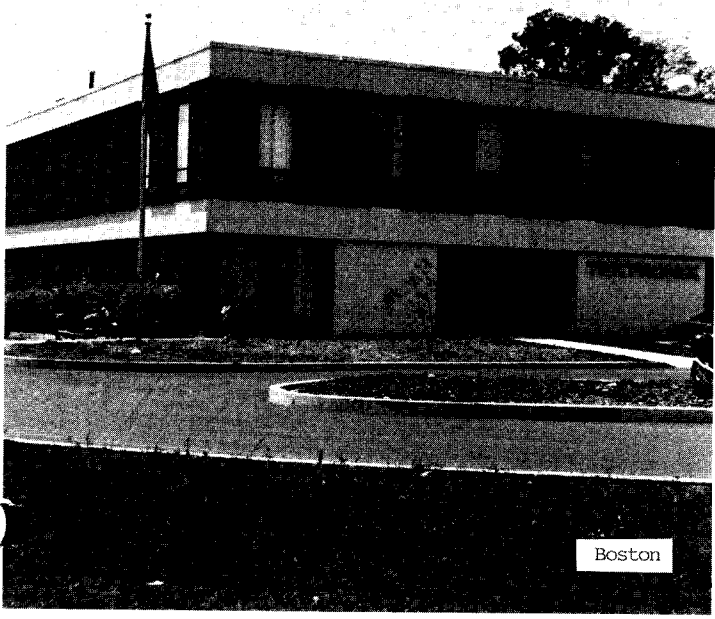
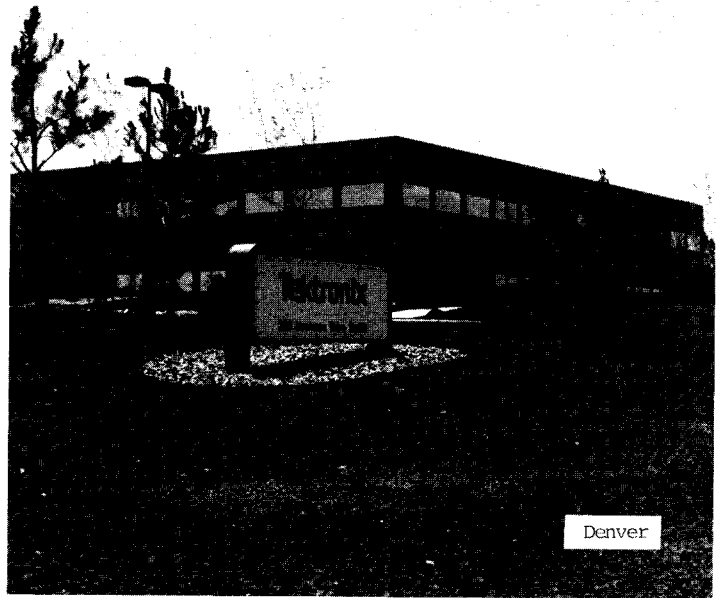


465/475
492/P
2215

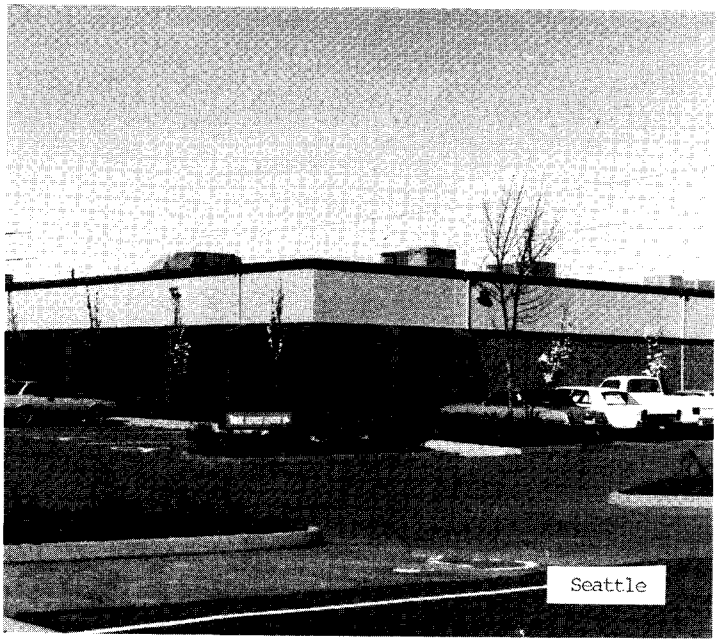
SERVICETEKNOTES



Boston



Denver



Seattle



Baltimore

TABLE OF CONTENTS

DAS9100 - ANTI SKID PADS/TILT BAILS. 1

DAS9100 - A6J498 AND A6J499 LOCATIONS. 1

DAS9129 - CRT SCREEN MESH PART NUMBER. 1

DC508 OPTION 7 CHECKOUT. 1

DC510/DC5010 CIRCUIT AND SPECIFICATION CHANGES FOR CROSS TALK AND
SENSITIVITY. 2

DM501A U1603 A/D CONVERTER REPLACEMENT 3

D70, D80 SECTOR CARD TEST FIXTURE (067-0745-00). 3

INSTRUCTION MANUAL UPDATES 3

NEW MANUALS. 3

PDP-11/R1340 UNIBUS CABLES, M42523 3

SC502 -70 VOLT SUPPLY TOO POSITIVE 3

SERVICE TRAINING CUSTOMER CLASS SCHEDULE 4

S-3200 DC SUBSYSTEM OSCILLATION. 6

S-3200 PRAM CIRCUIT BOARD REVISION LEVELS. 7

S-3200 RACK THUMBSCREW PART NUMBER 10

S-3200 SECTOR CARD TEST FIXTURE ENHANCEMENT, M43802. 10

S-3200 TYPE G FIXTURE (018-0105-00), RELIABILITY IMPROVED. 10

S-3275 NEW MANUALS 10

S-3275 POWER SUPPLY REPLACEMENT KITS FOR 620-0474-00 (M47397). 11

TDC PELTOLA CONNECTORS 11

TM5003/TM5006 OSCILLATOR I.C. REPLACEMENT OR OSCILLATOR FREQUENCY
INCORRECT. 11

TSCU/TSCU INTERFACE INTERCONNECT CABLE CONNECTOR 12

TSG7 COLOR BAR TIMING ERROR. 13

TV MANUALS REVISIONS 13

TV PRODUCT MANUALS 13

WP2110, WP3110 AND WP1310 CHECKOUT SOFTWARE HAS A COMPATIBILITY PROBLEM
WITH THE 4052R14 ROM PAK 14

7L5 MOD FB/7854. 15

49X/P 3MM CONNECTOR FIELD SERVICE KIT (003-1324-00). 15

49X/P 100 KHZ FILTER AMPLITUDE DRIFT 15

147A/149A VITS PASS. 15

465/475 BNC CONNECTORS 16

492/P (S/N B029999 & Below) MANUAL CHANGE. 16

650A/650HR SERIES EHT REPLACEMENTS 17

670 SERIES VERTICAL PARABOLA FAILURE . . . . .	.17
690SR HIGH VOLTAGE OVERLOAD. . . . .	.18
690SR/6942 CALIBRATION . . . . .	.19
690SR/6942 HV REGULATOR RELIABILITY. . . . .	.19
690SR/6942 LABELS ADDED, HARDWARE CHANGED. . . . .	.19
690/6942 POWER SUPPLY. . . . .	.22
834 XTAL MARKED WITH WRONG PART NUMBER . . . . .	.23
1410 SERIES PROCESS IMPROVEMENT. . . . .	.23
1440 MODIFIED PRODUCTS, TELETEXT PROCESSING. . . . .	.23
1450 SERIES OSCILLATION PROBLEM. . . . .	.24
1800 LOAD BOARD EXTRACTOR. . . . .	.24
2213/2215 CAPACITOR, P/N 283-0057-00 EXCESSIVE FAILURE RATE. . . . .	.24
4014/14-1, 4015/15-1 LVPS R483; R485, R487 BURNING - ADDENDUM. . . . .	.25
4052/4052A/4054/4054A OPTION 27/28 MANUAL CORRECTION . . . . .	.25
7704A/7834/7844/7844R/7854/7904/R7903 VERTICAL BOARD ½ TURN WIRE LOOP INDUCTORS NEW PART NUMBER. . . . .	.26
067-0986-00 INCORRECT ERROR MESSAGE. . . . .	.26

DAS9100 - ANTI SKID PADS/TILT BAILS

There are now some anti-skid pads available for the DAS. The part number is 348-0596-00. Order four (4) per instrument, one (1) for each cabinet foot.

Also, early DAS9100s (a clean serial number break is not known) were shipped without tilt bails. The part number for the tilt bail is 348-0727-01.

Both of these part numbers are now being incorporated into the Service Manual.

W² Issue 12-20

DAS9100 - A6J498 AND A6J499 LOCATIONS

Affected Serial Numbers: All

Reference: DAS9100 Service Manual Volume II, P/N 070-3836-01

There has been some questions as to the locations of jumpers J498 and J499 on the A6 Controller Board. They should both short pins 1 and 2 of their respective square pins. This is true in all levels of DAS firmware because A6U597 has always been a 68764 ROM. It is sometimes difficult to determine the type of ROM used because the copyright label covers the markings. See DAS Service Volume II, page 9-27 for a chart that shows jumper locations for types of ROMs used.

W² Issue 12-21

DAS9129 - CRT SCREEN MESH PART NUMBER

Affected Serial Numbers: All

The part number for the Screen Mesh that covers the DAS9129 CRT is 378-0214-00.

