

## General Information

1995

Chassis: 5BSA

CRT: 34EAC0136

Also Covers:

Sharp 37AM-12H

Remote Control:

37AM-23H

RRMCG1048BMSA

37AM-12H

RRMCG1050BMSA

Main Power Button:

37AM-23H

JBTN-1023BMSA

37AM-12H

JBTN-1019BMSA

## Specifications

Aerial Input Impedance	75 ohm unbalanced
Convergence	Self converging system
Focus	Bipotential electrostatic
Power Input	240V AC 50 Hz
Power Consumption	38 W
Speaker	8cm round
Voice Coil Impedance	32 ohm
Sweep Deflection	Magnetic
Tuning Ranges	471.25 MHz / 855.25 MHz
Audio Power Output Rating	1.5W (MPO)
Intermediate Frequencies:	
Picture IF	39.5 MHz
Sound IF Carrier	33.5 MHz
Colour Sub-Carrier	35.07 MHz (Nominal)

## Service Adjustments

### Important Service Notes

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

## Recommended Safety Parts

Item	Part No.	Description
	VB34EAC0136*N	CRT 14"
	RCILG0407BMZZ	Degaussing Coil
C 0722	RC-KZ0156CEZZ	3300p 4KV Ceramic
IC 0701	RH-FX0101BMZZ	Opto Coupler
L 0701	RCILF0111BMZZ	Mains Filter
R 0721	VRC-U2AHG825K	8.2M 1/2 W Solid
S 0701	QSW-P0600BMZZ	Power Switch
T 0601	RTRNF2031BMZZ	F.B.T.
T 0700	RTRNZ0535BMZZ	Chopper

### Servicing of High Voltage and Picture Tube.

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

- Picture tube in this receiver employs integral implosion protection.
- Replace with tube of the same type number for continued safety.
- Do not lift picture tube by the neck.
- 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:

- When repairing the circuit, be sure not to increase the high voltage to more than 30.0 kv, (at beam 1000uA) for the set.
- To keep the set in a normal operation, be sure to make it function on 23.5 kv ± 1.5 kv (at beam 1000 uA) 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 a result of the repairs, never forget to check for such high voltage after the work.
- Do not substitute a picture tube with unauthorised types and/or brands which may cause excess X-Ray radiation.

### Before Returning the Receiver

In addition to the checks 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.

- Inspect all lead insulation to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
- Inspect all protective devices such as non-metallic control knobs, insulating fish papers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators etc.
- Apply test voltage of 3000 volts between live parts and accessible metal parts for 3 seconds.

## Service Adjustment

### Service Mode Function

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

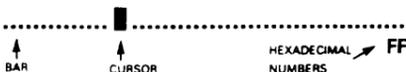
In order to use the Service Mode

- Press main switch to OFF
- Connect Test Pattern signal to antenna terminal
- Press v and CH Δ buttons and main switch to ON simultaneously
- SERV— will appear on screen. Service mode is now entered.
- Select adjustment using buttons v CH Δ

To exit service mode, press main switch to OFF or press MODE button on R/C.

Displayed on Screen	Hexadecimal Range	Function
-SERV-		Indicates operative Service Mode
a	00 - FF	Auto Gain Contrc
b	00 - FF	Auto Frequency Contrc
c	00 - 3F	Blanking Pulse shift
d	00 - 3F	Vertical Position shift
e	00 - 3F	Vertical Amplitude shift
f	00 - 3F	Vertical Symmetry alteration
g	00 - 05	Luma Delay
h		Indication of G2 adjustment
i	00 - 3F	Vertical Breathing Correction (DO NOT TOUCH)
j	00 - 3F	Red Gain
k	00 - 3F	Green Gain
l	00 - 3F	Blue Gain
m		Access to NVM memory

- For "a" thru "l" selections. Adjustment to a selection can be made by pressing buttons v Δ Δ (not for Gll adjustment). A colour bar is displayed on the OSD to indicate the adjustment position, together with hexadecimal numbers (not for Gll adjustment).



For "m" selection. NVM storage location settings variants.



In order to have access to the desired storage location, buttons v Δ Δ should be pressed, to obtain a higher or lower location, respectively. Bear in mind that, for storage location indication a hexadecimal numerical system is used, instead of a decimal system.

