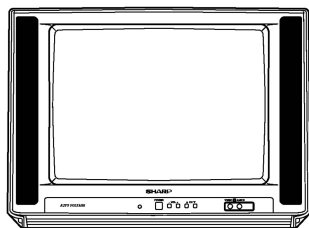
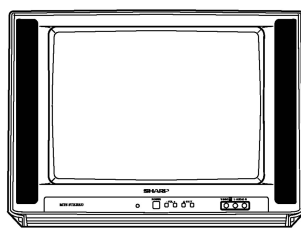


SHARP SERVICE MANUAL

S49F420LK30A/



20LK30A



20LK60A

COLOR TELEVISION *Chassis No. SN-70A*

MODELS 20LK30A/60A

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

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ELECTRICAL SPECIFICATIONS

POWER INPUT	110-220 V AC 50/60 Hz
POWER RATING	
20LK30A	88 W
20LK60A	98 W
PICTURE SIZE	1,194cm ² (185sq inch)
CONVERGENCE	Magnetic
SWEEP DEFLECTION	Magnetic
FOCUS	Hi-Bi-Potential Electrostatic
INTERMEDIATE FREQUENCIES	
Picture IF Carrier Frequency	45.75 MHz
Sound IF Carrier Frequency	41.25 MHz
Color Sub-Carrier Frequency	42.17 MHz
	(Nominal)
AUDIO POWER	
OUTPUT RATING	
20LK30A	1.3W (at 10% distortion)
20LK60A	2.5W (at 10% distortion)

SPEAKER	
SIZE	9 cm × 5 cm
VOICE COIL IMPEDANCE	
20LK30A	8 ohm at 400 Hz
20LK60A	16 ohm at 400 Hz
ANTENNA INPUT IMPEDANCE	
VHF/UHF	75 ohm Unbalanced
TUNING RANGES	
VHF-Channels	2 thru 13
UHF-Channels	14 thru 69
CATV Channels	1 thru 125

Specifications are subject to change without prior notice.

IMPORTANT SERVICE SAFETY PRECAUTION

- Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulating material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit. The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

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

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

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation, if the high voltage is as specified in the "High Voltage Check" instructions.
It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in the glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter. The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value –no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also, under certain conditions, may produce radiation in exceeding of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

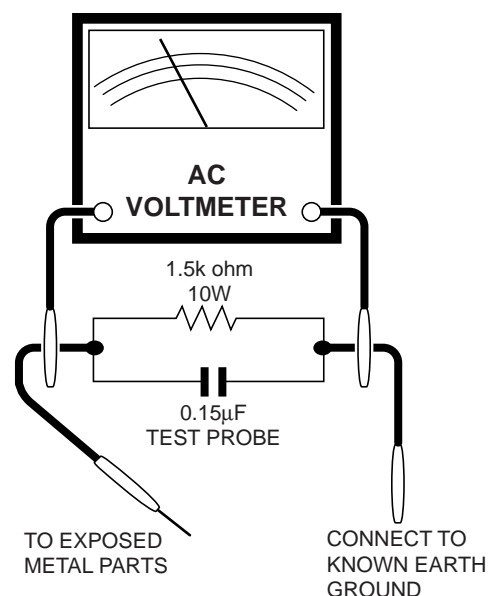
Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.
 - Plug the AC cord directly into a 110~220 volt AC outlet, (Do not use an isolation transformer for this test).
 - Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15 μ F capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
 - Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.

- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon and etc.) and measure the AC voltage drop across the resistor.

All checks must be repeated with the AC ine cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)

Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above indicate of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by " \triangle " and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

INSTALLATION AND SERVICE INSTRUCTIONS

- Note:** (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdrivers or TV alignment tools.
 (2) Before performing adjustments, the TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 3.15A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, B+ system, test the X-Radiation protection circuit to ascertain proper operation as follows:

1. Apply 220V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and adjust all customer controls for normal picture and sound.
3. Receive a good local channel.
4. Connect a digital voltmeter to TP653 and make sure that the voltmeter reads $20.6 \pm 1.5V$.
5. Apply external 26.8V DC at TP653 by using an external DC supply, TV must be shut off.
6. To reset the protector, unplug the AC cord and make a short circuit between TP651 and TP652. Now make sure that normal picture appears on the screen.
7. If the operation of the horizontal oscillator does not stop in step 5, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of picture tube.
2. Operate receiver for at least 15 minutes at 110~220V AC line voltage, with a strong air signal or a properly tuned in test signal.
3. Enter the service mode and select the service adjustment "S19" and Bus data "01" (Y-mute on).
4. The voltage should be approximately, 26.5kV (at zero beam).

If a correct reading cannot be obtained, check circuitry for malfunctioning components. After the voltage test, make Y-mute off to the normal mode.

For adjustments of this model, the bus data is converted to various analog signals by the D/A converter circuit.

Note: There are still a few analog adjustments in this series such as focus and master screen voltage. Follow the steps below whenever the service adjustment is required. See "Table-B" to determine, if service adjustments are required.

1. Service mode

Before putting unit into the service mode, check that customer adjustments are in the normal mode. Use the reset function in the video adjustment menu to ensure customer controls are in their proper (reset) position.

2. Service number selection

Once in the service mode, press the Ch-up or Ch-down button on the remote controller or at the set. The service adjustment number will vary in increments of one, from "S01" to "M05". Select the item you wish to adjust.

3. Data number selection

Press the Vol-up or down button to adjust the data number.

To enter the service mode and exit service mode.

While pressing the Vol-up and Ch-up buttons at the sametime, plug the AC cord into a wall socket. Now the TV set is switched on and enters the service mode.

To exit the service mode, turn the television off by pressing the power button.

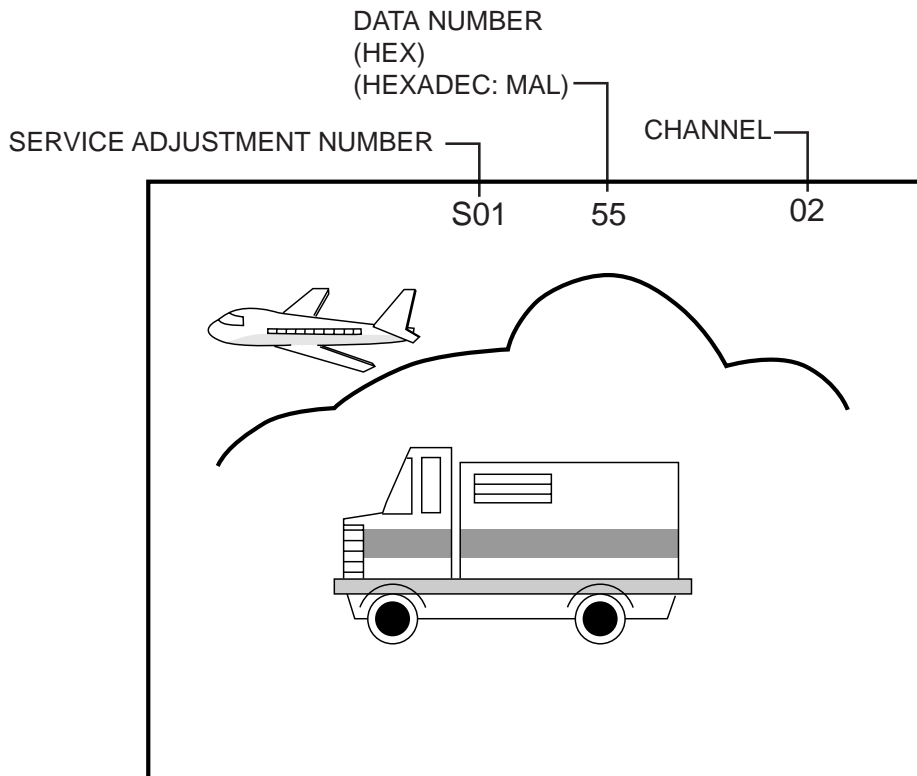


Figure A.

SERVICE NUMBER	ADJUSTMENT ITEM	DATA		ADJUSTMENT CONTENTS	
		INITIAL VALUE	RANGE		
S01	PICTURE	55	00-7F	Must be set to "24" Must be set between "0" to "03"	
S02	TINT	46	00-7F		
S03	COLOR	32	00-7F		
S04	BRIGHTNESS	40	00-7F		
S05	SHARPNESS	28	00-3F		
S06	VERTICAL PHASE	00	00-07		
S07	HORIZONTAL PHASE	12	00-1F		
S08	RF-AGC	2A	00-3F		
S09	VERTICAL AMP	20	00-3F		
S10	VCO	2C	00-7F		
S11	R CUT-OFF	00	00-FF		
S12	G CUT -OFF	00	00-FF		
S13	B CUT-OFF	00	00-FF		
S14	G GAIN	7F	00-FF		
S15	B GAIN	7F	00-FF		
S16	TRAP(3.58MHz)	00	00 or 01		Must be set to "00"
S17	BALANCE	20	00-3F		Must be set to "20"
S18	C.C.POSITION	18	00-7F		
S19	Y-MUTE	00	00,01,03		"00"=Normal, "01"=No-Y, "03"=No Vertical
OP.	OPTION (Set to each model)	80	00-FF	Must be set to "08"=20LK30A, "09"=20LK60A	
M01	MTS LEVEL	0A	00-0F		
M02	STEREO-VCO	20	00-3F		
M03	FILTER	1C	00-3F		
M04	LOW SEPARATION	20	00-3F		
M05	HIGH SEPARATION	1B	00-3F		

Table - A

Holding down both the CH-up/down buttons on the TV set at service mode for more than 2 seconds will automatically write the above initial values into IC2101.

PART REPLACED	ADJUSTMENT		NOTES
	NECESSARY	UNNECESSARY	
IC2001		X	Data is stored in IC2101.
IC201	X		The adjustment is needed to compensate for characteristics of parts including IC201.
IC2101	X		Holding down both the CH-up/down buttons on the TV set in the service mode for more than 2 seconds will automatically write the above initial values into IC2101.
CRT	X		Adjust items related to picture tube only.
IC3001 (20LK60A)	X		Adjust items related to MTS only (M01~M05).

Table - B

■ SERVICE ADJUSTMENT

VCO Adjustment

1. Connect a digital voltmeter between pin (44) of IC201 and ground.
2. Receive a good local channel.
3. Enter the service mode and select the service adjustment "S10".
4. Adjust the data so that digital voltmeter reads 2.2V.
5. Adjustment is completed, remove the voltmeter, return to "normal" mode.

RF AGC Adjustment

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S08".
3. Set the data value to point where no noise or beat appears.
4. Select another channel to confirm that no noise or beat appears.

Note 1 : You will have to come out of the service mode to select another channel.

Note 2 : Setting the data to "00" will produce a black raster.

Screen Adjustment

1. Connect a digital voltmeter between TP852 and TP853 on the CRT socket PWB.
Note : These test points may not be provided.
Then connect the voltmeter to both ends of R852 located near Q852 on the foil side.
2. Receive a good local channel.
3. Enter the service mode and select the service adjustment "S03" and set the data value to "00" to set the color level to minimum. (Record original data code under adjustment "S03" before changing) You may skip this step, if you selected a B/W picture or monoscope pattern.
4. Select the service adjustment "S19" and adjust the data value to "01", this turn off the luminance signal (Y-mute).
5. Select the service adjustment "S04" and adjust data value to obtain 0.17 volts on the oscilloscope screen.
6. Adjust the master screen control until the raster darkens to the point where raster is barely seen.
7. Adjust the service adjustments "S11" red, "S12" green and "S13" blue to obtain a good grey scale with normal whites at low brightness level.
8. Select the service adjustment "S19" and reset data to "00". Select the service adjustment "S03" and reset data to obtain normal color level.
9. Remove digital voltmeter, and reset the master screen control to obtain normal brightness range.

White Balance Adjustment

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S03" and set to "00" (minimum color). "S03" does not have to be adjusted, if you selected a B/W picture or monoscope pattern.
3. Alternately adjust the service adjustment data of "S14" and "S15" until a good grey scale with normal whites is obtained.
4. Select the service adjustment "S03" and adjust data to obtain normal color level.

Sub-Picture Adjustment

1. Receive a good local channel.
2. Make sure the customer picture control is set to maximum.
3. Enter the service mode and select the service adjustment "S01".
4. Adjust the data value to achieve normal contrast range.

Sub-Tint Adjustment

1. Receive a good local channel.
2. Set customer tint control to center of it's range.
3. Enter the service mode and select the service adjustment "S02".
4. Adjust "S02" data value to obtain normal flesh tones.

+115V DC REGULATOR Adjustment

The +115V DC Adj. control (R721) is adjusted at the factory. However, should readjustment be required, proceed as follows:

1. Actuate the receiver with 220V AC input voltage.
2. Select a local channel.
3. Connect positive lead of Digital Voltmeter to R603 TP751 (positive side) on PWB-A; negative lead to chassis ground.
4. Adjust R721 to obtain a +115V DC reading.

CAUTION: The reading should be within +115V \pm 1VDC to ensure normal function and circuitry reliability.

Sub-Color Adjustment

1. Receive a good local channel.
2. Make sure the customer color control is set to center position .
3. Enter the service mode and select the service adjustment "S03".
4. Adjust "S03" data value to obtain normal color level.

Sub-Brightness Adjustment

1. Receive a good local channel.
2. Make sure the customer brightness control is set to center position.
3. Enter the service mode and select the service adjustment "S04".
4. Adjust "S04" data value to obtain normal brightness level.

Vertical-Size Adjustment

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S09".
3. While observing the top and bottom of the screen, adjust "S09" data value to proper vertical size.

Vertical Phase Adjustment

1. Enter the service mode and select the service adjustment "S06".
2. Adjust data value to "00" ~ "03" so that picture is approximate center.

Note: This must be set "00" ~ "03" when adjust another data retrace line will be appear.

Horizontal Position Adjustment

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S07".
3. Adjust "S07" data value so that picture is centered.

Caption Position Adjustment (Horizontal)

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S18".
3. A black text box appears on the screen. (see **Figure B.** below)
4. Adjust "S18" data value so that text box is positioned in the center of the screen.

3.58MHz Trap Adjustment

1. Receive a good local channel.
2. Enter the service mode and select the service adjustment "S16".
3. This is a two position adjustment, "00" is ON, "01" is OFF.
4. Adjust data value to "00" for normal viewing.

Sharpness and Audio Balance Adjustments

1. Receive a good local channel.
2. Enter the service mode and select the service adjustments "S05" for sharpness and "S17" for balance.

● Sharpness Adjustment

3. Adjust data value to "24"(center of data range) for sharpness adjustment.

● Audio Balance Adjustment

4. Adjust data value to "20"(center of data range) for audio balance adjustment.

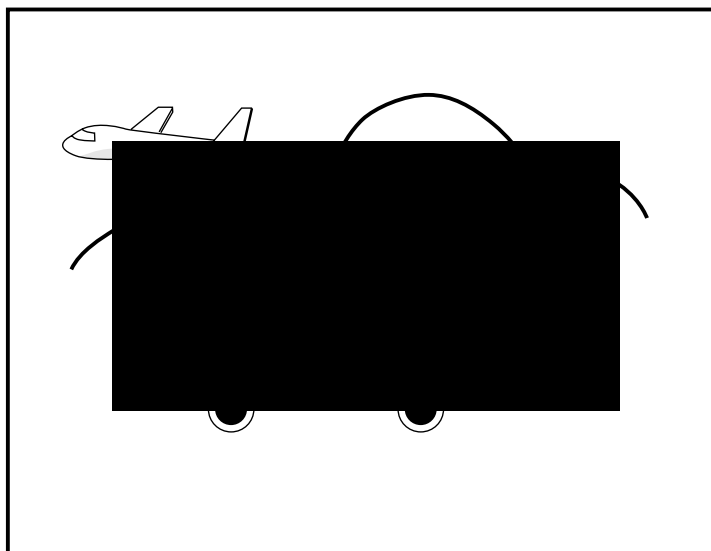


Figure B.