W² Issue 12-21

DC508 OPTION 7 CHECKOUT

The following checkout procedure was written by Kevin Brown, Rockville S.C. to check out the DC508 when used with the TR502 Tracking Generator and the 7L13 Spectrum Analyzer. This procedure is an excellent functional test and will be incorporated in the manual. The procedure is as follows:

This functional checkout procedure is intended to be used only after the DC508 has satisfied the performance check procedure as outlined in Section 2 of the DC508 Manual.

EQUIPMENT NEEDED

7L13 - Spectrum Analyzer
TR-502 - Tracking Generator
7K Mainframe
TM503, Option 2 wired for DC508, Option 7
Cables: 1 pc. 012-0648-00, 2 pcs. #012-0649-00, 1 pc. 012-0057-01
Adapter #015-1018-00

1. Plug 7L13 into mainframe and set front panels switches as follows:

Time/Div: approximately 50ms
Span/Div: -100kHz/div. "above 50kHz/div. except "max."
Resolution: 3MHz
Phaselock (slide switch): on (up)
Trigger Source: Free-run
Trigger Mode: Norm
Video Filters: Off (out)
Pulse Stretcher: Off (out)
Vert Mode: 10dB/div
Center Frequency: Anywhere below 1GHz
Vertical Position: Anywhere trace is on screen
Horizontal Position: Centered
Baseline Clipper: Fully counterclockwise
All Others: Irrelevant to this procedure

(ARTICLE CONTINUED ON THE NEXT PAGE)

DC508 OPTION 7 CHECKOUT (cont.)

2. Insert TR502 and DC508 into TM503 and set front panel switches as follows:

TR502: Dot Intensity: Off
 All Others: Irrelevant to this procedure.

DC508: Resolution: Any prescale position
 Standby: Pushed-in (running)
 All Others: Out
 Display Time (Hold) Dot: Fully counterclockwise

3. Connect cables as follows:

Logic Cable (012-0648-00): From 7L13 "Track Gen" port to TR502 "Track Gen Logic" port

SMA Cable (012-0649-00): From 7L13 "1st LO Out" to TR502 "1st LO In."
 From 7L13 "2nd LO Out" to TR502 "2nd LO In."

BNC-Coax (012-0057-01): From TR502 "AUX RF Out" (use adapter #015-1018-00) to DC508 prescale (110-1000MHz) input.

4. Switch the 7L13 time/div. selector to "Off" (fully counterclockwise).

A. Check that the DC508 display shows 100kHz resolution regardless of the position of the resolution selector switch and the "MHz" indicator is lit.

B. Rotate the display time control clockwise and observe an increase in display time.

5. Return the 7L13 time/div. switch to 50ms/div.

A. Verify the following sequence:

1. 7L13 sweeps to center screen.
2. DC508 gate lamp comes on and sweep stops at center.

3. Center frequency is measured and displayed by the DC508.
4. Gate lamp is extinguished and sweep resumes.

- B. Check that the DC508 resolution is still 100kHz - regardless of the resolution control setting.
- C. Rotate the DC508 display time control throughout its range, to verify that it has no effect.

6. Switch the 7L13 span/div. selector to 50kHz/div.

- A. Rotate the DC508 resolution selector switch and verify that it is now operating.
- B. Rotate the DC508 display-time control throughout its range. Verify that it is still disabled.

W² Issue 12-20

DC510/DC5010 CIRCUIT AND SPECIFICATION CHANGES FOR CROSS TALK AND SENSITIVITY

Serial Number:

DC510 B020200 and below
 DC510 opt 1 B020240 and below
 DC5010 B020630 and below
 DC5010 opt 1 B020750 and below

Reference: M48247

The following parts are effected to improve crosstalk and sensitivity.

A12C1113 is removed
 A12R1008 changes to P/N 315-0510-00
 51ohm, 5%, .25W
 A12R1117 changes to P/N 315-0510-00
 51ohm, 5%, .25W

Also, the channel isolation, crosstalk (50ohm, Pos slope, DC Coupling, X1) specification changes to:

(ARTICLE CONTINUED ON THE NEXT PAGE)

DC510/DC5010 CIRCUIT AND SPECIFICATION
CHANGES FOR CROSS TALK AND SENSITIVITY
(cont.)

No effect when both signals are below 100 MHz and $\leq 2V$ pk-pk. For $\leq 1V$ pk-pk signals between 100 MHz and 350 MHz (CH A) or 300 MHz (CH B), there is no effect if the slower signal has a square edge or a slew rate $\geq 80 V/ \mu\text{sec}$.

W² Issue 12-20

DM501A U1603 A/D CONVERTER REPLACEMENT

Serial Number: DM501A B027199 and below; DM501A Option 02 B026789 and below.

Reference: M44720

Mod Kit P/N 050-1658-00 is now used when replacing U1603. Due to a change in output voltage specifications of U1603, pull-up resistors were added to ensure adequate voltage levels. Order the kit when replacing U1603.

W² Issue 12-20

D70,D80 SECTOR CARD TEST FIXTURE
(067-0745-00)

Ref: 067-0745-00 D70,D80 Sector Card Test Fixtures
Modification Kit 040-1070-01
M43802, S47452
Page 2 of 10.

Description Change:

From: 195-9710-00 Lead, elec,
24AWG, 18.0L, Red
195-9711-00 Lead, elec,
24AWG, 18.0L, Red

To: 195-9710-00 Data Input Adapter
195-9711-00 Data Leads (4 each)

The 070-4318-00 Sector Card Checkout Procedure calls out the new description. The above parts are test equipment and are part of the Test Fixture.

W² Issue 12-22

INSTRUCTION MANUAL UPDATES

The following manuals have been updated as of September 1982.

TSP1	070-2621-00
69M41	070-2878-00

W² Issue 12-22

NEW MANUALS

The following manuals have been revised as of September 1982, and are orderable as necessary.

TSG7	070-3782-00
1980 Video Driver	070-2925-00

W² Issue 12-21

PDP-11/R1340 UNIBUS CABLES, M42523

The Processor Unibus Cable connects the system PDP-11 Processor to the R1340 Data Coupler. The new 8 foot cable (012-0553-02) provides additional length to allow ease in extending the processor. In some cases the original 6 foot cable created problems because the length was not adequate. The new 012-0553-02 replaces the 012-0553-00 in the 021-0105-00 and 021-0237-00 PDP11/R1340 Multi-Interrupt Interfaces. The -02 is a direct replacement for the -00. The 012-0553-01 PDP11/R1340 Unibus cable is 4 feet long.

All 012-0553-XX cables are flat, 60 conductor ribbon type cables.

W² Issue 12-20

SC502 -70 VOLT SUPPLY TOO POSITIVE

Serial Number: B029000 and below.

Reference: M43479

If the -70 volt supply operates too positive (not negative enough) and

(ARTICLE CONTINUED ON THE NEXT PAGE)

SC502 -70 VOLT SUPPLY TOO POSITIVE (cont.)

is out of specification, the cause may be the Beta of Q855 (H.V. Oscillator) being on the low side of its specifications. To bring the supply back into specifications C858, .047 uf, P/N 283-0341-00, is added in parallel with C857.

W² Issue 12-20

SERVICE TRAINING CUSTOMER CLASS SCHEDULECONTENT

These classes are designed for service technicians responsible for calibrating, troubleshooting, and servicing Tektronix products. Each class begins with an overview of the product, followed by a block diagram explanation and a study of the individual functions and circuits of the product.

PREREQUISITES

Incoming students are expected to display a thorough knowledge of both analog and digital circuitry and to have some experience with contemporary Tektronix products. Students should study in advance the circuit descriptions in the service manuals for the Tektronix products addressed.

REGISTRATION

To register for a class, contact Tektronix Service Training in Beaverton, Oregon at (503) 642-8842.

LOCATION

These Tektronix service classes will be held in Beaverton and various locations throughout the United States.

COST

Tuition fees are listed for each class. Fees may be subject to local

sales tax. The listed fees do not include food, lodging, or transportation.

Tektronix, Inc.
P.O. Box 500
Delivery Station 54/077
Beaverton, OR 97077

TM504/DC503A/PG506/SG503/TG501Calibration Package Class

\$550/Student P/N 068-9012-00

Class Dates:

Sept. 27-Oct. 1, 1982 - Beav., OR
Nov. 1-5, 1982 - Dallas, TX
Nov. 8-12, 1982 - Rockville, MD
Jan. 31-Feb. 4, 1983 - Boston, MA
Feb. 21-25, 1983 - Chicago, IL

465B/475APortable Oscilloscope Class

\$560/Student P/N 068-9011-00

Class Dates:

Aug. 9-13, 1982 - Beaverton, OR
Aug. 9-13, 1982 - Santa Clara, CA
Aug. 23-27, 1982 - Chicago, IL
Nov. 15-19, 1982 - Dallas, TX
Nov. 29-Dec. 3, 1982 - Beav. OR
Feb. 7-11, 1983 - Beaverton, OR
Mar. 7-11, 1983 - Boston, MA
Mar. 28-April 1, 1983 - Chicago, IL
April 18-22, 1983 - Beaverton, OR

7704A/7904Laboratory Oscilloscope Class

\$1350/Student P/N 068-9010-00

Class Dates:

Aug. 16-27, 1982 - Beaverton, OR
Oct. 11-22, 1982 - Beaverton, OR
Oct. 11-22, 1982 - Boston, MA
Dec. 6-17, 1982 - Beaverton, OR
Jan. 31-Feb. 11, 1983 - Chicago, IL
Feb. 14-25, 1983 - Beaverton, OR
April 25-May 6, 1983 - Beav., OR
May 16-27, 1983 - Dallas, TX

(ARTICLE CONTINUED ON THE NEXT PAGE)

SERVICE TRAINING CUSTOMER CLASS SCHEDULE
(cont.)7912ADProgrammable Digitizer Class
\$1950/Student P/N 068-9019-00

Class Dates:

Jan. 3-14, 1983 - Beaverton, OR
May 2-13, 1983 - Beaverton, OR7612DDual-Trace Programmable Digitizer Class
\$2100/Student P/N 068-9023-00

