

Radio Shack®

Service Manual

ZQ-1201

TRS-80 VIDEO DISPLAY

Catalog Number: 26-1201



CUSTOM MANUFACTURED IN U.S.A. FOR RADIO SHACK  A DIVISION OF TANDY CORPORATION

INTRODUCTION

Radio Shack's TRS-80 Video Display consists of RCA's model AA121S Television set which has been modified for use in Radio Shack's TRS-80 Microcomputer System. Radio Shack's model number for the Display is KTR 121S. This manual contains complete service information for the TRS-80 Video Display (KTR 121S) only.

Sections of this manual are a direct pickup from RCA's Television Service Data, File 1976 B-2. Radio Shack has been granted permission to reproduce those sections of the manual by RCA Corporation, Consumer Electronics, 600 N. Sherman Drive, Indianapolis, IN 46201.

SPECIFICATIONS

Power Input 120 Volts AC, 60 Hz
Power Consumption 37 Watts at 120 Vac

SAFETY PRECAUTIONS

NOTE: Before servicing this chassis, read and follow these precautions and the "Product Safety Notes" in the REPLACEMENT PARTS section.

Before returning any instrument to the customer a safety check of the entire Video Display Monitor should be made. The service technician must be sure that no protective device built into the instrument by the manufacturer has become defective or inadvertently defeated during servicing.

1. Comply with all caution and safety related notes located on or inside the receiver cabinet and on the monitor chassis or picture tube.
2. **WARNING:** Alterations of the design or circuitry of this video display monitor should not be made.

Any design alterations or additions such as, but not limited to, circuit modifications, auxiliary speaker jacks, switches, grounding, active or passive circuitry, etc. may alter the safety characteristics of this instrument and potentially create a hazardous situation for the user.

Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. **HOT CHASSIS WARNING:** The chassis of some video display monitors are connected to one side of the AC supply.

"Hot" chassis equipment in which the chassis is solidly connected to one side of the AC line cord may be serviced without using an isolation transformer if the power plug is inserted so that the chassis is connected to the grounded side of the AC supply. Check with an AC voltmeter to see if a potential exists between the chassis and a known earth ground. A zero or very low AC reading should be obtained. If a significant reading is obtained, reverse the power plug and recheck for a zero or low meter reading.

Some chassis have a secondary ground system in addition to the main chassis ground. The secondary ground is **NON-ISOLATED** in respect to the power line. The two ground systems are separated by insulating material which must not be defeated or altered in any way. Other chassis have an 85V RMS potential from chassis to earth ground, regardless of the polarity of the AC supply. Service on these types of chassis should only be performed with an isolation transformer inserted in the power line between the receiver and the AC supply for protection of both personnel and test equipment.

4. Observe the original correct lead dress. Extra precaution should be taken to assure proper lead dress in the following areas: (a) near sharp edges, (b) that wire or components do not touch thermally hot parts, (c) AC supply area, (d) high voltage area, (e) video input wiring, (f) inspect for pinched, out-of-place, or damaged wiring in all areas.
5. Components that indicate evidence of overheating should be replaced.
6. **WARNING:** The picture tube in this monitor employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not remove, install or handle the picture tube in any manner unless shatterproof goggles

are worn. People not so equipped should be kept away while picture tubes are handled. Keep picture tube away from the body while handling. On "In-Line" type picture tubes, the deflection yoke is an integral part of the picture tube and is permanently attached. Do not attempt to remove "permanently attached" yoke from CRT because of possible tube breakage and hazard to the servicer.

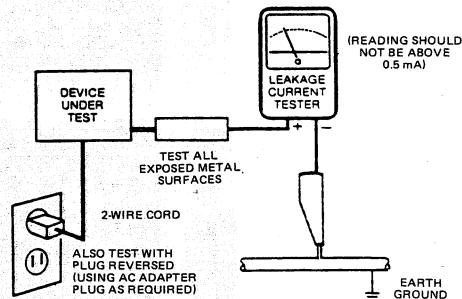
7. Protective shields are provided on this chassis for the protection of both the service technician and the customer. Protective shields removed for servicing convenience must be correctly re-installed and **ANY MISSING SHIELDS MUST BE REPLACED. DO NOT OPERATE THIS INSTRUMENT WITHOUT THE PROTECTIVE SHIELDS IN POSITION AND PROPERLY SECURED.**
8. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as: non-metallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, isolation resistor capacitor networks, etc.

9. VIDEO INPUT COLD CHECK

With the AC plug removed from the 120V AC source, place a jumper across the two plug prongs. Turn the instrument AC switch on. Using an ohmmeter, connect one lead to the jumpered AC plug and touch the other lead to each exposed coaxial connector. The resistance measured should not be less than 20 megohms. Any resistance value below this range indicates an abnormality which requires corrective action. Repeat the test with the AC switch in the OFF position.

10. LEAKAGE CURRENT HOT CHECK (ON COMPLETELY ASSEMBLED INSTRUMENT)

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use a Leakage Current Tester or a metering system which complies with American National Standards Institute (ANSI C101.1 "Leakage Current for Appliances"), and Underwriters Laboratories (UL) 1410, (50.7). Measure for current with the AC switch "on" and repeat with the AC switch "off" from all exposed metal parts of the cabinet (plugs, jacks, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.), to a known earth ground (waterpipe, conduit, etc); particularly, any exposed metal part having a return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse plug in the AC outlet and repeat test. **ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND CORRECTIVE ACTION MUST BE TAKEN BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER.**



AC Leakage Test

11. X-RADIATION AND HIGH VOLTAGE LIMITS

The primary source of potential x-radiation in solid state video display monitors is the picture tube. The picture tube is specially constructed to prohibit x-radiation emissions. For continued x-radiation protection, the replacement tube must be the same type as the original. The shields and mounting hardware for picture tubes have an x-radiation protection function and must be properly in place.

High voltage must be checked each time any service is required that involves B+, horizontal deflection or high voltage. Where used, x-radiation protection circuits (may also be referred to as horizontal disable or hold-down) must be checked

for proper operation each time the x-radiation protection circuit is serviced. Refer to the Technician x-radiation warning note on the Chassis Schematic in the Basic Service Data and Instrument Labels for specific high voltage limits of each chassis and, where used, x-radiation Protection Circuits specifications.

High voltage is maintained within specified limits by the use of close tolerance safety related components/adjustments in the high voltage circuit. If high voltage exceeds specified limits, check each component specified on the chassis schematic diagram and take necessary corrective action.

12. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Data and its Supplements and Bulletins. Electrical components having such features are identified by shading on the schematics and by (★) on the parts list in this Data and its Supplements and Bulletins. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in this Data and its Supplements and Bulletins, may create shock, fire, or other hazards.