- 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, ..... 19, 1A, 1B, 1C, 1D, 1E, 1F, 20, 21, ..... 99, 9A, 9B, 9C, 9D, 9E, 9F, A0, A1, ..... B0, ..... C0, ..... D0, ..... E0, ..... F0, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC, FD, FE, FF.

From this last location FF to the first: 00 can be reached by increasing and from first to last by decreasing. Once the storage location to be varied has been selected, its value can be modified by the bits that form part of the storage location numerical buttons, numbers 0 to 7, respectively. This switches its binary number from and between 0 and 1 each time one of the buttons is pressed.

0 = 2<sup>0</sup>, 1 = 2<sup>1</sup>, 2 = 2<sup>2</sup> = 4, .....

ACD (HEX)	DESCRIPTION
00	RED COLOUR TEMPERATURE
01	GREEN COLOUR TEMPERATURE
02	BLUE COLOUR TEMPERATURE
03	VERTICAL POSITION
04	HORIZONTAL PHASE CONTROL
05	VERTICAL AMPLITUDE
06	VERTICAL BREATHING CORRECTION
07	VERTICAL LINEARITY
08	LUMA DELAY PAL
09	LUMA DELAY SECAM
0A	AGC
0B	OPTIONS ING_OSD A_F CHL PAL UHF T_LOCK AV_F FP 7 6 5 4 3 2 1 0 0 FP SYSTEM B/G (0) - B/G-L MESSAGE RECHERCHE (1) 1 AV FRONTAL> NOT INCLUDED (0), INCLUDED (1) 2 TUNING LOCK LOCKED (1), NOT LOCKED (0) 3 UHF ONLY BAND UHF (1) - ALL BANDS (0) 4 PAL ONLY (1) PAL + SECAM (0) 5 CHILD LOCK CHILD LOCK ACTIVE (1), CHILD LOCK NOT ACTIVE (0) 6 AUTO FIRST TUNING FIRST MENU AUTO (1) MANUAL (0) 7 ING OSD OSD INGLESS (1) OSD SYMBOL (0)
0C	AFT ADJUSTMENT VALUE (B/G L SYSTEMS)
0D	AFT ADJUSTMENT VALUE (L SYSTEM)
0E	MAXIMUM VOLUME LIMIT
0F	FIRM
10	RED COLOUR TEMPERATURE
11	GREEN COLOUR TEMPERATURE
12	BLUE COLOUR TEMPERATURE
13	VERTICAL POSITION
14	HORIZONTAL PHASE CONTROL
15	VERTICAL AMPLITUDE
16	VERTICAL BREATHING CORRECTION
17	VERTICAL LINEARITY
18	LUMA DELAY PAL
19	LUNAR DELAY SECAM
1A	AGC
1B	OPTIONS ING_OSD A_F CHL PAL UHF T_LOCK AV_F FP 7 6 5 4 3 2 1 0 0 FP SYSTEM B/G (0) - B/G-L MESSAGE RECHERCHE (1) 1 AV FRONTAL> NOT INCLUDED (0), INCLUDED (1) 2 TUNING LOCK LOCKED (1), NOT LOCKED (0) 3 UHF ONLY BAND UHF (1) - ALL BANDS (0) 4 PAL ONLY (1) PAL + SECAM (0) 5 CHILD LOCK CHILD LOCK ACTIVE (1), CHILD LOCK NOT ACTIVE (0) 6 AUTO FIRST TUNING FIRST MENU AUTO (1) MANUAL (0) 7 ING OSD OSD INGLESS (1) OSD SYMBOL (0)
1C	AFT ADJUSTMENT VALUE (B/G L SYSTEMS)
1D	AFT ADJUSTMENT VALUE (L SYSTEMS)
1E	MAXIMUM VOLUME LIMIT
1F	FIRM
20	RED COLOUR TEMPERATURE
21	GREEN COLOUR TEMPERATURE
22	BLUE COLOUR TEMPERATURE
23	VERTICAL POSITION
24	HORIZONTAL PHASE CONTROL
25	VERTICAL AMPLITUDE
26	VERTICAL BREATHING CORRECTION
27	VERTICAL LINEARITY
28	LUMA DELAY PAL
29	LUMA DELAY SECAM
2A	AGC
2B	OPTIONS ING_OSD A_F CHL PAL UHF T_LOCK AV_F FP 7 6 5 4 3 2 1 0 0 FP SYSTEM B/G (0) - B/G-L MESSAGE RECHERCHE (1) 1 AV FRONTAL> NOT INCLUDED (0), INCLUDED (1) 2 TUNING LOCK LOCKED (1), NOT LOCKED (0) 3 UHF ONLY BAND UHF (1) - ALL BANDS (0) 4 PAL ONLY (1) PAL + SECAM (0) 5 CHILD LOCK CHILD LOCK ACTIVE (1), CHILD LOCK NOT ACTIVE (0) 6 AUTO FIRST TUNING FIRST MENU AUTO (1) MANUAL (0) 7 ING OSD OSD INGLESS (1) OSD SYMBOL (0)

