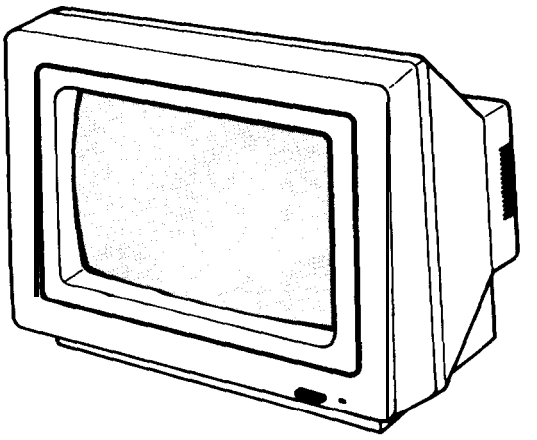
GoldStar

MONOCHROME MONITOR
SERVICE MANUAL

CAUTION
BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTIONS", IN THIS MANUAL



MODEL: **MBM-2105G/A (MC-3 CHASSIS)**

GoldStar

FEATURES

- 2000 display characters in a 8 x 8 dot format.
- 18 MHz bandwidth, medium class, composite signal input.
- This monitor is compatible with a variety of home and personal computers

CONTROLS LOCATION

The MBM-2105G/A monochrome monitor uses a RCA jack connector.
The input signal is input through the RCA jack connector.
The input signal is based on the composite level.
Figure 2 shows the monitor controls on the front and rear panels.

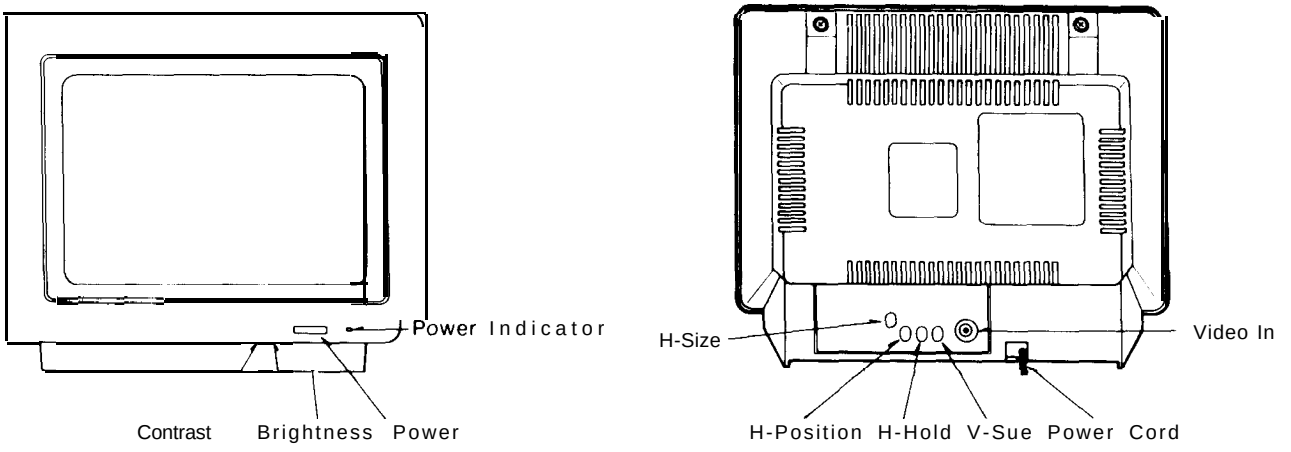


Figure 2, Monitor Controls

NOTE: Monitor cabinet not used on 6300T Models.

● POWER (PUSH-ON)
Turn on the monitor by pressing the power switch. The power indicator lights when the power is ON. Always turn on the monitor before you turn on the computer.
To turn the power OFF, just press this switch again.

● Brightness
Turn this knob clockwise to increase brightness.

● Contrast
Turn this knob clockwise to increase contrast.

● **V-Size**
Turn this knob to adjust the vertical size of the picture.

● H-Hold
Turn this knob to stop horizontal rolling of the picture.

● H-Position
Turn this knob clockwise to move the center of the picture to the right; turn the knob counterclockwise to move the center of the picture to the left.

● **H-Size**
Turn this knob to adjust the horizontal size of the picture.

CIRCUIT DESCRIPTION

1. VIDEO AMPLIFIER

The Fig. 3 details the cascade video amplifier. Video amplification is provided by the TR303 and TR304. TR303 and TR304 are connected in a cascade configuration. TR303 operates as a common emitter and TR304 operates in the common base configuration. This minimized the miller effect input capacitance and the difining breakdown parameter for TR303 which becomes BVCBO as opposed to BVCEO.

This enables selection of a higher speed/lower breakdown transistor to be used in the video amplifier.

The emitter of TR304 is driven by the collector of TR303 which is a high frequency transistor. Overall voltage gain for the stage is determined by the ratio of R312 to R316. Bandwidth is within 3dB to 32 MHz.

2. POWER SUPPLY

The 120V AC line voltage is applied to the primary of the T901 where it is stepped down through the secondary winding to approximately 17V (AC). After passing through the bridge rectifier circuit and filter (C905) the regulated DC supply voltage is approximately 18V (DC). The 18V unregulated B+ voltage is applied directly to the collector of the B+ regulator (TR901). A voltage divider network (R905, VR901, R906) in which the B+ adjustment control (VR901) is used to establish the desired operating level (12V DC). When AC input voltage variations occur, a correction voltage is produced at the base of TR903 and is coupled directly to the base of the error amplifier (TR902). This correction voltage is then passed from the emitter of TR902 directly to the base of TR901 and B+ voltage regulation is then accomplished.

