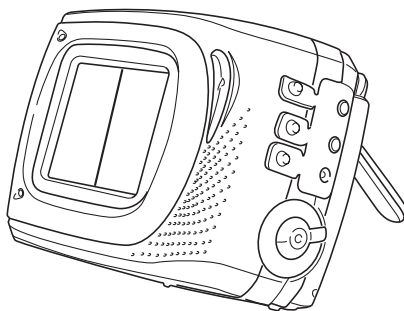


SERVICE MANUAL & PARTS LIST (without price)

SY-20B (KX-529B)

MAY. 2000



SY-20B

CASIO®

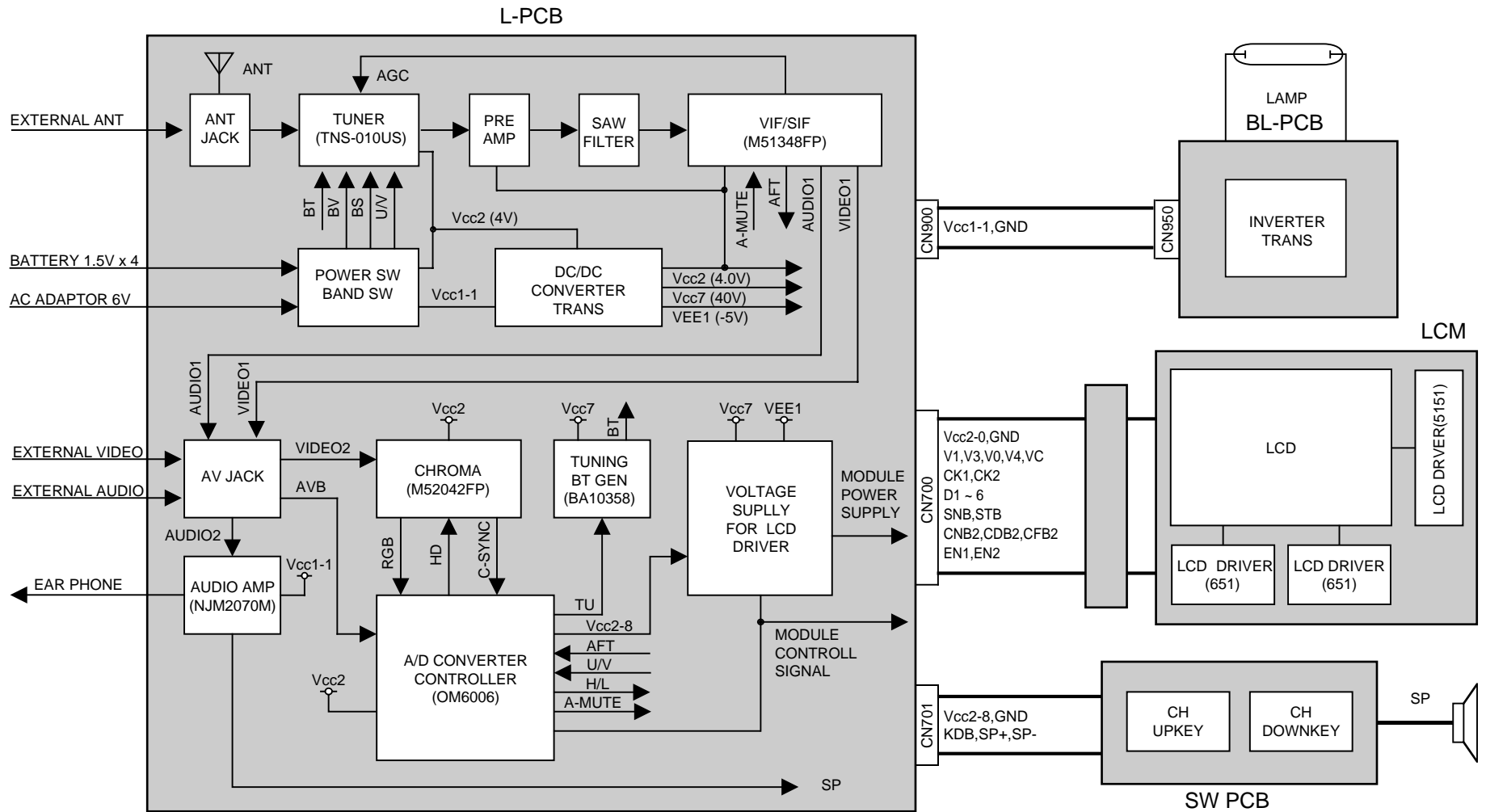
CONTENTS

SPECIFICATIONS	1
BLOCK DIAGRAM	2
ADJUSTMENT	3
PRINT CIRCUIT BOARDS	8
EXPLODED VIEW	10
PARTS LIST	11
SCHEMATIC DIAGRAMS	13
DRIP-PROOF PERFORMANCE Q & A	15

SPECIFICATIONS

Item	Specification
1. Type	LCD Color Television
2. Reception Frequencies:	UHF: UHF band CH 14 – CH 69 VHF: VHF band CH 2 – CH 13
3. Display Element:	High resolution color liquid crystal display (Super Twisted Nematic Type)
4. Drive System:	Passive matrix system
5. Screen Size:	2.3 inches
6. Backlight:	High luminance fluorescent material
7. Antenna:	Rod antenna (VHF, UHF)
8. Speaker:	1 2/16" inches (28 mm) X1
9. Connection Terminals:	External antenna jack (3.5ø mini) Earphone jack (3.5ø mini) External power source jack (DC 6V) Audio/Video input jack (3.5ø mini)
10. Power Supply:	3-way power supply system Batteries: 4 AA-size dry batteries AC: AC adaptor AD-K64/AD-K65 (option) Car battery: Car adaptor CA-K65 (option)
11. Power Consumption:	Approx. 3.6 W
12. Ambient Temperature Range:	32°F (0°C) ~ 104°F (40°C)
13. Dimensions:	5 6/16" (W) X 2 3/16" (D) X 3 6/16" (H) inches 136 (W) X 56 (D) X 85 (H) mm
14. Weight:	Approx. 9.2 oz 260 g (excluding batteries)