■ MTS ADJUSTMENT

(Only for 20LK60A)

MTS Level Adjustment

1. Feed the following monaural signal to pin (14) of IC3001.
Monaural signal : 300Hz, 245mVrms
2. Connect the rms voltmeter to pin (39) of IC3001.
3. Enter the service mode and select the service adjustment "M01".
4. Adjust the data so that the rms voltmeter reads.
Spec.: $490 \pm 10\text{mVrms}$.

MTS VCO Adjustment

1. Keep the unit in no-signal state.
2. Connect the frequency counter to pin (39) of IC3001.
3. Connect a capacitor ($100\mu\text{F}$, 50V) in between positive(+) side of C3005 and ground.
4. Enter the service mode and select the service adjustment "M02"
5. Adjust the data so that the frequency counter reads.
Spec.: $62.94 \pm 0.75\text{kHz}$.

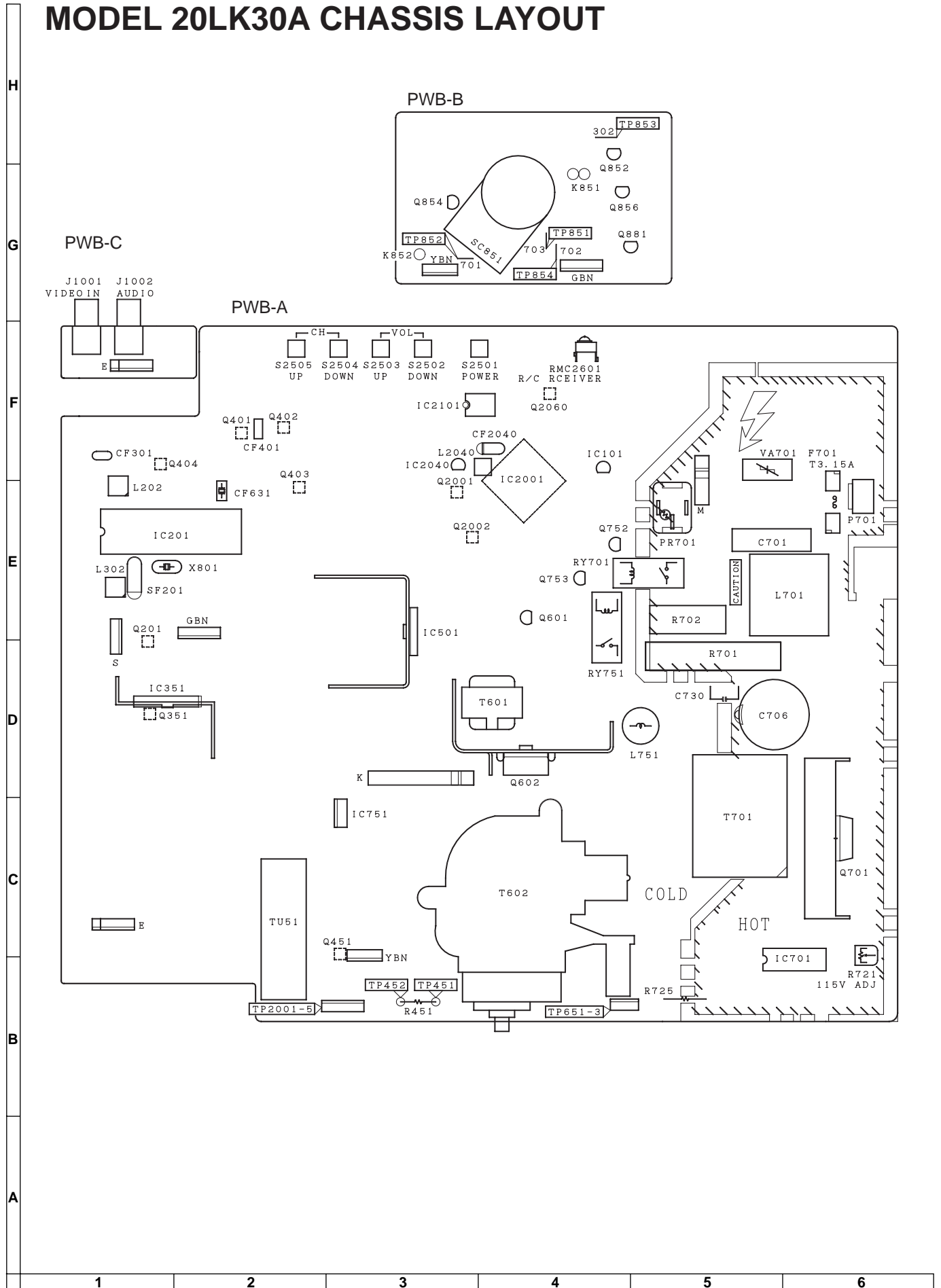
Filter Adjustment

1. Feed the following stereo pilot signal to pin (14) of IC3001 .
Stereo pilot signal: 9.4kHz, 600mVrms.
2. Enter the service mode and select the service adjustment "M03".
3. Adjust the data at the point where "OK" appears on the screen. The "OK" represents the approximate center of the adjustable range of the data.

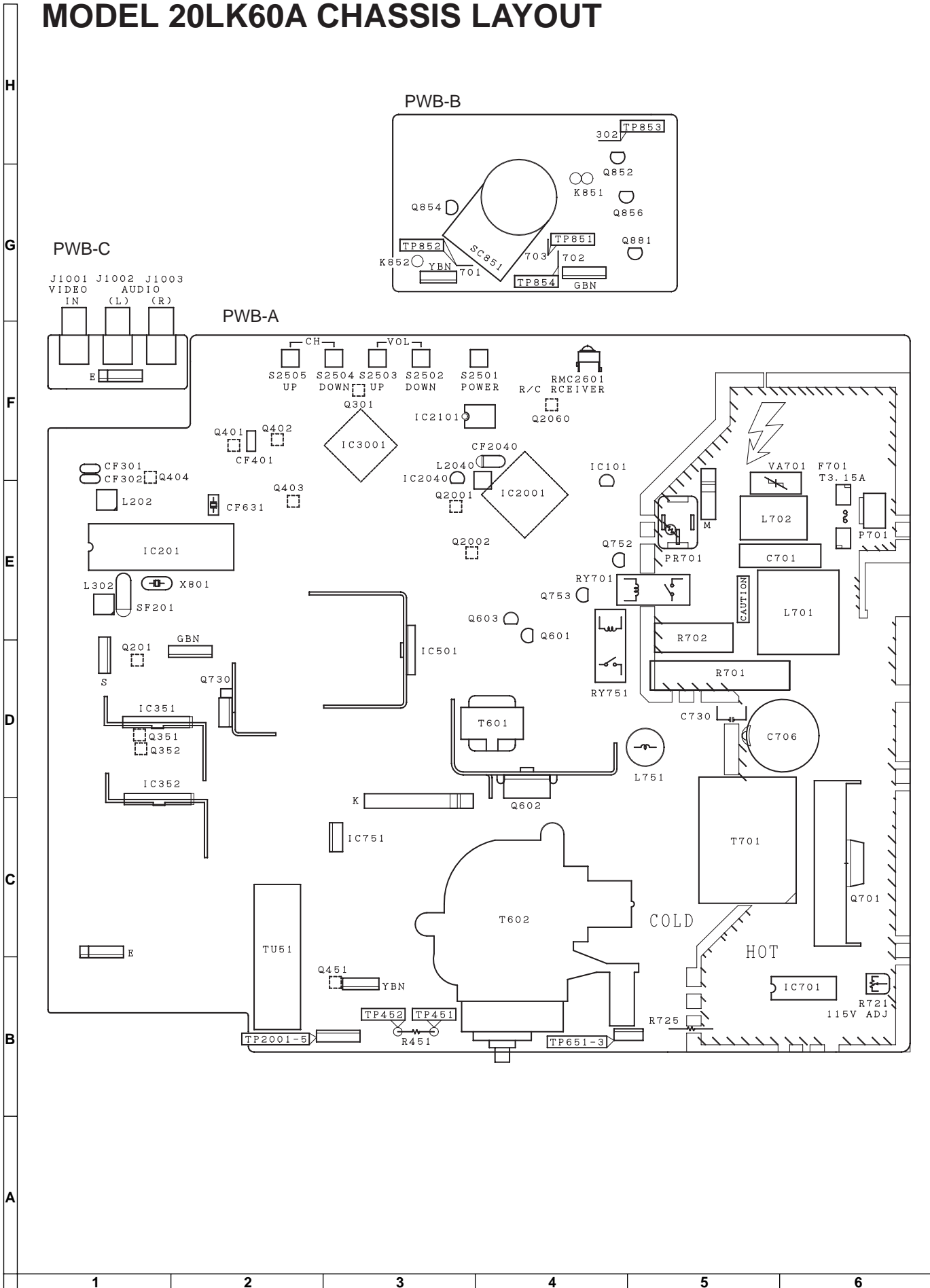
Separation Adjustment

1. Connect the rms voltmeter to pin (39) of IC3001.
2. Receive the following composite stereo signal 1.
Composite stereo signal: 30% modulation, left channel only, noise reduction on, 300Hz
3. Enter the service mode and select the service adjustment "M04".
4. Adjust the data until the AC voltage reading of the rms voltmeter is minimum.
5. Receive the following composite stereo signal 2.
Stereo signal: 30% modulation, left channel only, noise reduction on, 3kHz
6. Enter the service mode and select the service adjustment "M05".
7. Adjust the data until the AC voltage reading of the rms voltmeter is minimum.
8. Take the above steps 1 thru 8 again for fine adjustment.

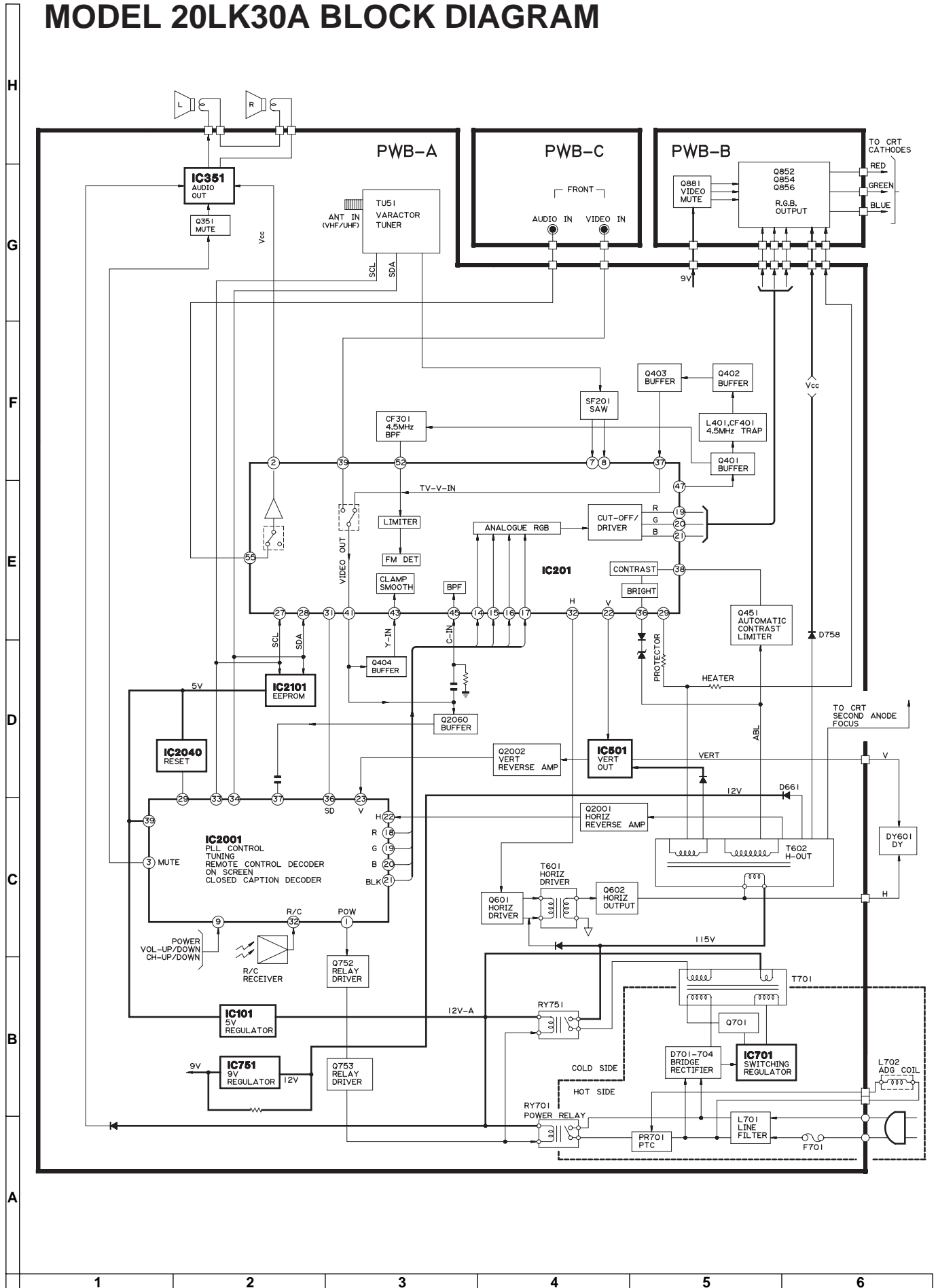
MODEL 20LK30A CHASSIS LAYOUT



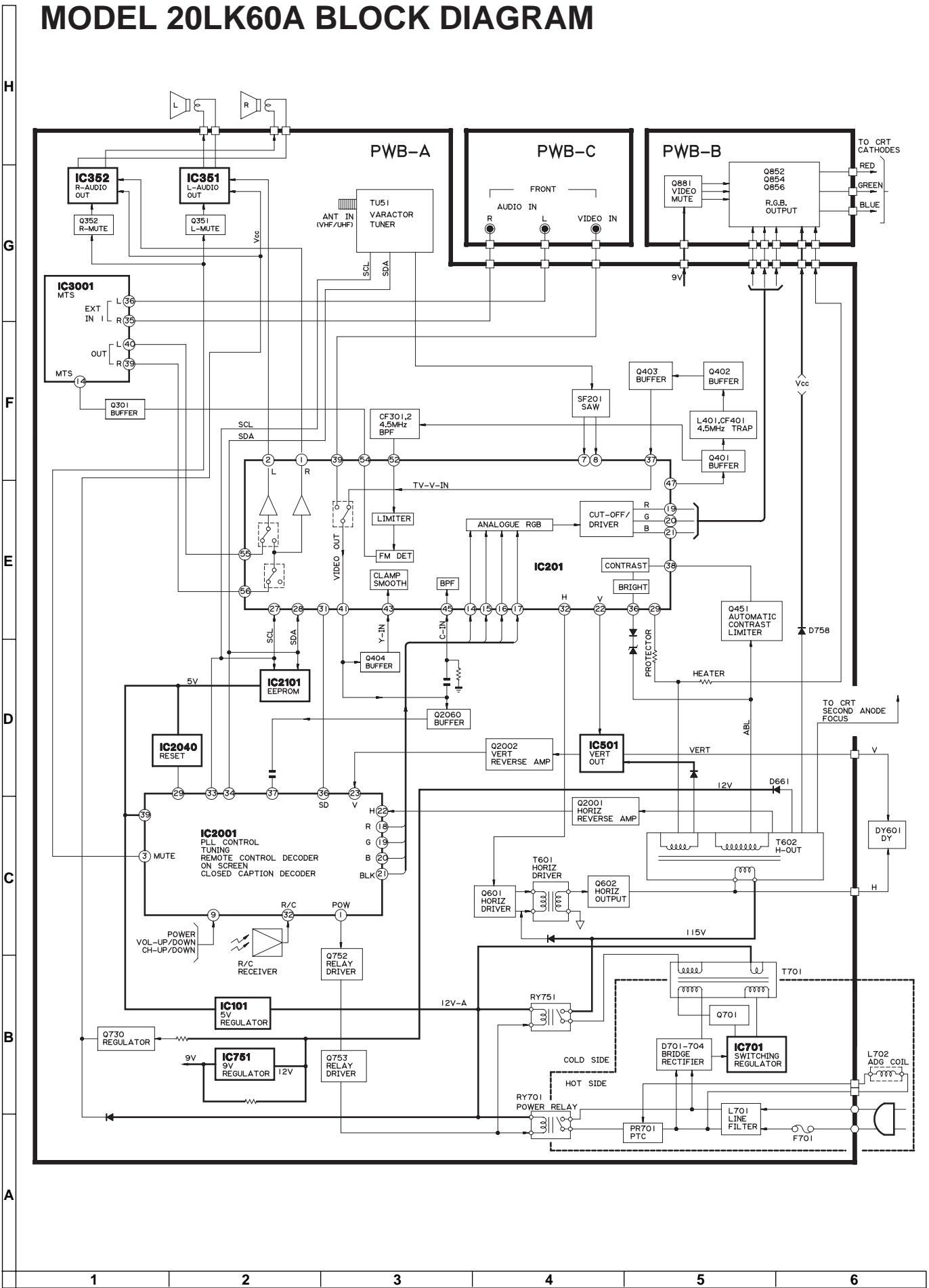
MODEL 20LK60A CHASSIS LAYOUT



MODEL 20LK30A BLOCK DIAGRAM



MODEL 20LK60A BLOCK DIAGRAM



DESCRIPTION OF SCHEMATIC DIAGRAM

NOTES:

