4153

CPD-1302

SERVICE MANUAL

US Model
Canadian Model

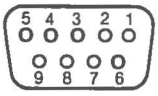
Chassis No. SCC-A08A-A

MULTISCAN

August, 1986

SPECIFICATIONS

Picture tube	Super Fine Pitch Trinitron color tube 13-inch picture tube measured diagonally 90 degree deflection Anti-glaring dark screen Useful screen 274mm × 207mm Phosphor P22 Phosphor pitch 0.26mm
Resolution	900 × 560 dots
Scanning frequency	Vertical sync signal frequency: 50–100 Hz Horizontal sync signal frequency: 15.0–34.0 kHz
Input	RGB input (D-sub 9 pin) (Analog and TTL available)



Pin Connection

Pin No.		1	2	3	4	5	6	7	8	9	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
NORMAL		GND	GND	R	G	B	GND	-	HD	VD	15.0 - 34.0	50 - 100
D2	D2-1	GND	GND	R	G	B	Yi	-	HD	VD	15.0 - 17.0	50 - 100
	D2-2	GND	r	R	G	B	g	b	HD	VD	17.0 - 27.0	55 - 100
	D2-3	GND	GND	-	-	-	Yi	G	HD	VD	17.0 - 27.0	50 - 55
	D2-4	GND	r	R	G	B	g	b	HD	VD	27.0 - 34.0	50 - 100
D1		GND	GND	R	G	B	Yi	-	HD	VD	15.0 - 34.0	50 - 100

GND: Grounded R: Red signal G: Green signal
B: Blue signal -: No connection HD: Horizontal drive signal
VD: Vertical drive signal Yi: Intensity signal
r: Separate red signal for EGA g: Separate green signal for EGA
b: Separate blue signal for EGA

- ANALOG
  — SYNC ON GREEN are automatically available.
  — When ANALOG is selected, Pin 8 is available for both positive and negative computer sync signals.
- TTL
  — TTL signal is available for NORMAL, D1, and D2.
  — HD and VD are available for both positive and negative.
  — D2-3 can be used for green monochrome monitor.
- Vertical size
  When vertical frequency changes, the vertical size can be manually adjusted. (except D2)

Power requirements	120V AC, 50/60 Hz
Power consumption	96 W (maximum)
Dimensions	370×330×415 mm (w/h/d) (14 5/8×13×16 3/8 inches) including projecting parts
Weight	14.5 kg (32 lb)
Supplied accessory	AC power cord (1)

Optional accessories

Monitor cable (9-pin ↔ 9-pin)	SMF-512 SMF-513 SMF-514
Display stand	SU-535

Design and specifications subject to change without notice.

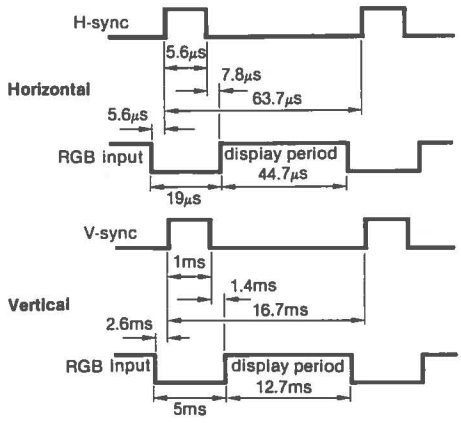
MICROFILM

TRINITRON® CHARACTER DISPLAY

SONY®

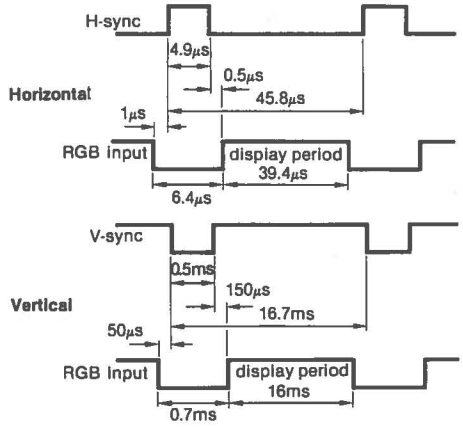
Timing Charts (for approximate reference)

[1] D2-1 (IBM CGA compatible)



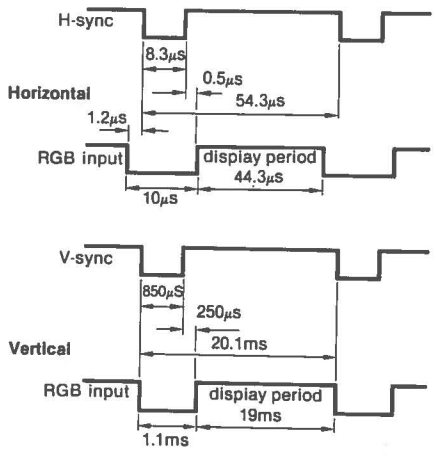
The indicated values apply when the line period is 63.7µs and the field period is 16.7ms.

[2] D2-2 (IBM EGA compatible)



The indicated values apply when the line period is 45.8µs and the field period is 16.7ms.

[3] D2-3 (IBM MDA compatible)



The indicated values apply when the line period is 54.3µs and the field period is 20.1ms.

Note

The picture may be biased or the picture size may be changed depending on the timing of the connected equipment.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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 the receiving antenna
Relocate the equipment with respect to the receiver
Move the equipment away from the receiver
Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

A shielded interface cable such as the SMF-series recommended on page 6 must be used with this equipment.

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 TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

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

SAFETY CHECK-OUT

(US Model only)

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

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

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 microampers). Leakage current can be measured by any one of three methods.

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

HOW TO FIND A GOOD EARTH GROUND

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

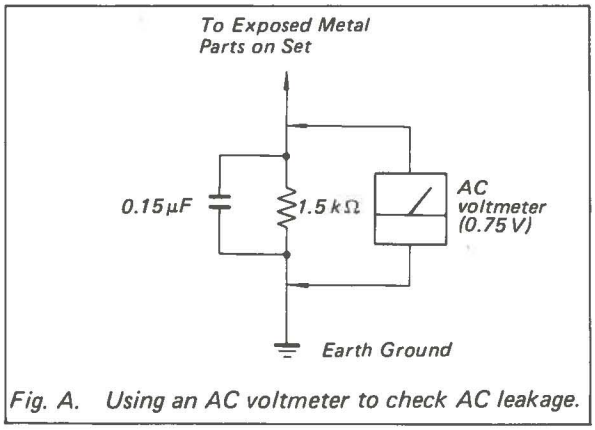


Fig. A. Using an AC voltmeter to check AC leakage.

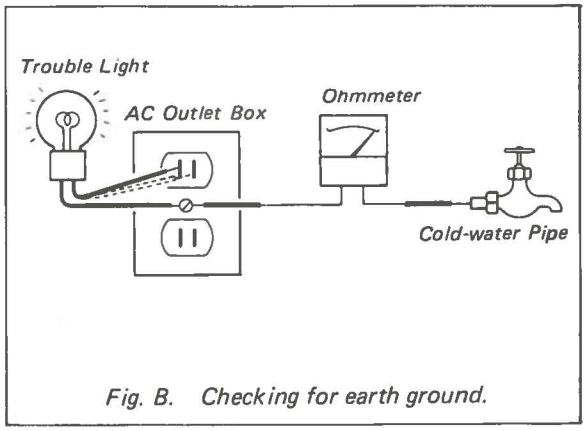


Fig. B. Checking for earth ground.

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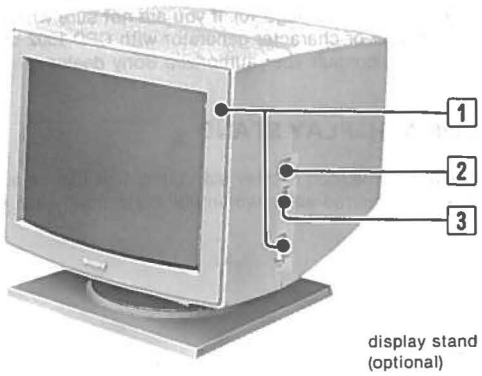
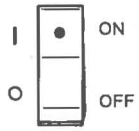
SECTION 1
GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS

On the front panel



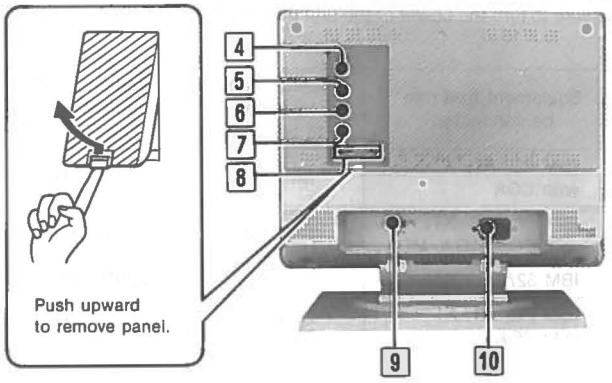
[1] **POWER switch and indicator (green)**
To turn on the power of the unit, press this switch to ON. The indicator will light up. To turn off the unit, press towards OFF.



[2] **PICTURE control**
Adjusts the contrast. Turn downwards to increase contrast, or upwards for less contrast.

[3] **BRIGHTNESS control**
Normally keep this control at the center detent position. For a brighter display, turn this knob downwards, or for a darker display, turn it upwards.

On the rear panel



[4] **H SHIFT (horizontal shift) control**
Turn this control to center the displays of microcomputers, character generators, etc. that are shifted toward the left or right side of the screen.

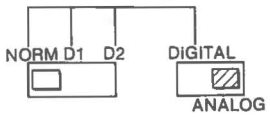
[5] **V SHIFT (vertical shift) control**
Turn this control to eliminate any shifting in the vertical direction.

[6] **H SIZE (horizontal size) control**
Turn this control to adjust the horizontal size.

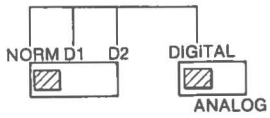
[7] **V SIZE (vertical size) control**
Turn this control to adjust the vertical size.

[8] **RGB input selectors**
Depending on the RGB output of the equipment you have connected, set these switches to one of the following four positions.

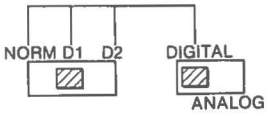
ANALOG: For microcomputers having analog RGB output, such as those using the PGA card. The position of the left switch has no effect when the right switch is set to ANALOG.



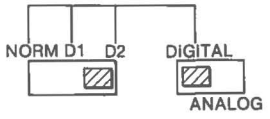
NORM-DIGITAL: For microcomputers having TTL RGB output, such as the IBM 3270.



D1-DIGITAL: For microcomputers having TTL RGB and I signal output, such as the IBM PC, AT and XT using the standard color graphics card.



D2-DIGITAL: For TTL graphics cards on the IBM PC, AT and XT. (automatic adjustment between EGA, CGA and MDA)



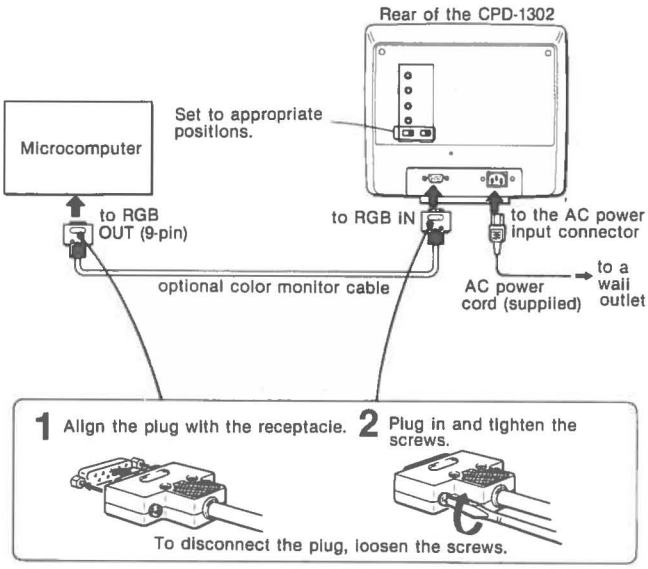
[9] **RGB IN (input) connector (9-pin D-sub)**
Allows a microcomputer having either analog or digital RGB output to be connected.
Refer to page 8.

[10] **AC IN connector**
Connect to the AC outlet with the supplied AC power cord.

1-2. CONNECTIONS

Use an appropriate optional color monitor cable with 9-pin D-sub connectors shown in the table.
Be sure to turn the power of the unit off before making any connections.

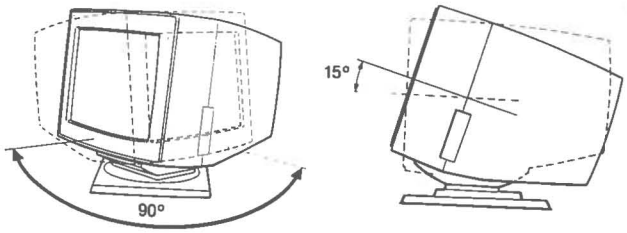
Equipment that can be connected	Monitor cable (optional) to be used	Position of RGB input selectors of the CPD-1302
IBM PC, AT, XT with CGA	SMF-512	D1-DIGITAL
IBM PC, AT, XT with EGA, CGA, MDA	SMF-512	D2-DIGITAL
IBM 3270	SMF-514	NORM-DIGITAL
IBM PC, AT, XT with PGA	SMF-513	ANALOG



Note
The monitor cable should arrange the RGB output signals of the connected equipment so that they match the signal assignment of the RGB IN connector of this unit (See page 10). If you are not sure whether you can use your computer or character generator with CPD-1302 or which monitor cable to use, consult your authorized Sony dealer.

1-3. USE OF A DISPLAY STAND

With the optional Sony SU-535 display stand, this unit can be adjusted to be viewed at your desired angle within 90° horizontally and 15° vertically.

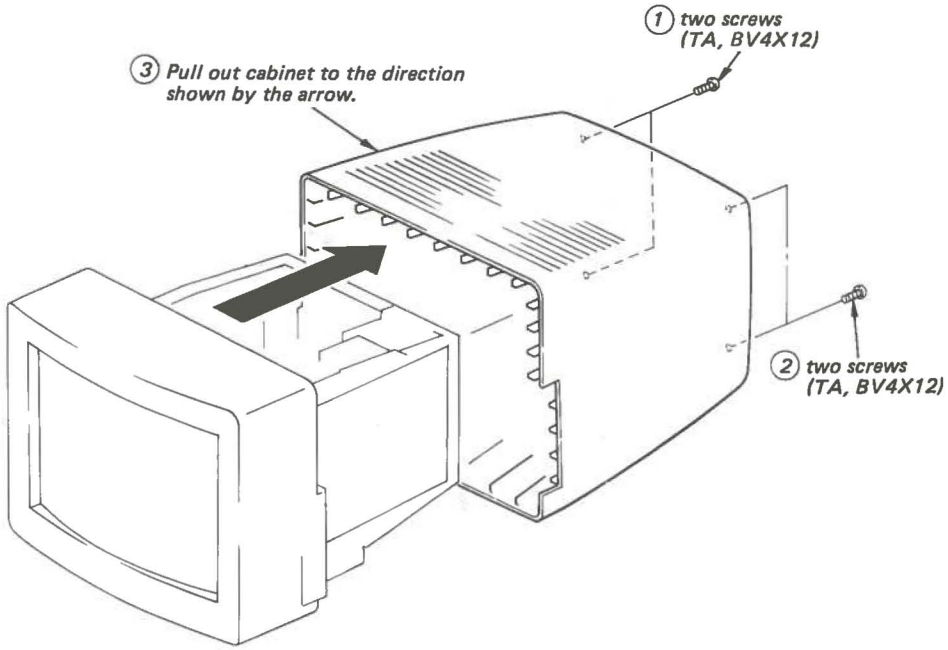


For details, read the instructions of the display stand.

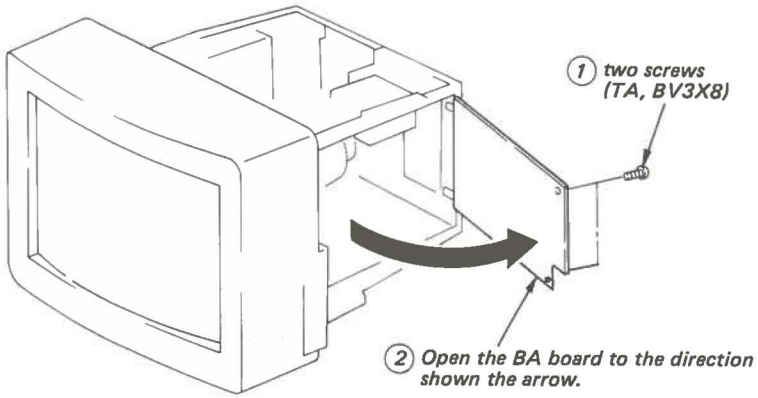
SECTION 2
DISASSEMBLY

- Follow the disassembly procedure in the numerical order given.

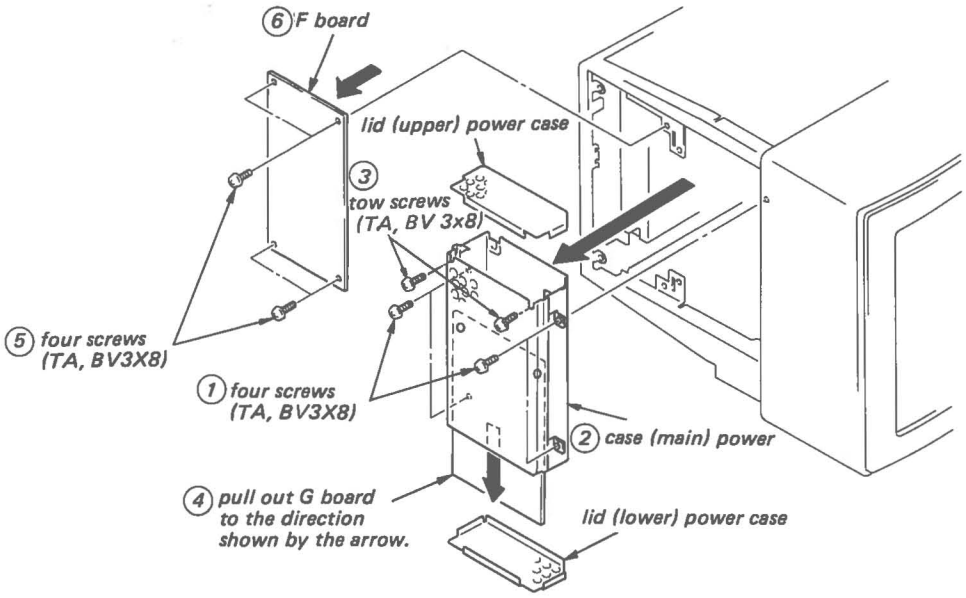
2-1. CABINET REMOVAL



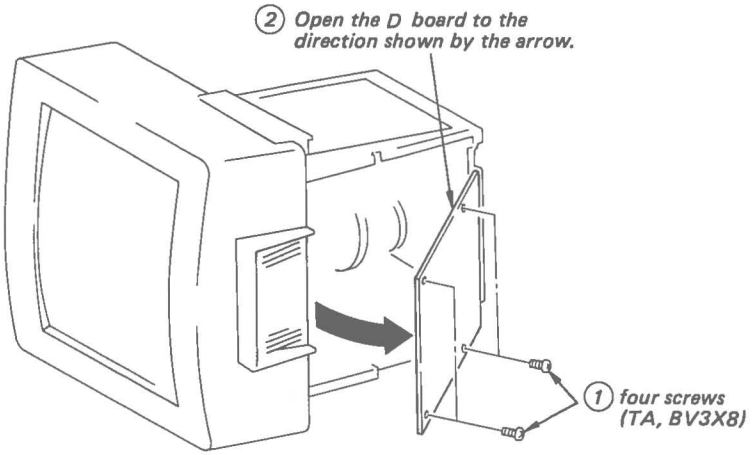
2-2. CHECKING FOR BA BOARD UP



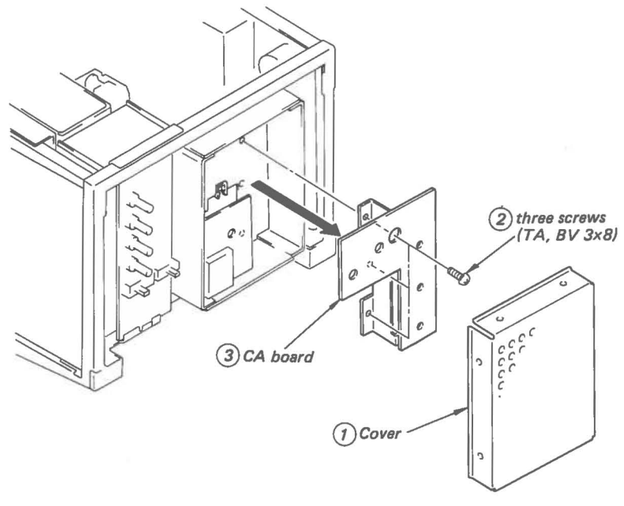
2-3. CHECKING FOR G AND F BOARDS UP



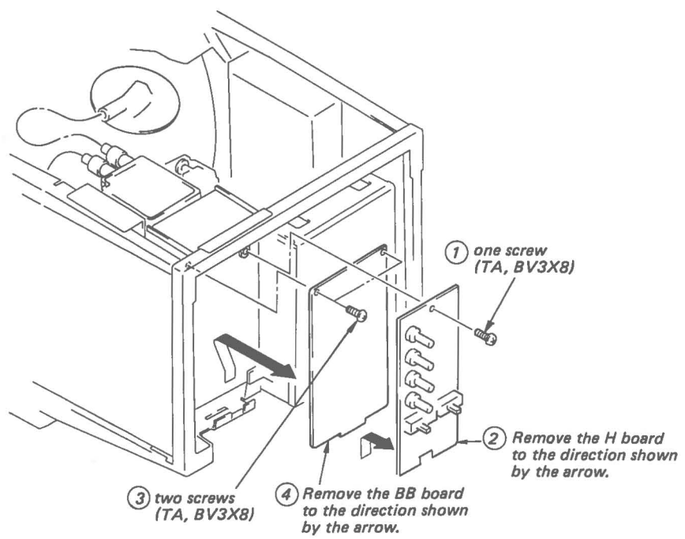
2-4. CHECKING FOR D BOARD UP



2-5. CHECKING FOR CA BOARD UP

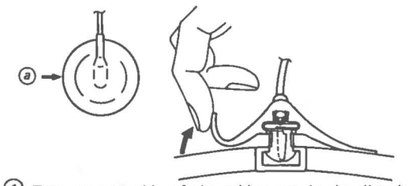


2-6. CHECKING FOR H AND BB BOARDS UP

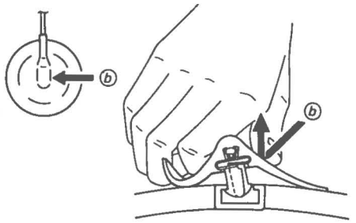


2-7. PICTURE TUBE REMOVAL

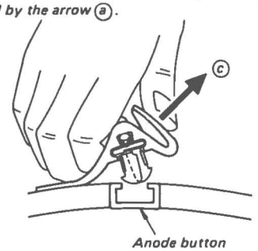
- **Removing Procedures**



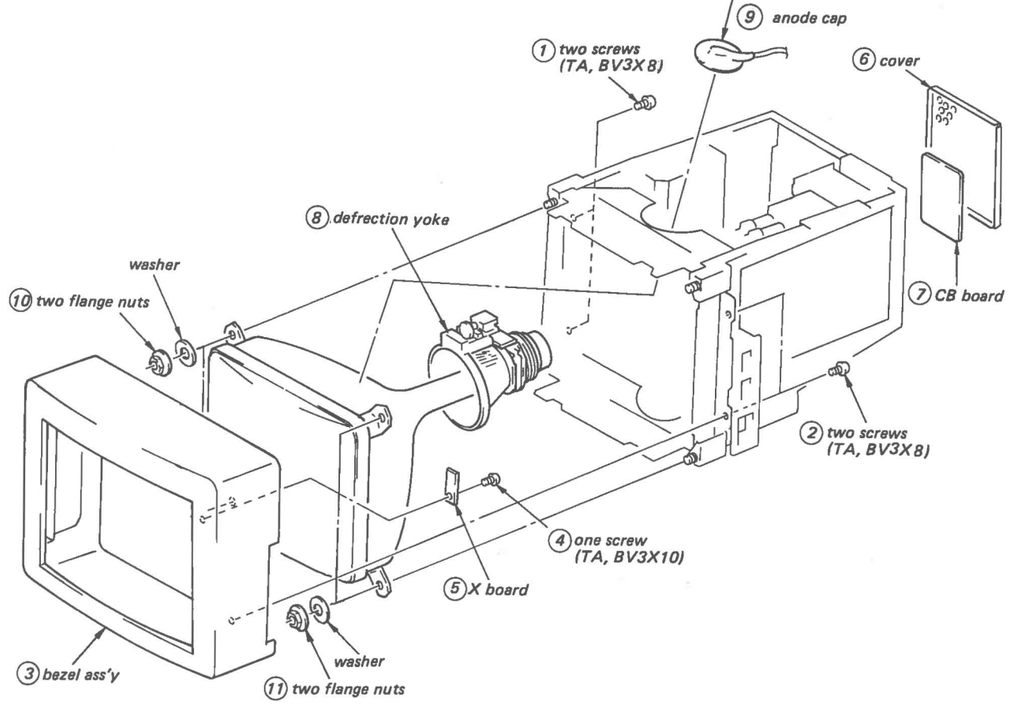
1 Turn up one side of the rubber cap in the direction indicated by the arrow (a).



2 Using a thumb, pull up the rubber cap firmly in the direction indicated by the arrow (b).



3 When one side of the rubber cap is separated from the anode button, the anode cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow (c).



SECTION 3
SAFETY RELATED ADJUSTMENT

NOTE:

(1) TEST EQUIPMENT REQUIRED

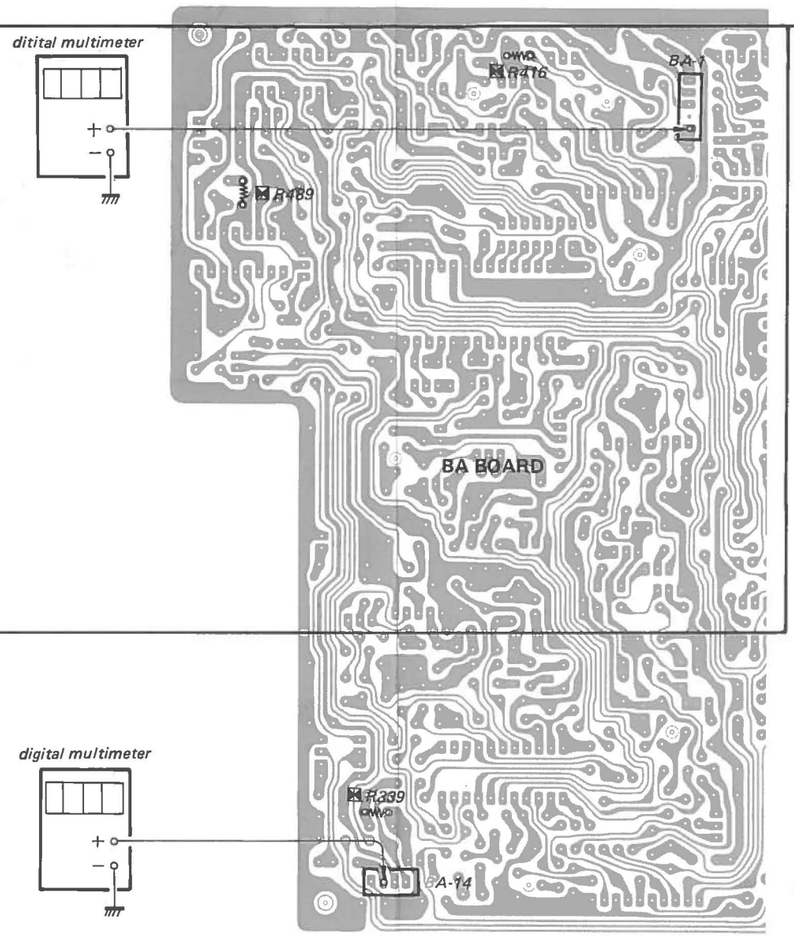
1. Voltmeter (VOM)
2. Digital multimeter
3. DC POWER SUPPLY.
4. SONY Microcomputer SMC-70

+B MAX (⊠ R416, R489)

Be sure to perform the following adjustment after replacing the parts below. (Marked on ◪ the schematic diagram).

(G board) Q653, R658, R659, T653
(BA board)
IC401, IC404, IC405, Q409, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R424, R425, R448, R479, R480, R489, R488.

1. *Input a dot signal and set PICTURE, BRIGHT to minimum.*
2. *Turn +B VR (RV403) to maximum.*
3. *Observe BA board to connecter pin (1) BA-1 on the digital multimeter.*
4. *Set SMC-70 output to fH = 15.734 kHz and confirm that the +B line is less than 62.0V dc.*
5. *Set SMC-70 output to fH = 18.4 kHz and confirm that the +B line is less than 72.8V dc.*
6. *Set SMC-70 output to fH = 21.8 kHz and confirm that the +B line is less than 86.0V dc.*
7. *Set SMC-70 output to fH = 25 kHz and confirm that the +B line is less than 97.8V dc.*
8. *Set SMC-70 output to fH = 31.5 kHz and confirm that the +B line is less than 124.5V dc.*
9. *If the specification is not met, adjust R416, R489 and repeat steps 1 and 3 until satisfied.*



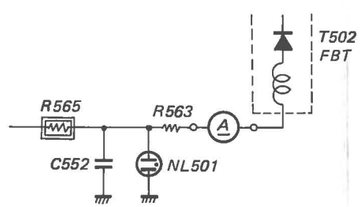
HOLD DOWN ADJUSTMENT (⊠ R339)

Be sure to perform the following adjustment after replacing the parts below. (Marked ◪ on the schematic diagram).
(BA board)
IC301, IC302, D304, R301, R302, R335, R336, R337, R338, R339, R340, R341, R342.
(D board)
R565, R566

1. *Set the PICTURE and BRIGHTNESS control to maximum.*
2. *Input the dot pattern signal.*
3. *Set SMC-70 output to fH = 21.8 kHz and confirm that the BA board to connecter pin (2) BA-14 is less than 7.3±0.8V dc.*
4. *Set the PICTURE and BRIGHTNESS control to minimum and supply is less than 8.95V dc, confirm that HV HOLD DOWN operates.*
5. *Adjust ABL current to 400$^{+0}_{-20}$ μA with PICTURE and BRIGHTNESS controls.*
6. *Confirm that there is less than 8.70V dc whereby the raster disappears during operation of hold-down circuit.*

Note: If the hold-down circuit starts operating in the above case, switch OFF the POWER of the set immediately.

7. *If above steps is not satisfied, select resistance valve of R339 and repeat above steps 1 through 6.*

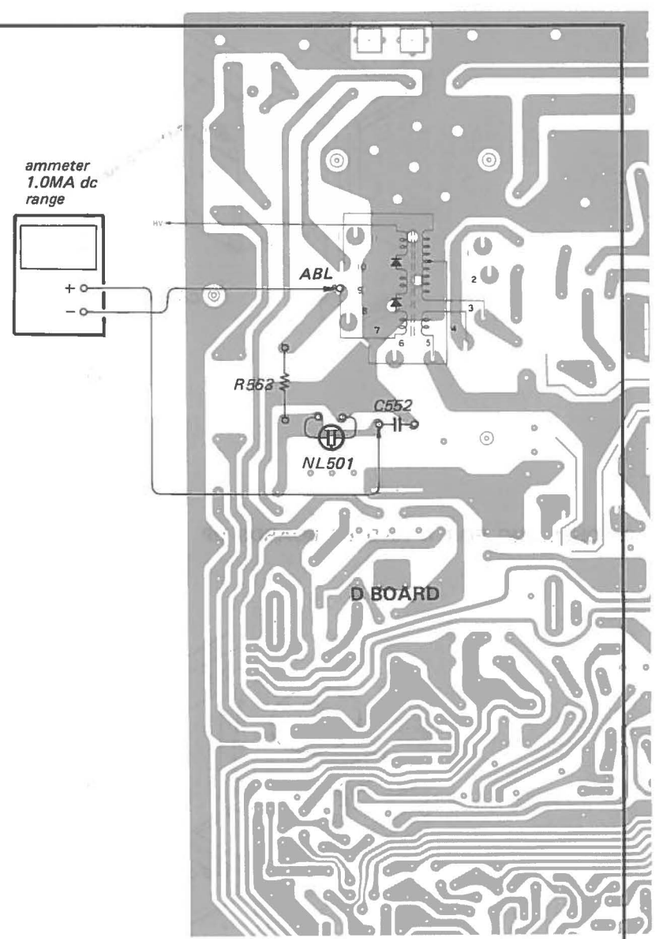


CONFIRMATION WHEN REPLACING H.V.R. (HIGH VOLTAGE REGISTER)

The following adjustments should always be performed with reference to whether an X-ray radiation control circuit is connected or not, when replacing H.V.R.

** This check is to be performed when H.V.R. only is replaced, and has no relation to the hold-down circuit readjustment for replacement of parts marked ◪.*

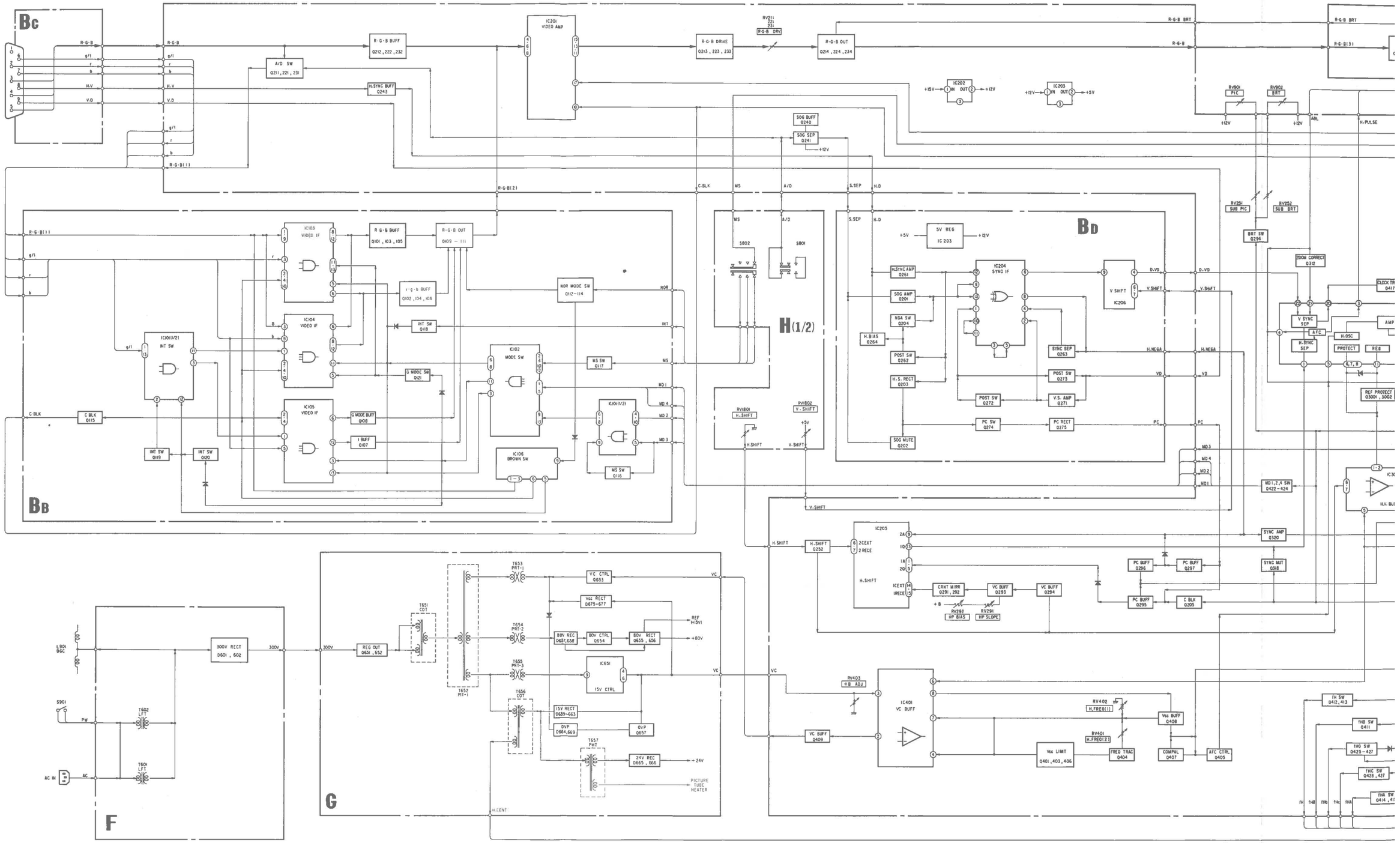
(Connection Confirmation)

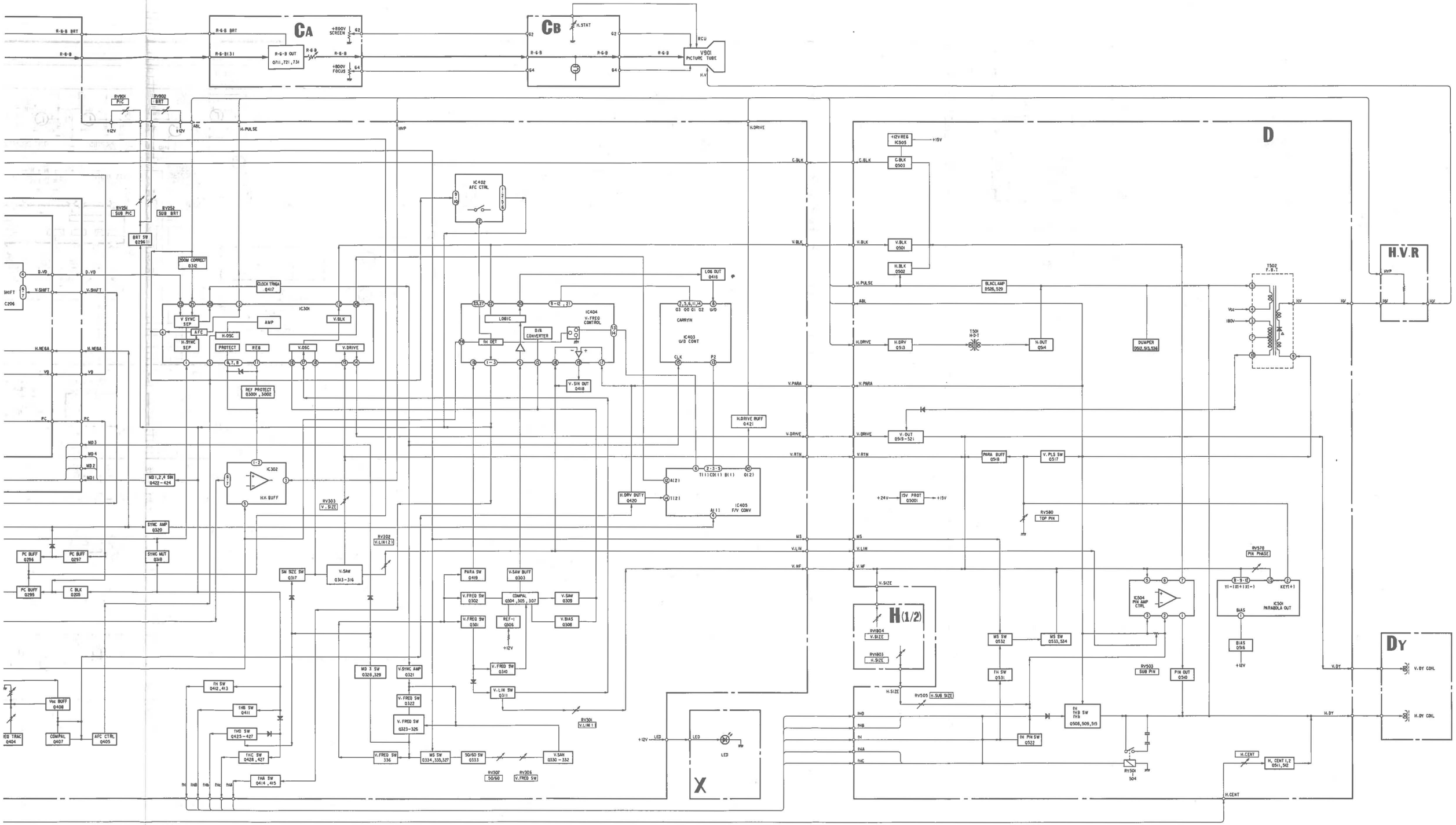


1. *Turn the POWER switch ON, and receive white signals and set the PICTURE and BRIGHTNESS controls to MAX.*
2. *When the set is operating normally with 120V AC supply, confirm the voltage of the connection point for connector (2) pin BA-14 is 7.3±0.8V dc.*

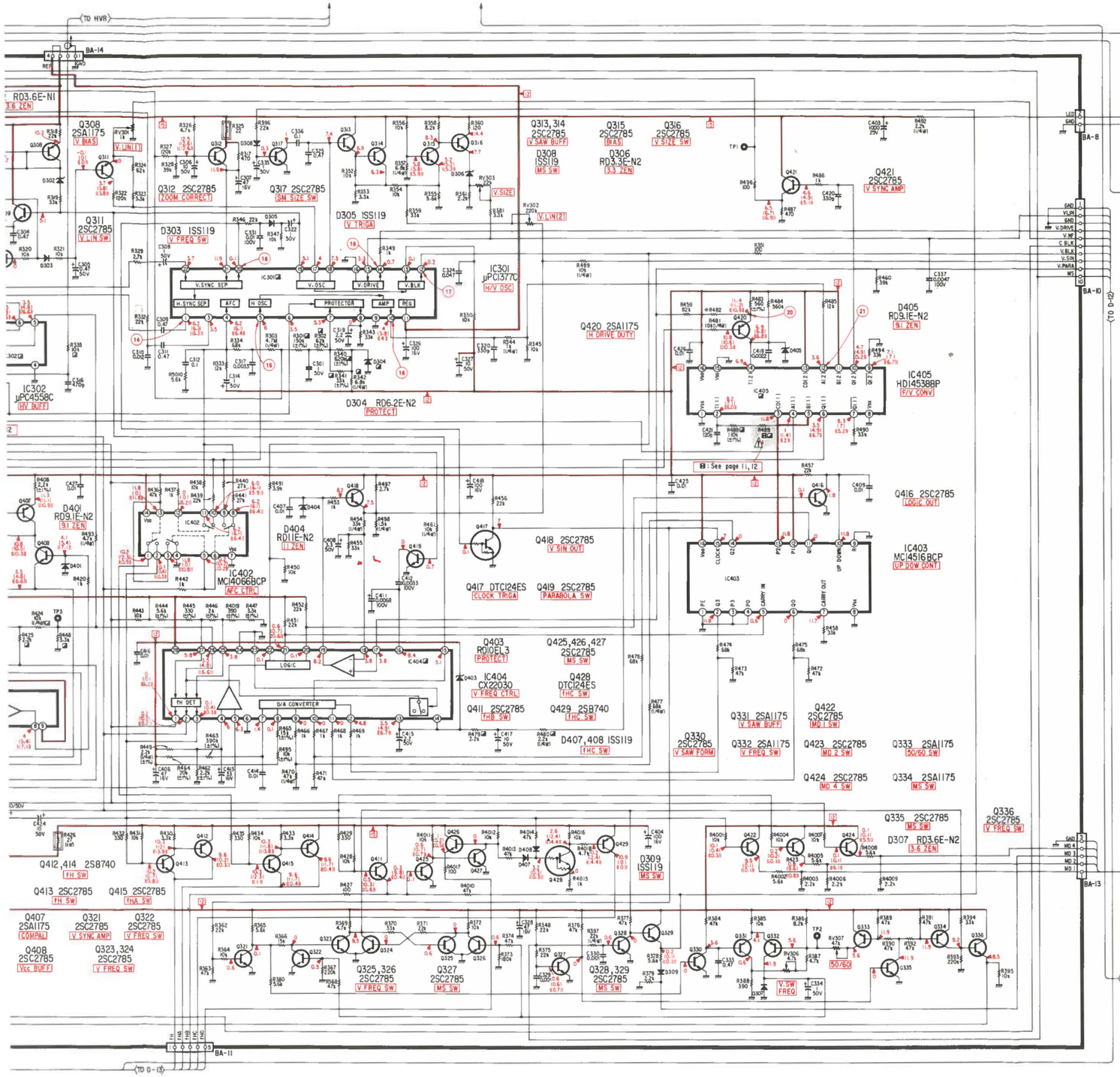
SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAM

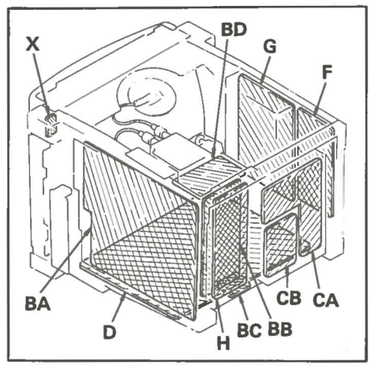



CA
CB
D
X
H.V.R
DY
R-G-B BRT
R-G-B
R-G-B OUT Q711,721,731
+800V SCREEN
+800V FOCUS
H.STAT
RCU
V901 PICTURE TUBE
H.V
RV901 PIC
RV902 BRT
RV251 SUB PIC
RV252 SUB BRT
BRT SW Q296
+12V
ABL
H.PULSE
HVP
H.DRIVE
C.BLK
V.BLK
H.BLK Q502
V.BLK Q501
+12V REG IC505
+15V
BLK.CLAMP D526,529
DUMPER D527,513,536
T502 F.B.T
H.DRV Q513
H.OUT Q514
T501 H.D.T
D.VD
V.SHIFT
H.MEGA
VD
PC
MD3
MD4
MD2
MD1
MD 1,2,4 SW Q422 - 424
ZOOM CORRECT Q312
CLOCK TRNSA Q417
IC301
V.SYNC SEP
AFC
H.SYNC SEP
H.OSC
PROTECT
REG
AMP
V.OSC
V.DRIVE
REF PROTECT Q300, 3002
IC402 AFC CTRL
LOGIC
TH DET
D/A CONVERTER
IC404 V.FREQ CONTROL
LOG OUT Q416
CARRYIN
IC403 U/D CONT
V.SIN OUT Q418
H.DRIVE BUFF Q421
IC302 H.V. BUFF
RV303 V. SIZE
SYNC AMP Q320
SYNC MUT Q318
PC BUFF Q296
PC BUFF Q297
PC BUFF Q295
C BLK Q205
RV302 V.LIN(2)
SW SIZE SW Q317
V.SAW Q313-316
PARA SW Q419
V.FREQ SW Q302
V.FREQ SW Q301
COMPAL Q304,305,307
REF-I Q306
V.SAW BUFF Q303
V.SAW Q309
V.BIAS Q308
+12V
MD 3 SW Q328,329
V.SYNC AMP Q321
V.FREQ SW Q322
V.FREQ SW Q323-326
V.FREQ SW Q336
MS SW Q334,335,327
50/60 SW Q333
V.SAW Q330-332
RV307 50/60
RV306 V.FREQ SW
RV304 V.LIN(1)
FH SW Q412,413
FHB SW Q411
FHD SW Q425-427
FHC SW Q428,427
FHA SW Q414,415
Vcc BUFF Q408
COMPAL Q407
AFC CTRL Q405
EQ TRAC Q404
H.DRIVE BUFF Q421
H.DRV DUTY Q420
IC405 F/V CONV
LED
+12V
V.DRIVE
V.RTN
V.PARA
V.OUT Q519-521
PARA BUFF Q518
V. PLS SW Q517
+24V
15V PROT Q500
+15V
RV580 TOP PIN
MS
V.LIN
V.HF
V.SIZE
H(1/2)
RV804 V.SIZE
RV803 H.SIZE
H.SIZE
RV505 H.SUB SIZE
MS SW Q532
MS SW Q533,534
TH SW Q531
TH PIN SW Q522
FH THB SW FHB Q508,509,515
IC504 PIN AMP CTRL
RV503 SUB PIN
PIN OUT Q540
RY501 504
RV370 PIN PHASE
IC501 PARABOLA OUT
BIAS
BIAS Q516
+12V
V.DY
V.DY COIL
H.DY
H.DY COIL
H.CENT
H. CENT 1,2 Q511,512
IHD
IHB
IH
IHA
IHC

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27



4-2. CIRCUIT BOARDS LOCATION



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

Note: Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

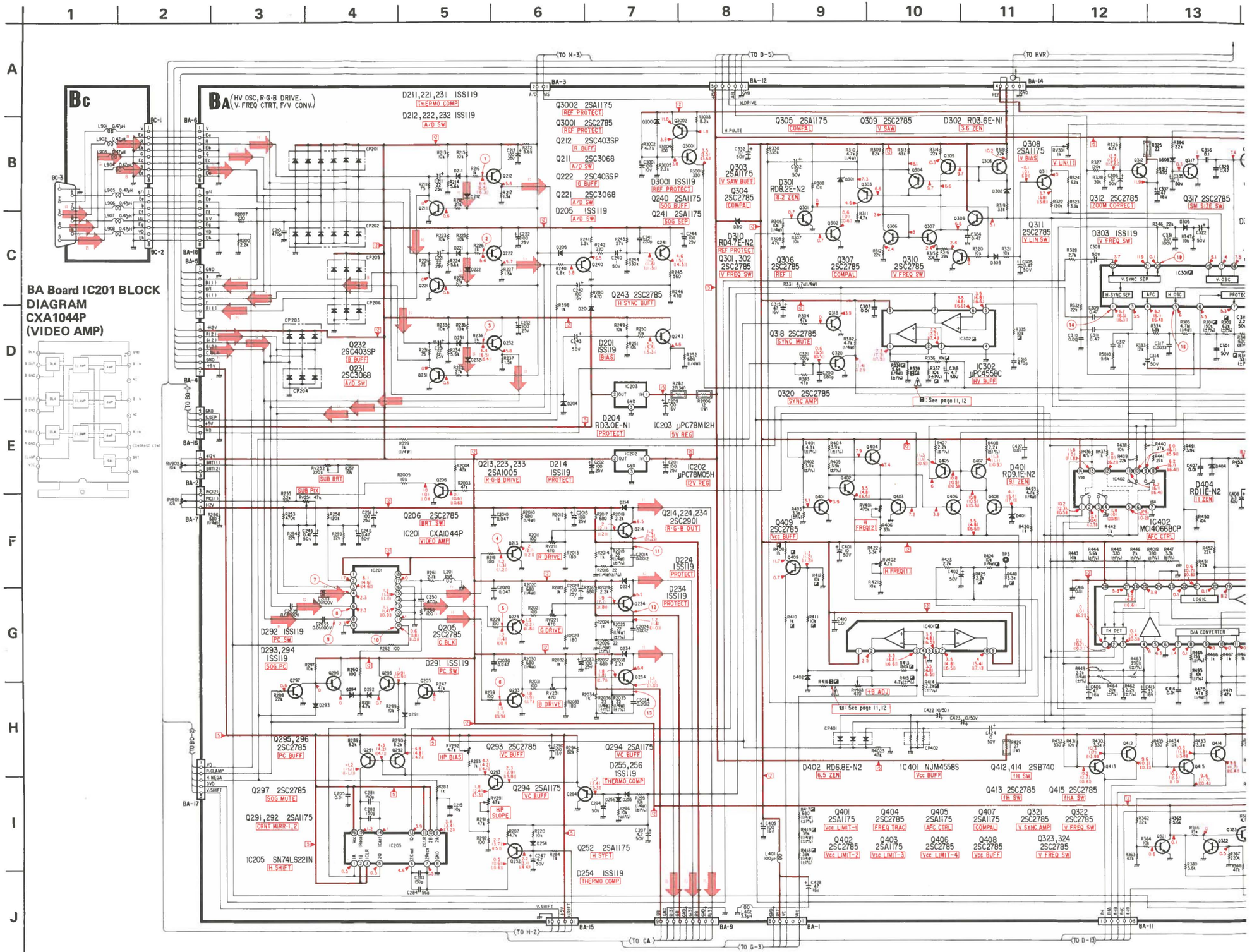
Note:

- All capacitors are in μF unless otherwise noted. p : μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/6W unless otherwise noted. k : 1000Ω, M : 1000kΩ.
- : nonflammable resitor.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : fusible resitor.
- △ : internal component.
- : panel designation.
- ✱ : selected to yield optimum performance.
- The components indentified by ✖ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ✖ and repeat the adjustment until the specified value is achieved. (Refer to R339, R416, R489 adjustment on page 11, 12.) When replacing the part in below table, be usre to perform the related adjustment.