BLOCK DIAGRAM



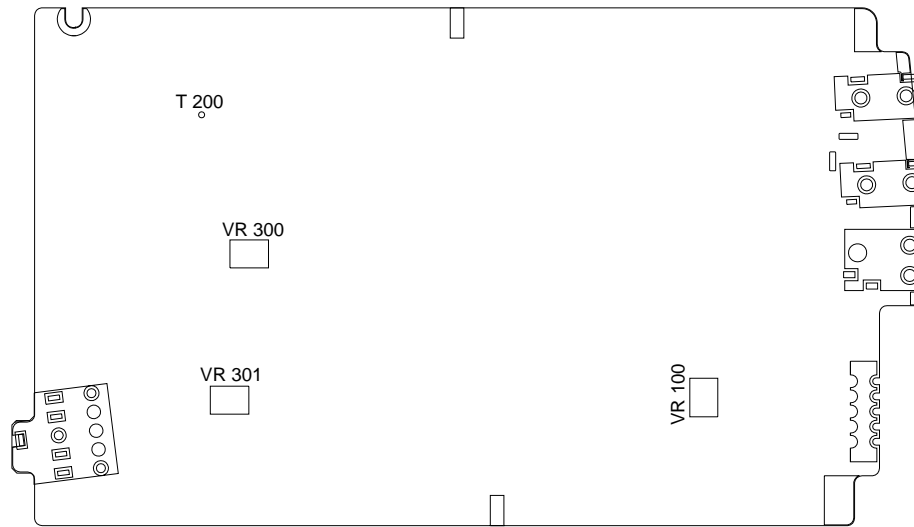
ADJUSTMENT

1. Vcc2 adjustment, Vcc7, Vee1 voltage check
2. LLD coil adjustment
3. Free running frequency adjustment
4. Contrast adjustment
5. TINT adjustment

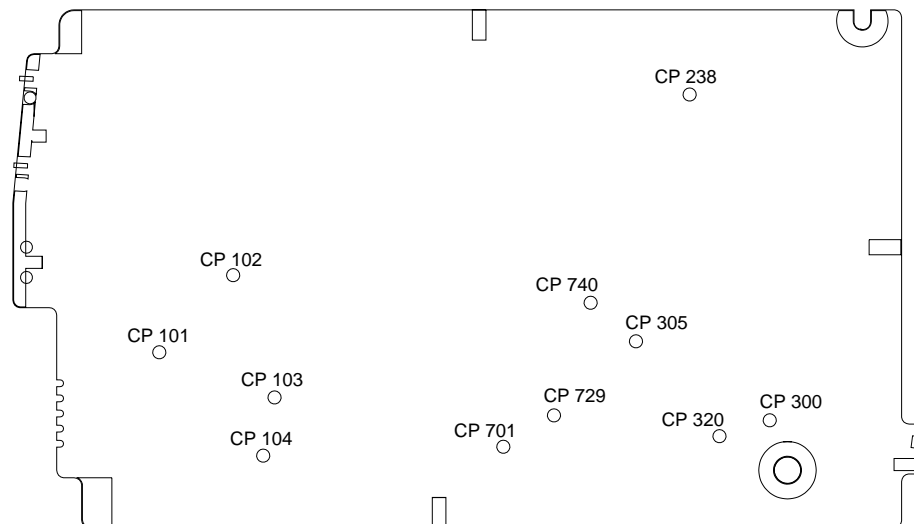
Preparations

1. Connect AVB (CP725) to GND.
2. Set SW100 on UHF mode.

Adjustment And Test Point Locations



Top View

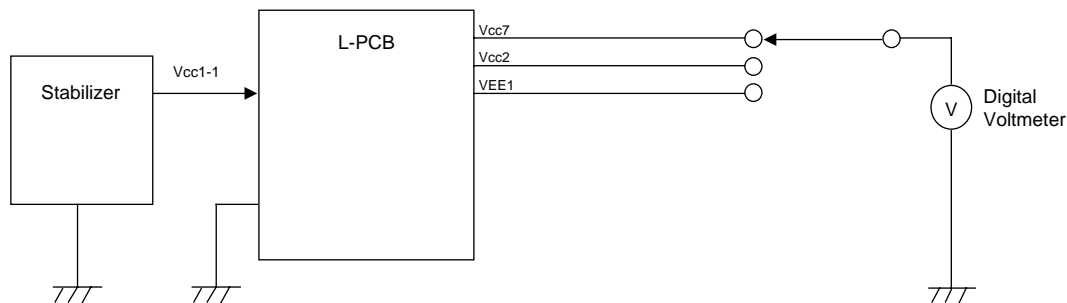


Bottom View

Adjustment procedures

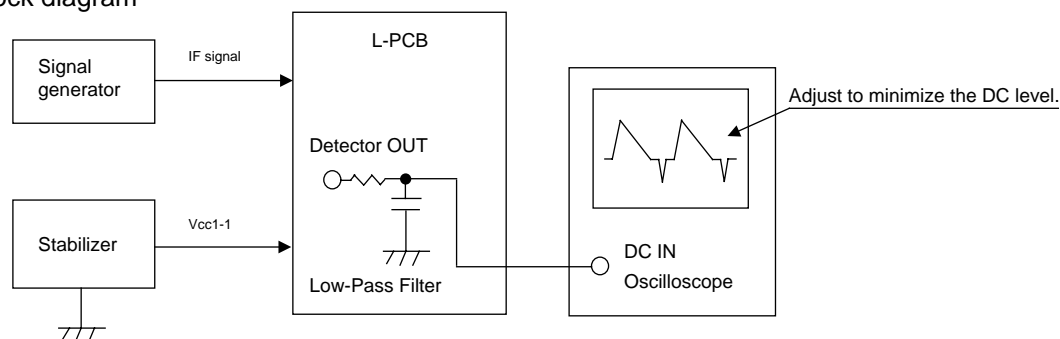
1. Vcc2 adjustment, Vcc7, VEE1 voltage check

- Condition
 - (1) Signal
No signal
 - (2) Other conditions
Power supply: Vcc1-1 (CP101) = 5.00 ± 0.05 [V]
- Adjustment
Apply 5.00 ± 0.05 [V] on Vcc1-1 (CP101).
Adjust VR100 so that Vcc2 (CP102) voltage becomes 4.00 ± 0.02 [V].
- Checking
Vcc7 (CP103) = $36.0 \sim 44.0$ [V]
VEE1 (CP104) = $-4.50 \sim -6.00$ [V]
- Block diagram



