# CONTRACTS MARKETING E

**ELECTROHOME ELECTRONICS** 

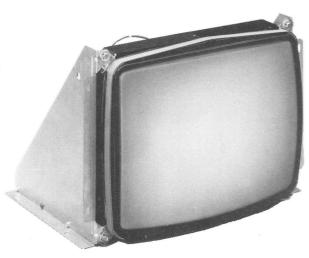
54-7294-01

THIS INFORMATION IS UP TO DATE AS OF JANUARY 1981

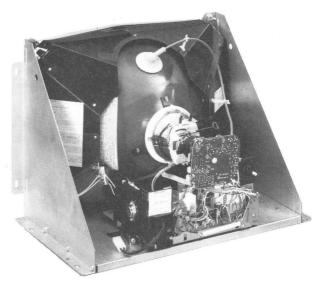
# SERVICE AND OPERATION MANUAL GO7-19" R.G.B. COLOUR MONITOR

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FRONT

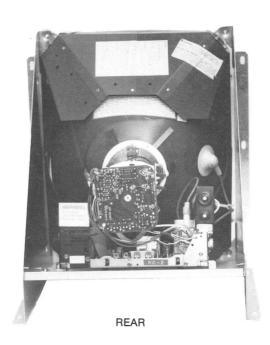


REAR

G07-904



FRONT



G07-907

Notes:

#### Service Data Reference

When writing for Service Information, please quote chassis type number and model code. See chassis type number and model code located on the right hand side panel. This information is correct as of June 1980.

File Supplementary Model Data with this G07 Manual.

# Warnings

#### 1. Power Up Warning

Caution: If the monitor is to be powered up outside of the games console, <u>an isolation</u> <u>transformer</u> must be used for the AC power source.

#### 2. X-Radiation

This chassis has been designed for minimal x-radiation hazard. However, to avoid possible exposure to soft x-radiation it is IMPERATIVE that the EHT circuitry IS NOT modified.

#### 3. High Voltage

The colour monitor contains HIGH VOLTAGES derived from power supplies capable of delivering LETHAL quantities of energy. To avoid DANGER TO LIFE, do not attempt to service the chassis until all precautions necessary for working on HIGH VOLTAGE equipment have been observed.

#### 4. CRT Handling

The picture tube encloses a high vacuum and due to the large surface area is subject to extreme force. Care must be taken not to bump or scratch the picture tube as this may cause the tube to implode resulting in personal injury and property damage. Shatter-proof goggles must be worn by individuals while handling the CRT or installing it in the monitor. Do not handle the CRT by the neck.

5. To prevent fire or shock hazard DO NOT EXPOSE THIS MONITOR TO RAIN OR MOISTURE.

# **Operating Instructions**

- 1. Apply a suitable power source to the monitor through an isolation transformer by means of P901.
- 2. Apply a suitable signal source to the monitor PCB by mean of J201.
- 3. For negative input pulses use J202 D2 for vertical \( \subseteq \), D3 for Horizontal \( \subseteq \).
- 4. Set up Controls

All controls are preset at the factory, but may be adjusted to suit program material. Refer to pages 7 and 9 (WHITE BALANCE AND GRAY SCALE TRACKING).

# Performance and Operating Data

#### 1.0 Supply

Min. — Max.

Voltage

108 VAC - 132 VAC

Frequency

44 Hz - 63 Hz

Note: Apply supply voltage through an isolation

transformer with 1 Amp. capability.

#### 2.0 High Voltage (EHT)

For 19"V models

22.5KV - 25.5 KV

Note: Condition for above I (beam) = 0

 $B_1 = 120V$ 

#### 3.0 Input Signal and Pin Assignments for J201

Pin No.	Description	Impedance	Signal Range
1	Red input	5K nom.	0 to 4V
2	Green input	5K nom.	0 to 4V
3	Blue input	5K nom.	0 to 4V
4	Ground		
5	Vertical sync pulse	35K nom.	+2V to +4V
6	Horizontal sync pulse	35K nom.	+2V to +4V

