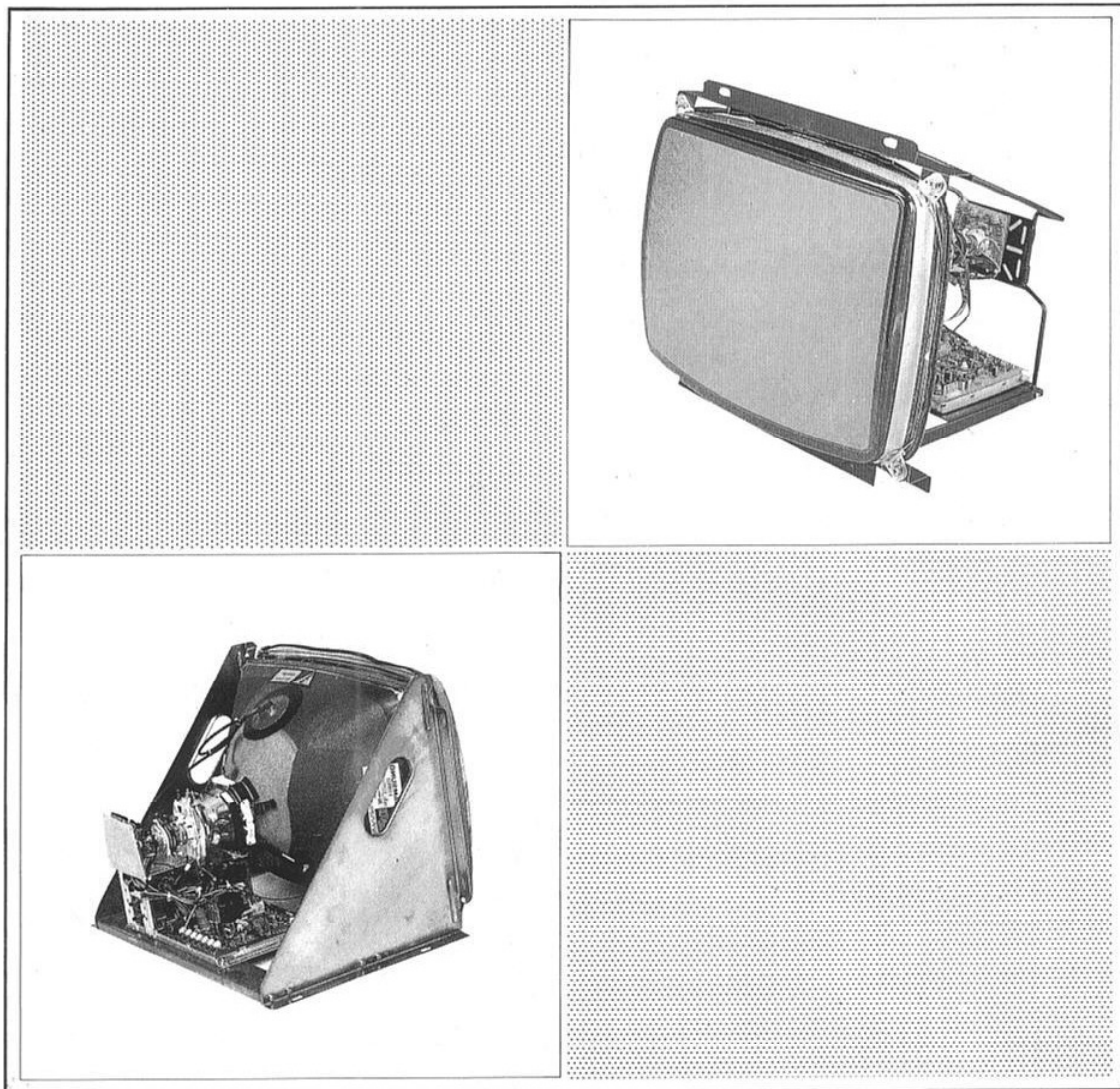


KORTEK

# COLOR DISPLAY MONITOR

## INSTRUCTION MANUAL

KT-1420A



BETSON ENTERPRISES



## ● SAFETY PRECAUTIONS

**WARNING :** Service should not be attempted by anyone unfamiliar with the necessary precautions on this monitor.

The followings are the necessary precautions to be observed before servicing.

- 1) An isolation transformer must be used between the AC supply and the AC plug of the monitor before servicing or testing is performed since the chassis and the heat sink are directly connected to one side of the AC line which involves a shock hazard.  
Before servicing is performed, read all the precautions labelled on the CRT and chassis.
- 2) Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken glass fragments are violently expelled, use shatterproof goggles and keep picture tube away from the bare body while handling.
- 3) Potentials as high as 25Kvolts are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
  - a) Servicing should not be anyone who is not thoroughly familiar with the precautions necessary when working on high – voltage equipment.
  - b) Always discharge the picture tube anode to keep off the shock hazard before removing the anode cap.
  - c) Perfectly discharge the high potential of the picture tube before handling. The picture tube is highly evacuated and if broken glass fragments are violently expelled, use shatterproof goggles and keep picture tube away from the bare body while handling.
- 4) Wind the lead wires around terminals before soldering when replacing parts or circuit boards.
- 5) When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10mm always from circuit board.
- 6) Keep wires away from high voltage or high temperature components.

## ● X – RAY RADIATION PRECAUTIONS

- 1) Excessive high voltage can produce potentially hazardous X – RAY RADIATION.  
To avoid such hazards, the high voltage must not be above the specified limit.  
The nominal value of the high voltage of this receiver is 25Kv at zero beam current (minimum brightness) under a 120VAC power source.  
The high voltage must not, under any circumstances, exceed 30Kv. Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure on page P (11) of this manual. It is recommended the reading of the high voltage be recorded as a part of the service record.  
It is important to use an accurate and reliable high voltage meter.
- 2) The only source of X – RAY RADIATION in this receiver is the picture tube. For continued X – RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.

## ● PERFORMANCE AND OPERATING DATA

Apply a suitable power source to the monitor through an isolation transformer.

Set Up Controls

All controls are preset at the factory, but may be adjusted to suit program material.

–Supply

Voltage 1 105VAC ~ 135VAC (Main Voltage)

Frequency 50Hz ~ 60Hz

(Apply supply voltage through an isolation transformer with 1 Amp. minimum capability)

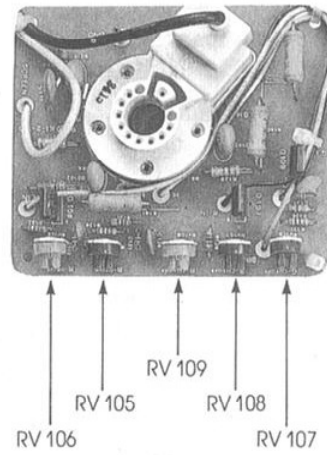
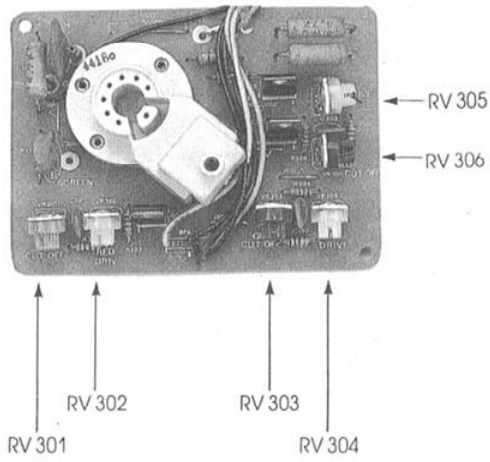
CRT # ORION  
A48JLL 40x18

