

SECTION 10

RGB SYNC 10 PIN INPUT MODULE

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No tables are included in this section.

10.1 TECHNICAL DESCRIPTION

10.1.1 General Description

The RGB SYNC 10 PIN input module is located in the rear panel card rack of the projector, normally occupying slot 1.

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

10.2 SERVICING AND ALIGNMENT

10.2.1 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 10-1.

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

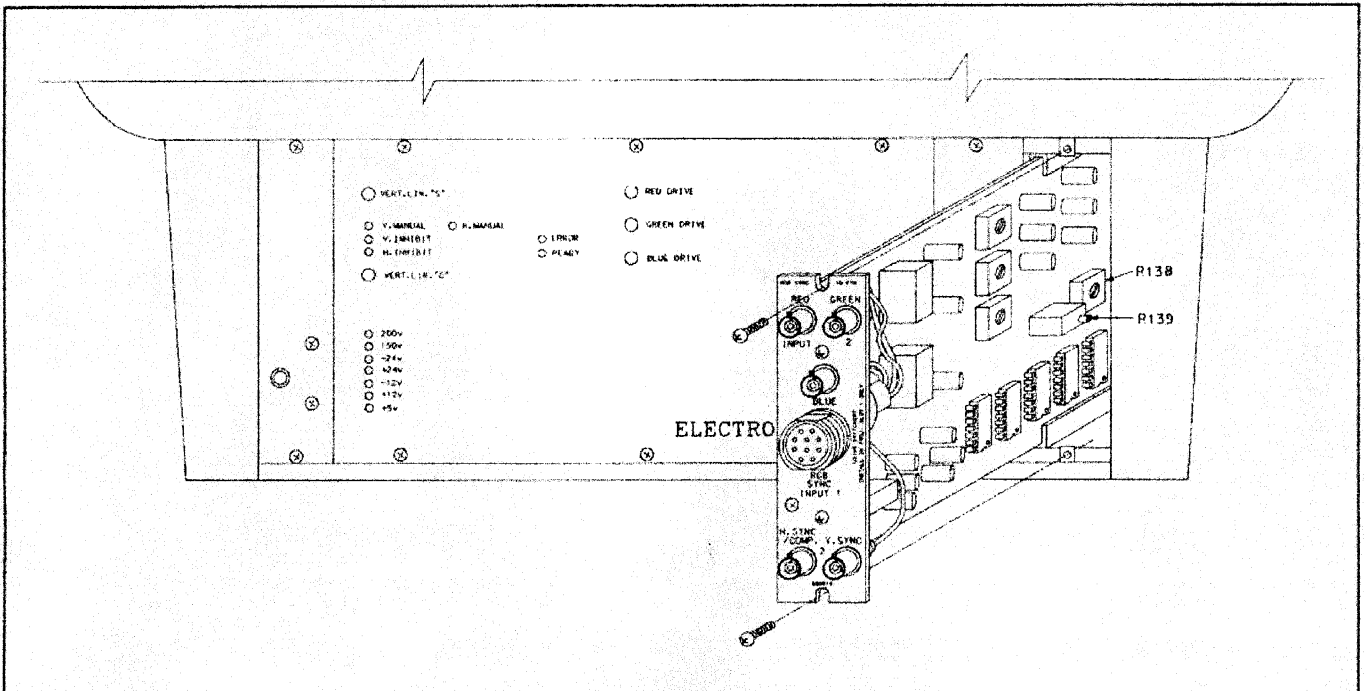


FIGURE 10-1. RGB SYNC 10 PIN Input Module Removal

