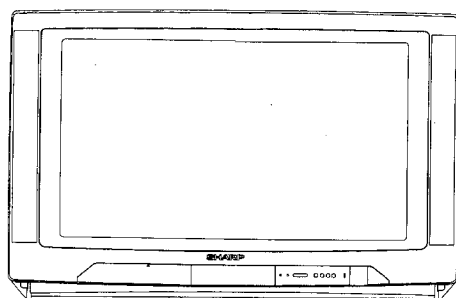


SHARP

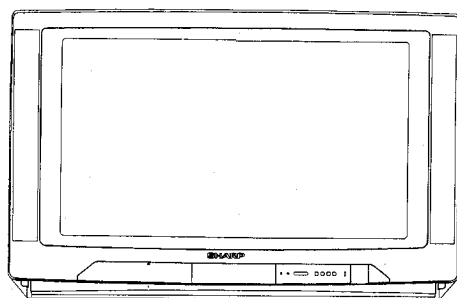
SERVICE MANUAL

SEMSX6FW54H

DA-100 (50Hz) - CHASSIS




66FW54H



76FW54H

PAL SYSTEM COLOUR TELEVISION

 DOLBY SURROUND
P R O · L O G I C

66FW-54H MODELS 76FW-54H

In the interests of user safety (required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used

CONTENTS

ELECTRICAL SPECIFICATION	2	PRINTED WIRING BOARDS	7
IMPORTANT SERVICE NOTES	3	SCHEMATIC DIAGRAM AND WAVE FORM ...	15
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SHARP CORPORATION

ELECTRICAL SPECIFICATIONS

- Power Input220-240 Volts AC 50 Hz
- Power Consumption
 - Normal Operating166 W
 - Stand-by Operating1W max.

- Audio Power

Output Rating

- Front L (Internal)10 W (M.P.O)
- Front R (Internal)10W (MPO)
- Front L (External)10W (MPO)
- Front R (External)10W (MPO)
- Rear7+7W(MPO)
- Subwoofer20W (MPO)
- Surround Back10W (MPO)
- Center Speaker10W (MPO)

Speaker

- Front L(Internal) 8 Ω 10W
- Front R (Internal) 8 Ω 10W
- Front L(External) 8 Ω
- Front R(External) 8 Ω
- Rear(External) 16Ω
- Rear(External) 16 Ω
- Subwoofer(External) 4 Ω

- White Level

Set brightness control to get total picture tube cathode current of 600 microampere under no signal condition.

Maximun necessary correction of each picture tube cathode current to get 8550 degrees K + 1MPCD screen temperature should not exceeded 15% of its original value.

X = 0.290 Y =0.284

- ConvergenceSelf Converging System
- FocusBi-Potential electrostatic
- SweepMagnetic

- Intermediate Frequencies

- Picture IF Frequency38.9 MHz
- Sound Carrier Trap33.4 MHz
- Adjacent Sound Carrier Trap40.4 MHz
- Adjacent Picture Carrier Trap31.9 MHz

- Aerial Input Impedance75 Unbalanced

- Tuning Ranges48.25 MHz to 855.25 MHz
CATV Special Channels

Specifications are subject to change without prior notice.

WARNING


The chassis in this receiver is partially hot. Use an isolation transformer between the line cord plug and power receptacle, when servicing this chassis.

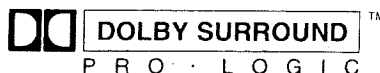
To prevent electric shock, do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

Special note

This models contains a DOLBY PRO LOGIC SURROUND DECODER.

Manufactured under license from Dolby Laboratories Licensing Corporation.

DOLBY, the double-D  symbol and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.



IMPORTANT SERVICE NOTES

Maintenance and repair of this receiver should be carried out by qualified service personnel only.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove static charge from it by connecting a 10 kohm resistor in series with a insulated wire (such a test probe) between picture tube ground tad an high voltage lead (AC line cord should be disconnected from AC outlet).

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely.

X-RAY

This receiver is designed so that any X-Ray radiation is kept to an absolute minimum. Since certain malfunctions or servicing may produce potentially hazardous radiation with prolonged exposure at close range, the following precautions should be observed:

1. When repaiting the circuit, be sure not to increase the high voltage to more than 32.0 kV (at beam 1300 μ A) for the set.
2. To keep the set in a normal operation, be sure to make it function on 30(76FW54H), 31(66FW54H) kV \pm 1.5 kV (at beam 1300 μ A) in the case of the set. The set has been factory — adjusted to the above mentioned high voltage.
If there is a possibility that the high voltage fluctuates as result of the repairs, never forget to check for such high voltage after the work.
3. Do not substitute a picture tube with unauthorized types and/or brands which may cause excess X-Ray radiation.

BEFORE RETURNING THE RECEIVER

In addition to the chekcs necessary as a result of a repair having been carried out, the following additional safety checks should also be made before returning the units to the user:

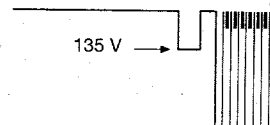
1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not logged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, insolation resistor-capacity networks, mechanical insulators, etc.

SERVICE ADJUSTMENTS

All the adjustments required for this chassis will be done in Service Mode, except G2 and Focus.

• G2 ADJUSTMENT

1. Receive cross hatch pattern signal
2. Set contrast to 80/100 and brightness to 40/100.
3. Connect the oscilloscope to the red cathode and adjust G2 to read 135V on the sensor pulse as in below drawing:



NOTE:

Oscilloscope should be adjusted for vertical.
TV field trigger and synchronized with video signal.

OV _____

• SERVICE MODE FUNCTION

This mode function is provided to assist with the settings of those adjustment that may vary from one Picture Tube to another, or between models.

In order to use the Service Mode

1. Connect Test Pattern signal to antenna terminal.
2. Press main switch to "OFF".
3. Press volume-down and channel-up buttons and main switch to "ON" simultaneously.
4. Service mode is now entered.

The required adjustments can then be made from the Remote Control Unit.

The only buttons required are the following:

Up/Down-channel for movement in adjustment options menu; Up/Down-volume are used to carry out and adjustment in said menu; ON/OFF is used to memorize a new adjustment.