Class Dates:

Oct. 11-22, 1982 - Beaverton, OR
Feb. 7-18, 1983 - Beaverton, OR
May 16-27, 1983 - Beaverton, ORWP1310 (7854)Waveform Calculating Oscilloscope Class
\$2100/Student P/N 068-9069-00

Class Dates:

Sept. 13-Oct. 1, 1982 - Beav., OR
Feb. 21-Mar. 11, 1983 - Beav., ORCG5001/CG551APProgrammable Calibration Generator Class
\$1350/Student P/N 068-9068-00

Class Dates:

Mar. 21-April 1, 1983 - Beav., OR

7L5/7L14Spectrum Analyzer Class
\$1750/Student P/N 068-9066-00

Class Dates:

Aug. 23-Sept. 3, 1982 - Beav., OR
March 7-18, 1983 - Beaverton, OR690SR/520A/1485T.V. Monitors Class
\$1430/Student P/N 068-9070-00

Class Dates:

Feb. 21-March 4, 1983 - Beav., OR

1410/1900T.V. Generator Class
\$1650/Student P/N 068-9071-00

Class Dates:

Sept. 27-Oct. 8, 1982 - Beav., OR
May 9-20, 1983 - Beav., OR492/492PPortable Spectrum Analyzer Class
\$1630/Student P/N 068-9067-00

Class Dates:

Oct. 11-29, 1982 - Beaverton, OR
April 25-May 13, 1983 - Beav., OR4051/4907Graphic System Class
\$1170/Student P/N 068-9017-00

Class Dates:

Dec. 6-17, 1982 - Beaverton, OR

4010/4014/4631Graphic Terminal Class
\$700/Student P/N 068-9016-00

Class Dates:

July 12-16, 1982 - Beaverton, OR
Aug. 30-Sept. 3, 1982 - Dallas, TX
Sept. 27-Oct. 1, 1982 - Beav., OR
Oct. 18-22, 1982 - Rockville, MD
Nov. 15-19, 1982 - Beaverton, OR
Jan. 3-7, 1983 - Beaverton, OR
March 21-25, 1983 - Santa Clara, CA
April 11-15, 1983 - Beaverton, OR4052/4054/4907Advanced Graphic System Class
\$1490/Student P/N 068-9024-00

Class Dates:

Sept. 13-24, 1982 - Beaverton, OR
April 11-22, 1983 - Beaverton, OR

(ARTICLE CONTINUED ON THE NEXT PAGE)

SERVICE TRAINING CUSTOMER CLASS SCHEDULE
(cont.)

GMA101/GMA102A/GMA125
Graphic Display Monitors Class
\$700/Student P/N 068-9072-00

Class Dates:

(Per Request Only)

4662/4663
Graphic Plotter Class
\$720/Student P/N 068-9025-00

Class Dates:

Sept. 27-Oct. 1, 1983 - Beav., OR
April 25-29, 1983 - Beaverton, OR

4025/4027
Raster Scan Graphic Terminal Class
\$1160/Student P/N 068-9026-00

Class Dates:

Aug. 2-13, 1982 - Beaverton, OR
Mar. 21-April 1, 1983 - Beav., OR

7D01/DF2 and 308
Logic/Data Analyzer Class
\$1280/Student P/N 068-9013-00

Class Dates:

Nov. 29-Dec. 10, 1982 - Beav., OR
April 4-15, 1983 - Beaverton, OR

7D02
Programmable Logic Analyzer Class
\$1300/Student P/N 068-9065-00

Class Dates:

Oct. 25-Nov. 5, 1982 - Beav., OR
Feb. 21-March 4, 1983 - Beav., OR

8540/8550/8560
Microcomputer Development Lab Class
\$1320/Student P/N 068-9014-00

Class Dates:

July 19-Aug. 6, 1982 - Beav., OR
Nov. 1-19, 1982 - Beaverton, OR
March 7-25, 1983 - Beaverton, OR

4112/4113/4114
DVST/Raster Graphic Terminal Class
\$1450/Student P/N 068-9073-00

Class Dates:

Nov. 1-12, 1982 - Beav., OR
Jan. 3-14, 1983 - Beav., OR
May 2-13, 1983 - Beav., OR

8002A
Microprocessor Development Lab Class
\$1150/Student P/N 068-9015-00

Class Dates:

Aug. 23-Sept. 3, 1982 - Beav., OR
Jan. 31-Feb. 11, 1983, - Beav., OR

S-3200 DC SUBSYSTEM OSCILLATION

MOD #47277

The DC Subsystem amplifier oscillates at about 10 MHz. This occurs while measuring current on the 100 ma range with VS3 or VS4 set greater than + or - 1.8 volts and with a load of about 100 ohms from I pin to system ground. The oscillations are enveloped by about a 60 Hz rate on domestic systems. The problem is sensitive to common bus capacitance and has mostly been seen on systems with CF-1. In order to see the problem on systems without CF-1, it is sometimes necessary to add several feet of cable (capacitance) in the common bus line. The following paragraph and circuit view describe how the circuit is to be modified to significantly reduce the oscillations.

Change Q150 from a 151-0364-00 to a 151-0366-00. This will make a better match of Q150 and Q160. Change R150 from 47 ohm, 1/4W, 5%, 315-0470-00 to a 120 ohm, 1/4W, 5%, 315-0121-00. Add R162 and R163 resistors 13 ohm, 1/4W, 5% 315-0130-00. This will dampen the oscillations

(ARTICLE CONTINUED ON THE NEXT PAGE)

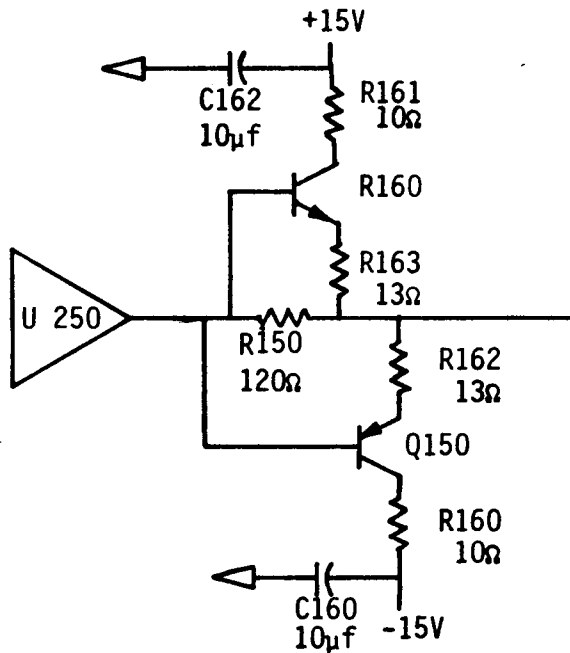
S-3200 DC SUBSYSTEM OSCILLATION (cont.)

which are caused by the cascaded emitter follower (U250, Q150, and Q160 connections).

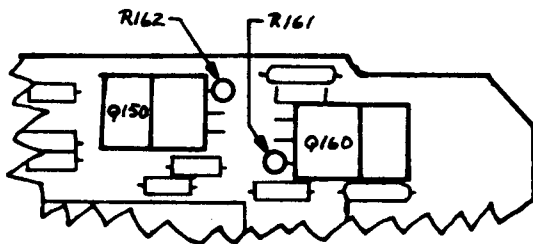
Install the mod and change the following part numbers:

- 670-2826-06 to 670-2826-07
- 670-5479-02 to 670-5479-03
- 670-7140-00 to 670-7140-01

Change DC Subsystem amplifier schematic as shown below:



Install R161 & R162 on DCSS Amplifier as shown below



W² Issue 12-22

S-3200 PRAM CIRCUIT BOARD REVISION LEVELS

Reference Modifications/Field Update Kits:

M37969, Level 3 PRAM: Multiple Clock Pulse Mode Operation (040-0981-00)

M40006, Level 4 PRAM: Enhanced PRAM/2942 Error Storage (040-1027-00)

M43128, Level 5 PRAM: Reloadable Keep Alive, Synchronous Calls, and more (040-1069-00)

The following table should clarify which particular circuit boards are used in the various PRAM assemblies. Also, for reference a chart has been included which shows how the different Shift Register Index Assemblies were modified for use in different systems and different PRAMs.

The part numbers shown in both the table and the chart are for reference only. Note that when ordering replacement boards the:

<u>Current Board</u>	<u>Replaces</u>
670-4767-02	670-4767-00
670-2852-04*	670-2852-02
670-5766-02	670-5766-00 & 670-2852-04*

* Shift Register Index Board Assembly 670-2852-04 is orderable until the stock is depleted.

(CHARTS ON FOLLOWING PAGES)

W² Issue 12-20

S-3200 PRAM CIRCUIT BOARD REVISION
LEVELS (cont.)

TABLE I

	PRAM LEVEL III M37969 040-0981-00	PRAM LEVEL IV M40006 040-1027-00	PRAM LEVEL V M43128 040-1069-00
1K PRAM	015-0372-00 Kit	015-0372-00	015-0431-00
	015-0307-00 Assy's	015-0307-00	---
4K PRAM	015-0346-00	015-0346-00	015-0432-00
Error Logic Assy	672-0625-01	672-0625-03	672-0625-03
Error Logic Front	670-4874-03	670-4874-04	670-4874-04
Error Logic Back	670-4875-04	670-4875-06	670-4875-06
Error Storage Back	---	670-7397-00	670-7397-00
Error Storage Front	---	670-7044-00	670-7044-00
Controller Assy	672-0618-01	672-0618-01	672-0618-02
Controller Front	670-4843-01	670-4843-01	670-4843-02
Controller Center	670-4844-01	670-4844-01	670-4844-02
Controller Back	670-4845-00	670-4845-00	670-4845-00
Input/Output Assy	672-0610-00	672-0610-00	672-0610-02
Input/Output Bd	670-4768-00	670-4768-00	670-4768-02
Hay Field & Call	670-4767-00	670-4767-02	---
Call Handler	---	---	670-4767-03
1K Memory Assy	672-0611-00	672-0611-00	672-0611-01
1K Memory Connector	670-4652-00	670-4652-00	670-4652-01
1KX24 Memory	670-4653-00	670-4653-00	670-4653-00
Reload Call Mem. Adp.	---	---	670-7361-00
4K Memory Assy	672-0769-00	672-0769-00	672-0769-01
4K Memory Connector	670-5805-00	670-5805-00	670-5805-01
4KX24 Memory	670-5806-00	670-5806-00	670-5806-00
Reload Call Mem. Adp.	---	---	670-7361-00

S-3200 PRAM CIRCUIT BOARD REVISION LEVELS (cont.)

