

# SECTION 16

## RGB SYNC 2 INPUT MODULE

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## SECTION 16

### RGB SYNC 2 INPUT MODULE

#### 16.1 TECHNICAL DESCRIPTION

##### 16.1.1 General Description

The RGB SYNC 2 INPUT module is located in the rear panel card rack of the projector, normally occupying slot 0.

The module has two analog video inputs (1 and 2). Both inputs accept sync on green, separate composite sync or separate horizontal and vertical sync (3,4 or 5 wire). All inputs are permanently terminated to 75 Ω.

#### 16.2 SERVICING AND ALIGNMENT

##### 16.2.1 Disassembly and Access

### WARNING

**STATIC SENSITIVE COMPONENTS  
 STATIC CONTROLLED WORK STATION REQUIRED**

##### Module Location:

► rear panel card rack

##### Tools & Equipment Required:

► Phillips screw driver

a) Remove the upper and lower mounting screws from the module. See Figure 16-1.

b) Using the BNC connectors, pull the module straight out from the card rack.

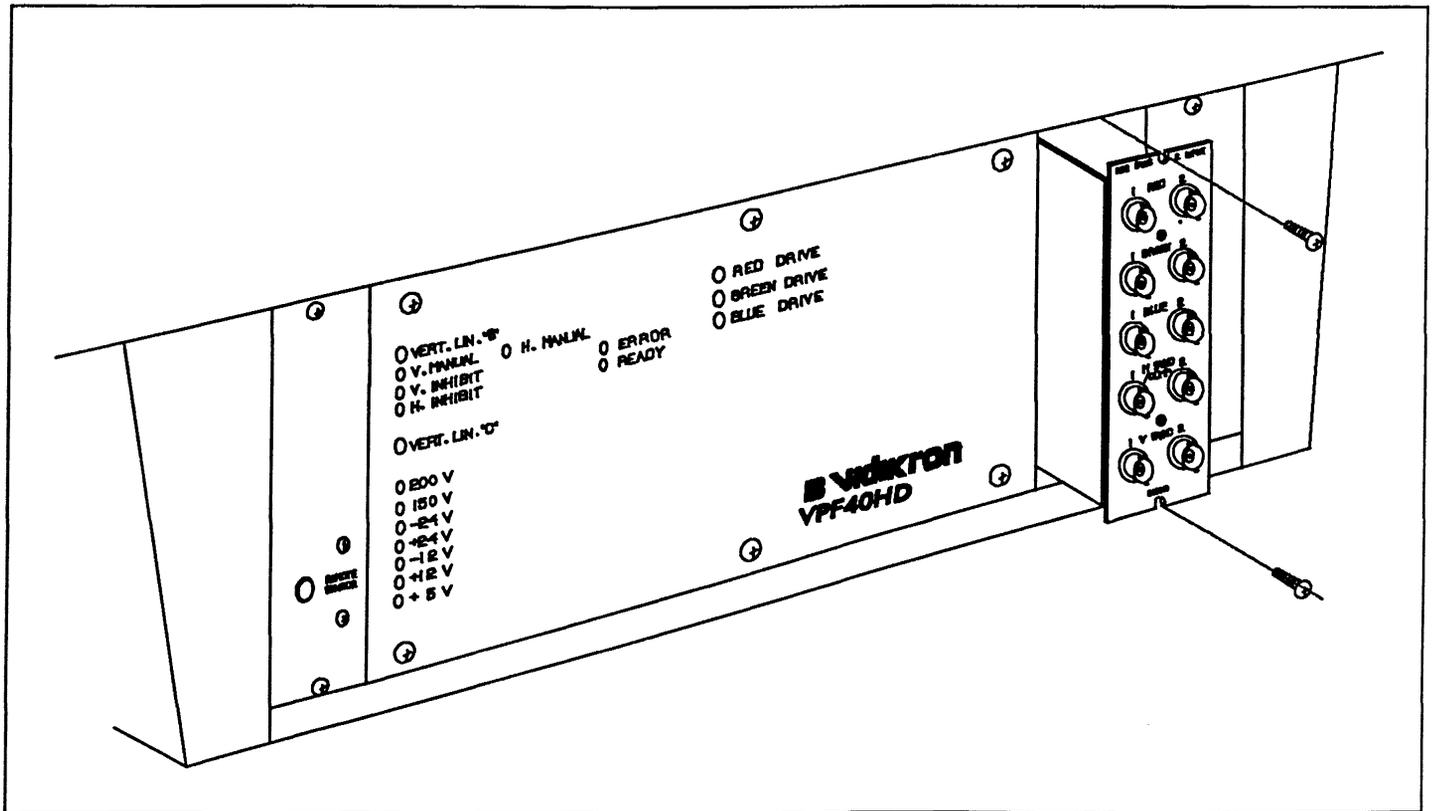


FIGURE 16-1. RGB SYNC 2 INPUT Module Removal

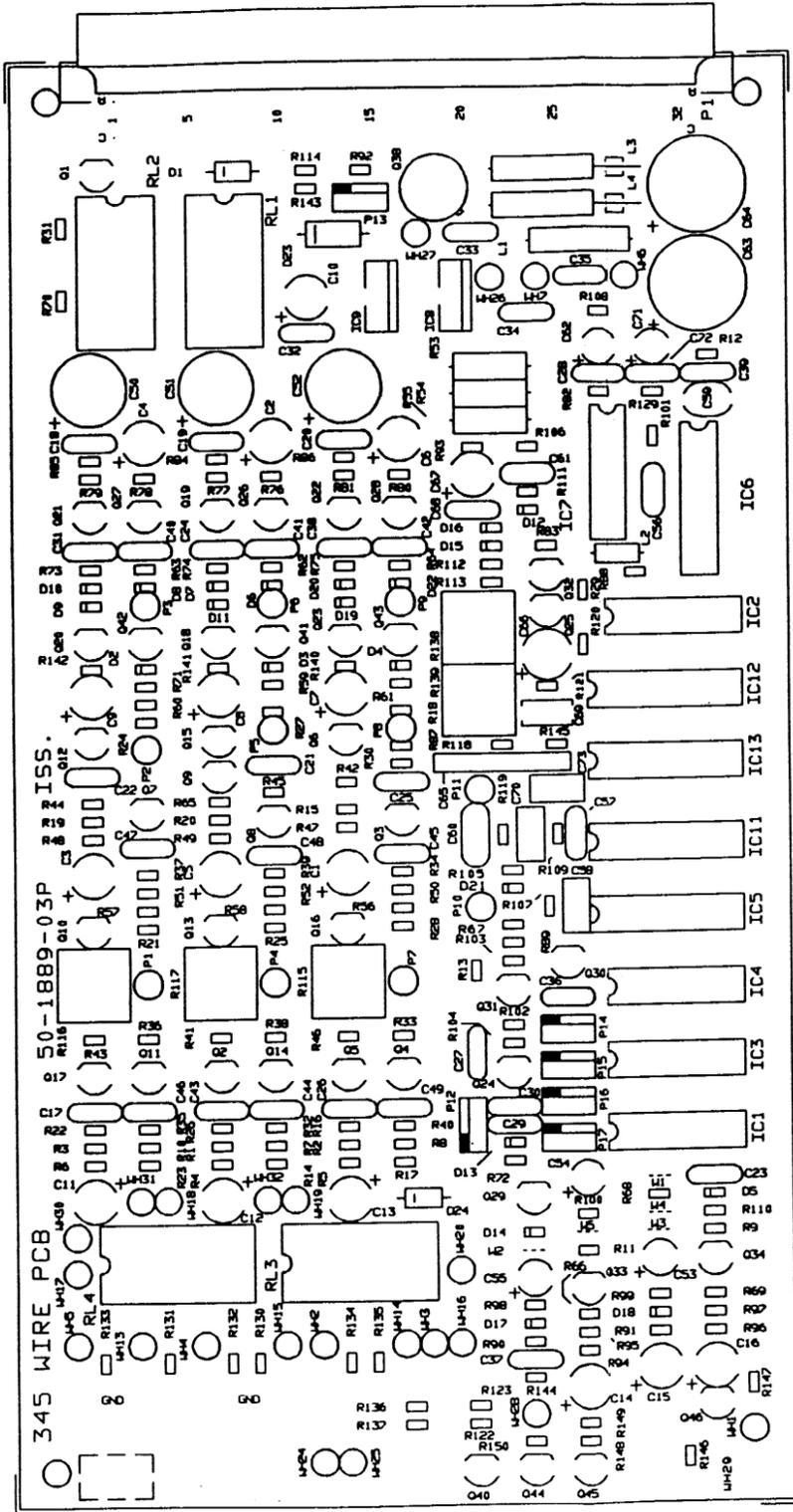
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##### 16.2.2 Alignment and Adjustments