Adjustment menu is as follows:

- | | |
|--|---|
| - SERVICE SOFTWARE AND HEXADECIMAL COUNTER DISPLAY | |
| - HORIZONTAL SHIFT | SW ON XXXX SW OFF XXXX HOURS ON XXXX |
| - EAST WEST WIDTH | |
| - PIN PHASE | - GREEN CUT OFF |
| - PIN AMP | - BLUE CUT OFF |
| - UPPER CORNER CORRECTION | - ALTER NVM PAGE / ALTER NVM POSITION / |
| - LOWER CORNER CORRECTION | ALTER VNM VALUE |
| - VERTICAL LINEARITY | - TELETEXT MIX MODE CONTRAST |
| - VERTICAL AMPLITUDE | - TELETEXT CONTRAST |
| - S CORRECTION | - OSD CONTRAST |
| - VERTICAL SHIFT | - DVCO ADJUSTMENT (Only PAL) |
| - RED GAIN | - DVCO ADJUSTMENT (Only NTSC) |
| - GREEN GAIN | - AGC ADJUSTMENT |
| - BLUE GAIN | - AFT ADJUSTMENT |
| - GREEN GAIN | - OPC VALUE (Not Available in this model) |
| To exit service mode, press main switch to OFF | - AUTOINSTALLATION ON/OFF |

Adjustment Note:

All the adjustments for Geometries are bases on internal pattern (fig. 1)

The procedure for making adjustments is as follows:

Horizontal

- Adjust HORIZONTAL SHIFT
- Adjust E-W WIDTH
- Adjust PIN PHASE
- Adjust PIN AMPLITUDE
- Adjust UPPER CORNER CORRECTION
- Adjust LOWER CORNER CORRECTION

Vertical

- Adjust VERTICAL AMPLITUDE
- Adjust S-CORRECTION
- Adjust VERTICAL SHIFT
- Adjust VERTICAL LINEARITY

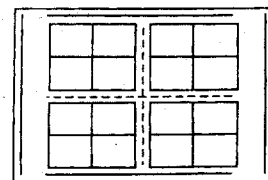


Fig. 1

1 - HORIZONTAL SHIFT

- Internal pattern signal will be displayed.
- When volume-up button is pressed, picture moves to the left.
- When volume-down is pressed, picture moves to the right.
- Adjust the horizontal location to obtain picture centering (fig. 2).

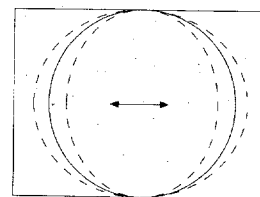


Fig. 2

2 - E-W WIDTH

- Internal pattern signal will be displayed.
- When volume-up button is pressed, horizontal scanning increases.
- When volume-down is pressed, horizontal scanning decreases.
- Adjust the horizontal amplitude to obtain 9% overscan (fig. 3).

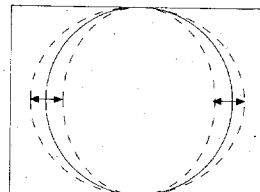


Fig. 3

3 - PIN PHASE

- Internal pattern signal will be displayed.
- When volume-up button is pressed, slide pincushion changes.
- When volume-down is pressed, slide pincushion changes.
- Adjust the PIN PHASE to obtain condition as in (fig. 4).

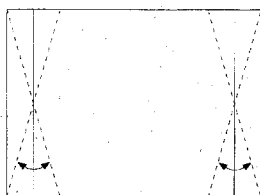


Fig. 4

4 - PIN AMPLITUDE

- Internal pattern signal will be displayed.
- When volume-up button is pressed, slide pincushion changes from pincushion to barrel shape.
- When volume-down is pressed, slide pincushion changes from barrel to pincushion shape.
- Adjust the PIN AMPLITUDE to obtain condition as in (fig. 5).

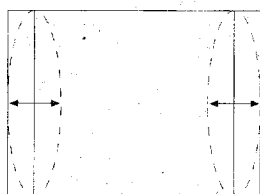


Fig. 5

5 - UPPER CORNER CORRECTION

- Internal pattern signal will be displayed.
- When volume-up button is pressed, slide pincushion changes from pincushion to barrel shape.
- When volume-down is pressed, slide pincushion changes from barrel to pincushion shape.
- Adjust the UPPER CORNER CORRECTION to obtain condition as in (fig. 6).

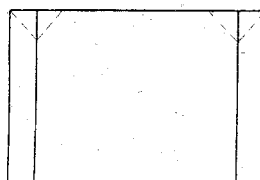


Fig. 6

6 - LOWER CORNER CORRECTION

- Internal pattern signal will be displayed.
- When volume-up button is pressed, slide pincushion changes from pincushion to barrel shape.
- When volume-down is pressed, slide pincushion changes from barrel to pincushion shape.
- Adjust the LOWER CORNER CORRECTION to obtain condition as in (fig. 7).

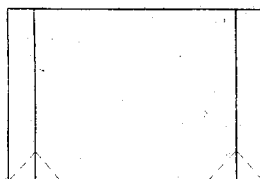


Fig. 7

7 - VERTICAL LINEARITY

- Internal pattern signal will be displayed.
- When volume-up button is pressed, upper picture scanning decreases and lower picture scanning increase.
- When volume-down is pressed, upper picture scanning increases and lower picture scanning decreases.
- Adjust the vertical symmetry to obtain symmetrical scanning between upper and lower picture (fig. 8).

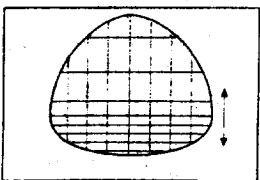


Fig. 8

8 - VERTICAL AMPLITUDE

- Internal pattern signal will be displayed.
- When volume-up button is pressed, vertical size of picture increases.
- When volume-down is pressed, vertical size of picture decreases.
- Adjust the the vertical size to obtain overscan (fig. 9).

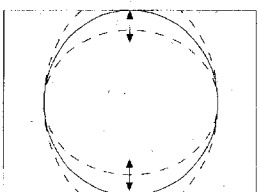


Fig. 9

9 - S-CORRECTION

- Internal pattern signal will be displayed.
- When volume-up button is pressed, upper and lower scanning decreases, and center scanning increases.
- When volume-down is pressed, upper and lower scanning increases, and center scanning decreases.
- Adjust the S-correction to obtain a balance between upper, lower and center (fig. 10).

