / 4-7)	4
	Fix	59	BGPW	BGPW(14 / 0-3)	10
	Fix	60	ADCL	ADCLKS(15 / 6-7)	3
	Fix	61	NSDW	NSDSW(15 / 4)	1
	Fix	62	HIZE	HIZEN (16 / 4)	0
	Fix	63	HCNT	HCNTFSYN (17 / 6)	0

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
PIP	Fix	0	PFRN	VCXO oscillation	0
	Fix	1	PRVS	HD/VD input synchronous mode selection	1
	Fix	2	PCON	PIP sub contrast control	97
	Fix	3	PUCO	PIP U level control	5
	Fix	4	PVCO	PIP V level control	17
	Fix	5	PHUE	PIP sub hue control	12
	Fix	6	PKIL	Color killer	0
	Fix	7	PSEP	C-sync sep input selection	1
	Fix	8	PDCN	Sub pic sync sep. Threshold setting	3
	Fix	9	PBGS	bgp position setting	15
	Fix	10	PDL0	Y/C delay adjust (for video)	11
	Fix	11	PDL1	Y/C delay adjust (for yuv)	13
	Fix	12	PBRT	Y brightness control	25
	Fix	13	PVP1	V pedestal level for YUV	0
	Fix	14	PUP1	U pedestal level for YUV	0
	Fix	15	PVP2	V pedestal level for main w/ burst	0
	Fix	16	PUP2	U pedestal level for main w/ burst	0
	Fix	17	PVP3	V pedestal level for main w/o burst	0
	Fix	18	PUP3	U pedestal level for main w/o burst	0
	Fix	19	PACS	0D, 0Eh setting mode	1
	Fix	20	PSYS	Color system	=
	Fix	21	PSDL	Sync delay control	0
	Fix	22	PCCL	YUV color level	11
	Fix	23	PCGA	Croma gain	1
	Fix	24	PAAF	Auto AFC	1
	Fix	25	PSU2	For test	0
	Fix	26	PCVF	Internal 1H comb filter	0
	Fix	27	PBIT	Y clamp time constant	0
	Fix	28	PAFC	AFC time constant	0
	Fix	29	PACC	Color decoder amplitude	21
	Fix	30	PSDT	System automatic judgment	=

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
PIP	Fix	31	PBUR	VCXO mode selection	0
	Fix	32	PEVE	Main picture PAL-N	0
	Fix	33	PINW	Invert sub picture field definition	0
	Fix	34	PINR	Invert main picture field definition	0
	Fix	35	PVMD	Vertical display mode when pal-n	=
	Fix	36	PREF	Main picture field fix	0
	Fix	37	PARE	Automatic 50/60 Hz judgment	0
	Fix	38	PBWD	BW det. Threshold setting	1
	Fix	39	PFRA	Freq. Adjustment for free run mode	0
	Fix	40	PPAL	Parameter setting for PAL-M judgment	52
	Var	41	PHPO	Sub picture h position	
	Fix	42	PVPO	Sub picture v position	22
	Fix	43	PHTI	Display timing adjust	6
	Fix	44	PHAJ	Main/Sub switch delay control	2
	Fix	45	PBGY	Back ground Y level setting	0
	Fix	46	PCRO	Sub picture read mode	0
	Fix	47	PPAR	Threshold control for ident judgment of sub	1
	Fix	48	PHPF	Y output HPF	0
	Fix	49	PFSC	FSC output	0
	Fix	50	PVCH	15h,16h,17h, setting mode	0
	Fix	51	PVON	V-chip decode mode	1
	Fix	52	PVLN	V-chip data slicer line selection	17
	Fix	53	PVSB	V-chip data slicer start bit detection parameter	64
	Fix	54	PVLV	V-chip data slicer slice parameter	130
	Fix	55	SUSW	Sub-Unlock bit position switch	0
	Fix	56	PDL5	YDL by when PALN system	0
	Fix	57	PHT5	HT by when PALN system	15

Service Group	Fix/ Var	No.	Name	Description	FS Models Init Data	FA Models Init Data
AP	Fix	0	SBAL	Sub Balance	4	4
	Fix	1	SBAS	Sub Bass	5	0
	Fix	2	STRE	Sub Treble	5	0
	Fix	3	SRL	Surround level	0	0
	Fix	4	BBOH	Surround Off - BBE high	0	5
	Fix	5	BBOL	Surround Off - BBE low	0	11
	Fix	6	BBSH	Simulated - BBE high	0	3
	Fix	7	BBSL	Simulated - BBE low	0	4
	Fix	8	BBMH	da	0	0
	Fix	9	BBML	Surround - BBE low	0	0
	Fix	10	BBGH	WOW - BBE high	0	6
	Fix	11	BBGL	WOW - BBE low	0	12
	Fix	12	BBTH	Trusurround - BBE high	0	5
	Fix	13	BBTL	Trusurround - BBE low	0	12
	Fix	14	VFIX	Audio output fix data	255	255
	Fix	15	AGCL	AGC Level	2	2
	Fix	16	BTAB	Bass/Treble curv selection	2	1

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
CCD	Fix	0	DUM0	Only for testing	=
	Fix	1	VOSD	Only for testing	=

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
OP	Var	0	DISP	OSD Display position	
	Fix	1	RAMW		=
	Fix	2	ICMP	Comparison data to determine Non-interlace signal for OSD	4
	Fix	3	IPOR	0:Even, 1: Odd, Other: do not change	1
	Fix	4	FAWD	1: Forced to auto wide mode, 0:normal	0
	Fix	5	HCLW	H-Count Lower limit	67
	Fix	6	HCHG	H-Count Higher limit	254
	Fix	7	9VTM	Delay for 9V check subsystem	55
	Fix	8	ZDET	Zero detect relay delay	123

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
ID	Fix	0	ID0	Model Variation ID0	SEE ID MAP
	Fix	1	ID1	Model Variation ID1	SEE ID MAP
	Fix	2	ID2	Model Variation ID2	SEE ID MAP
	Fix	3	ID3	Model Variation ID3	SEE ID MAP
	Fix	4	ID4	Model Variation ID4	SEE ID MAP
	Fix	5	ID5	Model Variation ID5	SEE ID MAP
	Fix	6	ID6	Model Variation ID6	SEE ID MAP
	Fix	7	ID7	Model Variation ID7	SEE ID MAP

4-5. ID MAP TABLE

Model	Destination	ID-O	ID-1	ID-2	ID-3	ID-4	ID-5	ID-6	ID-7
KV-27FS210	US	89	159	73	98	14	0	6	17
KV-27FS210	CND	89	159	73	82	14	0	6	17
KV-29FA210	L. NORTH	81	159	237	194	46	0	0	81
KV-29FA210	L. SOUTH	81	159	237	194	46	0	0	81
KV-32FS210	USA	89	159	73	98	14	0	6	17
KV-32FS210	CND	89	159	73	82	14	0	6	17
KV-36FS210	USA	89	159	73	98	14	0	6	17
KV-36FS210	CND	89	159	73	82	14	0	6	17
KV-36FS210	HAWAII	89	159	73	98	14	0	6	17

4-6. A BOARD ADJUSTMENTS

H. FREQUENCY (FREE RUN) CHECK

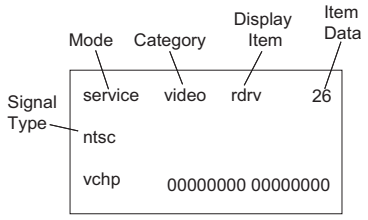
1. Input a TV mode (RF) with no signal.
2. Connect a frequency counter to base of Q501 (TP-25 H. DRIVE) on the A Board.
3. Check H. Frequency for 15734 ± 400/-200 Hz.

V. FREQUENCY (FREE RUN) CHECK

1. Select video 1 with no signal input.
2. Set the conditions for a standard setting.
3. Connect the frequency counter to TP-27 (V OUT) or CN501 pin ⑥ (V DY+) and ground on the A Board .
4. Check that V. Frequency shows 60 ± 5 Hz.

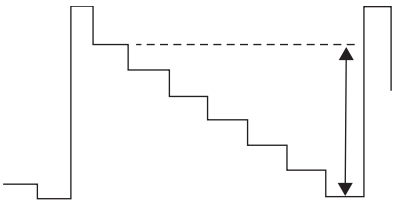
SUBCONTRAST ADJUSTMENT (RDRV)

1. Input a color-bar signal and set the level to 75%.
2. Set in Standard mode.
3. Activate the Service Adjustment Mode. Set color min pic max.
4. Set GON and BON items. Using 3 and 6 set each to the following values. Leave RON set to "1".



R ON: ON (1)
G ON: OFF (0)
B ON: OFF (0)

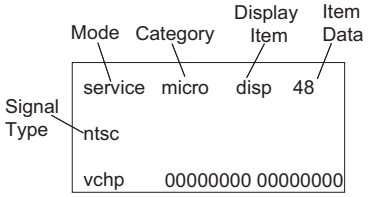
5. Connect an oscilloscope probe to C Board, CN705 pin 3 (Red Out) (TP35).
6. Select SCON with 1 and 4 .
7. Adjust the value of SCON with 3 and 6 for 1.90 ± 0.05Vpp.



8. Reset GON and BON values to "1".
   R ON: ON (1)
   G ON: ON (1)
   B ON: ON (1)
9. Press MUTING then ENTER to save into the memory.
10. After adjusting SCON, if still out of xpec, use RDRV resistor as a fine adjustment.

DISPLAY POSITION ADJUSTMENT (DISP)

1. Input a color-bar signal.
2. Set to Service Adjustment Mode.
3. Select DISP with 1 and 4 .
4. Adjust values of DISP with 3 and 6 to adjust characters to the center.
5. Write to memory by pressing MUTING then ENTER .
6. Check to see if the text is displayed on the screen.

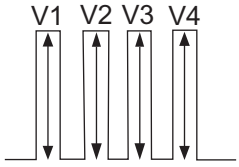


SUB BRIGHT ADJUSTMENT (SBRT)

1. Input a monoscope signal.
2. Activate the Service Adjustment Mode.
3. Set the PICTURE and BRIGHTNESS to minimum.
4. Select the SBRT item with 1 and 4 .
5. Adjust the values of SBRT with 3 and 6 to obtain a faintly visible crosshatch.
6. Press MUTING then ENTER to save into the memory.

SUB HUE, SUB COLOR ADJUSTMENT (SHUE, SCOL)

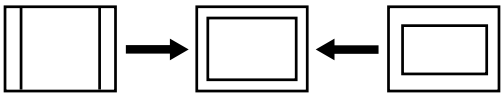
1. Input color-bar signal at 75%.
2. Activate the Service Adjustment Mode.
3. Set (PIC) to Max and (COL) to 50%.
4. Connect an oscilloscope probe to C Board, CN705Pin ④ Blue Out.
5. Select the SHUE and SCOL item with 1 and 4 .
6. While showing the SHUE item, adjust the waveform with 1 and 4 until the second and third bars show the same level (V2 = V3 < 0.15Vp-p).
7. While showing the SCOL item, adjust the waveform with 3 and 6 until the first and fourth bars show the same level (V1 = V4 < 0.15Vp-p).



8. Press MUTING then ENTER to save into the memory.

V. SIZE ADJUSTMENT (VSIZ)

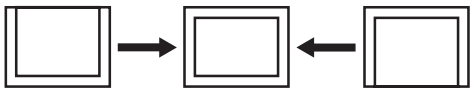
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the VSIZ item with 1 and 4 .
4. Adjust value of VPOS with 1 and 4 for the best vertical center.
5. Press MUTING then ENTER to save into the memory.



V. CENTER ADJUSTMENT (VPOS)

Perform this adjustment after performing H. Frequency (Free Run) Check.

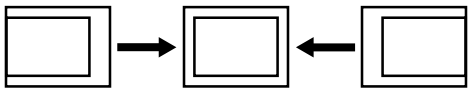
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the VPOS item with 1 and 4 .
4. Adjust value of VPOS with 3 and 6 for the best vertical center.
5. Press MUTING then ENTER to save into the memory.



H. CENTER ADJUSTMENT (HPOS)

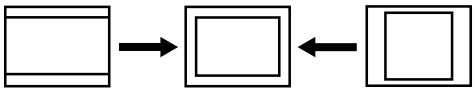
Perform this adjustment after performing H. Frequency (Free Run) Check.

1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the HPOS item with 1 and 4 .
4. Adjust the value of HPOS with 3 and 6 for the best horizontal center.
5. Press MUTING then ENTER to save into the memory.



H. SIZE ADJUSTMENT (HSIZ)

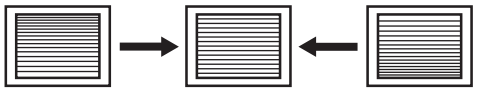
1. Input a monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select HSIZ with 1 and 4 .
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then ENTER to save into the memory.



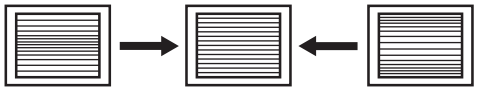
V. LINEARITY (VLIN), V. CORRECTION (SCOR), PIN AMP (PAMP), AND HORIZONTAL TRAPEZOID (HTRP) ADJUSTMENTS

1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select VLIN, SCOR, PAMP, and HTRP with 1 and 4.
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then ENTER to save into the memory.

V LINEARITY (VLIN)

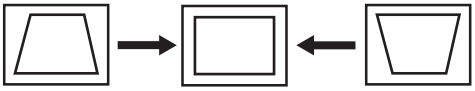


V CORRECTION (SCOR)



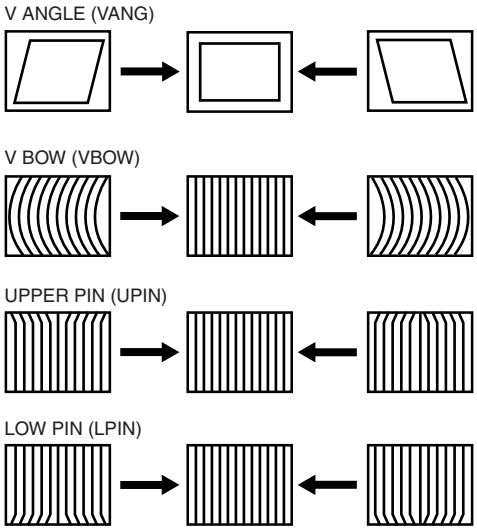
PIN AMP (PAMP)

HORIZONTAL TRAPEZOID (HTRP)



V. ANGLE (VANG), V. BOW (VBOW), UPPER PIN (UPIN) AND LOW PIN (LPIN) ADJUSTMENTS

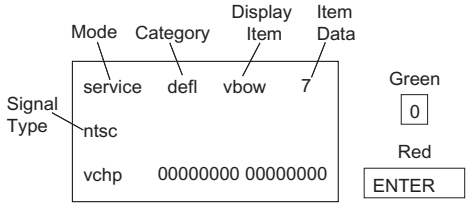
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select VANG, VBOW, UPIN, and LPIN with [1] and [4].
4. Adjust with [3] and [6] for the best picture.
5. Press [MUTING] then [ENTER] to save into the memory.



SERVICE ADJUSTMENT MODE MEMORY

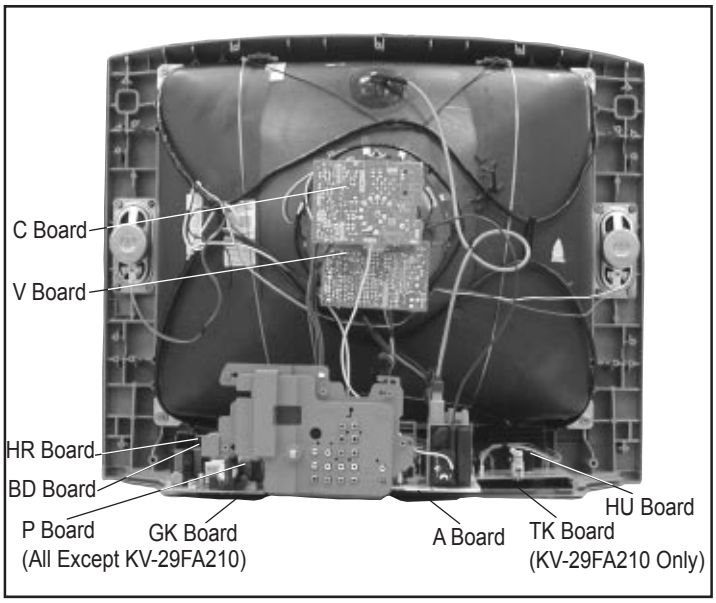
1. After completing all adjustments, press [0] then [ENTER] .

Read From Memory



SECTION 5: DIAGRAMS

5-1. CIRCUIT BOARDS LOCATION



5-2. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM INFORMATION

All capacitors are in µF unless otherwise noted. pF : µµF 50V or less are not indicated except for electrolytics and tantalums.

All electrolytics are in 50V unless otherwise specified.

All resistors are in ohms. kΩ=1000Ω, MΩ=1000kΩ

Indication of resistance, which does not have one for rating electrical power, is as follows: Pitch : 5mm
Rating electrical power : $^1/_4$ W

$^1/_4$ W in resistance, $^1/_{10}$ W and $^1/_8$ W in chip resistance.

: nonflammable resistor

: fusible resistor

: internal component

: panel designation and adjustment for repair

: earth ground

: earth-chassis

All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

Readings are taken with a color-bar signal input.

Readings are taken with a 10MΩ digital multimeter.

Voltages are DC with respect to ground unless otherwise noted.

Voltage variations may be noted due to normal production tolerances.

All voltages are in V.

S : Measurement impossibility.

: B+line

: B-line (Actual measured value may be different).

: signal path (RF)

Circled numbers are waveform references.

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

The symbol indicates a fast operating fuse and is displayed on the component side of the board. Replace only with fuse of the same rating as marked.

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

Le symbole indique une fusible a action rapide. Doit etre remplace par une fusible de meme yaleur, comme maque.

The components identified by ⋈ in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be necessary, replace only with the value originally used.

When replacing components identified by ◪, make the necessary adjustments as indicated. If the results do not meet the specified value, change the component identified by ⋈ and repeat the adjustment until the specified value is achieved. (Refer to Section 3: Safety Related Adjustments on Page 16.)

When replacing the parts listed in the table below, it is important to perform the related adjustments.

Part Replaced (◪)	Adjustment (⋈)
A BOARD: R550, T503, T504, D519, IC501, R533, D521, R532, D520, C531, R529, R530, R531, C532 **GK BOARD:** IC600, PH602	**HV HOLD DOWN** R530, R531

REFERENCE INFORMATION

RESISTOR

: RN	METAL FILM
: RC	SOLID
: FPRD	NONFLAMMABLE CARBON
: FUSE	NONFLAMMABLE FUSIBLE
: RW	NONFLAMMABLE WIREWOUND
: RS	NONFLAMMABLE METAL OXIDE
: RB	NONFLAMMABLE CEMENT
: ※	ADJUSTMENT RESISTOR

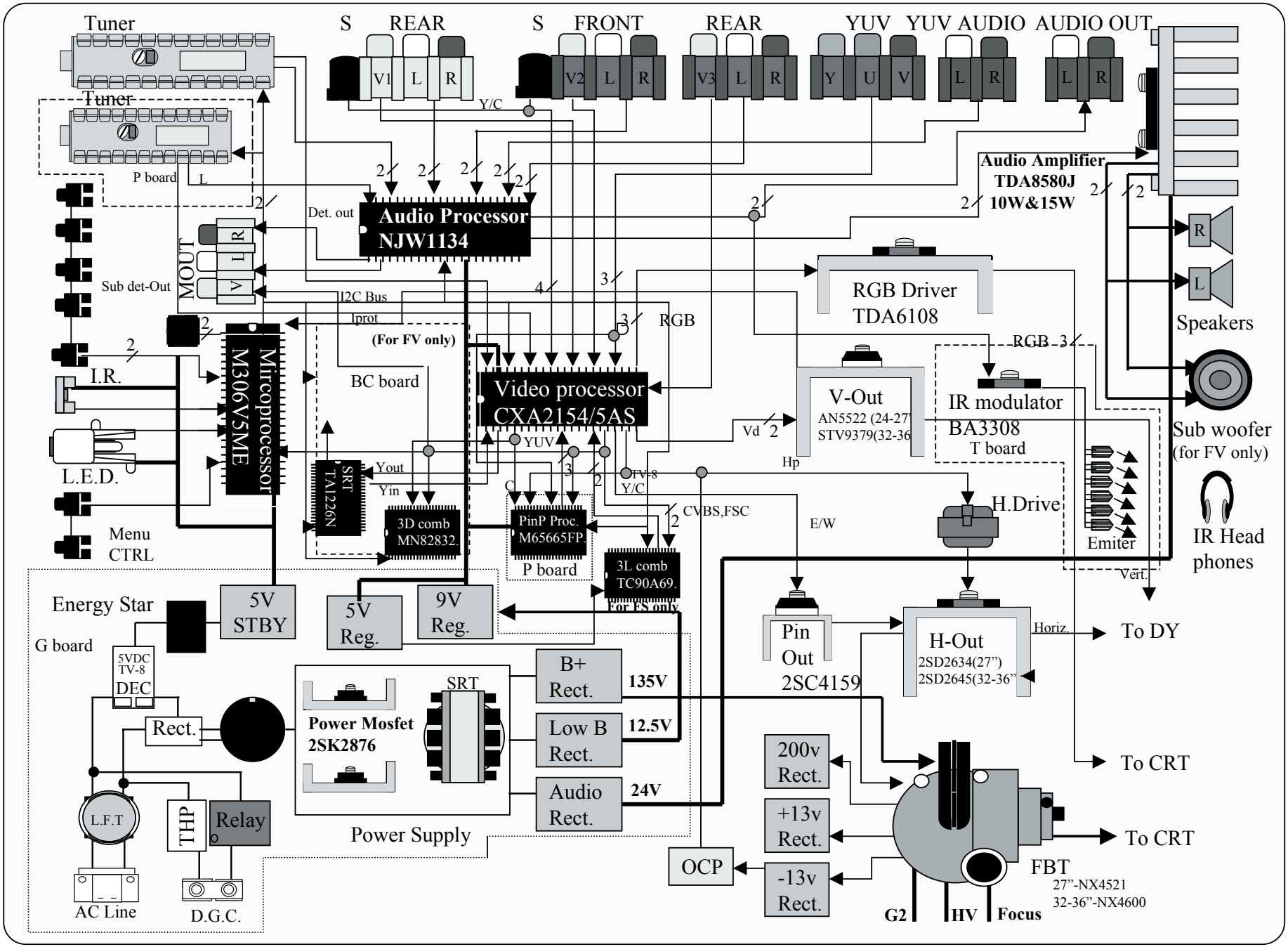
CAPACITOR

: TA	TANTALUM
: PS	STYROL
: PP	POLYPROPYLENE
: PT	MYLAR
: MPS	METALIZED POLYESTER
: MPP	METALIZED POLYPROPYLENE
: ALB	BIPOLAR
: ALT	HIGH TEMPERATURE
: ALR	HIGH RIPPLE

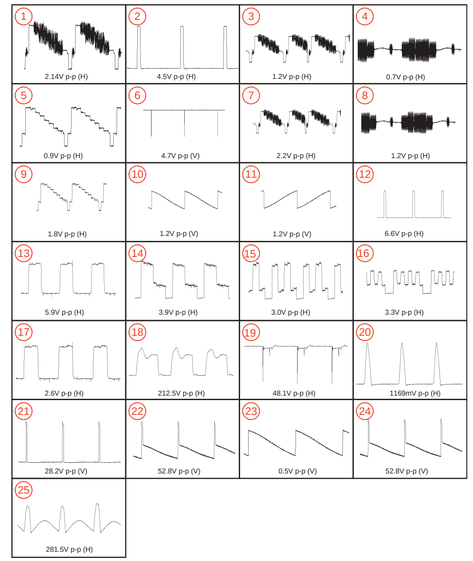
COIL

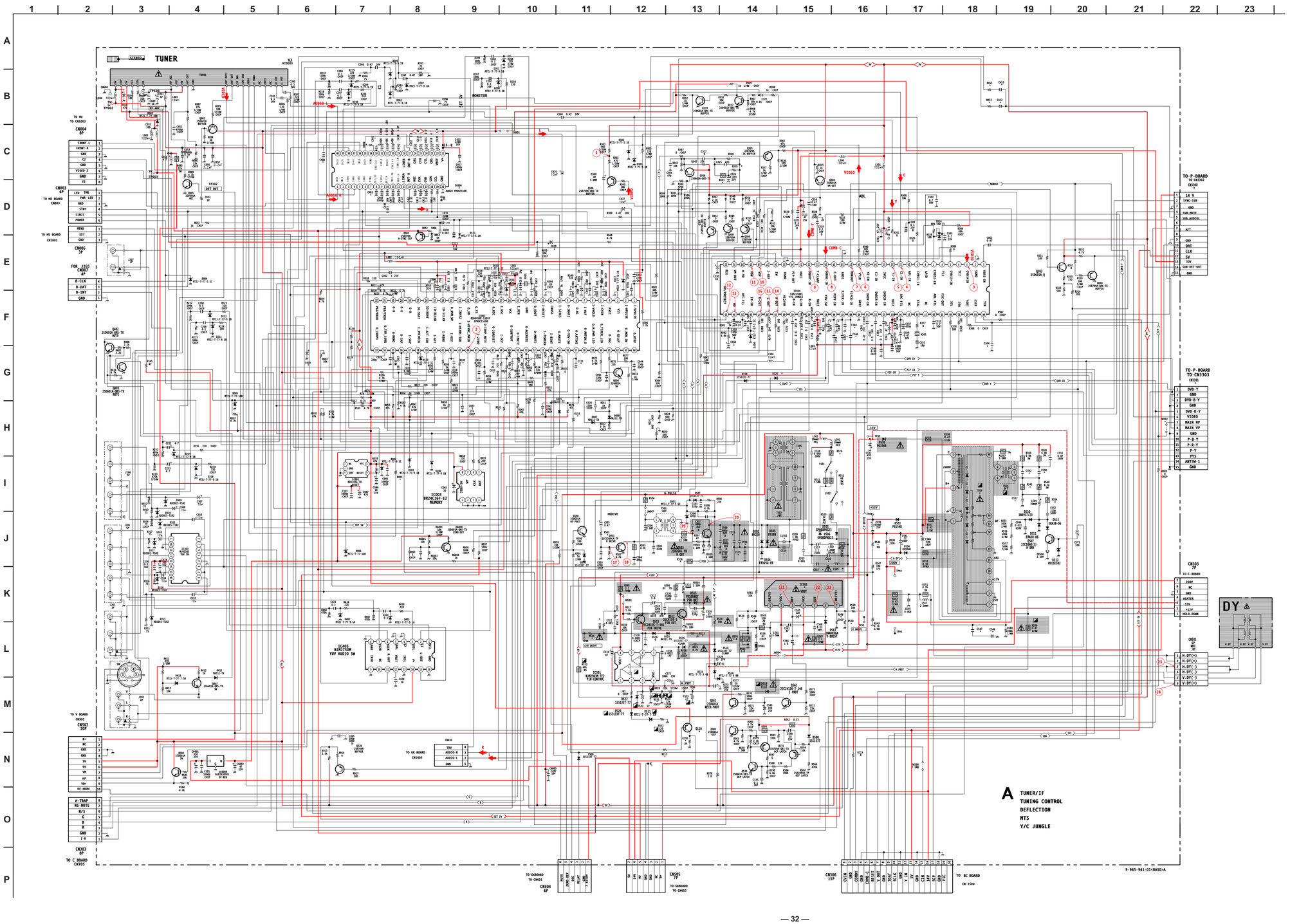
: LF-8L	MICRO INDUCTOR

5-3. BLOCK DIAGRAM



A BOARD WAVEFORMS





A BOARD IC VOLTAGE LIST

IC001	
PIN	VOLT
1	4.9
2	0.6
3	GND
4	5.0
5	0.2
6	1.7
7	1.4
8	0.5
9	0.0
10	5.0
11	GND
12	5.0
13	2.3
14	GND
15	2.1
16	5.0
17	2.6
18	2.6
19	0.3
20	0.0
21	2.1
22	5.0
23	5.0
24	5.0
25	5.0
26	5.0
27	5.0
28	0.0
29	0.0
30	0.0
31	N/C
32	N/C
33	4.8
34	0.0
35	0.0
36	0.0
37	0.0
38	4.2
39	1.7
40	2.6
41	5.0
42	5.0
43	0.2
44	0.6
45	1.2
46	4.8
47	4.8
48	0.0
49	0.1
50	4.4
51	5.0
52	0.1
53	0.0
54	4.8
55	0.1
56	0.0
57	4.8
58	N/C
59	N/C
60	0.0
61	0.1
62	4.6
63	0.1
64	N/C

IC002	
PIN	VOLT
1	N/C
2	GND
3	GND
4	5.0
5	5.0

IC003	
PIN	VOLT
1	GND
2	GND
3	GND
4	GND
5	5.0
6	5.0
7	0.0
8	5.0

IC301	
PIN	VOLT
1	5.0
2	GND
3	5.0
4	5.0
5	4.8
6	5.0
7	4.8
8	3.4
9	5.2
10	1.9
11	0.0
12	4.8
13	9.0
14	0.0
15	4.8
16	4.9
17	4.4
18	0.0
19	3.8
20	5.5
21	3.6
22	5.8
23	9.0
24	4.4
25	0.0
26	4.1
27	2.4
28	3.5
29	3.5
30	5.9
31	5.5
32	7.6
33	3.6
34	2.8
35	2.5
36	3.9
37	1.5
38	1.6
39	1.5
40	0.0
41	4.6
42	4.6
43	4.6
44	9.0
45	0.1
46	4.3
47	5.2
48	5.2
49	GND
50	4.8
51	5.2
52	5.2
53	9.1
54	5.3
55	N/C
56	1.7
57	N/C
58	6.9
59	4.7
60	4.7
61	4.7
62	4.7
63	1.1
64	5.1

IC303	
PIN	VOLT
1	4.5
2	4.0
3	3.0
4	GND
5	4.0
6	4.0
7	0.0
8	4.5
9	4.5
10	GND
11	4.5
12	0.0
13	9.0
14	4.5
15	GND
16	4.5

IC400	
PIN	VOLT
1	4.5
2	4.5
3	4.5
4	4.5
5	4.5
6	4.5
7	4.5
8	4.5
9	4.5
10	4.5
11	4.5
12	4.5
13	4.5
14	4.5
15	0.6
16	1.7

IC405	
PIN	VOLT
1	4.5
2	0.0
3	4.5
4	GND
5	GND
6	4.5
7	4.5
8	GND
9	GND
10	N/C
11	N/C
12	4.5
13	GND
14	9.0
15	4.5
16	GND

IC501	
PIN	VOLT
1	-13.3
2	8.2
3	7.2
4	-15.0
5	2.3
6	2.5
7	-13.5
8	12.0

IC561	
PIN	VOLT
1	1.5
2	12.0
3	-12.0
4	-15.0
5	0.3
6	14.2
7	1.4

IC6008	
PIN	VOLT
I	7.5
O	5.0
G	GND

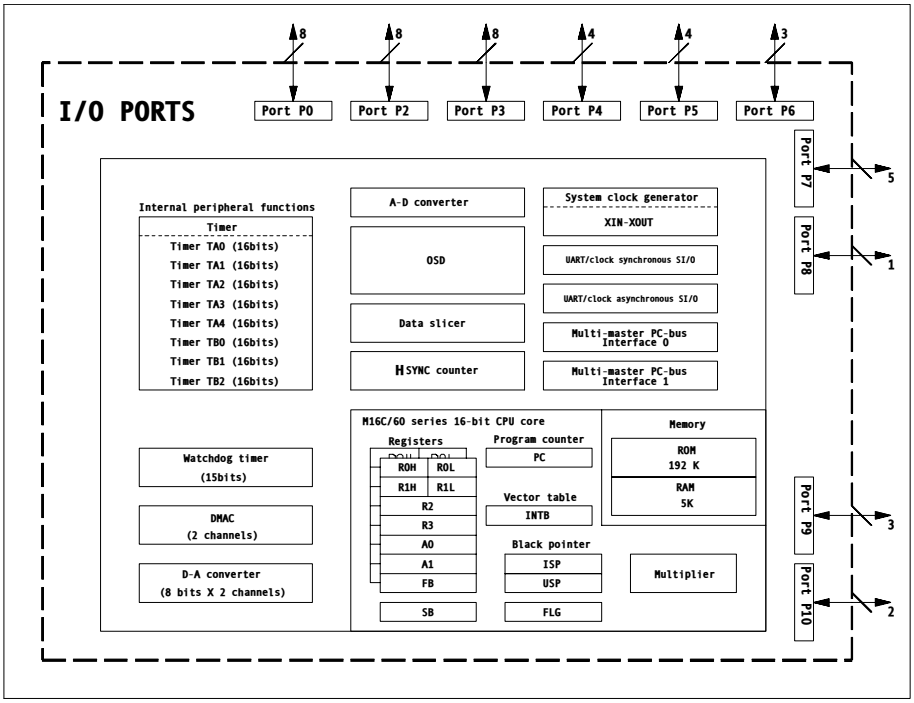
All voltages are in V.

A BOARD TRANSISTOR VOLTAGE LIST

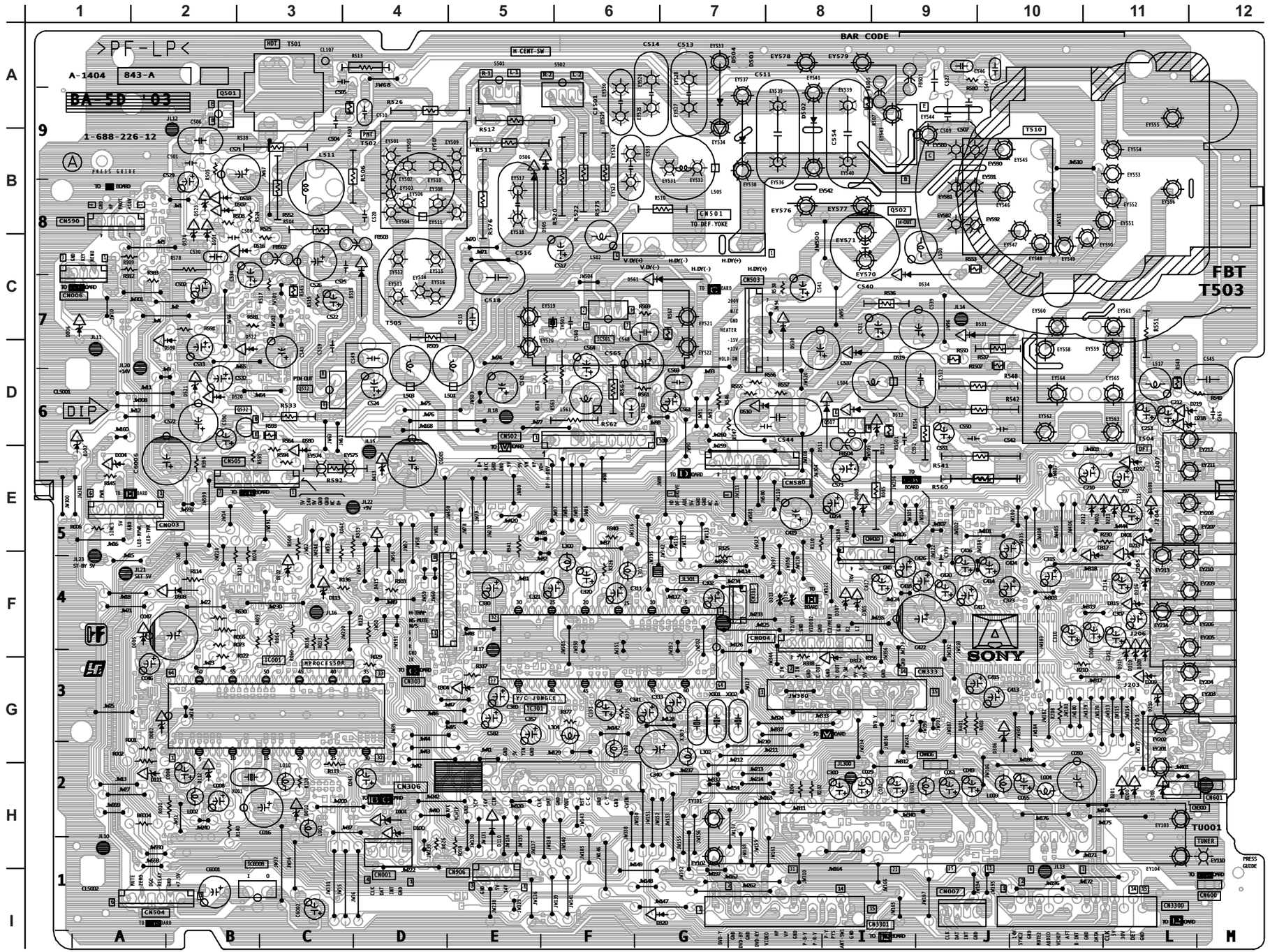
	B	C	E		B	C	E
Q001	0.0	0.4	5.0	**Q402**	0.0	0.0	GND
Q002	4.4	9.0	3.8	**Q403**	0.0	0.0	GND
Q003	0.7	0.0	GND	**Q407**	0.7	0.0	GND
Q004	0.0	4.3	GND	**Q500**	3.5	9.0	2.9
Q005	0.1	4.9	GND	**Q501**	0.0	123.6	GND
Q010	4.3	GND	4.9	**Q502**	0.0	131.8	0.0
Q110	4.8	0.0	5.0	**Q507**	0.3	110.7	GND
Q300	4.6	GND	5.2	**Q511**	-13.5	-8.4	-15.0
Q304	5.0	9.0	4.4	**Q512**	-14.9	-2.0	-15.0
Q305	5.0	0.0	3.4	**Q530**	0.0	4.4	GND
Q307	1.5	GND	2.2	**Q531**	4.4	0.0	4.4
Q308	1.5	GND	2.2	**Q532**	133.6	0.0	133.8
Q309	1.5	GND	2.2	**Q561**	0.0	4.4	GND
Q317	0.0	3.9	GND	**Q562**	0.0	0.0	GND
Q319	0.6	0.6	GND	**Q590**	0.0	3.6	GND
Q320	4.6	GND	5.2	**Q6000**	0.6	1.2	GND

All voltages are in V.

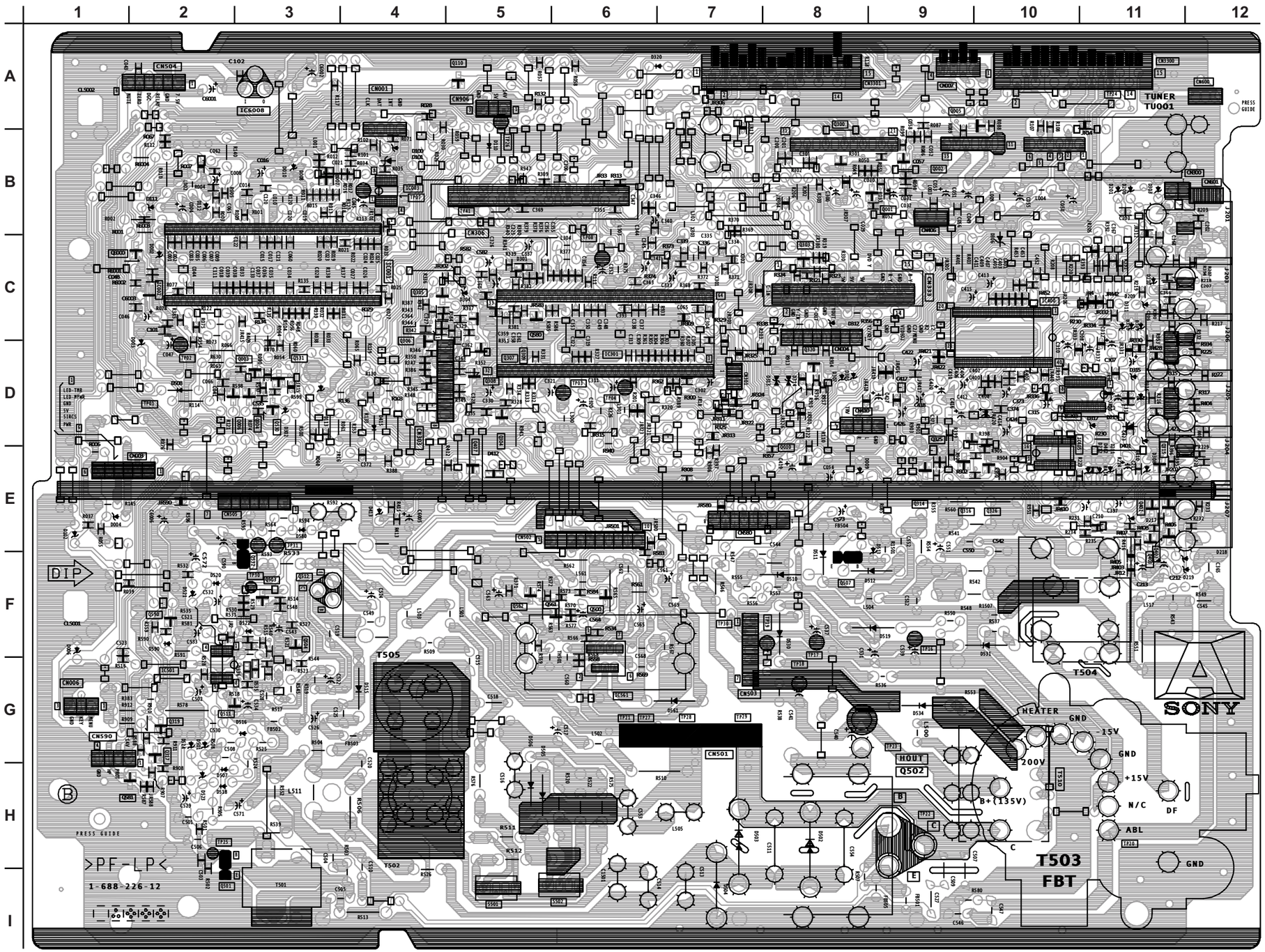
IC001 BLOCK DIAGRAM



A COMPONENT SIDE [TUNING CONTROL, DEFLECTION, TUNER/IF, Y/C JUNGLE, MTS]



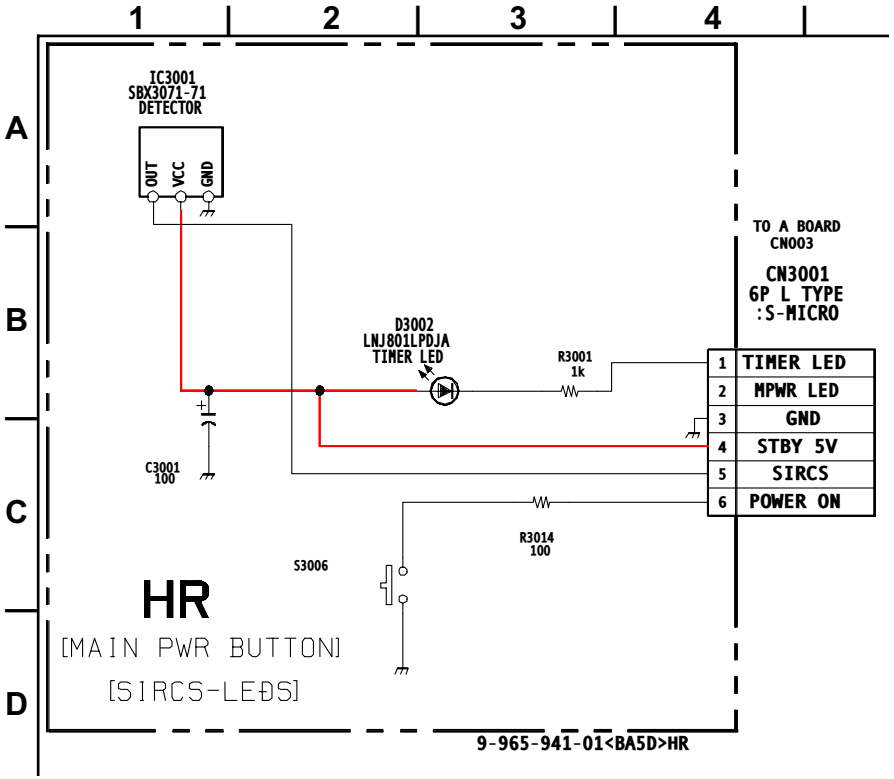
A CONDUCTOR SIDE [TUNING CONTROL, DEFLECTION, TUNER/IF, Y/C JUNGLE, MTS]



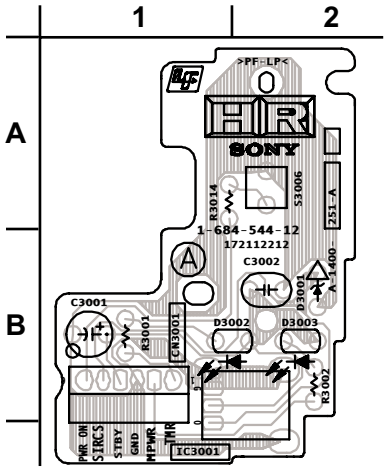
A BOARD LOCATOR LIST

DIODE		DIODE		TRANSISTOR	
D002	C-2	D501	G-2	Q001	B-8
D004	E-1	D502	H-8	Q002	B-9
D005	D-2	D503	H-7	Q003	D-3
D006	F-1	D504	I-7	Q004	D-3
D007	B-4	D505	G-5	Q005	A-9
D008	B-3	D506	G-5	Q010	E-8
D009	E-8	D507	H-2	Q110	A-5
D010	B-3	D508	D-2	Q300	B-8
D100	B-4	D515	G-4	Q304	D-5
D101	B-4	D516	G-3	Q305	C-4
D102	E-1	D518	H-2	Q307	D-5
D110	B-5	D520	F-2	Q308	D-5
D111	B-2	D521	F-2	Q309	D-5
D112	B-2	D522	F-3	Q314	E-9
D113	D-3	D523	H-2	Q315	E-10
D200	B-11	D524	G-2	Q316	E-9
D201	B-11	D530	F-8	Q317	G-2
D209	C-11	D531	F-10	Q319	G-2
D210	C-11	D534	G-9	Q325	D-9
D211	D-11	D535	G-3	Q326	E-10
D212	D-11	D536	G-3	Q400	E-11
D213	D-11	D561	G-7	Q401	E-11
D217	E-11	D580	E-3	Q402	E-12
D218	F-12	D590	F-2	Q403	E-11
D219	F-12	IC		Q407	E-5
D302	D-3	IC001	C-3	Q500	F-6
D303	B-11	IC002	C-2	Q501	H-2
D304	C-5	IC003	B-4	Q502	H-9
D305	D-8	IC301	C-6	Q511	G-3
D306	C-10	IC303	D-10	Q512	F-3
D307	D-8	IC400	C-10	Q530	D-3
D308	E-11	IC405	D-10	Q531	D-3
D309	C-11	IC501	G-2	Q532	F-3
D310	C-11	IC561	G-6	Q561	F-5
D311	C-11	IC6008	A-3	Q562	F-5
D312	C-8			Q580	C-5
D313	D-8			Q581	H-2
D314	D-8			Q590	F-2
D315	D-11			Q6000	C-1
D316	D-11				
D317	D-10				
D320	A-7				
D401	D-11				
D402	D-11				
D412	E-5				
D413	E-4				
D415	D-4				