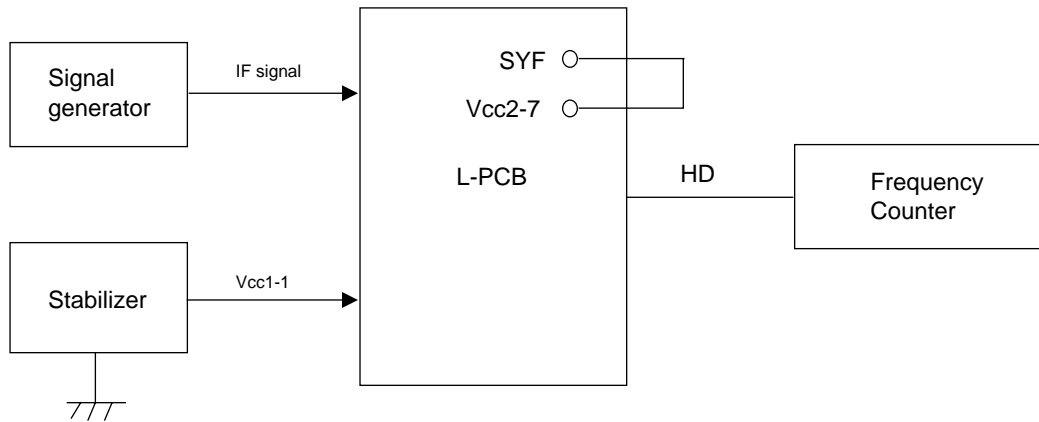
2. LLD coil adjustment

- Conditions
 - (1) Signals
Broadcasting system: M/M
Color system: NTSC color bar
 - (2) Signal level
Input electric field: 40 ± 5 dB μ (IF AGC full gain), P/S = 10 dB
 - (3) Other conditions
US IF (Input electric field: terminated with 75Ω resistance)
Power supply: Vcc1-1 (CP101) = 5.00 ± 0.05 [V]
- Adjustment
Monitor video detection signal (CP238) via a low-pass filter of 100 kHz cutoff frequency and adjust LLD coil T200 so that its DC level is minimum (waveform's amplitude is maximum).
- Confirmation
There should be no waveform distortion (erroneous synchronization, etc.), under sensitivity (video detector output level is abnormally small, etc.).
- Block diagram



3. Free running frequency adjustment

- Conditions
 - (1) Signal
No signal (NTSC standard signal should be applied only at synchronous check)
 - (2) Signal level
Input electric field only at synchronous check: $70 \pm 3 \text{ dB}\mu$ (terminated with 75Ω resistance),
P/S = 10 dB
 - (3) Other conditions
US IF input only at synchronous check (input electric field with 75Ω termination).
Connect SYF terminal (CP729) and Vcc2-7 (CP701).
Power supply: Vcc1-1 (CP101) = $5.00 \pm 0.05 \text{ [V]}$
Room temperature: $20 \pm 10 \text{ [}^\circ\text{C]}$
- Adjustment
Monitoring HDB (CP305) with a frequency counter, adjust VR700 so that the frequency is $15.734 \pm 0.1 \text{ [kHz]}$.
- Caution
 - (1) Disconnect the wire between SYF terminal. Applying IF signal make sure that synchronization is normal on the display.
 - (2) Use input signal pattern conforming CCIR standard.
- Block diagram



4. Contrast adjustment

- Conditions

- (1) Signals

- Broadcasting system: M/M

- Color system: NTSC color bar (white 75%)

- (2) Signal level

- Input electric field: 70 ± 3 dB μ (terminated with 75Ω resistance), P/S = 10 dB

- (3) Others

- US IF input (input electric field should be terminated with 75Ω resistance)

- Power supply : Vcc1-1 (CP101) = 5.00 ± 0.05 V

- Adjustment

- (1) Connect color terminal (CP320) to GND (CP300) so that screen becomes black and white.

- (2) Adjust contrast pot VR300 so that the voltage between pedestal level and white level of B signal (CP740) is 0.80 ± 0.05 [V].

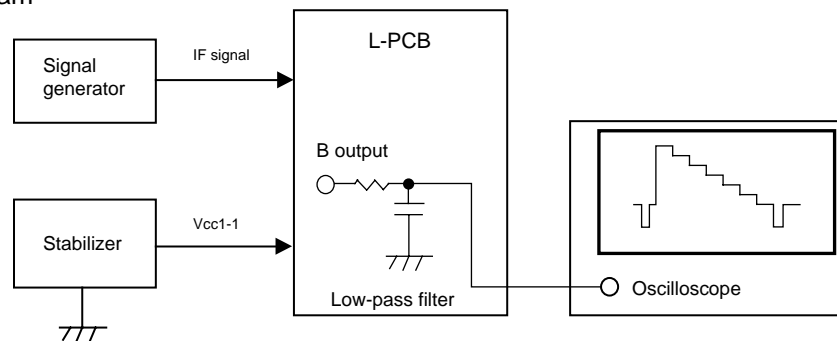
- Caution

- (1) Make sure that waveforms are not distorted.

- (2) Connect COLOR terminal of Chroma IC (M52042FP) to GND.

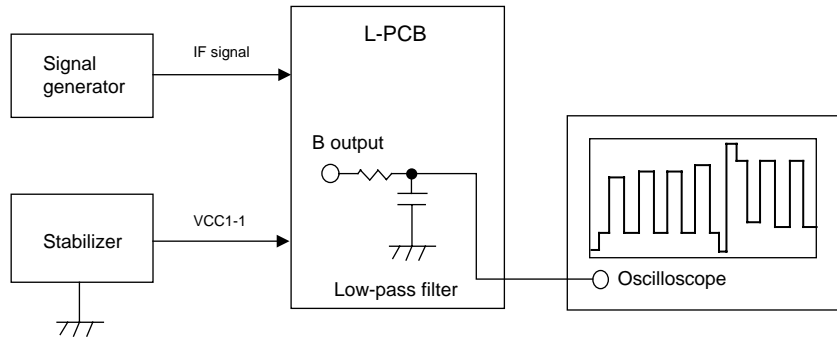
- (3) Monitor the B output signal with an oscilloscope via a low-pass filter ($C = 2700$ pF, $R = 100 \Omega$).

