

SHARP SERVICE MANUAL

S96M8CX-6336/


Linytron
**PAL SYSTEM
COLOUR TELEVISION**
NC-6 CHASSIS
MODEL CX-6336

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

Aerial Input Impedance	75 ohm unbalanced
Convergence	Self Converging System
Focus	Bi-potential electrostatic
Audio Power Output Rating	2.0W max.
Intermediate Frequencies	
Picture IF Frequency	36.875MHz
Sound Carrier Trap	31.375MHz
Adjacent Sound Carrier Trap	38.375MHz
Power Input	240V AC 50Hz
Power Consumption	120W
Speaker	10cm Round Dynamic x 1 pc.
Sweep Deflection	Magnetic
Tuning Ranges	VHF Channels 0 thru 11 UHF Channels 28 thru 63

Specifications are subject to change without prior notice

WARNING

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

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

IMPORTANT SERVICE NOTES

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

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove static charge from it by connecting a 10k ohm Resistor in series with an Insulated wire (such is a test probe) between picture tube tag and 2nd 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 shatter-proof goggles and after discharging the high voltage completely.

X-RAY

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

1. When repairing the circuit, be sure not to increase the high voltage to more than 30kV, (at beam 1.1mA), for the set.
2. To keep the set in a normal operation, be sure to make it function on $27.5\text{kV} \pm 1.5\text{ kV}$ (at beam 1.3 mA) in the case of the set. The set has been factory-adjusted to the above-mentioned high voltage.
 - .. If there is a possibility that the high voltage fluctuates as a result of the repairs, never forget to check for such high voltage after the work.
3. Do not substitute a picture tube with unauthorized types and/or brands which may cause excess X-ray radiation.

BEFORE RETURNING THE RECEIVER

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 fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators etc.

SERVICE ADJUSTMENT

Precautions:

How to prevent ICs from damages due to static electricity

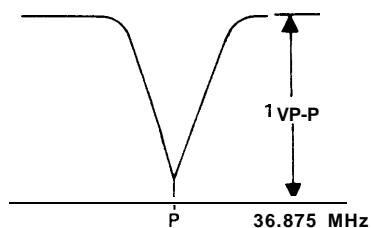
1. When replacing or handling the IC, be sure to put on your wrist a metal ring (earth ring) that is connected to ground.
* Avoid touching the IC directly by hand as much as possible.
2. For the soldering iron and other jigs in use, be sure to connect them to ground so that their potential is the same as that of the PWB and/or IC.
3. The PWB cannot be connected to ground in some condition although you attempt to attach the IC to that PWB. In this case, be sure to keep the PWB at the same potential as ground by touching it by your hand on which a metal ring is put.
4. When handling the IC, it is recommended for you to wear such clothes as not causing static electricity; the ones of wool, silk or synthetic fiber should be avoided. This is important in particular when handling the IC in a dry environment.

Note: Perform the service adjustment following the procedures shown below.

P-detector coil adjustment: T201

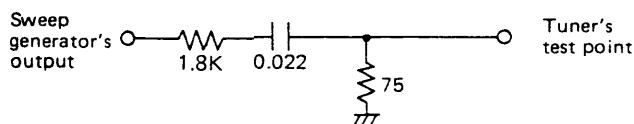
1. Connect sweep output to TP202.
 - Sweep central frequency: 36.875MHz
 - Sweep output: 80 dB
2. Connect the response lead of oscilloscope to TP207.
3. Apply AGC voltage to AGC (TP203).

Note: The AGC voltage should not exceed 7V.
4. Adjust AGC voltage so that the waveform on oscilloscope becomes 1 Vp-p.
5. Adjust T201 so that the waveform peak on oscilloscope becomes aligned with P marker.



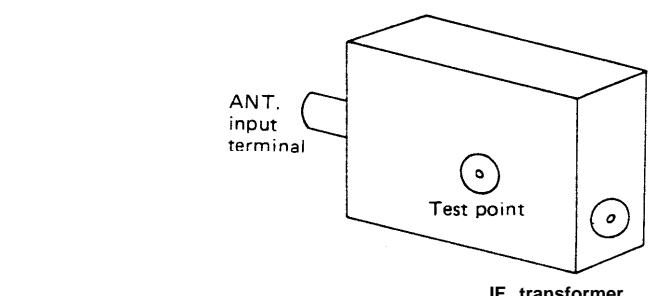
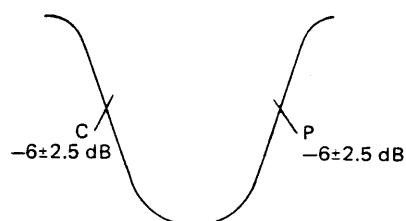
Overall waveform

1. Receive 10ch. signal.
2. Connect sweep output to the tuner test point through the specified jig.
 - Sweep output: 70 dB



3. Connect the response lead to TP207.
4. Connect a resistor of 100 ohms to both ends of R235 (10k ohms).

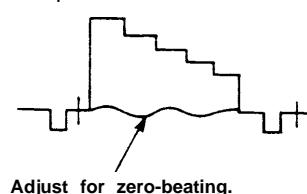
Note: Keep the lead of the 100 ohm resistor as short as possible.
5. Apply AGC voltage to AGC (TP203) and adjust AGC voltage so that the waveform on oscilloscope is 1 Vp-p.
6. Make sure that the overall waveform is as shown in the figure below. If not, adjust it with the aid of IF transformer of the tuner.



AFT adjustment: T202

1. Receive sequential colour bar signal.
2. Connect 36.875MHz oscillator to TP202 across a capacitor of 1pF.
3. Connect oscilloscope to TP207.
 - Oscilloscope range: 0.5V/cm AC
4. Adjust the output of 36.875MHz oscillator to have the waveform beating on oscilloscope be observable.
5. Adjust the tuning control so that the waveform on oscilloscope is free from beating.
 - Set the band switch at VHF position and adjust the tuning control.
6. Set the band switch at normal position and adjust TP202 so that the waveform on oscilloscope is free from beating.
 - Turn on AFT switch.

Note: Set the RF AGC control (R224) to obtain normal picture.

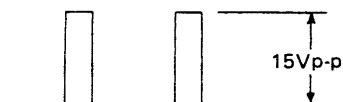


RF AGC cut-in adjustment: R224

1. Receive 10 ch. signal.
2. Set the signal input level at 52 ± 1 dB.
3. Connect CR oscillator to TP204 across a capacitor of $10\mu F/16V$: This capacitor is to cut off DC supply.
 - Oscillation frequency: 1kHz sine wave.
 - Output voltage: 0.1 Vp-p (Output voltage available at TP204)
4. Adjust R224 so that 1 kHz signal disappears from TV screen.
5. Set the signal input level at $52 + 3$ dB and check that 1 kHz signal appears on TV screen.
If 1 kHz signal does not appear, set the input signal level at 52 dB again and follow the procedure in step 4 again.

Sub-brightness adjustment: R421

1. Turn S501 on by tipping it rightwards in order to let the raster be linear.
2. Set each control as follows:
 - Screen control: at MIN position
 - Sub-brightness control (R421): at MIN position
 - R-bias control (R862)
 - G-bias control (R863)
 - B-bias control (R864)
 - G-drive control (R857-A)
 - B-drive control (R857-B)
 - Contrast control: at MIN position
 - Brightness control: at CENTER position
 - Picture tone control: at CENTER position
 - Colour control: at MIN position
3. Receive lion head pattern signal.
4. Connect oscilloscope to TP850.
5. Adjust R421 so that the waveform on oscilloscope is at 15 Vp-p.

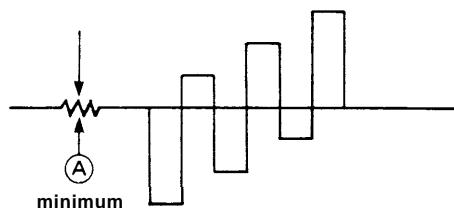
**Background adjustment: Screen control R862 R863 R864 R857-A/B**

6. Remove oscilloscope from TP850.
7. Adjust the screen control so that raster of red, green, or blue appears dimly on screen.
8. Adjust the bias controls except for dimly appearing colour to let the picture on screen be white.
9. Adjust the screen control to obtain cut-off point of CRT.
10. Turn S501 off by bringing it back to the center in order to resume the normal raster.
11. Set the contrast control at MAX position.

12. Adjust each drive control for good white balance.
 - Colour temperature: $7300^{\circ}K$
 $(X = 0.303)$
 $(Y = 0.310)$
13. Adjust brightness control and contrast control to obtain a dark picture. If the white balance is disturbed, adjust the bias control to obtain good white balance.
14. Again brighten the picture and adjust each drive control for good white balance as in step 12 above.

Carrier wave-phase adjustment: R826

1. Receive sequential colour bar signal.
2. Connect oscilloscope to K4 terminal (blue) and adjust synchronism of oscilloscope to obtain the waveform as shown in the figure below.



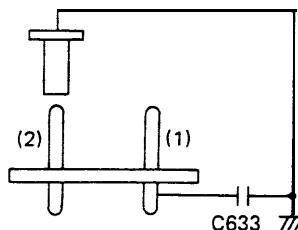
3. Adjust the phase control so that the part (A) of B-Y output waveform becomes minimum as shown in the figure above.

Sub-colour adjustment: R817

1. Receive sequential colour bar signal.
2. Set each control as follows:
 - Contrast control: at MAX position
 - Brightness control: at CENTER position
 - Colour control: at CENTER position
 - Picture-tone control: at CENTER position
3. Connect oscilloscope to TP850.
4. Adjust R817 so that the white output (75%) and red output will have the same level.

Horizontal Size adjustment:

1. Receive lion head pattern signal.
2. If the horizontal size is at less than 7% of overscanning, insert the socket into the opening (2).

**Vertical size adjustment: R525**

3. Adjust R634 to have proper horizontal center.

Vertical linearity adjustment: R520

1. Receive lion head pattern signal.
2. Adjust R520 to obtain good vertical linearity.

Vertical size adjustment: R525

3. Adjust R525 to have 10% of the vertical overscan.

Vertical center adjustment: S502

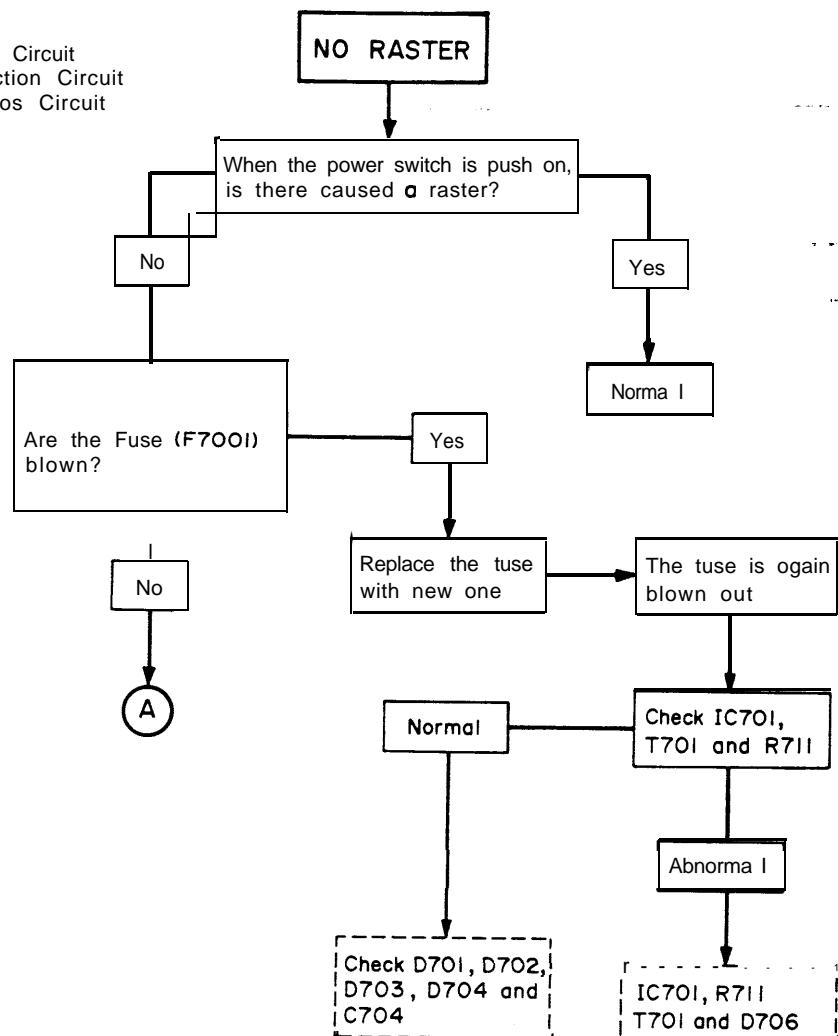
1. If the vertical center of picture is 3mm higher than the center of CRT, set S502 at "down" position. If it is 3mm lower than the center of CRT, set S502 at "up" position.