## ● COLOR SPECIFICATIONS

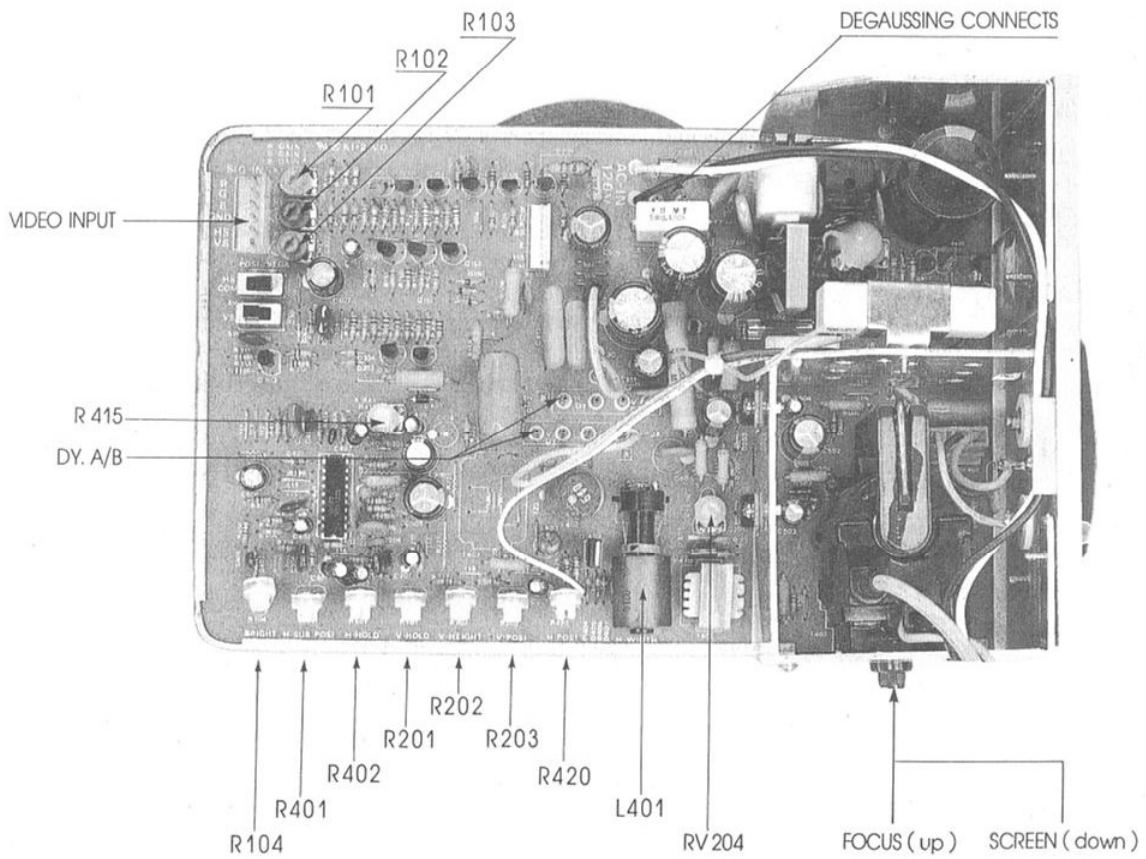
- 1) CRT
  - a) Sam Sung · Orion
  - b) From 9" to 19" diagonal measure
  - c) P22 phosphor
  - d) Polished faceplate standard : variety of optional faceplates and transmittances available.
  - e) Stripe trio spacings (standard) : 0.62mm(9"), 0.66mm(13"), 0.82mm(19")
  - f) Optional finer pitches available.
- 2) INPUT SIGNALS
  - a) Video : RGB analog, 2.5v to 5v peak-to-peak (adjustable with contrast control), 4.7k ohm input impedance, 40 usec to 50 usec active video.
  - b) Optional inputs available
    - Negative video
    - RGB analog 0~0.75v, 75 ohm input impedance
    - Composite video (NTSC)
    - Both composite video and RGB analog : Both signal sources can be connected to the monitor at the same time. Monitor display can be switched from one to the other, at anytime at pixel or vertical frame rate.
  - c) Sync : TTL positive or negative going, separate or composite. Input impedance : 20K ohms for positive going sync; 12K ohms for negative going sync.
- 3) HORIZONTAL SCAN
  - a) Width : Adjustable with just one coil to accommodate active video from 40 usec to 50 usec.
  - b) Frequency : 15.1kHz to 16.8kHz standard; higher scan frequencies available.
  - c) Linearity :  $\pm 5\%$
- 4) PICTURE SIZE REGULATION
  - a) 2%
- 5) VERTICAL SCAN
  - a) Frequency : 47 Hz to 63 Hz
  - b) Linearity :  $\pm 5\%$
- 6) GEOMETRIC DISTORTION
  - a)  $\pm 2\%$  (max)
- 7) VIDEO CHARACTERISTICS
  - a) Bandwidth (-3 db) 6 MHz typical
  - b) Rise Time : Less than 50 nanoseconds
  - c) Overshoot (max) : 5%
- 8) MECHANICAL
  - a) From 9" to 19" monitor is available in universal mount brackets. The monitor can be mounted in the user's cabinet horizontally or vertically.
  - b) The monitor is available as a kit - without a frame : Also available in chassis form - adaptable to individual customer requirements.
  - c) Contact your sales representative for details.
- 9) USER ADJUSTABLE CONTROLS AND ADJUSTMENTS
  - a) Brightness, Horizontal Hold, Horizontal Size, Horizontal Raster Position, Horizontal Video Position, Vertical Hold, Vertical Size, Vertical Raster Position, Focus. Custom Control Location available.
- 10) POWER INPUT
  - a) 120 VAC +10% ~ -10%, 50~60Hz, 85W (max)  
Isolation transformer required ; furnished with monitor as an option.
- 11) ENVIRONMENTAL CONDITIONS
  - a) Operating temperature 0° to 55°C. Complies with U.L., C.S.A., and D.H.H.S. radiation performance standard (composite video).
- 12) RESOLUTIONS
  - a) Standard CRT
    - 9" 280 Pixels × 240 Lines
    - 13" 400 Pixels × 240 Lines
    - 19" 400 Pixels × 240 Lines

**22.5  $\phi$  NECK BOARD**

**29.1  $\phi$  NECK BOARD**



**MAIN BOARD**



## ● SERVICE INSTRUCTIONS

All monitors are equipped with automatic degaussing coils which demagnetize the picture tube every time the monitor is turned on after being off for a minimum of 5 minutes.

Should any part of the chassis become magnetized it will be necessary to degauss the affected area with a manual degaussing coil. Move the coil slowly around the CRT face area and all surrounding metal parts. Then slowly withdraw for a distance of 6 feet before turning off.

## ● CIRCUIT ADJUSTMENT

- 1) 117V Power Supply Adjustment ( Adjust RV 601 )
- 2) Horizontal Oscillator Adjustment ( Adjust R 402 )  
If there is an indication of unstable horizontal synchronization, adjust the Horizontal Hold Control ( R 402 ) to produce a stable picture.
- 3) Width Adjustment ( Adjust L 401 )  
If the picture of the screen is not adequately wide, adjust L 401 to the width as required.
- 4) Horizontal Raster Position Adjustment ( Adjust R 420 )  
If the picture is off center horizontally, some compensation can be made by adjusting R 420 as required.
- 5) Vertical Oscillator Adjustment ( Adjust R 201 )  
If the picture moves up or down on the screen, adjust the Vertical Hold Control ( R 201 ) until there is a single picture on the screen.
- 6) Vertical Height Adjustment ( Adjust R 202 )  
Adjust Height Control ( R 202 ) to change the height of the picture or pattern.
- 7) Vertical Raster Position Adjustment ( Adjust R 203 )  
If the picture or pattern is off center vertically, some compensation can be made by adjustment ( R 203 ) as required.
- 8) White Balance Adjustment ( Adjust RV 105. RV 108. RV 106. RV 107. RV 109 )
- 9) Focus Adjustment ( Adjust Focus VR )  
Adjust focus control VR on focus pack for well defined scanning lines in the central area of the screen.
- 10) Brightness Adjustment ( Adjust R 104 )  
Adjustment of R 104 may be necessary to obtain the proper black level. Do not use the screen control to set the black level.
- 11) Screen Adjustment ( Adjust Screen VR on Focus Pack )  
This control has been set at the factory and should not need further attention. If however it is necessary when the game is applied, adjust Screen VR on Focus Pack.

## ● CONVERGENCE MAGNET ASSEMBLY POSITIONING

Convergence magnet assembly and rubber wedges need mechanical positioning following the figure 3.

## ● COLOR PURITY ADJUSTMENT

**NOTE :** Before attempting any purity adjustments, the monitor should be operated for at least fifteen minutes.

- 1) Demagnetize the picture tube and cabinet using a degaussing coil.
- 2) Turn the BRIGHTNESS control to maximum.
- 3) Adjust RED and BLUE CUT controls ( RV 108, RV 107 ) ( RV 301, RV 305 ) to provide only a green raster. The adjustment of the GREEN CUT control ( RV 109 ) ( RV 301 ) is necessary.
- 4) Loosen the clamp screw holding the yoke, and slide the yoke backward to provide vertical green belt ( zone ) in the picture screen.
- 5) Remove the Rubber Wedges.

- 6) Rotate and spread the tabs of the purity magnet ( See figure 4 ) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically.
- 7) Move the yoke slowly forward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
- 8) Check the purity of the RED and BLUE raster by adjusting the CUT controls.
- 9) Proceed with convergence adjustment.

## ● CONVERGENCE ADJUSTMENT

**NOTE :** Before attempting any convergence adjustments, the monitor should be operated for at least fifteen minutes.

### 1) CENTER CONVERGENCE ADJUSTMENT

- a) Receive crosshatch pattern with a R.G.B. signal generator.
- b) Adjust the BRIGHTNESS control for well defined pattern.
- c) Adjust two tabs of the 4–Pole magnets to change the angle between them ( See figure 4 ) and superimpose RED and BLUE vertical lines in the center area of the picture screen.( See figure 5 ).
- d) Turn both tabs at the same time keeping the constant angle to superimpose RED and BLUE horizontal lines at the center of the screen. ( See figure 5 )
- e) Adjust two tabs of 6–Pole magnets to superimpose RED and BLUE line with GREEN one. Adjusting the angle affects the vertical lines and rotating dot magnets affects the horizontal lines.
- f) Repeat adjustments 3). 4). 5) keeping in mind RED, GREEN and BLUE movement, because 4–Pole magnets and 6–Pole magnets interact and make dot movement complex.

### 2) CIRCUMFERENCE CONVERGENCE ADJUSTMENT

**NOTE :** This adjustment requires Rubber Wedge Kit

- a) Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
- b) Place a wedge as shown in figure 3 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
- c) Tilt front of the deflection yoke up or down to obtain better convergence in circumference. ( See figure 5 ) Push the mounted wedge into the space between picture tube and the yoke to hold to yoke temporarily.
- d) Place other wedge into bottom space and remove the cover paper to stick.
- e) Tilt front of the yoke right or left to obtain better convergence in circumference. ( See figure 5 ).
- f) Hold the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to hold the yoke.
- g) Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
- h) After placing three wedges, recheck overall convergence. Tighten the screw firmly to hold the yoke tightly in place.
- i) Stick 3 adhesive tapes on wedges as shown in figure 3.