- Block diagram



5. TINT adjustment

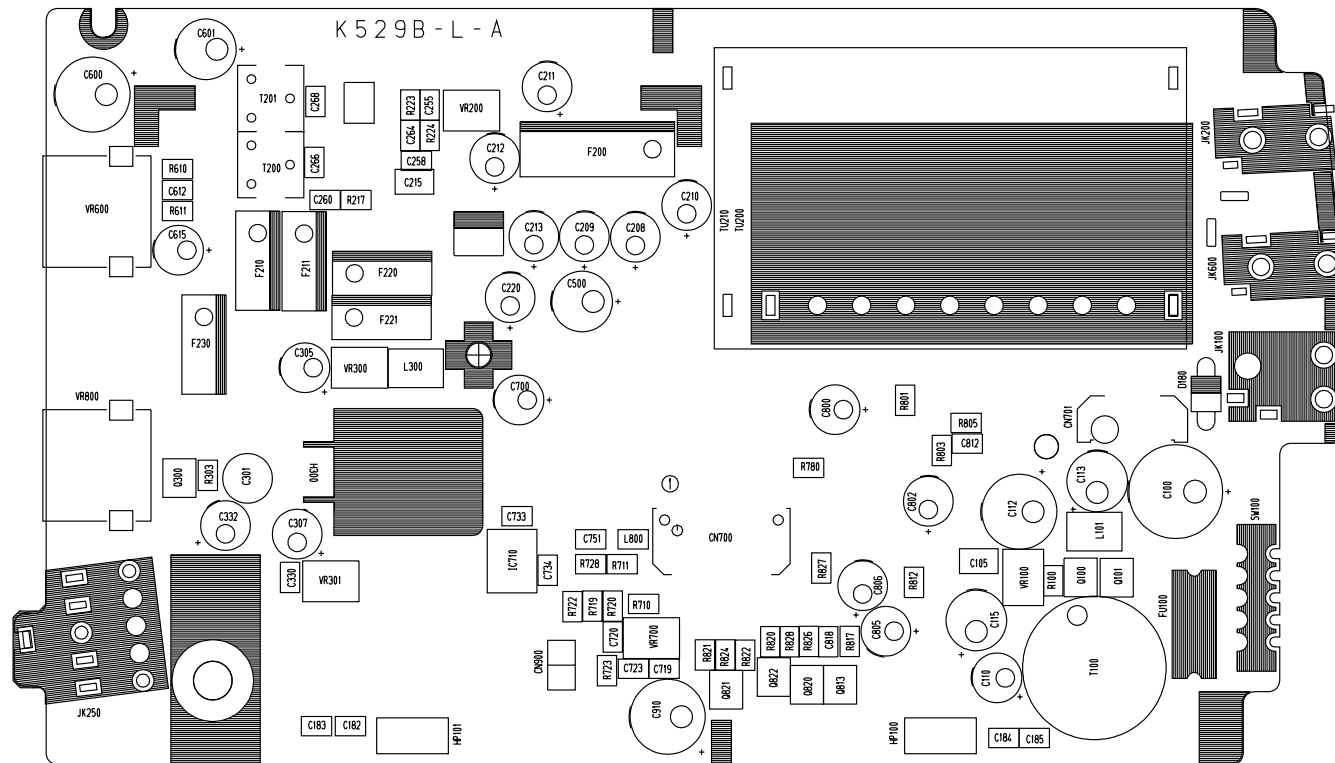
- Condition
 - (1) Signal
Broadcasting system: M/M
Color system: NTSC color bar (white 75%)
 - (2) Signal level
Input electric field: $70 \pm 3 \text{ dB}\mu$ (75Ω termination), P/S = 10 dB
 - (3) Other conditions
US IF input (input electric field should be terminated with 75Ω resistance).
Power supply : V_{cc1-1} (CP101) = $5.00 \pm 0.05 \text{ [V]}$
- Adjustment
Observing B output signal (CP740) with an oscilloscope, adjust TINT pot VR301 so that amplitude difference between two center pulses is 0.1 [V]
- Caution
 - (1) Do not connect COLOR chroma IC (M52042PP) terminal of to GND.
 - (2) Monitor B output signal with an oscilloscope via a low-pass filter ($C = 2700 \text{ pF}$, $R = 100 \Omega$)
- Block diagram