Protector check

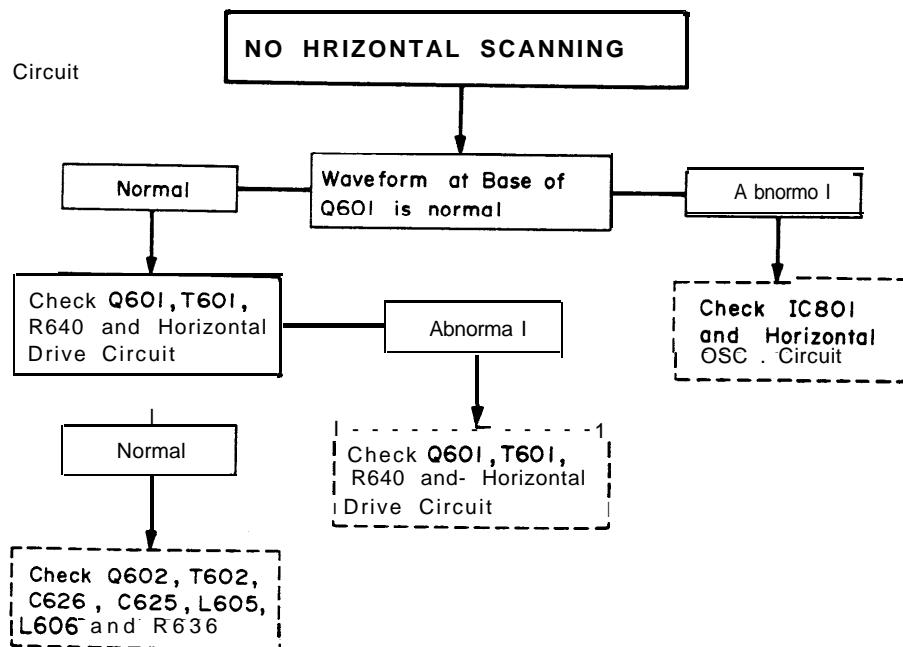
1. Apply DC25V to D605 (cathode side), and check that the protector remains inoperative.
2. Apply DC 30V to D605 (cathode side), and check that the protector gets operative.
3. Connect a resistor (10k ohms) between base of Q603 and ground, and check that the protector gets operative.

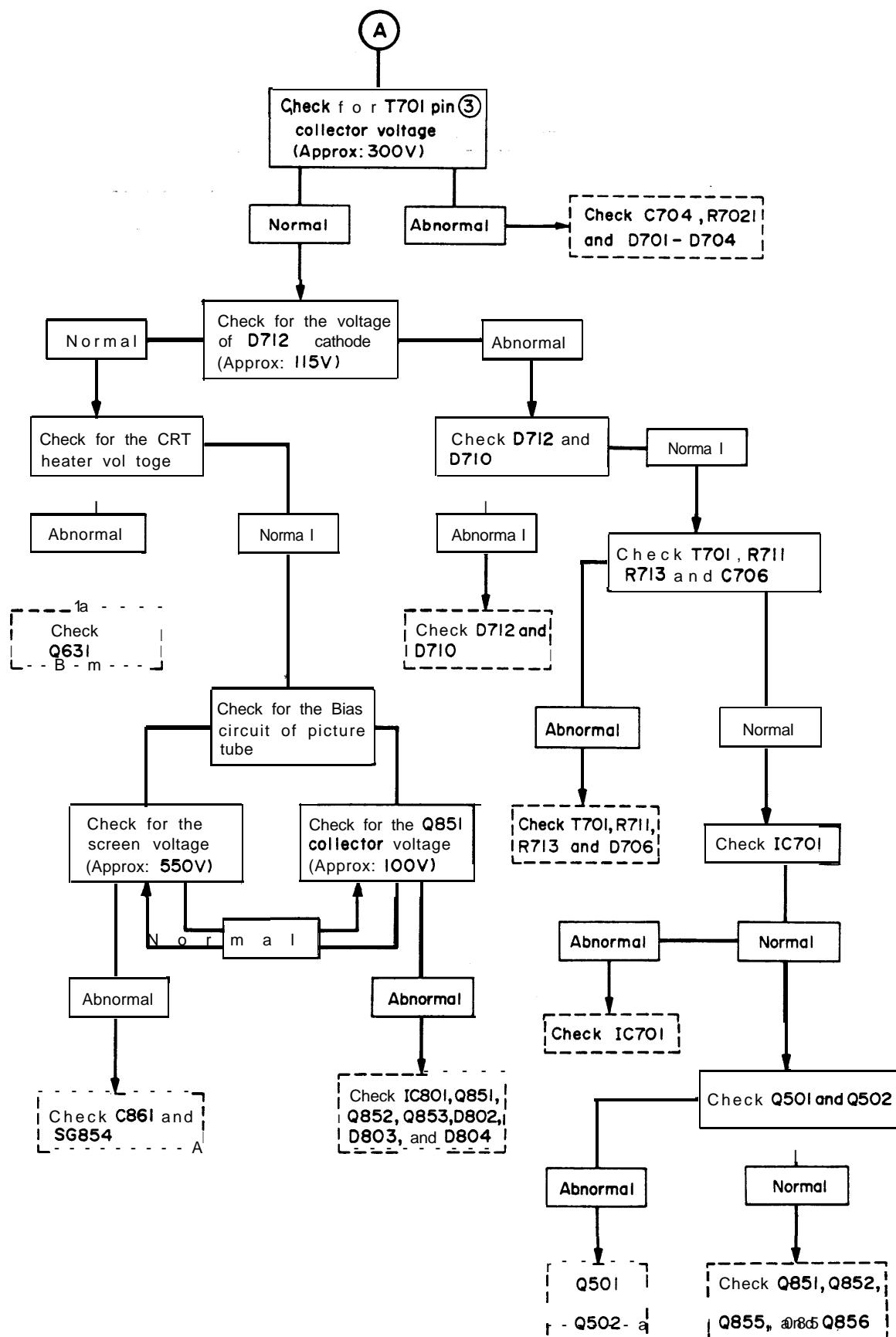
TROUBLE SHOOTING TABLE

- Checked Circuits
- Power Regulator Circuit
 - Horizontal Deflection Circuit
 - Picture tube Bios Circuit
 - Video Circuit
 - Picture tube