2C	AFT ADJUSTMENT VALUE (B/G L SYSTEMS)
2E	AFT ADJUSTMENT VALUE (L SYSTEMS)
2F	MAXIMUM VOLUME LIMIT
30	FIRM
31	TABLE LONG
32	FIRM
33	AGING ON AUTOMATIC SWITCH ON
34	SWITCH ON DELAY TIME
35	VOLUME
36	CONTRAST
37	COLOUR
38	BRIGHTNESS
39	PEAKING (RANGE 1-7)
3A	ACTUAL PROGRAMME
3B	TV STATE ON OFF
3C	DECIMAL VOLUME LEVEL (FACTORY PRESET)
3D	CONTRAST (FACTORY PRESET)
3E	COLOUR (FACTORY PRESET)
3F	BRIGHTNESS (FACTORY PRESET)
40	PEAKING (RANGE 1-7) (FACTORY PRESET)
41	ON TIMER LAST VALUE
42	OFF TIMER LAST VALUE
42-B9	PROGRAMMES
BA	OSD STATE (X.X.X.X.X CHILD_FRONT.CHILD_AV NORM ON OFF)
BA (37AM-23H)	OSD STATE (35A-25H) BIT 0 PICTURE NORM ON OFF BIT 1 SCART/AV LOCKED BIT 2 FRONTAL LOCKED BIT 3 ROW B:30 PERMISS (PROGRAMMED INTERNALLY) BIT 4 PIN NUMBER OPTION (0 - NOT APPEAR, 1 - APPEAR) BIT 5 CLOCK STATE (PROGRAMMED INTERNALLY) BIT 6 ELIMINATE VERTICAL WHITE BARS IN MENUS BIT 7 X
BB	BKCD USERS CORRECTION (NOT USED IN THIS MODEL)
BC	BKCD USERS PRESET VALUE (NORMALIZED)
BD	VOLTAGE LIMIT BETWEEN L-L SYSTEMS (MSB)
BE	VOLTAGE LIMIT BETWEEN L-L SYSTEMS (LSB)
BF	HORIZONTAL OSD OFFSET
BF (37AM-23H)	HORIZONTAL OSD OFFSET BIT 7 DIRECTION SIGN (0) INCREASE (1) DECREASE BIT 6 DONT CARE BIT 5 - BIT 0 OFFSET VALUE
CO	PROG SEARCH SPEED (ALL BANDS) - HIGH NIBBLE COMPLEMENTED
C1	PROG SEARCH SPEED (UHF BAND) - HIGH NIBBLE COMPLEMENTED
C2	PROG SEARCH SPEED (VHL BAND) - HIGH NIBBLE COMPLEMENTED
C3	PROG SEARCH SPEED (VHH BAND) - HIGH NIBBLE COMPLEMENTED
C4	CHANNEL RANGE IN FACTORY AUTOINSTALL
C5	PASSWORD ON (1) OFF (0)
C6	PASSWORD FIRST DIGIT
C7	PASSWORD SECOND DIGIT
C8	PASSWORD THIRD DIGIT
C9	PASSWORD FOURTH DIGIT
CA-CF	FREE
DO-FF (37AM-23H)	FREE
DO-FF (37AT-25H)	LIST STORED PAGES (8 PROGRAMMES) (6 BYTES PER PROGRAMME)

- The changes introduced are automatically memorized
- Having finalized adjustments, push MODE button on R/C to exit Service Mode.