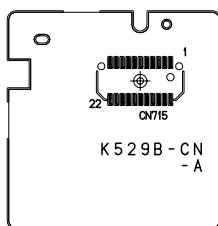
PRINTED CIRCUIT BOARDS

TOP VIEWS

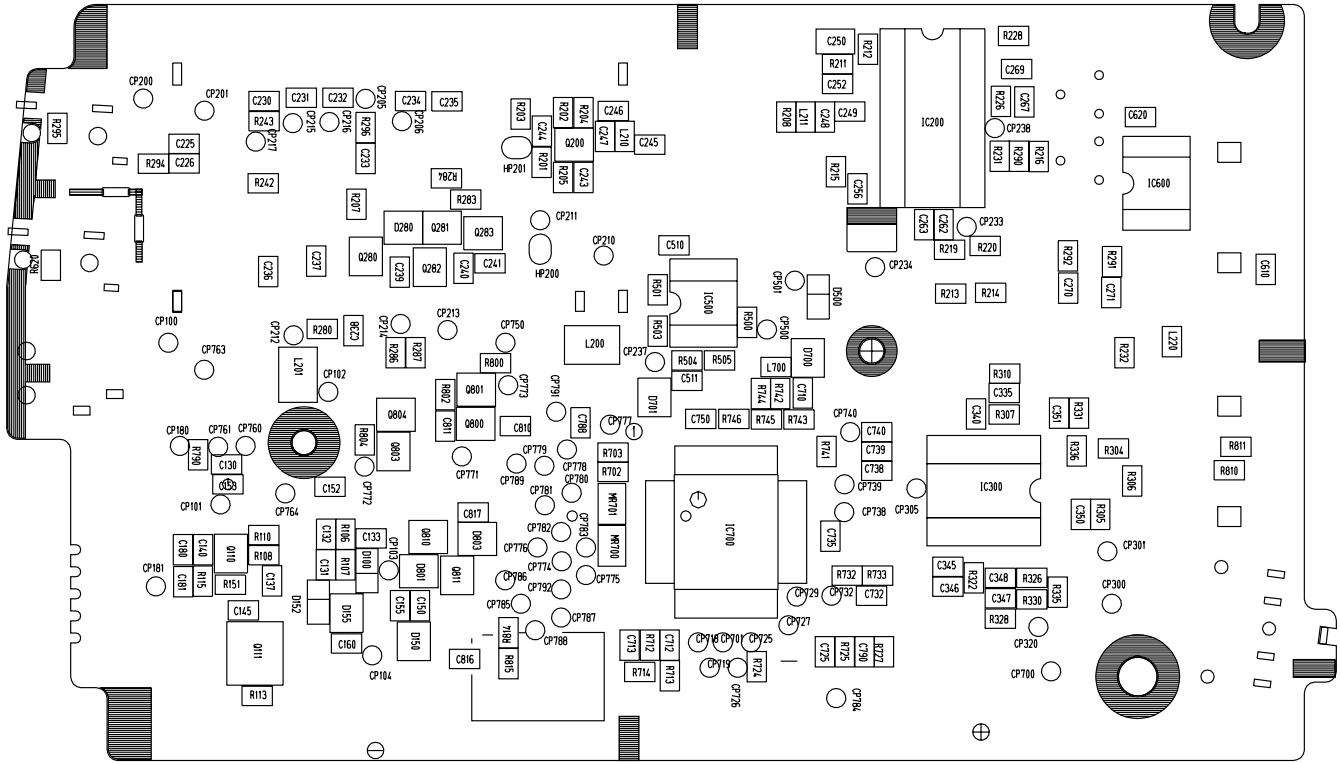
Linear



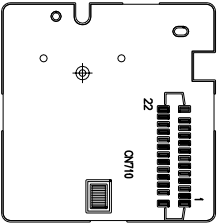
Connector



BOTTOM VIEWS
Linear

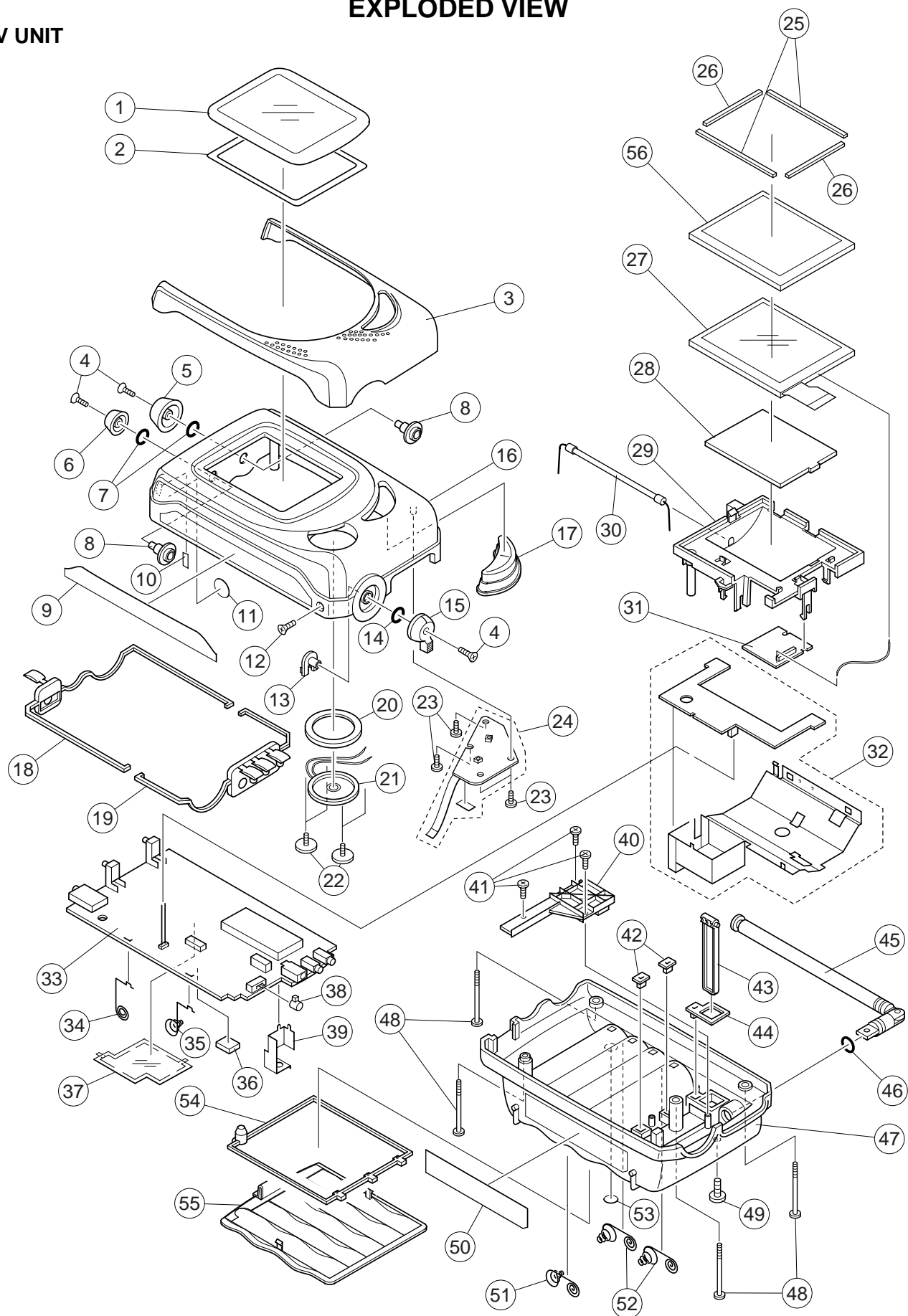


Connector



TV UNIT

EXPLODED VIEW



PARTS PRICE LIST
SY-20B

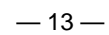
N	Item	Code No.	Parts Name	Specification	Q	Price Code	R
N	1	1002 6667	PANEL/DISPLAY	K342241-1	1	AN	X
N	2	1002 2739	TAPE/DOUBLE SIDE	K442084-1	1	AM	X
N	3	1002 3112	PANEL/UPPER	K140705-3	1	AF	X
N	4	1001 8269	SCREW	BT3 1.7X5.5Ni	3	AA	X
N	5	1001 4846	KNOB/VOLUME	K341905-1	1	AF	C
N	6	1001 4845	KNOB/BRIGHT	K341906-1	1	AF	C
N	7	1001 4839	PACKING/KNOB	K442072-2	2	AA	C
N	8	1001 4847	CASING FRAME/KNOB	K341910-1	2	AA	X
N	9	1002 2746	PLATE/RATING	K342110-3	1	AA	X
N	10	1002 8375	TAPE/DOUBLE SIDE	K442082-4	2	AA	X
N	11	1002 3110	SEAL/AIR ADJUSTMENT	K442209-1	1	AA	X
N	12	1001 8268	SCREW	BT3 1.7X4.5BK	1	AA	X
N	13	1001 4786	CASING FRAME/SWITCH	K341911-1	1	AA	X
N	14	1001 4782	PACKING/SWITCH	K442072-3	1	AA	C
N	15	1001 4789	KNOB/SWITCH	K341907-1	1	AF	C
N	16	1002 3111	CASE/UPPER	K140703-3	1	AY	X
N	17	1001 4795	BUTTON/TUNING	K241359-1	1	AF	C
N	18	1001 4771	PACKING/CA	K241357-2	1	AK	C
N	19	1001 4765	PACKING/CB	K241391-2	1	AJ	C