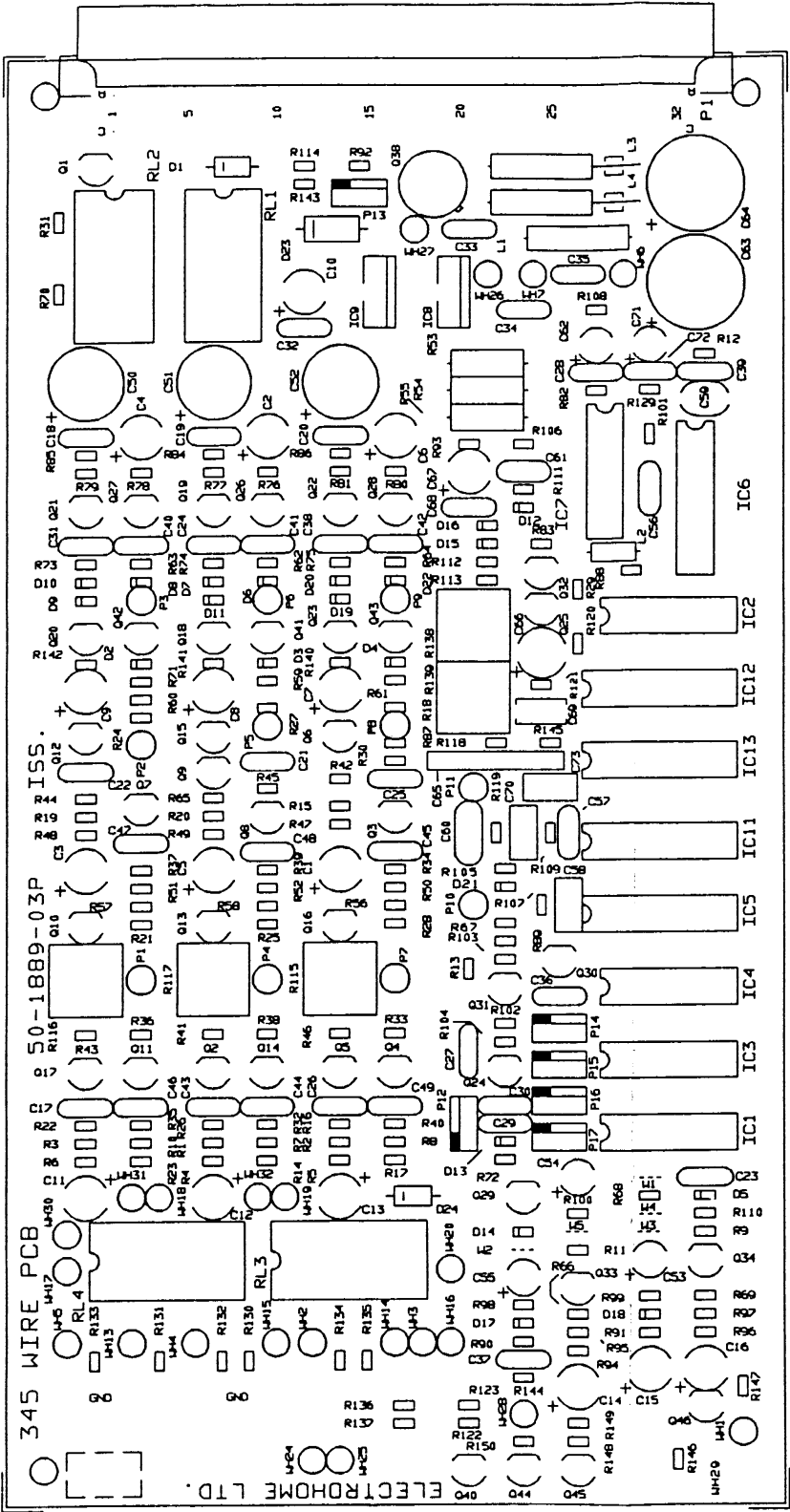
10.2.2 Alignment and Adjustments

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

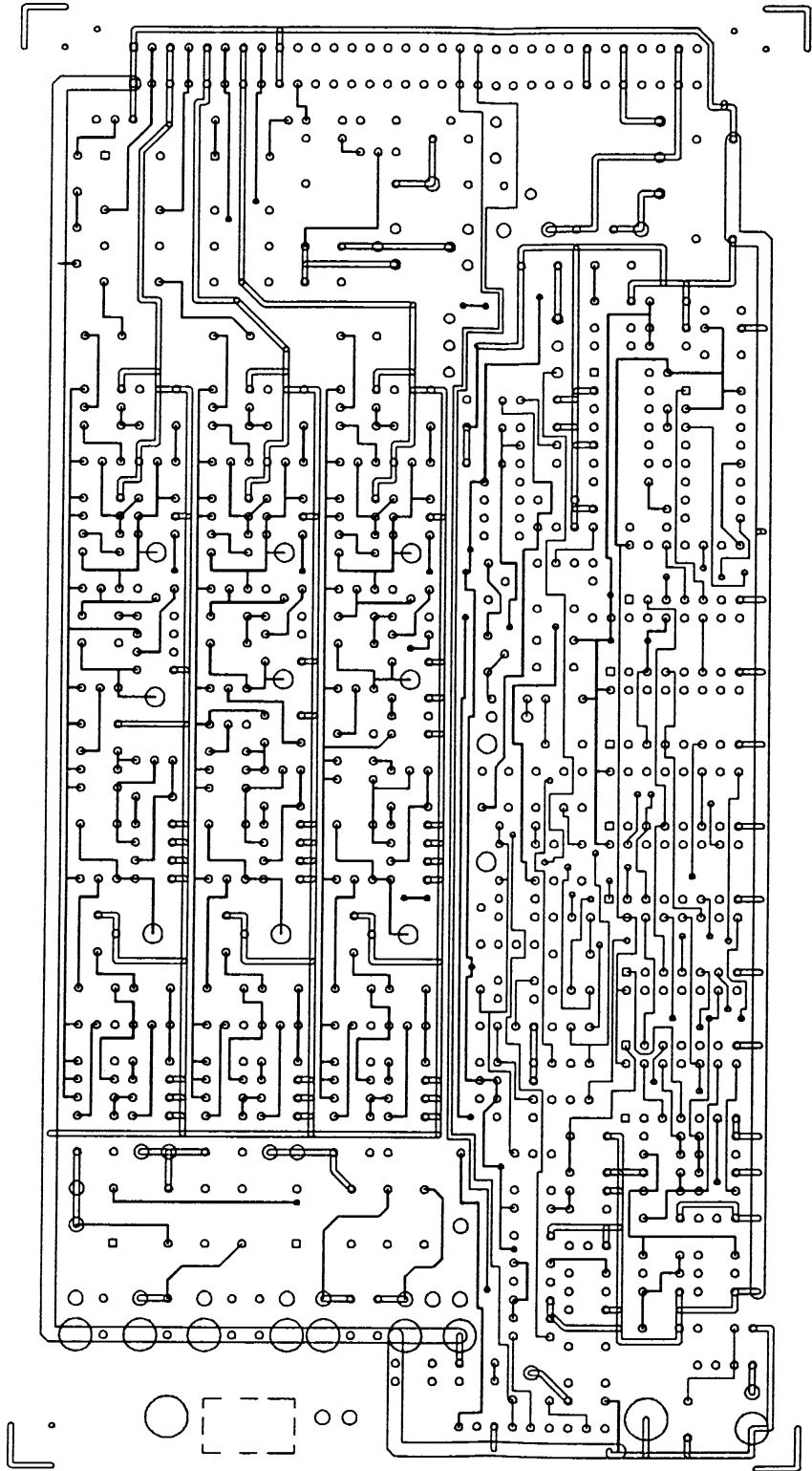
10.3 COMPONENT LAYOUT AND SCHEMATICS

Refer to the following pages for component layouts and schematics of the RGB SYNC 10 PIN input module.

