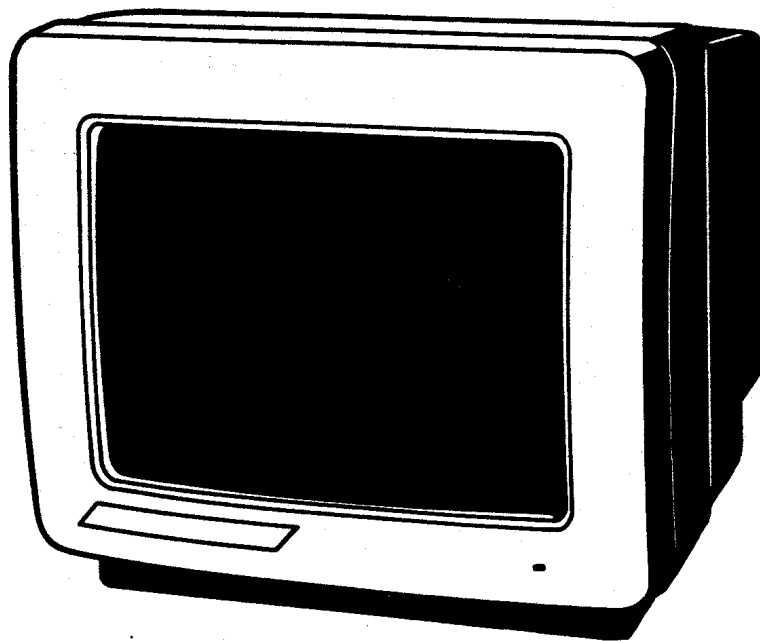


SM124™

HIGH-RESOLUTION MONOCHROME MONITOR



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SERVICE MANUAL

SPECIFICATIONS

1. CATHODE RAY TUBE

Type: Non-glare DARK
Size & Deflection angle: 12", 90°
Neck diameter: 20 mm
Phosphor: Paper White

2. INPUT

Input signal: TTL Signal

- Video : 1 Vp-p Positive
- Audio : 1 Vp-p
- Vertical Drive : 5 ± 1.5 Vp-p Negative
- Horizontal Drive : 5 ± 1.5 Vp-p Negative

Power Input : AC 220V 50Hz, 0.26A
Input Connector : 13 Pin Din Connector

3. SCANNING

Horizontal frequency : 35.7 KHz
Horizontal retrace time : 6.3 uS
Vertical frequency: 71.2 Hz
Vertical retrace time : 420 uS

4. VIDEO

- Display Area (HXV) : 210 mm × 130 mm
- Amplifier Type : Linear
- Frequency band width : 32 MHz
- Horizontal resolution : 1100 lines at center
- Display character : 80 × 50 characters

5. GEOMETRIC DISTORTION: 2.5% max.

6. LINEARITY

- Horizontal : 10% max.
- Vertical : 10% max.

7. EXTERNAL CONTROLS: BRIGHTNESS, CONTRAST, ON/VOLUME

ADJUSTMENT AND MAINTENANCE

CIRCUIT PROTECTION

Circuit protection is provided by one Mini fuse, on the power pc board. A 0.5 Ampere fuse (F901) is wired into one side of the AC line and provides primary protection to the entire chassis.

1. CENTERING ADJUSTMENT

CAUTION: The following adjustment points are close to the high voltage yoke terminal. If the raster is not centered in the raster opening, 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 counter-clockwise. To increase the amount of raster shift, move the two tabs which project from the device, farther apart. If the raster is tilted on an angle, it may be straightened by loosening the deflection yoke locking clamp and rotating the deflection yoke.

2. FOCUS

Adjust the focus control (VR703) 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. BRIGHTNESS

Adjust subbrightness control (VR301) for visual cut off of the raster when external brightness is turned to maximum.

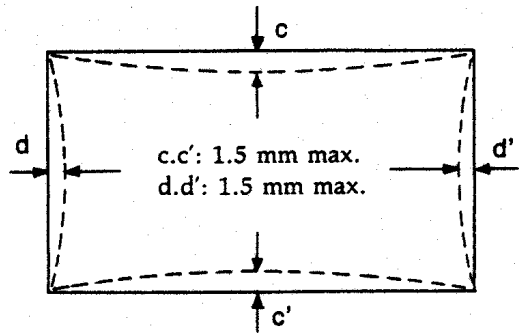
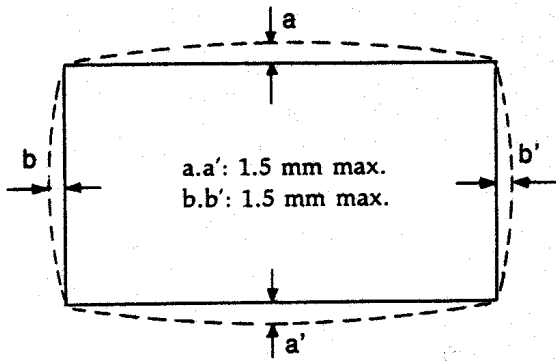
4. VERTICAL SIZE AND LINEARITY ADJUSTMENT

The vertical size control (VR602) should be adjusted for the picture to fill the screen vertically, the linearity control (VR603) should be adjusted for best overall vertical linearity. Adjustment of either control will not affect the adjustment of the other.

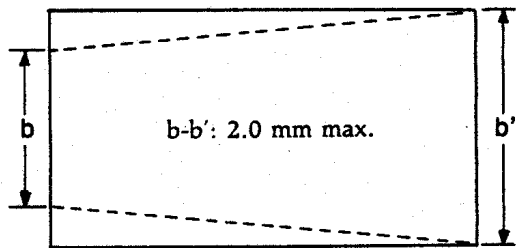
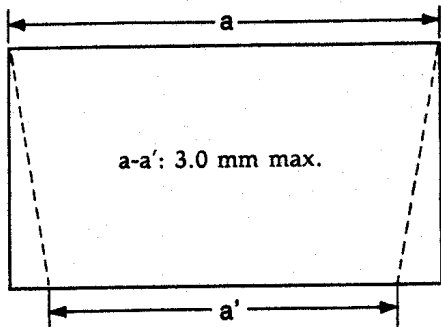
5. HORIZONTAL SIZE AND LINEARITY ADJUSTMENT

The horizontal size control (L702) is located on the main PCB, it should be adjusted for the picture to fill the screen horizontally, the linearity control (L703) should be adjusted for the best overall horizontal linearity adjustment so neither control will affect the adjustment of the other.

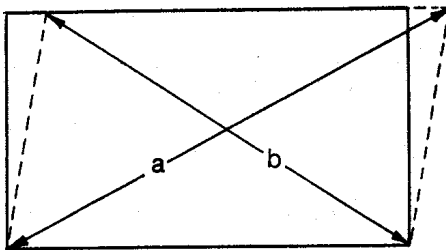
PINCUSHION AND BARRELLING



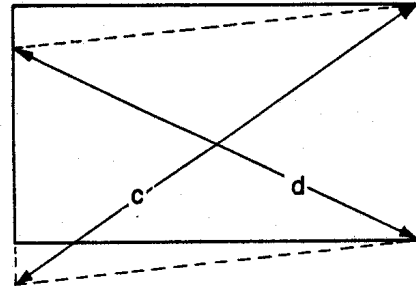
TRAPEZOID



PARALLELOGRAM

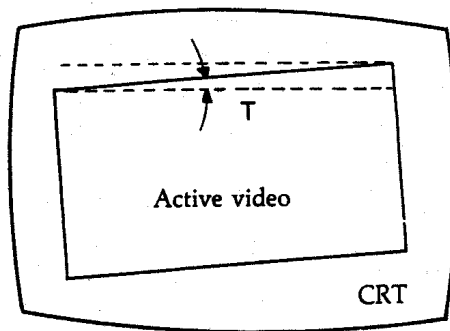


a-b: 2.0 mm max.



c-d: 2.0 mm max.