N	20	1001 4792	PACKING/SPEAKER	K341917-1	1	AA	C
	21	3831 1095	SPEAKER	28-8AB-09	1	AS	B
	22	6630 7430	SCREW	K440305-1	4	AA	X
	23	6604 3110	SCREW	K41310-1	4	AA	X
N	24	1002 3127	PCB ASSY/SWITCH	K442206*2	1	BB	B
N	25	1002 2691	CUSHION	K442245-1	2	AA	X
N	26	1002 2694	CUSHION	K442245-2	2	AA	-
	27	2725 1363	MODULE/LCD	CMG23C1-T0	1	CX	A
N	28	1001 4757	PLATE/DIFFUSION	K341913-1	1	AD	X
N	29	1002 8372	CASE/REFLECTOR	K241353-1	1	AF	X
	30	1002 2458	LAMP/FLUORESCENT	3067(LX)BB-CA52	1	AV	A
N	31	1002 9952	PCB ASSY/BACK LIGHT	TK-K140763*2(K529)	1	CV	B
N	32	1002 3121	UNIT/BACK LIGHT	K342169*2	1	CE	X
N	33	1002 9950	PCB ASSY/LINEAR	TK-K241446*1(K529)	1	DQ	A
N	34	1002 2678	SPRING	K442065-1	1	AA	C
N	35	1002 2679	SPRING	K442066-1	1	AA	C
N	36	6612 4420	CUSHION	K440802-3	1	AA	X
N	37	1002 9949	PLATE/SEALED	K342176-1	1	AC	X
N	38	1001 4848	SHAFT/SWITCH	K341912-1	1	AB	X
N	39	1002 1366	TERMINAL/ANTENNA	K241344-1	1	AA	C
N	40	1001 4834	CASING FRAME/STAND	K341909-1	1	AC	C
	41	5860 8820	SCREW	BT3 2X6BK	3	AA	X
N	42	1001 4836	PACKING/BATTERY COVER	K342056-1	2	AA	C
N	43	1001 4833	STAND	K341908-2	1	AB	B
N	44	1001 4835	PACKING/STAND	K341916-1	1	AA	C
N	45	1002 2738	ANTENNA/ROD	YC-KX-629-M2	1	AP	A
N	46	1001 4840	PACKING/ANTENNA	K442072-1	1	AA	C
N	47	1001 4831	CASE/LOWER	K140704-2	1	AK	X
N	48	1001 8271	SCREW	K442177-1	4	AA	X