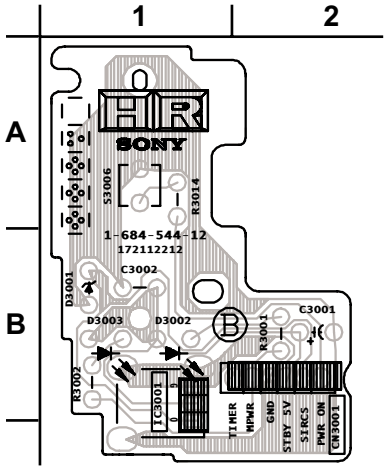
HR BOARD SCHEMATIC DIAGRAM



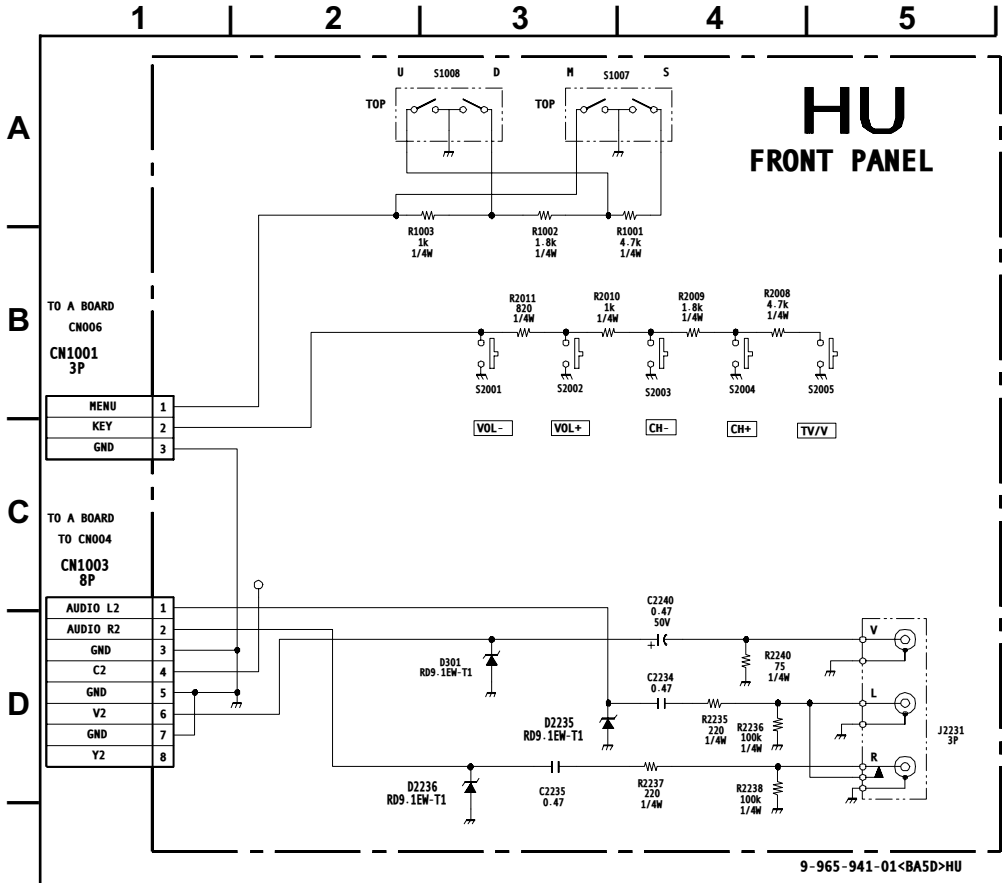
HR COMPONENT SIDE [MAIN POWER BUTTON [S] RCS-LEDS]



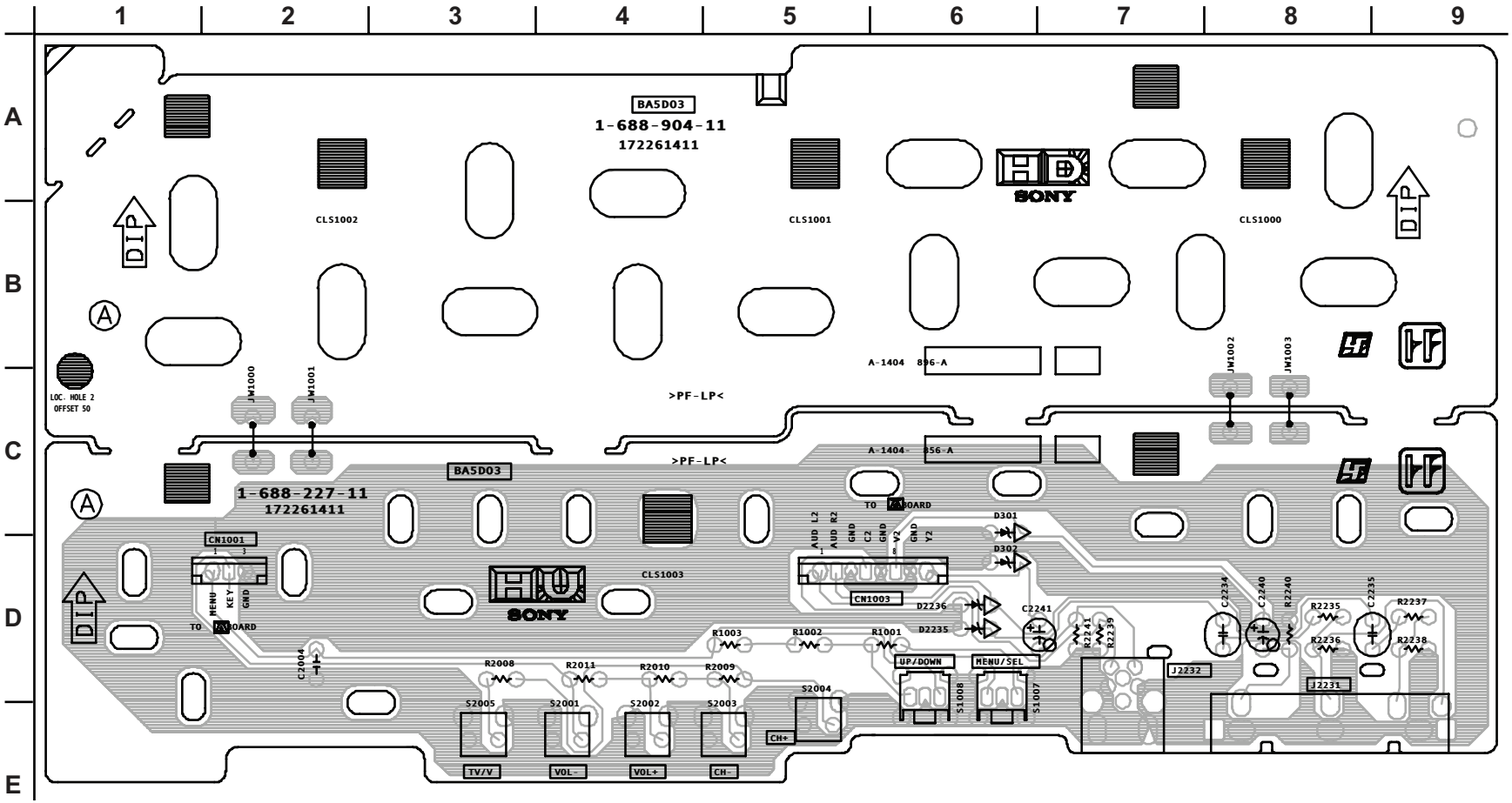
HR CONDUCTOR SIDE [MAIN POWER BUTTON [S] RCS-LEDS]



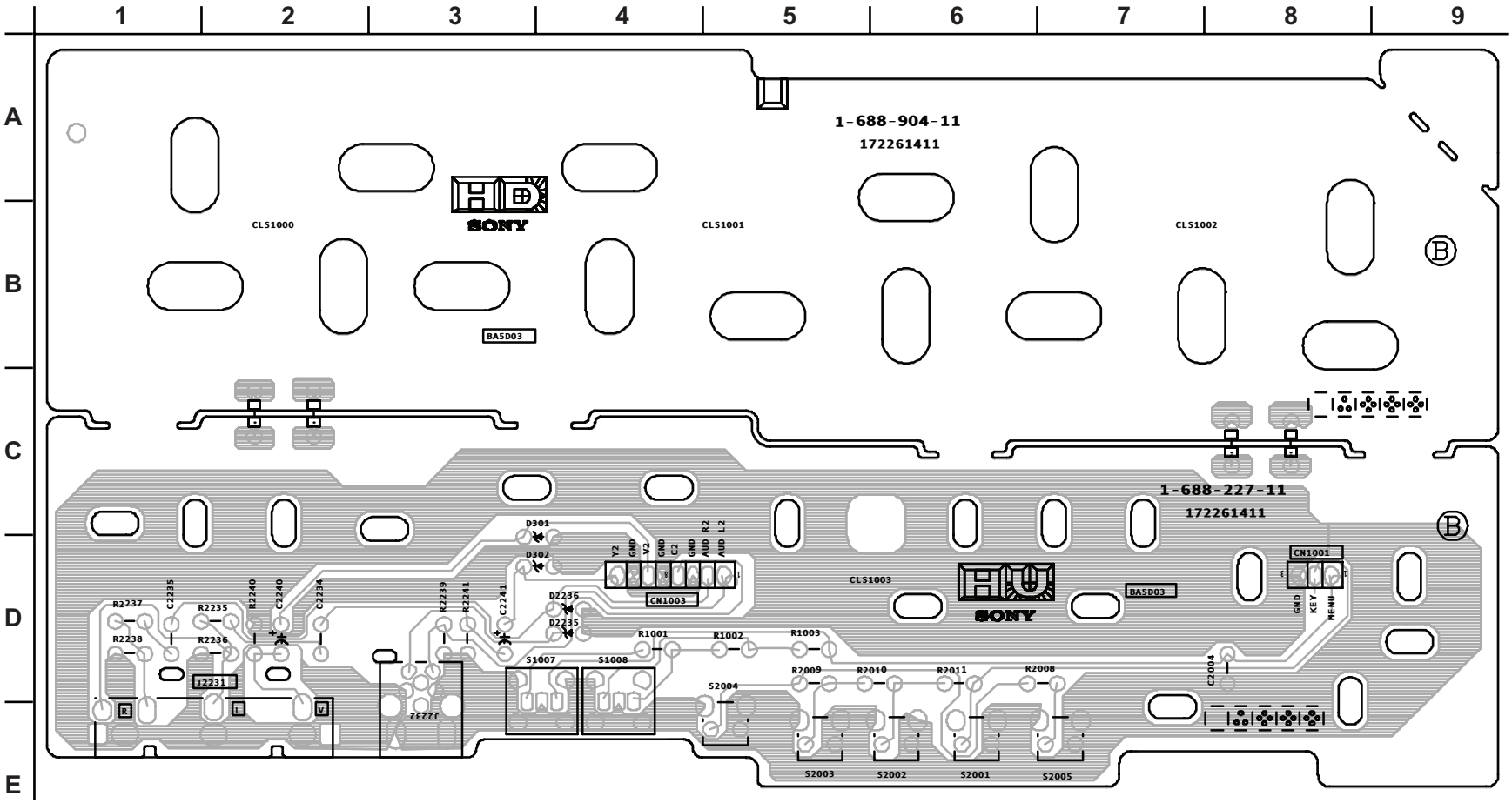
HU BOARD SCHEMATIC DIAGRAM



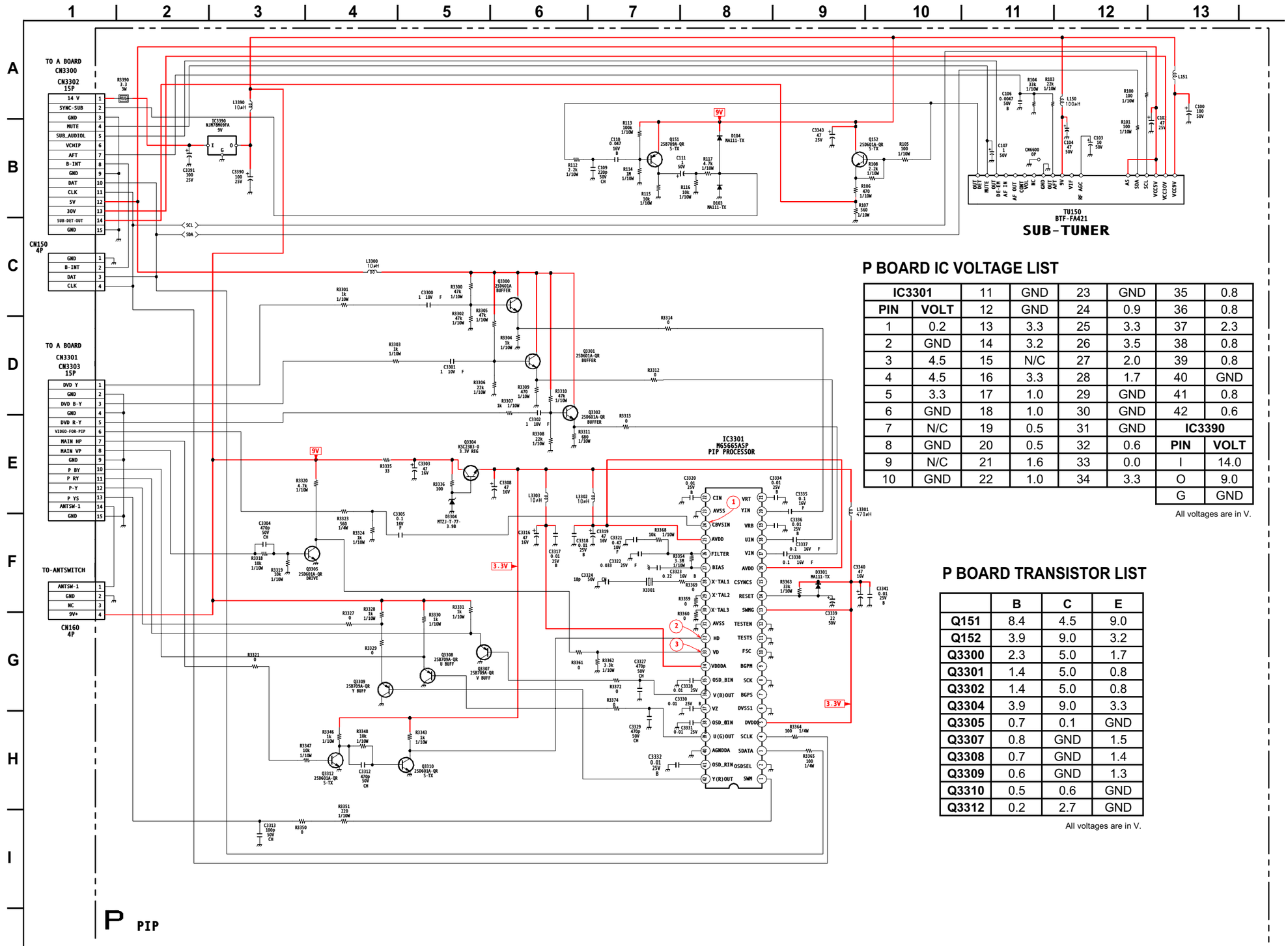
HU/HD COMPONENT SIDE [FRONT PANEL] (HD FOR KV-32FS210/36FS210 ONLY)



HU/HD CONDUCTOR SIDE [FRONT PANEL] (HD FOR KV-32FS210/36FS210 ONLY)



P BOARD SCHEMATIC DIAGRAM



P BOARD IC VOLTAGE LIST

IC3301		11	GND	23	GND	35	0.8
PIN	VOLT	12	GND	24	0.9	36	0.8
1	0.2	13	3.3	25	3.3	37	2.3
2	GND	14	3.2	26	3.5	38	0.8
3	4.5	15	N/C	27	2.0	39	0.8
4	4.5	16	3.3	28	1.7	40	GND
5	3.3	17	1.0	29	GND	41	0.8
6	GND	18	1.0	30	GND	42	0.6
7	N/C	19	0.5	31	GND	IC3390	
8	GND	20	0.5	32	0.6	PIN	VOLT
9	N/C	21	1.6	33	0.0	I	14.0
10	GND	22	1.0	34	3.3	O	9.0
						G	GND

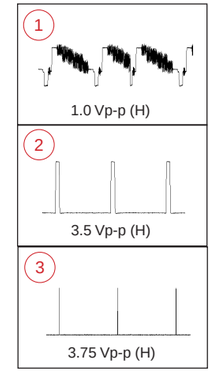
All voltages are in V.

P BOARD TRANSISTOR LIST

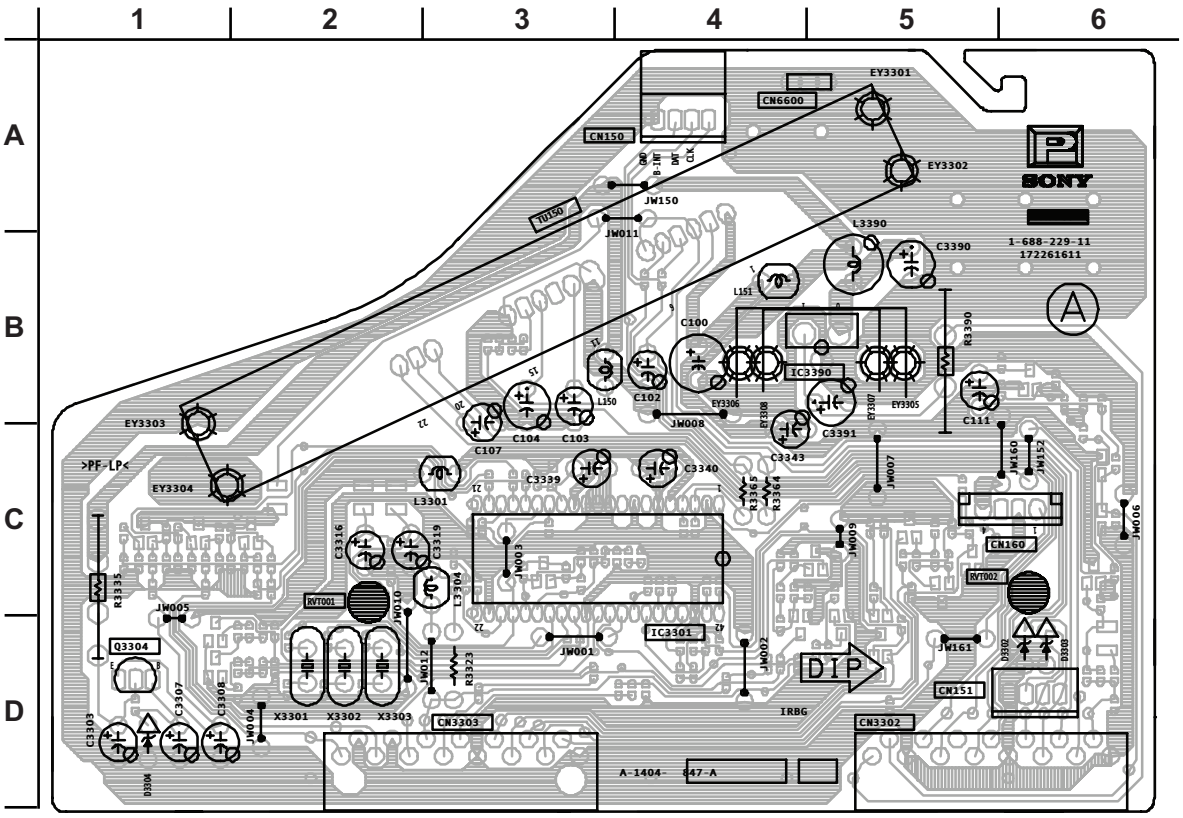
	B	C	E
Q151	8.4	4.5	9.0
Q152	3.9	9.0	3.2
Q3300	2.3	5.0	1.7
Q3301	1.4	5.0	0.8
Q3302	1.4	5.0	0.8
Q3304	3.9	9.0	3.3
Q3305	0.7	0.1	GND
Q3307	0.8	GND	1.5
Q3308	0.7	GND	1.4
Q3309	0.6	GND	1.3
Q3310	0.5	0.6	GND
Q3312	0.2	2.7	GND

All voltages are in V.

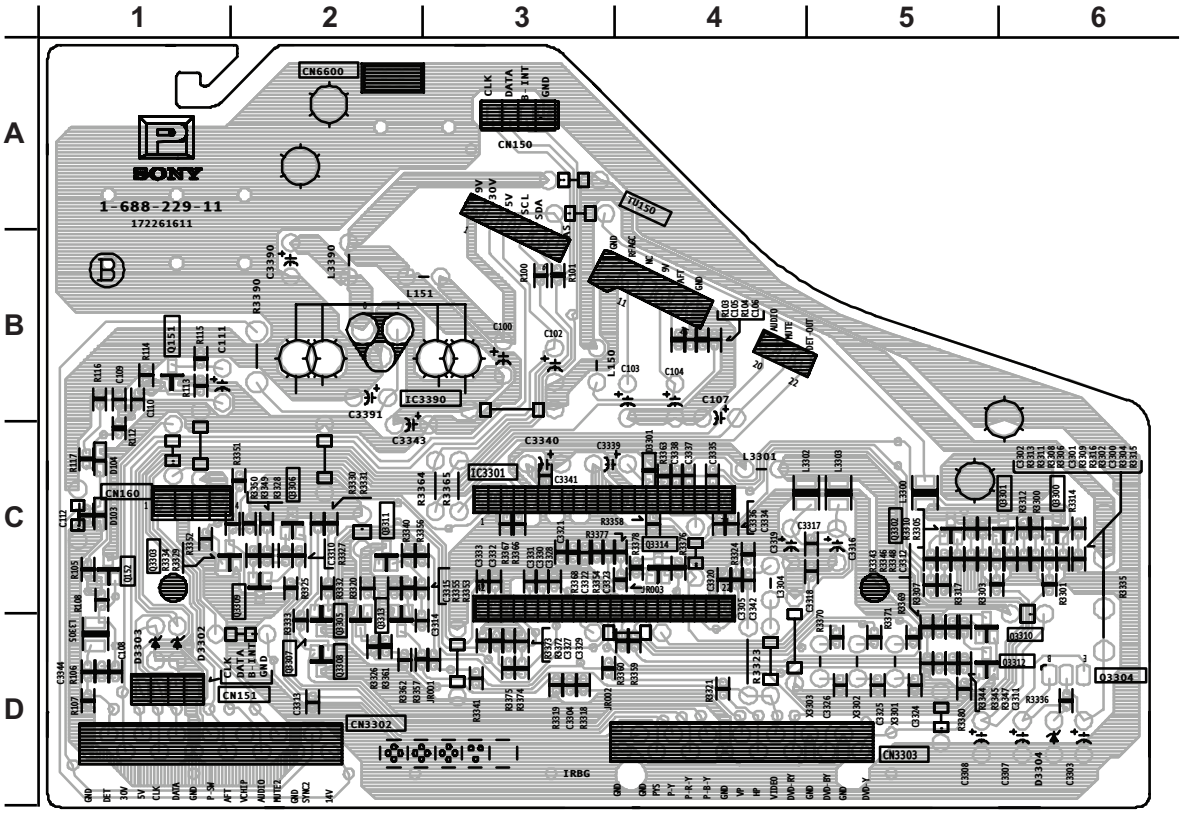
P BOARD WAVEFORM



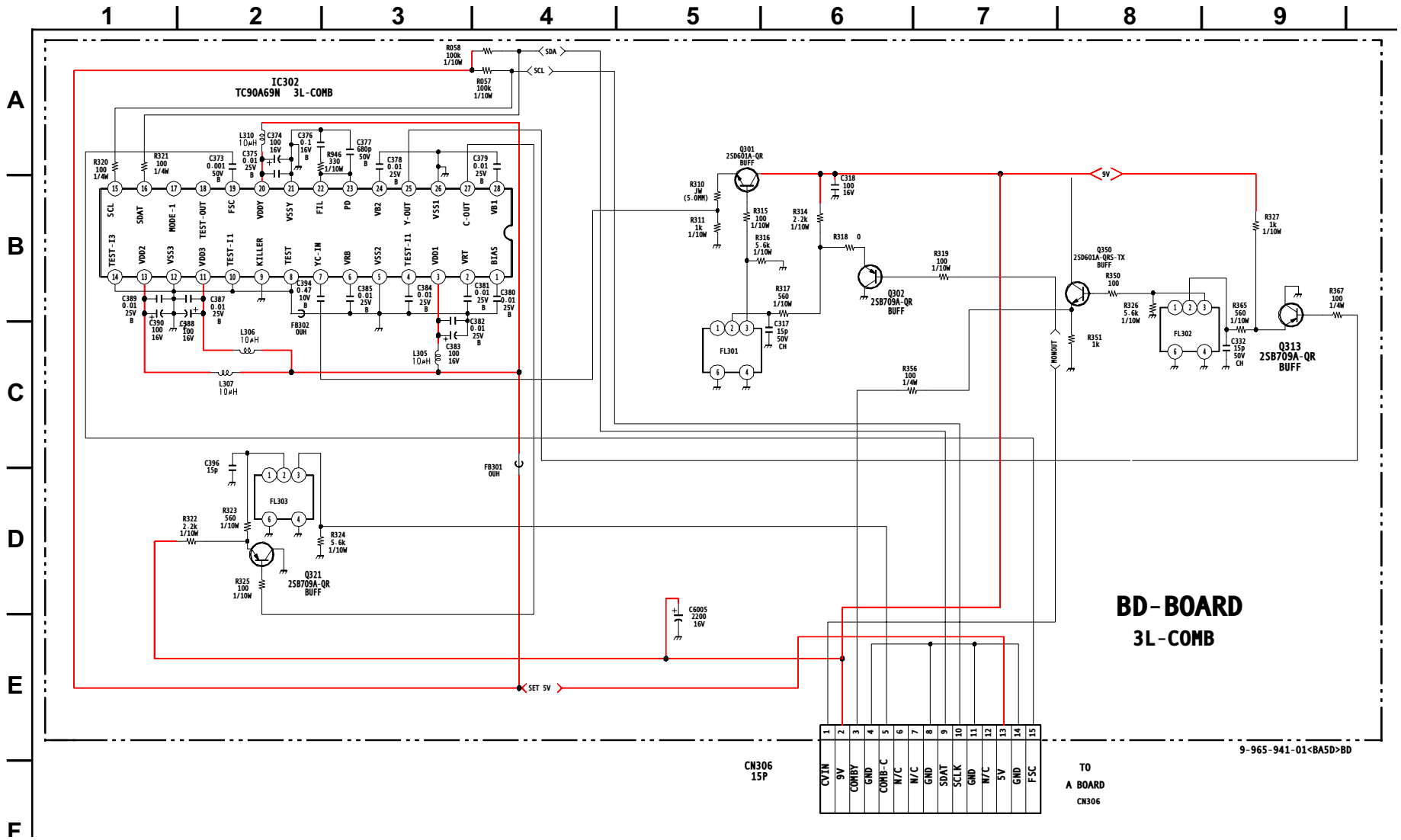
P COMPONENT SIDE [PIP]



P CONDUCTOR SIDE [PIP]



BD BOARD SCHEMATIC DIAGRAM



BD BOARD IC VOLTAGE LIST

IC302	
PIN	VOLT
1	1.3
2	3.1
3	4.9
4	2.4
5	GND
6	1.7
7	2.6
8	GND
9	GND
10	GND
11	4.9
12	GND
13	4.9
14	GND
15	4.8
16	4.7
17	N/C
18	N/C
19	2.4
20	4.9
21	GND
22	2.8
23	2.8
24	3.3
25	4.1
26	GND
27	3.6
28	1.6

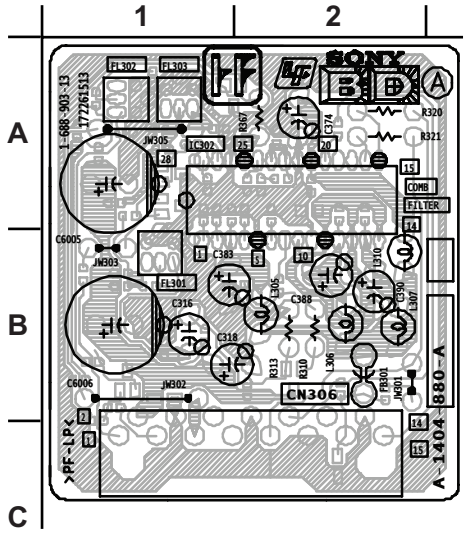
All voltages are in V.

BD BOARD TRANSISTOR LIST

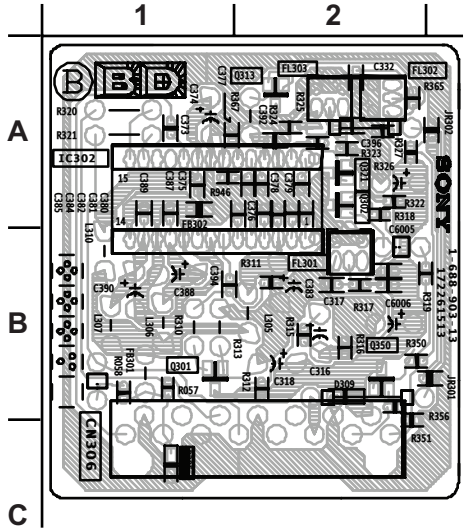
	B	C	E
Q301	3.1	9.0	2.4
Q302	2.7	GND	3.2
Q313	4.1	GND	4.7
Q321	3.6	GND	4.3

All voltages are in V.

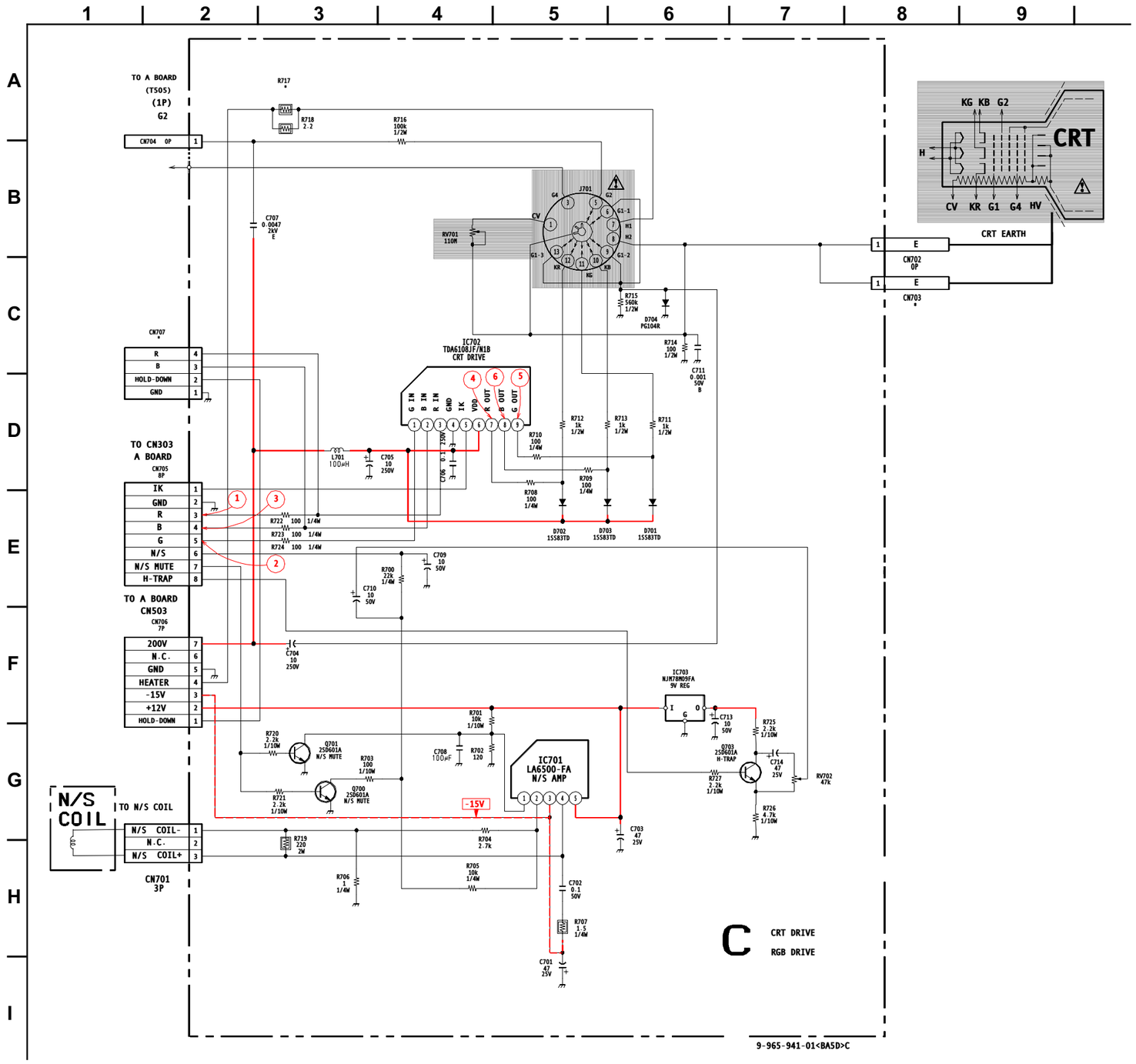
BD COMPONENT SIDE [3L-COMB]



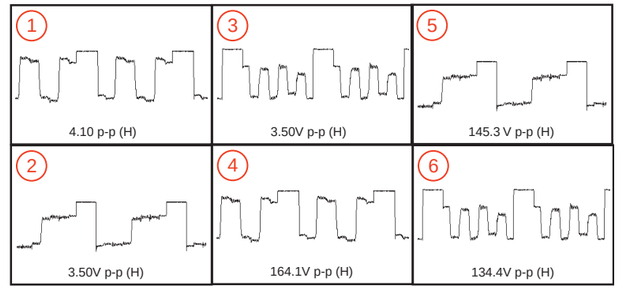
BD CONDUCTOR SIDE [3L-COMB]



C BOARD SCHEMATIC DIAGRAM



C BOARD WAVEFORMS



C BOARD IC VOLTAGE LIST

IC701		IC702		IC703	
PIN	VOLT	PIN	VOLT	PIN	VOLT
1	0.3	1	2.2	I	12.0
2	0.3	2	2.2	0	9.0
3	-13.0	3	2.2	G	GND
4	0.5	4	GND		
5	12.0	5	5.0		
		6	200.0		
		7	139.7		
		8	142.0		
		9	138.6		

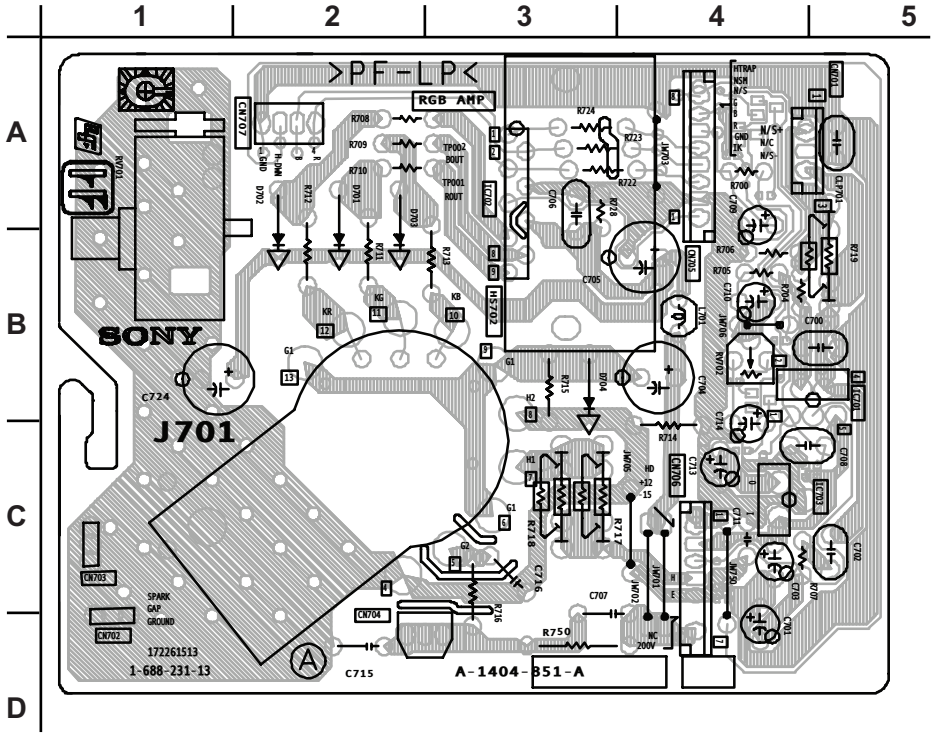
All voltages are in V.

C BOARD TRANSISTOR LIST

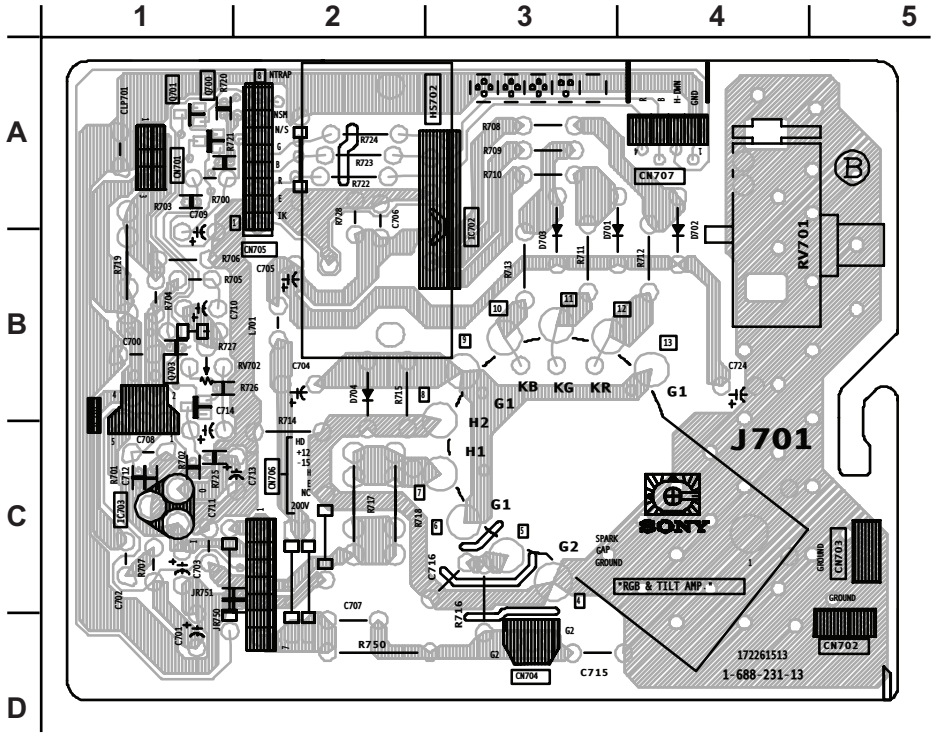
	B	C	E
Q700	0.3	0.8	GND
Q701	0.3	0.3	GND
Q703	6.0	6.5	5.5

All voltages are in V.

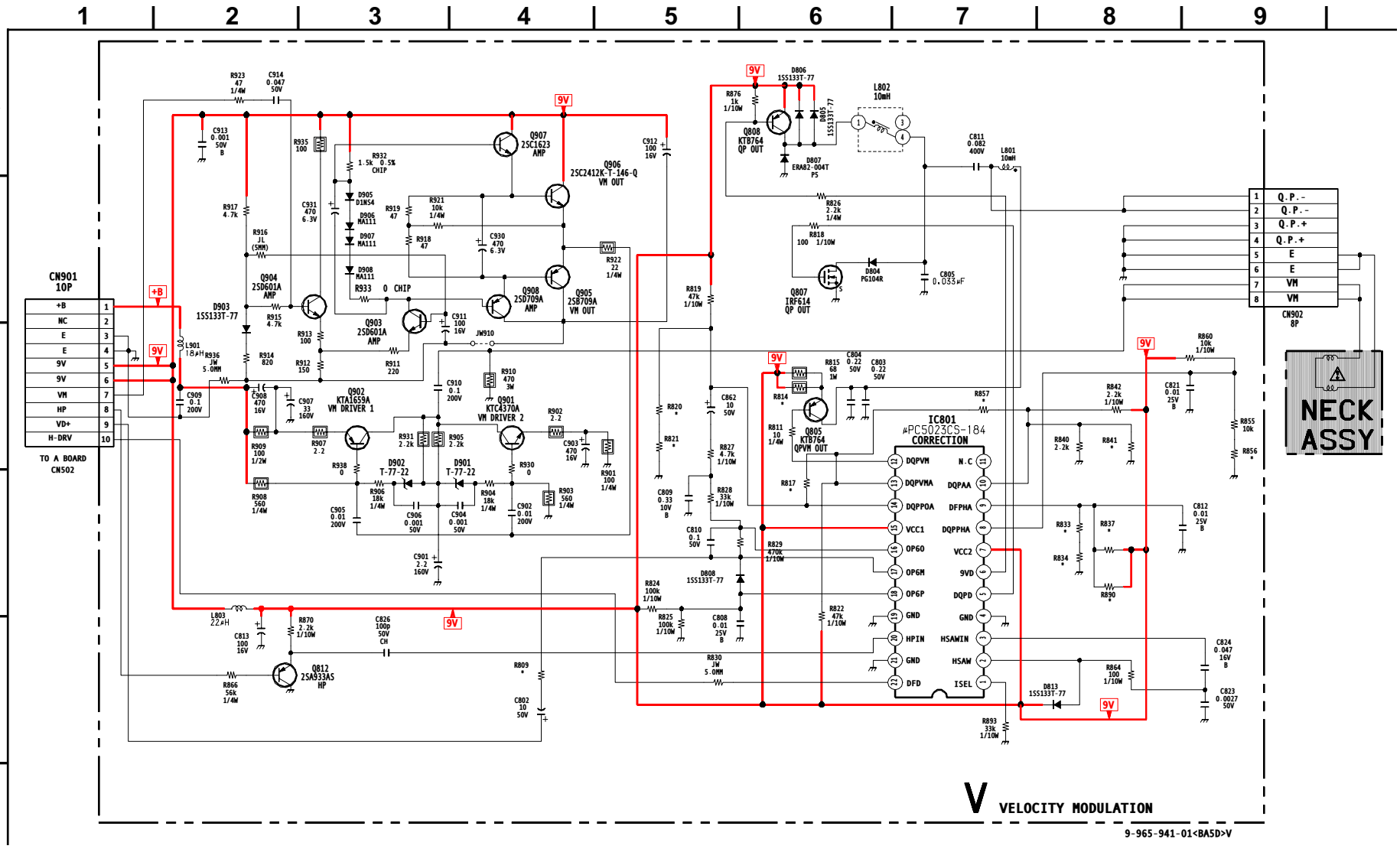
C COMPONENT SIDE [RGB DRIVE, CRT DRIVE]



C CONDUCTOR SIDE [RGB DRIVE, CRT DRIVE]



V BOARD SCHEMATIC DIAGRAM



V BOARD IC VOLTAGE LIST

IC801		11	N/C
PIN	VOLT	12	3..5
1	7.4	13	3.8
2	2.3	14	4.5
3	4.8	15	9.0
4	GND	16	4.6
5	6.3	17	4.6
6	4.5	18	4.5
7	9.0	19	N/C
8	5.8	20	4.8
9	4.6	21	GND
10	4.8	22	0.3

All voltages are in V.

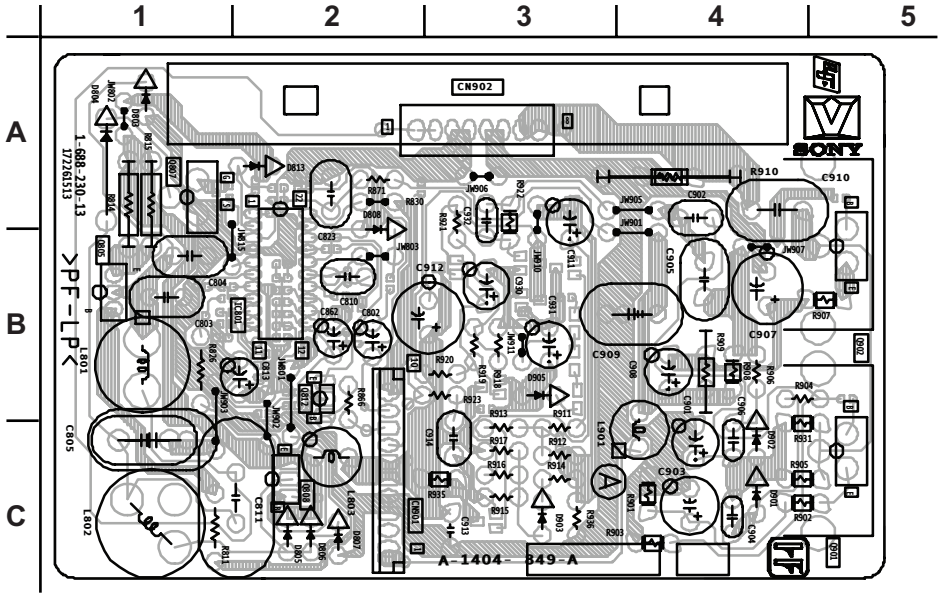
V BOARD TRANSISTOR LIST

	B	C	E
Q805	3.5	1.8	4.2
Q808	8.6	4.3	9.0
Q812	1.3	GND	2.0
Q901	1.4	67.0	0.8
Q902	132.9	67.0	133.4
Q903	1.2	6.2	1.8
Q904	1.2	8.8	1.8
Q905	7.1	0.0	6.7
Q906	7.4	9.0	7.1
Q907	7.4	9.0	8.1
Q908	6.9	0.0	6.2

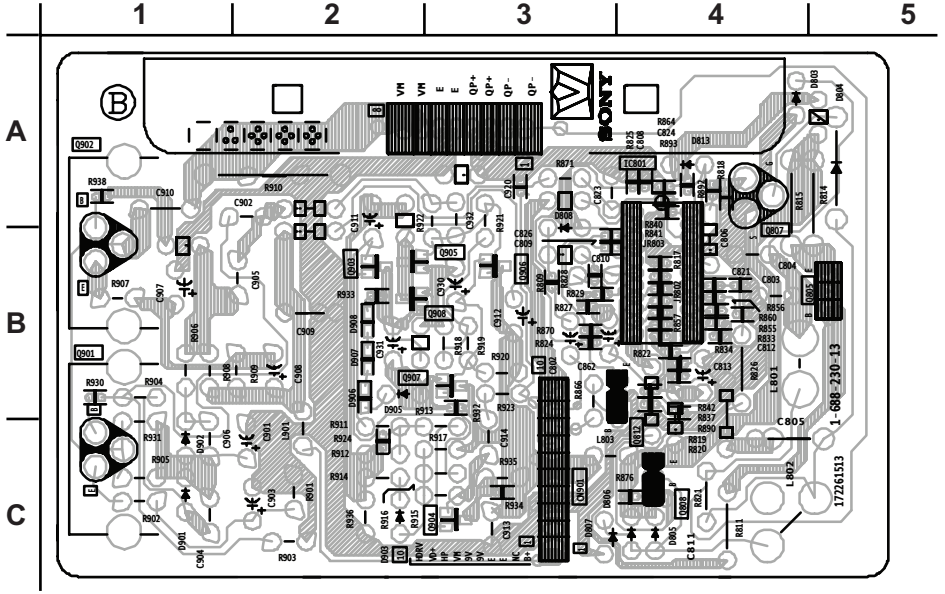
	D	G	S
Q807	9.5	6.3	GND

All voltages are in V.