#### 4. Service Set-Up Controls

- 4.1 B1 adjustment, R909 Set for B1 = 120V DC
- 4.2 Vertical Linearity, R406
- 4.3 Vertical hold control, R422
- 4.4 Horizontal Frequency control, R504
- 4.5 Vertical Hight control, R408
- 4.6 Vertical centering tabs, 3 positions
- 4.7 Horizontal centering tabs, 3 positions
- 4.8 CRT cut off controls (See fig. 3)
  - Red cut off, R114
  - Green cut off, R115
  - Blue cut off, R113
- 4.9 Video drive controls (See fig. 3)
  - Red drive, R105
  - Green drive, R106
- 4.10 Horizontal width coil, L503
- 4.11 Focus control R11
- 4.12 Screen Control

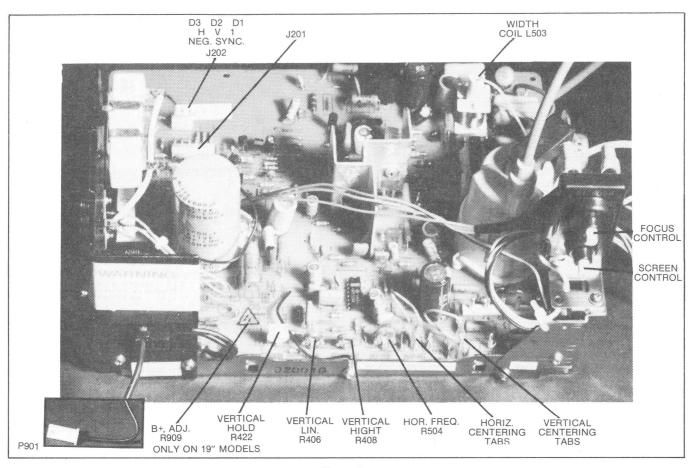


Figure 1

# **Product Safety and Servicing Guidelines**

#### Safety Checks

Subject: Fire and Shock Hazard

- 1. No modification of any circuit should be attempted. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and service guidelines. To do otherwise increases the risk of potential hazards and injury to the user.
- 2. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuitry area. Where a short circuit has occurred, replace those components that indicate evidence of overheating. Always use the manufacturer's specified replacement component. See parts list in the back of this manual.
- 3. Periodically check the high voltage for proper value using a meter of known accuracy and calibration.
- 4. Check for frayed insulation on wires.

#### **Notes**

# Service Set-Up Procedure

NOTE: All monitors are equipped with automatic degaussing coils which effectively demagnetize the picture tube each time the monitor is turned on. The degaussing coils will operate any time the set is turned on after having been off for at least five minutes.

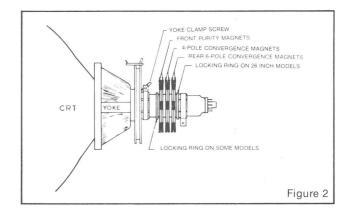
The degaussing effect is confined to the picture tube since the coils are mounted on the ferrous tube shield. Should any part of the chassis or cabinet become magnetized, it will be necessary to degauss the affected area by means of a manual degaussing coil. Move the coil slowly around the CRT face area, then slowly withdraw for a distance of six feet before disconnecting the coil from the AC power supply.

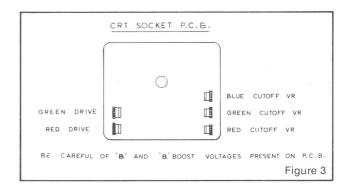
Normally little, if any adjustment should be necessary. However, when a picture tube, yoke or similar component is replaced, preliminary static convergence should be done before attempting purity adjustment, and so on.

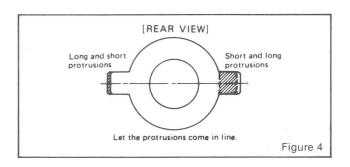
Set up should be done in a north/south direction. Horizontal and vertical centering taps should be set to the centre position if a major component has been changed.