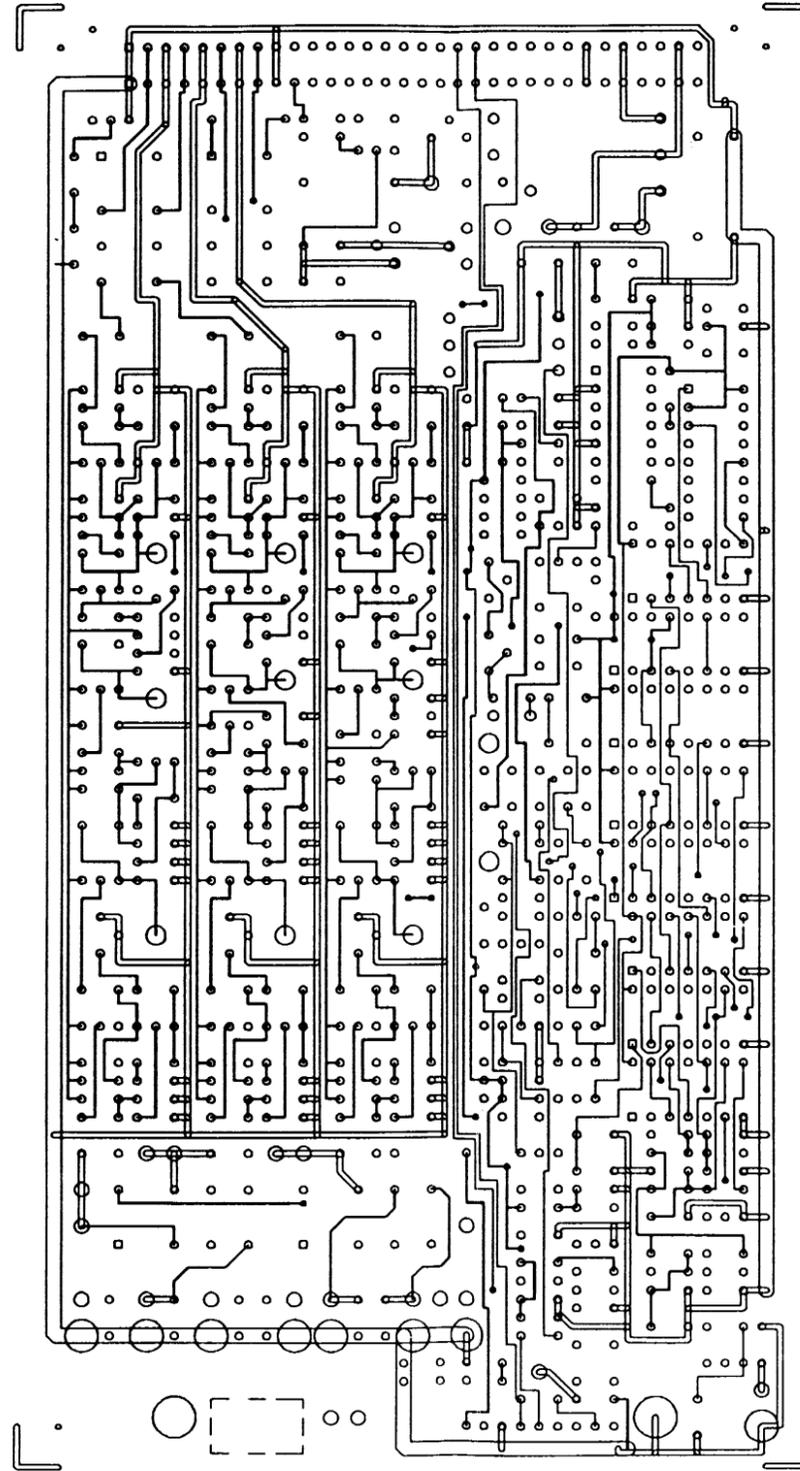
positions.