ADAPTION CHART P803, SHIFT REGISTER INDEX

PRAM LEVELS	SYSTEM TYPES			3275
	3260	3250/70/80	3220	
SINGLE STATION	Pre-Level 4 Pram Level 4 Pram Level 5 Pram	670-2852-02 or 670-5766-02 (select 1K & strap)	670-5766-00 670-5766-02 (select 4K)or (select 4K & strap)	NO OPTIONS ALWAYS USE 670-5766-02 (Select 4K)
		670-2852-04 or 670-5766-02 (select to 1K & strap)	670-5766-01 670-5766-02 (select 4K)or (select 4K & strap)	
		670-5766-02 (select 1K)	670-5766-02 (select 4K)	
DUAL STATION	Pre-Level 4 Pram Level 4 Pram Level 5 Pram	OPTION NOT AVAILABLE	670-7409-00 670-5766-02 (select 4K)or (select 4K, strap, add R201)	OPTION NOT AVAILABLE
			670-7409-01 670-5766-02 (select 4K)or (select 4K, strap, add R201)	
			670-7409-02 * 670-5766-02 (select 4K) (select 4K) (add R201)	

Shift Register Depth: Select 1K or 4K
Refers to the selector W40 position for 1K or 4K shift register depth (plug-in).

"Strap"

Refers to the wire straps W580 and W581 which disable the level 5 pram control lines when installed (solder in).

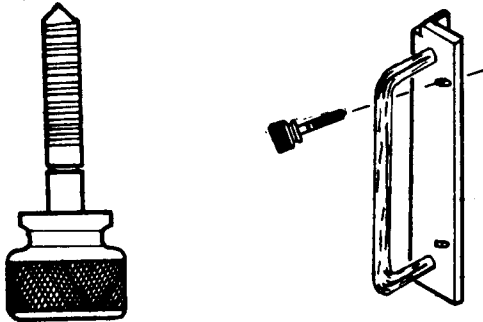
"Add R201"

Refers to the normally empty location for a 180Ω resistor which when added adapts the 670-5766-02 for dual station.

*Note: 670-7409-02 is a
670-5766-02 with R201 added.

S-3200 RACK THUMBSCREW PART NUMBER

The thumb screw used to secure the different rack units to the rack is 213-0167-00. There is a teflon washer, 210-0894-00, that should accompany it. The figure below is an illustration of the thumb screw (the washer is not shown).



W² Issue 12-22

S-3200 SECTOR CARD TEST FIXTURE ENHANCEMENT, M43802

There is a modification kit (040-1070-01) available to update the Sector Card Test Fixture, P/N 067-0745-00. The kit provides parts and instructions. The modified Test Fixture will allow a more complete check of D70 and D80 Pin Electronics Cards.

A Pin Electronics Card Checkout procedure manual (070-4318-00) is also provided in the kit. The manual includes instructions for testing D70, D75, and D80 Pin Cards. However, the modified test fixture (067-0745-00) will apply to the D70 and D80 Pin Cards only. The D75 Pin Electronics Cards (as well as the D70 and D80) can be tested using a new version of the test fixture (067-0745-01).

Included with the 040 kit is an instruction manual insert for the existing Test Fixture Manual (070-3232-00).

W² Issue 12-21

S-3200 TYPE G FIXTURE (018-0105-00), RELIABILITY IMPROVED

Some occurrences of the threads stripping out of the studs between the Sector Card Interface and the Type G Pogo Stabilizer has prompted a more reliable fastening method.

Replacing the studs when the threads become stripped out is nearly impossible without damage to the fixture. The new preferred method of securing the Type G Fixture boards together is to remove the 4-40 X .25 in. screws from the underside of the Sector Card Interface board and replace them with 8 ea. 4-40 x 1.25 in. screws (211-0239-00). Remove the thumbscrews (214-1878-00) and washers (210-1104-01) from the Type G Socket Card (the top board P/N 388-3863-00). Use 8 ea. knurled nuts (220-0911-00) to replace the thumbscrews and washers.

Note that the new 1.25 inch screws are of sufficient length to pass through the threaded studs, the Pogo stabilizer and the Type G Socket Card. The fixture is now secured with the knurled nuts (220-0911-00). This method will work fine even if the studs were previously stripped out. The threads are not absolutely necessary.

Be sure to clean all electrical contact areas after handling. Spray with a freon degreaser and let dry. Do not wipe the fixture boards or contacts. The part number for the Type G Fixture will not change.

W² Issue 12-20

S-3275 NEW MANUALS

The following manuals are available for the S-3275:

2945 Clock Gen	070-4137-00
2952 Pattern Proc.	070-4138-00

(ARTICLE CONTINUED ON THE NEXT PAGE)

S-3275 NEW MANUALS (cont.)

R1341 Data Coupler	070-4141-00
2945/2952 Pwr Supplies	070-4139-00
D75 Pin Cards	
(672-1014-00)	070-4136-00
1807 Test Station	070-4133-00
Vol. 1 & 2	070-4134-00
Test Station Inter- connect	070-4156-00
S-3275 TekTest III	070-4140-00
Test Language, Part II	
1807 Test Station	070-4135-00
Vol. 3 Wire List	

The following are Interim manuals:

S-3275 Recal	061-2661-00
S-3275 Verify	061-2660-00
(Verifies 1340 interface and cabling to and from OEM Equipment).	

W² Issue 12-21

S-3275 POWER SUPPLY REPLACEMENT
KITS FOR 620-0474-00 (M47397)

The 2945/2952 Power Supply has two power supply modules for which replacements have been chosen. These replacements were established to enhance system reliability.

The 5V Power Supply 119-0916-00 may be replaced by 119-1558-00 and the 15V Power Supply 119-1085-00 may be replaced by 119-1559-00. The replacement kit includes a new power supply, mounting hardware and wire assemblies. For replacement of the 5V Supply order Retrofit Kit PN 050-1684-00 and for the 15V Supply order PN 050-1683-00. For first time replacement the 050 Kits must be used. If a subsequent replacement must be made, only the power supply will need to be changed. Order the new power supply 119- part number.

NOTE: No replacement kits presently exist to replace these power supplies in any location other than the 2945/2952 Power Supply Unit (PN 620-0474-00).

The old power supplies (119-0916-01) and (119-1085-00) are still available.

W² Issue 12-23

TDC PELTOLA CONNECTORS

Reference: TDC Manual, 070-2597-01
SAR 8896

A recent input from the field pointed out a possible cause of some intermittents in the TDC's.

Several areas of the TDC use Peltola connectors to transfer various signals from board to board. If the center "Berg" type connector on the circuit board is not mounted flush to the board on its top (mating) surface, the connection may short to the collar ring. This can be remedied by heating the berg connector with a soldering iron and pressing it down flush with the board.

W² Issue 12-20

TM5003/TM5006 OSCILLATOR I.C.
REPLACEMENT OR OSCILLATOR FREQUENCY
INCORRECT

Serial Number:

TM5003 B010470 and below
TM5003 Option 2, B010500 and below
TM5006, B021520 and below
TM5006 Option 2, B021480 and below
TM5006 Option 10, B020940 and below.

Reference: All board, schematic 2
D.C. P.S. Regulator, M47379.

Damage can occur to the switching transistors Q1300 or Q1301, TM5003, (Q1640 or Q1650, TM5006) if the oscillator frequency of the TM5000 mainframe does not meet the 40 kHz to 42 kHz specification as tested at R1510 (R1860). A symptom of an audible high pitch noise indicates

(ARTICLE CONTINUED ON THE NEXT PAGE)

**TM5003/TM5006 OSCILLATOR I.C.
REPLACEMENT OR OSCILLATOR FREQUENCY
INCORRECT (cont.)**

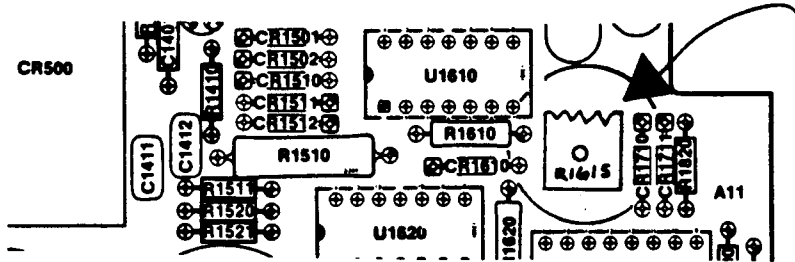
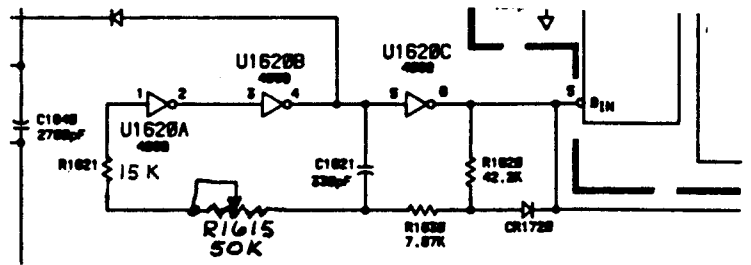
the oscillator is off frequency. Batch variances of the oscillator I.C. U1620 (U1840) P/N 156-0745-00 can cause the oscillator frequency not to meet specification. If it is determined the frequency is not correct or when replacing U1620 (U1840) the following changes should be made.