1. The unit of resistance "ohm" is omitted.
($K=k\Omega=1000\Omega$, $M=M\Omega$)
2. All resistors are 1/16 watt, unless otherwise noted.
3. All capacitors are μF , unless otherwise noted.
($P=pF=\mu\mu F$)
4. (G) indicates $\pm 2\%$ tolerance may be used.
5. \perp indicates line isolated ground.
6. ∇ indicates hot ground.

VOLTAGE MEASUREMENT CONDITIONS:

1. All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 110~220V AC and all controls set for normal picture unless otherwise indicated.
2. All voltages measured with 1000 μ V B & W or Color signal.

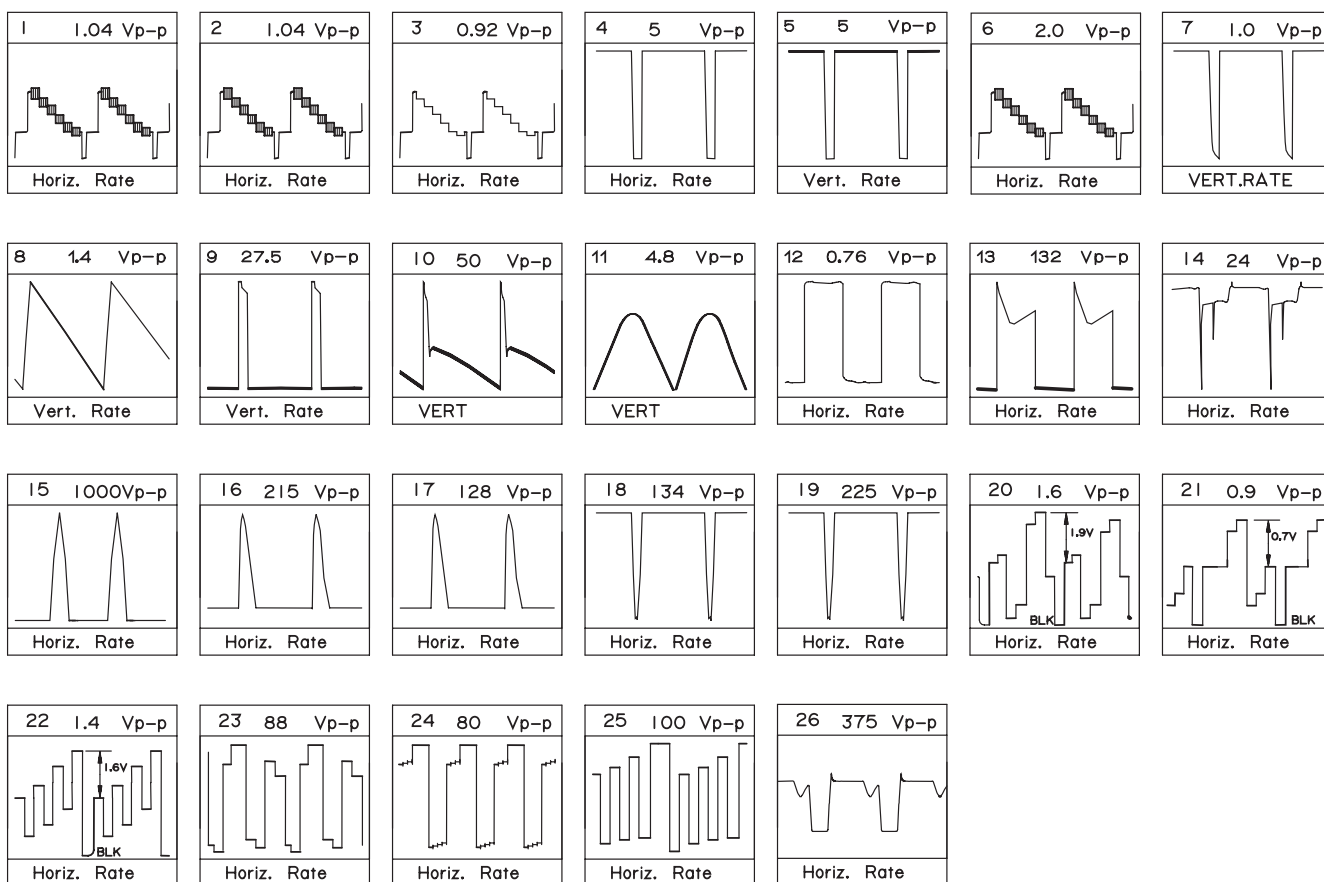
WAVEFORM MEASUREMENT CONDITIONS:

1. Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.
2. \odot indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)

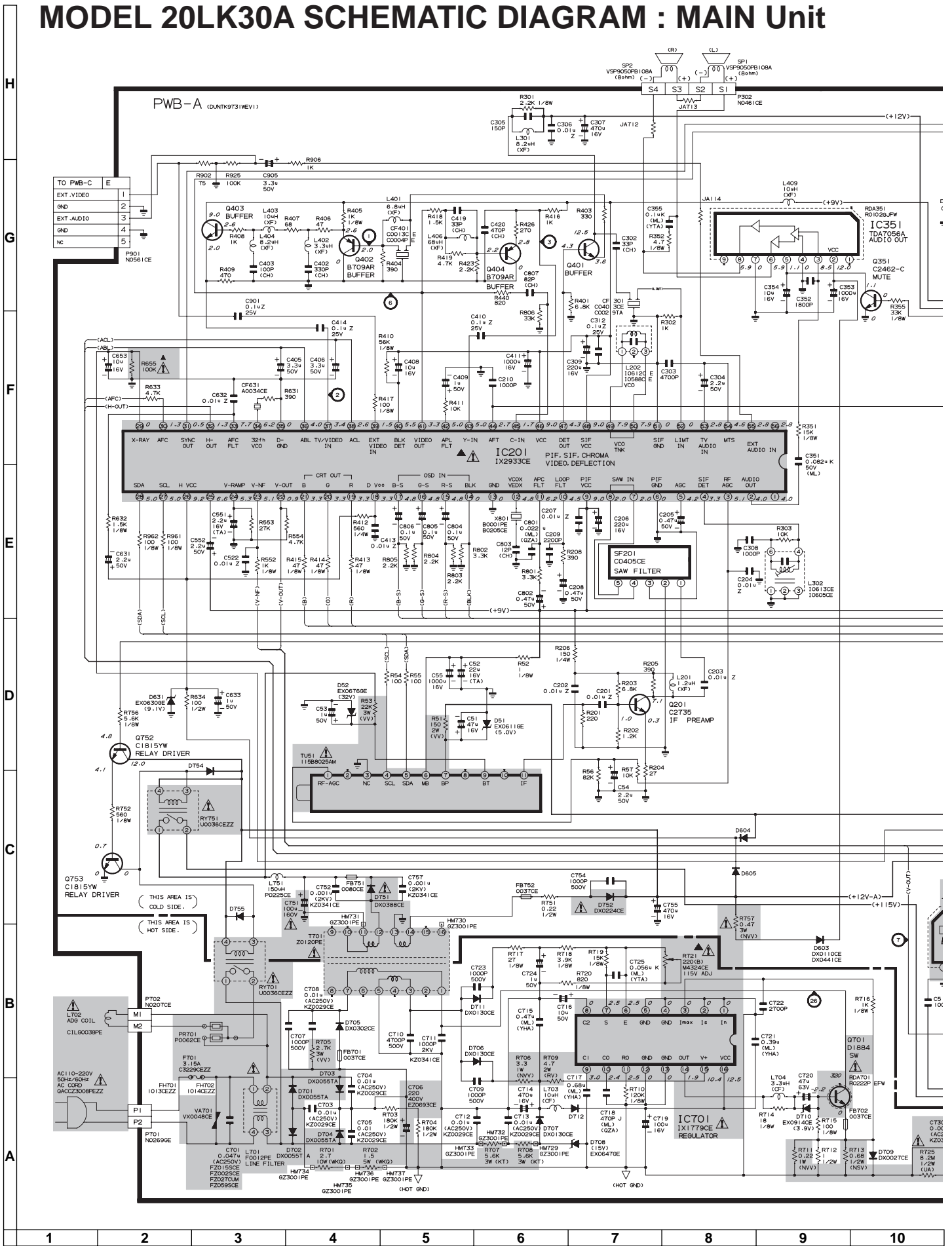
\triangle AND SHADED () COMPONENTS = SAFETY RELATED PARTS.
 \blacktriangle MARK= X-RAY RELATED PARTS.