CHASSIS LAYOUT

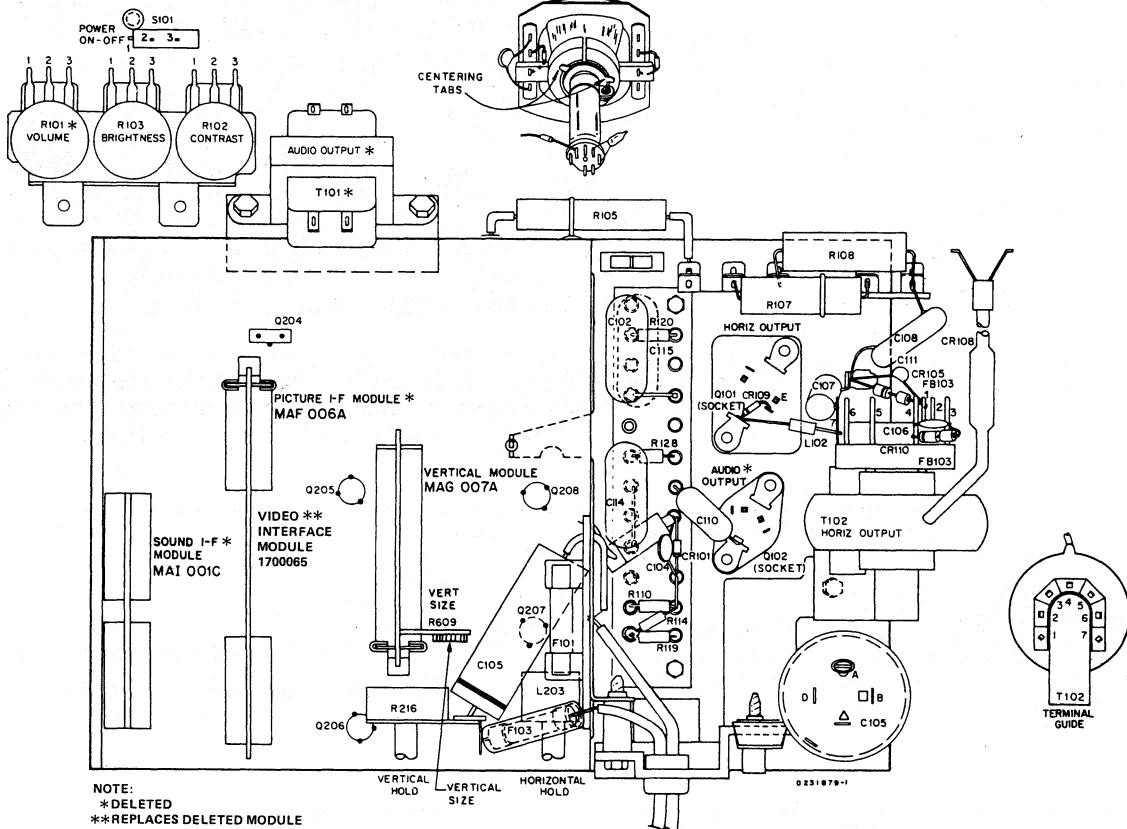


FIGURE 1. Chassis Layout

SERVICE INFORMATION

CENTERING

The Picture is centered on the screen by two disc magnets around the neck of the picture tube directly behind the yoke. To center the picture horizontally and vertically rotate the two magnets (Figure 1) separately or together. In order to view the edge of the picture reduce the AC line voltage until the edge of the picture can be seen at left and right. Reduce height with vertical size control R609 (Figure 1) until top and bottom edge is seen. Center the picture so that the black edge on left and right is equal and the black edge at top and bottom is equal. Centering must be adjusted correctly to maintain good linearity.

VERTICAL SIZE

Adjust line voltage to 108v AC. Set contrast and brightness controls R102, R103 (Figure 1) to maximum. Adjust vertical size control R609 (Figure 1) so that picture just fills the mask at top and bottom. Restore full line voltage. The picture should slightly overscan the mask at sides and at the top and bottom.

HORIZONTAL HOLD CHECK

Pull-in — From either direction should be a minimum of three bars and a maximum of ten bars.

Range — When fully rotated in either direction, the picture should fall out of sync when signal is interrupted.

Phase — immediately after pull-in from either side, the picture should be within $\frac{1}{4}$ inch of center.

INSTRUMENT DISASSEMBLY

Cabinet Back Removal — remove five (5) hex head $\frac{1}{4}$ inch screws: Two (1) at the top, one (1) from the back next to the AC cord.

Power Switch and Control Brackets — remove two (2) hex head $\frac{1}{4}$ inch screws from the power switch bracket and two (2) from the control bracket.

Power Switch and Control Brackets — remove two (2) hex head $\frac{1}{4}$ inch screws from the power switch bracket and two (2) from the control bracket.

Chassis Removal — pull-off kine socket, disconnect high voltage lead and the ground lead at left side of chassis frame. Loosen the yoke collar. Lift the rear of chassis slightly and pull back.

PICTURE TUBE DISASSEMBLY

BEFORE REMOVING OR REPLACING PICTURE TUBE
READ "Safety Precautions" on page 2 item 6.

Lay cabinet face down on clean drop cloth (protect any protrusions on cabinet face i.e. knobs, trim from weight and stress). Loosen kine mounting wire, screw and nut assembly enough to allow the four corner clips to be removed from the mounting wire. The kine is now free to be lifted out of cabinet. To replace kine, reverse this procedure.

REQUIRED LUBRICANTS

BEACON 325 (Humble Oil Co.) — Oscillator Switch.

CIRCUIT PROTECTION DEVICES

FUSES

F101... 1A/250v clip in
F103... 5A/250v pig-tail

PHYSICAL LOCATION

Terminal strip over PW 200 board
Terminal strip over PW200 board

VIDEO INTERFACE

The Video Interface Board has two main purposes. First, it supplies a convenient method of providing video from the computer to the Video Display. Secondly, it isolates the hot chassis in the Display from the computer ground. The isolating function is performed by Z1, a high-speed optical isolator.

DANGER

The 2nd anode lead on the picture tube's envelope supplies high voltage. Keep hands and test probes away from the left side of the picture tube while making voltage measurements. Always discharge the 2nd anode lead to the chassis before inserting or extracting the Video Interface board. The picture tube may hold a charge for long lengths of time. Remember — always discharge!

TROUBLESHOOTING THE VIDEO INTERFACE BOARD

All voltages, shown enclosed in circles on the Video Interface Schematic, are measured with the Video Display plugged into an Isolation Transformer with the computer connected and R1 shorted. Remember — there are two commons for each side of Z1. Be sure you have selected the proper common points or your readings will be wrong. All voltages are measured with a Digital Voltmeter having an input impedance of 10 megohms.

All waveform measurements are made with R1 not shorted to ground. Be sure to use an Isolation Transformer and use the proper common for the Oscilloscope. The waveforms should be present when the word "READY" appears on the Video Display.

CRITICAL LEAD DRESS

GENERAL PRACTICE

All components, leads and mechanical parts listed below are related to safety. When replacing components, wiring, spacers, etc., observe original lead length and spacing. Replace all components, leads, wire ties and cable clamps exactly as in the original circuit. (Also refer to "SAFETY PRECAUTIONS" on page 2 of this service data).

When replacing flame proof, power or high wattage (over 1 watt) resistors, keep body of resistor a minimum of $\frac{1}{8}$ inch (or more where specified below) away from terminal board. Dress all leads away from this type resistor.

AC wiring connections should be inspected for solder splash, teardrop solder and frayed ends. Wire ends protruding from connection should not be more than $\frac{1}{16}$ inch long. Make sure no "near short" condition exists.

Seat all modules firmly with retainers in place. Bead chains (where applicable) are used to keep modules perpendicular to chassis and prevent undue stress that may cause intermittent contact.

Dress leads away from any rotating parts, such as function switch S-7.

CHASSIS

- Wires from C105 electrolytic are taped one inch from end and dressed close to chassis.
- Dress R114, R119, R120 and R110 at least $\frac{1}{8}$ inch above terminal board.

- Leads of C110 and CR109 should be short as possible.
- Dress leads of power resistors R108, R105 and R107 through both holes of terminal board and solder both holes.
- R104, dress all leads away from body of resistor.
- C101, dress under fuse clips of F101.
- Leads to S101 should be taped one inch from connection point on switch.