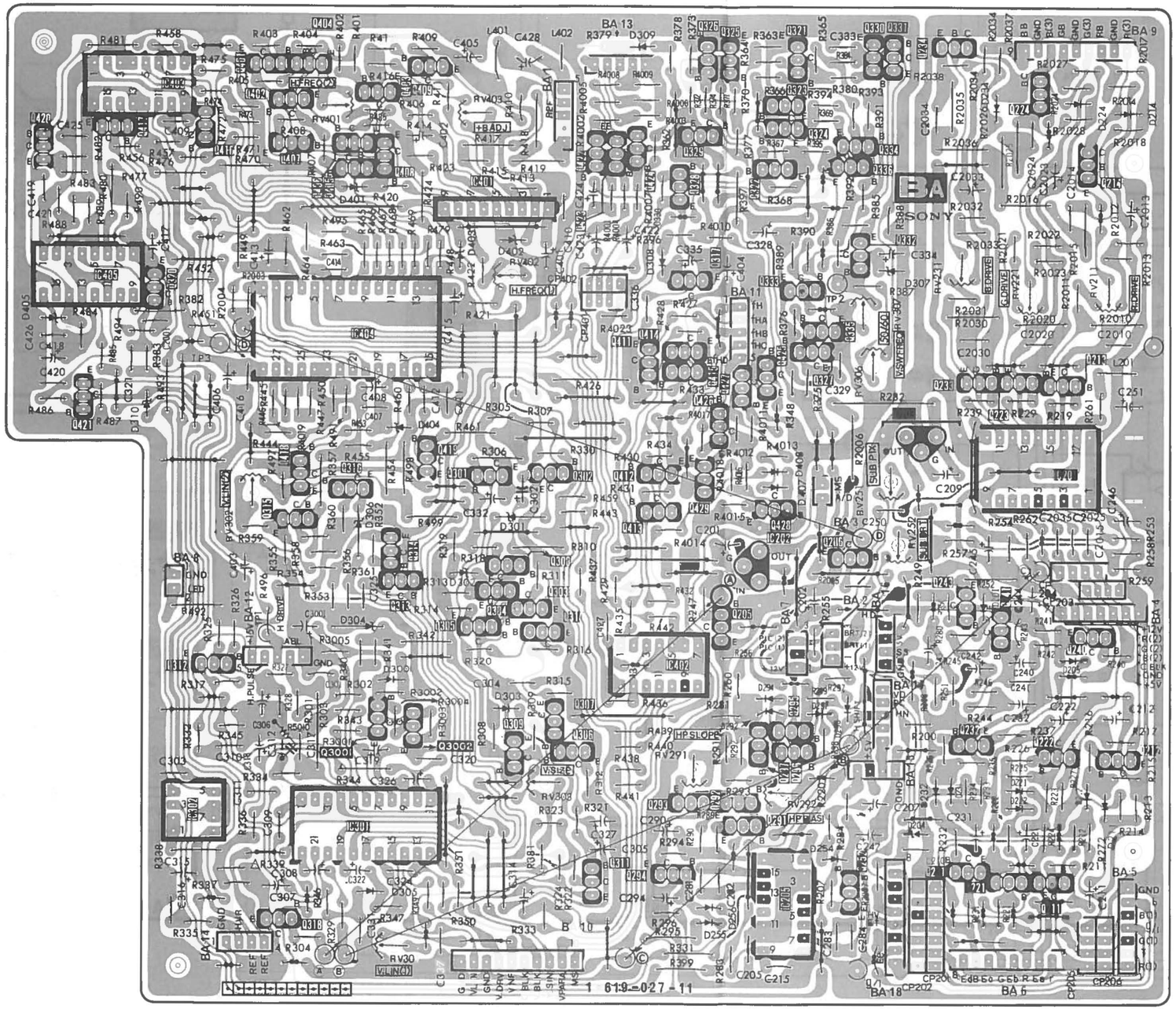
Part replaced (◪)	Adjustment (✖)
(G Board) Q653, R658, R659, T653 (BA Board) IC401, IC404, IC405, Q409, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418,, R419, R424, R425, R448, R479, R480, R488, R489.	R416, R489 (+B MAX)
(BA Board) IC301, IC302, R301, R302, R335, R336, R337, R338, R339, R340, R341, R342, D304 (D Board) R565, R566	R339 (HV HOLD DOWN)

- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 MΩ digital multimeter.
- Voltage variations my be noted due to normal production tolerances.
- Readings are taken with a color-bar-signal input. (SONY SMC-70)
- : adjustment to repair.
- no mark: with 15.73kHz color-bar signal received.
  ( ) : with 21.8kHz color-bar signal received.
  (( )) : with 30.12kHz color-bar signal received.
- ➡ : signal path.

4-3. SCHEMATIC DIAGRAMS



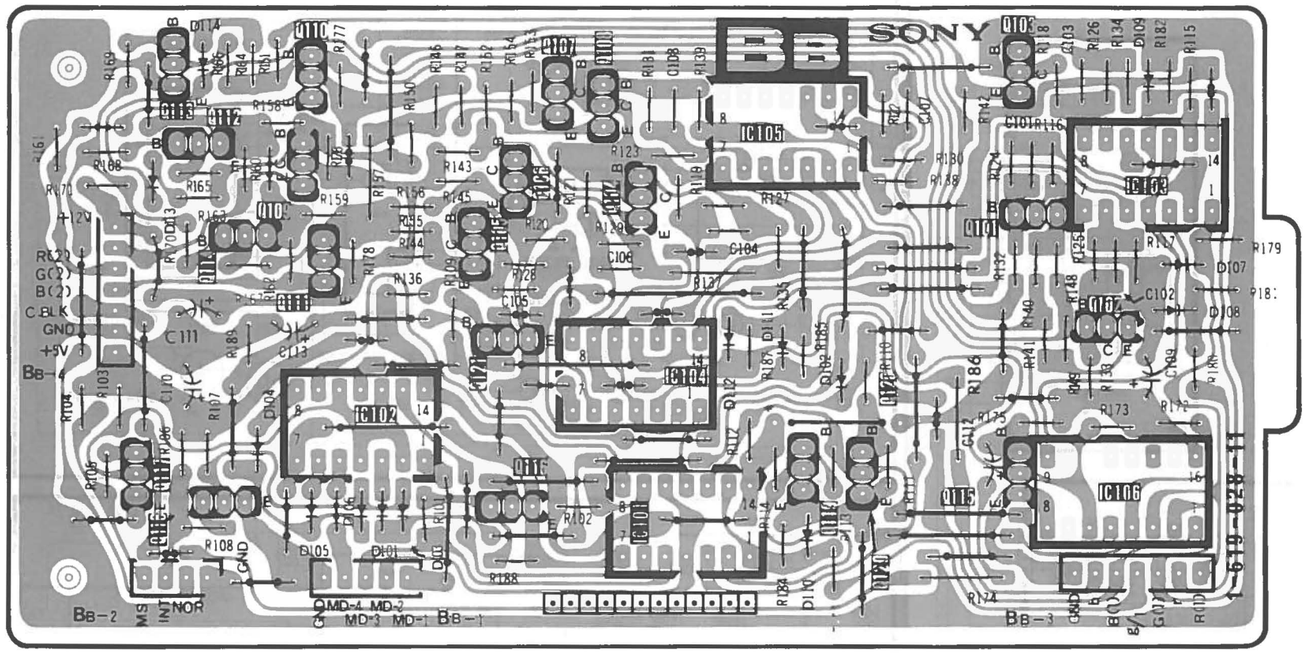
— BA Board —



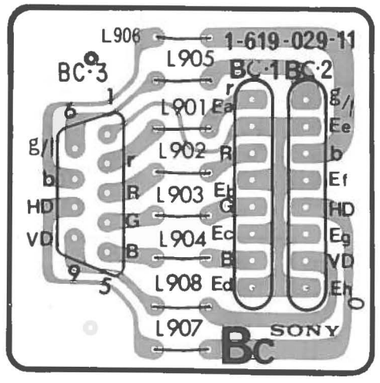
IC, Q	D	ADJ
326		
401 409 325 234	309	
404 403 321		
402 330 224		
331		
IC403		
420, 417 329 323	224	RV401
416 324	234	RV403
	214	
407, 406 422, 334		
408 423, 336		
405 424 214		
322		
328	401	
IC401		
320		
	402	
	403	
332	308	
	307	RV402
IC405 317		RV231
333		RV221
	405	RV211
IC404 335		RV307
411 327		
414, 425		RV306
415, 427		
233		
223	310	
213		
421		
426	404	
419 IC203		
IC201		
418 429	408	RV302
412	407	
316, 301		RV251
315 302 428	306	
413		
		RV252
314 206		
308 IC202	302	
313		
303		
304 243	201	
305		
310, 205, 241		
240	304	
	205	
312 IC402		
	3001	
	294	
	293	
3001 307	303	
3002 297	292	
306	291	
309 295, 232		
296 222		RV303
212	232	RV291
	231	
	222	RV292
IC302 293	221	
IC301 292	212	
291	211	
	204	
	254	
311 IC205 231	305	
294 252 221	256	
211	255	
318		
		RV301
IC, Q	D	ADJ

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

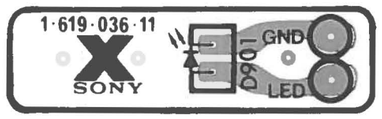
— BB Board —



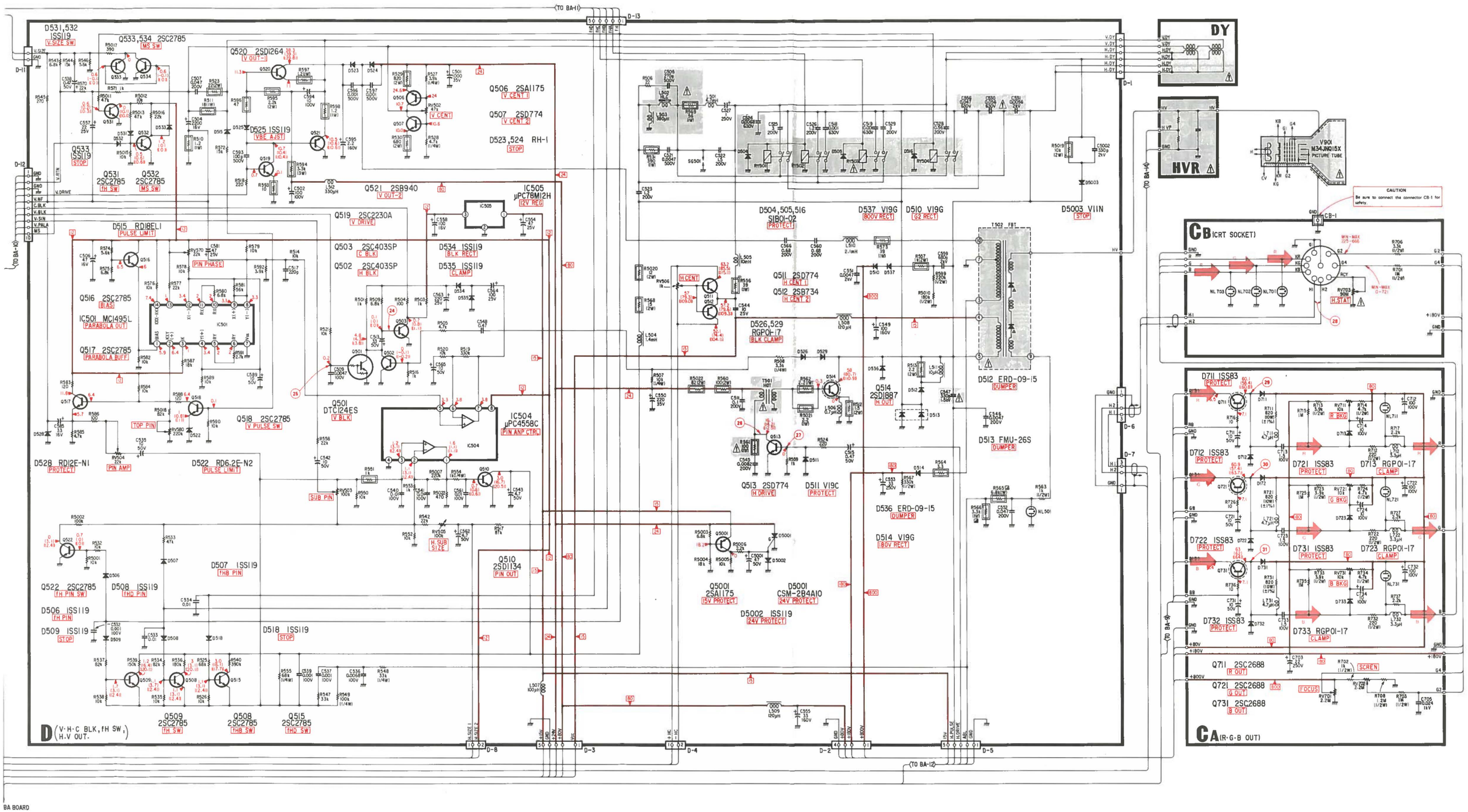
— BC Board —



— X Board —



11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27



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

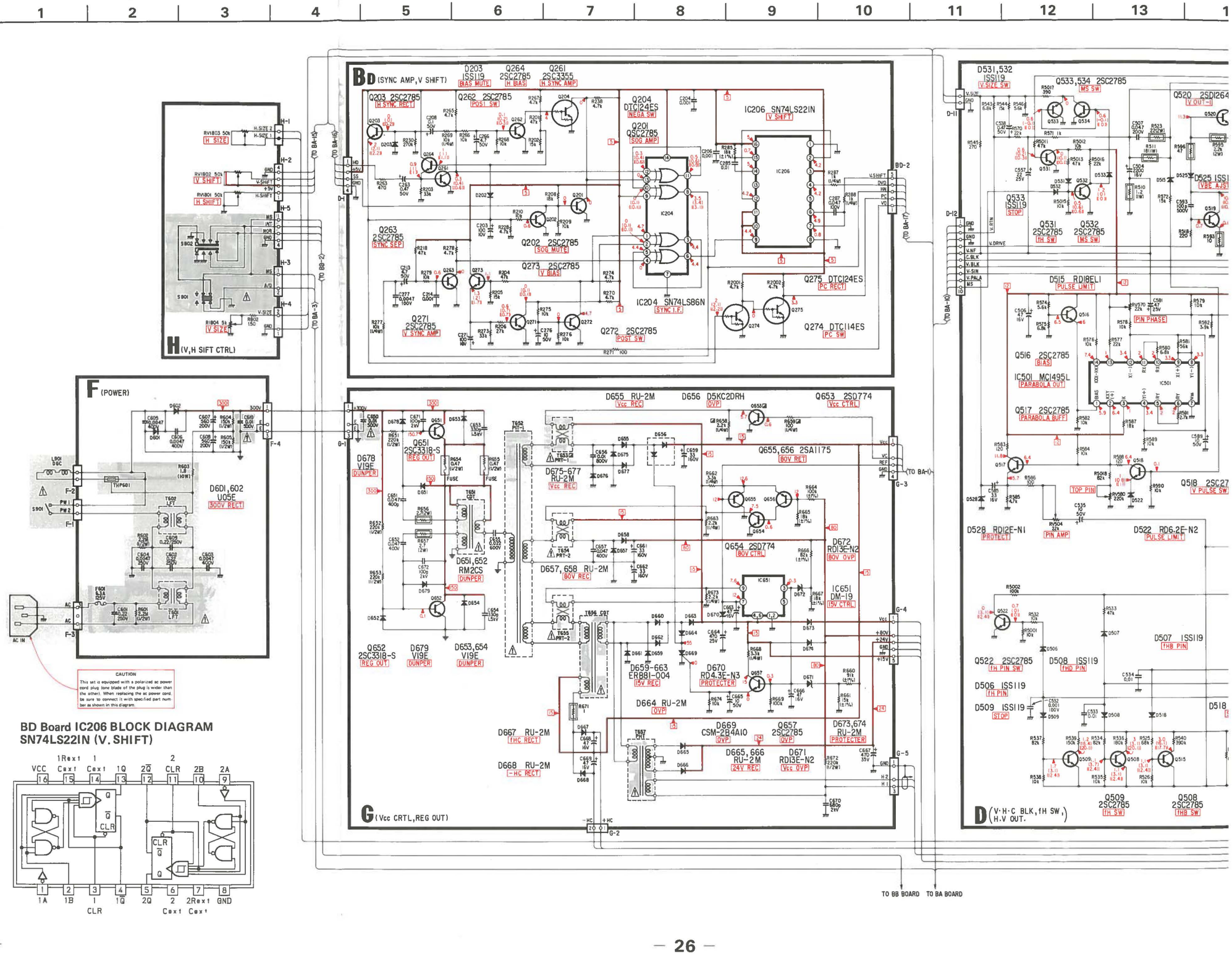
Note: Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

Note:
All capacitors are in μF unless otherwise noted. p : μμF 50WV or less are not indicated except for electrolytics.
All resistors are in ohms, 1/6W unless otherwise noted. k : 1000Ω, M : 1000kΩ.
: nonflammable resitor.
All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
: fusible resitor.
△ : internal component.
: panel designation.
※ : selected to yield optimum performance.
The components indentified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
When replacing components identified by ◪ mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment until the specified value is achieved.
(Refer to R339, R416, R489 adjustment on page 11, 12.)
When replacing the part in below table, be usre to perform the related adjustment.

Part replaced (◪)	Adjustment (⊠)
Board) Q653, R658, R659, T653	
A Board) 401, IC404, IC405, Q409, R409, R410, R411, 412, R413, R414, R415, R416, R417, R418,, 419, R424, R425, R448, R479, R480, R488, 489.	R416, R489 (+B MAX)
A Board) 301, IC302, R301, R302, R335, R336, R337, 338, R339, R340, R341, R342, D304	R339 (HV HOLD DOWN)
Board) R565, R566	

Voltages are dc with respect to ground unless otherwise noted.
Readings are taken with a 10 MΩ digital multimeter.
Voltage variations my be noted due to normal production tolerances.
Readings are taken with a color-bar-signal input. (SONY SMC-70)
: adjustment to repair.
no mark: with 15.73kHz color-bar signal received.
( ) : with 21.8kHz color-bar signal received.
(( )) : with 30.12kHz color-bar signal received.

➡ : signal path



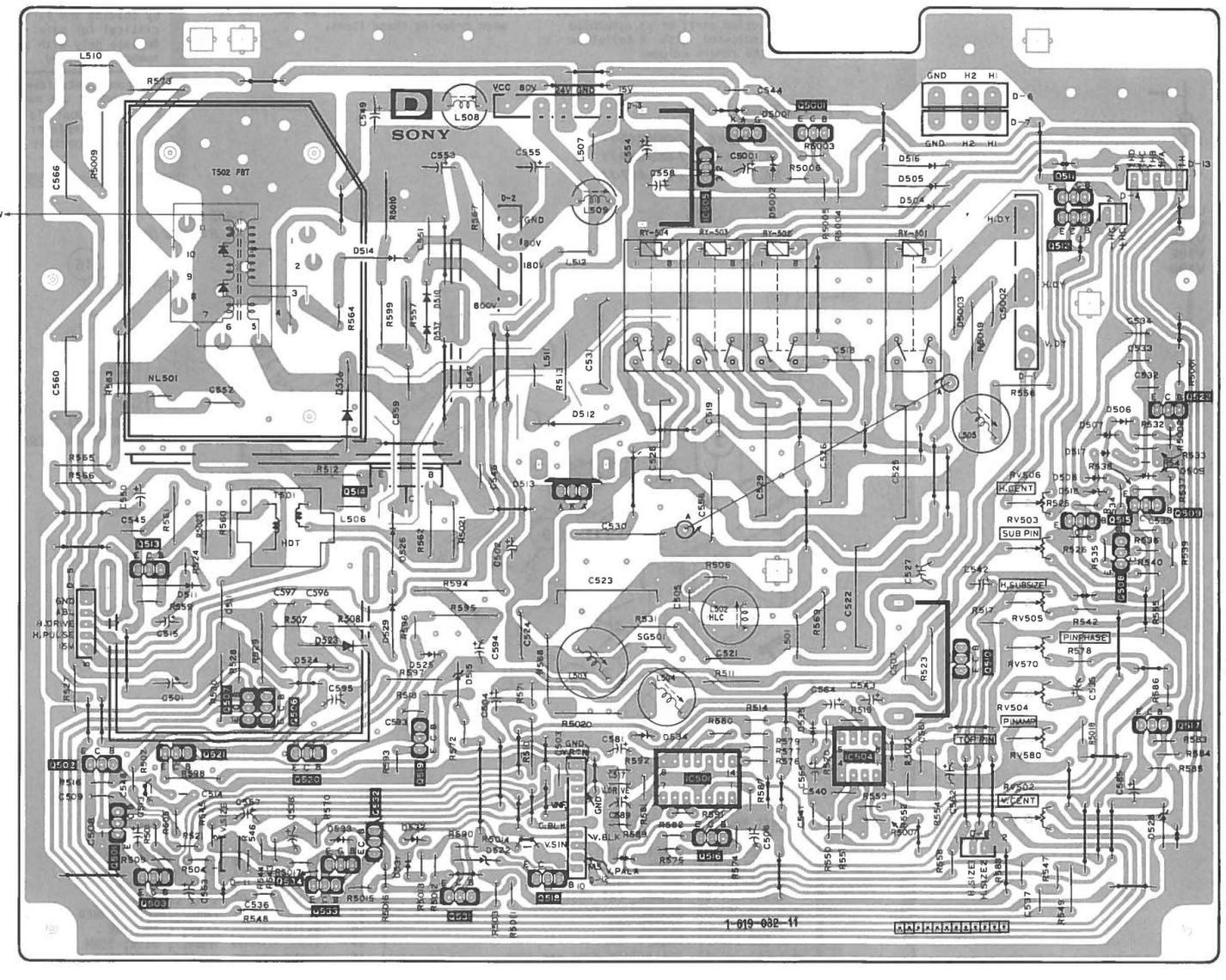
BD Board IC206 BLOCK DIAGRAM
SN74LS22IN (V. SHIFT)

D [V·H·C BLK, fH SW, H.V OUT.] H [V, H SIFT CRTL.] G [Vcc CRTL, REG OUT] CB [CRT SOCKET] BD [SYNC AMP, V SHIFT.] F [POWER] CA [R·G·B OUT]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

A B C D E F G H I J

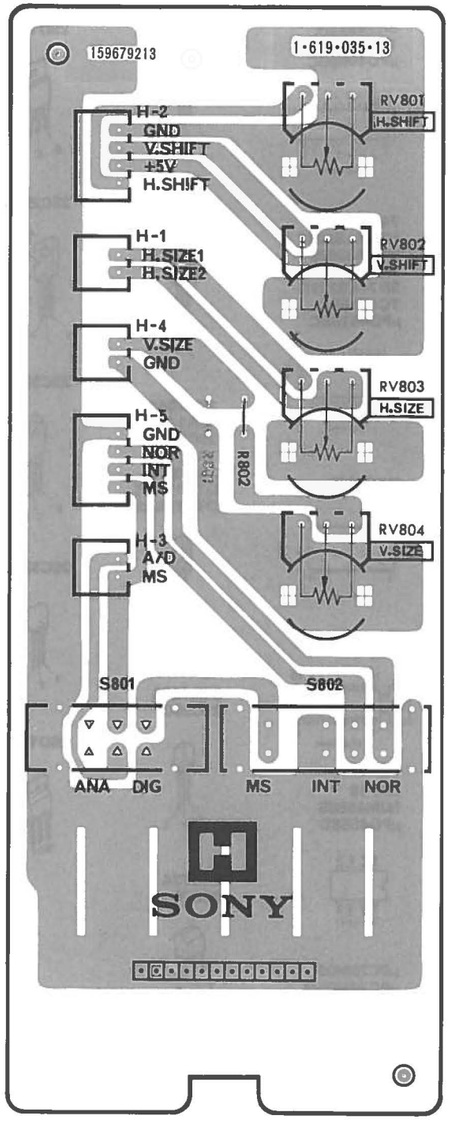
— D Board —



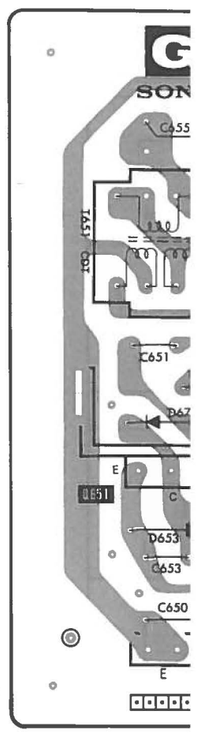
IC,Q	D	ADJ
	5001	
5001		
IC505	516	
	5002	
511	505	
512	504	
	514	
	5003	
	510	
522		
	536 506	
	512,507	
	517	
	509	
514	508	
509	518	RV506
515	513	
508	526	
513		RV503
	511	
	529	RV505
	523	
	525	
510	524	RV570
	515	
507		RV504
506		
517	535	RV580
519	534	
IC504		
521		
502		
520		
IC501		RV502
	528	
501	533	
532	532	522
516	531	
534		
503		
533		
518		
531		

IC,Q	D	ADJ

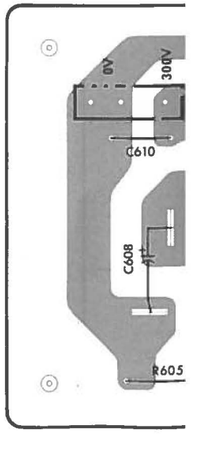
— H Board —



— G Board —

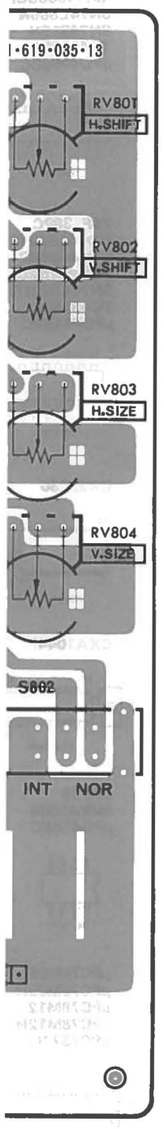


— F Board —

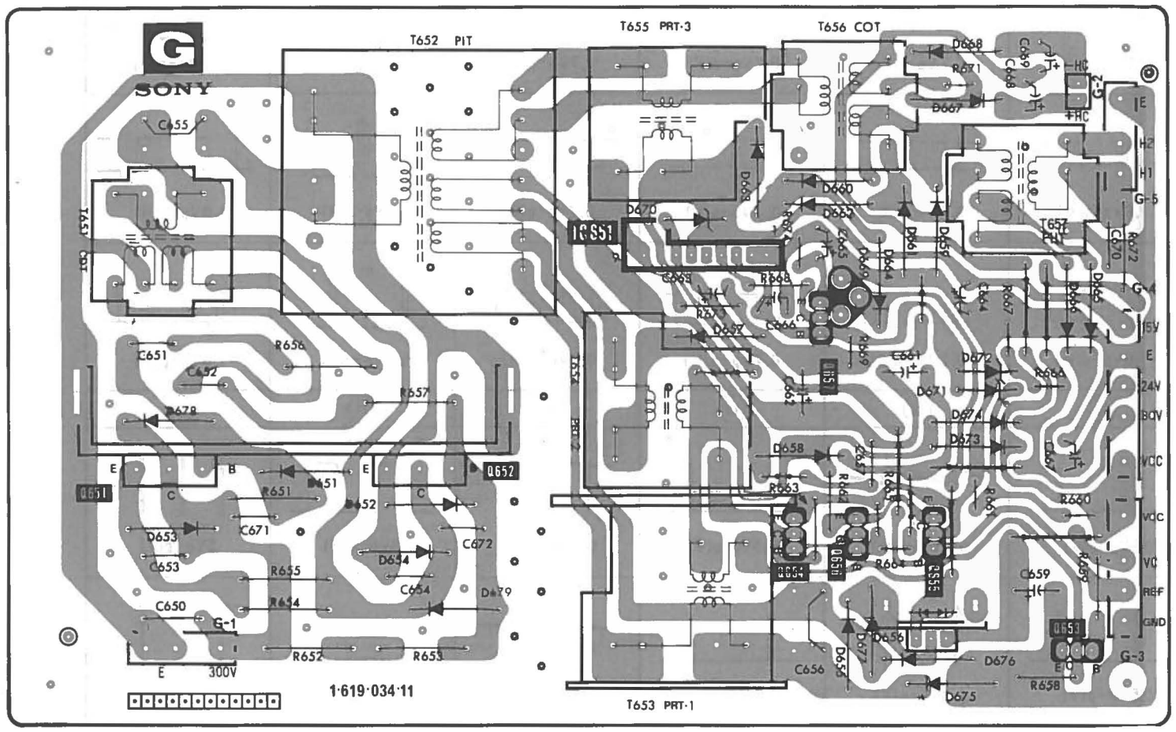


F [POWER] CA [R·G·B OUT]

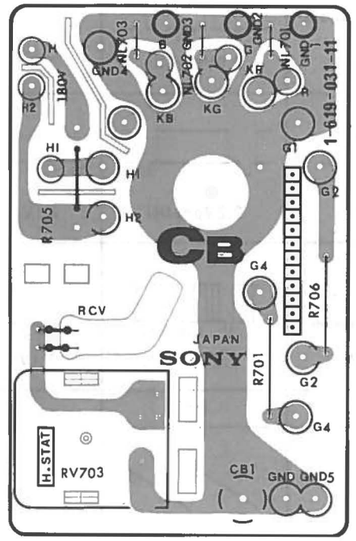
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31



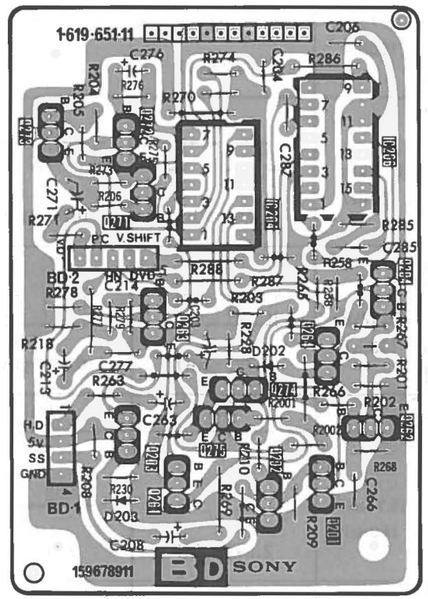
– G Board –



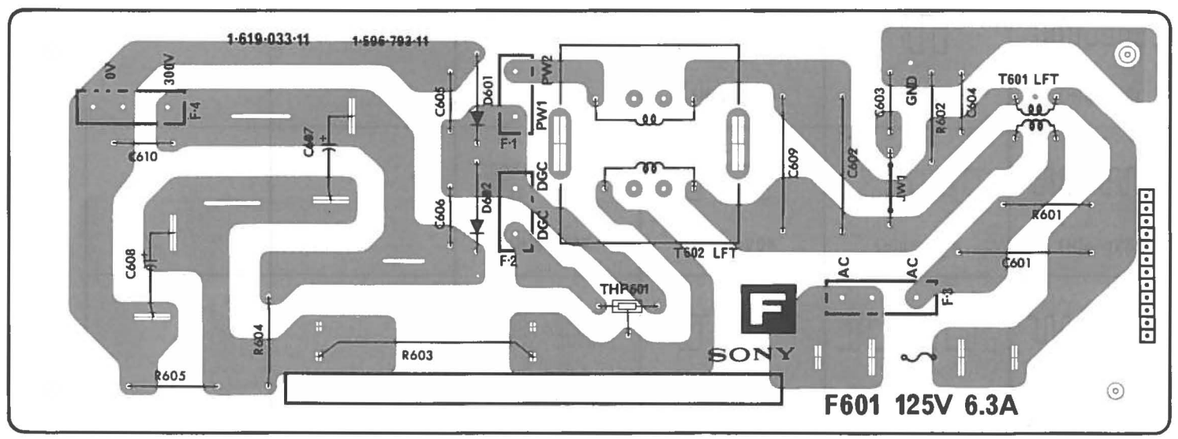
– CB Board –



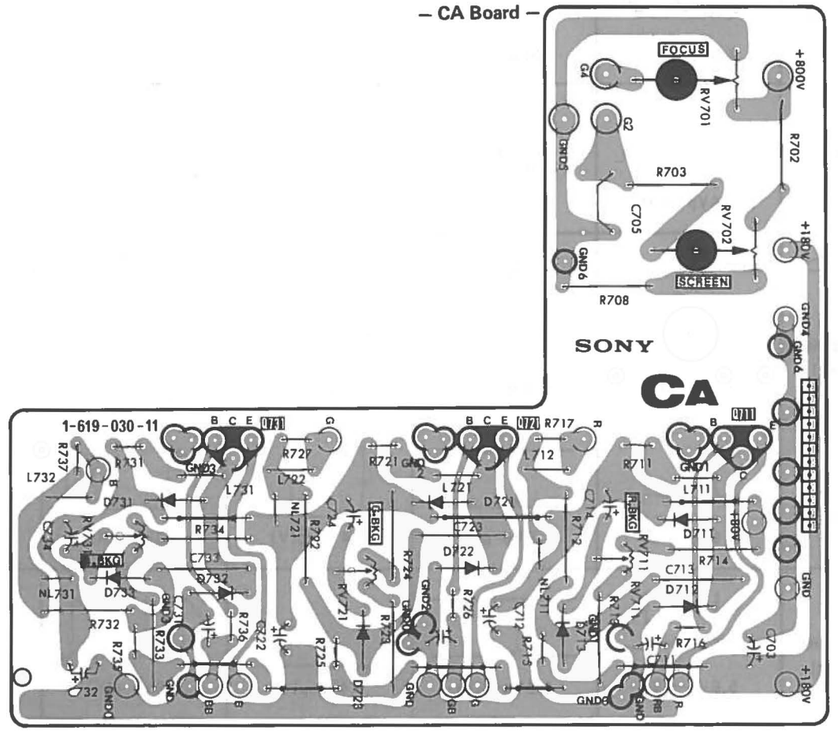
– BD Board –



– F Board –



– CA Board –

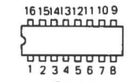


4-5. WAVE FORM

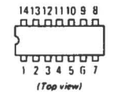
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
15.73kHz (60Hz)	0.7Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	2.8Vp-p(H)	2.8Vp-p(H)	2.6Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	5.4Vp-p(H)	2.2Vp-p(H)
21.8kHz (60Hz)	0.7Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	2.2Vp-p(H)	2.1Vp-p(H)	1.8Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	5.4Vp-p(H)	1.8Vp-p(H)
30.12kHz (60Hz)	0.7Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	2.2Vp-p(H)	2.1Vp-p(H)	1.8Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	0.7Vp-p(H)	5.4Vp-p(H)	1.8Vp-p(H)
	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒
15.73kHz (60Hz)	2.2Vp-p(H)	2Vp-p(H)	0.48Vp-p(H)	4Vp-p(H)	8.8Vp-p(H)	10.5Vp-p(V)	1.8Vp-p(V)	10.5Vp-p(V)	0.7Vp-p(H)	8Vp-p(H)	5Vp-p(V)
21.8kHz (60Hz)	1.6Vp-p(H)	1.5Vp-p(H)	0.4Vp-p(H)	4Vp-p(H)	8.8Vp-p(H)	10.5Vp-p(V)	1.8Vp-p(V)	10.5Vp-p(V)	0.7Vp-p(H)	8Vp-p(H)	5Vp-p(V)
30.12kHz (60Hz)	1.6Vp-p(H)	1.5Vp-p(H)	0.3Vp-p(H)	4Vp-p(H)	8.8Vp-p(H)	10.5Vp-p(V)	1.8Vp-p(V)	10.5Vp-p(V)	0.7Vp-p(H)	8Vp-p(H)	5Vp-p(V)
	㉓	㉔	㉕	㉖	㉗	㉘	㉙	㉚	㉛		
15.73kHz (60Hz)	5.6Vp-p(V)	5.6Vp-p(V)	7.4Vp-p(V)	32Vp-p(H)	1.6Vp-p(H)	13Vp-p(H)	40Vp-p(H)	40Vp-p(H)	40Vp-p(H)		
21.8kHz (60Hz)	5.6Vp-p(V)	4.8Vp-p(V)	7.4Vp-p(V)	30Vp-p(H)	1.6Vp-p(H)	13Vp-p(H)	40Vp-p(H)	40Vp-p(H)	40Vp-p(H)		
30.12kHz (60Hz)	5.6Vp-p(V)	4.2Vp-p(V)	7.4Vp-p(V)	28Vp-p(H)	1.6Vp-p(H)	13Vp-p(H)	40Vp-p(H)	40Vp-p(H)	40Vp-p(H)		

4-6. SEMICONDUCTORS

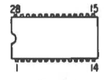
74F08PC
MC1495L
MC14066BCP
SN74LS86N
SN74S15N
TC4066BP
μPD4066BC



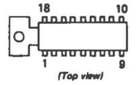
74F138PC
HD74LS221P
HD14538BP
MC14516BCP
SN74LS221N
TC4516BC
μPD4516BC



CX22030

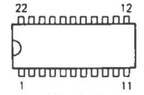


CXA1044P



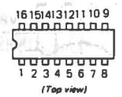
DM-19
NJM4558S
μPD4558C

μPC78M05
μPC78M05H
μPC78M12
μPC78M12H
μPC1377C

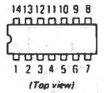


4-6. SEMICONDUCTORS

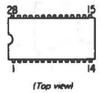
74F08PC
MC1495L
MC14066BCP
SN74LS86N
SN74S15N
TC4066BP
μPD4066BC



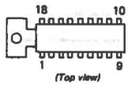
74F138PC
HD74LS221P
HD14538BP
MC14516BCP
SN74LS221N
TC4516BC
μPD4516BC



CX22030

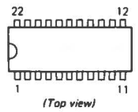


CXA1044P



DM-19
NJM4558S
μPD4558C

μPC78M05
μPC78M05H
μPC78M12
μPC78M12H
μPC1377C



2SA564
2SA933S
2SA1005
2SC1740
2SC3068

2SA1175
2SC2785

2SA1048
2SA1115
2SC403SP
2SC2458
2SC2603
DTC114ES
DTC124ES

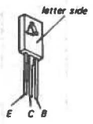
2SA1206
2SC2901

2SB734
2SD774

2SB740
2SC2230A
2SD789

2SB940
2SB940P
2SD1134
2SD1264
2SD1264P

2SC2688

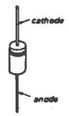


2SC3318-S

2SC3355

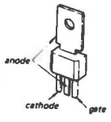
2SD1887

1SS83
1DE2
11E2
ERB12-02
ERB12-02V1
ERD09-15
ESIF
RD3.0E-N1
RD3.0F-NIT
RD3.0E-N2
RD3.1E-N1
RD3.1E-N2
RD3.3E-N2
RD3.6E-N1
RD3.6E-N2
RD4.3E-N2
RD4.3E-N3
RD4.3E-N3T
RD4.7E-N2
RD6.2E-N2
RD6.8E-N2
RD8.2E-N2
RD9.1E-N2
RD10E-L2
RD10E-LZ
RD10-E-L3T
RD11E-N2
RD12E-N1
RD12E-NIT
RD12E-N2
RD13E-N2
RD18E-L1
RD18E-L1T
RGP01-17
RGP01-17PKG23

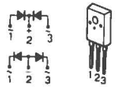


ISS119
ISS133
ISS148

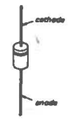
CSM2A4A10
CSM2B4A10



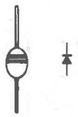
D5KC20RH



FRB81-004
EMU-26S
RH-1
RM2SC
RU-2M
SIB01-02
SIB01-02V1



U05E
V11N
V19C
V19E
V19G



SG232D

SECTION 5
EXPLODED VIEWS

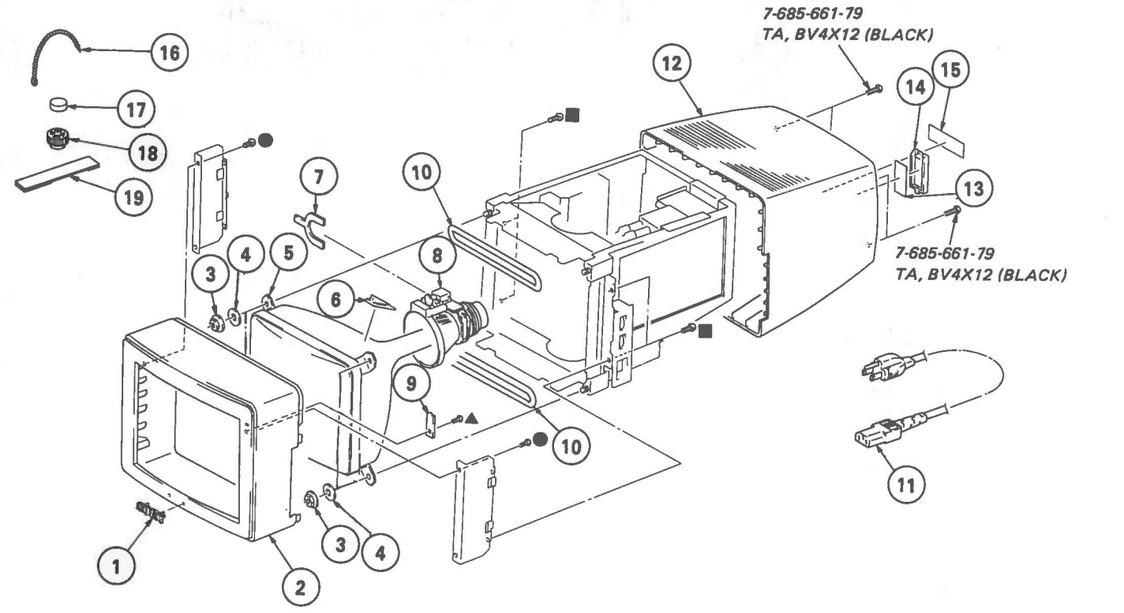
NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

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

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

5-1. PICTURE TUBE

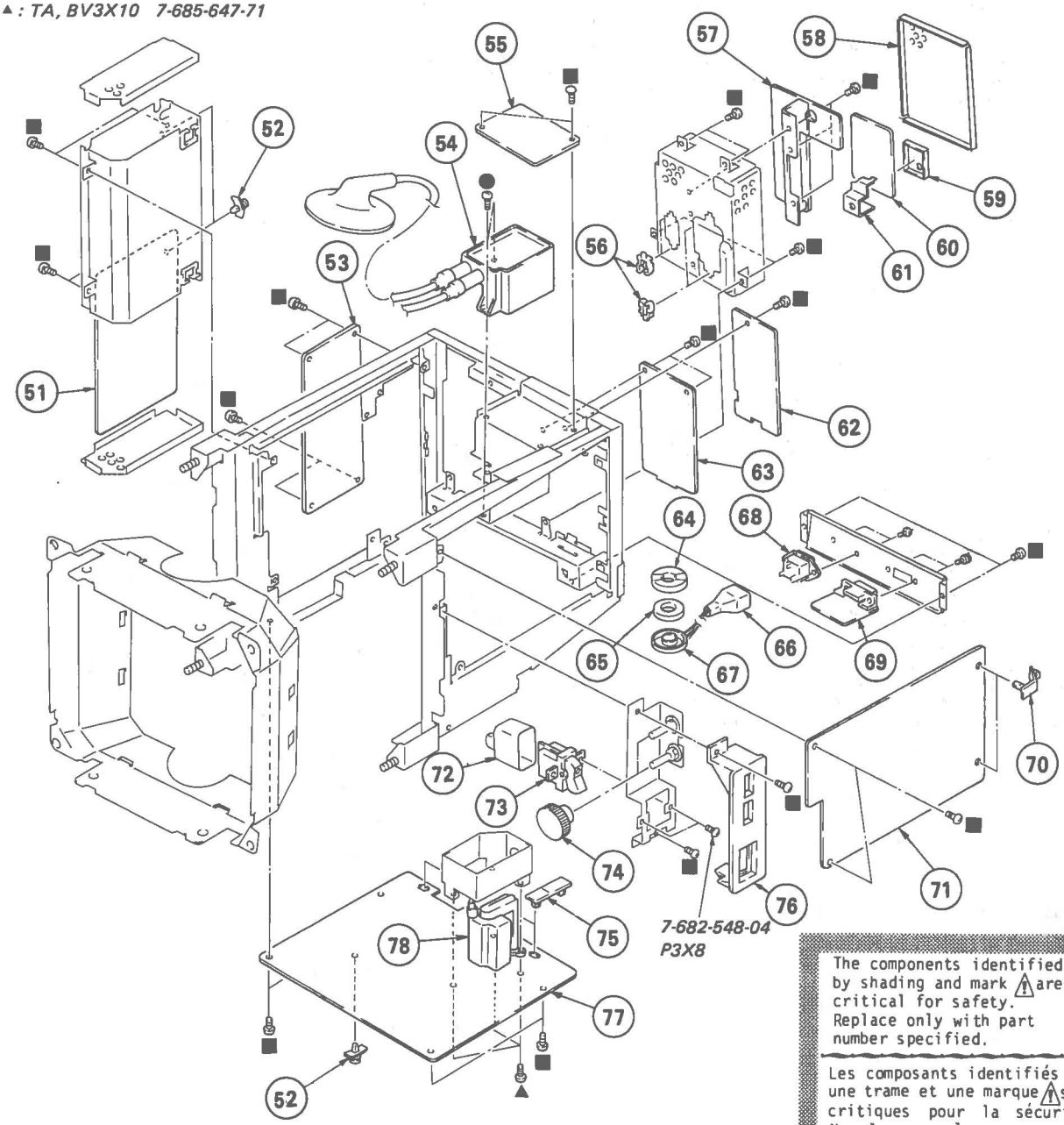
■ : *TA, BV3X8 7-685-646-71*
● : *TA, BV4X10 7-685-660-71*
▲ : *TA, BV3X10 7-685-647-71*



No.	Part No.	Description	Remark
1	*3-668-914-31	EMBLEM, SONY	
2	X-4381-801-1	BEZEL ASSY	
3	4-304-511-00	NUT, FLANGE	
4	4-348-567-00	WASHER, CRT POSITION	
5	⚠8-738-251-05	CRT M34JNQ15X	
6	3-703-961-01	SPACER, DY	
7	1-452-146-21	MAGNET, BMC	
8	⚠1-451-291-11	DEFLECTION YOKE (SY-175)	
9	*1-619-036-11	X BOARD	
10	⚠1-426-283-11	COIL, DEMAGNETIZATION	
11	⚠1-558-377-11	CORD, POWER	
12	4-381-820-01	CABINET	
13	4-381-826-01	LABEL, CONTROL	
14	4-381-817-01	LID, CONTROL	
15	*4-381-812-01	LABEL, MODEL NUMBER (SMALL)	
16	4-316-015-01	CLIP, LEAD WIRE	
17	1-452-032-00	MAGNET, DISK; 10MM ø	
18	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ø	
19	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	

5-2. CHASSIS ASSY

■ : TA, BV3X8 7-685-646-71
● : TA, BV4X10 7-685-660-71
▲ : TA, BV3X10 7-685-647-71



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

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

No.	Part No.	Description	Remark
51	*1-619-034-11	G BOARD	
52	*3-703-961-01	SPACER, SUPPORT	
53	*1-619-033-11	F BOARD	
54	⚠1-230-666-11	RESISTOR ASSY, HIGH-VOLTAGE	
55	*1-619-651-11	BD BOARD	
56	4-343-123-00	RETAINER, AC CORD	
57	*1-619-030-11	CA BOARD	
58	*4-377-601-01	COVER	
59	*4-370-995-01	COVER (LOWER), H.STAT	
60	*1-619-031-11	CB BOARD	
61	*4-370-996-01	COVER (UPPER), H.STAT	
62	*1-619-035-11	H BOARD	
63	*A-1130-489-A	BB BOARD, COMPLETE	
64	*4-361-125-01	COVER (B), CORE	
65	1-543-179-00	CORE, RING	
66	*4-601-466-11	COVER, 3P INLET	
67	*4-361-124-01	COVER (A), CORE	
68	⚠1-509-546-11	3P INLET	
69	*1-619-029-11	BC BOARD	
70	*3-701-832-00	HINGE, CIRCUIT BOARD	
71	*A-1135-387-A	BA BOARD, COMPLETE	
72	*4-381-806-01	COVER, SWITCH	
73	⚠1-554-953-31	SWITCH, SEESAW (AC POWER)	
74	4-372-107-01	KNOB, ROTARY	
75	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
76	*4-381-828-01	PANEL, SWITCH	
77	*A-1340-829-A	D BOARD, COMPLETE	
78	⚠1-439-390-11	TRANSFORMER ASSY, FLYBACK	

BB

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

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

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

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

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

Ref.No.	Part No.	Description				Remark
	*A-1130-489-A	BB BOARD, COMPLETE **********				
		CONNECTOR				
BB1	*1-564-441-11	PLUG, CONNECTOR (2.5MM) 5P				
BB2	*1-564-440-11	PLUG, CONNECTOR (2.5MM) 4P				
BB3	*1-564-443-11	PLUG, CONNECTOR (2.5MM) 7P				
BB4	*1-564-443-11	PLUG, CONNECTOR (2.5MM) 7P				
		CAPACITOR				
C101	1-102-959-00	CERAMIC	22PF	5%	50V	
C102	1-102-959-00	CERAMIC	22PF	5%	50V	
C103	1-102-959-00	CERAMIC	22PF	5%	50V	
C104	1-102-959-00	CERAMIC	22PF	5%	50V	
C105	1-102-959-00	CERAMIC	22PF	5%	50V	
C106	1-102-959-00	CERAMIC	22PF	5%	50V	
C107	1-102-959-00	CERAMIC	22PF	5%	50V	
C108	1-102-959-00	CERAMIC	22PF	5%	50V	
C109	1-124-445-00	ELECT	100MF	20%	16V	
C110	1-124-445-00	ELECT	100MF	20%	16V	
C111	1-124-478-11	ELECT	100MF	20%	25V	
C112	1-124-902-00	ELECT	0.47MF	20%	50V	
C113	1-124-927-11	ELECT	4.7MF	20%	50V	
		DIODE				
D101	8-719-911-19	DIODE 1SS119				
D102	8-719-911-19	DIODE 1SS119				
D103	8-719-911-19	DIODE 1SS119				
D104	8-719-911-19	DIODE 1SS119				
D105	8-719-911-19	DIODE 1SS119				
D106	8-719-911-19	DIODE 1SS119				
D107	8-719-911-19	DIODE 1SS119				
D108	8-719-911-19	DIODE 1SS119				
D109	8-719-911-19	DIODE 1SS119				
D110	8-719-911-19	DIODE 1SS119				
D111	8-719-911-19	DIODE 1SS119				
D112	8-719-911-19	DIODE 1SS119				
D113	8-719-911-19	DIODE 1SS119				
D114	8-719-911-19	DIODE 1SS119				
		IC				
IC101	8-759-904-81	IC 74F08PC				
IC102	8-759-904-81	IC 74F08PC				
IC103	8-759-910-15	IC SN74S15N				
IC104	8-759-910-15	IC SN74S15N				
IC105	8-759-910-15	IC SN74S15N				
IC106	8-759-917-52	IC 74F138PC				
		TRANSISTOR				
Q101	8-729-110-52	TRANSISTOR 2SA1005-L				
Q102	8-729-110-52	TRANSISTOR 2SA1005-L				
Q103	8-729-110-52	TRANSISTOR 2SA1005-L				
Q104	8-729-110-52	TRANSISTOR 2SA1005-L				
Q105	8-729-110-52	TRANSISTOR 2SA1005-L				
Q106	8-729-110-52	TRANSISTOR 2SA1005-L				
Q107	8-729-110-52	TRANSISTOR 2SA1005-L				
Q108	8-729-110-52	TRANSISTOR 2SA1005-L				
Q109	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q110	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q111	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q112	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q113	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q114	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q115	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q116	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q117	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q118	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q119	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q120	8-729-603-30	TRANSISTOR 2SC403SP-3				
Q121	8-729-603-30	TRANSISTOR 2SC403SP-3				
		RESISTOR				
R101	1-249-429-11	CARBON	10K	5%	1/6W	
R102	1-249-425-11	CARBON	4.7K	5%	1/6W	
R103	1-249-425-11	CARBON	4.7K	5%	1/6W	
R104	1-249-425-11	CARBON	4.7K	5%	1/6W	
R105	1-249-429-11	CARBON	10K	5%	1/6W	
R106	1-249-425-11	CARBON	4.7K	5%	1/6W	
R107	1-249-419-11	CARBON	1.5K	5%	1/6W	
R108	1-249-429-11	CARBON	10K	5%	1/6W	
R109	1-249-433-11	CARBON	22K	5%	1/6W	
R110	1-249-425-11	CARBON	4.7K	5%	1/6W	
R111	1-249-429-11	CARBON	10K	5%	1/6W	
R112	1-249-425-11	CARBON	4.7K	5%	1/6W	
R113	1-249-433-11	CARBON	22K	5%	1/6W	
R114	1-249-425-11	CARBON	4.7K	5%	1/6W	
R115	1-249-425-11	CARBON	4.7K	5%	1/6W	
R116	1-215-423-00	METAL	1.2K	1%	1/6W	
R117	1-215-423-00	METAL	1.2K	1%	1/6W	
R118	1-215-423-00	METAL	1.2K	1%	1/6W	
R119	1-215-423-00	METAL	1.2K	1%	1/6W	
R120	1-215-423-00	METAL	1.2K	1%	1/6W	
R121	1-215-423-00	METAL	1.2K	1%	1/6W	
R122	1-215-423-00	METAL	1.2K	1%	1/6W	
R123	1-215-423-00	METAL	1.2K	1%	1/6W	
R124	1-215-403-00	METAL	180	1%	1/6W	
R125	1-215-403-00	METAL	180	1%	1/6W	
R126	1-215-403-00	METAL	180	1%	1/6W	
R127	1-215-403-00	METAL	180	1%	1/6W	
R128	1-215-403-00	METAL	180	1%	1/6W	
R129	1-215-403-00	METAL	180	1%	1/6W	
R130	1-215-403-00	METAL	180	1%	1/6W	
R131	1-215-403-00	METAL	180	1%	1/6W	
R132	1-215-413-00	METAL	470	1%	1/6W	
R133	1-215-413-00	METAL	470	1%	1/6W	
R134	1-215-413-00	METAL	470	1%	1/6W	