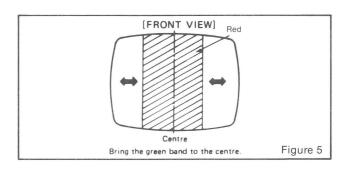
#### 1.0 Purity

- 1.1 Loosen yoke retaining clamp (figure 2), remove adhesive material fixing wedges to CRT. Remove wedges completely and clean off dried adhesive from picture tube and wedges.
- 1.2 A small quantity of "nail polish" has been used to lock the purity convergence rings in place. This seal must be broken with a sharp tipped instrument before any adjustments are attempted. Some models also use a locking ring at either end of the purity and convergence rings. This must be loosened before adjustments are made. It goes without saying that upon completion of all adjustments, the lock must be reset and/or a dab of paint or nail polish must be reapplied to edge of rings to prevent movement.
- 1.3 Connect an appropriate signal source, eg: Electrohome RGB generator producting a white field plus individual red, green and blue fields.
- 1.4 Bring the long and short purity tab protrusions in line with each other to obtain near-zero magnetic field (figure 4) (In some cases bring the flat and indented tabs together to obtain zero field). Protrusions can then be vertical, horizontal or at any convenient angle to start.
- 1.5 Turn off the green and blue fields and adjust setup controls to produce a red field. (See fig. 3)
- 1.6 Pull the deflection yoke back so that a red band appears in the centre of the screen.
- 1.7 Spread the tabs apart as little as necessary and rotate both rings together to center the red band horizontally on the face of the CRT (approximate). (See Fig. 5)
- 1.8 Slide the yoke towards the bell of the picture tube slowly to obtain a uniform red field (pure in color) across the entire tube face. Juggle back and forth slightly as necessary. Lightly tighten yoke retaining clamp.
- 1.9 Momentarily switch on a cross-hatch signal and rotate yoke to level the pattern on the face of CRT.
- 1.10 Return generator to regain red raster.
- 1.11 Turn off red field and check for pure field for each of the green and blue fields. Reposition yoke if necessary to obtain optimum purity on all fields.
- 1.12 Tighten yoke retaining clamp to prevent yoke shift or rotation. (Do not install wedges at this time.)









#### 2.0 Static and Dynamic Convergence

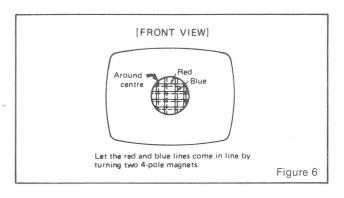
NOTE: Static convergence is achieved by four magnets located on the neck, nearest the base of the picture tube, Fig. 2. The middle pair of magnetic rings are adjusted to converge the blue and red crosshatch lines. The rear pair of convergence rings (closest to the base of the picture tube) are adjusted to converge the magenta (blue/red) to the green crosshatch lines. Dynamic convergence is achieved by tilting the deflection yoke up-down and left-right.

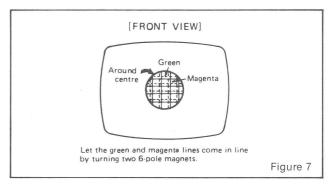
- 2.1 Ensure that the controls misadjusted during purity setup (screen, cut-off, etc.) are set to give white balance. See 3.0 below.
- 2.2 Switch generator to the crosshatch pattern.
- 2.3 Adjust convergence around the edges of the picture tube by tilting the yoke up-down and left-right, and temporarily install one wedge at the top of the yoke or in a more optimum position. (Figures 8, 9, 10)
- 2.4 Turn off green input and turn on the red and blue input.
- 2.5 Rotate the 4-pole (middle) pair of magnets as a unit to minimize separation of the red and blue crosshatch lines around the center of the screen (Figure 6). Variation of the angle between the tabs adjusts convergence of red and blue. (Tilt yoke as required to converge red and blue at the edges as in 2.3 above.)
- 2.6 Turn on green input to obtain magenta (red/blue) and green crosshatch lines. Rotate the 6-pole (rear) pair of magnets as a unit to minimize separation of the magenta and green lines (figure 7). Vary angle between the two tabs and further rotate as a unit to finalize.
- 2.7 When converence of 3 colors is optimized (static in center and dynamic around edges) apply stripe of paint or nail polish to converence magnet rings to prevent movement. If applicable, tighten locking ring carefully.
- 2.8 Remove temporary wedge from yoke. Tilt yoke in updown and left-right direction for best circumference convergence and install 3 wedges. (It is best to use 3 new wedges since they have adhesive backing. Simply pull off tape, slide wedge in place and press outer flap down firmly. For more permanency apply small quantity of silastic or similar material at junction of wedges and picture tube. Do not disturb while material is setting. (Order wedges by part number 39-1233-01).