R139 is the horizontal shift adjust. R138 is the vertical shift adjust. All other trimpots must be left in their factory set

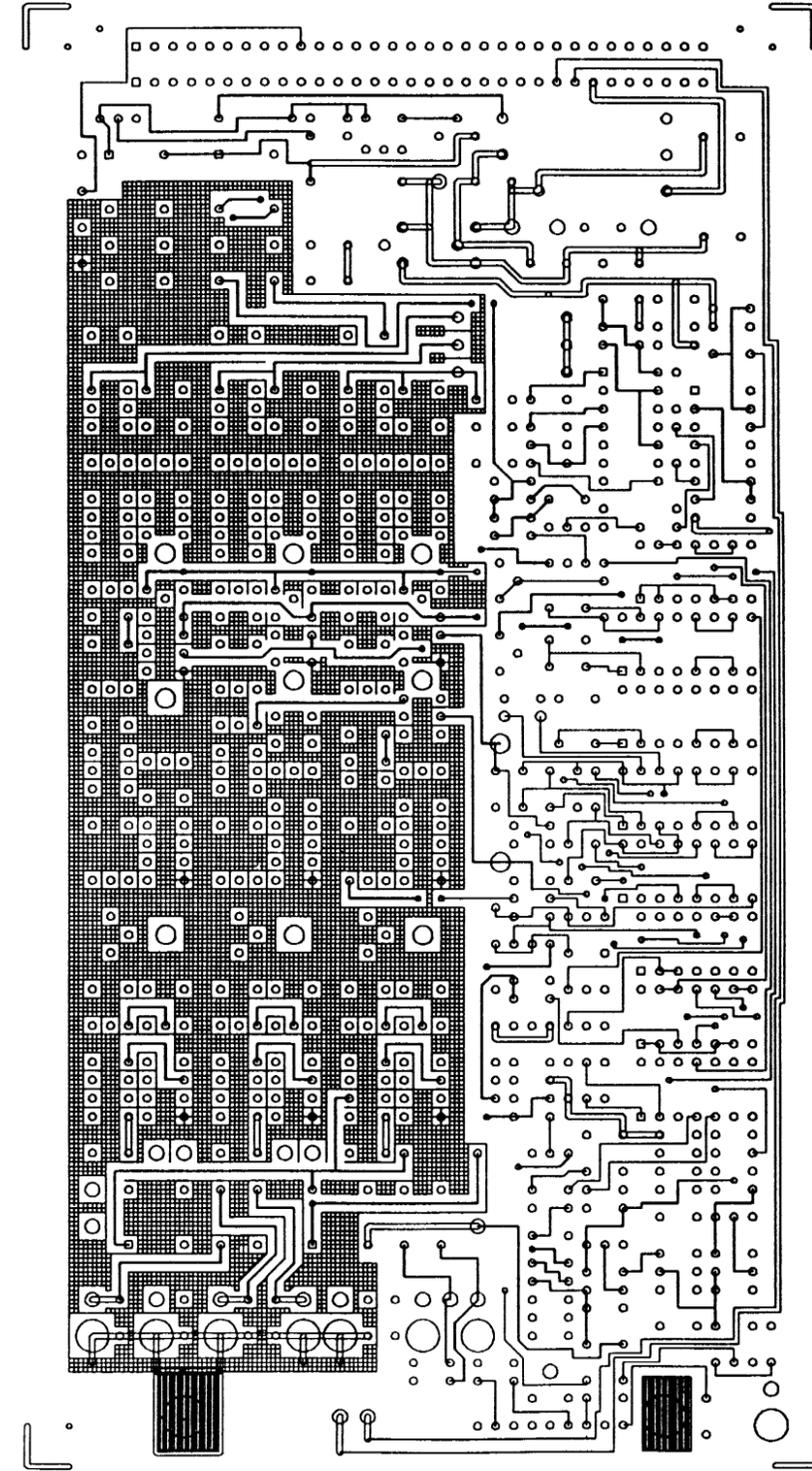
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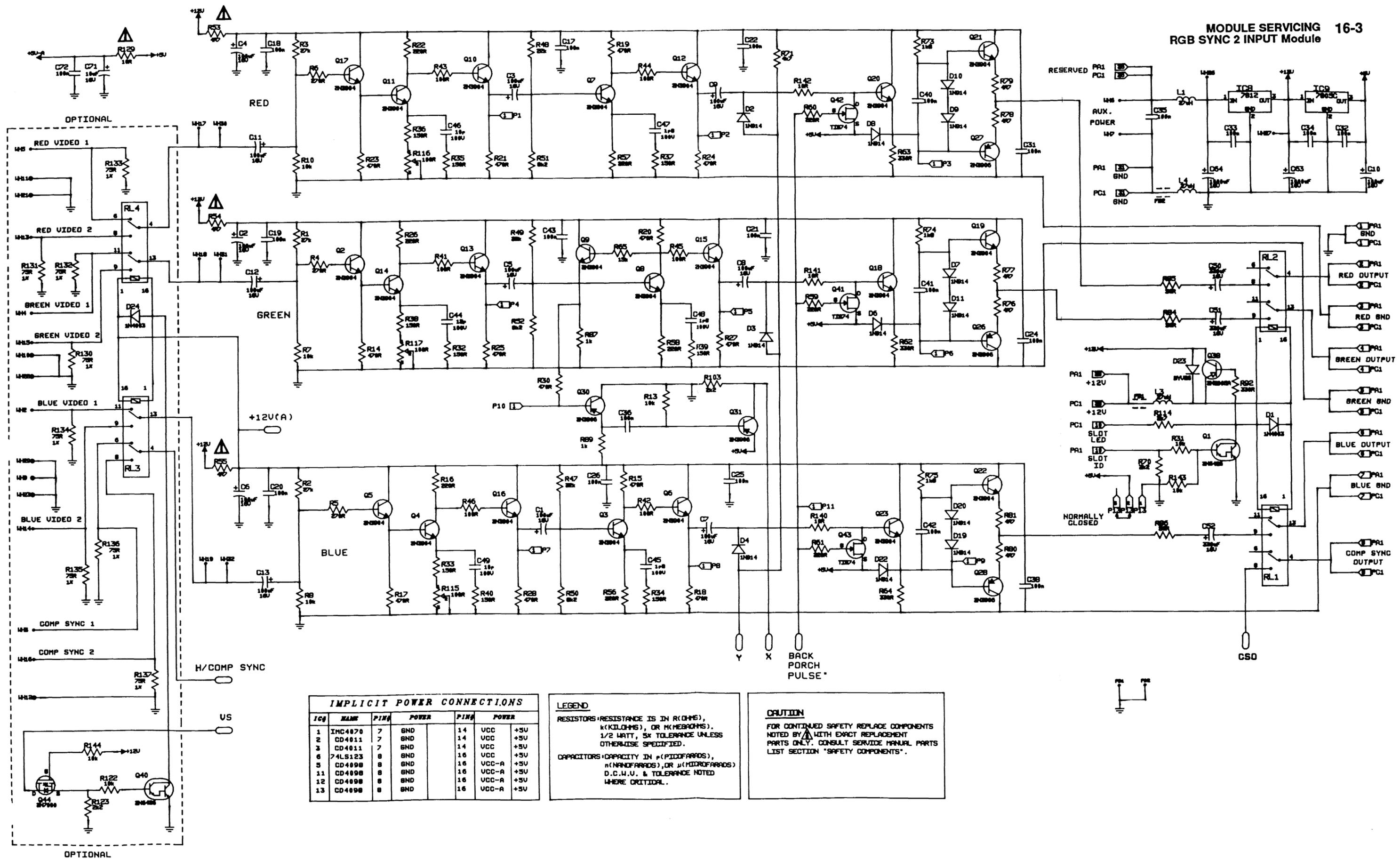
Component Layout