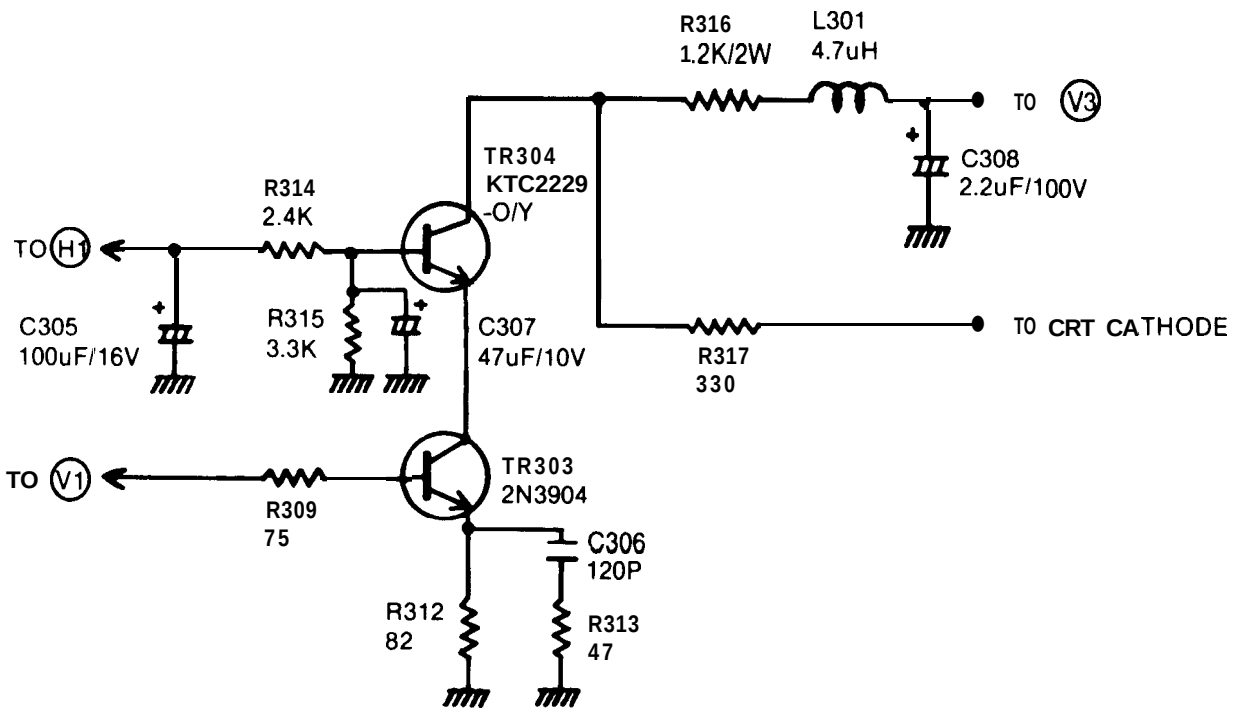


Figure 3, **Video Amplifier**

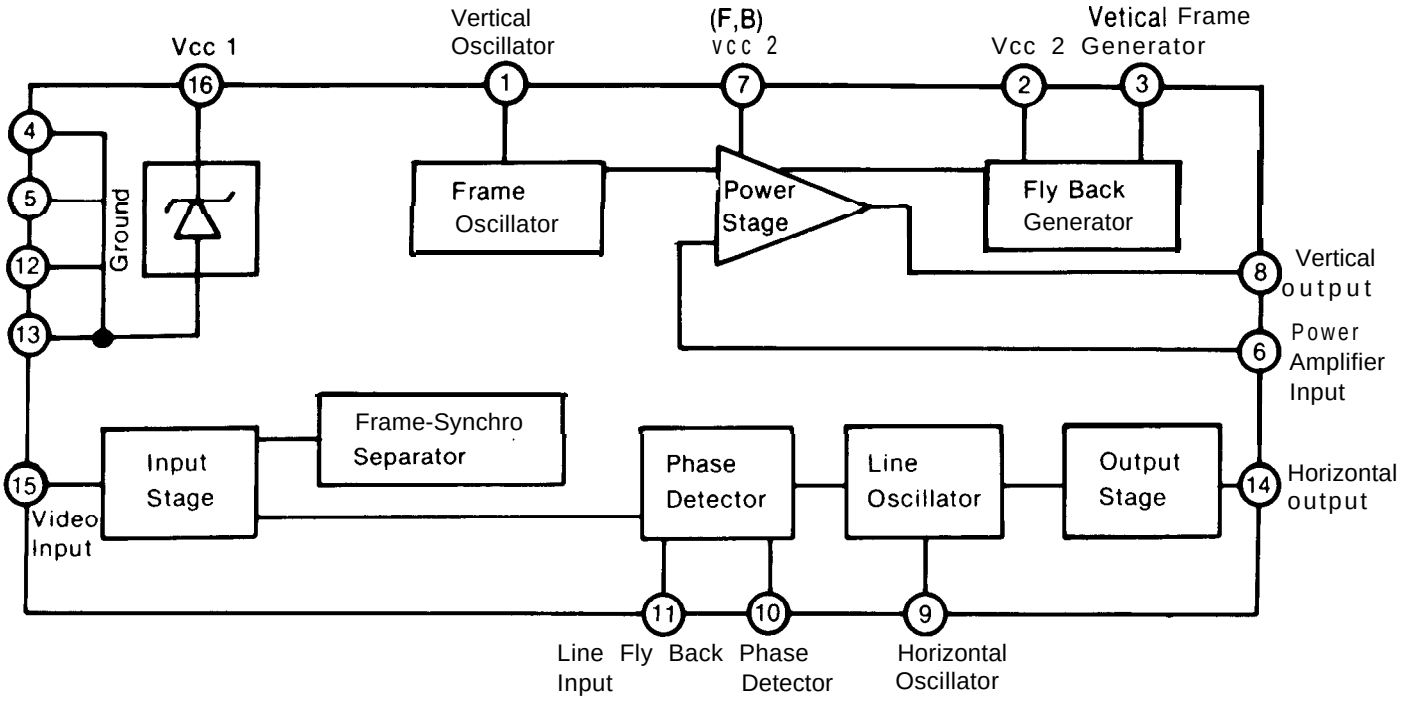
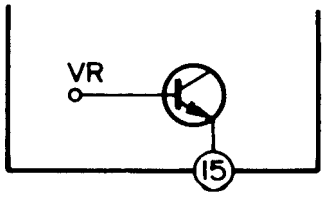


Figure 4, BLOCK DIAGRAM OF THE TEA 2037A

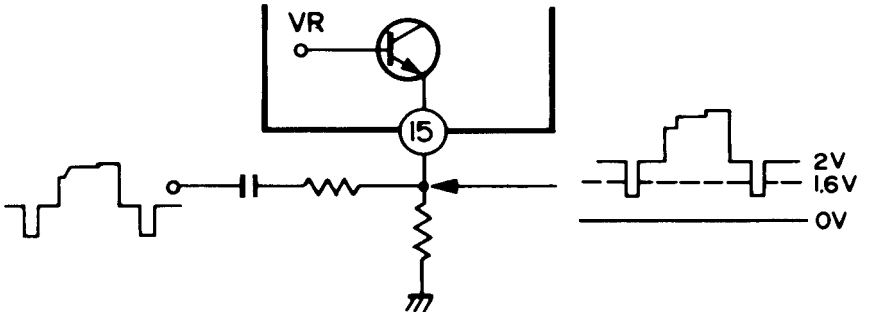
3. COMPOSITE VIDEO INPUT AND HORIZONTAL/ VERTICAL DEFLECTION

3-I VIDEO INPUT (PIN 15)

The detection level for negative sync pulse at the sync separation input (pin 15) is set at 1.6V. When the voltage at emitter of the Transistor (pin 15) is above 1.6V, the transistor is cut off. Voltage lower than 1.6V enables the transistor to conduct and the internal circuitry is enabled for synchronization function.