### PIF/AGC Adjustment

#### 1: VCO + AFT Adjustment

- Connect the output of SSG (Standard Signal Generator) to the tuner IF output terminal. SSG output: 39.5 MHz (CW) ±5 kHz). SSG output level: approx. 90dBμ v.
- Enter into Service Mode.
- Push CH Δ until AFT appears.
- Press □/0 button on R/C. Setting is made automatically. During this setting the colour bar shall go from red to yellow. When setting is finished, colour

bar disappears and B-STOP (bus stop) is shown on screen

- Switch set OFF and ON again, setting is now memorised.

#### 2: RF-AGC Take over Adjustment (I2C BUS)

- Receive the "COLOUR BAR" signal (Channel E-42). Signal strength: 57 dBμ v.
- Enter into Service Mode.
- Push CH Δ until AGC appears.
- Press □/0 button on R/C. Setting is made automatically. During this setting the colour bar shall go from red to yellow. When setting is finished, colour bar disappears and B-STOP (bus stop) is shown on screen.
- Switch set OFF and ON again, setting is now memorised.

### Screen Adjustment

#### 3: Focus Adjustment

- Apply mains voltage of 240v AC/50 Hz to TV.
- Receive Philips pattern signal to a level between 60 and 80 dBμ v.
- Set contrast to 10/10, brightness to 5/10 and colour to 0/10.
- Adjust focus potentiometer to obtain maximum definition.

#### 4: G2 Adjustment

- Apply mains voltage of 240 v AC/50 Hz to TV.
- Receive black screen signal to a level between 60 and 80 dBμ v.
- Set contrast to 10/10, brightness to 0/10 and colour to 0/10.
- Enter into Service Mode.
- Push CH Δ until Gll appears.
- Increase G2 potentiometer until flyback appears on screen, and OSD bar is at maximum.
- Adjust G2 potentiometer until OSD bar is at half way position on screen.
- Exit Service Mode.

### Geometry Adjustment Procedure

#### 1: "BL PHA"

- Receive Philips pattern signal.
- When Δ Δ button is pressed, picture moves to the left.
- When Δ v button is pressed, picture moves to the right.
- Adjust the horizontal location to obtain picture centring (fig. 1).

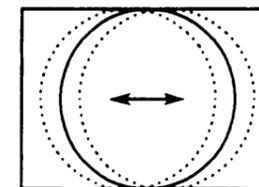


Fig 1.

#### 2: "VER PO"

- Receive Philips pattern signal.
- When Δ Δ button is pressed, picture moves up.
- When Δ v button is pressed, picture moves down.
- Adjust the horizontal location to obtain picture centring (fig. 2).

## Service Adjustments Cont'd.

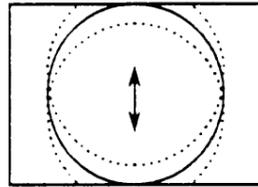


Fig 2

### 3: "VER AM"

- 1: Receive Philips pattern signal.
- 2: When  $\Delta$  button is pressed, vertical size of picture increases.
- 3: When  $\nabla$  button is pressed, vertical size of picture decreases.
- 4: Adjust the vertical size to obtain overscan (fig. 3).

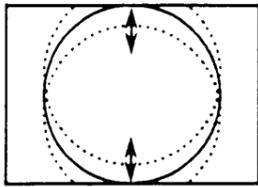


Fig 3

### 4: "VER SM"

- 1: Receive Philips pattern signal.
- 2: When  $\Delta$  button is pressed, upper picture scanning decreases and lower picture scanning increases.
- 3: When  $\nabla$  button is pressed, upper picture scanning increases and lower picture scanning decreases.
- 4: Adjust the vertical symmetry to obtain symmetrical scanning between upper and lower picture (fig. 4).