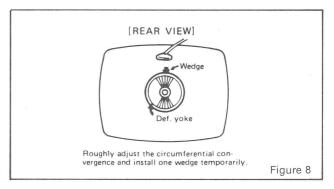
#### 3.0 White Balance (Grey Scale Tracking)

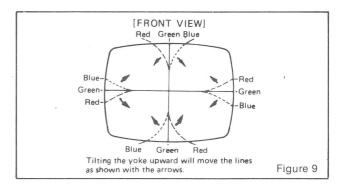
Refer to figure 3. Do the following in subdued light:

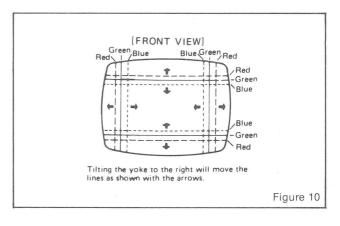
- 3.1 Note this adjustment can be accomplished with no signal connected; eg: input connector open or if a signal generator is connected, switch off all 3 inputs at the generator.
- 3.2 Set red and green drive controls to their mechanical center and turn the common G2 screen control and 3 cut-off controls to minimum (fully counterclockwise).
- 3.3 Slowly turn up G2 screen control until the first faint color appears, then back off to edge of visibility. Do not touch the associated cut-off control it should stay fully CCW for the remaining set-up.
- 3.4 Slowly turn up the other two color cut-off controls in turn to match the first. This should result in the faintest grey.
- 3.5 Turn on the signal generator with all 3 inputs on. (a crosshatch pattern would be appropriate).



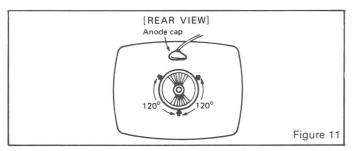








- 3.6 Adjust the red and green drive controls for "neutral white" on high white picture areas. Generally these controls will be left at mech. centre.
- 3.7 Note: When monitor is re-connected with the game the screen control (G2) may require a slight adjustment to obtain proper black level. (the black portion of picture just extinguished).



#### 4.0 Power Supply

The regulated +B1 control (R909) has been factory adjusted and normally requires no adjustment. However, if any repairs have been made to the chassis it is recommended that this adjustment should be made.

- a) Allow 5 minutes to warm up.
- b) No signal applied.
- c) Connect an accurate D.C. voltmeter to TP-91 or the emitter of X04 power regulator transistor.
- d) Adjust R909 for 120V. (See fig. 1)

#### Note:

Should +B1 control be set too high, it may cause possible component damage. Use an accurate D.C. voltmeter to set B1 (B+).

#### 5.0 Focus

Adjust focus control for best overall definition and picture detail an average signal applied. (Highlights should be favoured.)

#### 6.0 Color Service Generator for G07 Monitor

Electrohome has developed a color service generator that is specifically designed for use with the G07 color data monitor. It provides the monitor with both horizontal and vertical sync, as well as the following test patterns:

- 1) Fine cross-hatch pattern
- 2) Broad bar cross-hatch pattern
- 3) Complete field

Three color selection switches, red, green and blue, provide the ability to display the above patterns in the three primary colors as well as the three secondary colors.

This product may be ordered from: Contracts Marketing ELECTROHOME Electronics 809 Wellington St. North Kitchener, Ontario Canada N2G 4J6

Telephone: (519) 744-7111, Ext. 567

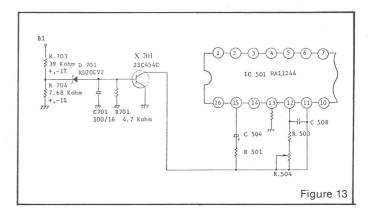


#### 7.0 X-Ray Emission Check

- 7.1 Assure the power supply B1 is properly adjusted to 120V DC. See Item 4.0 (page 8)
- 7.2 Assure that the anode voltage does not exceed max. as per Item 2.0 page 4.
- 7.3 Assure that the high voltage hold down circuit is operating correctly. Use the following procedure.
  - a) Increase the B1 greater than 138.5V by shorting collector/emitter of the power regulator, X04.
  - b) Observe that the anode voltage (EHT) goes to 0. If the EHT does not go to 0, a fault must be located and repaired.
  - c) Remove short and set should return to normal operation. (Note, after the short is removed some monitors may not restart. In this case, remove power from monitor momentarily and normal operation will be restored.

#### Note:

The protector circuit consists of the components shown below in Fig. 13 with a circuit description.



#### 8.0 Circuit Diagram and Description of High Voltage Hold Down or Safety Circuit

- 8.1 Circuit Diagram of High Voltage Hold Down Circuit.
- 8.2 Operation of High Voltage Hold Down Circuit.