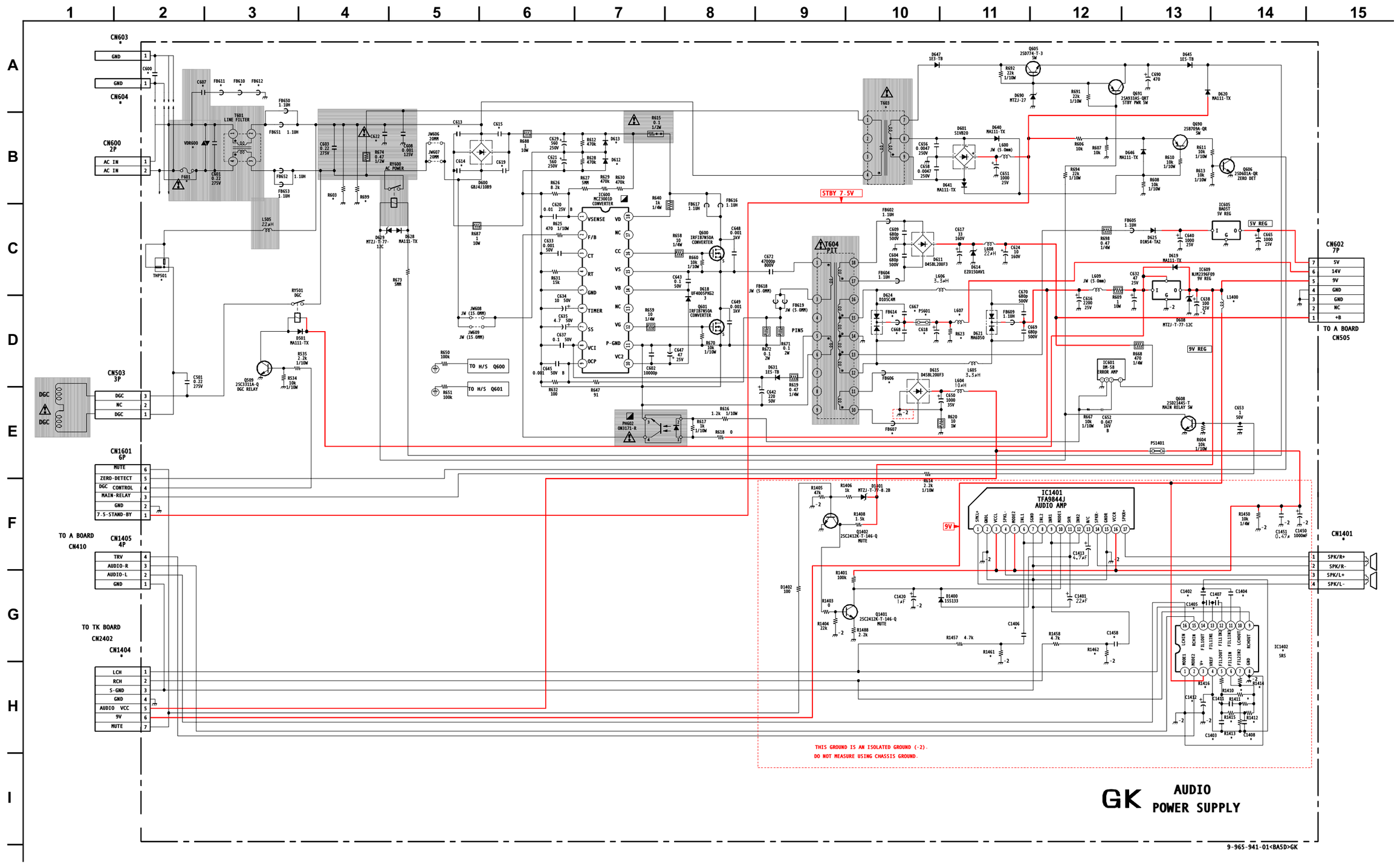
V COMPONENT SIDE [VELOCITY MODULATION]



V CONDUCTOR SIDE [VELOCITY MODULATION]



GK BOARD SCHEMATIC DIAGRAM



GK BOARD IC VOLTAGE LIST

IC600		IC601		2	GND	3	9.0
PIN	VOLT	PIN	VOLT	3	19.6	4	0.0
1	2.8	1	134.6	4	8.3	5	0.0
2	1.9	2	N/C	5	19.6	6	4.5
3	2.3	3	2.4	6	3.2	7	0.0
4	2.6	4	8.4	7	0.0	8	GND
5	GND	5	GND	8	0.0	9	4.5
6	0.0	IC605		9	3.2	10	4.5
7	4.6	PIN	VOLT	10	9.1	11	4.5
8	17.5	I	6.1	11	9.7	12	4.5
9	0.0	O	5.0	12	3.2	13	4.5
10	10.6	G	GND	13	3.3	14	4.4
11	0.0	IC609		14	8.3	15	4.4
12	4.9	PIN	VOLT	15	GND	16	4.5
13	2.3	I	10.5	16	19.6		
14	163.9	O	9.0	17	8.3		
15	153.8	G	GND	IC1402			
16	158.2	IC1401		PIN	VOLT		
17	2.6	PIN	VOLT	1	GND		
18	314.0	1	8.3	2	0.3		

All voltages are in V.

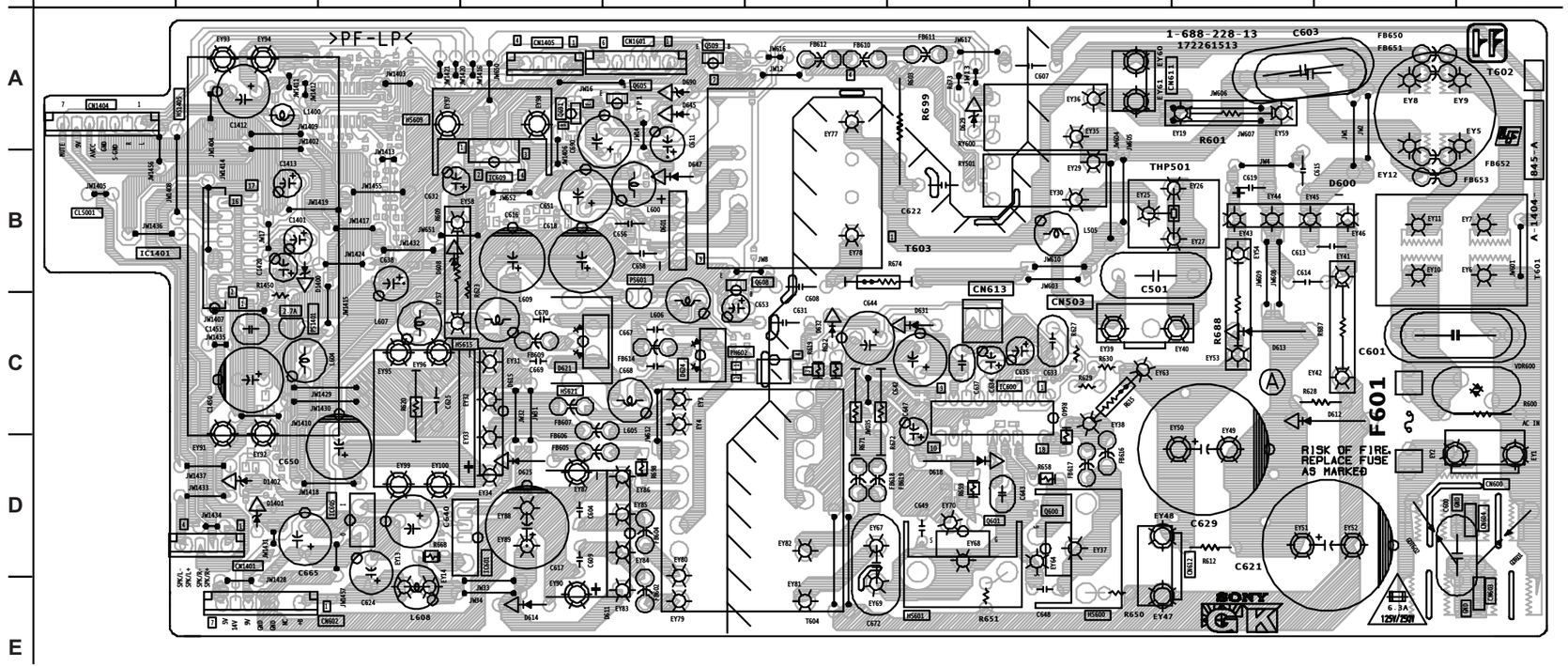
GK BOARD TRANSISTOR LIST

	B	C	E
Q509	0.3	10.5	GND
Q605	7.6	18.8	7.6
Q606	0.0	0.5	GND
Q608	0.6	0.0	GND
Q690	6.1	0.5	5.9
Q691	6.9	7.6	7.6
Q1401	0.0	GND	0.6
Q1402	0.0	0.0	GND

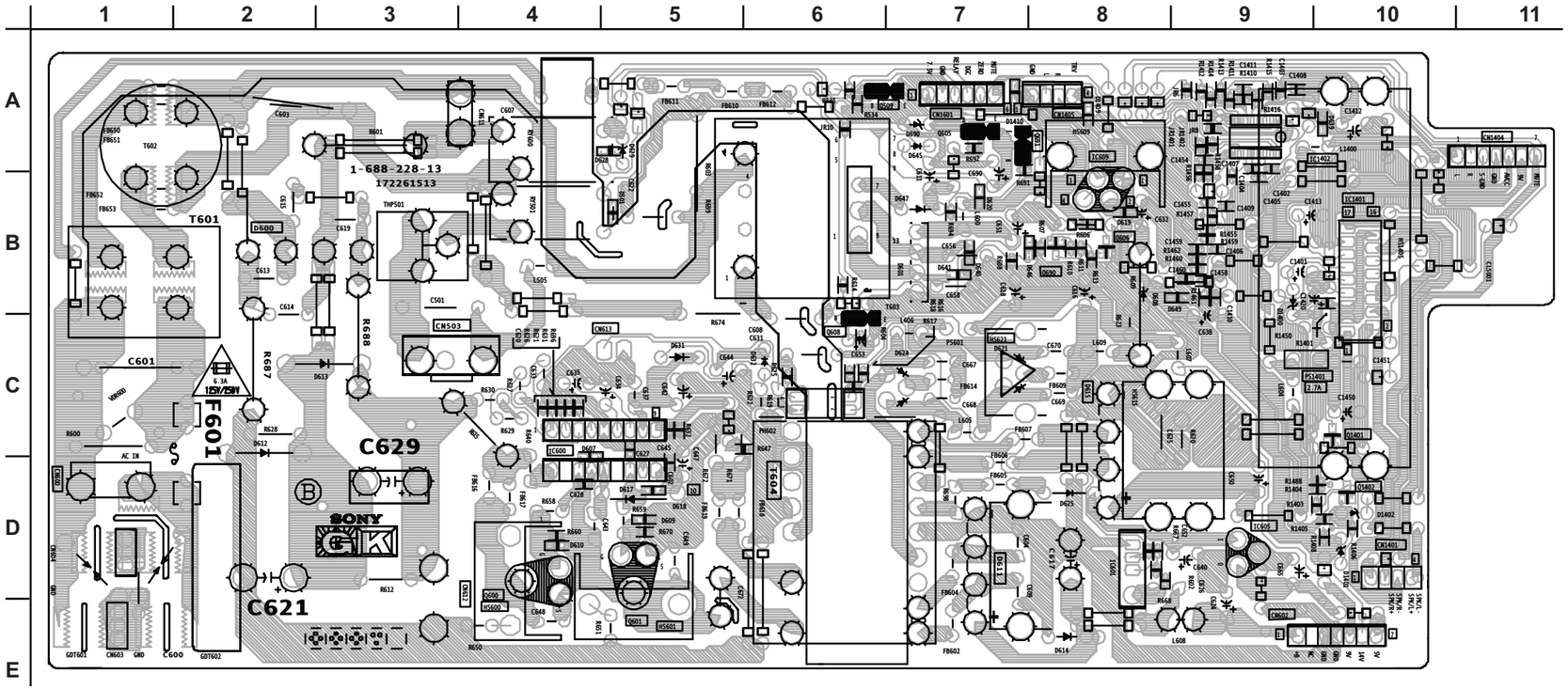
	D	G	S
Q600	313.0	160.0	156.0
Q601	155.0	4.9	0.0

All voltages are in V.

GK COMPONENT SIDE [AUDIO, POWER SUPPLY]



GK CONDUCTOR SIDE [AUDIO, POWER SUPPLY]



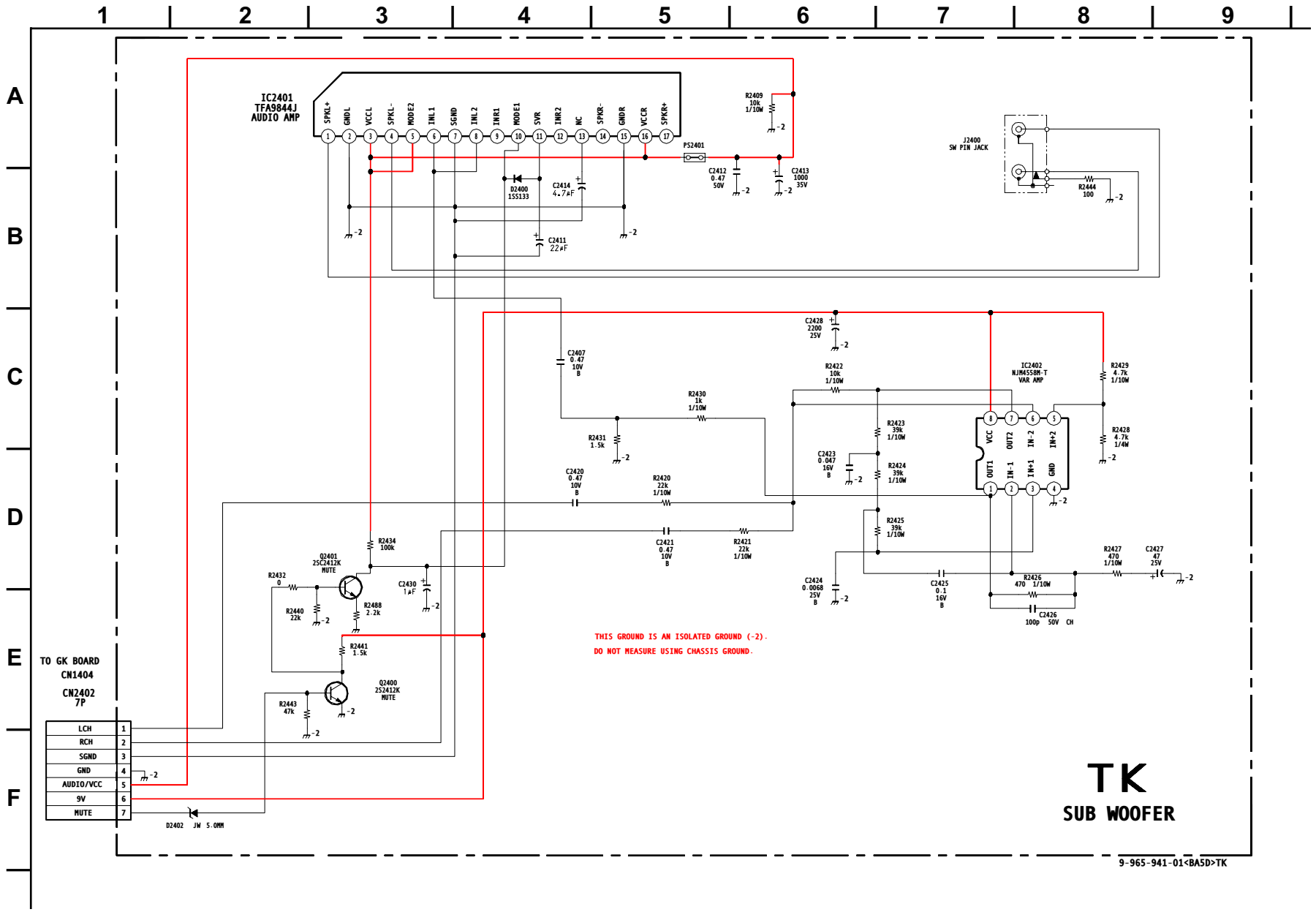
GK BOARD LOCATOR LIST

DIODE	
D1400	C-9
D1401	D-10
D1402	D-10
D501	B-5
D600	B-2
D601	B-7
D611	D-7
D612	C-2
D613	C-2
D614	E-8
D615	C-8
D618	D-5
D620	B-7
D621	C-7
D624	C-7
D625	D-8
D628	A-4
D629	A-5
D631	C-5
D632	C-5
D640	B-7
D641	B-7
D645	A-7
D646	B-8
D647	B-7
D690	A-7

IC	
IC1401	B-10
IC1402	B-10
IC600	C-4
IC601	D-8
IC605	D-9
IC609	A-8

TRANSISTOR	
Q1401	C-10
Q1402	D-10
Q509	A-6
Q600	D-4
Q601	E-5
Q605	A-7
Q606	B-8
Q608	C-6
Q690	B-8
Q691	A-8

TK BOARD SCHEMATIC DIAGRAM



TK BOARD IC VOLTAGE LIST

IC8401		IC8402	
PIN	VOLT	PIN	VOLT
1	8.3	1	4.6
2	GND	2	4.6
3	19.6	3	4.6
4	8.3	4	GND
5	19.6	5	4.6
6	3.2	6	4.6
7	0.0	7	4.6
8	0.0	8	9.0
9	3.2		
10	9.1		
11	9.7		
12	3.2		
13	3.3		
14	8.3		
15	GND		
16	19.6		
17	8.3		

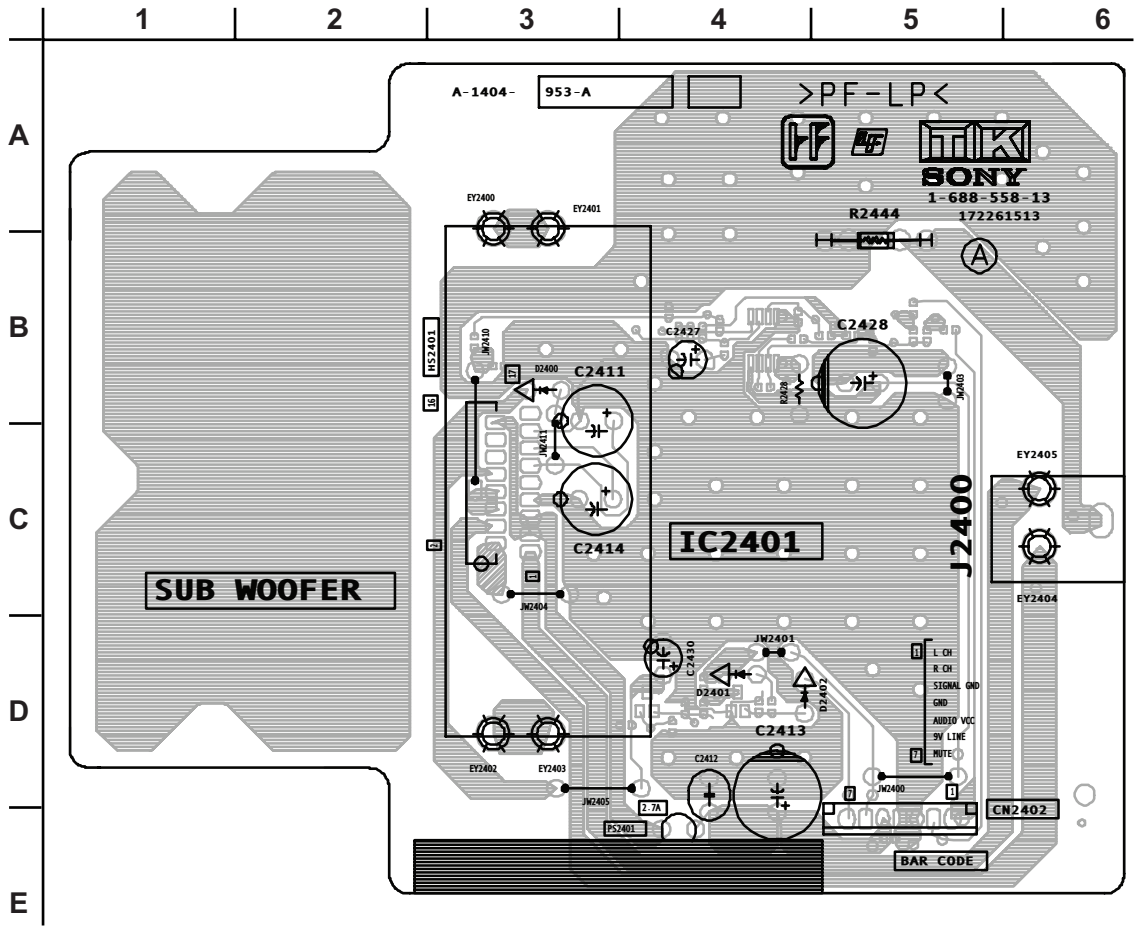
All voltages are in V.

TK BOARD TRANSISTOR LIST

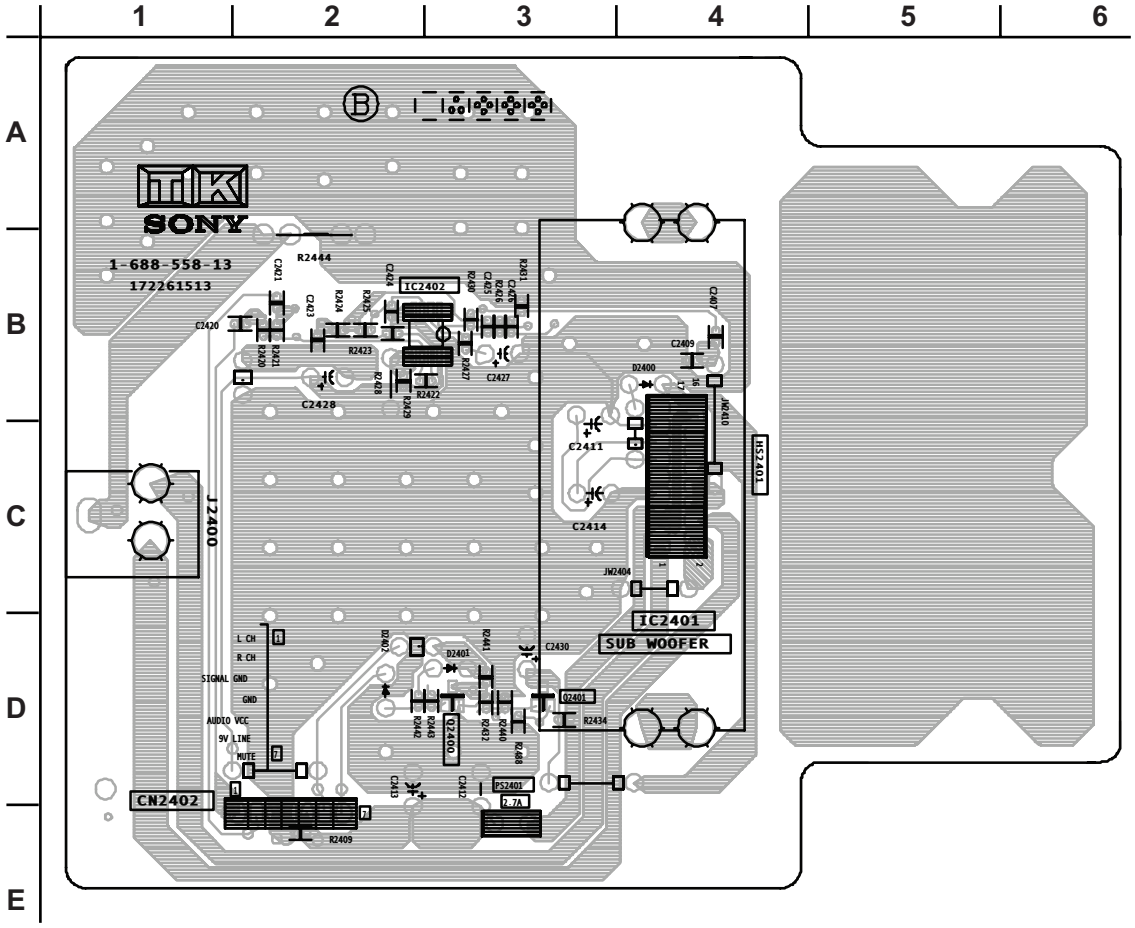
	B	C	E
Q8400	0.0	0.0	GND
Q8401	0.0	0.0	GND

All voltages are in V.

TK COMPONENT SIDE [SUB WOOFER]

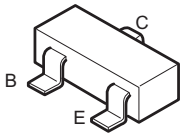


TK CONDUCTOR SIDE [SUB WOOFER]

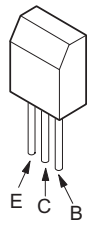


5-5. SEMICONDUCTORS

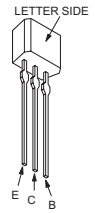
2SB709A-QRS-TX
2SD601A-QRS-TX
2SC2412K-T-146-QR



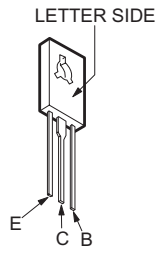
2SC3209LK-TP
2SD774-T-34



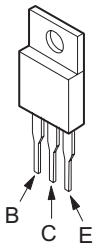
2SD1858-Q-TV2
2SC3311A-QRSTA
2SD2144S-TP-UVW



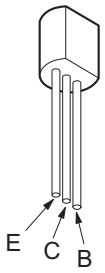
2SC3840K



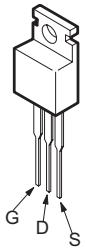
2SC4159-E



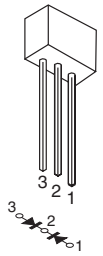
2SA1091O-TPE2



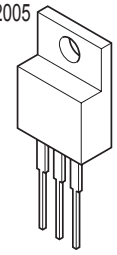
IRF614



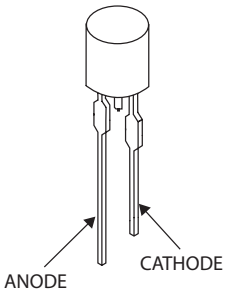
SVC203SPA-AL



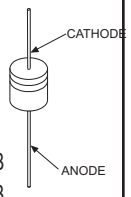
IRFIB7N50A-LF31
2SC5511
2SA2005



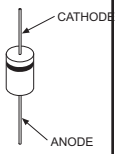
DAL5815



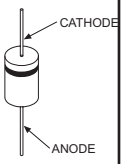
D1NS4-TA2
D1NS4-TR
ERA38-06TP1
ERA82-004TP5
1SS133T-77
MTZJ-T-77-3.3B
MTZJ-T-77-3.6B
MTZJ-T-77-3.9B
MTZJ-T-77-6.2B
MTZJ-T-77-6.8B
MTZJ-T-77-12C
MTZJ-T-77-15B
MTZJ-T-77-22



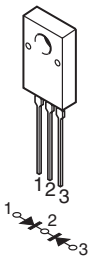
ERC06-15S
MTZJ-T-77-5.1C
MTZJ-T-77-5.6C
MTZJ-T-77-7.5A
MTZJ-T-77-9.1B
MTZJ-T-77-10B
MTZJ-T-77-30D
RGP10-GPKG3
RGP02-17PKG23
RGP15GPKG23



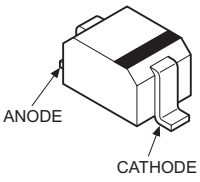
EL1Z-V1
ERB44-06TP1
ERC04-06SE
1SS83TD
1N4003GA
1N4937/23
GP08DPKG23
PR1004GT
RGP10GPKG23
RU4AM-T3



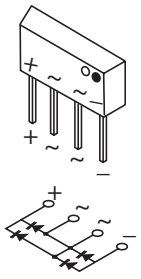
D10SC4M



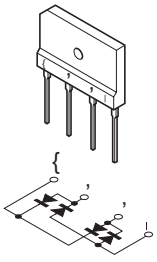
MA111-TX
UDZSTE-1710B



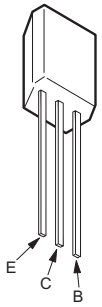
S1VB20



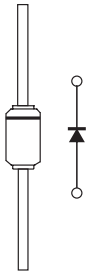
D4SB60L-F



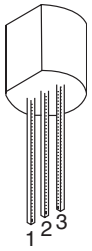
2SC2668-YTP



MTZJ-T-77-27



2SA933AS-QRT



SECTION 6: EXPLODED VIEWS

Components not identified by a part number or description are not stocked because they are seldom required for routine service.

The component parts of an assembly are indicated by the reference numbers in the far right column of the parts list and within the dotted lines of the diagram.

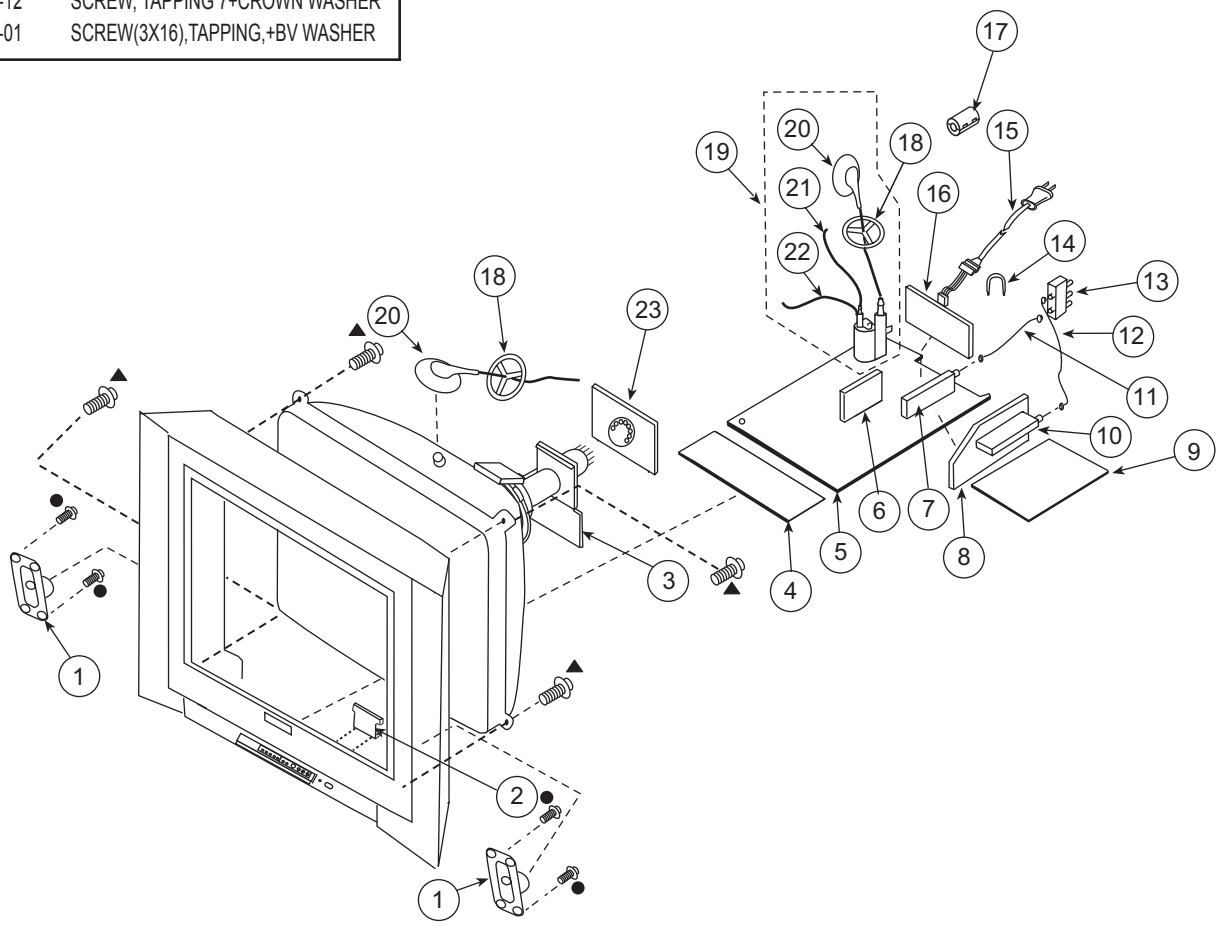
*** Items marked with an asterisk are not stocked since they are seldom required for routine service. Expect some delay when ordering these components.**

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-1. CHASSIS (KV-27FS210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER



	REF. NO.	PART NO.	DESCRIPTION
	1	1-825-513-11	LOUDSPEAKER
*	2	A-1400-251-A	HR (COM) BOARD, MOUNTED
*	3	A-1404-878-A	V (VAR) BOARD, MOUNTED
	4	A-1404-856-A	HU (COM) BOARD, MOUNTED
*	5	A-1302-095-A	A BOARD, COMPLETE
			The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. (SEE 20-22)
*	6	A-1404-880-A	BD (COM) BOARD, MOUNTED
	7	8-598-593-50	TUNER, FSS BTF-WA421
*	8	A-1404-846-A	P (VAR) BOARD, MOUNTED
*	9	A-1404-879-A	GK (VAR) BOARD, MOUNTED
	10	8-598-594-30	TUNER, FSS BTF-FA421

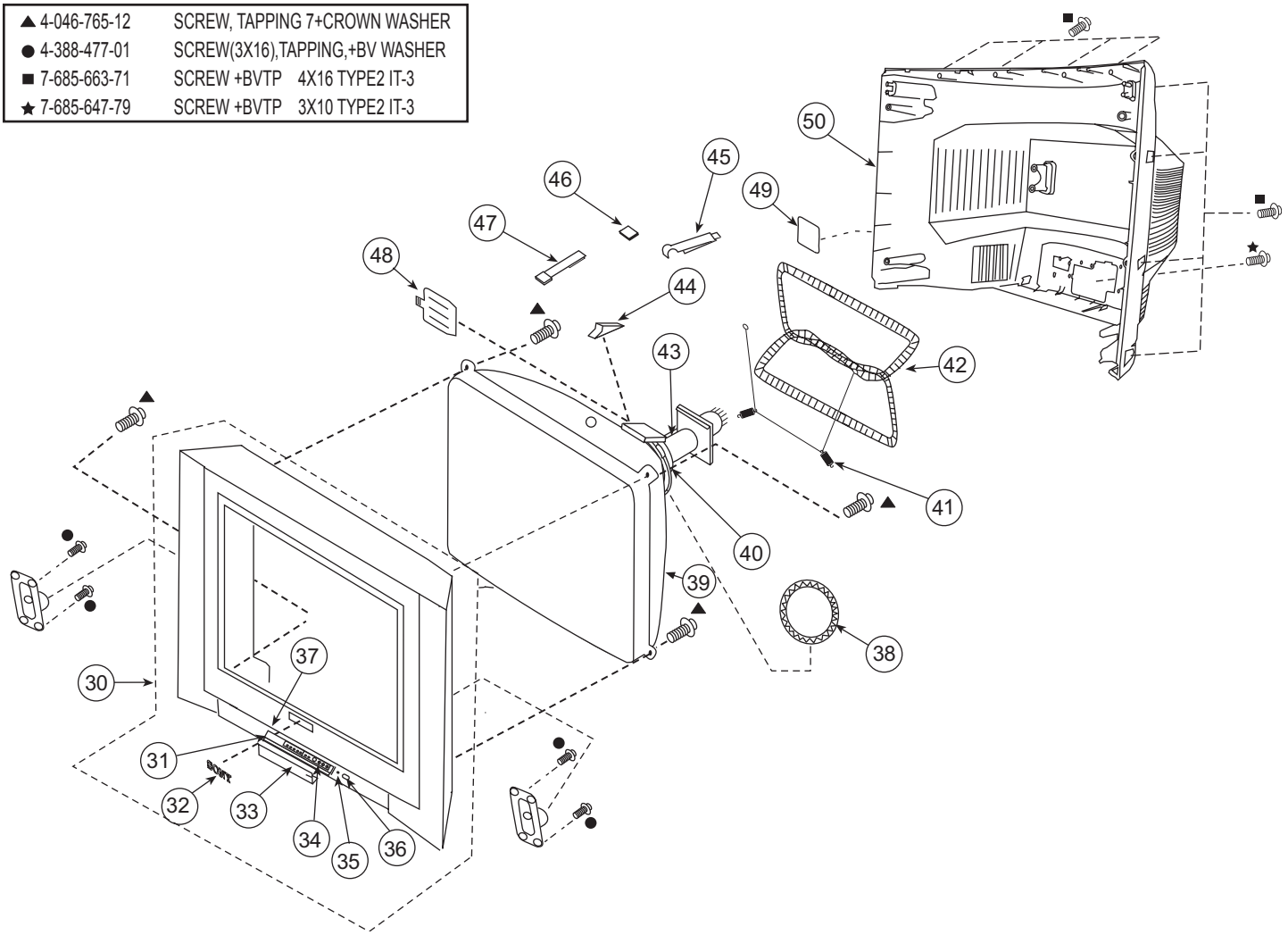
	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
*	11	1-555-110-00	CABLE, P-P	
*	12	1-558-539-21	CABLE, P-P	
⚠	13	1-771-787-13	SWITCH, RF ANTENNA	
*	14	4-076-951-01	HINGE, PWB	
⚠	15	1-791-935-12	CORD, AC POWER (WITH CONNECTOR)	
	16	4-087-877-21	BRACKET, TERMINAL	
	17	1-500-082-11	CLAMP, SLEEVE FERRITE	
	18	4-084-918-01	HOLDER, HV CABLE	
⚠	19	1-453-310-11	FBT ASSY NX-4521//X4J4	(20-22)
⚠	20	1-251-374-14	CAP ASSY, HIGH-VOLTAGE	
⚠	21	1-900-800-82	WIRE ASSY, FOCUS	
⚠	22	1-900-803-22	WIRE ASSY, G2 LEAD	
*	23	A-1405-168-A	C (VAR) BOARD, MOUNTED	

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-2. PICTURE TUBE (KV-27FS210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
■	7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3
★	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
30	X-4041-524-1	BEZNET ASSY	(31-37)
31	4-087-374-01	SPRING, DOOR	
32	4-046-160-21	EMBLEM, SONY (NO.9)	
33	4-087-375-21	DOOR, CONTROL	
34	4-087-376-21	LABEL, FRONT TERMINAL	
35	4-087-156-01	GUIDE, LIGHT	
36	4-087-150-01	BUTTON, POWER	
37	4-036-880-11	DAMPER	
⚠ 38	1-452-896-11	COIL, NA ROTATION (RT200)	
⚠ 39	8-735-082-05	CRT 29RSN(SDP) M68LNH050X	

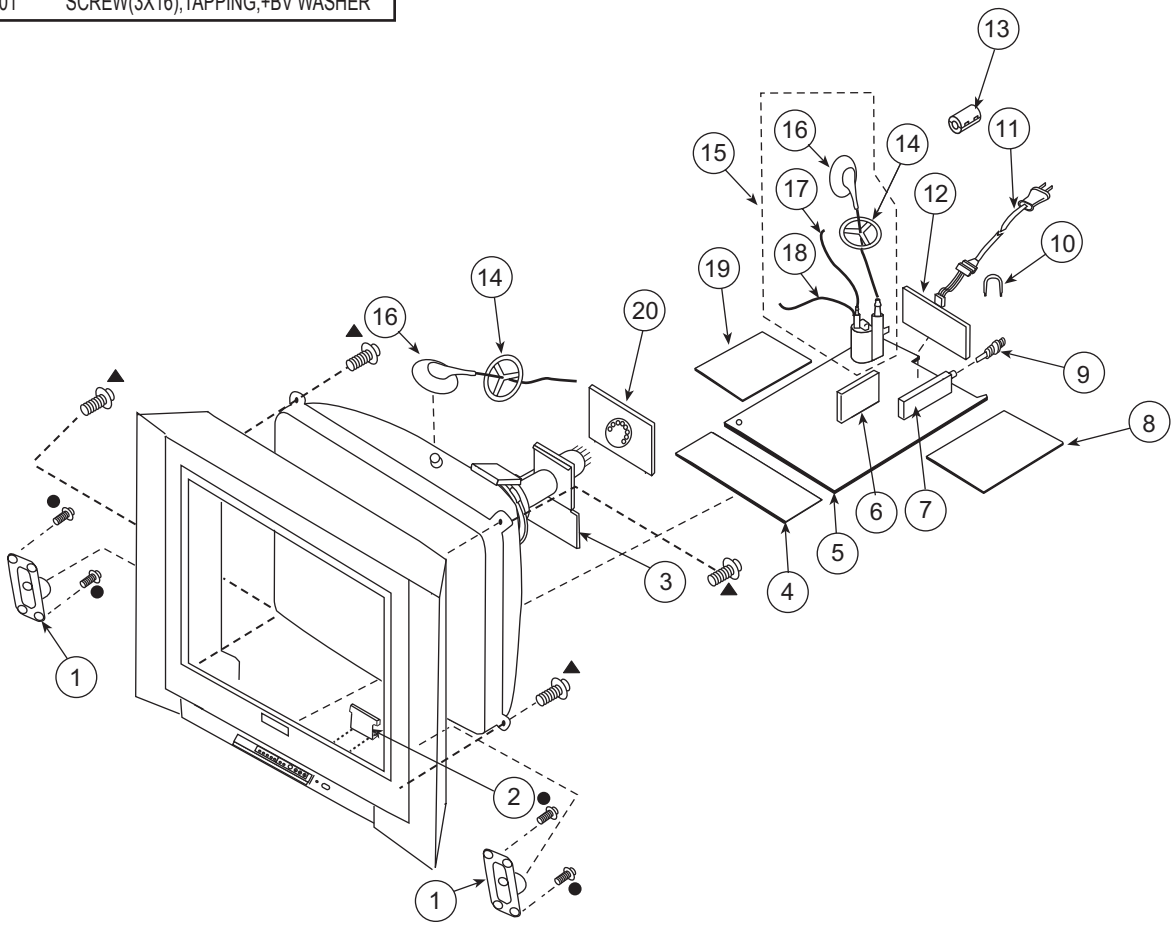
REF. NO.	PART NO.	DESCRIPTION
⚠ 40	8-451-494-41	DY Y29RSA-V
41	4-036-329-01	SPRING (B), TENSION
⚠ 42	1-419-156-21	COIL, DEGAUSSING
⚠ 43	8-453-011-11	NECK ASSEMBLY NA299-M
44	4-053-005-01	SPACER, DY
* 45	4-062-970-12	CLIP (29RSN), DGC
46	1-452-885-11	MAGNET, LANDING
47	4-083-414-01	PIECE A(110), CONV CORRECT
48	4-081-170-01	PLATE, TLH CORRECTION
49	4-094-643-01	LABEL, TERMINAL AUDIO
50	4-093-996-01	COVER, REAR

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-3. CHASSIS (KV-29FA210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER



	REF. NO.	PART NO.	DESCRIPTION
	1	1-825-417-11	LOUDSPEAKER (6X12CM)
*	2	A-1400-251-A	HR (COM) BOARD, MOUNTED
*	3	A-1404-878-A	V (VAR) BOARD, MOUNTED
	4	A-1404-856-A	HU (COM) BOARD, MOUNTED
			The high-voltage leads associated with the FBT on the following A boards are not included and must be ordered separately. (SEE 16-18)
*	5	A-1302-128-A	A BOARD, COMPLETE
			(KV-29FA210 LATIN NORTH ONLY)
*	5	A-1302-193-A	A BOARD, COMPLETE
			(KV-29FA210 LATIN SOUTH ONLY)
*	6	A-1404-880-A	BD (COM) BOARD, MOUNTED
⚠	7	8-598-593-50	TUNER, FSS BTF-WA421
*	8	A-1405-181-A	GK (VAR) BOARD, MOUNTED
			(KV-29FA210 LATIN NORTH ONLY)
*	8	A-1405-184-A	GK (VAR) BOARD, MOUNTED
			(KV-29FA210 LATIN SOUTH ONLY)

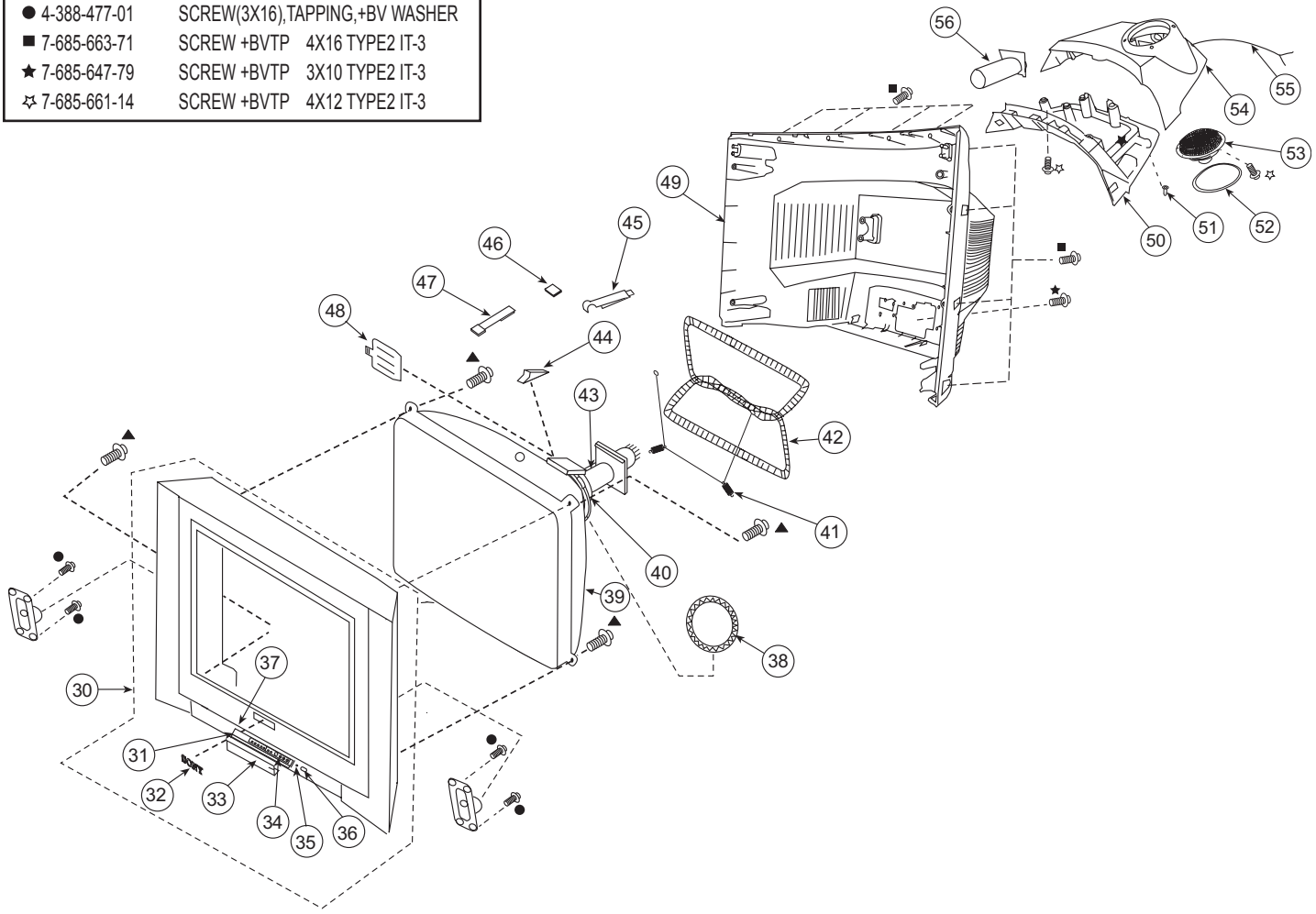
	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
	9	1-766-374-11	PLUG, F-PIN	
*	10	4-076-951-01	HINGE, PWB	
⚠	11	1-791-935-12	CORD, AC POWER (WITH CONNECTOR)	
			(KV-29FA210 LATIN NORTH ONLY)	
⚠	11	1-769-796-31	CORD, POWER (WITH CONNECTOR)	
			(KV-29FA210 LATIN SOUTH ONLY)	
*	12	4-087-877-31	BRACKET, TERMINAL	
	13	1-500-082-11	CLAMP, SLEEVE FERRITE	
	14	4-084-918-01	HOLDER, HV CABLE	
⚠	15	1-453-310-11	FBT ASSY NX-4521//X4J4	(16-18)
⚠	16	1-251-374-14	CAP ASSY, HIGH-VOLTAGE	
⚠	17	1-900-800-82	WIRE ASSY, FOCUS	
⚠	18	1-900-803-22	WIRE ASSY, G2 LEAD	
*	19	A-1404-953-A	TK (COM) BOARD, MOUNTED	
*	20	A-1405-168-A	C (VAR) BOARD, MOUNTED	

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-4. PICTURE TUBE (KV-29FA210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
■	7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3
★	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3
☆	7-685-661-14	SCREW +BVTP 4X12 TYPE2 IT-3