This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

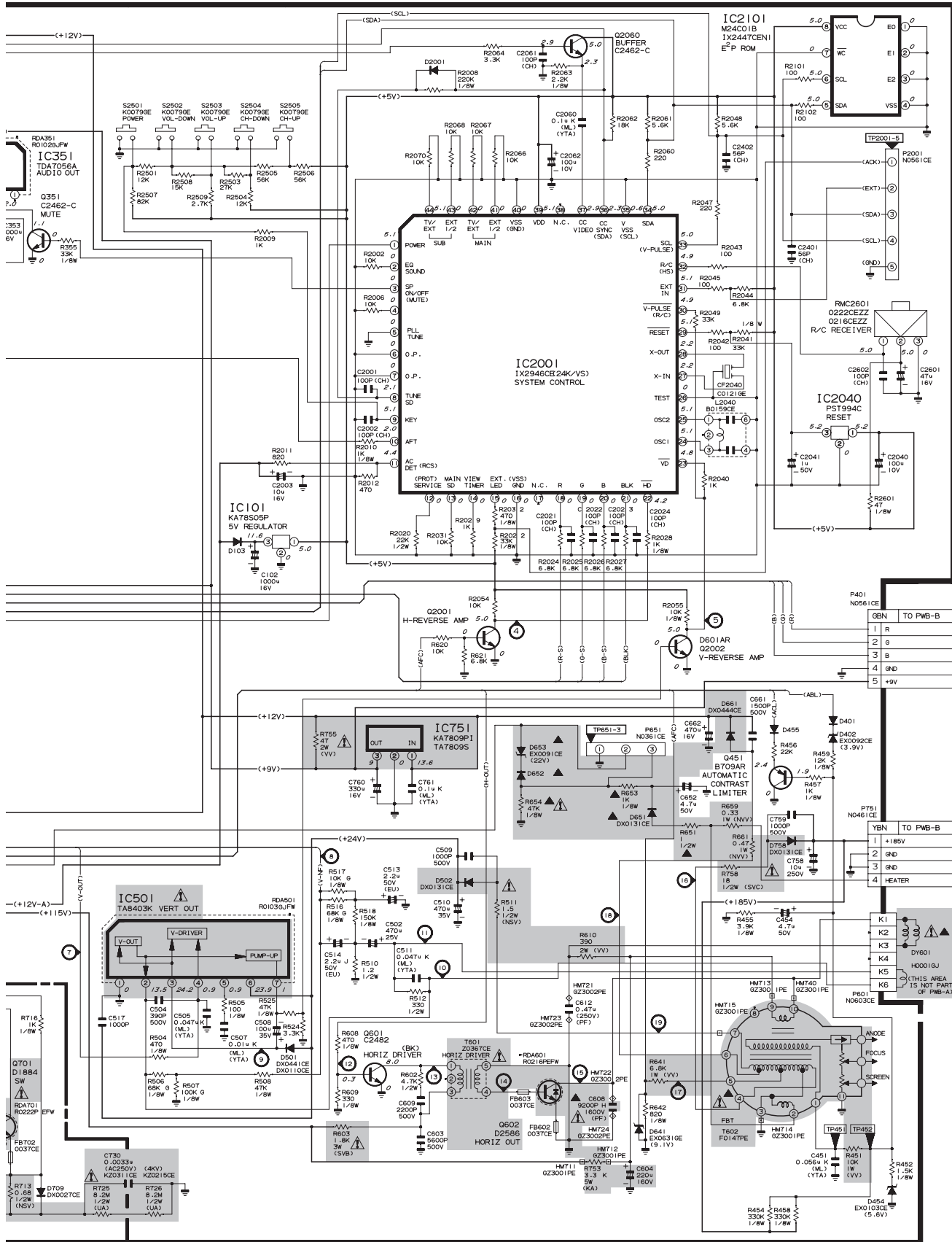
WAVEFORMS



MODEL 20LK30A SCHEMATIC DIAGRAM : MAIN Unit



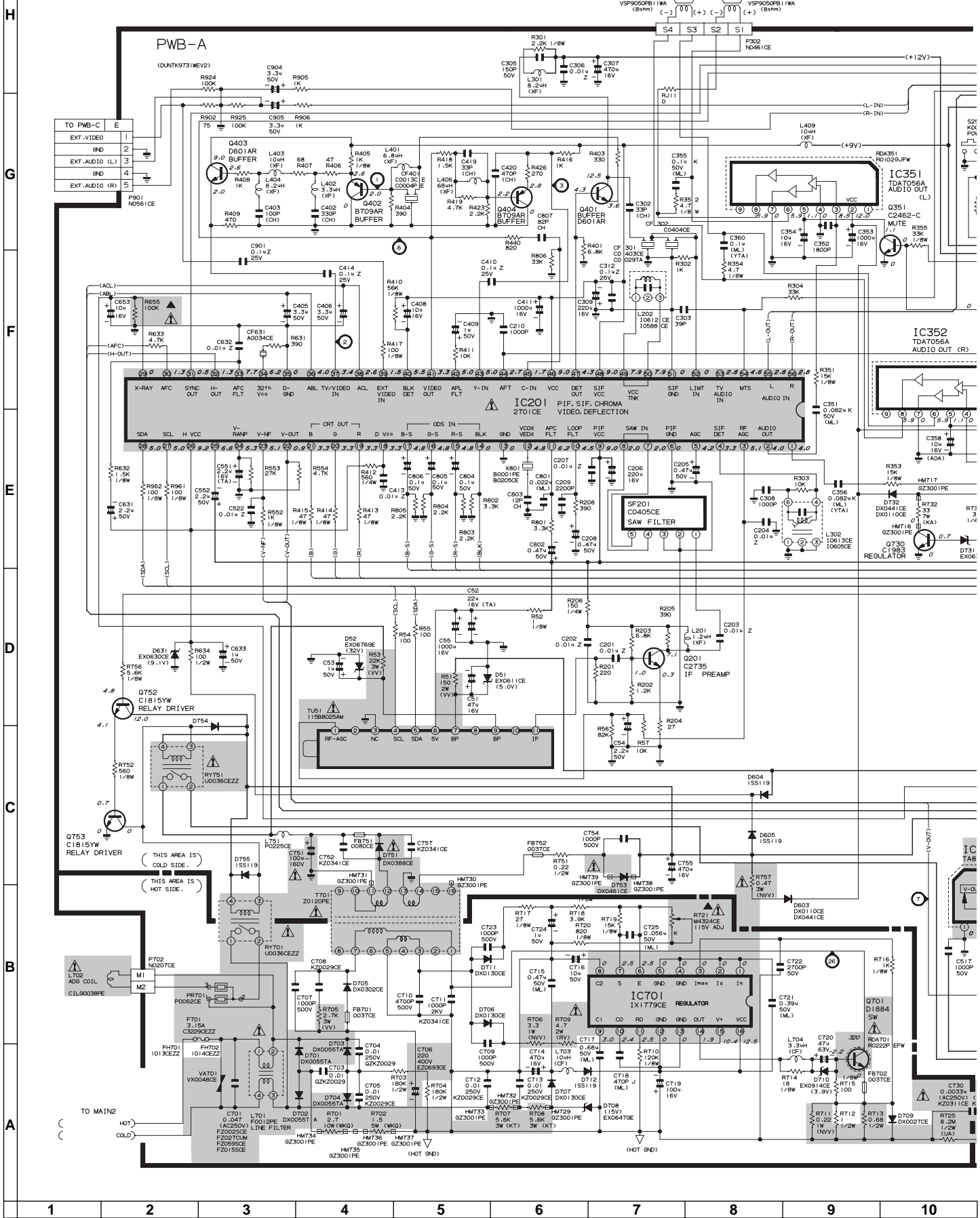
NOTE: ALL DIODES ARE *1SS119* UNLESS OTHERWISE SPECIFIED.
 *ALL TRANSISTORS ARE *2SC2462* OR *2SD601A* UNLESS OTHERWISE SPECIFIED.



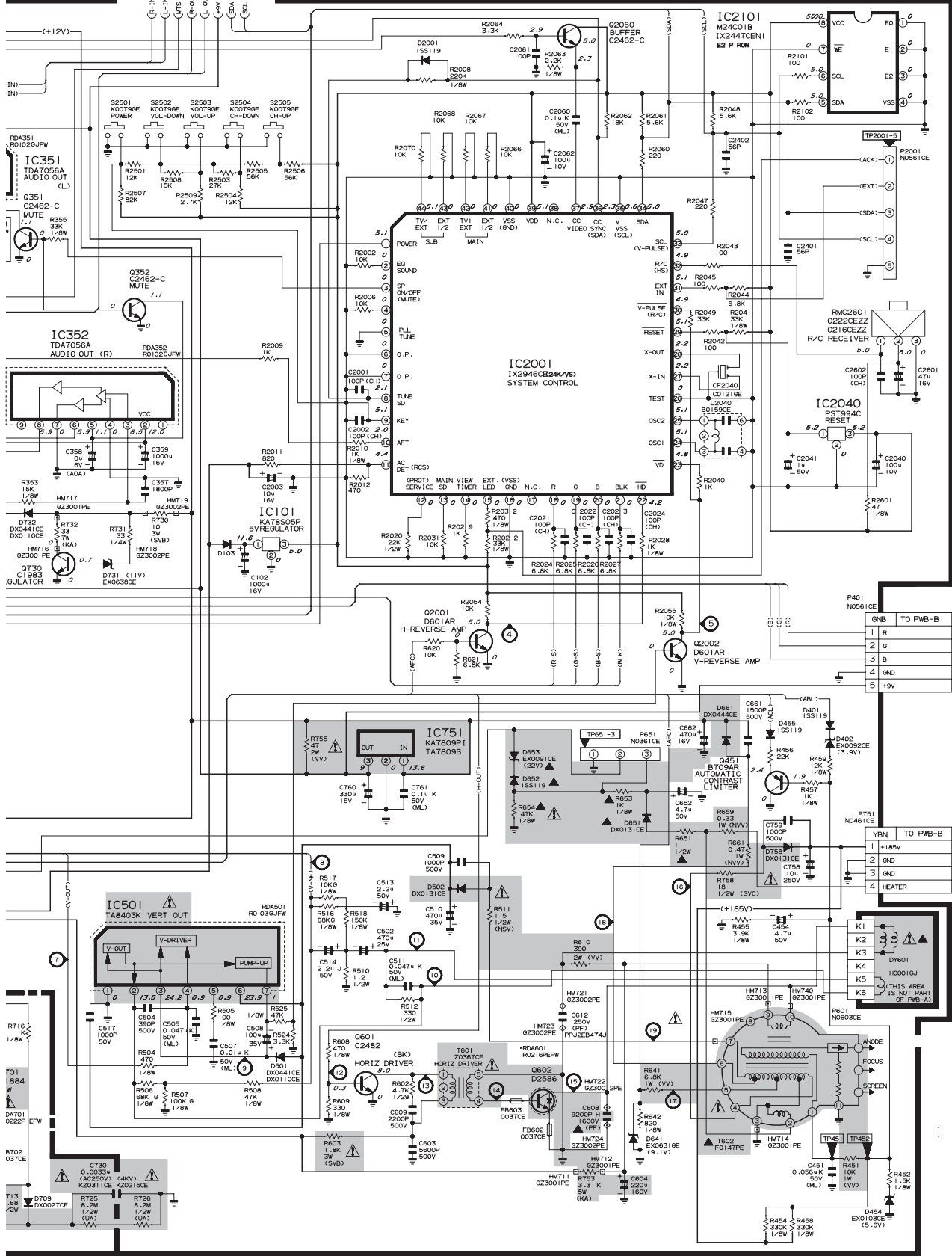
- RJ1 0
- RJ2 0
- RJ5 0
- RJ6 0
- RJT 0
- RJ8 0
- RJ15 0

10	11	12	13	14	15	16	17	18	19
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MODEL 20LK60A SCHEMATIC DIAGRAM : MAIN-1 Unit



NOTE: ALL DIODES ARE *ISS119* UNLESS OTHERWISE SPECIFIED.
 *ALL TRANSISTORS ARE *2SC2462* OR *2SD601A* UNLESS OTHERWISE SPECIFIED.

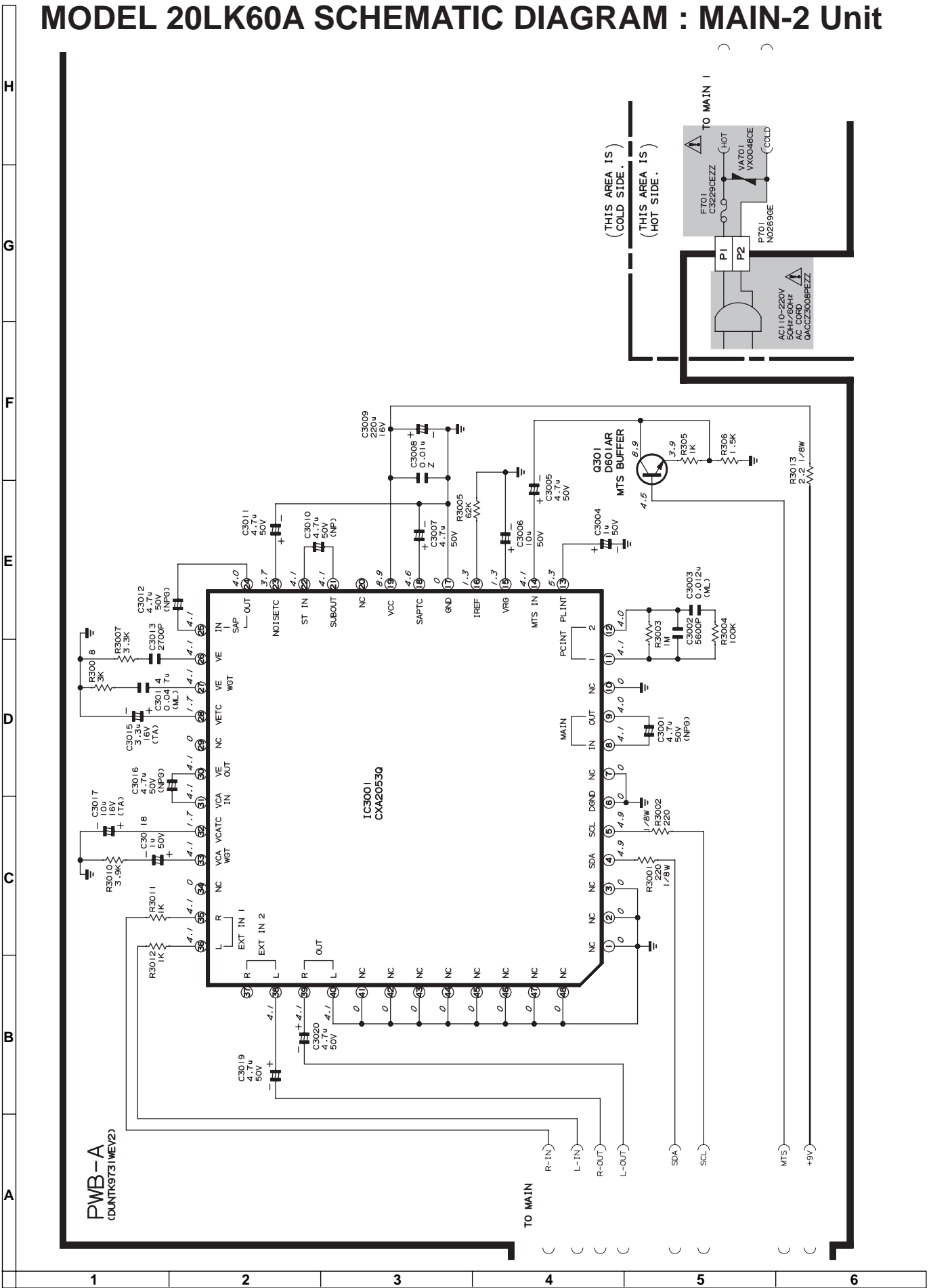


- * RJ1 0
- * RJ2 0
- * RJ5 0
- * RJ6 0
- * RJ7 0
- * RJ11 0
- * RJ14 0
- * RJ12 0
- * RJ13 0
- * RJ16 0
- * RJ17 0

- GNB TO PWB-B
- 1 R
- 2 g
- 3 B
- 4 GND
- 5 +9V

- YBN TO PWB-B
- 1 +185V
- 2 GND
- 3 GND
- 4 HEATER

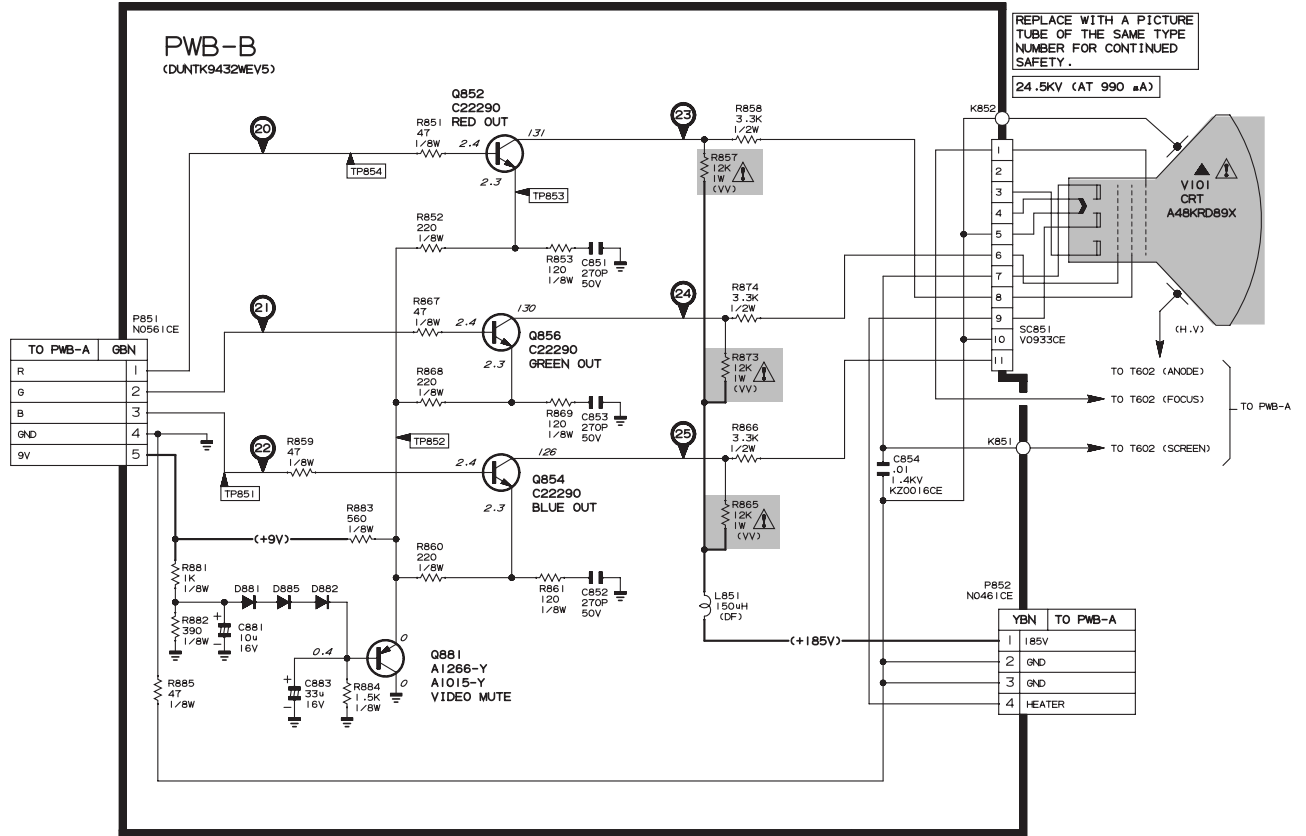
MODEL 20LK60A SCHEMATIC DIAGRAM : MAIN-2 Unit



SCHEMATIC DIAGRAM : FRONT AV and CRT Unit

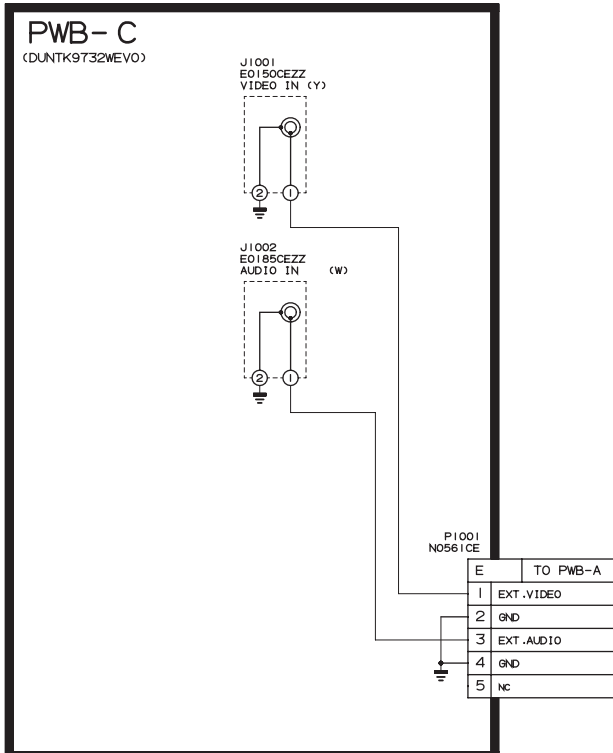
CRT

NOTE: ALL DIODES ARE *1SS119 *DX00456E *OR *DX0446CE *UNLESS OTHERWISE SPECIFIED.