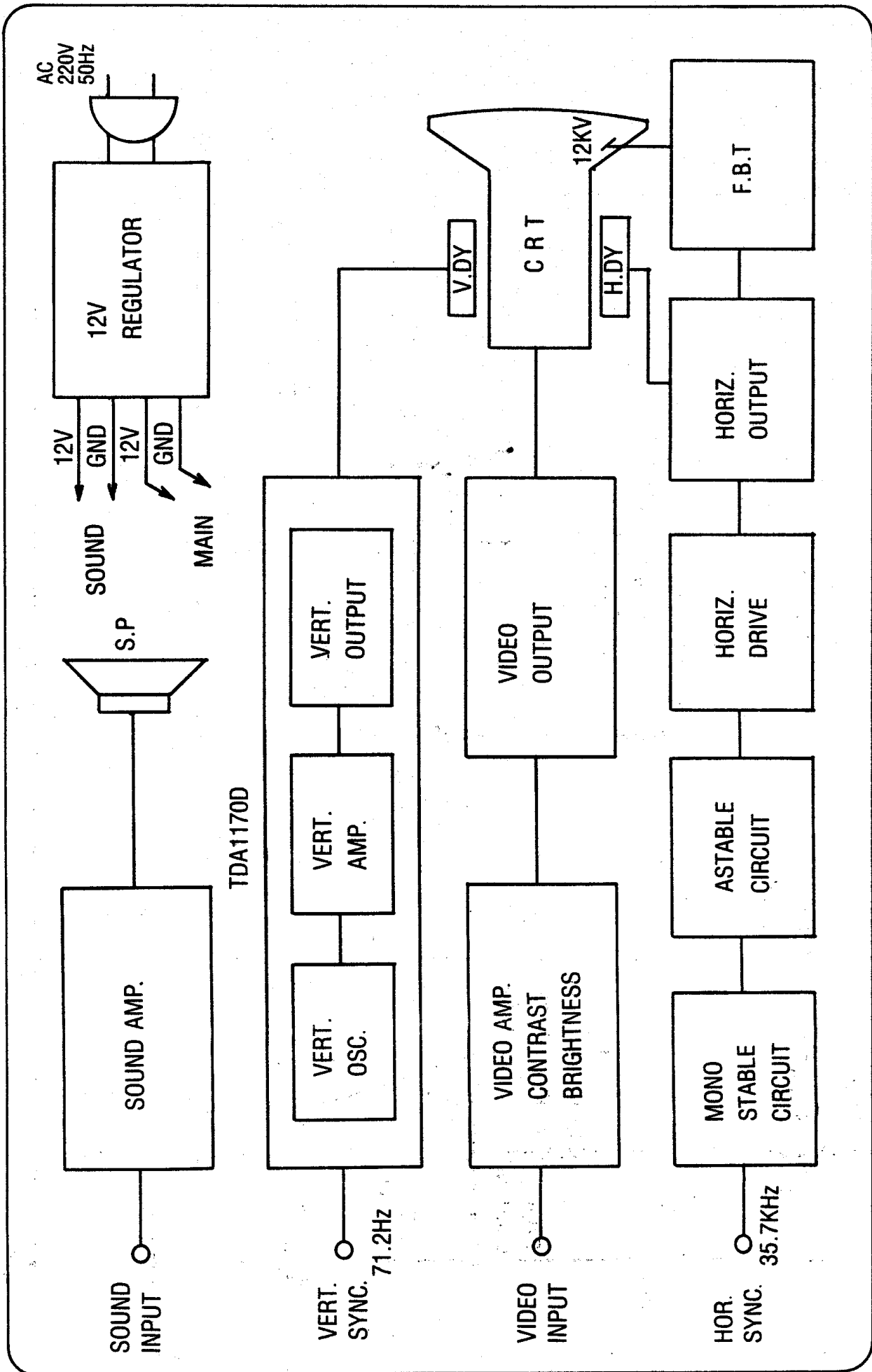
YORK TILT



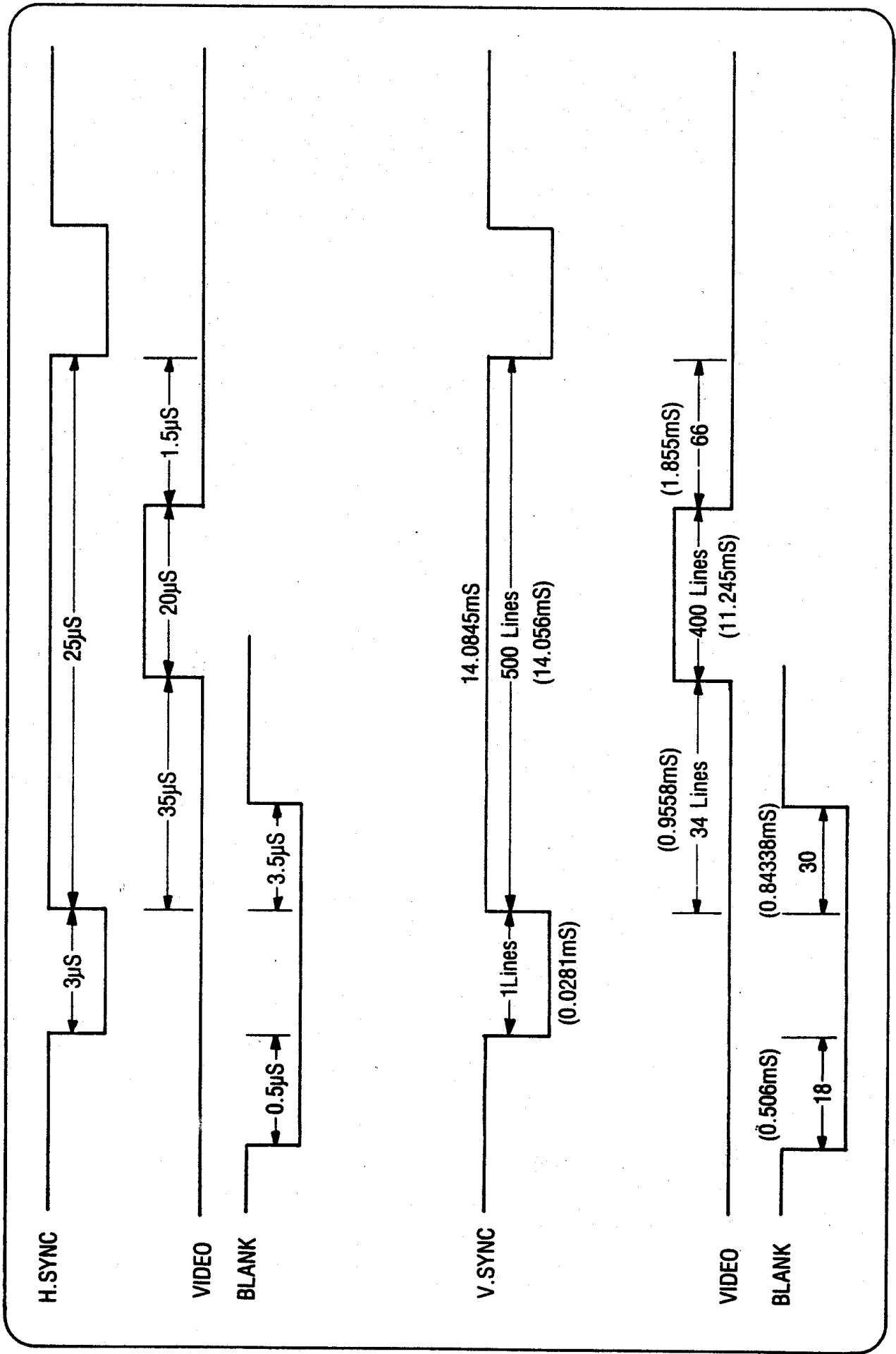
$T = 1^\circ$ max.