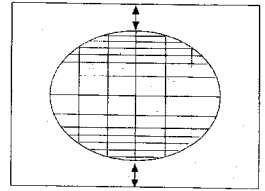


Fig. 10

10 - VERTICAL SHIFT

- Internal pattern signal will be displayed.
- When volume-up button is pressed, picture moves up.
- When volume-down is pressed, picture moves down.
- Adjust the the horizontal location to obtain picture centering (fig. 11).

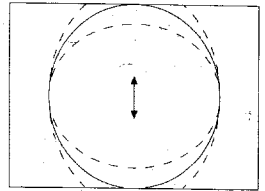


Fig. 11

COLOUR ADJUSTMENT

The following adjustments are only required when the Picture Tube is changed.

1. RED CUT OFF / GREEN CUT OFF / BLUE CUT OFF

- Adjust G2
- Tune a white card.
- Adjust colour to minimum.
- Positipm colourimeter in the center of screen.
- Adjust brightness and contrast to obtain a luminance of ≈ 20 NITS.
- Operate in Service Mode and select location RED CUT OFF / GREEN CUT OFF / BLUE CUT OFF, to obtain colour coordinates:
 $X=0.290 \pm 0.015$ $Y=0.284 \pm 0.015$

To increase press volume-up button and to decrease press volume down button

RED CUT OFF	alter "X" coordinate
GREEN CUT OFF	alter "Y" coordinate
BLUE CUT OFF	alter "X" and "Y" coordinate

- The changes introduced can be memorized by pressing button "O" on TV set

2. RED GAIN / GREEN GAIN / BLUE GAIN

- Using brightness and contrast buttons, select a luminance of $f \approx 110$ NITS.
- Operate again in Service Mode and select location RED GAIN / GREEN GAIN / BLUE GAIN, to obtain colour coordinates:
 $X = 0.290 \pm 0.015$ $Y = 0.284 \pm 0.015$

To increase press volume-up button and to decrease press volume-down button.

RED GAIN	alter "X" coordinate
GREEN GAIN	alter "Y" coordinate
BLUE GAIN	alter "X" and "Y" coordinate

- The changes introduced can be memorized by pressing button "O" on TV set.
- Exit Service Mode and check colour coordinates "X" and "Y" at 20 and 110 NITS. It may be necessary to repeat procedure 1 and 2 of COLOUR ADJUSTMENT.

ACCESS TO NVM

Press CH[^] to move in the following secuence:

ALTER NVM PAG → ALTER NVM POS → ALTER NVM VAL
to alter preseting adjustments, press up/down-volume buttons on ALTER NVM VAL.

⚠ CAUTION: Do not change NVM VALUE to avoid risk of serious damages to TV set.

CONTRAST ADJUSTMENT

Up/down-volume buttons are used to adjust the contras of the following items:

- TELETEXT MIX MODE CONTRAST
- TELETEXT CONTRAST
- OSD CONTRAST

DVCO ADJUSTMENT (PAL)

- Receive Philips pattern signal.
- When Stand-by button is pressed (Remote Control Unit), start automatically the adjustment.

DVCO ADJUSTMENT (NTSC)

Adjustment not required.

AUTO INSTALLATION OFF/ON

When ON is selected, the TV will perform the autoinstallation secuence as soon as service mode is removed.

PROTECTIONS CANCEL

- Connect Test Pattern signal to antenna terminal.
- Press main switch to OFF.
- Press volume-down and channel-up buttons and main switch to ON simultaneously.
- "Service software Vxx.xx" appears on screen.
- Press main switch to OFF.

AGC ADJUSTMENT

- Tune the TV into DM10 (pattern generator).
- Adjust the signal strenght to 57 db μ v.
- Press the stand-by button on the Remote Control (red button).
The TV will perform automatically the AGC Adjustment.

AFT ADJUSTMENT

- Tune the TV into CH69 (pattern generator).
- Press the stand-by button on the Remote Control (red button).
The TV will perform automatically the AGC Adjustment.

DESCRIPTION OF SCHEMATIC DIAGRAM

SAFETY NOTE:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

IMPORTANT SAFETY NOTICE:

PARTS MARKED WITH "⚠" () ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET, BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFORMANCE OF THE SET.

SEVICE PRECAUTION:

THE AREA ENCLOSED BY THIS LINE (---) IS DIRECTLY CONNECTED WITH AC MAINS VOLTAGE. WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANSFORMER. BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAZARD OF ELECTRIC SHOCK.

NOTE:

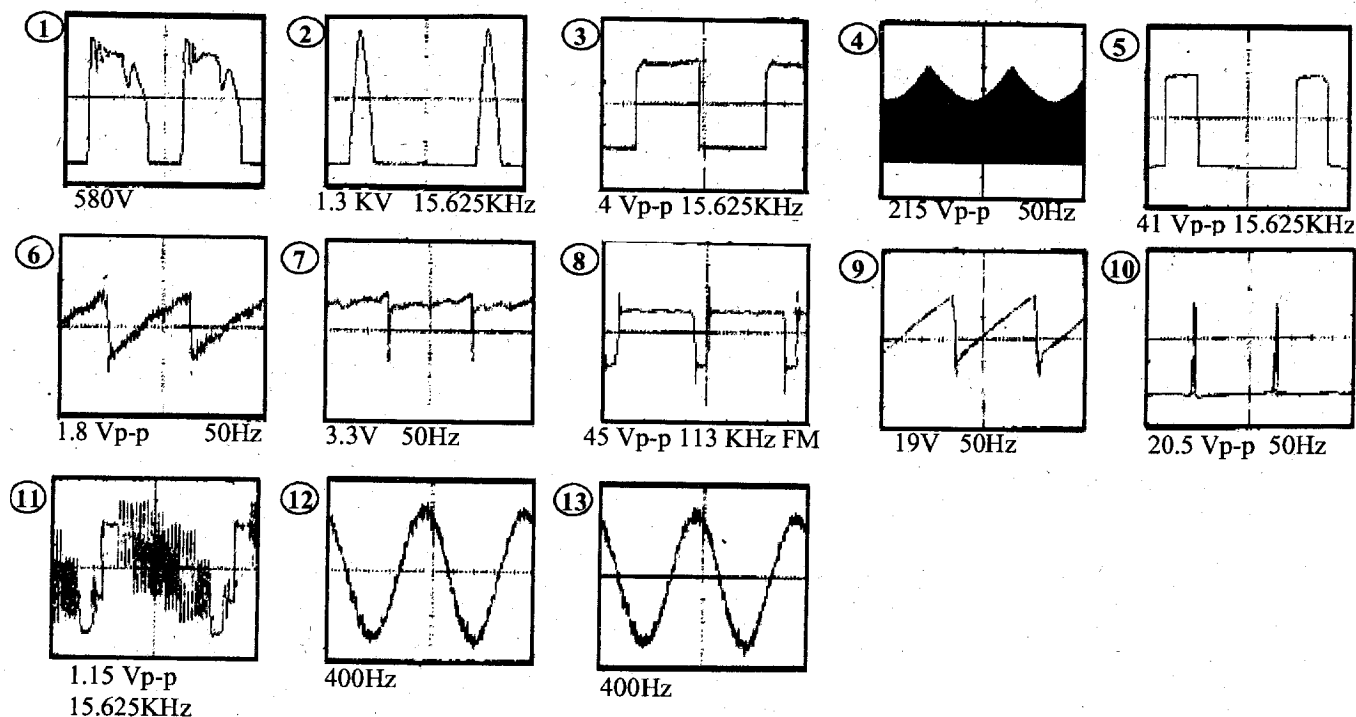
1. The unit of resistance "ohm" is omitted (K + 1000 ohms, M = Megaohm).
2. All resistors are 1/8 watt, unless otherwise noted.
3. All capacitors are μF , unless otherwise noted ($P = \mu\text{F}$).
4. The capacitor with Part No. RC-FZ9XXXBMNJ is designed to withstand 63V