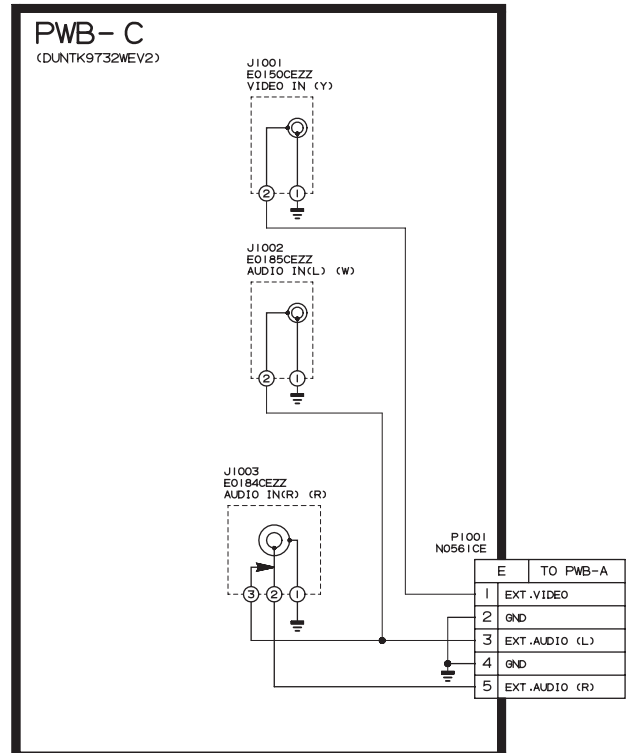
20LK30A

FRONT AV



20LK60A

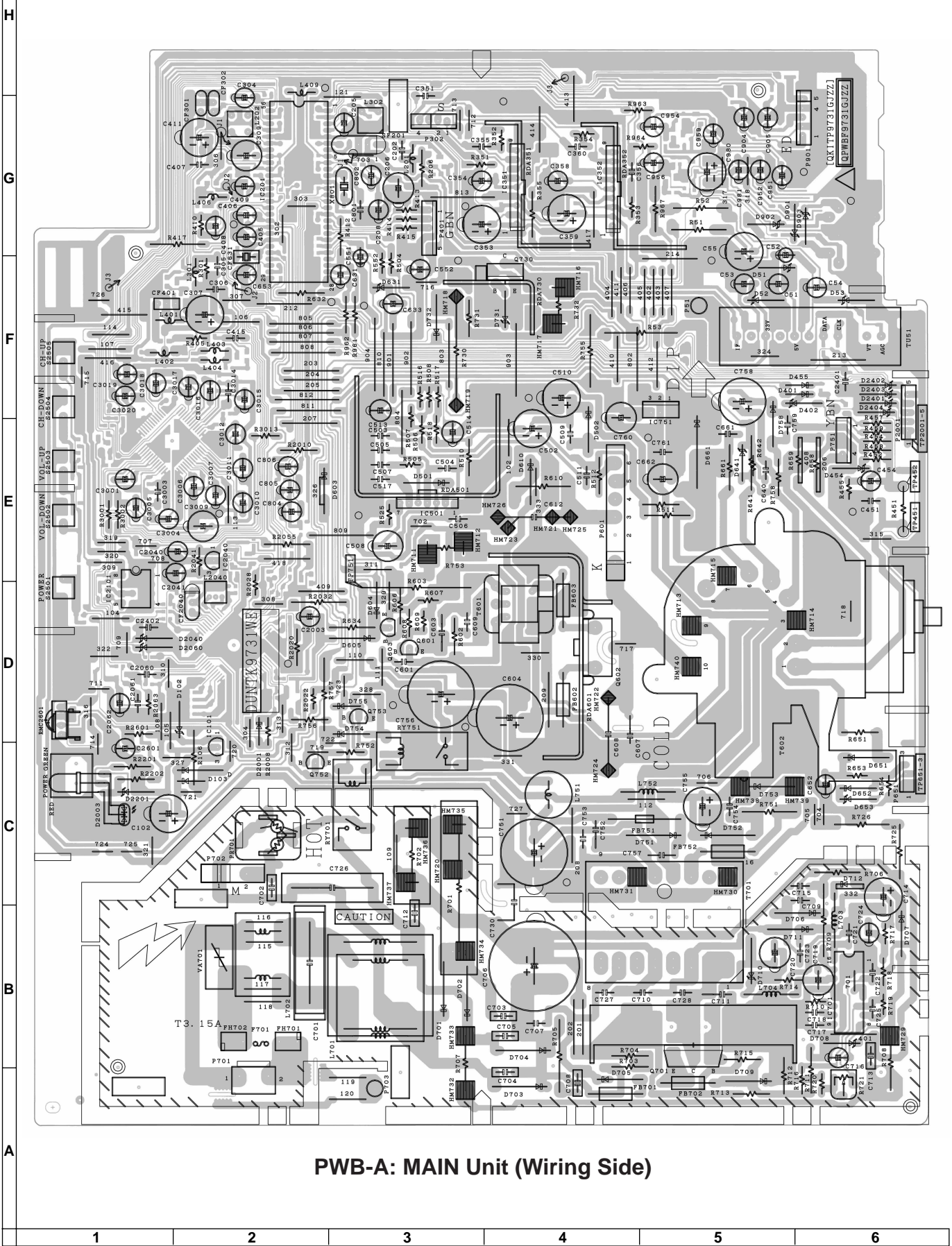
FRONT AV



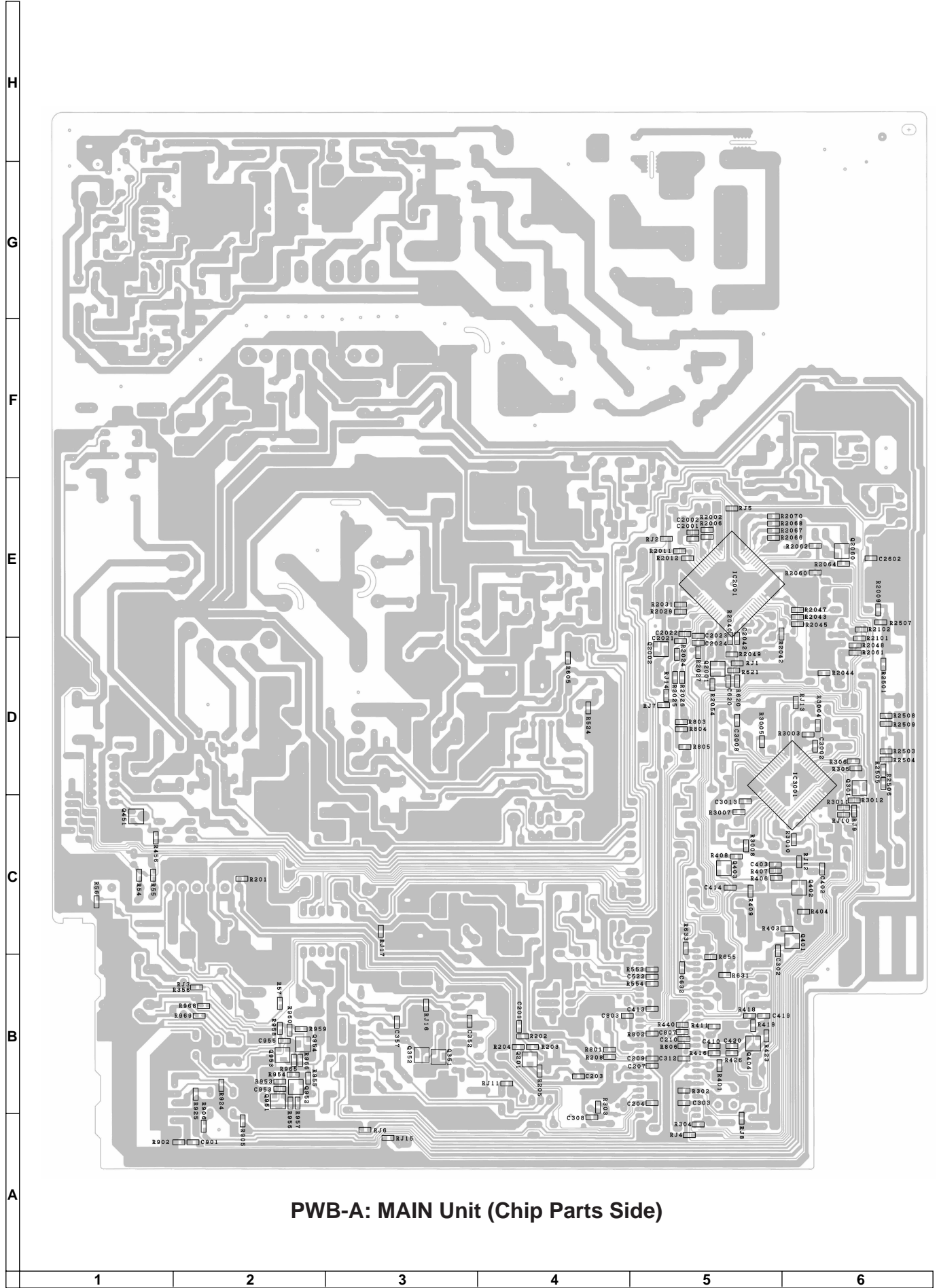
H
G
F
E
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1 2 3 4 5 6

PRINTED WIRING BOARD ASSEMBLIES

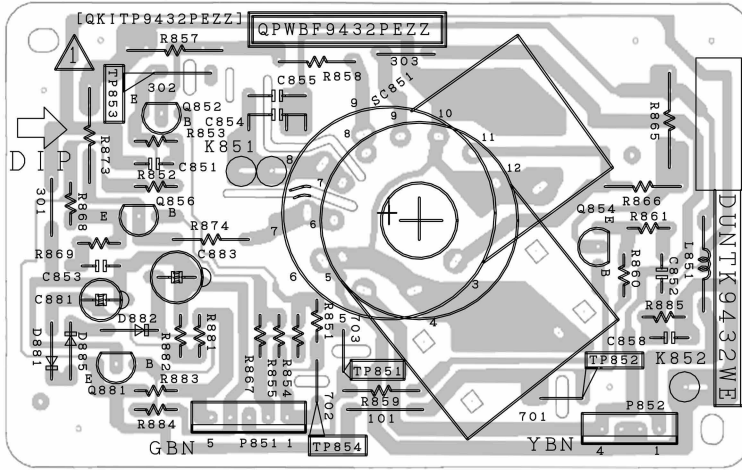


PWB-A: MAIN Unit (Wiring Side)

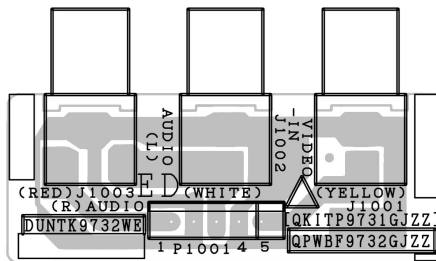


PWB-A: MAIN Unit (Chip Parts Side)

H
G
F
E
D
C
B
A



PWB-B: CRT Unit (Wiring Side)



PWB-C: FRONT AV Unit (Wiring Side)

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by Δ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

- | | |
|-----------------|----------------|
| 1. MODEL NUMBER | 2. REF. NO. |
| 3. PART NO. | 4. DESCRIPTION |

★MARK : SPARE PARTS-DELIVERY SECTION

▲MARK : X- RAY RELATED PARTS

Ref. No.	Part No.	★	Description	Code
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PICTURE TUBE

▲▲ V101	VB48KRD89X/3E	R	Picture Tube	
▲▲ DY601	RCiLH0001GJZZ	X	Deflection Yoke	
▲ L702	RCiLG0038PEZZ	R	Degaussing Coil	AU
	MSPRT0002MEZZ	M	Spring	AA
	PMAGF3003CEZZ	J	Magnet	AK

PRINTED WIRING BOARD ASSEMBLIES (NOT REPLACEMENT ITEM)

PWB-A DUNTK9731WEV1	- Main Unit (20LK30A)	—
PWB-A DUNTK9731WEV2	- Main Unit (20LK60A)	—
PWB-B DUNTK9432WEV5	- CRT Unit	—
PWB-C DUNTK9732WEV0	- Front AV Unit (20LK30A)	—
PWB-C DUNTK9732WEV2	- Front AV Unit (20LK60A)	—

Ref. No.	Part No.	★	Description	Code
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PWB-A: DUNTK9731WEV1(20LK30A) PWB-A: DUNTK9731WEV2(20LK60A) MAIN UNIT

TUNER

NOTE : THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.

▲ TU51 VTU115B8025AM J VHF Tuner

INTEGRATED CIRCUITS

IC101	VHiKA78S05P-1	J	KA78S05P	AD
▲ IC201	RH-iX2701CEN1	J	TA1201CN (20LK60A)	AY
▲▲ IC201	RH-iX2933CEZZ	J	TA1268N (20LK30A)	AX
IC351	VHiTDA7056A-1	J	TDA7056A	AP
IC352	VHiTDA7056A-1	J	TDA7056A (20LK60A)	AP
▲ IC501	VHiTA8403K/-1	J	TA8403K	AL
▲ IC701	RH-iX1779CEZZ	J	TEA2261	AR
▲ IC751	VHiKA7809Pi-1	R	KA7809PI	AE
	or			
	VHiTA7809S/-1			
IC2001	RH-iX2946CEZZ	J	TMPA8701CKF108	AX
IC2040	VHiPST994C/-1	J	PST994C	AD
IC2101	VHiM24C01B/-1	J	M24C01-BN6	AF
	or			
	RH-iX2447CEN1			
IC3001	VHiCXA2053Q-1	J	CXA2053Q (20LK60A)	AX

TRANSISTORS

You can substitute "VS2SC2462-C-1" for "VS2SD601AR/-1".

