

# SERVICE MANUAL

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COLOR TELEVISION

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This Service Manual is the "Revision Publishing" and replaces "Simple Manual"  
(S/M Code No. 09-003-340-3T1).

## NOTICES BEFORE REPAIRING

# To make the best use of this equipment, make sure to obey the following items when repairing (or mending).

1. Do not damage or melt the tunicate of the leading wire on the AC1 side, including the power supply cord.
2. Do not soil or stain the letters on the spec. inscription plates, notice labels, fuse labels, etc.
3. When repairing the part extracted from the conducted side of the board pattern, fix it firmly with applying bond to the pattern and the part.
4. Restore the following items after repairing.
  - 1) Conditions of soldering of the wires (especially, the distance on the AC1 side).
  - 2) Conditions of wiring, bundling of wires, etc.
  - 3) Types of the wires.
  - 4) Attachment conditions of all types of the insulation.
5. After repairing, always measure the insulation resistance and perform the voltage-withstand test (See Fig-1).
  - 1) The insulation resistance must be 7.0 to 9.5 M $\Omega$  when applying 500V per second.
  - 2) In the voltage withstand test, apply 1.0 kV for 1 minute and check that the GO lamp lights.

- \* Breaking current set to 10 mA.
- \* Connect the safety checker as shown in Fig-1, then measure the resistance and perform the test.
- \* Do not touch the equipment during testing.
- \* For details of the safety checker, refer to the supplied Operation manual.

Insulation resistance: 7.0 to 9.5 M $\Omega$  (500 V/s)  
Voltage-withstand: 1.0 kV for 1 minute.

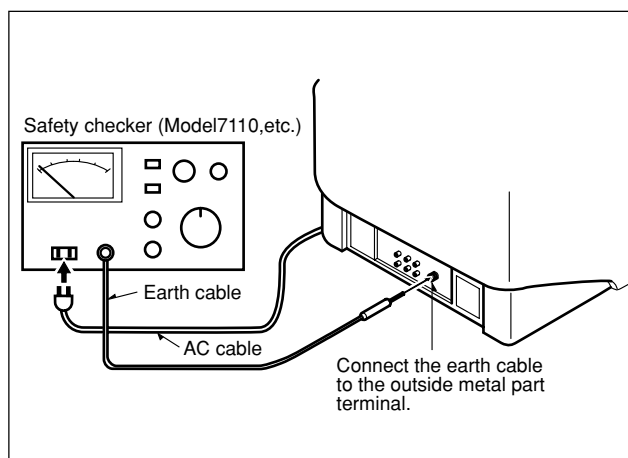


Fig-1

## When servicing and checking on the TV, note the followings.

1. Keep the notices.

As for the places which need special attentions, they are indicated with labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.
2. Avoid an electric shock.

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.
3. Use the designated parts.

The parts in this equipment have the specific characteristics of incombustibility and withstand voltage for safety.  
Therefore, use a part which has the same character as the replaced part. Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts with a  $\Delta$  mark, the designated parts must be used.
4. Put parts and wires in the original position after assembling or wiring.

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled so that these parts do not make contact with the printed board. The inside wiring is designed not to get close to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.
5. Take care of the cathode-ray tube.

By setting an explosion-proof cathode-ray tube in this equipment, safety is secured against implosion. However, when removing it or servicing from the back, it gives out shock that is dangerous. Take enough care to deal with it.
6. Avoid an X-ray.

Safety is secured against an X-ray by giving considerations to the cathode-ray tube and the high voltage peripheral circuit, etc. Therefore, when repairing the high voltage peripheral circuit, use the designated parts and do not change the circuit. Repairing, except indicates, causes rising of high voltage, and the cathode-ray tube emits an X-ray.
7. Perform a safety check after servicing.

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are deteriorated portions around the places serviced.

# SPECIFICATIONS

<b>Tuner System</b>	Frequency synthesized tuner
<b>TV System</b>	NTSC-M
<b>Channel Coverage</b>	VHF: 2 to 13 UHF: 14 to 69 CATV: 5A, A-1 to A-5, A to W, W+1 to W+84
<b>Program Memory</b>	181
<b>Antenna Input</b>	75 ohms, unbalanced
<b>Picture Tube</b>	20"
<b>Screen Size</b>	404 (W) x 303 (H) mm (16 x 12 in.) 480 mm (Visible diagonal) (19 in.)
<b>Video Input</b>	1 Vp-p 75 ohms
<b>Audio Input</b>	0.5 Vrms., 33 k ohms more
<b>Speaker</b>	120 x 60 mm (4 <sup>3</sup> / <sub>4</sub> x 2 <sup>3</sup> / <sub>8</sub> in.)
<b>Operating Voltage</b>	110 - 240 V, 50/60 Hz
<b>Power Consumption</b>	105 W
<b>Phone Jack</b>	Stereo-mini jack
<b>Operating Temperature</b>	5°C - 40°C
<b>Operation Humidity</b>	35% - 80%
<b>Dimensions</b>	610 (W) x 440 (H) x 483 (D) mm (24 <sup>1</sup> / <sub>8</sub> x 17 <sup>3</sup> / <sub>8</sub> x 19 <sup>1</sup> / <sub>8</sub> in.)
<b>Weight</b>	19.5 kg (42.9 lbs.)

• Design and specifications are subject to change without notice.

## ACCESSORIES LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8Z-JAK-901-010	IB,NH (E) -AN2110/ 2010/1410	
2	8Z-JAE-951-010	RC UNIT,RC-ZVT18	
3	87-A90-702-010	ANT ASSY,TV 5 SEC (NTSC)	
4	87-A91-015-010	PLUG,CONVERSION JT-0475A	



# DISASSEMBLY INSTRUCTIONS

## 1. REAR CABINET REMOVAL

- (1) Remove four screws ① and three screws ②, then remove the rear cabinet in the direction of the arrow. (See Figure 1-1)

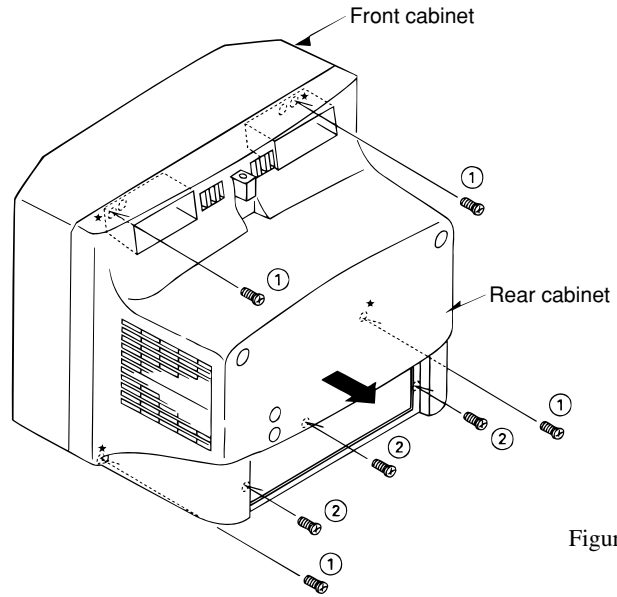


Figure 1-1

## 2. HIGH-VOLTAGE CAP (ANODE CAP) REMOVAL

### 2-1. Cautions before Removing

**Discharge the anode voltage**

- (1) The anode voltage is not discharged completely from the CRT of this unit even after the power is turned off. Be sure to discharge the residual anode voltage before removing the anode cap.

**Do not use pliers**

- (2) Do not use pliers, etc. to remove the anode cap. If you used pliers and bent the hook to remove the cap, the spring characteristics of the hook could be lost, and when reinstalled, the cap would come off from the CRT anode button easily, causing an accident.

**Do not turn the anode cap**

- (3) If the anode cap is turned in the direction of its circumference, the hook is likely to come off.

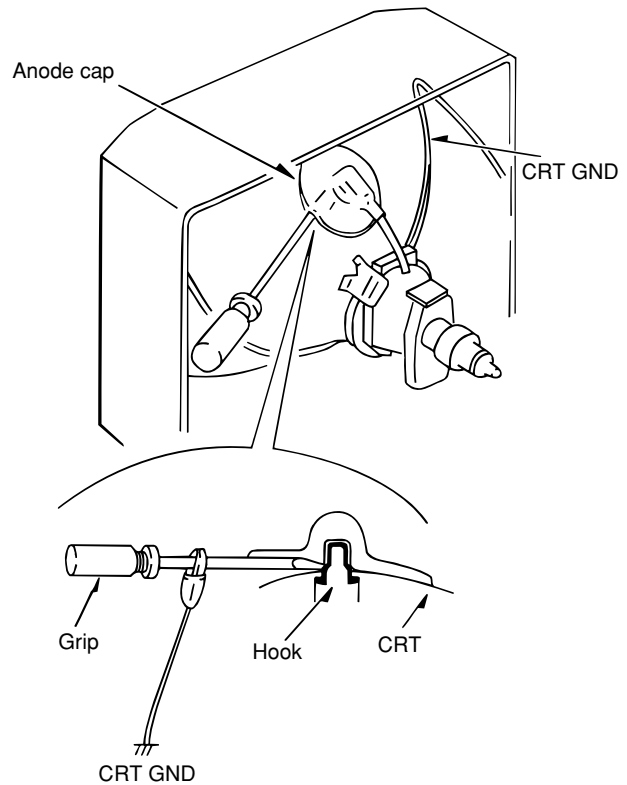


Figure 2-1

### 2-2. Anode Cap Removal

Discharge the anode voltage. (See Figure 2-1)

- (1) Connect a flat-bladed screwdriver to the CRT GND via an alligator clip.
- (2) Use a tester to check the end of the screwdriver and ground of the TV for continuity.
- (3) Touch the hook with the end of the screwdriver.
- (4) Turn over the anode cap.

**Caution :** Be careful not to damage the anode cap.

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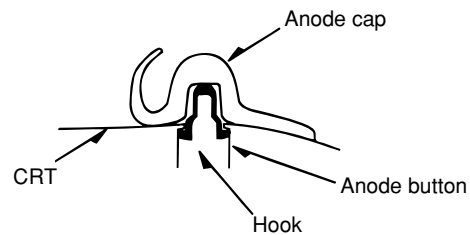


Figure 2-2

- (5) Push the anode cap with your thumb in the direction of arrow ① as shown in the figure, then lift the cap in the direction of arrow ② to release the hook on one side. (See Figure 2-3)

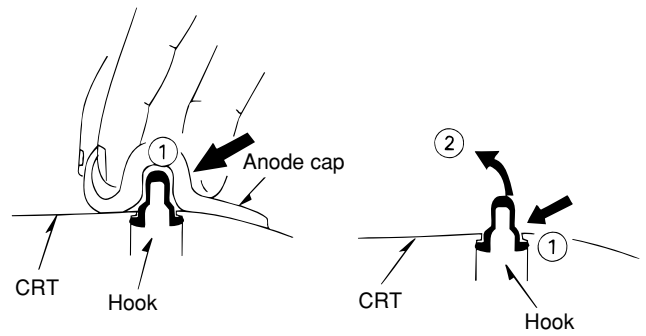


Figure 2-3

- (6) Turn over the anode cap on the side where the hook was released and pull out the cap in the direction opposite to that on which the cap was pushed. (See Figure 2-4)

**Caution** : Do not pull out the anode cap straight up.  
: Do not pull the cap forcibly. After removing the cap, check that the hook is not deformed.

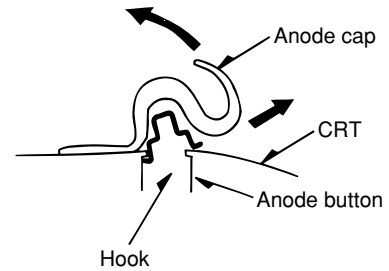


Figure 2-4

### 3. ANODE CAP REINSTALLTION

Observe the cautions carefully so that no accident occurs due to a defect in installing the anode cap and so it does not come off.

#### 3-1. Caution before Reinstalling

Never turn the anode cap after installing it

Never re-use the hook when it has been deformed

- (1) If the anode cap is turned after it is installed, it may come off. Therefore, arrange the high-voltage cable before attaching the anode cap. (See Figure 3-1)
- (2) If you have attached the anode cap before arranging the high-voltage cable, arrange the cable carefully so the cap does not turn.

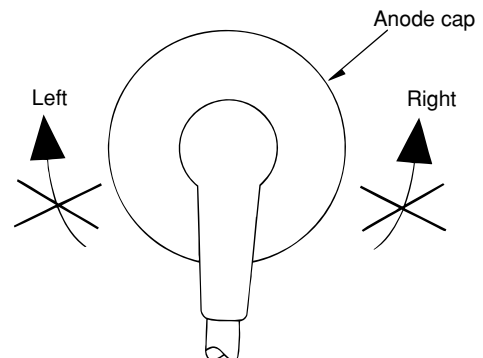


Figure 3-1

#### 3-2. Anode cap reinstallation

- (1) Use a clean cloth moistened slightly with alcohol to clean the installation section. (See Figure 3-2)

**Caution** : Check that the installation section is free from dust, foreign matter, etc.

- (2) Coat the anode cap installation circumference with an appropriate amount of the specified silicone grease (KS-650N).

**Caution** : Be careful that silicone grease does not enter the anode button.

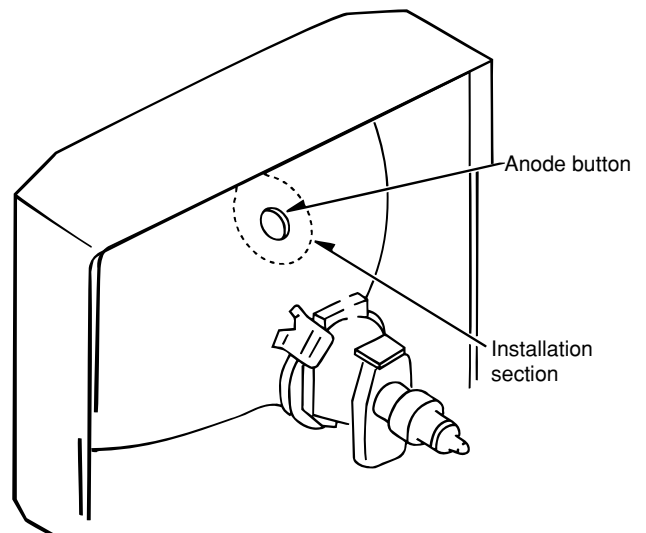


Figure 3-2

- (3) Eliminate twisting, etc. of the high-voltage cable and arrange it so that no twisting occurs. (See Figure 3-3)

**Caution :** If the cable is not arranged correctly, the anode cap could turn and cause an installation defect.

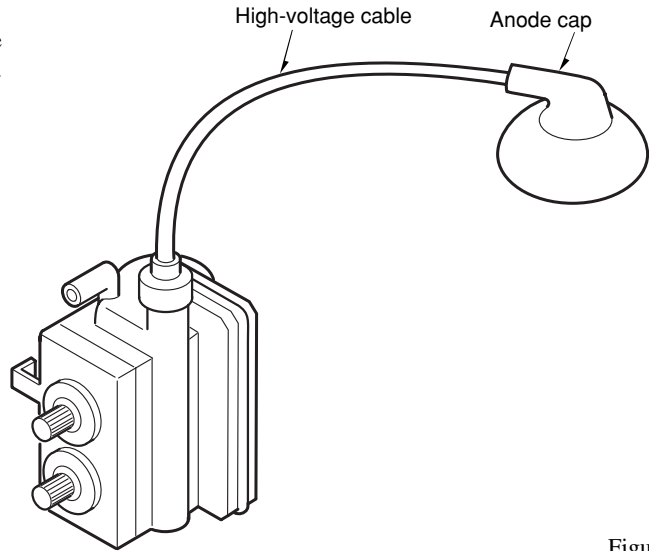


Figure 3-3

- (4) Turn over the rubber cap symmetrically on the left and right. (See Figure 3-4)

**Caution :** Take great care not to damage the anode cap.

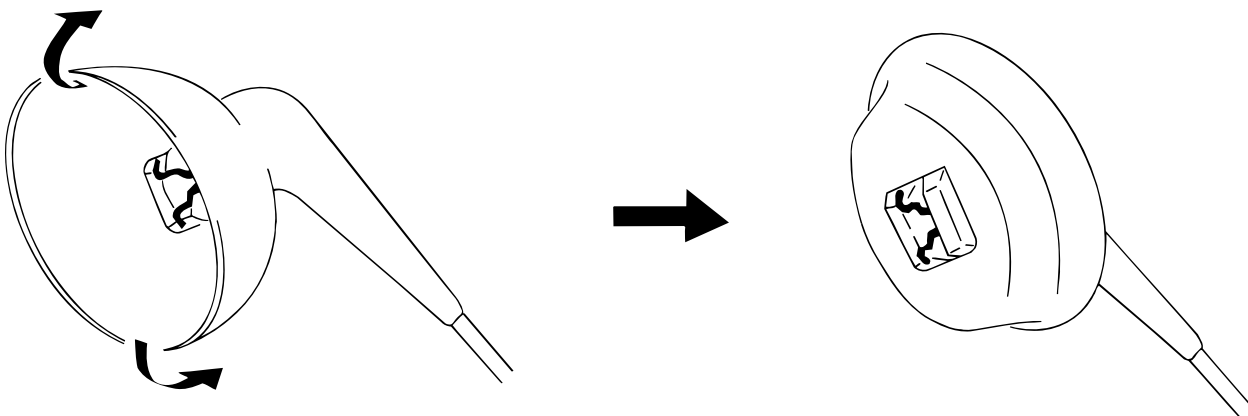


Figure 3-4

- (5) Fit your forefinger over the projection at the center of the cap and hold the cap between your thumb and middle finger. (See Figure 3-5)

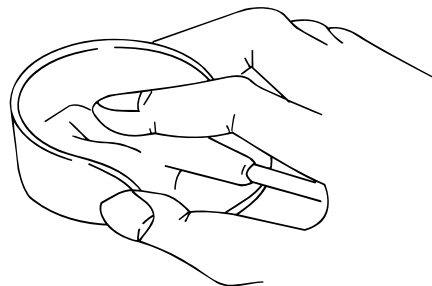


Figure 3-5

- (6) Apply the hook on one side to the anode button as shown on the figure. (See Figure 3-6)  
**Caution :** Check that the hook is held securely.
- (7) Apply the hook on the other side to the anode button as shown in Figure 3-7.