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
30	X-4041-544-1	BEZNET ASSY	(31-37)
31	4-087-374-01	SPRING, DOOR	
32	4-046-160-21	EMBLEM, SONY (NO.9)	
33	4-087-376-21	LABEL, FRONT TERMINAL	
34	4-087-375-21	DOOR, CONTROL	
35	4-087-156-01	GUIDE, LIGHT	
36	4-087-150-01	BUTTON, POWER	
37	4-036-880-11	DAMPER	
⚠ 38	1-452-896-11	COIL, NA ROTATION (RT200)	
⚠ 39	8-735-082-05	CRT 29RSN(SDP) M68LNH050X	
	(KV-29FA210 LATIN NORTH ONLY)		
⚠ 39	8-735-083-05	CRT 29RSN(SDP)(SOUTH) M68LNH050X	
	(KV-29FA210 LATIN SOUTH ONLY)		
⚠ 40	8-451-494-41	DY Y29RSA-V	
41	4-036-329-01	SPRING (B), TENSION	
⚠ 42	1-419-156-21	COIL, DEGAUSSING	
	(KV-29FA210 LATIN NORTH ONLY)		

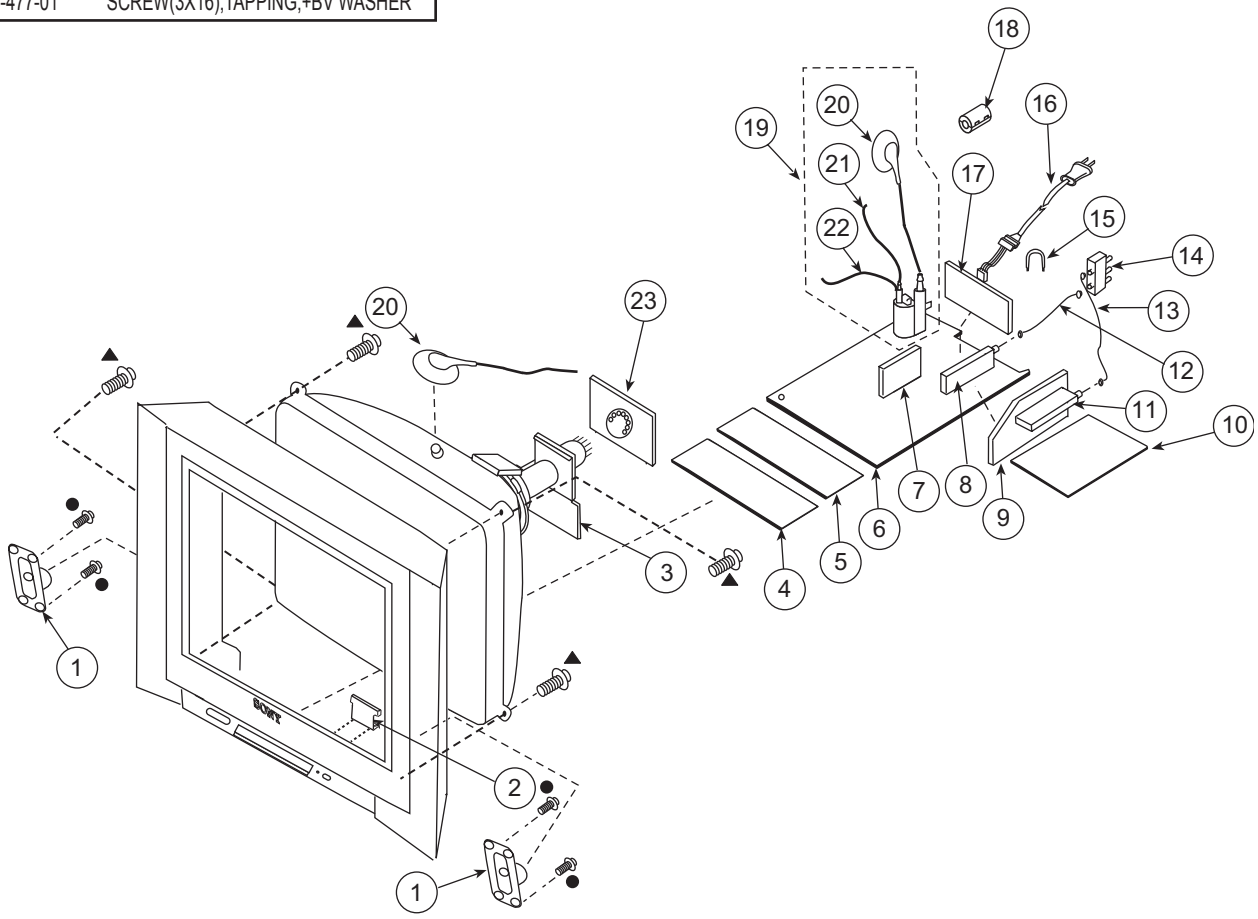
REF. NO.	PART NO.	DESCRIPTION
⚠ 42	1-419-523-21	COIL, DEGAUSSING
	(KV-29FA210 LATIN SOUTH ONLY)	
⚠ 43	8-453-011-11	NECK ASSEMBLY NA299-M
44	4-053-005-01	SPACER, DY
* 45	4-062-970-12	CLIP (29RSN), DGC
46	1-452-885-11	MAGNET, LANDING
47	4-083-414-01	PIECE A(110), CONV CORRECT
48	4-081-170-01	PLATE, TLH CORRECTION
49	4-093-996-01	COVER, REAR
* 50	4-094-733-01	COVER, BOTTOM WOOFER (29)
* 51	4-068-528-01	FOOT
52	4-094-735-01	RING, WOOFER
53	1-825-435-11	LOUDSPEAKER (13CM)
* 54	4-094-732-01	COVER, TOP WOOFER (29)
* 55	1-827-198-11	CONNECTION CABLE
56	4-094-734-01	DUCT (29)

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-5. CHASSIS (KV-32FS210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER



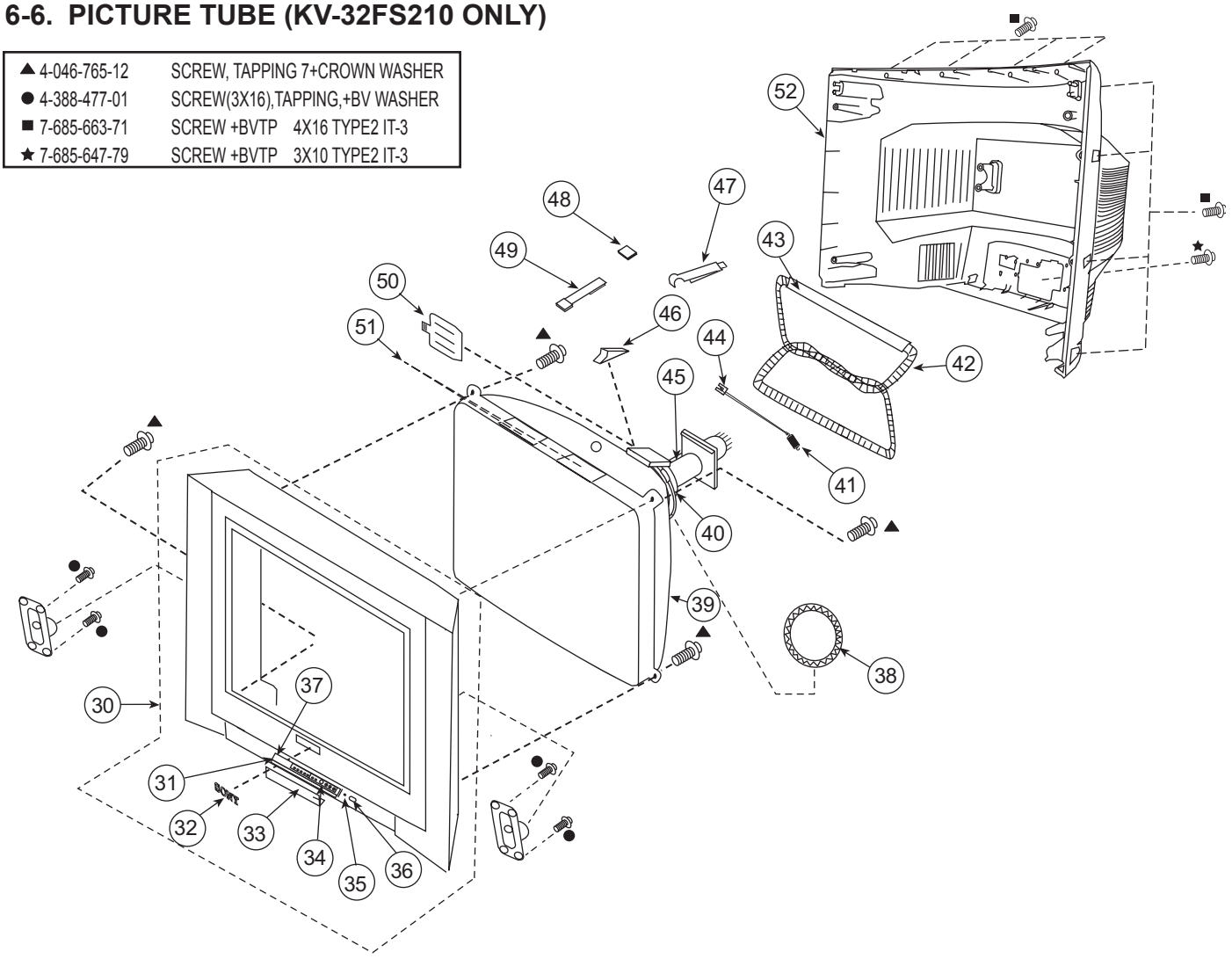
	REF. NO.	PART NO.	DESCRIPTION
	1	1-825-513-11	LOUDSPEAKER
*	2	A-1400-251-A	HR (COM) BOARD, MOUNTED
*	3	A-1404-901-A	V (VAR) BOARD, MOUNTED
*	4	A-1404-896-A	HD BOARD, MOUNTED
	5	A-1404-856-A	HU (COM) BOARD, MOUNTED
*	6	A-1302-108-A	A BOARD, COMPLETE
			The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. (SEE 20-22)
*	7	A-1404-880-A	BD (COM) BOARD, MOUNTED
	8	8-598-593-50	TUNER, FSS BTF-WA421
*	9	A-1404-846-A	P (VAR) BOARD, MOUNTED
*	10	A-1404-879-A	GK (VAR) BOARD, MOUNTED
	11	8-598-594-30	TUNER, FSS BTF-FA421
*	12	1-555-110-00	CABLE, P-P
*	13	1-558-539-21	CABLE, P-P
⚠	14	1-771-787-13	SWITCH, RF ANTENNA
*	15	4-076-951-01	HINGE, PWB
⚠	16	1-791-935-12	CORD, AC POWER (WITH CONNECTOR)
	17	4-087-877-21	BRACKET, TERMINAL
	18	1-500-082-11	CLAMP, SLEEVE FERRITE
⚠	19	1-453-338-31	FBT ASSY, NX-4600//X4J4 (20-22)
⚠	20	1-251-374-14	CAP ASSY, HIGH-VOLTAGE
⚠	21	1-900-805-19	WIRE ASSY, FOCUS HV
⚠	22	1-900-805-22	CONNECTOR ASSY, G2 HV
*	23	A-1405-182-A	C (VAR) BOARD, MOUNTED

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-6. PICTURE TUBE (KV-32FS210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
■	7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3
★	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
30	X-4041-530-1	BEZNET ASSY	(31-37)
31	4-087-374-01	SPRING, DOOR	
32	4-046-160-21	EMBLEM, SONY (NO.9)	
33	4-087-375-21	DOOR, CONTROL	
34	4-087-376-21	LABEL, FRONT TERMINAL	
35	4-087-156-01	GUIDE, LIGHT	
36	4-087-150-01	BUTTON, POWER	
37	4-036-880-11	DAMPER	
⚠ 38	1-452-896-11	COIL, NA ROTATION (RT200)	
⚠ 39	8-735-066-05	CRT 34RSN(SDP) A80LPD50X	

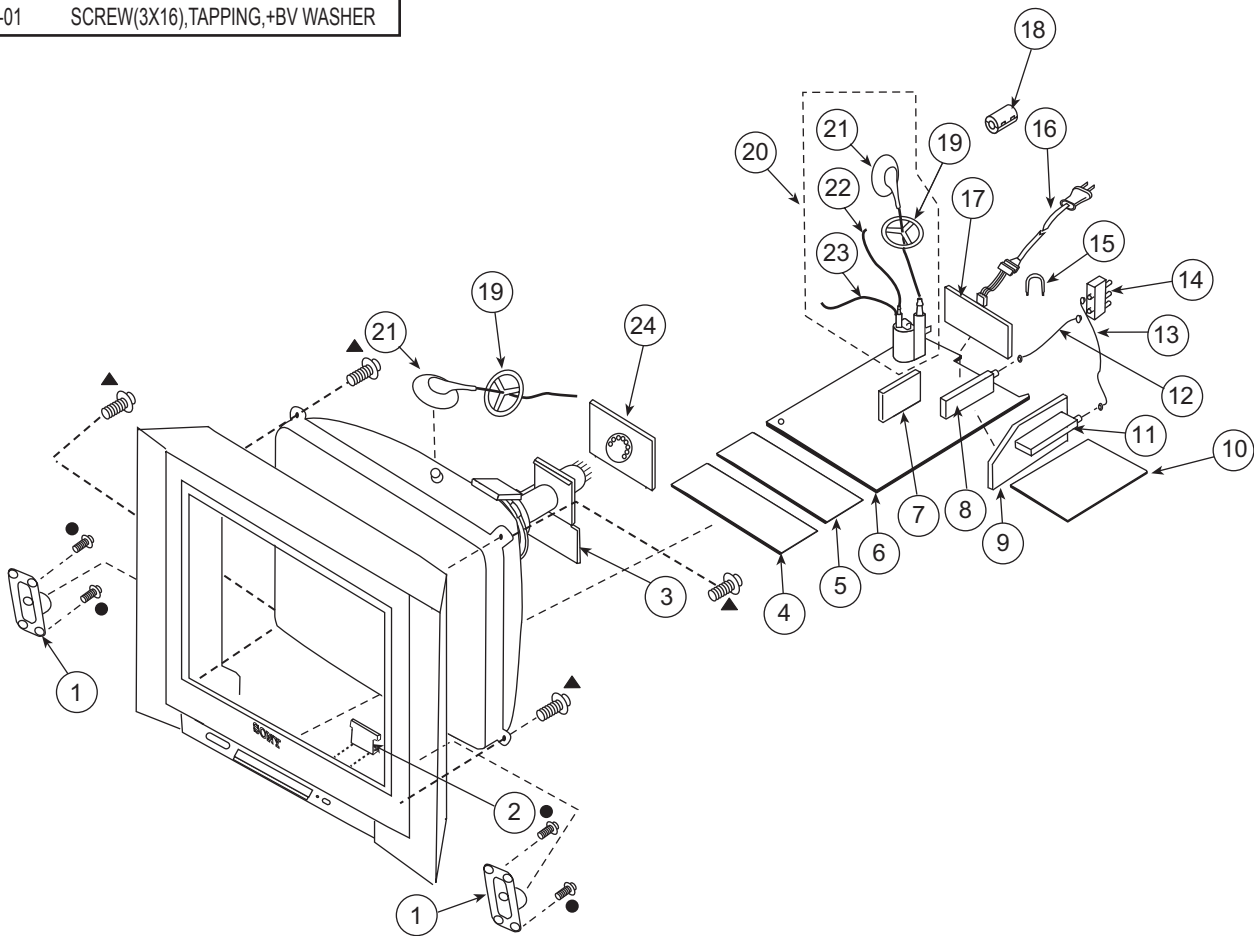
REF. NO.	PART NO.	DESCRIPTION
⚠ 40	8-451-499-41	DY Y34RSA-V
41	4-082-641-01	SPRING, 45MM
⚠ 42	1-428-988-11	DEGAUSSING COIL (32 120V)
* 43	4-074-576-01	CUSHION, DGC
44	4-082-640-01	HOOK, GROUND WIRE
⚠ 45	8-453-007-41	NECK ASSEMBLY NA324-M4
46	4-053-005-01	SPACER, DY
47	4-065-895-11	HOLDER, DGC
48	1-452-885-11	MAGNET, LANDING
49	4-083-414-01	PIECE A(110), CONV CORRECT
50	4-081-170-01	PLATE, TLH CORRECTION
51	4-091-284-01	DAMPER, SOUND
52	4-087-878-21	COVER, REAR

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-7. CHASSIS (KV-36FS210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER



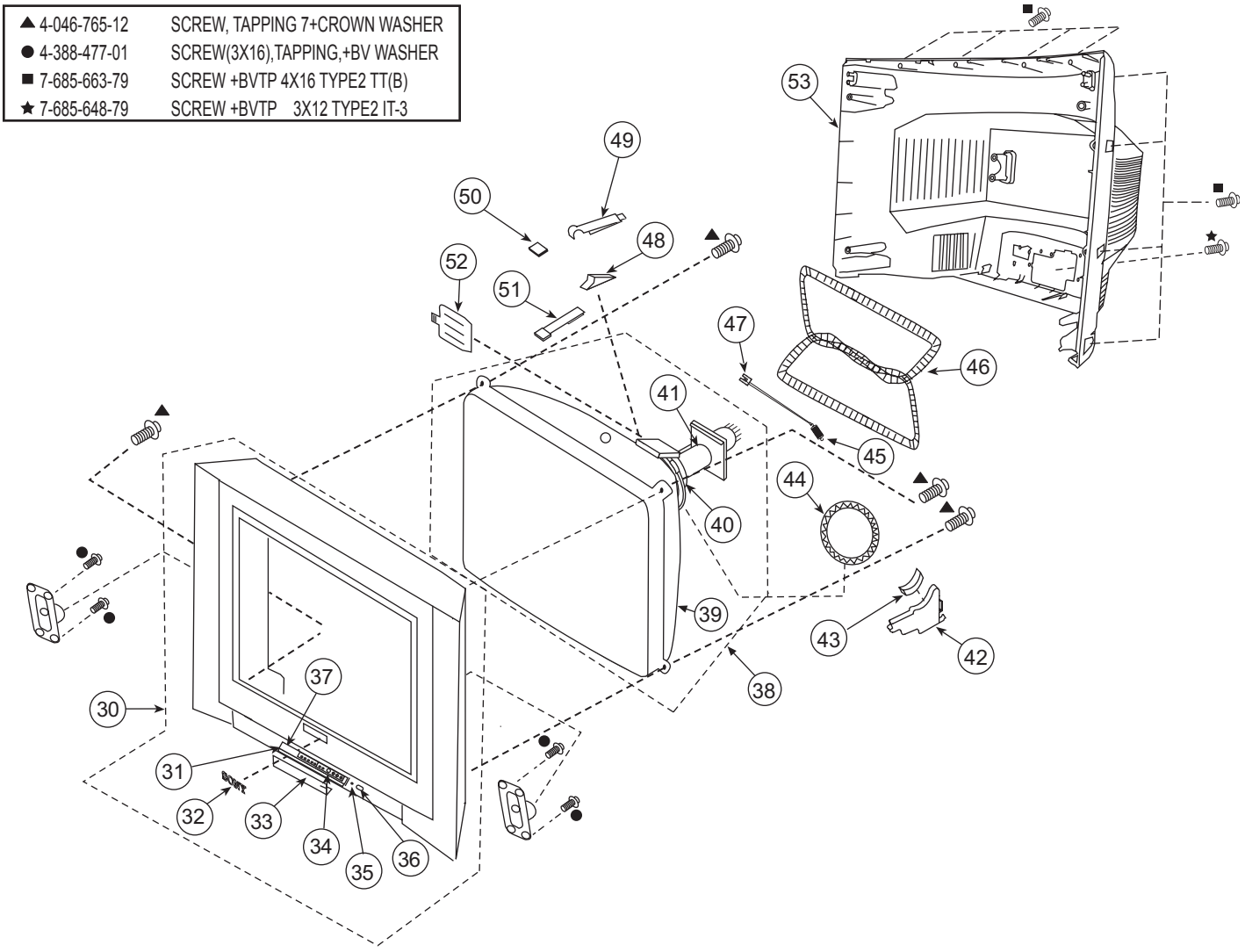
	REF. NO.	PART NO.	DESCRIPTION
	1	1-825-513-11	LOUDSPEAKER
*	2	A-1400-251-A	HR (COM) BOARD, MOUNTED
*	3	A-1404-904-A	V (VAR) BOARD, MOUNTED
*	4	A-1404-896-A	HD BOARD, MOUNTED
	5	A-1404-856-A	HU (COM) BOARD, MOUNTED
*	6	A-1302-109-A	A BOARD, COMPLETE
			The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. (SEE 21-23)
*	7	A-1404-880-A	BD (COM) BOARD, MOUNTED
	8	8-598-593-50	TUNER, FSS BTF-WA421
*	9	A-1404-846-A	P (VAR) BOARD, MOUNTED
*	10	A-1404-905-A	GK (VAR) BOARD, MOUNTED
	11	8-598-594-30	TUNER, FSS BTF-FA421
*	12	1-555-110-00	CABLE, P-P
*	13	1-558-539-21	CABLE, P-P
⚠	14	1-771-787-13	SWITCH, RF ANTENNA
*	15	4-076-951-01	HINGE, PWB
⚠	16	1-791-935-12	CORD, AC POWER (WITH CONNECTOR)
	17	4-087-877-21	BRACKET, TERMINAL
	18	1-500-082-11	CLAMP, SLEEVE FERRITE
	19	4-084-918-01	HOLDER, HV CABLE
⚠	20	1-453-338-21	FBT ASSY, NX-4600//X4C4 (21-23)
⚠	21	1-251-715-32	CAP ASSY, HIGH-VOLTAGE
⚠	22	1-900-805-19	WIRE ASSY, FOCUS HV
⚠	23	1-900-805-22	CONNECTOR ASSY, G2 HV
*	24	A-1404-903-A	C (VAR) BOARD, MOUNTED

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-8. PICTURE TUBE (KV-36FS210 ONLY)

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
■	7-685-663-79	SCREW +BVTP 4X16 TYPE2 TT(B)
★	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
30	X-4041-549-1	BEZNET ASSY	(31-37)
31	4-087-374-01	SPRING, DOOR	
32	4-046-160-21	EMBLEM, SONY (NO.9)	
33	4-087-375-21	DOOR, CONTROL	
34	4-087-376-21	LABEL, FRONT TERMINAL	
35	4-087-156-01	GUIDE, LIGHT	
36	4-087-150-01	BUTTON, POWER	
37	4-036-880-11	DAMPER	
⚠ 38	8-735-081-61	ITC 38RSN-A1M (KV-36FS210 HAWAII ONLY)	(39-41)
⚠ 38	8-735-048-61	ITC 38RSN-A1 (KV-36FS210 US ONLY)	(39-41)
⚠ 39	8-735-081-05	CRT 38RSN (FOR TAIWAN ETC) A90LPW80X (KV-36FS210 HAWAII ONLY)	
⚠ 39	8-735-048-05	CRT 38RSN A90LPW80X (KV-36FS210 US ONLY)	

REF. NO.	PART NO.	DESCRIPTION
⚠ 40	8-451-506-22	DY Y38RSA-V
⚠ 41	8-453-007-41	NECK ASSEMBLY NA324-M4
42	4-086-875-02	SUPPORTER, CRT
43	4-088-879-01	CUSHION, 36 CRT SUPPORTER
⚠ 44	1-452-896-11	COIL, NA ROTATION (RT200)
45	4-082-641-01	SPRING, 45MM
⚠ 46	1-428-987-11	DEGAUSSING COIL (36 120V)
47	4-082-640-01	HOOK, GROUND WIRE
48	2-164-116-01	SPACER, DY
49	4-065-895-04	HOLDER, DGC
50	1-452-885-11	MAGNET, LANDING
51	4-085-128-01	PIECE A (100), CONV. CORRECT
52	2-163-920-01	PLATE, TLH CORRECTION
53	4-086-697-22	COVER, REAR

SECTION 7: ELECTRICAL PARTS LIST

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components in this manual identified by the following symbol: ⋈ indicate parts that have been carefully factory-selected to satisfy regulations regarding X-ray radiation for each set.

Should replacement be required for one of these components, replace only with the value originally used.

*** Items marked with an asterisk are not stocked since they are seldom required for routine service. Expect some delay when ordering these components.**

RESISTORS
- **All resistors are in ohms**
- **F : nonflammable**
- **All variable and adjustable resistors have characteristic curve B, unless otherwise noted.**

When ordering parts by reference number, please include the board name.

A

REF. NO.	PART NO.	DESCRIPTION	VALUES
*	**A-1302-095-A**	**A BOARD, COMPLETE (KV-27FS210 ONLY)**	
*	**A-1302-128-A**	**A BOARD, COMPLETE (KV-29FA210 LATIN NORTH ONLY)**	
*	**A-1302-193-A**	**A BOARD, COMPLETE (KV-29FA210 LATIN SOUTH ONLY)**	
*	**A-1302-108-A**	**A BOARD, COMPLETE (KV-32FS210 ONLY)**	
*	**A-1302-109-A**	**A BOARD, COMPLETE (KV-36FS210 ONLY)**	
		The high-voltage leads associated with the FBT on these A boards are not included and must be ordered separately. Order the following leads when requesting these A boards:	
⚠	1-251-374-14	CAP ASSY, HIGH-VOLTAGE (KV-27FS210/29FA210/32FS210 ONLY)	
⚠	1-251-715-32	CAP ASSY, HIGH-VOLTAGE (KV-36FS210 ONLY)	
	1-900-800-82	WIRE ASSY, FOCUS HV (KV-27FS210/29FA210 ONLY)	
⚠	1-900-805-19	WIRE ASSY, FOCUS HV (KV-32FS210/36FS210 ONLY)	
	1-900-803-22	CONNECTOR ASSY, G2 HV (KV-27FS210/29FA210 ONLY)	
⚠	1-900-805-22	CONNECTOR ASSY, G2 HV (KV-32FS210/36FS210 ONLY)	
	4-382-854-11	SCREW (M3X10), P, SW (+)	

CAPACITOR

C001	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C002	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C003	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C004	1-126-947-11	ELECT	47µF	20%	35V
C005	1-164-739-11	CERAMIC CHIP	560pF	5%	50V
C006	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C007	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C008	1-126-960-11	ELECT	1µF	20%	50V
C009	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C014	1-162-975-11	CERAMIC CHIP	24pF	5%	50V
C015	1-162-975-11	CERAMIC CHIP	24pF	5%	50V
C016	1-126-935-11	ELECT	470µF	20%	16V
C017	1-162-966-11	CERAMIC CHIP	0.0022µF	10%	50V
C018	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C020	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C026	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C027	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C028	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C029	1-126-960-11	ELECT	1µF	20%	50V
C030	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C031	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C032	1-126-964-11	ELECT	10µF	20%	50V
C033	1-125-837-91	CERAMIC CHIP	1µF	10%	6.3V
C034	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C035	1-162-964-11	CERAMIC CHIP (KV-27FS210/32FS210/36FS210 ONLY)	0.001µF	10%	50V
C036	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C037	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C038	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C039	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C041	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C043	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C044	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C045	1-126-964-11	ELECT	10µF	20%	50V
C046	1-126-964-11	ELECT	10µF	20%	50V
C047	1-126-941-11	ELECT	470µF	20%	25V
C048	1-115-416-11	CERAMIC CHIP	0.001µF	5%	25V
C049	1-126-964-11	ELECT	10µF	20%	50V
C050	1-126-941-11	ELECT	470µF	20%	25V
C051	1-126-947-11	ELECT	47µF	20%	35V
C052	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C053	1-135-834-91	CERAMIC CHIP	2.2µF		6.3V
C054	1-126-963-11	ELECT	4.7µF	20%	50V
C055	1-126-933-11	ELECT	100µF	20%	16V

A

REF. NO.	PART NO.	DESCRIPTION	VALUES		
C056	1-135-834-91	CERAMIC CHIP	2.2µF		6.3V
C057	1-135-834-91	CERAMIC CHIP	2.2µF		6.3V
C060	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C062	1-125-837-91	CERAMIC CHIP	1µF	10%	6.3V
C065	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C101	1-115-416-11	CERAMIC CHIP	0.001µF	5%	25V
C102	1-115-416-11	CERAMIC CHIP	0.001µF	5%	25V
C111	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
	(KV-27FS210/32FS210/36FS210 ONLY)				
C120	1-162-915-11	CERAMIC CHIP	10pF	0.50pF	50V
C121	1-162-915-11	CERAMIC CHIP	10pF	0.50pF	50V
C122	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C133	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C200	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C201	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C202	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C203	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C206	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C207	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C208	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C209	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C212	1-126-963-11	ELECT	4.7µF	20%	50V
C213	1-126-963-11	ELECT	4.7µF	20%	50V
C302	1-126-963-11	ELECT	4.7µF	20%	50V
C303	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C304	1-113-619-11	CERAMIC CHIP	0.47UF		10V
	(KV-29FA210 ONLY)				
C307	1-126-964-11	ELECT	10µF	20%	50V
C308	1-126-964-11	ELECT	10µF	20%	50V
C309	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C310	1-126-964-11	ELECT	10µF	20%	50V
C311	1-126-947-11	ELECT	47µF	20%	35V
C312	1-126-964-11	ELECT	10µF	20%	50V
C313	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C314	1-126-964-11	ELECT	10µF	20%	50V
C315	1-126-964-11	ELECT	10µF	20%	50V
C319	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C320	1-126-959-11	ELECT	0.47µF	20%	50V
C321	1-126-947-11	ELECT	47µF	20%	35V
C322	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C325	1-162-923-11	CERAMIC CHIP	47pF	5%	50V
C326	1-164-373-11	CERAMIC CHIP	0.033µF		25V
C327	1-216-864-11	SHORT CHIP			
C330	1-126-964-11	ELECT	10µF	20%	50V

REF. NO.	PART NO.	DESCRIPTION	VALUES		
C333	1-126-963-11	ELECT	4.7µF	20%	50V
C335	1-162-918-11	CERAMIC CHIP	18pF	5%	50V
C337	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C338	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C339	1-113-619-11	CERAMIC CHIP	0.47µF		10V
C340	1-126-767-11	ELECT	1000µF	20%	16V
C341	1-126-947-11	ELECT	47µF	20%	35V
C343	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C344	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C345	1-113-619-11	CERAMIC CHIP	0.47µF	10V	
C346	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
	(KV-27FS210/32FS210/36FS210 ONLY)				
C347	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
	(KV-27FS210/32FS210/36FS210 ONLY)				
C348	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
	(KV-29FA210 ONLY)				
C349	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
	(KV-29FA210 ONLY)				
C350	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
	(KV-29FA210 ONLY)				
C351	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
	(KV-27FS210/32FS210/36FS210 ONLY)				
C352	1-126-947-11	ELECT	47µF	20%	35V
C353	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C354	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C355	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C356	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C357	1-126-960-11	ELECT	1µF	20%	50V
C358	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C359	1-162-961-11	CERAMIC CHIP	330pF	10%	50V
C360	1-126-960-11	ELECT	1µF	20%	50V
C364	1-162-923-11	CERAMIC CHIP	47pF	5%	50V
C365	1-162-117-00	CERAMIC	100pF	10%	500V
C366	1-113-619-11	CERAMIC CHIP	0.47µF		10V
C367	1-113-619-11	CERAMIC CHIP	0.47µF		10V
C368	1-113-619-11	CERAMIC CHIP	0.47µF	10V	
C372	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C373	1-104-665-11	ELECT	100µF	20%	25V
C374	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C393	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C400	1-128-934-91	CERAMIC CHIP	0.33UF	20%	10V
	(KV-29FA210 ONLY)				
C401	1-164-227-11	CERAMIC CHIP	0.022UF	10.00%	25V
	(KV-29FA210 ONLY)				
C401	1-162-969-11	CERAMIC CHIP	0.0068µF	10%	25V
	(KV-27FS210/32FS210/36FS210 ONLY)				

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REF. NO.	PART NO.	DESCRIPTION	VALUES
C402	1-164-174-11	CERAMIC CHIP	0.0082UF 10.00% 25V
	(KV-29FA210 ONLY)		
C402	1-164-227-11	CERAMIC CHIP	0.022µF 10% 25V
	(KV-27FS210/32FS210/36FS210 ONLY)		
C403	1-162-967-11	CERAMIC CHIP	0.0033µF 10% 50V
C404	1-162-967-11	CERAMIC CHIP	0.0033µF 10% 50V
C405	1-164-677-11	CERAMIC CHIP	0.033µF 10% 16V
C406	1-164-677-11	CERAMIC CHIP	0.033µF 10% 16V
C407	1-115-412-11	CERAMIC CHIP	680pF 5% 25V
C408	1-115-412-11	CERAMIC CHIP	680pF 5% 25V
C409	1-125-891-11	CERAMIC CHIP	0.47µF 10% 10V
C410	1-125-891-11	CERAMIC CHIP	0.47µF 10% 10V
C411	1-128-934-91	CERAMIC CHIP	0.33µF 20% 10V
C412	1-126-961-11	ELECT	2.2µF 20% 50V
C413	1-126-960-11	ELECT	1µF 20% 50V
C414	1-126-960-11	ELECT	1µF 20% 50V
C415	1-126-960-11	ELECT	1µF 20% 50V
C416	1-126-960-11	ELECT	1µF 20% 50V
C417	1-115-416-11	CERAMIC CHIP	0.001µF 5% 25V
C418	1-126-963-11	ELECT	4.7µF 20% 50V
C419	1-104-666-11	ELECT	220UF 20.00% 25V
	(KV-29FA210 ONLY)		
C420	1-126-960-11	ELECT	1µF 20% 50V
C421	1-107-826-11	CERAMIC CHIP	0.1µF 10% 16V
C422	1-126-768-11	ELECT	2200µF 20% 16V
C423	1-107-826-11	CERAMIC CHIP	0.1µF 10% 16V
C424	1-126-964-11	ELECT	10µF 20% 50V
C426	1-126-964-11	ELECT	10µF 20% 50V
C427	1-126-964-11	ELECT	10µF 20% 50V
C452	1-107-826-11	CERAMIC CHIP	0.1µF 10% 16V
	(KV-27FS210/32FS210/36FS210 ONLY)		
C453	1-107-826-11	CERAMIC CHIP	0.1µF 10% 16V
	(KV-27FS210/32FS210/36FS210 ONLY)		
C501	1-102-110-00	CERAMIC	220pF 10% 50V
C502	1-126-959-11	ELECT	0.47µF 20% 50V
C503	1-164-315-11	CERAMIC CHIP	470pF 5% 50V
C504	1-102-228-00	CERAMIC	470pF 10% 500V
C505	1-102-228-00	CERAMIC	470pF 10% 500V
C506	1-106-383-00	MYLAR	0.047µF 10% 200V
⚠ C507	1-162-116-00	CERAMIC	680pF 10% 2KV
C508	1-102-228-00	CERAMIC	470pF 10% 500V
⚠ C509	1-162-116-00	CERAMIC	680pF 10% 2KV
⚠ C510	1-137-150-11	FILM	0.01µF 5% 100V
⚠ C511	1-136-086-00	FILM	17000PF 3.00% 1.2KV
	(KV-27FS210/29FA210 ONLY)		

REF. NO.	PART NO.	DESCRIPTION	VALUES
⚠ C511	1-117-652-11	FILM	22000pF 3% 1.2KV
	(KV-32FS210/36FS210 ONLY)		
C512	1-129-709-91	FILM	0.0039UF 5.00% 630V
	(KV-27FS210/29FA210 ONLY)		
C512	1-129-928-00	FILM	0.0027µF 10% 630V
	(KV-32FS210/36FS210 ONLY)		
⚠ C513	1-129-722-00	FILM	0.047UF 5.00% 630V
	(KV-27FS210/29FA210 ONLY)		
⚠ C513	1-130-118-91	FILM	0.051µF 5% 400V
	(KV-32FS210/36FS210 ONLY)		
⚠ C514	1-109-844-11	FILM	0.68UF 5.00% 400V
	(KV-27FS210/29FA210 ONLY)		
⚠ C514	1-115-521-11	FILM	0.82µF 5% 250V
	(KV-32FS210/36FS210 ONLY)		
C515	1-104-987-11	MYLAR	0.001µF 5% 200V
⚠ C516	1-115-521-11	FILM	0.82UF 5.00% 250V
	(KV-27FS210/29FA210 ONLY)		
⚠ C516	1-115-356-11	FILM	1.2µF 5% 250V
	(KV-32FS210/36FS210 ONLY)		
C517	1-107-649-11	ELECT	2.2µF 20% 250V
C518	1-106-387-00	MYLAR	0.068µF 10% 200V
C519	1-102-244-00	CERAMIC	220pF 10% 500V
C520	1-164-646-11	CERAMIC	2200pF 10% 500V
C521	1-162-964-11	CERAMIC CHIP	0.001µF 10% 50V
C522	1-126-960-11	ELECT	1µF 20% 50V
C525	1-102-244-00	CERAMIC	220pF 10% 500V
C526	1-107-662-11	ELECT	22µF 20% 350V
⚠ C527	1-162-116-00	CERAMIC	680pF 10% 2KV
C528	1-162-966-11	CERAMIC CHIP	0.0022µF 10% 50V
C529	1-128-551-11	ELECT	22µF 20% 63V
C530	1-130-475-00	MYLAR	0.0022µF 5% 50V
C531	1-126-965-91	ELECT	22µF 20% 50V
C532	1-126-965-91	ELECT	22µF 20% 50V
C534	1-126-967-11	ELECT	47µF 20% 50V
C535	1-164-360-11	CERAMIC CHIP	0.1µF 16V
C537	1-126-941-11	ELECT	470µF 20% 25V
C539	1-126-941-11	ELECT	470µF 20% 25V
C540	1-131-867-51	ELECT	100µF 160V
C541	1-128-560-11	ELECT	22µF 20% 100V
C542	1-102-244-00	CERAMIC	220PF 10.00% 500V
	(KV-27FS210/29FA210 ONLY)		
C544	1-129-718-00	FILM	0.022µF 5% 630V
C545	1-106-387-00	MYLAR	0.068µF 10% 200V
C546	1-104-987-11	MYLAR	0.001µF 5% 200V
	(KV-32FS210/36FS210 ONLY)		
C547	1-104-987-11	MYLAR	0.001µF 5% 200V
	(KV-32FS210/36FS210 ONLY)		

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	REF. NO.	PART NO.	DESCRIPTION	VALUES		
	C550	1-102-002-00	CERAMIC	680PF	10.00%	500V
		(KV-27FS210/29FA210 ONLY)				
	C550	1-164-645-11	CERAMIC	1000pF	10%	500V
		(KV-32FS210/36FS210 ONLY)				
	C551	1-109-954-11	ELECT	0.47µF	20%	160V
	C552	1-102-244-00	CERAMIC	220pF	10%	500V
⚠	C553	1-117-412-11	FILM	0.24UF	5.00%	250V
		(KV-27FS210/29FA210 ONLY)				
⚠	C553	1-117-661-11	FILM	0.15µF	5%	250V
		(KV-32FS210/36FS210 ONLY)				
⚠	C554	1-117-629-11	FILM	2700PF	3.00%	1.2KV
		(KV-27FS210/29FA210 ONLY)				
⚠	C554	1-117-635-11	FILM	4700pF	3%	1.2KV
		(KV-32FS210/36FS210 ONLY)				
	C561	1-126-967-11	ELECT	47µF	20%	50V
	C563	1-104-666-11	ELECT	220µF	20%	25V
	C564	1-126-960-11	ELECT	1µF	20%	50V
	C565	1-126-969-11	ELECT	220µF	20%	50V
	C568	1-136-169-00	FILM	0.22µF	5%	50V
	C571	1-126-942-61	ELECT	1000µF	20%	25V
	C572	1-126-942-61	ELECT	1000µF	20%	25V
	C573	1-104-665-11	ELECT	100µF	20%	25V
	C590	1-126-964-11	ELECT	10µF	20%	50V
	C1501	1-107-846-11	FILM	0.1µF	5%	400V
		(KV-32FS210/36FS210 ONLY)				
	C6001	1-126-940-11	ELECT	330µF	20%	25V
	C6002	1-126-947-11	ELECT	47µF	20%	35V
	C6003	1-125-837-91	CERAMIC CHIP	1µF	10%	6.3V
	C6005	1-126-768-11	ELECT	2200µF	20%	16V
		CONNECTOR				
*	CN003	1-564-509-11	PLUG, CONNECTOR			6P
*	CN006	1-564-506-11	PLUG, CONNECTOR			3P
*	CN007	1-560-124-00	PLUG, CONNECTOR (2.5MM)			4P
*	CN306	1-774-105-11	CONNECTOR, BOARD TO BOARD			15P
*	CN501	1-580-798-11	CONNECTOR PIN (DY)			6P
*	CN503	1-564-510-11	PLUG, CONNECTOR			7P
*	CN504	1-564-509-11	PLUG, CONNECTOR			6P
*	CN505	1-564-510-11	PLUG, CONNECTOR			7P
	CN600	1-695-915-11	TAB (CONTACT)			
*	CN3300	1-774-105-11	CONNECTOR, BOARD TO BOARD			15P
		(KV-27FS210/32FS210/36FS210 ONLY)				
*	CN3301	1-774-105-11	CONNECTOR, BOARD TO BOARD			15P
		(KV-27FS210/32FS210/36FS210 ONLY)				

REF. NO.	PART NO.	DESCRIPTION	VALUES
	DIODE		
D002	8-719-109-93	DIODE	RD6.2ESB2
D004	8-719-921-44	DIODE	MTZJ-5.1C
D005	8-719-110-17	DIODE	RD10ESB2
D006	8-719-110-17	DIODE	RD10ESB2
D007	8-719-404-50	DIODE	MA111-TX
D008	8-719-404-50	DIODE	MA111-TX
D009	8-719-982-22	DIODE	MTZJ-30D
D010	8-719-109-93	DIODE	RD6.2ESB2
D100	8-719-929-15	DIODE	HZS9.1NB2
D101	8-719-929-15	DIODE	HZS9.1NB2
D102	8-719-109-85	DIODE	RD5.1ESB2
D110	8-719-991-33	DIODE	1SS133T-77
D111	8-719-109-93	DIODE	RD6.2ESB2
D112	8-719-109-93	DIODE	RD6.2ESB2
D113	8-719-921-44	DIODE	MTZJ-5.1C
D200	8-719-929-15	DIODE	HZS9.1NB2
D201	8-719-929-15	DIODE	HZS9.1NB2
D209	8-719-929-15	DIODE	HZS9.1NB2
D210	8-719-929-15	DIODE	HZS9.1NB2
D211	8-719-929-15	DIODE	HZS9.1NB2
D212	8-719-929-15	DIODE	HZS9.1NB2
D218	8-719-929-15	DIODE	HZS9.1NB2
D219	8-719-929-15	DIODE	HZS9.1NB2
D303	8-719-929-15	DIODE	HZS9.1NB2
D304	8-719-921-44	DIODE	MTZJ-5.1C
D305	8-719-108-12	DIODE	RD9.1EW
D306	8-719-929-15	DIODE	HZS9.1NB2
D307	8-719-929-15	DIODE	HZS9.1NB2
D309	8-719-110-17	DIODE	RD10ESB2
D310	8-719-110-17	DIODE	RD10ESB2
D311	8-719-110-17	DIODE	RD10ESB2
D314	8-719-108-12	DIODE	RD9.1EW
D315	8-719-110-17	DIODE	RD10ESB2
D316	8-719-110-17	DIODE	RD10ESB2
D317	8-719-110-17	DIODE	RD10ESB2
D320	8-719-991-33	DIODE	1SS133T-77
	(KV-27FS210/32FS210/36FS210 ONLY)		
D401	8-719-923-60	DIODE	MTZJ-T-77-9.1A
D402	8-719-923-60	DIODE	MTZJ-T-77-9.1A

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REF. NO.	PART NO.	DESCRIPTION	VALUES
D412	8-719-404-50	DIODE	MA111-TX
D413	8-719-921-63	DIODE	MTZJ-7.5B
D415	8-719-991-33	DIODE	1SS133T-77
D501	8-719-109-89	DIODE	RD5.6ESB2
D502	8-719-081-00	DIODE	BY228/A52A/
⚠ D503	8-719-081-00	DIODE	BY228/A52A/
D504	6-500-485-01	DIODE	FR305G-EB
D505	8-719-908-03	DIODE	GP08D
D506	8-719-908-03	DIODE	GP08D
D507	8-719-991-33	DIODE	1SS133T-77
D508	8-719-991-33	DIODE	1SS133T-77
D510	8-719-081-93	DIODE	1N4937/23
D511	8-719-970-87	DIODE	ERA38-06
D512	8-719-970-87	DIODE	ERA38-06
D513	8-719-110-41	DIODE	RD15ESB2
⚠ D515	8-719-075-41	DIODE	PR1004GT
D516	8-719-991-33	DIODE	1SS133T-77
D518	8-719-991-33	DIODE	1SS133T-77
⚠ D519	8-719-302-43	DIODE	EL1Z
D520	8-719-991-33	DIODE	1SS133T-77
D521	8-719-921-63	DIODE	MTZJ-7.5B
D522	8-719-991-33	DIODE	1SS133T-77
D523	8-719-109-69	DIODE	RD3.6ESB2
D524	8-719-109-97	DIODE	RD6.8ESB2
⚠ D530	6-500-531-01	DIODE	P6154R
D531	6-500-531-01	DIODE	P6154R
D534	8-719-074-25	DIODE	PG104R
D535	8-719-404-50	DIODE	MA111-TX
D536	1-216-864-11	SHORT CHIP	
D561	8-719-075-33	DIODE	1N4003GA
D580	8-719-991-33	DIODE	1SS133T-77
D590	8-719-991-33	DIODE	1SS133T-77
	FERRITE BEAD		
FB501	1-410-397-21	FERRITE	1.1µH
FB502	1-410-397-21	FERRITE	1.1µH
FB503	1-410-397-21	FERRITE	1.1µH
FB504	1-410-397-21	FERRITE	1.1µH
FB505	1-410-397-21	FERRITE	1.1µH
	IC		
IC001	6-803-010-01	IC	M306V5ME-110SP
IC002	6-701-929-01	IC	BD4743G-TR
IC003	8-759-641-86	IC	BR24C16F-E2
IC301	8-752-100-49	IC	CXA2154AS
IC303	8-759-443-11	IC	NJM2283M-TE1
IC400	6-703-191-01 (KV-27FS210/32FS210/36FS210 ONLY)	IC	NJW1135AGK1-TE2
IC400	6-703-190-01 (KV-29FA210 ONLY)	IC	NJW1134AGK1-TE2
IC405	6-701-105-01	IC	NJM2750M-TE2
IC501	8-759-700-07	IC	NJM2903M
⚠ IC561	8-759-980-58 (KV-27FS210/29FA210 ONLY)	IC	TDA8172
⚠ IC561	8-759-696-71 (KV-32FS210/36FS210 ONLY)	IC	STV9379A
IC6008	6-701-752-01	IC	NJM2930F05B
	JACK		
J201	1-794-119-11	TERMINAL BLOCK, S	4P
J203	1-794-118-11	JACK BLOCK, PIN	3P
* J205	1-817-461-11	PIN JACK BLOCK	5P
* J206	1-817-461-11	PIN JACK BLOCK	5P
J207	1-794-116-11	JACK BLOCK, PIN	2P
	CHIP CONDUCTOR		
JR2	1-216-864-11	SHORT CHIP	
JR4	1-216-864-11	SHORT CHIP	
JR9	1-216-864-11	SHORT CHIP	
JR10	1-216-864-11	SHORT CHIP	
JR12	1-216-864-11	SHORT CHIP	
JR13	1-216-864-11	SHORT CHIP	
JR14	1-216-864-11	SHORT CHIP	
JR15	1-216-864-11	SHORT CHIP	
JR205	1-216-864-11	SHORT CHIP	
JR206	1-216-864-11	SHORT CHIP	
JR301	1-216-864-11	SHORT CHIP	
JR302	1-216-864-11	SHORT CHIP	
JR303	1-216-864-11	SHORT CHIP	
JR304	1-216-864-11	SHORT CHIP	
JR305	1-216-864-11	SHORT CHIP	
JR306	1-216-864-11	SHORT CHIP	
JR307	1-216-864-11	SHORT CHIP	
JR308	1-216-864-11 (KV-27FS210/32FS210/36FS210 ONLY)	SHORT CHIP	
JR309	1-216-864-11	SHORT CHIP	
JR311	1-216-864-11	SHORT CHIP	
JR312	1-216-864-11	SHORT CHIP	
JR313	1-216-864-11	SHORT CHIP	
JR326	1-216-864-11	SHORT CHIP	
JR330	1-216-864-11	SHORT CHIP	
JR331	1-216-864-11	SHORT CHIP	