Note : Q - Quantity per unit
R - Rank

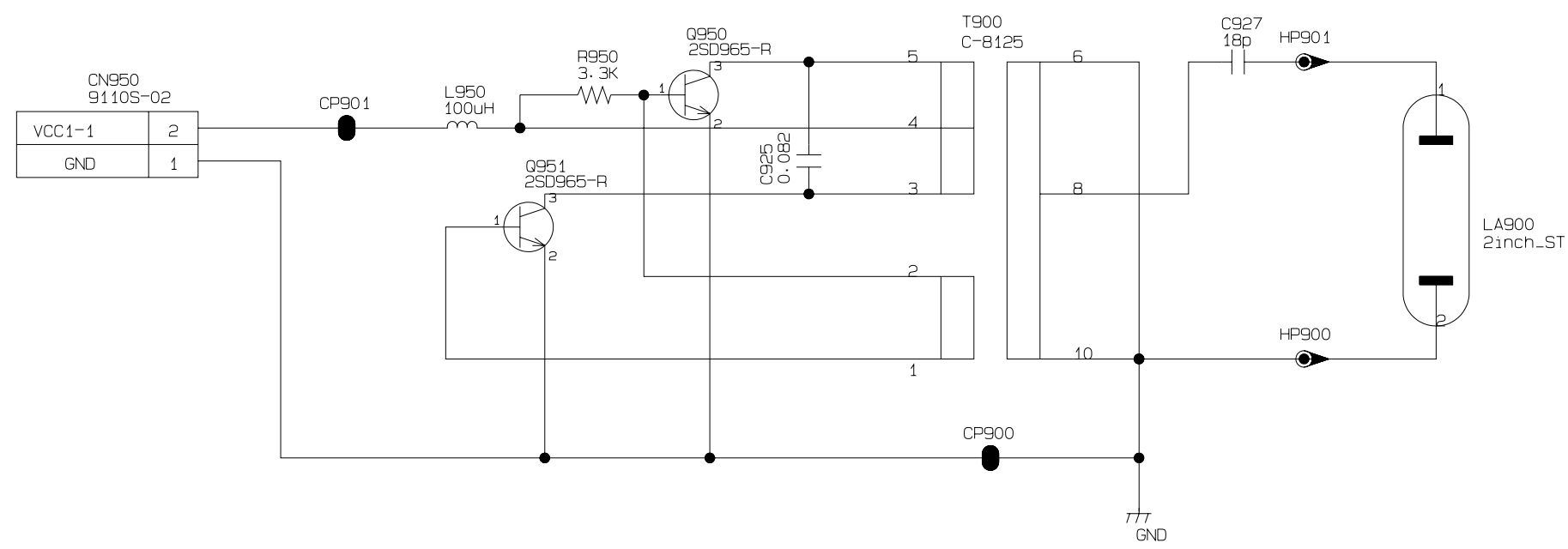
N	Item	Code No.	Parts Name	Specification	Q	Price Code	R
	49	6609 1290	SCREW	K412031-1	1	AA	X
	50	1002 2747	LABEL/CAUTIONS	K442211-2	1	AA	X
	51	6001 0862	SPRING/BATTERY	P408-1	1	AB	C
	52	6001 0871	SPRING/BATTERY	P409-1	2	AA	C
N	53	1002 2740	DETECTION SEAL/WET	K442210-1	1	AB	X
N	54	1001 4841	PACKING/BATTERY COVER	K241358-1	1	AC	C
N	55	1001 4844	COVER/BATTERY	K241351-2	1	AD	B
N	56	1002 5291	CASE/SHIELD	K241342-1	1	AB	X
L-PCB							
	D180	2390 1190	DIODE/CHIP	ERA15-01Y	1	AA	X
	F200	3025 1948	FILTER/SAW	SAF45MA210Z	1	AJ	X
	F210	3025 1949	FILTER/SIF	SFSH4.5MCB	1	AB	X
	F220	3851 2105	DISCRIMINATOR/SERAMIC	CDSH4.5MC30K	1	AB	X
	F230	3850 1259	TRAP/SIF	TPS4.5MB	1	AC	X
	FU100	1002 3113	FUSE	PI-471001(F10)	1	AE	A
	H300	2590 0749	OSCILLATOR	HC-49U	1	AH	X
	JK100	3501 8281	JACK/POWER	HEC0811-010010	1	AD	C
	JK200	3501 5439	JACK	HSJ1456-01-210	1	AC	C
	JK250	3501 3773	JACK/PHONE	HSJ6063-01-410	1	AH	C
	JK600	3501 5439	JACK	HSJ1456-01-210	1	AC	C
N	SW100	1001 8263	SWITCH/SLIDE	SSSS223-11-A	1	AD	C
	T100	3065 0730	CONVERTER/DC-DC	LC12U-45	1	AE	C
N	TU210	1002 0377	TUNER	TNS-010US-XB	1	CI	X
	VR600	2765 2191	VOLUME	RK09K111-10KB-H	1	AD	C
N	VR800	1001 8267	VOLUME	RK09K111-20KB-M	1	AC	C
BL-PCB							
N	Q950	2253 0287	TRNSISTOR	2SD965-R	1	AB	X
	Q951	2253 0287	TRNSISTOR	2SD965-R	1	AB	X
	T900	3012 1612	TRANS/INVERTER	C-8125	1	AQ	C
SW-PCB							
	SW801	1001 8262	SWITCH	SKHRAB	1	AB	C
	SW802	1001 8262	SWITCH	SKHRAB	1	AB	C