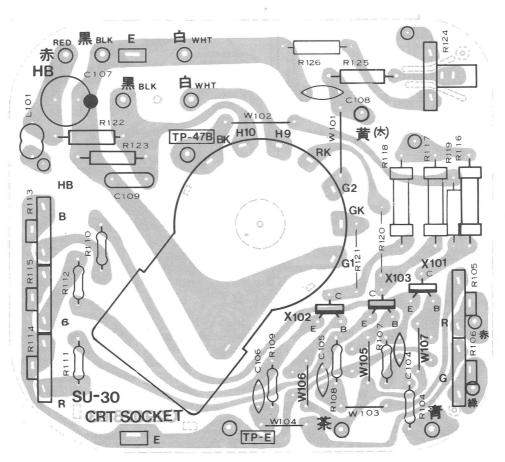
The high voltage hold-down circuit protects the high voltage circuit from dangerous voltage with short circuiting between emitter and collector of power regulating transistor.

The base voltage of X701 is increased when the B1 voltage is increased more than 138.5 V DC.

When the base of X701 is increased, a short is produced by X701 between pin 11 and ground of IC 501, shutting down the horizontal osc. and high voltage.

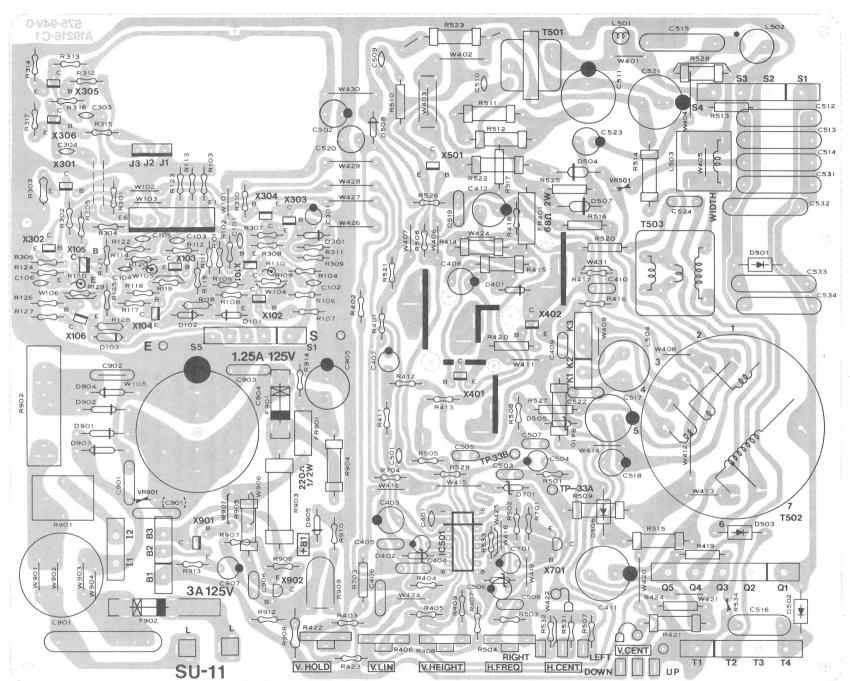
# C.R.T. P.C.B. COMPONENT LAYOUT

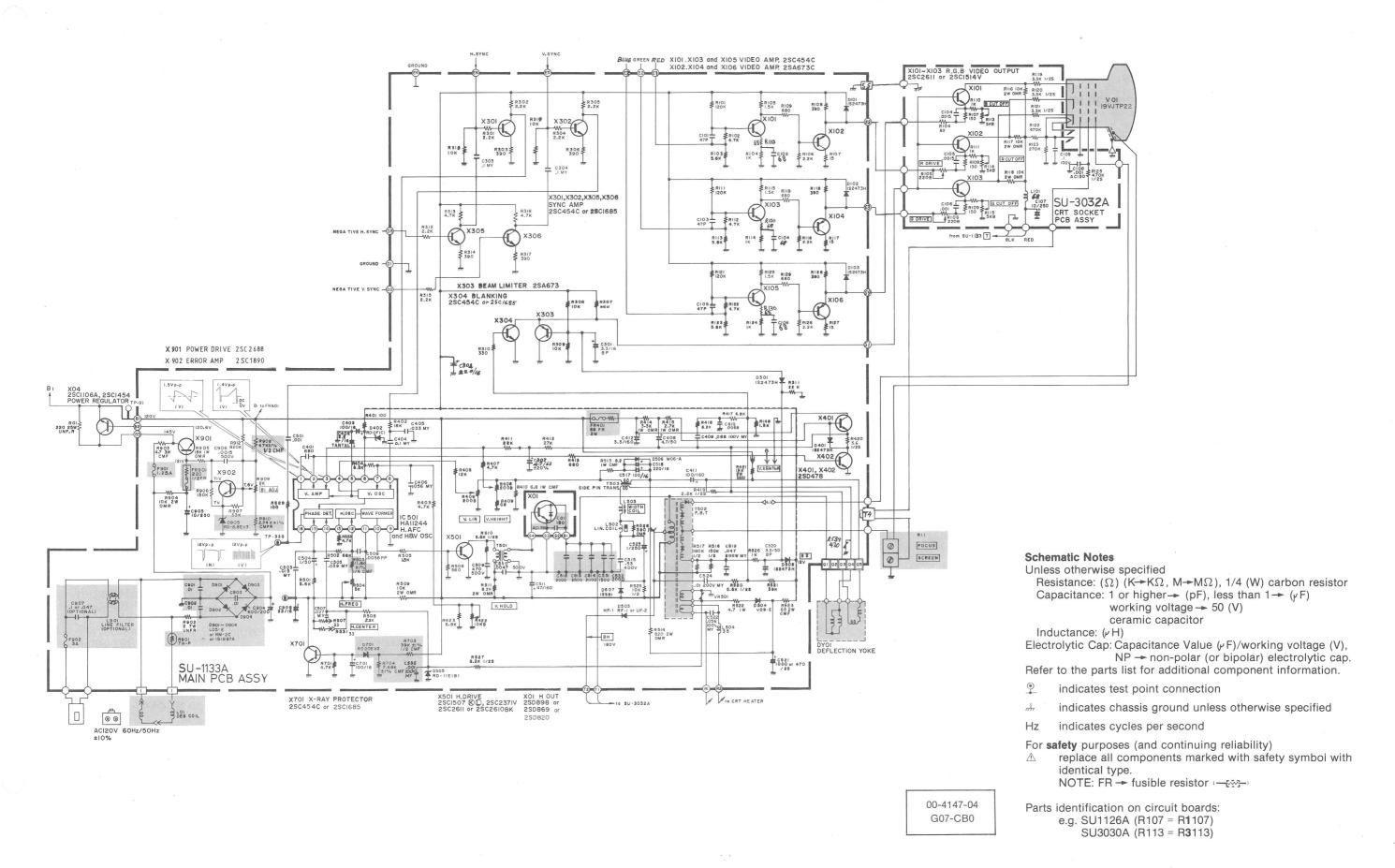




00-18025-06

# MAIN P.C.B. COMPONENT LAYOUT





### REPLACEMENT PARTS LIST

Components identified by the  $\triangle$  symbol in the PARTS LIST and on the Schematic have special characteristics important to safety.

DO NOT degrade the safety of the set through improper servicing.

#### **Abbreviations for Resistors and Capacitors**

Resistor		Capacitor	
Comp. R : OM R : V R : MF R : CMF R : UNF R :	Carbon Resistor Composition Resistor Oxide Metal Film Resistor Variable Resistor Metal Film Resistor Coating Metal Film Resistor Nonflammable Resistor Fusible Resistor	M Cap : E Cap. : BP E Cap. : MM Cap. : PP Cap. : MPP Cap. : PS Cap : Cap	Ceramic Capacitor Mylar Capacitor Electrolytic Capacitor Bi-Polar (or Non-Polar) Electrolytic Capacitor Metalized Mylar Capacitor Polypropylene Capacitor Metalized PP Capacitor Polystyrol Capacitor Tantal Capacitor

NOTE: When ordering replacement parts please specify the part number as shown in this list including part name, and model number. Complete information will help expedite the order.

Use of substitute replacement parts which do not have the same safety characteristics as specified, may create shock, fire or other hazards. For maximum reliability and performance, all parts should be replaced by those having identical specifications.