HIGH VOLTAGE

- Dress high voltage stick rectifier directly to 2nd anode kine connection with all excess lead on the anode end looped toward top of kine. High voltage lead must not touch cabinet.
- Dress all leads and components away from tire of T102, high voltage transformer.

YOKE & KINE

- Dress yoke leads, wires and components away from tire on high voltage transformer T102.
- Dress yellow kine socket lead between vertical module and yoke. Pull slack away from kine socket.
- Dress kine ground strap to chassis; make sure wire bundle does not interfere with ground contact. The ground strap should be under the wire bundle.

REPLACEMENT PARTS

WARRANTY STATUS OF ASSEMBLIES AND PARTS

† Eligible for warranty exchange for new or rebuilt unit.

‡ Complete assembly eligible for warranty replacement with new or rebuilt unit.

All other parts except cabinet parts are eligible for warranty replacement as discrete components. Cabinet parts must have prior approval of RCA for warranty replacement.

Warranty status of assemblies and parts is subject to change without notice.

PRODUCT SAFETY NOTE — Components marked with a (*) have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2 of the Basic Service Data. Don't degrade the safety of the set through improper servicing.

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
CHASSIS ASSEMBLY							
			CAPACITORS	C210	104205	1420193-19	3300 pf 20% 500v Z5P disc
C101	132735	1442487-229	*	C211	134961	1449093-332	.047 uf 10% 200v film
C102	139318	973991-78	*	C212	121671	1420193-17	2200 pf 20% 500v Z5P disc
C104	113165	945304-111	680 pf 20% 1kv Z5P disc	C213	134778	147442-69	.033 uf 10% 100v film
C105	140968	972187-64	* 4 section electrolytic	C214	104131	1420193-68	2700 pf 10% 500v Z5P disc
C106	104135	945304-111	680 pf 20% 500v Z5P disc	C215	231441	1420193-112	820 pf 20% 1kv Z5P disc
C107	141032	1479864-17	*	C216	120832	1420193-13	1000 pf 20% 500v Z5P disc
C108	242290	973991-75	.1 uf 10% 200v film	C217	120832	1420193-13	1000 pf 20% 500v Z5P disc
C110	228034	973991-117	.022 uf 20% 400v film	C218	229970	1449092-322	8200 pf 10% 100v film
C111	104135	945304-11	680 pf 20% 500v Z5P disc	C219	135048	1472442-67	.022 uf 10% 200v film
C113	142023	942966-224	*	C220	141028	1446666-151	5.6 uf 20v electrolytic
C114	242290	973991-25	.1 uf 20% 100v film	C221	134778	1472442-69	.033 uf 10% 100v film
C115	137088	973991-75	.1 uf 10% 200v film	C222	138743	1472442-64	.012 uf 10% 200v film
C116	113165	945304-111	680 pf 10% 1kv Z5P disc	C223	126343	1472442-68	.027 uf 10% 100v film
CR101	131501	99203-6	Diode — rectifier	C224	132829	1472442-79	.22 uf 10% 100v film
CR105	138173	1476171-31	Diode — rectifier	C226	141027	1446668-541	390 uf 15v electrolytic
				C227	102562	1420193-54	180 pf 10% 500v Z5P disc
				C228	141026	1446663-661	470 uf 25v electrolytic
CR108			* Diode — part of T102	C229	104384	1420193-14	1200 pf 20% 500v Z5P disc
CR109	140972	1476171-34	Diode — power switching	C230	121671	1420193-17	2200 pf 20% 500v Z5P disc
CR110	138173	1476171-31	Diode — rectifier	C231	141025	1446668-651	470 uf 20v electrolytic
DS101	122608	1442539-4	Lamp	C233	105301	1420193-57	330 pf 10% 500v Z5P disc
F101	426973	990157-8	* Fuse	C234	126804	1442134-23	.68 uf 10% 200v film
F103	118969	985994-9	* Fuse	C236	104205	1420193-69	3300 pf 10% 500v Z5P disc
FB101	119971	1443391-2	Bead — ferrite	C239	103852	945304-3	150 pf 20% 500v Z5P disc
FB102	138013	1443391-8	Bead — ferrite				
FB103	119971	1443391-2	Bead — ferrite				
L102	141972	1478663-1	Coil	CR201	119597	1471872-6	Silicone
Q101	140976	1417366-1	Transistor — 7366-1. horiz.out	CR202	119597	1471872-6	Silicone
Q102	139270	1417322-1	Transistor — 7322.audio out.	CR203	139706	1471872-8	Silicone
				CR204	119597	1471872-2	Silicone
				CR205	139706	1471872-14	Silicone
				CR206	119597	1471872-6	Silicone
DIODES							
R102	142448	1472242-43	* Control, contrast	CR207	139706	1471872-14	Silicone
R103	142449	1472242-40	* Control, brightness	FB201	128456	1443391-6	Bead — ferrite
R104	137728	945311-105	*	FB202	128456	1443391-6	Bead — ferrite
R105	141145	945312-131	*	FB203	128456	1443391-6	Bead — ferrite
R107	141142	945311-155	*	FB204	128456	1443391-6	Bead — ferrite
R108	141146	945311-129	*	L202	109944	973966-9	Coil — peaking
R109	138163	867578-98	*	L203	141017	907454-501	Coil — horiz. hold
R110	137087	993151-207	*	L204	141021	1478648-1	Coil — horiz. driver
R114	830147	993151-217	*	Q204	140259	1449098-1	Transistor — 3637, video output
R119	830147	993151-217	*	Q205	141019	1417344-1	Transistor — 7344, video output
R120	140986	993151-169	*	Q206	139362	1417306-1	Transistor — 7306, sync
R121	135412	993154-245	*	Q207	137875	1473614-3	Transistor — 3614-3, horiz. osc.
R122	135412	993154-245	*	Q208	141018	1417363-1	Transistor — 7363, horiz. driver
R128	830147	993151-217	*				
RV101	131652	1472668-8	Varistor				
S101	140777	1438740-1	* Switch — on/off				
T101	140714	1478607-5	* Transformer — audio output	R201	230563	993154-209	*
T102	140995	1465914-501	* Transformer — with CR108	R204	135414	993154-205	*
	141006	1478642-1	Bracket — AC power cable	R205	228934	993154-200	*
	1466838-508	137748	* Cable — AC power	R215	830056	993151-195	*
	1442970-6	120427	Insulator — for Q101	R216	141022	1473351-2	* Control, vertical hold
	1442970-1	121214	Insulator — for Q102	R217	132550	993151-177	*
	910959-1	114918	Magnet — centering	R220	141014	993117-145	*
	990327-128		Nut .375 — 32. control mounting	R221	139606	993154-201	100 ohm 5% 1/2w film
	133540	1472682-9	Socket — for Q101	R225	124648	993154-285	330k ohm 5% 1/2w film
	139293	1471883-2	Socket — for Q102	R230	134093	993154-265	47k ohm 5% 1/2w film
	140998	1465916-503	Socket — kine, assembly	R231	140986	993151-169	*
	137803	903368-1	Spacer — for centering magnet	R239	135126	993154-287	390k ohm 5% 1/2w film
	141001	1463734-502	* Yoke — deflection	R244	141012	993214-463	560k ohm 5% 1/2w film
		PW 200		R245	233096	993154-273	100k ohm 5% 1/2w film
PW200	141009	1454731-501	Circuit — complete	R246	229918	993154-253	15k ohm 5% 1/2w film
			CAPACITORS	R249	228712	993154-233	2.2k ohm 5% 1/2w film
				R250	134093	993154-265	47k ohm 5% 1/2w film
				R251	132728	993154-217	470 ohm 5% 1/2w film
				R253	239655	993154-193	47 ohm 5% 1/2w film
				R254	230560	993154-213	330 ohm 5% 1/2w film
				R255	139000	993154-235	2.7k ohm 5% 1/2w film
				R256	132550	993151-177	*
				R257	140986	993151-169	*
				R258	230560	993154-213	330 ohm 5% 1/2w film