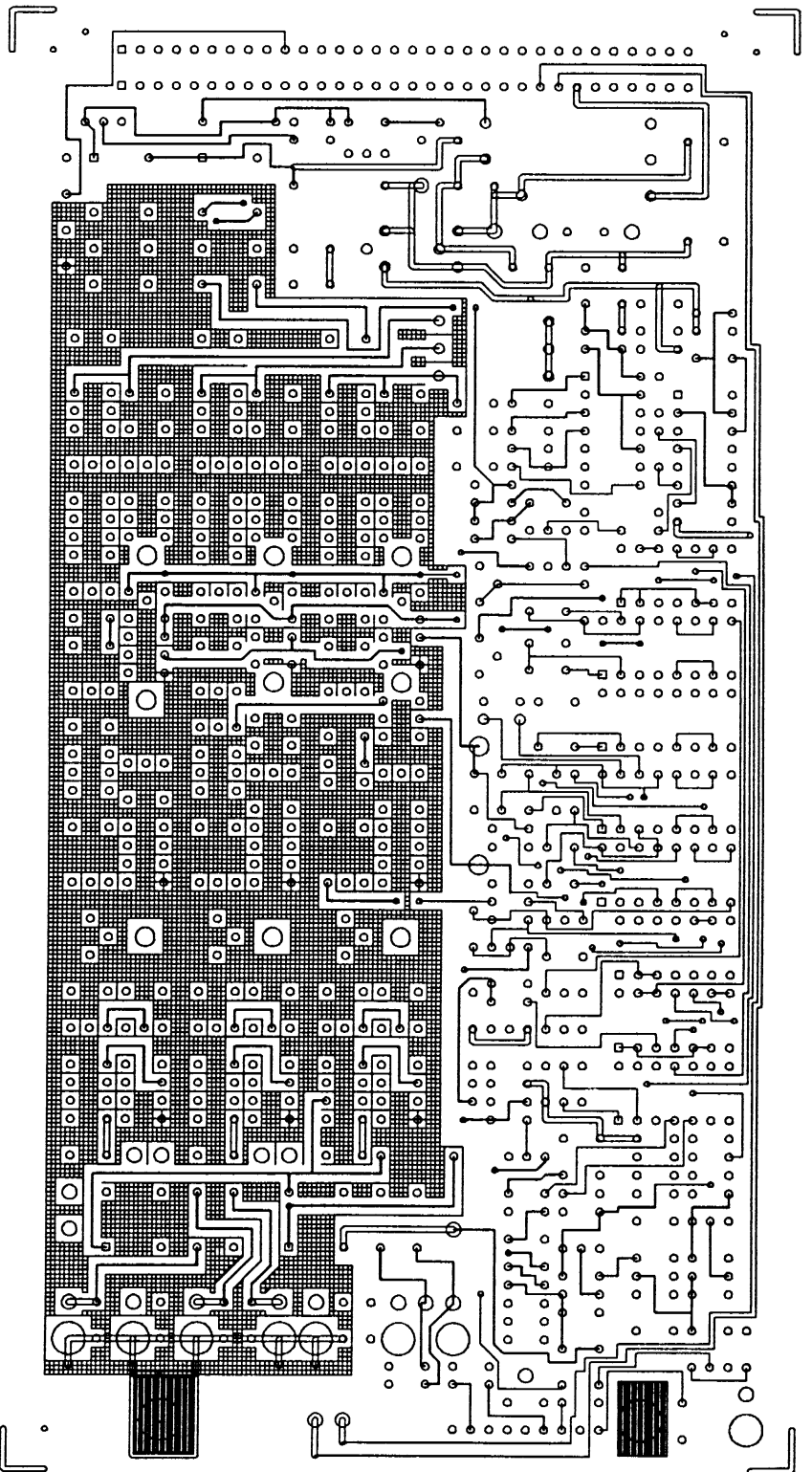
50-1889-03P ISS. 3



Component Layout



Solder Side
(Viewed from Component Side)