#### SERVICE REPLACEMENT PARTS LIST

Symbol

**Description**Main P.C.B. Ass'y
CRT Socket P.C.B. Ass'y
Purity Shield Ass'y

Part Number SU-1133A SU-3032A 07-220083-03

#### Outside of the P.C.B. Ass'y

Symbol  A A R05 C04 X01 X02 SC SC WA	Picture Tube 19"  △Deflection Yoke PC Magnet  △Flyback Transf.  △HVR  UNF Resistor 220 Ω,25W K  C Capacitor 150pF, AC1.5KV Si. Transistor Si. Transistor Screw #8-¾8 Screw ¼ x ¾ Pix Tube Mtg. (4) Pyramidal Lock Washer (4) Nut Retainer, Pix Tube Mtg. (4) Clip — P.C.B. Support Standoff Wire Terminal (Gnd. Strap) Terminal Lug (Gnd.) Groundstrap Assy. Grounding Spring Wire Hook (Gnd. Strap) Purity Shield Holddown Clamp Support Brkt. RH Support Brkt. LH Chassis Base	Part Number 17-7198-03 A29779-D = 21-141-01 A75034-B = 29-32-01 A29951-B A46600-A QRF258K-221 QCZ0101-005 2SD870 2SC1106A 31-610818-06 31-601418-12 33-255-01 33-494-01 33-629-02 33-670-010R-02 34-228-03 34-33-04 34-574-02 35-212-03 35-3053-02 35-2348-01 35-3890-01 35-3890-02 38-449-02
	Yoke Wedge (3)	39-1233-01

# Purity Shield Ass'y. Parts List

Symbol	Description	Part Number
	Degaussing Coil	21-1007-30
D911, D912	Rectifier 1 Amp 600V (2)	28-22-27
	Pin Terminal (2)	34-708-01
	Pin Terminal Housing	34-709-01
	Purity Shield (2 pcs.)	35-3847-01
	Purity Shield (2 pcs.)	35-3847-02
C911	Capacitor 100nF 10% 400V	48-171544-62
R921	Resistor, Wirewound 33 $\Omega$ , 4W	42-113301-03
	Fire Retardent Term. Strip 4 Lug	34-492-09

# CRT Socket P.C.B. Ass'y (SU-3032A) Parts List

, (	,	
Resistors Symbol	Description	Part-Number
R3105	V R 200	QVZ3234-022
R3106		QVZ3234-022
R3113	V R 5K	QVZ3234-053
R3114	V R 5K	QVZ3234-053
R3115	V R 5K	QVZ3234-053
R3116	OM R 10KΩ2W J	QRG029J-103
R3117	OM R 10K $\Omega$ 2W J	QRG029J-103
R3118	OM R 10KΩ2W J	QRG029J-103
R3119	Comp. R 3.3KΩ½W K	QRZ0039-332
R3120		QRZ0039-332
C3121	Comp. R $3.3$ K $\Omega$ ½W K	QRZ0039-332
Capacitors		
Symbol	Description	Part Number
C3107	E Cap. 10uF 250V A	QEW53EA-106
C3108	C Cap. 1000pF DC1400V P	QCZ9001-102M
Coils		
Symbol	Description	Part Number
L3101	·	QQL043K-101
LSTUT	Peaking Coil	QQL043K-101

**Semiconductors Description**Si. Transistor
Si. Transistor **Part Number Symbol** X3101 X3102 2SC1514VC 2SC1514VC 2SC1514VC X3103 Si. Transistor Miscellaneous