3-2 COMPOSITE VIDEO INPUT (PIN 15)



3-3 LINE (H) OSCILLATOR (PIN 9)

The line oscillator is of the type which charges and discharges a capacitor, since a perfectly linear sawtooth wave form is not required.

The free running frequency is dependent on C705, R705 and VR702 and is governed by this expression To = 085 x C705 x R705 where To is the line oscillator free running frequency.

3-4 FRAME(V) OSCILLATOR (PIN 9)

Oscillator thresholds are internally fixed by resistor C601, R603 are used to determine the free-running frequency, the oscillator free-running frequency is given by To = 0.15 x C601 x R603.

ADJUSTMENT

1. REGULATED B + ADJUSTMENT **(VR901)**

Connect high impedance voltmeter between TR901 emitter and ground rotate the B + adjustment control (VR901) to obtain a reading of 12.0 ± 0.1V.

2. FOCUS **(VR704)**

Adjust the focus control (VR704) for best overall focus of the test pattern (marked with the symbol ''%''). Usually the center and corners of the screen do not focus at the same setting and a compromise must be made.

3. VERTICAL **SIZE (VR601)**

The vertical size control (VR601) should be adjust for the picture to fill the screen vertically.

4. HORIZONTAL SIZE **(L703)**

The horizontal size control (H-site coil) should be adjusted for the picture to fill the screen horizontally.

5. HORIZONTAL POSITION **(VR701)**

The horizontal position control (VH701) snould be adjusted for the horizontal picture position.

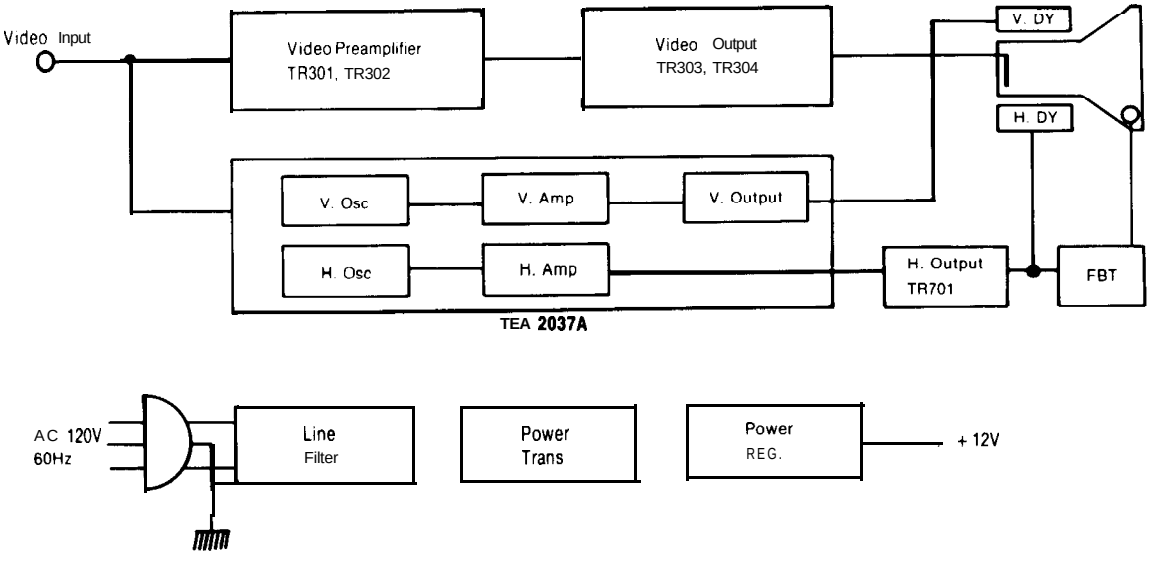
6. SUB-BRIGHT (VR703)

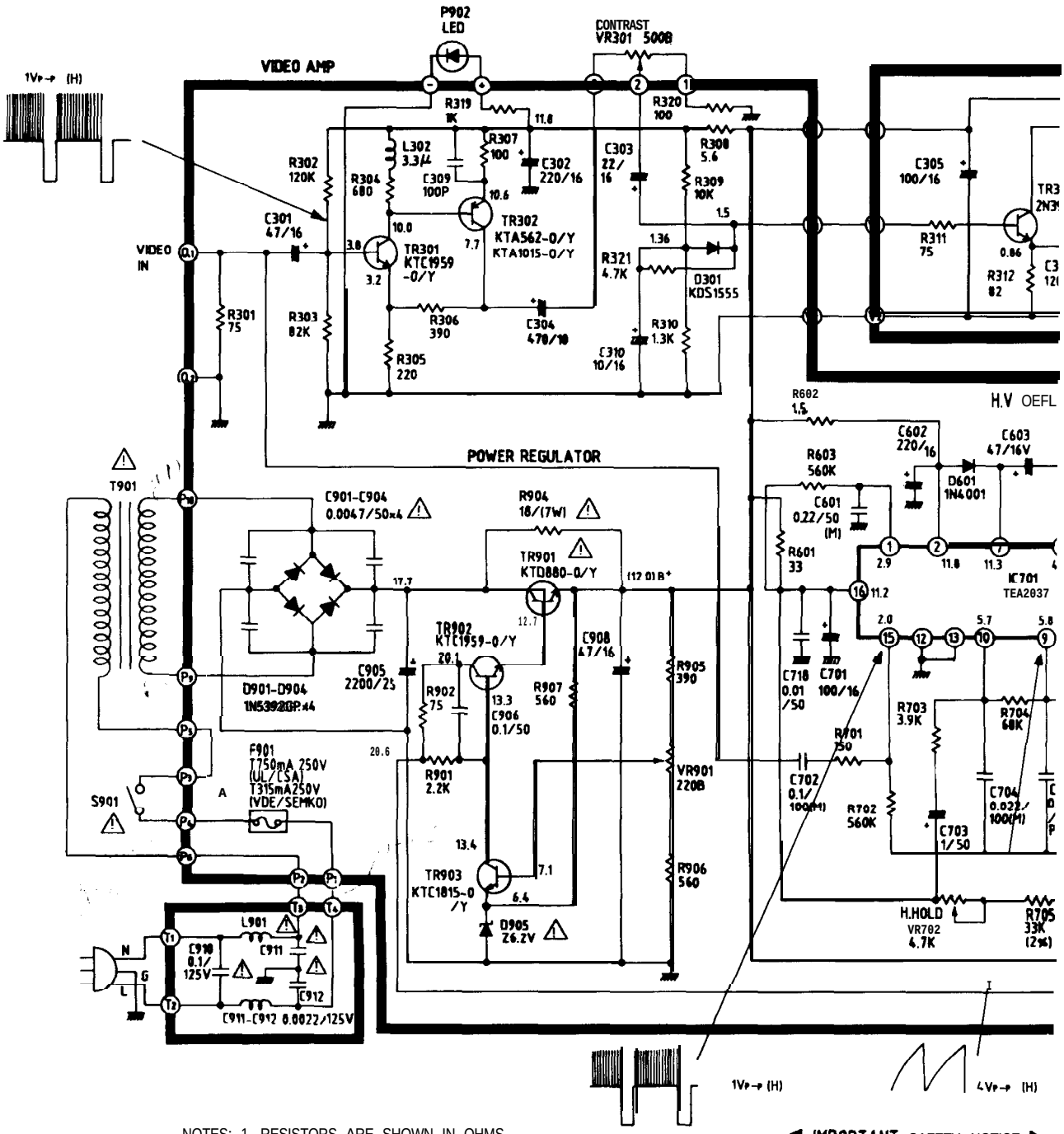
Adjust subbright control (VR703) for visual cut off of the raster when external brightness is turned to maximum