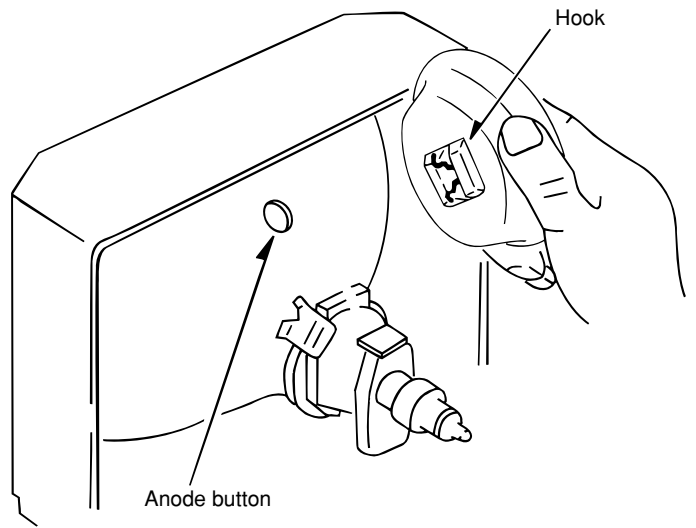
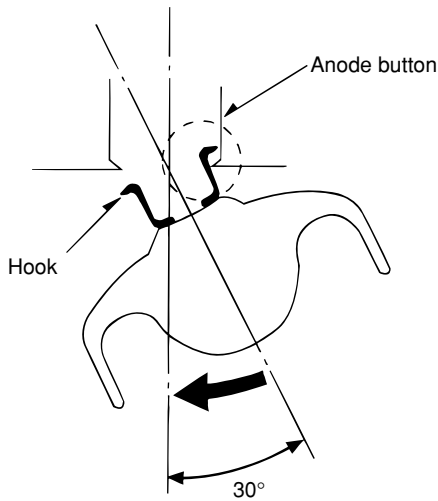


Figure 3-6

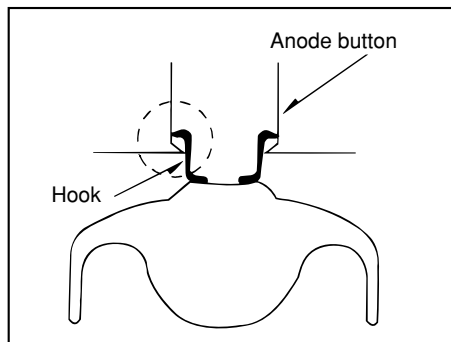


Figure 3-7

- (8) Pull the anode cap slightly with the rubber cap turned over and visually check that the hook is engaged securely.
- (9) Release your hand from the rubber cap of the anode cap.  
**Caution :** Cover the anode cap so that it does not lift.
- (10) Hold the skirt of the anode cap slightly to improve the close contact between the cap and CRT.
- (11) Check that the anode cap is in close contact with the CRT. (See Figure 3-8)

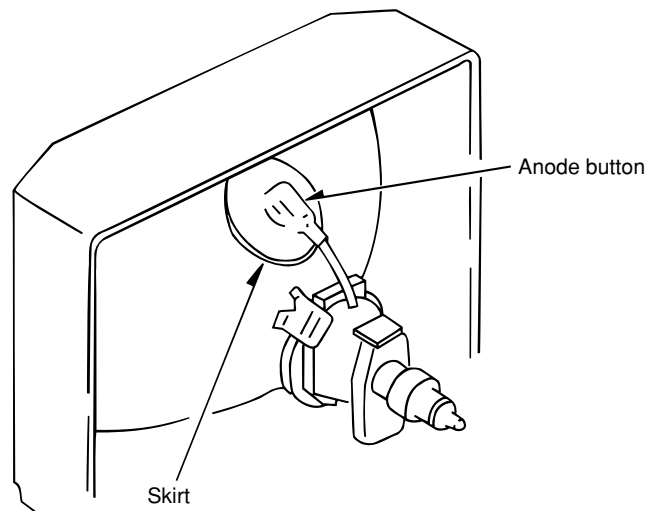


Figure 3-8

#### 4. NK C.B REMOVAL

- (1) Disconnect CN903 (CRT GND).
- (2) Disconnect CN901, CN902.
- (3) Pul out the NK C.B. in the direction of arrow.  
(See Figure 4)

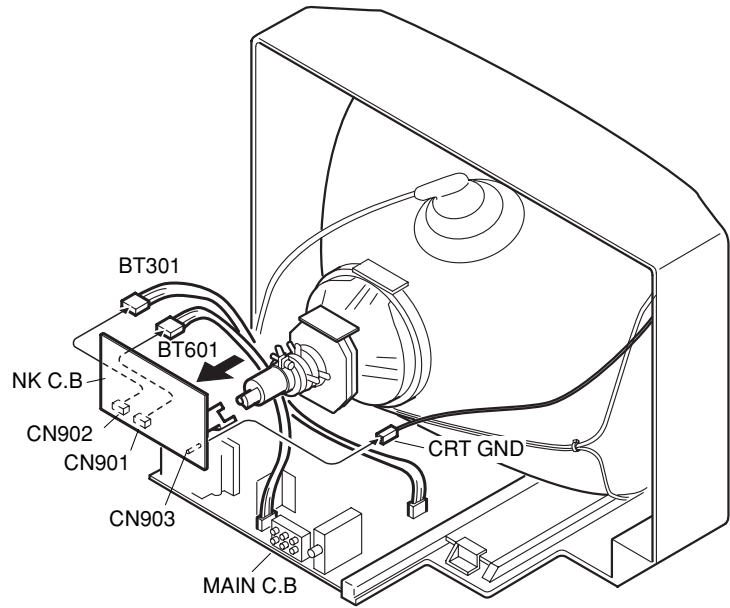


Figure 4

#### 5. MAIN C.B REMOVAL

- (1) Disconnect CNA401, CN601 and CN802.
- (2) Pull out the Main C.B. in the direction of the arrow.  
(See Figure 5)

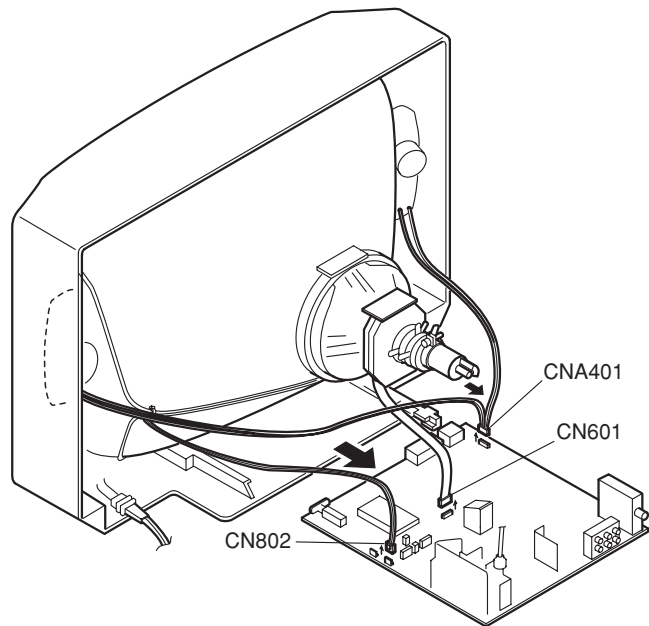


Figure 5



# ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
 If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C19	87-016-629-080		CAP,E 0.1-50 SSL
	87-A20-364-010	IC, KIA7809PI		C21	87-018-115-080		CAP, CER 47P-50V
	87-027-666-010	IC, TC4052BP		C22	87-018-115-080		CAP, CER 47P-50V
	87-A20-312-010	IC, M62420SP		C23	87-018-125-080		CAP, CER 330P-50V
	87-070-237-010	IC, LA7832		C24	87-018-131-080		CAP, CER 1000P-50V
	87-A30-041-110	TR, SE115N		C25	87-016-629-080		CAP,E 0.1-50 SSL
	87-A20-611-080	IC, M51943BSL-700A		C28	87-018-117-080		CAP,TC-U 68P-50 SL
	8Z-JAD-621-010	IC, M37272M8-165SP		C29	87-018-117-080		CAP,TC-U 68P-50 SL
	87-A91-538-010	RCR UNIT, SBX1981-72P		C101	87-016-636-080		CAP,E 4.7-50 SSL
	87-A21-433-010	IC, KS24C041I		C104	87-016-621-080		CAP,E 220-10 SSL
	87-A21-299-010	IC, LA6458SLL		C106	87-A10-576-010		CAP,CER 0.01-50 Z YF
	8Z-JBJ-605-010	IC, TA1268N		C110	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-002-421-010	IC, NJM2233BL		C111	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-A21-283-010	IC, AN5277		C201	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-A21-259-010	IC, MM1454XD		C202	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-A21-169-010	IC, MM1124B		C203	87-016-632-080		CAP,E 0.47-50 SSL
	87-A21-345-010	IC, NJM2150		C204	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-A21-344-010	IC, STR-F6656		C205	87-016-577-080		CAP,E 470-16 SSL
TRANSISTOR				C207	87-016-632-080		CAP,E 0.47-50 SSL
	89-337-794-580	TR, 2SC3779 D/E		C208	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-A30-091-080	FET, 2SJ460		C209	87-016-576-080		CAP,E 330-16 SSL
	87-A30-114-080	TR, 2SD1207T		C210	87-018-115-080		CAP, CER 47P-50V
	89-208-922-380	TR, 2SB892 ST		C211	87-A11-080-080		CAP,TC U 47P-50 J CH
	87-026-269-080	TR, DTA114ES		C214	87-016-627-080		CAP,E 47-16 SSL
	89-327-854-080	TR, 2SC2785F		C251	87-018-134-080		CAPACITOR,TC-U 0.01-16
	89-111-755-080	TR, 2SA1175F		C252	87-016-574-080		CAP,E 100-16 SSL
	87-A30-121-080	TR, DTC 323 TS		C253	87-A10-112-080		CAP,E 100-10 SSL
	87-A30-090-080	FET, 2SK2541		C254	87-015-464-080		CAP,E 4.7-16 BP
	87-A30-176-010	TR, 2SC1573A P/Q/R		C255	87-015-464-080		CAP,E 4.7-16 BP
	89-320-012-080	TR, 2SC2001L		C301	87-016-624-080		CAP,E 10-16 SSL
	87-A30-095-010	TR, 2SD2333LS/C202		C302	87-016-624-080		CAP,E 10-16 SSL
DIODE				C303	87-016-624-080		CAP,E 10-16 SSL
	87-017-654-060	DIODE, GBU6JL6131		C304	87-016-637-080		CAP,E 10-50 SSL
	87-070-111-060	DIODE, RU30A		C305	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-017-352-090	DIODE, RU3YX		C306	87-016-574-080		CAP,E 100-16 SSL
	87-070-112-060	DIODE, RU4YX		C308	87-016-632-080		CAP,E 0.47-50 SSL
	87-017-931-080	ZENER, MTZJ5.6B		C310	87-018-119-080		CAP, CER 100P-50V
	87-002-743-080	ZENER, MTZJ 33B		C311	87-A11-148-080		CAP,TC U 0.1-50 Z F
	87-070-136-080	ZENER, MTZJ5.1B		C312	87-A11-148-080		CAP,TC U 0.1-50 Z F
	87-A40-523-080	ZENER, MTZJ9.1B		C313	87-A11-148-080		CAP,TC U 0.1-50 Z F
	87-A40-348-080	ZENER, MTZJ3.3A		C314	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-020-465-080	DIODE, 1SS133 (110MA)		C315	87-018-131-080		CAP, CER 1000P-50V
	87-A40-286-080	DIODE, RGP10JE-5025		C316	87-016-634-080		CAP,E 2.2-50 SSL
	87-070-274-080	DIODE, 1N4003 SEM		C317	87-016-634-080		CAP,E 2.2-50 SSL
	87-017-932-080	ZENER, MTZJ6.2B		C318	87-018-134-080		CAPACITOR,TC-U 0.01-16
	87-A40-450-090	DIODE, RU 1P		C319	87-016-575-080		CAP,E 220-16 SSL
	87-A40-611-080	ZENER, MTZJ3.9B		C320	87-016-587-090		CAP,E 1000-25 M SSL
	87-A40-249-080	ZENER, MTZJ 15A		C321	87-016-636-080		CAP,E 4.7-50 SSL
MAIN C.B				C323	87-016-625-080		CAP,E 22-16 SSL
BT301	87-JBC-625-010	CONN ASSY, 5P V WHT TV-NK		C324	87-016-632-080		CAP,E 0.47-50 SSL
BT401	8Z-JAE-615-110	CONN ASSY, 4P V GRAY JK		C328	87-016-624-080		CAP,E 10-16 SSL
BT601	87-JBC-626-010	CONN ASSY, 4P V WHT TV-NK		C330	87-016-633-080		CAP,E 1-50 SSL
C1	87-016-624-080	CAP, E 10-16 SSL		C332	87-018-134-080		CAPACITOR,TC-U 0.01-16
C2	87-018-134-080	CAPACITOR,TC-U 0.01-16		C333	87-018-125-080		CAP, CER 330P-50V
C3	87-018-134-080	CAPACITOR,TC-U 0.01-16		C334	87-018-134-080		CAPACITOR,TC-U 0.01-16
C5	87-016-633-080	CAP, E 1-50 SSL		C335	87-016-574-080		CAP,E 100-16 SSL
C6	87-018-134-080	CAPACITOR,TC-U 0.01-16		C336	87-A11-148-080		CAP,TC U 0.1-50 Z F
C7	87-016-621-080	CAP, E 220-10 SSL		C338	87-016-632-080		CAP,E 0.47-50 SSL
C10	87-018-119-080	CAP, CER 100P-50V		C342	87-010-529-080		CAP,E 1-50 BP
C15	87-018-123-080	CAP, CER 220P-50V		C343	87-018-131-080		CAP, CER 1000P-50V
C16	87-016-633-080	CAP, E 1-50 SSL		C344	87-A11-080-080		CAP,TC U 47P-50 J CH
C17	87-018-131-080	CAP, CER 1000P-50V		C346	87-016-622-080		CAP,E 470-10 SSL
C18	87-018-128-080	CAP, CERA-SOL SS 560P		C348	87-018-126-080		CAP,TC-U 390P-50 B
				C401	87-018-134-080		CAPACITOR,TC-U 0.01-16
				C402	87-016-627-080		CAP,E 47-16 SSL
				△C403	87-010-399-090		CAP,E 3300-35 SME
				C404	87-018-134-080		CAPACITOR,TC-U 0.01-16
				C405	87-018-134-080		CAPACITOR,TC-U 0.01-16
				C406	87-018-134-080		CAPACITOR,TC-U 0.01-16
				C407	87-016-627-080		CAP,E 47-16 SSL