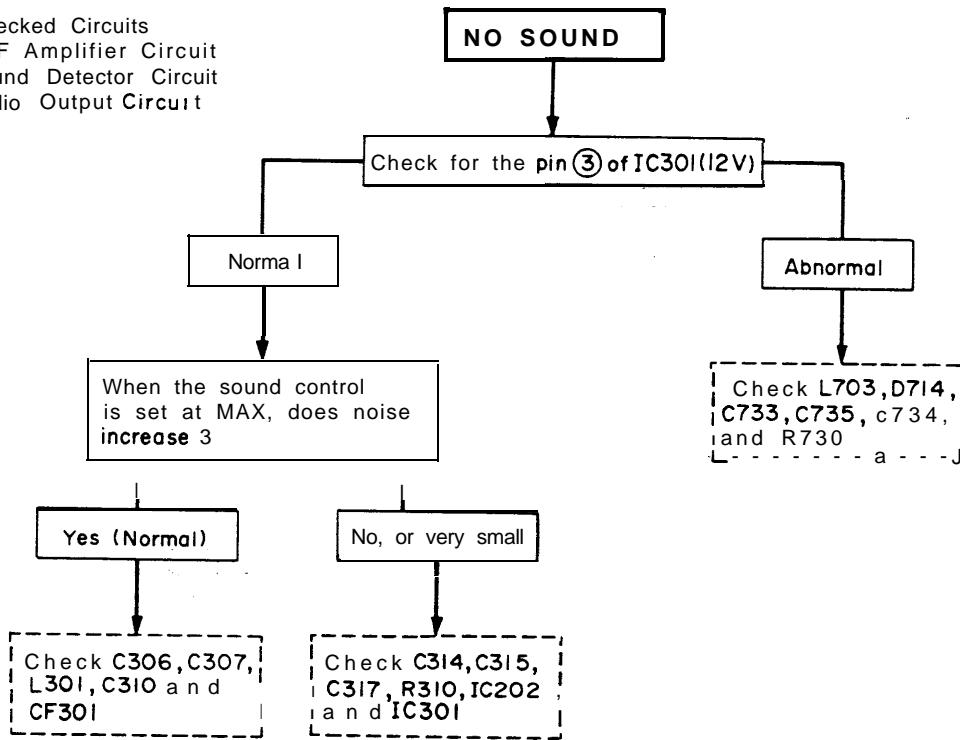


- Checked Circuits
- Horizontal Output Circuit

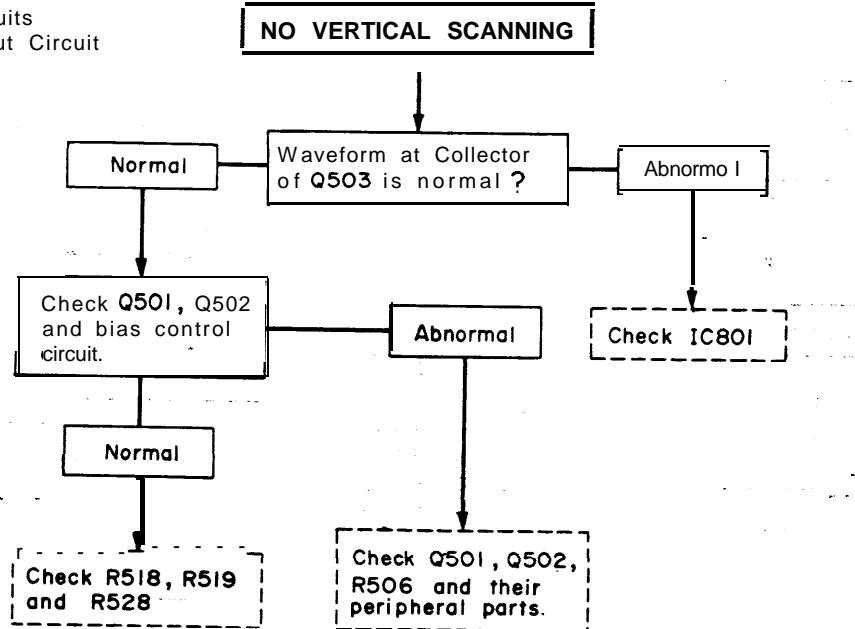




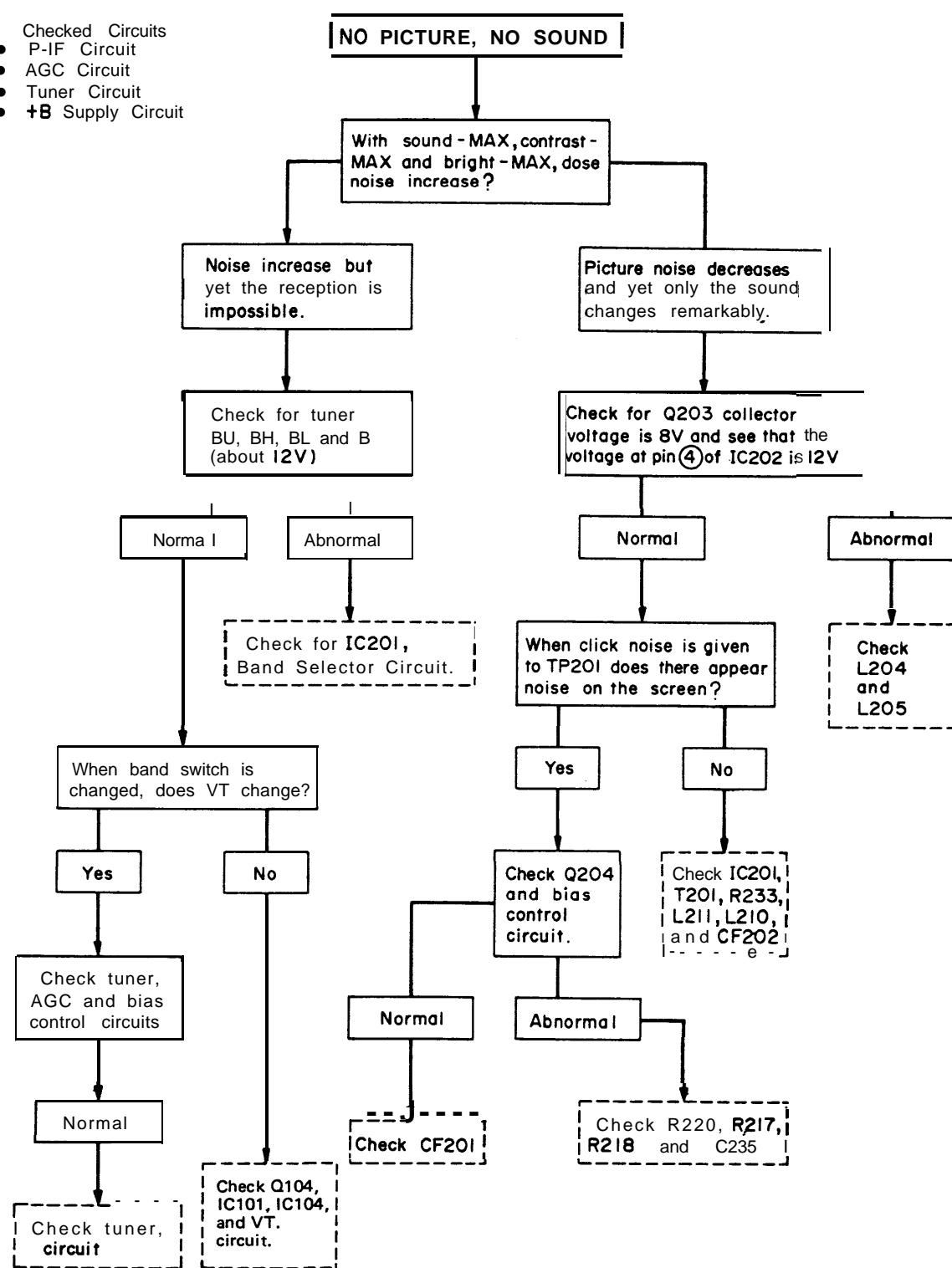
Checked Circuits
 • STF Amplifier Circuit
 • Sound Detector Circuit
 • Audio Output Circuit



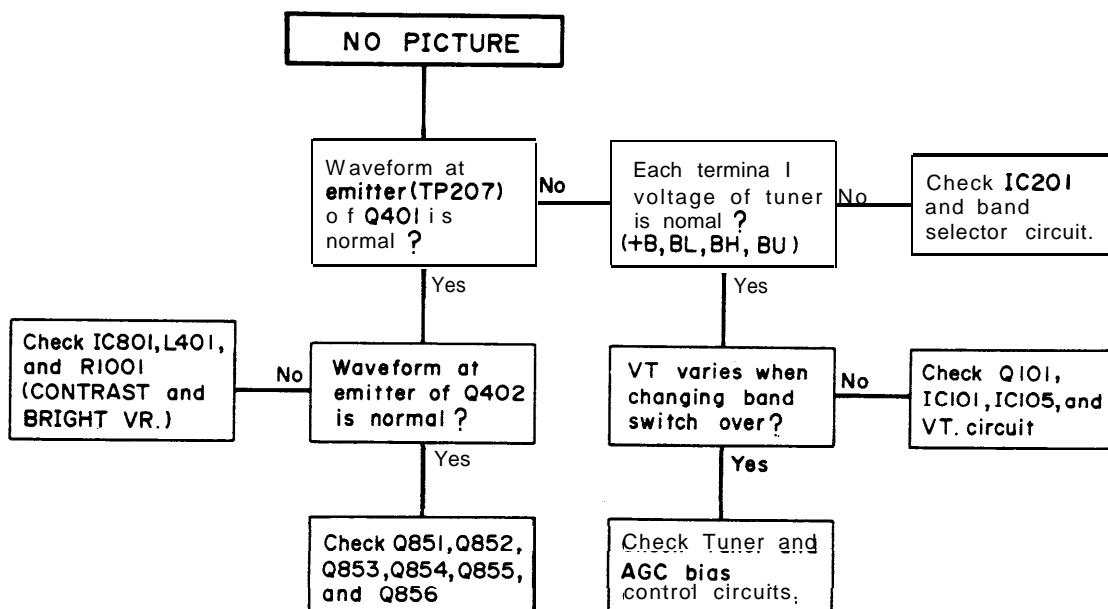
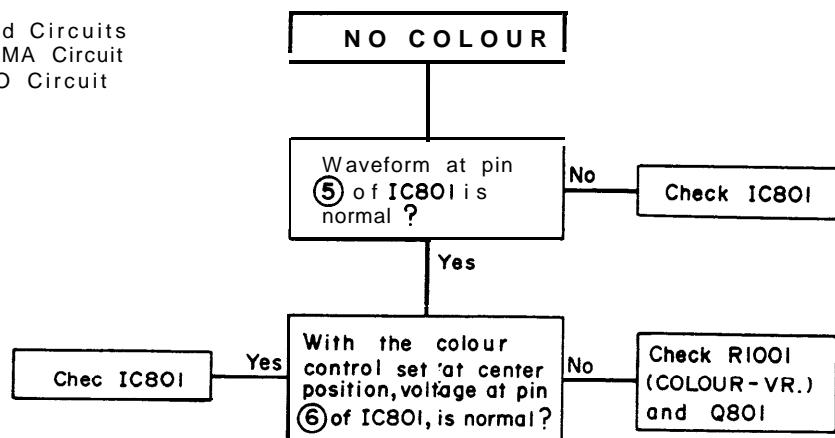
Checked Circuits
 • Vertical Output Circuit



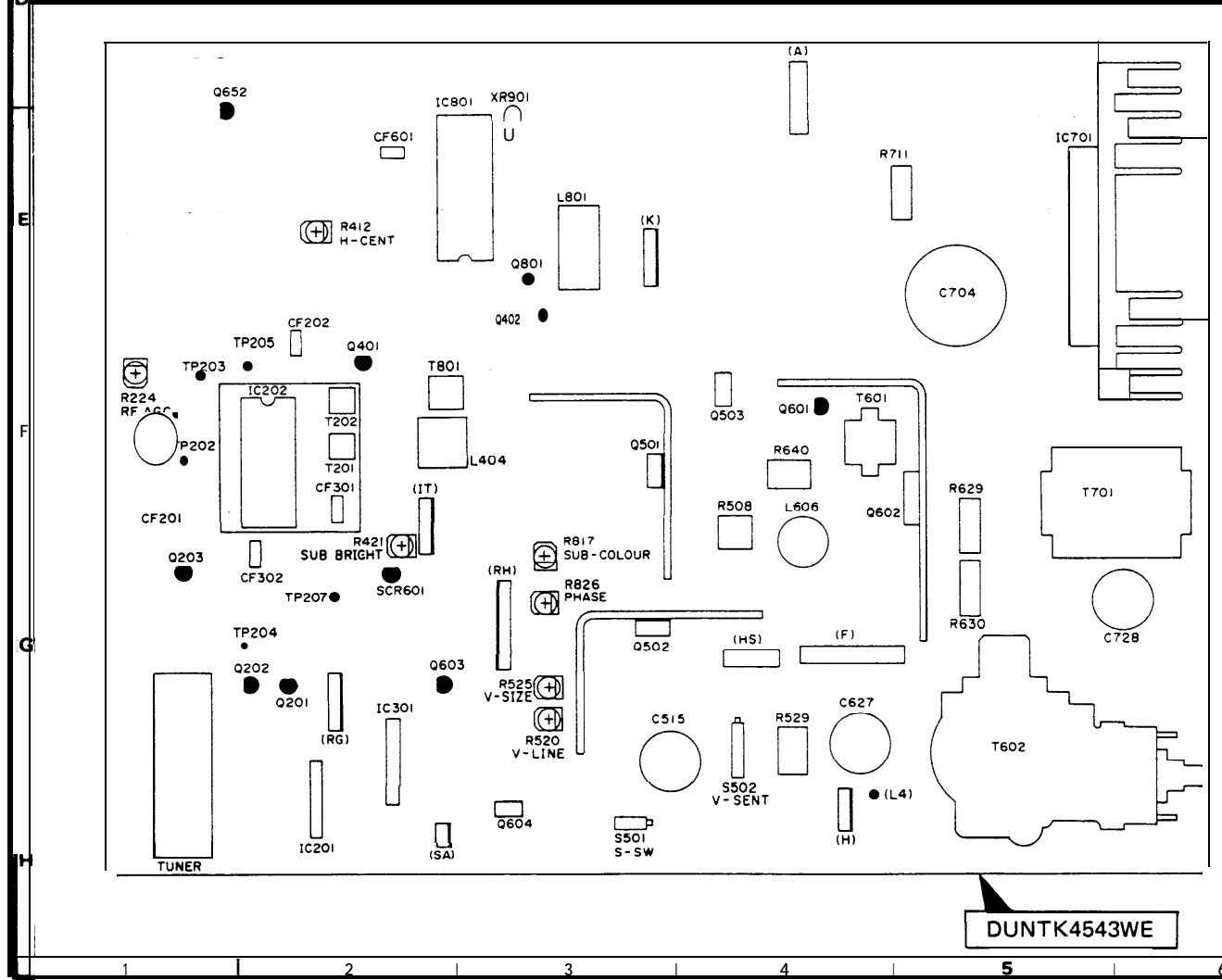
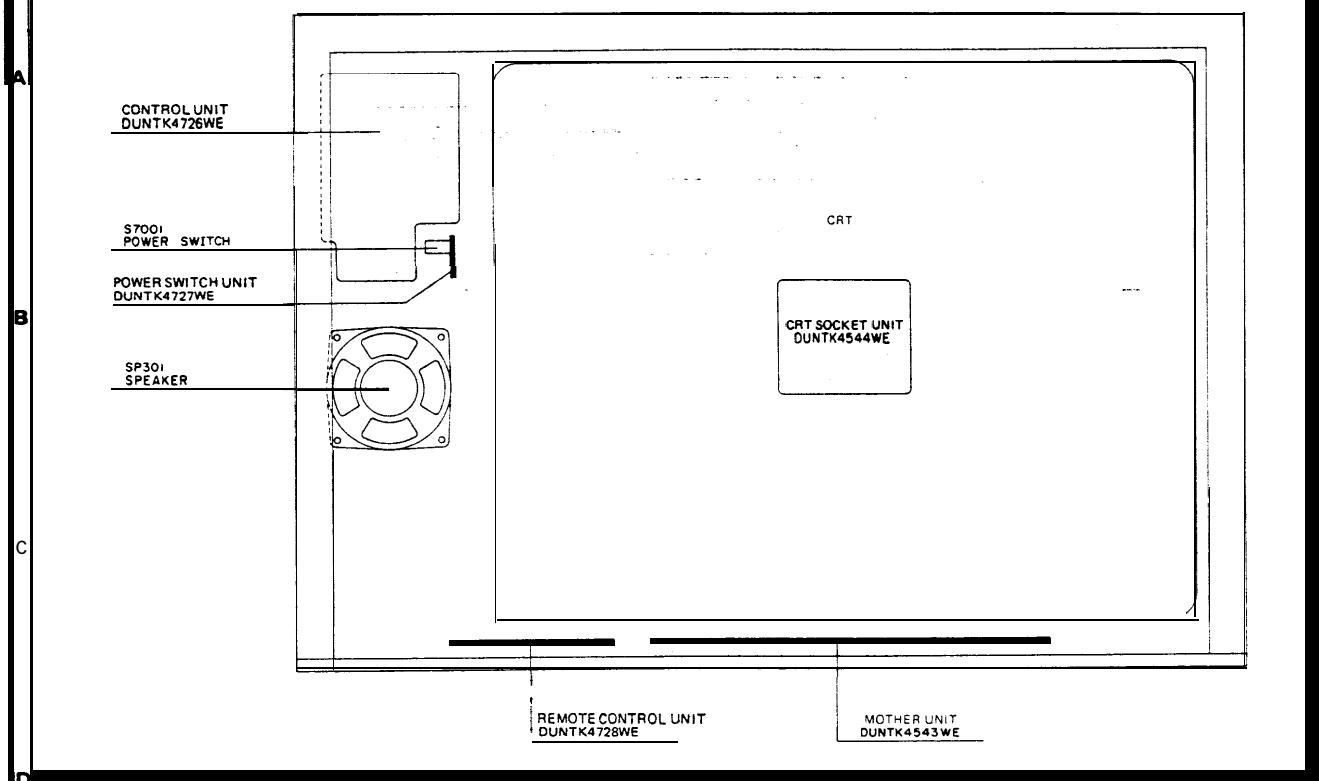
- Checked Circuits
- P-IF Circuit
- AGC Circuit
- Tuner Circuit
- +B Supply Circuit