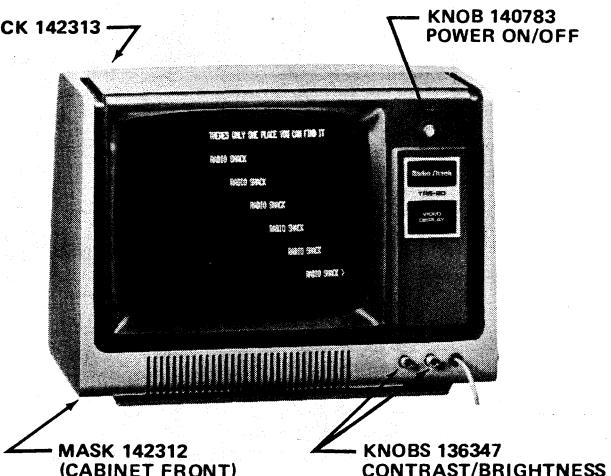
REPLACEMENT PARTS (Continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R259	230560	993154-213	330 ohm 5% 1/2w film				RESISTORS
	133634	1435768-501	Connector — module (MAG) 1 — 12	R1	4704023		Resistor — 75 ohm 5% 1/4w
	135450	1433854-501	Connector — module (MAF/MAI) 1 — 6	R2	4704080		Resistor — 47k ohm 5% 1/4w
	135451	1433854-502	Connector — module, (MAF/MAI) 7-12	R3	4708049		Resistor — 1.2k ohm 5% 1/2w
			‡ MAG007A — VERTICAL	R4	4704050		Resistor — 1.5k ohm 5% 1/4w
				R5	4704034		Resistor — 270 ohm 5% 1/4w
				R6	4704070		Resistor — 12k ohm 5% 1/4w
				R7	4704050		Resistor — 1.5k ohm 5% 1/4w
				R8	4704053		Resistor — 2k ohm 5% 1/4w
				R9	4704028		Resistor — 150 ohm 5% 1/4w
MAG 007A	141007	1453527-501	Module — complete	R10	4704040		Resistor — 510 ohm 5% 1/4w
			CAPACITORS	R11	4704041		Resistor — 560 ohm 5% 1/4w
C601	134778	1472442-69	.033 uf 10% 100v film	R12	4717002		Resistor — 200 ohm 10% 5w
C602	120832	1420193-13	1000 pf 20% 500v Z5P disc	R13	4704084		Resistor — 68k ohm 5% 1/4w
C603	135359	1472442-60	5600 pf 10% 200v film	R14	4704058		Resistor — 3.3k ohm 5% 1/4w
C604	139285	1446668-241	220 uf 15v electrolytic	R15	4704054		Resistor — 2.2k ohm 5% 1/4w
C605	139285	1446668-241	220 uf 15v electrolytic	R16	4704047		Resistor — 1k ohm 5% 1/4w
C606	137331	1446657-321	47 uf 6v electrolytic	R17	4704039		Resistor — 470 ohm 5% 1/4w
C607	139444	1472442-75	.1 uf 10% 100v film				TRANSISTORS
C608	127167	1442134-56	.68 uf 10% 75v film	Q1	4822001		Transistor — MPS3904 NPN
CR601	119597	1471872-6	Diode — silicone	Q2	4822001		Transistor — MPS3904 NPN
CR602	119597	1471872-6	Diode — silicone	Q3	4822001		Transistor — MPS3904 NPN
CR603	119597	1471872-6	Diode — silicone	Q4	4822003		Transistor — MPS3906 PNP
CR604	119597	1471872-6	Diode — silicone	Q5	4822001		Transistor — MPS3904 NPN
CR605	119597	1471872-10	Diode — silicone				INTEGRATED CIRCUIT
Q601	132830	1471112-8	Transistor — 1112-8, osc.	Z1	3106001		Optical Isolator HP5082-4351
Q602	132830	1471112-8	Transistor — 1112-8, pre-driver				INSTRUMENT MISCELLANEOUS
Q603	139268	1417318-2	Transistor — 7318-2, driver				
Q604	137340	1417303-1	Transistor — 7303-1, output				
Q605	141008	1417349-2	Transistor — 7349-2, output				
R604	141138	993154-503	Resistor — 120 ohm 2% 1/2w film				
R609	138145	1473359-27	Resistor — control vertical size				
R610	135587	993154-167	Resistor — 3.9 ohm 5% 1/2w film				
R614	227102	993154-241	Resistor — 4.7k ohm 5% 1/2w film	CPR3	142313	1437817-8	Back — AA121S
R615	135414	993154-505	Resistor — 150 ohm 2% 1/2w film	140964	1441375-4	Bracket — kine mounting	
R616	132855	993154-551	Resistor — 12k ohm 2% 1/2w film	109956	973973-4	*Circuit — encapsulated	
R617	830010	993151-177	*Resistor	121134	1442419-4	Clamp — yoke	
			‡ 8000025-1 VIDEO INTERFACE	128161	1444615-1	Clip — back retaining	
				132272	1445477-12	Cushion — kine mounting	
				136347	1461997-511	*Knob — contrast/bright	
				140779	1478626-1	*Knob — fine tune	
				124313	1444647-1	*Knob — horiz control	
				140783	1478652-501	*Knob — on/off	
				140778	1478625-1	*Knob — selector	
				142312	1437816-7	Mask — AA121S	
				139819	1462479-12	Monogram	
C1	1500054	100 uf 16v electrolytic axial		127854	1403070-2	Nut — for J102 AA121	
C2	1500036	10 uf 16v electrolytic axial		115984	1442072-7	Spring — for fine tune knobs	
C3	1500036	10 uf 16v electrolytic axial		140963	1464349-4	Wire — kine mounting	
C4	1500047	.01 uf 10% 25v disc					
C5	1500047	.01 uf 10% 25v disc					
C6	1500036	10 uf 16v electrolytic axial					
C7	1500046	150 pf 10% 50v disc					

WITH EXCEPTION OF THE VIDEO INTERFACE BOARD, 8000025-1, CONSULT YOUR RCA DEALER FOR REPLACEMENT PARTS AND ACCESSORIES.

Specifications subject to change without notice.