Fig. 2, Geometry Measurements

BLOCK DIAGRAM

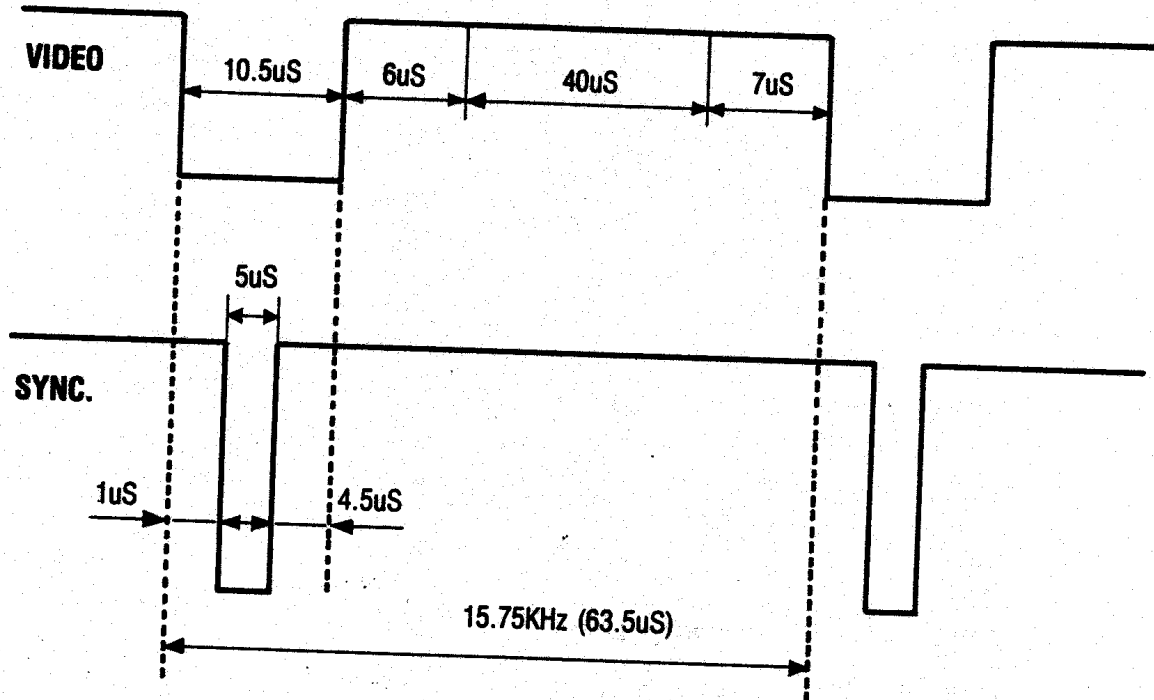


TIMING CHART

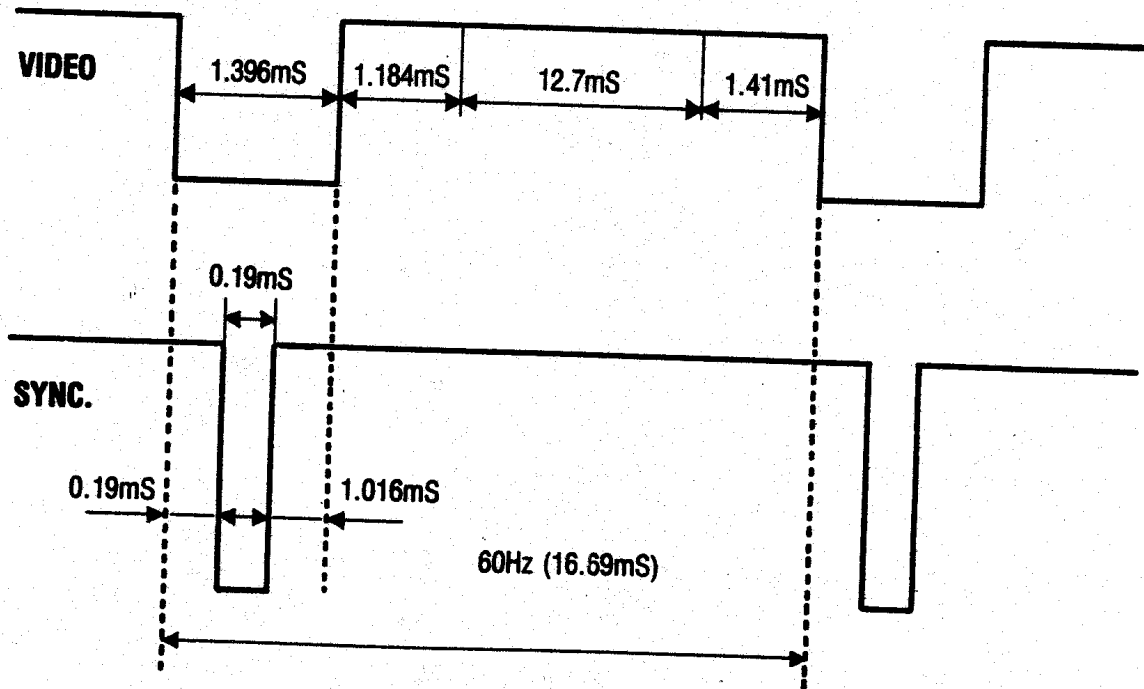


TIMING CHART

HORIZONTAL TIMING



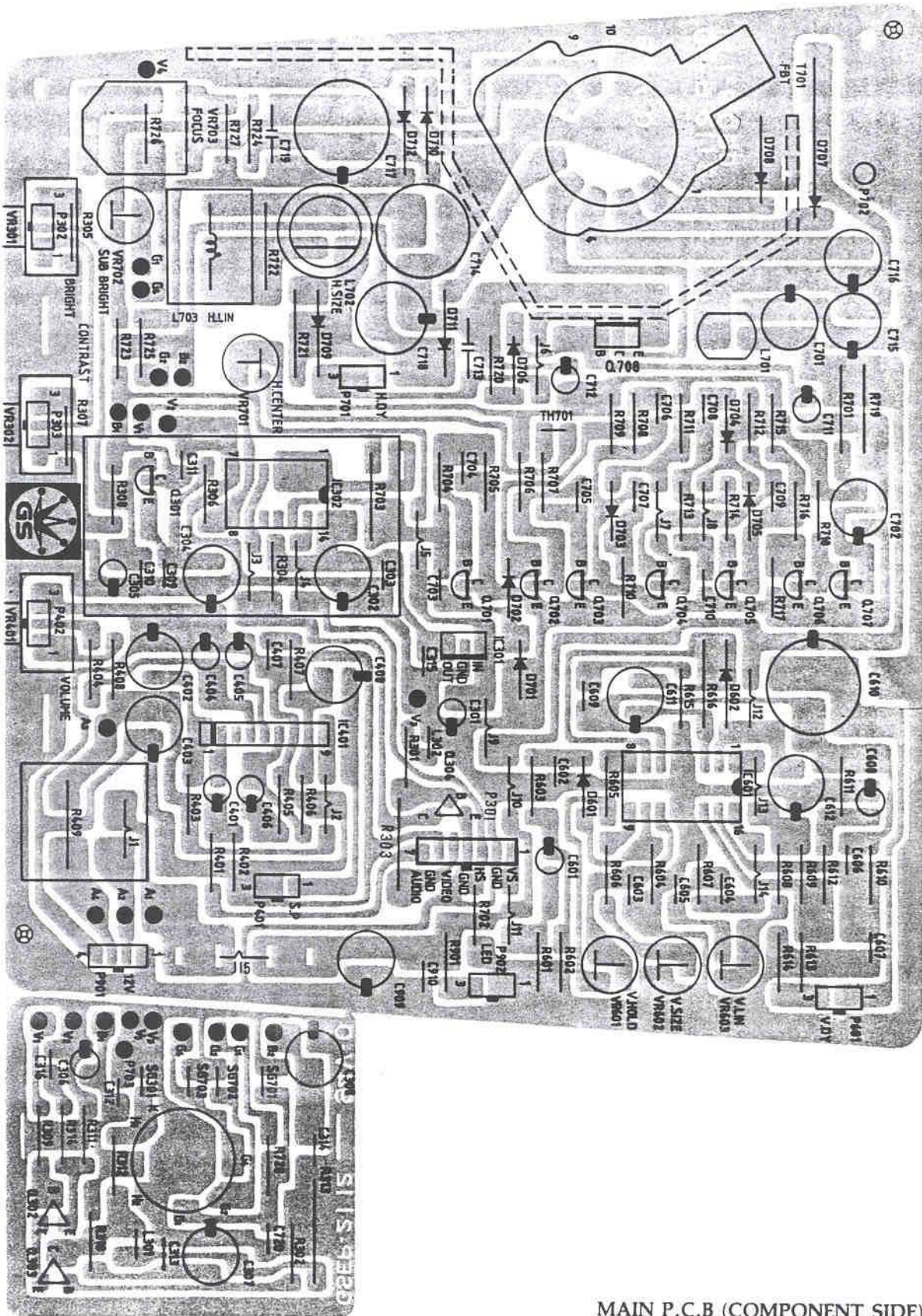
VERTICAL TIMING



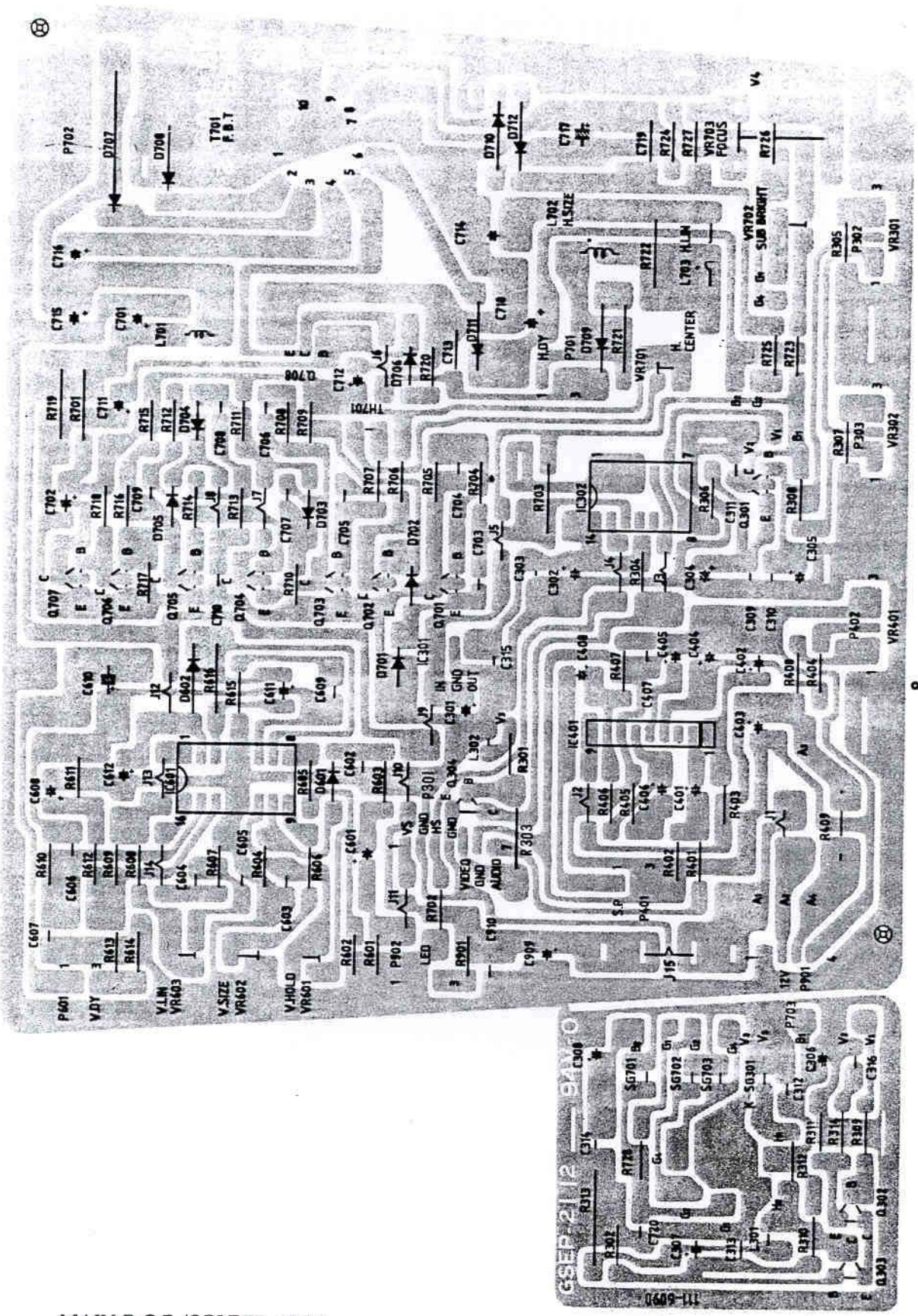