Note : Q - Quantity per unit
R - Rank

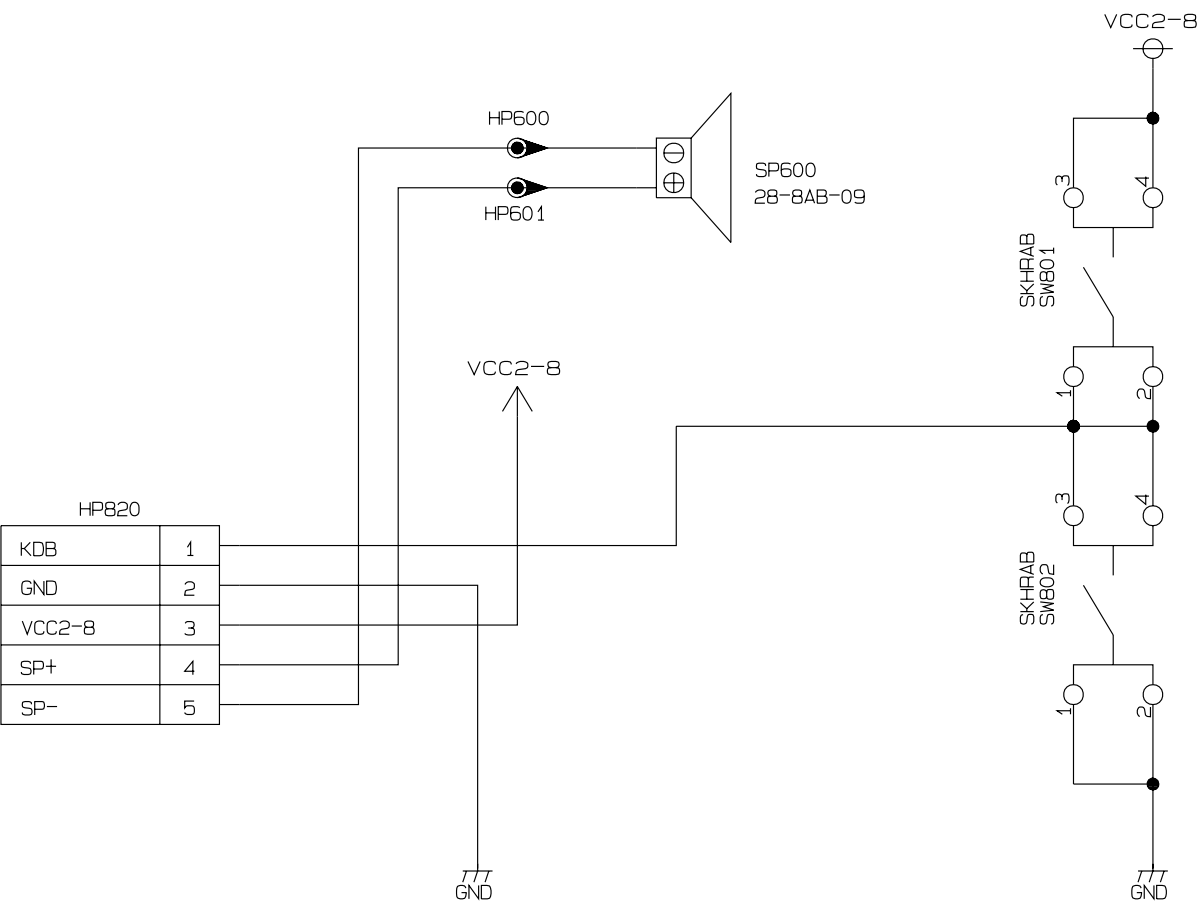
LINEAR



BACK LIGHT



SWITCH



CONNECTER



DRIP-PROOF PERFORMANCE Q & A

cause1. Can the TV be washed with water?

action1. This TV cannot be washed by applying cold water, hot water, sea water or any other form of moisture. This naturally is also true for soaps, detergents and other cleaners.

cause2. Is it all right to spray the TV under a shower?

action2. Since operation of the TV is not guaranteed in the case of spraying directly under a shower, it cannot be sprayed under a shower.

cause3. Is it all right to use the TV in the bath?

action3. The TV cannot be used by submerging in a bathtub or using in locations where it is sprayed directly from a shower. It can be used under conditions where it is subjected to water droplets dropping from the ceiling or slight splashing of water droplets from the surroundings. Following use, however, the TV should be taken out of the bathroom and should not be left in the bathroom.

cause4. Is it all right to use the TV in a pool or at the beach?

action4. The TV cannot be used by submerging in water or when it is subjected to direct spraying of water from a shower in the same manner as when used in the bath. It can be used in locations where it is occasionally subjected to splashing of water droplets.

cause5. Is it all right if the TV gets rained on?

action5. It can be used in light rain (such as when the intensity of the rain is less than XX per hour such that the ground does not become soaked or water accumulates on the ground). Always make sure to wipe off the TV with a dry cloth when it has become wet after raining.

cause6. Is it all right if the TV gets wet during falling snow?

action6. It can be used provided the amount of falling snow is not to a degree that causes snow to accumulate on the TV. Always make sure to wipe off the TV with a dry cloth when it has become wet after snowing.

cause7. Is the TV still all right after it has fallen onto a wet surface, wet ground or sandy beach?

action7. Although this TV is ensured to demonstrate drip-proof performance, since its resistance to impact has not been particularly enhanced, subjecting the TV to strong impacts as a result of being dropped and so forth can prevent drip-proof performance from being maintained.

cause8. Is it all right to touch the TV with wet hands?

action8. Although it is all right to touch the exterior of the TV with wet hands, when changing the batteries, always make sure that the TV as well as your hands are dry. Opening the battery cover while the product or your hands are wet can allow water to enter inside the TV possibly causing a malfunction. If water should happen to enter the battery compartment, remove the batteries and wipe off the batteries and battery compartment with a dry cloth and cotton swabs before using the TV.

cause9. Is drip-proof performance still maintained even when the antenna is extended?

action9. Drip-proof performance is maintained even when the antenna is extended.

cause10. Are there times when the sound cannot be heard or the volume decreases?

action10. If water is allowed to accumulate in the speaker as a result of subjecting the TV to heavy rain or direct spraying of water from a shower that exceeds the level of drip-proof performance, the sound may no longer be heard or the volume may decrease. When this happens, place the TV with the speaker facing down to remove the water, carefully wipe off the TV with a dry cloth and allow it to dry before further use.

cause11. What should be done if the TV is mistakenly dropped into water or subjected to direct spraying from a shower?

action11. Immediately remove the TV from the water or shower and wipe it off with a dry cloth. Since use of the TV while there is water present inside can result in the risk of fire or electrical shock, do not attempt to use the TV and take it to the store where it was purchased or a Casio Techno Service Station.

cause12. What should be done if the battery compartment packing has come off or been damaged?

action12. Since drip-proof performance can no longer be maintained, always take the TV to the store where it was purchased or a Casio Techno Service Station.

cause13. What should be done if a packing of one of the jacks has come off?

action13. Since drip-proof performance can no longer be maintained, always take the TV to the store where it was purchased or a Casio Techno Service Station.

cause14. Can the TV be used with an AC adapter or car cigarette lighter adapter?

action14. Yes, it can. However, always make sure to operate the TV with batteries when using around water such as in the bath or shower. Use of an AC adapter can cause an electrical shock.

cause15. Is the TV subject to condensation of moisture?

action15. Since the TV is not provided with any particular measures against moisture condensation, if moisture should condense on the TV, carefully wipe it off and allow to dry completely before use.

cause16. What should be done if the screen fogs up?

action16. If the surface of the screen becomes fogged, wipe it off before using the TV. If the inside of the screen has become fogged, allow the TV to dry completely before use.

cause17. Can the TV become rusted?

action17. Since the battery springs and screws can become rusted, if the TV should become wet, wipe it off and allow to dry completely.

cause18. What should be done if the inside of the battery cover becomes red?

action18. This is due to the water immersion detection seal having come in contact with water. If this should happen, always take the TV to the store where it was purchased or a Casio Techno Service Station.

cause19. What is the meaning of the seal inside the stand? Should it be removed? (applicable to white, 3.1K and yellow 3K)

action19. This seal fulfills an important role in terms of product performance and should never be removed.

cause20. Is drip-proof performance maintained even when the adapter or A/V cord and so forth are connected?

action20. Drip-proof performance cannot be maintained when the connector cover has been removed.
(This applies similarly to the rubber packing of the battery cover.)

CASIO TECHNO CO.,LTD.
Overseas Service Division

Nishi-Shinjuku Kimuraya Bldg. 1F
5-25, Nishi-Shinjuku 7-Chome
Shinjuku-ku, Tokyo 160-0023, Japan