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C408	87-016-574-080	CAP,E	100-16 SSL	△C817	87-A10-688-090		CAP,M/P 0.22-275 K (B81133)
C409	87-016-625-080	CAP,E	22-16 SSL	C819	87-016-587-090		CAP,E 1000-25 M SSL
C410	87-016-624-080	CAP,E	10-16 SSL	C821	87-010-446-010		CAP,E 2200-35 KME
C411	87-016-624-080	CAP,E	10-16 SSL	C822	87-016-515-010		CAP,CER 1000P-1K KB
C412	87-016-624-080	CAP,E	10-16 SSL	C827	87-016-587-090		CAP,E 1000-25 M SSL
C413	87-016-624-080	CAP,E	10-16 SSL	C830	87-A11-824-010		CAP,CER 100P-2K J SL
C414	87-016-624-080	CAP,E	10-16 SSL	C831	87-A10-858-090		CAP,CER 330P-2K KR
C415	87-016-633-080	CAP,E	1-50 SSL	CF201	84-LB3-626-010		FLTR,TPS4.5MB2
C416	87-016-633-080	CAP,E	1-50 SSL	CF202	87-008-574-080		FLTR,SFSH4.5MBCB
C417	87-018-134-080	CAPACITOR,TC-U	0.01-16	CN1	87-009-195-010		CONN,5P B5BEH
C418	87-016-624-080	CAP,E	10-16 SSL	CN401	87-049-469-010		CONN,4P V
C419	87-A10-112-080	CAP,E	100-10 SSL	CN601	87-A60-933-010		CONN,4P V B04(5-3)B-DVS-L
C428	87-016-627-080	CAP,E	47-16 SSL	CN604	87-A60-485-010		CONN,2P V LV GRA
C429	87-016-627-080	CAP,E	47-16 SSL	△CN801	87-099-674-010		CONN,2P VA V
C430	87-018-134-080	CAPACITOR,TC-U	0.01-16	△CN802	82-481-649-010		PLUG,2P MINI(*)
C435	87-016-627-080	CAP,E	47-16 SSL	CNA401	87-JB8-601-010		CONN ASSY,4P SP-20
C436	87-018-134-080	CAPACITOR,TC-U	0.01-16	D1	87-070-110-010		LED,SLP-181B-51
C437	87-016-624-080	CAP,E	10-16 SSL	D810	87-A90-965-010		VRIS,TNR15G471K
C440	87-016-627-080	CAP,E	47-16 SSL	△F801	87-035-192-010		FUSE, 4AT
C444	87-016-633-080	CAP,E	1-50 SSL	FB801	87-003-320-080		F-BEAD,FBRO7HA121NB
C445	87-016-591-080	CAP,E	100-35 SSL	FB803	87-003-320-080		F-BEAD,FBRO7HA121NB
C447	87-016-633-080	CAP,E	1-50 SSL	FB804	87-003-320-080		F-BEAD,FBRO7HA121NB
C449	87-016-588-090	CAP,E	2200-25 SSL	FB805	87-003-320-080		F-BEAD,FBRO7HA121NB
C450	87-016-588-090	CAP,E	2200-25 SSL	FB806	87-003-320-080		F-BEAD,FBRO7HA121NB
C453	87-016-574-080	CAP,E	100-16 SSL	FB807	87-003-320-080		F-BEAD,FBRO7HA121NB
C454	87-016-624-080	CAP,E	10-16 SSL	△FC801	87-033-213-080		CLAMP, FUSE
C455	87-016-624-080	CAP,E	10-16 SSL	△FC802	87-033-213-080		CLAMP, FUSE
C459	87-015-464-080	CAP,E	4.7-16 BP	FR601	87-A00-063-060		RES,FUSE 2.2-1/2W J R-TYPE
C460	87-015-464-080	CAP,E	4.7-16 BP	FR602	87-A00-055-060		RES,FUSE 2.2-2WJ R-TYPE
C465	87-018-134-080	CAPACITOR,TC-U	0.01-16	FR604	87-A00-106-060		RES,FUSE 3.3-1W J R-TYPE
C466	87-016-624-080	CAP,E	10-16 SSL	FR801	87-029-070-090		RESISTOR, FUSE 1/4W 2.2
C473	87-018-118-080	CAP,TC-U	82P-50 B	HL1	84-LB3-216-010		HLDR,LED
C474	87-018-118-080	CAP,TC-U	82P-50 B	J401	87-A60-856-010		JACK,PIN 3P
C475	87-018-117-080	CAP,TC-U	68P-50 SL	J402	87-A60-324-110		JACK,PIN 6P Y-W-R W/SW
C476	87-018-117-080	CAP,TC-U	68P-50 SL	J403	87-A60-858-010		JACK,3.5 BLK ST 2 SW
C477	87-015-464-080	CAP,E	4.7-16 BP	L2	87-005-614-080		COIL,100UH LAV35 J
C478	87-015-464-080	CAP,E	4.7-16 BP	L104	87-003-139-080		COIL,0.56UH
C487	87-016-633-080	CAP,E	1-50 SSL	L201	8Z-JBR-612-010		COIL,SIF 4.5MHZ 504BN
C488	87-016-633-080	CAP,E	1-50 SSL	L203	87-003-148-080		COIL BIAS 33UH
C495	87-018-115-080	CAP, CER	47P-50V	L204	87-003-282-080		COIL,12UH
C496	87-018-115-080	CAP, CER	47P-50V	L205	8Z-JBH-610-010		COIL,PIF-SQ57EL349A 45.75MHZ
C502	87-A10-831-080	CAP,E	1000-25 M SMG	L206	87-005-612-080		COIL,68UH J LAV35
C503	87-016-633-080	CAP,E	1-50 SSL	L207	87-003-147-080		COIL, 22UH
C504	87-016-633-080	CAP,E	1-50 SSL	L208	87-003-150-080		COIL, 68UH J LAL02
C508	87-A10-469-080	CAP,CER	2200P-500 K B DD10	L251	87-005-610-080		COIL,47UH LAV35 J
C510	87-018-131-080	CAP, CER	1000P-50V	L401	87-005-507-080		COIL,22UH FL0606 J
C511	87-016-591-080	CAP,E	100-35 SSL	L402	87-005-507-080		COIL,22UH FL0606 J
C601	87-016-644-080	CAP,E	10-100 SSL	L403	87-005-610-080		COIL,47UH LAV35 J
C604	87-016-593-080	CAP,E	470-35 M SSL	L404	87-005-507-080		COIL,22UH FL0606 J
C606	87-A10-675-090	CAP,M/P	0.56-250 J	L602	87-A50-040-010		COIL,2.2MH
C608	87-A10-833-010	CAP,CER	1000P-2K K R LONG	L801	87-A50-176-080		COIL,33UH-PJ87
C609	87-A11-047-090	CAP,M/P	8200P-1.25 H PHS	△LF801	87-JB8-651-010		FLTR,LINE SS24H-K15070
△C610	87-010-974-080	CAP,CER	220P-500 B	△LF802	8Z-JAD-610-010		FLTR,LINE FLF 15N022AV
△C611	87-010-974-080	CAP,CER	220P-500 B	△PR801	87-A90-090-080		PROTECTOR,1.5A 491SERIES 60V
C612	87-016-624-080	CAP,E	10-16 SSL	△PR802	87-A90-195-080		PROTECTOR 7A 60V 491SERIES
C615	87-016-215-080	CAP,E	1-160 M TWSS	△PR804	87-A90-195-080		PROTECTOR 7A 60V 491SERIES
C616	87-A10-833-010	CAP,CER	120P-2K K R LONG	△PS801	87-A91-407-010		P-COUPLER,ON3171-R
△C801	87-A10-688-090	CAP,M/P	0.22-275 K (B81133)	△PS802	87-A91-407-010		P-COUPLER,ON3171-R
△C803	87-A10-517-010	CAP,CER	3300P-4K M E KX	△PT801	8Z-JAD-801-010		PT,SW ZJA-D
△C804	87-A10-517-010	CAP,CER	3300P-4K M E KX	R107	87-A00-154-090		RES,M/F 18K-1W J RSF(S)
C805	87-016-633-080	CAP,E	1-50 SSL	R110	87-A00-160-090		RES,M/F 33-2W J RSF(S)
C806	87-A11-825-010	CAP,CER	120P-2K J SL	R312	87-025-602-090		RES,M/O 39-2W J
C807	87-018-127-080	CAP, CER	470P-50V	R429	87-025-381-080		RES,M/F 18K-1/6W F
△C808	87-A11-992-090	CAP,E	330-400 105 KMH	R430	87-025-424-080		RES,M/F 10K 1/6W F
C810	87-016-628-080	CAP,E	10-25 SSL	R431	87-025-380-080		RES,M/F 15K-1/6W F
C811	87-016-582-080	CAP,E	47-25 SSL	R432	87-025-381-080		RES,M/F 18K-1/6W F
C812	87-A11-302-090	CAP,M/P	0.01-630 J ECQF6(ZH)	R450	87-A00-624-090		RES,M/F 3.3-7W J RSV7
C814	87-018-130-080	CAP,TC-U	820P-50 B	R505	87-A00-563-090		RES,M/F 1.5-1/2W J ERXS
C815	87-A10-860-090	CAP,CER	470P-2K K R	R606	87-A00-196-090		RES,M/F 0.47-1/2W J RSF(S)
C816	87-A10-731-090	CAP,E	220-160 M KMF				

# TRANSISTOR ILLUSTRATION

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
R610	87-A00-123-090		RES,M/F 3.9K-2W J RSI-2S B	NK C.B			
R611	87-A00-561-090		RES,M/F 4.7K-2W J ERGS	C901	87-012-372-010		CAP,CER 1000P-2K
R624	87-A00-544-090		RES,M/F 220-3W J ERGS	C902	87-018-125-080		CAP, CER 330P-50V
R804	87-A00-543-080		RES,SD 8.2M-1W J RCR60	C903	87-018-125-080		CAP, CER 330P-50V
R806	87-A00-204-090		RES,CEM 0.18-5W K	C904	87-018-125-080		CAP, CER 330P-50V
R809	87-A00-552-010		RES,CEM 1.0-10W J MPC722	△C905	87-010-976-080		CAP,CER 1000P-500 B
R810	87-A00-552-010		RES,CEM 1.0-10W J MPC722	C907	87-016-577-080		CAP,E 470-16 SSL
R812	87-A00-576-090		RES,M/F 27K-5W J RSV5	C908	87-016-627-080		CAP,E 47-16 SSL
R813	87-A00-577-090		RES,M/F 22K-2W J RSF(S)	CN901	87-049-469-010		CONN,4P V
R816	87-A00-411-090		RES,M/F 33K-1W J	CN902	87-A60-622-010		CONN,5P V 2MM JMT
R824	87-A00-577-090		RES,M/F 22K-2W J RSF(S)	CN903	87-A60-485-010		CONN,2P V LV GRA
SF201	8Z-JBH-633-010		FLTR,SAW M1969-US	L901	87-005-615-080		COIL,120UH J LAV35
SW2	87-A90-712-080		SW,TACT EVQ11L07K	R904	87-A00-165-090		RES,M/F 15K-2W J RSF(S)
SW3	87-A90-712-080		SW,TACT EVQ11L07K	R905	87-A00-165-090		RES,M/F 15K-2W J RSF(S)
SW4	87-A90-712-080		SW,TACT EVQ11L07K	R906	87-A00-165-090		RES,M/F 15K-2W J RSF(S)
SW5	87-A90-712-080		SW,TACT EVQ11L07K	S901	86-LBU-670-010		SOCKET,CRT 9P CVT3326 1603
SW6	87-A90-712-080		SW,TACT EVQ11L07K				
SW7	87-A90-712-080		SW,TACT EVQ11L07K				
△SW801	87-A90-364-010		SW,PUSH SDDLBI-C-D-2				
△T601	8Z-JBS-605-010		FBT, HFT3608(SAN)20-C				
△T602	8Z-JBH-615-010		TRANS,US ETH09K10AZ				
△TH801	87-A91-405-010		POS-THMS,T209-B80-A10				
TU101	8Z-JBE-610-010		TU UNIT,USA ENV56D74G3				
X1	87-A70-124-080		VIB,CER 8.0MHZ				
X301	87-A70-007-080		VIB,XTAL 3.58MHZ AQC-1001				
X302	87-030-327-010		VIB,CER CSB503F30				



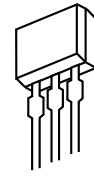
ECB

2SB892  
2SC1573  
2SC2001



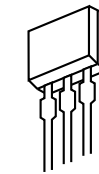
BEC

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2SD1207



ECB

2SA1175  
2SC2785



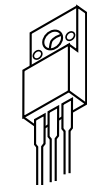
SDG

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2SK2541



ECB

DTA114ES  
DTC323TS



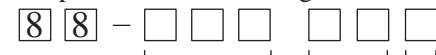
BCE

2SD2333

## ○チップ抵抗部品コード/CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

Chip Resistor Part Coding



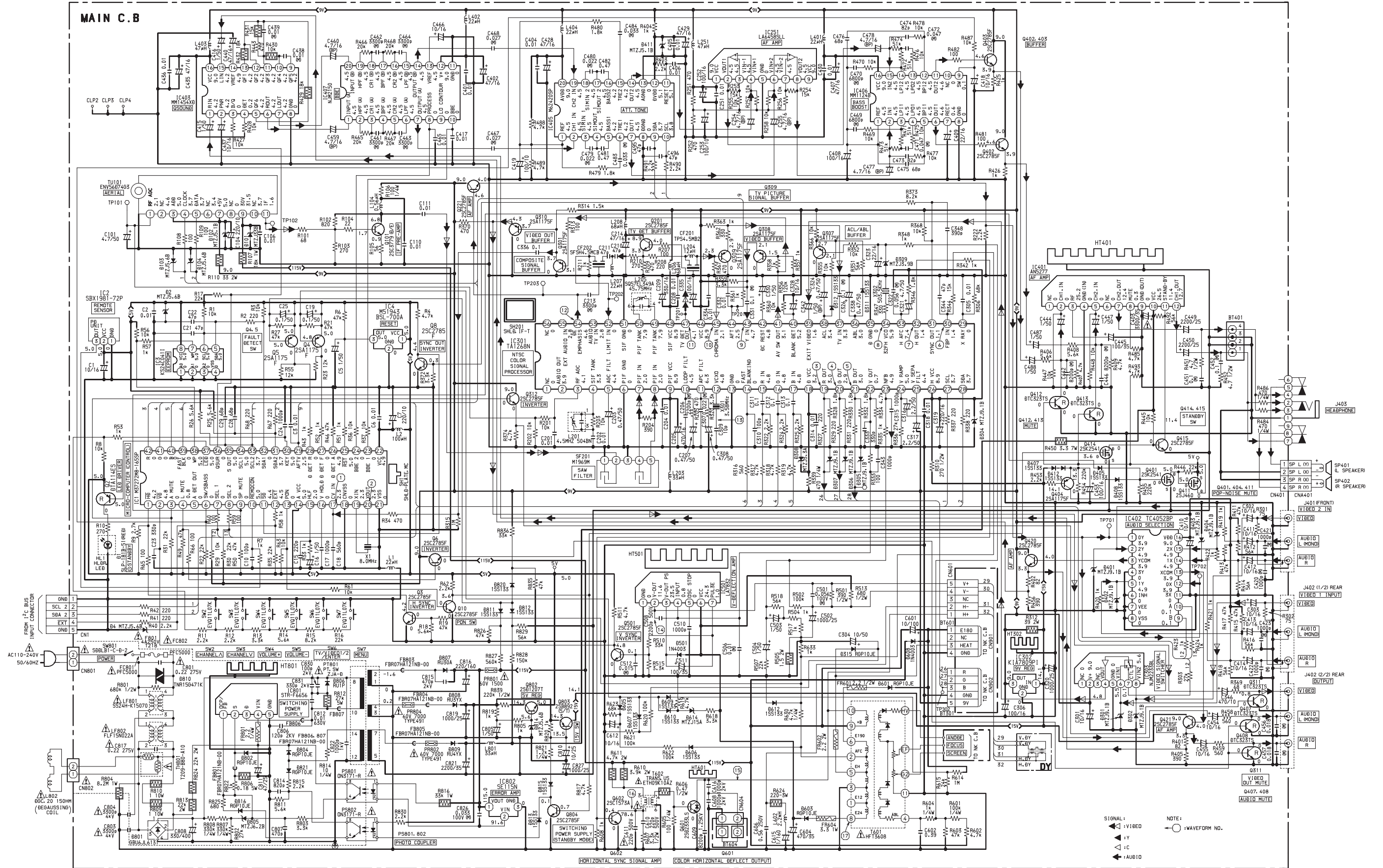
A  
抵抗部品コード  
Resistor Code

桁表示  
Figure  
抵抗値  
Value of resistor

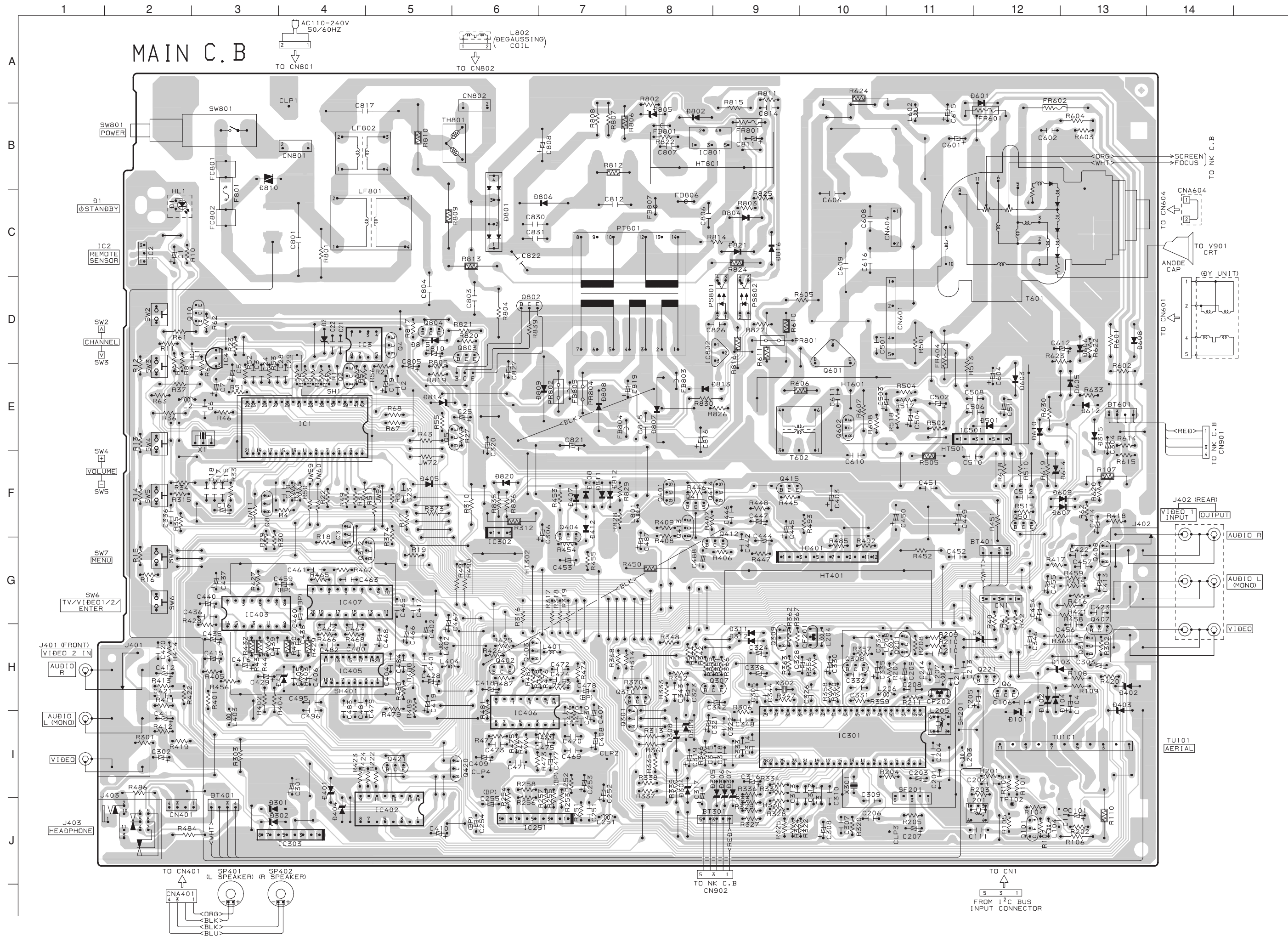
## チップ抵抗 Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法/Dimensions (mm)			抵抗コード : A Resistor Code : A	
				外形/Form	L	W		t
1/16W	1005	±5%	CJ		1.0	0.5	0.35	104
1/16W	1608	±5%	CJ		1.6	0.8	0.45	108
1/10W	2125	±5%	CJ		2	1.25	0.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.55	128