WAVEFORM MEASUREMENT CONDITION

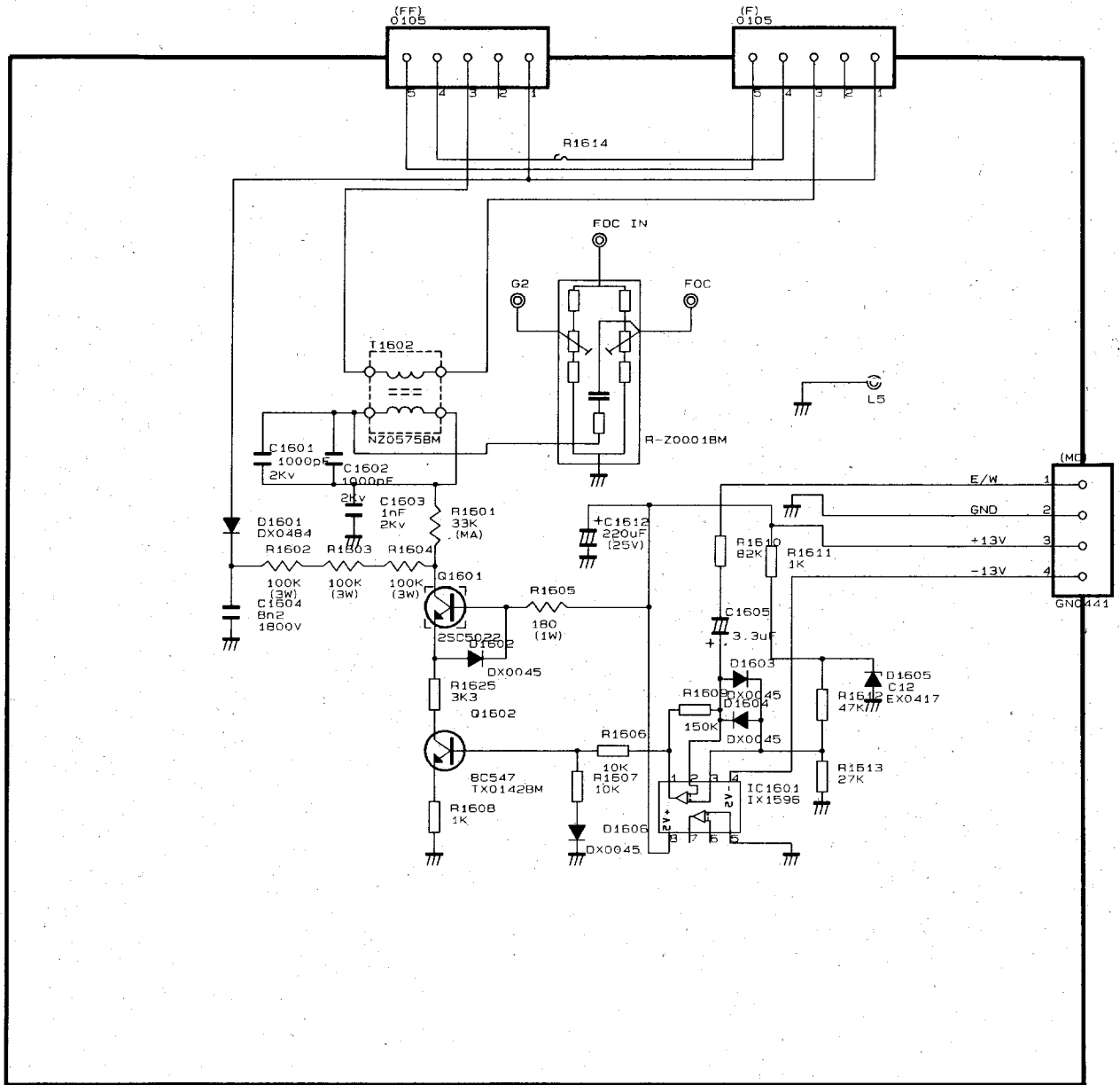
Colour bar generator signal of 70 dB from RF input.

CAUTION

This circuit diagram is original one, therefore there may be a slight difference from yours.