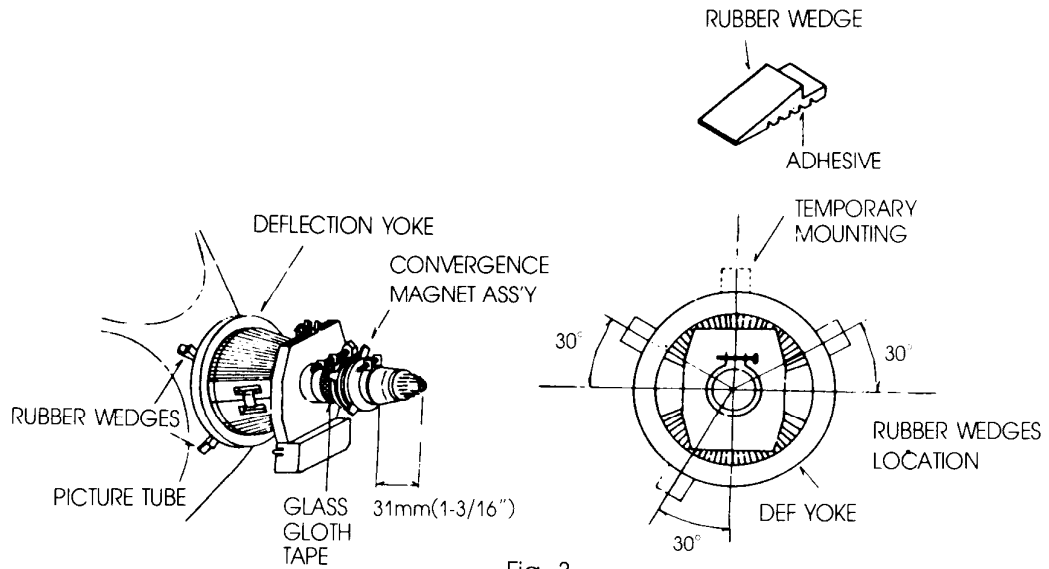


Fig. 3

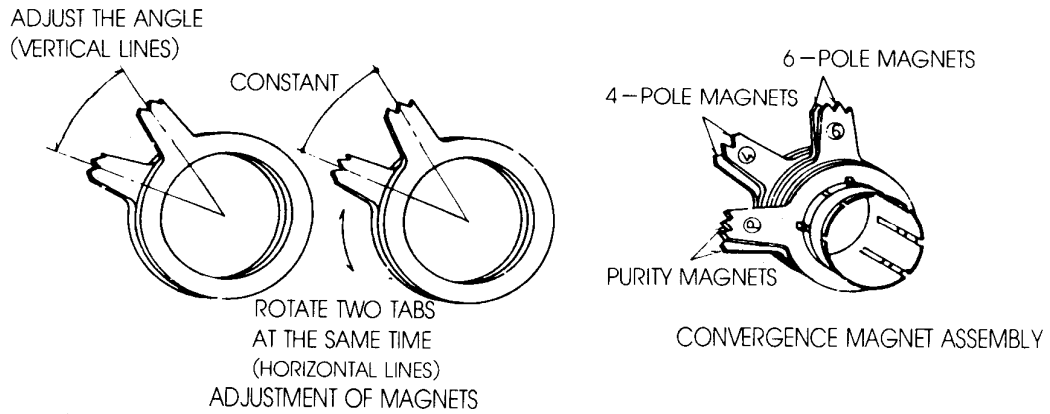


Fig.4

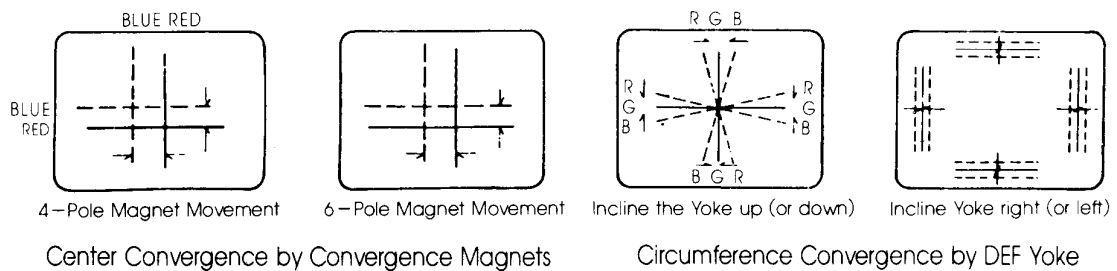
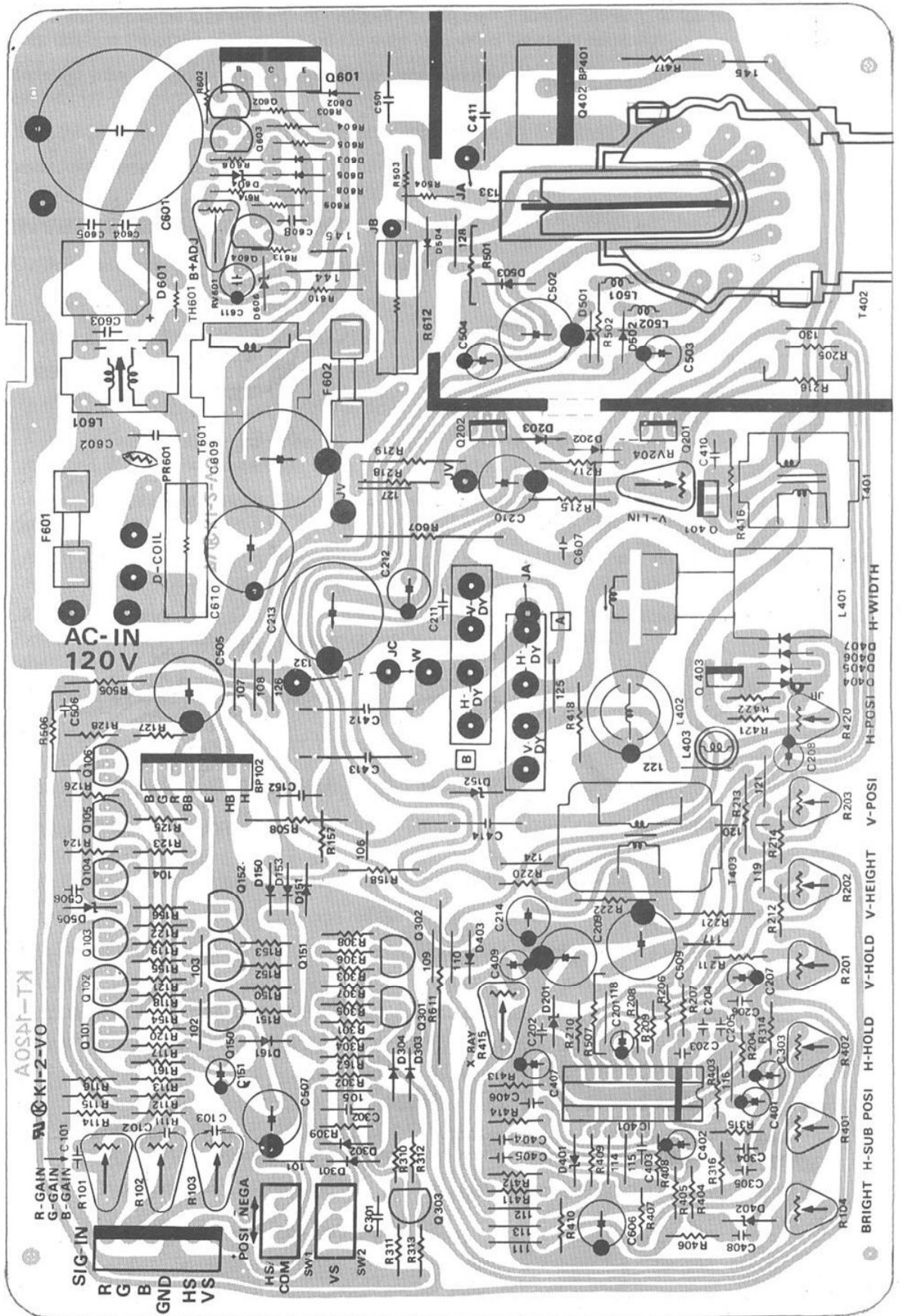