Ref.No.	Part No.	Description				Remark
R135	1-215-413-00	METAL	470	1%	1/6W	
R136	1-215-413-00	METAL	470	1%	1/6W	
R137	1-214-721-00	METAL	470	1%	1/4W	
R138	1-215-413-00	METAL	470	1%	1/6W	
R139	1-215-413-00	METAL	470	1%	1/6W	
R140	1-249-419-11	CARBON	1.5K	5%	1/6W	
R141	1-249-419-11	CARBON	1.5K	5%	1/6W	
R142	1-249-419-11	CARBON	1.5K	5%	1/6W	
R143	1-249-419-11	CARBON	1.5K	5%	1/6W	
R144	1-249-419-11	CARBON	1.5K	5%	1/6W	
R145	1-249-419-11	CARBON	1.5K	5%	1/6W	
R146	1-249-419-11	CARBON	1.5K	5%	1/6W	
R147	1-249-419-11	CARBON	1.5K	5%	1/6W	
R148	1-215-423-00	METAL	1.2K	1%	1/6W	
R149	1-215-431-00	METAL	2.7K	1%	1/6W	
R150	1-215-431-00	METAL	2.7K	1%	1/6W	
R151	1-215-423-00	METAL	1.2K	1%	1/6W	
R152	1-215-431-00	METAL	2.7K	1%	1/6W	
R153	1-215-431-00	METAL	2.7K	1%	1/6W	
R154	1-215-423-00	METAL	1.2K	1%	1/6W	
R155	1-215-423-00	METAL	1.2K	1%	1/6W	
R156	1-215-431-00	METAL	2.7K	1%	1/6W	
R157	1-214-739-00	METAL	2.7K	1%	1/4W	
R158	1-247-833-00	CARBON	1.2K	5%	1/6W	
R159	1-247-833-00	CARBON	1.2K	5%	1/6W	
R160	1-249-419-11	CARBON	1.5K	5%	1/6W	
R161	1-249-419-11	CARBON	1.5K	5%	1/6W	
R162	1-249-419-11	CARBON	1.5K	5%	1/6W	
R163	1-249-433-11	CARBON	22K	5%	1/6W	
R164	1-247-839-00	CARBON	2.2K	5%	1/6W	
R165	1-247-829-00	CARBON	820	5%	1/6W	
R166	1-247-829-00	CARBON	820	5%	1/6W	
R167	1-247-829-00	CARBON	820	5%	1/6W	
R168	1-249-433-11	CARBON	22K	5%	1/6W	
R169	1-249-433-11	CARBON	22K	5%	1/6W	
R170	1-249-433-11	CARBON	22K	5%	1/6W	
R171	1-249-429-11	CARBON	10K	5%	1/6W	
R172	1-249-425-11	CARBON	4.7K	5%	1/6W	
R173	1-249-425-11	CARBON	4.7K	5%	1/6W	
R174	1-247-708-11	CARBON	470	5%	1/4W	
R175	1-249-441-11	CARBON	100K	5%	1/6W	
R176	1-249-423-11	CARBON	3.3K	5%	1/6W	
R177	1-249-423-11	CARBON	3.3K	5%	1/6W	
R178	1-249-423-11	CARBON	3.3K	5%	1/6W	
R179	1-247-823-00	CARBON	470	5%	1/6W	
R180	1-247-804-00	CARBON	75	5%	1/6W	
R181	1-247-823-00	CARBON	470	5%	1/6W	
R182	1-247-823-00	CARBON	470	5%	1/6W	
R183	1-247-804-00	CARBON	75	5%	1/6W	
R184	1-247-823-00	CARBON	470	5%	1/6W	
R185	1-247-823-00	CARBON	470	5%	1/6W	
R186	1-247-104-00	CARBON	75	5%	1/4W	
R187	1-247-823-00	CARBON	470	5%	1/6W	
R188	1-249-429-11	CARBON	10K	5%	1/6W	
R189	1-249-417-11	CARBON	1K	5%	1/6W	

****

*A-1130-510-A BD BOARD, COMPLETE
****

CONNECTOR

BD1	*1-564-440-11	PLUG, CONNECTOR (2.5MM) 4P			
BD2	*1-564-441-11	PLUG, CONNECTOR (2.5MM) 5P			

CAPACITOR

C203	1-124-443-00	ELECT	100MF	20%	10V
C204	1-102-074-00	CERAMIC	0.001MF	10%	50V
C206	1-101-004-00	CERAMIC	0.01MF		50V
C208	1-123-607-00	ELECT	0.1MF	20%	50V
C213	1-124-927-11	ELECT	4.7MF	20%	50V
C214	1-101-001-00	CERAMIC	0.001MF		50V
C263	1-124-902-00	ELECT	0.47MF	20%	50V
C266	1-124-927-11	ELECT	4.7MF	20%	50V
C271	1-124-445-00	ELECT	100MF	20%	16V
C276	1-124-907-00	ELECT	10MF	20%	50V
C277	1-108-622-91	MYLAR	0.0047MF	10%	100V
C285	1-106-196-00	MYLAR	0.01MF	10%	100V
C287	1-106-212-00	MYLAR	0.047MF	10%	100V

DIODE

D202	8-719-911-19	DIODE 1SS119
D203	8-719-911-19	DIODE 1SS119

IC

IC204	8-759-900-86	IC SN74LS86N
IC206	8-759-902-21	IC SN74LS221N

TRANSISTOR

Q201	8-729-178-54	TRANSISTOR 2SC2785
Q202	8-729-178-54	TRANSISTOR 2SC2785
Q203	8-729-178-54	TRANSISTOR 2SC2785
Q204	8-729-900-36	TRANSISTOR DTC124ES
Q261	8-729-104-80	TRANSISTOR 2SC3355
Q262	8-729-178-54	TRANSISTOR 2SC2785
Q263	8-729-178-54	TRANSISTOR 2SC2785
Q264	8-729-178-54	TRANSISTOR 2SC2785
Q271	8-729-178-54	TRANSISTOR 2SC2785
Q272	8-729-178-54	TRANSISTOR 2SC2785
Q273	8-729-178-54	TRANSISTOR 2SC2785
Q274	8-729-900-80	TRANSISTOR DTC114ES
Q275	8-729-900-36	TRANSISTOR DTC124ES

BD BA

Ref.No.	Part No.	Description				Remark
		RESISTOR				
R201	1-249-437-11	CARBON	47K	5%	1/6W	
R202	1-247-859-00	CARBON	15K	5%	1/6W	
R203	1-249-435-11	CARBON	33K	5%	1/6W	
R204	1-249-437-11	CARBON	47K	5%	1/6W	
R205	1-247-859-00	CARBON	15K	5%	1/6W	
R206	1-249-434-11	CARBON	27K	5%	1/6W	
R208	1-249-432-11	CARBON	18K	5%	1/6W	
R209	1-249-429-11	CARBON	10K	5%	1/6W	
R210	1-249-429-11	CARBON	10K	5%	1/6W	
R218	1-249-437-11	CARBON	47K	5%	1/6W	
R228	1-249-425-11	CARBON	4.7K	5%	1/6W	
R230	1-247-889-00	CARBON	270K	5%	1/6W	
R238	1-249-425-11	CARBON	4.7K	5%	1/6W	
R263	1-247-823-00	CARBON	470	5%	1/6W	
R265	1-249-425-11	CARBON	4.7K	5%	1/6W	
R266	1-249-429-11	CARBON	10K	5%	1/6W	
R267	1-249-425-11	CARBON	4.7K	5%	1/6W	
R268	1-249-429-11	CARBON	10K	5%	1/6W	
R269	1-247-725-11	CARBON	10K	5%	1/4W	
R270	1-249-425-11	CARBON	4.7K	5%	1/6W	
R271	1-249-405-11	CARBON	100	5%	1/6W	
R273	1-249-435-11	CARBON	33K	5%	1/6W	
R274	1-249-425-11	CARBON	4.7K	5%	1/6W	
R275	1-249-429-11	CARBON	10K	5%	1/6W	
R276	1-249-429-11	CARBON	10K	5%	1/6W	
R277	1-247-725-11	CARBON	10K	5%	1/4W	
R278	1-249-425-11	CARBON	4.7K	5%	1/6W	
R279	1-249-429-11	CARBON	10K	5%	1/6W	
R285	1-215-451-00	METAL	18K	1%	1/6W	
R286	1-247-713-11	CARBON	1K	5%	1/4W	
R287	1-247-713-11	CARBON	1K	5%	1/4W	
R288	1-247-713-11	CARBON	1K	5%	1/4W	
R2001	1-249-425-11	CARBON	4.7K	5%	1/6W	
R2002	1-249-425-11	CARBON	4.7K	5%	1/6W	

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*A-1135-387-A BA BOARD, COMPLETE
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CONNECTOR

BA1	*1-564-441-11	PLUG, CONNECTOR (2.5MM)	5P
BA2	*1-564-354-00	PLUG, CONNECTOR (2.5MM)	3P
BA3	*1-564-353-00	PLUG, CONNECTOR (2.5MM)	2P
BA4	*1-564-443-11	PLUG, CONNECTOR (2.5MM)	7P
BA5	*1-564-443-11	PLUG, CONNECTOR (2.5MM)	7P
BA6	*1-564-444-11	PLUG, CONNECTOR (2.5MM)	8P
BA7	*1-564-354-00	PLUG, CONNECTOR (2.5MM)	3P
BA8	*1-564-353-00	PLUG, CONNECTOR (2.5MM)	2P
BA9	*1-564-445-31	PLUG, CONNECTOR (2.5MM)	9P
BA10	*1-564-446-11	PLUG, CONNECTOR (2.5MM)	10P
BA11	*1-564-441-11	PLUG, CONNECTOR (2.5MM)	5P
BA12	*1-564-441-11	PLUG, CONNECTOR (2.5MM)	5P
BA13	*1-564-441-11	PLUG, CONNECTOR (2.5MM)	5P
BA14	*1-564-440-11	PLUG, CONNECTOR (2.5MM)	4P
BA15	*1-564-440-11	PLUG, CONNECTOR (2.5MM)	4P
BA16	*1-564-440-11	PLUG, CONNECTOR (2.5MM)	4P
BA17	*1-564-441-11	PLUG, CONNECTOR (2.5MM)	5P
BA18	*1-564-444-11	PLUG, CONNECTOR (2.5MM)	8P

CAPACITOR

C201	1-124-127-91	ELECT	100MF	20%	25V
C202	1-124-478-11	ELECT	100MF	20%	25V
C205	1-101-004-00	CERAMIC	0.01MF		50V
C207	1-124-927-11	ELECT	4.7MF	20%	50V
C209	1-123-973-00	ELECT	100MF	20%	16V
C210	1-102-114-00	CERAMIC	470PF	10%	50V
C211	1-124-481-11	ELECT	22MF	20%	25V
C212	1-124-478-11	ELECT	100MF	20%	25V
C215	1-102-947-00	CERAMIC	10PF	5%	50V
C221	1-124-481-11	ELECT	22MF	20%	25V
C222	1-124-478-11	ELECT	100MF	20%	25V
C231	1-124-481-11	ELECT	22MF	20%	25V
C232	1-124-478-11	ELECT	100MF	20%	25V
C240	1-124-903-00	ELECT	1MF	20%	50V
C241	1-102-978-00	CERAMIC	220PF	5%	50V
C242	1-124-445-00	ELECT	100MF	20%	16V
C243	1-124-903-00	ELECT	1MF	20%	50V
C244	1-124-478-11	ELECT	100MF	20%	25V
C245	1-124-902-00	ELECT	0.47MF	20%	50V
C246	1-124-902-00	ELECT	0.47MF	20%	50V
C247	1-124-927-11	ELECT	4.7MF	20%	50V
C250	1-102-114-00	CERAMIC	470PF	10%	50V
C251	1-124-478-11	ELECT	100MF	20%	25V
C281	1-102-500-00	CERAMIC	150PF	5%	50V
C282	1-102-500-00	CERAMIC	150PF	5%	50V
C283	1-102-500-00	CERAMIC	150PF	5%	50V
C284	1-102-492-00	CERAMIC	56PF	5%	50V
C290	1-124-445-00	ELECT	100MF	20%	16V
C294	1-124-903-00	ELECT	1MF	20%	50V
C301	1-124-271-00	ELECT	1MF	20%	50V
C302	1-124-907-00	ELECT	10MF	20%	50V
C303	1-101-004-00	CERAMIC	0.01MF		50V
C304	1-136-173-00	FILM	0.47MF	5%	50V
C305	1-124-902-00	ELECT	0.47MF	20%	50V
C306	1-124-907-00	ELECT	10MF	20%	50V
C307	1-124-475-11	ELECT	470MF	20%	16V
C308	1-124-903-00	ELECT	1MF	20%	50V
C309	1-136-173-00	FILM	0.47MF	5%	50V
C310	1-108-627-91	MYLAR	0.012MF	10%	100V
C311	1-136-173-00	FILM	0.47MF	5%	50V
C312	1-136-165-00	FILM	0.1MF	5%	50V
C314	1-124-903-00	ELECT	1MF	20%	50V
C315	1-123-332-00	ELECT	47MF	20%	16V
C316	1-102-114-00	CERAMIC	470PF	10%	50V

Ref.No.	Part No.	Description			Remark
C317	1-110-201-00	MYLAR	0.0033MF	5%	50V
C318	1-124-927-11	ELECT	4.7MF	20%	50V
C319	1-124-904-00	ELECT	2.2MF	20%	50V
C320	1-102-112-00	CERAMIC	330PF	10%	50V
C321	1-102-973-00	CERAMIC	100PF	5%	50V
C322	1-124-903-00	ELECT	1MF	20%	50V
C324	1-108-812-91	MYLAR	0.047MF	5%	50V
C325	1-136-173-00	FILM	0.47MF	5%	50V
C326	1-124-445-00	ELECT	100MF	20%	16V
C327	1-124-907-00	ELECT	10MF	20%	50V
C328	1-123-332-00	ELECT	47MF	20%	16V
C329	1-102-074-00	CERAMIC	0.001MF	10%	50V
C330	1-102-074-00	CERAMIC	0.001MF	10%	50V
C331	1-106-196-00	MYLAR	0.01MF	10%	100V
C332	1-124-907-00	ELECT	10MF	20%	50V
C333	1-136-173-00	FILM	0.47MF	5%	50V
C334	1-124-038-00	ELECT	1MF	20%	50V
C335	1-124-903-00	ELECT	1MF	20%	50V
C336	1-136-165-00	FILM	0.1MF	5%	50V
C337	1-108-622-91	MYLAR	0.0047MF	10%	100V
C401	1-124-907-00	ELECT	10MF	20%	50V
C402	1-124-903-00	ELECT	1MF	20%	50V
C403	1-124-557-11	ELECT	1000MF	20%	25V
C404	1-124-445-00	ELECT	100MF	20%	16V
C405	1-124-445-00	ELECT	100MF	20%	16V
C406	1-123-332-00	ELECT	47MF	20%	16V
C407	1-102-129-00	CERAMIC	0.01MF	10%	50V
C408	1-124-905-11	ELECT	3.3MF	20%	50V
C409	1-101-004-00	CERAMIC	0.01MF		50V
C410	1-101-004-00	CERAMIC	0.01MF		50V
C411	1-106-192-00	MYLAR	0.0068MF	10%	100V
C412	1-108-620-91	MYLAR	0.0033MF	10%	100V
C413	1-124-896-00	ELECT	33MF	20%	16V
C414	1-102-129-00	CERAMIC	0.01MF	10%	50V
C415	1-124-904-00	ELECT	2.2MF	20%	50V
C416	1-101-004-00	CERAMIC	0.01MF		50V
C417	1-124-907-00	ELECT	10MF	20%	50V
C418	1-124-445-00	ELECT	100MF	20%	16V
C419	1-106-180-00	MYLAR	0.0022MF	5%	50V
C420	1-102-112-00	CERAMIC	330PF	10%	50V
C421	1-102-530-00	CERAMIC	120PF	5%	50V
C422	1-124-907-00	ELECT	10MF	20%	50V
C423	1-124-907-00	ELECT	10MF	20%	50V
C424	1-124-907-00	ELECT	10MF	20%	50V
C425	1-101-004-00	CERAMIC	0.01MF		50V
C426	1-101-004-00	CERAMIC	0.01MF		50V
C427	1-101-004-00	CERAMIC	0.01MF		50V
C428	1-123-332-00	ELECT	47MF	20%	16V
C2001	1-102-116-00	CERAMIC	680PF	10%	50V
C2010	1-101-006-00	CERAMIC	0.047MF		50V
C2013	1-124-127-91	ELECT	100MF	20%	25V
C2014	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C2015	1-106-196-00	MYLAR	0.01MF	10%	100V
C2020	1-101-006-00	CERAMIC	0.047MF		50V
C2023	1-124-127-91	ELECT	100MF	20%	25V
C2024	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C2025	1-106-196-00	MYLAR	0.01MF	10%	100V
C2030	1-101-006-00	CERAMIC	0.047MF		50V
C2033	1-124-127-91	ELECT	100MF	20%	25V
C2034	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C2035	1-106-196-00	MYLAR	0.01MF	10%	100V
C3001	1-124-443-00	ELECT	100MF	20%	10V
C3002	1-136-165-00	FILM	0.1MF	5%	50V

DIODE

D201	8-719-911-19	DIODE 1SS119
D204	8-719-102-49	DIODE RD3.0E-N1
D205	8-719-911-19	DIODE 1SS119
D211	8-719-911-19	DIODE 1SS119
D212	8-719-911-19	DIODE 1SS119
D214	8-719-911-19	DIODE 1SS119
D221	8-719-911-19	DIODE 1SS119
D222	8-719-911-19	DIODE 1SS119
D224	8-719-911-19	DIODE 1SS119
D231	8-719-911-19	DIODE 1SS119
D232	8-719-911-19	DIODE 1SS119
D234	8-719-911-19	DIODE 1SS119
D254	8-719-911-19	DIODE 1SS119
D255	8-719-911-19	DIODE 1SS119
D256	8-719-911-19	DIODE 1SS119
D291	8-719-911-19	DIODE 1SS119
D292	8-719-911-19	DIODE 1SS119
D293	8-719-911-19	DIODE 1SS119
D294	8-719-911-19	DIODE 1SS119
D301	8-719-102-84	DIODE RD8.2E-N2
D302	8-719-102-58	DIODE RD3.6E-N2
D303	8-719-911-19	DIODE 1SS119
D304	8-719-102-74	DIODE RD6.2E-N2
D305	8-719-911-19	DIODE 1SS119
D306	8-719-102-56	DIODE RD3.3E-N2
D307	8-719-102-58	DIODE RD3.6E-N2
D308	8-719-911-19	DIODE 1SS119
D309	8-719-911-19	DIODE 1SS119
D310	8-719-102-65	DIODE RD4.7E-N2
D401	8-719-102-87	DIODE RD9.1E-N2
D402	8-719-102-78	DIODE RD6.8E-N2
D403	8-719-101-76	DIODE RD10E-L2
D404	8-719-102-94	DIODE RD11E-N2
D405	8-719-102-87	DIODE RD9.1E-N2
D407	8-719-911-19	DIODE 1SS119
D408	8-719-911-19	DIODE 1SS119
D3001	8-719-911-19	DIODE 1SS119

IC

IC201	8-752-030-45	IC CXA1044P
IC202	8-759-170-12	IC UPC78M12H

Ref.No.	Part No.	Description	Remark
	*4-314-225-00	HEAT SINK, (A); IC202	
IC203	8-759-170-05	IC UPC78M05H	
	*4-314-225-00	HEAT SINK, (A); IC203	
IC205	8-759-902-21	IC SN74LS221N	
IC301	8-759-100-60	IC UPC1377C	
IC302	8-759-145-58	IC UPC4558C	
IC401	8-759-700-08	IC NJM4558S	
IC402	8-759-000-49	IC MC14066BCP	
IC403	8-759-000-73	IC MC14516BCP	
IC404	8-752-203-00	IC CX22030	
IC405	8-759-345-38	IC HD14538BP	
		COIL	
L201	1-407-717-00	MICRO INDUCTOR 1MMH	
L401	1-407-705-00	MICRO INDUCTOR 100UH	
L402	1-408-403-00	MICRO INDUCTOR 3.3UH	
		TRANSISTOR	
Q205	8-729-178-54	TRANSISTOR 2SC2785	
Q206	8-729-178-54	TRANSISTOR 2SC2785	
Q211	8-729-800-10	TRANSISTOR 2SC3068	
Q212	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q213	8-729-110-52	TRANSISTOR 2SA1005-L	
Q214	8-729-190-12	TRANSISTOR 2SC2901	
Q221	8-729-800-10	TRANSISTOR 2SC3068	
Q222	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q223	8-729-110-52	TRANSISTOR 2SA1005-L	
Q224	8-729-190-12	TRANSISTOR 2SC2901	
Q231	8-729-800-10	TRANSISTOR 2SC3068	
Q232	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q233	8-729-110-52	TRANSISTOR 2SA1005-L	
Q234	8-729-190-12	TRANSISTOR 2SC2901	
Q240	8-729-117-54	TRANSISTOR 2SA1175	
Q241	8-729-117-54	TRANSISTOR 2SA1175	
Q243	8-729-178-54	TRANSISTOR 2SC2785	
Q252	8-729-117-54	TRANSISTOR 2SA1175	
Q291	8-729-117-54	TRANSISTOR 2SA1175	
Q292	8-729-117-54	TRANSISTOR 2SA1175	
Q293	8-729-178-54	TRANSISTOR 2SC2785	
Q294	8-729-117-54	TRANSISTOR 2SA1175	
Q295	8-729-178-54	TRANSISTOR 2SC2785	
Q296	8-729-178-54	TRANSISTOR 2SC2785	
Q297	8-729-178-54	TRANSISTOR 2SC2785	
Q301	8-729-178-54	TRANSISTOR 2SC2785	
Q302	8-729-178-54	TRANSISTOR 2SC2785	
Q303	8-729-117-54	TRANSISTOR 2SA1175	
Q304	8-729-117-54	TRANSISTOR 2SA1175	
Q305	8-729-117-54	TRANSISTOR 2SA1175	
Q306	8-729-178-54	TRANSISTOR 2SC2785	
Q307	8-729-178-54	TRANSISTOR 2SC2785	
Q308	8-729-117-54	TRANSISTOR 2SA1175	
Q309	8-729-178-54	TRANSISTOR 2SC2785	
Q310	8-729-178-54	TRANSISTOR 2SC2785	
Q311	8-729-178-54	TRANSISTOR 2SC2785	
Q312	8-729-178-54	TRANSISTOR 2SC2785	
Q313	8-729-178-54	TRANSISTOR 2SC2785	
Q314	8-729-178-54	TRANSISTOR 2SC2785	
Q315	8-729-178-54	TRANSISTOR 2SC2785	
Q316	8-729-178-54	TRANSISTOR 2SC2785	
Q317	8-729-178-54	TRANSISTOR 2SC2785	
Q318	8-729-178-54	TRANSISTOR 2SC2785	
Q320	8-729-178-54	TRANSISTOR 2SC2785	
Q321	8-729-178-54	TRANSISTOR 2SC2785	
Q322	8-729-178-54	TRANSISTOR 2SC2785	
Q323	8-729-178-54	TRANSISTOR 2SC2785	
Q324	8-729-178-54	TRANSISTOR 2SC2785	
Q325	8-729-178-54	TRANSISTOR 2SC2785	
Q326	8-729-178-54	TRANSISTOR 2SC2785	
Q327	8-729-178-54	TRANSISTOR 2SC2785	
Q328	8-729-178-54	TRANSISTOR 2SC2785	
Q329	8-729-178-54	TRANSISTOR 2SC2785	
Q330	8-729-178-54	TRANSISTOR 2SC2785	
Q331	8-729-117-54	TRANSISTOR 2SA1175	
Q332	8-729-117-54	TRANSISTOR 2SA1175	
Q333	8-729-117-54	TRANSISTOR 2SA1175	
Q334	8-729-117-54	TRANSISTOR 2SA1175	
Q335	8-729-178-54	TRANSISTOR 2SC2785	
Q336	8-729-178-54	TRANSISTOR 2SC2785	
Q401	8-729-117-54	TRANSISTOR 2SA1175	
Q402	8-729-178-54	TRANSISTOR 2SC2785	
Q403	8-729-117-54	TRANSISTOR 2SA1175	
Q404	8-729-178-54	TRANSISTOR 2SC2785	
Q405	8-729-117-54	TRANSISTOR 2SA1175	
Q406	8-729-178-54	TRANSISTOR 2SC2785	
Q407	8-729-117-54	TRANSISTOR 2SA1175	
Q408	8-729-178-54	TRANSISTOR 2SC2785	
Q409	8-729-178-54	TRANSISTOR 2SC2785	
Q411	8-729-178-54	TRANSISTOR 2SC2785	
Q412	8-729-374-02	TRANSISTOR 2SB740	
Q413	8-729-178-54	TRANSISTOR 2SC2785	
Q414	8-729-374-02	TRANSISTOR 2SB740	
Q415	8-729-178-54	TRANSISTOR 2SC2785	
Q416	8-729-178-54	TRANSISTOR 2SC2785	
Q417	8-729-900-36	TRANSISTOR DTC124ES	
Q418	8-729-178-54	TRANSISTOR 2SC2785	
Q419	8-729-178-54	TRANSISTOR 2SC2785	
Q420	8-729-117-54	TRANSISTOR 2SA1175	
Q421	8-729-178-54	TRANSISTOR 2SC2785	
Q422	8-729-178-54	TRANSISTOR 2SC2785	
Q423	8-729-178-54	TRANSISTOR 2SC2785	
Q424	8-729-178-54	TRANSISTOR 2SC2785	
Q425	8-729-178-54	TRANSISTOR 2SC2785	
Q426	8-729-178-54	TRANSISTOR 2SC2785	
Q427	8-729-178-54	TRANSISTOR 2SC2785	
Q428	8-729-900-36	TRANSISTOR DTC124ES	
Q429	8-729-374-02	TRANSISTOR 2SB740	

Ref.No.	Part No.	Description				Remark
Q3001	8-729-178-54	TRANSISTOR 2SC2785				
Q3002	8-729-117-54	TRANSISTOR 2SA1175				
		RESISTOR				
R200	1-247-839-00	CARBON	2.2K	5%	1/6W	
R207	1-249-425-11	CARBON	4.7K	5%	1/6W	
R211	1-247-804-00	CARBON	75	5%	1/6W	
R212	1-249-434-11	CARBON	27K	5%	1/6W	
R213	1-249-429-11	CARBON	10K	5%	1/6W	
R214	1-247-849-00	CARBON	5.6K	5%	1/6W	
R215	1-249-429-11	CARBON	10K	5%	1/6W	
R216	1-249-417-11	CARBON	1K	5%	1/6W	
R217	1-249-419-11	CARBON	1.5K	5%	1/6W	
R219	1-249-405-11	CARBON	100	5%	1/6W	
R220	1-249-429-11	CARBON	10K	5%	1/6W	
R221	1-247-804-00	CARBON	75	5%	1/6W	
R222	1-249-434-11	CARBON	27K	5%	1/6W	
R223	1-249-429-11	CARBON	10K	5%	1/6W	
R224	1-247-849-00	CARBON	5.6K	5%	1/6W	
R225	1-249-429-11	CARBON	10K	5%	1/6W	
R226	1-249-417-11	CARBON	1K	5%	1/6W	
R227	1-249-419-11	CARBON	1.5K	5%	1/6W	
R229	1-249-405-11	CARBON	100	5%	1/6W	
R231	1-247-804-00	CARBON	75	5%	1/6W	
R232	1-249-434-11	CARBON	27K	5%	1/6W	
R233	1-249-429-11	CARBON	10K	5%	1/6W	
R234	1-247-849-00	CARBON	5.6K	5%	1/6W	
R235	1-249-429-11	CARBON	10K	5%	1/6W	
R236	1-249-417-11	CARBON	1K	5%	1/6W	
R237	1-249-419-11	CARBON	1.5K	5%	1/6W	
R239	1-249-405-11	CARBON	100	5%	1/6W	
R240	1-247-851-00	CARBON	6.8K	5%	1/6W	
R241	1-247-839-00	CARBON	2.2K	5%	1/6W	
R242	1-247-815-00	CARBON	220	5%	1/6W	
R243	1-249-434-11	CARBON	27K	5%	1/6W	
R244	1-247-891-00	CARBON	330K	5%	1/6W	
R245	1-249-414-11	CARBON	560	5%	1/6W	
R246	1-247-823-00	CARBON	470	5%	1/6W	
R247	1-249-437-11	CARBON	47K	5%	1/6W	
R249	1-249-429-11	CARBON	10K	5%	1/6W	
R250	1-249-429-11	CARBON	10K	5%	1/6W	
R251	1-249-429-11	CARBON	10K	5%	1/6W	
R252	1-247-711-11	CARBON	680	5%	1/4W	
R253	1-247-895-00	CARBON	470K	5%	1/6W	
R254	1-249-433-11	CARBON	22K	5%	1/6W	
R255	1-247-839-00	CARBON	2.2K	5%	1/6W	
R256	1-247-711-11	CARBON	680	5%	1/4W	
R257	1-249-429-11	CARBON	10K	5%	1/6W	
R258	1-247-881-00	CARBON	120K	5%	1/6W	
R259	1-249-433-11	CARBON	22K	5%	1/6W	
R260	1-249-405-11	CARBON	100	5%	1/6W	
R261	1-249-422-11	CARBON	2.7K	5%	1/6W	
R262	1-249-405-11	CARBON	100	5%	1/6W	

Ref.No.	Part No.	Description				Remark
R272	1-247-849-00	CARBON	5.6K	5%	1/6W	
R280	1-247-823-00	CARBON	470	5%	1/6W	
R281	1-249-425-11	CARBON	4.7K	5%	1/6W	
R282	1-216-471-11	METAL OXIDE	27	5%	3W	F
R283	1-249-417-11	CARBON	1K	5%	1/6W	
R284	1-249-417-11	CARBON	1K	5%	1/6W	
R289	1-247-853-00	CARBON	8.2K	5%	1/6W	
R290	1-247-853-00	CARBON	8.2K	5%	1/6W	
R291	1-249-437-11	CARBON	47K	5%	1/6W	
R292	1-249-405-11	CARBON	100	5%	1/6W	
R293	1-249-417-11	CARBON	1K	5%	1/6W	
R294	1-249-440-11	CARBON	82K	5%	1/6W	
R295	1-214-753-00	METAL	10K	1%	1/4W	
R296	1-215-445-00	METAL	10K	1%	1/6W	
R297	1-249-429-11	CARBON	10K	5%	1/6W	
R298	1-249-433-11	CARBON	22K	5%	1/6W	
R299	1-249-429-11	CARBON	10K	5%	1/6W	
R301	1-215-473-00	METAL	150K	1%	1/6W	
R302	1-215-464-00	METAL	62K	1%	1/6W	
R303	1-202-727-00	SOLID	4.7M	10%	1/2W	
R304	1-249-437-11	CARBON	47K	5%	1/6W	
R305	1-249-437-11	CARBON	47K	5%	1/6W	
R306	1-247-725-11	CARBON	10K	5%	1/4W	
R307	1-249-429-11	CARBON	10K	5%	1/6W	
R308	1-249-429-11	CARBON	10K	5%	1/6W	
R309	1-249-440-11	CARBON	82K	5%	1/6W	
R310	1-247-721-11	CARBON	4.7K	5%	1/4W	
R311	1-249-425-11	CARBON	4.7K	5%	1/6W	
R312	1-249-433-11	CARBON	22K	5%	1/6W	
R313	1-247-870-00	CARBON	43K	5%	1/6W	
R314	1-249-433-11	CARBON	22K	5%	1/6W	
R315	1-247-862-00	CARBON	20K	5%	1/6W	
R316	1-247-869-00	CARBON	39K	5%	1/6W	
R317	1-247-823-00	CARBON	470	5%	1/6W	
R318	1-249-433-11	CARBON	22K	5%	1/6W	
R319	1-249-435-11	CARBON	33K	5%	1/6W	
R320	1-249-429-11	CARBON	10K	5%	1/6W	
R321	1-249-429-11	CARBON	10K	5%	1/6W	
R322	1-247-881-00	CARBON	120K	5%	1/6W	
R323	1-249-423-11	CARBON	3.3K	5%	1/6W	
R324	1-247-874-00	CARBON	62K	5%	1/6W	
R325	1-249-397-11	CARBON	22	5%	1/6W	F
R326	1-249-425-11	CARBON	4.7K	5%	1/6W	
R327	1-247-881-00	CARBON	120K	5%	1/6W	
R328	1-247-869-00	CARBON	39K	5%	1/6W	
R329	1-249-422-11	CARBON	2.7K	5%	1/6W	
R330	1-247-891-00	CARBON	330K	5%	1/6W	
R331	1-247-721-11	CARBON	4.7K	5%	1/4W	
R332	1-249-433-11	CARBON	22K	5%	1/6W	
R333	1-247-857-00	CARBON	12K	5%	1/6W	
R334	1-247-875-00	CARBON	68K	5%	1/6W	
R335	1-249-429-11	CARBON	10K	5%	1/6W	
R336	1-249-429-11	CARBON	10K	5%	1/6W	

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Ref.No.	Part No.	Description				Remark
R337	1-215-445-00	METAL	10K	1%	1/6W	
R338	1-214-747-00	METAL	5.6K	1%	1/4W	
⊠R339 ⚠		METAL			1/6W	
R340	1-215-488-00	METAL	620K	1%	1/6W	
R341	1-215-457-00	METAL	33K	1%	1/6W	
R342	1-247-151-00	CARBON	6.8K	5%	1/4W	
R343	1-249-435-11	CARBON	33K	5%	1/6W	
R344	1-247-713-11	CARBON	1K	5%	1/4W	
R345	1-249-429-11	CARBON	10K	5%	1/6W	
R346	1-249-433-11	CARBON	22K	5%	1/6W	
R347	1-249-429-11	CARBON	10K	5%	1/6W	
R348	1-249-433-11	CARBON	22K	5%	1/6W	
R349	1-249-417-11	CARBON	1K	5%	1/6W	
R350	1-249-429-11	CARBON	10K	5%	1/6W	
R351	1-249-405-11	CARBON	100	5%	1/6W	
R352	1-249-429-11	CARBON	10K	5%	1/6W	
R353	1-249-423-11	CARBON	3.3K	5%	1/6W	
R354	1-249-429-11	CARBON	10K	5%	1/6W	
R355	1-247-849-00	CARBON	5.6K	5%	1/6W	
R356	1-249-429-11	CARBON	10K	5%	1/6W	
R357	1-247-151-00	CARBON	6.8K	5%	1/4W	
R358	1-247-853-00	CARBON	8.2K	5%	1/6W	
R359	1-249-435-11	CARBON	33K	5%	1/6W	
R360	1-247-809-00	CARBON	120	5%	1/6W	
R361	1-247-839-00	CARBON	2.2K	5%	1/6W	
R362	1-249-433-11	CARBON	22K	5%	1/6W	
R363	1-249-437-11	CARBON	47K	5%	1/6W	
R364	1-249-429-11	CARBON	10K	5%	1/6W	
R365	1-247-849-00	CARBON	5.6K	5%	1/6W	
R366	1-247-859-00	CARBON	15K	5%	1/6W	
R367	1-247-887-00	CARBON	220K	5%	1/6W	
R368	1-249-437-11	CARBON	47K	5%	1/6W	
R369	1-249-425-11	CARBON	4.7K	5%	1/6W	
R370	1-249-435-11	CARBON	33K	5%	1/6W	
R371	1-249-433-11	CARBON	22K	5%	1/6W	
R372	1-249-429-11	CARBON	10K	5%	1/6W	
R373	1-247-885-00	CARBON	180K	5%	1/6W	
R374	1-249-437-11	CARBON	47K	5%	1/6W	
R375	1-249-433-11	CARBON	22K	5%	1/6W	
R376	1-249-437-11	CARBON	47K	5%	1/6W	
R377	1-249-437-11	CARBON	47K	5%	1/6W	
R378	1-247-849-00	CARBON	5.6K	5%	1/6W	
R379	1-247-839-00	CARBON	2.2K	5%	1/6W	
R380	1-247-849-00	CARBON	5.6K	5%	1/6W	
R381	1-249-423-11	CARBON	3.3K	5%	1/6W	
R382	1-247-721-11	CARBON	4.7K	5%	1/4W	
R383	1-249-437-11	CARBON	47K	5%	1/6W	
R384	1-249-437-11	CARBON	47K	5%	1/6W	
R385	1-249-429-11	CARBON	10K	5%	1/6W	
R386	1-247-853-00	CARBON	8.2K	5%	1/6W	
R387	1-249-425-11	CARBON	4.7K	5%	1/6W	
R388	1-247-821-00	CARBON	390	5%	1/6W	
R389	1-249-437-11	CARBON	47K	5%	1/6W	
R390	1-249-437-11	CARBON	47K	5%	1/6W	
R391	1-249-437-11	CARBON	47K	5%	1/6W	
R392	1-249-437-11	CARBON	47K	5%	1/6W	
R393	1-247-887-00	CARBON	220K	5%	1/6W	
R394	1-249-435-11	CARBON	33K	5%	1/6W	
R395	1-249-429-11	CARBON	10K	5%	1/6W	
R396	1-249-433-11	CARBON	22K	5%	1/6W	
R397	1-247-163-00	CARBON	22K	5%	1/4W	
R398	1-249-417-11	CARBON	1K	5%	1/6W	
R399	1-247-713-11	CARBON	1K	5%	1/4W	
R401	1-215-436-00	METAL	4.3K	1%	1/6W	
R402	1-215-435-00	METAL	3.9K	1%	1/6W	
R403	1-215-433-00	METAL	3.3K	1%	1/6W	
R404	1-215-435-00	METAL	3.9K	1%	1/6W	
R405	1-215-435-00	METAL	3.9K	1%	1/6W	
R406	1-249-435-11	CARBON	33K	5%	1/6W	
R407	1-215-429-00	METAL	2.2K	1%	1/6W	
R408	1-215-429-00	METAL	2.2K	1%	1/6W	
R409	1-249-417-11	CARBON	1K	5%	1/6W	
R410	1-249-417-11	CARBON	1K	5%	1/6W	
R411	1-249-429-11	CARBON	10K	5%	1/6W	
R412	1-249-429-11	CARBON	10K	5%	1/6W	
R413	1-247-885-00	CARBON	180K	5%	1/6W	
R414	1-215-429-00	METAL	2.2K	1%	1/6W	
R415	1-215-437-00	METAL	4.7K	1%	1/6W	
⊠R416 ⚠		METAL			1/6W	
R417	1-214-725-00	METAL	680	1%	1/4W	
R418	1-214-767-00	METAL	39K	1%	1/4W	
R419	1-214-767-00	METAL	39K	1%	1/4W	
R420	1-249-417-11	CARBON	1K	5%	1/6W	
R421	1-249-429-11	CARBON	10K	5%	1/6W	
R422	1-249-423-11	CARBON	3.3K	5%	1/6W	
R423	1-247-839-00	CARBON	2.2K	5%	1/6W	
R424	1-247-725-11	CARBON	10K	5%	1/4W	
R425	1-247-839-00	CARBON	2.2K	5%	1/6W	
R426	1-216-423-11	METAL OXIDE	27	5%	1W	F
R427	1-249-405-11	CARBON	100	5%	1/6W	
R428	1-249-429-11	CARBON	10K	5%	1/6W	
R429	1-247-819-00	CARBON	330	5%	1/6W	
R430	1-249-423-11	CARBON	3.3K	5%	1/6W	
R431	1-249-429-11	CARBON	10K	5%	1/6W	
R432	1-247-819-00	CARBON	330	5%	1/6W	
R433	1-249-423-11	CARBON	3.3K	5%	1/6W	
R434	1-249-429-11	CARBON	10K	5%	1/6W	
R435	1-247-819-00	CARBON	330	5%	1/6W	
R436	1-249-437-11	CARBON	47K	5%	1/6W	
R437	1-249-417-11	CARBON	1K	5%	1/6W	
R438	1-249-429-11	CARBON	10K	5%	1/6W	
R439	1-249-433-11	CARBON	22K	5%	1/6W	
R440	1-249-434-11	CARBON	27K	5%	1/6W	
R441	1-249-434-11	CARBON	27K	5%	1/6W	
R442	1-249-417-11	CARBON	1K	5%	1/6W	
R443	1-249-429-11	CARBON	10K	5%	1/6W	

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

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

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

Ref.No.	Part No.	Description				Remark
R444	1-215-439-00	METAL	5.6K	1%	1/6W	
R445	1-215-409-00	METAL	330	1%	1/6W	
R446	1-215-428-00	METAL	2K	1%	1/6W	
R447	1-215-433-00	METAL	3.3K	1%	1/6W	
R448	1-249-423-11	CARBON	3.3K	5%	1/6W	
R449	1-214-737-00	METAL	2.2K	1%	1/4W	
R450	1-249-429-11	CARBON	10K	5%	1/6W	
R451	1-249-433-11	CARBON	22K	5%	1/6W	
R452	1-249-433-11	CARBON	22K	5%	1/6W	
R453	1-249-417-11	CARBON	1K	5%	1/6W	
R454	1-249-497-11	CARBON	33K	5%	1/4W	
R455	1-249-435-11	CARBON	33K	5%	1/6W	
R456	1-249-433-11	CARBON	22K	5%	1/6W	
R457	1-249-433-11	CARBON	22K	5%	1/6W	
R458	1-249-435-11	CARBON	33K	5%	1/6W	
R459	1-249-440-11	CARBON	82K	5%	1/6W	
R460	1-247-869-00	CARBON	39K	5%	1/6W	
R461	1-247-725-11	CARBON	10K	5%	1/4W	
R462	1-215-429-00	METAL	2.2K	1%	1/6W	
R463	1-215-483-00	METAL	390K	1%	1/6W	
R464	1-215-452-00	METAL	20K	1%	1/6W	
R465	1-215-449-00	METAL	15K	1%	1/6W	
R466	1-249-417-11	CARBON	1K	5%	1/6W	
R467	1-249-417-11	CARBON	1K	5%	1/6W	
R468	1-249-417-11	CARBON	1K	5%	1/6W	
R469	1-249-417-11	CARBON	1K	5%	1/6W	
R470	1-249-465-11	CARBON	47K	5%	1/4W	
R471	1-249-437-11	CARBON	47K	5%	1/6W	
R472	1-249-437-11	CARBON	47K	5%	1/6W	
R473	1-249-437-11	CARBON	47K	5%	1/6W	
R474	1-247-875-00	CARBON	68K	5%	1/6W	
R475	1-247-875-00	CARBON	68K	5%	1/6W	
R476	1-247-875-00	CARBON	68K	5%	1/6W	
R477	1-246-517-00	CARBON	68K	5%	1/4W	
R479	1-247-839-00	CARBON	2.2K	5%	1/6W	
R480	1-247-717-11	CARBON	2.2K	5%	1/4W	
R481	1-247-725-11	CARBON	10K	5%	1/4W	
✱R482	1-215-437-00	METAL	4.7K	1%	1/6W	
✱R482	1-215-441-00	METAL	6.8K	1%	1/6W	
✱R482	1-215-445-00	METAL	10K	1%	1/6W	
✱R482	1-215-453-00	METAL	22K	1%	1/6W	
✱R482	1-215-461-00	METAL	47K	1%	1/6W	
✱R482	1-215-469-00	METAL	100K	1%	1/6W	
R483	1-215-415-00	METAL	560	1%	1/6W	
R484	1-247-897-00	CARBON	560K	5%	1/6W	
R485	1-247-857-00	CARBON	12K	5%	1/6W	
R486	1-249-417-11	CARBON	1K	5%	1/6W	
R487	1-247-823-00	CARBON	470	5%	1/6W	
R488	1-215-470-00	METAL	110K	1%	1/6W	
⊠R489 ⚠		METAL			1/6W	
R490	1-249-435-11	CARBON	33K	5%	1/6W	
R491	1-247-845-00	CARBON	3.9K	5%	1/6W	
R492	1-247-717-11	CARBON	2.2K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R493	1-247-721-11	CARBON	4.7K	5%	1/4W	
R494	1-249-435-11	CARBON	33K	5%	1/6W	
R495	1-215-445-00	METAL	10K	1%	1/6W	
R496	1-249-405-11	CARBON	100	5%	1/6W	
R497	1-249-422-11	CARBON	2.7K	5%	1/6W	
R498	1-247-135-00	CARBON	1.5K	5%	1/4W	
R499	1-247-725-11	CARBON	10K	5%	1/4W	
R2003	1-249-437-11	CARBON	47K	5%	1/6W	
R2004	1-249-437-11	CARBON	47K	5%	1/6W	
R2005	1-249-429-11	CARBON	10K	5%	1/6W	
R2006	1-216-421-11	METAL OXIDE	12	5%	1W	F
R2007	1-247-815-00	CARBON	220	5%	1/6W	
R2010	1-247-711-11	CARBON	680	5%	1/4W	
R2011	1-249-405-11	CARBON	100	5%	1/6W	
R2012	1-249-417-11	CARBON	1K	5%	1/6W	
R2013	1-247-813-00	CARBON	180	5%	1/6W	
R2014	1-249-417-11	CARBON	1K	5%	1/6W	
R2015	1-214-092-00	METAL	22	1%	1/4W	
R2016	1-214-092-00	METAL	22	1%	1/4W	
R2017	1-249-415-11	CARBON	680	5%	1/6W	
R2018	1-247-839-00	CARBON	2.2K	5%	1/6W	
R2020	1-247-711-11	CARBON	680	5%	1/4W	
R2021	1-249-405-11	CARBON	100	5%	1/6W	
R2022	1-249-417-11	CARBON	1K	5%	1/6W	
R2023	1-247-813-00	CARBON	180	5%	1/6W	
R2024	1-249-417-11	CARBON	1K	5%	1/6W	
R2025	1-214-092-00	METAL	22	1%	1/4W	
R2026	1-214-092-00	METAL	22	1%	1/4W	
R2027	1-249-415-11	CARBON	680	5%	1/6W	
R2028	1-247-839-00	CARBON	2.2K	5%	1/6W	
R2030	1-247-711-11	CARBON	680	5%	1/4W	
R2031	1-249-405-11	CARBON	100	5%	1/6W	
R2032	1-249-417-11	CARBON	1K	5%	1/6W	
R2033	1-247-813-00	CARBON	180	5%	1/6W	
R2034	1-249-417-11	CARBON	1K	5%	1/6W	
R2035	1-214-092-00	METAL	22	1%	1/4W	
R2036	1-214-092-00	METAL	22	1%	1/4W	
R2037	1-249-415-11	CARBON	680	5%	1/6W	
R2038	1-247-839-00	CARBON	2.2K	5%	1/6W	
R3001	1-247-819-00	CARBON	330	5%	1/6W	
R3002	1-249-425-11	CARBON	4.7K	5%	1/6W	
R3003	1-247-853-00	CARBON	8.2K	5%	1/6W	
R3004	1-249-405-11	CARBON	100	5%	1/6W	
R3005	1-247-839-00	CARBON	2.2K	5%	1/6W	
R3006	1-247-893-00	CARBON	390K	5%	1/6W	
R4001	1-249-429-11	CARBON	10K	5%	1/6W	
R4002	1-247-849-00	CARBON	5.6K	5%	1/6W	
R4003	1-247-839-00	CARBON	2.2K	5%	1/6W	
R4004	1-249-429-11	CARBON	10K	5%	1/6W	
R4005	1-247-849-00	CARBON	5.6K	5%	1/6W	
R4006	1-247-839-00	CARBON	2.2K	5%	1/6W	
R4007	1-249-429-11	CARBON	10K	5%	1/6W	
R4008	1-247-849-00	CARBON	5.6K	5%	1/6W	

- ✱ : Selected to yield optimum performance.
- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

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BA F G

Ref.No.	Part No.	Description				Remark
R4009	1-247-839-00	CARBON	2.2K	5%	1/6W	
R4010	1-249-437-11	CARBON	47K	5%	1/6W	
R4011	1-249-429-11	CARBON	10K	5%	1/6W	
R4012	1-249-429-11	CARBON	10K	5%	1/6W	
R4013	1-249-437-11	CARBON	47K	5%	1/6W	
R4014	1-249-437-11	CARBON	47K	5%	1/6W	
R4015	1-249-417-11	CARBON	1K	5%	1/6W	
R4016	1-249-429-11	CARBON	10K	5%	1/6W	
R4017	1-249-405-11	CARBON	100	5%	1/6W	
R4018	1-249-425-11	CARBON	4.7K	5%	1/6W	
R4019	1-215-411-00	METAL	390	1%	1/6W	
R4023	1-249-437-11	CARBON	47K	5%	1/6W	
R5010	1-247-849-00	CARBON	5.6K	5%	1/6W	
		VARIABLE RESISTOR				
RV211	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
RV221	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
RV231	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
RV251	1-224-254-XX	RES, ADJ, METAL GLAZE 47K				
RV252	1-224-256-XX	RES, ADJ, METAL GLAZE 220K				
RV291	1-224-254-XX	RES, ADJ, METAL GLAZE 47K				
RV292	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K				
RV301	1-224-249-XX	RES, ADJ, METAL GLAZE 1K				
RV302	1-224-256-XX	RES, ADJ, METAL GLAZE 220K				
RV303	1-224-253-XX	RES, ADJ, METAL GLAZE 22K				
RV306	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K				
RV307	1-224-254-XX	RES, ADJ, METAL GLAZE 47K				
RV401	1-224-134-XX	RES, ADJ, METAL GLAZE 470K				
RV402	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K				
RV403	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
**********						
	*A-1240-695-A	F BOARD, COMPLETE **********				
	1-533-190-11	CLIP, FUSE				
		CAPACITOR				
C601	⚠1-136-360-51	FILM	0.22MF	20%	250V	
C602	⚠1-136-360-51	FILM	0.22MF	20%	250V	
C603	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C604	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C605	1-161-953-00	CERAMIC	0.0047MF	20%	400V	
C606	1-161-953-00	CERAMIC	0.0047MF	20%	400V	
C607	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V	
C608	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V	
C609	⚠1-136-360-51	FILM	0.22MF	20%	250V	
C610	⚠1-102-050-51	CERAMIC	0.01MF		500V	
		DIODE				
D601	8-719-911-55	DIODE U05G				
D602	8-719-911-55	DIODE U05G				