KTR121S CABINET PARTS IDENTIFICATION

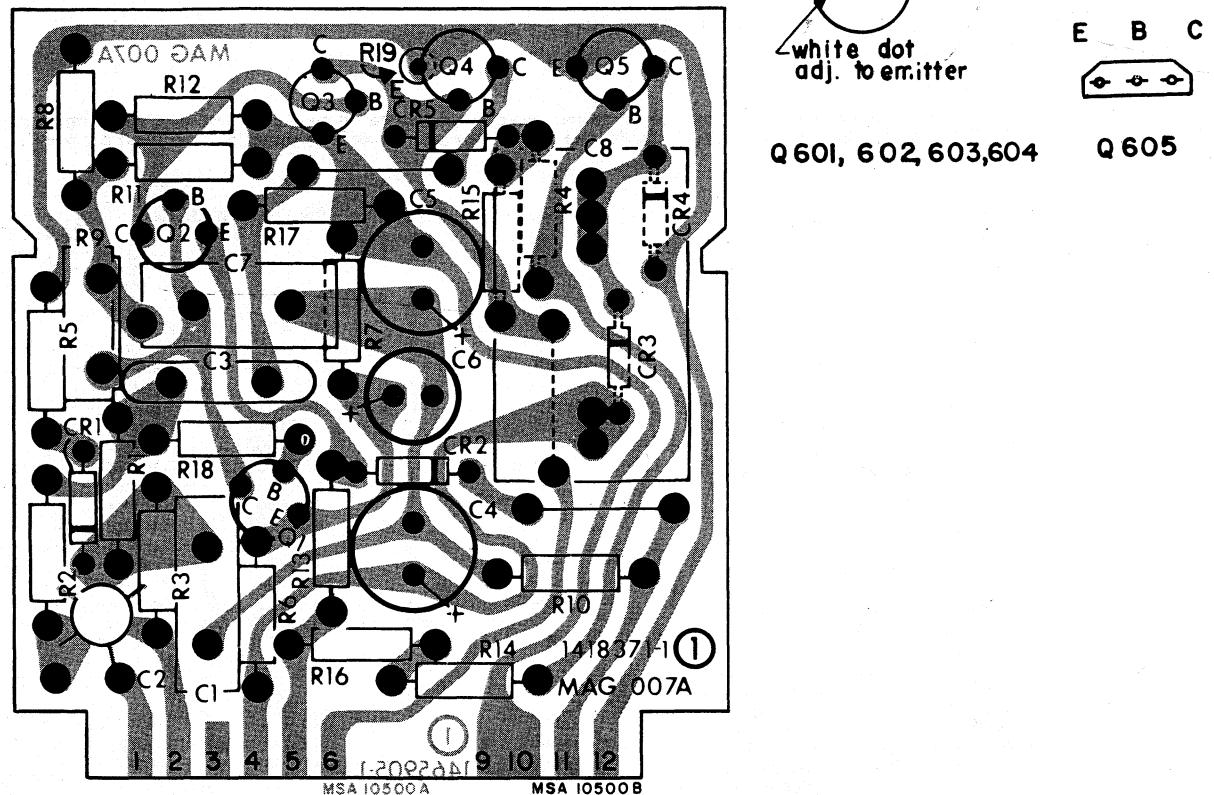


FIGURE 2. MAG 007A – Vertical Circuit Board Component Locations

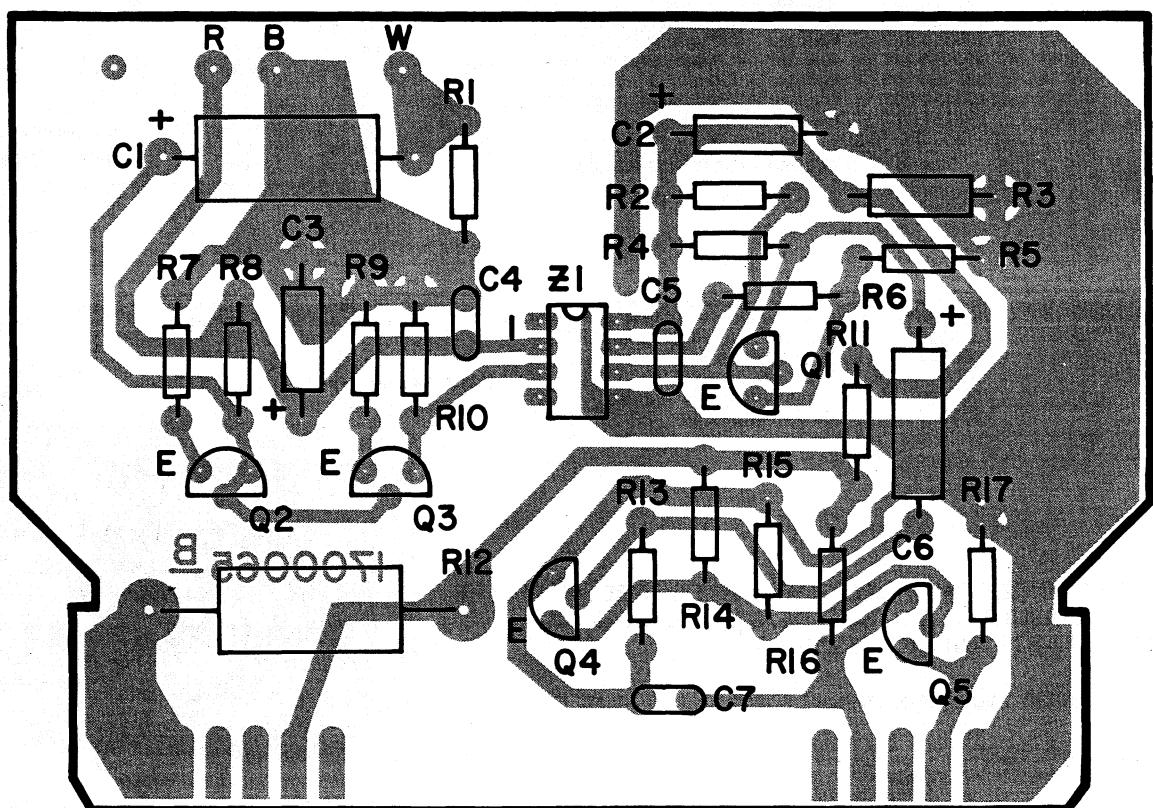


FIGURE 3. Video Interface, 8000025-1, Component Locations