Fig.5 Dot Movement Pattern

# P.C. BOARD LAYOUT



ACOSM-TX

R-GAIN  
G-GAIN  
B-GAIN  
SIG-IN

R 101  
G 102  
B 103  
GND  
HS  
VS

AC-IN  
120V

F601  
D-COIL  
TH601 B+ADJ

POS1 (NEGA)  
HS/COM  
SW1  
VS  
SW2

R310  
R313  
R312  
Q303

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R402  
R403  
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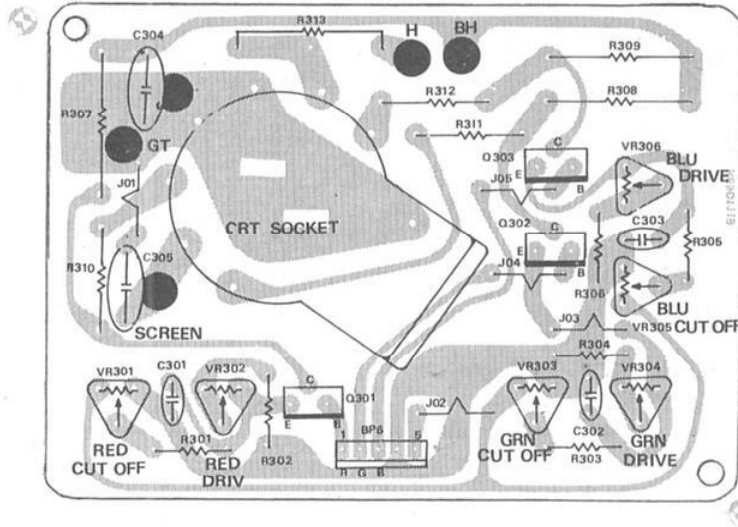
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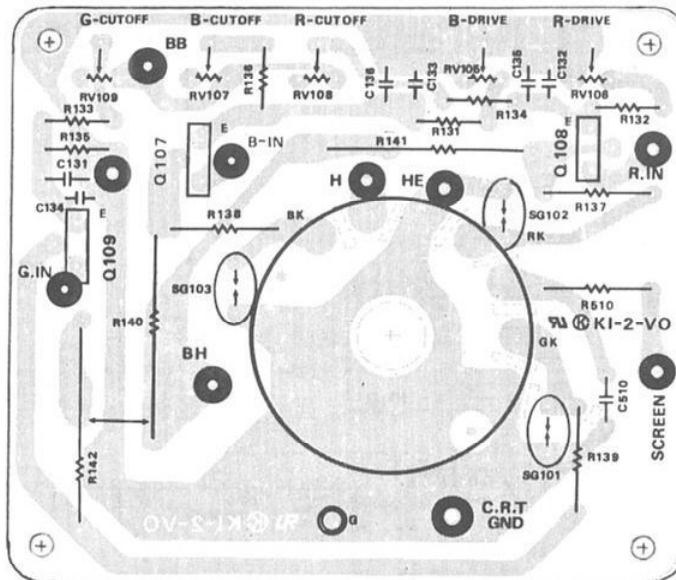
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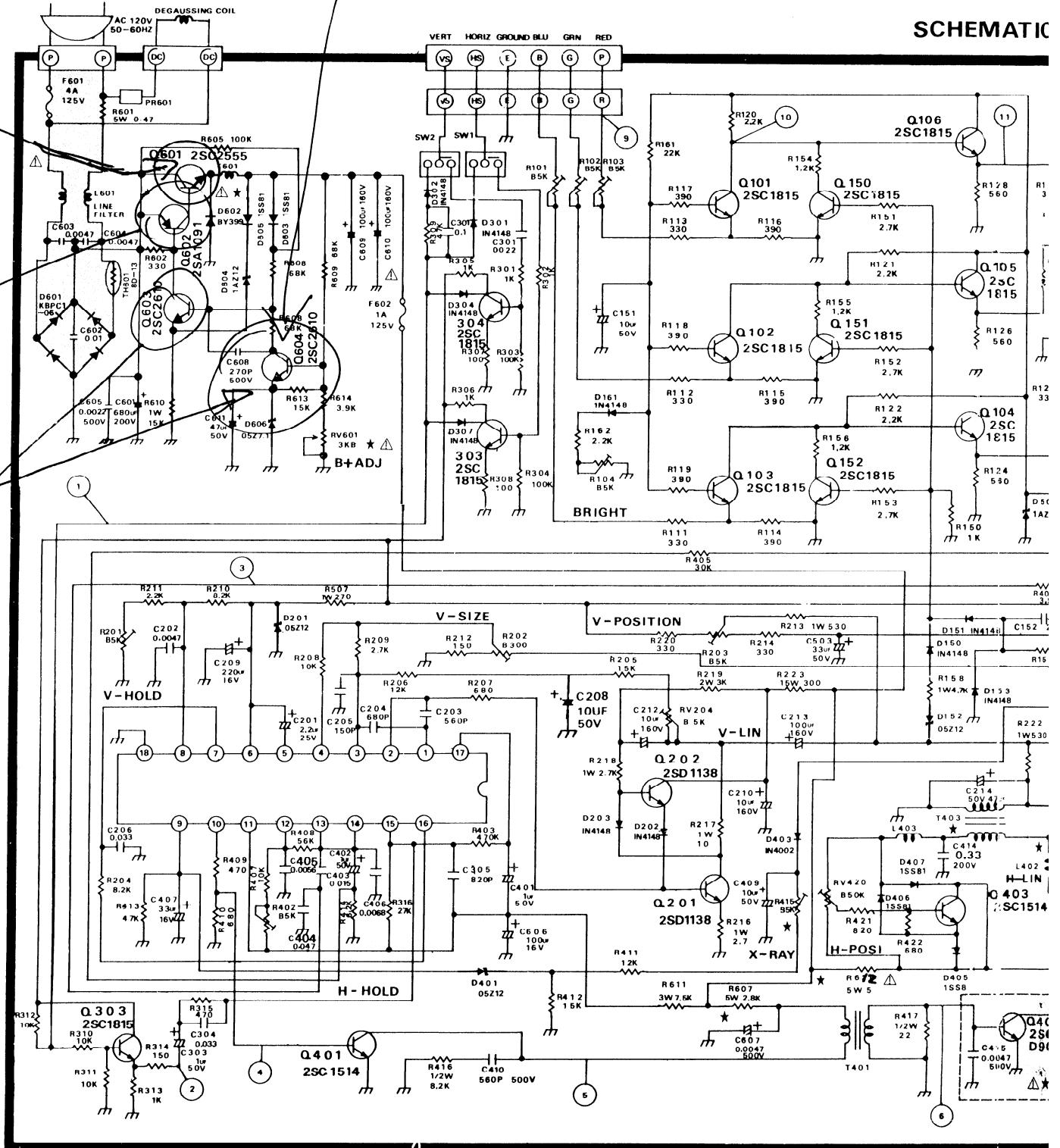
## 22.5 $\phi$ NECK BOARD



## 29.1 $\phi$ NECK BOARD



SCHMATIC

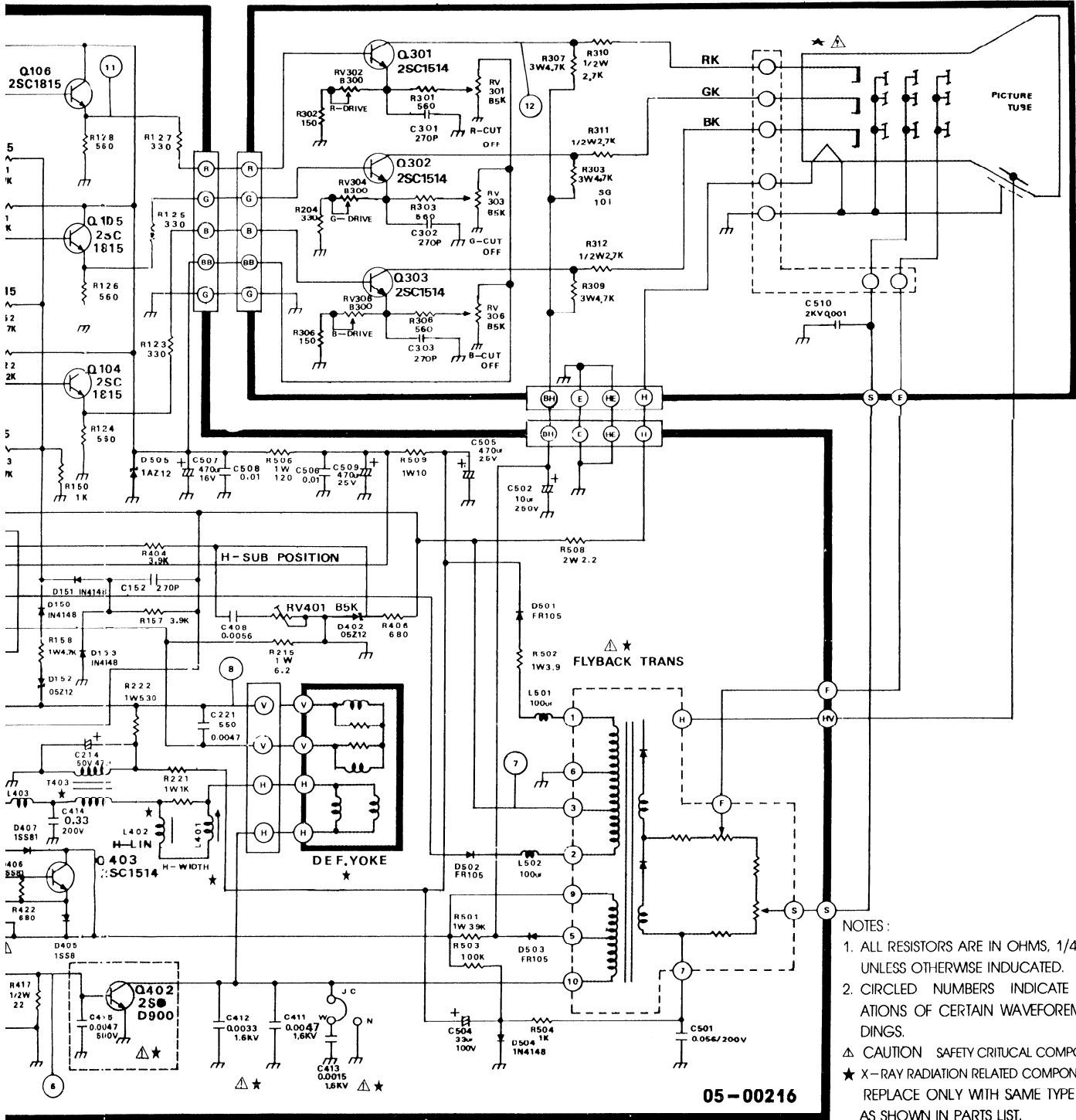


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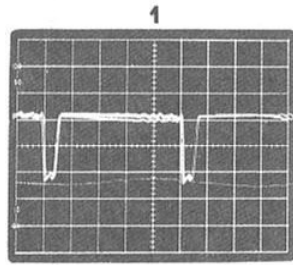
# SCHEMATIC DIAGRAM



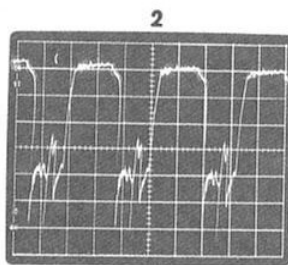
- NOTES:
1. ALL RESISTORS ARE IN OHMS, 1/4W, 5%, UNLESS OTHERWISE INDICATED.
  2. CIRCLED NUMBERS INDICATE LOCATIONS OF CERTAIN WAVEFORM READINGS.
- △ CAUTION SAFETY CRITICAL COMPONENT.  
 ★ X-RAY RADIATION RELATED COMPONENT.  
 REPLACE ONLY WITH SAME TYPE PARTS AS SHOWN IN PARTS LIST.

| DESCRIPTION | REF. NO. | 14"      | 20"      |
|-------------|----------|----------|----------|
| Capacitor   | C 411    | 0.0033uF | 0.0047uF |
|             |          |          |          |

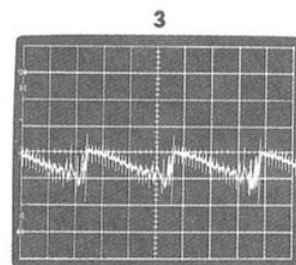
## ● CONTROL TEST POINTS AND WAVE FORMS



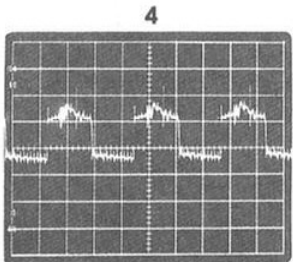
0.5V/DIV  
X1  
50uSEC/DIV



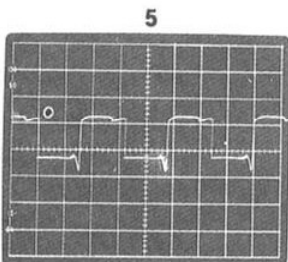
1V/DIV  
X1  
20uSEC/DIV



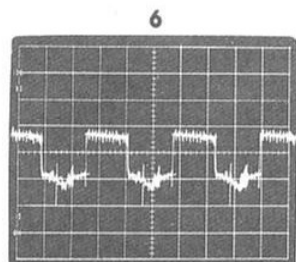
0.5V/DIV  
X1  
50uSEC/DIV



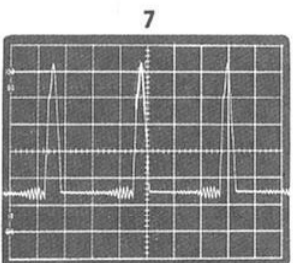
0.5V/DIV  
X1  
50uSEC/DIV



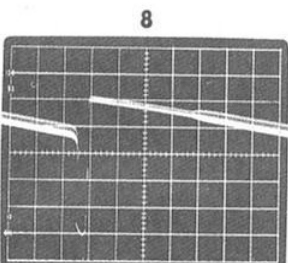
5V/DIV  
X10  
50uSEC/DIV



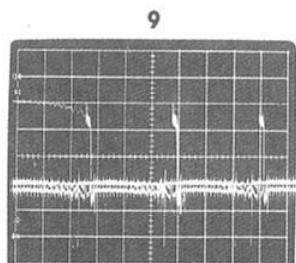
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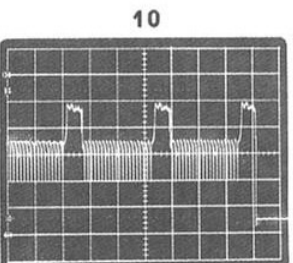
5V/DIV  
X1  
50uSEC/DIV