Component Side

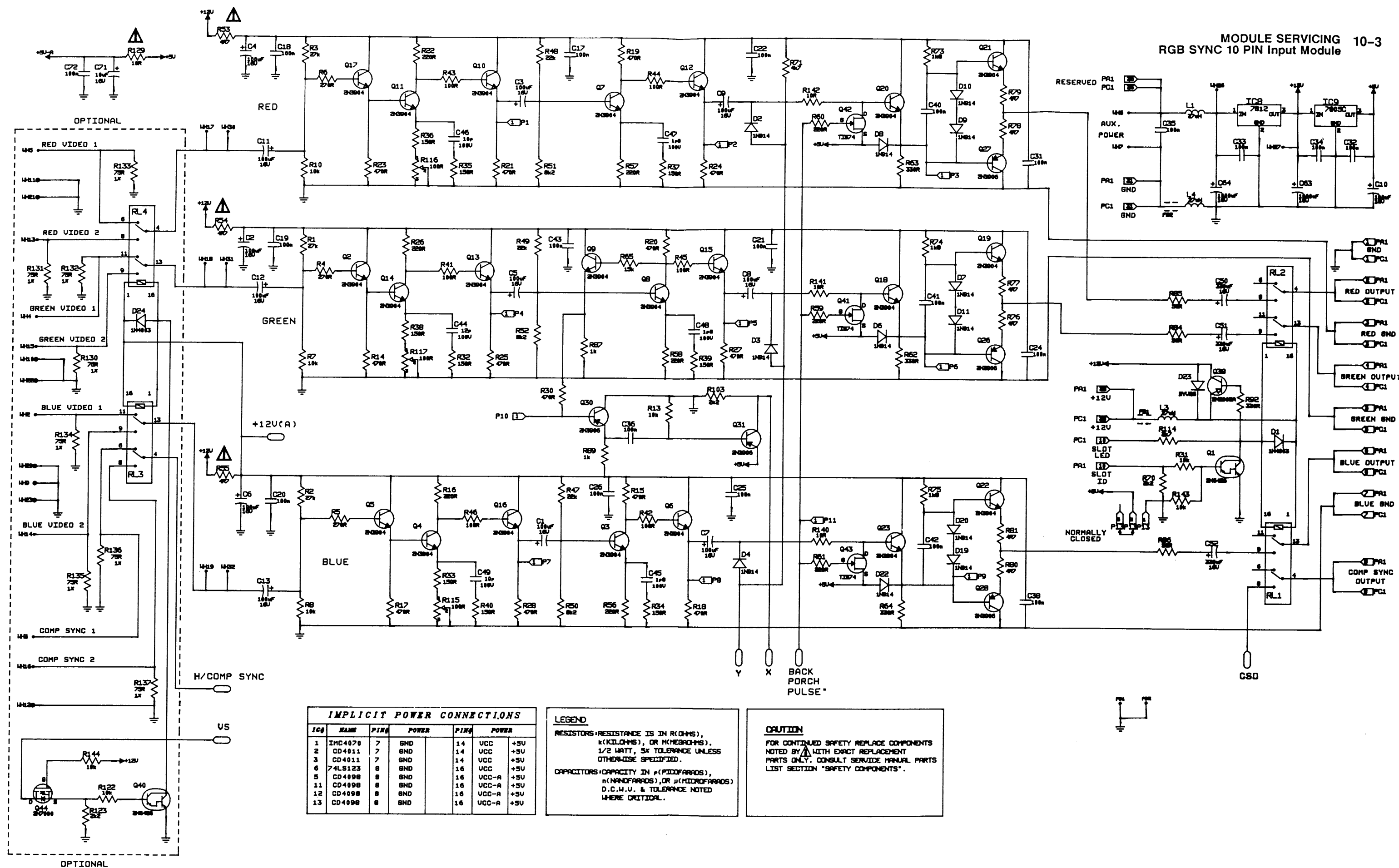


FIGURE 10-3.
RGB SYNC 10 Pin Schematic (Sheet 1 of 2)