7. CENTERING ADJUSTMENT

It the raster is not centered horizontally and vertically it may be centered by removing the cabinet back and adjusting the centering tabs on the neck of the tube, located at the rear of the deflection yoke. Turn the whole device clockwise or counterclockwise. To increase the amount of raster shift move the two tabs which project from the device farther apart, if raster is tilted on an angle, it may be straightened by loosening the deflection yoke clamp and rotating the deflection yoke.

BLOCK DIAGRAM



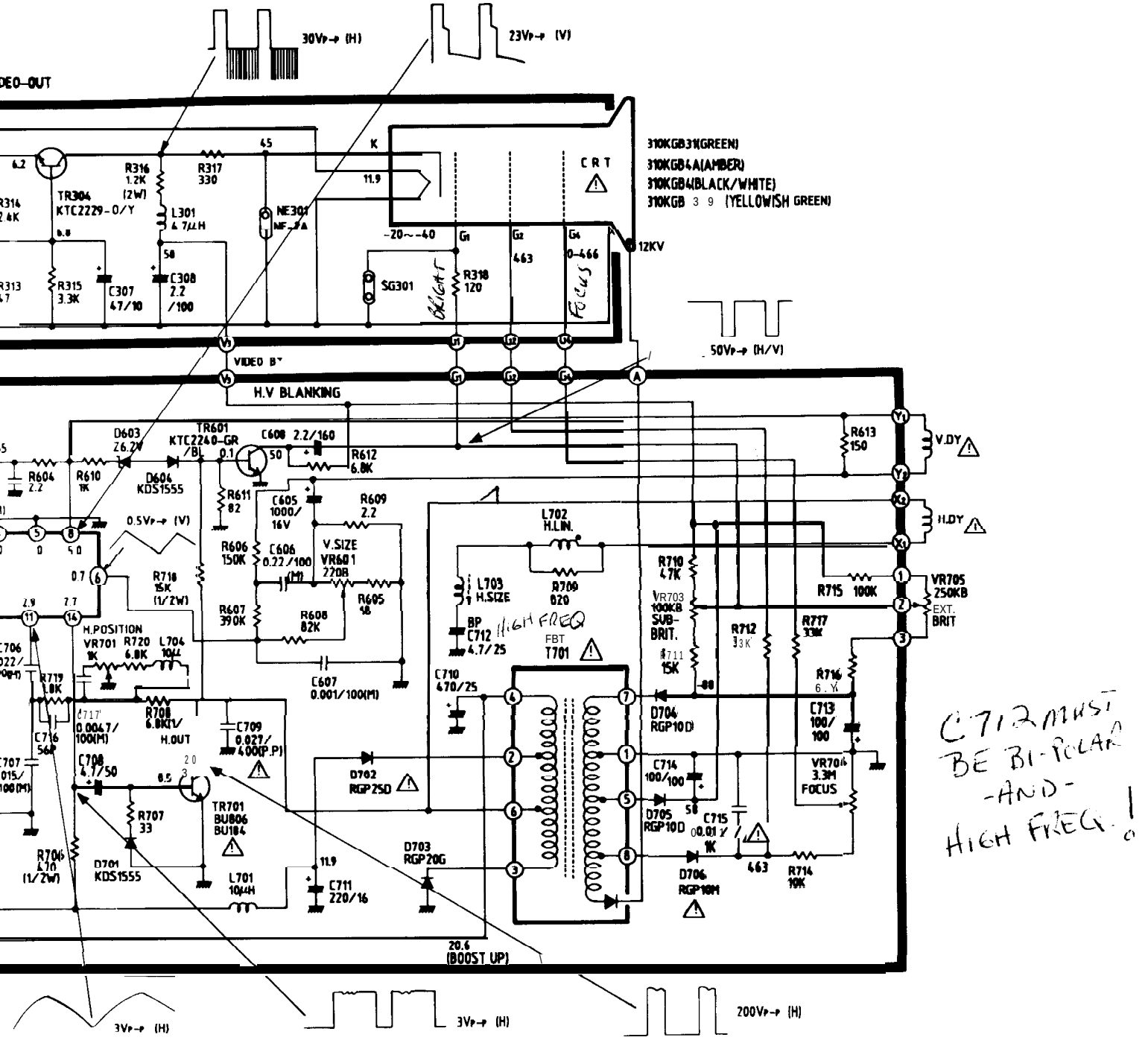


NOTES: 1. RESISTORS ARE SHOWN IN OHMS
K = 1.000 M = 1,000,000
2. CAPACITORS ARE SHOWN
IN uF OTHERWISE NOTED P = μμ
3. All RESISTORS ARE ± 5%
TOLERANCE UNLESS OTHERWISE NOTED

◀ IMPORTANT SAFETY NOTICE ▶

THE ⚠SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCOR
FEATURES IMPORTANT FOR PROTECTION FROM X-RADIA
ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS
ONLY MANUFACTURER'S SPECIFIED PARTS BE USED F
COMPONENTS IN THE ⚠SYMBOL MARK OF THE SCHE

DIAGRAM



C712 MUST BE BI-POLAR -AND- HIGH FREQ.!