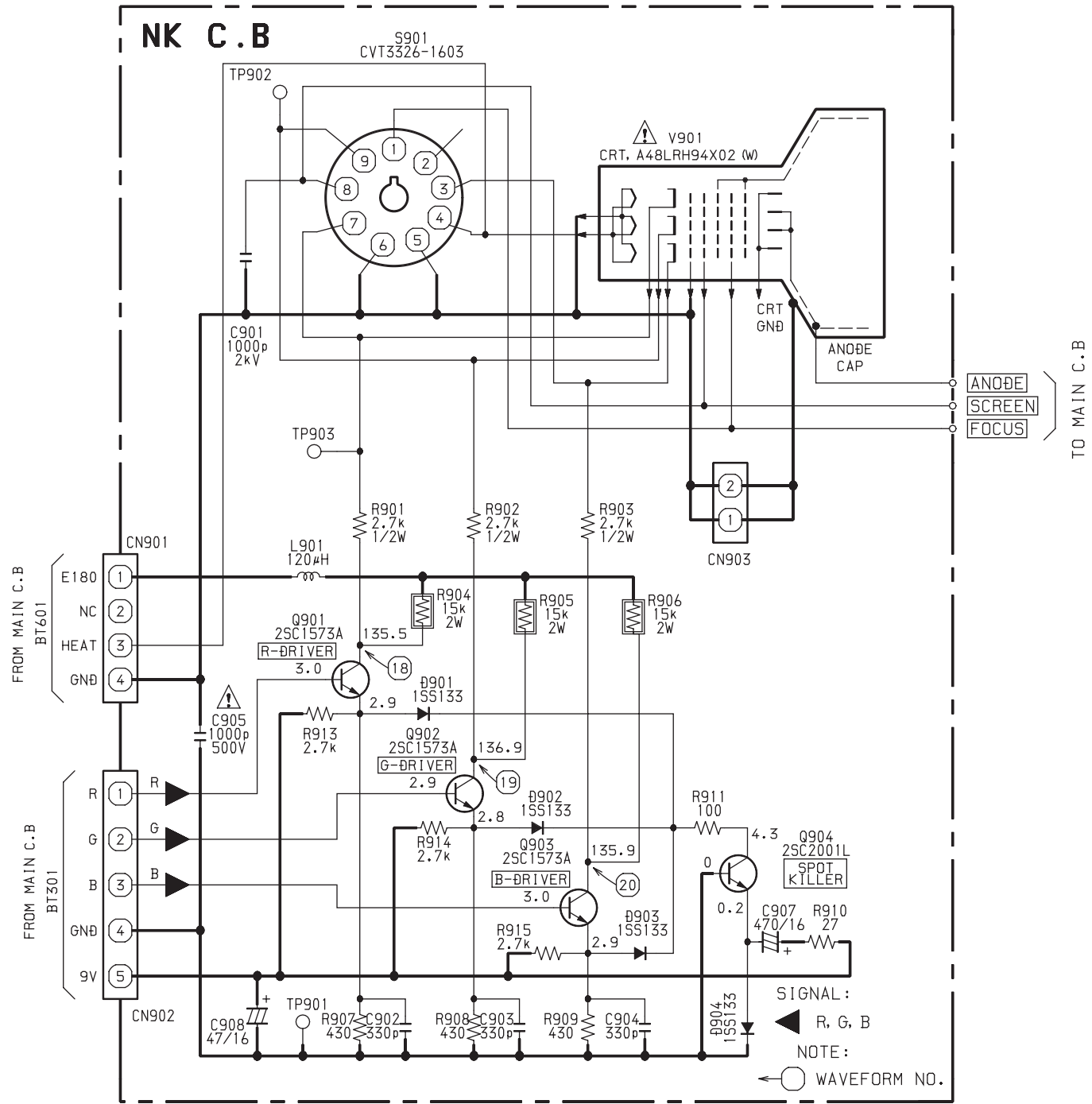
SCHEMATIC DIAGRAM-1 (MAIN SECTION)



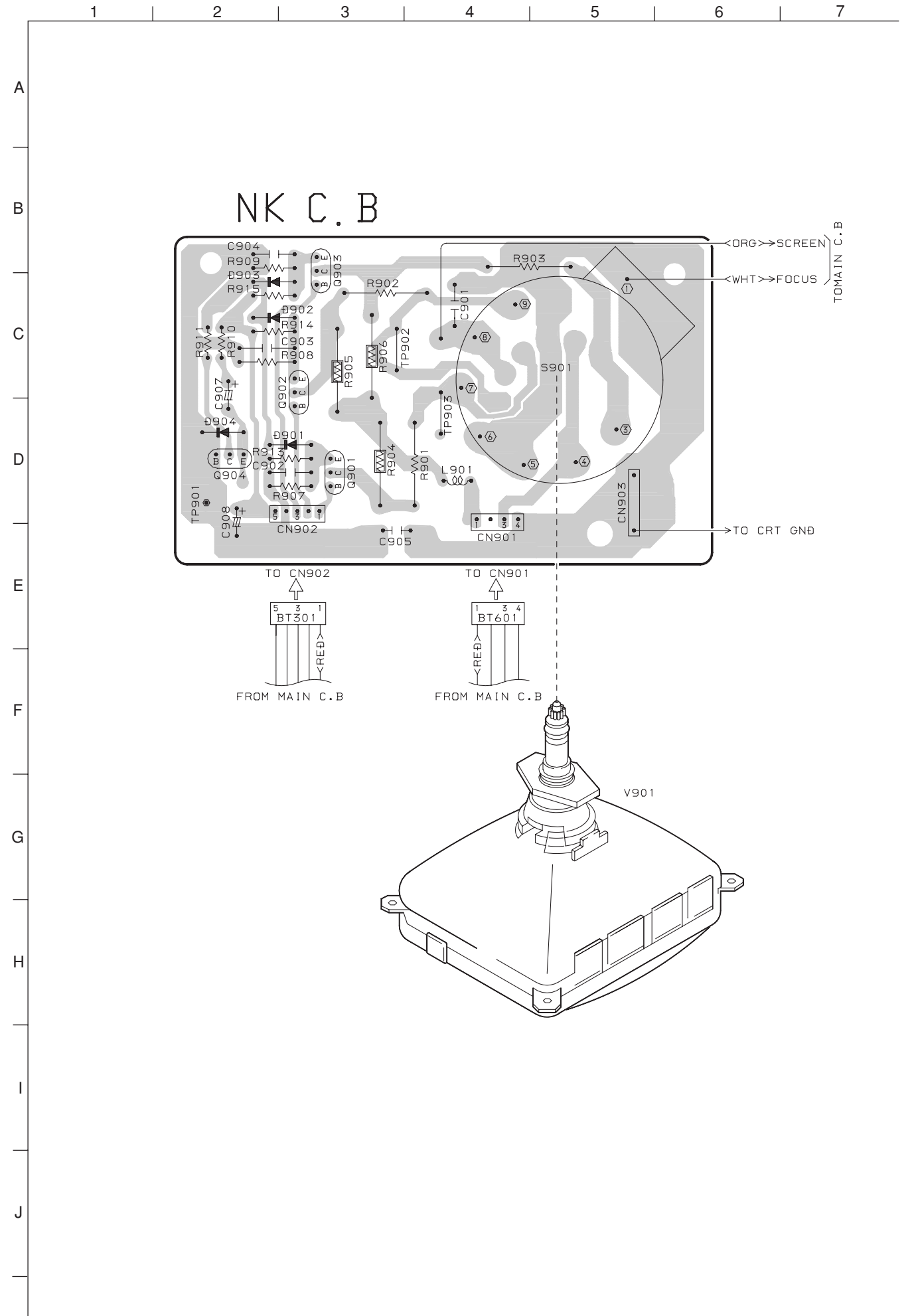
WIRING-1 (MAIN C.B SECTION)



SCHEMATIC DIAGRAM-2 (NK SECTION)

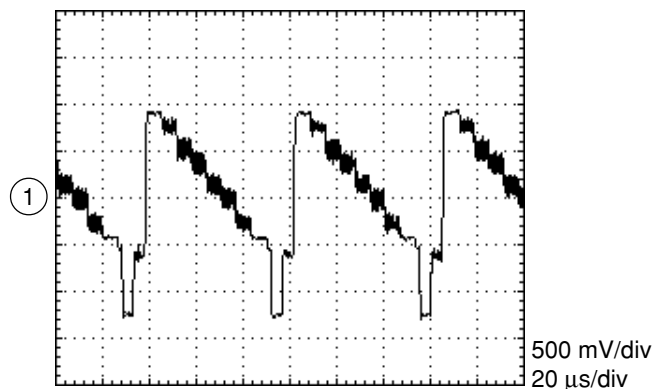


WIRING-2 (NK C.B SECTION)

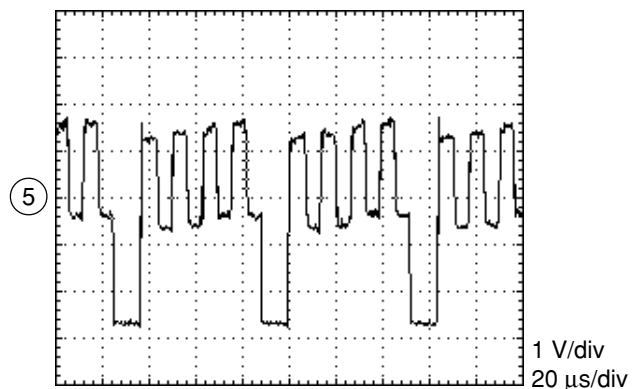


# WAVEFORM

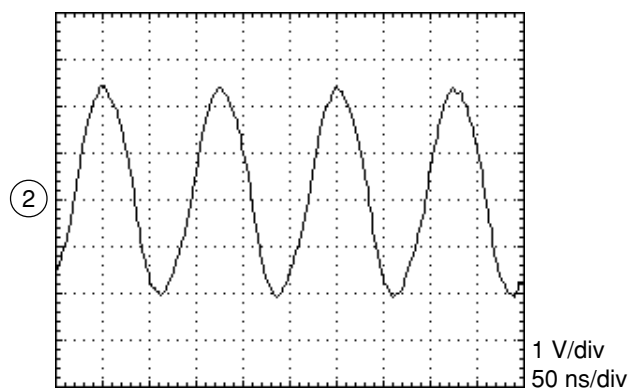
① IC1 Pin 17 (CV IN)



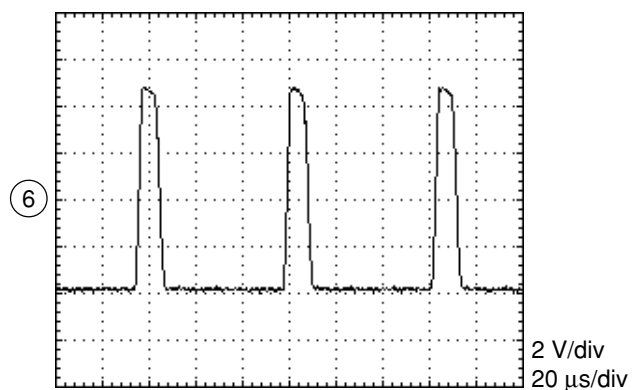
⑤ IC301 Pin 21 (B OUT)



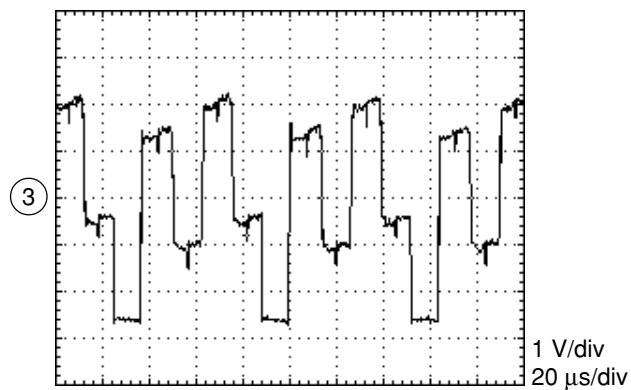
② IC1 Pin 20 (XOUT)



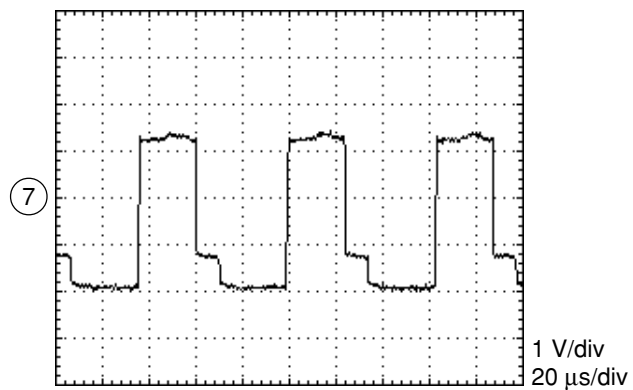
⑥ IC301 Pin 30 (FBP IN)



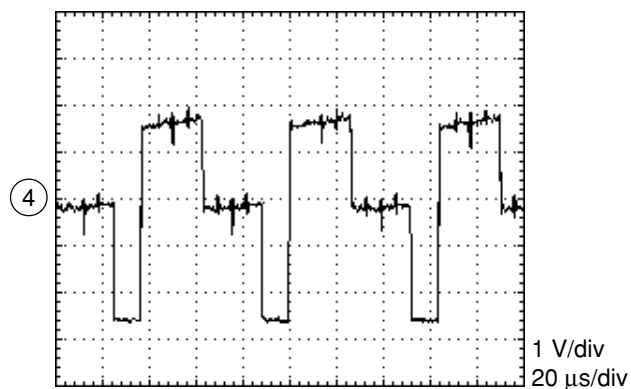
③ IC301 Pin 19 (R OUT)



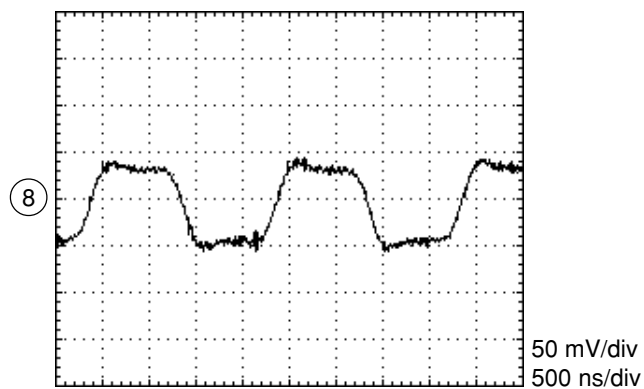
⑦ IC301 Pin 32 (H OUT)



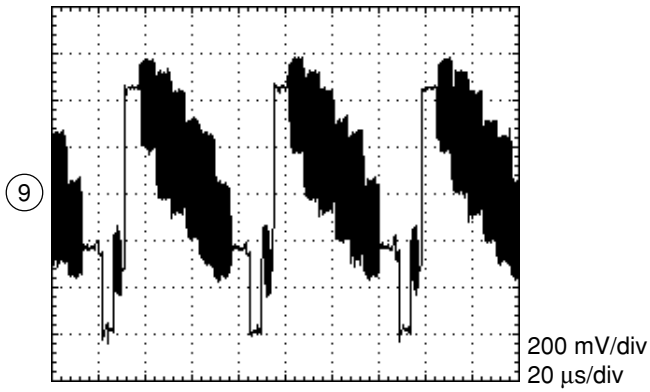
④ IC301 Pin 20 (G OUT)



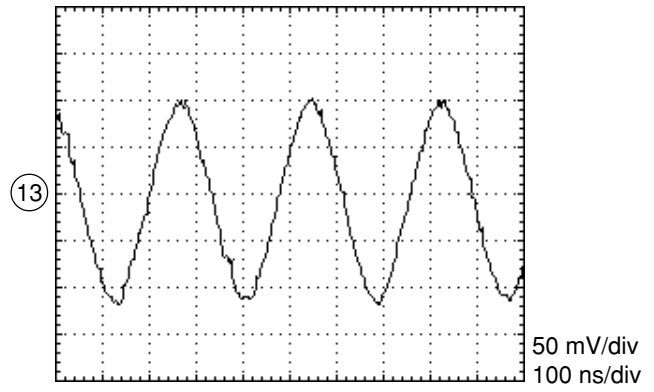
⑧ IC301 Pin 34 (32FH VCO)



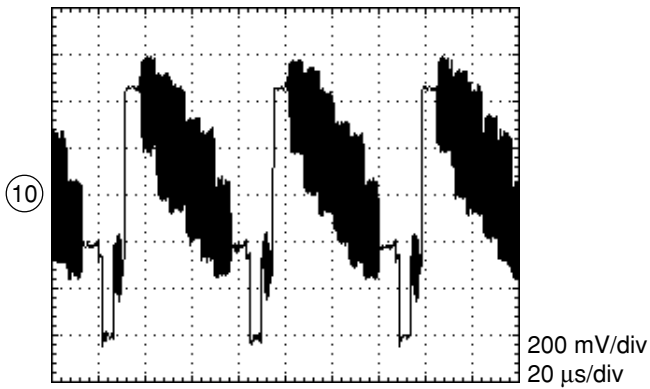
⑨ IC301 Pin 43 (Y IN)



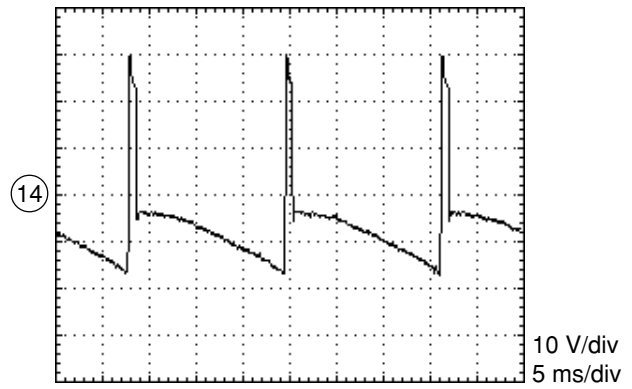
⑬ Between X301 & C309 (VCXO)



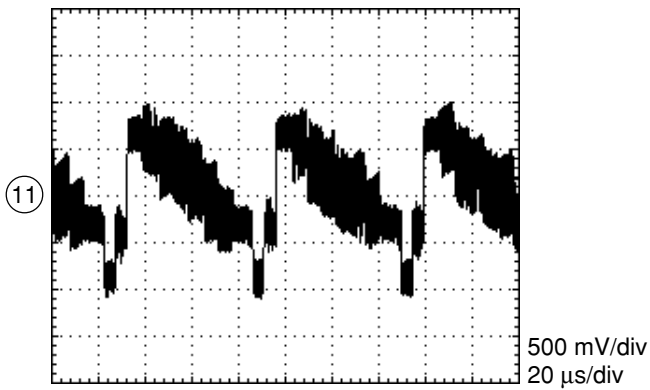
⑩ IC301 Pin 45 (CHROMA IN)



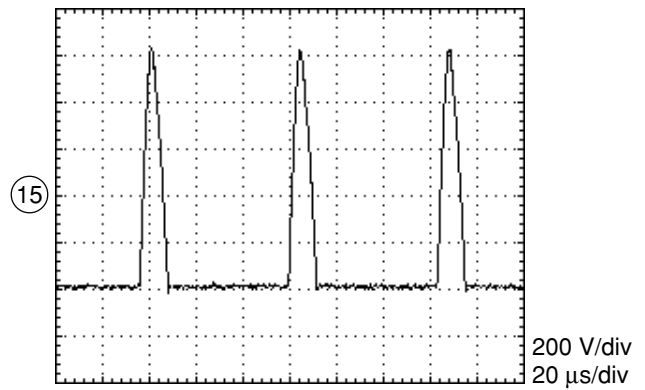
⑭ IC501 Pin 2 (V-OUT)



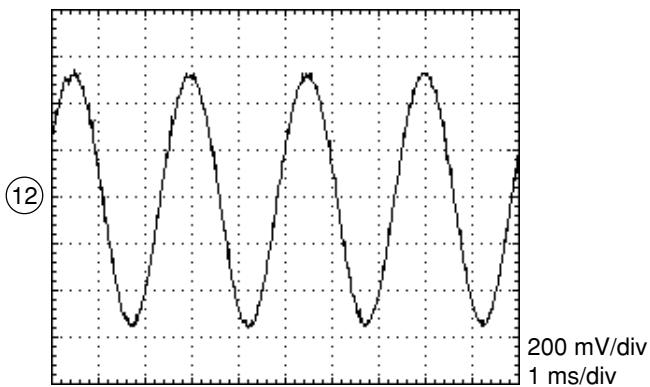
⑪ IC301 Pin 47 (TV DET OUT)