*** NOTES**

1. SIGNAL INPUT LEVEL: 1V_{p-p}
2. TIME TOLERANCE: ±0.1%
3. THE MONITOR IS ADJUSTED ACCORDING TO THE ABOVE TIMINGS AND FREQUENCY.

COMPONENT OF P.C.B



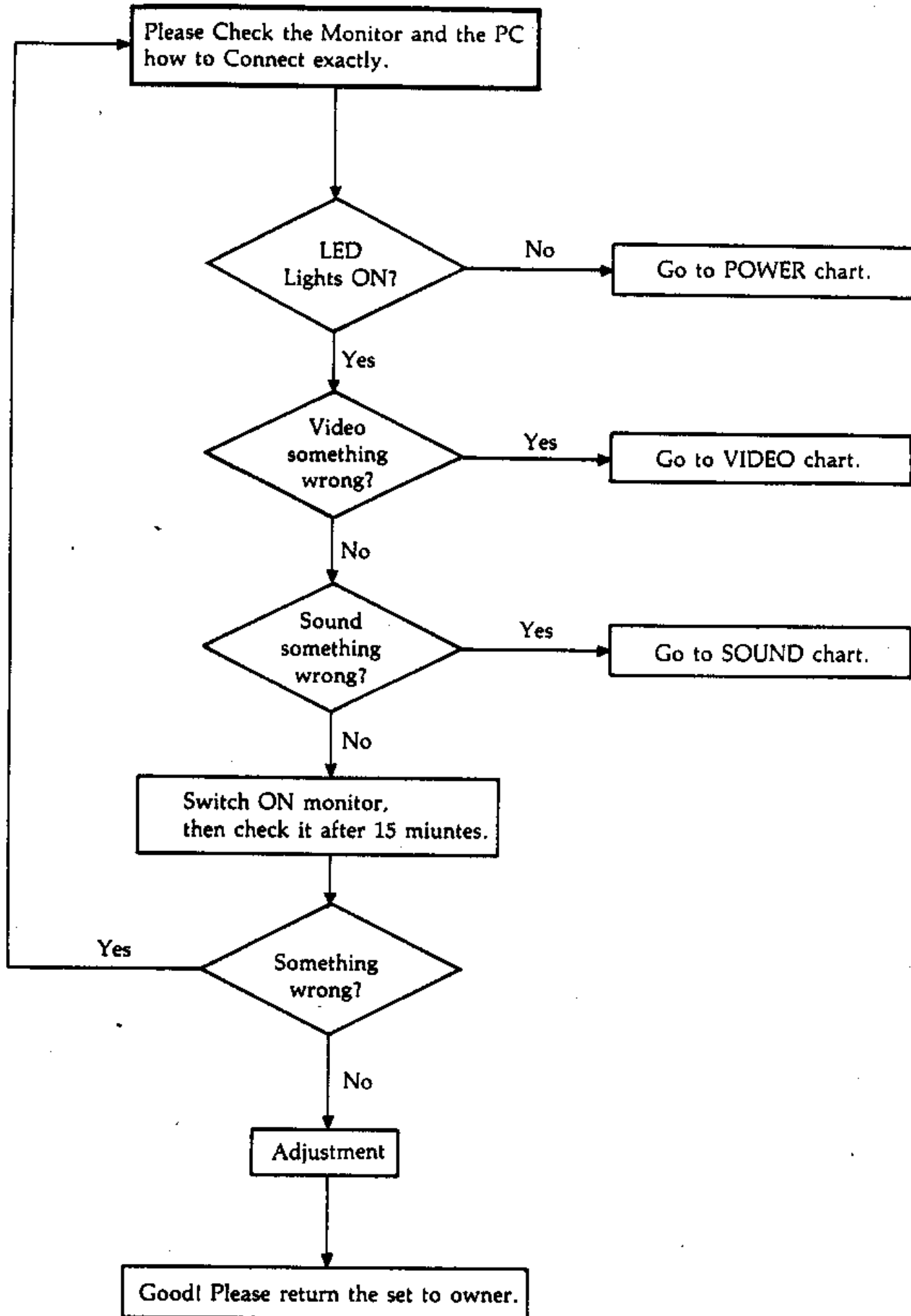
MAIN P.C.B (COMPONENT SIDE)



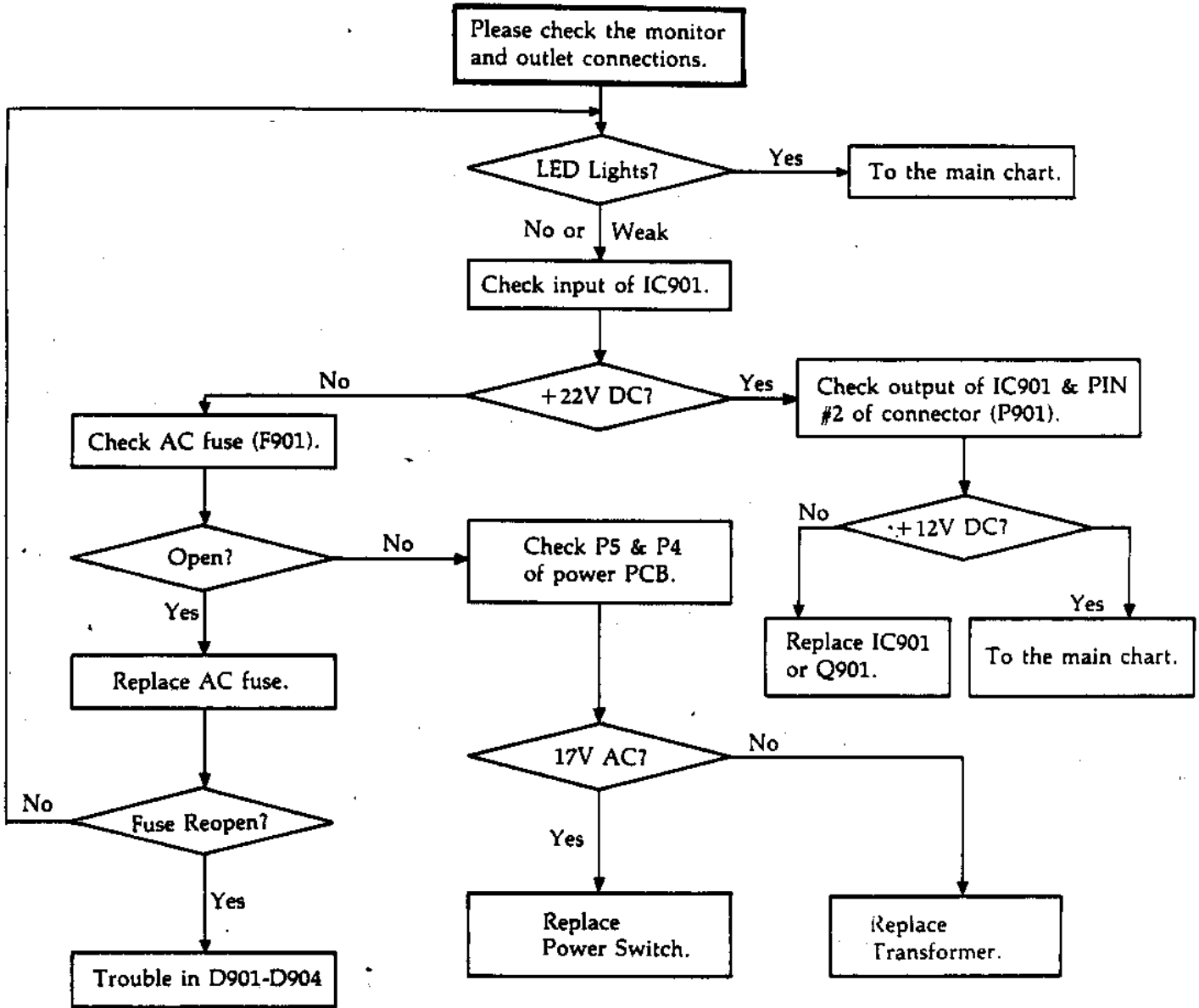
MAIN P.C.B (SOLDER SIDE)