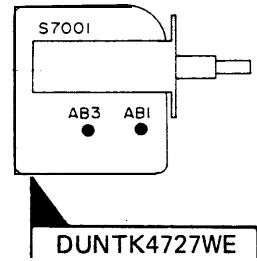
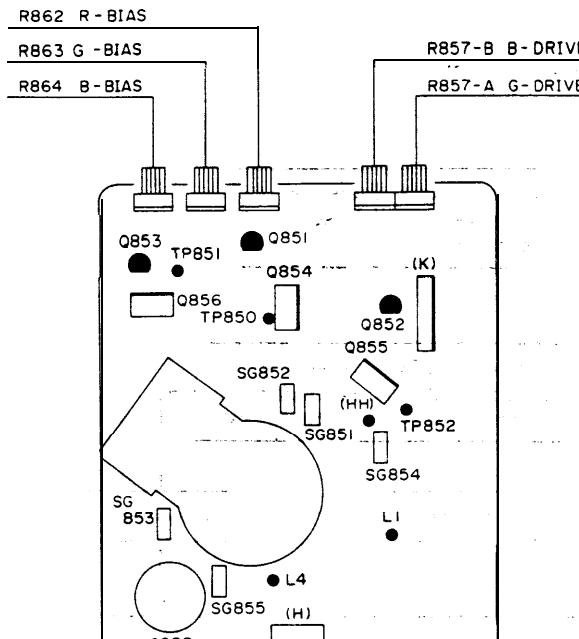
- Checked Circuits
- CHROMA Circuit
- VIDEO Circuit



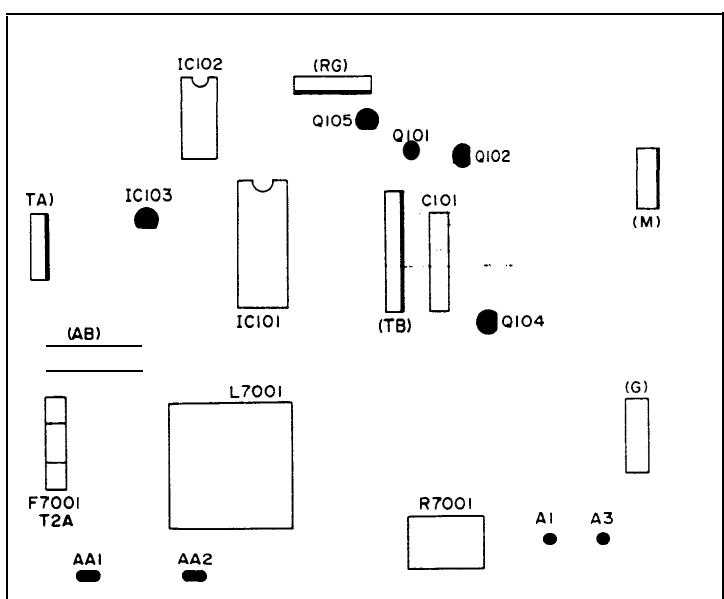
CHASSIS LAYOUT



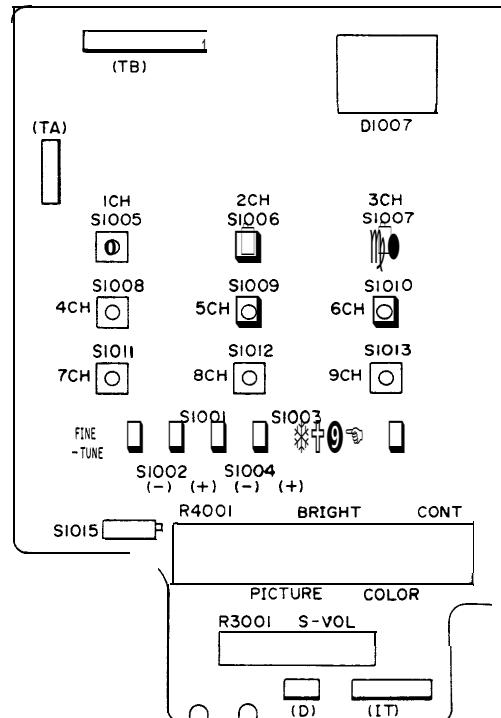
DUNTK4543WE



DUNTK4544WE



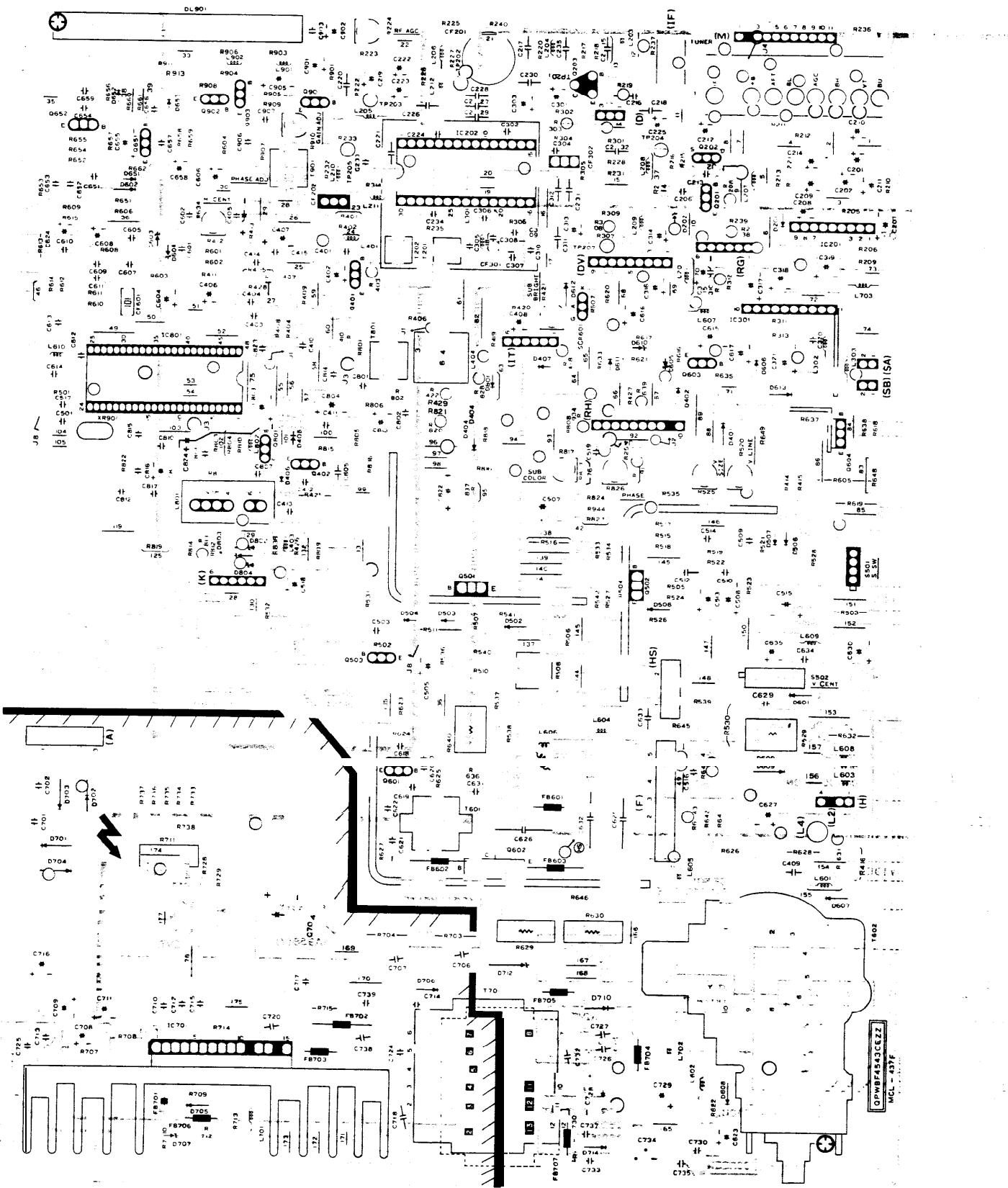
DUNTK4728WE



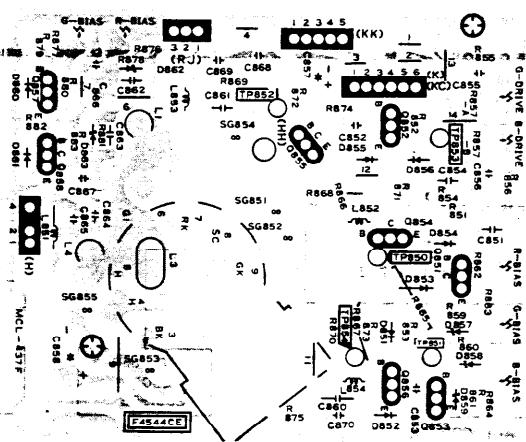
DUNTK4726WE

PRINTED WIRING BOARD ASSEMBLIES

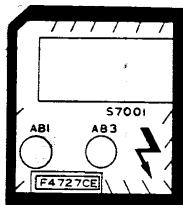
(All the PWBs here are shown as viewed from their wiring sides.)