Symbol **Part Number Description △CRT** Socket A76068

# Main PCB Ass'y (SU-1133A) Parts List

Resistors			
Symbol	Descriptio	n	Part Number
R1406	V R	$200\Omega$	QVZ3230-022
R1408	V R	$200\Omega$	QVZ3230-022
R1410	CMF R	6.8 Ω1W J	QRX019J-6R8
R1414	OM R	3.3K Ω1W J	QRG019J-332
R1415	OM R	2.7K Ω1W J	QRG019J-272
R1421	OM R	12KΩ2W J	QRG026J-123Z
R1422	V R	10K Ω	QVZ3230-014
<b>⚠FR1401</b>		68Ω2W K	QRH024K-680M
<b></b> ⚠R1503	<b>∆</b> CMF R	11.8KΩ¼W +1%	QRV142F-1182
R1504	V R	5Κ Ω	QVZ3230-053
R1509	OM R	10K Ω2W J	QRG026J-103Z
R1512	OM R	8.2KΩ2W J	QRG026J-822Z
R1514	OM R	820Ω2W J	QRG026J-821Z
R1515	CMF R	8.2Ω1W J	QRX019J-8R2
R1522	CMF R	4.7Ω1W J	QRX019J-4R7
R1523	OM R	68Ω2W J	QRG026J-680Z
R1528	OM R	390 Ω1W J	QRG019J-391
R1534	ZN R		ERZ-C05ZK471
VR1501	ZN R		ERZ-C05DK271
<b></b> ∆R1703	<b>∆</b> CMF R	39Ω½W +1%	QRV122F-3902
<b></b> ∆R1704	<b>∆</b> CMF R	$7.68$ K $\Omega$ ¼W +1%	QRV142F-7681
<b></b> ∆R1901	⚠Posistor		A75414
R1902	UNF R	2Ω7W K	QRF076K-2R0
R1903	CMF R	4.7Ω3W J	QRX039J-4R7
R1904	OM R	10KΩ2W J	QRG026J-103Z
R1905	OM R	18KΩ1W J	QRG019J-183
<b>∆</b> Q1908	<b>∆</b> CMF R	47Ω½W +1%	QRV122F-470Z
<b></b> ⚠R1909	V R	$2K\Omega$	QVP5A0B-023E
R1910	<b>∆</b> CMF R	2.74K Ω¼W +1%	QRV142F-274I
<b></b> AFR1901	<b>∆</b> F R	220Ω½W K	QRH124K-221M
Capacitors			

Capacitors		
Symbol	Description	Part Number
C1301	BPE Cap. 3.3uF 50V A	QEN61HA-335Z
C1402	Tan. Cap. 2.2uF 16V K	QEE51CK-225B
C1407	E Cap. 4.7uF 6.3V A	QEW51JA-475
C1411	E Cap. 100uF 160V A	QEW52CA-107
C1412	E Cap. 3.3uF 160V A	QEW52CA-335
C1508	PP Cap. 5600uF 50V J	QFP31HJ-562
<b>△</b> C1512	♠PP Cap. 2000pF DC1500V J	QFZ0082-202
<b>△</b> C1513	♠PP Cap. 2000pF DC1500V J	QFZ0082-202
<b>∆</b> C1514	♠PP Cap. 2000pF DC1500V J	QFZ0082-202
C1515	PP Cap. 0.53uF DC1200V J	QFZ0067-534
C1520	BPE Cap. 3.3uF 50V A	QEN61HA-335Z
C1523	E Cap. 1uF 160V A	QEW62CA-105Z
C1524	M Cap. 0.1uF 200V K	QFM720K-104M
△C1531	⚠PP Cap. 2000pF DC1500V J	QFZ0082-202
<b>△</b> C1532	⚠PP Cap. 1500pF DC1500V J	QFZ0082-152
C1904	E Cap.	QEY0034-001
C1905	E Cap. 10uF 250V A	QEW52EA-106

Coils Symbol L1502 L1503 L1504	Description Linarity Coil Width Coil Heater Choke	Part Number A39835 C30380-A C30445-A
Transformers Symbol T1501 T1503	<b>Description</b> Hor. Drive Transf. Side Pin Transf.	<b>Part Number</b> A46022-BM C39050-A
Semiconductors Symbol IC1501	<b>Description</b> IC	Part Number HA11244
X1101 X1102 X1103 X1104 X1105 X1106 X1301 X1302 X1303 X1304 X1305 X1401 X1402 X1501 X1901 X1902	Si. Transistor	2SC1685(R) 2SA673(C) 2SC1685(R) 2SA673(C) 2SC1685(R) 2SA673(C) 2SC1685(R) 2SC18904(R.L.M.) 2SC1890A (E.F.)
D1101 D1102 D1103 D1301 D1401 D1402	Si. Diode Si. Diode Si. Diode Si. Diode Si. Diode Zener Diode	W06A W06A W06A 1SZ473H 1SZ473H RD10F(C)
D1503 D1504 D1505 D1506 D1507 D1508 △D1701 △D1901 △D1902 △D1903 △D1904 △D1905	Si. Diode Si. Diode Zener Diode Si. Diode Si. Diode Si. Diode Si. Diode AZener Diode ASi. Diode	HF-1 V09E RD11E(B) W06A 1SS81 1SZ473H RD20EV2 1S1887A 1S1887A 1S1887A
Miscellaneous Symbol ⚠F1901 ⚠F1902	Description  ⚠Fuse 1.25A  ⚠UL Fuse 3A	Part Number QMF53U1-1R25S QMF66U1-3R0S

Notes:

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