Ref.No.	Part No.	Description				Remark
		CONNECTOR				
F1	*1-508-786-00	2P PLUG (M)				
F2	*1-508-786-00	2P PLUG (M)				
F3	*1-508-765-00	3P PLUG (M)				
F4	*1-508-765-00	3P PLUG (M)				
		FUSE				
F601	⚠1-532-509-00	FUSE, GLASS TUBE 6.3A				
		RESISTOR				
R601	⚠1-202-723-51	SOLID	2.2M	10%	1/2W	
R602	⚠1-202-723-51	SOLID	2.2M	10%	1/2W	
R603	⚠1-205-741-11	CEMENTED	1.8	5%	10W	
R604	1-244-925-00	CARBON	150K	5%	1/2W	
R605	1-244-925-00	CARBON	150K	5%	1/2W	
		TRANSFORMER				
T601	⚠1-421-357-31	TRANSFORMER, LINE FILTER				
T602	⚠1-421-426-11	TRANSFORMER, FERRITE				
		THERMISTOR				
THP601	⚠1-806-214-21	THERMISTOR (POSITIVE)				
**********						
	*A-1316-059-A	G BOARD, COMPLETE **********				
	*4-314-225-00	HEAT SINK, (A)				
	4-363-414-00	SPACER, MICA				
	*4-368-683-01	SPRING				
		CAPACITOR				
C650	⚠1-102-050-51	CERAMIC	0.01MF		500V	
C651	1-136-060-00	FILM	0.047MF	5%	400V	
C652	1-136-060-00	FILM	0.047MF	5%	400V	
C653	1-102-327-00	CERAMIC	330PF	15%	1.5KV	
C654	1-102-327-00	CERAMIC	330PF	15%	1.5KV	
C655	1-130-661-00	FILM	0.022MF	3%	600V	
C656	1-136-239-11	FILM	0.01MF,	3%	1KV	
C657	1-136-060-00	FILM	0.047MF	5%	400V	
C659	1-123-024-00	ELECT	33MF		160V	
C661	1-123-024-00	ELECT	33MF		160V	
C662	1-123-024-00	ELECT	33MF		160V	
C663	1-124-035-00	ELECT	47MF	20%	16V	
C664	1-124-128-00	ELECT	470MF	20%	25V	
C665	1-123-875-91	ELECT	10MF	20%	50V	
C666	1-124-035-00	ELECT	47MF	20%	16V	
C667	1-124-900-11	ELECT	470MF	20%	35V	
C668	1-123-332-00	ELECT	47MF	20%	16V	
C669	1-123-332-00	ELECT	47MF	20%	16V	
C670	1-162-116-00	CERAMIC	680PF	10%	2KV	
C671	1-162-558-11	CERAMIC	100PF	10%	2KV	

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Ref.No.	Part No.	Description			Remark
C672	1-162-558-11	CERAMIC	100PF	10% 2KV	
		DIODE			
D651	8-719-301-18	DIODE RM2CS			
D652	8-719-301-18	DIODE RM2CS			
D653	8-719-901-93	DIODE V19E			
D654	8-719-901-93	DIODE V19E			
D655	8-719-302-00	DIODE RU-2M			
D656	8-719-500-25	DIODE D5KC20RH			
D657	8-719-302-00	DIODE RU-2M			
D658	8-719-302-00	DIODE RU-2M			
D659	8-719-982-04	DIODE ERB81-004			
D660	8-719-982-04	DIODE ERB81-004			
D661	8-719-982-04	DIODE ERB81-004			
D662	8-719-982-04	DIODE ERB81-004			
D663	8-719-982-04	DIODE ERB81-004			
D664	8-719-302-00	DIODE RU-2M			
D665	8-719-302-00	DIODE RU-2M			
D666	8-719-302-00	DIODE RU-2M			
D667	8-719-302-00	DIODE RU-2M			
D668	8-719-302-00	DIODE RU-2M			
D669	8-719-901-24	THYRISTOR CSM2A4A10			
D670	8-719-102-62	DIODE RD4.3E-N2			
D671	8-719-103-06	DIODE RD13E-N2			
D672	8-719-103-06	DIODE RD13E-N2			
D673	8-719-302-00	DIODE RU-2M			
D674	8-719-302-00	DIODE RU-2M			
D675	8-719-302-00	DIODE RU-2M			
D676	8-719-302-00	DIODE RU-2M			
D677	8-719-302-00	DIODE RU-2M			
D678	8-719-901-93	DIODE V19E			
D679	8-719-901-93	DIODE V19E			
		CONNECTOR			
G1	*1-508-765-00	3P PLUG (M)			
G2	*1-564-353-00	PLUG, CONNECTOR (2.5MM) 2P			
G3	*1-508-766-00	4P PLUG (M)			
G4	*1-508-767-00	5P PLUG			
G5	*1-508-765-00	3P PLUG (M)			
		MODULE			
IC651	1-235-449-11	POWER MODULE (DM-19)			
		TRANSISTOR			
Q651	8-729-902-41	TRANSISTOR 2SC3318			
Q652	8-729-902-41	TRANSISTOR 2SC3318			
Q653	8-729-177-43	TRANSISTOR 2SD774			
Q654	8-729-177-43	TRANSISTOR 2SD774			
Q655	8-729-117-54	TRANSISTOR 2SA1175			
Q656	8-729-117-54	TRANSISTOR 2SA1175			
Q657	8-729-178-54	TRANSISTOR 2SC2785			

Ref.No.	Part No.	Description			Remark
		RESISTOR			
R651	1-202-842-51	SOLID	220K	1/2W	
R652	1-202-842-51	SOLID	220K	1/2W	
R653	1-202-842-51	SOLID	220K	1/2W	
R654	1-217-418-00	FUSIBLE	0.47 10%	1/2W	F
R655	1-217-418-00	FUSIBLE	0.47 10%	1/2W	F
R656	1-216-374-00	METAL OXIDE	2.7 5%	2W	F
R657	1-216-374-00	METAL OXIDE	2.7 5%	2W	F
R658	1-247-717-11	CARBON	2.2K 5%	1/4W	
R659	1-247-700-11	CARBON	100 5%	1/4W	
R660	1-215-468-00	METAL	91K 1%	1/6W	
R661	1-215-449-00	METAL	15K 1%	1/6W	
R662	1-247-719-11	CARBON	3.3K 5%	1/4W	
R663	1-247-717-11	CARBON	2.2K 5%	1/4W	
R664	1-215-469-00	METAL	100K 1%	1/6W	
R665	1-215-451-00	METAL	18K 1%	1/6W	
R666	1-215-467-00	METAL	82K 1%	1/6W	
R667	1-215-451-00	METAL	18K 1%	1/6W	
R668	1-247-719-11	CARBON	3.3K 5%	1/4W	
R669	1-249-441-11	CARBON	100K 5%	1/6W	
R671	1-249-381-11	CARBON	1 5%	1/6W	F
R672	1-202-842-51	SOLID	220K	1/2W	
R673	1-247-717-11	CARBON	2.2K 5%	1/4W	
R674	1-249-429-11	CARBON	10K 5%	1/6W	
		TRANSFORMER			
T651	⚠1-421-704-11	CDT			
T652	⚠1-421-886-11	PIT			
T653	⚠1-421-888-11	PRT			
T654	⚠1-421-889-11	PRT			
T655	⚠1-421-889-11	PRT			
T656	⚠1-421-885-11	COT			
T657	⚠1-421-887-11	PHT			
		**********			
	*A-1330-716-A	CB BOARD, COMPLETE			
		**********			
	1-526-762-00	SOCKET, CRT			
		NEON LAMP			
NL701	1-519-371-11	LAMP, NEON			
NL702	1-519-371-11	LAMP, NEON			
NL703	1-519-371-11	LAMP, NEON			
		RESISTOR			
R701	1-202-719-00	SOLID	1M 10%	1/2W	
R706	1-202-824-00	SOLID	3.3K	1/2W	
		VARIABLE RESISTOR			
RV703	1-230-798-11	RES, ADJ, METAL GLAZE 90M			

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D

Ref.No.	Part No.	Description			Remark
	*A-1340-829-A	D BOARD, COMPLETE			
		**********			
	*4-314-225-00	HEAT SINK, (A)			
	*4-323-833-00	HEAT SINK, PIN OUT			
	*4-323-833-00	HEAT SINK, PIN OUT			
	4-363-414-00	SPACER, MICA			
	*4-381-827-01	HOLDER, TR			
		CAPACITOR			
C159	1-162-116-00	CERAMIC	680PF	10%	2KV
C501	1-124-448-00	ELECT	1000MF	20%	35V
C502	1-124-932-11	ELECT	100MF	20%	100V
C504	1-124-556-11	ELECT	2200MF	20%	16V
C505	⚠1-102-234-51	CERAMIC	270PF	10%	500V
C506	1-123-332-00	ELECT	47MF	20%	16V
C507	1-108-429-00	MYLAR	0.047MF	10%	200V
C509	1-108-622-91	MYLAR	0.0047MF	10%	100V
C511	1-108-433-00	MYLAR	0.1MF	10%	200V
C513	1-124-909-11	ELECT	33MF	20%	50V
C515	1-124-902-00	ELECT	0.47MF	20%	50V
C517	1-102-978-00	CERAMIC	220PF	5%	50V
C518	1-129-702-00	FILM	0.001MF	10%	630V
C519	1-129-702-00	FILM	0.001MF	10%	630V
C521	1-161-830-00	CERAMIC	0.0047MF		500V
C522	1-136-179-00	FILM	1.5MF	5%	200V
C523	1-136-053-00	FILM	1.2MF	5%	200V
C524	⚠1-129-712-51	FILM	0.0068MF	10%	630V
C525	1-136-331-11	FILM	3MF	5%	200V
C526	1-136-053-00	FILM	1.2MF	5%	200V
C527	1-123-943-00	ELECT	1MF	20%	250V
C528	1-136-115-00	FILM	0.56MF	5%	200V
C529	1-136-331-11	FILM	3MF	5%	200V
C530	⚠1-129-723-51	FILM	0.056MF	10%	630V
C531	⚠1-136-089-11	FILM	0.0056MF	3%	2KV
C532	1-108-614-91	MYLAR	0.001MF	10%	100V
C533	1-102-129-00	CERAMIC	0.01MF	10%	50V
C534	1-102-129-00	CERAMIC	0.01MF	10%	50V
C535	1-124-907-00	ELECT	10MF	20%	50V
C536	1-106-192-00	MYLAR	0.0068MF	10%	100V
C537	1-106-196-00	MYLAR	0.01MF	10%	100V
C538	1-124-902-00	ELECT	0.47MF	20%	50V
C539	1-108-614-91	MYLAR	0.001MF	10%	100V
C540	1-106-196-00	MYLAR	0.01MF	10%	100V
C541	1-106-196-00	MYLAR	0.01MF	10%	100V
C542	1-124-907-00	ELECT	10MF	20%	50V
C543	1-124-192-00	ELECT	4.7MF	20%	50V
C545	1-108-691-81	MYLAR	0.0082MF	10%	200V
C546	1-108-688-91	MYLAR	0.0047MF	10%	200V
C547	⚠1-102-327-11	CERAMIC	330PF	15%	1.5KV
C548	1-136-173-00	FILM	0.47MF	5%	50V
C549	1-124-347-00	ELECT	100MF	20%	160V
C550	1-124-484-11	ELECT	220MF	20%	35V
C551	1-162-114-00	CERAMIC	0.0047MF		2KV
C552	1-108-429-00	MYLAR	0.047MF	10%	200V
C553	1-123-949-00	ELECT	33MF	20%	250V
C554	1-124-477-11	ELECT	47MF	20%	25V
C555	1-123-024-00	ELECT	33MF		160V
C556	⚠1-129-722-51	FILM	0.047MF	10%	630V
C557	1-124-481-11	ELECT	22MF	20%	25V
C558	1-124-445-00	ELECT	100MF	20%	16V
C560	1-136-308-11	FILM	0.68MF	5%	200V
C561	1-106-196-00	MYLAR	0.01MF	10%	100V
C562	1-124-927-11	ELECT	4.7MF	20%	50V
C563	1-124-120-11	ELECT	220MF	20%	25V
C564	1-124-478-11	ELECT	100MF	20%	25V
C565	1-124-907-00	ELECT	10MF	20%	50V
C566	1-136-308-11	FILM	0.68MF	5%	200V
C570	1-162-134-11	CERAMIC	470PF	10%	2KV
C581	1-124-477-11	ELECT	47MF	20%	25V
C585	1-124-896-00	ELECT	33MF	20%	16V
C589	1-124-907-00	ELECT	10MF	20%	50V
C593	1-162-117-00	CERAMIC	100PF	10%	500V
C594	1-123-640-00	ELECT	10MF	20%	100V
C595	1-123-267-00	ELECT	2.2MF	20%	160V
C596	1-102-038-00	CERAMIC	0.001MF		500V
C597	1-102-038-00	CERAMIC	0.001MF		500V
C5001	1-124-910-11	ELECT	47MF	20%	50V
C5002	1-162-115-00	CERAMIC	330PF	10%	2KV
		CONNECTOR			
D1	*1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P			
D2	*1-508-766-00	4P PLUG (M)			
D3	*1-508-767-00	5P PLUG			
D4	*1-564-353-00	PLUG, CONNECTOR (2.5MM) 2P			
D5	*1-564-441-11	PLUG, CONNECTOR (2.5MM) 5P			
D6	*1-508-765-00	3P PLUG (M)			
D7	*1-508-765-00	3P PLUG (M)			
D8	*1-564-353-00	PLUG, CONNECTOR (2.5MM) 2P			
D11	*1-564-353-00	PLUG, CONNECTOR (2.5MM) 2P			
D12	*1-564-446-11	PLUG, CONNECTOR (2.5MM) 10P			
D13	*1-564-441-11	PLUG, CONNECTOR (2.5MM) 5P			
		DIODE			
D504	⚠8-719-901-02	DIODE SIB01-02			
D505	⚠8-719-901-02	DIODE SIB01-02			
D506	8-719-911-19	DIODE 1SS119			
D507	8-719-911-19	DIODE 1SS119			
D508	8-719-911-19	DIODE 1SS119			
D509	8-719-911-19	DIODE 1SS119			
D510	8-719-918-77	DIODE V19G			
D511	8-719-901-93	DIODE V19E			
D512	8-719-973-95	DIODE ERD09-15			
D513	8-719-302-59	DIODE FMU-26S			
D514	8-719-918-77	DIODE V19G			
D515	8-719-101-94	DIODE RD18E-L2			
D516	⚠8-719-901-02	DIODE SIB01-02			

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Ref.No.	Part No.	Description	Remark
D518	8-719-911-19	DIODE 1SS119	
D522	8-719-102-74	DIODE RD6.2E-N2	
D523	8-719-300-76	DIODE RH1A	
D524	8-719-300-76	DIODE RH1A	
D525	8-719-911-19	DIODE 1SS119	
D526	8-719-300-65	DIODE ES1F	
D528	8-719-102-97	DIODE RD12E-N2	
D529	8-719-300-65	DIODE ES1F	
D531	8-719-911-19	DIODE 1SS119	
D532	8-719-911-19	DIODE 1SS119	
D533	8-719-911-19	DIODE 1SS119	
D534	8-719-911-19	DIODE 1SS119	
D535	8-719-911-19	DIODE 1SS119	
D536	8-719-973-95	DIODE ERD09-15	
D537	8-719-918-77	DIODE V19G	
D5001	8-719-901-24	THYRISTOR CSM2B4A10	
D5002	8-719-911-19	DIODE 1SS119	
D5003	8-719-901-19	DIODE V11N	
		IC	
IC501	8-759-014-95	IC MC1495L	
IC504	8-759-145-58	IC UPC4558C	
IC505	8-759-170-12	IC UPC78M12H	
		COIL	
L501	1-408-239-00	MICRO INDUCTOR 4.7MMH	
L502	⚠ 1-459-670-11	H.L.C	
L503	⚠ 1-459-671-11	COIL (WITH CORE)	
L504	1-459-123-00	COIL, DUST CORE(PAC)	
L505	1-459-104-00	COIL, DUST CORE	
L506	1-407-365-00	COIL, CHOKE (HIGH FREQUENCY)	
L507	1-421-421-00	COIL, CHOKE 100UH	
L508	1-459-215-00	CORE COIL	
L509	1-459-215-00	CORE COIL	
L510	1-459-454-00	COIL, FERRITE CHOKE	
L511	1-421-329-00	COIL, CHOKE	
L512	1-407-711-00	MICRO INDUCTOR 330UH	
		NEON LAMP	
NL501	1-519-237-11	LAMP, NEON	
		TRANSISTOR	
Q501	8-729-900-36	TRANSISTOR DTC124ES	
Q502	8-729-603-50	TRANSISTOR 2SC403SP	
Q503	8-729-603-50	TRANSISTOR 2SC403SP	
Q506	8-729-117-54	TRANSISTOR 2SA1175	
Q507	8-729-177-43	TRANSISTOR 2SD774	
Q508	8-729-178-54	TRANSISTOR 2SC2785	
Q509	8-729-178-54	TRANSISTOR 2SC2785	
Q510	8-729-313-42	TRANSISTOR 2SD1134	
Q511	8-729-177-43	TRANSISTOR 2SD774	
Q512	8-729-103-43	TRANSISTOR 2SB734	

Ref.No.	Part No.	Description	Remark
Q513	8-729-177-43	TRANSISTOR 2SD774	
Q514	8-729-805-07	TRANSISTOR 2SD1887-CA	
Q515	8-729-178-54	TRANSISTOR 2SC2785	
Q516	8-729-178-54	TRANSISTOR 2SC2785	
Q517	8-729-178-54	TRANSISTOR 2SC2785	
Q518	8-729-178-54	TRANSISTOR 2SC2785	
Q519	8-729-213-12	TRANSISTOR 2SC2230A	
Q520	8-729-401-21	TRANSISTOR 2SD1264-P	
Q521	8-729-401-18	TRANSISTOR 2SB940-P	
Q522	8-729-178-54	TRANSISTOR 2SC2785	
Q531	8-729-178-54	TRANSISTOR 2SC2785	
Q532	8-729-178-54	TRANSISTOR 2SC2785	
Q533	8-729-178-54	TRANSISTOR 2SC2785	
Q534	8-729-178-54	TRANSISTOR 2SC2785	
Q5001	8-729-117-54	TRANSISTOR 2SA1175	
		RESISTOR	
R501	1-249-417-11	CARBON 1K 5% 1/6W	
R503	1-249-417-11	CARBON 1K 5% 1/6W	
R504	1-249-405-11	CARBON 100 5% 1/6W	
R505	1-249-425-11	CARBON 4.7K 5% 1/6W	
R506	1-247-791-00	CARBON 22 5% 1/6W	
R507	1-247-725-11	CARBON 10K 5% 1/4W	
R508	1-247-719-11	CARBON 3.3K 5% 1/4W	
R509	1-247-851-00	CARBON 6.8K 5% 1/6W	
R510	1-216-350-11	METAL OXIDE 1.2 5% 1W	F
R511	1-216-428-00	METAL OXIDE 180 5% 1W	F
R512	1-216-371-00	METAL OXIDE 1.5 5% 2W	F
R513	1-216-373-11	METAL OXIDE 2.2 5% 2W	F
R514	1-249-429-11	CARBON 10K 5% 1/6W	
R516	1-249-417-11	CARBON 1K 5% 1/6W	
R517	1-249-440-11	CARBON 82K 5% 1/6W	
R518	1-247-815-00	CARBON 220 5% 1/6W	
R519	1-247-891-00	CARBON 330K 5% 1/6W	
R520	1-249-429-11	CARBON 10K 5% 1/6W	
R521	1-249-429-11	CARBON 10K 5% 1/6W	
R523	1-215-882-00	METAL OXIDE 22 5% 2W	F
R524	1-247-815-00	CARBON 220 5% 1/6W	
R525	1-247-875-00	CARBON 68K 5% 1/6W	
R526	1-249-429-11	CARBON 10K 5% 1/6W	
R527	1-247-145-00	CARBON 3.9K 5% 1/4W	
R528	1-247-721-11	CARBON 4.7K 5% 1/4W	
R529	1-216-456-00	METAL OXIDE 820 5% 2W	F
R530	1-215-891-11	METAL OXIDE 680 5% 2W	F
R531	1-216-430-11	METAL OXIDE 390 5% 1W	F
R532	1-249-429-11	CARBON 10K 5% 1/6W	
R533	1-249-437-11	CARBON 47K 5% 1/6W	
R534	1-249-440-11	CARBON 82K 5% 1/6W	
R535	1-249-429-11	CARBON 10K 5% 1/6W	
R536	1-247-885-00	CARBON 180K 5% 1/6W	
R537	1-249-440-11	CARBON 82K 5% 1/6W	
R538	1-249-429-11	CARBON 10K 5% 1/6W	
R539	1-247-883-00	CARBON 150K 5% 1/6W	

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D

Ref.No.	Part No.	Description				Remark
R540	1-247-893-00	CARBON	390K	5%	1/6W	
R542	1-249-433-11	CARBON	22K	5%	1/6W	
R543	1-247-851-00	CARBON	6.8K	5%	1/6W	
R544	1-247-859-00	CARBON	15K	5%	1/6W	
R545	1-247-817-00	CARBON	270	5%	1/6W	
R546	1-247-849-00	CARBON	5.6K	5%	1/6W	
R547	1-249-435-11	CARBON	33K	5%	1/6W	
R548	1-249-497-11	CARBON	33K	5%	1/4W	
R549	1-249-469-11	CARBON	100K	5%	1/4W	
R550	1-249-429-11	CARBON	10K	5%	1/6W	
R551	1-249-417-11	CARBON	1K	5%	1/6W	F
R552	1-249-429-11	CARBON	10K	5%	1/6W	
R553	1-249-417-11	CARBON	1K	5%	1/6W	
R554	1-247-713-11	CARBON	1K	5%	1/4W	
R555	1-246-517-00	CARBON	68K	5%	1/4W	
R556	1-216-424-11	METAL OXIDE	39	5%	1W	F
R557	1-215-892-11	METAL OXIDE	1K	5%	2W	F
R558	1-249-433-11	CARBON	22K	5%	1/6W	
R559	1-249-417-11	CARBON	1K	5%	1/6W	
R560	1-215-886-11	METAL OXIDE	100	5%	2W	F
R561	⚠1-215-863-51	METAL OXIDE	100	5%	1W	F
R562	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R563	1-202-818-00	SOLID	1K		1/2W	
R564	1-249-387-11	CARBON	3.3	5%	1/6W	F
R565	1-215-874-11	METAL OXIDE	6.8K	5%	1W	F
R566	1-215-872-11	METAL OXIDE	3.3K	5%	1W	F
R567	1-244-933-00	CARBON	330K	5%	1/2W	
R568	1-215-881-11	METAL OXIDE	15	5%	2W	F
R569	⚠1-216-425-51	METAL OXIDE	56	5%	1W	F
R570	1-249-433-11	CARBON	22K	5%	1/6W	
R571	1-249-417-11	CARBON	1K	5%	1/6W	
R572	1-247-859-00	CARBON	15K	5%	1/6W	
R573	1-216-424-11	METAL OXIDE	39	5%	1W	F
R574	1-247-849-00	CARBON	5.6K	5%	1/6W	
R575	1-247-851-00	CARBON	6.8K	5%	1/6W	
R576	1-249-429-11	CARBON	10K	5%	1/6W	
R577	1-249-433-11	CARBON	22K	5%	1/6W	
R578	1-249-429-11	CARBON	10K	5%	1/6W	
R579	1-249-429-11	CARBON	10K	5%	1/6W	
R580	1-247-851-00	CARBON	6.8K	5%	1/6W	
R581	1-247-873-00	CARBON	56K	5%	1/6W	
R582	1-249-429-11	CARBON	10K	5%	1/6W	
R583	1-247-809-00	CARBON	120	5%	1/6W	
R584	1-249-429-11	CARBON	10K	5%	1/6W	
R585	1-249-425-11	CARBON	4.7K	5%	1/6W	
R586	1-249-405-11	CARBON	100	5%	1/6W	
R587	1-249-432-11	CARBON	18K	5%	1/6W	
R588	1-247-809-00	CARBON	120	5%	1/6W	
R589	1-249-429-11	CARBON	10K	5%	1/6W	
R590	1-249-429-11	CARBON	10K	5%	1/6W	
R591	1-249-422-11	CARBON	2.7K	5%	1/6W	
R592	1-247-845-00	CARBON	3.9K	5%	1/6W	
R593	1-249-393-11	CARBON	10	5%	1/6W	F

Ref.No.	Part No.	Oescription				Remark
R594	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
R595	1-215-894-11	METAL OXIDE	2.2K	5%	2W	F
R596	1-249-401-11	CARBON	47	5%	1/6W	F
R597	1-216-350-11	METAL OXIDE	1.2	5%	1W	F
R598	1-216-350-11	METAL OXIDE	1.2	5%	1W	F
R599	1-202-842-51	SOLID	220K		1/2W	
R5001	1-249-429-11	CARBON	10K	5%	1/6W	
R5002	1-249-441-11	CARBON	100K	5%	1/6W	
R5003	1-247-851-00	CARBON	6.8K	5%	1/6W	
R5004	1-249-432-11	CARBON	18K	5%	1/6W	
R5005	1-249-429-11	CARBON	10K	5%	1/6W	
R5006	1-247-839-00	CARBON	2.2K	5%	1/6W	
R5007	1-247-887-00	CARBON	220K	5%	1/6W	
R5010	1-202-841-00	SOLID	180K	10%	1/2W	
R5011	1-249-437-11	CARBON	47K	5%	1/6W	
R5012	1-249-429-11	CARBON	10K	5%	1/6W	
R5013	1-249-437-11	CARBON	47K	5%	1/6W	
R5015	1-249-429-11	CARBON	10K	5%	1/6W	
R5016	1-249-433-11	CARBON	22K	5%	1/6W	
R5017	1-247-821-00	CARBON	390	5%	1/6W	
R5018	1-249-440-11	CARBON	82K	5%	1/6W	
R5019	1-215-898-11	METAL OXIDE	10K	5%	2W	F
R5020	1-216-445-11	METAL OXIDE	12	5%	2W	F
R5021	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R5022	1-247-823-00	CARBON	470	5%	1/6W	
R5023	1-216-450-00	METAL OXIDE	82	5%	2W	F

VARIABLE RESISTOR

RV502	1-228-727-00	RES, ADJ, CERAMIC	CARBON 47K
RV503	1-228-728-00	RES, ADJ, CERAMIC	CARBON 100K
RV504	1-228-725-00	RES, ADJ, CERAMIC	CARBON 22K
RV505	1-228-728-00	RES, ADJ, CERAMIC	CARBON 100K
RV506	1-228-720-00	RES, ADJ, CERAMIC	CARBON 1K
RV570	1-228-725-00	RES, ADJ, CERAMIC	CARBON 22K
RV580	1-228-729-00	RES, ADJ, CERAMIC	CARBON 220K

RELAY

RY501	⚠1-515-626-11	RELAY
RY502	⚠1-515-626-11	RELAY
RY503	⚠1-515-626-11	RELAY
RY504	⚠1-515-626-11	RELAY

SPARK GAP

SG501	1-519-063-XX	DISCHARGING GAP

TRANSFORMER

T501	⚠1-437-164-11	HDT
T502	⚠1-439-390-11	TRANSFORMER ASSY, FLYBACK

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H BC X CA

Ref.No.	Part No.	Description	Remark
	*A-1371-187-A	H BOARD, COMPLETE **********	
	1-619-035-11	PC BOARD, H	
		CONNECTOR	
H1	*1-564-450-11	PLUG, CONNECTOR (2.5MM) 2P	
H2	*1-564-452-41	PLUG, CONNECTOR (2.5MM) 4P	
H3	*1-564-450-11	PLUG, CONNECTOR (2.5MM) 2P	
H4	*1-564-450-11	PLUG, CONNECTOR (2.5MM) 2P	
H5	*1-564-452-11	PLUG, CONNECTOR (2.5MM) 4P	
		RESISTOR	
R802	1-247-811-00	CARBON 150 5% 1/6W	
		VARIABLE RESISTOR	
RV801	1-228-911-00	RES, VAR, CARBON 50K	
RV802	1-228-911-00	RES, VAR, CARBON 50K	
RV803	1-228-911-00	RES, VAR, CARBON 50K	
RV804	1-237-359-11	RES, VAR, CARBON 5K	
		SWITCH	
S801	⚠1-516-970-00	SWITCH, SLIDE	
S802	⚠1-553-111-00	SWITCH, SLIDE	
**********			
	*1-619-029-11	BC BOARD ********	
		CONNECTOR	
BC1	*1-564-444-11	PLUG, CONNECTOR (2.5MM) 8P	
BC2	*1-564-444-11	PLUG, CONNECTOR (2.5MM) 8P	
BC3	1-563-301-11	SOCKET, CONNECTOR (D-SUB) 9P	
		COIL	
L901	1-410-314-11	MICRO INDUCTOR 0.47UH	
L902	1-410-314-11	MICRO INDUCTOR 0.47UH	
L903	1-410-314-11	MICRO INDUCTOR 0.47UH	
L904	1-410-314-11	MICRO INDUCTOR 0.47UH	
L905	1-410-314-11	MICRO INDUCTOR 0.47UH	
L906	1-410-314-11	MICRO INDUCTOR 0.47UH	
L907	1-410-314-11	MICRO INDUCTOR 0.47UH	
L908	1-410-314-11	MICRO INDUCTOR 0.47UH	
**********			
	1-619-036-11	X BOARD *******	
		DIODE	
D901	8-719-102-34	DIODE SG232D	

Ref.No.	Part No.	Description			Remark
	*A-1389-771-A	CA BOARD, COMPLETE **********			
	1-619-030-11	PC BOARD, CA			
	4-370-970-01	SPACER, TR			
		CAPACITOR			
C703	1-123-948-00	ELECT	22MF	20%	250V
C705	1-136-338-11	FILM	0.024MF	3%	1KV
C711	1-124-907-00	ELECT	10MF	20%	50V
C712	1-124-932-11	ELECT	100MF	20%	100V
C713	1-130-983-00	FILM	1.5MF	5%	100V
C714	1-124-928-11	ELECT	10MF	20%	100V
C721	1-124-907-00	ELECT	10MF	20%	50V
C722	1-124-932-11	ELECT	100MF	20%	100V
C723	1-130-983-00	FILM	1.5MF	5%	100V
C724	1-124-928-11	ELECT	10MF	20%	100V
C731	1-124-907-00	ELECT	10MF	20%	50V
C732	1-124-932-11	ELECT	100MF	20%	100V
C733	1-130-983-00	FILM	1.5MF	5%	100V
C734	1-124-928-11	ELECT	10MF	20%	100V
		DIODE			
D711	8-719-901-83	DIODE 1SS83			
D712	8-719-901-83	DIODE 1SS83			
D713	8-719-300-65	DIODE ES1F			
D721	8-719-901-83	DIODE 1SS83			
D722	8-719-901-83	DIODE 1SS83			
D723	8-719-300-65	DIODE ES1F			
D731	8-719-901-83	DIODE 1SS83			
D732	8-719-901-83	DIODE 1SS83			
D733	8-719-300-65	DIODE ES1F			
		COIL			
L711	1-407-689-00	MICRO INDUCTOR 4.7UH			
L712	1-407-687-00	MICRO INDUCTOR 3.3UH			
L721	1-407-689-00	MICRO INDUCTOR 4.7UH			
L722	1-407-687-00	MICRO INDUCTOR 3.3UH			
L731	1-407-689-00	MICRO INDUCTOR 4.7UH			
L732	1-407-687-00	MICRO INDUCTOR 3.3UH			
		NEON LAMP			
NL711	1-519-405-11	LAMP, NEON			
NL721	1-519-405-11	LAMP, NEON			
NL731	1-519-405-11	LAMP, NEON			
		TRANSISTOR			
Q711	8-729-168-82	TRANSISTOR 2SC2688			
Q721	8-729-168-82	TRANSISTOR 2SC2688			
Q731	8-729-168-82	TRANSISTOR 2SC2688			

CA

Ref.No.	Part No.	Description				Remark
		RESISTOR				
R702	1-202-818-00	SOLID	1K		1/2W	
R703	1-202-719-00	SOLID	1M	10%	1/2W	
R708	1-202-720-00	SOLID	1.2M	10%	1/2W	
R711	1-216-732-11	METAL	820	1%	10W	
R712	1-202-557-00	SOLID	220	20%	1/2W	
R713	1-244-887-51	CARBON	3.9K	5%	1/2W	
R714	1-244-889-51	CARBON	4.7K	5%	1/2W	
R715	1-247-903-00	CARBON	1M	5%	1/6W	
R716	1-247-783-00	CARBON	10	5%	1/6W	
R717	1-247-839-00	CARBON	2.2K	5%	1/6W	
R721	1-216-732-11	METAL	820	1%	10W	
R722	1-202-557-00	SOLID	220	20%	1/2W	
R723	1-244-887-51	CARBON	3.9K	5%	1/2W	
R724	1-244-889-51	CARBON	4.7K	5%	1/2W	
R725	1-247-903-00	CARBON	1M	5%	1/6W	
R726	1-247-783-00	CARBON	10	5%	1/6W	
R727	1-247-839-00	CARBON	2.2K	5%	1/6W	
R731	1-216-732-11	METAL	820	1%	10W	
R732	1-202-557-00	SOLID	220	20%	1/2W	
R733	1-244-887-51	CARBON	3.9K	5%	1/2W	
R734	1-244-889-51	CARBON	4.7K	5%	1/2W	
R735	1-247-903-00	CARBON	1M	5%	1/6W	
R736	1-247-783-00	CARBON	10	5%	1/6W	
R737	1-247-839-00	CARBON	2.2K	5%	1/6W	
		VARIABLE RESISTOR				
RV701	1-226-114-00	RES, ADJ, METAL GLAZE 2.2M				
RV702	1-226-063-00	RES, ADJ, CARBON 2.2M				
RV711	1-224-252-XX	RES, ADJ, METAL GLAZE 10K				
RV721	1-224-252-XX	RES, ADJ, METAL GLAZE 10K				
RV731	1-224-252-XX	RES, ADJ, METAL GLAZE 10K				
		MISCELLANEOUS				
	⚠1-230-666-11	RESISTOR ASSY, HIGH-VOLTAGE				
	⚠1-451-291-11	DEFLECTION YOKE (SY-175)				
	1-452-146-21	MAGNET, BMC				
	⚠1-509-546-11	3P INLET				
	1-543-179-00	CORE, RING				
L901	⚠1-426-283-31	COIL, DEMAGNETIZATION				
RV901	1-230-536-11	RES, VAR, CARBON 10K				
RV902	1-230-536-11	RES, VAR, CARBON 10K				
S901	⚠1-554-953-31	SWITCH, SEESAW (AC POWER)				
V901	⚠8-738-251-05	CRT M34JNQ15X				

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
⚠1-558-377-11	CORD, POWER	
4-337-201-02	BAG, PROTECTION	
*4-381-831-01	INDIVIDUAL CARTON	
*4-381-832-01	CUSHION (UPPER) (ASSY)	
*4-381-833-01	CUSHION (LOWER) (ASSY)	
4-482-265-21	MANUAL, INSTRUCTION	
4-491-213-22	INSTRUCTION	

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

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

CPD-1302

SONY

SERVICE MANUAL

US Model
Canadian Model

Chassis No. SCC-A08A-A

January, 1987
No. 1

SUPPLEMENT

File this supplement with the service manual.

MULTISCAN

(SECTION ADJUSTMENTS)

MICROFILM

MON

TABLE OF CONTENTS

Input a microcomputor (SONY SMC-70) signal.
Note: Micro Floppy Disk (SOFT) Part No._____.

1. Input a Micro Floppy Disk on SMC-70.
2. Select the pattern signal. (F1~F5)
3. Select the Frequency. (SHIFT F1 ~ SHIFT F5)

SHIFT F-1	15.734kHz	60Hz
SHIFT F-2	18.4 kHz	60Hz
SHIFT F-3	21.8 kHz	60Hz
SHIFT F-4	25.0 kHz	60Hz
SHIFT F-5	31.5 kHz	60Hz

SECTION 1
SETUP ADJUSTMENTS

1-1. LANDING ADJUSTMENT

Preparations:

1. Face the set CRT surface toward the east or west in order to lessen the effect of geomagnetism.
2. Turn the set power switch on and degauss.

Adjustment:

1. Input an all white signal.
2. Perform rough adjustment of white balance, screen (G2), horizontal convergence and focus. The purity adjustment knob should be at the center position at this time. (Fig-1)
3. Set CA board R BKG VR (RV711) to maximum and G BKG VR (RV721) and B BKG VR (RV731) to minimum.
4. Move the deflection yoke back and adjust the purity magnet so that the entire picture is as shown in Fig-2.
5. Adjust so that the entire picture becomes red while moving the deflection yoke forward.
6. Use the G BKG VR (RV721) and B BKG VR (RV731) to check and adjust each color following steps 3 - 5.
7. When landing at the corners is not correct, perform magnet correction (Fig-3).
8. When the position of the deflection yoke is finalized, secure with the bracket.

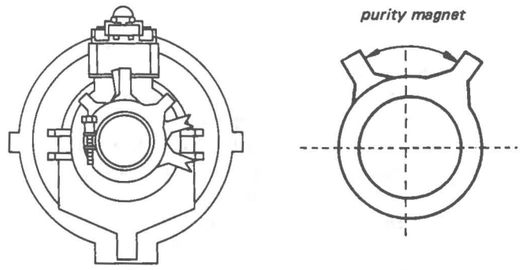


Fig. 1

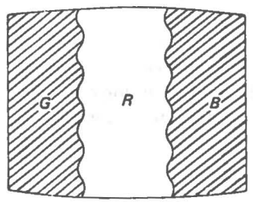
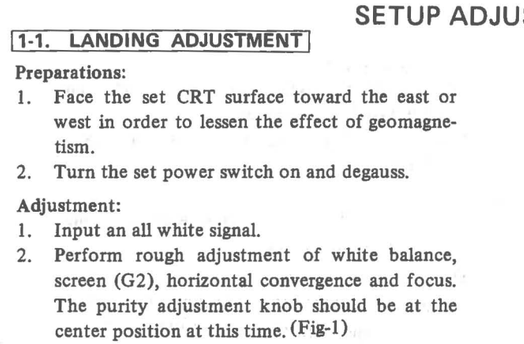
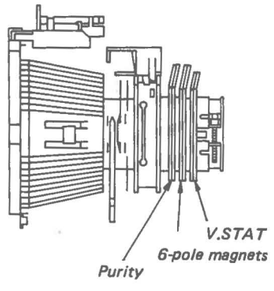


Fig. 2





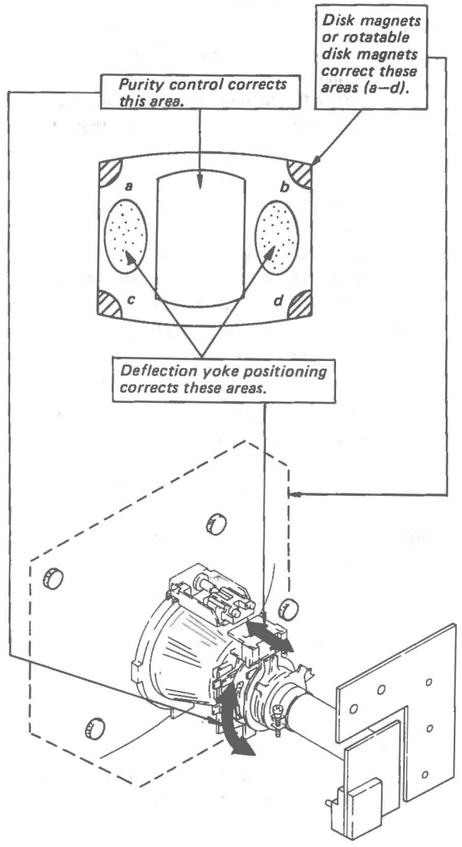


Fig. 3

1-2. DEFLECTION YOKE NECK ADJUSTMENT

Perform this adjustment when there is misconvergence and pincushion distortion at the top and bottom of the picture.

1. Tilt the deflection yoke up and down to adjust when the pincushion distortion is not the same at the top and bottom of the picture. (Fig-4)

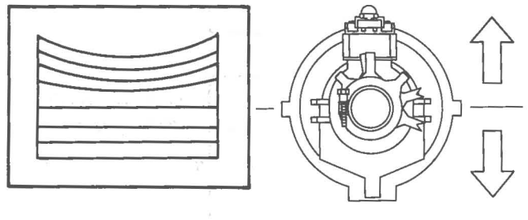


Fig. 4

2. When there is misconvergence at the top and bottom of the picture as shown in Fig-5 , tilt the deflection yoke to the left and right to adjust.

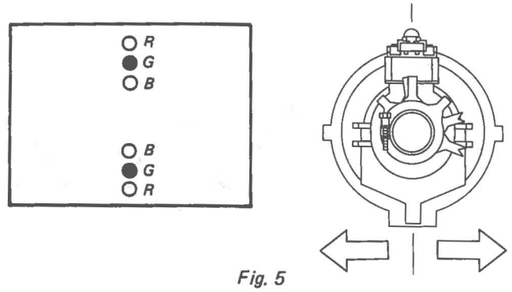


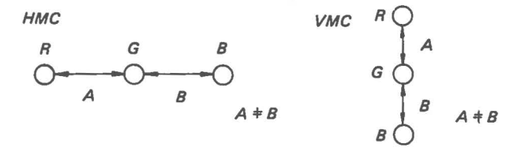
Fig. 5

1) Convergence Adjustment for Picture Center (H. STAT, V. STAT)

1. Input a dot signal, and with BRT at minimum, adjust for optimum picture with PICTURE.
2. Line up picture center and horizontal direction RGB dots with H. STAT VR (RV703).
3. Line up picture center and vertical direction RGB dots with V. STAT magnet.

2) Picture center horizontal direction asymmetrical misconvergence (HMC)
Picture center vertical direction asymmetrical misconvergence (VMC)

4. For HMC, move the six-pole magnet to adjust so that the R and B dots are symmetrical to the right and left of the G dot.
5. For VMC, move the six-pole magnet to adjust so that the R and B dots are symmetrical above and below the G dot.



Dot Movement due to 6-pole Magnet movement

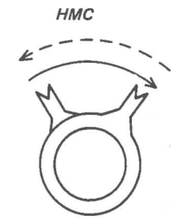


Fig. 6

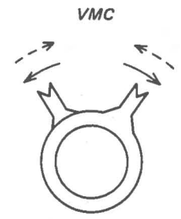
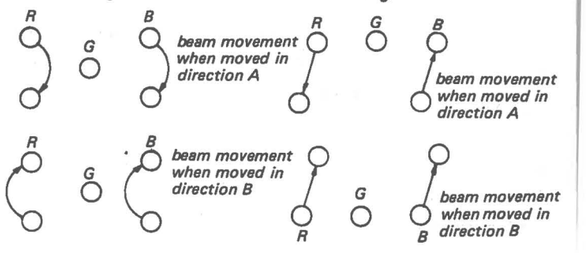
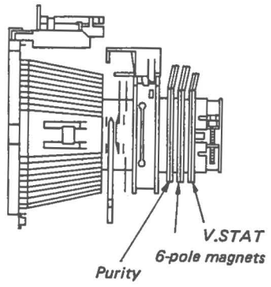


Fig. 7





3) Picture Periphery Convergence Adjustment

1. For Y crosstalk, adjust with the Y crosstalk correction magnet.

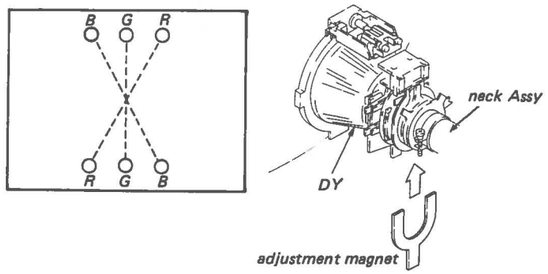


Fig. 8

2. Adjust with the X crosstalk adjustment magnet when there is H TILT.

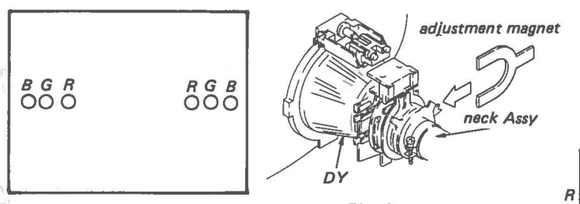


Fig. 9

When red dots are off to the inside at the right and left.

3. Adjust with the deflection yoke reactor correction coil when there is X crosstalk. (Fig-10)

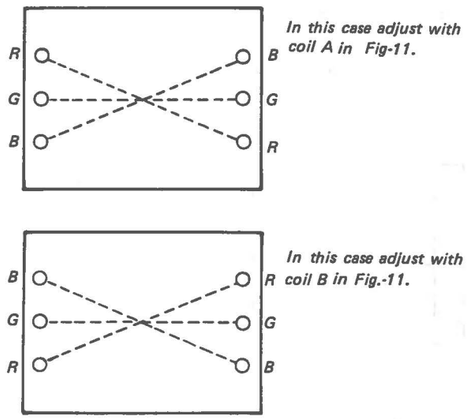
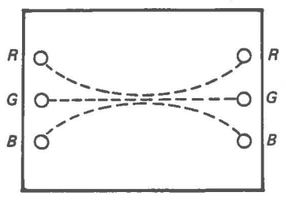


Fig. 10

4. Adjust with the deflection yoke reactor correction coil when there is X bow.



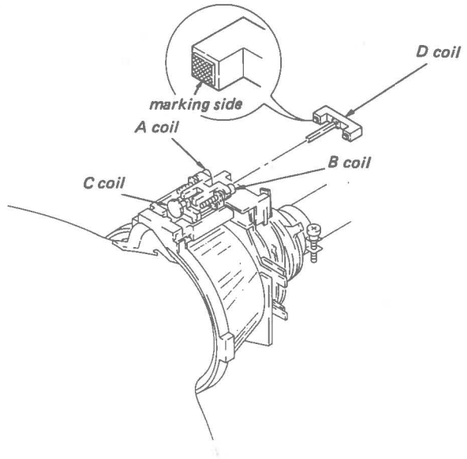


Fig. 11

1-3. G_2 ADJUSTMENT

.1. Cut off color check
- (1) Receive a 21.8 kHz TTL H. V. separate SYNC signal.
- (2) Set PICTURE, BRIGHTNESS (user controls), BA board SUB PICTURE VR (RV251) and SUB BRT VR (RV252) to minimum. Set R.G.B. BKG VR's (RV711, 721, 731,) to minimum.
- (3) Brighten the entire picture with the screen VR, then gradually darken the picture and note which color remains glowing at the top of the picture.

2. G_2 Adjustment (RV702)
- (1) Apply 140V DC to the cathode (CB board) of the color which remained glowing for cut off color check.
- (2) Adjust the screen VR for optimum background over the entire picture.
- (3) Set R.G.B DRIVE VR's (RV211, 221, 231) to maximum.

1-4. CUT OFF ADJUSTMENT

1. SUB BRT Setting
- (1) Input an all white signal. (TTL H.V separate signal)
- (2) Set PICTURE to maximum, and adjust BA board SUB PIX VR (RV251) so that the luminance meter set at the top of the picture is about 10 NIT.
- (3) Perform white balance rough adjustment with the BKG VR's of the two colors which are not glowing as much.
- (4) Set BRIGHTNESS to maximum, and adjust BA board SUB BRT VR (RV252) so that the brightness is 40 NIT brighter than the NIT value at this time.

2. 3 NIT Adjustment
- (1) Set BRIGHTNESS at center click and PICTURE to minimum.
- (2) Adjust an all white signal at 3 NIT to get white balance with the R.G.B. BKG VR's.

1-5. WHITE BALANCE ADJUSTMENT

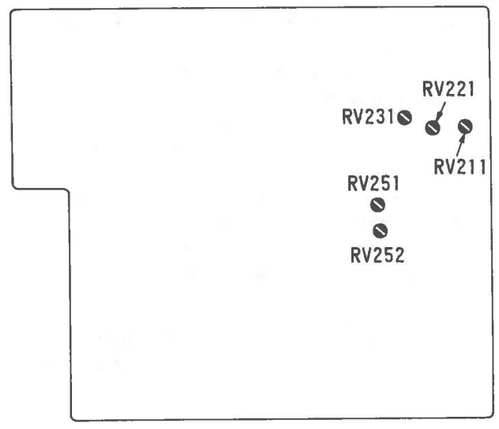
1. Highlight Adjustment (during white peak)
- (1) Input an all white signal. (TTL H.V separate signal)
- (2) Set BRIGHTNESS and PICTURE to maximum.
- 3) Adjust picture luminance to about 100
- (3) Adjust picture liminance to about 100 NIT with the BA board SUB PIX VR (RV251), then adjust highlight white balance with R.G.B. DRIVE VR's.

2. 3 NIT Adjustment
- (1) Set BRIGHTNESS to center click and PICTURE to minimum.
- (2) Adjust white balance with R.G.B. BKG VR's.

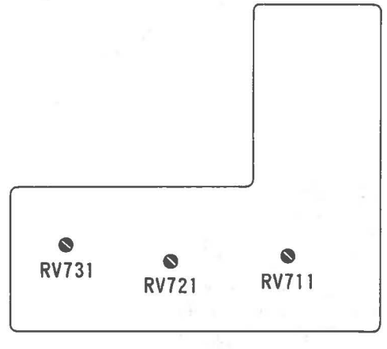
3. Tracking
- (1) Repeat 2-3 times for white balance during highlight and 3 NIT.

4. MAX Luminance Adjustment
- (1) Set BRIGHTNESS and PICTURE to maximum, and adjust BA board SUB BRT VR (RV252) for about 80 NIT.