Solder Side  
(Viewed from Component Side)



Component Side



**IMPLICIT POWER CONNECTIONS**

IC#	NAME	PIN#	POWER	PIN#	POWER
1	IMC4870	7	GND	14	VCC +5V
2	CD4011	7	GND	14	VCC +5V
3	CD4011	7	GND	14	VCC +5V
6	74LS123	8	GND	16	VCC +5V
5	CD4898	8	GND	16	VCC-A +5V
11	CD4898	8	GND	16	VCC-A +5V
12	CD4898	8	GND	16	VCC-A +5V
13	CD4898	8	GND	16	VCC-A +5V

**LEGEND**  
RESISTORS: RESISTANCE IS IN OHMS, K(KILOHMS), OR M(MEGOHMS). 1/2 WATT, 5% TOLERANCE UNLESS OTHERWISE SPECIFIED.  
CAPACITORS: CAPACITY IN P(PICOFARADS), n(NANOFARADS), OR μ(MICROFARADS) D.C.U.V. & TOLERANCE NOTED WHERE CRITICAL.

**CAUTION**  
FOR CONTINUED SAFETY REPLACE COMPONENTS NOTED BY WITH EXACT REPLACEMENT PARTS ONLY. CONSULT SERVICE MANUAL PARTS LIST SECTION "SAFETY COMPONENTS".