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REF. NO.	PART NO.	DESCRIPTION	VALUES
JR333	1-216-864-11	SHORT CHIP	
JR336	1-216-864-11	SHORT CHIP	
JR337	1-216-864-11	SHORT CHIP	
JR403	1-216-864-11	SHORT CHIP	
JR410	1-216-864-11	SHORT CHIP	
JR415	1-216-864-11	SHORT CHIP	
JR416	1-216-864-11	SHORT CHIP	
JR418	1-216-864-11	SHORT CHIP	
JR420	1-216-864-11	SHORT CHIP	
JR421	1-216-864-11	SHORT CHIP	
JR428	1-216-864-11	SHORT CHIP	
JR442	1-216-864-11	SHORT CHIP	
JR500	1-216-864-11	SHORT CHIP	
JR580	1-216-864-11	SHORT CHIP	
JR583	1-216-864-11	SHORT CHIP	
JR588	1-216-864-11	SHORT CHIP	
JR590	1-216-864-11	SHORT CHIP	
	COIL		
L001	1-414-857-11	INDUCTOR	100µH
L002	1-414-857-11	INDUCTOR	100µH
L003	1-414-856-11	INDUCTOR	10µH
L004	1-414-857-11	INDUCTOR	100µH
L009	1-414-857-11	INDUCTOR	100µH
L010	1-414-182-11	INDUCTOR	6.8µH
L300	1-414-857-11	INDUCTOR	100µH
L301	1-414-857-11	INDUCTOR	100µH
L302	1-414-856-11	INDUCTOR	10µH
L303	1-410-478-11	INDUCTOR	47µH
L304	1-410-470-11	INDUCTOR	10µH
L501	1-406-677-11	INDUCTOR	10MH
L502	1-412-552-81	INDUCTOR	2.2MH
L503	1-406-677-11	INDUCTOR	10MH
L504	1-406-677-11	INDUCTOR	10MH
⚠ L505	1-419-714-11	INDUCTOR	100UH
	(KV-27FS210/29FA210 ONLY)		
⚠ L505	1-406-978-11	INDUCTOR	150µH
	(KV-32FS210/36FS210 ONLY)		
L511	1-409-955-11	INDUCTOR	8MH
L517	1-412-552-11	INDUCTOR	2.2MH
	TRANSISTOR		
Q001	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q002	8-729-422-27	TRANSISTOR	2SD601A-Q
Q003	8-729-422-27	TRANSISTOR	2SD601A-Q
Q004	8-729-422-27	TRANSISTOR	2SD601A-Q
Q005	8-729-422-27	TRANSISTOR	2SD601A-Q
Q010	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q110	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
	(KV-27FS210/32FS210/36FS210 ONLY)		
Q300	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q303	8-729-422-27	TRANSISTOR	2SD601A-Q
Q304	8-729-422-27	TRANSISTOR	2SD601A-Q
Q305	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q306	8-729-422-27	TRANSISTOR	2SD601A-Q
Q307	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q308	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q309	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q317	8-729-422-27	TRANSISTOR	2SD601A-Q
Q319	8-729-422-27	TRANSISTOR	2SD601A-Q
Q320	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q402	8-729-422-27	TRANSISTOR	2SD601A-Q
Q403	8-729-422-27	TRANSISTOR	2SD601A-Q
Q407	8-729-422-27	TRANSISTOR	2SD601A-Q
Q500	8-729-422-27	TRANSISTOR	2SD601A-Q
Q501	8-729-140-50	TRANSISTOR	2SC3209LK
⚠ Q502	6-550-107-01	TRANSISTOR	2SD2645-YB
Q507	8-729-043-95	TRANSISTOR	2SC3840(3)
⚠ Q511	8-729-120-28	TRANSISTOR	2SC1623-L5L6
⚠ Q512	8-729-809-29	TRANSISTOR	2SC4159-E
Q530	8-729-422-27	TRANSISTOR	2SD601A-Q
Q531	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q532	6-550-362-01	TRANSISTOR	KTA1279
Q561	8-729-422-27	TRANSISTOR	2SD601A-Q
Q562	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q590	8-729-422-27	TRANSISTOR	2SD601A-Q
Q6000	8-729-422-27	TRANSISTOR	2SD601A-Q
	RESISTOR		
R001	1-249-429-11	CARBON	10K 5% 1/4W
R002	1-249-409-11	CARBON	220 5% 1/4W
R003	1-216-817-11	METAL CHIP	470 5% 1/10W
R004	1-216-857-11	METAL CHIP	1M 5% 1/10W
R005	1-216-821-11	METAL CHIP	1K 5% 1/10W
R006	1-249-417-11	CARBON	1K 5% 1/4W
R007	1-216-833-11	METAL CHIP	10K 5% 1/10W
R009	1-216-864-11	SHORT CHIP	
R010	1-249-409-11	CARBON	220 5% 1/4W
R011	1-216-821-11	METAL CHIP	1K 5% 1/10W

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REF. NO.	PART NO.	DESCRIPTION	VALUES		
R012	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R013	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R015	1-216-813-11	METAL CHIP	220	5%	1/10W
R016	1-216-813-11	METAL CHIP	220	5%	1/10W
R017	1-216-813-11	METAL CHIP	220	5%	1/10W
R018	1-216-813-11	METAL CHIP	220	5%	1/10W
R019	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R020	1-218-688-11	METAL CHIP	680	0.50%	1/10W
R021	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R022	1-218-688-11	METAL CHIP	680	0.50%	1/10W
R023	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R024	1-218-688-11	METAL CHIP	680	0.50%	1/10W
R025	1-216-813-11	METAL CHIP	220	5%	1/10W
R027	1-216-813-11	METAL CHIP	220	5%	1/10W
R029	1-249-409-11	CARBON	220	5%	1/4W
R030	1-216-841-11	METAL CHIP	47K	5%	1/10W
R031	1-216-809-11 (KV-27FS210/32FS210/36FS210 ONLY)	METAL CHIP	100	5%	1/10W
R032	1-216-813-11	METAL CHIP	220	5%	1/10W
R033	1-249-417-11	CARBON	1K	5%	1/4W
R034	1-216-813-11	METAL CHIP	220	5%	1/10W
R035	1-216-813-11	METAL CHIP	220	5%	1/10W
R037	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R038	1-249-417-11	CARBON	1K	5%	1/4W
R039	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R048	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R050	1-216-833-11	METAL CHIP	10K	5%	1/10W
R051	1-216-857-11	METAL CHIP	1M	5%	1/10W
R052	1-216-845-11	METAL CHIP	100K	5%	1/10W
R053	1-216-821-11	METAL CHIP	1K	5%	1/10W
R054	1-249-417-11	CARBON	1K	5%	1/4W
R055	1-216-841-11	METAL CHIP	47K	5%	1/10W
R056	1-216-813-11	METAL CHIP	220	5%	1/10W
R057	1-216-845-11	METAL CHIP	100K	5%	1/10W
R058	1-216-845-11	METAL CHIP	100K	5%	1/10W
R060	1-249-409-11	CARBON	220	5%	1/4W
R061	1-249-437-11	CARBON	47K	5%	1/4W
R063	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R064	1-216-813-11	METAL CHIP	220	5%	1/10W
R065	1-216-841-11	METAL CHIP	47K	5%	1/10W
R066	1-249-429-11	CARBON	10K	5%	1/4W
R070	1-216-813-11	METAL CHIP	220	5%	1/10W
R071	1-216-841-11	METAL CHIP	47K	5%	1/10W
R073	1-249-425-11	CARBON	4.7K	5%	1/4W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R074	1-249-417-11	CARBON	1K	5%	1/4W
R075	1-216-813-11	METAL CHIP	220	5%	1/10W
R076	1-216-841-11	METAL CHIP	47K	5%	1/10W
R077	1-216-809-11	METAL CHIP	100	5%	1/10W
R078	1-216-841-11	METAL CHIP	47K	5%	1/10W
R080	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R085	1-215-924-00	METAL OXIDE	15K	5%	3W
R086	1-216-839-11	METAL CHIP	33K	5%	1/10W
R087	1-216-837-11	METAL CHIP	22K	5%	1/10W
R089	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R098	1-216-821-11	METAL CHIP	1K	5%	1/10W
R099	1-216-809-11	METAL CHIP	100	5%	1/10W
R101	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R102	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R103	1-249-425-11	CARBON	4.7K	5%	1/4W
R107	1-216-809-11	METAL CHIP	100	5%	1/10W
R108	1-216-809-11	METAL CHIP	100	5%	1/10W
R110	1-247-807-31	CARBON	100	5%	1/4W
R111	1-216-809-11	METAL CHIP	100	5%	1/10W
R113	1-247-807-31	CARBON	100	5%	1/4W
R114	1-249-409-11 (KV-27FS210/32FS210/36FS210 ONLY)	CARBON	220	5%	1/4W
R117	1-216-837-11 (KV-27FS210/32FS210/36FS210 ONLY)	METAL CHIP	22K	5%	1/10W
R118	1-216-837-11 (KV-27FS210/32FS210/36FS210 ONLY)	METAL CHIP	22K	5%	1/10W
R120	1-249-413-11	CARBON	470	5%	1/4W
R129	1-249-409-11 (KV-29FA210 ONLY)	CARBON	220	5%	1/4W
R130	1-216-829-11 (KV-29FA210 ONLY)	METAL CHIP	4.7K	5%	1/10W
R131	1-216-813-11 (KV-27FS210/32FS210/36FS210 ONLY)	METAL CHIP	220	5%	1/10W
R132	1-216-829-11 (KV-27FS210/32FS210/36FS210 ONLY)	METAL CHIP	4.7K	5%	1/10W
R133	1-216-841-11	METAL CHIP	47K	5%	1/10W
R134	1-216-813-11	METAL CHIP	220	5%	1/10W
R135	1-216-813-11	METAL CHIP	220	5%	1/10W
R136	1-249-425-11	CARBON	4.7K	5%	1/4W
R137	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R139	1-216-813-11 (KV-27FS210/32FS210/36FS210 ONLY)	METAL CHIP	220	5%	1/10W
R140	1-249-409-11	CARBON	220	5%	1/4W
R145	1-249-401-11	CARBON	47	5%	1/4W
R201	1-216-864-11	SHORT CHIP			

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REF. NO.	PART NO.	DESCRIPTION	VALUES		
R202	1-249-409-11	CARBON	220	5%	1/4W
R206	1-249-409-11	CARBON	220	5%	1/4W
R207	1-216-845-11	METAL CHIP	100K	5%	1/10W
R208	1-249-409-11	CARBON	220	5%	1/4W
R209	1-216-845-11	METAL CHIP	100K	5%	1/10W
R210	1-249-409-11	CARBON	220	5%	1/4W
R217	1-216-845-11	METAL CHIP	100K	5%	1/10W
R218	1-216-845-11	METAL CHIP	100K	5%	1/10W
R219	1-216-813-11	METAL CHIP	220	5%	1/10W
R220	1-216-813-11	METAL CHIP	220	5%	1/10W
R222	1-216-845-11	METAL CHIP	100K	5%	1/10W
R223	1-216-813-11	METAL CHIP	220	5%	1/10W
R224	1-216-813-11	METAL CHIP	220	5%	1/10W
R225	1-216-845-11	METAL CHIP	100K	5%	1/10W
R232	1-216-853-11	METAL CHIP	470K	5%	1/10W
R233	1-216-853-11	METAL CHIP	470K	5%	1/10W
R234	1-216-813-11	METAL CHIP	220	5%	1/10W
R235	1-216-813-11	METAL CHIP	220	5%	1/10W
R300	1-113-619-11	CERAMIC CHIP	0.47µF	10V	
R301	1-216-809-11	METAL CHIP	100	5%	1/10W
R302	1-216-817-11	METAL CHIP	470	5%	1/10W
R303	1-216-818-11	METAL CHIP	560	5%	1/10W
R306	1-216-843-11	METAL CHIP	68K	5%	1/10W
R308	1-216-833-11	METAL CHIP	10K	5%	1/10W
R309	1-216-864-11	SHORT CHIP			
R313	1-216-864-11	SHORT CHIP			
R315	1-218-285-11	METAL CHIP	75	5%	1/10W
R316	1-218-285-11	METAL CHIP	75	5%	1/10W
R317	1-218-285-11	METAL CHIP	75	5%	1/10W
R319	1-216-809-11	METAL CHIP	100	5%	1/10W
R320	1-216-864-11	SHORT CHIP			
R321	1-216-809-11	METAL CHIP	100	5%	1/10W
R322	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R323	1-216-818-11	METAL CHIP	560	5%	1/10W
R325	1-247-807-31	CARBON	100	5%	1/4W
R328	1-216-833-11	METAL CHIP	10K	5%	1/10W
R329	1-216-809-11 (KV-27FS210/32FS210/36FS210 ONLY)	METAL CHIP	100	5%	1/10W
R330	1-216-815-11	METAL CHIP	330	5%	1/10W
R331	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R332	1-216-809-11	METAL CHIP	100	5%	1/10W
R333	1-216-809-11	METAL CHIP	100	5%	1/10W
R334	1-216-821-11	METAL CHIP	1K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R335	1-216-821-11	METAL CHIP	1K	5%	1/10W
R336	1-216-809-11	METAL CHIP	100	5%	1/10W
R337	1-249-417-11	CARBON	1K	5%	1/4W
R338	1-247-807-31	CARBON	100	5%	1/4W
R339	1-216-849-11 (KV-27FS210/29FA210/32FS210 ONLY)	METAL CHIP	220K	5%	1/10W
R339	1-216-842-11 (KV-36FS210 ONLY)	METAL CHIP	56K	5%	1/10W
R340	1-216-861-11 (KV-27FS210/29FA210 ONLY)	METAL CHIP	2.2M	5%	1/10W
R340	1-216-863-11 (KV-32FS210/36FS210 ONLY)	METAL CHIP	3.3M	5%	1/10W
R341	1-216-842-11 (KV-27FS210/29FA210 ONLY)	METAL CHIP	56K	5%	1/10W
R341	1-216-851-11 (KV-32FS210/36FS210 ONLY)	METAL CHIP	330K	5%	1/10W
R342	1-216-839-11	METAL CHIP	33K	5%	1/10W
R343	1-216-833-11	METAL CHIP	10K	5%	1/10W
R344	1-216-853-11	METAL CHIP	470K	5%	1/10W
R345	1-216-845-11	METAL CHIP	100K	5%	1/10W
R346	1-216-845-11	METAL CHIP	100K	5%	1/10W
R347	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R348	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R349	1-216-864-11	SHORT CHIP			
R350	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R351	1-216-864-11	SHORT CHIP			
R352	1-216-864-11	SHORT CHIP			
R357	1-216-864-11	SHORT CHIP			
R359	1-216-833-11	METAL CHIP	10K	5%	1/10W
R368	1-216-864-11	SHORT CHIP			
R369	1-216-809-11	METAL CHIP	100	5%	1/10W
R370	1-216-809-11	METAL CHIP	100	5%	1/10W
R372	1-216-864-11	SHORT CHIP			
R374	1-216-833-11	METAL CHIP	10K	5%	1/10W
R376	1-216-809-11	METAL CHIP	100	5%	1/10W
R378	1-216-809-11	METAL CHIP	100	5%	1/10W
R379	1-216-809-11	METAL CHIP	100	5%	1/10W
R380	1-216-809-11	METAL CHIP	100	5%	1/10W
R381	1-216-821-11	METAL CHIP	1K	5%	1/10W
R382	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R384	1-216-840-11	METAL CHIP	39K	5%	1/10W
R386	1-216-845-11	METAL CHIP	100K	5%	1/10W
R387	1-216-864-11	SHORT CHIP			
R388	1-216-821-11	METAL CHIP	1K	5%	1/10W

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

A component identified by this ⋈ symbol indicates that it has been carefully factory-selected to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

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	REF. NO.	PART NO.	DESCRIPTION	VALUES		
	R389	1-216-864-11	SHORT CHIP			
	R390	1-218-285-11	METAL CHIP	75	5%	1/10W
	R391	1-218-285-11	METAL CHIP	75	5%	1/10W
	R393	1-218-285-11	METAL CHIP	75	5%	1/10W
	R394	1-218-285-11	METAL CHIP	75	5%	1/10W
	R400	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		(KV-29FA210 ONLY)				
	R401	1-247-807-31	CARBON	100	5%	1/4W
	R402	1-216-845-11	METAL CHIP	100K	5%	1/10W
	R403	1-247-807-31	CARBON	100	5%	1/4W
	R404	1-216-845-11	METAL CHIP	100K	5%	1/10W
	R405	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
	R408	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
	R409	1-247-807-31	CARBON	100	5%	1/4W
	R410	1-216-813-11	METAL CHIP	220	5%	1/10W
	R411	1-216-817-11	METAL CHIP	470	5%	1/10W
	R412	1-216-821-11	METAL CHIP	1K	5%	1/10W
	R413	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R414	1-216-813-11	METAL CHIP	220	5%	1/10W
	R416	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R452	1-216-813-11	METAL CHIP	220	5%	1/10W
		(KV-27FS210/32FS210/36FS210 ONLY)				
	R453	1-216-813-11	METAL CHIP	220	5%	1/10W
		(KV-27FS210/32FS210/36FS210 ONLY)				
	R500	1-249-409-11	CARBON	220	5%	1/4W
	R501	1-216-815-11	METAL CHIP	330	5%	1/10W
		(KV-27FS210/29FA210 ONLY)				
	R501	1-216-817-11	METAL CHIP	470	5%	1/10W
		(KV-32FS210/36FS210 ONLY)				
	R502	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R503	1-249-425-11	CARBON	4.7K	5%	1/4W
	R504	1-215-885-00	METAL OXIDE	68	5%	2W
		(KV-27FS210/29FA210 ONLY)				
	R504	1-216-455-11	METAL OXIDE	560	5%	2W
		(KV-32FS210/36FS210 ONLY)				
	R505	1-249-433-11	CARBON	22K	5%	1/4W
	R506	1-215-861-00	METAL OXIDE	47	5%	1W
	R507	1-249-401-11	CARBON	47	5%	1/4W
	R508	1-249-425-11	CARBON	4.7K	5%	1/4W
	R509	1-260-328-11	CARBON	1K	5%	1/2W
⚠	R510	1-215-908-00	METAL OXIDE	33	5%	3W
	R512	1-215-910-00	METAL OXIDE	68	5%	3W
	R515	1-216-845-11	METAL CHIP	100K	5%	1/10W
		(KV-27FS210/29FA210 ONLY)				
	R515	1-216-835-11	METAL CHIP	15K	5%	1/10W
		(KV-32FS210 ONLY)				
	R515	1-216-837-11	METAL CHIP	22K	5%	1/10W
		(KV-36FS210 ONLY)				
⚠	R516	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
		(KV-27FS210/29FA210 ONLY)				
⚠	R516	1-216-828-11	METAL CHIP	3.9K	5%	1/10W
		(KV-32FS210 ONLY)				
⚠	R516	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		(KV-36FS210 ONLY)				
	R517	1-249-417-11	CARBON	1K	5%	1/4W
	R518	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R519	1-249-413-11	CARBON	470	5%	1/4W
	R520	1-215-907-11	METAL OXIDE	22	5%	3W
⚠	R523	1-216-837-11	METAL CHIP	22K	5%	1/10W
		(KV-27FS210/29FA210 ONLY)				
⚠	R523	1-216-834-11	METAL CHIP	12K	5%	1/10W
		(KV-32FS210/36FS210 ONLY)				
⚠	R524	1-249-429-11	CARBON	10K	5%	1/4W
⚠	R525	1-249-428-11	CARBON	8.2K	5%	1/4W
	R526	1-216-377-11	METAL OXIDE	4.7	5%	2W
		(KV-27FS210/29FA210 ONLY)				
	R526	1-215-905-11	METAL OXIDE	10	5%	3W
		(KV-32FS210/36FS210 ONLY)				
⚠	R528	1-216-837-11	METAL CHIP	22K	5%	1/10W
	R529	1-218-724-11	METAL CHIP	22K	0.50%	1/10W
⋈	R530	1-218-718-11	METAL CHIP	12K	0.50%	1/10W
⋈	R531	1-218-746-11	METAL CHIP	180K	0.50%	1/10W
		(KV-27FS210/29FA210 ONLY)				
⋈	R531	1-218-734-11	METAL CHIP	56K	0.50%	1/10W
		(KV-32FS210/36FS210 ONLY)				
	R532	1-216-810-11	METAL CHIP	120	5%	1/10W
	R533	1-215-879-11	METAL OXIDE	47K	5%	1W
	R534	1-218-720-11	METAL CHIP	15K	0.50%	1/10W
		(KV-36FS210 ONLY)				
	R535	1-216-855-11	METAL CHIP	680K	5%	1/10W
		(KV-27FS210/29FA21036FS210 ONLY)				
	R535	1-216-854-11	METAL CHIP	560K	5%	1/10W
		(KV-32FS210 ONLY)				
⚠	R536	1-260-288-11	CARBON	0.47	5%	1/2W
⚠	R537	1-260-288-11	CARBON	0.47	5%	1/2W
	R538	1-247-887-00	CARBON	220K	5%	1/4W
	R541	1-215-922-11	METAL OXIDE	6.8K	5%	3W
	R542	1-216-486-00	METAL OXIDE	8.2K	5%	3W
		(KV-27FS210/29FA210 ONLY)				
	R542	1-215-921-11	METAL OXIDE	4.7K	5%	3W
		(KV-32FS210/36FS210 ONLY)				
⚠	R543	1-249-377-11	CARBON	0.47	5%	1/4W
⚠	R545	1-249-387-11	CARBON	3.3	5%	1/4W

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

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REF. NO.	PART NO.	DESCRIPTION	VALUES		
R546	1-215-457-00	METAL	33K	1%	1/4W
	(KV-27FS210/29FA210 ONLY)				
R546	1-215-453-00	METAL	22K	1%	1/4W
	(KV-32FS210/36FS210 ONLY)				
R547	1-215-457-00	METAL	33K	1%	1/4W
R548	1-216-486-00	METAL OXIDE	8.2K	5%	3W
	(KV-27FS210/29FA210 ONLY)				
R548	1-215-921-11	METAL OXIDE	4.7K	5%	3W
	(KV-32FS210/36FS210 ONLY)				
R549	1-215-437-00	METAL	4.7K	1%	1/4W
⚠ R550	1-249-377-11	CARBON	0.47	5%	1/4W
R551	1-215-873-00	METAL OXIDE	4.7K	5%	1W
⚠ R553	1-249-377-11	CARBON	0.47	5%	1/4W
R554	1-215-876-00	METAL OXIDE	15K	5%	1W
	(KV-27FS210/29FA210 ONLY)				
R554	1-215-894-11	METAL OXIDE	2.2K	5%	2W
	(KV-32FS210 ONLY)				
R555	1-249-441-11	CARBON	100K	5%	1/4W
R556	1-249-441-11	CARBON	100K	5%	1/4W
R557	1-249-441-11	CARBON	100K	5%	1/4W
R558	1-218-720-11	METAL CHIP	15K	0.50%	1/10W
	(KV-36FS210 ONLY)				
R559	1-216-805-11	METAL CHIP	47	5%	1/10W
R560	1-215-922-11	METAL OXIDE	6.8K	5%	3W
R561	1-215-445-00	METAL	10K	1%	1/4W
⚠ R563	1-214-798-21	METAL	1.8	1%	1/2W
R564	1-247-895-91	CARBON	470K	5%	1/4W
R565	1-215-889-00	METAL OXIDE	330	5%	2W
R566	1-218-712-11	METAL CHIP	6.8K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R566	1-218-710-11	METAL CHIP	5.6K	0.50%	1/10W
	(KV-32FS210 ONLY)				
R566	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
	(KV-36FS210 ONLY)				
⚠ R567	1-249-385-11	CARBON	2.2	5%	1/4W
R568	1-218-712-11	METAL CHIP	6.8K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R568	1-218-710-11	METAL CHIP	5.6K	0.50%	1/10W
	(KV-32FS210 ONLY)				
R568	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
	(KV-36FS210 ONLY)				
R569	1-215-445-00	METAL	10K	1%	1/4W
R570	1-216-845-11	METAL CHIP	100K	5%	1/10W
R571	1-216-837-11	METAL CHIP	22K	5%	1/10W
R572	1-216-837-11	METAL CHIP	22K	5%	1/10W
R573	1-216-845-11	METAL CHIP	100K	5%	1/10W
⚠ R574	1-214-798-21	METAL	1.8	1%	1/2W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R576	1-215-907-11	METAL OXIDE	22	5%	3W
	(KV-27FS210/29FA210 ONLY)				
R576	1-215-905-11	METAL OXIDE	10	5%	3W
	(KV-32FS210/36FS210 ONLY)				
R577	1-216-821-11	METAL CHIP	1K	5%	1/10W
R578	1-214-798-21	METAL	1.8	1%	1/2W
R580	1-249-441-11	CARBON	100K	5%	1/4W
R583	1-216-833-11	METAL CHIP	10K	5%	1/10W
R584	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R586	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R590	1-216-809-11	METAL CHIP	100	5%	1/10W
R591	1-249-417-11	CARBON	1K	5%	1/4W
R592	1-216-363-00	METAL OXIDE	0.33	5%	2W
R593	1-249-417-11	CARBON	1K	5%	1/4W
	(KV-27FS210/29FA210 ONLY)				
R593	1-249-420-11	CARBON	1.8K	5%	1/4W
	(KV-32FS210/36FS210 ONLY)				
R594	1-249-429-11	CARBON	10K	5%	1/4W
R595	1-247-891-00	CARBON	330K	5%	1/4W
R596	1-249-441-11	CARBON	100K	5%	1/4W
R597	1-216-864-11	SHORT CHIP			
R598	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R599	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R907	1-216-833-11	METAL CHIP	10K	5%	1/10W
R908	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R909	1-249-417-11	CARBON	1K	5%	1/4W
R910	1-216-833-11	METAL CHIP	10K	5%	1/10W
R912	1-249-417-11	CARBON	1K	5%	1/4W
R915	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R916	1-216-864-11	SHORT CHIP			
R917	1-216-809-11	METAL CHIP	100	5%	1/10W
R932	1-218-285-11	METAL CHIP	75	5%	1/10W
R934	1-218-285-11	METAL CHIP	75	5%	1/10W
R940	1-247-807-31	CARBON	100	5%	1/4W
R941	1-247-807-31	CARBON	100	5%	1/4W
R942	1-216-841-11	METAL CHIP	47K	5%	1/10W
R947	1-216-864-11	SHORT CHIP			
R953	1-218-285-11	METAL CHIP	75	5%	1/10W
R6001	1-216-833-11	METAL CHIP	10K	5%	1/10W
R6002	1-216-833-11	METAL CHIP	10K	5%	1/10W
R6003	1-216-833-11	METAL CHIP	10K	5%	1/10W
R6004	1-249-417-11	CARBON	1K	5%	1/4W

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

A HR HU

REF. NO.	PART NO.	DESCRIPTION	VALUES
	SWITCH		
S501	1-572-707-11	SWITCH, LEVER	
S502	1-572-707-11	SWITCH, LEVER	
	TRANSFORMER		
T501	1-433-836-11	TRANSFORMER, HORIZONTAL DRIVE	
⚠ T502	1-435-869-11	TRANFORMER, FERRITE (PMT)	
⚠ T503	1-453-310-11	FBT ASSY, NX-4521//X4J4 (KV-27FS210/29FA210 ONLY)	
⚠ T503	1-453-338-31	FBT ASSY, NX-4600//X4J4 (KV-32FS210 ONLY)	
⚠ T503	1-453-338-21	FBT ASSY, NX-4600//X4C4 (KV-36FS210 ONLY)	
⚠ T504	1-433-533-12	TRANSFORMER, FERRITE (DFT)	
⚠ T505	1-433-850-11	TRANSFORMER, HORIZONTAL LINEAR (KV-27FS210/29FA210 ONLY)	
⚠ T505	1-435-098-21	TRANSFORMER, HORIZONTAL LINEAR (KV-32FS210/36FS210 ONLY)	
	THERMISTOR		
TH501	1-800-193-00	THERMISTOR	
	TUNER		
TU001	8-598-593-50	TUNER, FSS BTF-WA421	
	CRYSTAL		
X001	1-795-572-11	VIBRATOR, CRYSTAL	
X301	1-567-505-11	OSCILLATOR, CRYSTAL	

HR

*	**A-1400-251-A**	**HR (COM) BOARD, MOUNTED**	
	CAPACITOR		
C3001	1-104-665-11	ELECT	100µF 20% 25V
	CONNECTOR		
* CN3001	1-564-521-11	PLUG, CONNECTOR 6P	
	DIODE		
D3002	8-719-057-09	DIODE	LNJ801LPDJA
	IC		
IC3001	8-742-211-20	HYB IC	SBX3071-71

REF. NO.	PART NO.	DESCRIPTION	VALUES
	RESISTOR		
R3001	1-249-417-11	CARBON	1K 5% 1/4W
R3014	1-247-807-31	CARBON	100 5% 1/4W
	SWITCH		
S3006	1-786-338-11	SWITCH, TACTILE	

HU

*	**A-1404-856-A**	**HU (COM) BOARD, MOUNTED**	
	CAPACITOR		
C2234	1-137-194-81	FILM	0.47µF 5% 50V
C2235	1-137-194-81	FILM	0.47µF 5% 50V
C2240	1-126-959-11	ELECT	0.47µF 20% 50V
	CONNECTOR		
* CN1001	1-564-506-11	PLUG, CONNECTOR 3P	
* CN1003	1-564-511-11	PLUG, CONNECTOR 8P	
	DIODE		
D301	8-719-108-12	DIODE	RD9.1EW
D2235	8-719-108-12	DIODE	RD9.1EW
D2236	8-719-108-12	DIODE	RD9.1EW
	JACK		
J2231	1-794-048-11	JACK, PIN 3P	
	RESISTOR		
R1001	1-249-425-11	CARBON	4.7K 5% 1/4W
R1002	1-249-420-11	CARBON	1.8K 5% 1/4W
R1003	1-249-417-11	CARBON	1K 5% 1/4W
R2008	1-249-425-11	CARBON	4.7K 5% 1/4W
R2009	1-249-420-11	CARBON	1.8K 5% 1/4W
R2010	1-249-417-11	CARBON	1K 5% 1/4W
R2011	1-249-416-11	CARBON	820 5% 1/4W
R2235	1-249-409-11	CARBON	220 5% 1/4W
R2236	1-249-441-11	CARBON	100K 5% 1/4W
R2237	1-249-409-11	CARBON	220 5% 1/4W
R2238	1-249-441-11	CARBON	100K 5% 1/4W
R2240	1-247-804-11	CARBON	75 5% 1/4W

HU HD P

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	SWITCH				
S1007	1-762-816-11	SWITCH, TACTIL			
S1008	1-762-816-11	SWITCH, TACTIL			
S2001	1-692-431-21	SWITCH, TACTILE			
S2002	1-692-431-21	SWITCH, TACTILE			
S2003	1-692-431-21	SWITCH, TACTILE			
S2004	1-692-431-21	SWITCH, TACTILE			
S2005	1-692-431-21	SWITCH, TACTILE			

HD

* **A-1404-896-A HD BOARD, MOUNTED (SPACER BOARD) (KV-32FS210/36FS210 ONLY)**

P

* **A-1404-846-A P (VAR) BOARD, MOUNTED (KV-27FS210/32FS210/36FS210 ONLY)**

	4-382-854-11	SCREW (M3X10), P, SW (+)			
	CAPACITOR				
C100	1-126-968-11	ELECT	100µF	20%	50V
C102	1-126-947-11	ELECT	47µF	20%	35V
C103	1-126-964-11	ELECT	10µF	20%	50V
C104	1-126-967-11	ELECT	47µF	20%	50V
C106	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C107	1-126-960-11	ELECT	1µF	20%	50V
C109	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C110	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C111	1-126-960-11	ELECT	1µF	20%	50V
C3300	1-115-156-11	CERAMIC CHIP	1µF		10V
C3301	1-115-156-11	CERAMIC CHIP	1µF		10V
C3302	1-115-156-11	CERAMIC CHIP	1µF		10V
C3303	1-126-947-11	ELECT	47µF	20%	35V
C3304	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C3305	1-164-360-11	CERAMIC CHIP	0.1µF		16V
C3308	1-126-947-11	ELECT	47µF	20%	35V
C3312	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C3313	1-162-927-11	CERAMIC CHIP	100pF	5%	50V
C3316	1-126-947-11	ELECT	47µF	20%	35V
C3317	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3318	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3319	1-126-947-11	ELECT	47µF	20%	35V
C3320	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3321	1-113-619-11	CERAMIC CHIP	0.47µF		10V
C3322	1-164-373-11	CERAMIC CHIP	0.033µF		25V
C3323	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C3324	1-162-918-11	CERAMIC CHIP	18pF	5%	50V
C3327	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C3328	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3329	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C3330	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3331	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3332	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3334	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3335	1-164-360-11	CERAMIC CHIP	0.1µF		16V
C3336	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3337	1-164-360-11	CERAMIC CHIP	0.1µF		16V
C3338	1-164-360-11	CERAMIC CHIP	0.1µF		16V
C3339	1-126-965-91	ELECT	22µF	20%	50V
C3340	1-126-947-11	ELECT	47µF	20%	35V
C3341	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C3343	1-126-947-11	ELECT	47µF	20%	35V
C3390	1-104-665-11	ELECT	100µF	20%	25V
C3391	1-104-665-11	ELECT	100µF	20%	25V
	CONNECTOR				
* CN150	1-560-124-00	PLUG, CONNECTOR (2.5MM)		4P	
* CN160	1-564-507-11	PLUG, CONNECTOR		4P	
CN6600	1-695-915-11	TAB (CONTACT)			
	DIODE				
D103	8-719-404-50	DIODE	MA111-TX		
D104	8-719-404-50	DIODE	MA111-TX		
D3301	8-719-404-50	DIODE	MA111-TX		
D3304	8-719-109-72	DIODE	RD3.9ESB2		
	IC				
IC3301	6-701-754-01	IC	M65665ASP		
IC3390	8-759-701-59	IC	NJM78M09FA		
	CHIP CONDUCTOR				
JR001	1-216-864-11	SHORT CHIP			
JR002	1-216-864-11	SHORT CHIP			
	COIL				
L150	1-414-857-11	INDUCTOR	100µH		
L3300	1-414-267-21	INDUCTOR	10µH		

P

REF. NO.	PART NO.	DESCRIPTION	VALUES		
L3301	1-410-682-31	INDUCTOR	470µH		
L3302	1-414-267-21	INDUCTOR	10µH		
L3303	1-414-267-21	INDUCTOR	10µH		
L3390	1-412-525-31	INDUCTOR	10µH		
	TRANSISTOR				
Q151	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q152	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q3300	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q3301	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q3302	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q3304	6-550-409-01	TRANSISTOR	KSC2383-O		
Q3305	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q3307	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q3308	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q3309	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q3310	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q3312	8-729-422-27	TRANSISTOR	2SD601A-Q		
	RESISTOR				
R100	1-216-809-11	METAL CHIP	100	5%	1/10W
R101	1-216-809-11	METAL CHIP	100	5%	1/10W
R103	1-216-837-11	METAL CHIP	22K	5%	1/10W
R104	1-216-839-11	METAL CHIP	33K	5%	1/10W
R105	1-216-809-11	METAL CHIP	100	5%	1/10W
R106	1-216-817-11	METAL CHIP	470	5%	1/10W
R107	1-216-818-11	METAL CHIP	560	5%	1/10W
R108	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R112	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R113	1-216-845-11	METAL CHIP	100K	5%	1/10W
R114	1-216-857-11	METAL CHIP	1M	5%	1/10W
R115	1-216-833-11	METAL CHIP	10K	5%	1/10W
R116	1-216-833-11	METAL CHIP	10K	5%	1/10W
R117	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3300	1-216-841-11	METAL CHIP	47K	5%	1/10W
R3301	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3302	1-216-841-11	METAL CHIP	47K	5%	1/10W
R3303	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3304	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3305	1-216-841-11	METAL CHIP	47K	5%	1/10W
R3306	1-216-837-11	METAL CHIP	22K	5%	1/10W
R3307	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3308	1-216-837-11	METAL CHIP	22K	5%	1/10W
R3309	1-216-817-11	METAL CHIP	470	5%	1/10W
R3310	1-216-841-11	METAL CHIP	47K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R3311	1-216-819-11	METAL CHIP	680	5%	1/10W
R3312	1-216-864-11	SHORT CHIP			
R3313	1-216-864-11	SHORT CHIP			
R3314	1-216-864-11	SHORT CHIP			
R3318	1-216-833-11	METAL CHIP	10K	5%	1/10W
R3319	1-216-833-11	METAL CHIP	10K	5%	1/10W
R3320	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3321	1-216-864-11	SHORT CHIP			
R3323	1-249-414-11	CARBON	560	5%	1/4W
R3324	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3327	1-216-864-11	SHORT CHIP			
R3328	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3329	1-216-864-11	SHORT CHIP			
R3330	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3331	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3335	1-215-908-00	METAL OXIDE	33	5%	3W
R3336	1-216-809-11	METAL CHIP	100	5%	1/10W
R3343	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3346	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3347	1-216-833-11	METAL CHIP	10K	5%	1/10W
R3348	1-216-833-11	METAL CHIP	10K	5%	1/10W
R3350	1-216-864-11	SHORT CHIP			
R3351	1-216-813-11	METAL CHIP	220	5%	1/10W
R3354	1-216-863-11	METAL CHIP	3.3M	5%	1/10W
R3359	1-216-864-11	SHORT CHIP			
R3360	1-216-864-11	SHORT CHIP			
R3361	1-216-864-11	SHORT CHIP			
R3362	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R3363	1-216-839-11	METAL CHIP	33K	5%	1/10W
R3364	1-247-807-31	CARBON	100	5%	1/4W
R3365	1-247-807-31	CARBON	100	5%	1/4W
R3368	1-216-833-11	METAL CHIP	10K	5%	1/10W
R3369	1-216-864-11	SHORT CHIP			
R3372	1-216-864-11	SHORT CHIP			
R3374	1-216-864-11	SHORT CHIP			
R3390	1-216-395-00	METAL OXIDE	3.3	5%	3W
	TUNER				
TU150	8-598-594-30	TUNER, FSS BTF-FA421			
	CRYSTAL				
X3301	1-781-377-21	VIBRATOR, CRYSTAL			

BD

BD

REF. NO.	PART NO.	DESCRIPTION	VALUES		
*	A-1404-880-A	BD (COM) BOARD, MOUNTED			
	CAPACITOR				
C317	1-162-917-11	CERAMIC CHIP	15pF	5%	50V
C318	1-126-933-11	ELECT	100µF	20%	16V
C332	1-162-917-11	CERAMIC CHIP	15pF	5%	50V
C373	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C374	1-126-933-11	ELECT	100µF	20%	16V
C375	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C376	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C377	1-162-963-11	CERAMIC CHIP	680pF	10%	50V
C378	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C379	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C380	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C381	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C382	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C383	1-126-933-11	ELECT	100µF	20%	16V
C384	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C385	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C387	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C388	1-126-933-11	ELECT	100µF	20%	16V
C389	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C390	1-126-933-11	ELECT	100µF	20%	16V
C394	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C396	1-162-917-11	CERAMIC CHIP	15pF	5%	50V
C6005	1-126-768-11	ELECT	2200µF	20%	16V
	FERRITE BEAD				
FB301	1-412-911-11	FERRITE	0µH		
FB302	1-414-234-22	FERRITE	0µH		
	FILTER				
FL301	1-239-847-11	FILTER, LOW PASS			
FL302	1-239-847-11	FILTER, LOW PASS			
FL303	1-239-847-11	FILTER, LOW PASS			
	IC				
IC302	6-701-597-01	IC	TC90A69N		
	CHIP CONDUCTOR				
JR301	1-216-864-11	SHORT CHIP			
JR302	1-216-864-11	SHORT CHIP			

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	COIL				
L305	1-410-470-11	INDUCTOR	10µH		
L306	1-410-470-11	INDUCTOR	10µH		
L307	1-410-470-11	INDUCTOR	10µH		
L310	1-410-470-11	INDUCTOR	10µH		
	TRANSISTOR				
Q301	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q302	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q313	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q321	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q350	8-729-422-27	TRANSISTOR	2SD601A-Q		
	RESISTOR				
R057	1-216-845-11	METAL CHIP	100K	5%	1/10W
R058	1-216-845-11	METAL CHIP	100K	5%	1/10W
R311	1-216-821-11	METAL CHIP	1K	5%	1/10W
R314	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R315	1-216-809-11	METAL CHIP	100	5%	1/10W
R316	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R317	1-216-818-11	METAL CHIP	560	5%	1/10W
R318	1-216-864-11	SHORT CHIP			
R319	1-216-809-11	METAL CHIP	100	5%	1/10W
R320	1-247-807-31	CARBON	100	5%	1/4W
R321	1-247-807-31	CARBON	100	5%	1/4W
R322	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R323	1-216-818-11	METAL CHIP	560	5%	1/10W
R324	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R325	1-216-809-11	METAL CHIP	100	5%	1/10W
R326	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R327	1-216-821-11	METAL CHIP	1K	5%	1/10W
R350	1-216-809-11	METAL CHIP	100	5%	1/10W
R351	1-216-821-11	METAL CHIP	1K	5%	1/10W
R356	1-216-809-11	METAL CHIP	100	5%	1/10W
R365	1-216-818-11	METAL CHIP	560	5%	1/10W
R367	1-247-807-31	CARBON	100	5%	1/4W
R946	1-216-815-11	METAL CHIP	330	5%	1/10W

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

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C

C

REF. NO.	PART NO.	DESCRIPTION	VALUES		
*	**A-1405-168-A**	**C (VAR) BOARD, BOARD (KV-27FS210/29FA210 ONLY)**			
*	**A-1405-182-A**	**C (VAR) BOARD, BOARD (KV-32FS210 ONLY)**			
*	**A-1404-903-A**	**C (VAR) BOARD, BOARD (KV-36FS210 ONLY)**			
	4-382-854-11	SCREW (M3X10), P, SW (+)			
	CAPACITOR				
C701	1-126-947-11	ELECT	47µF	20%	35V
C702	1-136-165-00	FILM	0.1µF	5%	50V
C703	1-126-947-11	ELECT	47µF	20%	35V
C704	1-107-652-11	ELECT	10µF	20%	250V
C705	1-107-652-11	ELECT	10µF	20%	250V
C706	1-137-528-11	MYLAR	0.1µF	10%	250V
C707	1-162-114-00	CERAMIC	0.0047µF		2KV
C708	1-104-665-11	ELECT	100µF	20%	25V
C709	1-126-964-11	ELECT	10µF	20%	50V
C710	1-126-964-11	ELECT	10µF	20%	50V
C711	1-102-074-00	CERAMIC	0.001µF	10%	50V
C713	1-126-964-11	ELECT	10µF	20%	50V
C714	1-126-947-11	ELECT	47µF	20%	35V
	CONNECTOR				
* CN701	1-564-506-11	PLUG, CONNECTOR		3P	
CN702	1-695-915-11	TAB (CONTACT)			
CN703	1-695-915-11	TAB (CONTACT) (KV-27FS210/29FA210 ONLY)			
CN704	1-785-879-11	CONNECTOR, ONE TOUCH			
* CN705	1-564-511-11	PLUG, CONNECTOR		8P	
* CN706	1-564-510-11	PLUG, CONNECTOR		7P	
* CN707	1-508-879-11	BASE POST (KV-36FS210 ONLY)		4P	
	DIODE				
D701	8-719-901-83	DIODE	1SS83		
D702	8-719-901-83	DIODE	1SS83		
D703	8-719-901-83	DIODE	1SS83		
D704	8-719-074-25	DIODE	PG104R		

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	IC				
IC701	8-759-803-42	IC	LA6500-FA		
IC702	8-759-562-43	IC	TDA6108JF/N1B		
IC703	8-759-701-59	IC	NJM78M09FA		
	JACK				
⚠ J701	1-451-470-21	SOCKET, CRT			
	COIL				
L701	1-410-482-31	INDUCTOR	100µH		
	TRANSISTOR				
Q700	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q701	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q703	8-729-422-27	TRANSISTOR	2SD601A-Q		
	RESISTOR				
R700	1-249-433-11	CARBON	22K	5%	1/4W
R701	1-216-833-11	METAL CHIP	10K	5%	1/10W
R702	1-216-810-11	METAL CHIP	120	5%	1/10W
R703	1-216-809-11	METAL CHIP	100	5%	1/10W
R704	1-249-422-11	CARBON	2.7K	5%	1/4W
R705	1-249-429-11	CARBON	10K	5%	1/4W
R706	1-249-381-11	CARBON	1	5%	1/4W
R707	1-249-383-11	CARBON	1.5	5%	1/4W
R708	1-247-807-31	CARBON	100	5%	1/4W
R709	1-247-807-31	CARBON	100	5%	1/4W
R710	1-247-807-31	CARBON	100	5%	1/4W
R711	1-260-328-11	CARBON	1K	5%	1/2W
R712	1-260-328-11	CARBON	1K	5%	1/2W
R713	1-260-328-11	CARBON	1K	5%	1/2W
R714	1-260-087-11	CARBON	100	5%	1/2W
R715	1-260-132-11	CARBON	560K	5%	1/2W
R716	1-260-123-11	CARBON	100K	5%	1/2W
R717	1-216-375-00	METAL OXIDE (KV-27FS210/29FA210 ONLY)	3.3	5%	2W
R718	1-216-373-11	METAL OXIDE	2.2	5%	2W
R719	1-215-888-00	METAL OXIDE	220	5%	2W
R720	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R721	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R722	1-247-807-31	CARBON	100	5%	1/4W
R723	1-247-807-31	CARBON	100	5%	1/4W
R724	1-247-807-31	CARBON	100	5%	1/4W
R725	1-216-825-11	METAL CHIP	2.2K	5%	1/10W

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C V

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R726	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R727	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
		VARIABLE RESISTOR			
⚠ RV701	1-241-656-11	RES, ADJ, METAL FILM 110M			
RV702	1-238-019-11	RES, ADJ, CARBON 47K			