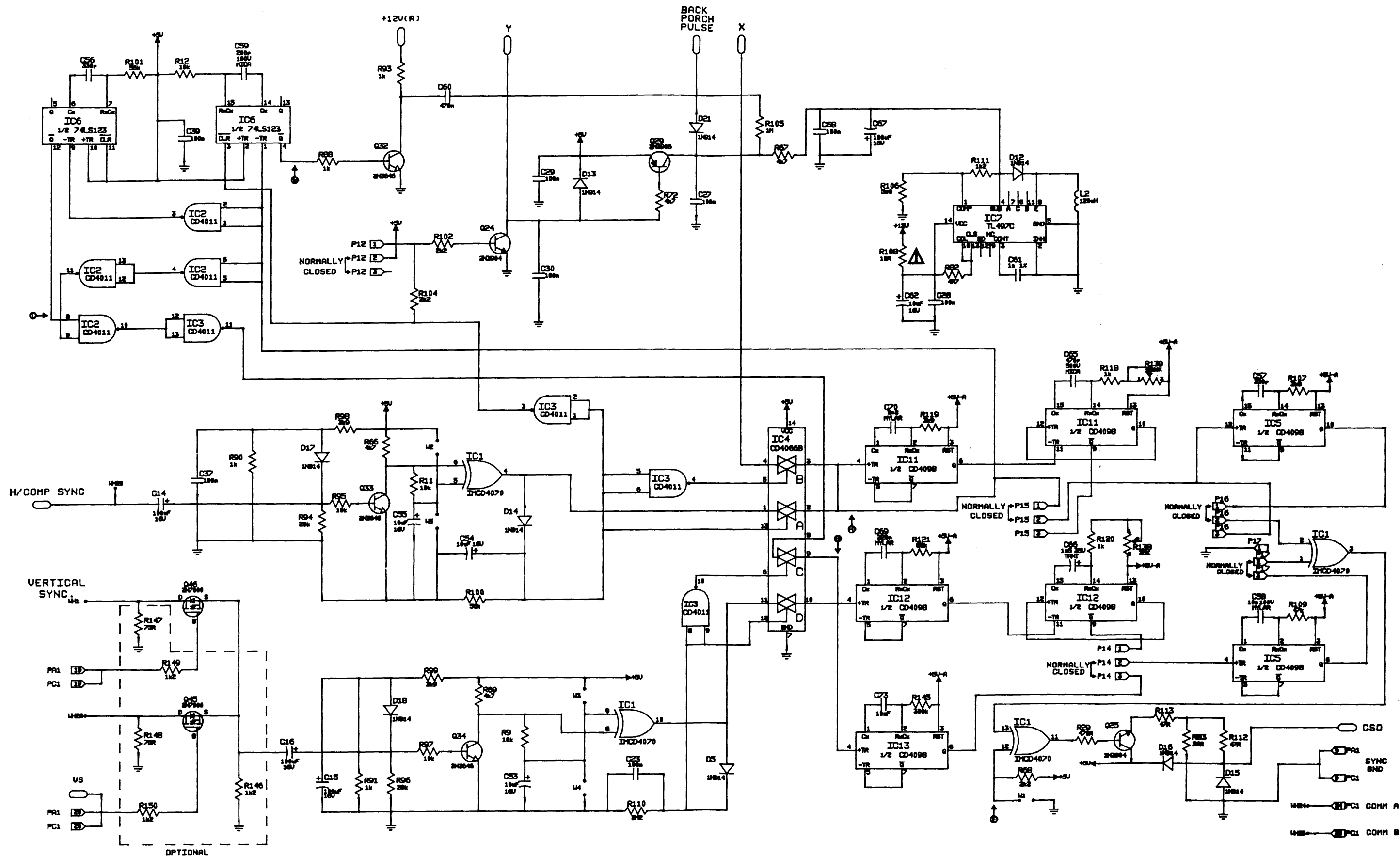


FIGURE 10-4.
RGB SYNC 10 Pin Schematic (Sheet 2 of 2)