FIGURE 16-3. RGB SYNC 2 INPUT Schematic (1 of 2)  
00-260015-03P

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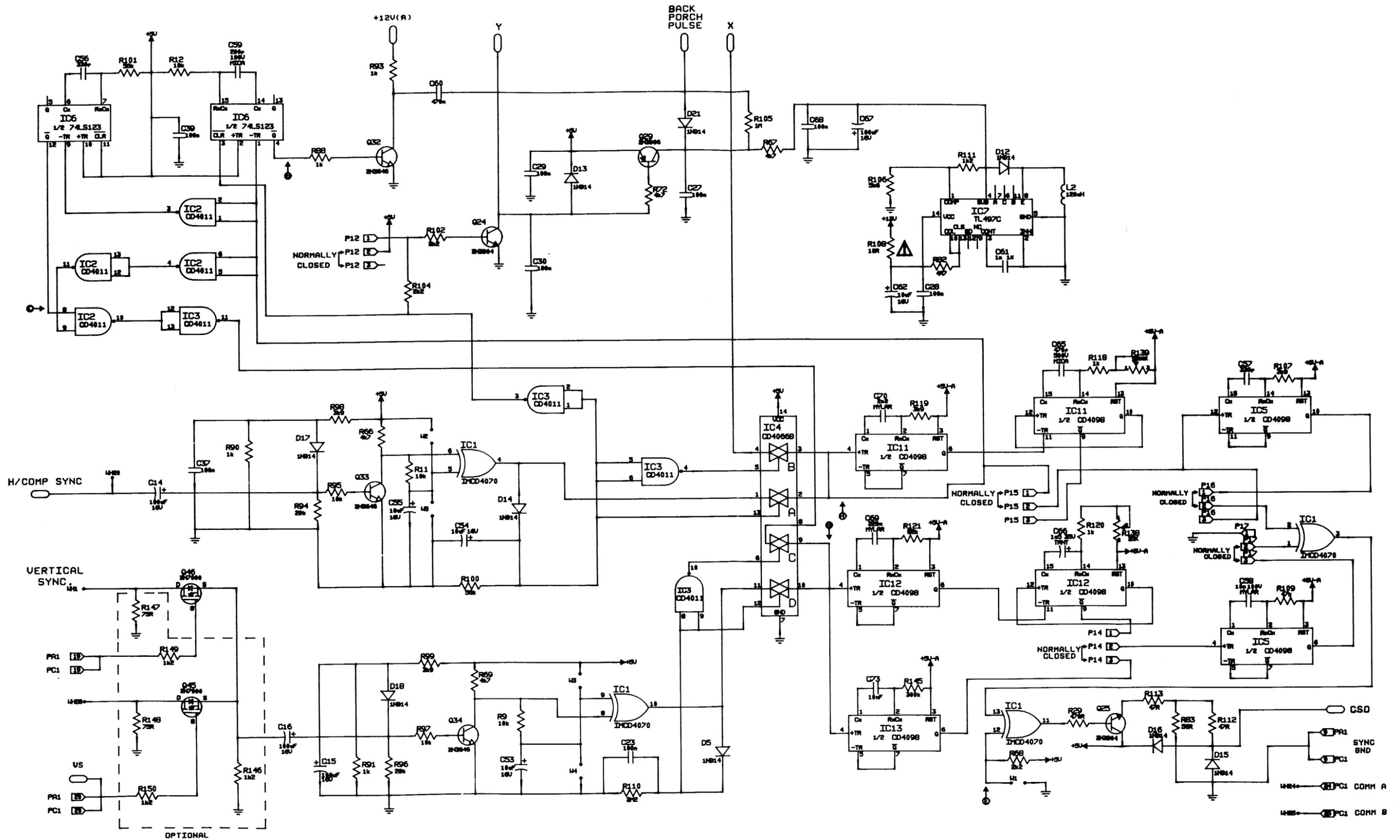


FIGURE 16-4. RGB SYNC 2 INPUT Schematic (2 of 2)  
00-260015-03P

54-7598-01P  
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16.4 PARTS LIST

▲ - CRITICAL SAFETY COMPONENT  
 (REPLACE WITH IDENTICAL PART)