BA BOARD



CA BOARD



SECTION 2
SAFETY RELATED ADJUSTMENT

NOTE:

(1) TEST EQUIPMENT REQUIRED

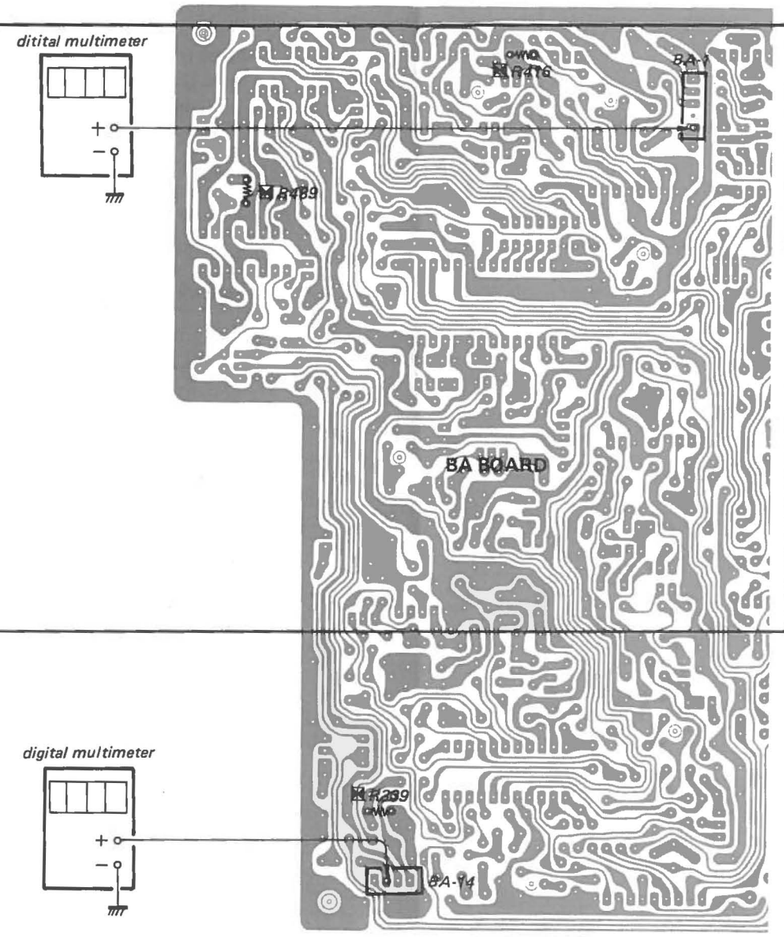
1. Voltmeter (VOM)
2. Digital multimeter
3. DC POWER SUPPLY.
4. SONY Microcomputer SMC-70

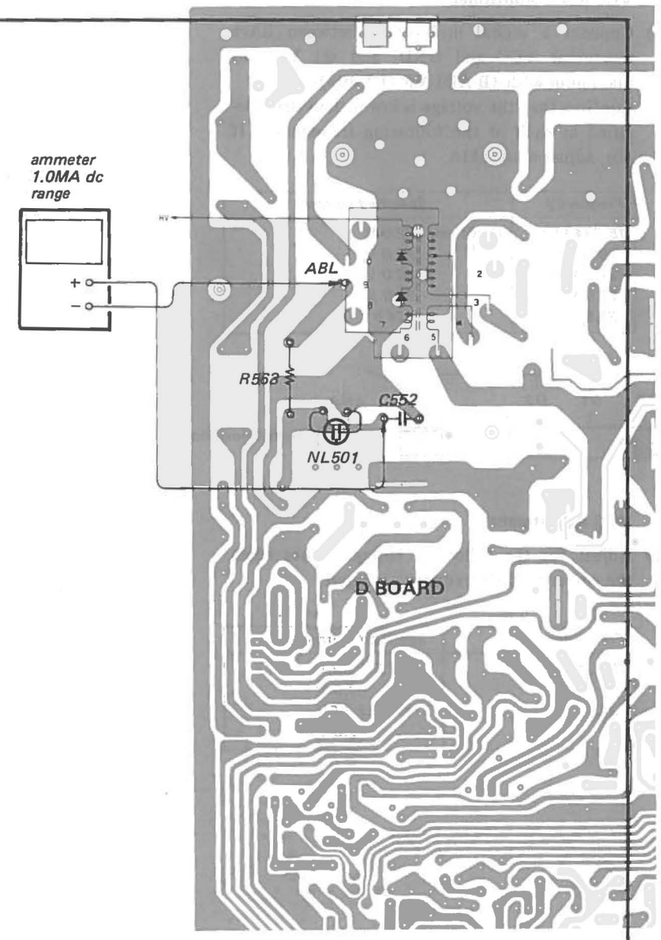
+B MAX (⊠ R416, R489)

Be sure to perform the following adjustment after replacing the parts below. (Marked on ◪ the schematic diagram).

(G board) Q653, R658, R659, T653
(BA board)
IC401, IC404, IC405, Q409, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R424, R425, R448, R479, R480, R489, R488.

1. *Input a dot signal and set PICTURE, BRIGHT to minimum.*
2. *Turn +B VR (RV403) to maximum.*
3. *Observe BA board to connecter pin (1) BA-1 on the digital multimeter.*
4. *Set SMC-70 output to fH = 15.734 kHz and confirm that the +B line is less than 62.0V dc.*
5. *Set SMC-70 output to fH = 18.4 kHz and confirm that the +B line is less than 72.8V dc.*
6. *Set SMC-70 output to fH = 21.8 kHz and confirm that the +B line is less than 86.0V dc.*
7. *Set SMC-70 output to fH = 25 kHz and confirm that the +B line is less than 97.8V dc.*
8. *Set SMC-70 output to fH = 31.5 kHz and confirm that the +B line is less than 124.5V dc.*
9. *If the specification is not met, adjust R416, R489 and repeat steps 1 and 3 until satisfied.*





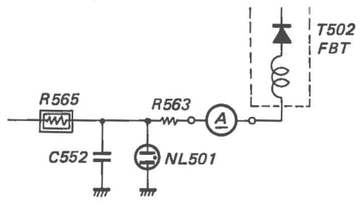
HOLD DOWN ADJUSTMENT (⊠ R339)

Be sure to perform the following adjustment after replacing the parts below. (Marked ◪ on the schematic diagram).
(BA board)
IC301, IC302, D304, R301, R302, R335, R336, R337, R338, R339, R340, R341, R342.
(D board)
R565, R566

1. *Set the PICTURE and BRIGHTNESS control to maximum.*
2. *Input the dot pattern signal.*
3. *Set SMC-70 output to fH = 21.8 kHz and confirm that the BA board to connecter pin (2) BA-14 is less than 7.3±0.8V dc.*
4. *Set the PICTURE and BRIGHTNESS control to minimum and supply is less than 8.95V dc, confirm that HV HOLD DOWN operates.*
5. *Adjust ABL current to 400$^{+0}_{-20}$ μA with PICTURE and BRIGHTNESS controls.*
6. *Confirm that there is less than 8.70V dc whereby the raster disappears during operation of hold-down circuit.*

Note: If the hold-down circuit starts operating in the above case, switch OFF the POWER of the set immediately.

7. *If above steps is not satisfied, select resistance valve of R339 and repeat above steps 1 through 6.*



CONFIRMATION WHEN REPLACING H.V.R. (HIGH VOLTAGE REGISTER)

The following adjustments should always be performed with reference to whether an X-ray radiation control circuit is connected or not, when replacing H.V.R.

** This check is to be performed when H.V.R. only is replaced, and has no relation to the hold-down circuit readjustment for replacement of parts marked ◪.*

(Connection Confirmation)

1. *Turn the POWER switch ON, and receive white signals and set the PICTURE and BRIGHTNESS controls to MAX.*
2. *When the set is operating normally with 120V AC supply, confirm the voltage of the connection point for connector (2) pin BA-14 is 7.3±0.8V dc.*

VCC Adjustment (R416)

Preparations:

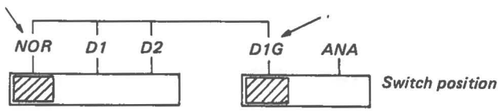
1. Set the switch on the set rear panel (H board) to NOR - DIG.
2. Input a 21.8 kHz TTL RGB, H.V separate SYNC signal from a microcomputer.

1. VCC MAX Adjustment

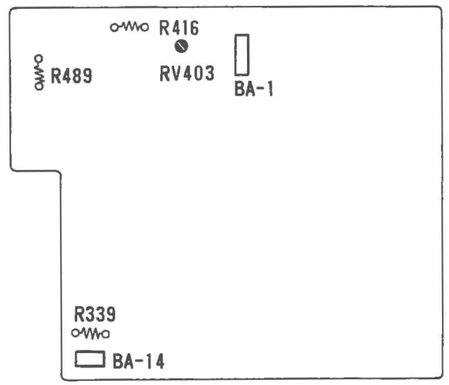
(1) Connect a digital multimeter between BA-1 connector VCC and GND, and set VCC to maximum with +B ADJ VR (RV403).

(2) Confirm that the voltage is lower than that specified at each of the following frequencies. If not, adjust with R416.

Frequency	*Specified voltage*
15.734 kHz	*(less than) 62.0 V*
18.4 kHz	*72.8 V*
21.8 kHz	*86.0 V*
26.0 kHz	*97.8 V*
31.5 kHz	*124.5V*



BA BOARD



2. VCC Adjustment

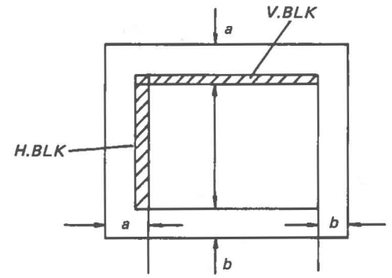
(1) Adjust for the following voltage values when the corresponding frequency is input.

Frequency	*Specified voltage*
15.734 kHz	*57.5 +2.0 V −1.5 V*
31.5 kHz	*115.0 +1.5V −2.0 V*

SECTION 3
CIRCUIT ADJUSTMENTS

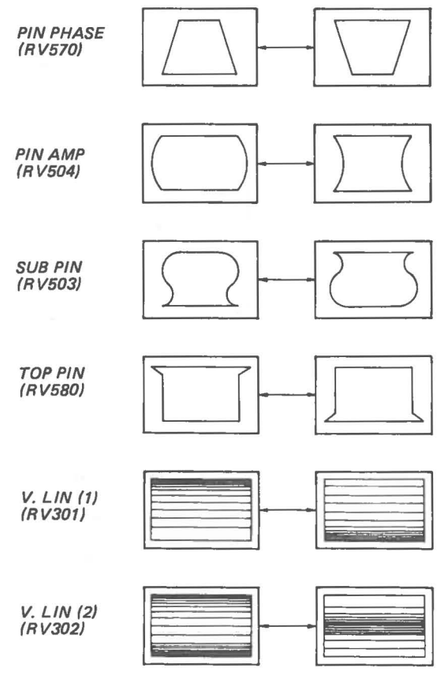
3-1. H.CENT, V.CENT ADJUSTMENT

1. Preparations
   (1) LIN rough adjustment
   Adjust top and bottom balance with V.LIN (1) for a 21.8 kHz signal. Balance center and top and bottom with V. LIN (2).
2. Brighten the background with the screen VR and adjust H. CENT (RV506) and V.CENT (RV502) so that the background shown in the figure is at the center of the effective picture.
   Note: Ignore raster blanking portion at this time.



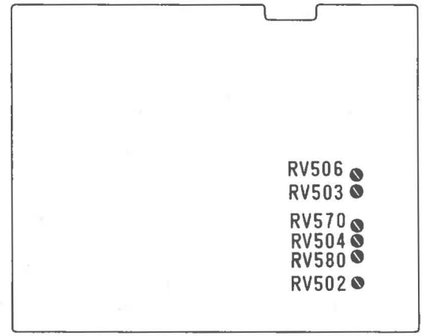
3-2. PICTURE DISTORTION ADJUSTMENT

1. Picture distortion adjustment
   Input a signal equivalent to a crosshatch signal. (TTL H.V. separate SYNC signal)

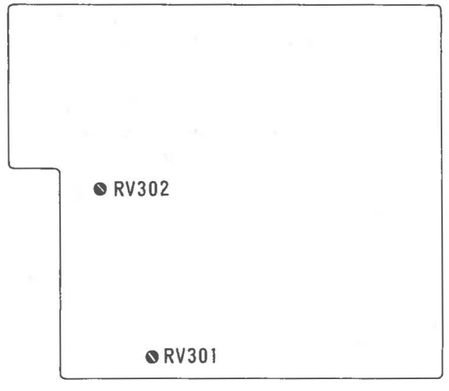


2. Picture Size
   Input a TTL H.V. separate SYNC signal.
   1. SIZE Adjustment
   (1) Adjust picture to about 182mm with V. SIZE on the set rear panel.
   (2) Set H. SIZE to maximum and adjust to about 244mm with D board H. SUB SIZE VR (RV505).
   (3) Adjust to about 240mm with H. SIZE.

D BOARD

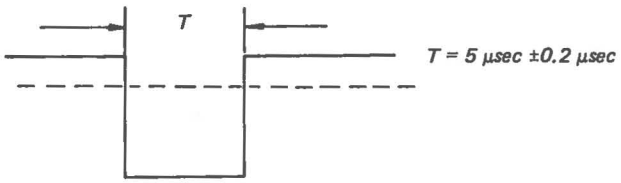


BA BOARD



3-3 ADJUSTMENT OF HORIZONTAL DELAY SYNC PULSE

1. Signal
   H: 15.734 kHz
   V: 60 Hz
2. Measure the BA board IC205 pin 13 pulse waveform and adjust pulse width value as shown below.
   (1) Turn HP BIAS VR (RV292) fully clockwise.
   (2) Adjust pulse width to 6 μsec ± 0.2 μsec with HP SLOPE VR (RV291).
   (3) Adjust pulse width to 4 μsec ± 0.2 μsec while turning HP BIAS VR (RV292) counterclockwise.
   (4) Adjust pulse width to 5μsec ± 0.2 μsec with HP SLOPE VR (RV291).

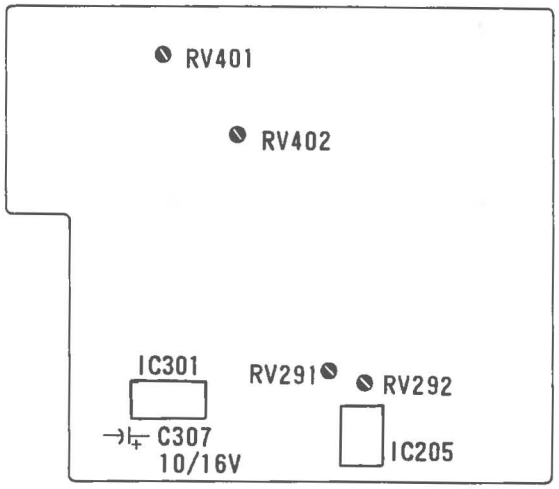


3. Signal
   H: 30.12 kHz
   V: 60Hz
4. Confirm that BA board IC205 pin 13 pulse width is 3μsec ± 0.2 μsec at this time.

3-4 ADJUSTMENT OF HORIZONTAL OSCILLATION FREQUENCY

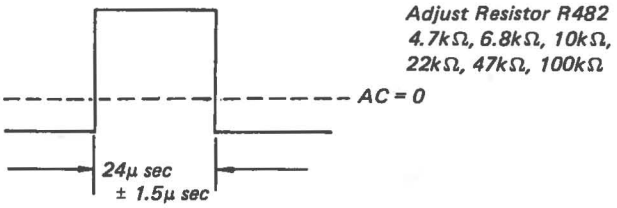
1. Signal
   H: 15.734 kHz
   V: 60 Hz
   H: 21.8 kHz
   V: 60 Hz
   H: 30.12 kHz
   V: 60 Hz
2. Mount a 10μ/16V chemical capacitor between BA board IC301 pin 1 and C307 negative side pin (GND).
3. Connect a frequency counter to IC405 pin 10.
4. Set H. FREQ (2) VR (RV401) to mechanical center.
5. Adjust H.FREQ (1) VR (RV402) so that the frequency counter reading is 30.12 kHz ±300 Hz for the input signal (30.12 kHz).
6. Adjust H. FREQ (2) VR (RV401) so that the frequency counter reading is 21.8 kHz ±300 Hz for the input signal (21.8 kHz).
7. Adjust H. FREQ (2) VR (RV401) so that the frequency counter reading is 15.734 kHz ±b100 Hz for the input signal (15.734 kHz).
8. With 30.12 kHz input signal again, adjust H. FREQ (1) VR (RV402) so that the frequency counter reading is 30.12 kHz ±300 Hz.
9. Repeat the above adjustments so that the frequency counter readings are as specified above. Then remove the chemical capacitor mounted in step 2.

BA BOARD

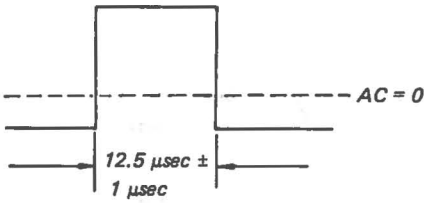


3-5. HORIZONTAL DRIVE PULSE WIDTH

1. Input signal H: 15.734 kHz
   V: 60 Hz
2. Connect an oscilloscope to BA board IC405 pin 10.
3. Adjust with adjustment resistor R482 so that pulse widths is 24 μsec ±1.5 μsec.



4. Check that the pulse width is 12.5 μsec ±1 μsec when input signal 30.12 kHz is input.



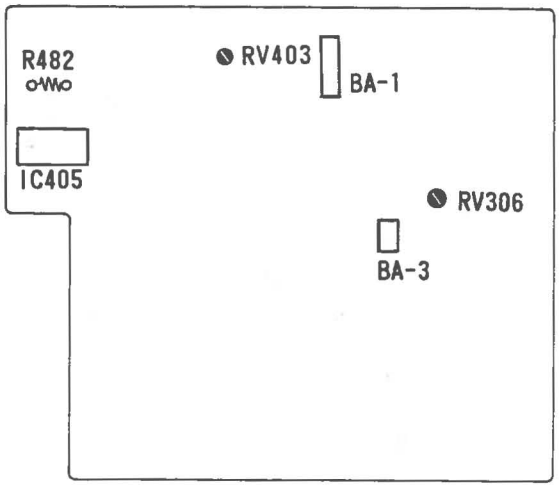
3-6. VERTICAL SYNC FREQUENCY IDENTIFICATION CIRCUIT

1. Input signal H: 15.734 kHz
   V: 60 Hz
2. Connect a digital voltmeter to BA board Q332 base and adjust RV306 so that the voltage value is 5.6 V ±0.05 V.
3. Short between BA-3 pin 1 (MS pin) and ground.
4. Adjust RV307 so that BA board Q332 base voltage value is 6.6V ±0.05V DC.

3-7. +B ADJUSTMENT

1. Input signal H: 21.8 kHz
   V: 60Hz
2. Connect a digital voltmeter to BA-1 connector pin 1 and adjust +B ADJ VR (RV403) so that the voltage value is 79.5 ±1V DC.

BA BOARD



CPD-1302

SONY

SERVICE MANUAL

US Model
Canadian Model

Chassis No. SCC-A08A-A
Serial No. 5,020,001 and later
Serial No. 5,021,501 and later

No. 2

SUPPLEMENT

SUBJECT : CIRCUIT MODIFICATION

File this supplement with the service manual.

MULTISCAN

INTRODUCTION

Contents of main modifications are as follows.

- BA board Addition: C203, R201, R300
  Alteration: C402, C415
  Deletion: R339
  } (Serial No. 5,020,001 and later)
- BB board Alteration: IC106
- D board Deletion: C5001, D5001, D5002, Q5001, R5003~R5006 (Serial No. 5,020,001 and later)
  Deletion: C505, C5002, D5003, R506, R5019 (Serial No. 5,021,501 and later)
  Alteration : R513 (Serial No. 5,021,501 and later)

- Parts to be replaced.

BOARD	OLD			NEW		
BA	C402	1-124-903-00	ELECT 1MF 20% 50V	C203	1-102-119-00	CERAMIC 0.0015MF 10%
	C415	1-124-904-00	ELECT 2.2MF 20% 50V	C402	1-124-903-00	ELECT 10MF 20% 50V
			---	C415	1-124-904-00	ELECT 10MF 20% 50V
			---	R201	1-249-425-11	CARBON 4.7K 5%
	⊠R339	⚠	METAL 1/6W	R300	1-246-501-75	CARBON 15K 5%

BB	IC106	8-759-917-52	IC 74F138PC	IC106	8-759-917-52	IC SN74LS138N
D	C505	⚠1-102-234-51	CERAMIC 270PF 10% 500V		---	
	C5001	1-124-910-11	ELECT 47MF 20% 50V		---	
	C5002	1-162-115-00	CERAMIC 330PF 10% 2KV		---	
	D5001	8-719-901-24	THYRISTOR CSM2B4A10		---	
	D5002	8-719-911-19	DIODE 1SS119		---	
	D5003	8-719-901-19	DIODE V11N		---	
	Q5001	8-729-117-54	TRANSISTOR 2SA1175		---	
	R506	1-247-791-00	CARBON 22 5% 1/6W		---	
	R513	1-216-373-11	METAL OXIDE 2.2 5% 2W F	R513	1-216-369-51	METAL OXIDE 1 5% 2W F
	R5003	1-247-851-00	CARBON 6.8K 5% 1/6W		---	
	R5004	1-249-432-11	CARBON 18K 5% 1/6W		---	
	R5005	1-249-429-11	CARBON 10K 5% 1/6W		---	
	R5006	1-247-839-00	CARBON 2.2K 5% 1/6W		---	
	R5019	1-215-898-11	METAL OXIDE 12 5% 2W F		---	

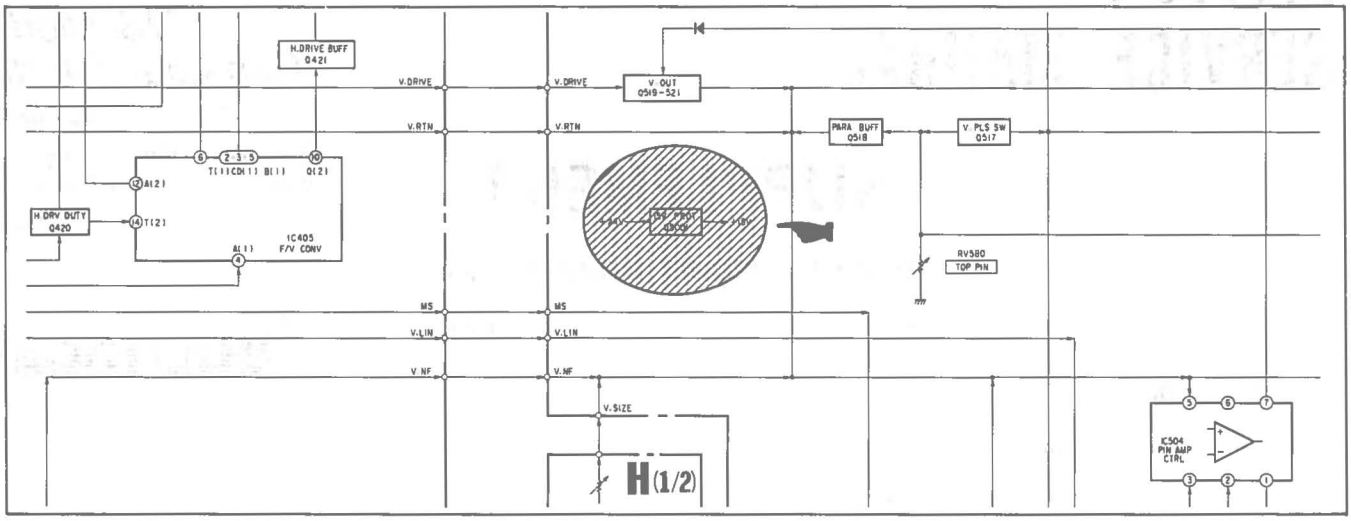
MICROFILM

: deleted portion

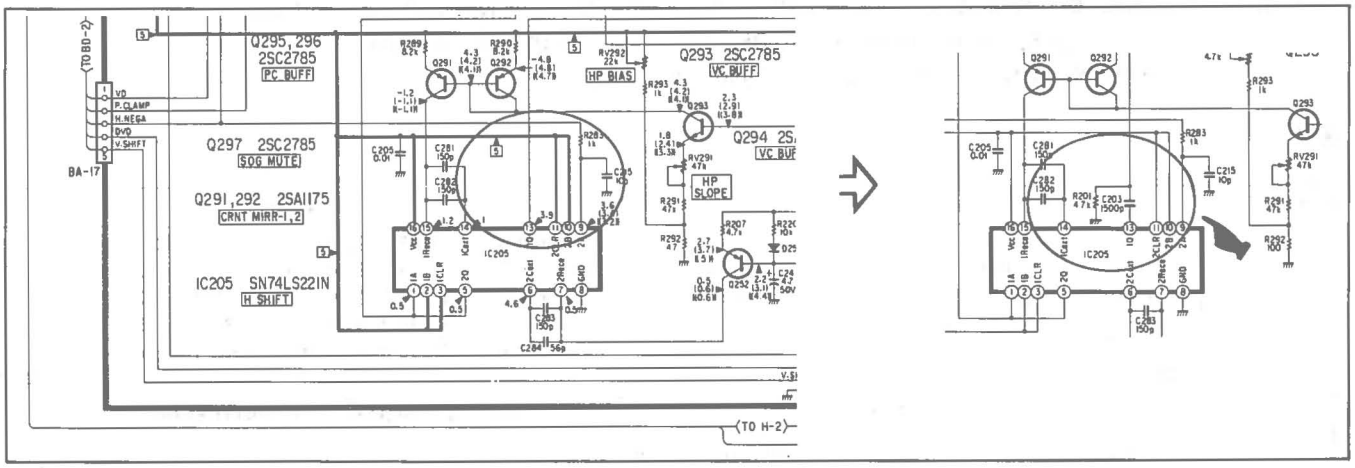
: alterated and added portion

SECTION 4
DIAGRAMS

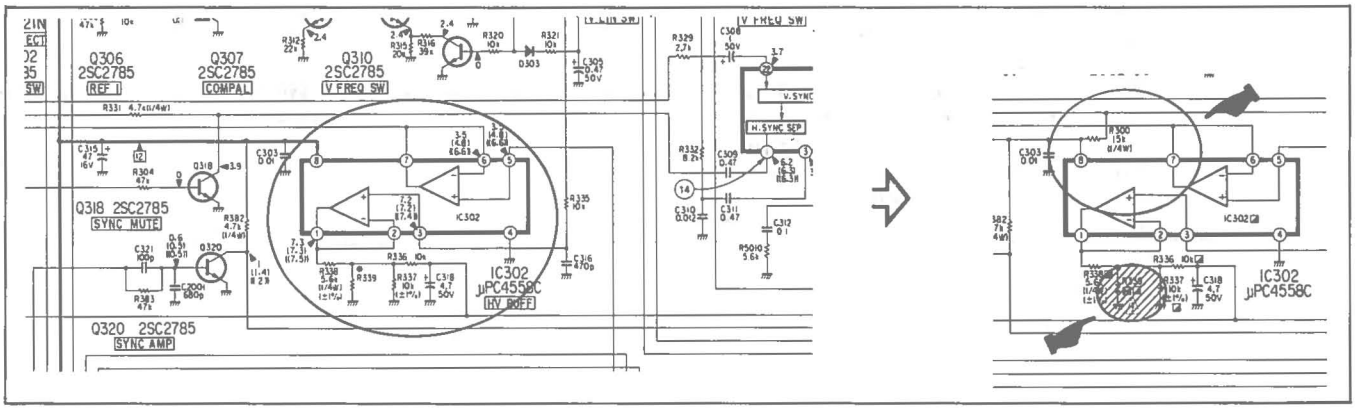
4-1. BLOCK DIAGRAM : PAGE 15 ~ 16/Q5001 to be deleted (D board).



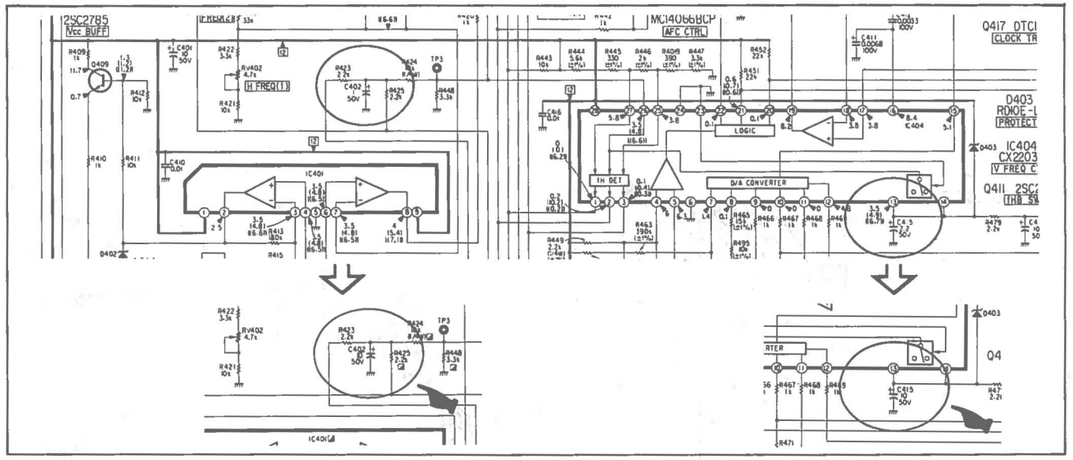
4-3. SCHEMATIC DIAGRAMS : PAGE 17 ~ 18/C203 and R201 to be added (BA board).



PAGE 18 ~ 19/R339 to be deleted and R300 to be added (BA board).

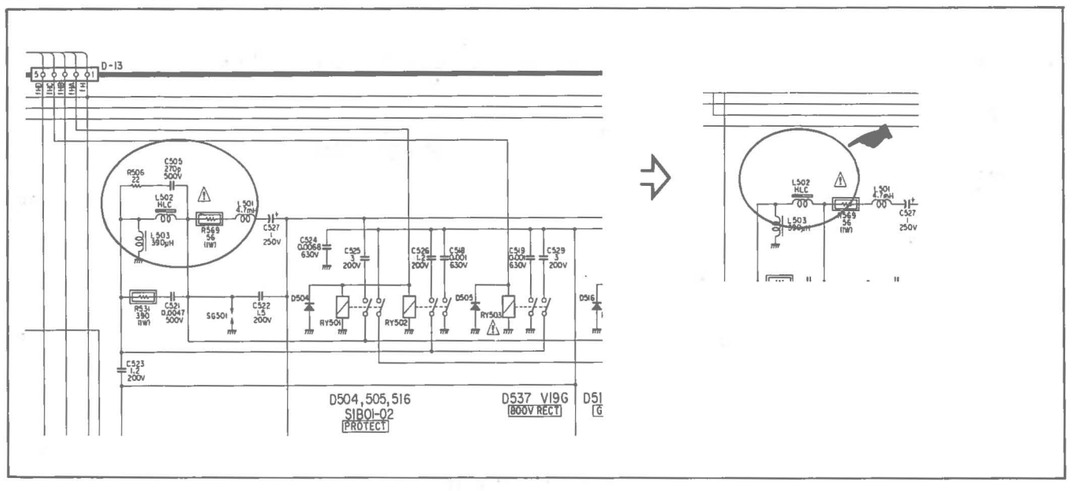


PAGE 18 ~ 19/C402 and C415 to be alterated (BA board).

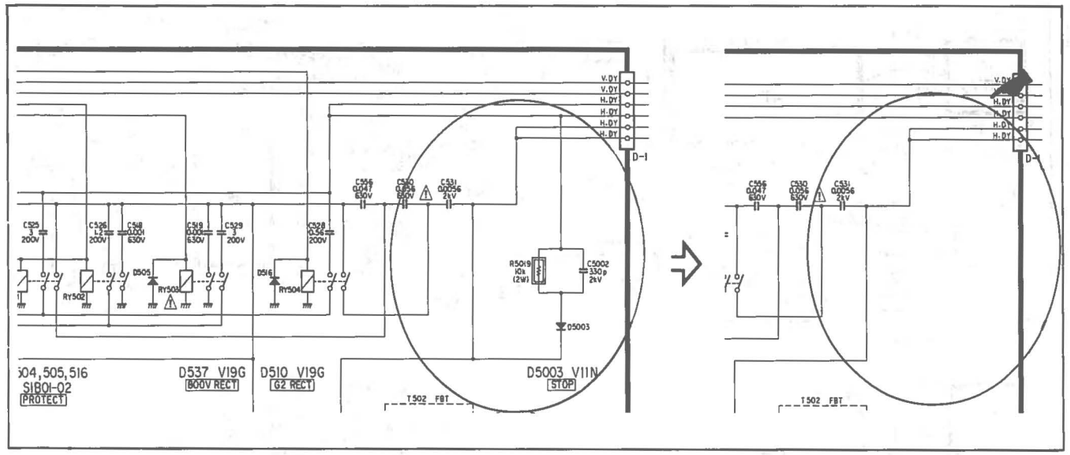


PAGE 20/IC106 to be alterated (BB board).

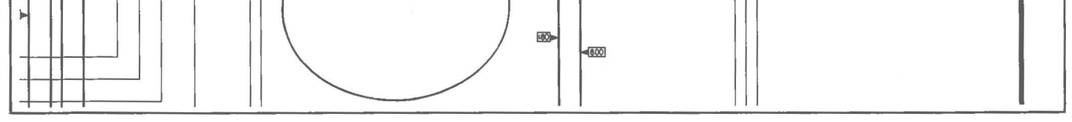
PAGE 27 ~ 28/C505 and R506 to be deleted (D board).



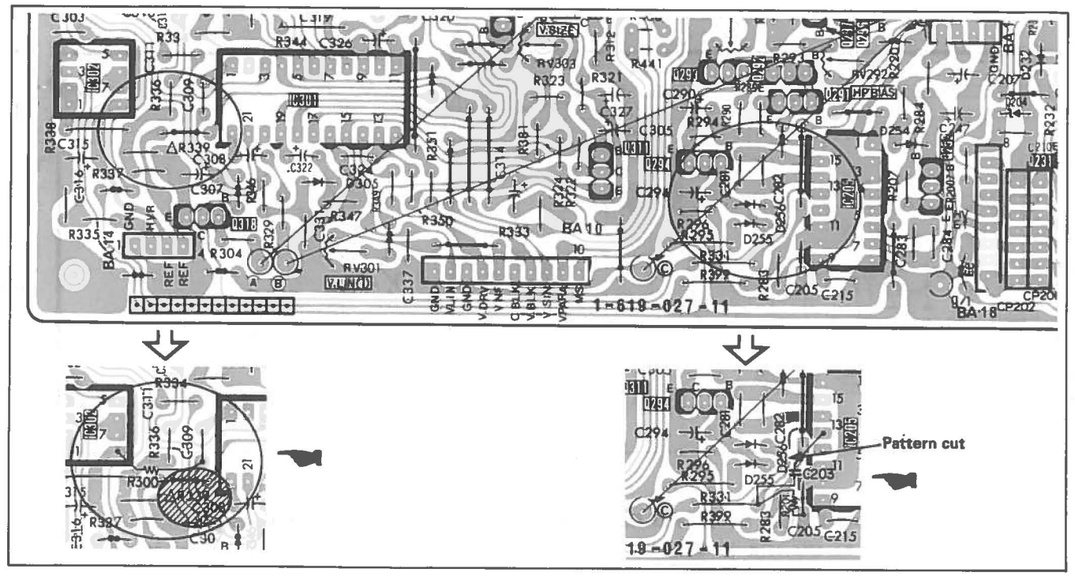
PAGE 27 ~ 28/C5002 and D5003 and R5019 to be deleted (D board).



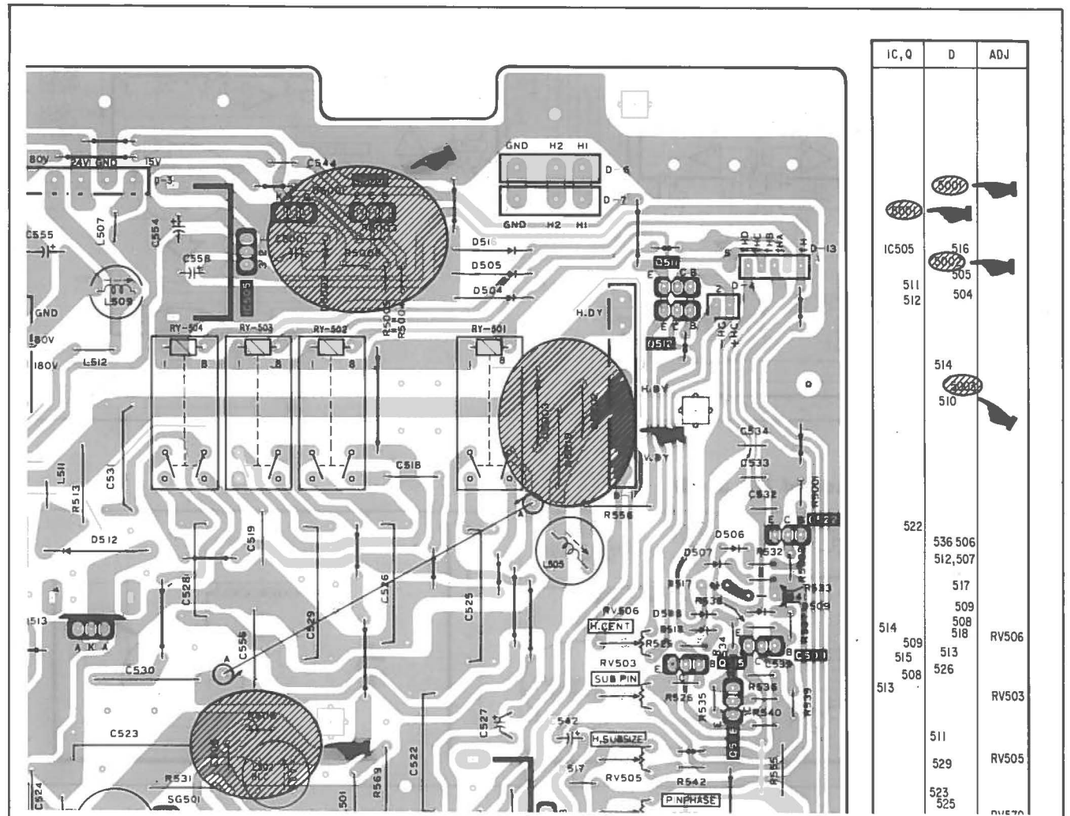
PAGE 27 ~ 28/C5001 and D5001, D5002 and Q5001 and R5003 ~ R5006 to be deleted (D board).
/R513 to be alterated (D board).



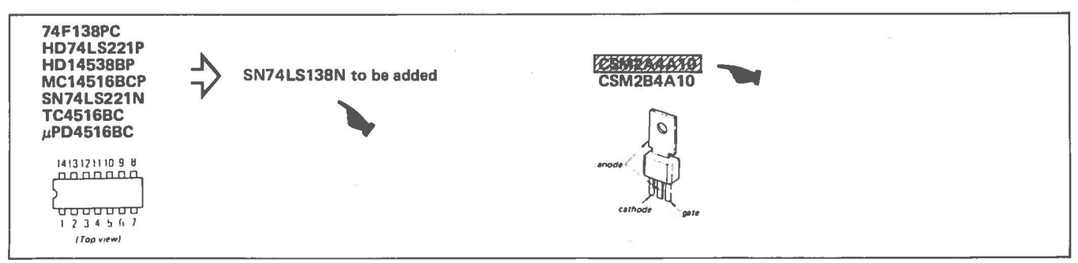
4-4. PRINTED WIRING BOARDS : PAGE 21 ~ 22/C203 and R201 to be added.
R339 to be deleted and R300 to be added (BA board).



PAGE 29 ~ 30/C505, C5001, C5002 and D5001, D5002, D5003 and Q5001 and R506, R5003 ~ R5006, R5019 to be deleted (D board).



4-6. SEMICONDUCTORS : PAGE 35/SN74LS138N to be added and CSM2A4A10 to be deleted.



9-963-637-82

Sony Corporation
TV Group

English
89HE0505-3
Printed in Japan

CPD-1302

SONY
SERVICE MANUAL

US Model
Canadian Model
Serial No. 5,500,001 and later
Chassis No. SCC-A08A-A

SUPPLEMENT-3

File this supplement with the service manual.

MULTISCAN

SPECIFICATIONS

Picture tube	Super Fine Pitch Trinitron color tube 13-inch picture tube measured diagonally 90 degree deflection Anti-glaring dark screen Useful screen 274mm × 207mm Phosphor P22 Phosphor pitch 0.26mm
Resolution	900 dots × 560 lines
Scanning frequency	Vertical sync signal frequency: 50 - 100 Hz Horizontal sync signal frequency: 15.0 - 34.0 kHz
Input	RGB input (D-sub 9 pin) (Analog and TTL available)
Power requirements	120V AC, 50/60 Hz
Power consumption	96 W (maximum)
Dimensions	360 × 300 × 425 mm (w/h/d) (14 1/4 × 11 7/8 × 16 3/4 inches) including projecting parts
Weight	14.5 kg (32 lb)
Supplied accessory	AC power cord (1)

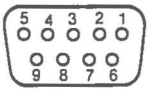
Optional accessories

Monitor cable (9-pin ↔ 9-pin)
SMF-512
SMF-513
SMF-514

Tilt/Swivel SU-535 Display Stand

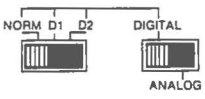
Design and specifications subject to change without notice.

Pin Assignment



			1	2	3	4	5	6	7	8	9
ANALOG**			GND	GND	R	G*	B	GND	—	H/HV	V
DIGITAL	NORMAL		GND	GND	R	G	B	GND	—	H/HV	V
	D1		GND	GND	R	G	B	I	—	H/HV	V
	D2	CGA	GND	GND	R	G	B	I	—	H/HV	V
		MDA	GND	GND	—	—	—	I	G	H/HV	V
		EGA	GND	r	R	G	B	g	b	H/HV	V

(Input Selection)



GND: Ground R: Red Signal G: Green Signal
B: Blue Signal —: No connection
H: Horizontal Sync V: Vertical Sync
HV: Composite sync I: Intensity Signal
r: Secondary Red for EGA 64 colors
g: Secondary Green for EGA 64 colors
b: Secondary Blue for EGA 64 colors

ANALOG
* Sync on Green automatic if horizontal or composite sync is not assigned at Pin # 8
** IBM PGA should be connected with PGA Video cable (SMF-513)

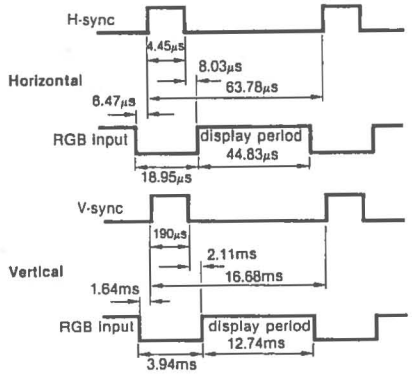
DIGITAL (TTL LEVEL)
"Normal" is for 8 colors (R, G, & B)
"D1" is for 16 colors (R, G, B & I)
"D2" is for IBM Digital Color Graphic Boards (CGA, MDA, EGA) and there is no need to readjust anything among these cards.

SYNC
Composite sync is acceptable at Pin # 8.
Every polarity is acceptable at Pin # 8 & 9.

VERTICAL Size
Vertical size depends on vertical frequency and can be manually adjusted.

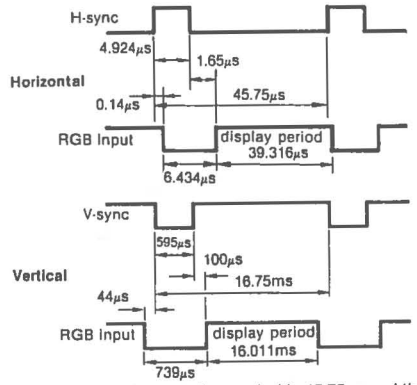
Timing Charts (for approximate reference)

[1] D2-1 (IBM CGA compatible)



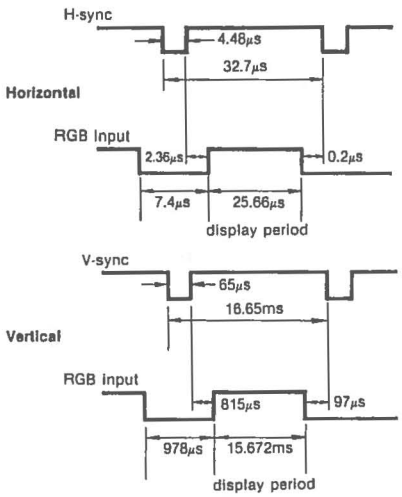
The indicated values apply when the line period is 63.78μs and the field period is 16.68ms.

[2] D2-2 (IBM EGA compatible)



The indicated values apply when the line period is 45.75μs and the field period is 16.75ms.

[3] D2-3 (IBM PGA compatible)



The indicated values apply when the line period is 32.7μs and the field period is 16.65ms.

Note
The picture may be biased or the picture size may be changed depending on the timing of the connected equipment.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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 the receiving antenna
Relocate the equipment with respect to the receiver
Move the equipment away from the receiver
Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

A shielded interface cable such as the SMF-series recommended on page 8 must be used with this equipment.

TABLE OF CONTENTS

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 TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION!!

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 SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

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

ELECTROCUTION
S TENSION, UN
T DOIT ETRE
E.
T DIRECTEMENT
TEUR.

ELATIFS À LA

UNE TRAME ET
IAS DE PRINCIPE,
STES DE PIECES
IQUE POUR LA
NE LES REM-
S SONY DONT LE
ANS LE PRÉSENT
TS PUBLIÉS PAR
DONT L'IMPOR-
SÉCURITÉ DU
FIES DANS LE
OCÉDURES LORS
E COMPOSANTS
AIS FONCTIONNE-

SAFETY CHECK-OUT
(US Model Only)

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

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

LEAKAGE TEST

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

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

HOW TO FIND A GOOD EARTH GROUND

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

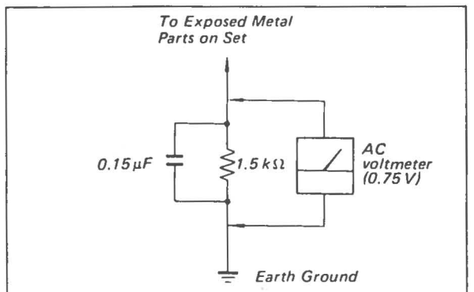


Fig. A. Using an AC voltmeter to check AC leakage.

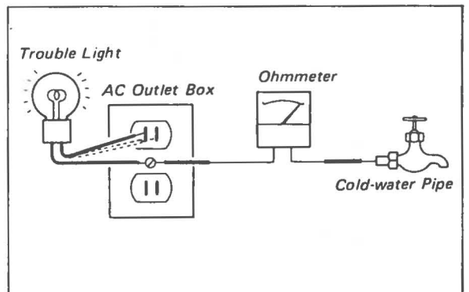


Fig. B. Checking for earth ground.

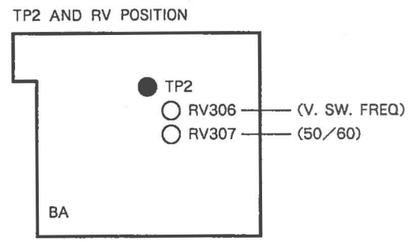
SECTION 1
CIRCUIT ADJUSTMENTS

V. SW. FREQ Adjustment

1. Input the EGA signal to the monitor.
2. Set the select switches position and VR adjustment.

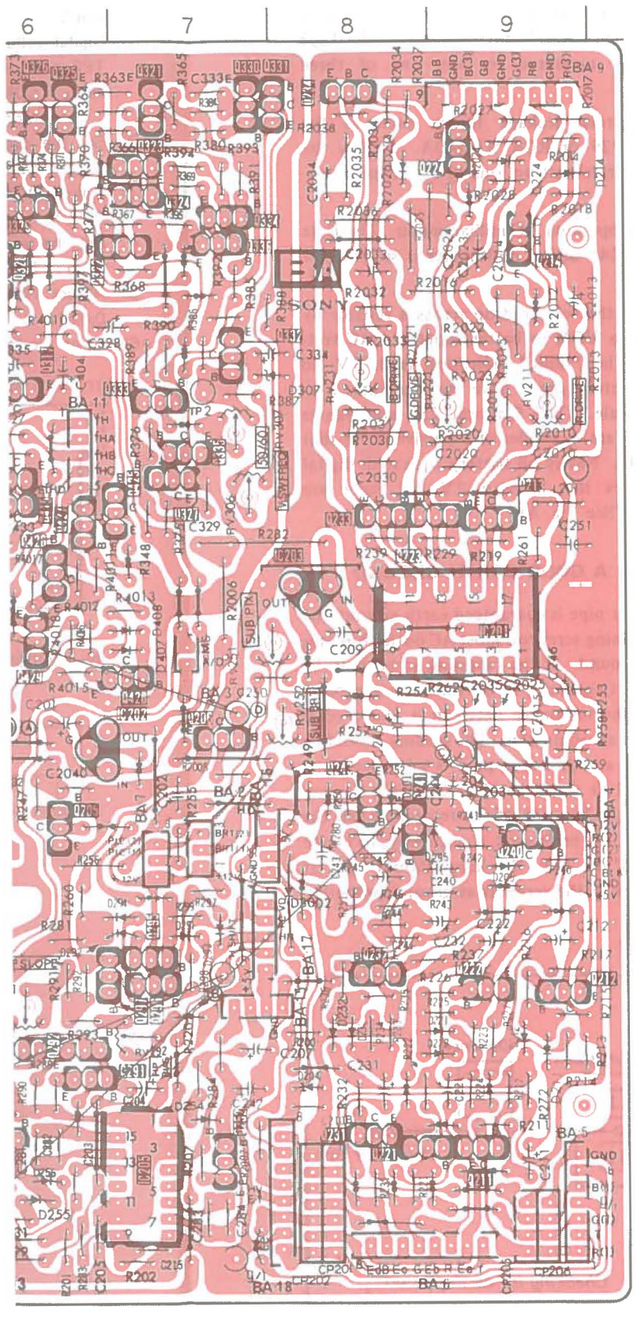
1) Digital voltage meter connect the probe between TP2 and ground on the BA board.
   Note : CONTRAST MINIMUM (Right side of monitor)
2) Set the switches of the back side.
   Note : D2-ANALOG
3) Adjust RV306 (V. SW. FREQ) for 6.10 V tolerance 0.02 V.
4) Set the switches of the back side.
   Note : D2-DIGITAL
5) Adjust RV307 (50/60) for 6.80 V tolerance 0.02 V.
6) After modification, adjust V. SIZE for VGA.