1. Change A11R1621 (R1850) to P/N 321-0306-00 15K ohm 1/4W
2. Remove A11W1630 (W1860) Dummy Resistor
3. Add A11R1615 (R1855) P/N 311-1232-00 50K ohm var. resistor.

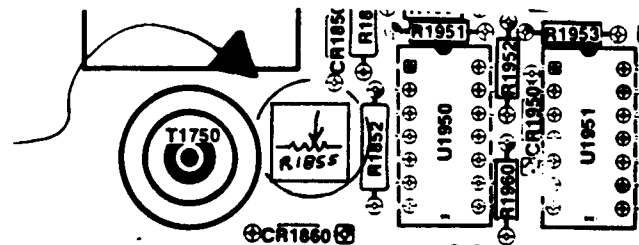
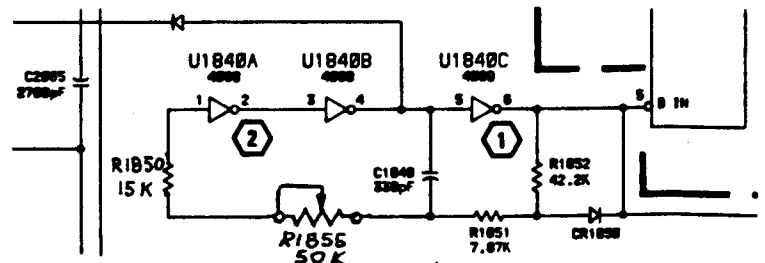
The holes provided for the var. resistor are located above the removed dummy resistor. Caution, the holes provided are not the holes left by the removal of the dummy resistor, but are holes already provided for the variable resistor. The part is keyed to be inserted only one way (see diagram for the part location).

After the modification is complete the following adjustment procedure for the clock oscillator should be performed:

- a. Connect a probe from the test oscilloscope to Pin 5, U1720 (TM5003) and Pin 5, U1940 (TM5006).
- b. Adjust R1615 (R1855) for a frequency of between 40 kHz and 42 kHz at Pin 5, U1720 (TM5003) and Pin 5, U1940 (TM5006).



TM 5003



TM 5006

w² Issue 12-21

**TSCU/TSCU INTERFACE INTERCONNECT
CABLE CONNECTOR**

The part number for the 012-0468-XX interconnect cable connector is 131-0295-00. The 012-0468-01 and 012-0468-05 cables connect the Test Station Control Unit to the Test Station Control Unit Interface. The 012-0468-01 is 20 feet long. The 012-0468-05 is 31 feet long. Two

(ARTICLE CONTINUED ON THE NEXT PAGE)

TSCU/TSCU INTERFACE INTERCONNECT
CABLE CONNECTOR (cont.)

131-0295-00 connectors are required for each cable.

The Test Station Control Unit frequently is moved. If it is dropped, the connector or the connector securing bracket may be damaged. A spare connector is recommended to allow timely replacement should this damage occur. Replacement involves the desoldering of all wires before the old connector or connector housing can be replaced. Care should be taken to chart all wire locations before starting the desoldering operation. This will prevent lost time during the re-assembly process.

W² Issue 12-20

TSG7 COLOR BAR TIMING ERROR

REF: TSG7 Manual 070-3782-00

Two recent failures in the TSG7 showed the same symptom, however, they were caused by a different component problem in each of the two instruments involved. The symptom was a timing error on the SMPTE Color Logic Board, A32. It appeared as a small band of a different color in the trailing portion of a given color bar. (In this case, the blue bar had a small band of red in the last part of the bar.) The problem came as a result of a wrong signal feeding the CK input of U172 from U165B.

In one of the failed units, U168B was putting out a double pulse to U165B, thereby clocking U172 wrong, and in the other unit C175 was installed in the wrong holes in the board, causing U165B's timing to be in error.

U165B which is a one-shot, puts out a nominal 100µsec pulse at about a

1MHz rate. Observed pulse widths can vary from about 100-200 nsec. The pulse, however, should be stable and free from extra spikes or other aberrations.

W² Issue 12-23

TV MANUALS REVISIONS

The following manuals are now available as October 1982 revisions.

1450 Series Opt. 2B
P/N 070-4349-00

147A/149A
P/N 070-2029-00

W² Issue 12-23

TV PRODUCT MANUALS

The following list gives the latest publication dates for updated manuals for TV products. This information should be made available to those people that desire to maintain current manual libraries.

<u>INSTRUMENT</u>	<u>MANUAL NO.</u>	<u>REVISION DATE</u>
067-0886-01/05	070-3530-00	Nov. 81
147/R147	070-1169-00	Jun. 82
148	070-1266-00	Mar. 82
147A/149A	070-2029-00	Jun. 82
520A	070-1709-00	May 82
521A	070-1794-00	Jun. 82
522A	070-1874-00	Apr. 82
528A	070-3662-00	Jul. 82
528AWW/ 528AWX	070-3802-00	Jan. 82
650HR	070-2646-00	Mar. 82

(ARTICLE CONTINUED ON THE NEXT PAGE)

TV PRODUCT MANUALS (cont.)

<u>INSTRUMENT</u>	<u>MANUAL NO.</u>	<u>REVISION DATE</u>
653HR/656HR	070-2647-00	Mar. 82
690SR	070-3821-00	Jan. 82
690SR Opt. 40, 48	070-2870-00	Jul. 82
69M41	070-2878-00	Jul. 82
1410 (B010135 & UP)	070-2759-00	Apr. 81
SPG1/SPG2	070-2104-00	DEC. 81
TSG-3	070-2108-01	Nov. 81
TSG-5	070-2336-00	Aug. 82
TSG-6	070-2528-00	Jul. 82
TSP-1	070-2621-00	May 82
1411	070-2322-00	Jan. 82
SPG11/SPG12	070-2324-00	Feb. 82
TSG-12	070-2329-00	Jan. 82
TSG-13	070-2330-00	Aug. 82
TSG-15	070-2479-00	Jun. 82
TSG-16	070-2649-00	Jan. 82
TSP-11	070-2664-00	Aug. 82
1420, 21, 22 (B050000 & UP)	070-2899-00	Apr. 82
1424	070-3893-00	Jun. 82
1430	070-1455-00	Feb. 82
1440	070-1498-02	May 82
1450/1450-1	070-2200-01	Jun. 82
1450-2	070-2998-00	Feb. 82
1450-3	070-3660-00	Jan. 82
TDC	070-2597-01	Aug. 82
TDC Opt. 2, 12	070-3525-00	May 82
TDC1/TDC2	070-2754-00	May 82
1470	070-2096-00	May 82
1474	070-2097-00	Apr. 82
1480 (B06 and UP)	070-2339-00	Aug. 82

1900 (Oper)	070-3443-00	Jun. 82
1980 (Pgrm Ref)	061-2336-00	Feb. 82
1980 (Graphics)	061-2374-00	Mar. 82
1980 (Service)	061-2290-01	Jul. 82
1980 (NTSC App)	061-2331-00	Feb. 82

Further changes/updates will be communicated as they become available.

W² Issue 12-21

WP2110, WP3110, AND WP1310 CHECKOUT SOFTWARE HAS A COMPATIBILITY PROBLEM WITH THE 4052R14 ROM PAK

References: 7912AD/4052 Checkout Software; 7612D/4052 Checkout Software; WP1310 Checkout & Utility Software.

Symptom: The system will hang-up when running the checkout software. The 7912AD and the 7612D Checkout Software will only hang-up during the power-on test. The WP1310 software will hang-up in most test.

Problem: ROMPAK R14 (with 4051, 4052, or 4054) powers up in the "SQROFF" state. If reinitialized or autoloaded, it also defaults to "SRQOFF." The software waits for an SRQ, so with SRQOFF the 405X never sees the SRQ and will wait forever.

Solutions: Remove 405XR14 from the system prior to power-up of the 405X. Then load the software, it will work normally.

Another possibility, but not recommended, is to wait for the menu of the program to be displayed,

(ARTICLE CONTINUED ON THE NEXT PAGE)

WP2110, WP3110, AND WP1310 CHECKOUT SOFTWARE HAS A COMPATIBILITY PROBLEM WITH THE 4052R14 ROM PAK (cont.)

then escape from the program. In the immediate mode type in CALL "SRQON" (CR). Then type: RUN (CR); this will allow the program to run normally with R14 installed.

Note: The same symptom will occur with the 4051 and the 4054. This could affect customer's software, if he adds the R14 ROM pak to his existing system.

W² Issue 12-20

7L5 MOD FB/7854

When using the 7L5/7854 combination, it is necessary to multiply the 7L5 center frequency readout by ten when the center frequency of the 7L5 is set below 10.00 Khz. This is necessary because below 10.00 Khz, the center frequency readout is one tenth the actual value. For example, a center frequency of 9.75 Khz is displayed on the 7854 readout as .975 Khz.

W² Issue 12-21

49X/P 3MM CONNECTOR FIELD SERVICE KIT (003-1324-00)

RE: 49X/P S/N B010100 -

All 3MM connectors in the 49X/P Series need to be torqued during reassembly to 8 in oz. if serviced. A Field Service kit (003-1324-00) is available for this purpose.

Since improper assembly of 3MM connectors can affect Frequency Response, it is important that all servicing be completed prior to calibration.