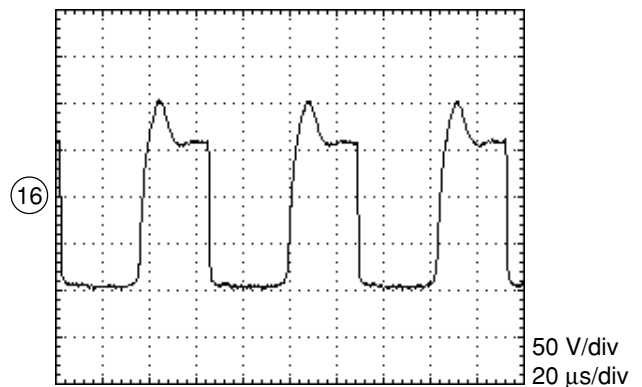
⑮ Q601 Collector



⑫ IC301 Pin 54 (DE EMPHASIS)

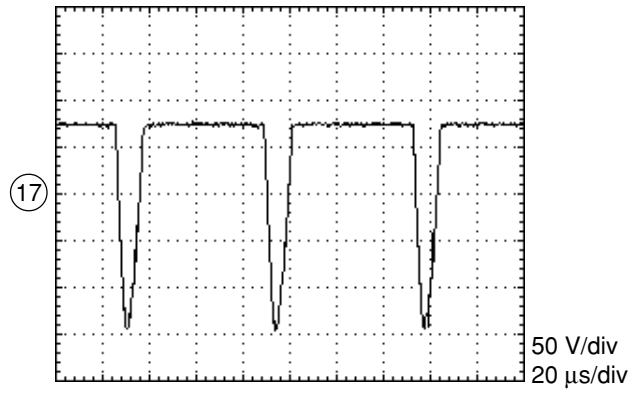


⑯ Q602 Collector

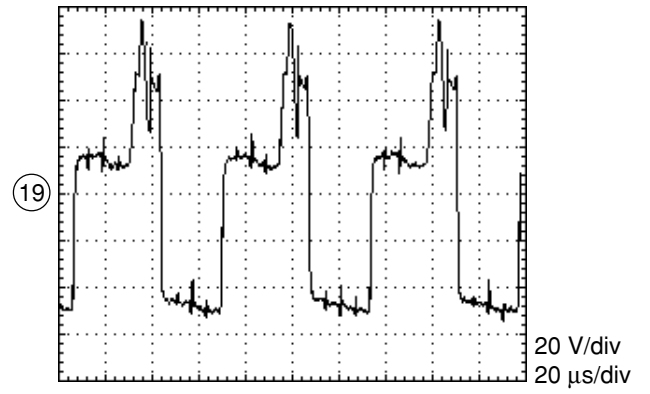




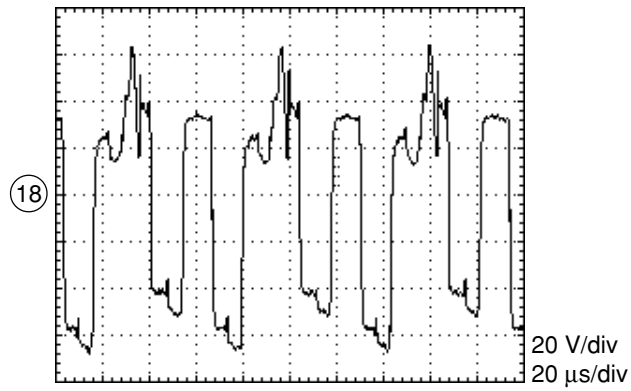
①⑦ T601 Pin 8 (E24)



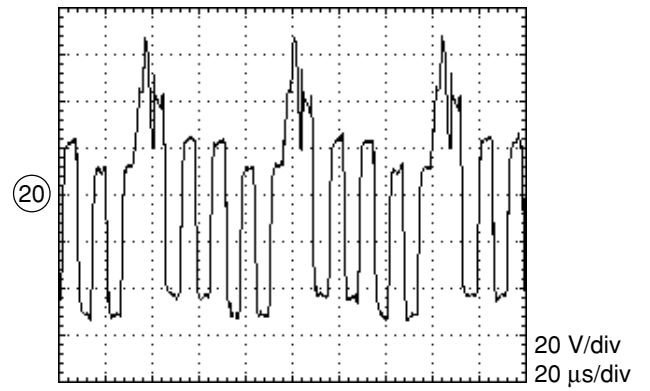
①⑨ Q902 Collector (G) --- NK C.B



①⑧ Q901 Collector (R) --- NK C.B



①⑩ Q903 Collector (B) --- NK C.B



IC DESCRIPTION  
IC, M37272M8-165SP

Pin No.	Pin Name	I/O	Description													
1	$\overline{\text{HD}}$	I	OSD horizontal synchronised signal input terminal. "L"= active.													
2	$\overline{\text{VD}}$	I	OSD vertical synchronised signal input terminal. "L"= active.													
3	A MUTE	O	Used to mute line out sound and picture when no input signal is detected. "H" to mute.													
4	L MUTE															
5	A DET OUT	O	Not used.													
6	SW/SBASS	O	SBASS ON "L", OFF "H".													
7	SEL1	O	Selecting tuner receiving band.  Reset start : Both of Pin 7, Pin 8 are "H".													
8	SEL2	O		<table border="1"> <thead> <tr> <th></th> <th>Pin 7</th> <th>Pin 8</th> </tr> </thead> <tbody> <tr> <td>TUNER</td> <td>L</td> <td>L</td> </tr> <tr> <td>VIDEO 1</td> <td>L</td> <td>H</td> </tr> <tr> <td>VIDEO 2</td> <td>H</td> <td>L</td> </tr> </tbody> </table>		Pin 7	Pin 8	TUNER	L	L	VIDEO 1	L	H	VIDEO 2	H	L
					Pin 7	Pin 8										
TUNER	L	L														
VIDEO 1	L	H														
VIDEO 2	H	L														
<table border="1"> <tbody> <tr> <td>VIDEO 1</td> <td>L</td> <td>H</td> </tr> <tr> <td>VIDEO 2</td> <td>H</td> <td>L</td> </tr> </tbody> </table>	VIDEO 1	L	H	VIDEO 2	H	L										
VIDEO 1	L	H														
VIDEO 2	H	L														
9	SP MUTE	O	Used to mute the speaker (sound) output.													
10	$\overline{\text{REMOCON}}$	I	Remote control signal is led to this pin.													
11	$\overline{\text{SD}}$	I	Horizontal sync. detected input. The level of this pin will be sampled by $\mu$ -P to determine whether there is picture signal detected.													
12	$\overline{\text{EXT}}$	I	I <sup>2</sup> C switching.													
13	PON	O	During standby mode, "H" level is inserted to switch off horizontal deflection and high voltage.													
14	A VCC	-	5V supply.													
15	HLF	-	Connected to filter.													
16	V HOLD	-	Connected to condensor.													
17	CV IN	I	Video signal input.													
18	CNVSS	-	Connected to ground.													
19	XIN	I	8 MHz clock input.													
20	XOUT	O	8 MHz clock output.													
21	VSS	-	Connected to ground.													
22	VCC	-	5 V supply.													
23	BBE 1	O	<table border="1"> <thead> <tr> <th></th> <th>Pin 23</th> <th>Pin 24</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>L</td> <td>L</td> </tr> <tr> <td>LOW</td> <td>H</td> <td>L</td> </tr> <tr> <td>HIGH</td> <td>H</td> <td>H</td> </tr> </tbody> </table>		Pin 23	Pin 24	OFF	L	L	LOW	H	L	HIGH	H	H	
	Pin 23	Pin 24														
OFF	L	L														
LOW	H	L														
HIGH	H	H														
24	BBE 2	O	<table border="1"> <tbody> <tr> <td>LOW</td> <td>H</td> <td>L</td> </tr> <tr> <td>HIGH</td> <td>H</td> <td>H</td> </tr> </tbody> </table>	LOW	H	L	HIGH	H	H							
			LOW	H	L											
HIGH	H	H														
<table border="1"> <tbody> <tr> <td>HIGH</td> <td>H</td> <td>H</td> </tr> </tbody> </table>	HIGH	H	H													
HIGH	H	H														
25	$\overline{\text{RST}}$	I	Used to reset the $\mu$ -P when power up.													
26	D DET A	I	Connected to ground through a resistor.													
27	D DET F	I	Fault detection. Detect as a fault when the voltage is more than 2.5V.													
28	D DET R															
29	AFTV	I	AFT voltage from IC301 is received by $\mu$ -P during channel tuning.													
30	KEY	I	Input key is detected by monitor.													
31	SDA2	I/O	I <sup>2</sup> C bus CH2 data.													
32	SDA1	I/O	I <sup>2</sup> C bus CH1 data.													
33	SCL2	I/O	I <sup>2</sup> C bus CH2 clock.													
34	SCL1	I/O	I <sup>2</sup> C bus CH1 clock.													

Pin No.	Pin Name	I/O	Description
35	S OUT	O	Not used.
36	QSUR	O	Surround ON "H", OFF "L".
37	$\overline{\text{LED}}$	O	LED ON "L", OFF "H".
38	WP	O	E <sup>2</sup> PROM write protect.
39	FAST BLK	O	OSD blanking output.
40	B	O	OSD blue output.
41	G	O	OSD green output.
42	R	O	OSD red output.

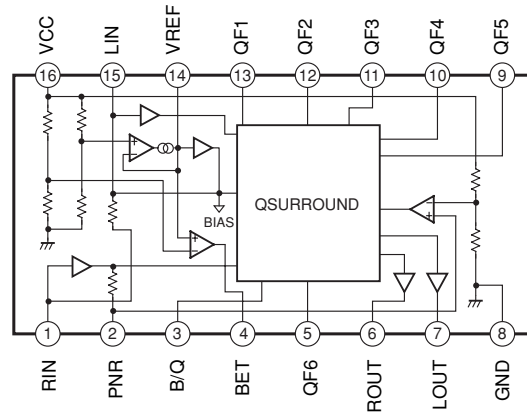
#### IC, TA1268N

Pin No.	Pin Name	I/O	Description
1	NC	–	Not connected.
2	AUDIO OUT	O	Sound output. The maximum flew out current is 3.6mA. So, the minimum load resistor is 1k $\Omega$ . (Not used)
3	RF AGC	O	RF AGC output.
4	SIF TANK	–	Tank coil connection for SIF detection circuit.
5	AGC FILT	–	PIF 2nd AGC filter.
6	PIF GND	–	GND for PIF circuit.
7 ~ 8	PIF IN	I	IF input. The typical input value is 90dB $\mu$ V.
9	PIF VCC	–	VCC for PIF circuit.
10	LOOP FILT	–	PIF PLL loop filter.
11	APC FILT	–	APC filter of f <sub>sc</sub> oscillation.
12	VCXO	I	X'tal of 3.58MHz VCXO.
13	GND	–	V/C/D GND.
14	FAST BLANKING	I	Fast blanking of RGB input.
15	R IN	I	R signal input.
16	G IN	I	G signal input.
17	B IN	I	B signal input.
18	D VCC	–	VCC for digital circuit.
19	R OUT	O	R primary color signal output.
20	G OUT	O	G primary color signal output.
21	B OUT	O	B primary color signal output.
22	V OUT	O	Vertical pulse output.
23	NFB	I	NFB input.
24	V RAMP	O	Vertical ramp output.
25	V SEPA FILT	–	Vertical sync. separation filter.
26	H VCC	–	VCC for horizontal circuit.

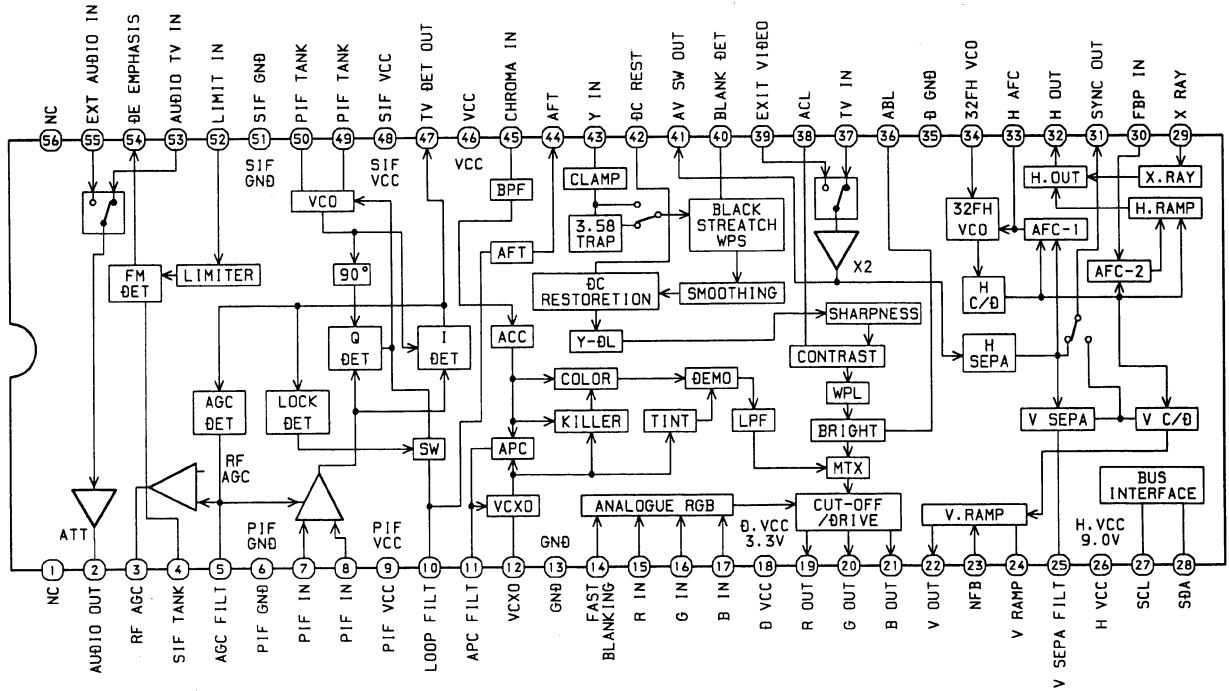
Pin No.	Pin Name	I/O	Description															
27 ~ 28	SCL, SDA	I/O	Input and output of I <sup>2</sup> C Bus.															
29	X RAY	I	Inputting of X-RAY protect circuit. The threshold voltage is 3.5V (typ.). If the voltage that is applied is more than the threshold voltage, the X-RAY protect circuit make horizontal output a low.															
30	FBP IN	I	Fly-back pulse input. The Fly-back pulse is the reference of AFC circuit, gate pulse and so on. The current needs to keep under 1mA.															
31	SYNC OUT	O	Sync. pulse output.															
32	H OUT	O	Horizontal pulse output.															
33	H AFC	-	Horizontal AFC filter. The AFC circuit fits the phase between inputted horizontal sync. signal and horizontal pulse which is made by countdowning 32f <sub>H</sub> .															
34	32FH VCO	-	Ceramic oscillator connection. That constitutes 32f <sub>H</sub> (503kHz) oscillation circuit.															
35	D GND	-	GND for digital circuit.															
36	ABL	O	ABL circuit.															
37	TV IN	I	Inputting of PIF detected signal. The typical input amplitude is 1.0Vp-p.															
38	ACL	O	ACL circuit.															
39	EXT VIDEO	I	Inputting of external video signal.															
40	BLANK DET	-	Filtering of black peak detection.															
41	AV SW OUT	O	Video switch output which selects TV signal or external video. Amp gain: Min. 1.7, Typ. 1.9, Max. 2.1.															
42	DC REST	I	Filtering of APL detection.															
43	Y IN	I	Y signal input. The typical input amplitude is 1.0Vp-p.															
44	AFT	O	AFT output. Monitor signal output can be selected via Bus. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>B0</th> <th>B1</th> <th>OUTPUT</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>AFT</td> </tr> <tr> <td>0</td> <td>1</td> <td>TEST purpose only</td> </tr> <tr> <td>1</td> <td>0</td> <td>B</td> </tr> <tr> <td>1</td> <td>1</td> <td>(RF AGC)/2</td> </tr> </tbody> </table>	B0	B1	OUTPUT	0	0	AFT	0	1	TEST purpose only	1	0	B	1	1	(RF AGC)/2
B0	B1	OUTPUT																
0	0	AFT																
0	1	TEST purpose only																
1	0	B																
1	1	(RF AGC)/2																
45	CHROMA IN	I	Chrominance signal input. The typical input signal amplitude is 286mVp-p (at burst signal). This IC will go to test mode when this terminal voltage is higher than 4.5V.															
46	VCC	-	VCC for video, chroma and deflection circuit.															
47	TV DET OUT	O	PIF detected signal output.															
48	SIF VCC	-	VCC for SIF circuit.															
49 ~ 50	PIF TANK	-	Tank coil connection for PIF detection circuit.															
51	SIF GND	-	GND for SIF circuit.															
52	LIMIT IN	I	Inputting of SIF limiter amplifier circuit.															
53	AUDIO TV IN	I	Inputting of SIF detected signal. (Not used)															
54	DE-EMPHASIS	O	Filtering of SIF de-emphasis.															
55	EXT AUDIO IN	I	External audio input. (Not used)															
56	NC	-	Not connected.															