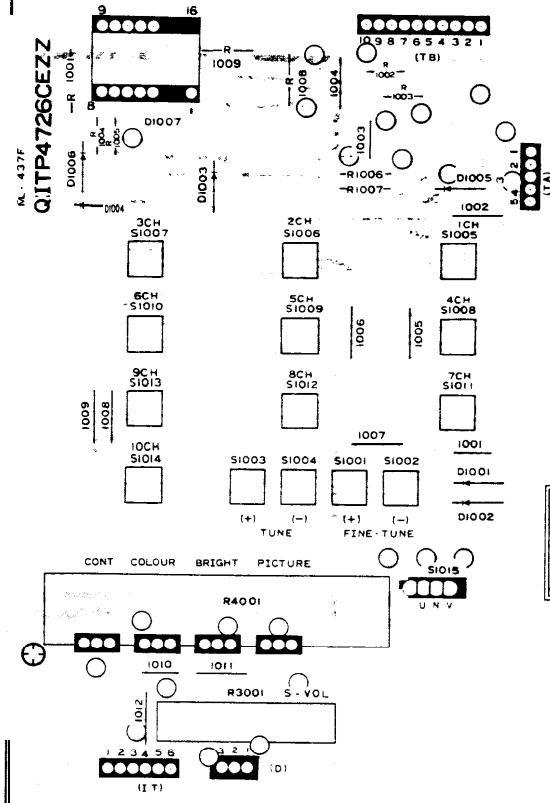
Mother Unit



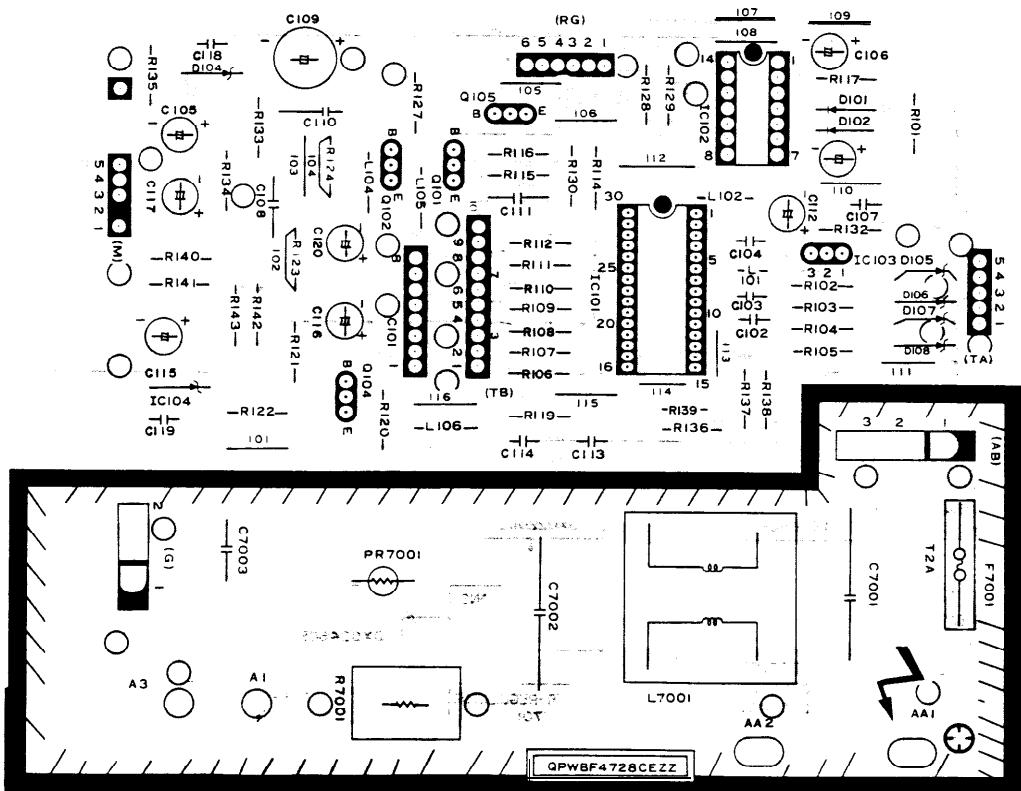
CRT Socket Unit



Power Switch Unit

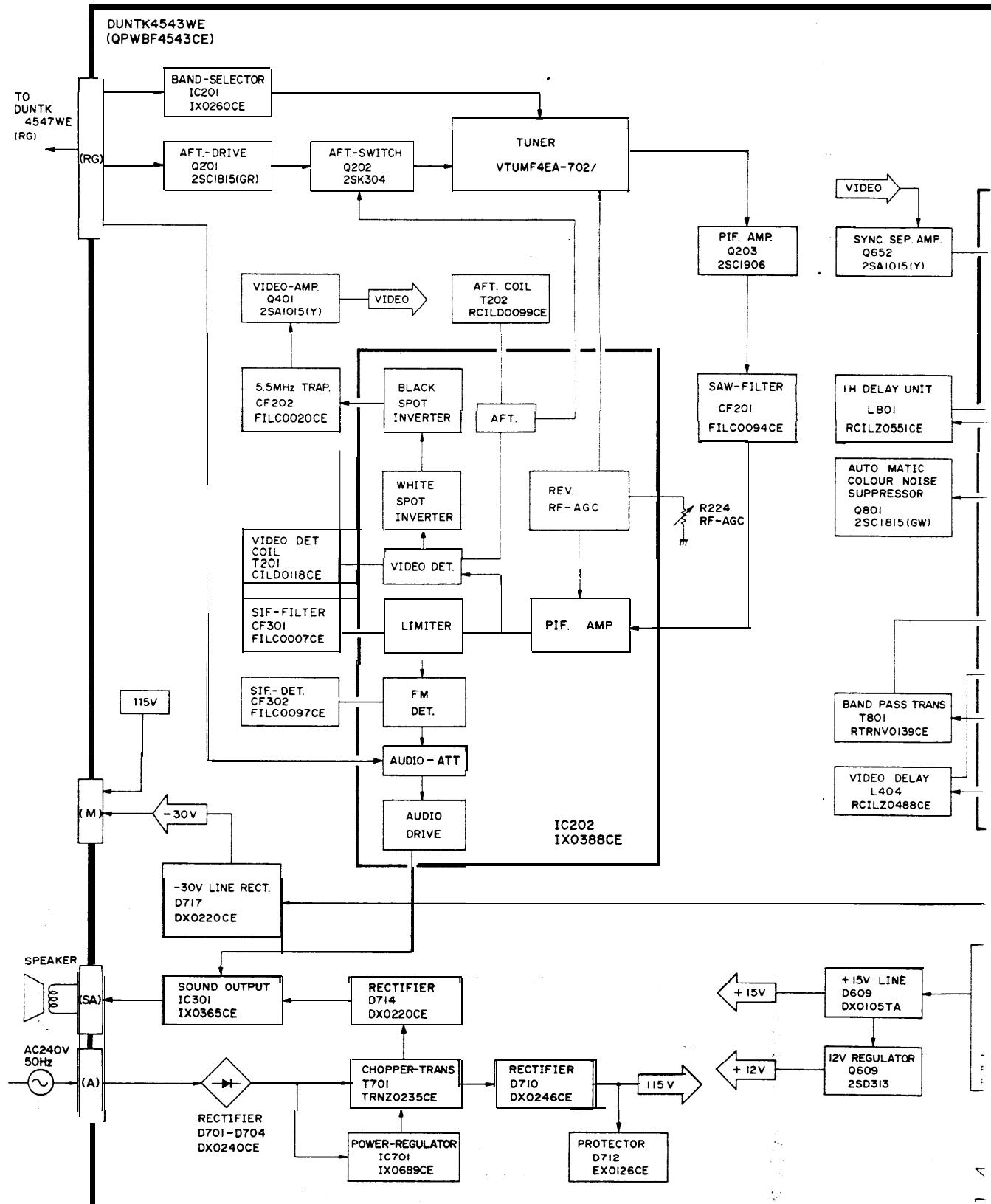


Control Unit

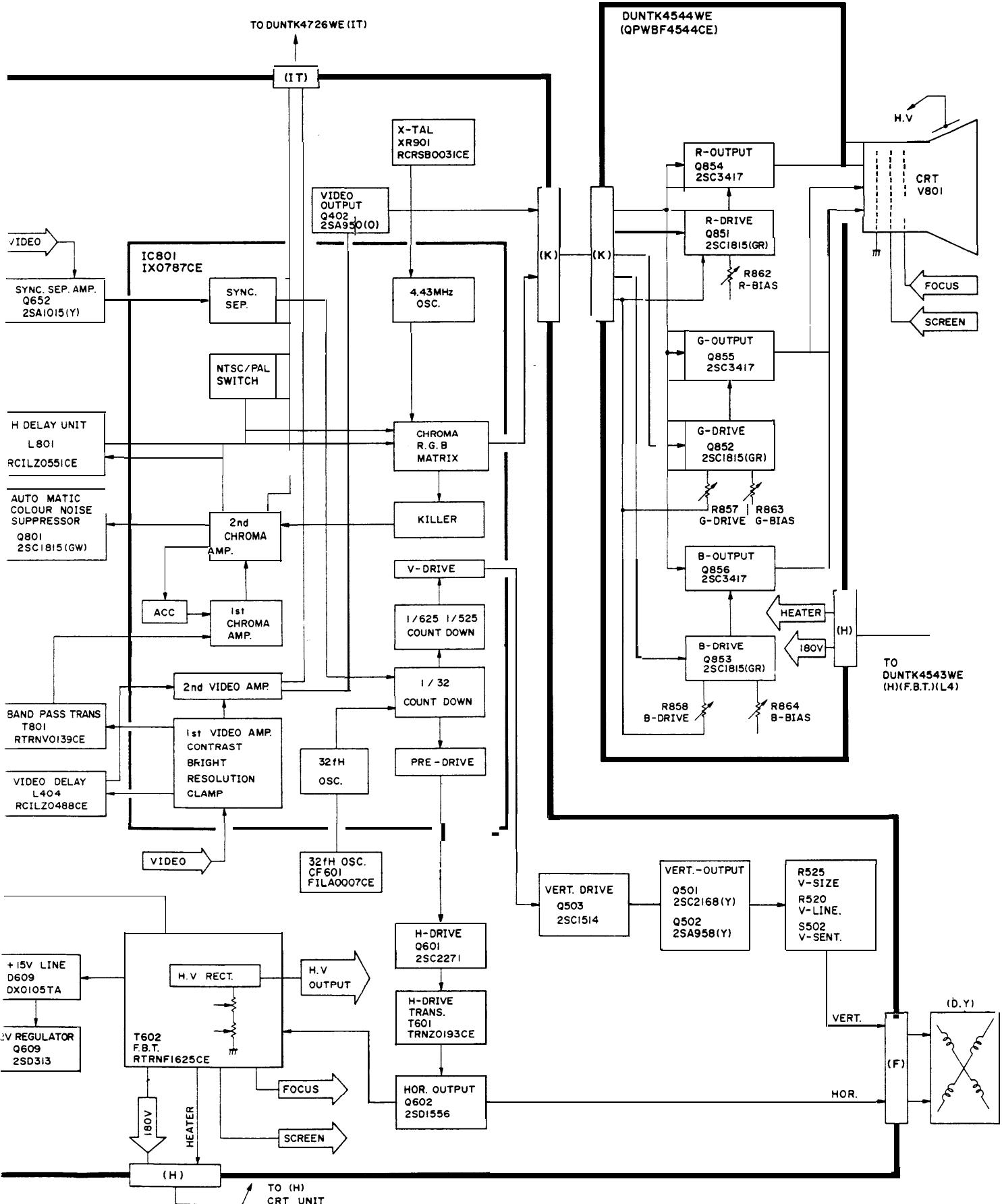


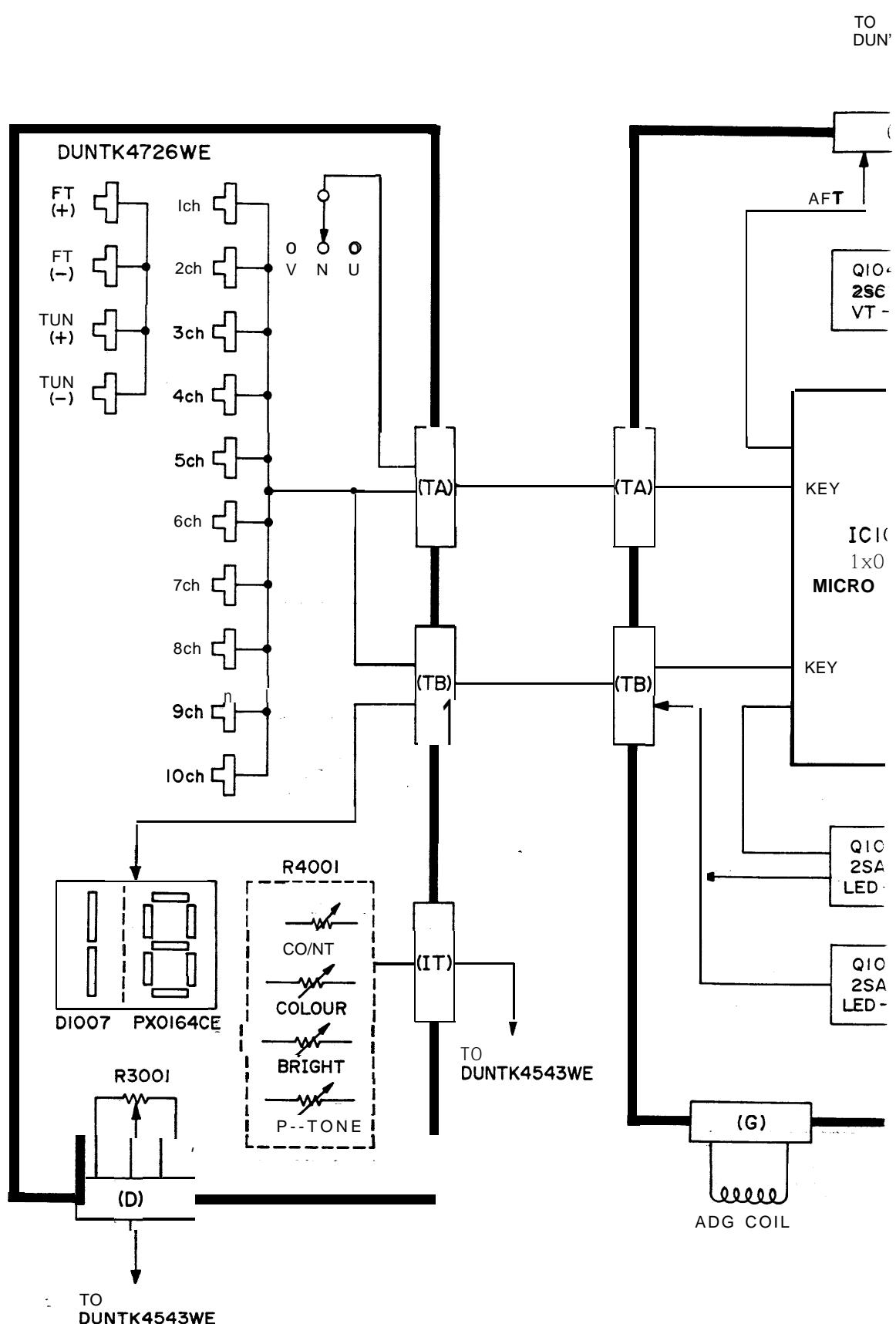
Channel Select Unit

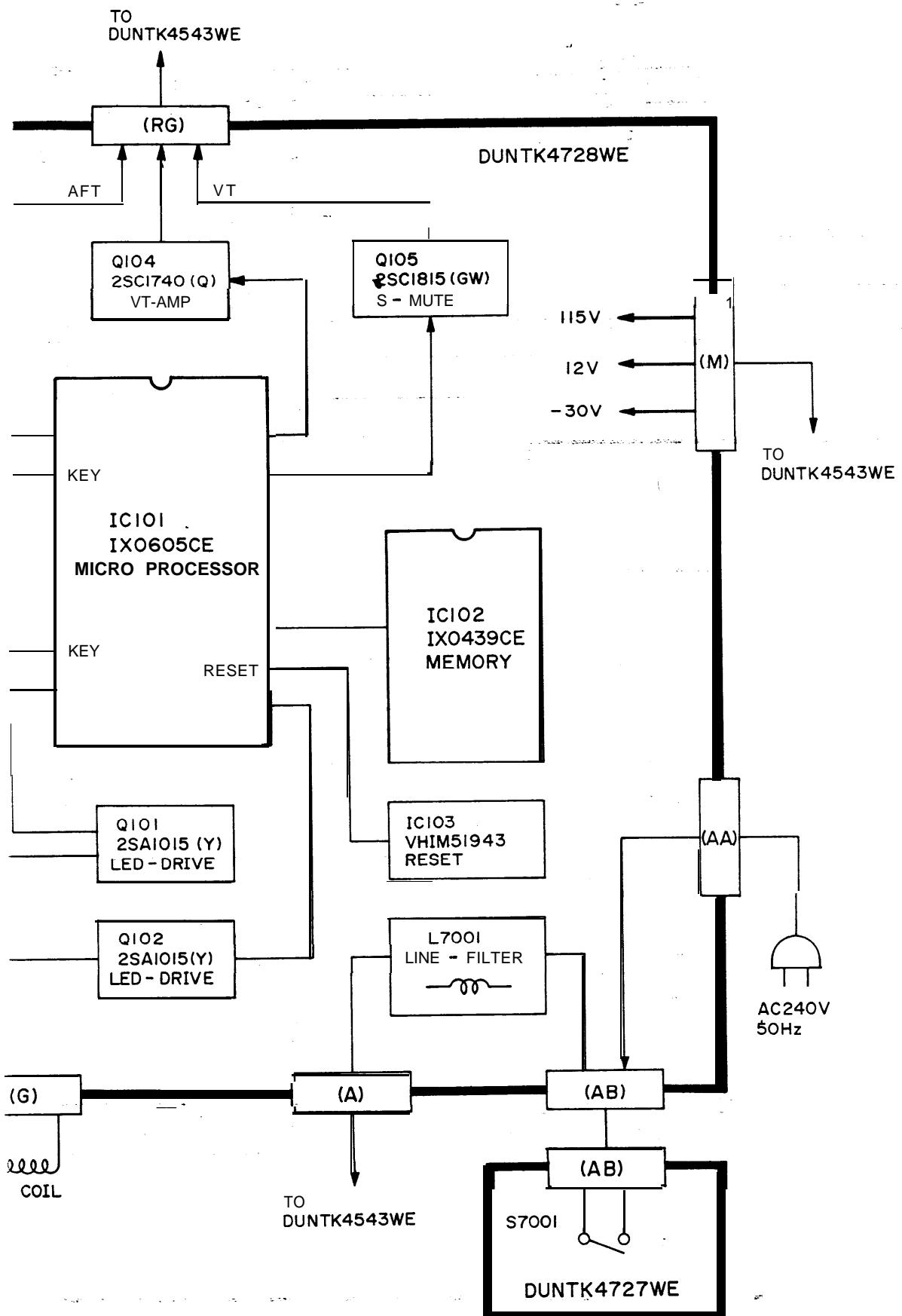
BLOCK DIAGRAM

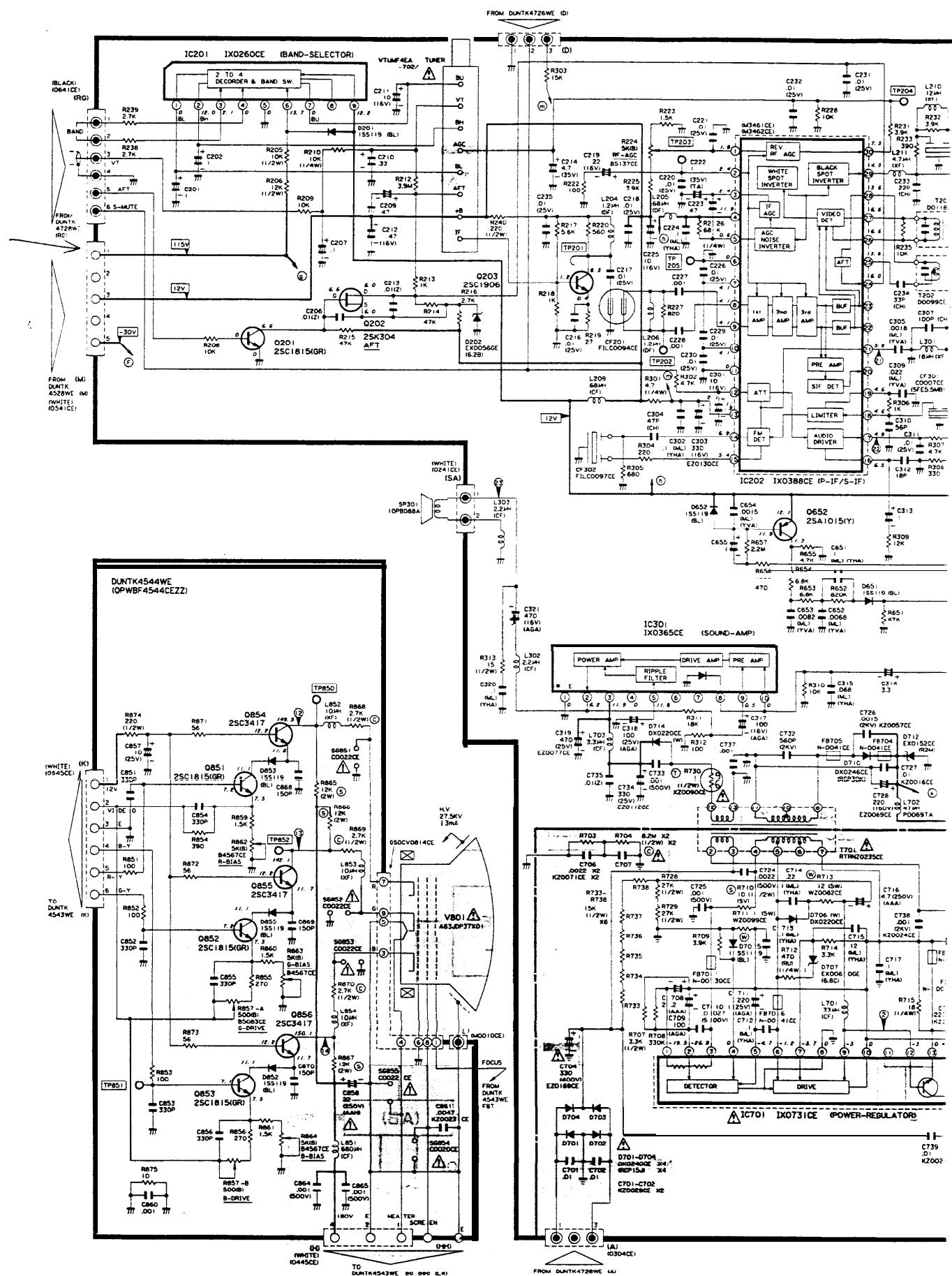


CK DIAGRAM



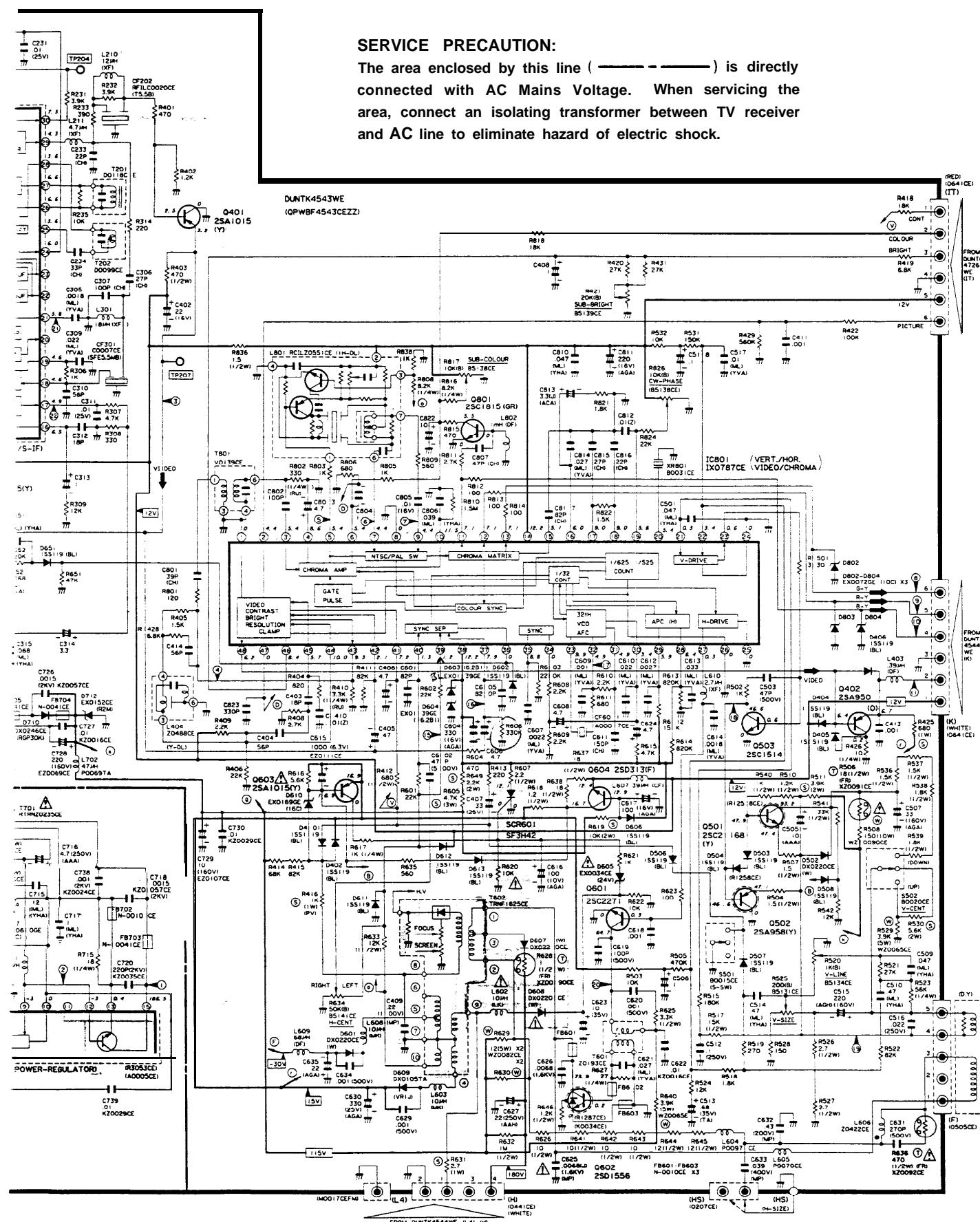
A
B
C
D
E
F
G
H





SERVICE PRECAUTION:

The area enclosed by this line (— — —) is directly connected with AC Mains Voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.