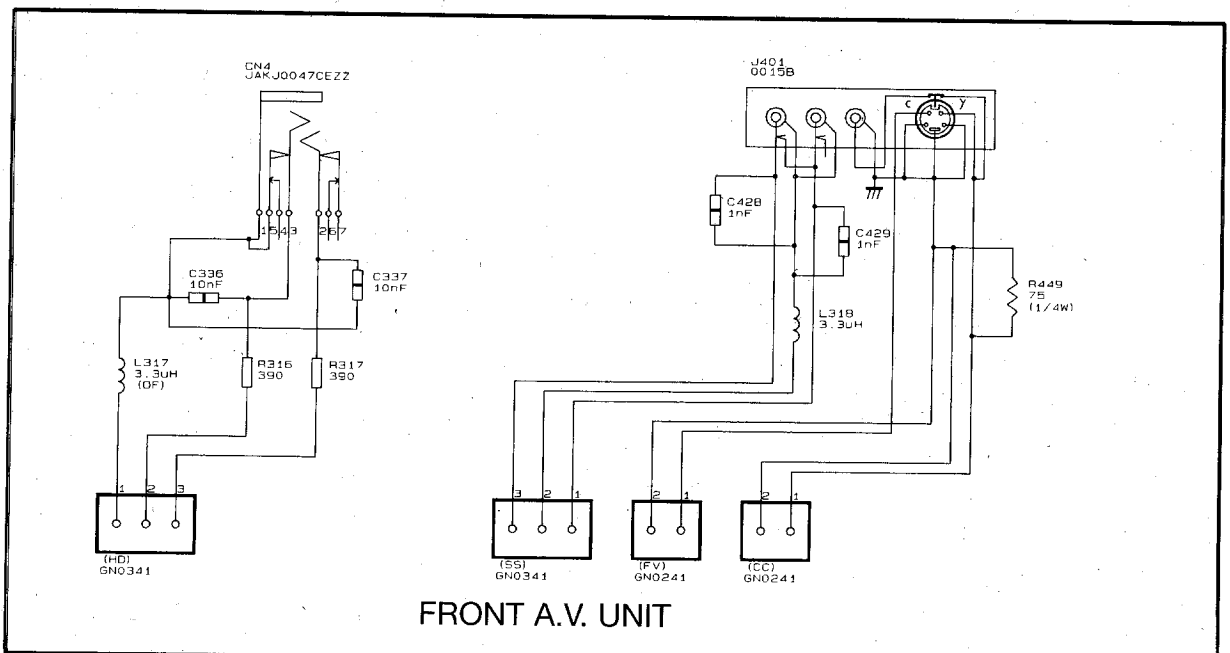
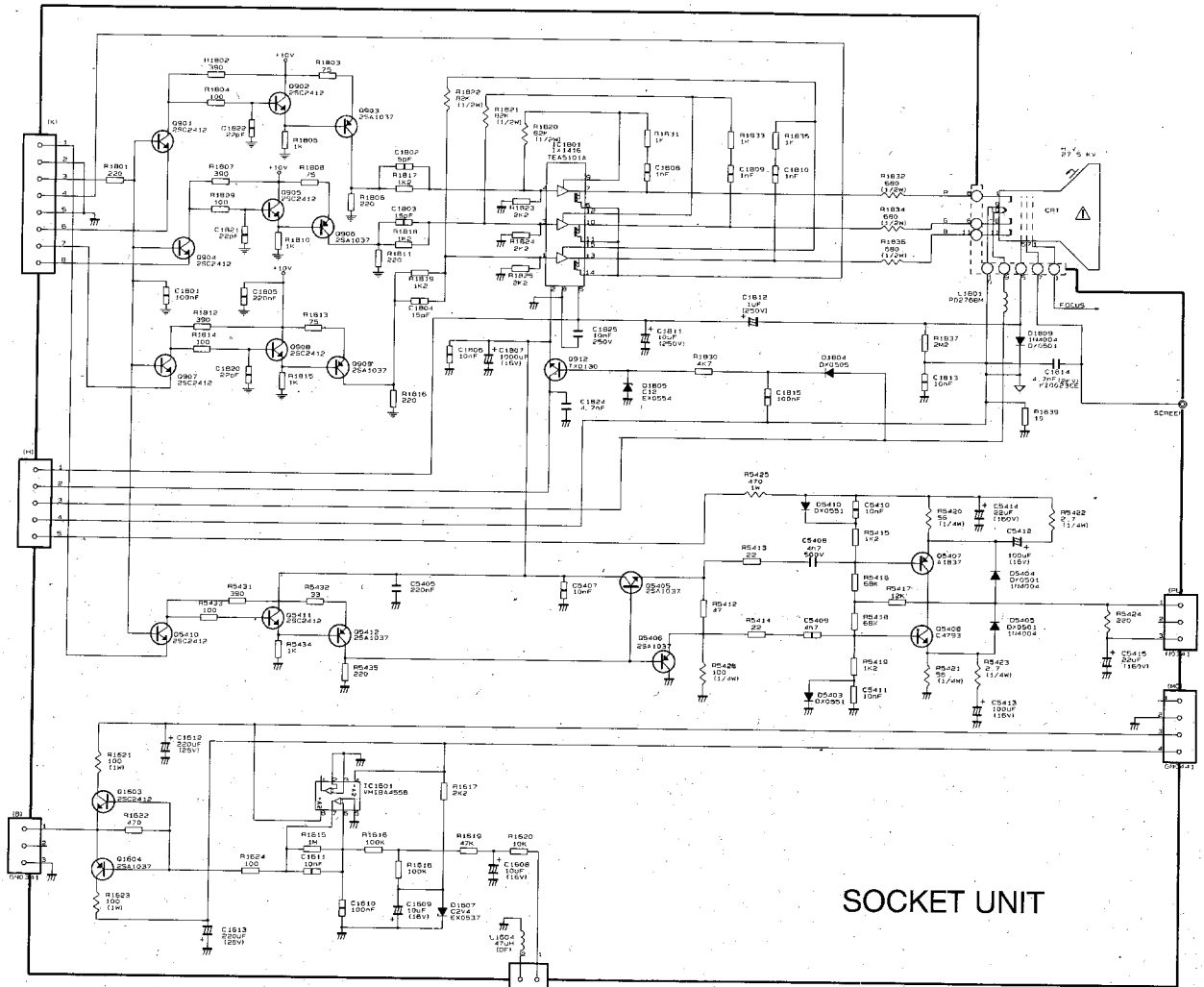