Item Ref.	Part No.	Description
<b>Integrated Circuits</b>		
IC1	IC-14-004620-01P	74LS86, quad EXOR gate
IC2,IC3	IC-14-A04027-01P	CD4011BE, 20V CMOS NAND gate
IC4	IC-14-A03008-02P	CD4066B, (RCA or Motorola ONLY)
IC5,IC11-IC13	IC-14-A04041-01P	MM14538B, CMOS, precision dual monostable
IC6	IC-14-004670-02P	74LS123, dual mono multivibrator
IC7	IC-14-002834-01P	TL497C, voltage regulator
IC8	IC-14-002018-01P	MC7812CT, +12 VDC, fixed linear regulator
IC9	IC-14-002032-01P	MC7805CT, +5 VDC, fixed linear regulator
<b>Transistors and Diodes</b>		
Q1,Q40	TR-14-000990-01P	2N6426, NPN
Q2-Q25	TR-14-000881-06P	2N3904, NPN, 40V, 0.2A, 0.35W
Q26-Q31	TR-14-000873-82P	2N3906, PNP, small signal
Q32-Q34	TR-14-000880-05P	MPS3646, NPN, 15V, 0.3A, 1W
Q38	TR-14-000984-02P	2N2905A
Q41-Q43	TR-14-000720-13P	TIS74, FET, 30V, 0.05A, 0.36W
D1,D24	D-14-000525-53P	1N4003, rectifier, 1A, 200V
D2-D4,D6-D13,D15-D22	D-14-000513-01P	1N914, diode, 0.075A, 75V
D5,D14	D-14-000533-01P	BAT81, Schottky barrier diode
D23	D-14-000525-07P	BYV26, rectifier, 0.5A, 350V, T
<b>Capacitors</b>		
C1-C16,C67	C-84-410104-03P	100 $\mu$ F, 25V, electrolytic
C17-C43,C68,C72	C-89-000032-03P	100 nF, 50V, 20%, ceramic, multi layer
C44	C-86-612031-04P	12 pF, 100V, 2%
C45,C47,C48	C-86-618711-04P	1.8 pF, $\pm$ 0.25pF, NPO, 100V, ceramic
C46,C49	C-86-610031-04P	10 pF, ceramic
C50-C52	C-44-433103-05P	330 $\mu$ F, 16V, electrolytic
C53-C55,C62,C71	C-84-410004-01P	10 $\mu$ F, 25V, electrolytic
C56,C57	C-89-000033-06P	330 pF, 5%, NPO, ceramic, multi layer
C58	C-88-171031-02P	10 nF, 100V, 10%, mylar
C59	C-47-052012-16P	200 pF, 2%, mica, 100V
C60	C-89-000032-02P	0.47 $\mu$ F, 50V, $\pm$ 20%, ceramic, multi layer
C61	C-89-000033-02P	1.0 nF, 50V, 1%, ceramic, multi layer
C63,C64	C-44-410203-08P	1000 $\mu$ F, 16V, electrolytic
C65	C-47-044715-03P	470 pF, $\pm$ 5%, mica, 500V
C69	C-88-172240-02P	220 nF, 50V, 10%, mylar
C70	C-88-172220-02P	2.2 nF, 50V, $\pm$ 10%, mylar
C73	C-89-000032-04P	10 nF, 50V, 20%, ceramic, multi layer
C75	C-88-171053-12P	1 $\mu$ F, 50V, mylar
<b>Resistors</b>		
R1-R3	R-80-127025-11P	27K, 1/2W, 5%, metal film
R4-R6	R-80-127005-11P	270R, 1/2W, 5%, metal film
R7-R13,R31,R95,R97, R122,R143,R144	R-80-110025-11P	10K, 1/2W, 5%, metal film
R14,R15,R17-R21, R23-R25,R27-R30	R-80-147005-11P	470R, 1/2W, 5%, metal film

16.4 PARTS LIST (cont.)

▲ - CRITICAL SAFETY COMPONENT  
(REPLACE WITH IDENTICAL PART)