# IC BLOCK DIAGRAM

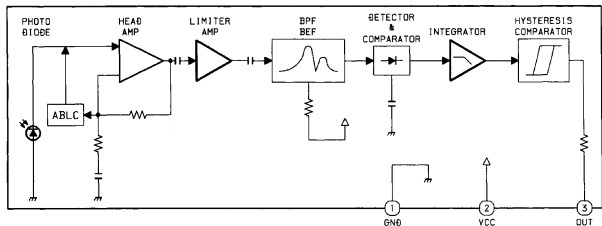
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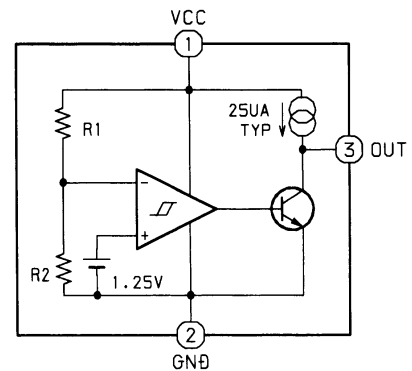
IC, TA1268N



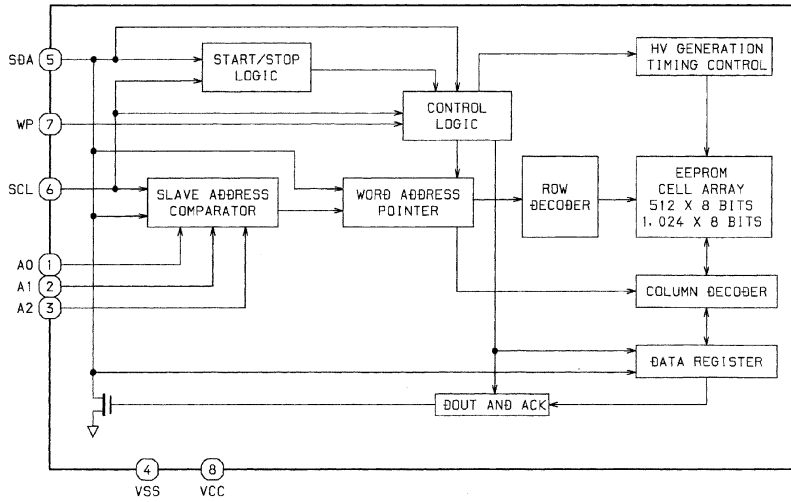
IC, SBX1981-72P



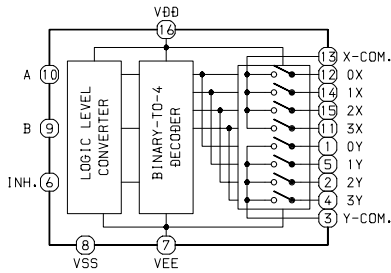
IC, M51943BSL-700A



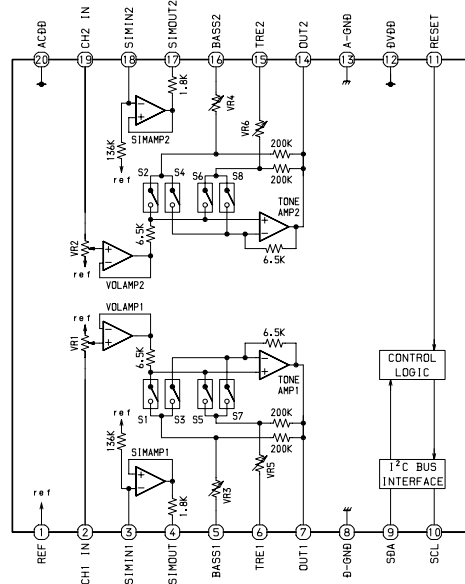
IC, KS24C0411



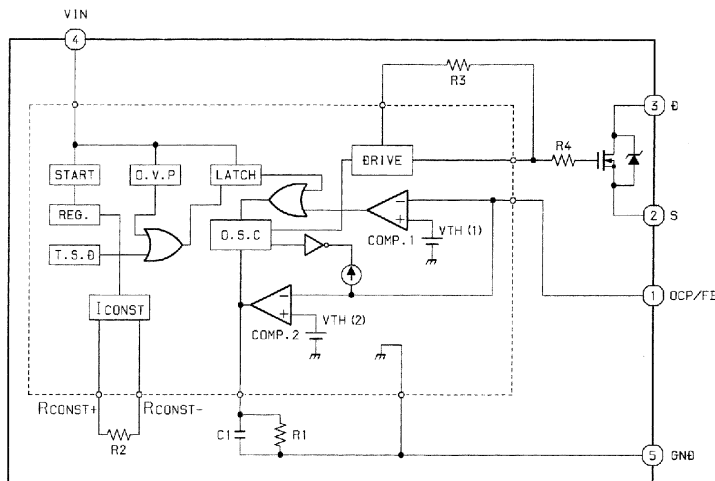
IC, TC4052BP



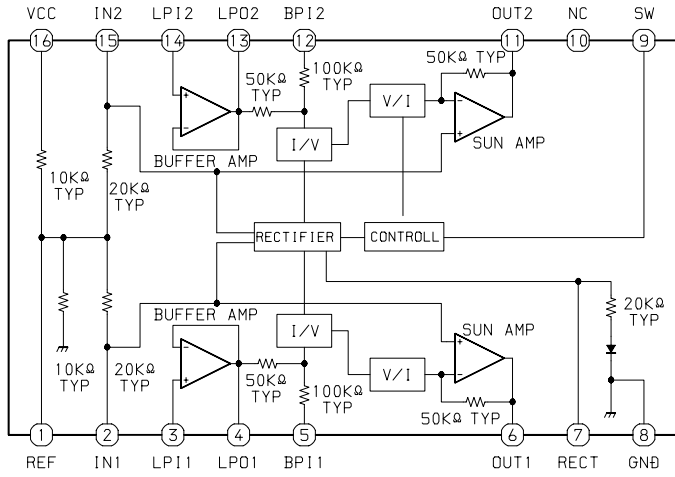
IC, M62420SP



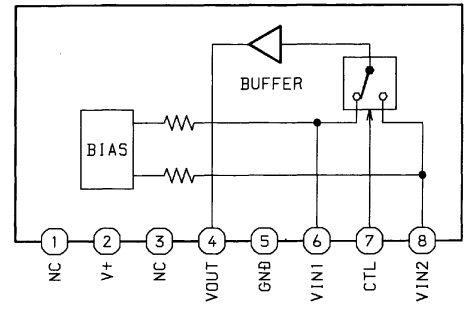
IC, STR-F6656



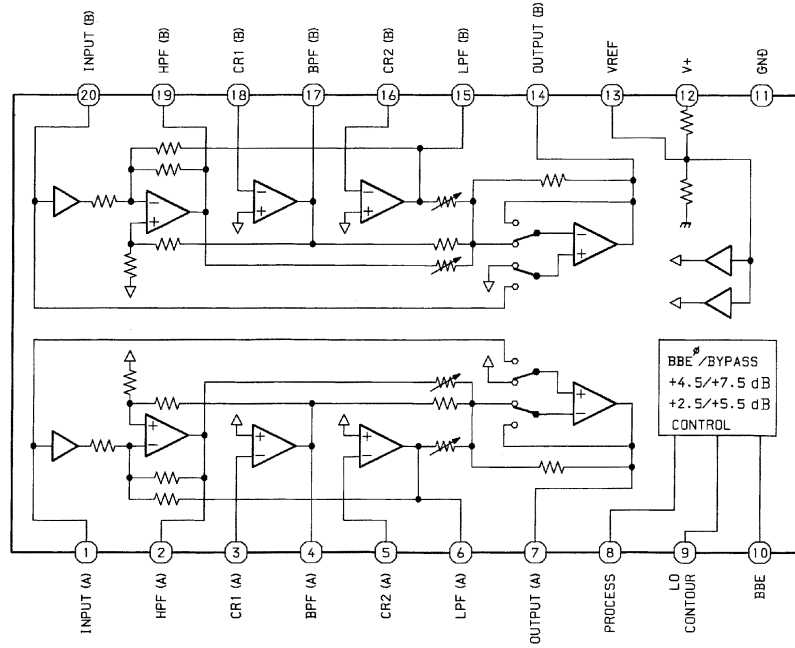
IC, MM1124B



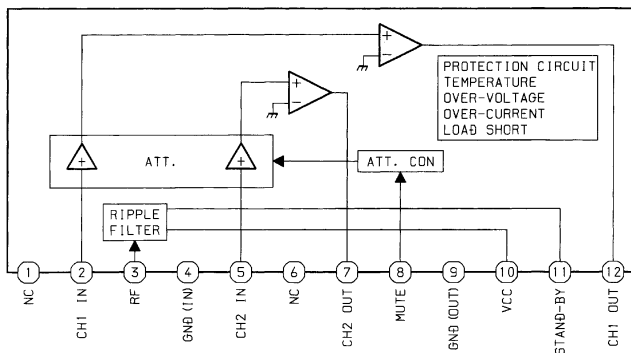
IC, NJM2233BL



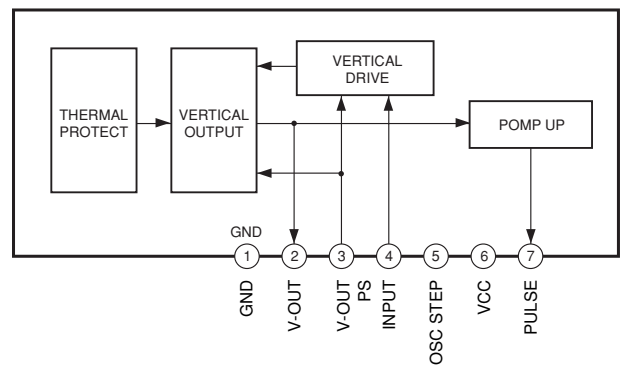
IC, NJM2150



IC, AN5277

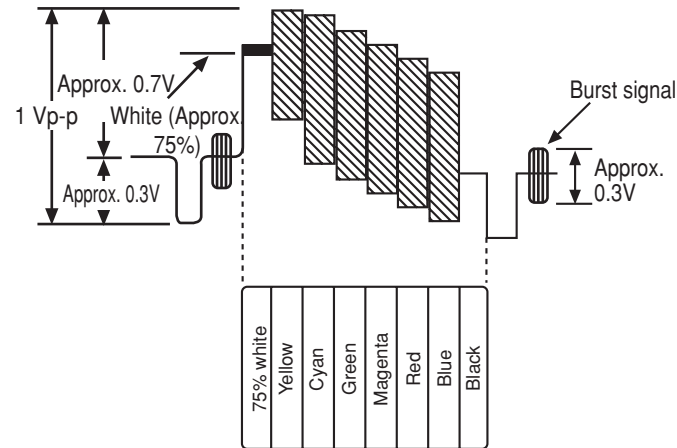


IC, LA7832



# SET-UP FOR ADJUSTMENT

Because the video signal output from a pattern generator is used as the adjustment signal input during adjustment, the video signal output from the pattern generator must conform with the specifications. Measure the output waveform across 75 Ω load. Confirm that the synchronizing signal has an amplitude of about 0.3 V, the video signal portion has an amplitude of about 0.7 V and the burst signal has an amplitude of about 0.3 V with flat envelope. Confirm that ratio of the burst signal amplitude and the red signal amplitude is 0.30 : 0.66. If the output signal does not conform with the specifications, calibrate the pattern generator. (Refer to pattern generator operation manual.)  
Use the LEADER: LCG 404 for the pattern generator.



TV display  
Color bar signal of a pattern generator

## Precautions before starting adjustment

Satisfy the following setting conditions before starting adjustment.

- Allow warm-up of 20 minutes or longer. (Do not turn off during warm-up.)
- Set all picture quality controls of users' setting to initial set-up, unless otherwise specified.
- Picture quality reset
  1. Select "Picture" on the screen menu and press enter button.
  2. Select "Normal" and press enter button.
  3. Select "Reset" and press enter button.
- Set the pattern generator's output level to 1.0Vp-p (across 75Ω load).

## 1. CRT ADJUSTMENT

### 1-1. Precautions

- (1) Receive the white raster signal, and then perform aging for at least 20 minutes.
- (2) Demagnetize the area surrounding the CRT with a degausser before making adjustments.
- (3) Set the picture quality for each mode to the factory setting.
- (4) Position the front screen facing the east as much as possible.

### 1-2. Purpose

- (1) Beam landing adjustment (purity magnet)  
Set the left/right balance of beam landing. If there is a discrepancy in this adjustment, a color irregularity will occur. After completion of the landing adjustment, it is necessary to perform convergence adjustment.

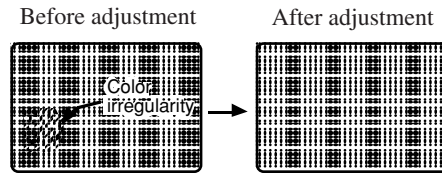
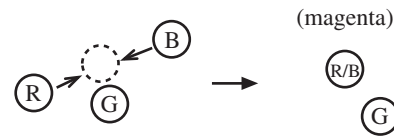


Fig. 1-1

### (2) Beam convergence adjustment (4-pole magnet)

Align the R beam with the B beam. The G beam does not move with this adjustment.

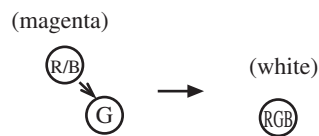


Align the R beam with the B beam

Fig. 1-2

### (3) Beam convergence adjustment (6-pole magnet)

With a 4-pole magnet align the G beam with the already aligned R/B beam.



Align the G beam with the R/B beam

Fig. 1-3



- (4) The composition of each magnet is as shown in Fig. 1-4.  
 In making adjustments, rotate the lock ring clockwise (looking from the CRT's back screen) and disengage.  
 Be careful not to loose the lock ring too much. If the magnet assembly has become shifted during adjustments, secure it to the position in Fig. 1-4.

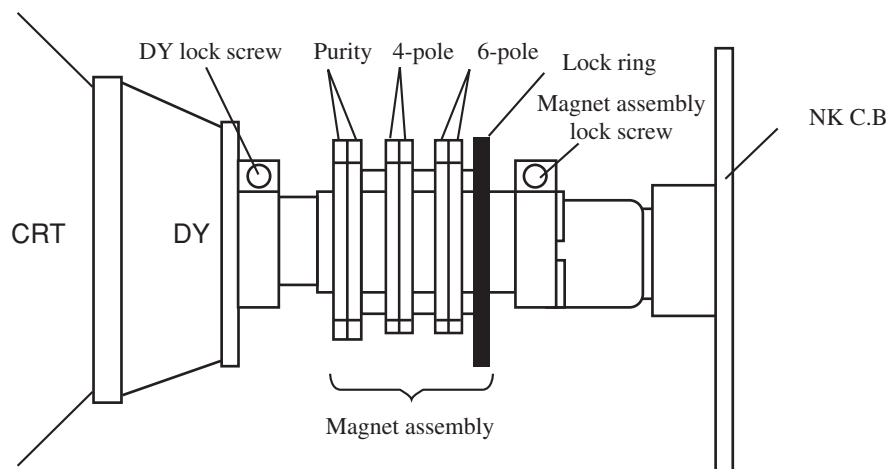


Fig 1-4

### 1-3. Beam Landing Adjustment

- (1) Receive the green raster signal from the pattern generator.
- (2) Loosen the magnet lock screw, and shift the magnet assembly backward (toward the neck).
- (3) Loosen the DY lock screw, and shift the DY deflecting yoke backward (toward the neck).
- (4) After opening the two purity magnets to the same angle, adjust the color width of the bands on both sides of the screen so that they are equal. (refer to Fig. 1-5 (a)).

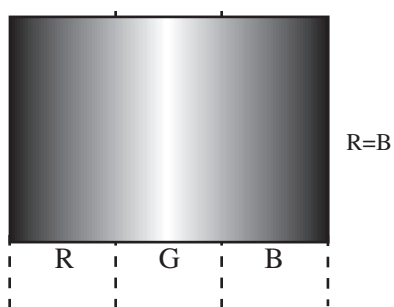


Fig 1-5 (a)

As shown in Fig. 1-5 (b), the purity magnet functions in relation to the electron beam.

- (5) Gradually shift the deflecting yoke toward the front (toward the CRT funnel). Stop movement at the point when the screen has become completely green.

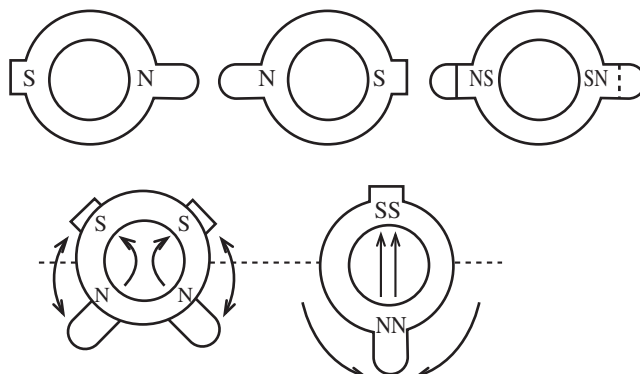


Fig 1-5 (b)

- (6) Also, verify the respective monochromatics of red and blue.
- (7) While looking at the screen, adjust the tilt of the deflecting yoke and tighten the DY lock screw.
- (8) Shift the magnet assembly to the front (toward the CRT funnel), stop movement before the adjustment position and then tighten the magnet lock screw.  
 At this time, be careful not to shift the position of the purity magnet.

As there is occurrence of convergence distortion after completing the landing adjustments, be sure to carry out convergence adjustments.

If the color irregularities in the screen's corner section are not improved, correct them with the landing magnet. After using the landing magnet, be sure to demagnetize the CRT with degausser and verify that there is no occurrence of color irregularity. (refer to Fig. 1-6)

Landing magnet: 81-JTI-710-010  
(two-sided adhesive tape) : 80-XVI-218-010 Cushion

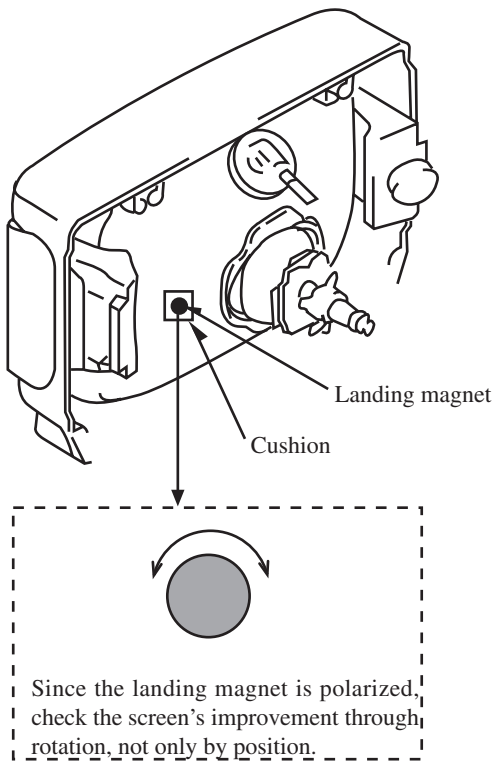


Fig 1-6

#### 1-4. Beam Center Convergence Adjustment

Make adjustments on the convergence with 4-pole and 6-pole magnets. Operate each magnet in relation to the electron beam as shown in Figs. 1-7 and 1-8. When performing this adjustment, verify whether there is distortion in the focus adjustment. If necessary, carry out adjustments again.