V

*	**A-1404-878-A**	**V (VAR) BOARD, MOUNTED (KV-27FS210/29FA210 ONLY)**	
*	**A-1404-901-A**	**V (VAR) BOARD, MOUNTED KV-32FS210 ONLY)**	
*	**A-1404-904-A**	**V (VAR) BOARD, MOUNTED (KV-36FS210 ONLY)**	
	4-382-854-11	SCREW (M3X10), P, SW (+)	
		CAPACITOR	
C802	1-126-964-11	ELECT	10µF 20% 50V
C803	1-137-378-11	MYLAR	0.22µF 5% 50V
C804	1-137-378-11	MYLAR	0.22µF 5% 50V
C805	1-131-985-21	FILM	0.033µF 5% 250V
C808	1-162-970-11	CERAMIC CHIP	0.01µF 10% 25V
C809	1-128-934-91	CERAMIC CHIP	0.33µF 20% 10V
C810	1-130-495-00	MYLAR	0.1µF 5% 50V
C811	1-129-725-00	FILM	0.082µF 5% 400V
C812	1-162-970-11	CERAMIC CHIP	0.01µF 10% 25V
C813	1-126-933-11	ELECT	100µF 20% 16V
C821	1-162-970-11	CERAMIC CHIP	0.01µF 10% 25V
C823	1-130-967-00	FILM	0.0027µF 5% 50V
C824	1-165-176-11	CERAMIC CHIP	0.047µF 10% 16V
C826	1-162-927-11	CERAMIC CHIP	100pF 5% 50V
C862	1-126-964-11	ELECT	10µF 20% 50V
C901	1-107-667-11	ELECT	2.2µF 20% 400V
C902	1-107-364-11	MYLAR	0.01µF 10% 200V
C903	1-126-935-11	ELECT	470µF 20% 16V
C904	1-130-471-00	MYLAR	0.001µF 5% 50V
C905	1-107-364-11	MYLAR	0.01µF 10% 200V
C906	1-130-471-00	MYLAR	0.001µF 5% 50V
C907	1-107-963-11	ELECT	33µF 20% 250V
C908	1-126-935-11	ELECT	470µF 20% 16V
C909	1-104-999-11	MYLAR	0.1µF 5% 200V
C910	1-104-999-11	MYLAR	0.1µF 5% 200V

REF. NO.	PART NO.	DESCRIPTION	VALUES		
C911	1-126-933-11	ELECT	100µF	20%	16V
C912	1-126-933-11	ELECT	100µF	20%	16V
C913	1-102-074-00	CERAMIC	0.001µF	10%	50V
C914	1-130-491-00	MYLAR	0.047µF	5%	50V
C930	1-126-935-11	ELECT	470µF	20%	16V
C931	1-126-935-11	ELECT	470µF	20%	16V
		CONNECTOR			
* CN901	1-764-333-11	PIN, CONNECTOR(PCB)(V TYPE)	10P		
* CN902	1-770-723-11	CONNECTOR, BOARD TO BOARD	8P		
		DIODE			
D804	8-719-074-25	DIODE	PG104R		
D805	8-719-991-33	DIODE	1SS133T-77		
D806	8-719-991-33	DIODE	1SS133T-77		
D807	8-719-210-21	DIODE	11EQS04		
D808	8-719-991-33	DIODE	1SS133T-77		
D813	8-719-991-33	DIODE	1SS133T-77		
D901	8-719-924-11	DIODE	MTZJ-T-77-22		
D902	8-719-924-11	DIODE	MTZJ-T-77-22		
D903	8-719-991-33	DIODE	1SS133T-77		
D905	8-719-510-02	DIODE	D1NS4		
D906	8-719-404-50	DIODE	MA111-TX		
D907	8-719-404-50	DIODE	MA111-TX		
D908	8-719-404-50	DIODE	MA111-TX		
		IC			
IC801	6-701-598-01	IC	UPC5023CS-184		
		CHIP CONDUCTOR			
JR802	1-216-864-11	SHORT CHIP			
JR803	1-216-864-11	SHORT CHIP			
		COIL			
L801	1-406-989-21	INDUCTOR	10MH		
L802	1-419-633-11	INDUCTOR	10MH		
L803	1-412-529-81	INDUCTOR	22µH		
L901	1-412-528-11	INDUCTOR	18µH		
		TRANSISTOR			
Q805	6-550-106-01	TRANSISTOR	KTB764		
Q807	8-729-931-45	TRANSISTOR	IRF614		
Q808	6-550-106-01	TRANSISTOR	KTB764		
Q812	8-729-026-39	TRANSISTOR	2SA933AS-QT		
Q901	8-729-053-87	TRANSISTOR	KTC4370A		

V

REF. NO.	PART NO.	DESCRIPTION	VALUES		
Q902	6-550-247-01	TRANSISTOR	KTA1659A		
Q903	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q904	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q905	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q906	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q907	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q908	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
	RESISTOR				
R809	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R809	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R811	1-249-393-11	CARBON	10	5%	1/4W
R814	1-215-862-11	METAL OXIDE	68	5%	1W
	(KV-32FS210/36FS210 ONLY)				
R815	1-215-862-11	METAL OXIDE	68	5%	1W
R817	1-218-732-11	METAL CHIP	47K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R817	1-218-728-11	METAL CHIP	33K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R818	1-216-809-11	METAL CHIP	100	5%	1/10W
R819	1-216-841-11	METAL CHIP	47K	5%	1/10W
R820	1-216-839-11	METAL CHIP	33K	5%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R820	1-216-837-11	METAL CHIP	22K	5%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R821	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R821	1-218-714-11	METAL CHIP	8.2K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R822	1-216-841-11	METAL CHIP	47K	5%	1/10W
R824	1-218-740-11	METAL CHIP	100K	0.50%	1/10W
R825	1-216-845-11	METAL CHIP	100K	5%	1/10W
R826	1-249-421-11	CARBON	2.2K	5%	1/4W
R827	1-218-708-11	METAL CHIP	4.7K	0.50%	1/10W
R828	1-218-728-11	METAL CHIP	33K	0.50%	1/10W
R829	1-216-853-11	METAL CHIP	470K	5%	1/10W
R833	1-218-710-11	METAL CHIP	5.6K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R833	1-218-712-11	METAL CHIP	6.8K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R834	1-218-706-11	METAL CHIP	3.9K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R834	1-218-700-11	METAL CHIP	2.2K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R837	1-218-714-11	METAL CHIP	8.2K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R840	1-218-700-11	METAL CHIP	2.2K	0.50%	1/10W
R841	1-218-708-11	METAL CHIP	4.7K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R841	1-218-712-11	METAL CHIP	6.8K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R842	1-218-700-11	METAL CHIP	2.2K	0.50%	1/10W
R855	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R856	1-218-704-11	METAL CHIP	3.3K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R856	1-218-706-11	METAL CHIP	3.9K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R857	1-218-724-11	METAL CHIP	22K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R857	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R860	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R864	1-218-668-11	METAL CHIP	100	0.50%	1/10W
R866	1-249-438-11	CARBON	56K	5%	1/4W
R870	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R876	1-216-821-11	METAL CHIP	1K	5%	1/10W
R890	1-218-736-11	METAL CHIP	68K	0.50%	1/10W
	(KV-27FS210/29FA210 ONLY)				
R890	1-218-712-11	METAL CHIP	6.8K	0.50%	1/10W
	(KV-32FS210/36FS210 ONLY)				
R893	1-216-839-11	METAL CHIP	33K	5%	1/10W
R901	1-249-405-11	CARBON	100	5%	1/4W
R902	1-249-385-11	CARBON	2.2	5%	1/4W
R903	1-249-414-11	CARBON	560	5%	1/4W
R904	1-249-432-11	CARBON	18K	5%	1/4W
R905	1-249-421-11	CARBON	2.2K	5%	1/4W
R906	1-249-432-11	CARBON	18K	5%	1/4W
R907	1-249-385-11	CARBON	2.2	5%	1/4W
R908	1-249-414-11	CARBON	560	5%	1/4W
R909	1-260-316-51	CARBON	100	5%	1/2W
R910	1-215-915-11	METAL OXIDE	470	5%	3W
R911	1-215-405-00	METAL	220	1%	1/4W
R912	1-249-407-11	CARBON	150	5%	1/4W
R913	1-215-397-00	METAL	100	1%	1/4W
R914	1-249-416-11	CARBON	820	5%	1/4W
R915	1-249-425-11	CARBON	4.7K	5%	1/4W
R917	1-249-425-11	CARBON	4.7K	5%	1/4W
R918	1-249-401-11	CARBON	47	5%	1/4W
R919	1-249-401-11	CARBON	47	5%	1/4W
R921	1-249-429-11	CARBON	10K	5%	1/4W

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V GK

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R922	1-249-397-11	CARBON	22	5%	1/4W
R923	1-249-401-11	CARBON	47	5%	1/4W
R930	1-216-864-11	SHORT CHIP			
R931	1-249-421-11	CARBON	2.2K	5%	1/4W
R932	1-218-696-11	METAL CHIP	1.5K	0.50%	1/10W
R933	1-216-864-11	SHORT CHIP			
R935	1-249-405-11	CARBON	100	5%	1/4W
R938	1-216-864-11	SHORT CHIP			

GK

*	**A-1404-879-A**	**GK (VAR) BOARD, MOUNTED (KV-27FS210/32FS210 ONLY)**	
*	**A-1405-181-A**	**GK (VAR) BOARD, MOUNTED (KV-29FA210 LATIN NORTH ONLY)**	
*	**A-1405-184-A**	**GK (VAR) BOARD, MOUNTED (KV-29FA210 LATIN SOUTH ONLY)**	
*	**A-1404-905-A**	**GK (VAR) BOARD, MOUNTED (KV-36FS210 ONLY)**	
	1-533-223-11	FUSE HOLDER 0A 0V	
*	4-374-846-11	COVER, CAPACITOR, CAP TYPE	
	4-382-854-11	SCREW (M3X10), P, SW (+)	

CAPACITOR

	C501	1-165-529-11	MYLAR	0.22µF	10	275V
	C600	1-117-703-11	CERAMIC CHIP	0.0047µF		250V
		(KV-29FA210 (S) ONLY)				
⚠	C601	1-165-529-11	MYLAR	0.22µF	10	275V
	C602	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
⚠	C603	1-165-529-11	MYLAR	0.22µF	10	275V
	C604	1-164-625-11	CERAMIC	680pF	10%	500V
⚠	C607	1-119-911-51	CERAMIC	470pF	10%	125V
		(KV-27FS210/32FS210/36FS210 ONLY)				
	C608	1-119-912-51	CERAMIC	0.001µF	20%	125V
	C609	1-164-625-11	CERAMIC	680pF	10%	500V
	C613	1-117-214-11	CERAMIC CHIP	0.001µF	10%	2KV
		(KV-29FA210(S) ONLY)				
	C614	1-117-214-11	CERAMIC CHIP	0.001µF	10%	2KV
		(KV-29FA210(S) ONLY)				
	C615	1-117-214-11	CERAMIC CHIP	0.001µF	10%	2KV
		(KV-29FA210(S) ONLY)				
	C616	1-126-943-11	ELECT	2200µF	20%	25V
	C617	1-123-024-21	ELECT	33µF		160V
	C618	1-126-943-11	ELECT	2200µF	20%	25V
		(KV-27FS210/32FS210/36FS210 ONLY)				
	C619	1-117-214-11	CERAMIC CHIP	0.001µF	10%	2KV
		(KV-29FA210(S) ONLY)				

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	C620	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
	C621	1-117-894-11	ELECT	560µF	20%	250V
⚠	C622	1-119-912-51	CERAMIC CHIP	0.001µF	20%	125V
		(KV-29FA210 ONLY)				
	C624	1-107-636-11	ELECT	10µF	20%	160V
	C629	1-117-894-11	ELECT	560µF	20%	250V
	C632	1-126-947-11	ELECT	47µF	20%	35V
	C633	1-136-479-11	FILM	0.001µF	5%	100V
	C634	1-126-964-11	ELECT	10µF	20%	50V
	C635	1-126-963-11	ELECT	4.7µF	20%	50V
	C637	1-136-165-00	FILM	0.1µF	5%	50V
	C638	1-104-665-11	ELECT	100µF	20%	25V
	C640	1-126-942-61	ELECT	1000µF	20%	25V
	C642	1-126-969-11	ELECT	220µF	20%	50V
	C643	1-136-165-00	FILM	0.1µF	5%	50V
	C645	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
	C647	1-126-947-11	ELECT	47µF	20%	35V
	C648	1-164-143-11	CERAMIC	0.001µF	10%	1KV
	C649	1-164-143-11	CERAMIC	0.001µF	10%	1KV
	C650	1-100-120-51	ELECT	1000µF	20%	35V
	C651	1-126-942-61	ELECT	1000µF	20%	25V
	C652	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
	C653	1-126-960-11	ELECT	1µF	20%	50V
	C656	1-161-964-91	CERAMIC	0.0047µF		250V
	C658	1-161-964-91	CERAMIC	0.0047µF		250V
	C665	1-126-942-61	ELECT	1000µF	20%	25V
	C667	1-164-625-11	CERAMIC	680pF	10%	500V
		(KV-27FS210/32FS210/36FS210 ONLY)				
	C668	1-164-625-11	CERAMIC	680pF	10%	500V
		(KV-27FS210/32FS210/36FS210 ONLY)				
	C669	1-164-625-11	CERAMIC	680pF	10%	500V
	C670	1-164-625-11	CERAMIC	680pF	10%	500V
	C672	1-165-953-11	FILM	47000pF	3%	800V
	C690	1-126-971-11	ELECT	470µF	20%	50V
	C1401	1-126-965-91	ELECT	22µF	20%	50V
	C1402	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
		(KV-29FA210 ONLY)				
	C1403	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
		(KV-29FA210 ONLY)				
	C1404	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
		(KV-29FA210 ONLY)				
	C1405	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
		(KV-29FA210 ONLY)				

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	REF. NO.	PART NO.	DESCRIPTION	VALUES		
	C1406	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
		(KV-27FS210/32FS210/36FS210 ONLY)				
	C1406	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
		(KV-29FA210 ONLY)				
	C1407	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
		(KV-29FA210 ONLY)				
	C1408	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
		(KV-29FA210 ONLY)				
	C1411	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
		(KV-29FA210 ONLY)				
	C1412	1-104-656-11	ELECT	2200µF	20%	6.3V
		(KV-29FA210 ONLY)				
	C1413	1-126-963-11	ELECT	4.7µF	20%	50V
	C1420	1-126-960-11	ELECT	1µF	20%	50V
	C1450	1-100-120-51	ELECT	1000µF	20%	35V
	C1451	1-137-194-81	FILM	0.47µF	5%	50V
	C1458	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
		(KV-27FS210/32FS210/36FS210 ONLY)				
	C1458	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
		(KV-29FA210 ONLY)				

CONNECTOR

*	CN503	1-573-963-11	PIN, CONNECTOR (PC BOARD)	3P
*	CN600	1-580-843-11	PIN, CONNECTOR (POWER)	
*	CN602	1-564-510-11	PLUG, CONNECTOR	7P
	CN603	1-695-915-11	TAB (CONTACT)	
		(KV-29FA210(S) ONLY)		
	CN604	1-695-915-11	TAB (CONTACT)	
		(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)		
*	CN1401	1-564-507-11	PLUG, CONNECTOR	4P
	CN1404	1-564-510-11	PLUG, CONNECTOR	7P
		(KV-29FA210 ONLY)		
*	CN1405	1-564-507-11	PLUG, CONNECTOR	4P
*	CN1601	1-564-509-11	PLUG, CONNECTOR	6P

DIODE

D501	8-719-404-50	DIODE	MA111-TX
D600	6-500-397-11	DIODE	GBJ4J10B9
D601	8-719-511-40	DIODE	S1VB40
D608	8-719-110-31	DIODE	RD12ESB2
D611	8-719-062-40	DIODE	D4SBL20µF3
D612	8-719-068-00	DIODE	ERC04-06SE
	(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)		
D613	8-719-068-00	DIODE	ERC04-06SE
	(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)		
D614	8-719-057-52	DIODE	EZ0150AV1
D615	8-719-062-40	DIODE	D4SBL20µF3
D618	8-719-979-64	DIODE	µF4005PKG23
D619	8-719-404-50	DIODE	MA111-TX
D620	8-719-404-50	DIODE	MA111-TX
D621	6-500-181-01	DIODE	MA6D50
D624	8-719-510-12	DIODE	D10SC4M
	(KV-27FS210/32FS210/36FS210 ONLY)		
D625	8-719-510-02	DIODE	D1NS4
D628	8-719-404-50	DIODE	MA111-TX
D629	8-719-110-31	DIODE	RD12ESB2
D631	6-500-175-01	DIODE	1E3-TB
D640	8-719-404-50	DIODE	MA111-TX
D641	8-719-404-50	DIODE	MA111-TX
D645	6-500-175-01	DIODE	1E3-TB
D646	8-719-404-50	DIODE	MA111-TX
D647	6-500-175-01	DIODE	1E3-TB
D690	8-719-982-13	DIODE	MTZJ-27
D1400	8-719-991-33	DIODE	1SS133T-77
D1401	8-719-110-08	DIODE	RD8.2ESB2
D1402	1-247-807-31	CARBON	100 5% 1/4W

FUSE

⚠	F601	1-532-506-51	FUSE	6.3A	250V
		(KV-29FA210(S) ONLY)			
⚠	F601	1-576-193-11	FUSE	6.3A	125V
		(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)			

FERRITE BEAD

FB602	1-410-397-21	FERRITE	1.1µH
FB604	1-410-397-21	FERRITE	1.1µH
FB605	1-410-397-21	FERRITE	1.1µH
FB606	1-410-396-41	FERRITE	0.45µH
	(KV-27FS210/32FS210/36FS210 ONLY)		
FB607	1-410-396-41	FERRITE	0.45µH
	(KV-27FS210/32FS210/36FS210 ONLY)		
FB609	1-410-397-21	FERRITE	1.1µH
FB610	1-410-397-21	FERRITE	1.1µH
	(KV-27FS210/32FS210/36FS210 ONLY)		
FB611	1-410-397-21	FERRITE	1.1µH
	(KV-27FS210/32FS210/36FS210 ONLY)		
FB614	1-410-397-21	FERRITE	1.1µH
	(KV-27FS210/32FS210/36FS210 ONLY)		
FB616	1-410-397-21	FERRITE	1.1µH
FB617	1-410-397-21	FERRITE	1.1µH
FB650	1-410-397-21	FERRITE	1.1µH

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REF. NO.	PART NO.	DESCRIPTION	VALUES
FB651	1-410-397-21	FERRITE	1.1µH
FB652	1-410-397-21	FERRITE	1.1µH
FB653	1-410-397-21	FERRITE	1.1µH
	IC		
IC600	8-759-670-30	IC	MCZ3001D
IC601	8-749-012-13	IC	DM-58
IC605	8-759-450-47	IC	BA05T
IC609	6-702-873-01	IC	NJM2396F09
IC1401	6-704-065-01	IC	TFA9844J
IC1402	8-759-689-71	IC	JM2188M-TE
	(KV-29FA210 ONLY)		
	CHIP CONDUCTOR		
JR6	1-216-864-11	SHORT CHIP	
JR10	1-216-864-11	SHORT CHIP	
JR1401	1-216-864-11	SHORT CHIP	
	(KV-27FS210/32FS210/36FS210 ONLY)		
JR1402	1-216-864-11	SHORT CHIP	
	(KV-27FS210/32FS210/36FS210 ONLY)		
	COIL		
⚠ L505	1-412-529-81	INDUCTOR	22µH
L604	1-412-525-31	INDUCTOR	10µH
L605	1-412-519-11	INDUCTOR	3.3µH
L606	1-412-519-11	INDUCTOR	3.3µH
L607	1-412-525-31	INDUCTOR	10µH
	(KV-27FS210/32FS210/36FS210 ONLY)		
L608	1-412-529-81	INDUCTOR	22µH
L1400	1-410-470-11	INDUCTOR	10µH
	(KV-29FA210 ONLY)		
	PHOTO COUPLER		
⚠ PH602	8-749-924-35	PHOTO COUPLER	ON3171-R
	IC LINK		
PS601	1-576-337-21	IC LINK	2.7A 50V
	(KV-27FS210/32FS210/36FS210 ONLY)		
PS1401	1-576-337-21	IC LINK	2.7A 50V
	TRANSISTOR		
Q509	8-729-423-33	TRANSISTOR	2SC3311A-QRSTA
Q600	8-729-052-32	TRANSISTOR	IRFIB7N50A-LF31
Q601	8-729-052-32	TRANSISTOR	IRFIB7N50A-LF31
Q605	8-729-140-96	TRANSISTOR	2SD774-34
Q606	8-729-422-27	TRANSISTOR	2SD601A-Q
Q608	8-729-922-37	TRANSISTOR	2SD2144S-UVW
Q690	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q691	8-729-026-39	TRANSISTOR	2SA933AS-QT
Q1401	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q1402	8-729-120-28	TRANSISTOR	2SC1623-L5L6
	RESISTOR		
R534	1-216-833-11	METAL CHIP	10K 5% 1/10W
R535	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R603	1-219-513-11	METAL	4.7M 5% 1/2W
	(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)		
R604	1-216-833-11	METAL CHIP	10K 5% 1/10W
R606	1-216-833-11	METAL CHIP	10K 5% 1/10W
R607	1-216-833-11	METAL CHIP	10K 5% 1/10W
R608	1-216-833-11	METAL CHIP	10K 5% 1/10W
R609	1-205-998-11	CEMENTED	1 5% 10W
R610	1-216-833-11	METAL CHIP	10K 5% 1/10W
R611	1-216-833-11	METAL CHIP	10K 5% 1/10W
R612	1-260-131-11	CARBON	470K 5% 1/2W
R613	1-216-833-11	METAL CHIP	10K 5% 1/10W
R614	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
⚠ R615	1-202-933-61	FUSIBLE	0.1 10% 1/2W
R616	1-216-822-11	METAL CHIP	1.2K 5% 1/10W
R617	1-216-821-11	METAL CHIP	1K 5% 1/10W
R618	1-216-864-11	SHORT CHIP	
R619	1-249-377-11	CARBON	0.47 5% 1/4W
R620	1-215-857-71	METAL OXIDE	10 5% 1W
R623	1-249-429-11	CARBON	10K 5% 1/4W
	(KV-27FS210/32FS210/36FS210 ONLY)		
R625	1-216-817-11	METAL CHIP	470 5% 1/10W
R626	1-218-869-11	METAL CHIP	8.2K 0.50% 1/10W
R628	1-260-131-11	CARBON	470K 5% 1/2W
R629	1-245-478-21	METAL	470K 1% 1/4W
R630	1-245-478-21	METAL	470K 1% 1/4W
R631	1-218-875-11	METAL CHIP	15K 0.50% 1/10W
R632	1-218-823-11	METAL CHIP	100 0.50% 1/10W
R640	1-249-417-11	CARBON	1K 5% 1/4W
R647	1-211-992-11	METAL CHIP	91 0.50% 1/10W
R650	1-249-441-11	CARBON	100K 5% 1/4W
R651	1-249-441-11	CARBON	100K 5% 1/4W
R658	1-249-393-11	CARBON	10 5% 1/4W
R659	1-249-393-11	CARBON	10 5% 1/4W
R660	1-216-833-11	METAL CHIP	10K 5% 1/10W
R667	1-216-833-11	METAL CHIP	10K 5% 1/10W

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GK TK

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R668	1-249-413-11	CARBON	470	5%	1/4W
R670	1-216-833-11	METAL CHIP	10K	5%	1/10W
R671	1-243-979-71	METAL OXIDE	0.1	5%	2W
R672	1-243-979-71	METAL OXIDE	0.1	5%	2W
⚠ R674	1-220-926-11	FUSIBLE	0.47	10%	1/2W
R687	1-205-998-11	CEMENTED	1	5%	10W
R688	1-205-998-11	CEMENTED	1	5%	10W
R691	1-216-837-11	METAL CHIP	22K	5%	1/10W
R692	1-216-837-11	METAL CHIP	22K	5%	1/10W
R694	1-216-837-11	METAL CHIP	22K	5%	1/10W
R698	1-249-377-11	CARBON	0.47	5%	1/4W
R699	1-218-265-11	METAL CHIP	8.2M	5%	1W
	(KV-29FA210(S) ONLY)				
R1401	1-218-895-11	METAL CHIP	100K	0.50%	1/10W
R1403	1-216-864-11	SHORT CHIP			
R1404	1-216-837-11	METAL CHIP	22K	5%	1/10W
R1405	1-216-841-11	METAL CHIP	47K	5%	1/10W
R1406	1-218-692-11	METAL CHIP	1K	0.50%	1/10W
R1408	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R1410	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
	(KV-29FA210 ONLY)				
R1411	1-216-839-11	METAL CHIP	33K	5%	1/10W
	(KV-29FA210 ONLY)				
R1412	1-216-843-11	METAL CHIP	68K	5%	1/10W
	(KV-29FA210 ONLY)				
R1413	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
	(KV-29FA210 ONLY)				
R1414	1-216-846-11	METAL CHIP	120K	5%	1/10W
	(KV-29FA210 ONLY)				
R1415	1-216-842-11	METAL CHIP	56K	5%	1/10W
	(KV-29FA210 ONLY)				
R1416	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
	(KV-29FA210 ONLY)				
R1450	1-249-429-11	CARBON	10K	5%	1/4W
R1457	1-218-863-11	METAL CHIP	4.7K	0.50%	1/10W
R1458	1-218-863-11	METAL CHIP	4.7K	0.50%	1/10W
R1461	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
	(KV-29FA210 ONLY)				
R1461	1-218-879-11	METAL CHIP	22K	0.50%	1/10W
	(KV-27FS210/32FS210/36FS210 ONLY)				
R1462	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
	(KV-29FA210 ONLY)				
R1462	1-218-879-11	METAL CHIP	22K	0.50%	1/10W
	(KV-27FS210/32FS210/36FS210 ONLY)				
R1488	1-216-825-11	METAL CHIP	2.2K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION	VALUES
	RELAY		
RY501	1-755-198-11	RELAY, AC POWER	
⚠ RY600	1-755-395-11	RELAY, AC POWER	
	TRANSFORMER		
⚠ T601	1-435-617-11	TRANSFORMER, LINE FILTER	
⚠ T603	1-439-854-11	TRANSFORMER, STANDBY	
	(KV-29FA210(S) ONLY)		
⚠ T603	1-437-783-11	TRANSFORMER, STANDBY	
	(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)		
⚠ T604	1-437-606-12	CONVERTER TRANSFORMER	
	(KV-29FA210 ONLY)		
⚠ T604	1-437-607-12	CONVERTER TRANSFORMER	
	(KV-27FS210/32FS210/36FS210 ONLY)		
	THERMISTOR		
THP501	1-803-540-11	THERMISTOR, POSITIVE	
	(KV-29FA210(S) ONLY)		
THP501	1-803-970-11	THERMISTOR, POSITIVE	
	(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)		
	VARISTOR		
⚠ VDR600	1-803-967-11	VARISTOR	
	(KV-29FA210(S) ONLY)		
⚠ VDR600	1-810-974-21	VARISTOR	
	(KV-27FS210/29FA210(N)/32FS210/36FS210 ONLY)		

TK

* **A-1404-953-A TK (COM) BOARD, MOUNTED (KV-29FA210 ONLY)**

4-382-854-11 SCREW (M3X10), P, SW (+)

CAPACITOR

C2407	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C2411	1-126-965-91	ELECT	22µF	20%	50V
C2412	1-137-194-81	FILM	0.47µF	5%	50V
C2413	1-100-120-51	ELECT	1000µF	20%	35V
C2414	1-126-963-11	ELECT	4.7µF	20%	50V
C2420	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C2421	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C2423	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C2424	1-162-969-11	CERAMIC CHIP	0.0068µF	10%	25V
C2425	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V

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	REF. NO.	PART NO.	DESCRIPTION	VALUES		
	C2426	1-162-927-11	CERAMIC CHIP	100pF	5%	50V
	C2427	1-126-947-11	ELECT	47µF	20%	35V
	C2428	1-126-943-11	ELECT	2200µF	20%	25V
	C2430	1-126-960-11	ELECT	1µF	20%	50V
		CONNECTOR				
*	CN2402	1-564-510-11	PLUG, CONNECTOR	7P		
		DIODE				
	D2400	8-719-991-33	DIODE	1SS133T-77		
		IC				
	IC2401	6-704-065-01	IC	TFA9844J		
	IC2402	8-759-100-96	IC	UPC4558G2		
		JACK				
*	J2400	1-817-528-11	PIN JACK BLOCK	2P		
		IC LINK				
	PS2401	1-576-337-21	IC LINK	2.7A	50V	
		TRANSISTOR				
	Q2400	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
	Q2401	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
		RESISTOR				
	R2409	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R2420	1-216-837-11	METAL CHIP	22K	5%	1/10W
	R2421	1-216-837-11	METAL CHIP	22K	5%	1/10W
	R2422	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R2423	1-216-840-11	METAL CHIP	39K	5%	1/10W
	R2424	1-216-840-11	METAL CHIP	39K	5%	1/10W
	R2425	1-216-840-11	METAL CHIP	39K	5%	1/10W
	R2426	1-216-817-11	METAL CHIP	470	5%	1/10W
	R2427	1-216-817-11	METAL CHIP	470	5%	1/10W
	R2428	1-249-425-11	CARBON	4.7K	5%	1/4W
	R2429	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R2430	1-218-847-11	METAL CHIP	1K	0.50%	1/10W
	R2431	1-218-851-11	METAL CHIP	1.5K	0.50%	1/10W
	R2432	1-216-864-11	SHORT CHIP			
	R2434	1-218-895-11	METAL CHIP	100K	0.50%	1/10W

	REF. NO.	PART NO.	DESCRIPTION	VALUES		
	R2440	1-216-837-11	METAL CHIP	22K	5%	1/10W
	R2441	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
	R2443	1-216-841-11	METAL CHIP	47K	5%	1/10W
	R2444	1-215-863-11	METAL OXIDE	100	5%	1W
	R2488	1-216-825-11	METAL CHIP	2.2K	5%	1/10W

ACCESSORIES AND PACKING

*	4-041-259-05	BAG, PROTECTION (KV-27FS210/29FA210 ONLY)
*	4-066-845-02	BAG, PROTECTION (KV-32FS210)
*	4-087-598-01	BAG, PROTECTION (KV-36FS210)
*	4-086-349-04	CARTON, HSC (KV-36FS210)
*	4-087-224-02	CARTON, INDIVIDUAL (KV-27FS210)
*	4-094-286-01	CARTON, INDIVIDUAL (KV-29FA210 ONLY)
*	4-085-910-11	CARTON, INDIVIDUAL (KV-32FS210)
*	4-085-911-03	CUSHION, FRONT (UPPER) (KV-32FS210)
*	4-086-352-01	CUSHION, FRONT (UPPER) (KV-36FS210)
*	4-087-223-01	CUSHION, LOWER (KV-27FS210)
*	4-094-288-01	CUSHION, LOWER (KV-29FA210 ONLY)
*	4-085-913-02	CUSHION, LOWER (KV-32FS210)
*	4-086-354-02	CUSHION, LOWER (KV-36FS210)
*	4-085-912-02	CUSHION, REAR (UPPER) (KV-32FS210)
*	4-086-353-02	CUSHION, REAR (UPPER) (KV-36FS210)
*	4-087-222-01	CUSHION, UPPER (KV-27FS210)
*	4-094-287-01	CUSHION, UPPER (KV-29FA210 ONLY)
	4-093-139-11	INSERT, DOOR BREAKAGE (L)

REF. NO.	PART NO.	DESCRIPTION	VALUES
	4-094-034-21	MANUAL, INSTRUCTION	
	(ALL EXCEPT KV-29FA210)		
	4-094-034-31	MANUAL, INSTRUCTION	
	(KV-27FS210/32FS210 CND ONLY)		
	4-094-034-41	MANUAL, INSTRUCTION	
	(KV-29FA210 ONLY)		
*	4-041-423-01	SHEET, PROTECTION	
	(KV-36FS210 ONLY)		
	REMOTE COMMANDER		
	1-476-680-21	REMOTE COMMANDER (RM-Y180)	
	(KV-29FA210 ONLY)		
	1-476-681-12	REMOTE COMMANDER (RM-Y181)	
	(ALL EXCEPT KV-29FA210)		
	4-978-977-11	BATTERY COVER	(FOR RM-Y180/Y181)

REF. NO.	PART NO.	DESCRIPTION	VALUES

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Sony Technology Center
Technical Services
Service Promotion Department

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2003EJ74WEB-1
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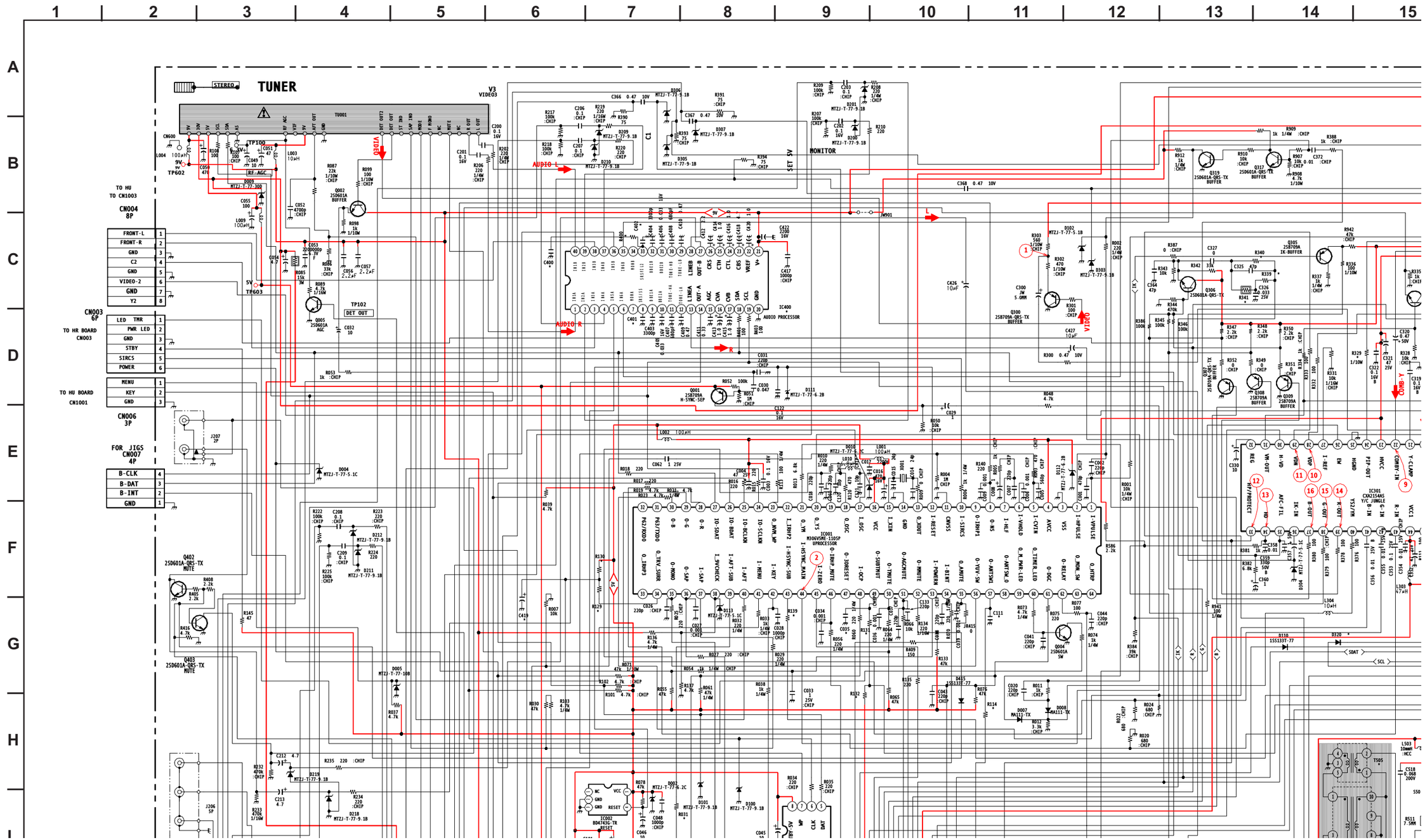
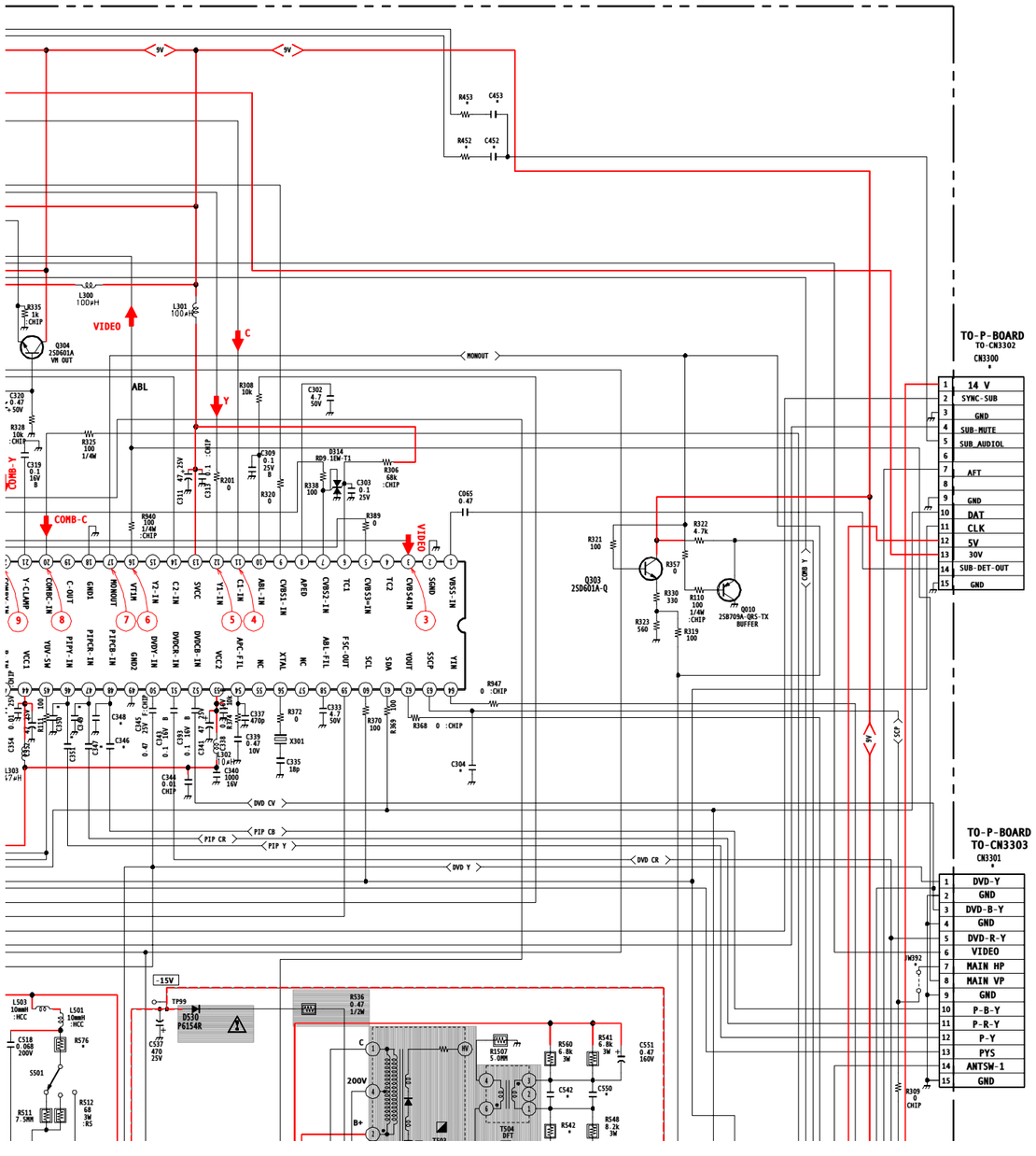
9-965-941-02

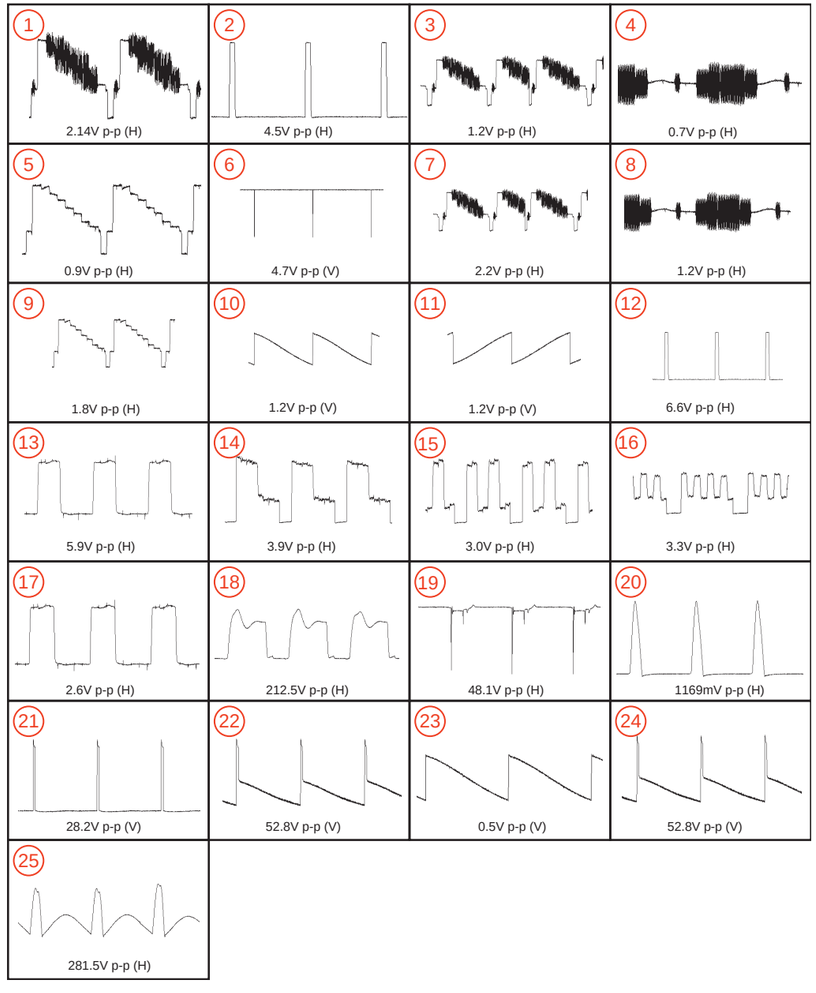
5-4. SCHEMATICS AND SUPPORTING INFORMATION

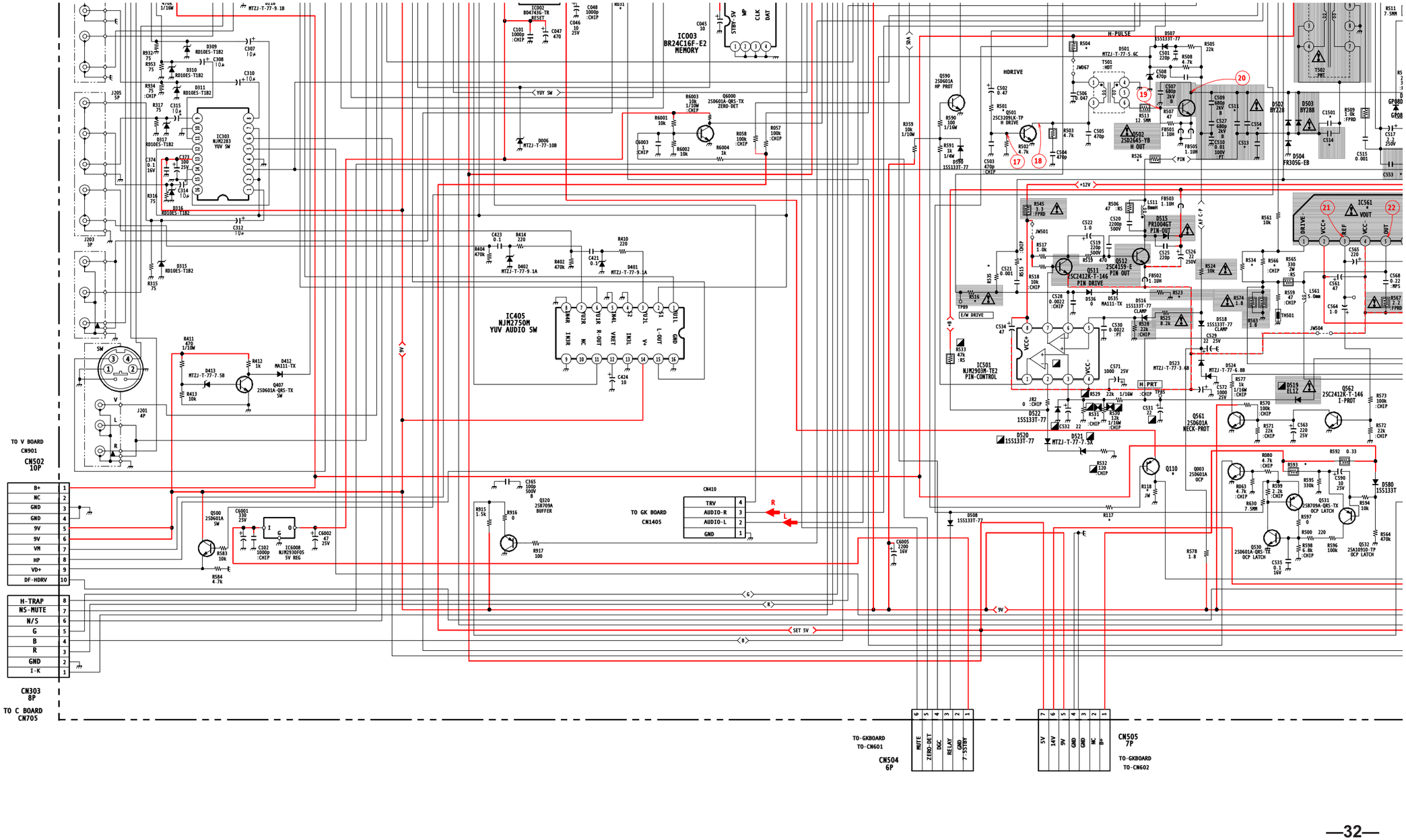
A BOARD SCHEMATIC DIAGRAM

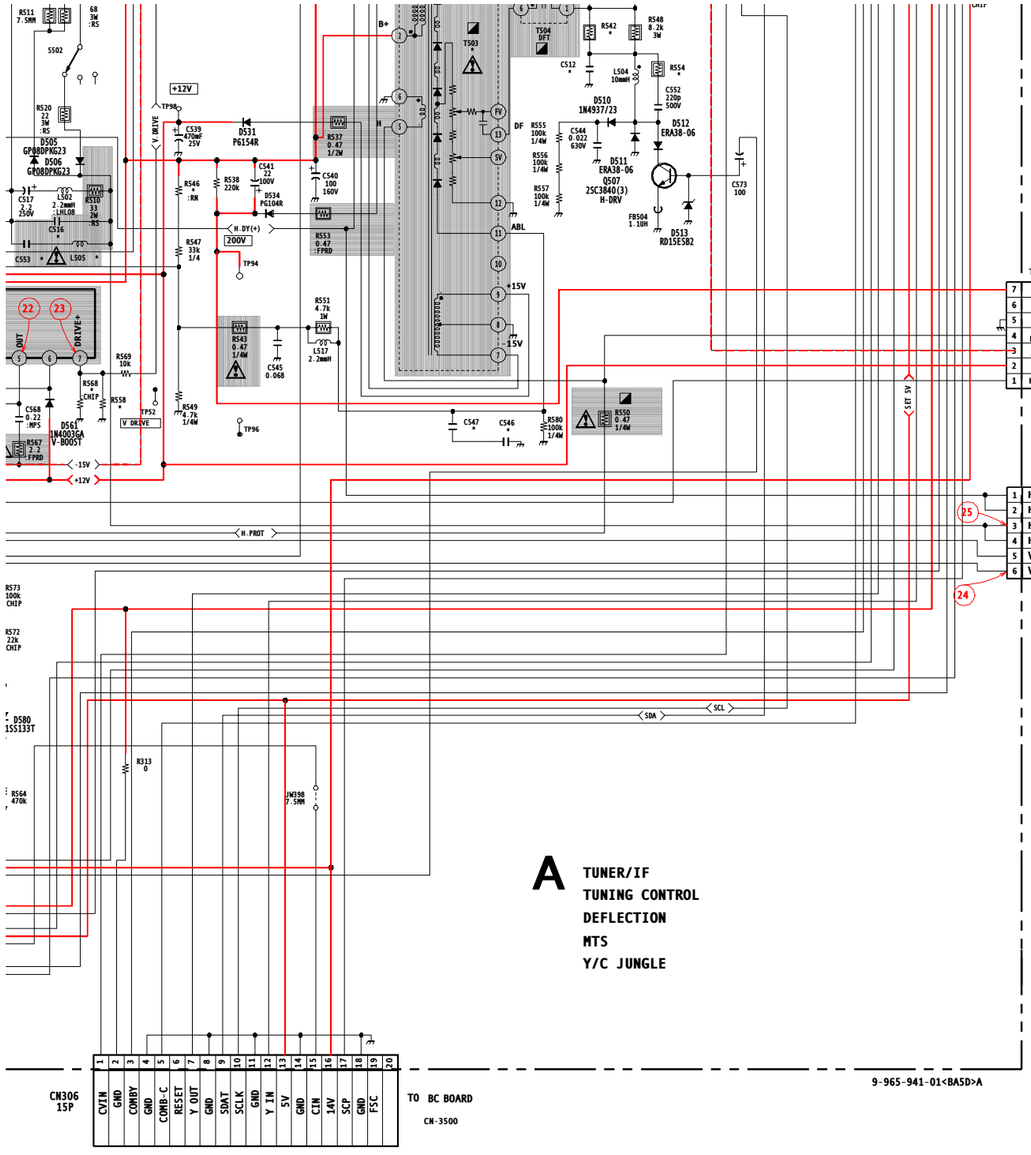




A BOARD WAVEFORMS




IC003
BR24C16F-E2
MEMORY
IC405
NJM2750M
YUV AUDIO SW
IC303
NJM2283
YUV SW
IC501
NJM2903M-TE2
PIN-CONTROL
IC561
PIN-OUT
H-PULSE
HDRIVE
H PRT
E/W DRIVE
TO V BOARD
CN901
CN502
10P
B+
NC
GND
GND
9V
9V
VH
HP
VD+
DF-HDRV
H-TRAP
NS-MUTE
N/S
G
B
R
GND
I-K
CN303
8P
TO C BOARD
CN705
TO GK BOARD
CN1405
TRV
AUDIO-R
AUDIO-L
GND
CN504
6P
MUTE
ZERO-DET
DGC
RELAY
GND
7.5STBY
TO-GKBOARD
TO-CN601
CN505
7P
5V
14V
9V
GND
GND
NC
B+
TO-GKBOARD
TO-CN602
SET 5V
5V
9V
6
8