TP2 AND RV POSITION



SW POSITION

BA [HV.OSC, R·G·B DRIVE, V. FREQ CTRT, F/V CONV.] BB [Video, IF, INT SW. R·G·B OUT.] BC X



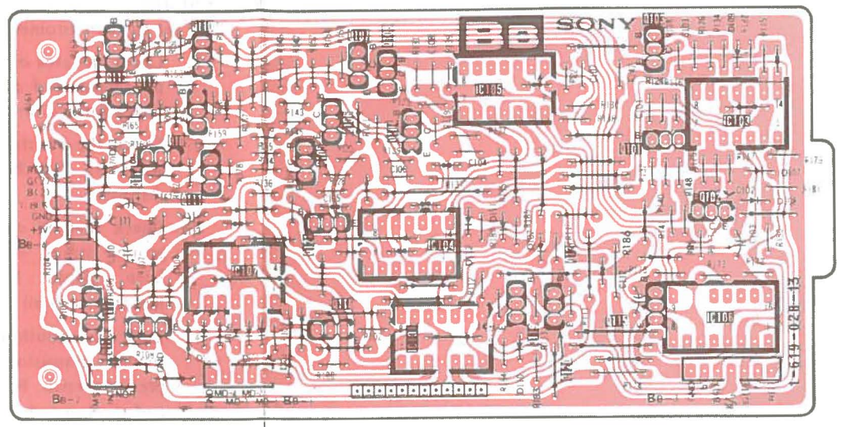
IC	
IC201	D-9
IC202	E-7
IC203	D-8
IC205	H-7
IC301	G-3
IC302	G-2
IC401	B-4
IC403	A-2
IC404	C-3
IC405	C-1

TRANSISTOR	
Q205	E-6
Q206	E-7
Q211	G-9
Q212	F-9
Q213	C-9
Q214	B-9
Q221	G-8
Q222	F-9
Q223	C-9
Q224	A-9
Q231	G-8
Q232	F-8
Q233	C-8
Q234	A-8
Q240	E-9
Q241	E-8
Q243	E-8
Q252	G-7
Q291	G-6
Q292	G-6
Q293	G-6
Q294	G-6
Q295	F-7
Q296	F-7
Q297	F-6
Q301	D-4
Q302	D-5
Q303	E-5
Q304	E-4
Q305	E-4
Q306	F-5
Q307	F-5
Q308	E-4
Q309	F-5
Q310	E-5
Q311	G-5
Q312	F-2
Q313	E-4
Q314	E-4
Q315	E-3
Q316	D-3
Q317	C-6
Q318	H-3
Q320	C-2
Q321	A-7
Q322	B-7
Q323	A-7
Q324	A-7
Q325	A-6
Q326	A-6
Q327	C-7
Q328	B-6
Q329	B-6
Q330	A-7
Q331	A-8
Q332	B-7
Q333	C-7
Q334	B-7
Q335	C-7
Q336	B-7
Q401	A-3
Q402	A-3
Q403	A-3
Q404	A-3
Q405	B-3
Q406	B-3
Q407	B-3
Q408	B-3
Q409	A-4
Q411	C-6
Q412	D-6
Q413	D-6
Q414	C-6
Q415	C-6
Q416	A-2
Q417	A-1
Q418	D-3
Q419	D-4
Q420	B-1
Q421	D-1
Q422	B-5
Q423	B-5
Q424	B-5
Q425	C-7
Q426	D-6
Q427	C-6
Q428	D-7
Q429	D-6
Q440	F-6
Q3001	F-3
Q3002	F-4

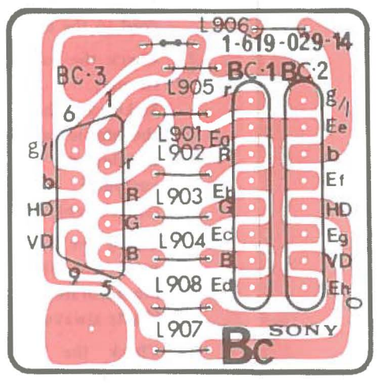
DIODE	
D201	E-8
D204	G-8
D205	F-9
D211	G-9
D212	G-9
D221	G-9
D222	G-9
D231	G-8
D232	G-8
D254	G-7
D255	H-6
D256	H-6
D291	F-7
D292	F-7
D293	F-7
D294	F-7
D295	E-9
D301	E-5
D302	E-4
D303	F-4
D304	E-3
D305	H-3
D306	E-3
D307	C-8
D308	C-6
D309	A-6
D310	D-2
D401	B-3
D402	B-4
D403	B-4
D404	D-4
D405	C-1
D407	D-7
D408	D-7
D3001	F-4
D3002	F-8

VARIABLE RESISTOR	
RV211	C-9
RV221	C-9
RV231	C-8
RV251	D-8
RV252	E-8
RV291	G-6
RV292	G-7
RV301	H-3
RV302	D-2
RV303	G-5
RV306	C-7
RV307	C-7
RV401	A-3
RV402	C-4
RV403	A-4

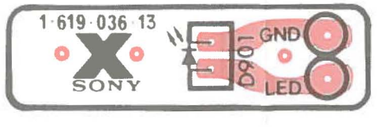
— BB Board —



— BC Board —



— X Board —



BA BOARD WAVEFORM

① 0.7Vp-p(H)	② 0.7Vp-p(H)	③ 0.7Vp-p(H)
④ 2.7Vp-p(H)	⑤ 2.6Vp-p(H)	⑥ 2.7Vp-p(H)
⑦ 0.7Vp-p(H)	⑧ 0.7Vp-p(H)	⑨ 0.7Vp-p(H)
⑩ 7.0Vp-p(H)	⑪ 2.1Vp-p(H)	⑫ 2.0Vp-p(H)
⑬ 2.0Vp-p(H)	⑭ 2.8Vp-p(H)	⑮ 4.0Vp-p(H)
⑯ 8.8Vp-p(H)	⑰ 10.5Vp-p(V)	⑱ 1.3Vp-p(V)
⑲ 10.5Vp-p(V)	⑳ 0.7Vp-p(H)	㉑ 8.0Vp-p(H)

BB BOARD WAVEFORM

㉒ 5.0Vp-p(V)	㉓ 7.0Vp-p(V)

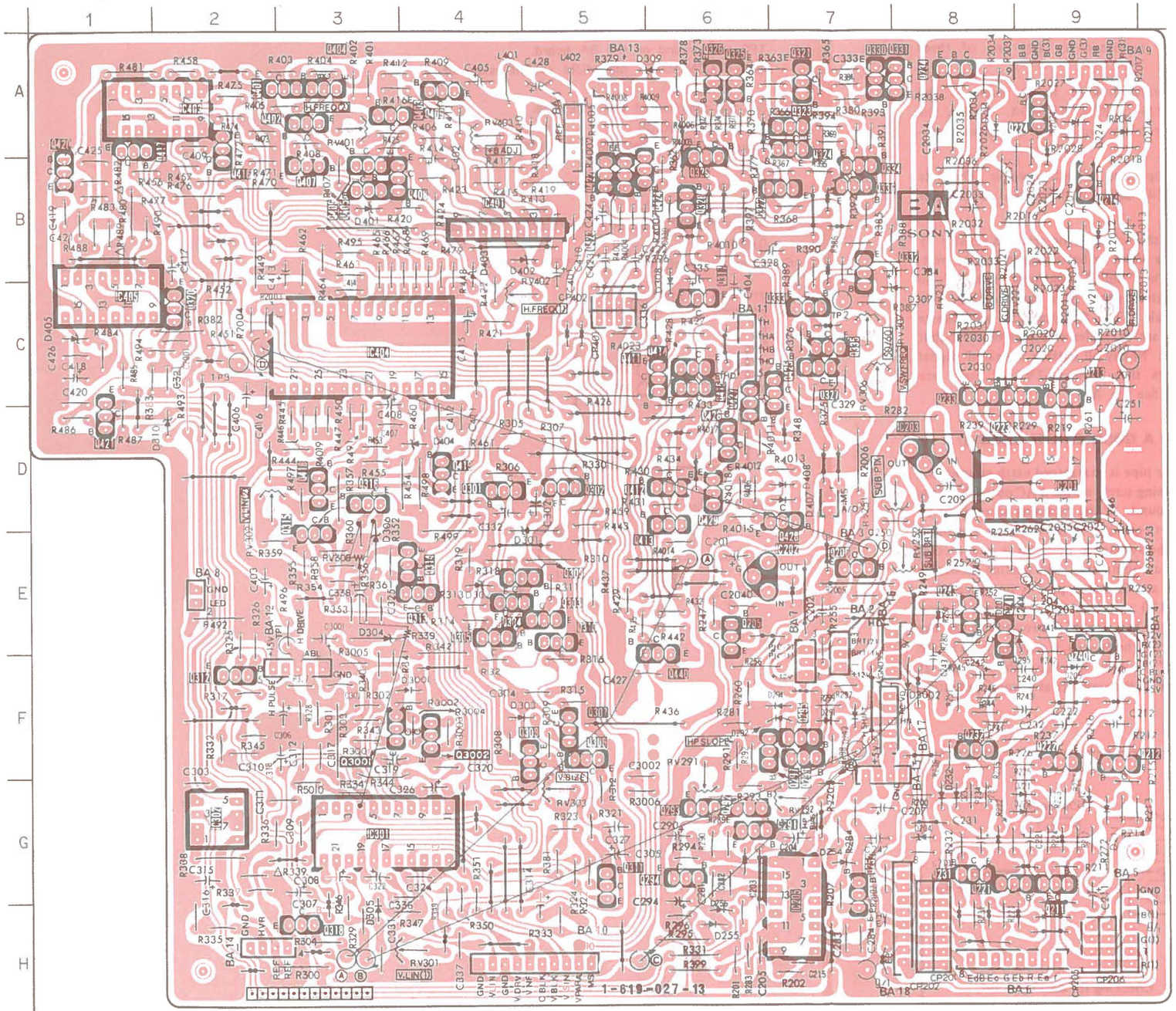
CPD-1302 CPD-1302

SECTION 2
DIAGRAMS

BA [HV.OSC, R·G·B DRIVE, V. FREQ CTRT, F/V CONV.] **BB** [Video, IF, INT SW. R·G·B OUT.] **BC** **X**

2-1. PRINTED WIRING BOARDS — *Conductor Side* —

— BA Board —



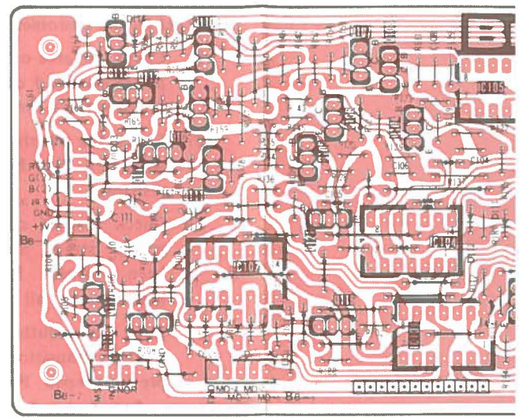
IC	
IC201	D-9
IC202	E-7
IC203	D-8
IC205	H-7
IC301	G-3
IC302	G-2
IC401	B-4
IC403	A-2
IC404	C-3
IC405	C-1

TRANSISTOR	
Q205	E-6
Q206	E-7
Q211	G-9
Q212	F-9
Q213	C-9
Q214	B-9
Q221	G-8
Q222	F-9
Q223	C-9
Q224	A-9
Q231	G-8
Q232	F-8
Q233	C-8
Q234	A-8
Q240	E-9
Q241	E-8
Q243	E-8
Q252	G-7
Q291	G-6
Q292	G-6
Q293	G-6
Q294	G-6
Q295	F-7
Q296	F-7
Q297	F-6
Q301	D-4
Q302	D-5
Q303	E-5
Q304	E-4
Q305	E-4
Q306	F-5
Q307	F-5
Q308	E-4
Q309	F-5
Q310	E-5
Q311	G-5
Q312	F-2
Q313	E-4
Q314	E-4
Q315	E-3
Q316	D-3
Q317	C-6
Q318	H-3
Q320	C-2
Q321	A-7
Q322	B-7
Q323	A-7
Q324	A-7
Q325	A-6
Q326	A-6
Q327	C-7
Q328	B-6
Q329	B-6
Q330	A-7
Q331	A-8
Q332	B-7
Q333	C-7
Q334	B-7
Q335	C-7
Q336	B-7
Q401	A-3
Q402	A-3
Q403	A-3
Q404	A-3
Q405	B-3
Q406	B-3
Q407	B-3
Q408	B-3
Q409	A-4
Q411	C-6
Q412	D-6
Q413	D-6
Q414	C-6
Q415	C-6
Q416	A-2
Q417	A-1
Q418	D-3
Q419	D-4
Q420	B-1
Q421	D-1
Q422	B-5
Q423	B-5
Q424	B-5
Q425	C-7
Q426	D-6
Q427	C-6
Q428	D-7
Q429	D-6
Q440	F-6
Q3001	F-3
Q3002	F-4

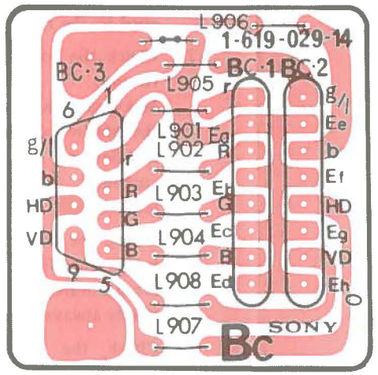
DIODE	
D201	E-8
D204	G-8
D205	F-9
D211	G-9
D212	G-9
D221	G-9
D222	G-9
D231	G-8
D232	G-8
D254	G-7
D255	H-6
D256	H-6
D291	F-7
D292	F-7
D293	F-7
D294	F-7
D295	E-9
D301	E-5
D302	E-4
D303	F-4
D304	E-3
D305	H-3
D306	E-3
D307	C-8
D308	C-6
D309	A-6
D310	D-2
D401	B-3
D402	B-4
D403	B-4
D404	D-4
D405	C-1
D407	D-7
D408	D-7
D3001	F-4
D3002	F-8

VARIABLE RESISTOR	
RV211	C-9
RV221	C-9
RV231	C-8
RV251	D-8
RV252	E-8
RV291	G-6
RV292	G-7
RV301	H-3
RV302	D-2
RV303	G-5
RV306	C-7
RV307	C-7
RV401	A-3
RV402	C-4
RV403	A-4

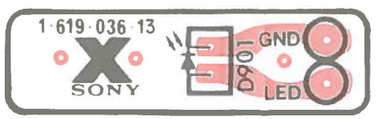
— BB Board —



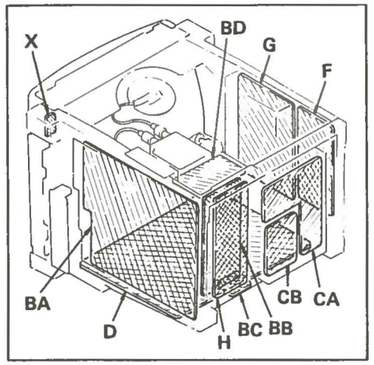
— BC Board —



— X Board —



2-2. CIRCUIT BOARDS LOCATION



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

Note: Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

Note:

- All capacitors are in μF unless otherwise noted. p : μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/6W unless otherwise noted. k : 1000Ω, M : 1000kΩ.
- ▭ : nonflammable resitor.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⏦ : fusible resitor.
- △ : internal component.
- ▭ : panel designation.
- ※ : selected to yield optimum performance.
- The components indentified by ▣ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ▣ and repeat the adjustment until the specified value is achieved.
  (Refer to R339, R416, R489 adjustment on page 11, 12.)
  When replacing the part in below table, be usre to perform the related adjustment.

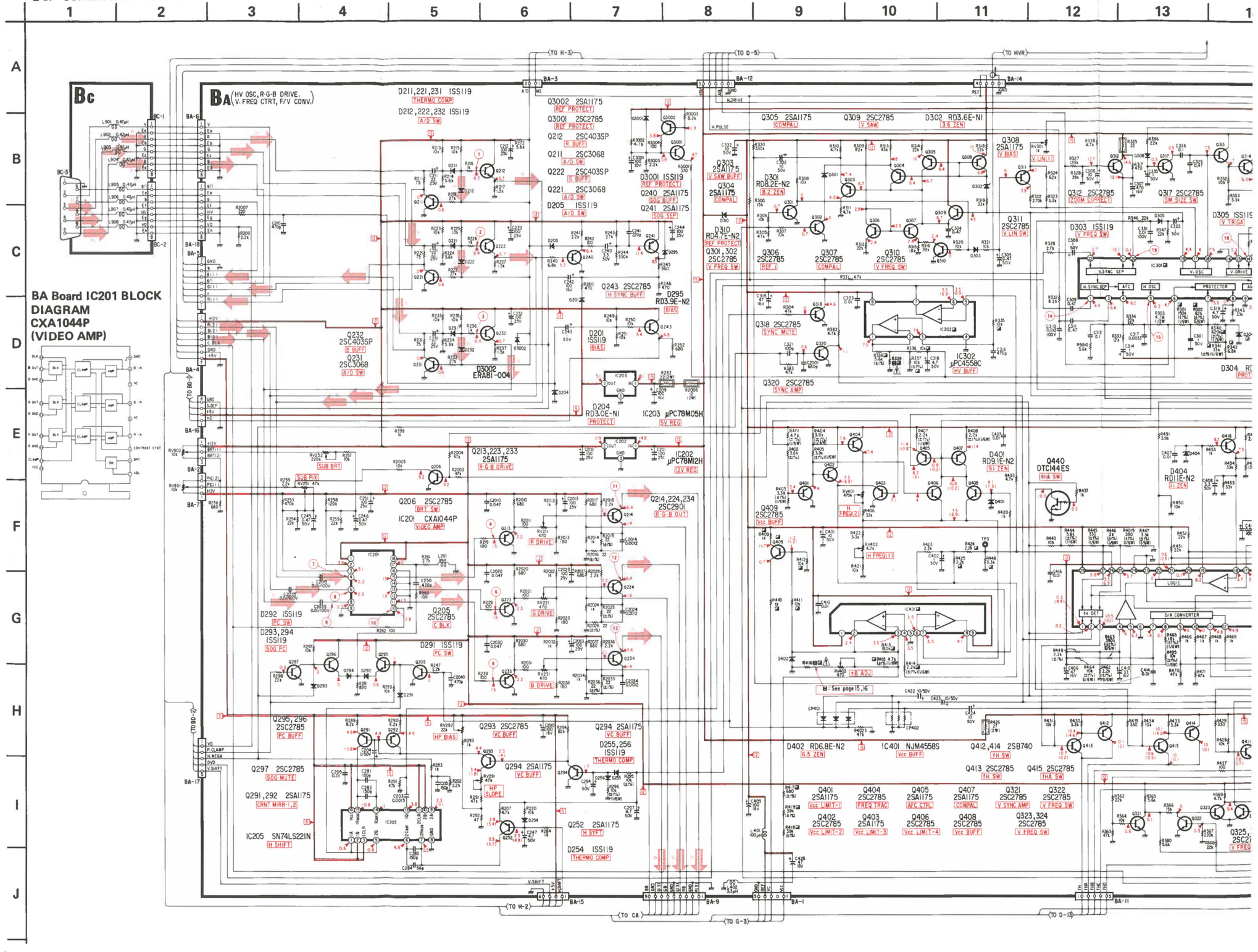
Part replaced (◪)	Adjustment (▣)
(G Board) Q653, R658, R659, T653 (BA Board) IC401, IC404, IC405, Q409, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418,, R419, R424, R425, R448, R479, R480, R488, R489.	R416, R489 (+B MAX)
(BA Board) IC301, IC302, R301, R302, R335, R336, R337, R338, R339, R340, R341, R342, D304 (D Board) R565, R566	R339 (HV HOLD DOWN)

- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 MΩ digital multimeter.
- Voltage variations my be noted due to normal production tolerances.
- Readings are taken with a color-bar signal input. (MULTI SCAN GENERATOR JIG)
- ▭ : adjustment to repair.
- no mark: with 15.76kHz (60Hz V) color-bar signal received.
  ( ): with 31.52kHz (70Hz V) color-bar signal received.

MULTI SCAN GENERATOR JIG VR POSITION

	FREQ	POSITION			
		(H)		(V)	
NORMAL MODE	15.76kHz (60Hz)	A	B	A	B
		2	3	7	F
2H MODE	31.52kHz (70Hz)	9	2	2	5

2-3. SCHEMATIC DIAGRAMS



11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

A B C D E F G H I J

(TO HVR)

BA-14

Q308 2SA1175 (V BIAS) V.LIN(1)

Q312 2SC2785 (ZOOM CORRECT)

Q317 2SC2785 (SM SIZE SW)

Q311 2SC2785 (V.LIN SW)

D303 ISS119 (V FREQ SW)

D305 ISS119 (V TRIGA)

Q313,314 2SC2785 (V SAW BUFF)

Q315 2SC2785 (BIAS)

Q316 2SC2785 (V SIZE SW)

D306 RD3.3E-N2 (3.3 ZEN)

D308 ISS119 (MS SW)

V.ANGLE V.SIZE V.LIN(2)

Q421 2SC2785 (V SYNC AMP)

IC301 μPC1377C (H/V OSC)

X-SYNC SEP H.SYNC SEP AFC H. OSC V. OSC PROTECTOR AMP REG V.DRIVE V.BLK

Q420 2SA1175 (H DRIVE DUTY)

D405 RD9.1E-N2 (9.1 ZEN)

IC405 HD14538BP (F/V CONV)

IC302 μPC4558C (HV BUFF)

D304 RD6.2E-N2 (PROTECT)

B: See page 15, 16

Q401 RD9.1E-N2 (9.1 ZEN)

Q440 DTC144ES (THA SW)

D404 RD11E-N2 (11 ZEN)

Q416 2SC2785 (LOGIC OUT)

Q418 2SC2785 (V SIN OUT)

IC403 MC14516BCP (UP DOW CONT)

Q417 DTC124ES (CLOCK TRIGA)

Q419 2SC2785 (PARABOLA SW)

LOGIC

D403 RD10EL3 (PROTECT)

IC404 CX22030 (V FREQ CTRL)

Q425,426,427 2SC2785 (MS SW)

Q428 DTC124ES (THC SW)

FH DET D/A CONVERTER

Q411 2SC2785 (THB SW)

Q429 2SB740 (THC SW)

D407,408 ISS119 (THC SW)

Q331 2SA1175 (V SAW BUFF)

Q422 2SC2785 (MD 1 SW)

Q330 2SC2785 (V SAW FORM)

Q332 2SA1175 (V FREQ SW)

Q423 2SC2785 (MD 2 SW)

Q333 2SA1175 (50/60 SW)

Q424 2SC2785 (MD 4 SW)

Q334 2SA1175 (MS SW)

Q335 2SC2785 (MS SW)

D307 RD3.6E-N2 (3.6 ZEN)

Q336 2SC2785 (V FREQ SW)

D309 ISS119 (MS SW)

Q412,414 2S8740 (TH SW)

Q413 2SC2785 (TH SW)

Q415 2SC2785 (THA SW)

Q407 2SA1175 (COMPAL)

Q408 2SC2785 (Vcc BUFF)

Q321 2SC2785 (V SYNC AMP)

Q322 2SC2785 (V FREQ SW)

Q323,324 2SC2785 (V FREQ SW)

Q325,326 2SC2785 (V FREQ SW)

Q327 2SC2785 (MS SW)

Q328,329 2SC2785 (MS SW)

V.SW FREQ 50/60

THA THB THC THD THE

BA-11

(TO D-13)

D901 GL-4NG2 X

BA-8

BA-10

(TO D-12)

BA-13

BB (VIDEO, IF, INT SW. R·G·B OUT.)

BB-3

BB-1

BB-2

(TO H-5)

D101 ISS119 (STOP)

D102 ISS119 (STOP)

D103 ISS119 (STOP)

D104 ISS119 (STOP)

D105 ISS119 (STOP)

D107 ISS119 (PROTECT)

IC103 SN74S15N (VIDEO I.F.)

D108 ISS119 (PROTECT)

D109 ISS119 (PROTECT)

IC104 SN74S15N (VIDEO I.F.)

D110 ISS119 (PROTECT)

D111 ISS119 (PROTECT)

IC105 SN74S15N (VIDEO I.F.)

Q101 2SA1175 (R BUFF)

Q109 2SC403SP (R OUT)

Q102 2SA1175 (Y BUFF)

Q112 2SC403SP (NOR MODE SW)

Q103 2SA1175 (G BUFF)

Q104 2SA1175 (Y BUFF)

Q105 2SA1175 (B BUFF)

Q106 2SA1175 (b BUFF)

Q107 2SA1175 (I BUFF)

Q108 2SA1175 (G MODE BUFF)

Q110 2SC403SP (G OUT)

Q113 2SC403SP (NOR MODE SW)

Q111 2SC403SP (B OUT)

Q114 2SC403SP (NOR MODE SW)

D113 ISS119 (BIAS)

D114 ISS119 (BIAS)

Q119 2SC403SP (INT SW)

Q120 2SC403SP (INT SW)

IC101 74E08PC (INT SW)

IC102 SN74LS08N (MODE SW)

D112 ISS119 (PROTECT)

Q121 2SC403SP (G MODE SW)

IC106 SN74LS138N (B ROWN SW)

Q116 2SC403SP (MS SW)

Q117 2SC403SP (MS SW)

Q118 2SC403SP (INT SW)

Q115 2SC403SP (C BLK)

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

A B C D E F G H I J

D531,532 ISS119 V.SIZE SW
Q533,534 2SC2785 MS SW
Q520 2SD1264 V OUT-1
Q506 2SA1175 V CENT 1
Q507 2SD774 V CENT 2
D523,524 RH-1 STOP
D525 ISS119 VBE ADJUST
D533 ISS119 STOP
Q531 2SC2785 fH SW
Q532 2SC2785 MS SW
Q521 2SB940 V OUT-2
IC505 µPC78M12H 12V REG
Q519 2SC2230A V DRIVE
D515 RD18ELI PULSE LIMIT
Q503 2SC403SP C BLK
Q502 2SC403SP H BLK
D534 ISS119 BLK RECT
D535 ISS119 CLAMP
Q516 2SC2785 BIAS
IC501 MC1495L PARABOLA OUT
PIN PHASE
Q517 2SC2785 PARABOLA BUFF
Q501 DTC124ES V BLK
Q518 2SC2785 V PULSE SW
IC504 µPC4558C PIN AMP CTRL
TOP PIN
SUB PIN
PIN AMP
D528 RD12E-N1 PROTECT
D522 RD6.2E-N2 PULSE LIMIT
H.SUB SIZE
Q510 2SD1134 PIN OUT
Q522 2SC2785 fH PIN SW
D508 ISS119 fHD PIN
D507 ISS119 fHB PIN
D506 ISS119 fH PIN
D509 ISS119 STOP
D518 ISS119 STOP
Q509 2SC2785 fH SW
Q508 2SC2785 fHB SW
Q515 2SC2785 fHD SW
D504,505,516 S1B01-02 PROTECT
D537 V19G 800V RECT
D510 V19G G2 RECT
H.CENT
Q511 2SD774 H CENT 1
Q512 2SB734 H CENT 2
D526,529 RGP01-17 BLK CLAMP
T501 H.OT
Q514 2SD1887 H OUT
Q513 2SD774 H DRIVE
D511 V19C PROTECT
D536 ERD-09-15 DUMPER
D514 V19G 180V RECT
T502 FBT
D512 ERD-09-15 DUMPER
D513 FMU-26S DUMPER
DY
HVR
V90I M34JN915X PICTURE TUBE
CB (CRT SOCKET)
CAUTION Be sure to connect the connector CB-1 for safety.
D711 ISS83 PROTECT
D712 ISS83 PROTECT
D713 RGP01-17 CLAMP
R BKG
D721 ISS83 PROTECT
G BKG
D722 ISS83 PROTECT
D731 ISS83 PROTECT
D723 RGP01-17 CLAMP
B BKG
D732 ISS83 PROTECT
D733 RGP01-17 CLAMP
Q711 2SC2688 R OUT
Q721 2SC2688 G OUT
Q731 2SC2688 B OUT
FOCUS
SCREEN
CA (R·G·B OUT)
D (V·H·C BLK, fH SW, H.V OUT.)
(TO BA-1) (TO BA-2) (TO BA-9) (TO BA-12)
D-1 D-2 D-3 D-4 D-5 D-6 D-7 D-8 D-11 D-12 D-13
OARD

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

ote: Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

:

ll capacitors are in μF unless otherwise noted. p : μμF 50WV, r less are not indicated except for electrolytics.

ll resistors are in ohms, 1/6W unless otherwise noted. k : 000Ω, M : 1000kΩ.

: nonflammable resitor.

ll variable and adjustable resistors have characteristic curve B, nless otherwise noted.

: fusible resitor.

△ : internal component.

: panel designation.

k : selected to yield optimum performance.

he components indentified by ⊠ in this manual have been arefully factory-selected for each set in order to satisfy re- ulations regarding X-ray radiation. Should replacement be quired, replace only with the value originally used.

hen replacing components identified by ◪ mark the neces- ry adjustments indicated. If results do not meet the specified alue, change the component identified by ⊠ and repeat the djustment until the specified value is achieved.

Refer to R339, R416, R489 adjustment on page 11, 12.)

hen replacing the part in below table, be usre to perform the lated adjustment.

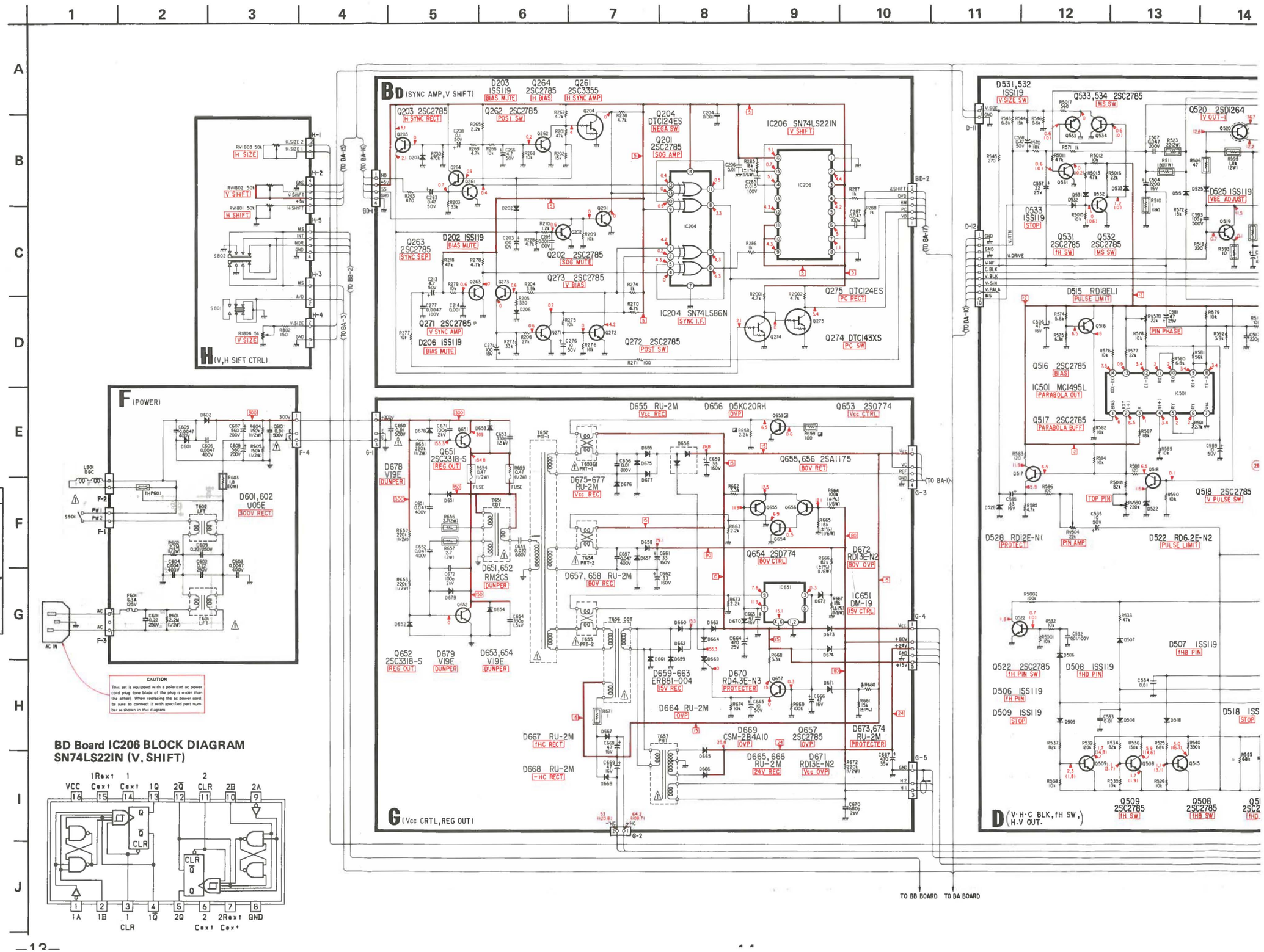
Part replaced (◪)	Adjustment (⊠)
oard) Q653, R658, R659, T653 Board) 01, IC404, IC405, Q409, R409, R410, R411, 2, R413, R414, R415, R416, R417, R418,, 9, R424, R425, R448, R479, R480, R488, 3.	R416, R489 (+B MAX)
Board) 1, IC302, R301, R302, R335, R336, R337, 3, R339, R340, R341, R342, D304 oard) R565, R566	R339 (HV HOLD DOWN)

oltages are dc with respect to ground unless otherwise noted.
eadings are taken with a 10 MΩ digital multimeter.
oltage variations my be noted due to normal production olerances.
leadings are taken with a color-bar signal input. (MULTI CAN GENERATOR JIG)
: adjustment to repair.
o mark: with 15.76kHz (60Hz V) color-bar signal received.
): with 31.52kHz (70Hz V) color-bar signal received.

ULTI SCAN GENERATOR JIG VR POSITION

	FREQ	POSITION			
		(H)		(V)	
ORMAL MODE	15.76kHz (60Hz)	A	B	A	B
		2	3	7	F
H MODE	31.52kHz (70Hz)	9	2	2	5

: signal path



BD Board IC206 BLOCK DIAGRAM
SN74LS22IN (V. SHIFT)

D [V·H·C BLK, fH SW, H.V OUT.]

H [V, H SIFT CRTL.]

D BOARD WAVEFORM

㉔	㉕	㉖
4.2Vp-p(V)	7.4Vp-p(V)	30Vp-p(H)

㉗
1.6Vp-p(H)

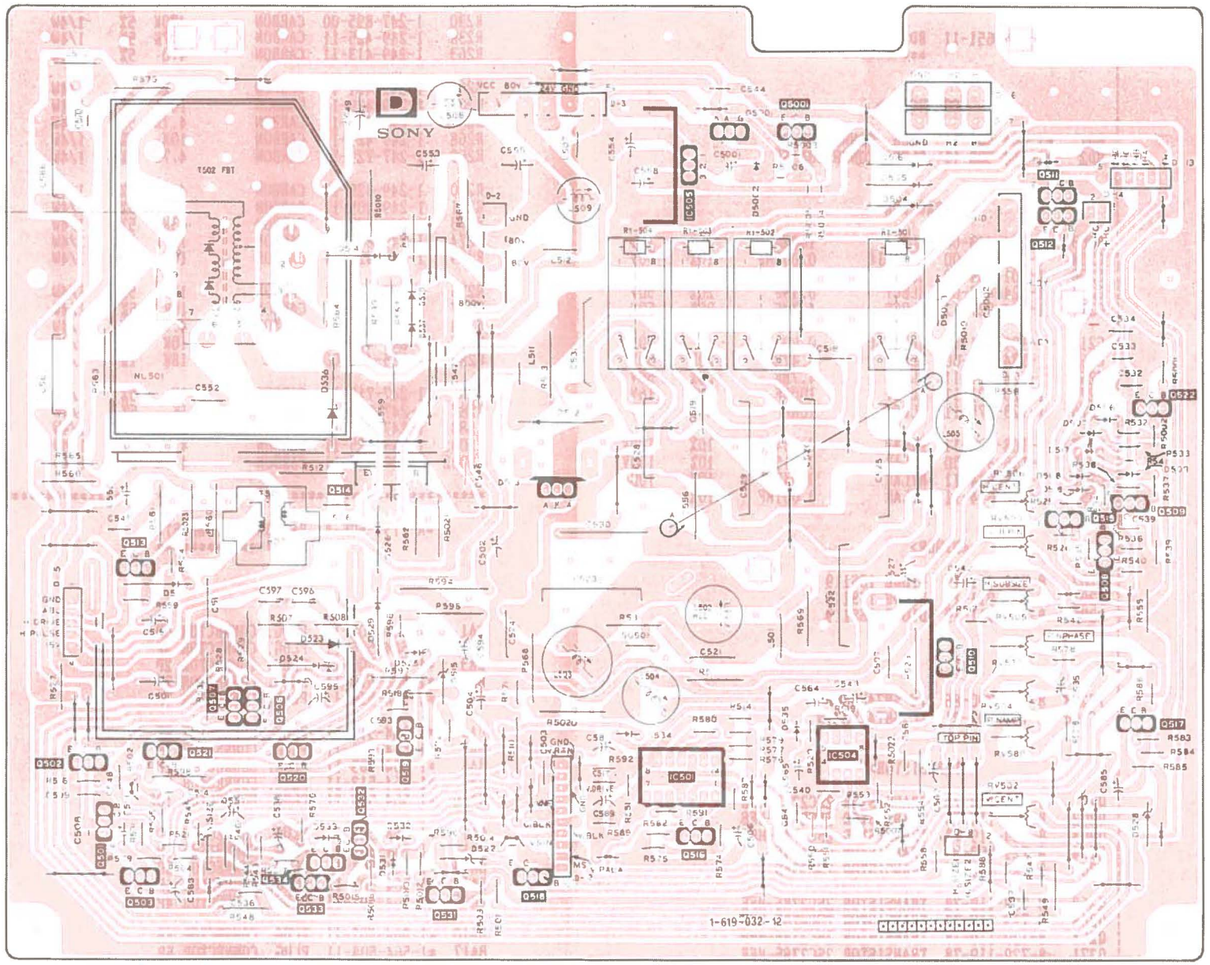
CB BOARD WAVEFORM

㉘
13Vp-p(H)

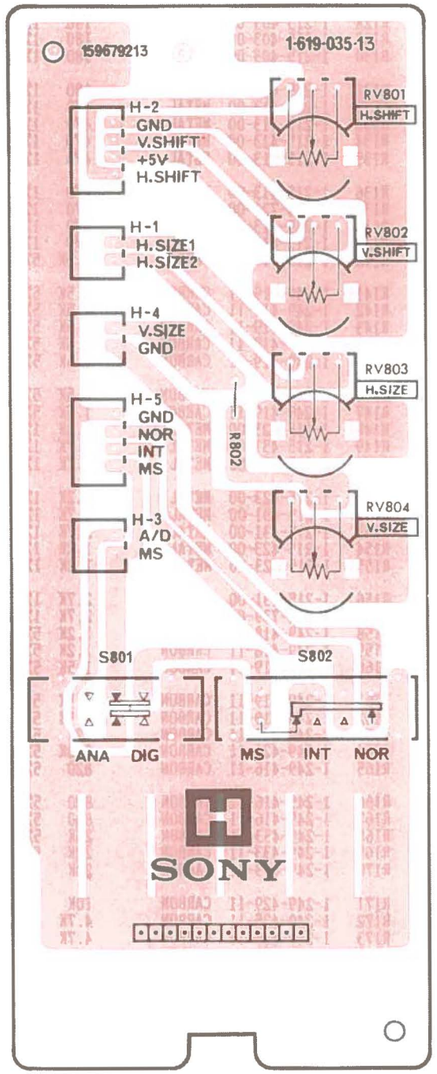
CA BOARD WAVEFORM

㉙	㉚	㉛
40Vp-p(H)	36Vp-p(H)	38Vp-p(H)

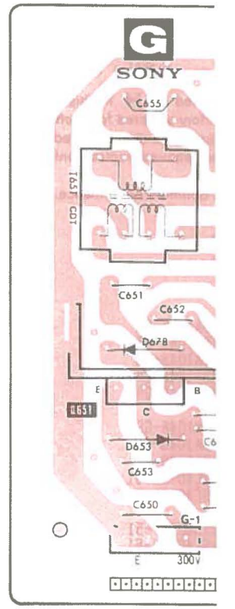
— D Board —



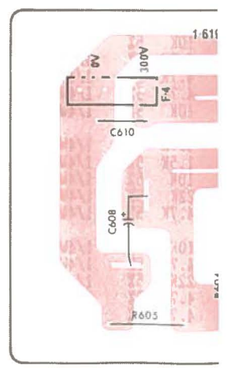
— H Board —



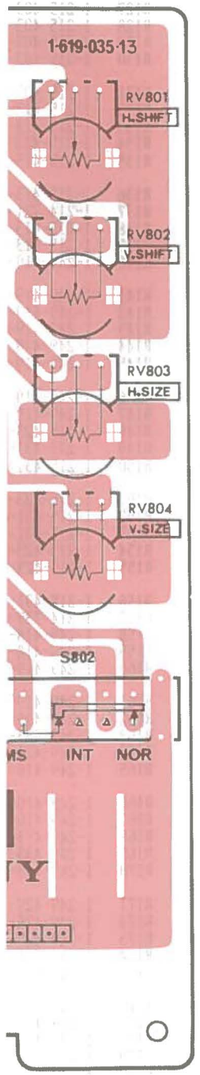
— G Board —



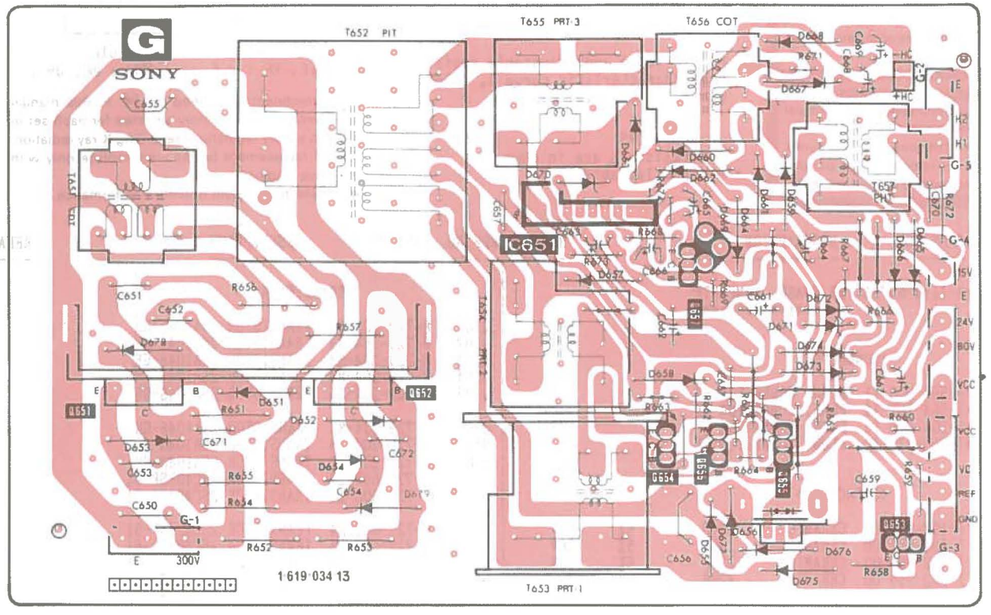
— F Board —



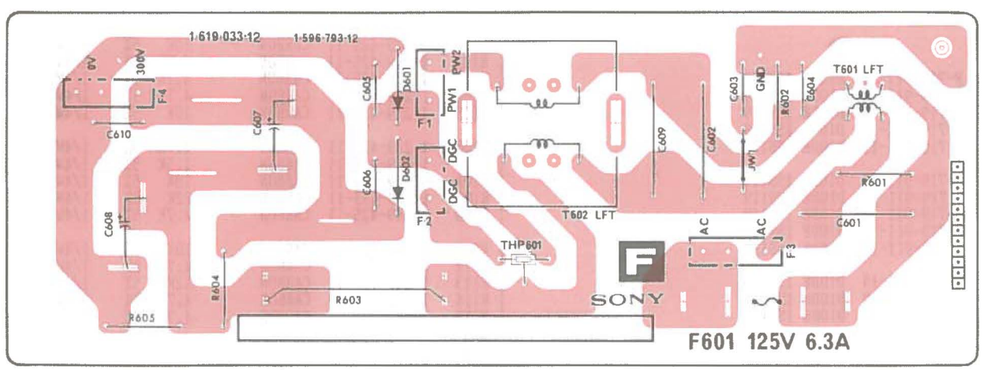
G [Vcc CRTL, REG OUT] **F** [POWER] **CB** [CRT SOCKET] **CA** [R·G·B OUT] **BD** [SYNC AMP, V SHIFT.]



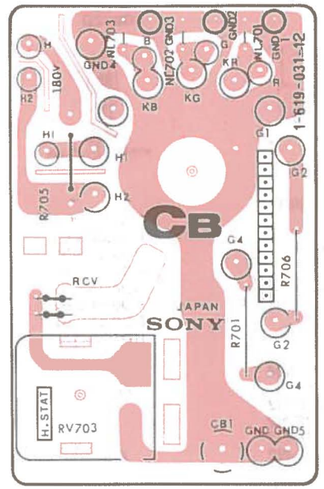
– G Board –



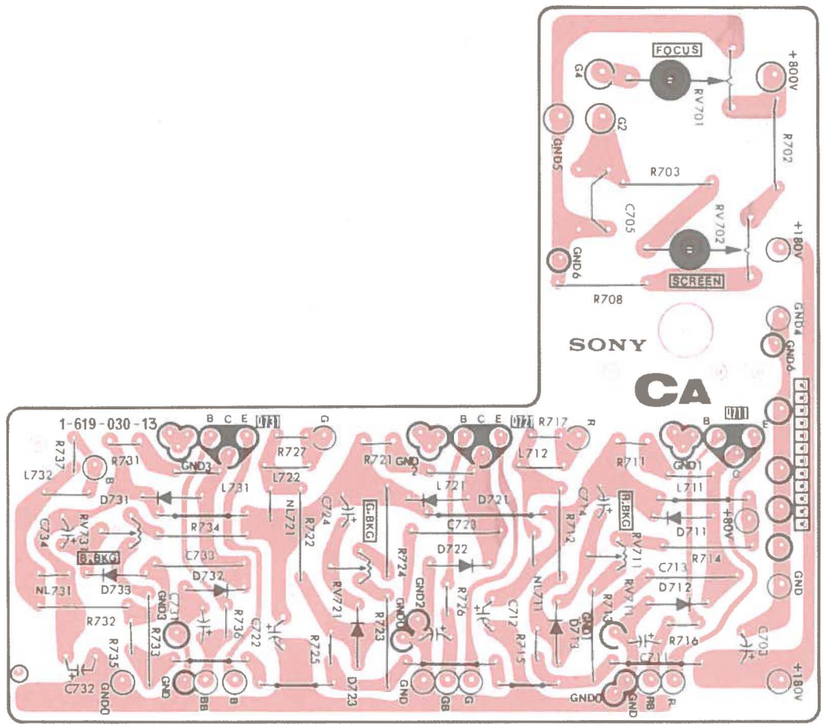
– F Board –



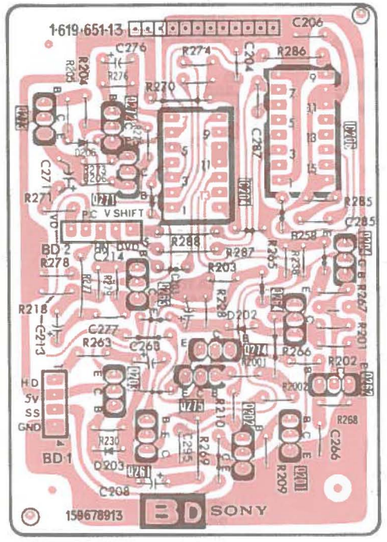
– CB Board –



– CA Board –



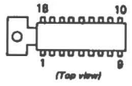
– BD Board –



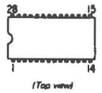
BB

2-4. SEMICONDUCTORS

CXA1044P

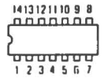


CX22030

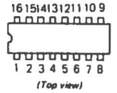


DM-19
NJM4558S
μPC4558C

HD14538BP
MC14516BCP
SN74LS08N
SN74LS221N

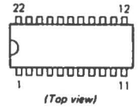


MC1495L
SN74LS86N
SN74LS138N
SN74S15N
TC4516BP
74F08PC
74F138PC



μPC78L12J

μPC78M05H
μPC78M12
μPC1377C



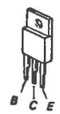
DTC114ES
DTC124ES
DTC144ES
2SA1048
2SC403SP

2SA1175
2SC2785

2SB734
2SD774

2SB740
2SC2230A

2SB940
2SB940P
2SD1134
2SD1264
2SD1264P



2SC2688

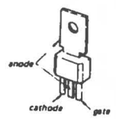
2SC2901

2SC3068

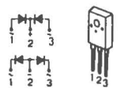
2SC3318-S

2SD1887

CSM2B4A10

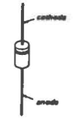


D5KC20RH



ERA81-004
ERD09-15
RD3.3E-N2
RD3.9E-N2
RD4.3E-N3
RD6.2E-N2
RD8.2E-N2
RD12E-N1
RD13E-N2
RD18E-L1
RGP01-17
RGP01-17PKG23
1SS83
10E2

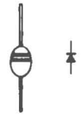
ERB81-004
FMU-26S
RH-1
RM2CS
RU-2M
SIB01-02



GL-4NG2
SG232D

RD3.0ES-B2
RD3.6ES-B1
RD3.6ES-B2
RD3.9ES-B2
RD4.7ES-B2
RD6.8ES-B2
RD9.1ES-B2
RD10ES-B3
RD11ES-B2
1SS119
1SS133

U05E
V19C
V19E
V19G



SECTION 3
ELECTRICAL PARTS LIST

NOTE:

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

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

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

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

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- ✱ : Selected to yield optimum performance.