10.4 PARTS LIST

Item Ref.	Part No.	Description
Integrated Circuits		
IC1	14-A04024-01P	CD4070BE, quad EXOR gate
IC2,IC3	14-A04027-01P	CD4011BE, 20V CMOS NAND gate
IC5,IC11,IC12,IC13	14-A04021-01P	CD4098BE, CMOS dual mono multivibrator
IC4	14-A03008-02P	CD4066B, (RCA or Motorola ONLY)
IC6	14-004670-02P	74LS123, dual mono multivibrator
IC7	14-002834-01P	TL497C, voltage regulator
IC8	14-002018-01P	MC7812CT, fixed +V linear regulator
IC9	14-002032-01P	MC7805CT, fixed +V linear regulator
Transistors and Diodes		
Q1,Q40	14-000990-01P	2N6426, NPN
Q2-Q25	14-000881-06P	2N3904, NPN, 40V, 0.2A, 0.35W
Q26-Q31	14-000873-82P	2N3906, small signal
Q32-Q34	14-000880-05P	MPS3646, NPN, 15V, 0.3A, 1W
Q38	14-000984-02P	2N2905A
Q41-Q43	14-000720-13P	TIS74, FET, 30V, 0.05A, 0.36W
D1,D24	14-000525-53P	1N4003, diode, 1A, 200V
D2-D22	14-000513-01P	1N914, diode, 0.075A, 75V
D23	14-000525-07P	BYV26, diode, 0.5A, 350V
Capacitors		
C1-C16,C67	84-410104-03P	100 μ F, 25V
C17-C43,C68,C72	89-000032-03P	100 nF, 50V
C44	46-612031-04P	12 pF, 100V, 2%
C45,C47,C48	86-618711-04P	1.8 pF, ± 0.25 pF, NPO, 100V
C46,C49	46-610031-04P	10 pF, 100V, NPO
C50-C52	44-433103-05P	330 μ F, 16V
C53-C55,C62,C71	84-410004-01P	10 μ F, 25V
C56,C57	89-000033-06P	330 pF, 5%, NPO
C58	88-171031-02P	10 nF, 100V, 10%, mylar
C59	47-052012-16P	200 pF, 2%, mica, 100V
C60	89-000032-02P	0.47 μ F, 50V, $\pm 20\%$
C61	89-000033-02P	1.0 nF, 50V, 1%
C63,C64	44-410203-08P	1000 μ F, 16V
C65	47-044715-03P	470 pF, $\pm 5\%$, mica, 500V
C66	84-215476-01P	1.5 μ F, 35V, 20%, tantalum
C69	88-172240-02P	220 nF, 50V, 10%
C70	88-172220-02P	2.2 nF, 50V, $\pm 10\%$
C73	89-000032-04P	10 nF, 50V, 20%, mylar
Resistors		
R1-R3	80-127025-11P	27K, 1/2W, 5%, metal film
R4-R6	80-127005-11P	270R, 1/2W, 5%, metal film
R7-R13,R31,R95, R97,R122,R143, R144	80-110025-11P	10K, 1/2W, 5%, metal film

10.4 PARTS LIST (cont.)

Item Ref.	Part No.	Description
Resistors (cont.)		
R14,R15,R17-R21, R23-R25,R27-R30	80-147005-11P	470R, 1/2W, 5%, metal film
R16,R22,R26, R56-R61	80-122005-11P	220R, 1/2W, 5%, metal film
R32-R40	80-115005-11P	150R, 1/2W, 5%, metal film
R41-R46	80-110005-11P	100R, 1/2W, 5%, metal film
R47-R49	80-122025-11P	22K, 1/2W, 5%, metal film
R50-R52	80-182015-11P	8.2K, 1/2W, 5%, metal film
△ R53-R55	42-000063-57P	4.7R, 1/2W, 5% SAFETY COMPONENT
R62-R64,R92 R65	80-133005-11P 80-115025-11P	330R, 1/2W, 5%, metal film 15K, 1/2W, 5%, metal film
R66,R67,R69, R71,R72	80-147015-11P	4.7K, 1/2W, 5%, metal film
R68,R70, R102-R104,R123	80-122015-11P	2.2K, 1/2W, 5%
R73-R75	80-118015-11P	1.8K, 1/2W, 5%, metal film
R76-R82	80-147085-11P	4.7R, 1/2W, 5%, metal film
R83-R86	80-156095-11P	56R, 1/2W, 5%, metal film
R87-R91,R93, R118,R120	80-110015-11P	1K, 1/2W, 5%, metal film
R94,R96	80-120025-11P	20K, 1/2W, 5%, metal film
R98,R99,R107, R119	80-139015-11P	3.9K, 1/2W, 5%, metal film
R110	40-122255-31P	2.2M, 1/4W, 5%
R111	80-112015-11P	1.2K, 1/2W, 5%, metal film
R105	80-110045-11P	1M, 1/2W, 5%, metal film
R106	80-156015-11P	5.6K, 1/2W, 5%, metal film
R108,R129, △ R140-R142	80-110095-11P	10R, 1/2W, 5%, metal film SAFETY COMPONENT
R109	80-147025-11P	47K, 1/2W, 5%, metal film
R100,R101	80-156025-11P	56K, 1/2W, 5%, metal film
R112,R113	80-147095-11P	47R, 1/2W, 5%, metal film
R114	80-127015-11P	2.7K, 1/2W, 5%, metal film
R115-R117	41-000344-04P	100R carbon trim pot
R121	80-182025-11P	82K, 1/2W, 5%, metal film
R130-R137	82-375091-29P	75R, 1/3W, 1%
R138	41-000344-12P	25K, carbon trim pot
R139	41-000345-11P	200K, 20 turn trim pot
R145	80-130035-11P	300K, 1/2W, 5%, metal film