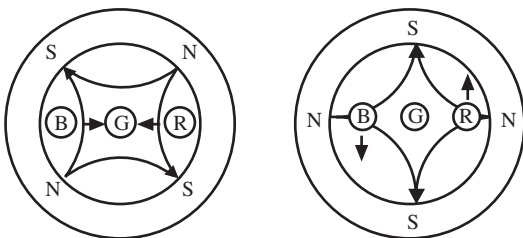


Fig 1-7

In Fig. 1-7, two 4-pole magnets are stacked together so as to be of the same polarity. Move the B and R beams to their respective direction, by rotating the two 4-pole magnets together. By adjusting the opening of the two magnets, it is possible to adjust the amount of the beam's movement.

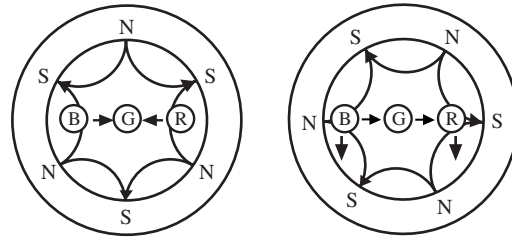


Fig 1-8

In Fig. 1-8, the two 6-pole magnets are stacked together so as to be of the same polarity. Move the B and R beams to their respective direction, by rotating the two 6-pole magnets together. By adjusting the opening of the two magnets, it is possible to adjust the amount of the beam's movement.

- (1) Receive the dot pattern signal from the pattern generator.
- (2) Pay attention to the center of the screen, and perform adjustments with two 4-pole magnets so that the R beam and B beam are perfectly aligned and become a magenta color. (Refer to Fig. 1-2)
- (3) In the same way, pay attention to the screen, and perform adjustments with a 6-pole magnet so that the magenta beam and G beam are aligned and become a white dot. (Refer to Fig. 1-3)
- (4) After adjustments are completed, secure all magnets with the lock link. (Refer to Fig. 1-4)

#### 1-5. The Surrounding Convergence Adjustment

Perform this adjustment after completion of adjustment 1-4.

- (1) Shake the deflecting yoke up, down to the right and left, and adjust any discrepancies in the screen's surroundings.
- (2) Insert wedges in three locations in the gap between the deflecting yoke and the surface of the CRT funnel in order to secure the deflecting yoke. (Refer to Fig. 1-9)

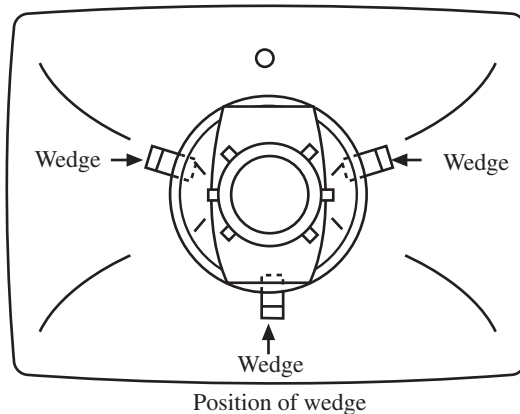


Fig. 1-9

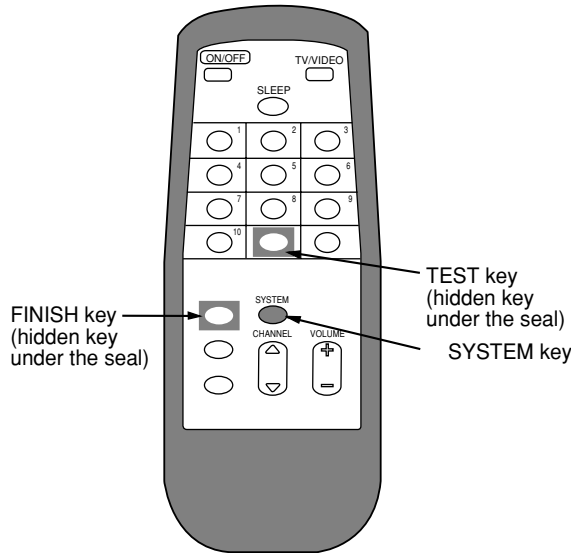
# IC BUS Data Setting Procedure

With this model, most parts of video and deflection blocks can be adjusted using a jig remote control.

## Preparations:

- Modify the hidden keys on the RC-6VT06 jig remote control (TV-C142/86-LB4-951-010) so that they can easily be pressed.

2 keys to be modified (see the figure below):



## Starting service mode:

Hidden key TEST:

- Pressing the TEST key on the jig remote control once will set the unit to the aging mode. See Fig. 1.
- Pressing TEST again will set the unit to the adjustment mode.

Hidden key FINISH:

- Pressing the FINISH key on the jig remote control will reset the accumulated hours in the aging mode.
- Do not press FINISH during normal servicing.

## Aging mode operation method: Be sure to check this after replacing EEPROM.

1. Press the TEST key on the remote control to set to the aging mode. See Fig. 1.
2. Press the SYSTEM key to check the status of distinction switch. See Fig. 2.
  - If the contents are different, press the "1" key to select "IN-ST" for destination.
  - To modify the data, use the channel keys to move the cursor to 0-F, and then use the volume keys to change it to "0" or "1".



Fig. 1

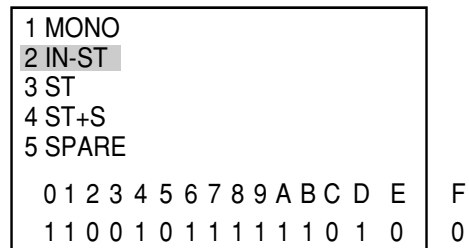
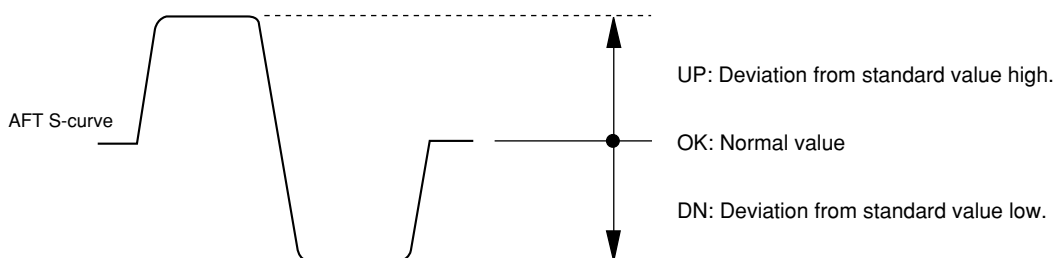


Fig. 2

## Contents of aging mode:

1. Releasing auto power off function
  - Release the auto power off function when no input is supplied.
  - Use this mode for warming up (aging) during CRT adjustment.
2. AFT S-curve status display
  - OK, UP or DN (down) will appear to show whether the AFT S-curve status is optimum, too high or too low.

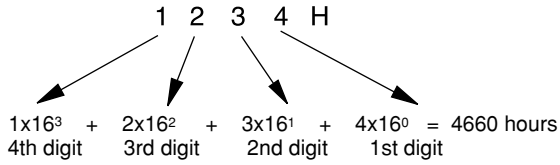


3. CRT ON accumulated hour display

The CRT usage hours accumulate every hour, and are displayed using hexadecimal number.

Example of calculating displayed hexadecimal number:

AFT OK 1234H IN-ST



\* When the accumulated hours exceed 7FFFH (32,768 hours), the display will be reset to 0000H.

Adjustment mode operation method:

1. Press the SYSTEM key to restore the aging display, and press the TEST key again to display the adjustment menu.

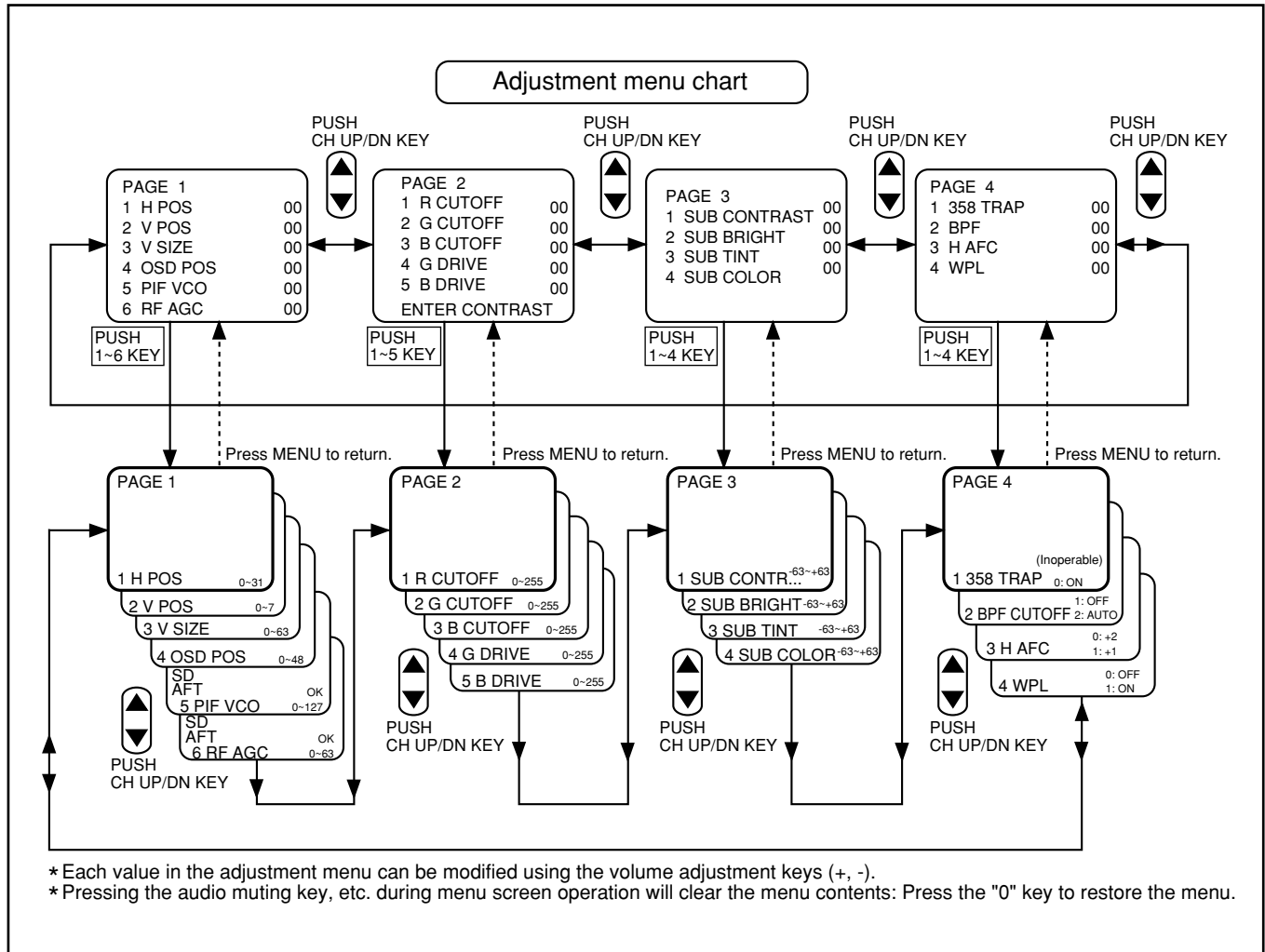
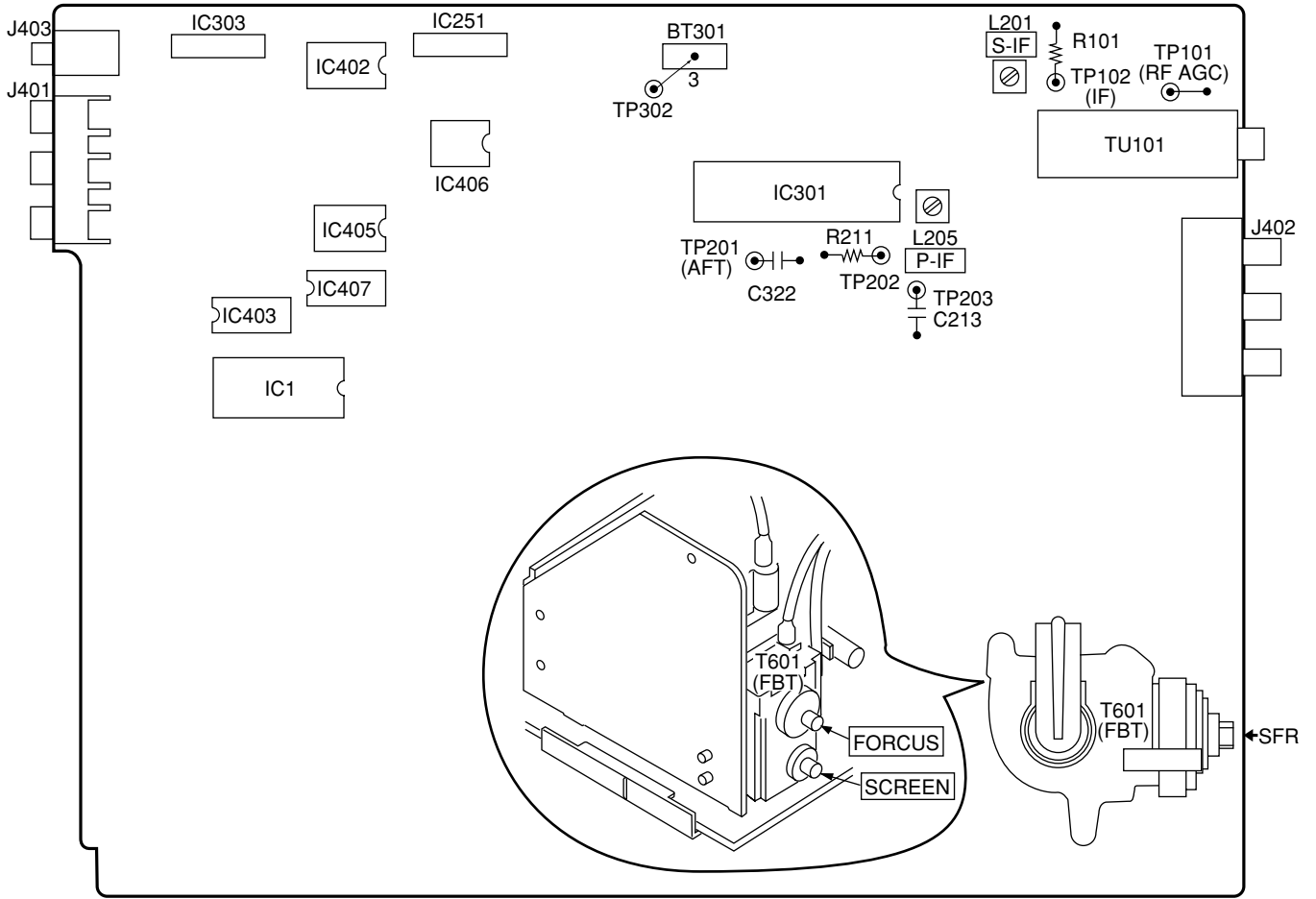


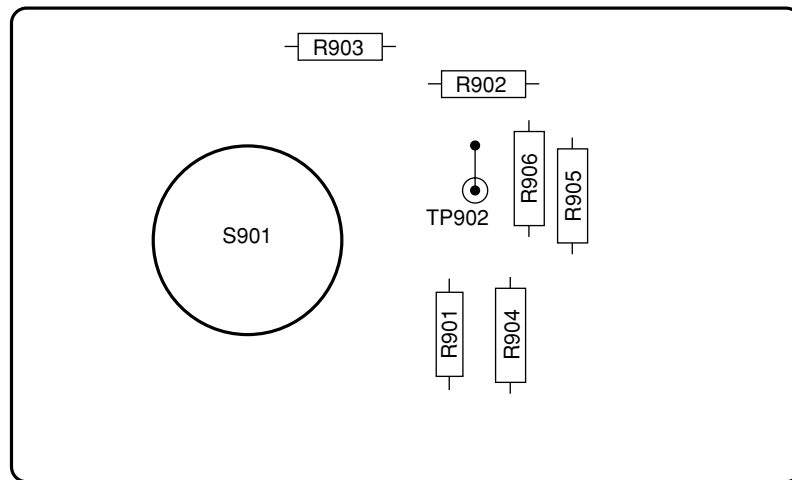
Fig.3

ELECTRICAL ADJUSTMENT (adjustment menu screen)

MAIN C. B (Top View)



NK C. B (Top View)



- After replacing EEPROM, enter the following initial values before proceeding with adjustment.
- During normal servicing, check the applicable items, and adjust them if necessary.