TROUBLESHOOTING CHART

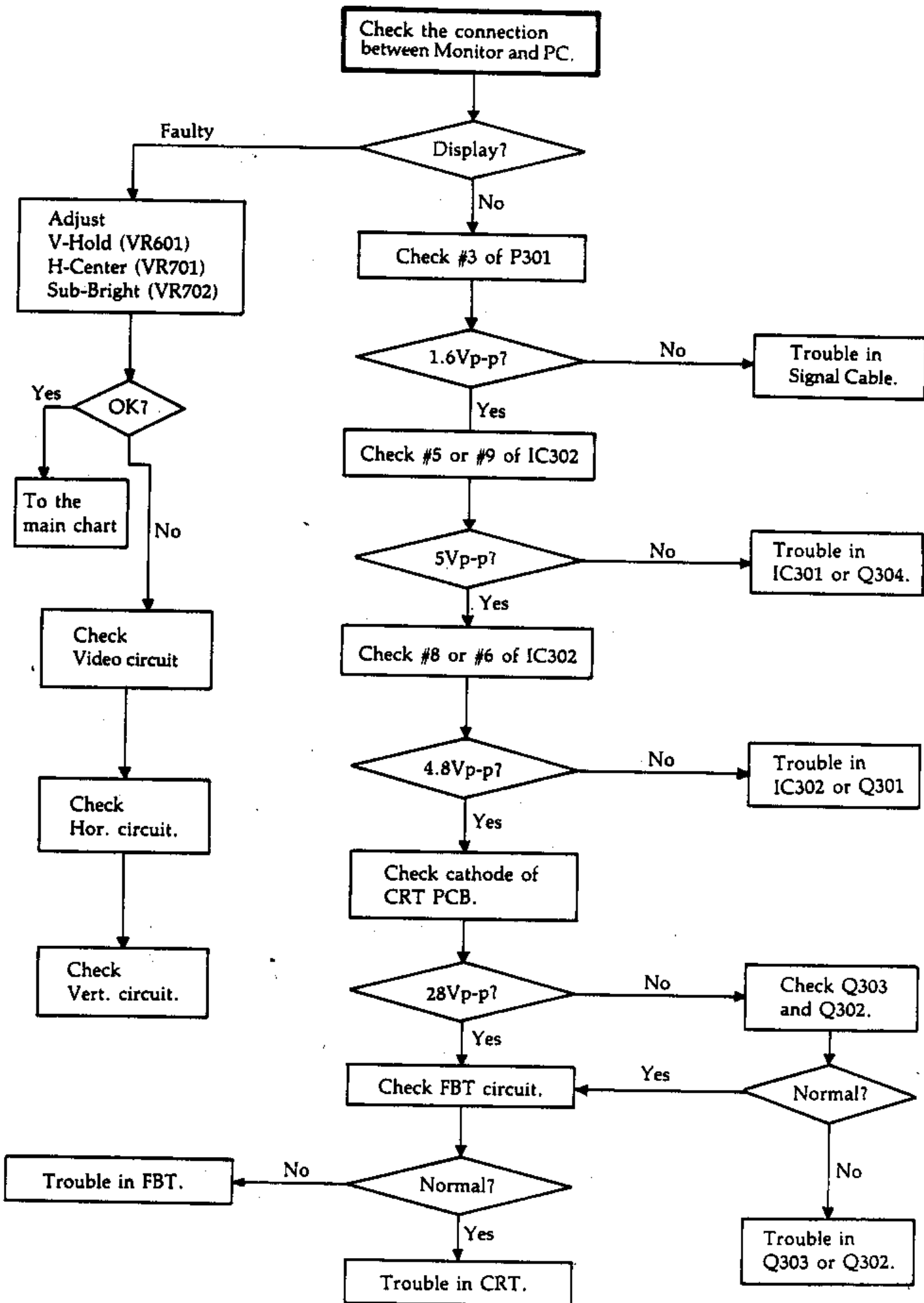
MAIN CHART



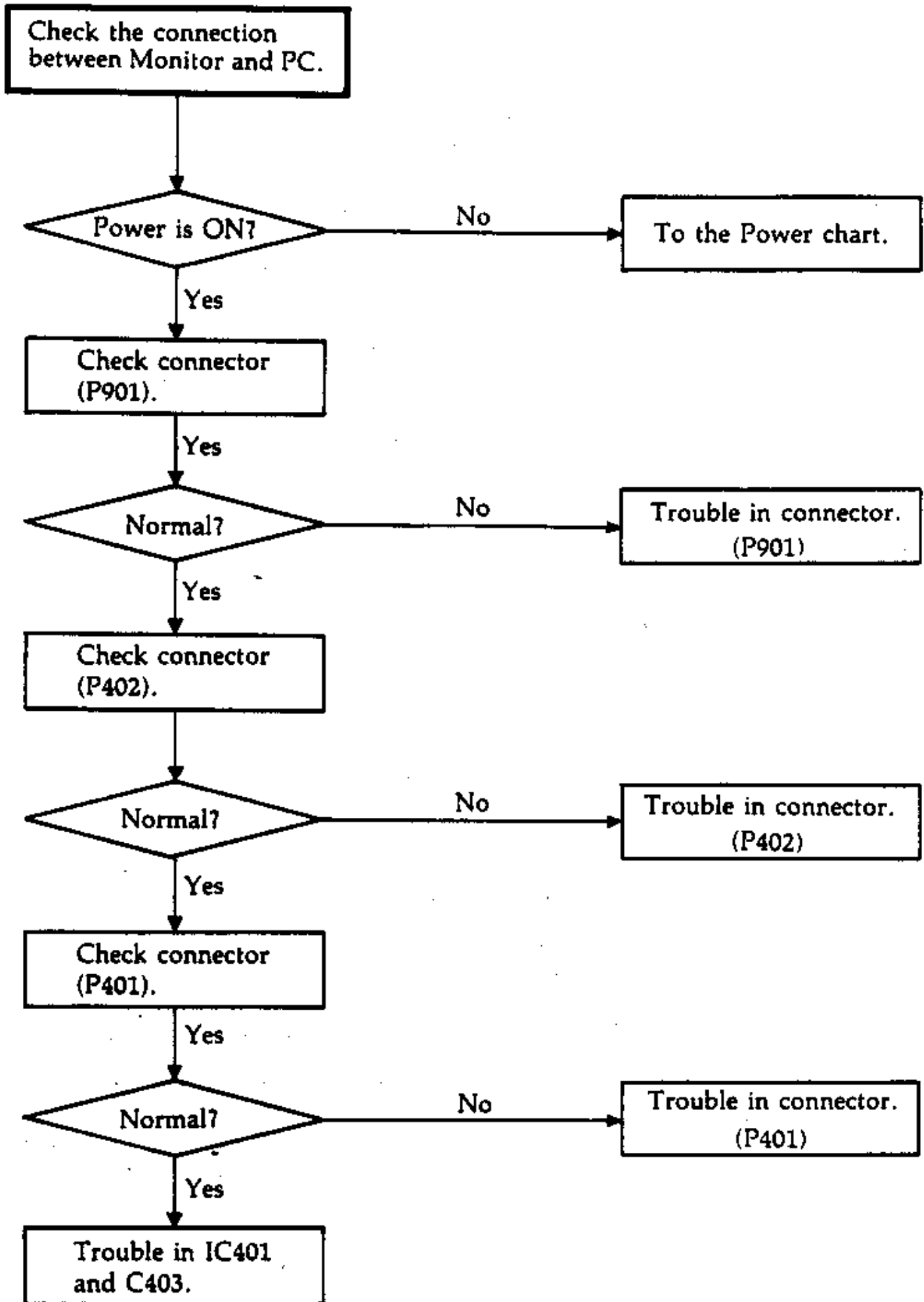
POWER CHART



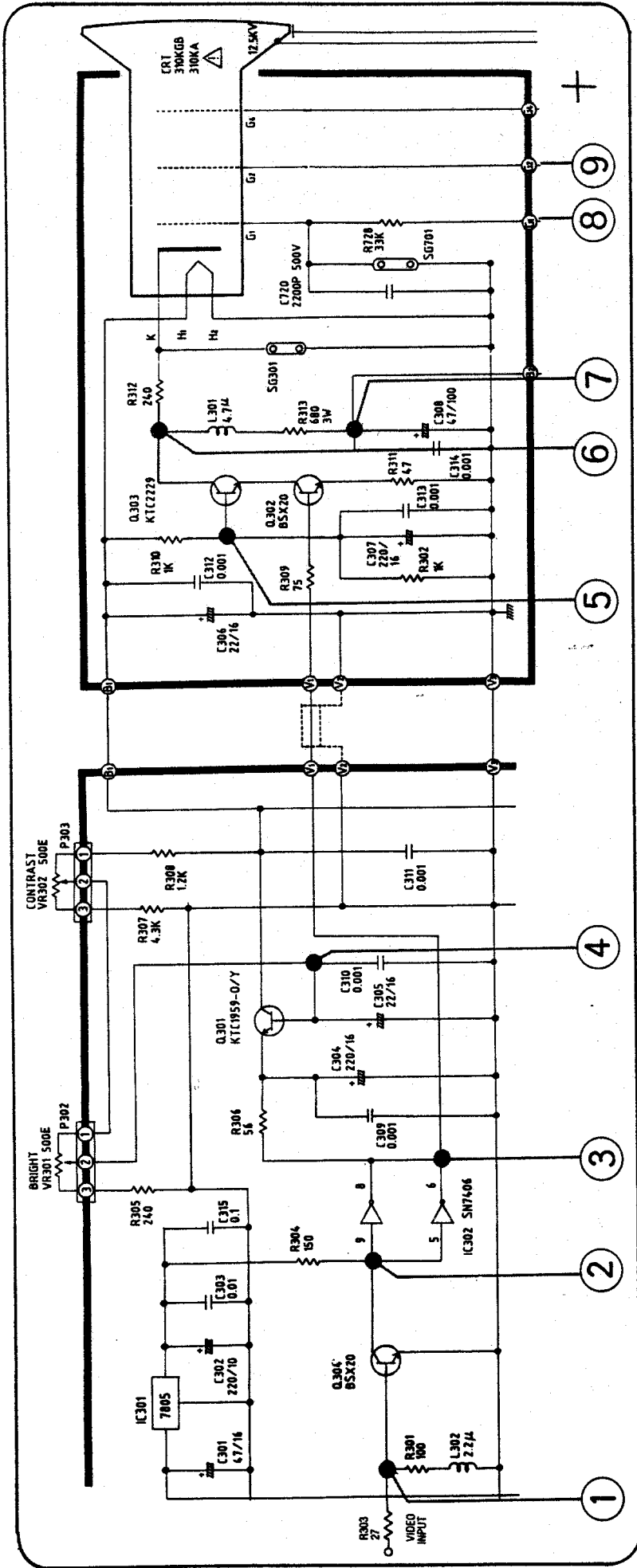
VIDEO CHART



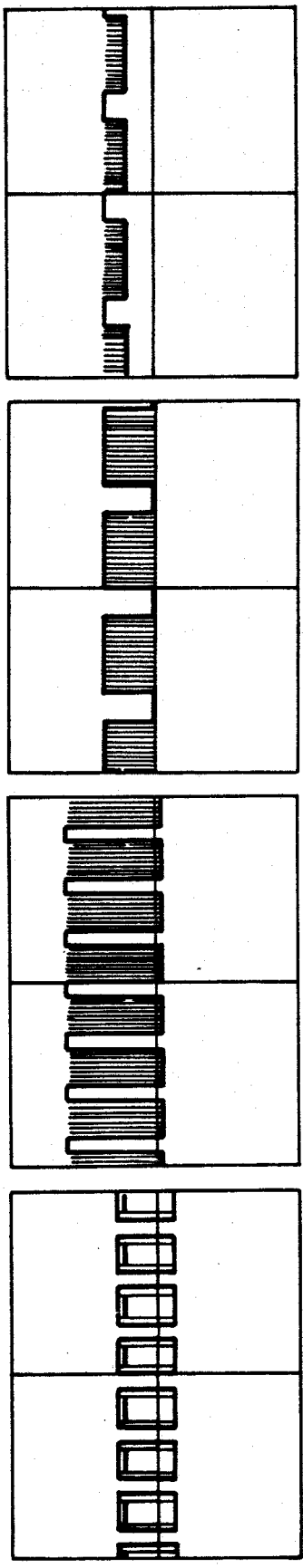
SOUND CHART



VIDEO CIRCUIT



Q301 BASE 3.3V
EMITTER 2.67V
COLLECTOR 11.66V



① 0.9Vp-p

② 5Vp-p

③ 3.3Vp-p

⑥ 28Vp-p

⑨ :600V

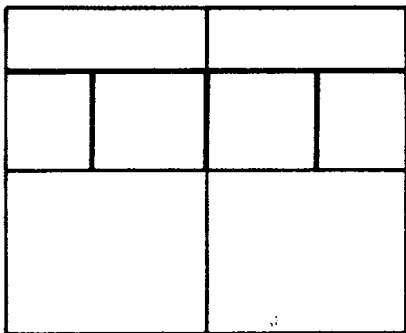
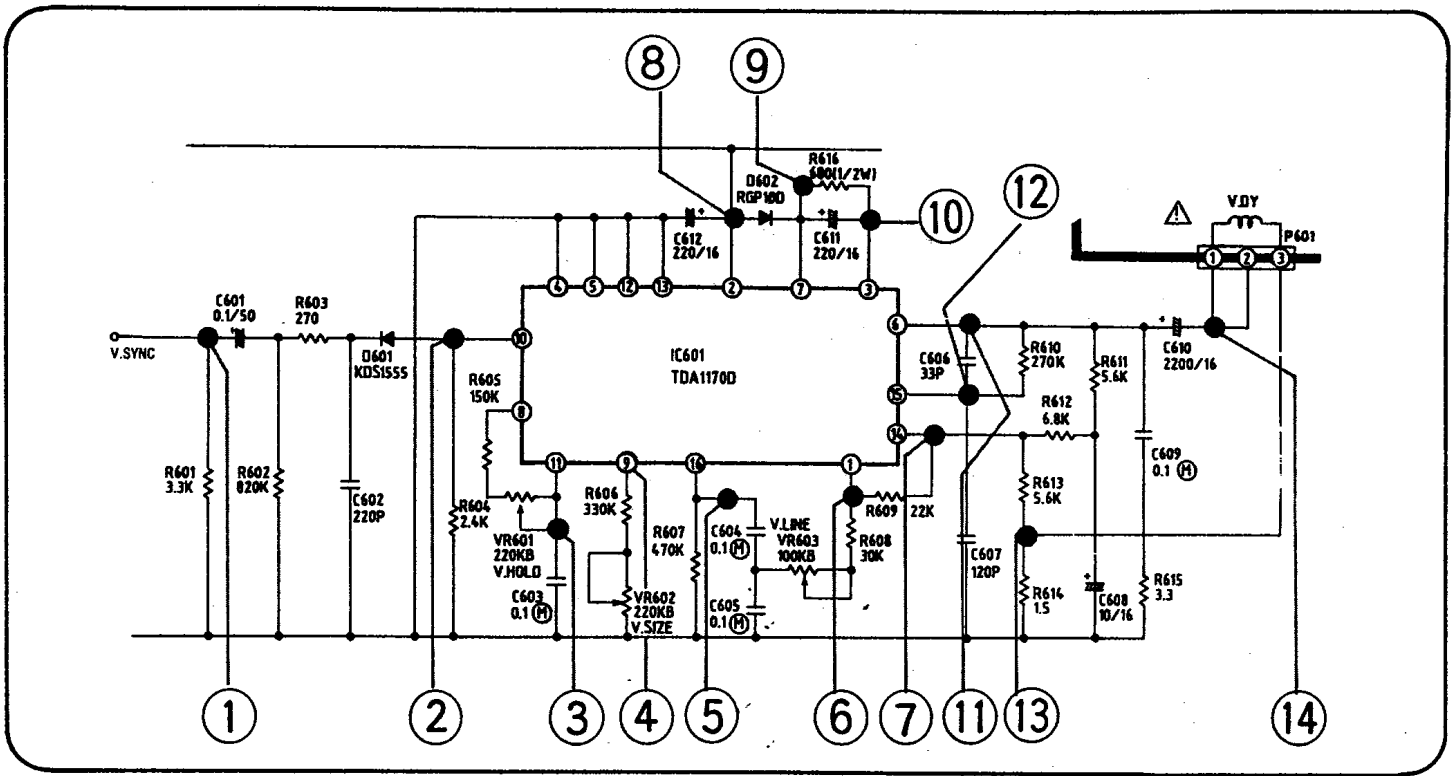
④ :3.93V