◀ IMPORTANT AVIS SUR LA SÉCURITÉ ▶

TES SPECIAL FIRE AND TIAL THAT HE CRITICAL

LA ⚠ SYMBOLE MARQUE DE CE DIAGRAMME SCHEMATIQUE COMPREND DIMPORTANTES CARACTÉRISTIQUES SPÉCIALES CONÇUES POUR PROTÉGER DES RAYONS X, ET DES DANGERS DINCENDIE ET DE SECOUSSES ÉLECTRIQUES. EN CAS DE BESOIN SI DES PIÈCES DE CETTE ⚠ SYMBOLE MARQUE DOIVÊNT ÊTRE REMPLACE'S N'UTILISEZ QUE DES PIÈCES SPÉCIFIÉES PAR LE HANUFACTURIER.

484-309A

D | E | F | G

TROUBLESHOOTING GUIDE

NO VIDEO

VIDEO IS OK BUT DISPLAY SIZE IS SMALL AND WAVY → TR902, TR903, D905, TR901 AND POWER REG CIRCUIT

CHECK BETWEEN TR901 E AND GROUND 12V
- 0V OR SMALL → TROUBLE IN HORIZONTAL CIRCUIT D702, D703, C710, C709 TR701, C712, D704, D705 D706, C713, C714, C715
- YES
- ABOVE 14V → TROUBLE IN L701, C705, R707, D701 R706, R705, IC701.

, CHECK CRT (G2) VOLTAGE 450V
2 CHECK CRT (HEATER) VOLTAGE 12V
- NO → TROUBLE IN FBT, CR706, R712 LEAD (H1), LEAD (V1, V2)
- YES

CHECK CRT CATHOD VOLTAGE 45–55V
- ABOVE 55V → TROUBLE IN TR303, TR304, R311, R309, R310, R315, R314, R312
- YES

TROUBLE IN VR703 (SUB-BRIGHT,, R710, R711, VR301 (CONTRAST,, VR705 (EXT BRIGHT,, TR301, TR302, VIDEO CABLE

HORIZONTAL/VERTICAL SYNC TROUBLE → TROUBLE IN IC701, R701, R702, C702

NO VERTICAL DEFLECTION (ONE HORIZONTAL LINE AT CRT SCREEN CENTER) → TROUBLE IN DY, IC601, R603, C601, C605, R606, R609, R605, C607, R608, C606, VR601, D601

NO HORIZONTAL DEFLECTION (ONE VERTICAL LINE AT CRT SCREEN CENTER) → TROUBLE IN DY, C712, L702

HORIZONTAL SYNC TROUBLE → TROUBLE IN R719, C716, R708, R720, C717, C706, C707, R704

VERTICAL SYNC TROUBLE → TROUBLE IN IC701

RETRACE LINE TROUBLE → TROUBLE IN R610, D603, D604, R611, TR601, R612, C608

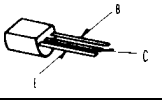
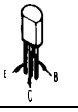
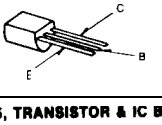
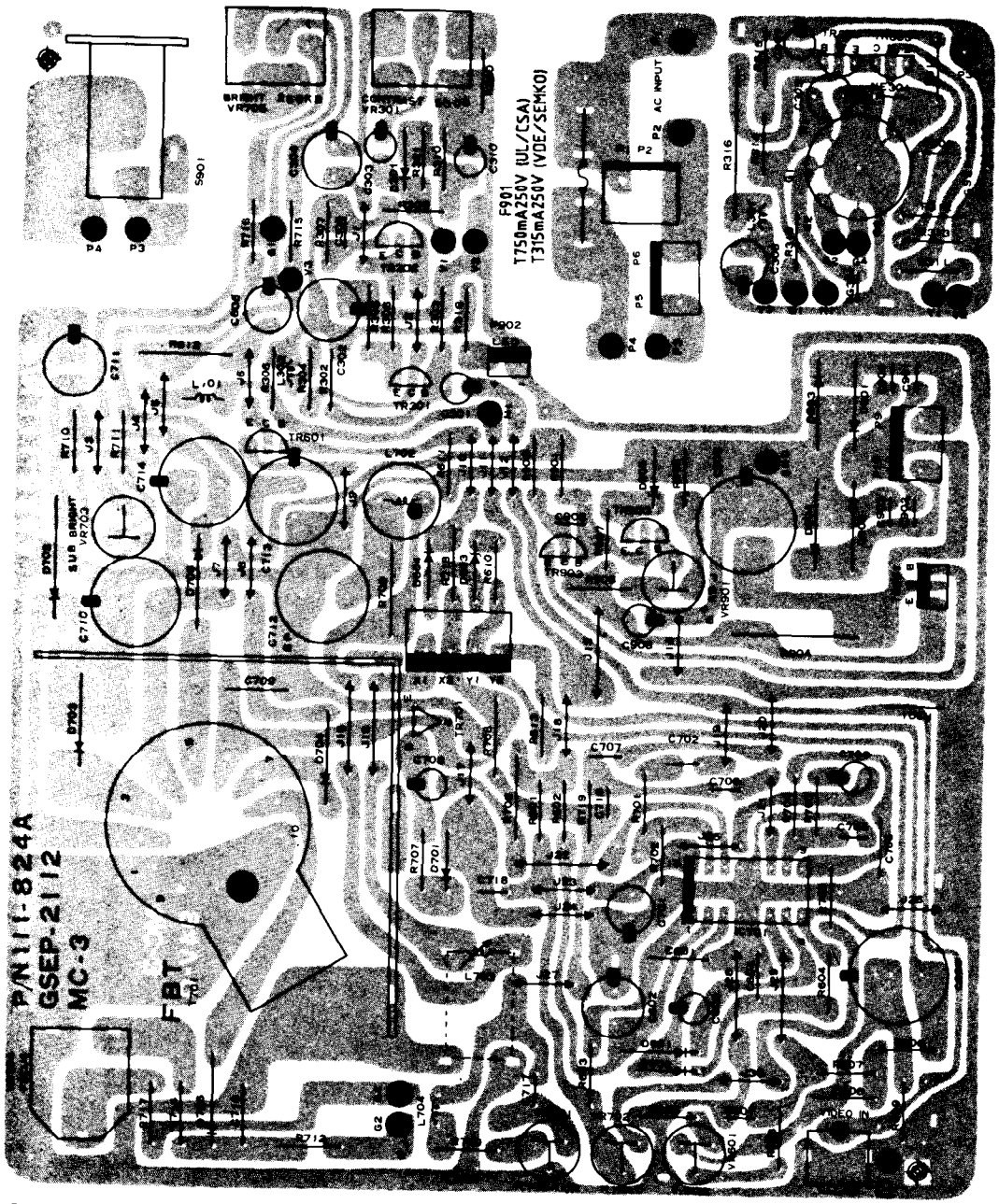
REF. NO.	FIGURE	DESCRIPTION
TR301, TR302, TR902, TR903, TR601		KTC 1015 KTC 1959 KTA 562TM KTC 1815
TR304		KTC 2229
TR701, TR901		BU 806 KTD 880
IC701		TEA 2037A
TR303		2N 3904