CN503
7P
TO-C-BOARD
7 200V
6 NC
5 GND
4 HEATER
3 -15V
2 +12V
1 HOLD-DOWN
DY
H.DY
H.DY
V.DY
V.DY
CN501
6P
WHT
:DY
1 H.DY(+)
2 H.DY(+)
3 H.DY(-)
4 H.DY(-)
5 V.DY(-)
6 V.DY(+)
A
TUNER/IF
TUNING CONTROL
DEFLECTION
MTS
Y/C JUNGLE
CN306
15P
CVIN
GND
COMBY
GND
COMB_C
RESET
Y OUT
GND
SDAT
SCLK
GND
Y IN
5V
GND
CIN
14V
SCP
GND
FSC
TO BC BOARD
CN-3500
9-965-941-01<BA5D>A

HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL — BA-5D CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION	CHASSIS NO.
KV-27FA210	*RM-Y180*	*US*	*SCC-S61JA*

NOTE: THIS MANUAL IS IDENTICAL TO 9-965-941-02 (USE DATA FOR KV-29FA210 LATIN NORTH) (ATTACHED) WITH THE FOLLOWING EXCEPTIONS:

☛: **NEW DATA**

Section 4 **CIRCUIT ADJUSTMENTS**

- **New ID Map Table**

Section 6 **EXPLODED VIEWS**

- **New Exploded View data provided.**

Section 7 **ELECTRICAL PARTS LIST**

- **Use same data as KV-29FA210 Latin North**

ACCESSORIES AND PACKING

- **New data provided.**

NEW INSTRUCTION MANUAL INCLUDED

ORIGINAL MANUAL ISSUE DATE: 9/2003

REVISION DATE	SUBJECT
9/2003	No revisions or updates are applicable at this time.
9/2003	Added assembly P/N for Woofer Assembly (Replace Page 95)

TRINITRON® COLOR TELEVISION

SONY®

9-965-955-02

Self Diagnosis Supported model

SERVICE MANUAL

BA-5D CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION	CHASSIS NO.
KV-27FA210	*RM-Y180*	*US*	*SCC-S61JA*

KV-27FA210

RM-Y180

TRINITRON® COLOR TELEVISION

SONY®

9-965-955-02

SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
CCD	Fix	0	DUM0	Only for testing	=
	Fix	1	VOSD	Only for testing	=

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
OP	Var	0	DISP	OSD Display position	
	Fix	1	RAMW		=
	Fix	2	ICMP	Comparison data to determine Non-interlace signal for OSD	4
	Fix	3	IPOR	0:Even, 1: Odd, Other: do not change	1
	Fix	4	FAWD	1: Forced to auto wide mode, 0:normal	0
	Fix	5	HCLW	H-Count Lower limit	67
	Fix	6	HCHG	H-Count Higher limit	254
	Fix	7	9VTM	Delay for 9V check subsystem	55
	Fix	8	ZDET	Zero detect relay delay	123

Service Group	Fix/ Var	No.	Name	Description	Common Init Data
ID	Fix	0	ID0	Model Variation ID0	SEE ID MAP
	Fix	1	ID1	Model Variation ID1	SEE ID MAP
	Fix	2	ID2	Model Variation ID2	SEE ID MAP
	Fix	3	ID3	Model Variation ID3	SEE ID MAP
	Fix	4	ID4	Model Variation ID4	SEE ID MAP
	Fix	5	ID5	Model Variation ID5	SEE ID MAP
	Fix	6	ID6	Model Variation ID6	SEE ID MAP
	Fix	7	ID7	Model Variation ID7	SEE ID MAP

4-5. ID MAP TABLE

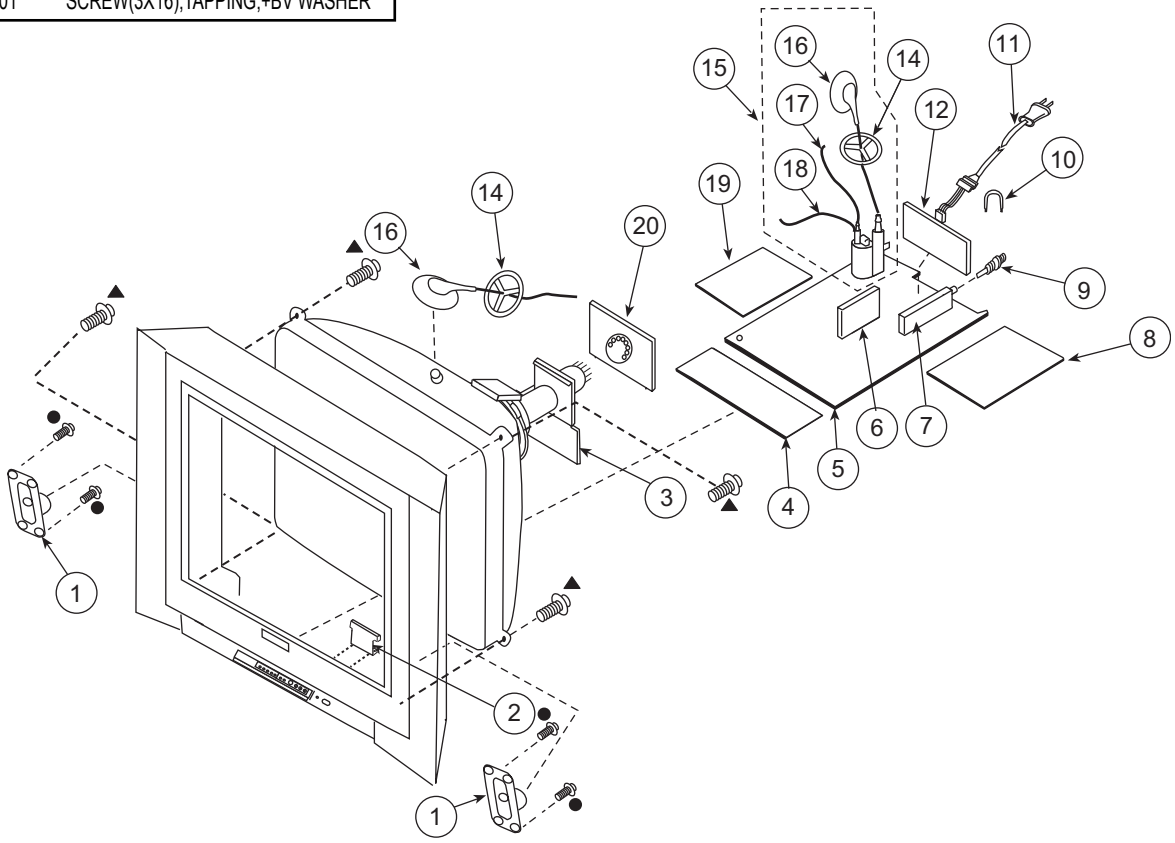
Model	Destination	ID-O	ID-1	ID-2	ID-3	ID-4	ID-5	ID-6	ID-7
KV-27FA210	US	89	159	237	96	14	0	0	17

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

☛ 6-3. CHASSIS

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER



	REF. NO.	PART NO.	DESCRIPTION
	1	1-825-417-11	LOUDSPEAKER (6X12CM)
*	2	A-1400-251-A	HR (COM) BOARD, MOUNTED
*	3	A-1404-878-A	V (VAR) BOARD, MOUNTED
	4	A-1404-856-A	HU (COM) BOARD, MOUNTED
*	5	A-1302-128-A	A BOARD, COMPLETE
			The high-voltage leads associated with the FBT on the following A boards are not included and must be ordered separately. (SEE 16-18)
*	6	A-1404-880-A	BD (COM) BOARD, MOUNTED
⚠	7	8-598-593-50	TUNER, FSS BTF-WA421
*	8	A-1405-181-A	GK (VAR) BOARD, MOUNTED
	9	1-766-374-11	PLUG, F-PIN
*	10	4-076-951-01	HINGE, PWB
⚠	11	1-827-159-11	CORD, AC POWER (WITH CONNECTOR)
*	12	4-087-877-31	BRACKET, TERMINAL

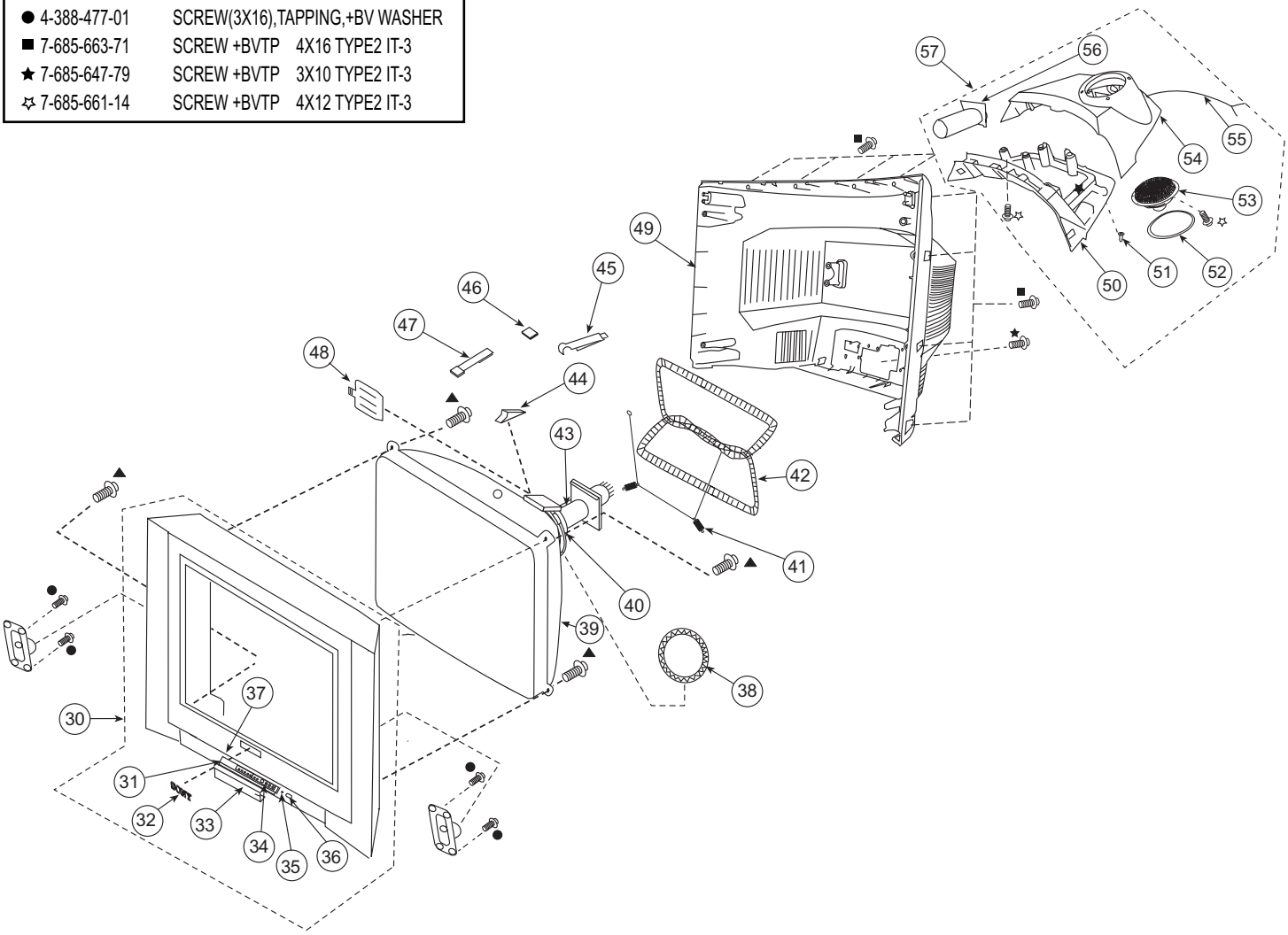
	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
	14	4-084-918-01	HOLDER, HV CABLE	
⚠	15	1-453-310-11	FBT ASSY NX-4521//X4J4	(16-18)
⚠	16	1-251-374-14	CAP ASSY, HIGH-VOLTAGE	
⚠	17	1-900-800-82	WIRE ASSY, FOCUS	
⚠	18	1-900-803-22	WIRE ASSY, G2 LEAD	
*	19	A-1404-953-A	TK (COM) BOARD, MOUNTED	
*	20	A-1405-168-A	C (VAR) BOARD, MOUNTED	

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

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

☛ 6-4. PICTURE TUBE

▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
■	7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3
★	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3
☆	7-685-661-14	SCREW +BVTP 4X12 TYPE2 IT-3



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
30	X-4041-544-1	BEZNET ASSY	(31-37)
31	4-087-374-01	SPRING, DOOR	
32	4-046-160-21	EMBLEM, SONY (NO.9)	
33	4-087-376-21	LABEL, FRONT TERMINAL	
34	4-087-375-21	DOOR, CONTROL	
35	4-087-156-01	GUIDE, LIGHT	
36	4-087-150-01	BUTTON, POWER	
37	4-036-880-11	DAMPER	
⚠ 38	1-452-896-11	COIL, NA ROTATION (RT200)	
⚠ 39	8-735-082-05	CRT 29RSN(SDP) M68LNH050X	
⚠ 40	8-451-494-41	DY Y29RSA-V	
41	4-036-329-01	SPRING (B), TENSION	
⚠ 42	1-419-156-21	COIL, DEGAUSSING	
⚠ 43	8-453-011-11	NECK ASSEMBLY NA299-M	
44	4-053-005-01	SPACER, DY	

	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
*	45	4-062-970-12	CLIP (29RSN), DGC	
	46	1-452-885-11	MAGNET, LANDING	
	47	4-083-414-01	PIECE A(110), CONV CORRECT	
	48	4-081-170-01	PLATE, TLH CORRECTION	
	49	4-093-996-02	COVER, REAR	
*	50	4-094-733-01	COVER, BOTTOM WOOFER (29)	
*	51	4-068-528-01	FOOT	
	52	4-094-735-01	RING, WOOFER	
	53	1-825-435-11	LOUDSPEAKER (13CM)	
*	54	4-094-732-11	COVER, TOP WOOFER (29)	
*	55	1-827-198-11	CONNECTION CABLE	
	56	4-094-734-02	DUCT (29)	
☛ *	57	A-1606-325-A	WOOFER BOX ASSEMBLY	(50-56)

TK

	REF. NO.	PART NO.	DESCRIPTION	VALUES		
	C2426	1-162-927-11	CERAMIC CHIP	100pF	5%	50V
	C2427	1-126-947-11	ELECT	47µF	20%	35V
	C2428	1-126-943-11	ELECT	2200µF	20%	25V
	C2430	1-126-960-11	ELECT	1µF	20%	50V
		CONNECTOR				
*	CN2402	1-564-510-11	PLUG, CONNECTOR	7P		
		DIODE				
	D2400	8-719-991-33	DIODE	1SS133T-77		
		IC				
	IC2401	6-704-065-01	IC	TFA9844J		
	IC2402	8-759-100-96	IC	UPC4558G2		
		JACK				
*	J2400	1-817-528-11	PIN JACK BLOCK	2P		
		IC LINK				
	PS2401	1-576-337-21	IC LINK	2.7A	50V	
		TRANSISTOR				
	Q2400	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
	Q2401	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
		RESISTOR				
	R2409	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R2420	1-216-837-11	METAL CHIP	22K	5%	1/10W
	R2421	1-216-837-11	METAL CHIP	22K	5%	1/10W
	R2422	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R2423	1-216-840-11	METAL CHIP	39K	5%	1/10W
	R2424	1-216-840-11	METAL CHIP	39K	5%	1/10W
	R2425	1-216-840-11	METAL CHIP	39K	5%	1/10W
	R2426	1-216-817-11	METAL CHIP	470	5%	1/10W
	R2427	1-216-817-11	METAL CHIP	470	5%	1/10W
	R2428	1-249-425-11	CARBON	4.7K	5%	1/4W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R2429	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R2430	1-218-847-11	METAL CHIP	1K	0.50%	1/10W
R2431	1-218-851-11	METAL CHIP	1.5K	0.50%	1/10W
R2432	1-216-864-11	SHORT CHIP			
R2434	1-218-895-11	METAL CHIP	100K	0.50%	1/10W
R2440	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2441	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R2443	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2444	1-215-863-11	METAL OXIDE	100	5%	1W
R2488	1-216-825-11	METAL CHIP	2.2K	5%	1/10W

ACCESSORIES AND PACKING

*	4-041-259-05	BAG, PROTECTION
*	4-094-287-01	CUSHION, UPPER
*	4-094-288-01	CUSHION, LOWER
*	4-100-637-01	CARTON, INDIVIDUAL
	4-093-139-11	INSERT, DOOR BREAKAGE (L)
	4-100-520-21	MANUAL, INSTRUCTION

REMOTE COMMANDER

1-476-680-21	REMOTE COMMANDER (RM-Y180)
4-978-977-11	BATTERY COVER (FOR RM-Y180)

Sony Corporation
Sony Technology Center
Technical Services
Service Promotion Department

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9-965-955-02

SONY

4-100-520-**21**

FD Trinitron

WEGA®

Operating Instructions

KV-27FA210

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WARNING

To reduce the risk of fire or electric shock, do not expose the TV to rain or moisture.

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

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

Note to the CATV Installer

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

SAFETY PRECAUTIONS

- ❏ Operate the TV only on 120 V AC.
- ❏ One blade of the power plug is wider than the other for safety purposes and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- ❏ If any liquid or solid object falls into the TV, unplug it and have it checked by qualified personnel before operating it further.

CAUTION

When using TV games, computers, and similar products with your TV, keep the brightness and contrast functions at low settings. If a fixed (non-moving) pattern is left on the screen for long periods of time at a high brightness or contrast setting, the image can be permanently imprinted onto the screen. Continuously watching the same channel can cause the imprint of station logos onto the TV screen. These types of imprints are not covered by your warranty because they are the results of misuse.

To reduce the risk of electric shock, do not use this polarized plug with an extension cord, receptacle, or other outlet unless the blades can be fully inserted to prevent blade exposure.

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

NOTIFICATION

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ❏ Reorient or relocate the receiving antennas.
- ❏ Increase the separation between the equipment and receiver.
- ❏ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ❏ Consult the dealer or an experienced radio/TV technician for help.

Protecting the TV

- ❏ To prevent internal heat build-up, do not block the ventilation openings.
- ❏ Do not install the TV in a hot or humid place, or in a place subject to excessive dust or mechanical vibration.

Note on Caption Vision

This television receiver provides display of television closed captioning in accordance with § 15.119 of the FCC rules. Use of this television for other than private viewing of programs broadcast on UHF or VHF or transmitted by cable companies for the use of the general public may require authorization from the broadcaster-cable company and/or program owner.

Owner's Record

The model and serial numbers are located on the front cover of this manual and at the rear of your TV.

Trademarks and Copyrights

ENERGY STAR® is a registered mark.

As an ENERGY STAR® Partner, Sony has determined that this product or product model meets the ENERGY STAR® guidelines for energy efficiency.

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"WOW, TruSurround, and the (●)® symbol are trademarks of SRS Labs, Inc. WOW technology is incorporated under license from SRS Labs, Inc."

IMPORTANT SAFEGUARDS

For your protection, please read these instructions completely, and keep this manual for future reference. Carefully observe and comply with all warnings, cautions and instructions placed on the set, or described in the operating instructions or service manual.

WARNING

To guard against injury, the following basic safety precautions should be observed in the installation, use, and servicing of the set.

Use

Power Sources

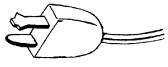
This set should be operated only from the type of power source indicated on the serial/model plate. If you are not sure of the type of electrical power supplied to your home, consult your dealer or local power company. For those sets designed to operate from battery power, refer to the operating instructions.

Grounding or Polarization

This set may be equipped with a polarized alternating current line plug (a plug having one blade wider than other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

For the set with a polarized AC power cord plug

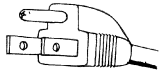
This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to have a suitable outlet installed. Do not defeat the safety purpose of the polarized plug by forcing it in.



Alternate Warning

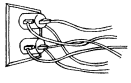
For the set with a three-wire grounding type AC plug

This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to have a suitable outlet installed. Do not defeat the safety purpose of the grounding plug.



Overloading

Do not overload wall outlets, extension cords or convenience receptacles beyond their capacity, since this can result in fire or electric shock.



Always turn the set off when it is not to be used. When the set is left unattended and unused for long periods of time, unplug it from the wall outlet as a precaution against the possibility of an internal malfunction that could create a fire hazard.

Do not disconnect the antenna or the power cord during a heavy storm. Lightning may strike while you are holding the cable or cord, causing serious injury. Turn off your TV and wait for the weather to improve.

Object and Liquid Entry

Never push objects of any kind into the set through the cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the set.

Attachments

Do not use attachments not recommended by the manufacturer, as they may cause hazards.

Do not place any objects, especially heavy objects, on top of the set. The object may fall from the set, causing injury.

Cleaning

Unplug the set from the wall outlet before cleaning or polishing it. Do not use liquid cleaners or aerosol cleaners. Use a cloth lightly dampened with water for cleaning the exterior of the set.

If a snapping or popping sound from a TV set is continuous or frequent while the TV is operating, unplug the TV and consult your dealer or service technician. It is normal for some TV sets to make occasional snapping or popping sounds, particularly when being turned on or off.

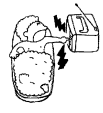
Installation

Always use two or more people to lift or move the set. The set is heavy and the bottom surface is flat. Serious injury can result from trying to move the set by yourself alone, or from unsteady handling.

Install the set on a stable, level surface.

Water and Moisture

Do not use power-line operated sets near water — for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.



Accessories

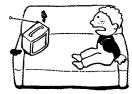
Do not place the set on an unstable cart, stand, tripod, bracket, table, or shelf. The set may fall, causing serious injury to a child or an adult, and serious damage to the set. Use only a cart or stand recommended by the manufacturer for the specific model of TV. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

Ventilation

The slots and openings in the cabinet and in the back or bottom are provided for necessary ventilation. To ensure reliable operation of the set, and to protect it from overheating, these slots and openings must never be blocked or covered.

- **Never cover the slots and openings with a cloth or other materials.**

- **Never block the slots and openings by placing the set on a bed, sofa, rug or other similar surface.**



- **Never place the set in a confined space, such as a bookcase or built-in cabinet, unless proper ventilation is provided.**

- **Do not place the set near or over a radiator or heat register, or where it is exposed to direct sunlight.**

Power-Cord Protection

Do not allow anything to rest on or roll over the power cord, and do not place the set where the power cord is subject to wear or abuse.

Antennas

Outdoor Antenna Grounding

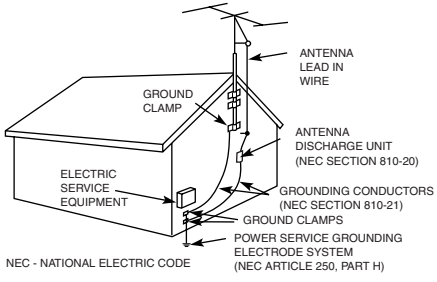
If an outdoor antenna is installed, follow the precautions below. An outdoor antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can come in contact with such power lines or circuits.

WHEN INSTALLING AN OUTDOOR ANTENNA SYSTEM, EXTREME CARE SHOULD BE TAKEN TO KEEP FROM CONTACTING SUCH POWER LINES OR CIRCUITS AS CONTACT WITH THEM IS ALMOST INVARIABLY FATAL.

Be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code (NEC) in USA and Section 54 of the Canadian Electrical Code in Canada provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

Antenna Grounding According to the NEC

Antenna Grounding According to the National Electrical Code, ANSI/NFPA 70.



Lightning

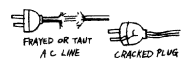
For added protection for this television receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage to the receiver due to lightning and power-line surges.

Service

Damage Requiring Service

Unplug the set from the wall outlet and refer servicing to qualified service personnel under the following conditions:

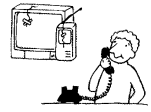
- **When the power cord or plug is damaged or frayed.**



- **If liquid has been spilled into the set or objects have fallen into the product.**

- **If the set has been exposed to rain or water.**

- **If the set has been subject to excessive shock by being dropped, or the cabinet has been damaged.**



- **If the set does not operate normally when following the operating instructions. Adjust only those controls that are specified in the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the set to normal operation.**

- **When the set exhibits a distinct change in performance — this indicates a need for service.**

Servicing

Do not attempt to service the set yourself since opening the cabinet may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Replacement Parts

When replacement parts are required, be sure the service technician certifies in writing that he has used replacement parts specified by the manufacturer that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Safety Check

Upon completion of any service or repairs to the set, ask the service technician to perform routine safety checks (as specified by the manufacturer) to determine that the set is in safe operating condition, and to so certify. When the set reaches the end of its useful life, improper disposal could result in a picture tube implosion. Ask a qualified service technician to dispose of the set.

Contents

Introduction

Congratulations on your purchase of the Sony FD Trinitron WEGA®.

Introducing the FD Trinitron WEGA® Features

Some of the features you will enjoy include:

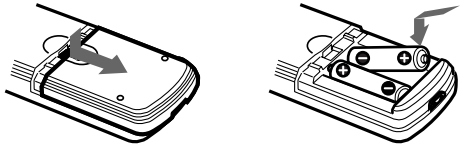
- **FD Trinitron Flat CRT** — Delivers a picture with uncompromising accuracy and outstanding image detail via a technologically advanced tube.
- **Dynamic Bass Response System** — Enhances low-frequency sounds with a powerful subwoofer. New and exclusive from Sony.
- **Y, P_B, P_R Inputs** — Provides component video inputs for superior picture quality (480i only).
- **WOW** — Provides a dramatic presence with a full, deep bass sound. When WOW is enabled, BBE is directly activated to further enhance the audio performance.
- **TruSurround** — Produces a dynamic three-dimensional sound for stereo audio signals.
- **BBE** — Gives sound more impact by using audio technology to compensate for phase effects in speakers.
- **Parental Control (V-Chip)** — Helps parents monitor what their children watch on TV by establishing rating limits.
- **Favorite Channels** — Provides instant access to your favorite channels with the touch of a button.
- **Info Banner** — Displays the name and the remaining time of the current program, if available.
- **Universal Remote Control** — Operates your connected cable box, VCR, digital satellite receiver, or DVD player.
- **Energy Star®** — Meets the Energy Star guidelines for energy efficiency.
- **Front Panel Controls** — Allows access to the on-screen menus without the use of a remote control.
- **Front A/V Inputs** — Lets you quickly connect video games, camcorders, or stereo/mono equipment.

About this Manual

This manual provides instructions to help you enjoy your new TV. It shows you how to connect to an antenna or cable, cable box, VCR, DVD, satellite receiver, stereo system, or camcorder. Once your TV is connected, follow the instructions and use the remote control to access the on-screen menus.

Batteries for the Remote Control

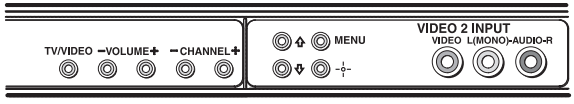
Insert two AA (R6) batteries (supplied) into the remote control using the following illustration as a guide.



✍ Under normal conditions, batteries will last up to six months. If the remote control does not operate properly, the batteries might be worn out.

✍ If you will not be using the remote control for an extended period of time, remove the batteries to avoid possible damage from battery leakage.

Front Panel Menu Controls



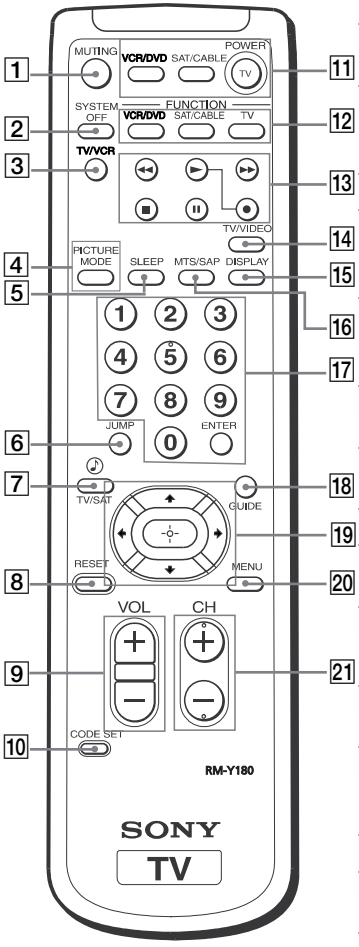
The front Audio/Video panel controls allow you to access the menu without the remote control.

- ❏ Press MENU to display the on-screen menu.
- ❏ Use the ⊕ and ⊖ buttons on the front Audio/Video panel instead of your remote control.
- ❏ Use the ⊕ button on the front Audio/Video panel to navigate through the menus, then select an item. The front panel controls also allow you to change your channels (CH+/-), adjust the volume (VOL +/-), and change video inputs.

✍ To navigate the menus with your remote control, see "Using the Menus" on page 25.

Using the Remote Control

Remote Control Description



	Button	Description
1	**MUTING**	Instantly turns off the sound. Press again or press VOL + to restore the sound.
2	**SYSTEM OFF**	Powers off all Sony equipment at once (may not work with older equipment).
3	**TV/VCR**	Press when you are finished using a VCR and you want to switch to the TV Antenna input. Your VCR power will remain on.
4	**PICTURE MODE**	Cycles through the available Video Mode settings.
5	**SLEEP**	Turns the TV off automatically in approximately 15, 30, 45, 60 or 90 minutes. Cancel by pressing until Sleep Off appears.
6	**JUMP**	Press to jump back and forth between two channels. The TV alternates between current channel and the last channel that was selected.
7	TV/SAT	Press for a direct selection of Effect settings (Simulated, WOW, TruSurround, Off) (see page 27).
8	**RESET**	Press to return to factory settings while in an on-screen menu.
9	**VOL (volume)**	Press when you want to adjust the volume.
10	**CODE SET**	Use to program your remote control to operate connected video equipment (see page 5).
11	**POWER**	Press when you want to turn connected equipment on or off.
12	**FUNCTION**	Press when you want to control connected equipment with your remote control.
13	**VCR/DVD (operating)**	Operates VCR or DVD. Use when you want to operate connected VCR or DVD with your remote control.
14	**TV/VIDEO**	Cycles through available video inputs.
15	**DISPLAY**	Press once to show current time (if set) and channel number. Press again to turn DISPLAY off.
16	**MTS/SAP**	Cycles through the Multi-Channel TV Sound (MTS) options: Stereo, Mono, and Auto SAP (Second Audio Program).
17	**0-9 and ENTER**	Change the channels directly. Press 0-9 buttons to select a channel, then press ENTER.
18	**GUIDE**	Brings up the custom guide of your satellite receiver.

	Button	Description
19		Moves the cursor in the on-screen menus. Press the arrow buttons to move the cursor. Press the center button to select or access an option.
20	**MENU**	Displays the on-screen menu. Press again to exit the menu at any time.
21	**CH (channel)**	Press when you want to change channels.

✍ If you lose your remote control, see page 42.

Programming the Remote Control

In order to use your remote control with other equipment, you need to program your remote control. Use the following procedure to program the remote control.

1. Check the list of "Manufacturer's Codes" on page 6 and find the three-digit code number for the manufacturer of your component. If more than one code number is listed, use the number listed first.
2. Press CODE SET.

✍ The VCR/DVD and SAT/CABLE button will flash when you press CODE SET.

3. Press VCR/DVD or SAT/CABLE button to indicate the type of component you want to program with the remote control.

✍ You must do step 4 within 10 seconds of step 3, or you must redo steps 2 and 3.

4. Use the 0-9 buttons to enter the three-digit manufacturer's code number.
5. Press ENTER.
6. To check if the code number works, aim the TV's remote control at the component and press on the green POWER button (VCR/DVD, SAT/CABLE, TV) that corresponds with that component. If it responds, you are done. If not try using another code listed for that manufacturer.

✍ If you have problems programming your remote control, see "Troubleshooting" on page 41.

Manufacturer's Codes

VCRs

Manufacturer	Code
Sony	301, 302, 303
Admiral (M. Ward)	327
Aiwa	338, 344
Audio Dynamic	314, 337
Broksonic	319, 317
Canon	309, 308
Citizen	332
Craig	302, 332
Criterion	315
Curtis Mathes	304, 338, 309
Daewoo	341, 312, 309
DBX	314, 336, 337
Dimensia	304
Emerson	319, 320, 316, 317, 318, 341
Fisher	330, 335
Funai	338
General Electric	329, 304, 309
Go Video	322, 339, 340
Goldstar	332
Hitachi	306, 304, 305, 338
Instant Replay	309, 308
JC Penney	309, 305, 304, 330, 314, 336, 337
JVC	314, 336, 337, 345, 346, 347
Kenwood	314, 336, 332, 337
LXI (Sears)	332, 305, 330, 335, 338
Magnavox	308, 309, 310
Marantz	314, 336, 337
Marta	332
Memorex	309, 335
Minolta	305, 304
Mitsubishi/ MGA	323, 324, 325, 326
Multitech	325, 338, 321
NEC	314, 336, 337
Olympic	309, 308
Optimus	327
Panasonic	308, 309, 306, 307
Pentax	305, 304
Philco	308, 309
Philips	308, 309, 310
Pioneer	308
Quasar	308, 309, 306
RCA/ PROSCAN	304, 305, 308, 309, 311, 312, 313, 310, 329
Realistic	309, 330, 328, 335, 324, 338
Sansui	314
Samsung	322, 313, 321
Sanyo	330, 335
Scott	312, 313, 321, 335, 323, 324, 325, 326
Sharp	327, 328
Shintom	315
Signature 2000 (M. Ward)	338, 327
SV2000	338
Sylvania	308, 309, 338, 310
Symphonic	338
Tashiro	332
Tatung	314, 336, 337
Teac	314, 336, 338, 337
Technics	309, 308
Toshiba	312, 311
Wards	327, 328, 335, 331, 332
Yamaha	314, 330, 336, 337
Zenith	331

Laserdisc Players

Manufacturer	Code
Sony	701
Panasonic	704, 710
Pioneer	702

DVD Players

Manufacturer	Code
Sony	751
Hitachi	758
JVC	756
Magnavox	757
Mitsubishi	761
Onkyo	762
Oritron	759
Panasonic	753
Philips	757
Pioneer	752
RCA	755
Samsung	758
Toshiba	754
Zenith	760

Cable Boxes

Manufacturer	Code
Sony	230
Hamlin/Regal	222, 223, 224, 225, 226
Jerrold/G.I./ Motorola	201, 202, 203, 204, 205, 206, 207, 208, 218
Oak	227, 228, 229
Panasonic	219, 220, 221
Pioneer	214, 215
Scientific Altanta	209, 210, 211
Tocom	216, 217
Zenith	212, 213

Satellite Receivers

Manufacturer	Code
Sony	801
DIRECT TV	809
Dish Network	810
Echostar	810
General Electric	802
Hitachi	805
Hughes	804
Mitsubishi	809
Panasonic	803
RCA/ PROSCAN	802, 808
Toshiba	806, 807

Using your TV Remote Control with Other Equipment

Operating a VCR

Press	To
VCR/DVD	Power on the VCR (VCR/DVD green button)
0-9	Select a channel
CH + / CH −	Change channels
►	Play video tape
■	Stop
◄◄ or ►►	Search forward or backward
❚❚	Pause
● and ►	Record
TV/VCR	Switch between VCR and TV inputs

Operating a DVD Player

Press	To
VCR/DVD	Power on the DVD (VCR/DVD green button)
0-9	Select chapters
CH + / CH −	Search chapters forward or backward
►	Play DVD
■	Stop
❚❚	Pause
MENU	Display the DVD menu
	Use the arrow buttons to move the cursor in the menu, and the center button to select an option

Operating a Laser Disc Player

Press	To
VCR/DVD	Power on the laser disc (VCR/DVD green button)
CH + / CH −	Search chapters forward or backward
►	Play disc
■	Stop
❚❚	Pause

Operating a Satellite Receiver

Press	To
SAT/CABLE	Power on the satellite receiver (SAT/CABLE green button)
0-9	Select a channel
CH + / CH −	Change channels
JUMP	Back to previous channel
DISPLAY	Display channel number
GUIDE	Display SAT GUIDE
MENU	Display SAT Menu
	Use the arrow buttons to move the cursor in the menu, and the center button to select an option

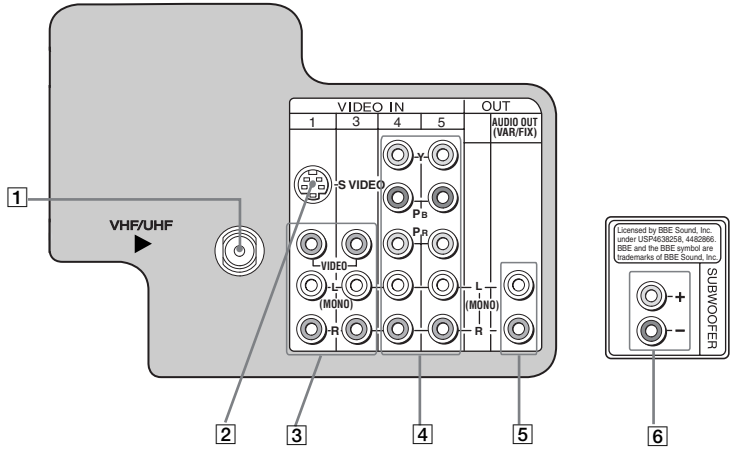
Operating a Cable Box

Press	To
SAT/CABLE	Power on the cable box (SAT/CABLE green button)
0-9	Select a channel
CH + / CH −	Change channels
JUMP	Change back to previous channel

Connecting Your TV

Read this section before setting up your TV for the first time. This section explains how to make the basic connections and how to connect optional equipment.

TV Rear Panel



Jack	Description
1 **VHF/UHF**	This input connects to your VHF/UHF antenna or cable.
2 **S VIDEO**	This input connects to the S VIDEO OUT jack on your VCR or other video equipment that has S VIDEO. S VIDEO provides better picture quality than the VHF/UHF jacks or the video input jack. S VIDEO does not provide sound, so you still must connect the audio cables.
3 **AUDIO L(MONO), R/ VIDEO**	This input connects to the AUDIO/VIDEO output jacks on your VCR or other video equipment. A third video input jack (VIDEO 2) is located on the front panel of the TV. These AUDIO/VIDEO input jacks provide better picture quality than the VHF/UHF jack.
4 **Y, P_B, P_R/ L(MONO), R**	These inputs (Video 4-5) connect to the component video Y, P_B, P_R, and AUDIO L(MONO), R jacks on your DVD player or digital set-top box (480i only).

(continued)

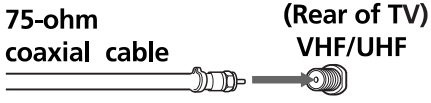
Jack	Description
5 **AUDIO OUT (VAR/FIX) L (MONO), R**	This jack connects to the Audio input jacks on your audio equipment. You can listen to your TV's audiio through your stereo system.
6 **Dynamic Bass Response System**	The Dynamic Bass Response System (subwoofer) accentuates the low frequencies for better overall sound.

Basic Connections

TV with Cable, Indoor, or Outdoor Antenna

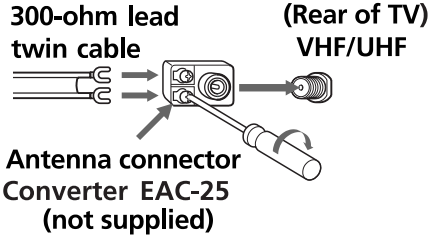
Depending on the cable system available in your home, choose one of the connections below:

A **VHF only or VHF/UHF or Cable**



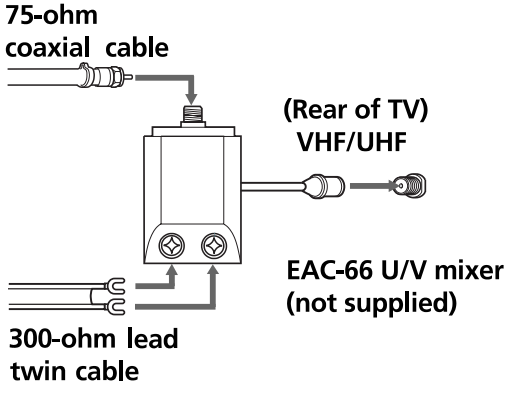
Use this to connect the TV to a cable system or an antenna with a 75-ohm cable (usually built in to newer homes).

B **VHF only or UHF only or VHF/UHF**



Use this to connect the TV to a dipole antenna, also known as a "rabbit ears antenna" (usually found in older homes).

C **VHF and UHF**



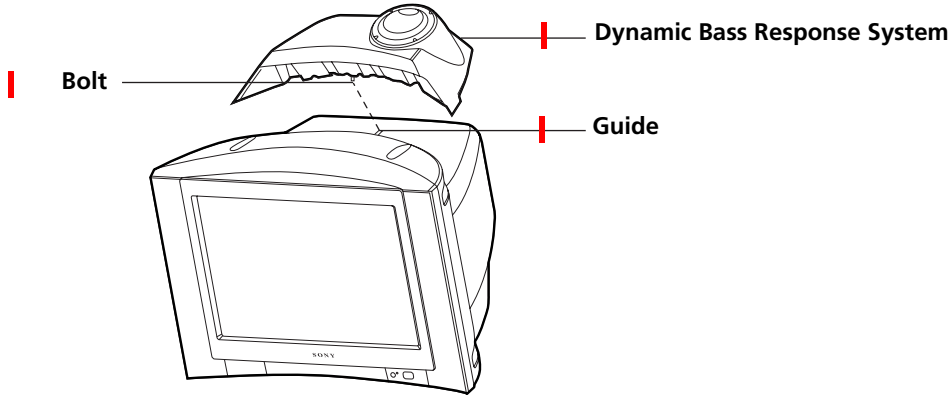
This allows you to connect your TV to both a cable system and a dipole antenna, in order to view both cable and local channels.

✍ If you are connecting to an indoor or outdoor antenna, you may need to adjust the orientation of the antenna for the best reception.

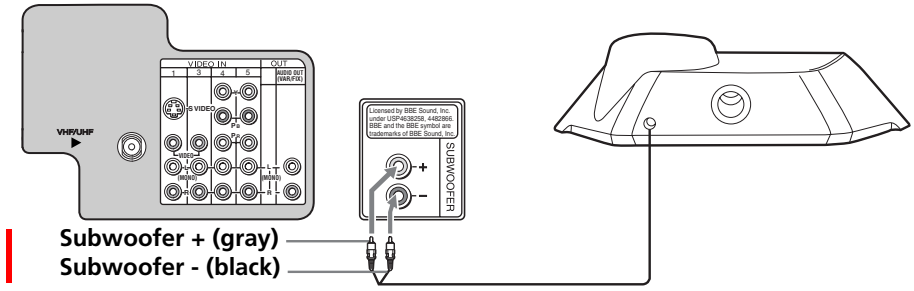
Dynamic Bass System Connection (Subwoofer)

- **Disconnect** the TV before connecting the Dynamic Bass Response System.
- Do **not** connect anything other than the KV-27FA210 Sony TV to the Dynamic Bass Response System (SUBWOOFER +/-) inputs.

1 Introduce the support bolt of the Dynamic Bass Response System into the guide located on top of the TV.

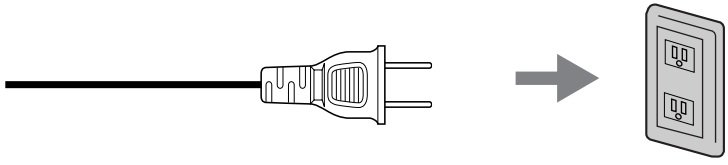


2 Connect the Dynamic Bass Response System cables (supplied) to the indicated inputs of the TV rear panel. Connect the gray cable to the SUBWOOFER + (gray input). Connect the black cable to the SUBWOOFER – (black input). See illustration below.



✍ Use only the supplied cables, otherwise your TV will not work.

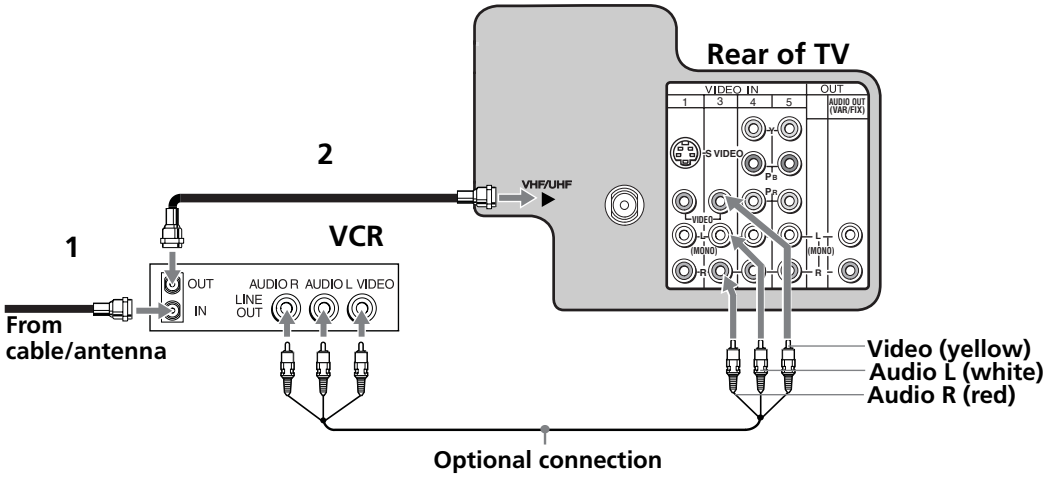
3 Once installation is complete, plug the TV's AC powercord into the wall socket.



✍ Do not plug in the AC powercord until the subwoofer is completely installed.