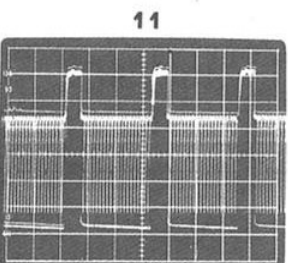
2V/DIV  
X10  
50uSEC/DIV



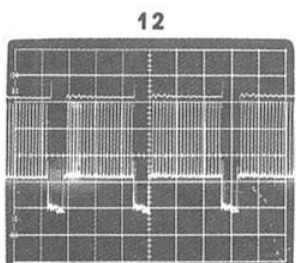
1V/DIV  
X1  
1uSEC/DIV



2V/DIV  
X1  
10uSEC/DIV

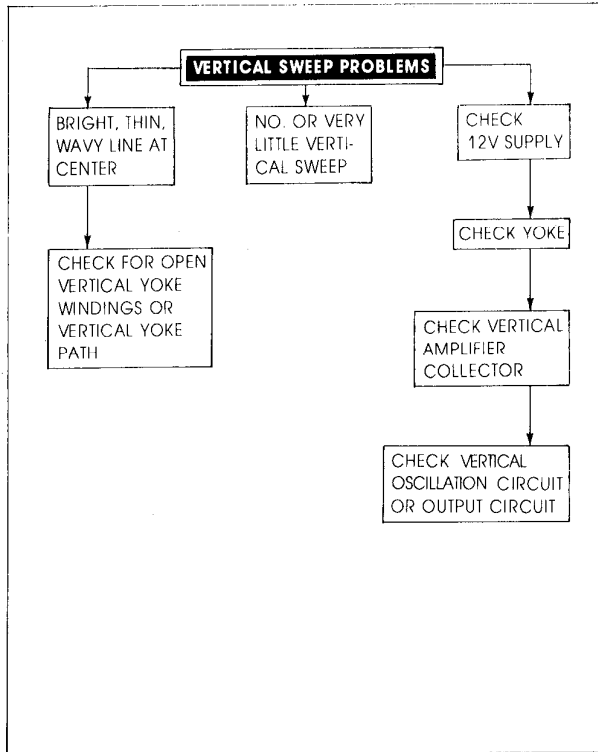
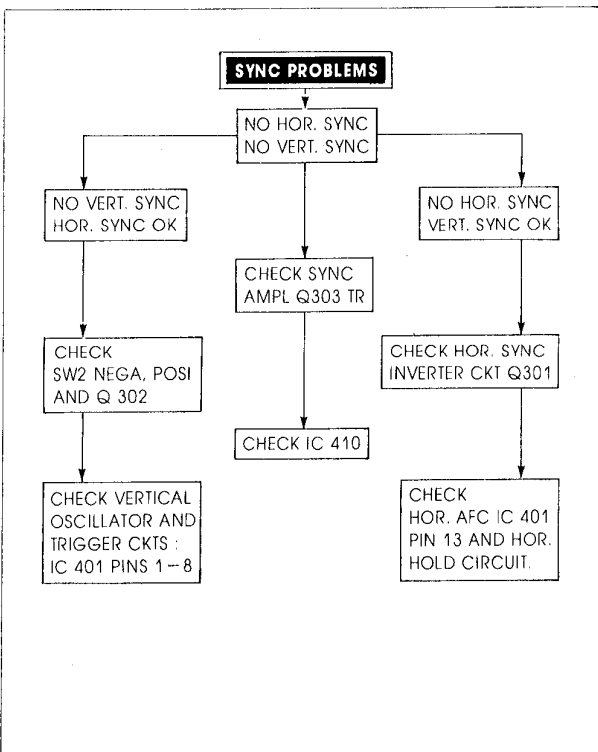
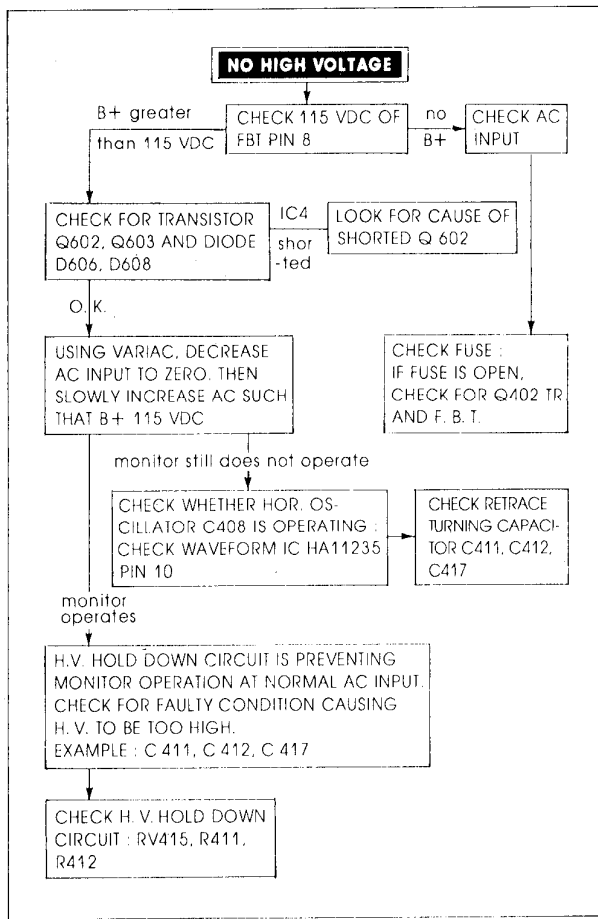
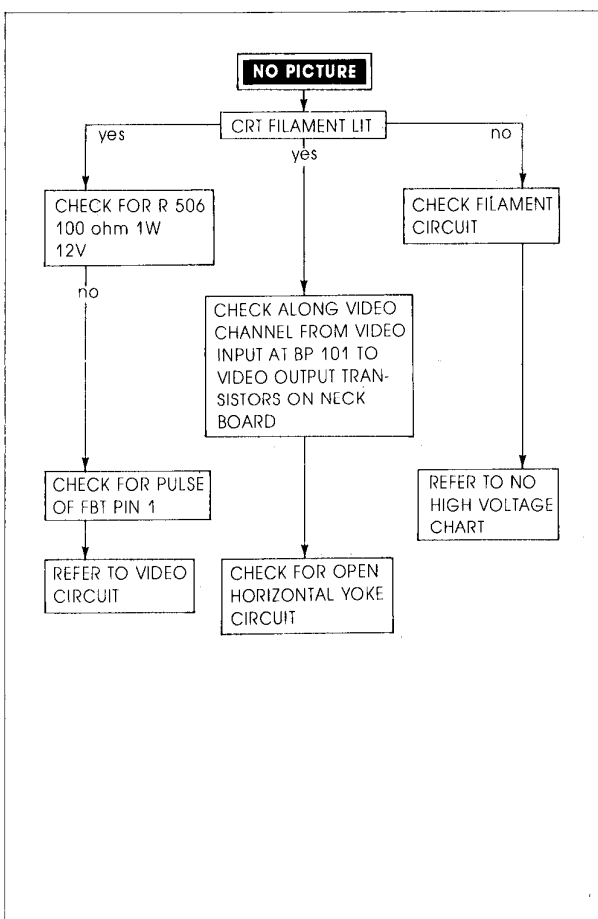


5V/DIV  
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10uSEC/DIV

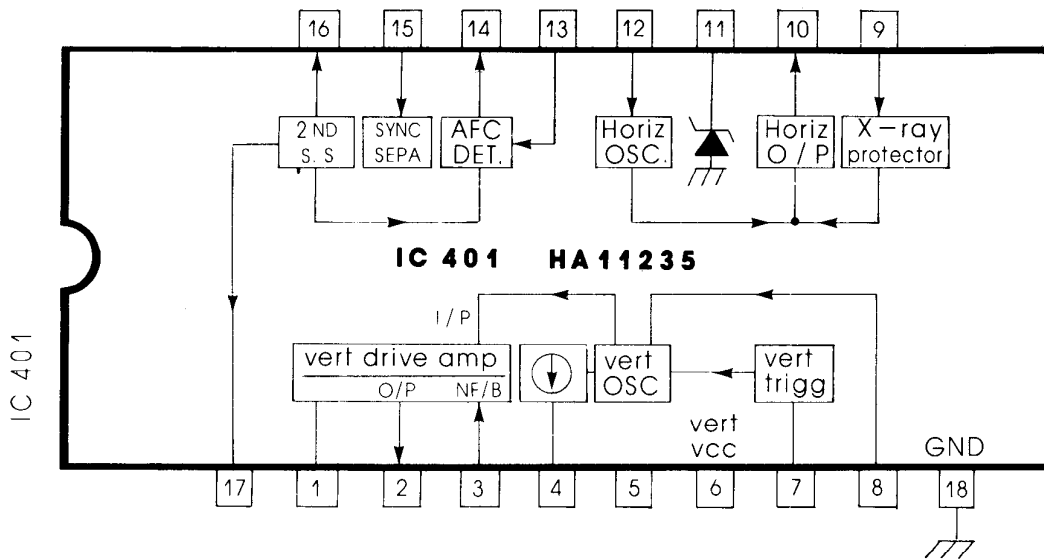


1V/DIV  
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1uSEC/DIV

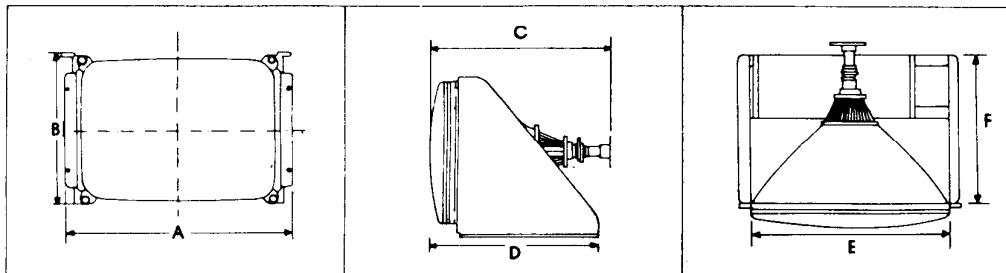
# TROUBLESHOOTING CHART



● IC 401



● MECHANICAL DATA



|           | A     | B     | C     | D     | E     | F     |
|-----------|-------|-------|-------|-------|-------|-------|
| KTA-1401S | 262mm | 327mm | 298mm | 339mm | 423mm | 414mm |
| KTA-2001S | 520mm | 360mm | 355mm | 380mm | 445mm | 315mm |

## ● GENERAL REPLACEMENT PARTS LIST

For all K5000 models except where noted.