Figure 5, TRANSISTOR & IC BASING

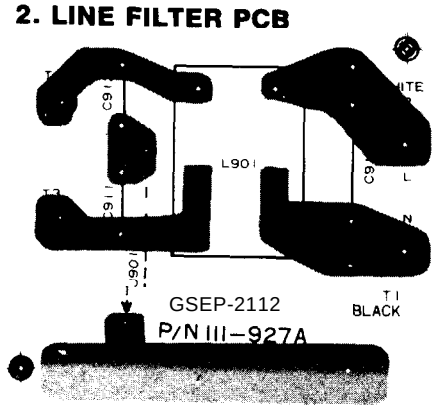
PRINTED CIRCUIT BOARD

1. MAIN PCB

ASSY PIN: 1 **10-B06C**

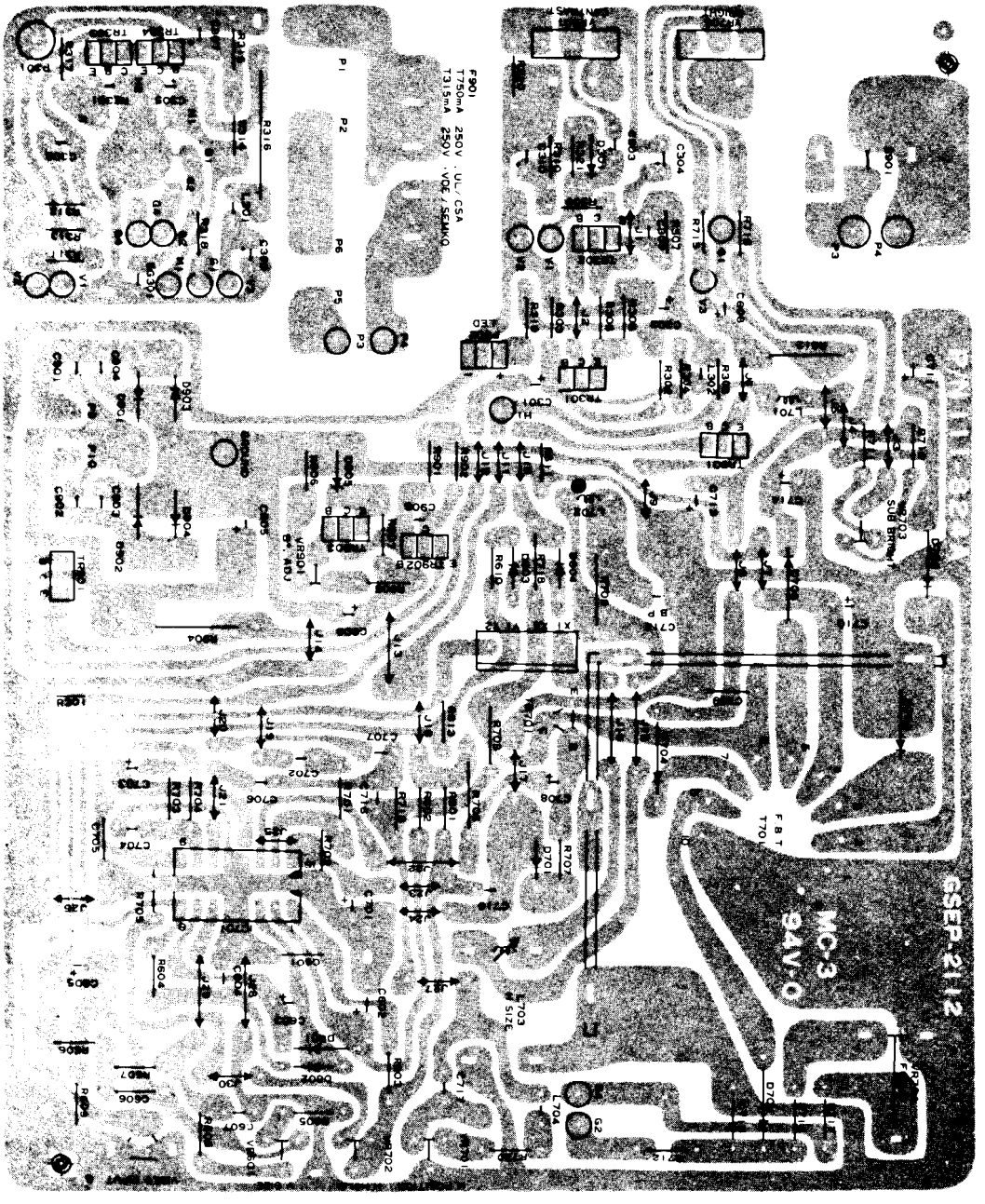


2. LINE FILTER PCB

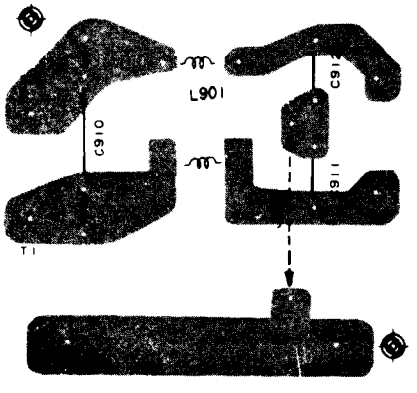


ASSY PIN: **110-B72A**

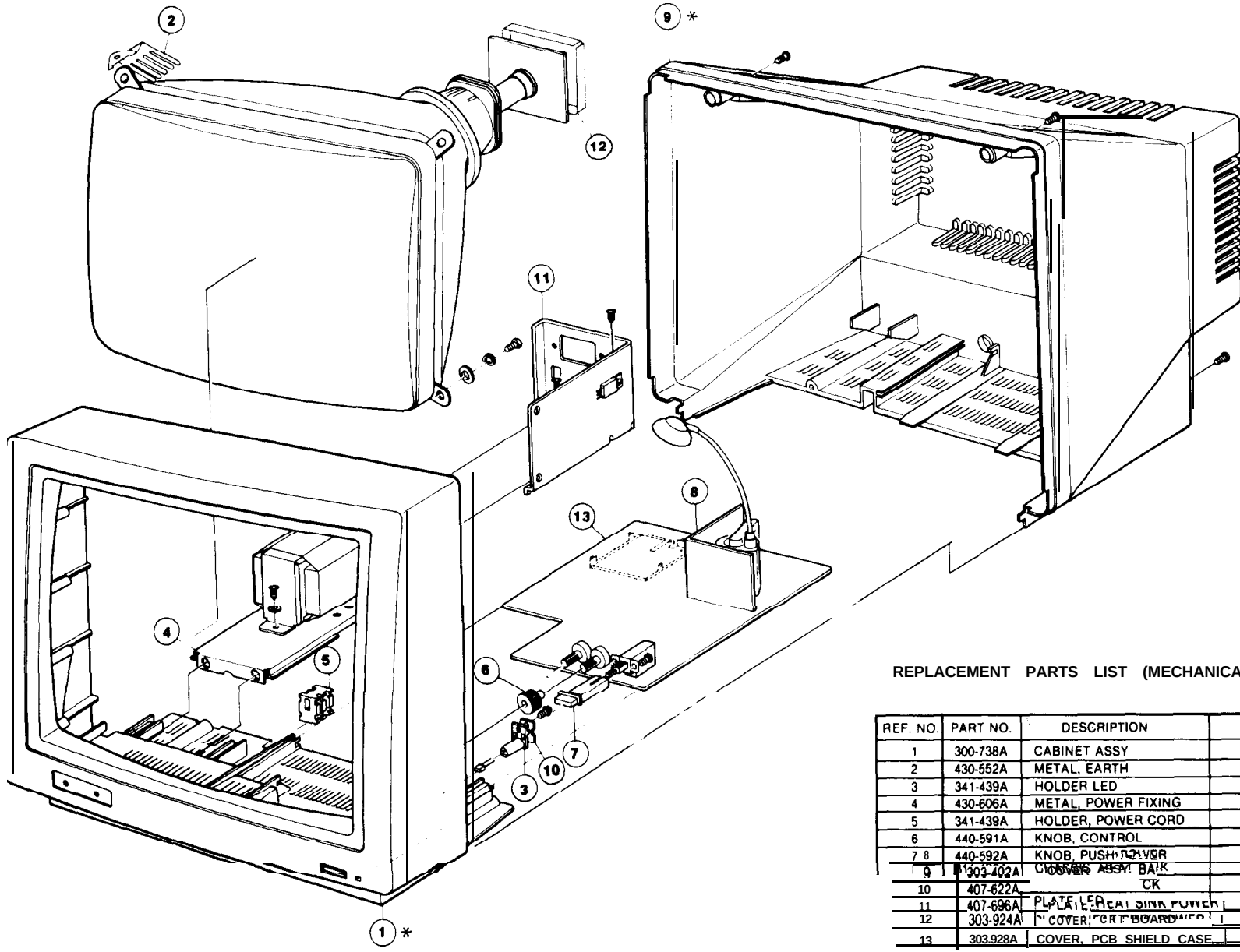
3. MAIN PCB (SOLDER SIDE)



4. LINE FILTER PCB (SOLDER SIDE)



EXPLODED VIEW



*Outer Cabinet not used on 6300T Models.

REPLACEMENT PARTS LIST (MECHANICAL PARTS)

REF. NO.	PART NO.	DESCRIPTION	REMARK
1	300-738A	CABINET ASSY	
2	430-552A	METAL, EARTH	
3	341-439A	HOLDER LED	
4	430-606A	METAL, POWER FIXING	
5	341-439A	HOLDER, POWER CORD	
6	440-591A	KNOB, CONTROL	
7 8	440-592A	KNOB, PUSH LEVER	
9	303-402A	COVER ASSY, BACK	
10	407-622A	PLATE, LED	
11	407-696A	PLATE, HEAT SINK POWER	
12	303-924A	COVER, CRT BOARD	
13	303.928A	COVER, PCB SHIELD CASE	

REPLACEMENT PARTS LIST

CAUTION: Components identified by the ⚠ symbols in the PARTS LIST and on the SCHEMATIC DIAGRAM have special characteristics important to safety.
Do not degrade the safety of the set through improper servicing.

ABBREVIATIONS: Capacitors . . . . CC: Ceramic (TC), CE: Chemical, CK: Ceramic (Hi-K), BP: Bipolar, CQ: Mylar, PE: Polyester, PP: Polypropylene
Resistors .... RD: Carbon Film, RS: Metal Oxide Film

(All CC and Capacitors are ± 5%, 50 Volts and all resistor, ± 5%, 1/8W unless otherwise noted).
S: Recommended Service Parts, R: Replacement Service Parts