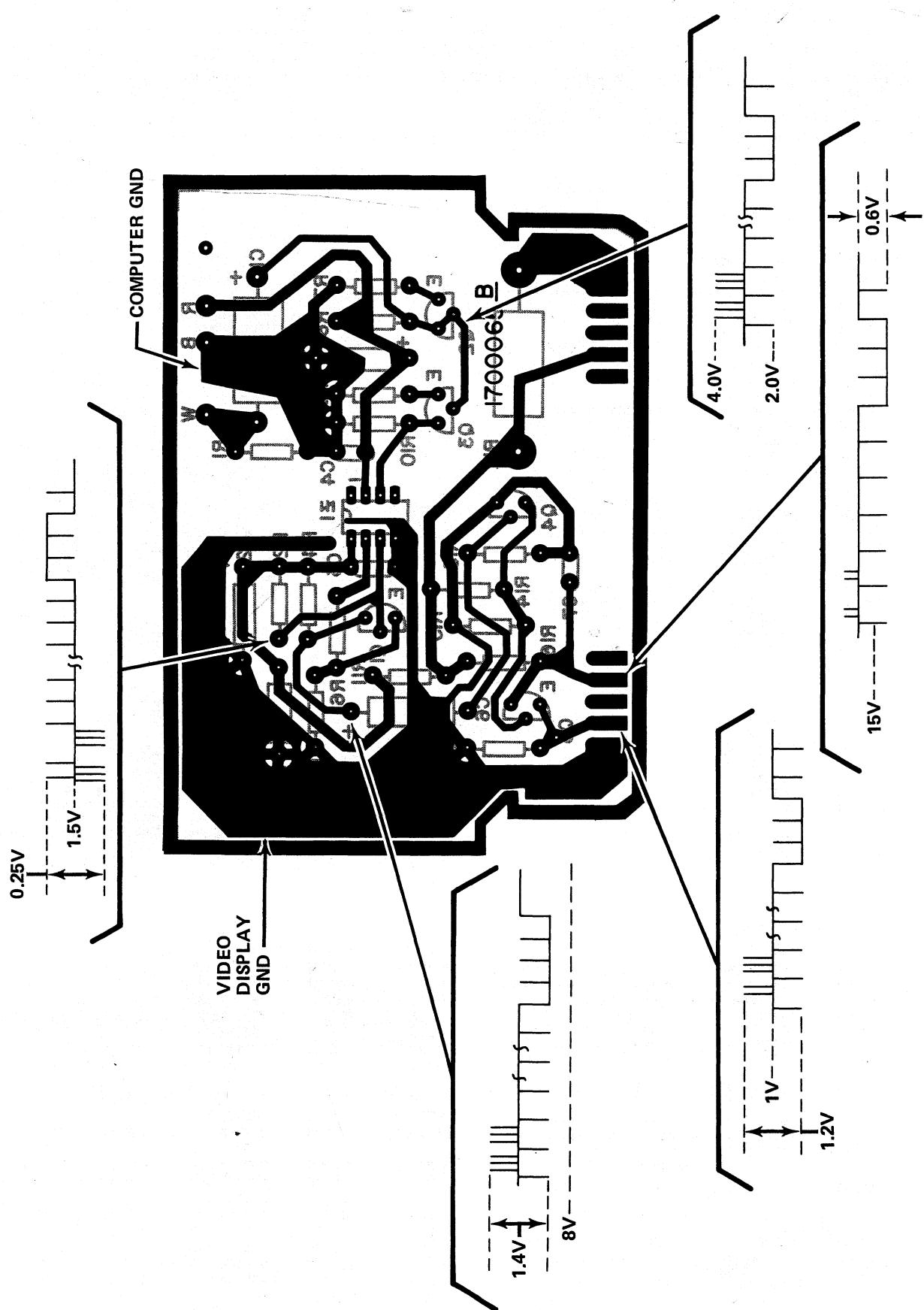
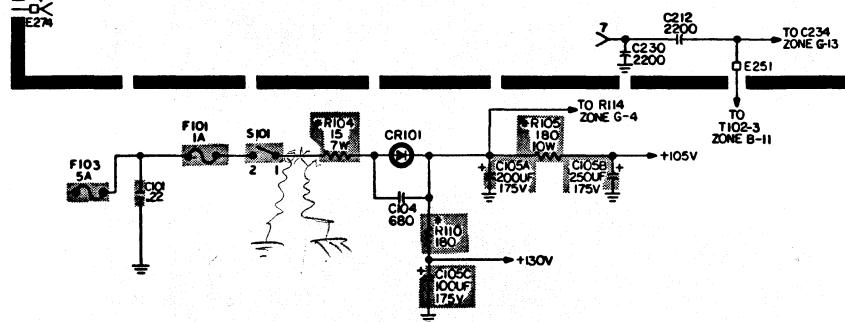
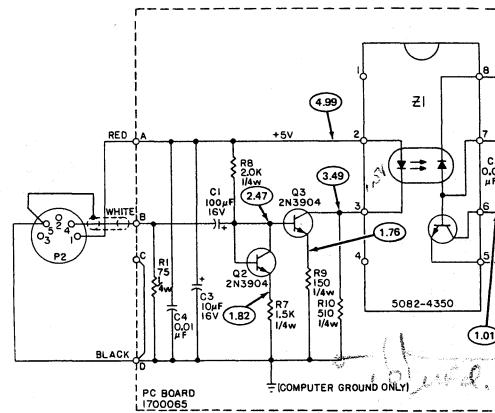
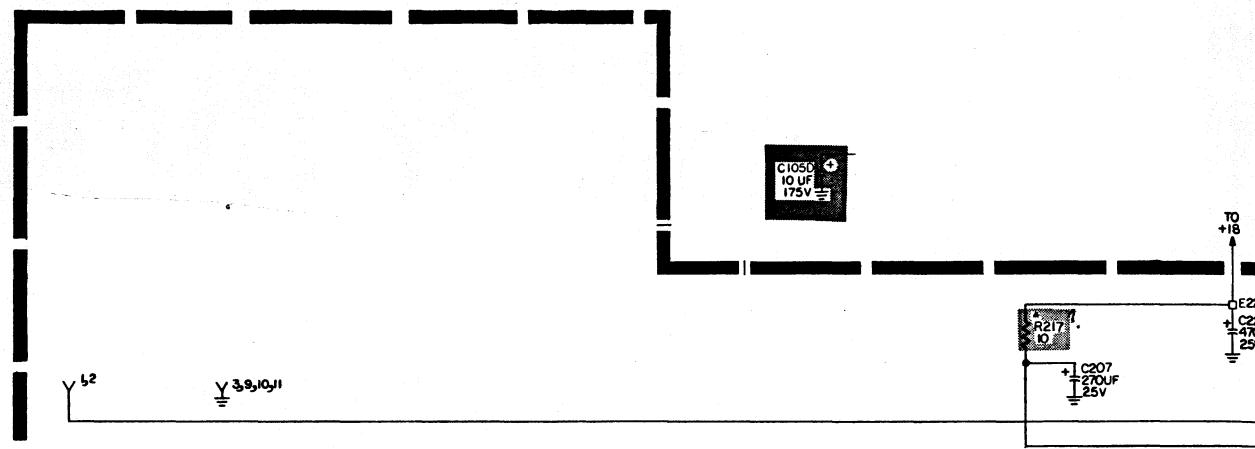
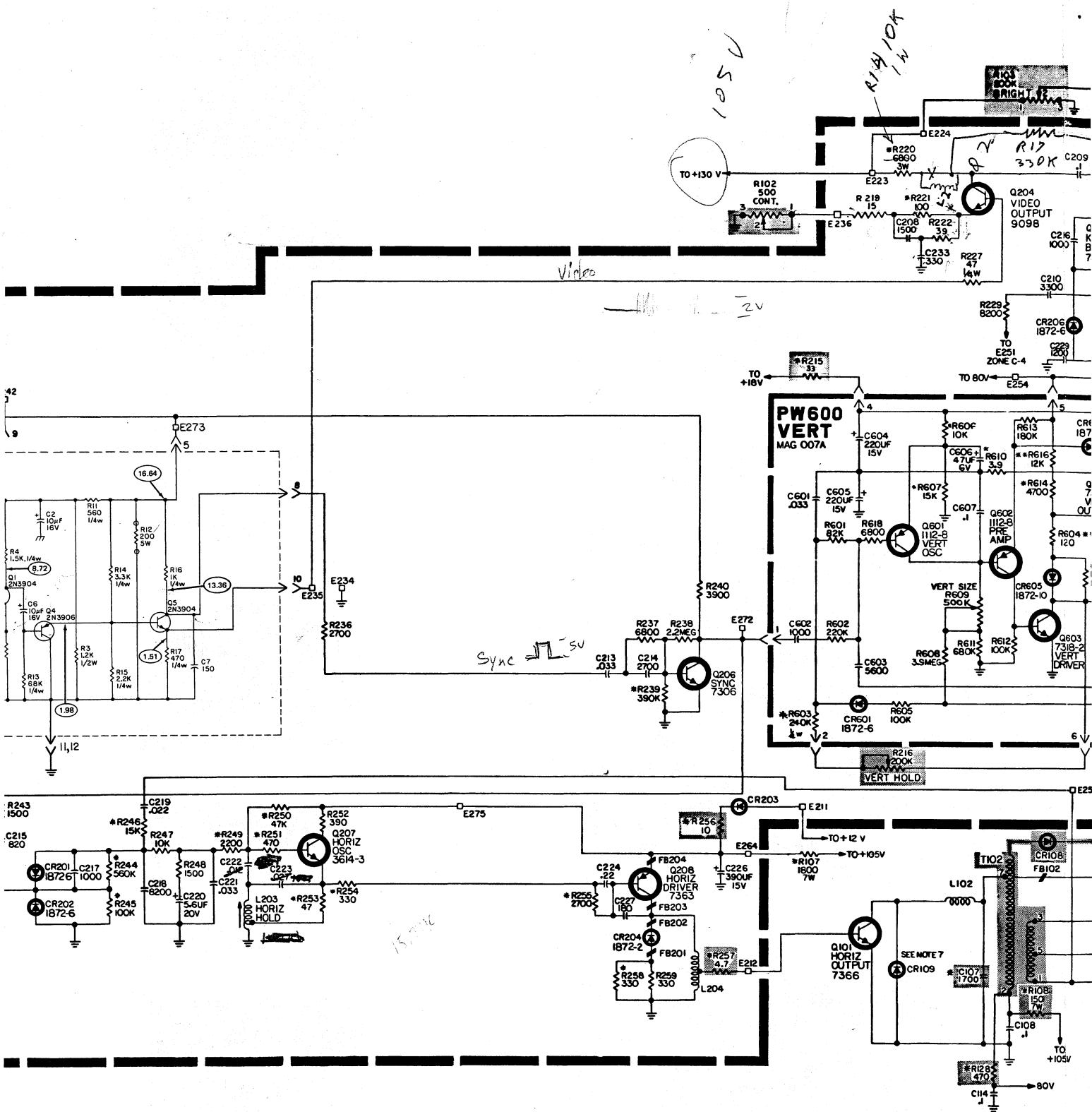
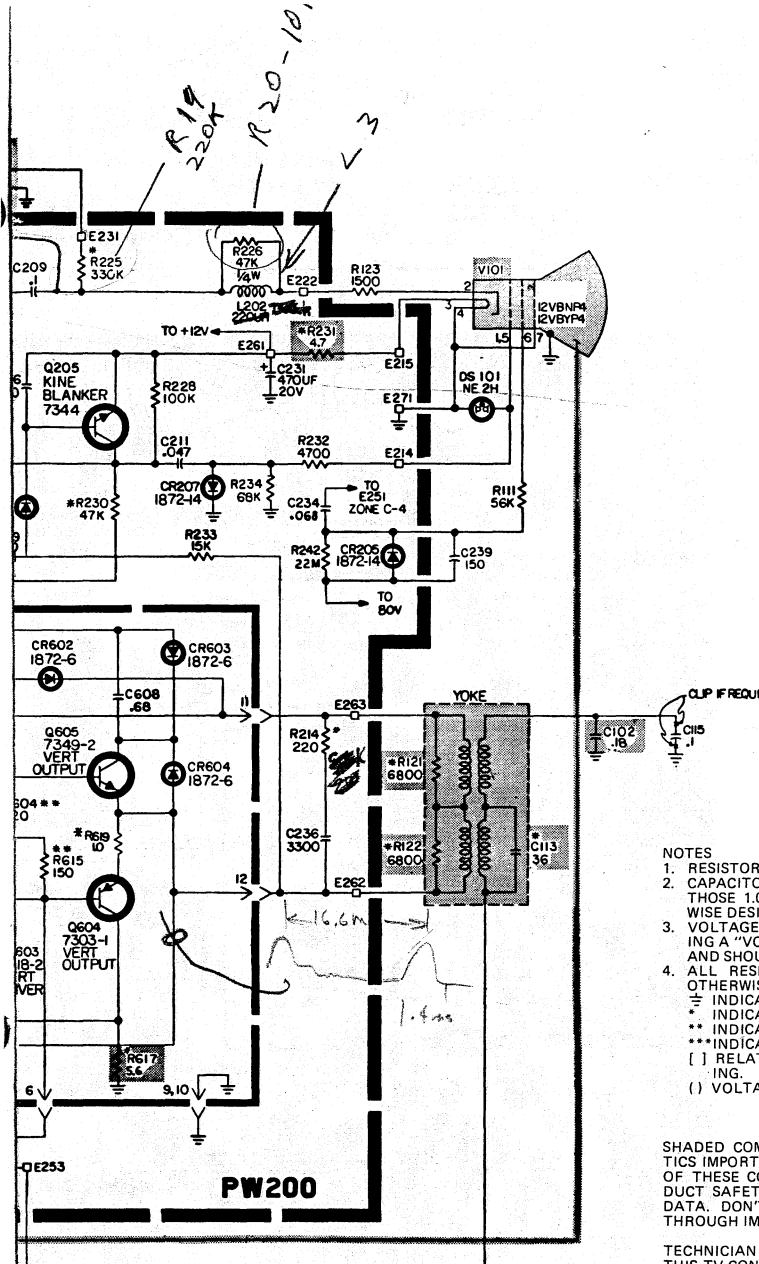