⑤ :5.88V

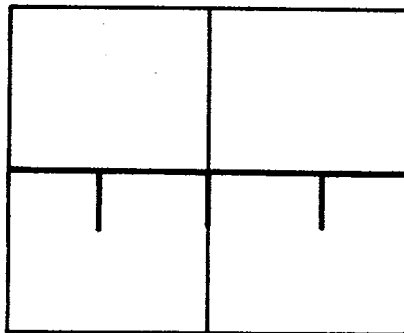
⑦ :70.7V

⑧ : -20.8V

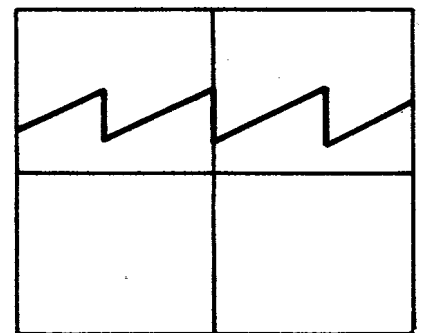
VERTICAL DEFLECTION CIRCUIT



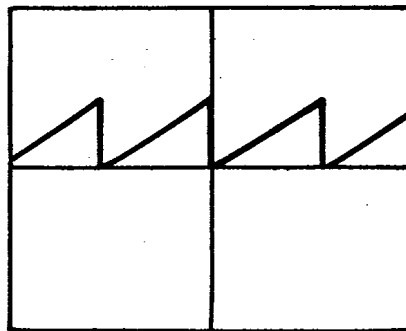
① 5.0Vp-p
71.43Hz



② 0.7Vp-p
71.43Hz

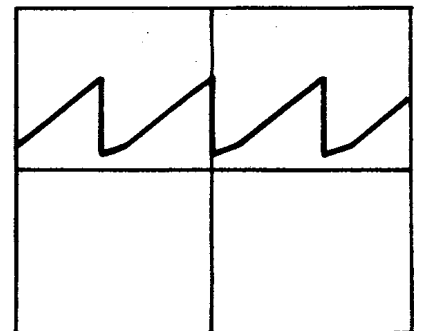


③ 4Vp-p
71.43Hz

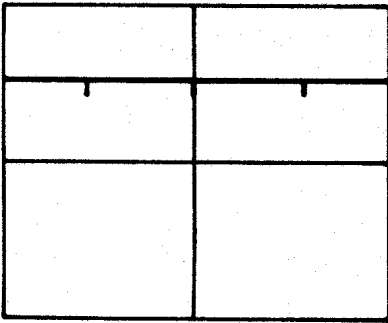


④ 6.68V

⑤ 4.0Vp-p
71.43Hz

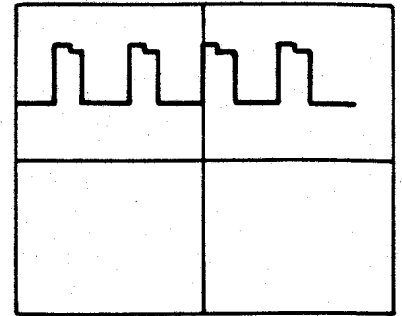


⑥ 4.7Vp-p
71.43Hz

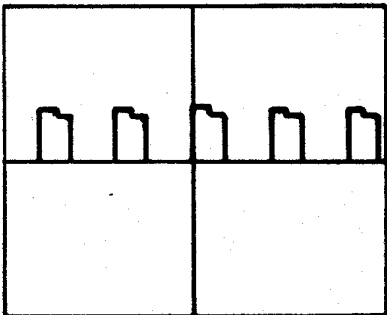


⑦ 2.1Vp-p
71.43Hz

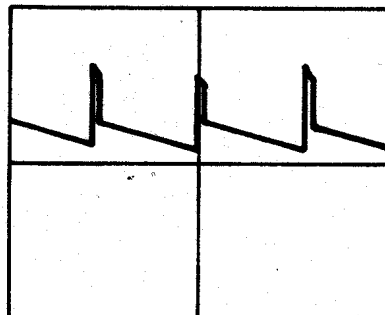
⑧ 11.92V



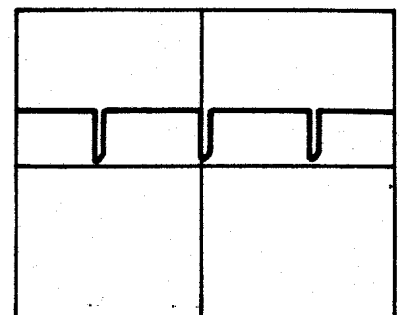
⑨ 24Vp-p
71.43Hz



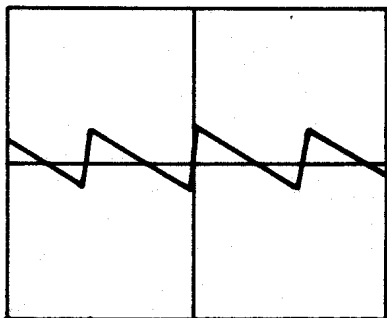
⑩ 12Vp-p
71.43Hz



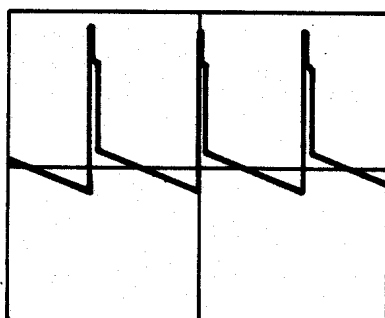
⑪ 2.5Vp-p
71.43Hz



⑫ 0.7Vp-p
71.43Hz

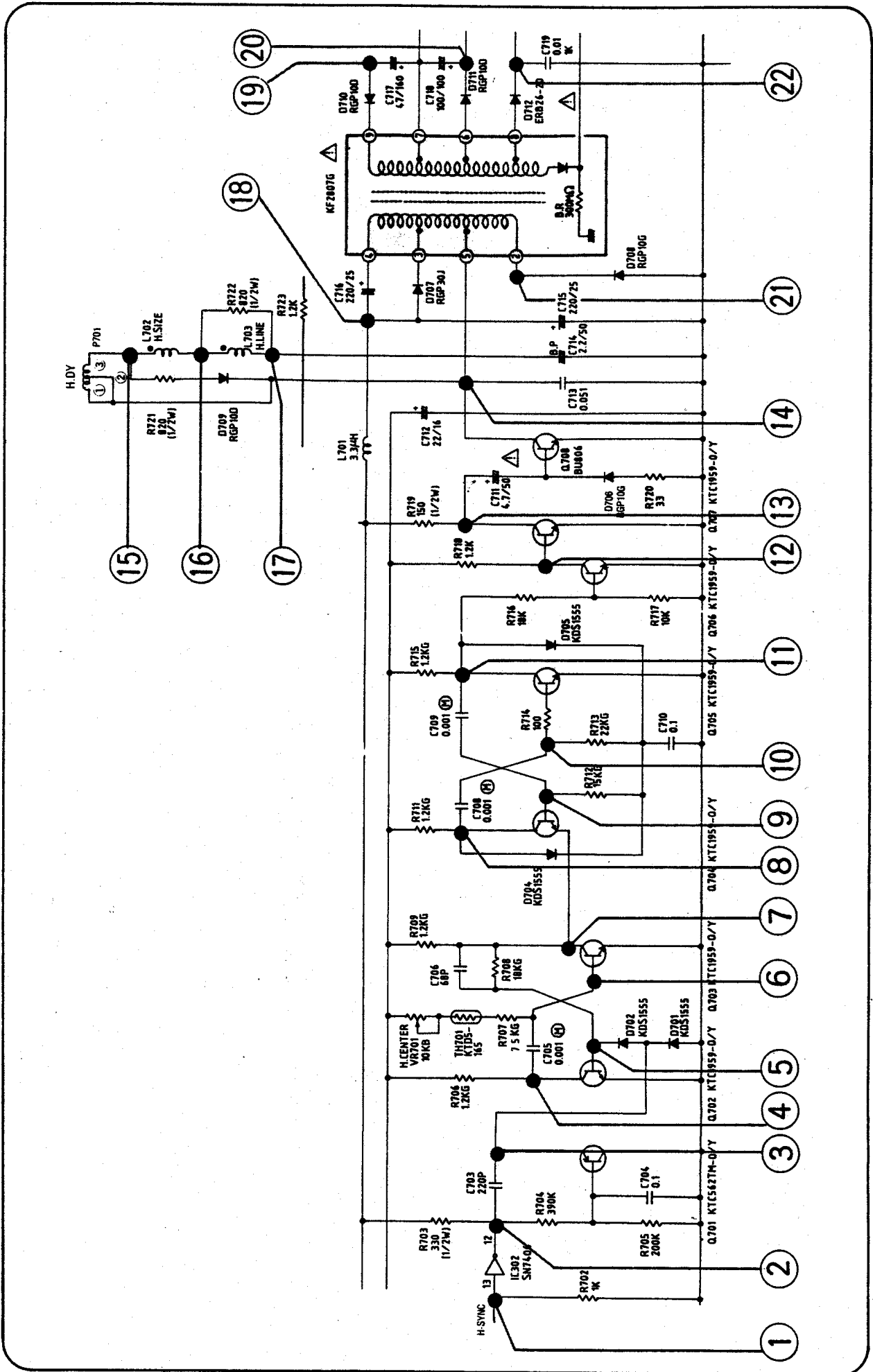


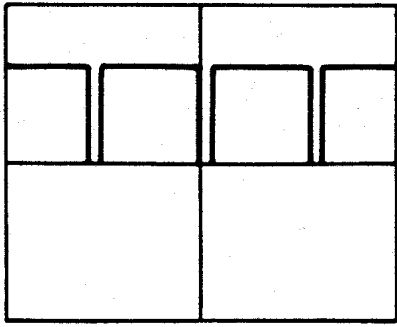
⑬ 0.85Vp-p
71.43Hz



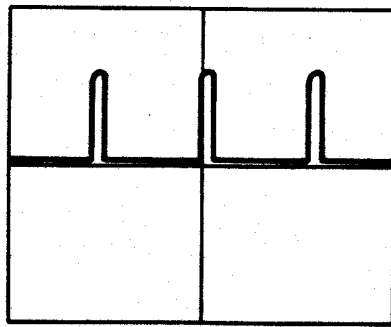
⑭ 22Vp-p
71.43Hz

HORIZONTAL DEFLECTION CIRCUIT

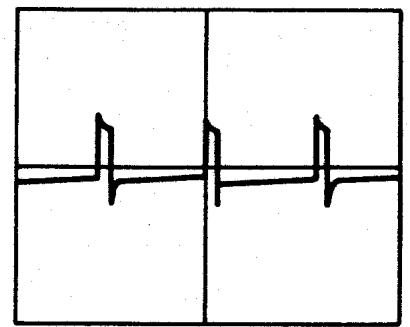




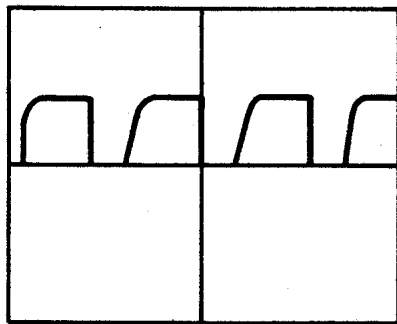
① 5Vp-p
35.7KHz



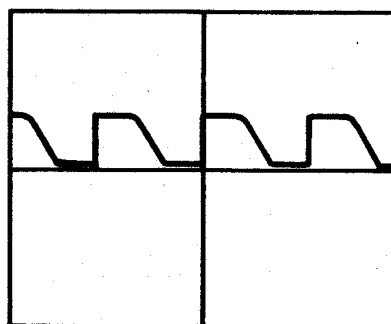
② 11.5Vp-p
35.7KHz



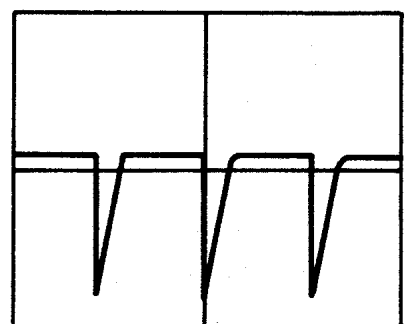
③ 2.3Vp-p
35.7KHz



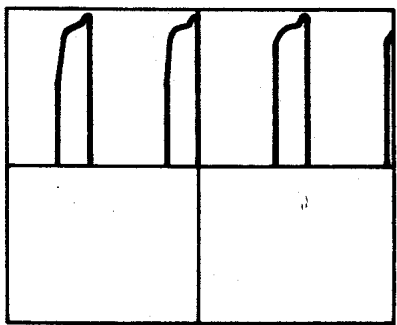
④ 9.0Vp-p
35.7KHz



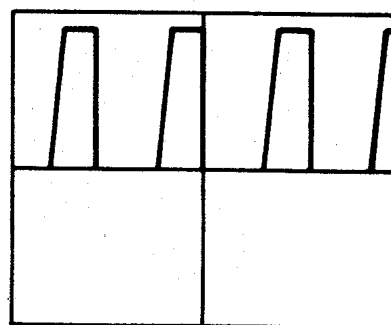
⑤ 0.7Vp-p
35.7KHz



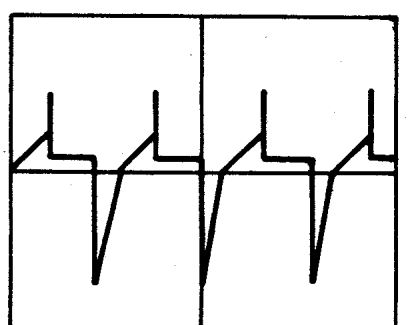
⑥ 6.8Vp-p
35.7KHz



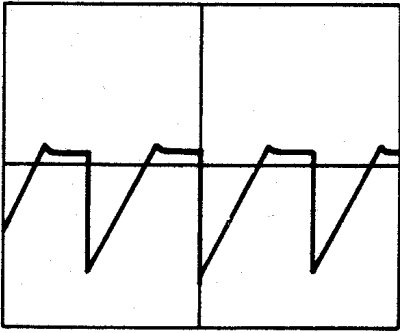
⑦ 8.0Vp-p
35.714KHz



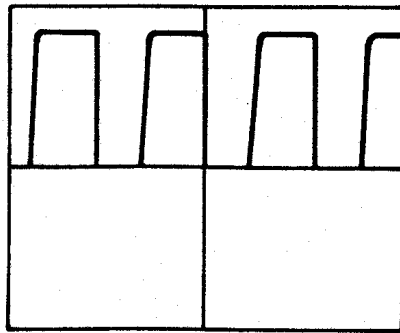
⑧ 7.2Vp-p
35.714KHz



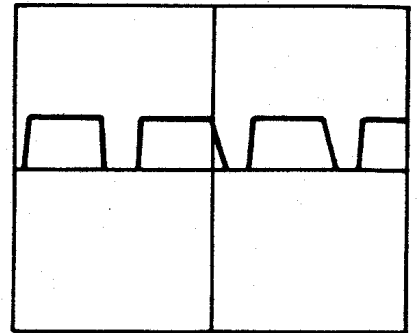
⑨ 7.0Vp-p
35.714KHz



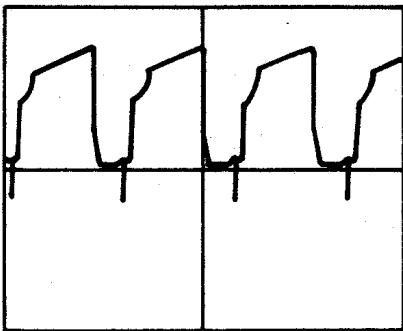
⑩ Vol: 6.4Vp-p