This monitor contains circuits and components included specifically for safety purposes.

For continued protection no changes should be made to the original design, and components shown in shaded areas of schematic, or  $\Delta$ ★ on parts list should be replaced with exact factory replacement parts.

The use of substitute parts may create a shock, fire, radiation or other hazard. Service should be performed by qualified personnel only.

## ● PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION              | REF. NO. | PART NO.            | DESCRIPTION              |
|----------|----------|--------------------------|----------|---------------------|--------------------------|
|          | RESISTOR |                          |          | RESISTOR            |                          |
| R111     | R004-331 | 330 ohm 1/4W Carbon      | R315     | R004-331            | 330 ohm 1/4W Carbon      |
| R112     | R004-331 | 330 ohm 1/4W Carbon      | R316     | R004-273            | 27 Kohm 1/4W Carbon      |
| R113     | R004-331 | 330 ohm 1/4W Carbon      | R403     | R004-474            | 470Kohm 1/4W Carbon      |
| R114     | R004-391 | 390 ohm 1/4W Carbon      | R404     | R004-392            | 3.9K ohm 1/4W Carbon     |
| R115     | R004-391 | 390 ohm 1/4W Carbon      | R405     | R004-303            | 30 Kohm 1/4W Carbon      |
| R116     | R004-391 | 390 ohm 1/4W Carbon      | R406     | R004-681            | 680 ohm 1/4W Carbon      |
| R117     | R004-391 | 390 ohm 1/4W Carbon      | R407     | R004-103            | 10 Kohm 1/4W Carbon      |
| R118     | R004-391 | 390 ohm 1/4W Carbon      | R408     | R004-563            | 56 Kohm 1/4W Carbon      |
| R119     | R004-391 | 390 ohm 1/4W Carbon      | R409     | R004-471            | 470 ohm 1/4W Carbon      |
| R120     | R004-222 | 2.2 Kohm 1/4W Carbon     | R410     | R004-681            | 680 ohm 1/4W Carbon      |
| R121     | R004-222 | 2.2 Kohm 1/4W Carbon     | R411     | R004-123            | 12 Kohm 1/4W Carbon      |
| R122     | R004-222 | 2.2 Kohm 1/4W Carbon     | R412     | R004-153            | 15 Kohm 1/4W Carbon      |
| R123     | R004-331 | 330 ohm 1/4W Carbon      | R413     | R004-472            | 4.7 Kohm 1/4W Carbon     |
| R124     | R004-561 | 560 ohm 1/4W Carbon      | R414     | R004-622            | 6.2 Kohm 1/4W Carbon     |
| R125     | R004-331 | 330 ohm 1/4W Carbon      | R416     | R002-822            | 8.2 Kohm 1/2W Carbon     |
| R126     | R004-561 | 560 ohm 1/4W Carbon      | R417     | R002-220            | 22 ohm 1/2W Carbon       |
| R127     | R004-331 | 330 ohm 1/4W Carbon      | R418     | 0010-272            | 2.7 Kohm 1 W Metal Oxide |
| R128     | R004-561 | 560 ohm 1/4W Carbon      | R421     | R004-821            | 820 ohm 1/4W Carbon      |
| R150     | R004-102 | 1 Kohm 1/4W Carbon       | R422     | R004-681            | 680 ohm 1/4W Carbon      |
| R151     | R004-272 | 2.7 Kohm 1/4W Carbon     | R501     | 0010-393            | 3.9 Kohm 1 W Metal Oxide |
| R152     | R004-222 | 2.7 Kohm 1/4W Carbon     | R502     | 0010-039            | 3.9 ohm 1 W Metal Oxide  |
| R153     | R004-272 | 2.7 Kohm 1/4W Carbon     | R503     | 0010-104            | 100Kohm 1 W Metal Oxide  |
| R154     | R004-122 | 1.2 Kohm 1/4W Carbon     | R504     | R004-102            | 1 Kohm 1/4W Carbon       |
| R155     | R004-122 | 1.2 Kohm 1/4W Carbon     | R505     | 0010-100            | 10 ohm 1 W Metal Oxide   |
| R156     | R004-122 | 1.2 Kohm 1/4W Carbon     | R506     | 0010-121            | 120 ohm 1 W Metal Oxide  |
| R157     | R004-392 | 3.9 Kohm 1/4W Carbon     | R507     | 0010-271            | 270 ohm 1 W Metal Oxide  |
| R158     | 0010-472 | 4.7 Kohm 1 W Metal Oxide | R508     | 0020-022            | 2.2 ohm 2 W Metal Oxide  |
| R161     | R004-223 | 22 Kohm 1/4W Carbon      | △ R601   | NG50-047            | 0.47 ohm 5 W Cement      |
| R162     | R004-222 | 2.2 Kohm 1/4W Carbon     | R602     | F004-331            | 330 ohm Fuseble/R        |
| R204     | R004-822 | 8.2 Kohm 1/4W Carbon     | R603     | F004-680            | 680 ohm Fuseble          |
| R205     | R004-153 | 15 Kohm 1/4W Carbon      | R604     | R004-105            | 1 M ohm 1/4W Carbon      |
| R206     | R004-123 | 12 Kohm 1/4W Carbon      | R605     | R004-104            | 100Kohm 1/4W Carbon      |
| R207     | R004-681 | 680 ohm 1/4W Carbon      | R606     | R004-153            | 15 Kohm 1/4W Carbon      |
| R208     | R004-103 | 10 Kohm 1/4W Carbon      | ★ R607   | 0050-282            | 2.8 Kohm 5 W Metal Oxide |
| R209     | R004-272 | 2.7 Kohm 1 W Carbon      | R608     | R004-683            | 68 Kohm 1/4W Carbon      |
| R210     | R004-822 | 8.2 Kohm 1/4W Carbon     | R609     | R004-683            | 68 Kohm 1/4W Carbon      |
| R211     | R004-222 | 2.2 Kohm 1/4W Carbon     | R610     | 0010-153            | 15 Kohm 1 W Metal Oxide  |
| R212     | R004-181 | 180 ohm 1/4W Carbon      | R611     | 0030-752            | 7.5 Kohm 3 W Metal Oxide |
| R213     | 0010-531 | 530 ohm 1/4W Metal Oxide | △★ R612  | F050-005            | 5 ohm 5 W Fuseble/R      |
| R214     | R004-331 | 330 ohm 1/4W Carbon      | R613     | R004-153            | 15 Kohm 1/4W Carbon      |
| R215     | 0010-062 | 6.2 ohm 1 W Metal Oxide  | R614     | R004-392            | 3.9K ohm 1/4W Carbon     |
| R216     | 0010-027 | 2.7 ohm 1 W Metal Oxide  | D. P.    | R002-272            | .7K ohm 1/2W Carbon      |
| R217     | 0010-100 | 10 ohm 1/4W Metal Oxide  |          |                     |                          |
| R218     | 0010-272 | 2.7 Kohm 1 W Metal Oxide |          |                     |                          |
| R219     | 0020-302 | 3 Kohm 2 W Metal Oxide   |          |                     |                          |
| R220     | R004-331 | 330 ohm 1/4W Carbon      |          |                     |                          |
| R223     | N150-301 | 300 ohm 15 W Cement      |          |                     |                          |
| R304     | R004-102 | 1 Kohm 1/4W Carbon       |          |                     |                          |
| R302     | R004-102 | 1 Kohm 1/4W Carbon       |          |                     |                          |
| R303     | R004-104 | 100Kohm 1/4W Carbon      |          |                     |                          |
| R304     | R004-104 | 100Kohm 1/4W Carbon      |          |                     |                          |
| R305     | R004-102 | 1 Kohm 1/4W Carbon       |          |                     |                          |
| R306     | R004-102 | 1 Kohm 1/4W Carbon       |          |                     |                          |
| R307     | R004-101 | 100 ohm 1/4W Carbon      |          |                     |                          |
| R308     | R004-101 | 100 ohm 1/4W Carbon      |          |                     |                          |
| R309     | R004-473 | 47 Kohm 1/4W Carbon      |          |                     |                          |
| R310     | R004-103 | 10 Kohm 1/4W Carbon      |          |                     |                          |
| R311     | R004-103 | 10 Kohm 1/4W Carbon      |          |                     |                          |
| R312     | R004-103 | 10 Kohm 1/4W Carbon      |          |                     |                          |
| R313     | R004-102 | 1 Kohm 1/4W Carbon       |          |                     |                          |
| R314     | R004-151 | 150 ohm 1/4W Carbon      |          |                     |                          |
|          |          |                          |          | SEMI-FIXED RESISTOR |                          |
|          |          |                          | RV101    | F92R-502            | 5 Kohm B (RED)           |
|          |          |                          | RV102    | F92G-502            | 5 Kohm B (GREEN)         |
|          |          |                          | RV103    | F92B-502            | 5 Kohm B (BLUE)          |
|          |          |                          | RV104    | F17W-502            | 5 Kohm B                 |
|          |          |                          | RV201    | F17W-502            | 5 Kohm B                 |
|          |          |                          | RV202    | F17W-301            | 300 ohm B                |
|          |          |                          | RV203    | F17W-502            | 5 Kohm B                 |
|          |          |                          | RV204    | F92W-502            | 5 Kohm B                 |
|          |          |                          | RV401    | F17W-502            | 5 Kohm B                 |
|          |          |                          | RV402    | F17W-502            | 5 Kohm B                 |
|          |          |                          | ★ RV415  | F92W-502            | 5 Kohm B                 |
|          |          |                          | RV420    | F17W-503            | 50 Kohm B                |
|          |          |                          | △★ RV601 | F92W-303            | 3 Kohm B                 |
|          |          |                          |          | CAPACITORS          |                          |
|          |          |                          | Ⓞ C151   | E050-106            | 10uFK 50V Electrolytic   |
|          |          |                          | C152     | C500-271            | 270pF 500V Ceramic       |