Q201	VS2SC2735//1E	J	2SC2735	AC
Q301	VS2SD601AR/-1	J	2SD601AR (20LK60A)	AC
Q351	VS2SC2462-C-1	J	2SC2462(C)	AB
Q352	VS2SC2462-C-1	J	2SC2462(C) (20LK60A)	AB
Q401	VS2SD601AR/-1	J	2SD601AR	AC
Q402	VS2SB709AR/-1	J	2SB709AR	AC
Q403	VS2SD601AR/-1	J	2SD601AR	AC
Q404	VS2SB709AR/-1	J	2SB709AR	AC
Q451	VS2SB709AR/-1	J	2SB709AR	AC
Q601	VS2SC2482//1	J	2SC2482	AD
▲ Q602	VS2SD2586//1E	J	2SD2586	AM
▲ Q701	VS2SD1884//1	J	2SD1884	AN
Q730	VS2SC1983//2	J	2SC1983 (20LK60A)	AF
Q752	VS2SC1815YW-1	J	2SC1815YW	AC
Q753	VS2SC1815YW-1	J	2SC1815YW	AC
Q2001	VS2SD601AR/-1	J	2SD601AR	AC
Q2002	VS2SD601AR/-1	J	2SD601AR	AC
Q2060	VS2SC2462-C-1	J	2SC2462(C)	AB

DIODES

D51	RH-EX0611GEZZ	J	Zener Diode, 5.0V	AA
D52	RH-EX0676GEZZ	J	Zener Diode, 32V	AA
D103	VHD1SS119//1	J	Diode	AB
D401	VHD1SS119//1	J	Diode	AB
D402	RH-EX0092CEZZ	J	Zener Diode, 3.9V	AB
D454	RH-EX0103CEZZ	J	Zener Diode, 5.6V	AB
D455	VHD1SS119//1	J	Diode	AB
D501	RH-DX0441CEZZ	J	Diode	AC
	or			
	RH-DX0110CEZZ			
▲ D502	RH-DX0131CEZZ	J	Diode	AC
D603	RH-DX0441CEZZ	J	Diode	AC
	or			
	RH-DX0110CEZZ			
D604	VHD1SS119//1	J	Diode	AB
D605	VHD1SS119//1	J	Diode	AB
D631	RH-EX0630GEZZ	J	Zener Diode, 9.1V	AA
D641	RH-EX0631GEZZ	J	Zener Diode, 9.1V	AA
▲▲ D651	RH-DX0131CEZZ	J	Diode	AC
▲▲ D652	VHD1SS119//1	J	Diode	AB
▲▲ D653	RH-EX0091CEZZ	J	Zener Diode, 22V	AB
▲ D661	RH-DX0444CEZZ	J	Diode	AH
▲ D701	RH-DX0055TAZZ	J	Diode	AD
▲ D702	RH-DX0055TAZZ	J	Diode	AD
▲ D703	RH-DX0055TAZZ	J	Diode	AD

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTK9731WEV1(20LK30A)					PWB-A: DUNTK9731WEV2(20LK60A)				
MAIN UNIT (Continued)									
△ D704	RH-DX0055TAZZ	J	Diode	AD	C52	VCSATA1CE226K	J 22	16V Tantalum	AD
D705	RH-DX0302CEZZ	J	Diode	AC	C53	VCEA0A1HW105M	J 1.0	50V EL.	AB
D706	RH-DX0130CEZZ	J	Diode	AE	C54	VCEA0A1HW225M	J 2.2	50V EL.	AB
D707	RH-DX0130CEZZ	J	Diode	AE	C55	VCEAGA1CW108M	J 1000	16V EL.	AD
D708	RH-EX0647GEZZ	J	Zener Diode, 1.5V	AA	C102	VCEAGA1CW108M	J 1000	16V EL.	AD
D709	RH-DX0027CEZZ	J	Diode	AE	C201	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA
D710	RH-EX0914CEZZ	J	Zener Diode, 3.9V	AD	C202	VCKYPA1HF103Z	J 0.01	50V Ceramic	AA
D711	RH-DX0130CEZZ	J	Diode	AE	C203	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA
D712	VHD1SS119/-1	J	Diode	AB	C204	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA
D731	RH-EX0638GEZZ	J	Zener Diode, 11V(20LK60A)	AB	C205	VCEA0A1HW474M	J 0.47	50V EL.	AB
D732	RH-DX0441CEZZ	J	Diode (20LK60A)	AC	C206	VCEA0A1CW227M	J 220	16V EL.	AC
△ D751	RH-DX0388CEZZ	J	Diode	AE	C207	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA
△ D752	RH-DX0224CEZZ	J	Diode (20LK30A)	AB	C208	VCEA0A1HW474M	J 0.47	50V EL.	AB
△ D753	RH-DX0461CEZZ	J	Diode (20LK60A)	AG	C209	VCKYCY1HB222K	J 2200p	50V Ceramic	AA
D754	VHD1SS119/-1	J	Diode	AB	C210	VCKYCY1HB102K	J 1000p	50V Ceramic	AA
D755	VHD1SS119/-1	J	Diode	AB	C302	VCCCCY1HH330J	J 33p	50V Ceramic	AA
△ D758	RH-DX0131CEZZ	J	Diode	AC	C303	VCCCCY1HH390J	J 39p	50V Ceramic	AA
D2001	VHD1SS119/-1	J	Diode	AB				(20LK60A)	
△ VA701	RH-VX0048CEZZ	J	Varistor	AE	C303	VCKYCY1HB472K	J 4700p	50V Ceramic	AA
								(20LK30A)	
PACKAGED CIRCUITS					C304	VCEA0A1HW225M	J 2.2	50V EL. (20LK30A)	AB
△ PR701	RMPTP0062CEZZ	J	Packaged Circuit	AH	C305	VCKYPA1HB151K	J 150p	50V Ceramic	AA
X801	RCRSB0001PEZZ	R	Crystal	AL	C306	VCKYPA1HF103Z	J 0.01	50V Ceramic	AA
	or				C307	VCEA0A1CW477M	J 470	16V EL.	AC
	RCRSB0205CEZZ				C308	VCKYCY1HB102K	J 1000p	50V Ceramic	AA
FILTERS					C309	VCEA0A1CW227M	J 220	16V EL.	AC
CF301	RFiLC0403CEZZ	J	Ceramic Filter	AE	C312	VCKYCY1EF104Z	J 0.1	25V Ceramic	AA
	or				C351	VCQYTA1HM823K	J 0.082	50V Mylar	AB
CF302	RFiLC0404CEZZ	J	Ceramic Filter (20LK60A)	AF	C352	VCKYCY1HB182K	J 1800p	50V Ceramic	AA
CF401	RFiLC0013CEZZ	J	Ceramic Filter	AE	C353	VCEAGA1CW108M	J 1000	16V EL.	AD
	or				C354	VCEA0A1CW106M	J 10	16V EL.	AB
CF631	RFiLA0034CEZZ	J	Ceramic Filter	AD	C355	VCQYTA1HM104K	J 0.1	50V Mylar	AC
CF2040	RFiLC0121GEZZ	J	Ceramic Filter	AD	C356	VCQYTA1HM823K	J 0.082	50V Mylar	AB
SF201	RFiLC0405CEZZ	J	SAW Filter	AH				(20LK60A)	
COILS					C357	VCKYCY1HB182K	J 1800p	50V Ceramic	AA
L201	VP-XF1R2K0000	J	Peaking 1.2μH	AB				(20LK60A)	
L202	RCiLi0612CEZZ	J	IF Coil	AE	C358	VCEA0A1CW106M	J 10	16V EL. (20LK60A)	AB
	or				C359	VCEAGA1CW108M	J 1000	16V EL. (20LK60A)	AD
L301	VP-XF8R2K0000	J	Peaking 8.2μH	AB	C360	VCQYTA1HM104K	J 0.1	50V Mylar	AC
L302	RCiLi0613CEZZ	J	VCO Coil	AE				(20LK60A)	
	or				C402	VCCCCY1HH331J	J 330p	50V Ceramic	AA
L401	VP-XF6R8K0000	J	Peaking 6.8μH	AB	C403	VCCCCY1HH101J	J 100p	50V Ceramic	AA
L402	VP-XF3R3K0000	J	Peaking 3.3μH	AB	C405	VCEA0A1HW335M	J 3.3	50V EL.	AB
L403	VP-XF100K0000	J	Peaking 10μH	AB	C406	VCEA0A1HW335M	J 3.3	50V EL.	AB
L404	VP-XF8R2K0000	J	Peaking 8.2μH	AB	C408	VCEA0A1CW106M	J 10	16V EL.	AB
L406	VP-XF680K0000	J	Peaking 68μH	AB	C409	VCEA0A1HW105M	J 1.0	50V EL.	AB
L409	VP-XF100K0000	J	Peaking 10μH	AB	C410	VCKYCY1EF104Z	J 0.1	25V Ceramic	AA
△ L701	RCiLF0012PEZZ	R	Coil	AN	C411	VCEAGA1CW108M	J 1000	16V EL.	AD
L703	VP-CF100K0000	J	Peaking 10μH	AB	C413	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA
L704	VP-CF3R3K0000	J	Peaking 3.3μH	AB	C414	VCKYCY1EF104Z	J 0.1	25V Ceramic	AA
L751	RCiLP0225CEZZ	J	Coil	AF	C419	VCCCCY1HH330J	J 33p	50V Ceramic	AA
L2040	RCiLB0159CEZZ	J	Oscillation Coil	AE	C420	VCCCCY1HH471J	J 470p	50V Ceramic	AA
TRANSFORMERS					C451	VCQYTA1HM563K	J 0.056	50V Mylar	AB
△ T601	RTRNZ0367CEZZ	J	Transformer	AK	C454	VCEA0A1HW475M	J 4.7	50V EL.	AB
▲△ T602	RTRNF0147PEZZ	R	H-Volt Transformer	BC	C502	VCEA0A1EW477M	J 470	25V EL.	AD
△ T701	RTRNZ0120PEZZ	R	Transformer	AX	C504	VCKYPA2HB391K	J 390p	500V Ceramic	AA
CONTROL					C505	VCQYTA1HM473K	J 0.047	50V Mylar	AB
▲△ R721	RVR-M4324CEZZ	J	220(B) 115V Adj.	AC	C507	VCQYTA1HM103K	J 0.01	50V Mylar	AB
CAPACITORS					C508	VCEAGA1VW107M	J 100	35V EL.	AC
					C509	VCKYPA2HB102K	J 1000p	500V Ceramic	AA
					C510	VCEAGA1VW477M	J 470	35V EL.	AD
					C511	VCQYTA1HM473K	J 0.047	50V Mylar	AB
					C513	VCEACA1HC225M	J 2.2	50V EL.	AC
					C514	VCEACA1HC225J	J 2.2	50V EL.	AC
					C517	VCKYPA1HB102K	J 1000p	50V Ceramic	AA
					C522	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA
					C551	VCSATA1CE225K	J 2.2	16V Tantalum	AB
					C552	VCEA0A1HW225M	J 2.2	50V EL.	AB
					C603	VCKYPA2HB562K	J 5600p	500V Ceramic	AB
					△ C604	VCEAGH2CW227M	J 220	160V EL.	AH
					▲△ C608	VCFFPD3CA922H	J 9200p	1.6kV M-Poly.	AF
					C609	VCKYPA2HB222K	J 2200p	500V Ceramic	AA
					C612	VCFFPJ2EB474J	J 0.47	250V M-Poly.	AF
					C631	VCEA0A1HW225M	J 2.2	50V EL.	AB
					C632	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA
					C633	VCEA0A1HW105M	J 1.0	50V EL.	AB

[EL... Electrolytic, M-Poly... Metalized Polypro Film]

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTK9731WEV1(20LK30A)					PWB-A: DUNTK9731WEV2(20LK60A)				
MAIN UNIT (Continued)									
C652	VCEA0A1HW475M	J	4.7 50V EL.	AB	C3001	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB
C653	VCEA0A1CW106M	J	10 16V EL.	AB				(20LK60A)	
C661	VCKYPA2HB152K	J	1500p 500V Ceramic	AA	C3002	VCKYCY1HB562K	J	5600p 50V Ceramic	AA
C662	VCEA0A1CW477M	J	470 16V EL.	AC				(20LK60A)	
△ C701	RC-FZ015SCEZZ	J	0.047 AC250V Plastic	AE	C3003	RC-QZA123TAYK	J	0.012 50V Mylar	AB
	or							(20LK60A)	
	RC-FZ002SCEZZ				C3004	VCEA0A1HW105M	J	1.0 50V EL. (20LK60A)	AB
	or				C3005	VCEA0A1HW475M	J	4.7 50V EL. (20LK60A)	AB
	RC-FZ027CUMZZ				C3006	VCEA0A1HW106M	J	10 50V EL. (20LK60A)	AB
	or				C3007	VCEA0A1HW475M	J	4.7 50V EL. (20LK60A)	AB
	RC-FZ059SCEZZ				C3008	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C703	RC-KZ0029CEZZ	J	0.01 AC250V Ceramic	AC				(20LK60A)	
C704	RC-KZ0029CEZZ	J	0.01 AC250V Ceramic	AC	C3009	VCEA0A1CW227M	J	220 16V EL. (20LK60A)	AC
C705	RC-KZ0029CEZZ	J	0.01 AC250V Ceramic	AC	C3010	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB
△ C706	RC-EZ0693CEZZ	J	220 400V EL.	AS				(20LK60A)	
C707	VCKYPA2HB102K	J	1000p 500V Ceramic	AA	C3011	VCEA0A1HW475M	J	4.7 50V EL. (20LK60A)	AB
C708	RC-KZ0029CEZZ	J	0.01 AC250V Ceramic	AC	C3012	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB
C709	VCKYPA2HB102K	J	1000p 500V Ceramic	AA				(20LK60A)	
C710	VCKYPA2HB472K	J	4700p 500V Ceramic	AB	C3013	VCKYCY1HB272K	J	2700p 50V Ceramic	AA
C711	RC-KZ0341CEZZ	J	1000p 2kV Ceramic	AD				(20LK60A)	
C712	RC-KZ0029CEZZ	J	0.01 AC250V Ceramic	AC	C3014	RC-QZA473TAYK	J	0.047 50V Mylar	AB
C713	RC-KZ0029CEZZ	J	0.01 AC250V Ceramic	AC				(20LK60A)	
C714	VCEA0A1CW477M	J	470 16V EL.	AC	C3015	VCSATA1CE335K	J	3.3 16V Tantalum	AC
C715	VCFYHA1HA474J	J	0.47 50V Mylar	AD				(20LK60A)	
C716	VCEA0A1HW106M	J	10 50V EL.	AB	C3016	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB
C717	VCFYHA1HA684J	J	0.68 50V Mylar	AD				(20LK60A)	
C718	RC-QZA471TAYJ	J	470p 50V Mylar	AB	C3017	VCSATA1CE106K	J	10 16V Tantalum	AD
C719	VCEA0A1CW107M	J	100 16V EL.	AC				(20LK60A)	
C720	VCEAGA1JW476M	J	47 63V EL.	AB	C3018	VCEA0A1HW105M	J	1.0 50V EL. (20LK60A)	AB
C721	VCFYHA1HA394J	J	0.39 50V Mylar	AC	C3019	VCEA0A1HW475M	J	4.7 50V EL. (20LK60A)	AB
C722	VCKYPA1HB272K	J	2700p 50V Ceramic	AA	C3020	VCEA0A1HW475M	J	4.7 50V EL. (20LK60A)	AB
C723	VCKYPA2HB102K	J	1000p 500V Ceramic	AA	RESISTORS				
C724	VCEA0A1HW105M	J	1.0 50V EL.	AB	<i>[M-Ox... Metal Oxide, M-Film... Metal Film]</i>				
C725	VCQYTA1HM563K	J	0.056 50V Mylar	AB	RJ1	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
△ C730	RC-KZ0311CEZZ	J	0.0033 AC250V Ceramic	AD	RJ2	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
	or				RJ4	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
	RC-KZ0215CEZZ							(20LK60A)	
△ C751	VCEAGH2CW107M	J	100 160V EL.	AE	RJ5	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C752	RC-KZ0341CEZZ	J	0.001 2kV Ceramic	AD	RJ6	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C754	VCKYPA2HB102K	J	1000p 500V Ceramic	AA	RJ7	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C755	VCEA0A1CW477M	J	470 16V EL.	AC	RJ8	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C757	RC-KZ0341CEZZ	J	0.001 2kV Ceramic	AD				(20LK30A)	
C758	VCEAGA2EW106M	J	10 250V EL.	AC	RJ11	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C759	VCKYPA2HB102K	J	1000p 500V Ceramic	AA				(20LK60A)	
C760	VCEA0A1CW337M	J	330 16V EL.	AC	RJ12	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C761	VCQYTA1HM104K	J	0.1 50V Mylar	AC				(20LK60A)	
C801	RC-QZA223TAYK	J	0.022 50V Mylar	AB	RJ13	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C802	VCEA0A1HW474M	J	0.47 50V EL.	AB				(20LK60A)	
C803	VCCCCY1HH120J	J	12p 50V Ceramic	AA	RJ15	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C804	VCEA0A1HW104M	J	0.1 50V EL.	AB	RJ16	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C805	VCEA0A1HW104M	J	0.1 50V EL.	AB				(20LK60A)	
C806	VCEA0A1HW104M	J	0.1 50V EL.	AB	RJ17	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C807	VCCCCY1HH820J	J	82p 50V Ceramic	AA				(20LK60A)	
C901	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA	△ R51	VRS-VV3DB151J	J	150 2W M-Ox.	AA
C904	VCEA0A1HW335M	J	3.3 50V EL. (20LK60A)	AB	R52	VRD-RA2BE1R0J	J	1.0 1/8W Carbon	AA
C905	VCEA0A1HW335M	J	3.3 50V EL.	AB	△ R53	VRS-VV3LB223J	J	22k 3.0W M-Ox.	AB
C2001	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R54	VRS-CY1JF101J	J	100 1/16W M-Ox.	AA
C2002	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R55	VRS-CY1JF101J	J	100 1/16W M-Ox.	AA
C2003	VCEA0A1CW106M	J	10 16V EL.	AB	R56	VRS-CY1JF823J	J	82k 1/16W M-Ox.	AA
C2021	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R57	VRS-CY1JF103J	J	10k 1/16W M-Ox.	AA
C2022	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R201	VRS-CY1JF221J	J	220 1/16W M-Ox.	AA
C2023	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R202	VRS-CY1JF122J	J	1.2k 1/16W M-Ox.	AA
C2024	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R203	VRS-CY1JF682J	J	6.8k 1/16W M-Ox.	AA
C2040	VCEA0A1AW107M	J	100 10V EL.	AB	R204	VRS-CY1JF270J	J	27 1/16W M-Ox.	AA
C2041	VCEA0A1HW105M	J	1.0 50V EL.	AB	R205	VRS-CY1JF391J	J	390 1/16W M-Ox.	AA
C2060	VCQYTA1HM104K	J	0.1 50V Mylar	AC	R206	VRD-RA2EE151J	J	150 1/4W Carbon	AA
C2061	VCCCPA1HH101J	J	100p 50V Ceramic	AA	R208	VRS-CY1JF391J	J	390 1/16W M-Ox.	AA
C2062	VCEA0A1AW107M	J	100 10V EL.	AB	R301	VRD-RA2BE222J	J	2.2k 1/8W Carbon	AA
C2401	VCCCPA1HH560J	J	56p 50V Ceramic	AA	R302	VRS-CY1JF102J	J	1.0k 1/16W M-Ox.	AA
C2402	VCCCPA1HH560J	J	56p 50V Ceramic	AA	R303	VRS-CY1JF103J	J	10k 1/16W M-Ox.	AA
C2601	VCEA0A1CW476M	J	47 16V EL.	AB	R304	VRS-CY1JF333J	J	33k 1/16W M-Ox.	AA
C2602	VCCCCY1HH101J	J	100p 50V Ceramic	AA				(20LK60A)	
					R305	VRS-CY1JF102J	J	1.0k 1/16W M-Ox.	AA
								(20LK60A)	