DESCRIPTION OF SCHEMATIC DIAGRAM AND WAVEFORMS

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

CAUTION:

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

All the voltages in each point are measured with digital multi meter.

All these figures represent the voltage levels measured upon reception of colour signals.

Waveform Measurement Conditions

1. Upon receiving EBU colour bar signal of 70 dB in field intensity.

2.  indicates wave form check points (See chart, waveforms and measured from point indicated to chassis ground).

NOTE:

RESISTOR

(1) Resistance values are shown in ohms:
 $K=1,000 \text{ M}=1,000,000$

(2) All resistors are 1/8 watt, unless otherwise noted.

(3) All resistors are Carbon, unless otherwise noted.

(C)..... Solid (W)..... Cement

(S)..... Oxide Film (T)..... Special

(N)..... Metal Coating

CAPACITOR

(1) Capacitance values are shown in $\mu=10^{-6}\text{F}$ otherwise noted
 $p=\mu\mu\text{F}=10^{-12}\text{F}$

(2) All capacitors are 50V, unless otherwise noted.

(3) All capacitors are Ceramic, unless otherwise noted.

(ML)..... Mylar (PF)..... Polypropylene Film

(TA)..... Tantalum

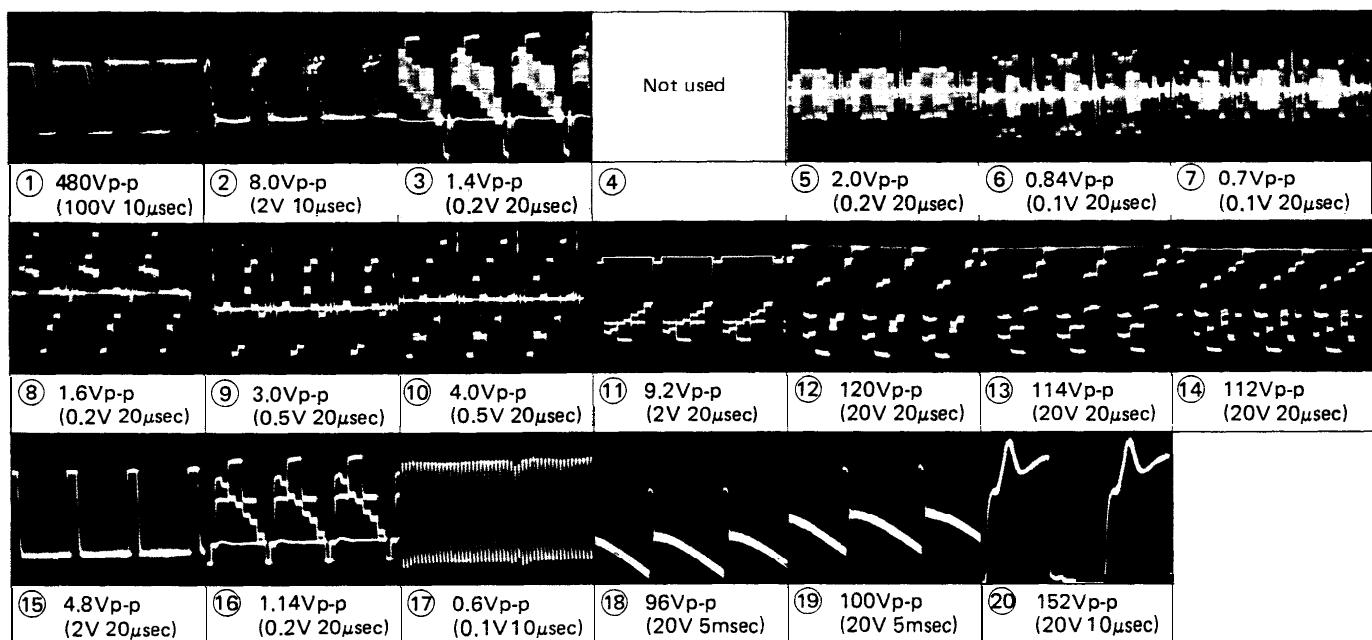
DIODE

Diodes are shown parts name other Diode are shown cathode colour.