W² Issue 12-20

49X/P 100 KHZ FILTER AMPLITUDE DRIFT

RE: MOD #46937

Many 49X/P instruments are experiencing problems with drifting amplitude levels of the 100 kHz filter. A performance improvement can be gained by changing two Mica capacitors to NPO Ceramic on two circuit boards in the VR assembly (A69) as follows:

1st Filter Select (A69A3)

<u>Remove</u>	<u>P/N</u>
C3024	283-0640-00
C3038	283-0640-00
<u>Add</u>	<u>P/N</u>
C3024	283-0899-00
C3038	283-0899-00

2nd Filter Select (A68A2)

<u>Remove</u>	<u>P/N</u>
C4050	283-0640-00
C5054	283-0640-00
<u>Add</u>	<u>P/N</u>
C4050	283-0899-00
C5054	283-0899-00

W² Issue 12-23

147A/149A VITS PASS

Reference: 147A/149A Manual 070-2029-00

The following article is reprinted from the August, 1982, edition of the Communications Newsletter.

149A Vits Pass

The 149A when operated in the Proc Amp mod (sync and burst regeneration) will not pass lines 14 and 15. This becomes a serious problem with so many of the networks running teletext information on these lines. There is a fairly simple modification customers can make which will allow lines 14 and 15 to pass undisturbed.

(ARTICLE CONTINUED ON THE NEXT PAGE)

147A/149A VITS PASS (cont.)

On the Bits and FF board, pin number one of U4622 A & D needs to be tied to pin number six of U4351 instead of pin number 8 (U4351).

The easiest way to accomplish this without cutting any circuit board runs is:

1. Remove Alt. APL Board and bend pin BB out of the way.
2. Reinstall Alt. APL Board, and solder a wire between socket BB (where pin BB use to make contact) and pin two of P4500.

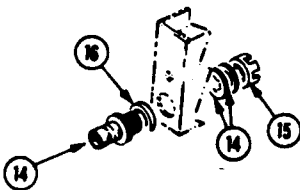
The 149A will now work in a normal manner with the additional feature of passing lines 14 and 15 when in the Proc Amp mode.

W² Issue 12-20

465/475 BNC CONNECTORS

In the listed serial number ranges, P/N 220-0569-00 was used to attach the vertical BNC connectors.

465 B010100 - B152399
475 B010100 - B144499



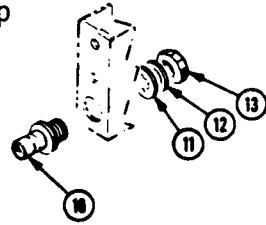
Removal of this fastener may require a flat bladed screwdriver and small hammer if the knurled nut is too tight.

Units above the listed serial numbers use a 12 sided DODEC nut, P/N 220-0695-00.

ALWAYS USE THE NEW DODEC NUT, P/N 220-0695-00, WHEN REPLACING OR TIGHTENING A BNC. DO NOT USE THE OLD KNURLED NUT.

465 B152400 & up
475 B144500 & up
475A All
465B All

10 131-0679-02
11 210-1039-00
12 210-0845-00
13 220-0695-00



A special tool for the new style nut is available.

9/16" 12 point socket
P/N 003-0737-00

Handle
P/N 003-0109-01

If desired, a drop of loctite can be used to ensure that the connector remains tight.

W² Issue 12-22

492/P (S/N B029999 & Below) MANUAL CHANGE

RE: Service Manual 070-2727-01 C22/982

Please change the following information in your 492/P Service Manual, Vol. 1, P/N 070-2727-03.

SECTION 3, CALIBRATION, PERFORMANCE CHECK PROCEDURE, Part 2. Check Frequency Readout Accuracy, page 3-8, step f

CHANGE TO READ:

f. Repeat this process checking frequency readout accuracy in 1 GHz or 2 GHz increments for bands 1 through 3 (0 to 7.1 GHz) applying the limit \pm (0.2% of center frequency \pm 20% of span/division) above 2.5 GHz.

Part 2.A, page 3-8, CHANGE TO READ:

2.A. 492P only Tune Accuracy Check \pm (7% of frequency or 150 kHz)n, which-

(ARTICLE CONTINUED ON THE NEXT PAGE)

492/P (S/N B029999 & Below) MANUAL CHANGE (cont.)

ever is greater, after a 2-hour warm-up, in bands 1 and 2.

Part 23. Check Triggering Operation & Sensitivity, page 3-31, step f, NOTE & i CHANGE TO READ:

f. Adjust the sine-wave generator output for a modulation amplitude of two division, then switch TRIGGERING to INT.

NOTE

Because of deflection amplifier response the display amplitude will decrease at the high frequency end.

The triggering signal can also be applied, through a BNC-to-pin-jack cable, to pins 1, 2, and 3 (see Fig. 3-25) of the rear panel ACCESSORIES connector (pin 2 is Video in, pin 1 Ext Video select and pin 3 is ground).

Connect a jumper between pins 1 & 3.

i. Set the sine-wave generator frequency to 1 kHz. Adjust its output level for 2 V peak-to-peak (0.5 V peak) as indicated on the test oscilloscope (see Fig. 3-20).

CHANGE Fig. 3-20, page 3-32, cutline to read:

Fig. 3-20. Test oscilloscope display of a sinewave input signal to EXT TRIG connector (input 1.0 V peak or 2.0 V peak-to-peak).

W² Issue 12-21

650A/650HR SERIES EHT REPLACEMENTS

Reference: 650HR Manual 070-2646-00
SAR 03269

A recent problem involving the installation of a new EHT assembly, 119-0320-08, in a 655HR posed a possible compatibility problem.

When the new unit was installed, replacing a -07 version, the High Voltage circuit would not regulate. TV Manufacturing Engineering investigated the problem and offered the following solution.

With the installation of a 119-0320-08 EHT assembly, in order to maintain proper high voltage regulation, C8601 must be selected for a value between .018 ufd and .022 ufd, with the nominal value being .022 ufd. The following procedure will be inserted into the adjustment section of the manual.

Check High-Voltage Regulation (Select C8601)

a. Display a 100 IRE flat field signal applied to one of the VIDEO INPUT A connectors with a 75 ohm terminator connected to the other VIDEO INPUT A connector.

b. Set the CONTRAST control to a point just before the OVERLOAD light becomes illuminated.

c. Replace the flat field signal with a field square wave signal at the VIDEO INPUT A connector.

d. CHECK -- While triggered at a vertical rate, check that the waveform at TP29 (on the LV and HV Power board) is a well-behaved sinewave envelope. The oscillator should not be turned "off" during the dark portion of the signal or be unstable during the white position.

e. CHECK -- Display a low level signal such as crosshatch, and check that the envelope is stable. Select a value for C8601 to achieve these results.

f. Set the CONTRAST control to PRESET. Disconnect the probe from TP29.

W² Issue 12-21

670 SERIES VERTICAL PARABOLA FAILURE

RE: 670A MANUAL, 070-2201-01

In a recent field failure of a 670A monitor, the instrument showed a
(ARTICLE CONTINUED ON THE NEXT PAGE)

670 SERIES VERTICAL PARABOLA FAILURE (cont.)

malfunction while cold, which cleared after about 1/2 hour of operation.

The symptom was an apparent failure of the vertical parabola circuitry on the deflection board A5, causing the display to exhibit exaggerated pincushion until the circuitry got warm. Freeze spray localized the problem, but a lot of part changes failed to correct it.

The problem was cleared by first cleaning the circuitry side of the deflection board with an approved solution and then ultrasonically cleaning the board in alcohol. It was then dried in an oven for several days.

This problem illustrates one of the faults that may be attributed to dirt and grease contamination. The contaminate can be of a variety of chemical compositions, but it also usually holds a certain amount of moisture in suspension. The condensing of this moisture by cooler temperatures can have a profound effect upon circuits where very high impedances are encountered. In this case, it was probably attributable to the lead lengths and circuit proximity to the input of a FET and its associated support circuitry.

The lesson - don't be afraid of giving the suspect areas a good cleaning. This not only gives the machine a clean appearance, but it will remove dirt and other contaminants that can affect performance, such as moisture and slivers of metal, etc. The removal of surface dirt also relieves a heating problem that can further affect performance and reliability.

W² Issue 12-20

690SR HIGH VOLTAGE OVERLOAD

REF: 690SR Manual 070-3821-00

Here's a recent failure/fix from the field that will be of value to 690/6942 service technicians.

Symptoms--

1. Unit was in high voltage burst mode.
 - a. Over voltage overload, no overload light.
 - b. Defeating scan fail, with anode disconnected had no effect.
2. Horizontal was unlocked.
3. H retrace Blanking pulse at TP520 assembly A11A1, schematic 8 was slightly reduced and same pulse at P810-B, assembly A11A1, schematic 8, was greatly reduced.
4. Disconnecting the Horizontal Deflection Module and defeating scan fail (anode disconnected) would allow the high voltage to come up.
5. Disconnecting the Raster Drawer assembly would allow the high voltage to come up.

Solutions--

1. C495 had shorted (assembly A8A2, schematic 13) causing R497 and R498 to open up.

Without the proper power supplied to CR701 and CR700 on assembly A8A2, schematic 10, the small H Retrace blanking signal going to H scan fail on the HV board, A7A2A1, allowed the scan fail protection circuit to operate. (The circuit was sensing a reduced H scan signal.)

W² Issue 12-22

690SR/6942 CALIBRATION

RE: 690SR OPT. 40,48
MANUAL P/N 070-2870-00
690SR MANUAL P/N 070-3821-00

During the repair of the 690SR/6942 several parts can be replaced that will require calibration in their respective areas, in order to satisfy a "Repair Only" service. The following notes will be helpful in three areas. Of course, if the customer requests a full cal, he should get a full cal.

The procedural steps referred to are those contained in the 690SR Opt. 40, 48 manual. The applicable steps in the 690SR Color Television Monitor manual (070-3821-00) are enclosed in parentheses.