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTK9731WEV1(20LK30A)					PWB-A: DUNTK9731WEV2(20LK60A)				
MAIN UNIT (Continued)									
R306	VRS-CY1JF152J	J	1.5k 1/16W (20LK60A)	M-Ox. AA	△ R659	VRN-VV3ABR33J	J	0.33 1W	M-Film AA
R351	VRD-RA2BE153J	J	15k 1/8W	Carbon AA	△ R661	VRN-VV3ABR47J	J	0.47 1W	M-Film AA
R352	VRD-RA2BE4R7J	J	4.7 1/8W	Carbon AA	△ R701	VRW-KQ4AC2R7K	J	2.7 10W	Cement AE
R353	VRD-RA2BE153J	J	15k 1/8W (20LK60A)	Carbon AA	△ R702	VRW-KQ3HC1R5K	J	1.5 5W	Cement AE
R354	VRD-RA2BE4R7J	J	4.7 1/8W (20LK60A)	Carbon AA	R703	VRD-RM2HD184J	J	180k 1/2W	Carbon AA
R355	VRD-RA2BE333J	J	33k 1/8W	Carbon AA	R704	VRD-RM2HD184J	J	180k 1/2W	Carbon AA
R401	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox. AA	△ R705	VRS-VV3LB272J	J	2.7k 3.0W	M-Ox. AB
R403	VRS-CY1JF331J	J	330 1/16W	M-Ox. AA	△ R706	VRN-VV3AB3R3J	J	3.3 1W	M-Film AA
R404	VRS-CY1JF391J	J	390 1/16W	M-Ox. AA	△ R707	VRS-KT3LB562J	J	5.6k 3.0W	M-Ox. AC
R405	VRD-RA2BE102J	J	1.0k 1/8W	Carbon AA	△ R708	VRS-KT3LB562J	J	5.6k 3.0W	M-Ox. AC
R406	VRS-CY1JF470J	J	47 1/16W	M-Ox. AA	△ R709	VRN-RV3DB4R7J	J	4.7 2W	M-Film AB
R407	VRS-CY1JF680J	J	68 1/16W	M-Ox. AA	R710	VRD-RA2BE124J	J	120k 1/8W	Carbon AA
R408	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA	△ R711	VRN-VV3ABR22J	J	0.22 1W	M-Film AA
R409	VRS-CY1JF471J	J	470 1/16W	M-Ox. AA	R712	VRD-RM2HD1R0J	J	1.0 1/2W	Carbon AA
R410	VRD-RA2BE563J	J	56k 1/8W	Carbon AA	△ R713	VRN-SV2HBR68J	J	0.68 1/2W	M-Film AB
R411	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA	R714	VRD-RA2BE180J	J	18 1/8W	Carbon AA
R412	VRD-RA2EE561J	J	560 1/4W	Carbon AA	R715	VRD-RA2BE101J	J	100 1/8W	Carbon AB
R413	VRD-RA2BE470J	J	47 1/8W	Carbon AA	R716	VRD-RA2BE102J	J	1.0k 1/8W	Carbon AA
R414	VRD-RA2BE470J	J	47 1/8W	Carbon AA	R717	VRD-RA2BE270J	J	27 1/8W	Carbon AA
R415	VRD-RA2BE470J	J	47 1/8W	Carbon AA	R718	VRD-RA2BE392J	J	3.9k 1/8W	Carbon AA
R416	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA	R719	VRD-RA2BE153J	J	15k 1/8W	Carbon AA
R417	VRD-RA2BE101J	J	100 1/8W	Carbon AB	R720	VRD-RA2BE821J	J	820 1/8W	Carbon AA
R418	VRS-CY1JF152J	J	1.5k 1/16W	M-Ox. AA	△ R725	VRC-UA2HG825K	J	8.2M 1/2W	Solid AA
R419	VRS-CY1JF472J	J	4.7k 1/16W	M-Ox. AA	△ R726	VRC-UA2HG825K	J	8.2M 1/2W	Solid AA
R423	VRS-CY1JF222J	J	2.2k 1/16W	M-Ox. AA	R730	VRS-SV3LB100J	J	10 3.0W (20LK60A)	M-Ox. AC
R426	VRS-CY1JF271J	J	270 1/16W	M-Ox. AA	R731	VRD-RA2EE330J	J	33 1/4W (20LK60A)	Carbon AA
R440	VRS-CY1JF821J	J	820 1/16W	M-Ox. AA	R732	VRS-KA3NG330J	J	33 7.0W (20LK60A)	M-Ox. AE
△ R451	VRS-VV3AB103J	J	10k 1W	M-Ox. AA	R751	VRN-SV2HBR22J	J	0.22 1/2W	M-Film AA
R452	VRD-RA2BE152J	J	1.5k 1/8W	Carbon AA	R752	VRD-RA2BE561J	J	560 1/8W	Carbon AA
R454	VRD-RA2BE334J	J	330k 1/8W	Carbon AA	△ R753	VRS-KA3HG3R3K	J	3.3 5W	M-Ox. AD
R455	VRD-RA2BE392J	J	3.9k 1/8W	Carbon AA	△ R755	VRS-VV3DB470J	J	47 2W	M-Ox. AA
R456	VRS-CY1JF223J	J	22k 1/16W	M-Ox. AA	R756	VRD-RA2BE562J	J	5.6k 1/8W	Carbon AA
R457	VRD-RA2BE102J	J	1.0k 1/8W	Carbon AA	△ R757	VRN-VV3LBR47J	J	0.47 3.0W	M-Film AC
R458	VRD-RA2BE334J	J	330k 1/8W	Carbon AA	△ R758	VRS-SV2HC180J	J	18 1/2W	M-Ox. AA
R459	VRD-RA2BE123J	J	12k 1/8W	Carbon AA	R801	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox. AA
R504	VRD-RA2BE471J	J	470 1/8W	Carbon AA	R802	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox. AA
R505	VRD-RA2BE101J	J	100 1/8W	Carbon AB	R803	VRS-CY1JF222J	J	2.2k 1/16W	M-Ox. AA
R506	VRD-RA2BE683G	J	68k 1/8W	Carbon AA	R804	VRS-CY1JF222J	J	2.2k 1/16W	M-Ox. AA
R507	VRD-RA2BE104G	J	100k 1/8W	Carbon AA	R805	VRS-CY1JF222J	J	2.2k 1/16W	M-Ox. AA
R508	VRD-RA2BE473J	J	47k 1/8W	Carbon AA	R806	VRS-CY1JF333J	J	33k 1/16W	M-Ox. AA
R510	VRD-RM2HD1R2J	J	1.2 1/2W	Carbon AA	R902	VRS-CY1JF750J	J	75 1/16W	M-Ox. AA
△ R511	VRN-SV2HB1R5J	J	1.5 1/2W	M-Film AB	R905	VRS-CY1JF102J	J	1.0k 1/16W (20LK60A)	M-Ox. AA
R512	VRD-RM2HD331J	J	330 1/2W	Carbon AA	R906	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA
R516	VRD-RA2BE683G	J	68k 1/8W	Carbon AA	R924	VRS-CY1JF104J	J	100k 1/16W (20LK60A)	M-Ox. AA
R517	VRD-RA2BE103G	J	10k 1/8W	Carbon AA	R925	VRS-CY1JF104J	J	100k 1/16W	M-Ox. AA
R518	VRD-RA2BE154J	J	150k 1/8W	Carbon AA	R961	VRD-RA2BE101J	J	100 1/8W	Carbon AB
R524	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox. AA	R962	VRD-RA2BE101J	J	100 1/8W	Carbon AB
R525	VRD-RA2BE473J	J	47k 1/8W	Carbon AA	R2002	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA
R552	VRD-RA2BE102J	J	1.0k 1/8W	Carbon AA	R2006	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA
R553	VRS-CY1JF273J	J	27k 1/16W	M-Ox. AA	R2008	VRD-RA2BE224J	J	220k 1/8W	Carbon AA
R554	VRS-CY1JF472J	J	4.7k 1/16W	M-Ox. AA	R2009	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA
R602	VRD-RM2HD472J	J	4.7k 1/2W	Carbon AA	R2010	VRD-RA2BE102J	J	1.0k 1/8W	Carbon AA
△ R603	VRS-SV3LB182J	J	1.8k 3.0W	M-Ox. AB	R2011	VRS-CY1JF821J	J	820 1/16W	M-Ox. AA
R608	VRD-RA2BE471J	J	470 1/8W	Carbon AA	R2012	VRS-CY1JF471J	J	470 1/16W	M-Ox. AA
R609	VRD-RA2BE331J	J	330 1/8W	Carbon AA	R2020	VRD-RM2HD223J	J	22k 1/2W	Carbon AA
△ R610	VRS-VV3DB391J	J	390 2W	M-Ox. AA	R2022	VRD-RA2BE333J	J	33k 1/8W	Carbon AA
R620	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA	R2024	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox. AA
R621	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox. AA	R2025	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox. AA
R631	VRS-CY1JF391J	J	390 1/16W	M-Ox. AA	R2026	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox. AA
R632	VRD-RA2BE152J	J	1.5k 1/8W	Carbon AA	R2027	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox. AA
R633	VRS-CY1JF472J	J	4.7k 1/16W	M-Ox. AA	R2028	VRD-RA2BE102J	J	1.0k 1/8W	Carbon AA
R634	VRD-RM2HD101J	J	100 1/2W	Carbon AA	R2029	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA
△ R641	VRS-VV3AB682J	J	6.8k 1W	M-Ox. AA	R2031	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA
R642	VRD-RA2BE821J	J	820 1/8W	Carbon AA	R2032	VRD-RA2BE471J	J	470 1/8W	Carbon AA
▲ R651	VRD-RM2HD1R0J	J	1.0 1/2W	Carbon AA	R2040	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA
▲ R653	VRD-RA2BE102J	J	1.0k 1/8W	Carbon AA	R2041	VRD-RA2BE333J	J	33k 1/8W	Carbon AA
▲ R654	VRD-RA2BE473J	J	47k 1/8W	Carbon AA	R2042	VRS-CY1JF101J	J	100 1/16W	M-Ox. AA
▲ R655	VRS-CY1JF104J	J	100k 1/16W	M-Ox. AA	R2043	VRS-CY1JF101J	J	100 1/16W	M-Ox. AA
					R2044	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox. AA
					R2045	VRS-CY1JF101J	J	100 1/16W	M-Ox. AA
					R2047	VRS-CY1JF221J	J	220 1/16W	M-Ox. AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTK9731WEV1(20LK30A)					PWB-A: DUNTK9731WEV2(20LK60A)				
MAIN UNIT (Continued)									
R2048	VRS-CY1JF562J	J	5.6k 1/16W	M-Ox. AA	P702	QPLGN0207CEZZ	J	Plug, 2-pin(M)	AA
R2049	VRS-CY1JF333J	J	33k 1/16W	M-Ox. AA	P751	QPLGN0461CEZZ	J	Plug, 4-pin(YBN)	AB
R2054	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA	P901	QPLGN0561CEZZ	J	Plug, 5-pin(E)	AB
R2055	VRD-RA2BE103J	J	10k 1/8W	Carbon AA	P2001	QPLGN0561CEZZ	J	Plug, TP2001-5	AB
R2060	VRS-CY1JF221J	J	220 1/16W	M-Ox. AA	RMC2601	RRMCU0222CEZZ	J	R/C Receiver	AL
R2061	VRS-CY1JF562J	J	5.6k 1/16W	M-Ox. AA	or				
R2062	VRS-CY1JF183J	J	18k 1/16W	M-Ox. AA	RRMCU0216CEZZ				
R2063	VRD-RA2BE222J	J	2.2k 1/8W	Carbon AA	HM711	LX-GZ3001PEZZ	R	Screw	AB
R2064	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox. AA	HM712	LX-GZ3001PEZZ	R	Screw	AB
R2066	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA	HM713	LX-GZ3001PEZZ	R	Screw	AB
R2067	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA	HM714	LX-GZ3001PEZZ	R	Screw	AB
R2068	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA	HM715	LX-GZ3001PEZZ	R	Screw	AB
R2070	VRS-CY1JF103J	J	10k 1/16W	M-Ox. AA	HM716	LX-GZ3001PEZZ	R	Screw (20LK60A)	AB
R2101	VRS-CY1JF101J	J	100 1/16W	M-Ox. AA	HM717	LX-GZ3001PEZZ	R	Screw (20LK60A)	AB
R2102	VRS-CY1JF101J	J	100 1/16W	M-Ox. AA	HM718	LX-GZ3002PEZZ	R	Screw (20LK60A)	AB
R2501	VRS-CY1JF123J	J	12k 1/16W	M-Ox. AA	HM719	LX-GZ3002PEZZ	R	Screw (20LK60A)	AB
R2503	VRS-CY1JF273J	J	27k 1/16W	M-Ox. AA	HM721	LX-GZ3002PEZZ	R	Screw	AB
R2504	VRS-CY1JF123J	J	12k 1/16W	M-Ox. AA	HM722	LX-GZ3002PEZZ	R	Screw	AB
R2505	VRS-CY1JF563J	J	56k 1/16W	M-Ox. AA	HM723	LX-GZ3002PEZZ	R	Screw	AB
R2506	VRS-CY1JF563J	J	56k 1/16W	M-Ox. AA	HM724	LX-GZ3002PEZZ	R	Screw	AB
R2507	VRS-CY1JF823J	J	82k 1/16W	M-Ox. AA	HM729	LX-GZ3001PEZZ	R	Screw	AB
R2508	VRS-CY1JF153J	J	15k 1/16W	M-Ox. AA	HM730	LX-GZ3001PEZZ	R	Screw	AB
R2509	VRS-CY1JF272J	J	2.7k 1/16W	M-Ox. AA	HM731	LX-GZ3001PEZZ	R	Screw	AB
R2601	VRD-RA2BE470J	J	47 1/8W	Carbon AA	HM732	LX-GZ3001PEZZ	R	Screw	AB
R3001	VRD-RA2BE221J	J	220 1/8W	Carbon AA	HM733	LX-GZ3001PEZZ	R	Screw	AB
			(20LK60A)		HM734	LX-GZ3001PEZZ	R	Screw	AB
R3002	VRD-RA2BE221J	J	220 1/8W	Carbon AA	HM735	LX-GZ3001PEZZ	R	Screw	AB
			(20LK60A)		HM736	LX-GZ3001PEZZ	R	Screw	AB
R3003	VRS-CY1JF105J	J	1.0M 1/16W	M-Ox. AA	HM737	LX-GZ3001PEZZ	R	Screw	AB
			(20LK60A)		HM738	LX-GZ3001PEZZ	R	Screw (20LK60A)	AB
R3004	VRS-CY1JF104J	J	100k 1/16W	M-Ox. AA	HM739	LX-GZ3001PEZZ	R	Screw (20LK60A)	AB
			(20LK60A)		HM740	LX-GZ3001PEZZ	R	Screw	AB
R3005	VRS-CY1JF623J	J	62k 1/16W	M-Ox. AA	RDA351	PRDAR0102GJFW	X	Heat Sink, for IC351	
			(20LK60A)		RDA352	PRDAR0102GJFW	X	Heat Sink, for IC352	
R3007	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox. AA				(20LK60A)	
			(20LK60A)		RDA501	PRDAR0103GJFW	X	Heat Sink, IC501	
R3008	VRS-CY1JF302J	J	3.0k 1/16W	M-Ox. AA	RDA601	PRDAR0216PEFW	R	Heat Sink, for Q602	AE
			(20LK60A)		RDA701	PRDAR0222PEFW	R	Heat Sink, for Q701	AH
R3010	VRS-CY1JF392J	J	3.9k 1/16W	M-Ox. AA	LHLDW1002PEZZ	R	Holder	AB	
			(20LK60A)		LX-BZ3100CEFD	J	Screw	AA	
R3011	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA	LX-BZ3100CEFD	J	Screw	AA	
			(20LK60A)		LX-BZ3100CEFD	J	Screw	AA	
R3012	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox. AA	LX-BZ3100CEFD	J	Screw (20LK60A)	AA	
			(20LK60A)		LX-TZ3004CEFD	J	Screw	AA	
R3013	VRD-RA2BE2R2J	J	2.2 1/8W	Carbon AA	QCNW-2047PEZZ	R	Connecting Cord	AK	
			(20LK60A)						
SWITCHES									
S2501	QSW-K0079GEZZ	J	Power	AB					
S2502	QSW-K0079GEZZ	J	Vol-Down	AB					
S2503	QSW-K0079GEZZ	J	Vol-Up	AB					
S2504	QSW-K0079GEZZ	J	Ch-Down	AB					
S2505	QSW-K0079GEZZ	J	Ch-Up	AB					
MISCELLANEOUS PARTS									
△ RY701	RRLYU0036CEZZ	J	Relay	AM					
△ RY751	RRLYU0036CEZZ	J	Relay	AM					
△ F701	QFS-C3229CEZZ	J	Fuse, 3.15A	AD					
FB602	RBLN-0037CEZZ	J	Ferrite Bead	AB					
FB603	RBLN-0037CEZZ	J	Ferrite Bead	AB					
FB701	RBLN-0037CEZZ	J	Ferrite Bead	AB					
FB702	RBLN-0037CEZZ	J	Ferrite Bead	AB					
FB751	RBLN-0080CEZZ	J	Ferrite Bead	AD					
FB752	RBLN-0037CEZZ	J	Ferrite Bead	AB					
FH701	QFSDH1013CEZZ	J	Fuse Holder	AC					
FH702	QFSDH1014CEZZ	J	Fuse Holder	AC					
P302	QPLGN0461CEZZ	J	Plug, 4-pin(S)	AB					
P401	QPLGN0561CEZZ	J	Plug, 5-pin(GNB)	AB					
P601	QPLGN0603CEZZ	J	Plug, 6-pin(K)	AB					
P651	QPLGN0361CEZZ	J	Plug, TP651-3	AB					
P701	QPLGN0269GEZZ	J	Plug, 2-pin(P)	AB					