REF. NO.	PART NO.	DESCRIPTION	REMARK
		RESISTOR	
R301		RD. 1/8W 75 ohm	R
Fi302		RD. 1/8W 120K ohm	R
R303		RD. 1/8W 82K ohm	R
R304		RD. 1/8W 680 ohm	R
R305		RD. 1/8W 220 ohm	R
R306		RD, 1/8W 390 ohm	R
R307		RD. 1/8W 100 ohm	R
R308		RD 1/8W 56 ohm	R
R309		RD. 1/8W 10K ohm	R
R310		RD. 1/8W 1 3K ohm	R
R311		RD 1/8W 75 ohm	R
R312		RD. 1/8W 82 ohm	R
R313		RD. 1/8W 47 ohm	R
R314		RD. 1/8W 2 4K ohm	R
R315		RD. 1/8W 3 3K ohm	R
R316		RD 2W 1 2K ohm	R
R317		RD. 1/8W 330 ohm	R
R318		RD. 1/8W 120 ohm	R
R319		RD. 1/8W 1 OK ohm	R
R320		RD 1/8W 100 ohm	R
R321		RD. 1/8W 4 7K ohm	R
R601		RD. 1/8W 33 ohm	R
R602		RD. 1/8W 1 5 ohm	R
R603		RD. 1/8W 560K ohm	R
R604		RD. 1/8W 2 2 ohm	R
R605		RD. 1/8W 18 ohm	R
R606		RD. 1/8W 150K ohm	R
R607		RD. 1/8W 390K ohm	R
R608		RD. 1/8W 82K ohm	R
R609		RD. 1/8W 2 2 ohm	A
R610		RD. 1/8W 1 OK ohm	R
R611		RD. 1/8W 82 ohm	R
R612		RD. 1/8W 6 8K ohm	R
R613		RD. 1/8W 150 ohm	R
R701		RD. 1/8W 150 ohm	R
R702		RD. 1/8W 560K ohm	R
R703		RD. 1/8W 3 9K ohm	R
R704		RD. 1/8W 47K ohm	R
R705		RD. 1/8W 33K ohm ± 2%	R
R706		RD. 1/8W 470 ohm	R
R707		RD. 1/8W 33 ohm	R
R708		RD. 1/2W 6 8K ohm	R
R709		RD. 1/8W 820 ohm	R
R710		RD. 1/8W 47K ohm	R
R711		RD. 1/8W 15K ohm	R
R712		RD. 1/8W 33K ohm	R
R714		RD. 1/8W 10K ohm	R
R715		RD. 1/8W 100K ohm	R
R716		RD. 1/8W 6 8K ohm	R
R717		RD, 1/8W 33K ohm	R
R718		RD. 1/8W 15K ohm	R
R719		RD. 1/8W 1 8K ohm	R
R720		RD. 1/8W 6 8k ohm	R
R901		RD. 1/8W 2 2K ohm	R
R902		RD. 1/8W 75K ohm	R
A R904		RWR, 7W 18 ohm	S
R905		RD. 1/8W 390 ohm	R
R906		RD. 1/8W 560 ohm	R
R907		RD. 1/8W 560 ohm	R
VR301		VARIABLE 500B	S
VR601		SEMIFIX SR 29R 2208	S
VR701		SEMIFIX SR 29R 1KB	S
VR702		SEMIFIX SR 29R 4 7KB	S
VR703		SEMIFIX S R 19R100KB	S
VR704		SEMIFIX H162IC 3 3MB	S
VR705		VARIABLE 250KB	S
VR901		SEMIFIX SR 19R 2208	S
		CAPACITOR	
C301		CE, 47uF 16V	R
C302		CE, 220uF 16V	R
C303		CE, 22uF 16V	R
C304		CE, 470uF 10V	R
C305		CE. 100uF 16V	R
C306		CC, 120pF 50V	R
C307		CE, 47uF 10V	R
C308		CE, 22uF 100V	R
C309		CC, 100pF 50V	R
C310		CE, 10uF 16V	R
C601		CO. 0 22uF 100V	S
C602		CE. 220uF 16V	R
C603		CE. 47uF 16V	R
C604		CO, 0 1uF 100V	S
C605		CE. 1000uF 16V	R
C606		CO, 0 22uF 100V	S
C607		CO, 0.001uF 100V	R

REF. NO.	PART NO.	DESCRIPTION	REMAR
C608		CE, 2 2uF 160V	R
C701		CE. 100uF 16V	R
C702		CO, 0 1uF 100V	S
c 703		CE. 1 0uF 25V	R
C704		CO, 0 0022uF 100V	R
C705		PP 0 0022uF 200V	S
C 706		CO, 0 0022uF 100V	R
C707		CQ. 0 015uF 100V	R
C708		CE, 4 7uF 25V	R
A C709		PP. 0 027uF 400V	S
C710		CE, 470uF 25V	R
C711		CE. 220uF 16V	R
C712		BP. 4 7uF 25V	S
C713		CE, 100uF 100V	R
C714		CE, 100uF 100V	R
A C715		CK. 0.01uF 1000V	R
C716		CC. 56pF 50V	R
c717		CO, 0 0047uF 100V	R
C718		CK. 0 01uF 50V	R
C901		CK, 0 0047uF 50V	R
C902		CK, 0 0047uF 50V	R
C903		CK, 0 0047uF 50V	R
C904		CK, 0 0047uF 50V	R
C905		CE, 2200uF 25V	R
C906		CK, 0 1uF 50V	R
C908		CE, 47uF 16V	R
A C910		MPP. 0 1uF 125V	S
A C911		CK, 0 0022uF 125V	S
A C912		CK, 0 0022uF 125V	S
I c.			
IC701	06300159	TEA 2037A	S
DIODE			
D301		KDS1555	S
D601		1 N4002	S
D602	19-0053	KDSI555	S
A D603	19-0052	ZENER BZX83-C6V2	S
D604		KDS1555	S
D701		KDS1555	S
A D702	19-0051	RGP25D	S
D703	19-0050	RGP20G	S
D704		RGP10D	S
D705	19-0049	RGPIOD	S
A D706	19-0048	RGP10M	S
A D901	19-0047	1N5392GP	S
A 0902		1N5392GP	S
A D903		1N5392GP	S
A D904		1N5392GP	S
A D905		ZENER BZX83-C6V2	S
P902		LED (GREEN)	S
TRANSISTOR			
TR301	19-0046	KTC 1959-Y	S
TR302	19-0045	KTA562 TM-Y	S
TR303		2N3904	S
TR304	19-0044	KTC2229-Y	S
TR601		KTC2240-GR	S
A TR701		BU806	S

REF. NO.	PART NO.	DESCRIPTION	REMARK
⚠ TR901		KTD880-O	S
TR902		KTC1959-Y	S
TR903	19-0043	KTC1815-Y	S
COIL			
L301	20-0040	PEAKING PL 4 7uH	S
L302	20-0039	PEAKING PL 3 3uH	S
L701		CHOKE 10uH	S
L702		H-LINEARITY	S
L703		COIL WIDTH	S
L704	20-0038	PEAKING PL 10uH	S
A L901		LINE FILTER	S
MISCELLANEOUS			
⚠		CRT, 310KGB31 (Green)	S
A	1 I-0023	CRT, 310KGB4A (Amber)	S
A T701		FBT	S
A		DY ASSY	S
		PCB MAIN	S
A F901	07-0009	FUSE 0 75A/250V	S
A S901		SWITCH, POWER	S
NE301		NEON LAMP 95V	S
SG301		SPARK GAP	R
VIDEO IN		JACK, RCA PHONE	R
SIGNAL		RCA TO RCA CABLE	R
CABLE			
		SOCKET CRT	R
V1, v2		WIRE ASSY SHIELD	R
		TRANS. POWER SHIELD	S
		PWB LINE FILTER	S
	14709	AC POWER CORD	R
	00-6300-52T	PC BOARD COMPL. W/TRAY	R
PCBONLY	12579	CONNECTOR ASSY FOR TR901	R
		CONNECTOR ASSY FOR LED	R
PRINTED MATTERS			
		KIT, PRINTING	R
		OWNER'S MANUAL	R
		PIN. STAPLE NO 10	R
		BAG, PE	R

FLYBACK 37072