1) After replacing the EHT potted assembly (119-1441-XX), the high voltage and size adjustments, Steps 3 and 11, must be done (4, 5, 11, 21 and 22). While set up for Step 11, the linearity of the display should be checked. Only if necessary, Steps 12, 13, 14 and 15 (20 through 25) should be done to correct linearity.

2) After replacement of the LV chopper transistors (Q205, Q305), the low voltage adjustment, Step 2 of the adjustment procedure (1 and 2) should be made. If necessary, due to turn on problems, use the Low Voltage troubleshooting procedure in Section 8 to correct any faults. When the power supply is operating, it should be tested for low-line, hi-load starting. With the supply installed in the mainframe, adjust the line voltage to 270V P-P and turn the supply on 10 times with at least 30 seconds of off time in between. During this procedure, monitor the 7.5V supply at TP408. The 7.5V supply should come up smoothly without resetting or momentarily hanging up at about 4V. Suspect U409 if starting problems of this type are encountered.

3) After replacing the video amp output FET's (Q291, Q491, Q691) the video amp adjustments should be made with Steps 19, 19 or 20, and 21 (26 through 34).

Any problems encountered during these adjustments should be solved as necessary.

W² Issue 12-21

690SR/6942 HV REGULATOR RELIABILITY

Reference: 690SR Manual, 070-3821-00
Mod 46597

Mod 465497 corrects some component/assembly reliability problems on the High Voltage Regulator board, A7A2A1, which becomes 670-6354-02. The following parts are involved:

<u>CKT #</u>	<u>OLD P/N</u>	<u>NEW P/N</u>
CR537	152-0075-00	152-0322-00
R342	315-0103-00	315-0303-00
R542	315-0431-00	315-0201-00
CR352	152-0242-00	152-0242-02

These changes should be made for increased reliability when a failure has occurred in the H.V. Regulator circuit.

NOTE--CR537 (P/N 152-0322-00) becomes a Shottky "hot-carrier" diode. Exercise caution due to the static sensitivity of the part.

W² Issue 12-21

690SR/6942 LABELS ADDED, HARDWARE CHANGED

Ref: 690SR Manual 070-3821-00
And Opt. 40, 48 070-2870-00
Mod 45570

Starting at B010180 (690SR) or B010647 (6942) several labels have been added to the mainframe. Figure 1 illustrates the three safety certification labels that will be used. Labels 1A & C will be found on 690SR instruments in most applications, and labels 1B & C will be found on 6942 instruments and some 690SR options.

(ARTICLE CONTINUED ON THE NEXT PAGE)

690SR/6942 LABELS ADDED, HARDWARE CHANGED
(cont.)

These labels are located at the rear of the bottom chassis as per Figure 3. These labels are not field replaceable. If one of these labels is damaged and must be replaced for customer requirements, the instrument must be returned to the factory. Contact Factory Service and arrange for the instrument to be sent in for recertification on the manufacturing line.

Figure 2 illustrates two labels, one of which will be located on the Front left side of the bottom chassis as per Figure 3. Label 2A will be installed on 690SR's sold into the television marketplace, and label 2B will be installed on 690SR's installed in data display applications, particularly Opt. 40 and 48. These labels call out the appropriate Horizontal scan rate for instrument calibration.

Of particular interest here is label 2B. When a customer orders a multi-rate 690SR, he may specify a Horizontal Scan rate appropriate for his application. This line rate can be entered on the label to provide scan rate information for recalibration/service. The unit should be adjusted to this rate unless the customer desires otherwise. If the customer does not order a specific line rate, the label will contain, and the instrument will be calibrated to a default scan rate of 31.5KHz.

Again, the customer may desire a different scan rate calibration, and this can be easily accomplished using procedures outlined in the 690SR Opt. 40, 48 manual, P/N 070-2870-00.

These labels are available for replacement purposes.

The second part of this mod changes several pieces of hardware to allow for control drawer mechanical adjustments (see Figure 3). These parts are contained in a kit, P/N 050-1539-00, and can be installed if one has trouble aligning the control drawer in its rails.

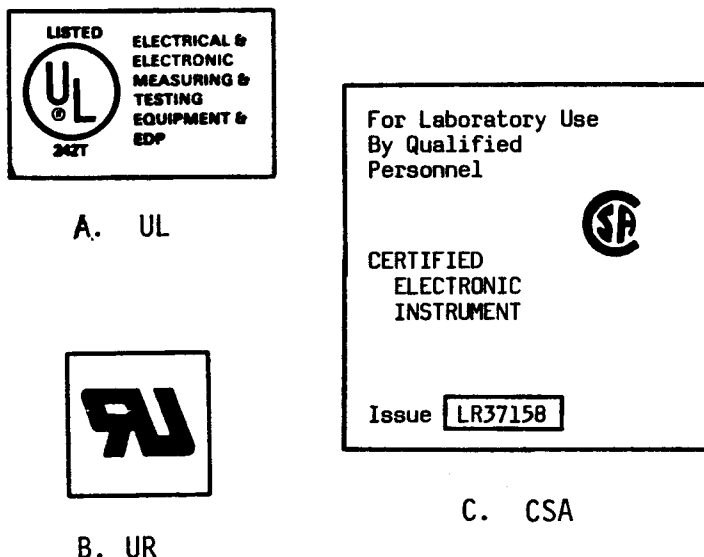
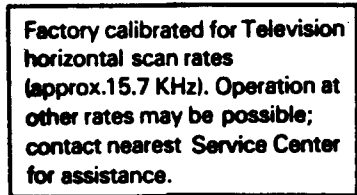
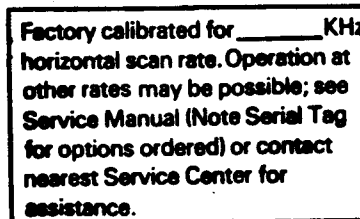


Figure 1
SAFETY LABELS



A. TV Use



B. Display Use

Figure 2
CALIBRATION LABELS

(ARTICLE CONTINUED ON THE NEXT PAGE)

690SR/6942 LABELS ADDED, HARDWARE CHANGED
(cont.)

ADDED: (1) 334-4861-00 (TV Rate) or
(1) 334-4862-00 (Horiz rate)
Depending on the Instrument and
Option Combination, to side panel.