● PART LIST

| REF. NO.        | PART NO.   | DESCRIPTION                |
|-----------------|------------|----------------------------|
| CAPACITORS      |            |                            |
| C201            | TA25 - 225 | 2.2 uF 25V Tantal          |
| C202            | M100-472   | 0.0047 uF 100V Mylar       |
| C203            | C050-561   | 560 pF 50V Ceramic         |
| C204            | C050-681   | 680 pF 50V Ceramic         |
| C205            | C050-151   | 150 pF 50V Ceramic         |
| C206            | M100-333   | 0.033 uF 100V Mylar        |
| <del>C207</del> | E050 -105  | 1 uF 50V Electrolytic      |
| <del>C208</del> | E050 -106  | 10 uF 50V Electrolytic     |
| <del>C209</del> | E016 -227  | 220 uF 16V Electrolytic    |
| C210            | E160 -106  | 10 uF 160V Electrolytic    |
| C211            | C500-472   | 0.0047 uF 500V Ceramic     |
| C212            | F160 -106  | 10 uF 160V Electrolytic    |
| <del>C213</del> | E160 -107  | 100 uF 160V Electrolytic   |
| C301            | M100-223   | 0.022 uF 100V Mylar        |
| C302            | M100-104   | 0.1 uF 100V Mylar          |
| • C303          | E050 -105  | 1 uF 50V Electrolytic      |
| C304            | M100-333   | 0.033 uF 100V Mylar        |
| C305            | C050-821   | 820 uF 50V Ceramic         |
| • C401          | E050 -105  | 1 uF 50V Electrolytic      |
| • C402          | E050 -105  | 1 uF 50V Electrolytic      |
| C403            | M100-153   | 0.015 uF 100V Mylar        |
| C404            | M100-473   | 0.047 uF 100V Mylar        |
| C405            | M100-562   | 0.0056 uF 100V Mylar (T1N) |
| C406            | M100-682   | 0.0068 uF 100V Mylar       |
| C407            | E016 -336  | 33 uF 16V Electrolytic     |
| C408            | M100-562   | 0.0056 uF 100V Mylar       |
| C409            | E050 -106  | 10 uF 50V Electrolytic     |
| C410            | C500-561   | 560 uF 500V Ceramic        |
| ▲ ★ C411        | X162 -332  | 0.0033 uF 1600V P-P        |
| ▲ ★ C412        | X162 -332  | 0.0033 uF 1600V P-P        |
| ▲ ★ C413        | X162 -152  | 0.0015 uF 1600V P-P        |
| ★ C414          | X200 -434  | 0.43 uF 200V P-P           |
| C415            | C500-222   | 0.0022 uF 500V Ceramic     |
| C501            | X200-563   | 0.056 uF 200V P-P          |
| C502            | E250 -106  | 10 uF 350V Electrolytic    |
| C503            | E050 -336  | 33 uF 50V Electrolytic     |
| C504            | E100 -335  | 3.3 uF 100V Electrolytic   |
| C505            | E025 -477  | 470 uF 25V Electrolytic    |
| C506            | C050-103   | 0.01 uF 50V Ceramic        |
| C507            | E016 -477  | 470 uF 16V Electrolytic    |
| C508            | C050-103   | 0.01 uF 50V Ceramic        |
| C509            | E025 -477  | 470 uF 25V Electrolytic    |
| C601            | C250-103   | 0.01 uF 250V Ceramic       |
| C602            | C500-472   | 0.0047 uF 500V Ceramic     |
| C603            | C500-472   | 0.0047 uF 500V Ceramic     |
| C604            | C500-222   | 0.0022 uF 500V Ceramic     |
| C605            | E200 -687  | 680 uF 200V Electrolytic   |
| C606            | E016 -107  | 100 uF 16V Electrolytic    |
| C607            | C500-472   | 0.0047 uF 500V Ceramic     |
| C608            | C500-271   | 270 pF 500V Ceramic        |
| C609            | E160 -107  | 100 uF 160V Electrolytic   |
| C610            | F160 -107  | 100 uF 160V Electrolytic   |
| C611            | E050 -476  | 47 uF 50V Electrolytic     |

SEMICONDUCTORS

|      |         |                   |
|------|---------|-------------------|
| D150 | D1R-148 | 1N4148 Diode      |
| D151 | D1R-148 | 1N4148 Diode      |
| D152 | D1Z-012 | 05:12 Zener Diode |
| D153 | D1R-148 | 1N4148 Diode      |
| D161 | D1R-148 | 1N4148 Diode      |
| D201 | D1Z-012 | 05:12 Zener Diode |
| D202 | D1R-148 | 1N4148 Diode      |
| D203 | D1R-148 | 1N4148 Diode      |
| D301 | D1R-148 | 1N4148 Diode      |
| D302 | D1R-148 | 1N4148 Diode      |
| D303 | D1R-148 | 1N4148 Diode      |
| D304 | D1R-148 | 1N4148 Diode      |
| D401 | D1Z-012 | 05:12 Zener Diode |
| D402 | D1Z-012 | 05:12 Zener Diode |
| D403 | D1R-002 | 1N4002 Diode      |
| D404 | D1S-S81 | 1SS81 Diode       |
| D405 | D1S-S81 | 1SS81 Diode       |

| REF. NO.       | PART NO. | DESCRIPTION |
|----------------|----------|-------------|
| SEMICONDUCTORS |          |             |

|          |         |                     |
|----------|---------|---------------------|
| D406     | D1S-S81 | 1SS81 Diode         |
| D407     | D1S-S81 | 1SS81 Diode         |
| D501     | D1F-F05 | FR105 Diode         |
| D502     | D1F-F05 | FR105 Diode         |
| D503     | D1F-F05 | FR105 Diode         |
| D504     | D1R-148 | 1N4148 Diode        |
| D505     | D1Z-120 | 1AZ12 Zener Diode   |
| ▲ D601   | DKB-106 | KBPC1-06 Diode      |
| D602     | D1R-399 | BY399 Diode         |
| D603     | D1S-S81 | 1SS81 Diode         |
| D604     | D1Z-120 | 1AZ12 Zener Diode   |
| D605     | D1S-S81 | 1SS81 Diode         |
| D606     | D1Z-071 | 05Z7.1 Zener Diode  |
| IC401    | IH1-S35 | HA11235 IC          |
| Q101     | S2N-815 | 2SC1815Y Transistor |
| Q102     | S2N-815 | 2SC1815Y Transistor |
| Q103     | S2N-815 | 2SC1815Y Transistor |
| Q104     | S2N-815 | 2SC1815Y Transistor |
| Q105     | S2N-815 | 2SC1815Y Transistor |
| Q106     | S2N-815 | 2SC1815Y Transistor |
| Q150     | S2N-815 | 2SC1815Y Transistor |
| Q151     | S2N-815 | 2SC1815Y Transistor |
| Q152     | S2N-815 | 2SC1815Y Transistor |
| Q201     | S2N-138 | 2SD1138 Transistor  |
| Q202     | S2N-138 | 2SD1138 Transistor  |
| Q301     | S2N-815 | 2SC1815Y Transistor |
| Q302     | S2N-815 | 2SC1815Y Transistor |
| Q303     | S2N-815 | 2SC1815Y Transistor |
| Q401     | S2N-514 | 2SC1514 Transistor  |
| Q402     | S2N-514 | 2SC1514 Transistor  |
| ▲ ★ Q403 | S2N-900 | 2SD900B Transistor  |
| ▲ Q601   | S2N-555 | 2SC2555 Transistor  |
| Q602     | S2N-091 | 2SA1091 Transistor  |
| Q603     | S2N-610 | 2SC2610 Transistor  |
| Q604     | S2N-610 | 2SC2610 Transistor  |

TRANSFORMERS & COILS

|          |          |                         |
|----------|----------|-------------------------|
| T401     | T510-002 | Transformer Horiz Drive |
| ▲ ★ T402 | T510-110 | Fly back transformer    |
| ▲ ★ T601 | T510-210 | Pules transformer       |
| ★ T401   | L510-020 | Horiz-Width coil        |
| ★ T402   | L510-003 | Horiz-Linearity coil    |
| T403     | L510-002 | Coil Horiz Position     |
| T501     | L510-101 | Peaking coil            |
| T502     | L502-101 | Peaking coil            |
| ▲ T601   | L510-110 | Coil Line Filter        |

MISCELLANEOUS

|          |                           |
|----------|---------------------------|
| U125-012 | CRT Socket                |
| ▲ F601   | U125-004 Fuse 4Amp 125V   |
| ▲ F602   | U125-004 Fuse 1Amp 125V   |
| PR601    | PR07-207 7ROM Posistor    |
| ▲ TH601  | TH8D-013 8D-13 Thermistor |

COLOR PICTURE TUBE

|      |          |          |
|------|----------|----------|
| P101 | PT01-201 | CRT & DY |
|------|----------|----------|