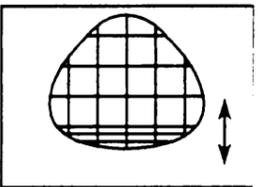


Fig 4

### Colour Adjustment

#### 5: "LUMA D"

- 1: Receive Philips pattern signal.
- 2: When  $\Delta$  button is pressed, luma phase delays.
- 3: When  $\nabla$  button is pressed, chroma phase delays.
- 4: Adjust the chroma-luma delay.

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

#### 6: "GAIN R", "GAIN G", "GAIN B"

- 1: Adjust G2.
- 2: Tune in white card.
- 3: Adjust colour to minimum.
- 4: Position colourmetre in the centre of screen.
- 5: Using brightness and contrast buttons, select a luminance of  $\approx 120$  nits.
- 6: Operate again in Service Mode and select location GAIN R, GAIN G, GAIN B to obtain colour co-ordinates:  
X =  $0.290 \pm 0.015$   
Y =  $0.284 \pm 0.015$
- 7: Exit Service Mode and check colour co-ordinates 'X' and 'Y' at 20 and 120

NITS. It may be necessary to repeat procedure.

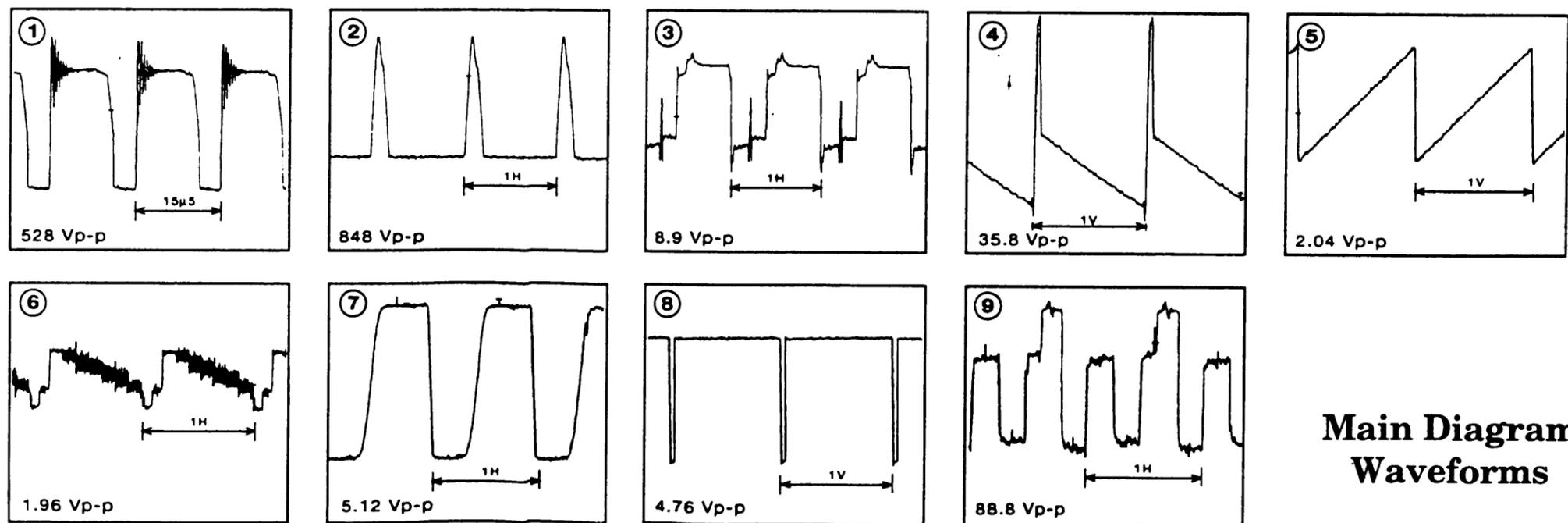
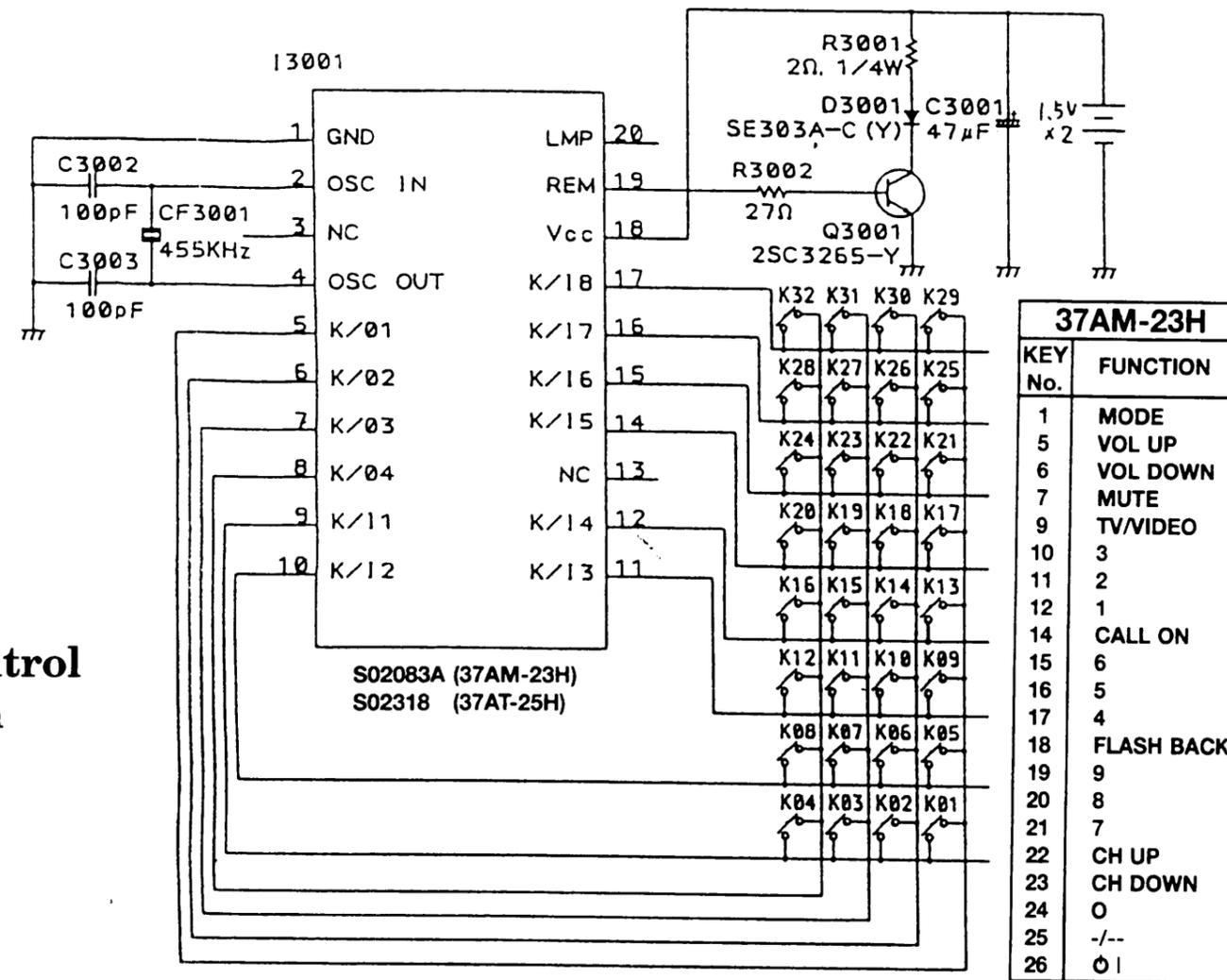
Note:  
Locations: GAIN R alter 'X' co-ordinate;  
GAIN G alter the 'Y' co-ordinates; GAIN B alter the 'X' and 'Y' co-ordinates.

### Child Lock Cancel

The following process describes how to cancel actual password (PIN) when the customer forgets the code.

- 1: Switch ON TV set.
- 2: Press buttons  $\nabla$   $\Delta$  on TV and  $\square$  /  $\rightarrow$  on R/C simultaneously.
- 3: Press MODE button on R/C to input menu.
- 4: Using buttons  $\Delta$  CH  $\nabla$  move to  $\rightarrow$  position.
- 5: Press MODE button again.
- 6: Select PIN and input new PIN (please do not forget it).
- 7: Select EXIT and press MODE button again.

## Remote Control Diagram



## Main Diagram Waveforms

Main Diagram