35.714KHz



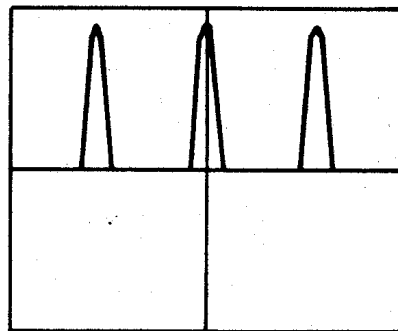
⑪ 7.0Vp-p
35.714KHz



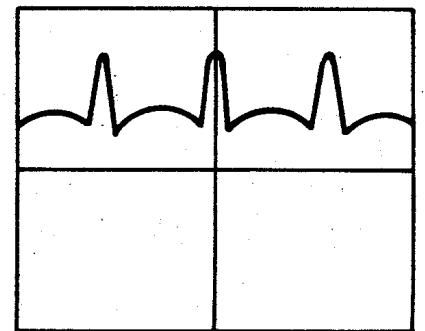
⑫ 0.7Vp-p
35.714KHz



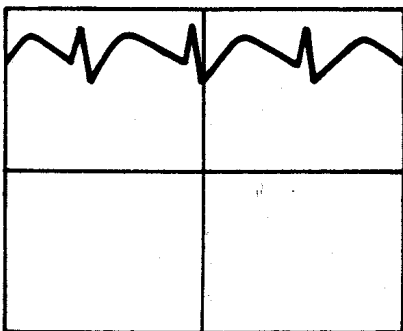
⑬ 4.71Vp-p
35.714KHz



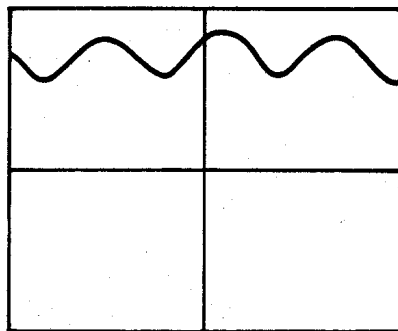
⑭ 180Vp-p
35.714KHz



⑮ 56Vp-p
35.714KHz



⑯ 38Vp-p
35.714KHz



⑰ 36Vp-p
35.714KHz

⑱ 11.8VDC

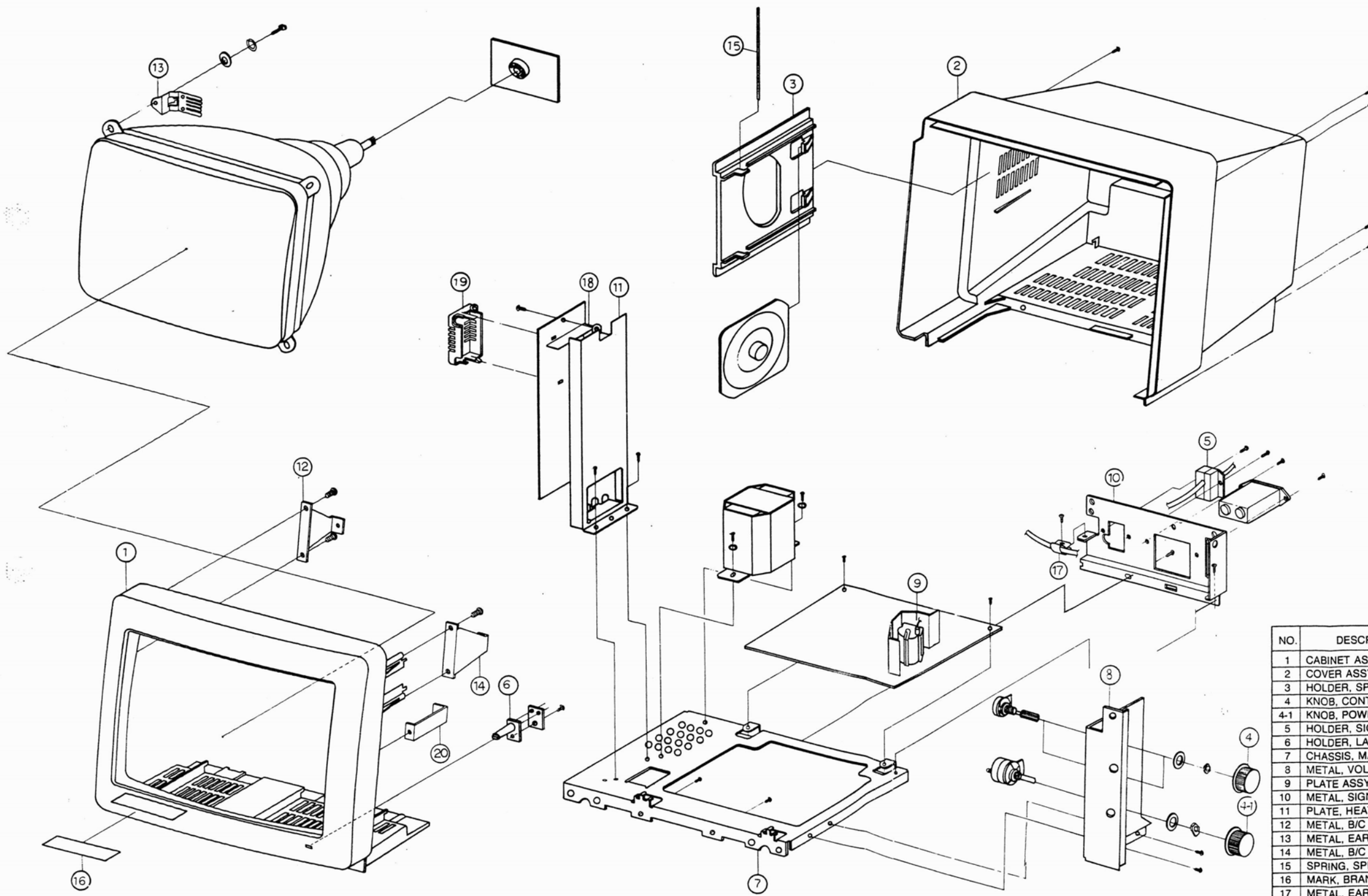
⑲ -70.0VDC

⑳ 69.5VDC

㉑ 28.8VDC

㉒ 600VDC

EXPLODED VIEW



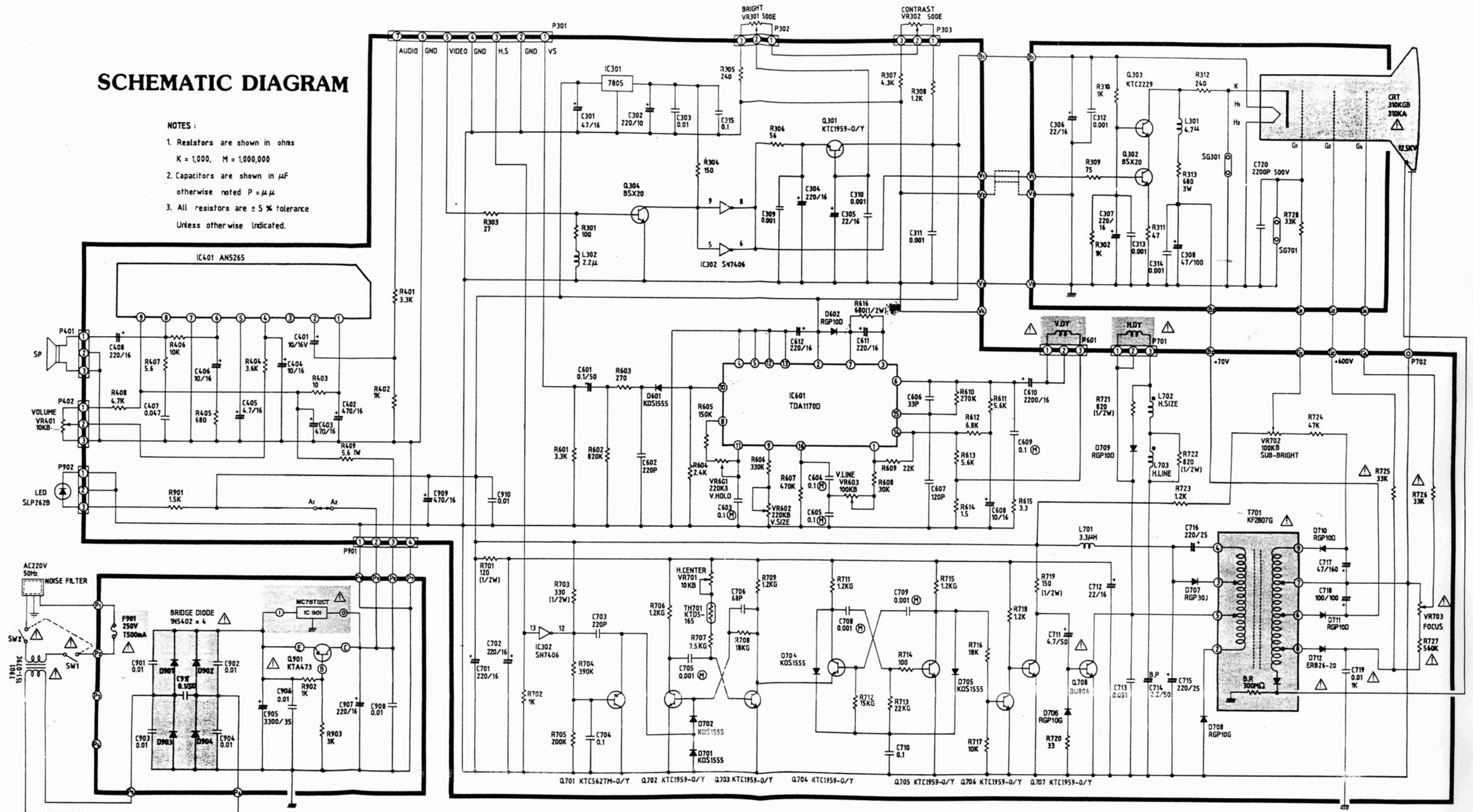
MECHANICAL PARTS

NO.	DESCRIPTION	PART NO.	MATERIAL	Q'TY	REMARK
1	CABINET ASSY	300-105D	HAN NAM HIPS 425TV	1	
2	COVER ASSY. BACK	303-614D	HAN NAM HIPS 425TV	1	
3	HOLDER, SPEAKER	341-236D	HAN NAM HIPS 425TV	1	
4	KNOB, CONTROL	440-488D	LUCKY ABS AF-303	2	
4-1	KNOB, POWER	440-207A	LUCKY ABS AF-303	1	
5	HOLDER, SIGNAL CORD	341-068A	LUCKY ABS AF-303	1	
6	HOLDER, LAMP	341-238A	LUCKY ABS AF-303	1	
7	CHASSIS, MAIN	311-486A		1	
8	METAL, VOLUME FIXING	430-273A		1	
9	PLATE ASSY. HEAT SINK	407-385A		1	
10	METAL, SIGNAL POWER	430-268C		1	
11	PLATE, HEAT SINK	407-384B		1	
12	METAL, B/C FIX (R)	430-420A		1	
13	METAL, EARTY	430-552A		1	
14	METAL, B/C FIX (L)	430-421A		1	
15	SPRING, SPEAKER	320-012B		1	
16	MARK, BRAND	410-193A		1	
17	METAL, EARTH HOLDER	430-554A		1	
18	PLATE, INSULATION	407-448A	SUMILITED	1	
19	COVER, FUSE	303-791A	LUCKY ABS AF-303	1	
20	METAL, VOLUME SUPPORTER	430-553A		1	

SCHEMATIC DIAGRAM

NOTES :

1. Resistors are shown in ohms
K = 1,000, M = 1,000,000
2. Capacitors are shown in μF
otherwise noted P = μF
3. All resistors are $\pm 5\%$ tolerance
Unless otherwise indicated.