FIGURE 4. Video Interface (Bottom View) With Waveforms







NOTES

- NOTES

 1. RESISTOR VALUES ARE IN OHMS K = 1000
 2. CAPACITOR VALUES GREATER THAN 1.0 ARE IN PF.
THOSE 1.0 AND LESS ARE IN MFD. UNLESS OTHERWISE DESIGNATED.
 3. VOLTAGES MEASURED WITH RESPECT TO $\frac{1}{2}$ US.
A "VOLTOHMMYST", NO SIGNAL CONDITION,
AND SHOULD HOLD WITHIN \pm 20%.
 4. ALL RESISTORS ARE 1/2 WATT, EXCEPT WHERE
OTHERWISE INDICATED
 $\frac{1}{2}$ INDICATES GROUND
* INDICATES 5% TOLERANCE
** INDICATES 2% TOLERANCE
*** INDICATES 1% TOLERANCE
[] RELATES TO ZONING ON PERIMETER OF DRAW-
ING.
 - (1) VOLTAGES MEASURED WITH SIGNAL

PRODUCT SAFETY NOTE

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE ON PAGE 2 OF THIS SERVICE DATA. DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

TECHNICIAN X-RADIATION WARNING – KCS 201
THIS TV CONTAINS CRITICAL PARTS TO PROTECT AGAINST X-RADIATION, NOMINAL 2ND ANODE VOLTAGE IS 13.0KV AT 120v AC AND MUST NOT EXCEED 18.0KV UNDER ANY VIEWABLE CONDITION. TO MEASURE SET BRIGHTNESS FOR VERY DIM PICTURE USE A HIGH IMPEDANCE METER, CONNECT IT TO CHASSIS GROUND AND

HIGH IMPEDANCE METER. CONNECT (-) TO CHASSIS GROUND AND (+) TO 2ND ANODE.
THIS INSTRUMENT CONTAINS NO HIGH VOLTAGE ADJUSTMENT.
SEE SERVICE DATA FOR REPLACEMENT PARTS AND INFORMATION.
CAUTION: RESETTING WIDTH MAY AFFECT HIGH VOLTAGE.