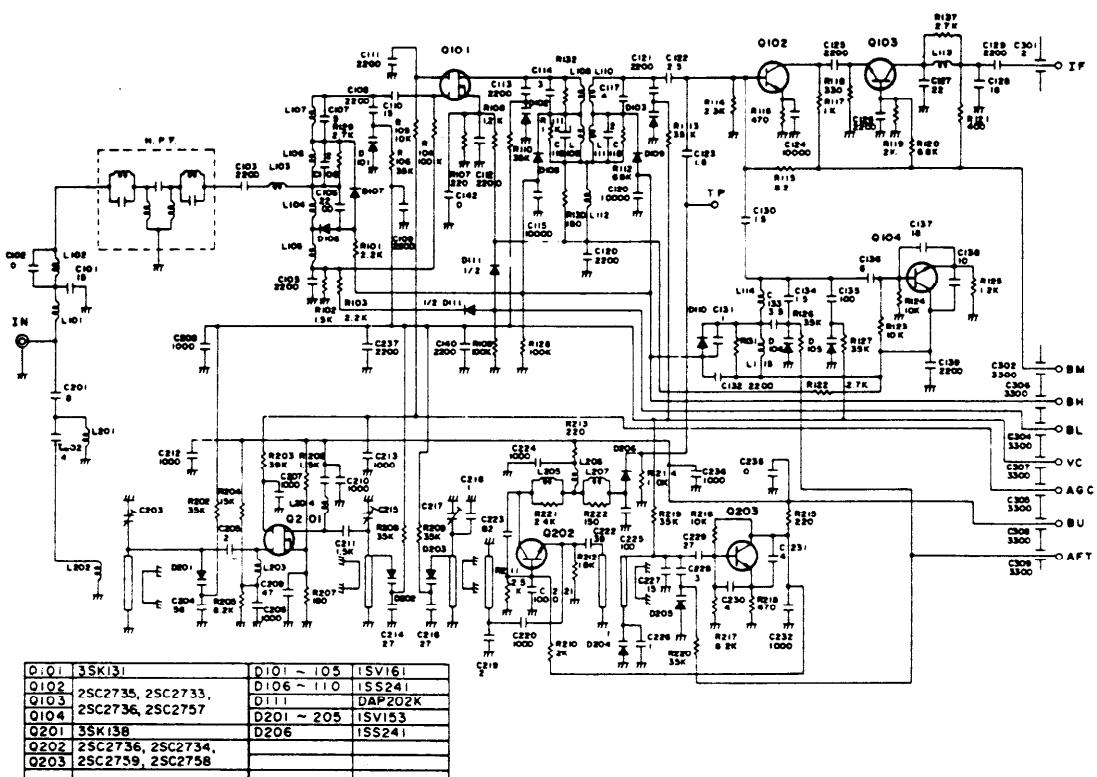
(BL)..... BLUE (BR)..... BLACK

(Y)..... YELLOW (W)..... WHITE

(G)..... GREEN (OR)..... ORANGE



TUNER A VTUMF4EA-702/



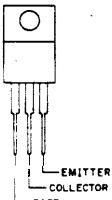
1 2 3 4 5 6

SOLID STATE DEVICE BASE DIAGRAM

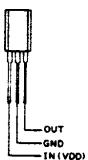
VS2SD313F//IE
VS2SC2168Y//E

VS2SC3417//I

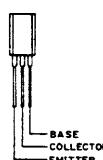
VS2SA958Y//E



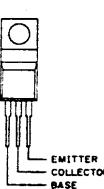
VHIM51943BS-I



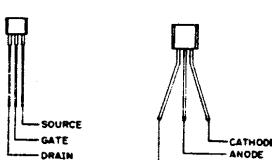
VS2SC227I-EIA



VS2SC1514-/2E



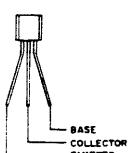
VS2SK304CD/-I

VS2SC1815GW-I
VS2SC1906/IE

VS2SD1556//2E

RH - PX0149CEZZ

VS2SA9505



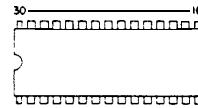
RMPTE0043CEZZ



RMPTCO150CEZZ



RH - IX0388CEZZ



RH - IX0439CEZZ

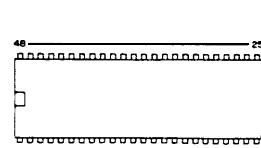
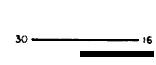
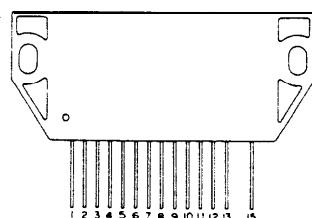
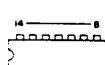
RH - IX0412CEZZ

RH - IX0260CEZZ

RH - IX0731CEZZ

RH - IX0703CEZZ

RH - IX0787CEZZ



CATHODE ANODE

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 in the Replacement Parts Lists. The use of a substitute replacement part which does not have the same safety characteristics 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 |

Ref. No.	Part No.	Description	Code
----------	----------	-------------	------

PICTURE TUBE

Δ V801	VBA63JDP37X01	CRT	CV
Δ L7002	RCI LG0199CEZZ	Degaussing Coil	AX

PRINTED WIRING BOARD ASSEMBLIES (NOT REPLACEMENT ITEM)

	DUNTK4543WEV7	Mother Unit	-
	DUNTK4544WEV4	CRT Socket Unit	-
	DUNTK4726WEVO	Control Unit	-
	DUNTK4727WEVO	Channel Select Unit	-
	DUNTK4728WEVO	Power Switch Unit	-

DUNTK4543WEV7

TUNER

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

	VTUMF4EA-702/	VHFUHF Tuner	BF
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INTEGRATED CIRCUITS

IC201	RH-iX0260CEZZ		AF
IC202	RH-iX0388CEZZ		AQ
IC301	RH-iX0365CEZZ		AK
IC701	RH-iX0731CEZZ		AT
IC801	RH-iX0787CEZZ		AT

TRANSISTORS

0201, 801	VS2SC1815GW-1	2SC1815(GR)	A0
Q202	VS2SK304CD/-1	2SK 304	AC
Q203	VS2SC1906//1E	2SC 1906	AC
0401, .603, 652	VS2SA1015Y/1 E	2SA1015(Y)	AC

Ref. No.	Part No.	Description	Code
Q402	VS2SA9506// - 1	2SA950	AD
Q501	VS2SC2168Y/2 E	2SC2168(Y)	AF
0502	VS2SA958Y//1 E	2SA958(Y)	AC
0503	VS2SC1514- / 2 E	2SC1514	AE
Q601	VS2SC2271- E 1A	2SC2271	AC
Q602	VS2SD1556//2 E	2SD1556	AP
0604	VS2SD313F//1 E	2SD313(F)	AE
Δ SCR601	VHSSF3H42// - 1	SF3H42	AG

DIODES

0201, 401, 402, 404 406, 503, 504, 506 508, 602, 606, 611 613, 651, 652, 705	VHD1SS119// - 1		AB
D202	RH-EX0056GEZZ	Zener Diode	AB
D502, 601, 607, Δ 608, 706, 714	RH-DX0220CEZZ	Zener Diode	AB
D603, 604	RH-EX0139GEZZ	Zener Diode	AA
Δ D605	RH-EX0034CEZZ	Zener Diode	AC
D609	RH-DX0105TAZZ	Zener Diode	AD
Δ D610	RH-EX0169GEZZ	Zener Diode	AA
Δ D701 Δ 704	RH-DX0240CEZZ	Zener Diode	AB
D707	RH-EX0060GEZZ	Zener Diode	AA
D710	RH-DX0246CEZZ	Zener Diode	AD
D712	RH-EX0152CEZZ	Zener Diode	AE
D802 804	RH-EX0072GEZZ	Zener Diode	AA

PACKAGED CIRCUIT

XR801	RCRSB003 1 CEZZ	Crystal	AK
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COILS

L204, 206	VP - DF1R2M0000	1.2 μ H	AB
L205, 609	VP - DF680K0000	68 μ H	A%
L209	VP - CF680K0000	68 μ H	
L210	VP - XF120K0000	12 μ H	AB
L211	VP - XF4R7K0000	4.7 μ H	AB

Ref.No.	Part No.	Description	Code	Ref. No.	Part No.	Description	Code
AR 703. A 704 R710 R711	V R C - UA2HG825K VRS- SV2HC1OOJ R R - WZ0099CEZZ	8.2M 1/2W Solid 100 1/2W Oxide Film 5 w Cement	AA AA AD	C858 C861 C864, 865	VCEAAH2EW226M 2 RC - KZ0023CEZZ 0.0047 VCKYPA2HB102K 0.001	250 Electrolytic Ceramic 500 V Ceramic	D AD AA
S W I T C H E S							
S501 S502	QSW- BO01 5CEZZ QSW-B0020CEZZ	Service Vertical Center	AC AE	R865, 866, 867	VRS- VV3DB123J	12k 2W Oxide Film	AA
MISCELLANEOUS							
FB601, 602, 603, 702 FB701 FB703, 704, 705, 706	RBL N- 001 OCEZZ RBLN- 0030CEZZ RBL N- 0041 CEZZ	Ferrite Bead Ferrite Bead Ferrite Bead	AC AC AB	ASG851, A 852, A 853, A 855 ASG854	QSÖCV0814CEZZ QSPGC0022CEZZ QSPGC0020CEZZ	CRT Socket Spark Gap Spark Gap	AG AB AC
DUNTK4726WEV0							
DUNTK4544WEV4							
TRANSISTORS							
Q851, 852, 853 Q854, 855, 856	VS2SC1815GW-1 VS2SC3417//1E	2SC1815(GR) 2SC3417	AB AC	01001 006 D1007	VHD1SS119//1 RH- PX0164CEZZ	1SS119 Channel LED	AB AN
DIODES							
D852, 853, 855	VHD1SS119//1		AB	CONTROLS			
L851 L852 854	VP- CF 68 1 K0000 VP- XF 1 OOK0000	680µH 10µH	AB AB	AR3001 AR4001	RVR- Q4032CEZZ RVR- G4013CEZZ		AF AG
MISCELLANEOUS							
COILS							
R857-A/ -B R862 863, 864	RVR- B5083CEZZ R V R - B4567CEZZ	500k(B)x2 Green Drive/ Blue Drive Red Bias Green Bias Blue Bias	AC AC	AS1001 1014 AS101 5	RR MCUO16OC EZZ QSW- K0030CEZZ QSW- B00188CEZ	Remote Control Receiver Band Select	AR AB AD
DUNTK4727WEV0							
SWITCH							
CONTROLS							
DUNTK4728WEV0							
INTEGRATED CIRCUITS							
IC101 ICI02							
RH- IX0605CEZZ RH- IX0439CEZZ							
AS AQ							

Ref .No.	Part No.	Description	Code	Ref. No.	Part No.	Description	Code
IC103 IC104	VHi M51943BS - 1 RH- i X0249CEZZ		AP AE			CABINET PARTS	
						C C A B A 5 1 6 6 C E S 0 Not Available	Front Cabinet Ass'y
TRANSISTORS							
Q101, 102	VS2SA1015Y / 1E	2SA1015(Y)	AC		GL E GP 9 0 0 7 C E Z Z C WAK P 1 1 3 6 C E 3 7	Front Cabinet Leg Front Frame Ass'y	— AC BB
Q104	VS2SC1740QR1E	2SC1740(Q)	AB		Not Avaiable	Front Frame	— AL AD AE
Q105	VS2SC1815GW- 1	2SC1815(GR)	AB		GDō RF 1 5 7 2 C E S A HBDGB 1 0 5 8 A F S A	Door Badge "SHARP"	AD AF AD AW AR
DIODES							
D101, 102	VHD1SS119 / / - 1		AB		HBDGD301 6 C E S A Hi N D M 2 4 8 3 C E S A	Badge "LINYTRON" Indication Metal	— AC AE
D105	RH- EX0044TAZZ	RD8.2	AB		Hi N D M 2 4 8 5 C E S A Hi N D P 2 3 7 9 C E S A	Decoration Metal Indication LED	AD AF AD AW
108					HP NL C 1 5 6 3 C E S A HP NL C 0 1 6 0 C E S A	Indication Panel Punching Plate	— AC AE
D104	R H - EX0051GEZZ	Zener Diode	AA		CCABB1650WEV1 Not Available	Back Cabinet Ass'y Back Cabinet	AC
PACKAGED CIRCUITS							
C101 PR7001	R M P T E 0 0 4 0 C E Z Z R M P T P 0 0 2 8 C E Z Z	Positive Coefficient Thermister	AD AG		J BTN- 1 3 2 1 C E S C J BTN- 1 3 5 4 C E S A	Button, Power Button, Channel	— AC AE
COILS							
L101	V P - MK 5 6 0 K 0 0 0 0	56μH	AB		J KNBP 1 0 9 9 C E S A	Knob	AC
L102	VP- XF 1 ROM0000	1μH	AB				
L104, 105	VP- XF 5 R 6 K 0 0 0 0	5.6μH	AB				
L106	VP - XF 1 2 0 K 0 0 0 0	12μH	AB				
L7001	R C i L F 0 0 9 0 C E Z Z	Line Filter	AL				
CAPACITORS							
C109 C7001 C7003	VCEAGA0JW337M VCFYSK3AB224K VCFYSB2GB683K	330 6.3V Electrolytic 0.22 1kV Mylar 0.068 400V Mylar	AB AG AD				
RESISTOR							
R7001	RR - WZ0096CEZZ	6.8 10W Cement	AE				
MISCELLANEOUS							
F7001	QFS- C 2 0 2 2 T A Z Z QFS HD1002CEZZ QACCL 5001CEZZ	Fuse, T2A Fuse Holder (2 Used) AC Cord	AE AA AP				
MISCELLANEOUS							
SP301	VSP0010PBD88A	Speaker	AP				

CX-6336

S H A R P

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