CONNECTORS

|       |                 |             |
|-------|-----------------|-------------|
| BP101 | HANLIM Wafer    | LW-1143-06  |
|       | HANLIM Housing  | CH-1143-06  |
|       | HANLIM Terminal | CT-1140-06  |
| BP102 | HANLIM Wafer    | LW-0640-06  |
|       | HANLIM Housing  | CHW-0640-08 |
|       | HANLIM Terminal | CT-1140-08  |
| BP401 | HANLIM Wafer    | LWP-1145-03 |
|       | HANLIM Housing  | CHP-1145-03 |
|       | HANLIM Terminal | CT-1140-03  |



● CRT BOARD 29.1 mm

| REF. NO.            | PART NO. | DESCRIPTION              |
|---------------------|----------|--------------------------|
| RESISTORS           |          |                          |
| R131                | R004-151 | 150 ohm 1/4W Carbon      |
| R132                | R004-151 | 150 ohm 1/4W Carbon      |
| R133                | R004-561 | 560 ohm 1/4W Carbon      |
| R134                | R004-561 | 560 ohm 1/4W Carbon      |
| R135                | R004-331 | 330 ohm 1/4W Carbon      |
| R136                | R004-561 | 560 ohm 1/4W Carbon      |
| R137                | R002-272 | 2.7 Kohm 1/2W Carbon     |
| R138                | R002-272 | 2.7 Kohm 1/2W Carbon     |
| R139                | R002-272 | 2.7 Kohm 1/2W Carbon     |
| R140                | 0030-472 | 4.7 Kohm 3 W Metal Oxide |
| R141                | 0030-472 | 4.7 Kohm 3 W Metal Oxide |
| R142                | 0030-472 | 4.7 Kohm 3 W Metal Oxide |
| R510                | R002-334 | 330Kohm 1/2W Carbon      |
| SEMI-FIXED RESISTOR |          |                          |
| RV105               | F17B-301 | 300 ohm B (Blue)         |
| RV106               | F17R-301 | 300 ohm B (Red)          |
| RV107               | F17B-502 | 5 Kohm B (Blue)          |
| RV108               | F17R-502 | 5 Kohm B (Red)           |
| RV109               | F17G-502 | 5 Kohm B (Green)         |

| REF. NO.    | PART NO. | DESCRIPTION          |
|-------------|----------|----------------------|
| CAPACITORS  |          |                      |
| C131        | C050-271 | 270 pF 50V Ceramic   |
| C132        | C050-271 | 270 pF 50V Ceramic   |
| C133        | C050-271 | 270 pF 50V Ceramic   |
| C510        | C202-102 | 0.001 uF 2KV Ceramic |
| SPARK GAPS  |          |                      |
| SG101       | G1K-102  | 1KV Spark Gap        |
| SG102       | G1K-102  | 1KV Spark Gap        |
| SG103       | G1K-102  | 1KV Spark Gap        |
| TRANSISITOR |          |                      |
| Q107        | S2N-514  | 2SC1514 Transistor   |
| Q108        | S2N-514  | 2SC1514 Transistor   |
| Q109        | S2N-514  | 2SC1514 Transistor   |

● CRT BOARD 22.5 mm

| RESISTORS           |          |                          |
|---------------------|----------|--------------------------|
| R301                | R004-561 | 560 ohm 1/4W Carbon      |
| R302                | R004-151 | 150 ohm 1/4W Carbon      |
| R303                | R004-561 | 560 ohm 1/4W Carbon      |
| R304                | R004-151 | 150 ohm 1/4W Carbon      |
| R305                | R004-561 | 560 ohm 1/4W Carbon      |
| R306                | R004-151 | 150 ohm 1/4W Carbon      |
| R307                | 0030-472 | 4.7 Kohm 3 W Metal       |
| R308                | 0030-472 | 4.7 Kohm 3 W Metal Oxide |
| R309                | 0030-472 | 4.7 Kohm 3 W Metal Oxide |
| R310                | R002-272 | 2.7 Kohm 1/2W Carbon     |
| R311                | R002-272 | 2.7 Kohm 1/2W Carbon     |
| R312                | R002-272 | 2.7 Kohm 1/2W Carbon     |
| SEMI-FIXED RESISTOR |          |                          |
| RV301               | F17R-502 | 5 Kohm B (Red)           |
| RV302               | F17R-301 | 300 ohm B                |
| RV303               | F17G-502 | 5 Kohm B (Green)         |
| RV304               | F17G-301 | 300 ohm B                |
| RV305               | F17B-502 | 5 Kohm B (Blue)          |
| RV306               | F17B-502 | 5 Kohm B                 |

| CAPACITORS    |                     |                       |
|---------------|---------------------|-----------------------|
| C301          | C050-271            | 270 pF 50V Ceramic    |
| C302          | C050-271            | 270 pF 50V Ceramic    |
| C303          | C050-271            | 270 pF 50V Ceramic    |
| C304          | C500-103            | 0.01 uF 500V Ceramic  |
| C305          | C202-152            | 0.0015 uF 2KV Ceramic |
| TRANSISITOR   |                     |                       |
| Q301          | S2N-514             | 2SC1514 Transistor    |
| Q302          | S2N-514             | 2SC1514 Transistor    |
| Q303          | S2N-514             | 2SC1514 Transistor    |
| MISCELLANEOUS |                     |                       |
| STK201        | 22.5m/m Board Cover | PIX Socket            |

● EXCHANGE PARTS OF 10" MONITOR

| REF. NO. | PART NO. | DESCRIPTION                | REMARKS              |
|----------|----------|----------------------------|----------------------|
| R131     | R004-221 | 220 ohm 1/4 W Carbon       | Resistor             |
| R132     | R004-221 | 220 ohm 1/4 W Carbon       | Resistor             |
| R135     | R004-471 | 470 ohm 1/4 W Carbon       | Resistor             |
| R140     | 0030-752 | 7.5 Kohm 3 W Carbon        | Metal Oxide          |
| R141     | 0030-752 | 7.5 Kohm 3 W Carbon        | Metal Oxide          |
| R142     | 0030-752 | 7.5 Kohm 3 W Carbon        | Metal Oxide          |
| R157     | R004-472 | 4.7 Kohm 1/4 W Carbon      | Resistor             |
| R161     | R004-333 | 33 Kohm 1/4 W Carbon       | Resistor             |
| R205     | R004-103 | 10 Kohm 1/4 W Carbon       | Resistor             |
| R215     | 0010-100 | 10 ohm 1 W Metal Oxide     | Metal Oxide          |
| R411     | R004-103 | 10 Kohm 1/4 W Carbon       | Resistor             |
| R421     | R004-471 | 470 ohm 1/4 W Carbon       | Resistor             |
| R422     | R004-472 | 4.7 Kohm 1/4 W Carbon      | Resistor             |
| C131     | C050-221 | 220 pF 50 V Ceramic        | Ceramic Capacitor    |
| C132     | C050-221 | 220 pF 50 V Ceramic        | Ceramic Capacitor    |
| C133     | C050-221 | 220 pF 50 V Ceramic        | Ceramic Capacitor    |
| C152     | C500-101 | 100 pF 500 V Ceramic       | Ceramic Capacitor    |
| △ * C411 | X162-332 | 0.0033 uF 1600 V           | Metallized Capacitor |
| △ * C412 | X162-102 | 0.001 uF 1600 V            | Metallized Capacitor |
| △ * C413 | X162-102 | 0.001 uF 1600 V            | Metallized Capacitor |
| * C414   | X200-154 | 0.15 uF 2000 V             | Metallized Capacitor |
| C502     | E315-106 | 10 uF 315 V                | Electrolytic         |
| C510     | C202-122 | 0.0012 pF AC 2000V Ceramic | Ceramic Capacitor    |
| △ * T402 | T510-110 | FCC-0915AL                 | F.B.T.               |
| * L401   | L510-020 | 764uH                      | Width Coil           |
| * L402   | L510-003 | 40uH                       | Linearity Coil       |

● EXCHANGE PARTS OF 14" MONITOR

|      |          |                 |                      |
|------|----------|-----------------|----------------------|
| C412 | X162-472 | 0.0047 uF 1600V | Metallized Capacitor |
| L402 | L510-003 | 400 uH          | Linearity Coil       |

● EXCHANGE PARTS OF 14" ORION MONITOR

|          |          |                 |                      |
|----------|----------|-----------------|----------------------|
| △ * C411 | X162-332 | 0.0033 uF 1600V | Metallized Capacitor |
| △ * C412 | X162-222 | 0.0022 uF 1600V | Metallized Capacitor |
| △ * C413 | X162-152 | 0.0015 uF 1600V | Metallized Capacitor |
| * C414   | X200-334 | 0.33 uF 200V    | Metallized Capacitor |
| △ * T402 | T510-110 | KFS-60737       | F.B.T.               |
| * L402   | L510-003 | 40uH            | Linearity Coil       |

● EXCHANGE PARTS OF 20" ORION MONITOR

|          |          |                 |                      |
|----------|----------|-----------------|----------------------|
| △ * C411 | X162-472 | 0.0047 uF 1600V | Metallized Capacitor |
| △ * C412 | X162-332 | 0.0033 uF 1600V | Metallized Capacitor |
| △ * C413 | X162-152 | 0.0015 uF 1600V | Metallized Capacitor |
| * C414   | X200-334 | 0.33 uF 200V    | Metallized Capacitor |
| △ * T402 | T510-110 | KFS-60737       | F.B.T.               |

● EXCHANGE PARTS OF 14" SAMSUNG MONITOR

|                                  |           |             |              |
|----------------------------------|-----------|-------------|--------------|
| * CRT No : A34KQV42X02 DSE-142WL |           |             |              |
| R220                             | RC-000370 | 1/4W 150ohm | CARBON       |
| R510                             | JP-00030  | 10mm        | JUMP WIRE    |
| C414                             | CL-00070  | 250V 434pF  | METALLIZED   |
| C502                             | CE-00560  | 160V 100uF  | ELECTROLYTIC |
| L501                             | JP-00010  | 5mm         | JUMP WIRE    |
| T402                             | FT-       | KFS-60291   | F. B. T.     |
| SOLDER SIDE                      | CE-00440  | 100V 3.3uF  | ELECTROLYTIC |
| SOLDER SIDE                      | RC-00520  | 1/4W 1Kohm  | CARBON       |

THIS GOODS CAN BE CHANGED FOR THE IMPROVEMENT WITHOUT ANY NOTIFICATION IN ADVANCE.

**06 - A00213**

PART CODE : MU - 00010