REF.NO.	PART NO.	DESCRIPTION				REMARK
	*A-1130-697-A	BB BOARD, COMPLETE **********				
		<CONNECTOR>				
BB1	*1-564-508-11	PLUG, CONNECTOR 5P				
BB2	*1-564-507-11	PLUG, CONNECTOR 4P				
BB3	*1-564-510-11	PLUG, CONNECTOR 7P				
BB4	*1-564-510-11	PLUG, CONNECTOR 7P				
		<CAPACITOR>				
C101	1-102-959-00	CERAMIC	22PF	5%	50V	
C102	1-102-959-00	CERAMIC	22PF	5%	50V	
C103	1-102-959-00	CERAMIC	22PF	5%	50V	
C104	1-102-959-00	CERAMIC	22PF	5%	50V	
C105	1-102-959-00	CERAMIC	22PF	5%	50V	
C106	1-102-959-00	CERAMIC	22PF	5%	50V	
C107	1-102-959-00	CERAMIC	22PF	5%	50V	
C108	1-102-959-00	CERAMIC	22PF	5%	50V	
C109	1-126-101-11	ELECT	100MF	20%	16V	
C110	1-126-101-11	ELECT	100MF	20%	16V	
C111	1-124-478-11	ELECT	100MF	20%	25V	
C112	1-124-902-00	ELECT	0.47MF	20%	50V	
C113	1-124-927-11	ELECT	4.7MF	20%	50V	
		<DIODE>				
D101	8-719-911-19	DIODE 1SS119				
D102	8-719-911-19	DIODE 1SS119				
D103	8-719-911-19	DIODE 1SS119				
D104	8-719-911-19	DIODE 1SS119				
D105	8-719-911-19	DIODE 1SS119				
D107	8-719-911-19	DIODE 1SS119				
D108	8-719-911-19	DIODE 1SS119				
D109	8-719-911-19	DIODE 1SS119				
D110	8-719-911-19	DIODE 1SS119				
D111	8-719-911-19	DIODE 1SS119				
D112	8-719-911-19	DIODE 1SS119				
D113	8-719-911-19	DIODE 1SS119				
D114	8-719-911-19	DIODE 1SS119				
		<IC>				
IC101	8-759-904-81	IC 74F08PC				
IC102	8-759-900-08	IC SN74LS08N				
IC103	8-759-910-15	IC SN74S15N				
IC104	8-759-910-15	IC SN74S15N				
IC105	8-759-910-15	IC SN74S15N				
IC106	8-759-901-38	IC SN74LS138N				

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<TRANSISTOR>				
Q101	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q102	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q103	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q104	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q105	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q106	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q107	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q108	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q109	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q110	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q111	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q112	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q113	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q114	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q115	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q116	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q117	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q118	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q119	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q120	8-729-600-24	TRANSISTOR 2SC403SP-51				
Q121	8-729-600-24	TRANSISTOR 2SC403SP-51				
		<RESISTOR>				
R101	1-249-429-11	CARBON	10K	5%	1/4W	
R102	1-249-425-11	CARBON	4.7K	5%	1/4W	
R103	1-249-425-11	CARBON	4.7K	5%	1/4W	
R104	1-249-425-11	CARBON	4.7K	5%	1/4W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R106	1-249-425-11	CARBON	4.7K	5%	1/4W	
R107	1-249-419-11	CARBON	1.5K	5%	1/4W	
R108	1-249-429-11	CARBON	10K	5%	1/4W	
R109	1-249-433-11	CARBON	22K	5%	1/4W	
R110	1-249-425-11	CARBON	4.7K	5%	1/4W	
R111	1-249-429-11	CARBON	10K	5%	1/4W	
R112	1-249-425-11	CARBON	4.7K	5%	1/4W	
R113	1-249-433-11	CARBON	22K	5%	1/4W	
R114	1-249-425-11	CARBON	4.7K	5%	1/4W	
R115	1-249-425-11	CARBON	4.7K	5%	1/4W	
R116	1-215-423-00	METAL	1.2K	1%	1/6W	
R117	1-215-423-00	METAL	1.2K	1%	1/6W	
R118	1-215-423-00	METAL	1.2K	1%	1/6W	
R119	1-215-423-00	METAL	1.2K	1%	1/6W	
R120	1-215-423-00	METAL	1.2K	1%	1/6W	
R121	1-215-423-00	METAL	1.2K	1%	1/6W	
R122	1-215-423-00	METAL	1.2K	1%	1/6W	
R123	1-215-423-00	METAL	1.2K	1%	1/6W	
R124	1-215-403-00	METAL	180	1%	1/6W	
R125	1-215-403-00	METAL	180	1%	1/6W	

BB BD BD BA

ts by refer-
se include

COILS
• MMH : mH, UH : μH

ed by ☒ in this manual
ry-selected for each set in
s regarding X-ray radiation.
aquired, replace only with

timum performance.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R126	1-215-403-00	METAL	180	1%	1/6W	
R127	1-215-403-00	METAL	180	1%	1/6W	
R128	1-215-403-00	METAL	180	1%	1/6W	
R129	1-215-403-00	METAL	180	1%	1/6W	
R130	1-215-403-00	METAL	180	1%	1/6W	
R131	1-215-403-00	METAL	180	1%	1/6W	
R132	1-215-413-00	METAL	470	1%	1/6W	
R133	1-215-413-00	METAL	470	1%	1/6W	
R134	1-215-413-00	METAL	470	1%	1/6W	
R135	1-215-413-00	METAL	470	1%	1/6W	
R136	1-215-413-00	METAL	470	1%	1/6W	
R137	1-214-721-00	METAL	470	1%	1/4W	
R138	1-215-413-00	METAL	470	1%	1/6W	
R139	1-215-413-00	METAL	470	1%	1/6W	
R140	1-249-419-11	CARBON	1.5K	5%	1/4W	
R141	1-249-419-11	CARBON	1.5K	5%	1/4W	
R142	1-249-419-11	CARBON	1.5K	5%	1/4W	
R143	1-249-419-11	CARBON	1.5K	5%	1/4W	
R144	1-249-419-11	CARBON	1.5K	5%	1/4W	
R145	1-249-419-11	CARBON	1.5K	5%	1/4W	
R146	1-249-419-11	CARBON	1.5K	5%	1/4W	
R147	1-249-419-11	CARBON	1.5K	5%	1/4W	
R148	1-215-423-00	METAL	1.2K	1%	1/6W	
R149	1-215-431-00	METAL	2.7K	1%	1/6W	
R150	1-215-431-00	METAL	2.7K	1%	1/6W	
R151	1-215-423-00	METAL	1.2K	1%	1/6W	
R152	1-215-431-00	METAL	2.7K	1%	1/6W	
R153	1-215-431-00	METAL	2.7K	1%	1/6W	
R154	1-215-423-00	METAL	1.2K	1%	1/6W	
R155	1-215-423-00	METAL	1.2K	1%	1/6W	
R156	1-215-431-00	METAL	2.7K	1%	1/6W	
R157	1-214-739-00	METAL	2.7K	1%	1/4W	
R158	1-249-418-11	CARBON	1.2K	5%	1/4W	
R159	1-249-418-11	CARBON	1.2K	5%	1/4W	
R160	1-249-419-11	CARBON	1.5K	5%	1/4W	
R161	1-249-419-11	CARBON	1.5K	5%	1/4W	
R162	1-249-419-11	CARBON	1.5K	5%	1/4W	
R163	1-249-433-11	CARBON	22K	5%	1/4W	
R164	1-249-421-11	CARBON	2.2K	5%	1/4W	
R165	1-249-416-11	CARBON	820	5%	1/4W	
R166	1-249-416-11	CARBON	820	5%	1/4W	
R167	1-249-416-11	CARBON	820	5%	1/4W	
R168	1-249-433-11	CARBON	22K	5%	1/4W	
R169	1-249-433-11	CARBON	22K	5%	1/4W	
R170	1-249-433-11	CARBON	22K	5%	1/4W	
R171	1-249-429-11	CARBON	10K	5%	1/4W	
R172	1-249-425-11	CARBON	4.7K	5%	1/4W	
R173	1-249-425-11	CARBON	4.7K	5%	1/4W	
R174	1-247-708-11	CARBON	470	5%	1/4W	
R175	1-249-441-11	CARBON	100K	5%	1/4W	
R176	1-249-423-11	CARBON	3.3K	5%	1/4W	
R177	1-249-423-11	CARBON	3.3K	5%	1/4W	
R178	1-249-423-11	CARBON	3.3K	5%	1/4W	
R179	1-249-413-11	CARBON	470	5%	1/4W	
R180	1-247-804-11	CARBON	75	5%	1/4W	
R181	1-249-413-11	CARBON	470	5%	1/4W	
R182	1-249-413-11	CARBON	470	5%	1/4W	
R183	1-247-804-11	CARBON	75	5%	1/4W	
R184	1-249-413-11	CARBON	470	5%	1/4W	
R185	1-249-413-11	CARBON	470	5%	1/4W	
R186	1-247-104-00	CARBON	75	5%	1/4W	
R187	1-249-413-11	CARBON	470	5%	1/4W	
R188	1-249-429-11	CARBON	10K	5%	1/4W	
R189	1-249-409-11	CARBON	220	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
	*1-619-651-11	BD BOARD				
		<CONNECTOR>				
BD1	*1-564-507-11	PLUG, CONNECTOR 4P				
BD2	*1-564-508-11	PLUG, CONNECTOR 5P				
		<CAPACITOR>				
C203	1-124-443-00	ELECT	100MF	20%	10V	
C204	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C206	1-101-004-00	CERAMIC	0.01MF		50V	
C208	1-124-463-00	ELECT	0.1MF	20%	50V	
C213	1-124-927-11	ELECT	4.7MF	20%	50V	
C214	1-101-001-00	CERAMIC	0.001MF		50V	
C263	1-124-902-00	ELECT	0.47MF	20%	50V	
C266	1-124-927-11	ELECT	4.7MF	20%	50V	
C271	1-126-101-11	ELECT	100MF	20%	16V	
C276	1-123-875-11	ELECT	10MF	20%	50V	
C277	1-108-622-11	MYLAR	0.0047MF	10%	100V	
C285	1-106-371-00	MYLAR	0.015MF	10%	100V	
C287	1-108-634-11	MYLAR	0.047MF	10%	100V	
C295	1-108-614-11	MYLAR	0.001MF	10%	100V	
		<DIODE>				
D202	8-719-911-19	DIODE 1SS119				
D203	8-719-911-19	DIODE 1SS119				
D206	8-719-911-19	DIODE 1SS119				
		<IC>				
IC204	8-759-900-86	IC SN74LS86N				
IC206	8-759-902-21	IC SN74LS221N				
		<TRANSISTOR>				
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q204	8-729-900-36	TRANSISTOR DTC124ES				
Q261	8-729-104-80	TRANSISTOR 2SC3355				
Q262	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q263	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q264	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q271	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q272	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q273	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q274	8-729-901-57	TRANSISTOR DTC143XS				
Q275	8-729-900-36	TRANSISTOR DTC124ES				
		<RESISTOR>				
R201	1-249-437-11	CARBON	47K	5%	1/4W	
R202	1-249-431-11	CARBON	15K	5%	1/4W	
R203	1-249-435-11	CARBON	33K	5%	1/4W	
R204	1-249-424-11	CARBON	3.9K	5%	1/4W	
R205	1-249-411-11	CARBON	330	5%	1/4W	
R206	1-249-434-11	CARBON	27K	5%	1/4W	
R209	1-249-429-11	CARBON	10K	5%	1/4W	
R210	1-249-418-11	CARBON	1.2K	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R218	1-249-437-11	CARBON	47K	5%	1/4W	
R228	1-249-425-11	CARBON	4.7K	5%	1/4W	
R230	1-247-895-00	CARBON	470K	5%	1/4W	
R238	1-249-425-11	CARBON	4.7K	5%	1/4W	
R263	1-249-413-11	CARBON	470	5%	1/4W	
R265	1-249-421-11	CARBON	2.2K	5%	1/4W	
R266	1-249-429-11	CARBON	10K	5%	1/4W	
R267	1-249-425-11	CARBON	4.7K	5%	1/4W	
R268	1-249-429-11	CARBON	10K	5%	1/4W	
R269	1-247-721-11	CARBON	4.7K	5%	1/4W	
R270	1-249-425-11	CARBON	4.7K	5%	1/4W	
R271	1-249-405-11	CARBON	100	5%	1/4W	
R273	1-249-435-11	CARBON	33K	5%	1/4W	
R274	1-249-417-11	CARBON	1K	5%	1/4W	
R275	1-249-429-11	CARBON	10K	5%	1/4W	
R276	1-249-429-11	CARBON	10K	5%	1/4W	
R277	1-247-725-11	CARBON	10K	5%	1/4W	
R278	1-249-425-11	CARBON	4.7K	5%	1/4W	
R279	1-249-429-11	CARBON	10K	5%	1/4W	
R285	1-215-451-00	METAL	18K	1%	1/6W	
R286	1-247-713-11	CARBON	1K	5%	1/4W	
R287	1-247-713-11	CARBON	1K	5%	1/4W	
R288	1-247-713-11	CARBON	1K	5%	1/4W	
R2001	1-249-425-11	CARBON	4.7K	5%	1/4W	
R2002	1-249-425-11	CARBON	4.7K	5%	1/4W	
	*A-1135-505-A	BA BOARD, COMPLETE				
		<CONNECTOR>				
BA1	*1-564-508-11	PLUG, CONNECTOR 5P				
BA2	*1-564-506-11	PLUG, CONNECTOR 3P				
BA3	*1-564-505-11	PLUG, CONNECTOR 2P				
BA4	*1-564-510-11	PLUG, CONNECTOR 7P				
BA5	*1-564-510-11	PLUG, CONNECTOR 7P				
BA6	*1-564-511-11	PLUG, CONNECTOR 8P				
BA7	*1-564-506-11	PLUG, CONNECTOR 3P				
BA8	*1-564-505-11	PLUG, CONNECTOR 2P				
BA9	*1-564-512-11	PLUG, CONNECTOR 9P				
BA10	*1-564-513-11	PLUG, CONNECTOR 10P				
BA11	*1-564-508-11	PLUG, CONNECTOR 5P				
BA12	*1-564-508-11	PLUG, CONNECTOR 5P				
BA13	*1-564-508-11	PLUG, CONNECTOR 5P				
BA14	*1-564-507-11	PLUG, CONNECTOR 4P				
BA15	*1-564-507-11	PLUG, CONNECTOR 4P				
BA16	*1-564-507-11	PLUG, CONNECTOR 4P				
BA17	*1-564-508-11	PLUG, CONNECTOR 5P				
BA18	*1-564-511-11	PLUG, CONNECTOR 8P				
		<CAPACITOR>				
C201	1-123-333-00	ELECT	100MF	20%	25V	
C202	1-124-478-11	ELECT	100MF	20%	25V	
C203	1-102-119-00	CERAMIC	0.0015MF	10%	50V	
C204	1-124-499-11	ELECT	1MF	20%	50V	
C205	1-101-004-00	CERAMIC	0.01MF		50V	
C207	1-124-927-11	ELECT	4.7MF	20%	50V	
C209	1-126-101-11	ELECT	100MF	20%	16V	
C210	1-102-114-00	CERAMIC	470PF	10%	50V	
C211	1-126-233-11	ELECT	22MF	20%	25V	
C212	1-124-478-11	ELECT	100MF	20%	25V	
C215	1-102-108-00	CERAMIC	150PF	10%	50V	

REF.NO.	PART NO.	DESCRIPTION				REMARK
C221	1-126-233-11	ELECT	22MF	20%	25V	
C222	1-124-478-11	ELECT	100MF	20%	25V	
C231	1-126-233-11	ELECT	22MF	20%	25V	
C232	1-124-478-11	ELECT	100MF	20%	25V	
C240	1-123-382-00	ELECT	3.3MF	20%	50V	
C241	1-102-978-00	CERAMIC	220PF	5%	50V	
C242	1-126-101-11	ELECT	100MF	20%	16V	
C243	1-124-499-11	ELECT	1MF	20%	50V	
C244	1-124-478-11	ELECT	100MF	20%	25V	
C245	1-124-902-00	ELECT	0.47MF	20%	50V	
C246	1-124-902-00	ELECT	0.47MF	20%	50V	
C247	1-124-927-11	ELECT	4.7MF	20%	50V	
C250	1-102-114-00	CERAMIC	470PF	10%	50V	
C251	1-124-478-11	ELECT	100MF	20%	25V	
C281	1-101-361-00	CERAMIC	150PF	5%	50V	
C282	1-101-361-00	CERAMIC	150PF	5%	50V	
C283	1-101-361-00	CERAMIC	150PF	5%	50V	
C284	1-101-884-00	CERAMIC	56PF	5%	50V	
C290	1-126-101-11	ELECT	100MF	20%	16V	
C294	1-124-499-11	ELECT	1MF	20%	50V	
C301	1-124-499-11	ELECT	1MF	20%	50V	
C302	1-123-875-11	ELECT	10MF	20%	50V	
C303	1-101-004-00	CERAMIC	0.01MF		50V	
C304	1-136-173-00	FILM	0.47MF	5%	50V	
C305	1-124-902-00	ELECT	0.47MF	20%	50V	
C306	1-123-875-11	ELECT	10MF	20%	50V	
C307	1-126-103-11	ELECT	470MF	20%	16V	
C308	1-124-499-11	ELECT	1MF	20%	50V	
C309	1-136-173-00	FILM	0.47MF	5%	50V	
C310	1-108-627-11	MYLAR	0.012MF	10%	100V	
C311	1-136-173-00	FILM	0.47MF	5%	50V	
C312	1-136-165-00	FILM	0.1MF	5%	50V	
C314	1-124-499-11	ELECT	1MF	20%	50V	
C315	1-124-477-11	ELECT	47MF	20%	16V	
C316	1-102-114-00	CERAMIC	470PF	10%	50V	
C317	1-130-477-00	MYLAR	0.0033MF	5%	50V	
C318	1-124-927-11	ELECT	4.7MF	20%	50V	
C319	1-124-927-11	ELECT	4.7MF	20%	50V	
C320	1-102-112-00	CERAMIC	330PF	10%	50V	
C321	1-102-973-00	CERAMIC	100PF	5%	50V	
C322	1-124-499-11	ELECT	1MF	20%	50V	
C324	1-108-812-11	MYLAR	0.047MF	5%	50V	
C325	1-136-173-00	FILM	0.47MF	5%	50V	
C326	1-126-101-11	ELECT	100MF	20%	16V	
C327	1-123-875-11	ELECT	10MF	20%	50V	
C328	1-124-477-11	ELECT	47MF	20%	16V	
C329	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C330	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C331	1-108-626-11	MYLAR	0.01MF	10%	100V	
C332	1-123-875-11	ELECT	10MF	20%	50V	
C333	1-136-173-00	FILM	0.47MF	5%	50V	
C334	1-124-925-11	ELECT	2.2MF	20%	50V	
C335	1-124-499-11	ELECT	1MF	20%	50V	
C336	1-136-165-00	FILM	0.1MF	5%	50V	
C337	1-108-622-11	MYLAR	0.0047MF	10%	100V	
C338	1-124-499-11	ELECT	1MF	20%	50V	
C401	1-123-875-11	ELECT	10MF	20%	50V	
C402	1-124-499-11	ELECT	1MF	20%	50V	
C403	1-124-557-11	ELECT	1000MF	20%	25V	
C404	1-126-101-11	ELECT	100MF	20%	16V	
C405	1-126-101-11	ELECT	100MF	20%	16V	
C406	1-124-477-11	ELECT	47MF	20%	16V	
C407	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C408	1-123-382-00	ELECT	3.3MF	20%	50V	

REF.NO.	PART NO.	DESCRIPTION			REMARK
C409	1-101-004-00	CERAMIC	0.01MF		50V
C410	1-101-004-00	CERAMIC	0.01MF		50V
C411	1-108-624-11	MYLAR	0.0068MF	10%	100V
C412	1-108-620-11	MYLAR	0.0033MF	10%	100V
C413	1-124-963-11	ELECT	33MF	20%	16V
C414	1-102-129-00	CERAMIC	0.01MF	10%	50V
C415	1-123-875-11	ELECT	10MF	20%	50V
C416	1-101-004-00	CERAMIC	0.01MF		50V
C417	1-123-875-11	ELECT	10MF	20%	50V
C418	1-126-101-11	ELECT	100MF	20%	16V
C419	1-108-796-11	MYLAR	0.0022MF	5%	50V
C420	1-102-112-00	CERAMIC	330PF	10%	50V
C421	1-102-816-00	CERAMIC	120PF	5%	50V
C422	1-123-875-11	ELECT	10MF	20%	50V
C423	1-123-875-11	ELECT	10MF	20%	50V
C424	1-123-875-11	ELECT	10MF	20%	50V
C425	1-101-004-00	CERAMIC	0.01MF		50V
C426	1-101-004-00	CERAMIC	0.01MF		50V
C427	1-101-004-00	CERAMIC	0.01MF		50V
C428	1-124-477-11	ELECT	47MF	20%	16V
C2001	1-102-116-00	CERAMIC	680PF	10%	50V
C2010	1-101-006-00	CERAMIC	0.047MF		50V
C2013	1-123-333-00	ELECT	100MF	20%	25V
C2014	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C2015	1-108-626-11	MYLAR	0.01MF	10%	100V
C2020	1-101-006-00	CERAMIC	0.047MF		50V
C2023	1-123-333-00	ELECT	100MF	20%	25V
C2024	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C2025	1-108-626-11	MYLAR	0.01MF	10%	100V
C2030	1-101-006-00	CERAMIC	0.047MF		50V
C2033	1-123-333-00	ELECT	100MF	20%	25V
C2034	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C2035	1-108-626-11	MYLAR	0.01MF	10%	100V
C2040	1-102-114-00	CERAMIC	470PF	10%	50V
C3001	1-124-443-00	ELECT	100MF	20%	10V
C3002	1-136-165-00	FILM	0.1MF	5%	50V

<DIODE>

D201	8-719-911-19	DIODE 1SS119	
D204	8-719-109-62	DIODE RD3.0ES-B1	
D205	8-719-911-19	DIODE 1SS119	
D211	8-719-911-19	DIODE 1SS119	
D212	8-719-911-19	DIODE 1SS119	
D221	8-719-911-19	DIODE 1SS119	
D222	8-719-911-19	DIODE 1SS119	
D231	8-719-911-19	DIODE 1SS119	
D232	8-719-911-19	DIODE 1SS119	
D254	8-719-911-19	DIODE 1SS119	
D255	8-719-911-19	DIODE 1SS119	
D256	8-719-911-19	DIODE 1SS119	
D291	8-719-911-19	DIODE 1SS119	
D292	8-719-911-19	DIODE 1SS119	
D293	8-719-911-19	DIODE 1SS119	
D294	8-719-911-19	DIODE 1SS119	
D295	8-719-109-72	DIODE RD3.9ES-B2	
D301	8-719-110-08	DIODE RD8.2ES-B2	
D302	8-719-109-68	DIODE RD3.6ES-B1	
D303	8-719-911-19	DIODE 1SS119	
D304	8-719-109-93	DIODE RD6.2ES-B2	
D305	8-719-911-19	DIODE 1SS119	
D306	8-719-109-66	DIODE RD3.3ES-B2	
D307	8-719-109-69	DIODE RD3.6ES-B2	
D308	8-719-911-19	DIODE 1SS119	
D309	8-719-911-19	DIODE 1SS119	
D310	8-719-109-81	DIODE RD4.7ES-B2	
D401	8-719-110-13	DIODE RD9.1ES-B2	
D402	8-719-109-97	DIODE RD6.8ES-B2	
D403	8-719-110-18	DIODE RD10ES-B3	
D404	8-719-110-22	DIODE RD11ES-B2	
D405	8-719-110-13	DIODE RD9.1ES-B2	
D407	8-719-911-19	DIODE 1SS119	
D408	8-719-911-19	DIODE 1SS119	
D3001	8-719-911-19	DIODE 1SS119	
D3002	8-719-908-06	DIODE ERA81-005	

<IC>

IC201	8-752-033-27	IC CXA1044AP	
IC202	8-759-604-39	IC M5F78M12	
	*4-314-225-00	HEAT SINK, (A); IC202	
IC203	8-759-604-35	IC M5F78M05	
	*4-314-225-00	HEAT SINK, (A); IC203	
IC205	8-759-902-21	IC SN74LS221N	
IC301	8-759-100-60	IC UPC1377C	
IC302	8-759-145-58	IC UPC4558C	
IC401	8-759-981-95	IC RC4558S	
IC403	8-759-245-16	IC TC4516BP	
IC404	8-752-203-00	IC CX22030	
IC405	8-759-345-38	IC HD14538BP	

<COIL>

L201	1-410-119-11	INDUCTOR	1MMH
L401	1-408-080-00	INDUCTOR	100UH
L402	1-408-403-00	INDUCTOR	3.3UH

<TRANSISTOR>

Q205	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q206	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q211	8-729-800-10	TRANSISTOR 2SC3068	
Q212	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q213	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q214	8-729-190-12	TRANSISTOR 2SC2901	
Q221	8-729-800-10	TRANSISTOR 2SC3068	
Q222	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q223	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q224	8-729-190-12	TRANSISTOR 2SC2901	
Q231	8-729-800-10	TRANSISTOR 2SC3068	
Q232	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q233	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q234	8-729-190-12	TRANSISTOR 2SC2901	
Q240	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q241	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q243	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q252	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q291	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q292	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q293	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q294	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q295	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q296	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q297	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q301	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q302	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q303	8-729-204-83	TRANSISTOR 2SA1048-GR	

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q304	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q305	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q306	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q307	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q308	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q309	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q310	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q311	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q312	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q313	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q314	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q315	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q316	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q317	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q318	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q320	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q321	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q322	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q323	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q324	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q325	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q326	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q327	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q328	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q329	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q330	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q331	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q332	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q333	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q334	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q335	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q336	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q401	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q402	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q403	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q404	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q405	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q406	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q407	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q408	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q409	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q411	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q412	8-729-374-02	TRANSISTOR 2SB740	
Q413	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q414	8-729-374-02	TRANSISTOR 2SB740	
Q415	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q416	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q417	8-729-900-36	TRANSISTOR DTC124ES	
Q418	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q419	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q420	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q421	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q422	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q423	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q424	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q425	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q426	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q427	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q428	8-729-900-36	TRANSISTOR DTC124ES	
Q429	8-729-374-02	TRANSISTOR 2SB740	
Q440	8-729-900-89	TRANSISTOR DTC144ES	
Q3001	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q3002	8-729-204-83	TRANSISTOR 2SA1048-GR	

REF.NO.	PART NO.	DESCRIPTION			REMARK
		<RESISTOR>			
R200	1-249-421-11	CARBON	2.2K	5% 1/4W	
R201	1-249-425-11	CARBON	4.7K	5% 1/4W	
R202	1-249-421-11	CARBON	2.2K	5% 1/4W	
R207	1-249-425-11	CARBON	4.7K	5% 1/4W	
R211	1-247-804-11	CARBON	75	5% 1/4W	
R212	1-249-434-11	CARBON	27K	5% 1/4W	
R213	1-249-429-11	CARBON	10K	5% 1/4W	
R214	1-249-426-11	CARBON	5.6K	5% 1/4W	
R215	1-249-429-11	CARBON	10K	5% 1/4W	
R216	1-249-417-11	CARBON	1K	5% 1/4W	
R217	1-249-419-11	CARBON	1.5K	5% 1/4W	
R219	1-249-405-11	CARBON	100	5% 1/4W	
R220	1-249-429-11	CARBON	10K	5% 1/4W	
R221	1-247-804-11	CARBON	75	5% 1/4W	
R222	1-249-434-11	CARBON	27K	5% 1/4W	
R223	1-249-429-11	CARBON	10K	5% 1/4W	
R224	1-249-426-11	CARBON	5.6K	5% 1/4W	
R225	1-249-429-11	CARBON	10K	5% 1/4W	
R226	1-249-417-11	CARBON	1K	5% 1/4W	
R227	1-249-419-11	CARBON	1.5K	5% 1/4W	
R229	1-249-405-11	CARBON	100	5% 1/4W	
R231	1-247-804-11	CARBON	75	5% 1/4W	
R232	1-249-434-11	CARBON	27K	5% 1/4W	
R233	1-249-429-11	CARBON	10K	5% 1/4W	
R234	1-249-426-11	CARBON	5.6K	5% 1/4W	
R235	1-249-429-11	CARBON	10K	5% 1/4W	
R236	1-249-417-11	CARBON	1K	5% 1/4W	
R237	1-249-419-11	CARBON	1.5K	5% 1/4W	
R239	1-249-405-11	CARBON	100	5% 1/4W	
R240	1-249-427-11	CARBON	6.8K	5% 1/4W	
R241	1-249-421-11	CARBON	2.2K	5% 1/4W	
R242	1-249-405-11	CARBON	100	5% 1/4W	
R243	1-249-434-11	CARBON	27K	5% 1/4W	
R244	1-247-891-00	CARBON	330K	5% 1/4W	
R245	1-249-414-11	CARBON	560	5% 1/4W	
R246	1-249-413-11	CARBON	470	5% 1/4W	
R247	1-249-421-11	CARBON	2.2K	5% 1/4W	
R249	1-249-429-11	CARBON	10K	5% 1/4W	
R250	1-249-429-11	CARBON	10K	5% 1/4W	
R251	1-249-429-11	CARBON	10K	5% 1/4W	
R252	1-247-711-11	CARBON	680	5% 1/4W	
R253	1-247-895-00	CARBON	470K	5% 1/4W	
R254	1-249-433-11	CARBON	22K	5% 1/4W	
R255	1-249-421-11	CARBON	2.2K	5% 1/4W	
R256	1-247-711-11	CARBON	680	5% 1/4W	
R257	1-249-429-11	CARBON	10K	5% 1/4W	
R258	1-247-881-00	CARBON	120K	5% 1/4W	
R259	1-249-433-11	CARBON	22K	5% 1/4W	
R260	1-249-405-11	CARBON	100	5% 1/4W	
R261	1-249-422-11	CARBON	2.7K	5% 1/4W	
R262	1-249-405-11	CARBON	100	5% 1/4W	
R272	1-249-426-11	CARBON	5.6K	5% 1/4W	
R280	1-249-413-11	CARBON	470	5% 1/4W	
R281	1-249-416-11	CARBON	820	5% 1/4W	
R282	1-215-882-00	METAL OXIDE	22	5% 2W	F
R283	1-249-417-11	CARBON	1K	5% 1/4W	
R284	1-249-417-11	CARBON	1K	5% 1/4W	
R289	1-249-428-11	CARBON	8.2K	5% 1/4W	
R290	1-249-428-11	CARBON	8.2K	5% 1/4W	
R291	1-249-437-11	CARBON	47K	5% 1/4W	
R292	1-249-401-11	CARBON	47	5% 1/4W	

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

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

• The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R293	1-249-417-11	CARBON	1K	5%	1/4W	
R294	1-249-440-11	CARBON	82K	5%	1/4W	
R295	1-215-753-00	METAL	10K	1%	1/4W	
R296	1-215-445-00	METAL	10K	1%	1/6W	
R297	1-249-429-11	CARBON	10K	5%	1/4W	
R298	1-249-433-11	CARBON	22K	5%	1/4W	
R299	1-249-429-11	CARBON	10K	5%	1/4W	
R300	1-249-460-11	CARBON	15K	5%	1/4W	
R301	1-215-473-00	METAL	150K	1%	1/6W	
R302	1-215-464-00	METAL	62K	1%	1/6W	
R303	1-202-727-00	SOLID	4.7M	10%	1/2W	
R304	1-249-437-11	CARBON	47K	5%	1/4W	
R305	1-249-437-11	CARBON	47K	5%	1/4W	
R306	1-247-725-11	CARBON	10K	5%	1/4W	
R307	1-249-429-11	CARBON	10K	5%	1/4W	
R308	1-249-429-11	CARBON	10K	5%	1/4W	
R309	1-249-440-11	CARBON	82K	5%	1/4W	
R310	1-247-721-11	CARBON	4.7K	5%	1/4W	
R311	1-249-425-11	CARBON	4.7K	5%	1/4W	
R312	1-249-433-11	CARBON	22K	5%	1/4W	
R313	1-247-870-11	CARBON	43K	5%	1/4W	
R314	1-249-433-11	CARBON	22K	5%	1/4W	
R315	1-215-451-00	METAL	18K	1%	1/6W	
R316	1-215-459-00	METAL	39K	1%	1/6W	
R317	1-249-413-11	CARBON	470	5%	1/4W	
R318	1-249-433-11	CARBON	22K	5%	1/4W	
R319	1-249-435-11	CARBON	33K	5%	1/4W	
R320	1-249-429-11	CARBON	10K	5%	1/4W	
R321	1-249-429-11	CARBON	10K	5%	1/4W	
R322	1-247-889-00	CARBON	270K	5%	1/4W	
R323	1-249-423-11	CARBON	3.3K	5%	1/4W	
R324	1-247-874-11	CARBON	62K	5%	1/4W	
R325	1-249-397-11	CARBON	22	5%	1/4W	F
R326	1-249-425-11	CARBON	4.7K	5%	1/4W	
R327	1-247-881-00	CARBON	120K	5%	1/4W	
R328	1-249-436-11	CARBON	39K	5%	1/4W	
R329	1-249-422-11	CARBON	2.7K	5%	1/4W	
R330	1-247-891-00	CARBON	330K	5%	1/4W	
R331	1-247-721-11	CARBON	4.7K	5%	1/4W	
R332	1-249-428-11	CARBON	8.2K	5%	1/4W	
R333	1-249-430-11	CARBON	12K	5%	1/4W	
R334	1-249-433-11	CARBON	22K	5%	1/4W	
R335	1-249-429-11	CARBON	10K	5%	1/4W	
R336	1-249-429-11	CARBON	10K	5%	1/4W	
R337	1-215-445-00	METAL	10K	1%	1/6W	
R338	1-214-747-00	METAL	5.6K	1%	1/4W	
⊠R339⚠		METAL			1/6W	
R340	1-215-488-00	METAL	620K	1%	1/6W	
R341	1-215-457-00	METAL	33K	1%	1/6W	
R342	1-247-723-11	CARBON	6.8K	5%	1/4W	
R343	1-249-435-11	CARBON	33K	5%	1/4W	
R344	1-247-713-11	CARBON	1K	5%	1/4W	
R345	1-249-429-11	CARBON	10K	5%	1/4W	
R346	1-249-433-11	CARBON	22K	5%	1/4W	
R347	1-249-433-11	CARBON	22K	5%	1/4W	
R348	1-249-433-11	CARBON	22K	5%	1/4W	
R349	1-249-417-11	CARBON	1K	5%	1/4W	
R350	1-249-429-11	CARBON	10K	5%	1/4W	
R351	1-249-405-11	CARBON	100	5%	1/4W	
R352	1-249-429-11	CARBON	10K	5%	1/4W	
R353	1-249-423-11	CARBON	3.3K	5%	1/4W	
R354	1-249-429-11	CARBON	10K	5%	1/4W	
R355	1-249-426-11	CARBON	5.6K	5%	1/4W	
R356	1-249-429-11	CARBON	10K	5%	1/4W	
R357	1-247-723-11	CARBON	6.8K	5%	1/4W	
R358	1-249-428-11	CARBON	8.2K	5%	1/4W	
R359	1-249-435-11	CARBON	33K	5%	1/4W	
R360	1-249-421-11	CARBON	2.2K	5%	1/4W	
R361	1-249-421-11	CARBON	2.2K	5%	1/4W	
R362	1-249-433-11	CARBON	22K	5%	1/4W	
R363	1-249-437-11	CARBON	47K	5%	1/4W	
R364	1-249-429-11	CARBON	10K	5%	1/4W	
R365	1-249-426-11	CARBON	5.6K	5%	1/4W	
R366	1-249-431-11	CARBON	15K	5%	1/4W	
R367	1-247-887-00	CARBON	220K	5%	1/4W	
R368	1-249-433-11	CARBON	22K	5%	1/4W	
R369	1-249-425-11	CARBON	4.7K	5%	1/4W	
R370	1-249-435-11	CARBON	33K	5%	1/4W	
R371	1-249-433-11	CARBON	22K	5%	1/4W	
R372	1-249-429-11	CARBON	10K	5%	1/4W	
R373	1-247-885-00	CARBON	180K	5%	1/4W	
R374	1-249-433-11	CARBON	22K	5%	1/4W	
R375	1-249-433-11	CARBON	22K	5%	1/4W	
R376	1-249-437-11	CARBON	47K	5%	1/4W	
R377	1-249-437-11	CARBON	47K	5%	1/4W	
R378	1-249-426-11	CARBON	5.6K	5%	1/4W	
R379	1-249-421-11	CARBON	2.2K	5%	1/4W	
R380	1-249-426-11	CARBON	5.6K	5%	1/4W	
R381	1-249-423-11	CARBON	3.3K	5%	1/4W	
R382	1-247-721-11	CARBON	4.7K	5%	1/4W	
R383	1-249-437-11	CARBON	47K	5%	1/4W	
R384	1-249-437-11	CARBON	47K	5%	1/4W	
R385	1-249-429-11	CARBON	10K	5%	1/4W	
R386	1-249-428-11	CARBON	8.2K	5%	1/4W	
R387	1-249-425-11	CARBON	4.7K	5%	1/4W	
R388	1-249-412-11	CARBON	390	5%	1/4W	
R389	1-249-437-11	CARBON	47K	5%	1/4W	
R390	1-249-437-11	CARBON	47K	5%	1/4W	
R391	1-249-437-11	CARBON	47K	5%	1/4W	
R392	1-249-437-11	CARBON	47K	5%	1/4W	
R393	1-247-887-00	CARBON	220K	5%	1/4W	
R394	1-249-435-11	CARBON	33K	5%	1/4W	
R395	1-249-429-11	CARBON	10K	5%	1/4W	
R396	1-249-433-11	CARBON	22K	5%	1/4W	
R397	1-249-462-11	CARBON	22K	5%	1/4W	
R399	1-247-713-11	CARBON	1K	5%	1/4W	
R401	1-215-437-00	METAL	4.7K	1%	1/6W	
R402	1-215-434-00	METAL	3.6K	1%	1/6W	
R403	1-215-433-00	METAL	3.3K	1%	1/6W	
R404	1-215-435-00	METAL	3.9K	1%	1/6W	
R405	1-215-435-00	METAL	3.9K	1%	1/6W	
R406	1-249-435-11	CARBON	33K	5%	1/4W	
R407	1-215-429-00	METAL	2.2K	1%	1/6W	
R408	1-215-429-00	METAL	2.2K	1%	1/6W	
R409	1-249-417-11	CARBON	1K	5%	1/4W	
R410	1-249-417-11	CARBON	1K	5%	1/4W	
R411	1-249-429-11	CARBON	10K	5%	1/4W	
R412	1-249-429-11	CARBON	10K	5%	1/4W	
R413	1-247-885-00	CARBON	180K	5%	1/4W	
R414	1-215-429-00	METAL	2.2K	1%	1/6W	
R415	1-215-437-00	METAL	4.7K	1%	1/6W	
⊠R416⚠		METAL			1/6W	
R417	1-214-725-00	METAL	680	1%	1/4W	
R418	1-214-767-00	METAL	39K	1%	1/4W	
R419	1-214-767-00	METAL	39K	1%	1/4W	
R420	1-249-417-11	CARBON	1K	5%	1/4W	
R421	1-249-429-11	CARBON	10K	5%	1/4W	

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- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- ✱ : Selected to yield optimum performance.

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

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

REF.NO.	PART NO.	DESCRIPTION				REMARK
R422	1-249-423-11	CARBON	3.3K	5%	1/4W	
R423	1-249-421-11	CARBON	2.2K	5%	1/4W	
R424	1-247-717-11	CARBON	2.2K	5%	1/4W	
R425	1-249-421-11	CARBON	2.2K	5%	1/4W	
R426	1-216-447-00	METAL OXIDE	27	5%	2W	F
R427	1-249-405-11	CARBON	100	5%	1/4W	
R428	1-249-429-11	CARBON	10K	5%	1/4W	
R429	1-249-411-11	CARBON	330	5%	1/4W	
R430	1-249-423-11	CARBON	3.3K	5%	1/4W	
R431	1-249-429-11	CARBON	10K	5%	1/4W	
R433	1-249-423-11	CARBON	3.3K	5%	1/4W	
R434	1-249-429-11	CARBON	10K	5%	1/4W	
R435	1-249-411-11	CARBON	330	5%	1/4W	
R437	1-249-417-11	CARBON	1K	5%	1/4W	
R443	1-249-429-11	CARBON	10K	5%	1/4W	
R444	1-215-439-00	METAL	5.6K	1%	1/6W	
R445	1-215-409-00	METAL	330	1%	1/6W	
R446	1-215-428-00	METAL	2K	1%	1/6W	
R447	1-215-433-00	METAL	3.3K	1%	1/6W	
R448	1-249-423-11	CARBON	3.3K	5%	1/4W	
R449	1-214-737-00	METAL	2.2K	1%	1/4W	
R450	1-249-429-11	CARBON	10K	5%	1/4W	
R451	1-249-433-11	CARBON	22K	5%	1/4W	
R452	1-249-433-11	CARBON	22K	5%	1/4W	
R453	1-249-417-11	CARBON	1K	5%	1/4W	
R454	1-247-726-11	CARBON	33K	5%	1/4W	
R455	1-249-435-11	CARBON	33K	5%	1/4W	
R456	1-249-433-11	CARBON	22K	5%	1/4W	
R457	1-249-433-11	CARBON	22K	5%	1/4W	
R458	1-249-435-11	CARBON	33K	5%	1/4W	
R459	1-249-440-11	CARBON	82K	5%	1/4W	
R460	1-249-436-11	CARBON	39K	5%	1/4W	
R461	1-247-725-11	CARBON	10K	5%	1/4W	
R462	1-215-429-00	METAL	2.2K	1%	1/6W	
R463	1-215-483-00	METAL	390K	1%	1/6W	
R464	1-215-445-00	METAL	10K	1%	1/6W	
R465	1-215-451-00	METAL	18K	1%	1/6W	
R466	1-249-417-11	CARBON	1K	5%	1/4W	
R467	1-249-417-11	CARBON	1K	5%	1/4W	
R468	1-249-417-11	CARBON	1K	5%	1/4W	
R469	1-249-417-11	CARBON	1K	5%	1/4W	
R470	1-249-465-11	CARBON	47K	5%	1/4W	
R471	1-249-437-11	CARBON	47K	5%	1/4W	
R472	1-249-437-11	CARBON	47K	5%	1/4W	
R473	1-249-437-11	CARBON	47K	5%	1/4W	
R474	1-249-439-11	CARBON	68K	5%	1/4W	
R475	1-249-439-11	CARBON	68K	5%	1/4W	
R476	1-249-439-11	CARBON	68K	5%	1/4W	
R477	1-249-467-11	CARBON	68K	5%	1/4W	
R479	1-249-421-11	CARBON	2.2K	5%	1/4W	
R480	1-247-717-11	CARBON	2.2K	5%	1/4W	
R481	1-247-725-11	CARBON	10K	5%	1/4W	
✱R482	1-215-427-00	METAL	1.8K	1%	1/6W	
✱R482	1-215-429-00	METAL	2.2K	1%	1/6W	
✱R482	1-215-431-00	METAL	2.7K	1%	1/6W	
✱R482	1-215-433-00	METAL	3.3K	1%	1/6W	
✱R482	1-215-437-00	METAL	4.7K	1%	1/6W	
✱R482	1-215-441-00	METAL	6.8K	1%	1/6W	
✱R482	1-215-445-00	METAL	10K	1%	1/6W	
✱R482	1-215-453-00	METAL	22K	1%	1/6W	
✱R482	1-215-461-00	METAL	47K	1%	1/6W	
R483	1-215-417-00	METAL	680	1%	1/6W	
R484	1-247-897-11	CARBON	560K	5%	1/4W	
R485	1-249-430-11	CARBON	12K	5%	1/4W	
R486	1-249-417-11	CARBON	1K	5%	1/4W	
R487	1-249-413-11	CARBON	470	5%	1/4W	
R488	1-215-470-00	METAL	110K	1%	1/6W	
⊠R489⚠		METAL			1/6W	
R490	1-249-435-11	CARBON	33K	5%	1/4W	
R491	1-249-424-11	CARBON	3.9K	5%	1/4W	
R492	1-247-717-11	CARBON	2.2K	5%	1/4W	
R493	1-247-721-11	CARBON	4.7K	5%	1/4W	
R494	1-249-435-11	CARBON	33K	5%	1/4W	
R495	1-215-445-00	METAL	10K	1%	1/6W	
R496	1-249-405-11	CARBON	100	5%	1/4W	
R497	1-249-422-11	CARBON	2.7K	5%	1/4W	
R498	1-247-715-11	CARBON	1.5K	5%	1/4W	
R499	1-247-725-11	CARBON	10K	5%	1/4W	
R2003	1-249-437-11	CARBON	47K	5%	1/4W	
R2004	1-249-437-11	CARBON	47K	5%	1/4W	
R2005	1-249-429-11	CARBON	10K	5%	1/4W	
R2006	1-216-445-11	METAL OXIDE	12	5%	2W	F
R2007	1-249-409-11	CARBON	220	5%	1/4W	
R2010	1-247-711-11	CARBON	680	5%	1/4W	
R2011	1-249-405-11	CARBON	100	5%	1/4W	
R2012	1-249-417-11	CARBON	1K	5%	1/4W	
R2013	1-249-408-11	CARBON	180	5%	1/4W	
R2014	1-249-417-11	CARBON	1K	5%	1/4W	
R2015	1-214-092-00	METAL	22	1%	1/4W	
R2016	1-214-092-00	METAL	22	1%	1/4W	
R2017	1-249-415-11	CARBON	680	5%	1/4W	
R2018	1-249-421-11	CARBON	2.2K	5%	1/4W	
R2020	1-247-711-11	CARBON	680	5%	1/4W	
R2021	1-249-405-11	CARBON	100	5%	1/4W	
R2022	1-249-417-11	CARBON	1K	5%	1/4W	
R2023	1-249-408-11	CARBON	180	5%	1/4W	
R2024	1-249-417-11	CARBON	1K	5%	1/4W	
R2025	1-214-092-00	METAL	22	1%	1/4W	
R2026	1-214-092-00	METAL	22	1%	1/4W	
R2027	1-249-415-11	CARBON	680	5%	1/4W	
R2028	1-249-421-11	CARBON	2.2K	5%	1/4W	
R2030	1-247-711-11	CARBON	680	5%	1/4W	
R2031	1-249-405-11	CARBON	100	5%	1/4W	
R2032	1-249-417-11	CARBON	1K	5%	1/4W	
R2033	1-249-408-11	CARBON	180	5%	1/4W	
R2034	1-249-417-11	CARBON	1K	5%	1/4W	
R2035	1-214-092-00	METAL	22	1%	1/4W	
R2036	1-214-092-00	METAL	22	1%	1/4W	
R2037	1-249-415-11	CARBON	680	5%	1/4W	
R2038	1-249-421-11	CARBON	2.2K	5%	1/4W	
R3001	1-249-411-11	CARBON	330	5%	1/4W	
R3002	1-249-425-11	CARBON	4.7K	5%	1/4W	
R3003	1-249-428-11	CARBON	8.2K	5%	1/4W	
R3004	1-249-405-11	CARBON	100	5%	1/4W	
R3005	1-249-421-11	CARBON	2.2K	5%	1/4W	
R3006	1-247-893-11	CARBON	390K	5%	1/4W	
R4001	1-249-429-11	CARBON	10K	5%	1/4W	
R4002	1-249-426-11	CARBON	5.6K	5%	1/4W	
R4003	1-249-421-11	CARBON	2.2K	5%	1/4W	
R4004	1-249-429-11	CARBON	10K	5%	1/4W	
R4005	1-249-426-11	CARBON	5.6K	5%	1/4W	
R4006	1-249-421-11	CARBON	2.2K	5%	1/4W	
R4007	1-249-429-11	CARBON	10K	5%	1/4W	
R4008	1-249-426-11	CARBON	5.6K	5%	1/4W	
R4009	1-249-421-11	CARBON	2.2K	5%	1/4W	
R4010	1-249-437-11	CARBON	47K	5%	1/4W	

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Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R4011	1-249-429-11	CARBON	10K	5%	1/4W	
R4012	1-249-429-11	CARBON	10K	5%	1/4W	
R4013	1-249-437-11	CARBON	47K	5%	1/4W	
R4014	1-249-437-11	CARBON	47K	5%	1/4W	
R4015	1-249-429-11	CARBON	10K	5%	1/4W	
R4016	1-249-429-11	CARBON	10K	5%	1/4W	
R4017	1-249-405-11	CARBON	100	5%	1/4W	
R4018	1-249-425-11	CARBON	4.7K	5%	1/4W	
R4019	1-215-411-00	METAL	390	1%	1/6W	
R4023	1-249-437-11	CARBON	47K	5%	1/4W	
R5010	1-249-426-11	CARBON	5.6K	5%	1/4W	
		<VARIABLE RESISTOR>				
RV211	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
RV221	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
RV231	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
RV251	1-224-254-XX	RES, ADJ, METAL GLAZE 47K				
RV252	1-224-256-XX	RES, ADJ, METAL GLAZE 220K				
RV291	1-224-254-XX	RES, ADJ, METAL GLAZE 47K				
RV292	1-224-253-XX	RES, ADJ, METAL GLAZE 22K				
RV301	1-224-249-XX	RES, ADJ, METAL GLAZE 1K				
RV302	1-224-256-XX	RES, ADJ, METAL GLAZE 220K				
RV303	1-224-253-XX	RES, ADJ, METAL GLAZE 22K				
RV306	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K				
RV307	1-224-254-XX	RES, ADJ, METAL GLAZE 47K				
RV308	1-228-997-00	RES, ADJ, CARBON 100K				
RV401	1-224-134-XX	RES, ADJ, METAL GLAZE 470K				
RV402	1-224-251-XX	RES, ADJ, METAL GLAZE 4.7K				
RV403	1-224-248-XX	RES, ADJ, METAL GLAZE 470				
		**********				
	*1-619-033-11	F BOARD				
		*******				
	1-533-190-11	CLIP, FUSE				
		<CAPACITOR>				
C601⚠	1-136-360-51	FILM	0.22MF	20%	250V	
C602⚠	1-136-360-51	FILM	0.22MF	20%	250V	
C603⚠	1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C604⚠	1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C605	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
C606	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
C607	1-125-457-11	ELECT(BLOCK)	560MF	20%	200V	
C608	1-125-457-11	ELECT(BLOCK)	560MF	20%	200V	
C609⚠	1-136-360-51	FILM	0.22MF	20%	250V	
C610⚠	1-102-050-51	CERAMIC	0.01MF		500V	
		<DIODE>				
D601	8-719-911-55	DIODE U05G				
D602	8-719-911-55	DIODE U05G				
		<CONNECTOR>				
F1	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
F2	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
F3	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
F4	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
		<FUSE>				
F601⚠	1-532-509-11	FUSE, GLASS TUBE 6.3A/125V				
		<RESISTOR>				
R601⚠	1-202-723-51	SOLID	2.2M	10%	1/2W	
R602⚠	1-202-723-51	SOLID	2.2M	10%	1/2W	
R603⚠	1-205-741-11	WIREWOUND	1.8	5%	10W	F
R604	1-214-917-00	CARBON	150K	5%	1/2W	
R605	1-214-917-00	CARBON	150K	5%	1/2W	
		<TRANSFORMER>				
T601⚠	1-421-357-31	TRANSFORMER, LINE FILTER				
T602⚠	1-421-426-11	TRANSFORMER, FERRITE				
		<THERMISTOR>				
THP601⚠	1-806-214-12	THERMISTER, POSITIVE				
		**********				
	*A-1316-079-A	G BOARD, COMPLETE				
		**********				
	*4-314-225-00	HEAT SINK, (A)				
	4-363-414-00	SPACER, MICA				
	*4-368-683-01	SPRING				
		<CAPACITOR>				
C650⚠	1-102-050-51	CERAMIC	0.01MF		500V	
C651	1-136-060-00	FILM	0.047MF	5%	400V	
C652	1-136-060-00	FILM	0.047MF	5%	400V	
C653	1-102-327-00	CERAMIC	330PF	15%	1.5KV	
C654	1-102-327-00	CERAMIC	330PF	15%	1.5KV	
C655	1-130-661-00	FILM	0.022MF	3%	600V	
C656	1-136-239-11	FILM	0.01MF	3%	1KV	
C657	1-136-060-00	FILM	0.047MF	5%	400V	
C659	1-124-494-00	ELECT	33MF		160V	
C661	1-124-494-00	ELECT	33MF		160V	
C662	1-124-494-00	ELECT	33MF		160V	
C663	1-124-126-00	ELECT	47MF	20%	16V	
C664	1-126-104-11	ELECT	470MF	20%	25V	
C665	1-123-875-11	ELECT	10MF	20%	50V	
C666	1-124-126-00	ELECT	47MF	20%	16V	
C667	1-126-104-11	ELECT	470MF	20%	35V	
C668	1-124-477-11	ELECT	47MF	20%	16V	
C669	1-124-477-11	ELECT	47MF	20%	16V	
C670	1-162-116-00	CERAMIC	680PF	10%	2KV	
C671	1-162-558-11	CERAMIC	100PF	10%	2KV	
C672	1-162-558-11	CERAMIC	100PF	10%	2KV	
		<DIODE>				
D651	8-719-301-18	DIODE RM2CS				
D652	8-719-301-18	DIODE RM2CS				
D653	8-719-971-20	DIODE ERC38-06				
D654	8-719-971-20	DIODE ERC38-06				
D655	8-719-300-33	DIODE RU-3AM				
D656	8-719-500-25	DIODE D5KC20RH				
D657	8-719-300-33	DIODE RU-3AM				
D658	8-719-300-33	DIODE RU-3AM				
D659	8-719-981-00	DIODE ERC81-004				
D660	8-719-981-00	DIODE ERC81-004				
D661	8-719-981-00	DIODE ERC81-004				

• ※ : Selected to yield optimum performance.