KCS 201K



E B C

white dot
adj to emitter

(either style)

Q 205, 206
Q 207, 208

C B E

Q 204

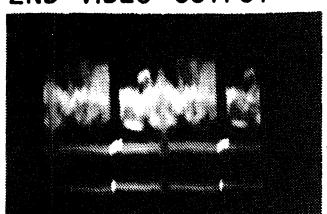
E B C

100

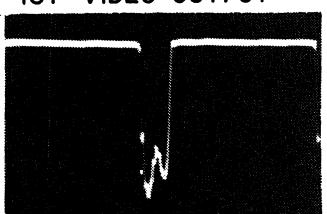
⑦ 75V P-P VERT. RATE
MAXIMUM CONTRAST



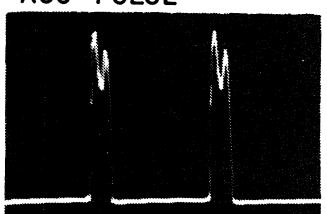
② 2V P-P VERT. RATE
2ND VIDEO OUTPUT



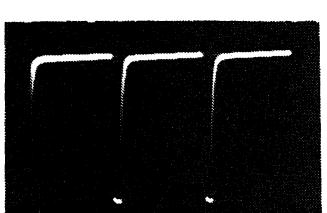
(1) 2V P-P VERT. RATE
1ST VIDEO OUTPUT



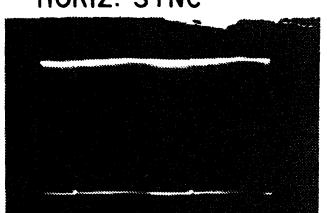
④ 60V P-P HORIZ. RATE
AGC PULSE



(II) 96V P-P HORIZ. RATE



(3) 18V P-P HORIZ. RATE
HORIZ. SYNC



(3) 18V P-P VERT. RATE
VERT. SYNC

TO RIO2
CONTRAST

TO RIOI
VOLUME

2

1

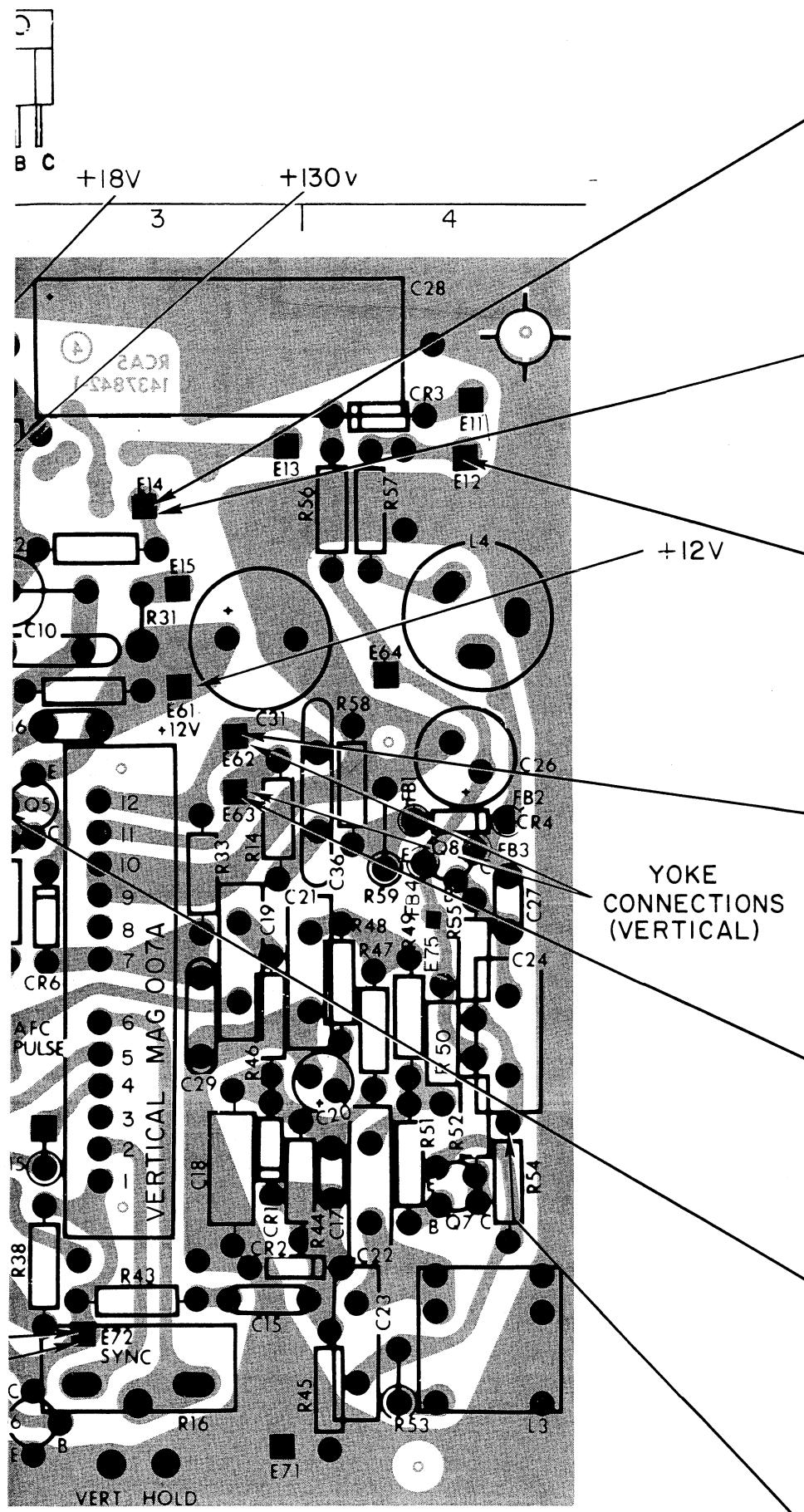
1

2

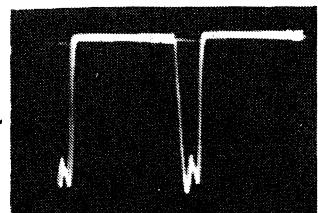
180

AGC
(TUNER)

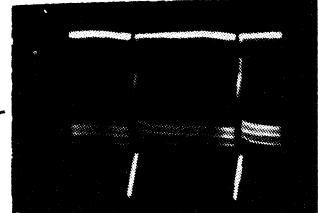
1



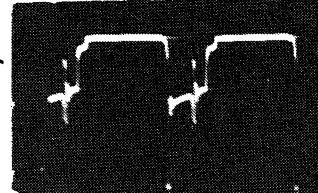
YOKES
CONNECTIONS
(VERTICAL)



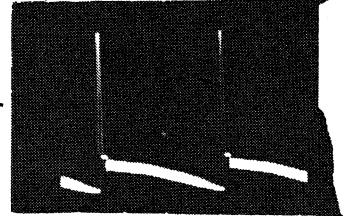
(8) *42V HORIZ. RATE
KINE BLANKING



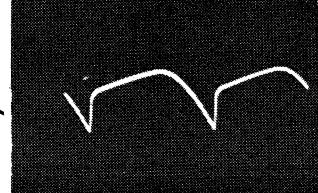
**(8) 55V VERT. RATE
KINE BLANKING**



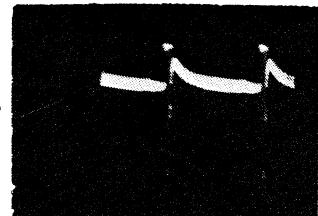
**⑥ 6V P-P HORIZ. RATE
HORIZ. DRIVE OUTPUT**



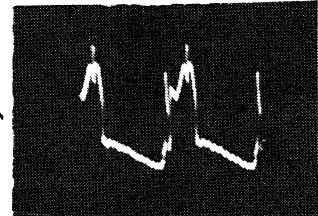
(10) 60V P-P VERT. RATE
VERT. OUTPUT



⑨ 3V P-P VERT. RATE
YOKE



(12) 5V P-P VERT. RATE
INPUT TO KINE BLANKER



⑤ 2V P-P HORZ. RATE
HORZ. OSC.

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CANADA: BARRIE, ONTARIO L4M 4W5

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RYDALMERE, N.S.W. 2116

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PARC INDUSTRIEL DE NANINNE
5140 NANINNE

U.K.

BILSTON ROAD
WEDNESBURY, STAFFS WS10 7JN