10.4 PARTS LIST (cont.)

Item Ref.	Part No.	Description
Coils and Transformers		
L1	21-001400-10P	27 μ H, RF choke
L2	21-001185-38P	120 μ H, coil
L3,L4	21-001400-25P	27 μ H, RF choke
Miscellaneous		
RL1,RL2	25-000106-01P	DPDT relay, MT2, 12V coil

10-10 MODULE SERVICING

RGB SYNC 10 PIN Input Module

10.5 SPECIFICATIONS

Power Requirements:

Voltage	
in projector or switcher	+12 VDC \pm 5%
in sleeve	+15 VDC \pm 5%
Current	350 Ma max

Input Signal Requirements:

RGB Video	1V nom. \pm 6 dB (0.5 to 2V p-p)
RGB Sync on Green	1V nom. \pm 6 Db (0.5 to 2V p-p)
Separate Sync	0.5 to 4V p-p
Composite Sync	0.5 to 4V p-p

Input Impedance:

Video	
terminated	R = $75\Omega \pm 1\%$, C = 18pF - 50%
open	R = $7.3K\Omega \pm 20\%$, C = 18pF - 50%

Sync	
terminated	R = $75\Omega \pm 1\%$, C = 18pF - 50%
open	R = $10K\Omega \pm 20\%$, C = 18pF - 50%

Output Signal Level:

RGB Video (into 75Ω)	1V p-p nom. \pm 10%
Composite Sync	
(neg. going into 75Ω)	1V p-p nom. \pm 10%
RGB Gain Balance	$\pm 1\%$
RGB Input/Output	
Frequency Response	90 MHz - 3 Db
Input Crosstalk	-40 Db

On-board Sync Delay:

Horizontal	
fixed delay	$12\mu s \pm 10\%$
variable delay	1 to $55\mu s \pm 10\%$
Vertical	
fixed delay	$7\text{ ms} \pm 10\%$
variable delay	9 to $29\text{ ms} \pm 10\%$

Regenerated Sync Output:

Horizontal	
range	15 to 80 KHz \pm 10%
duration	$3.0\mu s \pm 10\%$
Vertical	
range	40 to 120 Hz \pm 10%
duration	$225\mu s \pm 10\%$

3-Pin Jumper Plug Functions and Settings:

Plug P12

function forced back porch clamp

- NOTE:**
- shorting pins 1 & 2 forces the back porch clamp ON
 - shorting pins 2 & 3 enables sync-on-green only

Plug P14

function vertical sync delay

- NOTE:**
- shorting pins 1 & 2 turns the delay ON and activates R138
 - shorting pins 2 & 3 turns the delay OFF (normal condition)

Plug P15

function horizontal sync delay

- NOTE:**
- shorting pins 1 & 2 turns the delay OFF (normal condition)
 - shorting pins 2 & 3 turns the delay ON and activates R139

Plug P16

horizontal regenerated sync control

- NOTE:**
- shorting pins 1 & 2 enables sync regeneration (normal condition)
 - shorting pins 2 & 3 shorted by-passes sync regeneration

Plug P17

vertical regenerated sync control

- NOTE:**
- shorting pins 1 & 2 by-passes sync regeneration
 - shorting pins 2 & 3 enables sync regeneration (normal condition)

NOTE: The combination, P15 pins 1 & 2 shorted, P16 pins 2 & 3 shorted and P17 pins 2 and 3 shorted, can be used to pass input composite sync directly through the module without regenerating sync internally.

The incoming sync must be of proper timing and duration. If not, the image could be displaced.