SCHEMATIC DIAGRAM

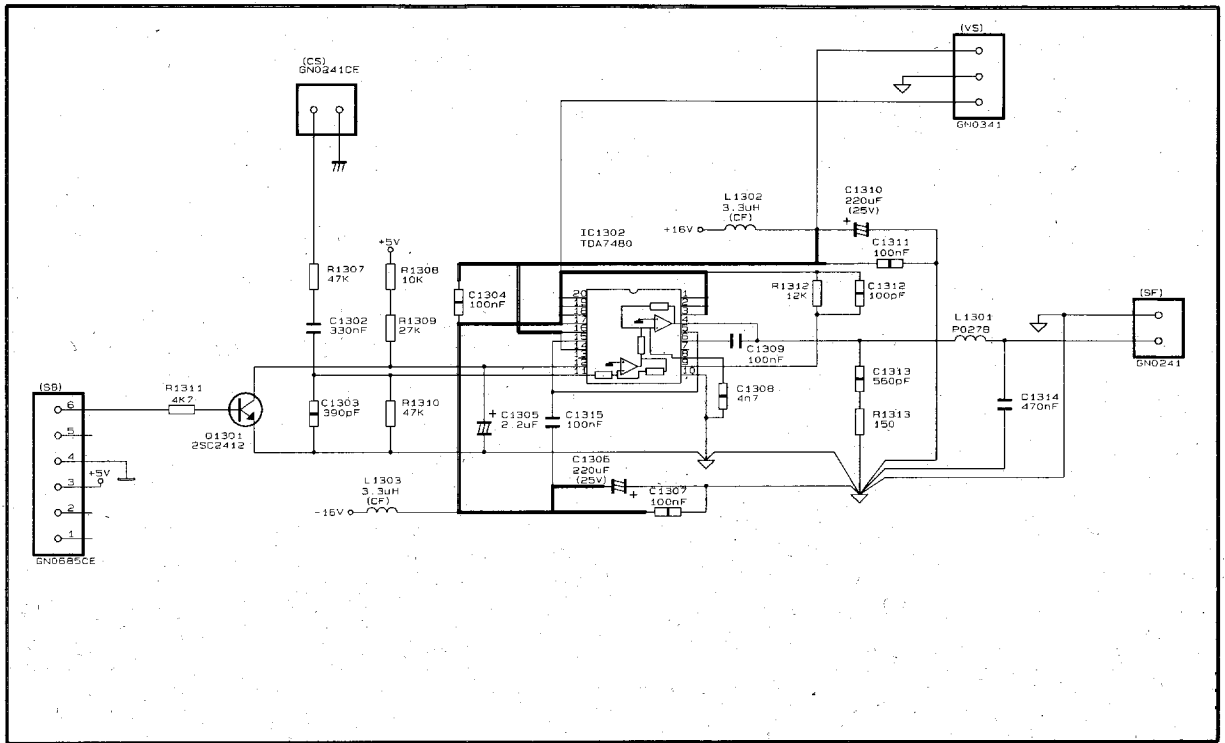


DEFLECTION UNIT (76FW54H)

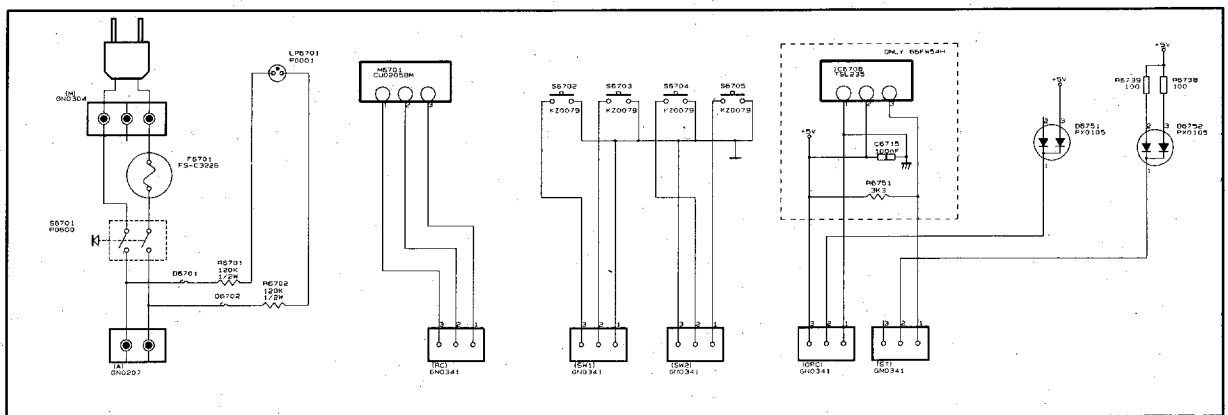
SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM



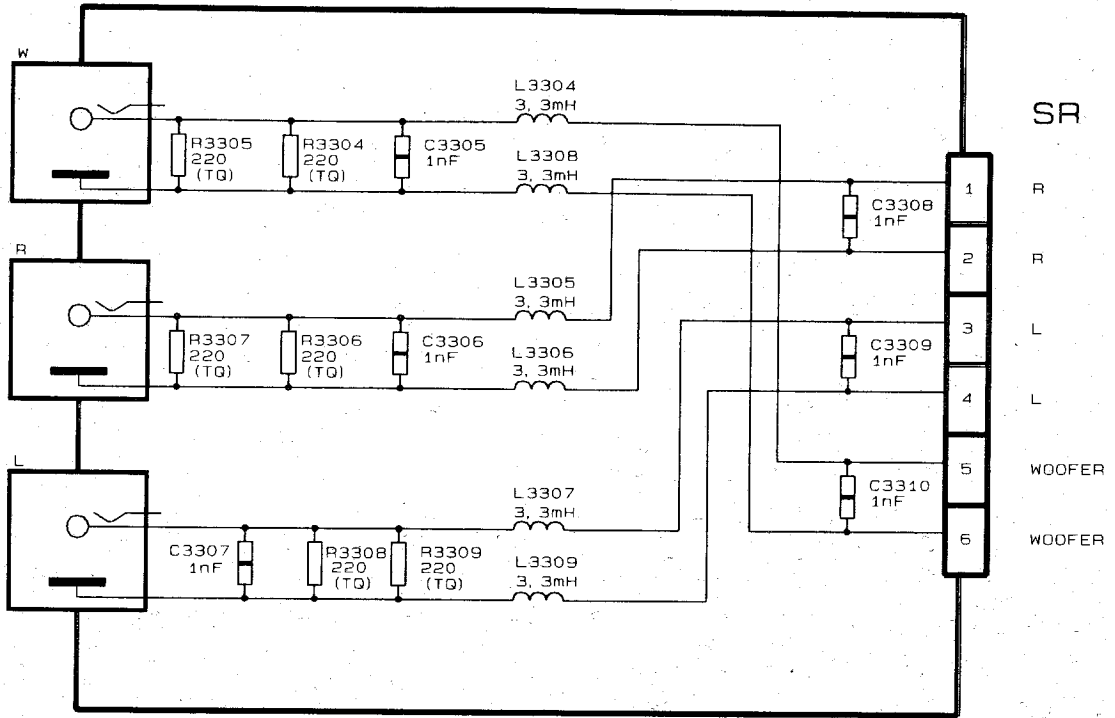
AUDIO AMP. UNIT



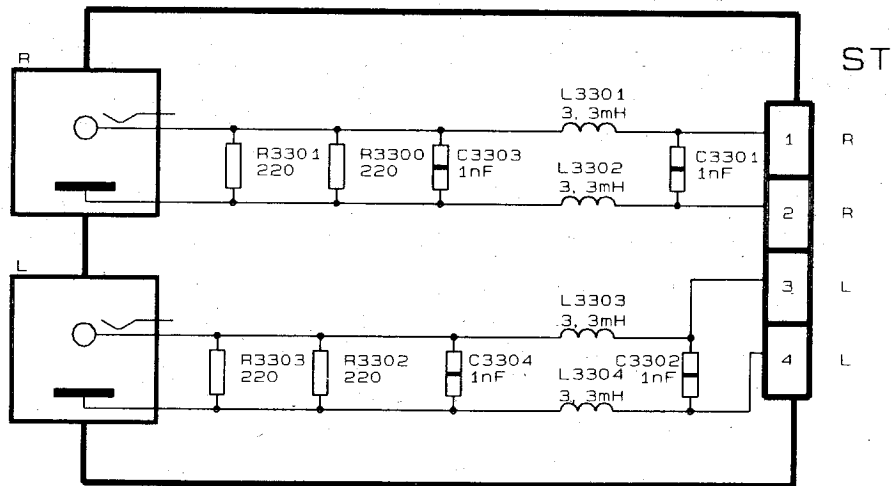
CONTROL UNIT

SCHEMATIC DIAGRAM

I
H
G
F
E
D
C
B
A



EXTERNAL SPEAKER X 3



EXTERNAL SPEAKER X 2

1 2 3 4 5 6

PARTS LIST

REPLACEMENT PARTS

Replacement parts which have special safety characteristics are identified in this manual. Electrical components having such features are identified by u in the Replacement Parts list.

The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended is not permitted.

Replacement parts not shown in this service manual may create shock fire, or other hazards.

HOW TO ORDER REPLACEMENT PARTS

To have you order completed promptly and correctly please supply the following information.

1. MODEL NUMBER 2. REF. NO.
3. PART NO. 4 DESCRIPTION
5. CODE 6. QUANTITY

★ MARK: SPARE PARTS DELIVERY SECTION

REF N°	PARTS	★	DESCRIPTION	CODE
PICTURE TUBE				
△	VB66QBD2910*N	S	C.R.T. 28" 66FW54H	CV
△	VB76QAG280W12	S	C.R.T. 32" 76FW54H	
△	RCILG0417BMZZ	S	DEGAUSSING COIL 28" 66FW54H	AX
△	RCILG0418BMZZ	S	DEGAUSSING COIL 32" 76FW54H	AZ
△	RCILG0422CEZZ	S	ROTATION COIL 28" 66FW54H	AP
△	RCILG0419BMZZ	S	ROTATION COIL 32" 76FW54H	AR
PRINTED WIRIN BOARDS				
(NOT REPLACEMENT ITEM)				
PWB-A	DUNTK7240BMV8	S	MOTHER UNIT 66FW54H	—
PWB-A	DUNTK7240BMV3	S	MOTHER UNIT 76FW54H	
PWB-B	DUNTK7273BMV1	S	SOCKET UNIT 66FW54H	
PWB-B	DUNTK7273BMV4	S	SOCKET UNIT 76FW54H	
PWB-C	DUNTK7243BMV1	S	DOLBY UNIT 66FW54H	
PWB-C	DUNTK7243BMV2	S	DOLBY UNIT 76FW54H	
PWB-D	DUNTK7266BMV1	S	CONTROL UNIT 66FW54H	
PWB-D	DUNTK7266BMV5	S	CONTROL UNIT 76FW54H	
PWB-E	DUNTK7267BMV1	S	AV FRONT UNIT 66FW54H	
PWB-E	DUNTK7267BMV5	S	AV FRONT UNIT 76FW54H	
PWB-F	DUNTK7285BMV4	S	AUDIO AMP. UNIT 66FW54H	
PWB-F	DUNTK7285BMV3	S	AUDIO AMP. UNIT 76FW54H	
PWB-G	DUNTK7268BMV0	S	EXT. SPEAKER (X2) 66FW54H	
PWB-G	DUNTK7268BMV1	S	EXT. SPEAKER (X2) 76FW54H	
PWB-H	DUNTK7229BMV2	S	EXT. SPEAKER (X3) 66FW54H	
PWB-H	DUNTK7229BMV3	S	EXT. SPEAKER (X3) 76FW54H	
PWB-I	DUNTK7271BMV4	S	DEFLECTION (ONLY 76FW54H)	
	DSETU7240BMV8	S	COMPLETE CHASSIS 66FW54H	
	DSETU7240BMV3	S	COMPLETE CHASSIS 76FW54H	
PWB-A	MOTHER UNIT			
TUNER				
△ TH 0201	RTUNH0123BMZZ	S	TUNER CTT5020	BA
INTEGRATED CIRCUITS				
IC 0201	RH-IX1672BMZZ	S	TDA4472-MFL TEMIC	AP
IC 0202	RH-IX1556BMZZ	S	BA10393 S0P8	AD
IC 0203	RH-IX0037CEZZ	S	UPC574J 33V	AD
IC 0301	VHITDA7480/-1	S	TDA7480	AK
IC 0302	VHITDA7480/-1	S	TDA7480	AK
IC 0304	VHIM5218L/-1	S	M5218L	AF
IC 0305	RH-IX1636BMZZ	S	MSP3410D PSD1P64 ITT	BD
IC 0401	RH-IX1602BMZZ	S	HEF 4053	AE
IC 0501	VHITDA7480/-1	S	TDA7480	AK
IC 0502	VHIBA4558F/-1	S	BA4558F-E2 OP-AMP	
IC 0503	RH-IX1556BMZZ	S	BA10393 S0P8	AD
IC 0701	VHIPST529C2-1	S	PST529C2	AD
IC 0702	RH-IX1646BMZZ	S	ST6203B SGS-	AL
△ IC 0703	RH-FX0106BMZZ	S	M0C8106SR2V-M	AD
△ IC 0704	RH-FX0106BMZZ	S	M0C8106SR2V-M	AD
△ IC 0705	RH-FX0106BMZZ	S	M0C8106SR2V-M	AD
IC 0706	RH-IX1674BMZZ	S	KA431AZ	AD
IC 0707	RH-IX1704BMZZ	S	L4978	AK