	Initial value
PAGE 1	
1. H POS	20
2. V POS	2
3. V SIZE	18
4. OSD POS	6
5. PIF VCO	58
6. RF AGC	32
PAGE 2	
1. R CUT OFF	127
2. G CUT OFF	127
3. B CUT OFF	127
4. G DRIVE	127
5. B DRIVE	127
PAGE 3	
1. SUB CONTRAST	34
2. SUB BRIGHT	35
3. SUB TINT	0
4. SUB COLOR	16
PAGE 4	Specified value
1. 3.58 TRAP	ON
2. BPF	AUTO
3. H AFC	+1
4. WPL	OFF

- 1-1. **H POS** Horizontal position adjustment/Adjustment menu screen PAGE 1-1  
 Input signal: Crosshatch  
 Measuring instrument: Leader LCG-404 pattern generator
- Use the volume keys on the jig remote control to adjust so that the dot mark at the center of crosshatch is positioned at the horizontal center of screen and the squares on the left and right are equal. Fig. 1-1

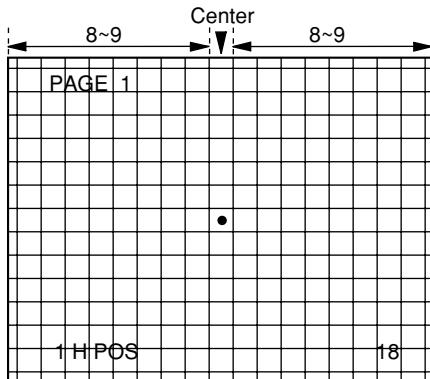


Fig.1-1

- 1-3. **V SIZE** Vertical size adjustment/Adjustment menu screen PAGE 1-3  
 Input signal: Crosshatch  
 Measuring instrument: Leader LCG-404 pattern generator
- Use the volume keys on the jig remote control to adjust so that the number of crosshatch squares in the vertical direction is 13-14. Fig. 1-3

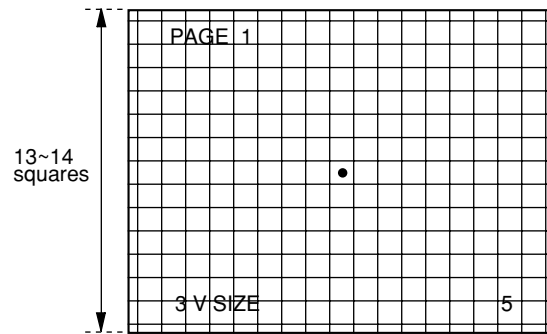


Fig.1-3

- 1-2. **V POS** Vertical position adjustment/Adjustment menu screen PAGE 1-2  
 Input signal: Crosshatch  
 Measuring instrument: Leader LCG-404 pattern generator
- Use the volume keys on the jig remote control to adjust so that the dot mark at the center of crosshatch is positioned at the vertical center of screen. Fig. 1-2

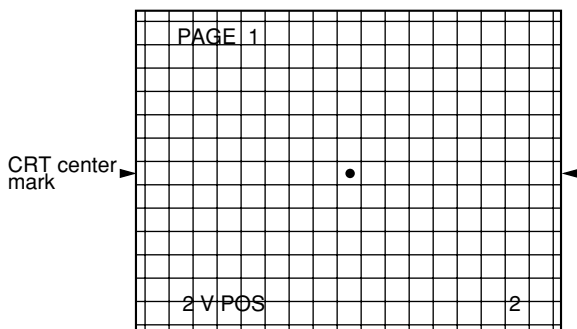


Fig.1-2

- 1-4. **OSD POS** OSD position adjustment/Adjustment menu PAGE 1-4  
 Input signal: Not specified
- Use the volume keys on the jig remote control to adjust so that both sides of OSD characters are equal to the length of edge of screen. A = B Fig. 1-4

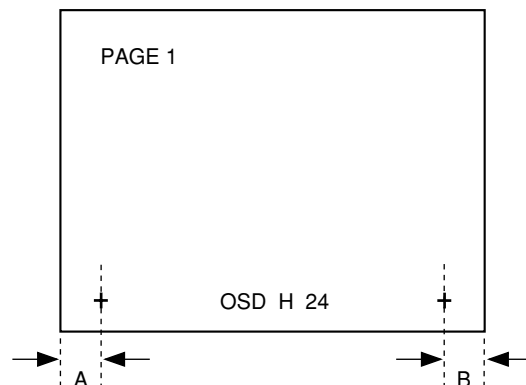


Fig.1-4

1-5. **PIF VCO** Video IF/VCO adjustment/Adjustment menu screen

PAGE 1-5

Input signal: ANT RF-INPUT

Color bar

- Measuring instruments: Leader LCG-404 pattern generator  
Use the volume keys on the jig remote control to adjust so that the AFT status on the screen is "OK". Fig. 1-5
- If there are several ranges where the AF status is acceptable, select the center value.

\* "NG" will appear for SD when no signal appears on the screen, but this will not cause any problem for VCO adjustment (example: No signal with video input). Even in this case, adjustment is possible if there is a load on ANT.

	Optimum	Higher	Lower
PAGE 1			
SD	OK	OK	OK
AFT	OK	UP	DN
5 PIF VCO	58	58	52

Fig.1-5

1-6. **RF AGC** RF-AGC adjustment/Adjustment menu screen

PAGE 1-6

Input signal: ANT RF-INPUT

Color bar

Measuring instruments: Oscilloscope, Leader LCG-404 pattern generator

1. Connect the oscilloscope to TP-101.
2. Use the volume keys on the jig remote control to adjust so that the voltage at the test point is  $3.5 \pm 0.3$  V. Make sure that "OK" appears for AFT on the adjustment menu screen as shown in Fig. 1-6.

PAGE 1	
SD	OK
AFT	OK
6 RF AGC	32

Fig.1-6

## White Balance Adjustment:

Adjustment menu screen PAGES 2-1~5

\* When the adjustment menu screen appears, the user picture quality will be cleared.

Input signal: White raster

Details of adjustment:

1. R CUT OFF
2. G CUT OFF
3. B CUT OFF
4. G DRIVE
5. B DRIVE

\* Perform aging for at least 20 minutes before adjustment.

\* Repeat all processes of adjustment several times.

Measuring instrument: Leader LCG-404 pattern generator

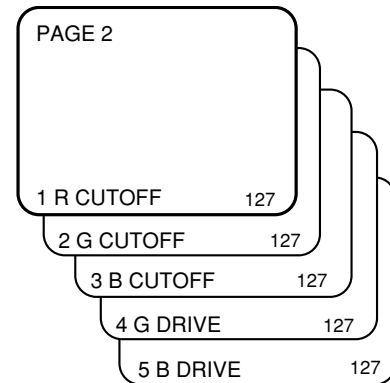


Fig. 2-1

## Cutoff adjustment:

- 2-1. Use the pattern generator to input white raster signal.
- 2-2. Fix the cutoff value whose color seems to be most intense at 127, and use the volume keys on the jig remote control to adjust the other two cutoff values so that a white picture appears.

## Drive adjustment:

- 2-3. Use the volume keys on the jig remote control to increase the **4. G DRIVE** value to 200 or more so that the picture is greenish.
- 2-4. Decrease the value gradually until green disappears.
- 2-5. Use the volume keys on the jig remote control to increase the **5. B DRIVE** value to 200 or more so that the picture is bluish.
- 2-6. Decrease the value gradually until blue disappears.
- 2-7. Perform steps 1-6 several times so that a white picture appears.

## Focus Adjustment:

Input signal: Dot signal

Adjustment point: Upper SFR of FBT (T601)

Measuring instrument: Leader LCG-404 pattern generator

- Adjust the upper SFR of FBT (T601) until the focus of dots in the dot pattern is optimum.

## Screen Adjustment:

Input signal: No signal (raster)

Adjustment point: Lower SFR of FBT (T601)

Measuring instrument: Leader LCG-404 pattern generator

1. Use the jig remote control to display the adjustment menu screen.
2. Press the "0" channel numeric key so that a horizontal single line appears. Fig. 2-2
3. Adjust the lower SFR of FBT (T601) until the horizontal single line starts to gleam.
4. Perform step (2) again to return to the adjustment menu screen.



Fig. 2-2

- 3-1. **SUB BRIGHT** Sub-brightness adjustment / Adjustment menu screen PAGE 3-2 (make sure of the order)

Input signal: Color bar (stairstep)

Measuring instrument: Leader LCG-404 pattern generator

1. Use the volume keys on the jig remote control to adjust until the second step from the right gleams.

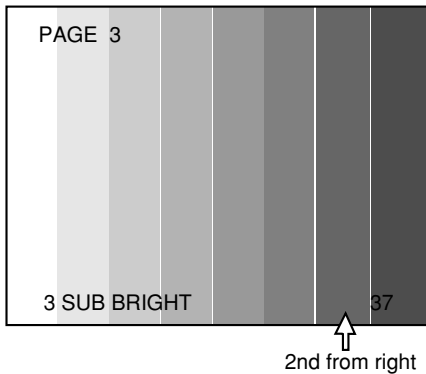


Fig. 3-1

- 3-2. **SUB CONTRAST** Sub-brightness adjustment / Adjustment menu screen PAGE 3-1

Input signal: Color bar (QIW) with chroma off

Measuring instruments: Oscilloscope

Leader LCG-404 pattern generator

Test point: TP902 on NK C.B.

1. Connect the oscilloscope to TP902.
2. Use the volume keys on the jig remote control to adjust so that the voltage to the pedestal level from 100% white is  $80 \pm 2.0$  V, referring to Fig. 3-2.

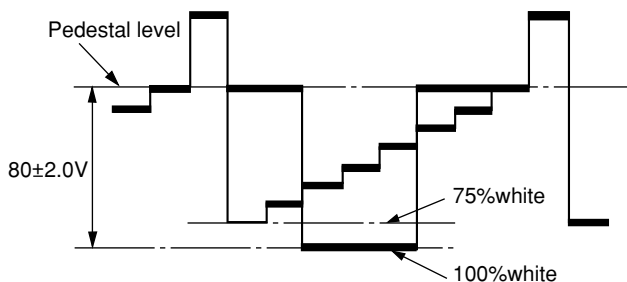


Fig. 3-2

- 3-3. **SUB TINT** Sub-tint adjustment/Adjustment menu screen PAGE 3-3

Input signal: Color bar

VIDEO IN

Measuring instruments: Oscilloscope

Leader LCG-404 pattern generator

Test point: TP302/BT301 (wire connector) pin (3)

1. Connect the oscilloscope to TP302.
2. Use the volume keys on the jig remote control to adjust so that the bottom edges of waveform are in one oblique line, referring to Fig. 3-3.

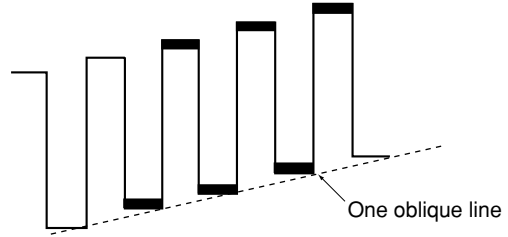


Fig. 3-3

- 3-4. **SUB COLOR** Sub-color adjustment/Adjustment menu screen PAGE 3-4

Input signal: Color bar

VIDEO IN

Measuring instruments: Oscilloscope

Leader LCG-401 pattern generator

Test point: TP302/BT301 (wire connector) pin (3)

1. Connect the oscilloscope to TP302.
2. Use the volume keys on the jig remote control to adjust so that the peaks of waveform are in one straight line, referring to Fig. 3-4.

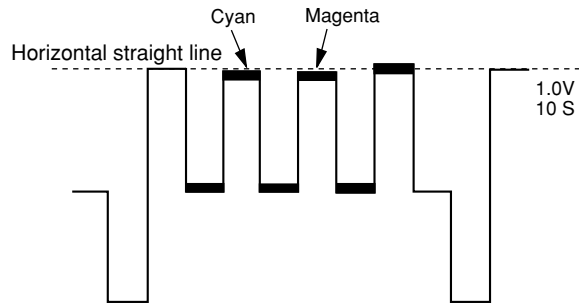


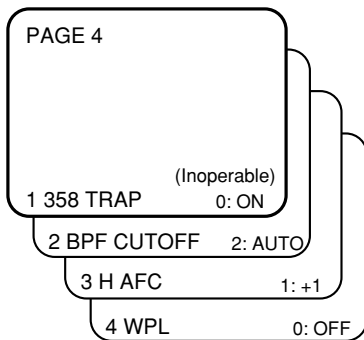
Fig. 3-4



4. **TV SETTING CHECK** Settings check for different models/  
Adjustment menu screen PAGES 4-1~4  
The settings are fixed for each model: Do not change the settings to those other than specified.
- Check to see if the settings on the adjustment menu screen are the same as in Table 4.
- If the settings are different, use the volume keys on the jig remote control to reset them.

3.58 TRAP	0: ON
BPF	2: AUTO
H AFC	1: +1
WPL	0: OFF

\* The 3.58 TRAP setting cannot be modified.  
Table 4



Check is possible even with a list of menus.

Fig. 4

## Tuner Adjustment:

If adjustment element has been replaced as a result of repair, perform the following adjustments, and then proceed with adjustment using the adjustment menu screens.

If this adjustment is not complete, correct adjustment will not be possible with adjustment menu screens.

Components which cause the circuit status to change after repair:

- VCO coil
- SIF coil
- TRAP coil
- SEPARATION VR

- 5-1. **VCO ADJUSTMENT** VCO (PIF) adjustment/Video carrier frequency free-running adjustment

Input signal: RF-NTSC color bar:

Input level: 90 dB $\mu$ V

BROADCAST CH/fc=45.75MHz

Mode: TUNER

Test points: Input: TP-102 **IF** (TU101 pin 11)

Output: TP-201 **AFT** (IC301 pin 44)

Adjustment point: L205/P-IF

Measuring instruments: Oscilloscope

Leader LCG-404 pattern generator

1. Connect the oscilloscope to TP-201.
2. Supply a specified level RF signal to TP-102, and adjust L205 so that the voltage at TP-201 is  $2.8 \pm 0.3$  V DC.

- 5-2 **SIF ADJUSTMENT** Audio IF modulation adjustment

Input signal: AM/FM-SG RF OUT: 4.5MHz

MODE OFF

90 dB $\mu$ V

With the simple adjustment method, receive an ordinary broadcast signal with simple adjustment.

Mode: TUNER

Test points: Input/TP-202: IC301 pin 52

Output/TP-203: IC301 pin 54

Adjustment point: L201/S-IF

Measuring instruments: Oscilloscope

AM/FM signal generator

1. Connect the oscilloscope to TP-203.
2. Tune in TV channel 2.
3. Supply a specified signal to TP-202, and adjust L201 so that the voltage at TP-203 is  $4.5 \pm 0.2$  V DC.

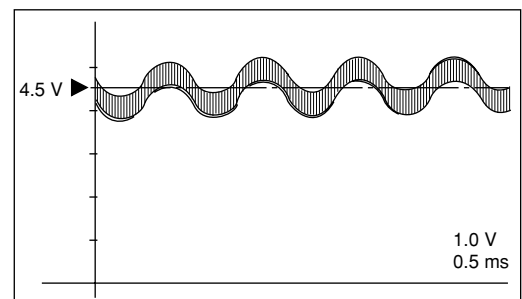
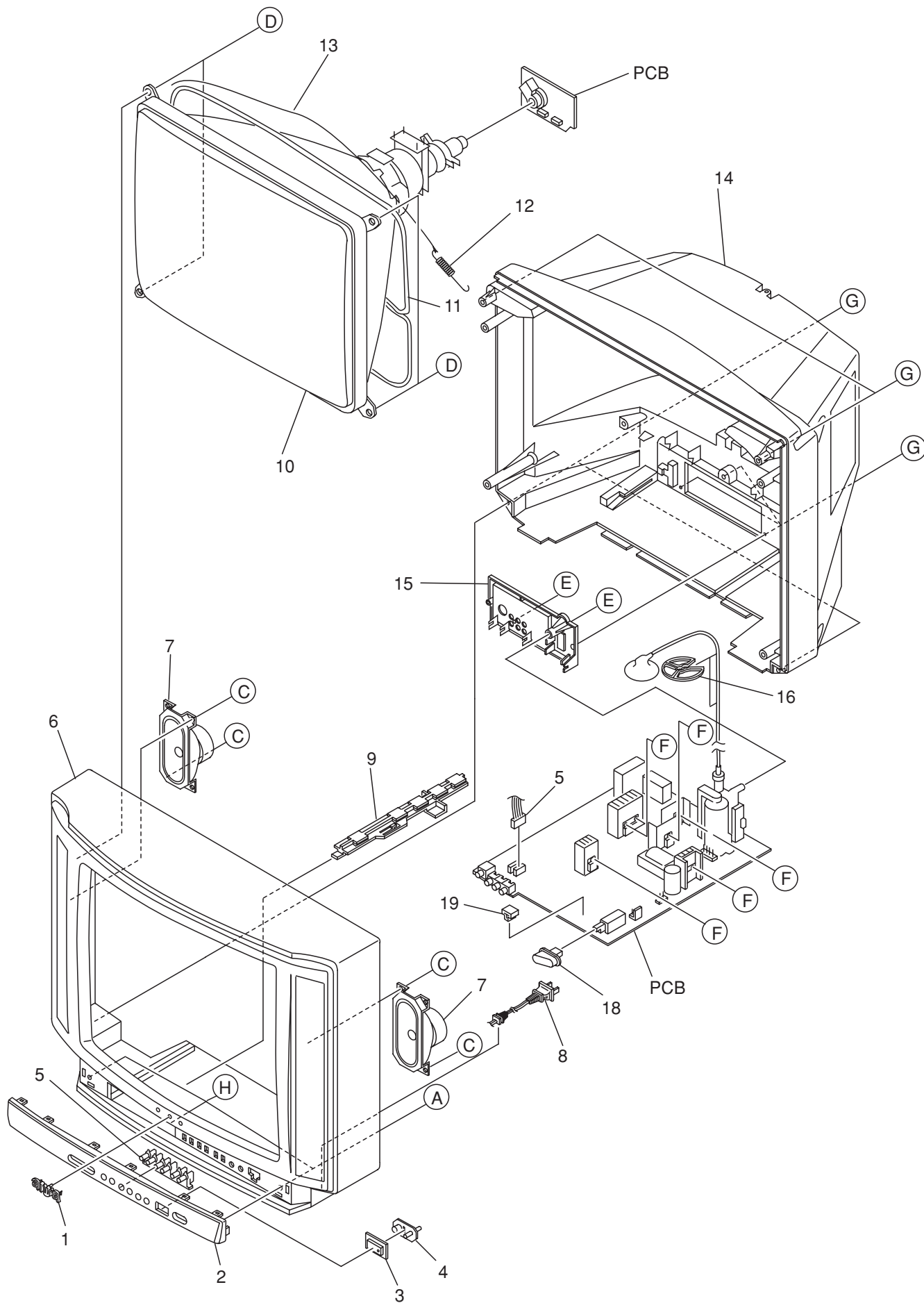


Fig.5-1

# MECHANICAL EXPLODED VIEW 1/1



# MECHANICAL MAIN PARTS LIST 1/1

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
 If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	87-054-086-010		BADGE,AIWA 52.5
2	8Z-JAK-003-010		PANEL,MAIN AN2010 NH
3	8Z-JBR-005-010		LENS,RC
4	8Z-JBR-006-010		LENS,LED
5	8Z-JBR-004-010		KEY,MAIN
6	8Z-JBS-001-010		CABI,FR
7	8Z-JB4-620-010		SPKR,6*12 8OHM 10W
△	8Z-JAD-620-010		AC CORD SET,NH BLK
9	8Z-JBR-201-010		HLDL,PCB 1
△	10 87-JBD-606-010		CRT,A48LRH94X02 (W)
△	11 87-A50-557-010		DGC,20' 15 OHM-TYPE8
12	84-LB3-205-010		SPR-E,EARTH
13	84-LB2-633-110		CONN ASSY,1P CRT GND
14	8Z-JBR-002-010		CABI,REAR
15	8Z-JB5-010-010		PANEL,REAR SH
16	87-A90-332-010		HLDL,SF-2001 HV CABLE
18	8Z-JB5-007-010		BTN,POWER SH
19	84-LB3-216-010		HLDL,LED
A	87-067-680-010		BVI T3+3-10
C	87-078-070-010		BVIT3B+4-12
D	86-LBB-206-010		S-SCREW,ASSY TV5-40 W20
E	87-067-761-010		TAPPING SCREW, BVT2+3-10
F	87-067-579-010		TAPPING SCREW, BVT2+3-8
G	87-067-844-010		BVT2+4-16 BLK
H	87-067-690-010		TAPPING SCREW, BVIT3+3-12

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

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