⚠ : REPLACE ALL COMPONENTS MARKED WITH SAFETY SYMBOL WITH IDENTICAL TYPE

IMPORTANT SAFETY NOTICE

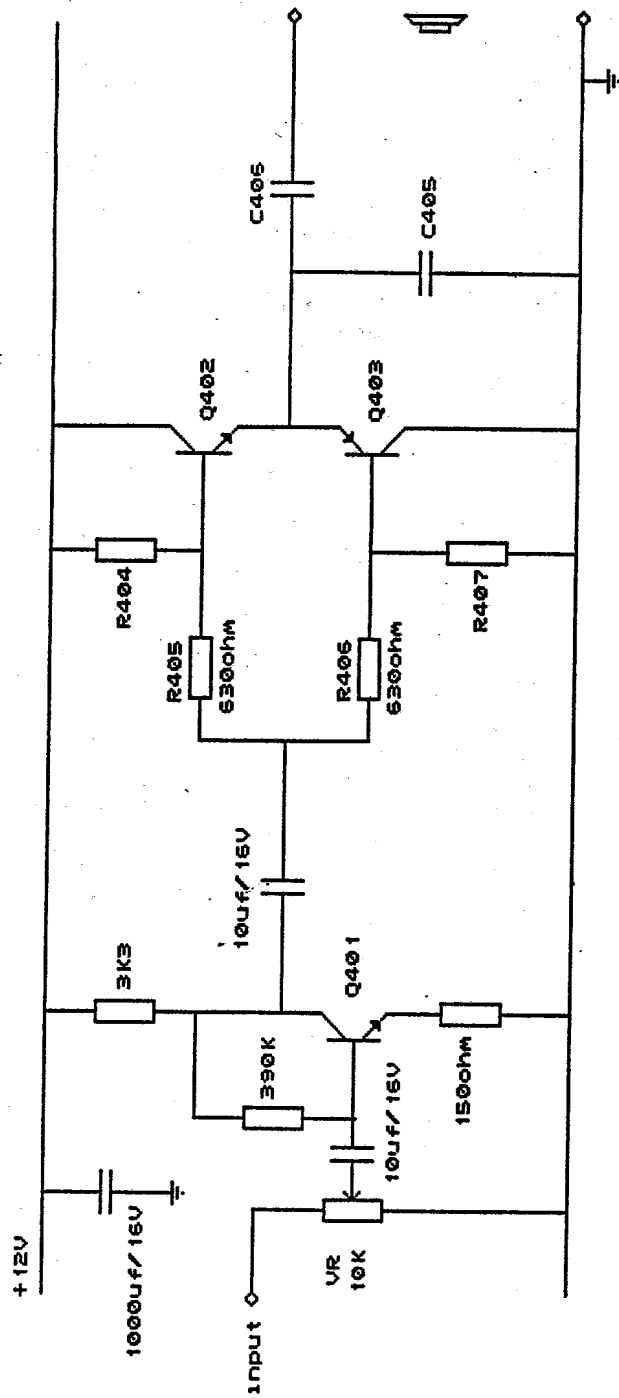
THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

IMPORTANT AVIS SUR LA SÉCURITÉ

LA PARTIE OMBRÉE DE CE DIAGRAMÉ SCHEMATIQUE COMPREND D'IMPORTANTES CARACTÉRISTIQUES SPÉCIALES CONÇUES POUR PROTÉGER DES RAYONS X, ET DES DANGERS D'INCENDIE ET DE SECOURS ÉLECTRIQUES. EN CAS DE BESOIN SI DES PIÈCES DE CETTE PARTIE OMBRÉE DOIVENT ÊTRE REMPLACÉES N'UTILISEZ QUE DES PIÈCES SPÉCIFIÉES PAR LE MANUFACTURIER.

P/N 484-476A

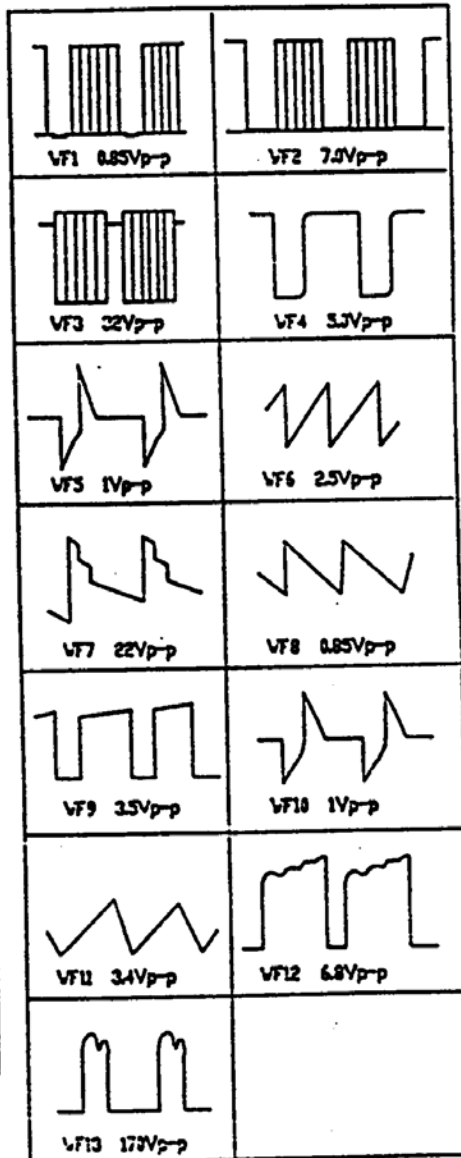
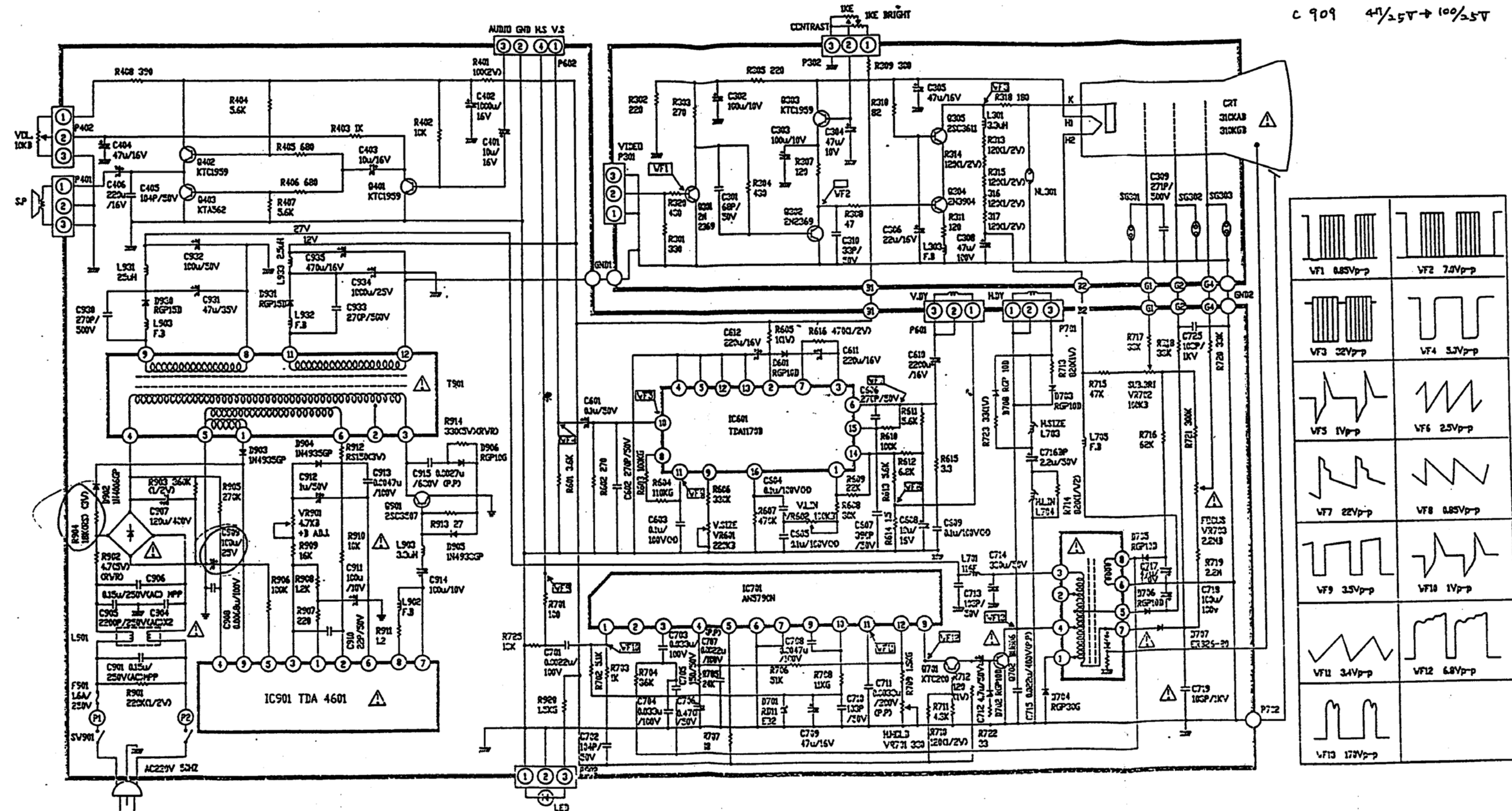
REVISED AUDIO CIRCUIT SM124 MONITOR



MT-21 SCHEMATIC DIAGRAM

R 904 22KΩ 3W → 18KΩ 3W

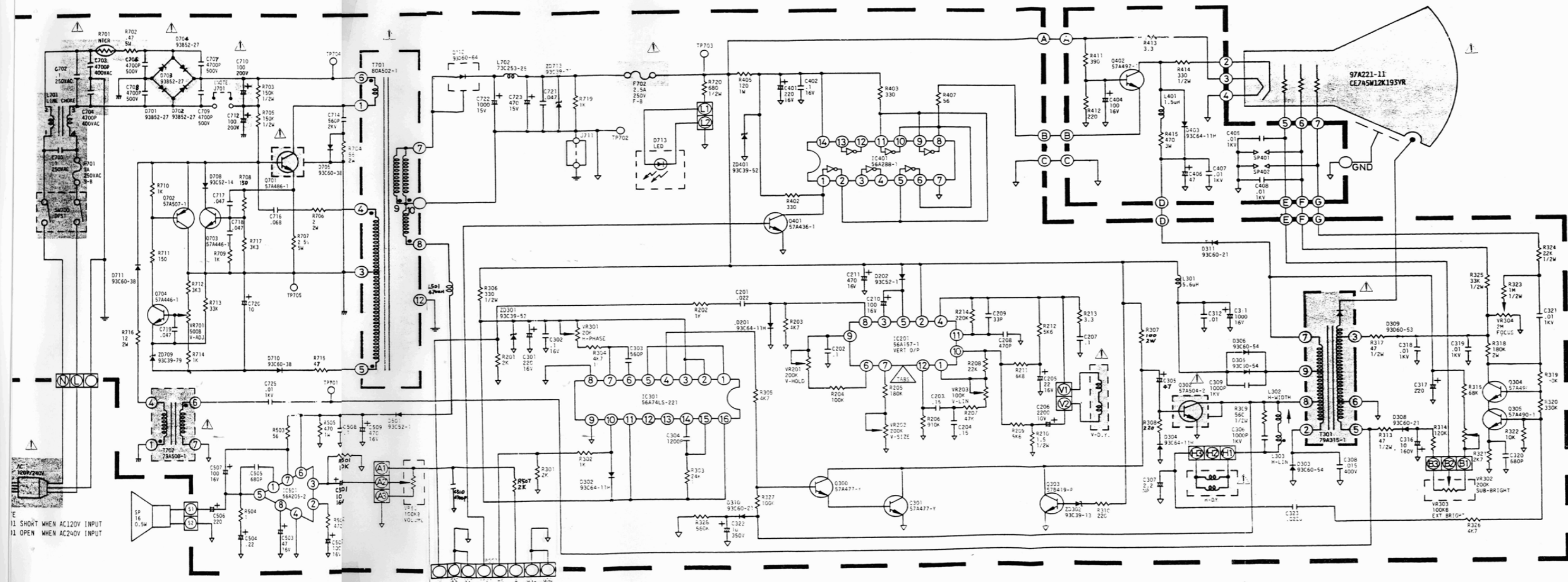
C 909 47/25V → 100/25V



NOTES : 1. RESISTORS ARE SHOWN IN OHMS
 K = 1000 H = 100,000
 2. CAPACITORS ARE SHOWN IN UF
 OTHERWISE NOTED P = u u
 3. ALL RESISTORS ARE ± 5% TOLERANCE
 UNLESS OTHERWISE INDICATED.
 REPLACE ALL COMPONENTS MARKED WITH
 SAFETY SYMBOL WITH IDENTICAL TYPE

IMPORTANT SAFETY NOTICE
 THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SEVERAL
 FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND
 ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IT IS ESSENTIAL THAT
 ONLY MANUFACTURER SPECIFIED PARTS BE USED FOR THE CRITICAL
 COMPONENTS IN THE SHADED AREA OF THE SCHEMATIC.

Nov - 6 - '87
 N. S. LEE



SCHEMATIC DIAGRAM