REF N°	PARTS	★	DESCRIPTION	CODE
IC 0708	RH-FX0111BMZZ	S	OPTOCOUP. TLP165J TOSHIBA	AE
IC 0801	RH-IX1688BMN2	S	VDP 3120C2 MICRONAS	BH
IC 1001	RH-IX1686BMZZ	S	ST10R27PL	AW
IC 1002	CH-IX1664CJH6	S	CON EPROM SOFT 66FW54H	AX
IC 1002	CH-IX1664CJH8	S	CON EPROM SOFT 76FW54H	
IC 1003	RH-IX1603BMZZ	S	NVM X24645S8 XICOR	AV
IC 1004	RH-IX1603BMZZ	S	NVM X24645S8 XICOR	AV
IC 1005	VHIPST529C2-1	S	PST529C2	AD
IC 1801	RH-IX1416BMZZ	S	TEA 5101A	AN
IC 2401	RH-IX1709BMZZ	S	SDA5275-3MTXT NIVEL2,5	BG
IC 2402	RH-IX1656BMZZ	S	RAM D KM44C1000DT-6T SAMS	AY
TRANSISTORS				
Q 0201	VS2SA1037KQ-1	S	BC807	AA
Q 0208	VS2SC2412KQ-1	S	2SC2412	AA
Q 0209	VS2SC2412KQ-1	S	2SC2412	AA
Q 0210	VS2SC2412KQ-1	S	2SC2412	AA
Q 0302	VS2SC2412KQ-1	S	2SC2412	AA
Q 0303	VS2SC2412KQ-1	S	2SC2412	AA
Q 0304	VS2SA1037KQ-1	S	BC807	AA
Q 0305	VS2SC2412KQ-1	S	2SC2412	AA
Q 0306	VS2SC2412KQ-1	S	2SC2412	AA
Q 0403	VS2SC2412KQ-1	S	2SC2412	AA
Q 0404	VS2SC2412KQ-1	S	2SC2412	AA
Q 0405	VS2SA1037KQ-1	S	BC807	AA
Q 0406	VS2SA1037KQ-1	S	BC807	AA
Q 0408	VS2SC2412KQ-1	S	2SC2412	AA
Q 0501	VS2SC2412KQ-1	S	2SC2412	AA
Q 0502	RH-TX0201BMZZ	S	KSA928A	AC
Q 0503	RH-TX0172BMZZ	J	IRFR010TM N	AE
Q 0505	VS2SC2412KQ-1	S	2SC2412	AA
Q 0506	RH-TX0151BMZZ	S	2SD2391Q	AD
Q 0507	RH-TX0203BMZZ	S	2SB852	AB
Q 0601	RH-TX0144BMZZ	S	BUH 515	AK
Q 0602	RH-TX0192BMZZ	S	KSC2500	AC
Q 0603	VS2SC2412KQ-1	S	2SC2412	AA
Q 0606	VS2SC2412KQ-1	S	2SC2412	AA
Q 0607	VS2SC2412KQ-1	S	2SC2412	AA
Q 0608	VS2SC2412KQ-1	S	2SC2412	AA
Q 0701	RH-TX0198BMZZ	S	S5F10N80A	AU
Q 0702	RH-TX0182BMZZ	S	2PD602AR	AB
Q 0703	RH-TX0151BMZZ	S	2SD2391Q	AD
Q 0708	VS2SC2412KQ-1	S	2SC2412	AA
Q 0709	VS2SC2412KQ-1	S	2SC2412	AA
Q 0710	VS2SC2412KQ-1	S	2SC2412	AA
Q 0711	RH-TX0106BMZZ	S	BC547	AB
Q 0712	VS2SC2412KQ-1	S	2SC2412	AA
Q 0714	VS2SA1037KQ-1	S	BC807	AA
Q 0715	RH-TX0215BMZZ	S	MOSFET 2SK2715	AF
Q 0717	VS2SC2412KQ-1	S	2SC2412	AA
Q 0801	VS2SA1037KQ-1	S	BC807	AA
Q 0802	VS2SC2412KQ-1	S	2SC2412	AA
Q 1001	VS2SC2412KQ-1	S	2SC2412	AA
Q 1002	VS2SC2412KQ-1	S	2SC2412	AA
Q 1003	VS2SC2412KQ-1	S	2SC2412	AA
Q 1004	VS2SA1037KQ-1	S	BC807	AA
Q 1005	VS2SC2412KQ-1	S	2SC2412	AA
Q 1006	VS2SC2412KQ-1	S	2SC2412	AA
Q 1007	VS2SC2412KQ-1	S	2SC2412	AA
Q 1601	VS2SC5022//1E	S	C5022 HITACHI	AF
Q 1701	RH-TX0166BMZZ	S	MOSFET 2SK2605 TOSHIBA	AK
Q 2401	VS2SC2412KQ-1	S	2SC2412	AA
DIODES				
D 0203	RH-DX0551BMZZ	S	DIODE LL4148 TFK	AA
D 0204	RH-DX0548BMZZ	S	DIODE BBY40 VARICAP	AE
D 0301	RH-DX0551BMZZ	S	DIODE LL4148 TFK	AA
D 0302	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0303	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0304	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0305	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0401	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0402	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0403	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0404	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0405	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0406	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0407	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA
D 0408	RH-EX0549BMZZ	S	ZENER TZMC7V5 TFK	AA