Item Ref.	Part No.	Description
<b>Resistors (cont.)</b>		
R16,R22,R26,R56-R61	R-80-122005-11P	220R, 1/2W, 5%, metal film
R32-R40	R-80-115005-11P	150R, 1/2W, 5%, metal film
R41-R46	R-80-110005-11P	100R, 1/2W, 5%, metal film
R47-R49	R-80-122025-11P	22K, 1/2W, 5%, metal film
R50-R52	R-80-182015-11P	8.2K, 1/2W, 5%, metal film
▲ R53-R55	R-42-000063-57P	4.7R, 1/2W
R62-R64,R92	R-80-133005-11P	330R, 1/2W, 5%, metal film
R65	R-80-115025-11P	15K, 1/2W, 5%, metal film
R66,R67,R69,R71,R72, R151,R154	R-80-147015-11P	4.7K, 1/2W, 5%, metal film
R68,R70,R102-R104, R123	R-80-122015-11P	2.2K, 1/2W, 5%, metal film
R73-R75	R-80-118015-11P	1.8K, 1/2W, 5%, metal film
R76-R82	R-80-147085-11P	4.7R, 1/2W, 5%, metal film
R83-R86	R-80-156095-11P	56R, 1/2W, 5%, metal film
R87-R91,R93,R118, R120,R152,R153	R-80-110015-11P	1K, 1/2W, 5%, metal film
R94,R96	R-80-120025-11P	20K, 1/2W, 5%, metal film
R98,R99	R-80-139015-11P	3.9K, 1/2W, 5%, metal film
R100,R101	R-80-156025-11P	56K, 1/2W, 5%, metal film
R105	R-80-110045-11P	1M, 1/2W, 5%, metal film
R106,R107	R-80-156015-11P	5.6K, 1/2W, 5%, metal film
R108,R129,R140-R142	R-80-110095-11P	10R, 1/2W, 5%, metal film
R109	R-80-136025-11P	36K, 1/2W, 5%, metal film
R110	R-80-122045-11P	2.2M, 1/2W, 5%, metal film
R111	R-80-112015-11P	1.2K, 1/2W, 5%, metal film
R112	R-80-147095-11P	47R, 1/2W, 5%, metal film
R113	R-80-127095-11P	27R, 1/2W, 5%, metal film
R114	R-80-127015-11P	2.7K, 1/2W, 5%, metal film
R115-R117	VR-41-000344-04P	100R, carbon trim pot
R119	R-80-151015-11P	5.1K, 1/2W, 5%, metal film
R121	R-80-143025-11P	43K, 1/2W, 5%, metal film
R130-R137	R-82-375091-29P	75R, 1/3W, 1%, metal film
R138	VR-41-000344-12P	25K, carbon trim pot
R139	VR-41-000345-11P	200K, 20 turn trim pot
R145	R-80-122035-11P	220K, 1/2W, 5%, metal film

**Coils and Transformers**

L1	L-21-001400-10P	27 $\mu$ H, RF choke
L2	L-21-001185-38P	120 $\mu$ H, inductor
L3,L4	L-21-001400-25P	inductor

**Miscellaneous**

RL1,RL2	RL-25-000106-01P	relay, DPDT, 12v coil
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**16.5 SPECIFICATIONS**

**Power Requirements:**

Voltage  
 in projector or switcher . . . . . +12 VDC ±5%  
 in sleeve . . . . . +15 VDC ±5%  
 Current . . . . . 400 mA max

**Input Signal Requirements:**

RGB Video . . . . . 0.7Vpp ± .3V  
 RGB Sync on Green . . . . . 0.5Vpp to 4Vpp  
 Separate Sync . . . . . 0.5Vpp to 4Vpp

**Input Impedance:**

Video  
 terminated . . . . . R = 75Ω ±1%, C = 18pF - 50%  
 open . . . . . R = 7.3KΩ +20%, C = 18pF - 50%

Sync  
 terminated . . . . . R = 75Ω ±1%, C = 18pF - 50%  
 open . . . . . R = 10KΩ +20%, C = 18pF - 50%

**Output Signal Level:**

RGB Video (into 75Ω) . . . . . 0.7Vp-p ±50mV%  
 RGB Gain Balance . . . . . ±1%  
 Output Sync level (-ve going to 75Ω) . . . . . 1.0Vpp ±10%  
 Output Drive Impedance) . . . . . 75 Ω  
 Frequency Response . . . . . 100 MHz - 3 dB  
 Input Crosstalk . . . . . -40 dB

**On-board Sync Delay:**

Horizontal  
 fixed delay . . . . . 12 μs ±10%  
 variable delay . . . . . 1 to 55 μs ±10%

Vertical  
 fixed delay . . . . . 7 ms ±10%  
 variable delay . . . . . 9 to 29 ms ±10%

**Regenerated Sync Output:**

Horizontal  
 range . . . . . 15 to 80 KHz ±5%  
 duration . . . . . 3.0 μs ±10%

Vertical  
 range . . . . . 40 to 100 Hz ±10%  
 duration . . . . . 225 μs ±10%

**Quality and Reliability:**

Quality Level: AQL . . . . . 1.5% max.  
 Reliability Level: MTBF . . . . . 10,000 Hrs min.

NOTES