Connecting Additional Equipment

Connecting a TV and VCR



1 Connect the coaxial cable from your TV antenna or cable service to the IN jack on your VCR.

2 Connect a coaxial cable (not supplied) from the OUT jack on your VCR to the VHF/UHF jack on the TV.

Optional connection

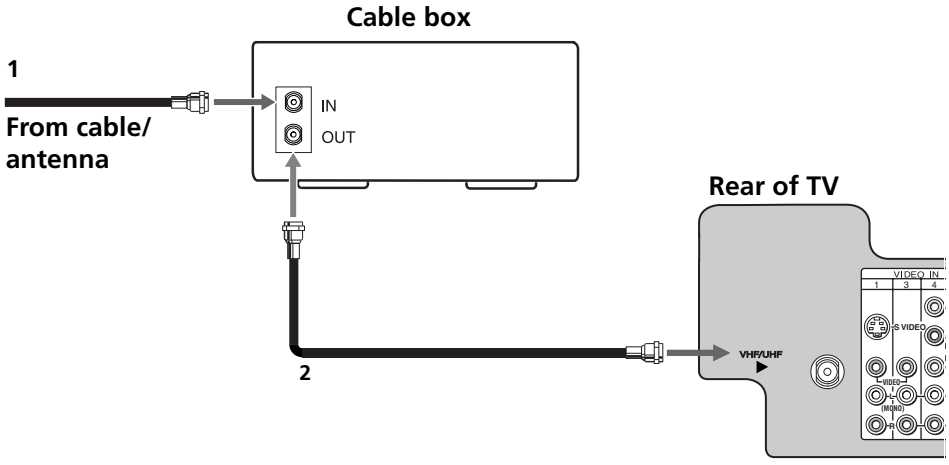
- If your VCR is equipped with video outputs, you can get better picture quality by connecting audio/video cables (not supplied) from AUDIO/VIDEO OUT on your VCR to AUDIO/VIDEO IN on your TV.
- For better picture quality, use S VIDEO instead of the yellow video cable. S VIDEO does not provide sound, so you still must connect the audio cables.

Using your TV with this connection

This connection allows you to do the following:

- Program your Sony remote control to operate your VCR (see page 5).
- To activate your remote, press VCR/DVD to operate your VCR. To do this, first program your remote control, then use the Channel Fix feature to set your TV to channel 3 or 4 (see page 29).
- Press TV/VIDEO repeatedly to switch between VCR input (VIDEO input) and VHF/UHF (local channels).

TV and Cable Box



1 Connect the coaxial cable from your cable service to the IN jack on your cable box.

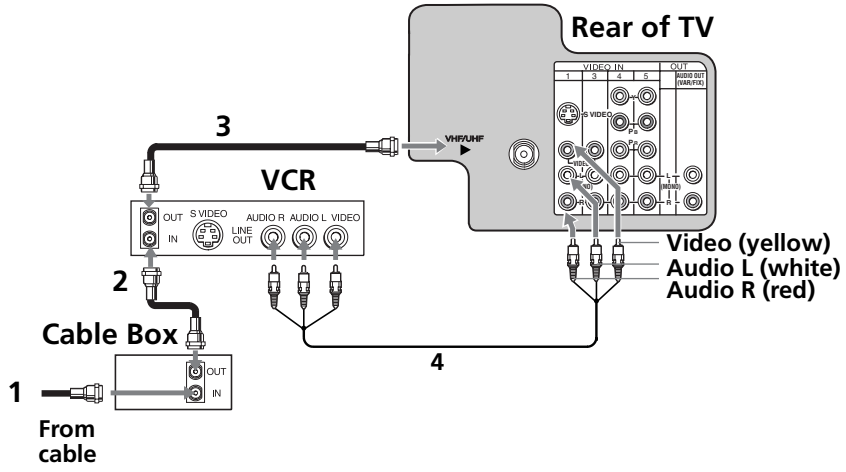
2 Connect a coaxial cable (not supplied) from the OUT jack on your cable box to the VHF/UHF jack on your TV.

Using your TV with this connection

This connection allows you to do the following:

- Program your Sony remote control to operate your cable box (see page 5).
- To activate your remote press SAT/CABLE to operate your cable box and then use the 0-9 buttons or CH+/- buttons to change the channels. To do this, first program your remote control, then use the Channel Fix feature to set your TV to channel 3 or 4 (see page 29).

TV, VCR, and Cable Box



1 Connect the coaxial cable from your cable service to the IN jack on your cable box.

2 Connect a coaxial cable (not supplied) from the OUT jack on your cable box to the IN jack on your VCR.

3 Connect a coaxial cable (not supplied) from the OUT jack on your VCR to the VHF/UHF jack on the TV.

4 If your VCR is equipped with video outputs, you can get better picture quality by connecting audio/video cables (not supplied) from AUDIO/VIDEO OUT on your VCR to AUDIO/VIDEO IN on your TV.

Optional connection

❏ For better picture quality, use S VIDEO inserted of the yellow video cable. S VIDEO does not provide sound, so you still must connect the audio cables.

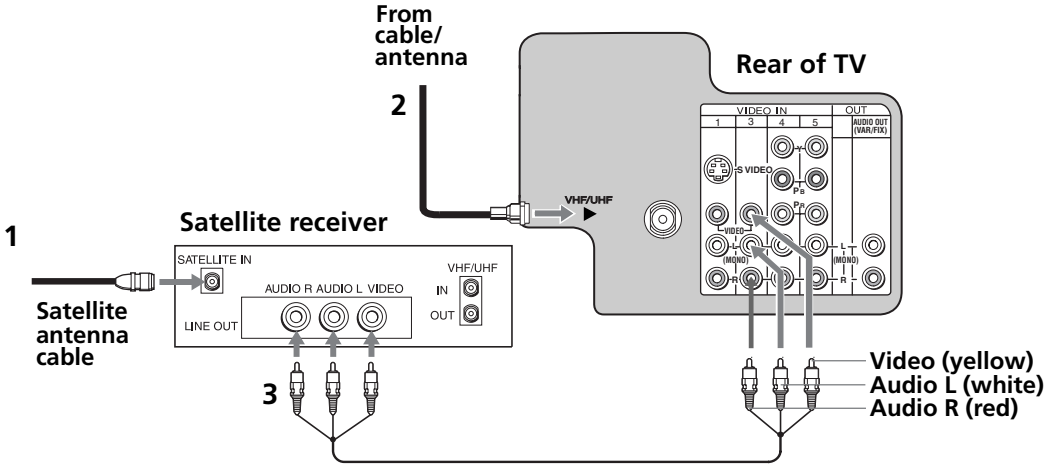
Using your TV with this connection

❏ Program your Sony remote control to operate your VCR or cable box (see page 5).

❏ To activate your remote, press VCR/DVD to operate your VCR or SAT/CABLE to operate your cable box. To do this, first program your remote control, then use the Channel Fix feature to set your TV to channel 3 or 4 (see page 29).

❏ Press TV/VIDEO repeatedly to switch between VCR input (VIDEO input), VHF/UHF (local channels or unscrambled), or cable box (cable system or scrambled channels).

Connecting a TV and Satellite Receiver



1 Connect the cable from your satellite antenna to SATELLITE IN on your satellite receiver.

2 Connect the coaxial cable from your cable service or antenna to the VHF/UHF jack on your TV.

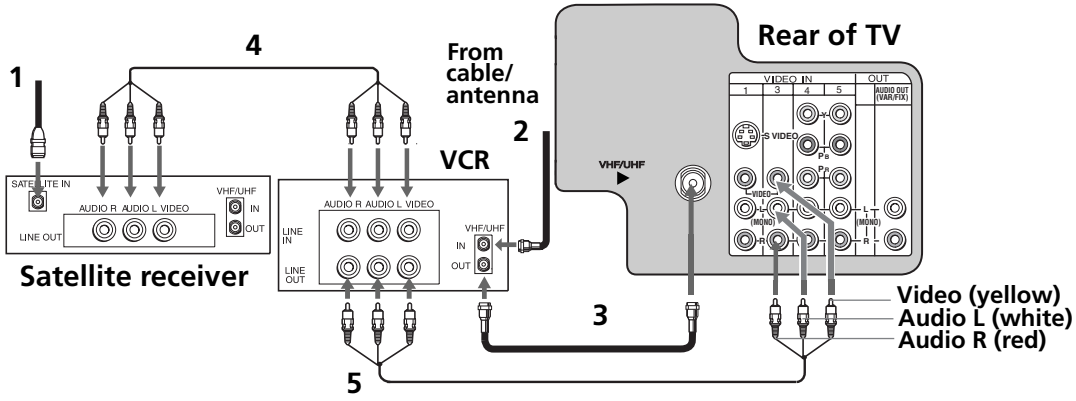
3 Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your satellite receiver to AUDIO/VIDEO IN on your TV.

Using your TV with this connection

This connection allows you to do the following:

- ❏ Program your Sony remote control to operate your satellite receiver (see page 5).
- ❏ To activate your remote, press SAT/CABLE to operate your satellite receiver. See page 7 on how to operate other functions.
- ❏ Press TV/VIDEO repeatedly to switch to satellite receiver input (VIDEO input).

Connecting a TV, VCR, and Satellite Receiver



1 Connect the coaxial cable from your satellite antenna to SATELLITE IN on the satellite receiver.

2 Connect the coaxial cable from your cable service or antenna to the IN jack on your VCR.

3 Using a coaxial cable (not supplied), connect the OUT jack on your VCR to the VHF/UHF jack on your TV.

4 Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your satellite receiver to AUDIO/VIDEO IN on your VCR.

5 Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your VCR to AUDIO/VIDEO IN on your TV.

✍ To view from the satellite receiver or VCR, select the video input to which your satellite receiver or VCR is connected by pressing TV/VIDEO on the remote control.

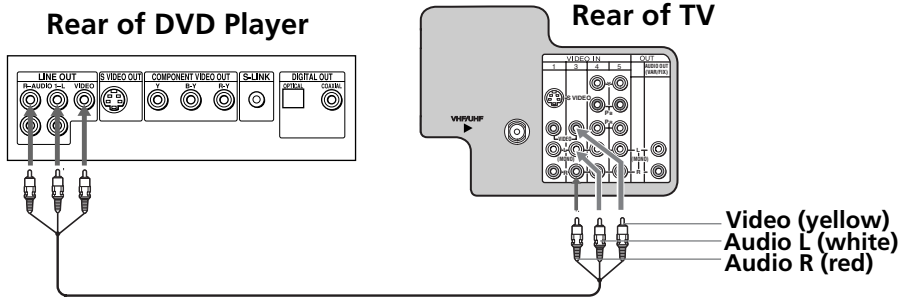
Using your TV with this connection

This connection allows you to do the following:

- ❏ Program your Sony remote control to operate your VCR or satellite receiver (see page 5).
- ❏ Turn on your VCR to enable your satellite receiver to work with this connection.
- ❏ To activate your remote, press VCR/DVD to operate your VCR or SAT/CABLE to operate your satellite receiver.
- ❏ Press TV/VIDEO repeatedly to switch between VCR input (VIDEO input), VHF/UHF (local channels or unscrambled), or your cable box (cable system or scrambled channels).

Connecting a DVD Player

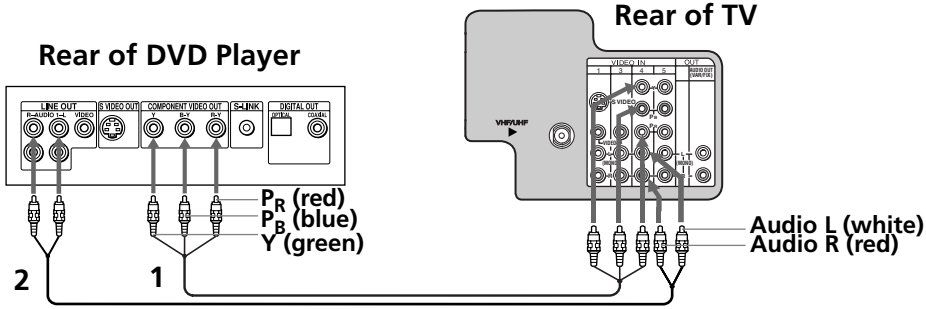
Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your DVD player to AUDIO/VIDEO IN on your TV.



Optional connection

- For better picture quality, use S VIDEO instead of the yellow video cable. S VIDEO does not provide sound, so you still must connect the audio cables.
- If your DVD player is equipped with component video outputs (Y, P_B, P_R), you can improve the picture quality by using component video cables (480i only). This connection can be done on VIDEO 4 or 5 (both Y, P_B, P_R).

✍ PIP feature is not compatible with VIDEO 4-5, you can use VIDEO 1or 3. These inputs are compatible with PIP.



1 Using component video cables (not supplied), connect the Y, P_B, P_R OUT on your DVD player to Y, P_B, P_R IN on your TV.

2 Connect AUDIO OUT on your DVD player to AUDIO IN on your TV.

✍ The Y, P_B, P_R outputs on your DVD player are sometimes labeled Y, C_B, and C_R or Y, B-Y, and R-Y. If so, connect the cables to like colors.

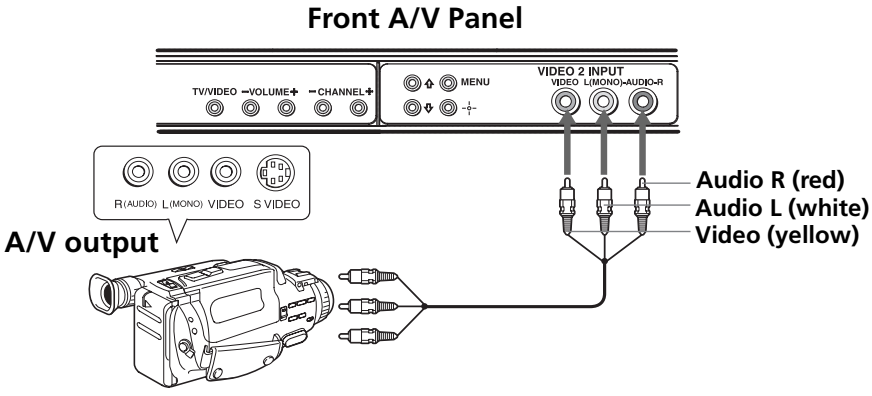
Using your TV with this connection

This connection allows you to do the following:

- Program your Sony remote control to operate your DVD (see page 5).
- To activate your remote, press VCR/DVD to operate your DVD.
- Press TV/VIDEO repeatedly to switch to the DVD player's input (VIDEO input).

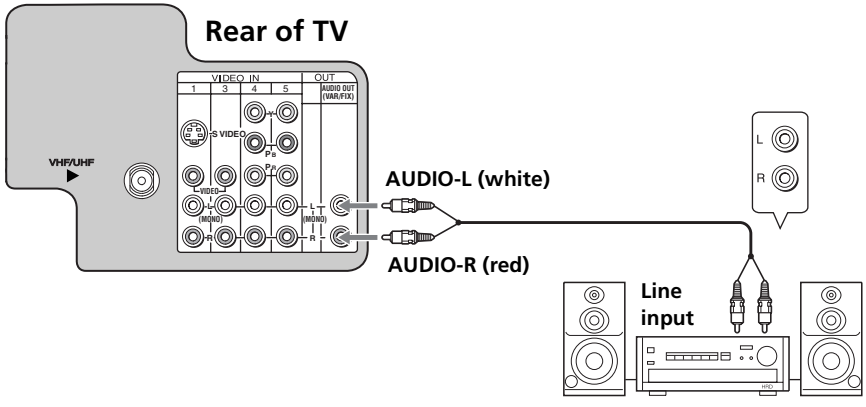
Connecting a Camcorder

To connect your camcorder, you can use the Audio/Video inputs on either the front or rear panel of the TV. Using the audio/video cables (not supplied), connect the AUDIO/VIDEO OUT on your camcorder to the AUDIO/VIDEO IN on your TV.



Connecting an Audio System

1. Using audio/video cables (not supplied), connect AUDIO OUT on your TV to one of the unused line inputs (e.g. TV, AUX, TAPE2) on your stereo.
2. Set the Speaker option to Off. For more instructions, see "Using the Audio Menu" on page 28.
3. Open the Audio Out option on the Audio Menu and select Fixed to control the volume through the connected audio system. For more instructions, see "Using the Audio Menu" on page 28.



Using Basic Functions

Setting Up the TV

After you have finished connecting your TV, you can use Auto Program to set up your channels. During Auto Program, the TV will automatically search for available channels and program receivable channels.

✍ When you start Auto Program wait until it is finished; otherwise it will skip over channels that are available. Perform Auto Program again to program receivable channels.

1 Press POWER to turn on the TV. The Initial Setup screen appears.

2 Press CH + on the remote control or on the TV front panel to start Auto Program, or press CH – to exit.

✍ The Initial Setup screen appears each time you turn on the TV until you perform Auto Program.

To perform Auto Program again

1 Press MENU.

2 Press → to highlight Channel Menu.

3 Press ↓ to highlight Cable. Press ⊕ to select.

4 Press ↑ or ↓ to highlight On or Off according to how you connected your TV. Press ⊕ to select.

5 Press ↓ to highlight Auto Program. Press ⊕ to search for channels.

6 After Auto Program finishes, press MENU to exit.

To reset the TV to factory settings

1 Turn the TV on.

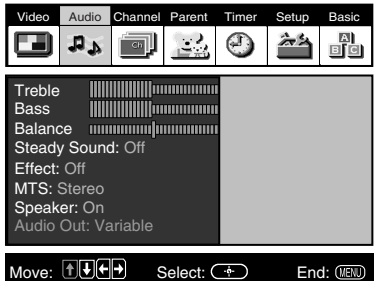
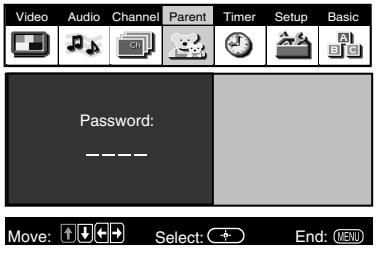
2 Hold down RESET on the remote control.

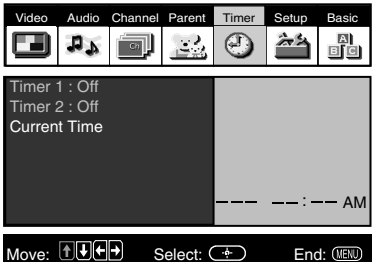
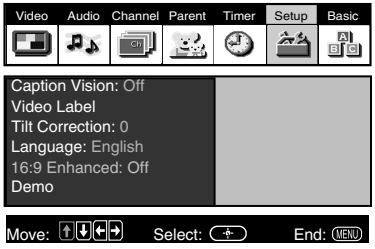
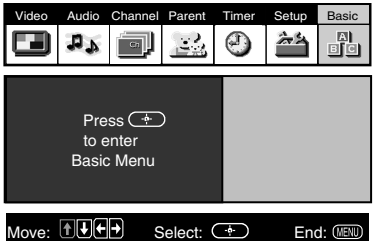
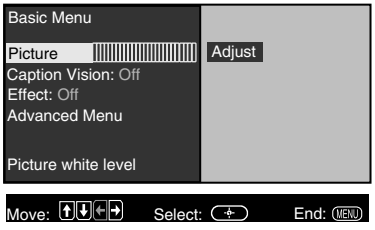
3 Press and release the POWER button on the TV front panel. The TV will turn itself off, then back on.

4 Release RESET.

Quick Start to the Menus

The following settings are available in your on-screen menus. For more details on how to use the menus, see “Using the Menus” on page 25.

Menu	Allows you to
	Adjust your picture settings.
	Change your audio settings.
	Customize your channel settings.
	Set rating limits on your TV based on program rating or content.

Menu	Allows you to
	Set the clock on your TV and program scheduled viewing using Timer 1 and Timer 2.
	Select closed captioning options, label video inputs, adjust tilt correction, enhance your DVD picture resolution (16:9 Enhanced), select menu language, or run a demo of the menus.
	
	Access the most commonly used menu settings.

Using the Menus

This section shows the options available for setting up and adjusting the TV.

How to Access Menus

To Access Menus

1. Press MENU to display the on-screen menu.
2. Use the ⇦ or ⇨ buttons to highlight the desired menu icon. Press ⊙ to select it.
3. Use the ⇧ or ⇩ buttons to scroll up and down through the features.
4. Follow the instructions on the screen.
5. For instructions on using a specific menu, see the page in this section that talks about that menu.
6. Press MENU to exit the menu.

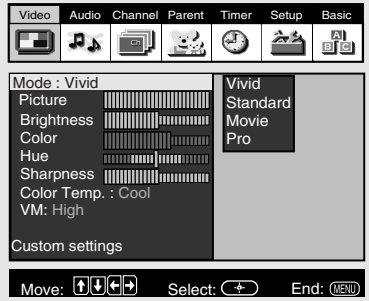
✍ Press MENU once to display the on-screen menu, and press again to return to normal viewing. If no buttons are pressed, the menu closes automatically after about 90 seconds.

Using the Video Menu

To access the Video menu, use the following steps:

To Display **To Select**

Press ⇩ to highlight an option; then press ⊕.



Mode *Customized picture viewing*	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it. **Vivid:** Select for enhanced picture contrast and sharpness. **Standard:** Select for a standard picture. **Movie:** Select for a finely detailed picture. **Pro:** Select for natural picture and sharpness.

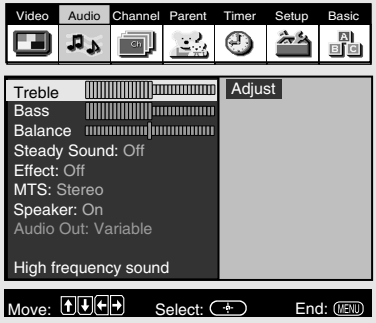
✍ Press PICTURE MODE on the remote control for direct access to the picture modes (Vivid, Standard, Movie, Pro).

Picture	Press ⇦ to decrease the contrast. Press ⇨ to increase the contrast.
Brightness	Press ⇦ to darken the picture. Press ⇨ to brighten the picture.
Color	Press ⇦ to decrease color saturation. Press ⇨ to increase color saturation.
Hue	Press ⇦ to increase the red tones. Press ⇨ to increase the green tones.
Sharpness	Press ⇦ to soften the picture. Press ⇨ to sharpen the picture.
Color Temp. *White tint adjustment*	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it. **Cool:** Gives white colors a blue tint. **Neutral:** Gives white colors a neutral tint. **Warm:** Gives white colors a red tint.
VM *Velocity Modulation*	Sharpens picture definition to give objects a crisp, clean edge. Use the ⇧ or ⇩ buttons to highlight one of the following options: **High**, **Low**, **Off,** then press ⊕ to select it.

Using the Audio Menu

To access the Audio menu, use the following steps:

Press ⇩ to highlight an option; then press ⊕.



Treble — Press ⇦ to decrease the higher pitched sounds. Press ⇨ to increase the higher pitched sounds.

Bass — Press ⇦ to decrease the lower pitched sounds. Press ⇨ to increase the lower pitched sounds.

Balance — Press ⇦ to emphasize the left speaker. Press ⇨ to emphasize the right speaker.

Steady Sound — *Stabilizes volume*

Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.

- **On:** Select to stabilize the volume when changing channels.
- **Off:** Select to turn Steady Sound off.

Effect

Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.

- **Simulated:** Simulates theater quality sound for mono programs.
- **WOW:** Provides a dramatic presence with a full, deep bass sound. When WOW is enabled, BBE is activated to further enhance the audio performance.
- **TruSurround:** Produces a dynamic three-dimensional sound for stereo audio signals.
- **Off:** Provides normal stereo or mono reception.

✍ Press TV/SAT to directly select Effect settings (Simulated, WOW, TruSurround, Off).

MTS — *Multi-Channel TV Sound*

Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.

- **Stereo:** Select when viewing a broadcast in stereo.
- **Auto SAP:** Select to have the TV automatically switch to a Second Audio Program (SAP) when a signal is received.
- **Mono:** Select to reduce noise in areas of poor reception.

✍ Press MTS/SAP to directly select MTS settings (Stereo, Auto SAP, Mono).

✍ If your TV is set to Auto SAP, some programs may be muted or distorted. If your TV does not output sound, change your Audio MTS setting to Stereo or Mono.

(continued)

Speaker *Custom selection of audio output source*	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.	
	On:	Select to listen to the sound from the TV speakers with or without a separate stereo system.
	Off:	Select to turn off the TV speakers and listen to the TV's sound only through external audio system speakers.
Audio Out *Use to control the TV's volume through a stereo*	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.	
	Variable:	Adjust the volume through your TV.
	Fixed:	Adjust the volume through a connected stereo.

✍ You can only set Audio Out settings when you have set Speaker to Off.

Using the Channel Menu

To access the Channel menu, use the following steps:

Press ⇩ to highlight an option; then press ⊕.

Favorite Channels

Quick access to favorite channels

1. Use the ⇧ or ⇩ buttons to highlight the position (1-8) where you want to set a favorite channel, then press ⊕.
2. Use the ⇧ or ⇩ buttons to find the channel you want to add to your favorite channels.
3. Press ⊕ to select the channel. The TV will automatically change to the selected channel.
4. Press ⇦ to return to the Channel menu or press MENU to exit.

✍ To use Favorite Channels, exit all menus and press ⊕. Press ⇧ or ⇩ to move the cursor to the desired channel number and press ⊕.

Cable

Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.

On: Select if you are receiving cable channels with a CATV cable.
Off: Select if you are using a TV antenna.

✍ After changing your cable settings, you will need to perform Auto Program. See "To perform Auto Program again" on page 21.

Channel Fix

Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.

Off: Channel Fix is not set.
2-6: Select when you want to control all channel selection through a cable box or VCR. Select the appropriate channel (usually 3 or 4) and use the cable box's or VCR's remote control for channel selection.
AUX 2-6: Select this setting instead of **2-6** if you want to change channels using a cable box, VCR, or satellite receiver and you've connected it to the AUX input.
Video 1: Select from available video inputs when you have connected video equipment (e.g., a satellite receiver) and you want your TV fixed to it.

✍ You cannot use Favorite Channels, Cable, Channel Skip/Add, or Channel Label when Channel Fix is set.

(continued)

Auto Program

Perform Auto Program whenever setting up your TV.
Auto Program will search for available channels and program receivable channels.

Channel Skip/Add

Use this feature after you run Auto Program to skip unwanted channels or add new ones.

1. Use the ⇧ or ⇩ buttons to highlight the position of the desired channel, then press ⊕.
2. Use the ⇧ or ⇩ buttons to highlight **Skip** or **Add,** then press ⊕.
3. Press ⇦ to return to the Channel menu or press MENU to exit.

✍ Press CH + or CH - to skip over channels that have been skipped. You can still use the ⓪-⑨ buttons to directly tune to skipped channels.

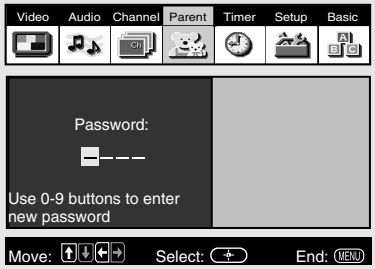
Channel Label

Label up to 40 channels with their call letters

1. Press ⊕, then use the ⇧ or ⇩ buttons until you reach the desired channel number.
2. Press ⊕ to activate the channel.
3. Press ⇩ to highlight **Label**, then press ⊕. Use the ⇧ or ⇩ buttons to display the first call letter or number of the label. Press ⊕ to select. Repeat this process until you finish selecting all the call letters.
4. When finished, press ⊕ to activate.
5. Press ⇦ to return to the Channel menu or press MENU to exit.

Using the Parent Menu

To access the Parent menu, use the following steps:



The Parental Control feature helps parents monitor what their children watch on television.

To use the Parent Menu

When you select the Parent menu, you are prompted to set a 4-digit password. You cannot access the Parent menu settings without this password.

1. Use the 0-9 buttons to enter a 4-digit password.
2. Confirm your password by entering it again.

✍ Keep this manual in a safe place. You need your password for any future access to the Parent menu. If you forget your password, see page 41.

Parental Control

Setting the Rating

You can change the Rating by selecting one of the Parental Lock options.

1 Press ⇩ to highlight **Parental Lock;** then press ⊕.

If you are not familiar with Parental Guideline rating system, use one of the following preset categories to simplify the rating selection: Child, Youth, Young Adult.

2 Use the ⇧ or ⇩ to highlight the desired rating and press ⊕.

Rating	TV will allow a maximum rating of
Off	No rating limit
Child	TV-Y, TV-G, G (U.S.), G, C (Canada)
Youth	TV-PG, PG (U.S.), 8 ans + (Canada)
Young Adult	TV-14, PG-13 (U.S.), 14+ (Canada)
Custom	Select to set more restrictive ratings (see next section)

Changing your Password

1 Use the ⇧ or ⇩ buttons to highlight **Change Password** and press ⊕.

2 Follow steps 1 and 2 for “Using the Parent Menu” on page 31.

Select a Country

Select U.S.A. to use US ratings (see pages 34-35) or select Canada to use Canadian ratings (see page 36). If you select a Country (U.S.A. or Canada) that is not where you live, the rating you select will not be activated.

1 Press ⇩ to highlight **Country**, then press ⊕.

2 Use the ⇧ or ⇩ to highlight the desired country and press ⊕.

Information for Parents

To view a program that exceeds the TV rating

❏ Press ENTER, then use the 0-9 buttons to enter your password.

✍ Entering your password to view a blocked program will temporarily turn **Parental Lock** to Off. To reactivate your Lock settings, turn the TV off then back on; the TV will return to the settings that you have selected.

Using the Custom Menu

Follow the instructions on the screen to make your custom settings. Select the country desired for your TV's rating limit. See page 34 for U.S. models and page 36 for Canadian models for more information.

✍ Once you have blocked a rating or content, all higher ratings or content will be automatically blocked.

United States: Selecting Custom Rating Options

For the United States, the Custom Rating menu includes the following options: Movie Rating, TV Rating and Unrated. (For Canada, see page 36.)

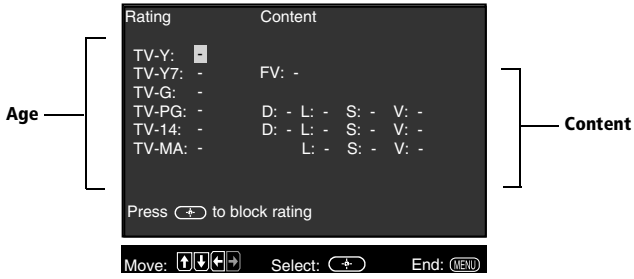
Movie Rating

This system defines the rating levels of movies shown in theaters and on prime cable channels.

Rating	Defined as
G	General audience
PG	Parental guidance suggested
PG-13	Parents strongly cautioned
R	Restricted
NC-17	No one 17 and under admitted
X	Adult audience only

TV Rating

The TV rating is divided into two groups: age-based and content-based.



Age	Defined as
TV-Y	All children
TV-Y7	Directed to older children
TV-G	General audience
TV-PG	Parental guidance suggested
TV-14	Parents strongly cautioned
TV-MA	Mature audience only

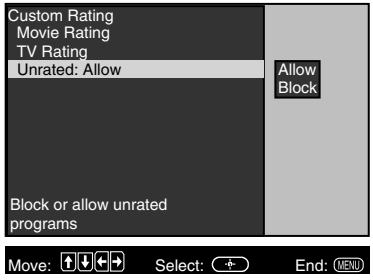
Content	Defined as
FV	Fantasy violence
D	Suggestive dialogue
L	Strong language
S	Sexual situations
V	Violence

✍ The content ratings will increase depending on the level of the age-based rating. For example, a program with a TV-PG V (Violence) rating may contain moderate violence, while a TV-14 V (Violence) rating may contain intense violence.

Unrated

You have the option of blocking TV programs or movies that are not rated.

Allow	Allows all unrated programs
Block	Blocks all unrated programs



✍ If you choose to block unrated TV programs, please be aware that the following programs may be blocked: emergency broadcasts, political programs, pro, news, public service announcements, religious programs, and weather.

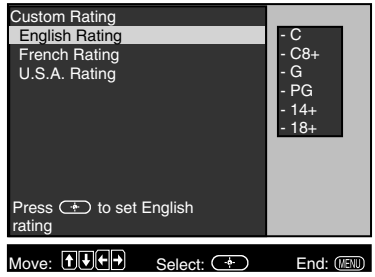
Canada: Selecting Custom Rating Options

For Canada, the Custom Rating menu includes the following options: English Rating, French Rating, and U.S.A. Rating.

English Rating

These ratings are for Canadian programs that are broadcast in English.

Rating	Defined as
C	Children
C8+	Children 8 years and older
G	General programming
PG	Parental guidance
14+	Viewers 14 and older
18+	Adult programming



French Rating

These ratings are for Canadian programs that are broadcast in French.

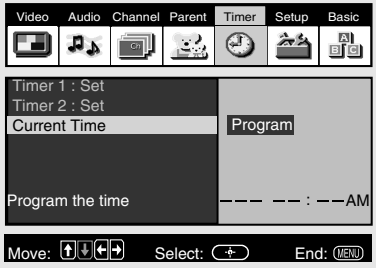
Rating	Defined as
G	General
8 ans+	Not recommended for younger children
13 ans+	Not recommended for children under age 13
16 ans+	Not recommended for ages under 16
18 ans+	This program is restricted to adults

U.S.A. Rating

For programs from the United States, see “TV Rating” on page 34.

Using the Timer Menu

To access the Timer menu, use the following steps:



Current Time

Set your TV to the current day and time. Press ⊕ to open the Current Time menu:

1. Use the ⇧ or ⇩ buttons to enter the correct day and time, then press ⊕.
2. Press MENU to exit the menu.

✍ You must set the Current Time before you can use Timer 1 or Timer 2.

Timer 1 and Timer 2
Scheduled viewing

Use the timers to program your TV to turn on and off by day, time, duration, and channel. The timer duration is a maximum of six hours. When the channel is fixed, it is not necessary to set the channel.

1. Use the ⇧ or ⇩ buttons to highlight **Timer 1** or **Timer 2**, then press ⊕.
2. Use the ⇧ or ⇩ buttons to enter the desired day, start time, duration, and channel, then press ⊕. The timer status should be On when the Timer has been set, and the timer light on the front panel of the TV should be on.
3. Press MENU to exit the menu.

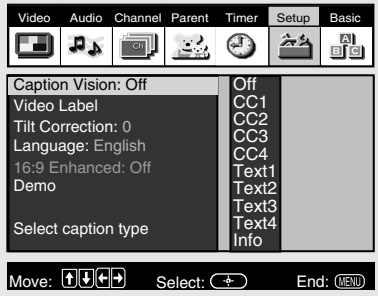
✍ Select Off to turn off the Timer. Your previous settings will be saved.

✍ When you perform Auto Program, Timer 1 and Timer 2 settings will be cleared. Also, in the event of any loss of power, Current Time, Timer 1, and Timer 2 settings will be cleared.

Using the Setup Menu

To access the Setup menu, use the following steps:

Press ⇳ to highlight an option; then press ⊕.



Caption Vision
Closed-Captioning

Allows you to select from three closed caption modes for programs that are broadcast with closed captioning.
Use the ⇳ or ⇳ buttons to highlight one of the following options, then press ⊕ to select it.

Off:	Caption Vision is not activated.
CC1, 2, 3, 4:	Displays printed dialogue and sound effects of a program.
Text1, 2, 3, 4:	Displays network/station information.
Info:	Displays the name of the current program and its remaining time (if available) when you change the channel or press the DISPLAY button.

Video Label
Label connected equipment

Allows you to identify the video components connected to the TV: VCR, DVD, etc. When you press TV/VIDEO to switch inputs, the Video Label appears on-screen.

1. Press the ⇳ or ⇳ buttons to highlight the input you want to label and press ⊕.
2. Press the ⇳ or ⇳ buttons to highlight a label and press ⊕.
3. Press ⇦ to return to the Setup menu or press MENU to exit.

✍ If you select **Skip**, your TV skips this connection when you press the TV/VIDEO button.

Tilt Correction

Use the ⇳ or ⇳ buttons to set the tilt of the picture from –5 to +5, then press ⊕ to activate.

Language

Display all menus in the language of your choice.
Use the ⇳ or ⇳ buttons to select from one of the following options: **English, Español** (Spanish) and **Français** (French). Then press ⊕.

16:9 Enhanced

Provides enhanced picture resolution for wide-screen sources such as DVD. This is only available when the TV is in Video mode.

Demo

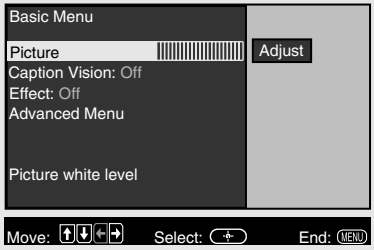
Press ⊕ to run a demonstration of the on-screen menus.

✍ You can press any button to exit Demo mode.

Using the Basic Menu

To access the Basic menu, use the following steps:

Press ⇩ to highlight an option; then press ⊕.



Picture *Picture contrast*	Press ⇦ to decrease picture contrast. Press ⇨ to increase picture contrast.
Caption Vision *Closed-Captioning*	The Basic menu displays the current Caption Vision setting. By default, this is Off.
Effect	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it. **Simulated:** Simulates theater quality sound for mono programs. **WOW:** Provides a dramatic presence with a full, deep bass sound. When WOW is enabled, BBE is activated to further enhance the audio performance. **TruSurround:** Produces a dynamic three-dimensional sound for stereo audio signals. **Off:** Provides normal stereo or mono reception.
Advanced Menu	Press ⊕ to return to the advanced menus.

✍ If you use the MENU button to close the Basic menu, only the Basic menu appears when you press MENU again. To access the other menus, press ⇩ to highlight Advanced Menu, then press ⊕.

Other Information

Troubleshooting

If you have a problem with your TV, try the suggestions below. If the problem persists, see "Contacting Sony" at the end of this section.

General

Problem	Possible Remedies
I want to reset the TV to the factory settings	❑ Turn on the TV. While holding down the RESET button on the remote control, press POWER button on the TV front panel. The TV will turn itself off, then back on again. Release the RESET button.
I cannot access other menus when I am in the Basic menu	❑ If you use the MENU to close the Basic menu, only the Basic menu appears when you press MENU again. To access the other menus, select the advanced menu option (page 39).
The TV is dirty	❑ Clean the TV with a soft dry cloth. Never use strong solvents such as thinner or benzine, which might damage the finish of the cabinet.
I lost the parental control password	❑ In the password screen, enter the following master password: 4357. After using the master password, you must create a new password. You cannot use the master to unlock currently blocked channels.
There is a black box on the screen	❑ You have selected a text option in the Setup menu (page 38) and no text is available. To turn off this feature, select Off in the Caption Vision option. If you were trying to select closed captioning, select CC1-4 instead of Text1-4.
There was a blackout or power outage, and now the TV won't turn on and the timer LED is flashing	❑ Press the POWER button on your remote control or on the TV front panel.

(continued)

Remote Control

Problem	Possible Remedies
I cannot operate the remote control	❑ Press TV (FUNCTION) when operating your TV. ❑ Check the orientation of the batteries. ❑ Batteries could be weak. Replace them (page 2). ❑ Move the TV three to four feet away from fluorescent lights.
I cannot change channels with the remote control	❑ Make sure you have not inadvertently switched your TV from the channel 3 or 4 setting if you are using another device to change channels. ❑ If you are using another device to control channels, be sure that you have pressed the FUNCTION button for that device. For example, if you are using your VCR to control channels, be sure to press the VCR/DVD FUNCTION button (page 3).
I lost the remote control	❑ You can use the front panel controls to access your menus, change channels, adjust the volume, or change video inputs (page 2). Contact your nearest Sony Dealer to order a replacement, please call our Sony Direct Accessory and Part Center at 1-800-488-7669 (U.S. residents only).

Programming The Remote Control

Problem	Possible Remedies
More than one code is listed	❑ Try entering them one by one until you come to the correct code for your component.
I entered the wrong code number	❑ If you enter a new code number, the code number you previously entered at that setting is erased.
I cannot operate a component with the remote control	❑ Use the component's own remote control.
When I changed the batteries, the code numbers changed back to the factory settings	❑ You must reprogram the remote control (page 5).

Video

Problem	Possible Remedies
No picture, no sound	❏ Make sure the power cord is plugged in. ❏ If a red light is flashing on the front of your TV for more than a few minutes, disconnect and reconnect the power cord. If the problem continues, call your local service center. ❏ Check the TV/VIDEO setting: when watching TV, set it to TV; when watching video equipment, set it to VIDEO 1, 2, 3, 4 or 5 (page 3). ❏ Make sure you have inserted the batteries correctly into the remote control (page 2). ❏ Try another channel to rule out station trouble.
Poor or no picture, good sound	❏ Adjust the **Picture** setting in the Video menu (page 26). ❏ Adjust the **Brightness** setting in the Video menu (page 26). ❏ Check the antenna and/or cable connections (page 11).
No color	❏ Adjust the **Color** setting in the Video menu (page 26).
Only snow appears on the screen	❏ Check the **Cable** setting in the Channel menu (page 29). ❏ Check the antenna and/or cable connections (page 11). ❏ Make sure the channel selected is currently broadcasting.
Dotted lines or stripes	❏ Adjust the antenna. ❏ Move the TV away from other electronic equipment. Some electronic equipment creates electrical noise, which can interfere with TV reception.
Double images or ghosts	❏ Check your outdoor antenna or call your cable service.

Audio

Problem	Possible Remedies
Good picture, no sound	❏ Press MUTING so that Muting disappears from the screen (page 3). ❏ Check your Audio settings. Your TV may be set to Auto SAP in the MTS feature (page 27). ❏ Make sure the speaker option is set to On in the Audio Menu. ❏ Press VOL − to adjust your TV's volume.

(continued)

Dynamic Bass Response System (Subwoofer)

Problem	Possible Remedies
No sound	❑ Check the SUBWOOFER +/- inputs on the rear panel of the TV to make sure the cables are connected correctly (see page 12).

Channels

Problem	Possible Remedies
I cannot receive higher number channels (UHF) when using an antenna	❑ Make sure **Cable** is set to Off in the Channel menu (page 29). ❑ Perform Auto Program to add channels that are not presently in the memory (page 21).
Cable stations don't seem to work	❑ Make sure **Cable** is set to On in the Channel menu (page 29). ❑ Perform Auto Program to add channels that are not presently in the memory (page 21).
I cannot get anything but TV	❑ Be sure that you did not set the video in the Setup menu (page 38) to skip your video inputs. If a video input has been set to **Skip**, it will be skipped when you press the TV/VIDEO button.

Contacting Sony

Before calling our Customer Information Services Center, reset the TV to factory settings (see page 21). Please have your TV serial number ready. The number is located on the rear of your TV and on the front cover of this manual.

Our Customer Information Services Center phone number is 1-800-222-SONY (7669) (US residents only) or (416) 499-SONY (7669) (Canadian residents only).

Specifications

Television system	American TV standard/NTSC			
Channel coverage	VHF: 2-13/UHF: 14-69/CATV: 1-125			
Antenna	75-ohm external antenna terminal for VHF/UHF			
Picture tube	FD Trinitron® tube			
Power requirements	120V, 60 Hz			
Supplied accessories	Size AA (R6) batteries (2) Remote Control RM-Y180 (1)			
Inputs/outputs	Inputs 1	1 video, 1 audio (front) 2 video, 2 audio (rear) 1 S VIDEO 1 RF 2 Y, PB, PR, 2 audio	Outputs	1 AUDIO OUT 1 Dynamic Bass Response System (Subwoofer)
Optional accessories	Connecting cables VMC-810S/820S, VMC-720M, YC-YC-15V/30V, RK74A EAC-66U/V mixer TV Stand: SU-27F1			
KV-27FA210				
Screen size	Visible screen size: 679 mm (27 inches) measured diagonally Actual screen size: 736.6 mm (29 inches) measured diagonally			
Speaker output	10 W x 2			
Dynamic Bass Response System	20 W			
Power consumption	195 W in use 1 W in standby			
TV Dimensions with the Dynamic Bass Response System installed (W/H/D)	784 x 633.7 x 520 mm ($30\,^{7}/_{8}$ x $24\,^{7}/_{8}$ x $20\,^{1}/_{2}$ inches)			
Mass	52.8 kg (116.2 lbs)			

Design and specifications are subject to change without notice.

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Sony Corporation Printed in U.S.A.

PRINTING THE SERVICE MANUAL

The PDF of this service manual is not designed to be printed from cover to cover. The pages vary in size, and must therefore be printed in sections based on page dimensions.

NON-SCHEMATIC PAGES

Data that does NOT INCLUDE schematic diagrams are formatted to 8.5 x 11 inches and can be printed on standard letter-size and/or A4-sized paper.

SCHEMATIC DIAGRAMS

The schematic diagram pages are provided in two ways, full size and tiled. The full-sized schematic diagrams are formatted on paper sizes between 8.5" x 11" and 18" x 30" depending upon each individual diagram size. Those diagrams that are LARGER than 11" x 17" in full-size mode have been tiled for your convience and can be printed on standard 11" x 17" (tabloid-size) paper, and reassembled.

TO PRINT FULL SIZE SCHEMATIC DIAGRAMS

If you have access to a large paper plotter or printer capable of outputting the full-sized diagrams, output as follows:

1) Note the page size(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.

2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your large format printer. Confirm that the printer settings are set to output the indicated page size or larger.

3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

TO PRINT TILED VERSION OF SCHEMATICS

Schematic pages that are larger than 11" x 17" full-size are provided in a 11" x 17" printable tiled format near the end of the document. These can be printed to tabloid-sized paper and assembled to full-size for easy viewing.

If you have access to a printer capable of outputting the tabloid size (11" x 17") paper, then output the tiled version of the diagram as follows:

1) Note the page number(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.

2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your printer. Confirm that the plotter settings are set to output 11" x 17", or tabloid size paper in landscape (▭) mode.

3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

TO PRINT SPECIFIC SECTIONS OF A SCHEMATIC

To print just a particular section of a PDF, rather than a full page, access the Graphics Select tool in the Acrobat Reader tool bar.

1) To view the Graphics Select Tool, press and HOLD the mouse button over the Text Select Tool which looks like: 
This tool will expand to reveal to additional tools.
Choose the Graphics Select tool by placing the cursor over the button on of the far right that looks like: 

2) After selecting the Graphics Select Tool, place your cursor in the document window and the cursor will change to a plus (+) symbol. Click and drag the cursor over the area you want to print. When you release the mouse button, a marquee (or dotted lined box) will be displayed outlining the area you selected.

3) With the marquee in place, go to the file menu and select the "Print..." option. When the print window appears, choose the option under the section called "Print Range" which says "Selected Graphic".

Select OK and the output will print only the area that you outlined with the marquee. 

(continued >)

ON-SCREEN SEARCH OPTION

All of the text within the service manual PDF is content searchable. This means that you can enter any text, word, phrase or reference number that appears in the manual, and the PDF software will search, find and move the cursor to the location where you requested text first appears. This feature can be particularly useful in locating components on a specific schematic or printed wire circuit board (PWB) diagrams.

Follow these steps to effectively locate a component on a schematic diagram:

1) Locate the schematic you want to search by clicking on the corresponding bookmark on the left side of the screen. The view on the right of the screen will then jump to the desired schematic page.

2) Magnify the diagram to at least 400% before conducting a component search. This will enable you to easily view the reference number when it is highlighted on screen. To do this, click on the magnifying glass button on the tool bar at the top of the screen. Move the cursor over the diagram and RIGHT click you mouse. Select the 400% magnification option on the pop-up menu. Click on the button with the icon of the open hand to deactivate the magnification tool

3) Search the diagram (or the entire manual) by clicking on the binocular button tool at the top of the screen. The “Find” window will appear and allow you to type in your desired text. Type in a reference designator, such as R502, and click on the “Find” button. If the component is not on the diagram, but is listed anywhere else in the manual, the cursor will jump to the first location the text is found in the file. To find another instance of that same text, click on the binocular button again and select “Find Again.”