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

G **CB** **D**

REF.NO.	PART NO.	DESCRIPTION				REMARK
D662	8-719-981-00	DIODE ERC81-004				
D663	8-719-981-00	DIODE ERC81-004				
D664	8-719-200-02	DIODE 10E2				
D665	8-719-300-33	DIODE RU-3AM				
D666	8-719-300-33	DIODE RU-3AM				
D667	8-719-300-33	DIODE RU-3AM				
D668	8-719-300-33	DIODE RU-3AM				
D669	8-719-913-64	THYRISTOR CSM2B4A10				
D670	8-719-109-75	DIODE RD4.3ES-B2				
D671	8-719-110-36	DIODE RD13ES-B2				
D672	8-719-110-36	DIODE RD13ES-B2				
D673	8-719-300-33	DIODE RU-3AM				
D674	8-719-300-33	DIODE RU-3AM				
D675	8-719-300-33	DIODE RU-3AM				
D676	8-719-300-33	DIODE RU-3AM				
D677	8-719-300-33	DIODE RU-3AM				
D678	8-719-971-20	DIODE ERC38-06				
D679	8-719-971-20	DIODE ERC38-06				
		<CONNECTOR>				
G1	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
G2	*1-564-505-11	PLUG, CONNECTOR 2P				
G3	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P				
G4	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P				
G5	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
		<MODULE>				
IC651	1-235-449-11	POWER MODULE (DM-19)				
		<TRANSISTOR>				
Q651	8-729-904-23	TRANSISTOR 2SC3318-S				
Q652	8-729-904-23	TRANSISTOR 2SC3318-S				
Q653	8-729-177-43	TRANSISTOR 2SD774				
Q654	8-729-177-43	TRANSISTOR 2SD774				
Q655	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q656	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q657	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<RESISTOR>				
R651	1-202-842-11	SOLID	220K	10%	1/2W	
R652	1-202-842-11	SOLID	220K	10%	1/2W	
R653	1-202-842-11	SOLID	220K	10%	1/2W	
R654	1-207-451-00	WIREWOUND	0.1	10%	1/2W	
R656	1-216-374-00	METAL OXIDE	2.7	5%	2W	F
R657	1-216-374-00	METAL OXIDE	2.7	5%	2W	F
R658	1-247-717-11	CARBON	2.2K	5%	1/4W	
R659	1-247-700-11	CARBON	100	5%	1/4W	F
※R660	1-215-469-00	METAL	100K	1%	1/6W	
※R660	1-215-470-00	METAL	110K	1%	1/6W	
R661	1-215-449-00	METAL	15K	1%	1/6W	
R662	1-247-719-11	CARBON	3.3K	5%	1/4W	
R663	1-247-717-11	CARBON	2.2K	5%	1/4W	
R664	1-215-469-00	METAL	100K	1%	1/6W	
R665	1-215-451-00	METAL	18K	1%	1/6W	
R666	1-215-467-00	METAL	82K	1%	1/6W	
R667	1-215-451-00	METAL	18K	1%	1/6W	
R668	1-247-719-11	CARBON	3.3K	5%	1/4W	
R669	1-249-441-11	CARBON	100K	5%	1/4W	
R671	1-249-381-11	CARBON	1	5%	1/4W	F
R672	1-202-842-11	SOLID	220K	10%	1/2W	
R673	1-247-717-11	CARBON	2.2K	5%	1/4W	
R674	1-249-429-11	CARBON	10K	5%	1/4W	
		<TRANSFORMER>				
T651⚠	1-421-704-11	CDT				
T652⚠	1-421-886-11	PIT				
T653⚠	1-421-888-11	PRT				
T654⚠	1-421-889-11	PRT				
T655⚠	1-421-889-11	PRT				
T656⚠	1-421-885-11	COT				
T657⚠	1-421-887-11	PHT				
		**********				
	*1-619-031-11	CB BOARD ********				
	1-526-762-00	SOCKET, PICTURE TUBE				
		<RESISTOR>				
R701	1-202-719-00	SOLID	1M	10%	1/2W	
R706	1-202-824-00	SOLID	3.3K	10%	1/2W	
		<VARIABLE RESISTOR>				
RV703⚠	1-230-798-21	RES, ADJ, METAL GLAZE 90M				
		**********				
	*A-1341-067-A	D BOARD, COMPLETE **********				
	*4-314-225-00	HEAT SINK, (A)				
	*4-323-833-00	HEAT SINK, PIN OUT				
	4-363-414-00	SPACER, MICA				
	*4-381-827-01	HOLDER, TR				
		<CAPACITOR>				
C501	1-126-105-11	ELECT	1000MF	20%	35V	
C502	1-123-605-00	ELECT	100MF	20%	100V	
C504	1-124-556-11	ELECT	2200MF	20%	16V	
C506	1-124-477-11	ELECT	47MF	20%	16V	
C507	1-108-700-11	MYLAR	0.047MF	10%	200V	
C509	1-108-622-11	MYLAR	0.0047MF	10%	100V	
C511	1-108-704-11	MYLAR	0.1MF	10%	200V	
C513	1-124-917-11	ELECT	33MF	20%	50V	
C515	1-124-902-00	ELECT	0.47MF	20%	50V	
C517	1-102-978-00	CERAMIC	220PF	5%	50V	
C518	1-129-702-00	FILM	0.001MF	10%	630V	
C519	1-129-702-00	FILM	0.001MF	10%	630V	
C521	1-161-830-00	CERAMIC	0.0047MF		500V	
C522	1-136-541-11	FILM	1.5MF	5%	200V	
C523	1-136-569-11	FILM	1.2MF	5%	200V	
C524⚠	1-129-712-51	FILM	0.0068MF	10%	630V	
C525	1-136-598-11	FILM	3MF	5%	200V	
C526	1-136-569-11	FILM	1.2MF	5%	200V	
C527	1-124-634-11	ELECT	1MF	20%	250V	
C528	1-136-115-00	FILM	0.56MF	5%	200V	
C529	1-136-598-11	FILM	3MF	5%	200V	
C530⚠	1-129-723-51	FILM	0.056MF	10%	630V	
C531⚠	1-136-089-11	FILM	0.0056MF	3%	2KV	
C532	1-108-626-11	MYLAR	0.01MF	10%	100V	
C533	1-102-129-00	CERAMIC	0.01MF	10%	50V	

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Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
C534	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C535	1-123-875-11	ELECT	10MF	20%	50V	
C536	1-108-624-11	MYLAR	0.0068MF	10%	100V	
C537	1-108-626-11	MYLAR	0.01MF	10%	100V	
C538	1-124-902-00	ELECT	0.47MF	20%	50V	
C539	1-108-614-11	MYLAR	0.001MF	10%	100V	
C540	1-108-626-11	MYLAR	0.01MF	10%	100V	
C541	1-108-626-11	MYLAR	0.01MF	10%	100V	
C542	1-123-875-11	ELECT	10MF	20%	50V	
C543	1-124-045-00	ELECT	4.7MF	20%	50V	
C545	1-108-691-11	MYLAR	0.0082MF	10%	200V	
C546	1-108-688-11	MYLAR	0.0047MF	10%	200V	
C547⚠	1-102-327-11	CERAMIC	330PF	5%	1.5KV	
C548	1-136-173-00	FILM	0.47MF	5%	50V	
C549	1-124-347-00	ELECT	100MF	20%	160V	
C550	1-124-484-11	ELECT	220MF	20%	35V	
C551	1-162-114-00	CERAMIC	0.0047MF		2KV	
C552	1-108-700-11	MYLAR	0.047MF	10%	200V	
C553	1-123-949-00	ELECT	33MF	20%	250V	
C554	1-124-477-11	ELECT	47MF	20%	25V	
C555	1-124-494-00	ELECT	33MF		160V	
C556⚠	1-129-722-51	FILM	0.047MF	10%	630V	
C557	1-126-233-11	ELECT	22MF	20%	25V	
C558	1-126-101-11	ELECT	100MF	20%	16V	
C559	1-162-116-00	CERAMIC	680PF	10%	2KV	
C560	1-108-965-11	MYLAR	0.33MF	10%	200V	
C561	1-108-626-11	MYLAR	0.01MF	10%	100V	
C562	1-124-927-11	ELECT	4.7MF	20%	50V	
C563	1-124-120-11	ELECT	220MF	20%	25V	
C564	1-124-478-11	ELECT	100MF	20%	25V	
C565	1-123-875-11	ELECT	10MF	20%	50V	
C581	1-124-477-11	ELECT	47MF	20%	25V	
C585	1-124-963-11	ELECT	33MF	20%	16V	
C589	1-123-875-11	ELECT	10MF	20%	50V	
C593	1-162-117-00	CERAMIC	100PF	10%	500V	
C594	1-124-667-11	ELECT	10MF	20%	100V	
C595	1-124-267-00	ELECT	2.2MF	20%	160V	
C596	1-102-038-00	CERAMIC	0.001MF		500V	
C597	1-102-038-00	CERAMIC	0.001MF		500V	

<CONNECTOR>

D1	*1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P	
D2	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P	
D3	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P	
D4	*1-564-505-11	PLUG, CONNECTOR 2P	
D5	*1-564-508-11	PLUG, CONNECTOR 5P	
D6	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P	
D7	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P	
D8	*1-564-505-11	PLUG, CONNECTOR 2P	
D11	*1-564-505-11	PLUG, CONNECTOR 2P	
D12	*1-564-513-11	PLUG, CONNECTOR 10P	
D13	*1-564-508-11	PLUG, CONNECTOR 5P	

<DIODE>

D504⚠	8-719-200-02	DIODE 10E2	
D505⚠	8-719-200-02	DIODE 10E2	
D506	8-719-911-19	DIODE 1SS119	
D507	8-719-911-19	DIODE 1SS119	
D508	8-719-911-19	DIODE 1SS119	
D509	8-719-911-19	DIODE 1SS119	
D510	8-719-971-20	DIODE ERC38-06	
D511	8-719-971-20	DIODE ERC38-06	
D512	8-719-973-95	DIODE ERD09-15	
D513	8-719-302-59	DIODE FMU-26S	
D514	8-719-971-20	DIODE ERC38-06	
D515	8-719-101-94	DIODE RD18E-L1	
D516⚠	8-719-200-02	DIODE 10E2	
D518	8-719-911-19	DIODE 1SS119	
D522	8-719-109-93	DIODE RD6.2ES-B2	
D523	8-719-300-76	DIODE RH-1A	
D524	8-719-300-76	DIODE RH-1A	
D525	8-719-911-19	DIODE 1SS119	
D526	8-719-300-65	DIODE ES1F	
D528	8-719-110-31	DIODE RD12ES-B2	
D529	8-719-300-65	DIODE ES1F	
D531	8-719-911-19	DIODE 1SS119	
D532	8-719-911-19	DIODE 1SS119	
D533	8-719-911-19	DIODE 1SS119	
D534	8-719-911-19	DIODE 1SS119	
D535	8-719-911-19	DIODE 1SS119	
D536	8-719-973-95	DIODE ERD09-15	
D537	8-719-971-20	DIODE ERC38-06	

<IC>

IC501	8-759-014-95	IC MC1495L	
IC504	8-759-145-58	IC UPC4558C	
IC505	8-759-982-26	IC RC78L12A	

<COIL>

L501	1-408-239-00	INDUCTOR	4.7MMH
L502⚠	1-459-670-12	H.L.C	
L503⚠	1-459-671-11	COIL (WITH CORE)	
L504	1-459-123-00	COIL,DUST CORE(PAC)	
L505	1-459-104-00	COIL,DUST CORE	
L506	1-407-365-00	COIL, CHOKE (HIGH FREQUENCY)	
L507	1-421-421-00	COIL, CHOKE 100UH	
L508	1-459-215-00	CORE COIL	
L509	1-459-215-00	CORE COIL	
L510	1-459-454-00	COIL, FERRITE CHOKE	
L511	1-421-329-00	COIL, CHOKE	
L512	1-408-092-00	INDUCTOR	330UH

<NEON LAMP>

NL501	1-519-108-XX	LAMP, NEON	

<TRANSISTOR>

Q501	8-729-900-36	TRANSISTOR DTC124ES	
Q502	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q503	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q506	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q507	8-729-177-44	TRANSISTOR 2SD774-5	
Q508	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q509	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q510	8-729-313-42	TRANSISTOR 2SD1134	
Q511	8-729-177-44	TRANSISTOR 2SD774-5	
Q512	8-729-140-97	TRANSISTOR 2SB734-34	
Q513	8-729-177-44	TRANSISTOR 2SD774-5	
Q514	8-729-805-07	TRANSISTOR 2SD1887-CA	
Q516	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q517	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q518	8-729-119-78	TRANSISTOR 2SC2785-HFE	

D

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

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

REF.NO.	PART NO.	DESCRIPTION				REMARK
Q519	8-729-213-12	TRANSISTOR 2SC2230A				
Q520	8-729-401-21	TRANSISTOR 2SD1264-P				
Q521	8-729-401-18	TRANSISTOR 2SB940-P				
Q522	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q531	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q532	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q533	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q534	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<RESISTOR>				
R501	1-249-417-11	CARBON	1K	5%	1/4W	
R503	1-249-417-11	CARBON	1K	5%	1/4W	
R504	1-249-405-11	CARBON	100	5%	1/4W	
R505	1-249-425-11	CARBON	4.7K	5%	1/4W	
R507	1-247-725-11	CARBON	10K	5%	1/4W	
R508	1-247-719-11	CARBON	3.3K	5%	1/4W	
R509	1-249-427-11	CARBON	6.8K	5%	1/4W	
R510	1-216-349-00	METAL OXIDE	1	5%	1W	F
R511	1-216-428-00	METAL OXIDE	180	5%	1W	F
R512	1-216-371-00	METAL OXIDE	1.5	5%	2W	F
R513	1-216-369-00	METAL OXIDE	1	5%	2W	F
R514	1-249-429-11	CARBON	10K	5%	1/4W	
R516	1-249-417-11	CARBON	1K	5%	1/4W	
R517	1-249-440-11	CARBON	82K	5%	1/4W	
R518	1-249-409-11	CARBON	220	5%	1/4W	
R519	1-247-891-00	CARBON	330K	5%	1/4W	
R520	1-249-429-11	CARBON	10K	5%	1/4W	
R521	1-249-429-11	CARBON	10K	5%	1/4W	
R523	1-215-882-00	METAL OXIDE	22	5%	2W	F
R524	1-249-409-11	CARBON	220	5%	1/4W	
R525	1-249-439-11	CARBON	68K	5%	1/4W	
R526	1-249-429-11	CARBON	10K	5%	1/4W	
R527	1-247-720-11	CARBON	3.9K	5%	1/4W	
R528	1-247-721-11	CARBON	4.7K	5%	1/4W	
R529	1-215-890-11	METAL OXIDE	470	5%	2W	F
R530	1-216-454-11	METAL OXIDE	390	5%	2W	F
R531	1-216-430-11	METAL OXIDE	390	5%	1W	F
R532	1-249-429-11	CARBON	10K	5%	1/4W	
R533	1-249-437-11	CARBON	47K	5%	1/4W	
R534	1-249-440-11	CARBON	82K	5%	1/4W	
R535	1-249-429-11	CARBON	10K	5%	1/4W	
R536	1-247-883-00	CARBON	150K	5%	1/4W	
R537	1-249-440-11	CARBON	82K	5%	1/4W	
R538	1-249-429-11	CARBON	10K	5%	1/4W	
R539	1-247-881-00	CARBON	120K	5%	1/4W	
R542	1-249-433-11	CARBON	22K	5%	1/4W	
R543	1-249-427-11	CARBON	6.8K	5%	1/4W	
R544	1-249-431-11	CARBON	15K	5%	1/4W	
R545	1-249-410-11	CARBON	270	5%	1/4W	
R546	1-249-426-11	CARBON	5.6K	5%	1/4W	
R547	1-249-435-11	CARBON	33K	5%	1/4W	
R548	1-247-726-11	CARBON	33K	5%	1/4W	
R549	1-249-469-11	CARBON	100K	5%	1/4W	
R550	1-249-429-11	CARBON	10K	5%	1/4W	
R551	1-249-417-11	CARBON	1K	5%	1/4W	F
R552	1-249-429-11	CARBON	10K	5%	1/4W	
R553	1-249-417-11	CARBON	1K	5%	1/4W	
R554	1-247-714-11	CARBON	1.2K	5%	1/4W	
R555	1-249-467-11	CARBON	68K	5%	1/4W	
R556	1-216-446-00	METAL OXIDE	18	5%	2W	F
R557	1-215-892-11	METAL OXIDE	1K	5%	2W	F
R558	1-249-433-11	CARBON	22K	5%	1/4W	
R559	1-249-417-11	CARBON	1K	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R560	1-215-886-11	METAL OXIDE	100	5%	2W	F
R561⚠	1-215-863-51	METAL OXIDE	100	5%	1W	F
R562	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R563	1-202-818-00	SOLID	1K	10%	1/2W	
R564	1-249-387-11	CARBON	3.3	5%	1/4W	F
R565	1-215-874-11	METAL OXIDE	6.8K	5%	1W	F
R566	1-215-872-11	METAL OXIDE	3.3K	5%	1W	F
R567	1-214-925-00	CARBON	330K	5%	1/2W	
R568	1-215-881-11	METAL OXIDE	15	5%	2W	F
R569⚠	1-216-425-51	METAL OXIDE	56	5%	1W	F
R570	1-249-432-11	CARBON	18K	5%	1/4W	
R571	1-249-417-11	CARBON	1K	5%	1/4W	
R572	1-249-431-11	CARBON	15K	5%	1/4W	
R573	1-213-074-00	FUSIBLE	39	5%	1W	F
R574	1-249-426-11	CARBON	5.6K	5%	1/4W	
R575	1-249-427-11	CARBON	6.8K	5%	1/4W	
R576	1-249-429-11	CARBON	10K	5%	1/4W	
R577	1-249-433-11	CARBON	22K	5%	1/4W	
R578	1-249-429-11	CARBON	10K	5%	1/4W	
R579	1-249-429-11	CARBON	10K	5%	1/4W	
R580	1-249-427-11	CARBON	6.8K	5%	1/4W	
R581	1-249-438-11	CARBON	56K	5%	1/4W	
R582	1-249-429-11	CARBON	10K	5%	1/4W	
R583	1-249-406-11	CARBON	120	5%	1/4W	
R584	1-249-429-11	CARBON	10K	5%	1/4W	
R585	1-249-425-11	CARBON	4.7K	5%	1/4W	
R586	1-249-405-11	CARBON	100	5%	1/4W	
R587	1-249-432-11	CARBON	18K	5%	1/4W	
R588	1-249-406-11	CARBON	120	5%	1/4W	
R589	1-249-429-11	CARBON	10K	5%	1/4W	
R590	1-249-429-11	CARBON	10K	5%	1/4W	
R591	1-249-422-11	CARBON	2.7K	5%	1/4W	
R592	1-249-424-11	CARBON	3.9K	5%	1/4W	
R593	1-249-393-11	CARBON	10	5%	1/4W	F
R594	1-216-483-11	METAL OXIDE	2.7K	5%	3W	F
R595	1-216-458-11	METAL OXIDE	1.8K	5%	2W	F
R596	1-249-401-11	CARBON	47	5%	1/4W	F
R597	1-216-350-11	METAL OXIDE	1.2	5%	1W	F
R598	1-216-350-11	METAL OXIDE	1.2	5%	1W	F
R599	1-202-842-11	SOLID	220K	10%	1/2W	
R5001	1-249-429-11	CARBON	10K	5%	1/4W	
R5002	1-249-441-11	CARBON	100K	5%	1/4W	
R5007	1-247-887-00	CARBON	220K	5%	1/4W	
R5010	1-202-841-00	SOLID	180K	10%	1/2W	
R5011	1-249-437-11	CARBON	47K	5%	1/4W	
R5012	1-249-429-11	CARBON	10K	5%	1/4W	
R5013	1-249-437-11	CARBON	47K	5%	1/4W	
R5015	1-249-429-11	CARBON	10K	5%	1/4W	
R5016	1-249-433-11	CARBON	22K	5%	1/4W	
R5017	1-249-414-11	CARBON	560	5%	1/4W	
R5018	1-249-440-11	CARBON	82K	5%	1/4W	
R5020	1-216-445-11	METAL OXIDE	12	5%	2W	F
R5021	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R5022	1-249-413-11	CARBON	470	5%	1/4W	
R5023	1-216-450-00	METAL OXIDE	82	5%	2W	F
		<VARIABLE RESISTOR>				
RV502	1-228-727-00	RES, ADJ, CERAMIC CARBON 47K				
RV503	1-228-728-00	RES, ADJ, CERAMIC CARBON 100K				
RV504	1-228-725-00	RES, ADJ, CERAMIC CARBON 22K				
RV505	1-228-728-00	RES, ADJ, CERAMIC CARBON 100K				
RV506	1-228-720-00	RES, ADJ, CERAMIC CARBON 1K				

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

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Ne les remplacer que par une piece portant le numero specifie.

D H Bc X Ca

REF.NO.	PART NO.	DESCRIPTION	REMARK
RV570	1-228-725-00	RES, ADJ, CERAMIC CARBON 22K	
RV580	1-228-729-00	RES, ADJ, CERAMIC CARBON 220K	
		<RELAY>	
RY501⚠	1-515-626-11	RELAY	
RY502⚠	1-515-626-11	RELAY	
RY503⚠	1-515-626-11	RELAY	
RY504⚠	1-515-626-11	RELAY	
		<TRANSFORMER>	
T501⚠	1-437-164-11	HDT	
T502⚠	1-439-390-11	TRANSFORMER ASSY, FLYBACK	
**********			
	*1-619-035-11	H BOARD *******	
		<CONNECTOR>	
H1	*1-564-517-11	PLUG, CONNECTOR 2P	
H2	*1-564-519-11	PLUG, CONNECTOR 4P	
H3	*1-564-517-11	PLUG, CONNECTOR 2P	
H4	*1-564-517-11	PLUG, CONNECTOR 2P	
H5	*1-564-519-11	PLUG, CONNECTOR 4P	
		<RESISTOR>	
R802	1-249-407-11	CARBON 150 5% 1/4W	
		<VARIABLE RESISTOR>	
RV801	1-228-911-00	RES, VAR, CARBON 50K	
RV802	1-228-911-00	RES, VAR, CARBON 50K	
RV803	1-228-911-00	RES, VAR, CARBON 50K	
RV804	1-237-359-11	RES, VAR, CARBON 5K	
		<SWITCH>	
S801	1-516-779-XX	SWITCH, SLIDE	
S802	1-553-111-00	SWITCH, SLIDE	
**********			
	*1-619-029-11	BC BOARD ********	
		<CONNECTOR>	
BC1	*1-564-511-11	PLUG, CONNECTOR 8P	
BC2	*1-564-511-11	PLUG, CONNECTOR 8P	
BC3	1-565-269-11	SOCKET, CONNECTOR (D-DUB,L) 9P	
		<COIL>	
L901	1-410-314-11	INDUCTOR 0.47UH	
L902	1-410-314-11	INDUCTOR 0.47UH	
L903	1-410-314-11	INDUCTOR 0.47UH	
L904	1-410-314-11	INDUCTOR 0.47UH	
L905	1-410-314-11	INDUCTOR 0.47UH	
L906	1-410-314-11	INDUCTOR 0.47UH	
L907	1-410-314-11	INDUCTOR 0.47UH	
L908	1-410-314-11	INDUCTOR 0.47UH	
**********			
	*1-619-036-11	X BOARD *******	
		<DIODE>	
D901	8-719-902-19	DIODE GL-4NG2	
**********			
	*1-619-030-11	CA BOARD ********	
		<CAPACITOR>	
C703	1-123-948-00	ELECT 22MF 20% 250V	
C705	1-136-338-11	FILM 0.024MF 3% 1KV	
C711	1-123-875-11	ELECT 10MF 20% 50V	
C712	1-123-605-00	ELECT 100MF 20% 100V	
C713	1-130-983-00	FILM 1.5MF 5% 100V	
C714	1-124-667-11	ELECT 10MF 20% 100V	
C721	1-123-875-11	ELECT 10MF 20% 50V	
C722	1-123-605-00	ELECT 100MF 20% 100V	
C723	1-130-983-00	FILM 1.5MF 5% 100V	
C724	1-124-667-11	ELECT 10MF 20% 100V	
C731	1-123-875-11	ELECT 10MF 20% 50V	
C732	1-123-605-00	ELECT 100MF 20% 100V	
C733	1-130-983-00	FILM 1.5MF 5% 100V	
C734	1-124-667-11	ELECT 10MF 20% 100V	
		<DIODE>	
D711	8-719-901-83	DIODE 1SS83	
D712	8-719-901-83	DIODE 1SS83	
D713	8-719-300-65	DIODE ES1F	
D721	8-719-901-83	DIODE 1SS83	
D722	8-719-901-83	DIODE 1SS83	
D723	8-719-300-65	DIODE ES1F	
D731	8-719-901-83	DIODE 1SS83	
D732	8-719-901-83	DIODE 1SS83	
D733	8-719-300-65	DIODE ES1F	
		<COIL>	
L711	1-408-113-00	INDUCTOR 4.7UH	
L712	1-408-111-00	INDUCTOR 3.3UH	
L721	1-408-113-00	INDUCTOR 4.7UH	
L722	1-408-111-00	INDUCTOR 3.3UH	
L731	1-408-113-00	INDUCTOR 4.7UH	
L732	1-408-111-00	INDUCTOR 3.3UH	
		<NEON LAMP>	
NL711	1-519-405-11	LAMP, NEON	
NL721	1-519-405-11	LAMP, NEON	
NL731	1-519-405-11	LAMP, NEON	
		<TRANSISTOR>	
Q711	8-729-119-80	TRANSISTOR 2SC2688-LK	
	4-373-933-11	SHEET (TRANSISTOR), BN; Q711	
Q721	8-729-119-80	TRANSISTOR 2SC2688-LK	
	4-373-933-11	SHEET (TRANSISTOR), BN; Q721	
Q731	8-729-119-80	TRANSISTOR 2SC2688-LK	
	4-373-933-11	SHEET (TRANSISTOR), BN; Q731	

CA

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

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<RESISTOR>				
R702	1-202-818-00	SOLID	1K	10%	1/2W	
R703	1-202-719-00	SOLID	1M	10%	1/2W	
R708	1-202-720-00	SOLID	1.2M	10%	1/2W	
R711	1-216-995-11	METAL	820	1%	10W	
R712	1-202-557-00	SOLID	220	20%	1/2W	
R713	1-247-759-11	CARBON	3.9K	5%	1/2W	
R714	1-247-760-11	CARBON	4.7K	5%	1/2W	
R715	1-247-903-00	CARBON	1M	5%	1/4W	
R716	1-249-393-11	CARBON	10	5%	1/4W	
R717	1-249-421-11	CARBON	2.2K	5%	1/4W	
R721	1-216-995-11	METAL	820	1%	10W	
R722	1-202-557-00	SOLID	220	20%	1/2W	
R723	1-247-759-11	CARBON	3.9K	5%	1/2W	
R724	1-247-760-11	CARBON	4.7K	5%	1/2W	
R725	1-247-903-00	CARBON	1M	5%	1/4W	
R726	1-249-393-11	CARBON	10	5%	1/4W	
R727	1-249-421-11	CARBON	2.2K	5%	1/4W	
R731	1-216-995-11	METAL	820	1%	10W	
R732	1-202-557-00	SOLID	220	20%	1/2W	
R733	1-247-759-11	CARBON	3.9K	5%	1/2W	
R734	1-247-760-11	CARBON	4.7K	5%	1/2W	
R735	1-247-903-00	CARBON	1M	5%	1/4W	
R736	1-249-393-11	CARBON	10	5%	1/4W	
R737	1-249-421-11	CARBON	2.2K	5%	1/4W	
		<VARIABLE RESISTOR>				
RV701	1-226-114-00	RES, ADJ, METAL GLAZE 2.2M				
RV702	1-226-063-00	RES, ADJ, CARBON 2.2M				
RV711	1-224-252-XX	RES, ADJ, METAL GLAZE 10K				
RV721	1-224-252-XX	RES, ADJ, METAL GLAZE 10K				
RV731	1-224-252-XX	RES, ADJ, METAL GLAZE 10K				

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MISCELLANEOUS
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	⚠1-230-666-12	RESISTOR ASSY, HIGH-VOLTAGE	
	⚠1-451-291-13	DEFLECTION YOKE (SY-175)	
	⚠1-509-546-11	3P INLET	
	1-543-179-00	CORE, RING	
L901	⚠1-426-283-11	COIL, DEMAGNETIZATION	
RV901	1-230-536-11	RES, VAR, CARBON 10K	
RV902	1-230-536-11	RES, VAR, CARBON 10K	
S901	⚠1-554-953-31	SWITCH, SEESAW (AC POWER)	
V901	⚠8-738-251-05	PICTURE TUBE (M34JNQ15X)	

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ACCESSORIES AND PACKING MATERIALS
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PART NO.	DESCRIPTION	REMARK
⚠1-558-377-11	CORD, POWER	
*4-337-201-02	BAG, PROTECTION	
*4-381-831-01	INDIVIDUAL CARTON	
*4-381-895-01	CUSHION (UPPER) (ASSY)	
*4-381-896-01	CUSHION (LOWER) (ASSY)	
4-482-265-21	MANUAL, INSTRUCTION	

9-963-637-83

Sony Corporation
TV Group

English
89HE0505-2
Printed in Japan

CPD-1302

SONY
SERVICE MANUAL

US Model
Canadian Model
Serial No. 7,000,001 and later
Chassis No. SCC-A08A-A

SUPPLEMENT-4

File this supplement with the service manual.

Introduction: the following parts change (Serial No. 7,000,001 and later)

Section 6. ELECTRICAL PARTS LIST
PAGE 52

Part No.	Description
*4-389-045-01	INDIVIDUAL CARTON
*4-389-039-01	CUSHION (UPPER) (ASSY)
*4-389-040-01	CUSHION (LOWER) (ASSY)
4-482-265-31	MANUAL, INSTRUCTION

MICROFILM
9-963-637-84

Sony Corporation
TV Group

English
89LZ0525-1
Printed in Japan

CPD-1302

SONY
SERVICE MANUAL

US Model
Canadian Model
Chassis No. SCC-A08A-A

CORRECTION-2

Correct the service manual as shown below.
File this correction with the service manual and supplement-1.

☛ : indicates corrected portion

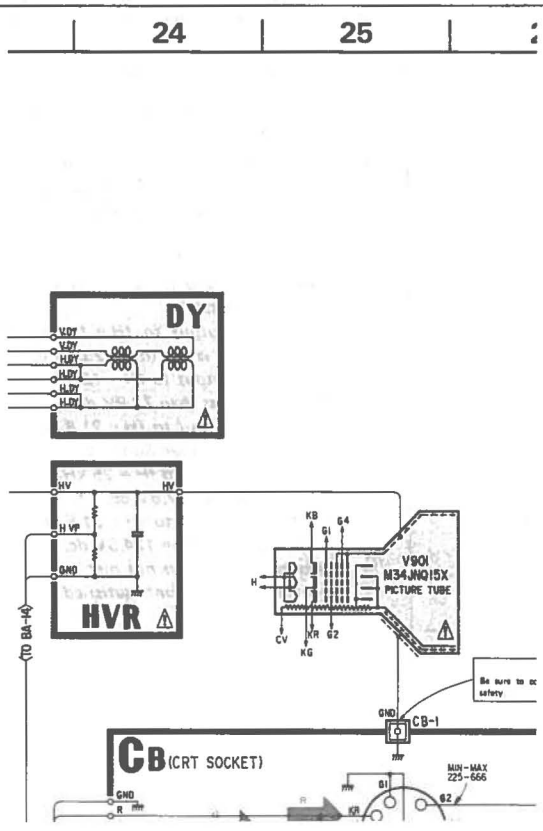
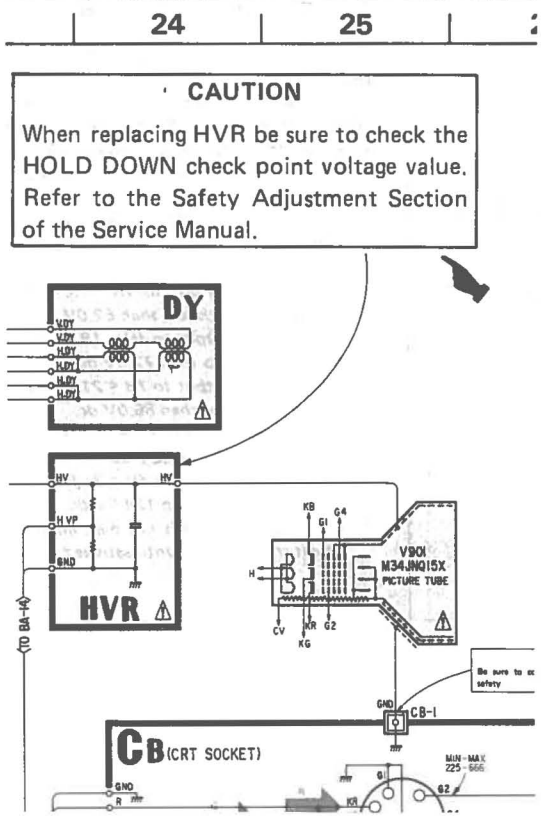
SECTION 3 (Service Manual), SECTION 2 (Supplement)
SAFETY RELATED ADJUSTMENTS

PAGE	INCORRECT	CORRECT
11 (Service Manual) 7 (Supplement)	*+B MAX (⊠ R416, R489)* *Be sure to perform the following adjustment after replacing the parts below. (Marked on ◪ the schematic diagram).* *(G board) Q653, R658, R659, T653* *(BA board)* *IC401, IC404, IC405, Q409, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R424, R425, R448, R479, R480, R489, R488.* 1. *Input a dot signal and set PICTURE, 8RIGHT to minimum.* 2. *Turn +B VR (RV403) to maximum.* 3. *Observe BA board to connecter pin (1) BA-1 on the digital multimeter.* 4. *Set SMC-70 output to fH = 15.734 kHz and confirm that the +8 line is less than 62.0V dc.* 5. *Set SMC-70 output to fH = 18.4 kHz and confirm that the +8 line is less than 72.8V dc.* 6. *Set SMC-70 output to fH = 21.8 kHz and confirm that the +B line is less than 86.0V dc.* 7. *Set SMC-70 output to fH = 25 kHz and confirm that the +B line is less than 97.8V dc.* 8. *Set SMC-70 output to fH = 31.5 kHz and confirm that the +8 line is less than 124.5V dc.* 9. *If the specification is not met, adjust R416, R489 and repeat steps 1 and 3 until satisfied.*	*+B MAX (⊠ R416, R489)* *8e sure to perform the following adjustment after replacing the parts below. (Marked on ◪ the schematic diagram).* *(G board) Q653, R658, R659, T653* *(8A board)* *IC401, IC404, IC405, Q409, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R424, R425, R448, R479, R480, R489, R488.* 1. *Supply 130±3/6 V AC to with variable auto-transformer.* ☛ 2. *Input a dot signal and set PICTURE, 8RIGHT to minimum.* 3. *Turn +8 VR (RV403) to maximum.* 4. *Observe 8A board to connecter pin (1) BA-1 on the digital multimeter.* 5. *Set SMC-70 output to fH = 15.734 kHz and confirm that the +8 line is less than 62.0V dc.* 6. *Set SMC-70 output to fH = 18.4 kHz and confirm that the +8 line is less than 72.8V dc.* 7. *Set SMC-70 output to fH = 21.8 kHz and confirm that the +8 line is less than 86.0V dc.* 8. *Set SMC-70 output to fH = 25 kHz and confirm that the +8 line is less than 97.8V dc.* 9. *Set SMC-70 output to fH = 31.5 kHz and confirm that the +8 line is less than 124.5V dc.* 10. *If the specification is not met, adjust R416, R489 and repeat steps 1 and 3 until satisfied.*

PAGE	INCORRECT	CORRECT
12 (Service Manual) 8 (Supplement)	*CONFIRMATION WHEN REPLACING H.V.R. (HIGH VOLTAGE REGISTER)* *The following adjustments should always be performed with reference to whether an X-ray radiation control circuit is connected or not, when replacing H.V.R.* ** This check is to be performed when H.V.R. only is replaced, and has no relation to the hold-down circuit readjustment for replacement of parts marked ◪.* *(Connection Confirmation)* *1. Turn the POWER switch ON, and receive white signals and set the PICTURE and BRIGHTNESS controls to MAX.* *2. When the set is operating normally with 120V AC supply, confirm the voltage of the connection point for connector (2) pin BA-14 is 7.3±0.8V dc.*	*CONFIRMATION WHEN REPLACING H.V.R. (HIGH VOLTAGE REGISTER)* *The following adjustments should always be performed with reference to whether an X-ray radiation control circuit is connected or not, when replacing H.V.R.* ** This check is to be performed when H.V.R. only is replaced, and has no relation to the hold-down circuit readjustment for replacement of parts marked ◪.* *(Connection Confirmation)* *1. Supply 120V AC to with variable auto-transformer.* *2. Turn the POWER switch ON, and receive white signals and set the PICTURE and BRIGHTNESS controls to MAX.* *3. Set SMC-70 output to fH±21, 8kHz and confirm the voltage of the connection point for connector (2) pin BA-14 is 7.3±0.8V dc.*

SECTION 4 (Service Manual)

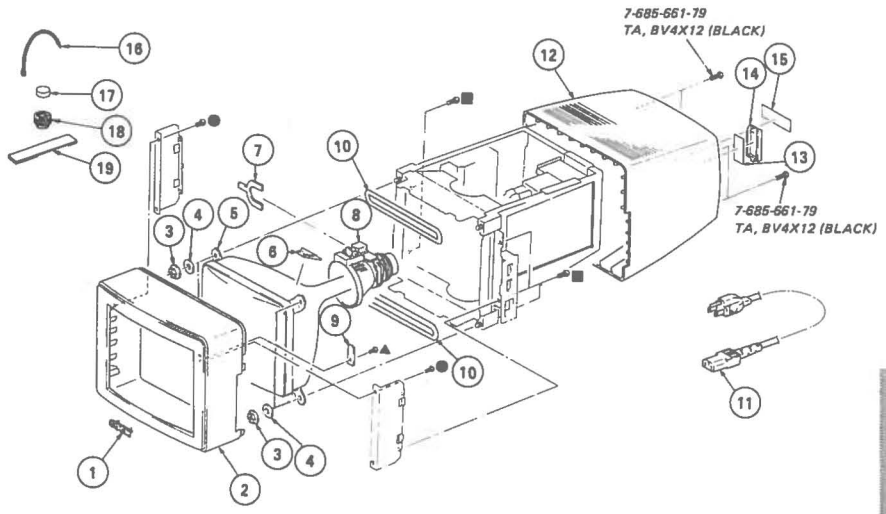
4-3. SCHEMATIC DIAGRAM

PAGE	INCORRECT	CORRECT
28		

PAGE 36 — INCORRECT

5-1. PICTURE TUBE

■ : TA, BV3X8 7-685-646-71
● : TA, BV4X10 7-685-660-71
▲ : TA, BV3X10 7-685-647-71



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

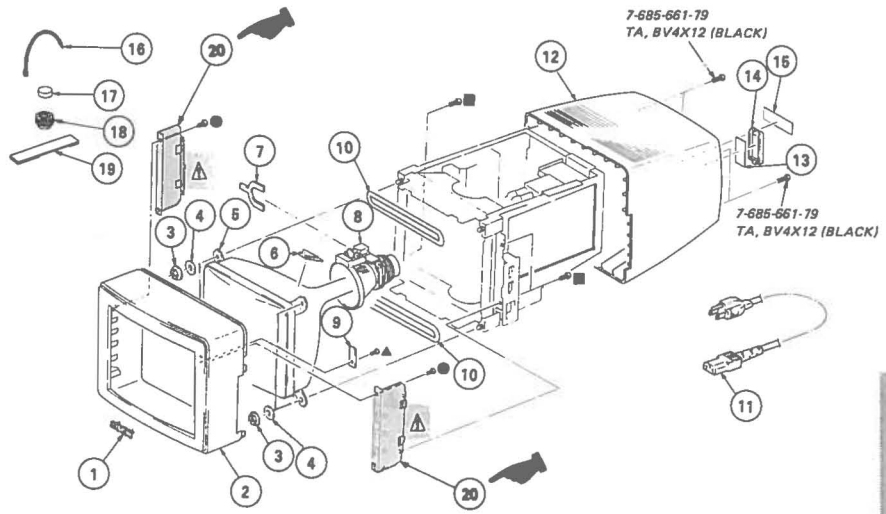
Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
1	*3-668-914-31	EMBLEM, SONY	
2	X-4381-801-1	BEZEL ASSY	
3	4-304-511-00	NUT, FLANGE	
4	4-348-567-00	WASHER, CRT POSITION	
5	⚠8-738-251-05	CRT M34JNQ15X	
6	3-703-961-01	SPACER, DY	
7	1-452-146-21	MAGNET, BMC	
8	⚠1-451-291-11	DEFLECTION YOKE (SY-175)	
9	*1-619-036-11	X BOARD	
10	⚠1-426-283-11	COIL, DEMAGNETIZATION	
11	⚠1-558-377-11	CORD, POWER	
12	4-381-820-01	CABINET	
13	4-381-826-01	LABEL, CONTROL	
14	4-381-817-01	LID, CONTROL	
15	*4-381-812-01	LABEL, MODEL NUMBER (SMALL)	
16	4-316-015-01	CLIP, LEAD WIRE	
17	1-452-032-00	MAGNET, DISK; 10MM ø	
18	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ø	
19	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	

PAGE 36 — CORRECT

5-1. PICTURE TUBE

■ : TA, BV3X8 7-685-646-71
● : TA, BV4X10 7-685-660-71
▲ : TA, BV3X10 7-685-647-71



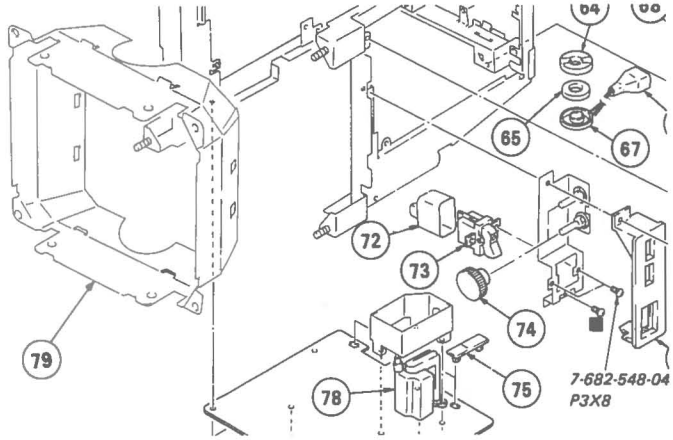
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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

No.	Part No.	Description	Remark
1	*3-668-914-31	EMBLEM, SONY	
2	X-4381-801-1	BEZEL ASSY	
3	4-304-511-00	NUT, FLANGE	
4	4-348-567-00	WASHER, CRT POSITION	
5	⚠8-738-251-05	CRT M34JNQ15X	
6	3-703-961-01	SPACER, DY	
7	1-452-146-21	MAGNET, BMC	
8	⚠1-451-291-11	DEFLECTION YOKE (SY-175)	
9	*1-619-036-11	X BOARD	
10	⚠1-426-283-11	COIL, DEMAGNETIZATION	
11	⚠1-558-377-11	CORD, POWER	
12	4-381-820-01	CABINET	
13	4-381-826-01	LABEL, CONTROL	
14	4-381-817-01	LID, CONTROL	
15	*4-381-812-01	LABEL, MODEL NUMBER (SMALL)	
16	4-316-015-01	CLIP, LEAD WIRE	
17	1-452-032-00	MAGNET, DISK; 10MM ø	
18	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ø	
19	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	
20	⚠4-381-813-01	BRACKET, BEZEL	

PAGE	INCORRECT

37



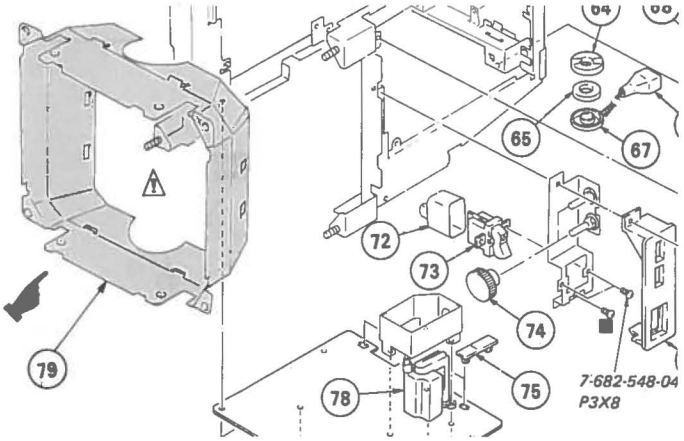
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	*1-619-034-11	G BOARD		65	1-543-179-00	CORE, RING	
52	*3-703-961-01	SPACER, SUPPORT		66	*4-601-466-11	COVER, 3P INLET	
53	*1-619-033-11	F BOARD		67	*4-361-124-01	COVER (A), CORE	
54	⚠1-230-666-11	RESISTOR ASSY, HIGH-VOLTAGE		68	⚠1-509-546-11	3P INLET	
55	*1-619-651-11	BD BOARD		69	*1-619-029-11	BC BOARD	
56	4-343-123-00	RETAINER, AC CORD		70	*3-701-832-00	HINGE, CIRCUIT BOARD	
57	*1-619-030-11	CA BOARD		71	*A-1135-387-A	BA BOARD, COMPLETE	
58	*4-377-601-01	COVER		72	*4-381-806-01	COVER, SWITCH	
59	*4-370-995-01	COVER (LOWER), H.STAT		73	⚠1-554-953-31	SWITCH, SEESAW (AC POWER)	
60	*1-619-031-11	CB BOARD		74	4-372-107-01	KNOB, ROTARY	
61	*4-370-996-01	COVER (UPPER), H.STAT		75	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
62	*1-619-035-11	H BOARD		76	*4-381-828-01	PANEL, SWITCH	
63	*A-1130-489-A	BB BOARD, COMPLETE		77	*A-1340-829-A	D BOARD, COMPLETE	
64	*4-361-125-01	COVER (B), CORE		78	⚠1-439-390-11	TRANSFORMER ASSY, FLYBACK	
65	1-543-179-00	CORE,RING		79	*X-4381-802-1	SHIELD ASSY, CRT	
				80	*A-1465-149-A	HV BLOCK ASSY	

	CORRECT

37



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52	*3-703-961-01	SPACER, SUPPORT		66	*4-601-466-11	COVER, 3P INLET	
53	*1-619-033-11	F BOARD		67	*4-361-124-01	COVER (A), CORE	
54	⚠1-230-666-11	RESISTOR ASSY, HIGH-VOLTAGE		68	⚠1-509-546-11	3P INLET	
55	*1-619-651-11	BD BOARD		69	*1-619-029-11	BC BOARD	
56	4-343-123-00	RETAINER, AC CORD		70	*3-701-832-00	HINGE, CIRCUIT BOARD	
57	*1-619-030-11	CA BOARD		71	*A-1135-387-A	BA BOARD, COMPLETE	
58	*4-377-601-01	COVER		72	*4-381-806-01	COVER, SWITCH	
59	*4-370-995-01	COVER (LOWER), H.STAT		73	⚠1-554-953-31	SWITCH, SEESAW (AC POWER)	
60	*1-619-031-11	CB BOARD		74	4-372-107-01	KNOB, ROTARY	
61	*4-370-996-01	COVER (UPPER), H.STAT		75	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
62	*1-619-035-11	H BOARD		76	*4-381-828-01	PANEL, SWITCH	
63	*A-1130-489-A	BB BOARD, COMPLETE		77	*A-1340-829-A	D BOARD, COMPLETE	
64	*4-361-125-01	COVER (B), CORE		78	⚠1-439-390-11	TRANSFORMER ASSY, FLYBACK	
65	1-543-179-00	CORE,RING		79	⚠*X-4381-802-1	SHIELD ASSY, CRT	
				80	*A-1465-149-A	HV BLOCK ASSY	

Sony Corporation
TV Group

English
89HE0505-2
Printed in Japan

SONY®

color tv
Service Bulletin No. 294

Technical Department
Sony Service Company
A Division of Sony Corporation of America
Sony Drive, Park Ridge, New Jersey 07656

Model: CPD-1302

Subject: Picture Distortion (Pincushion)

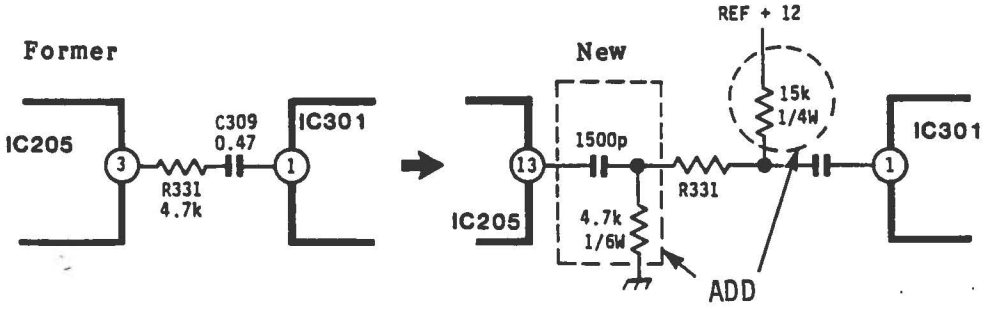
Date: July 15, 1987

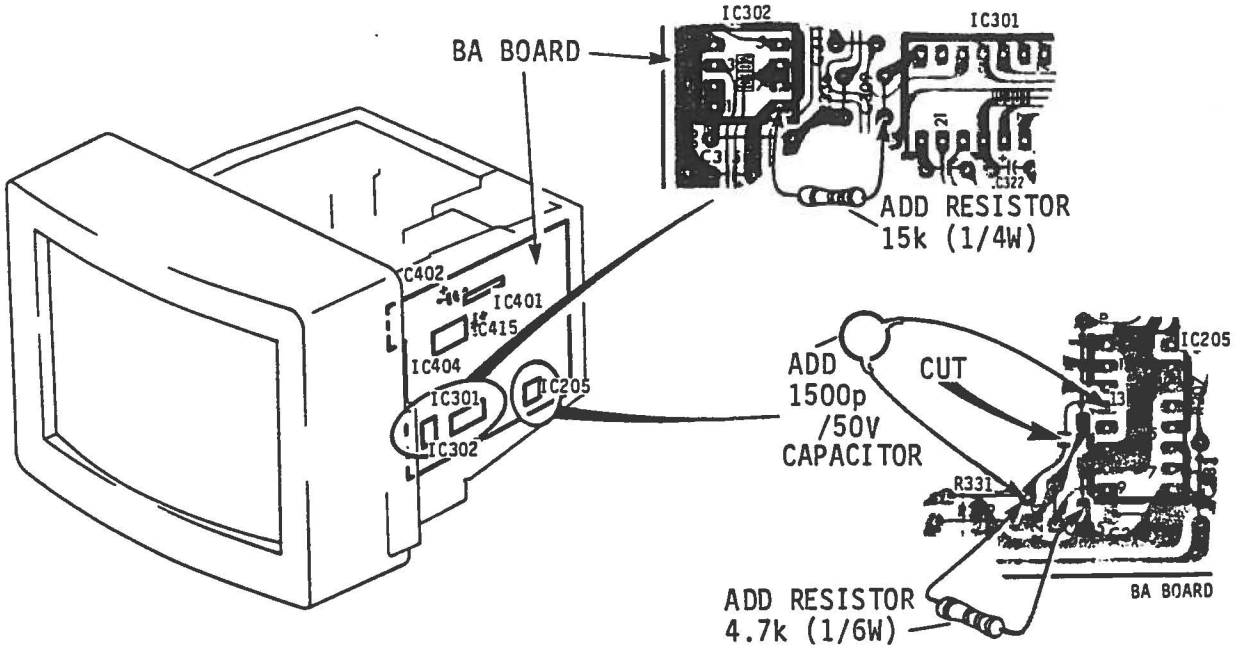
01162

Symptom:
(133)
Picture distortion.

Solution:
1. Change the value of capacitors.
   C402 from 1µF/50V ⟶ 10µF/50V ⟶ 1-123-356-00
   C415 from 2.2µF/50V ⟶ 10µF/50V ⟶ 1-123-356-00 (BA Board)

   BA Board
2. Circuit Change: *Cut the pattern between (13) IC205 and R331.
   *Attach 1500p/50V (1-102-119-00) across the cut pattern.
   *Add 4.7K (1/6w) between R331 and ground on soldering side.
   *Add 15K (1/4w) between IC302 and C309 on soldering side.





Printed in USA

SONY color tv Service Bulletin No.303

Technical Department
Sony Service Company
A Division of Sony Corporation of America
Sony Drive, Park Ridge, New Jersey 07656

Model: CPD-1302

Date: October 9, 1987

Subject: Only Green Text Displayed Or Muted Picture

Symptom:
(22) 01162

Using EGA Card only green text is displayed or occasionally no display at all when the vertical frequency is 55-57Hz. The 50/60Hz switching circuit does not respond correctly to the incoming signal.

Solution:

3-6. Vertical Sync Frequency Identification Circuit.

1) Preliminary CPD Generator Setting

1. Input signal H: 15.734KHz → H: ② ③
   V: 60Hz → V: ⑦ Ⓕ
2. Set switch position to D1.
3. Connect a digital voltmeter to BA board Q332/BASE and adjust RV306 so the voltage value is 5.6V±0.05V DC.
4. Set switch position to D2 (or short between BA-3 pin 1 (MS pin) and ground).
5. Adjust RV307 so the "BA" board Q332/BASE voltage value is 6.6V±0.05V DC.

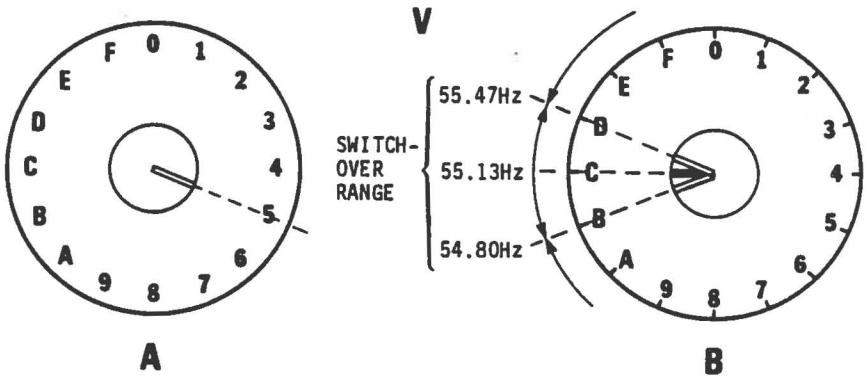
2) Precise CPD Generator Setting For V: 55.13Hz Switch-Over Frequency

1. Input signal H: 18.41KMz → H ④ ③
   V: 55.13H → V ⑤ Ⓒ
2. Set switch position to D2 (Green Bars should appear on screen).
3. Connect a digital voltmeter to "BA" board Q332/BASE and very slowly increase the voltage with RV307 until relay CLICK is heard and GREEN BARS change into COLOR BARS. The voltage would be approximately in 6.7—6.8V range.

(Continued)

Printed in USA

4. Confirm 55.13Hz switch-over point by changing position of VB switch within Ⓑ Ⓒ Ⓓ range: CLICK + GREEN TO COLOR BARS CHANGE should take place.



If the range is slightly different touch up RV307 until desired result is obtained. Monitoring Q332/B voltage while doing so provides helpful reference.

Settings For 18.41KHz//50Hz～60Hz Combination

H		
A	B	f(KHz)
4	3	18.41

V		
A	B	f(H2)
5	0	51.44
	1	51.30
	2	52.02
	3	52.31
	4	52.61
	5	52.91
	6	53.22
	7	53.53
	8	53.84
	9	54.16
	A	54.48
	B	54.80
	C	55.13
	D	55.47
	E	55.80
	F	56.14
6	0	56.49
	1	56.83
	2	57.19
	3	57.55
	4	57.91
	5	58.27
	6	58.65
	7	59.02
	8	59.40
	9	59.79
	A	60.18
	B	60.57
	C	60.98
	D	61.38
	E	61.79
	F	62.21