Ref. No. Part No. ★ Description Code

**PWB-B: DUNTK9432WEV5
CRT UNIT**

TRANSISTORS

Q852	VS2SC2229O/1E	J	2SC2229	AD
Q854	VS2SC2229O/1E	J	2SC2229	AD
Q856	VS2SC2229O/1E	J	2SC2229	AD
Q881	VS2SA1266-Y-1	J	2SA1266(Y)	AA
	or			
	VS2SA1015-Y-1			

DIODES

You can substitute "RH-DX0045GEZZ" and "RH-DX0446CEZZ" for "VHD1SS119//-1".

D881	VHD1SS119//-1	J	Diode	AB
D882	VHD1SS119//-1	J	Diode	AB
D885	VHD1SS119//-1	J	Diode	AB

COIL

L851	VP-DF151K0000	J	Peaking 150µH	AB
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CAPACITORS

[EL... Electrolytic]

C851	VCKYPA1HB271K	J	270p 50V	Ceramic	AA
C852	VCKYPA1HB271K	J	270p 50V	Ceramic	AA
C853	VCKYPA1HB271K	J	270p 50V	Ceramic	AA
C854	RC-KZ0016CEZZ	J	0.01 1.4kV	Ceramic	AC
C881	VCEA0A1CW106M	J	10 16V	EL.	AB
C883	VCEA0A1CW336M	J	33 16V	EL.	AB

RESISTORS

[M-Ox... Metal Oxide]

R851	VRD-RA2BE470J	J	47 1/8W	Carbon	AA
R852	VRD-RA2BE221J	J	220 1/8W	Carbon	AA
R853	VRD-RA2BE121J	J	120 1/8W	Carbon	AA
△ R857	VRS-VV3AB123J	J	12k 1W	M-Ox.	AA
R858	VRD-RM2HD332J	J	3.3k 1/2W	Carbon	AA
R859	VRD-RA2BE470J	J	47 1/8W	Carbon	AA
R860	VRD-RA2BE221J	J	220 1/8W	Carbon	AA
R861	VRD-RA2BE121J	J	120 1/8W	Carbon	AA
△ R865	VRS-VV3AB123J	J	12k 1W	M-Ox.	AA
R866	VRD-RM2HD332J	J	3.3k 1/2W	Carbon	AA
R867	VRD-RA2BE470J	J	47 1/8W	Carbon	AA
R868	VRD-RA2BE221J	J	220 1/8W	Carbon	AA
R869	VRD-RA2BE121J	J	120 1/8W	Carbon	AA
△ R873	VRS-VV3AB123J	J	12k 1W	M-Ox.	AA
R874	VRD-RM2HD332J	J	3.3k 1/2W	Carbon	AA
R881	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA
R882	VRD-RA2BE391J	J	390 1/8W	Carbon	AA
R883	VRD-RA2BE561J	J	560 1/8W	Carbon	AA
R884	VRD-RA2BE152J	J	1.5k 1/8W	Carbon	AA
R885	VRD-RA2BE470J	J	47 1/8W	Carbon	AA

MISCELLANEOUS PARTS

P851	QPLGN0561CEZZ	J	Plug, 5-pin(GBN)	AB
P852	QPLGN0461CEZZ	J	Plug, 4-pin(YBN)	AB
SC851	QSOCV0933CEZZ	J	CRT Socket	AH

**PWB-C: DUNTK9732WEV0(20LK30A)
PWB-C: DUNTK9732WEV2(20LK60A)
FRONT AV UNIT**

MISCELLANEOUS PARTS

J1001	QJAKE0150CEZZ	J	Jack, Video IN	AD
J1002	QJAKE0185CEZZ	J	Jack, Audio IN	AE
J1003	QJAKE0184CEZZ	J	Jack, Audio IN (20LK60A)	AE
P1001	QPLGN0561CEZZ	J	Plug, 5-pin(E)	AB

Ref. No. Part No. ★ Description Code

MISCELLANEOUS PARTS

△	QACCZ3008PEZZ	R	AC Cord	AN
	QCNW-1964PEZZ	R	Connecting Cord	AF
	QCNW-2011PEZZ	R	Connecting Cord	AH
	QCNW-2110PEZZ	R	Connecting Cord	AG
	VSP9050PB108A	J	Speaker (20LK30A)	AP
	VSP9050PB11WA	J	Speaker (20LK60A)	AP

SUPPLIED ACCESSORIES

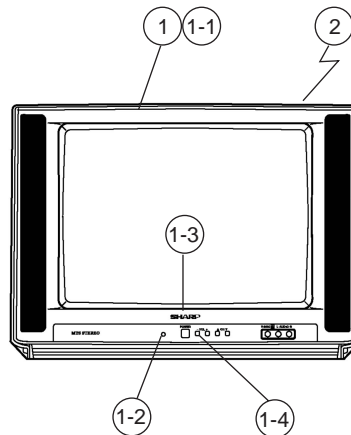
TiNS-6487GJZZ	X	Operation Manual(20LK30A)	
TiNS-6489GJZZ	X	Operation Manual(20LK60A)	
RRMCG1339CESA	J	Infrared R/C Unit	AT
QANTR0018PEZZ	R	Rod Antenna	AQ
QPLGA0017CEZZ	J	Plug	AK
RUNTK0165CEZZ	J	Antenna Box Unit	AM

**PACKING PARTS
(NOT REPLACEMENT ITEM)**

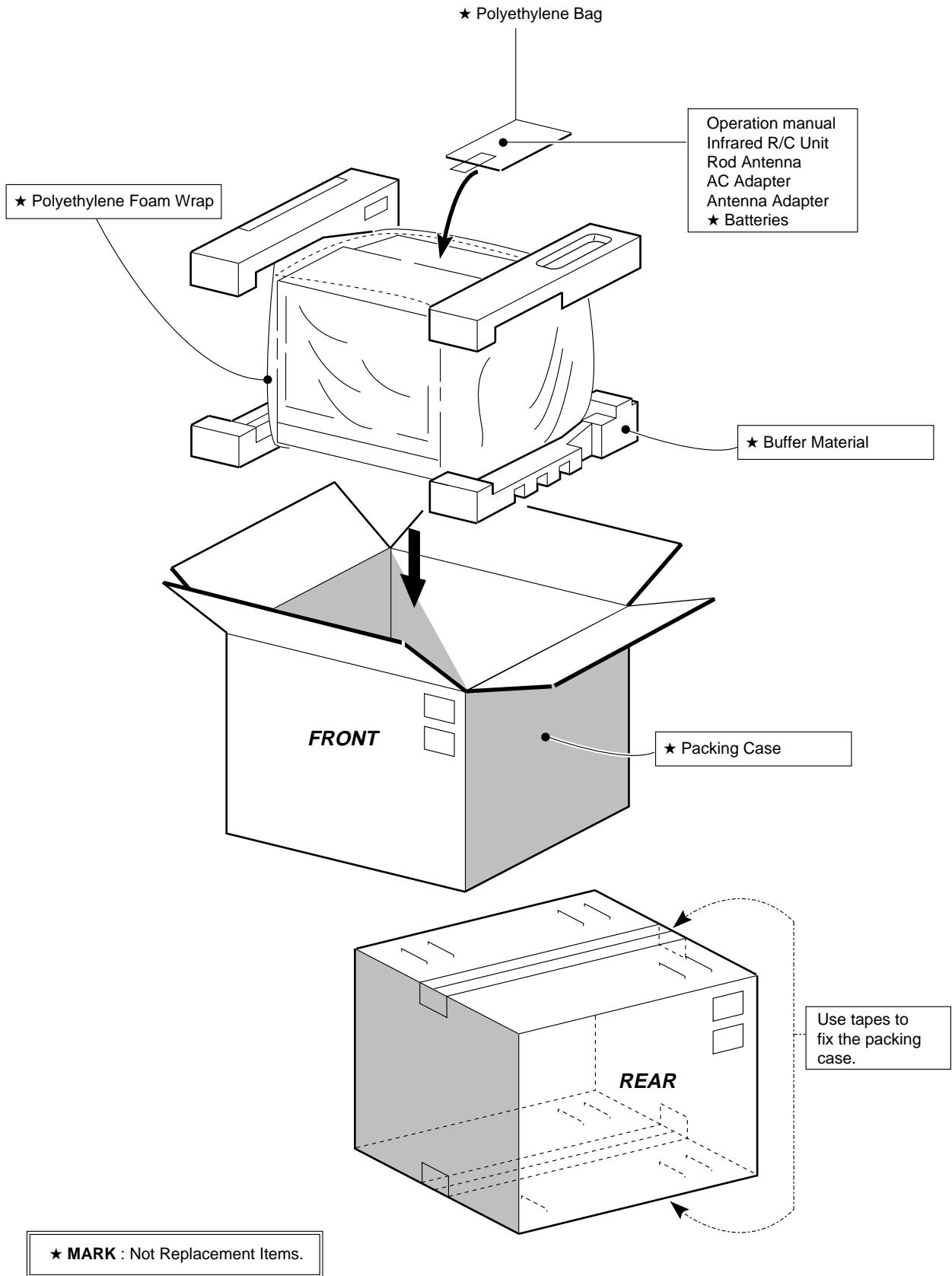
SPAKC0002GJZZ	-	Packing Case(20LK30A)	—
SPAKC0003GJZZ	-	Packing Case(20LK60A)	—
SPAKP0102GJZZ	-	Polyethylene Foam Wrap	—
SPAKX0002GJZZ	-	Buffer Material	—
SSAKA0101GJZZ	-	Polyethylene Bag	—

CABINET PARTS

1	CCABA0002WEH0	X	Front Cabinet Ass'y (20LK30A)	
1	CCABA0003WEH0	X	Front Cabinet Ass'y (20LK60A)	
1-1	Not Available		- Front Cabinet	—
1-2	GCOVA0002GJSA	X	R/C Cover	
1-3	HBDGB0019PESA	R	Badge, "SHARP"	AD
1-4	JBTN-0002GJSA	X	Button	
2	GCABB0002GJKA	X	Rear Cabinet	



PACKING OF THE SET



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