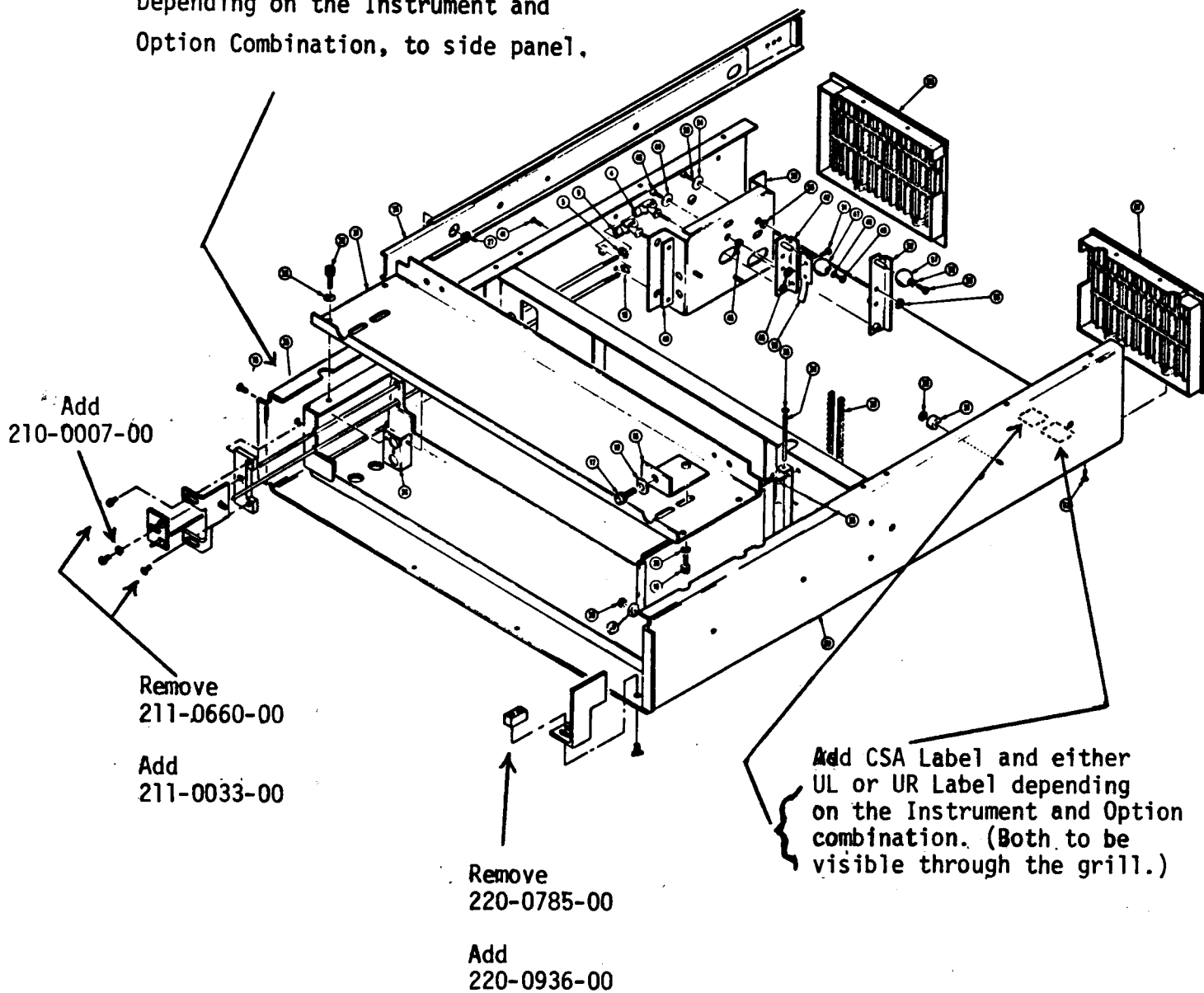


Figure 3

690 BOTTOM CHASSIS

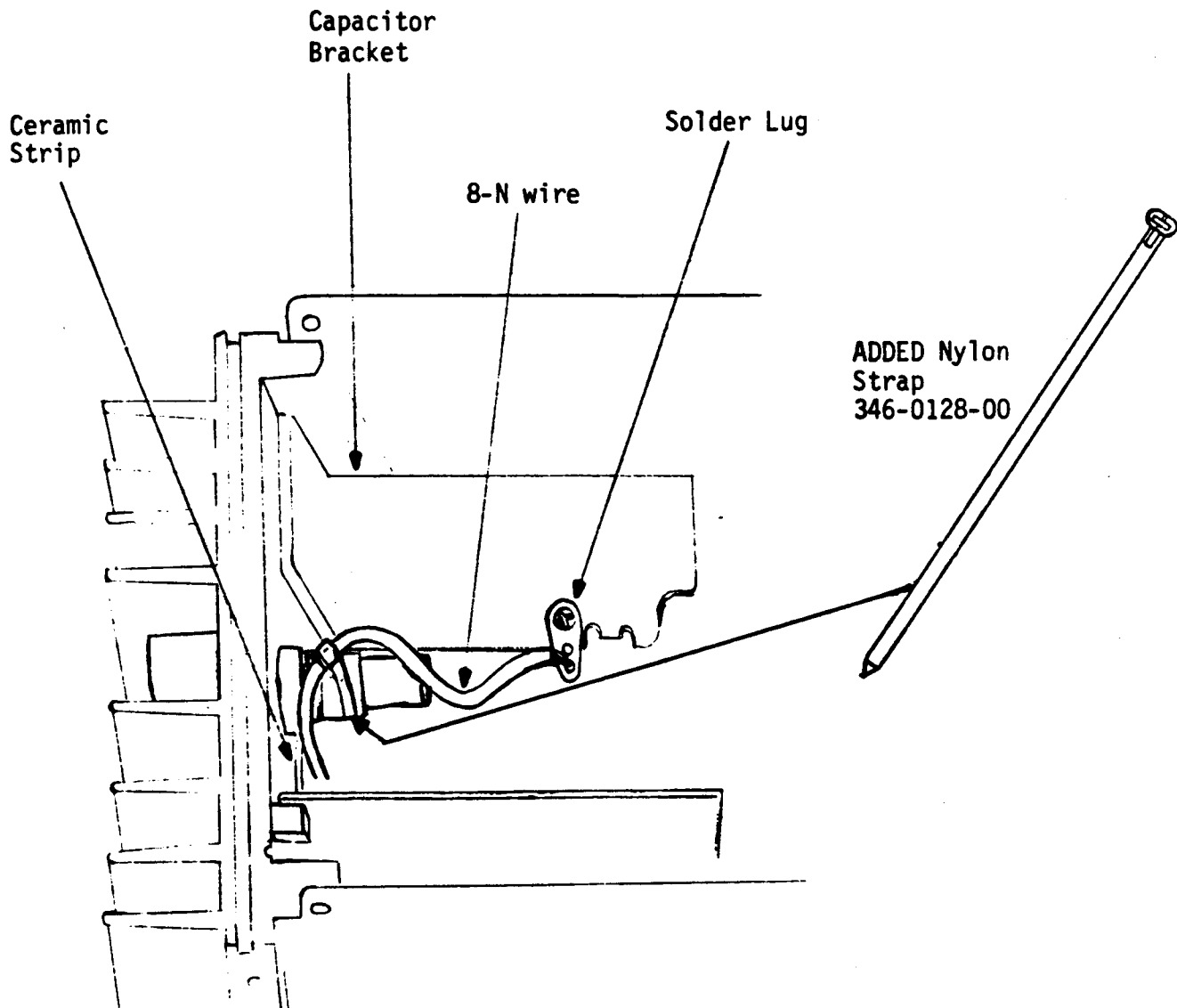
690/6942 POWER SUPPLY

Reference: 690SR Manual, 070-3821-00
Mod 48099

One of the requirements for UL recognition of the 690/6942 family was a tie-down strap on a grounding wire, holding it to the fuse holder case. In order to maintain UL integrity, this strap must be in place on any instrument repaired. This applies to those units that were UL

rated from the factory only, but since the power supply assemblies are on Repair and Return, please insure that the strap is also in place on any power supply module that is repaired under R & R. (See attached diagram.) Starting serial numbers for UL rated units are B010987 (6942) and B010361 (690SR).

Partial View Low Volts Power Supply assembly 672-0873-02.



W² Issue 12-21

834 XTAL MARKED WITH WRONG PART NUMBER

Reference: 834 Instruction Manual, P/N 070-3399-00, Diagram 8

An unknown number of units have had crystals installed for A3Y356 that are marked with the incorrect Tektronix part number. They are marked with 158-0220-00 which is a 9 MHz part. The correct number is 158-0224-00, a 4 MHz part. Those marked with the incorrect number do run at 4 MHz.

W² Issue 12-22

1410 SERIES PROCESS IMPROVEMENT

REF: 1410 Manual 070-2759-00
1411 Manual 070-2322-00
Mod 47651

To improve the buildability of the 1410 series chassis and eliminate the greasy mess associated with chassis mounted transistors, the mica insulators under U800, Q155, Q152, Q243 and Q246 have been replaced with fiberglass reinforced silicon rubber insulators, P/N 342-0563-00.

When using one of these new insulators under a transistor, the grease is unnecessary. Insure, however, that the chassis is clean before mounting the new insulator and IC or transistor.

W² Issue 12-23

1440 MODIFIED PRODUCTS, TELETEXT PROCESSING

RE: 1440, I2R, I3R, I3C MANUAL INSERT
061-1448-00 SAR 16710

A recent article in the Wizards Workshop addressed some of the problems that NBC affiliate TV stations have experienced when trying to pass Teletext signals through a 1440 Mod I3B on lines 14 and 15 of the vertical

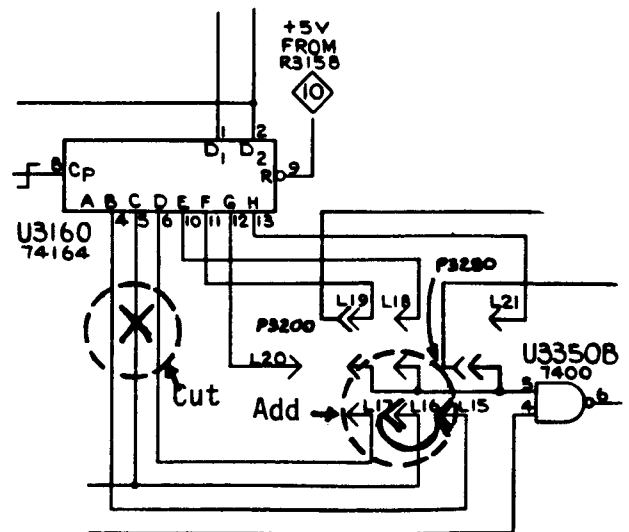
interval. A temporary solution for the problem was suggested, consisting of changing the value of R7200 to about 25K ohms.

Additional input from field users prompted a more in-depth solution with regards to setup timing. As a result, the following information is offered.

On the vertical counter board, disconnect Pin 5 of U3160 from the circuit by cutting the IC pin out. Then by putting one leg of a jumper on the Line 16 pin of the VIRS Matrix (P3280), the other end of the jumper can be connected to the appropriate pin to select the desired line for the start of setup timing (Line 15 - Line 21).

Note - If you desire to key set up timing to Line 14, a pin is not provided in the VIRS Matrix. You can, however, obtain a Line 14 timing signal from Pin 3 of U3160 (not connected in present diagram).

Vertical insertion width adjustment can be modified to allow passage of lines 15 and 16 by replacing R7200 with an 18.2K ohm resistor, and then



(Line 15 shown)

FIGURE A

(ARTICLE CONTINUED ON THE FOLLOWING PAGE)

1440 MODIFIED PRODUCTS, TELETEXT PROCESSING (cont.)

adjusting R7205 for the desired insertion/deletion parameters.

Figure A illustrates the modification for setup timing, and figure B illustrates the modification for insertion timing.

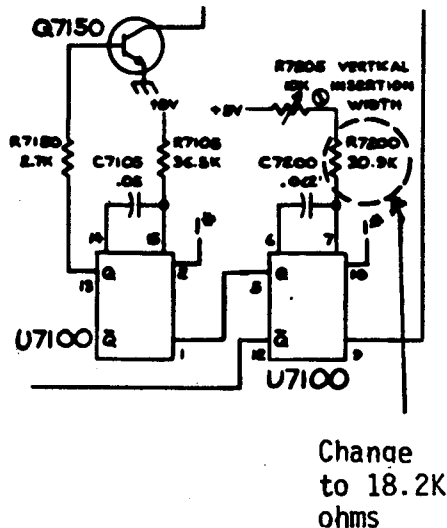


Figure B

Changes have been requested to reflect these new parameters in product documentation.

W² Issue 12-20

1450 SERIES OSCILLATION PROBLEM

REF: 1450-1 Manual 070-2200-01
1450-2 Manual 070-2998-00
1450-3 Manual 070-3660-00
Mod 46341

To eliminate 220 MHz oscillations caused by Q96, it has been required to test select the transistor for proper operation. Mod 46341 eliminates the need for selection by putting a 100pf, 5%, 50 cap (283-0330-00) between the base of Q96B and ground. A kit has been setup (050-1625-00) to allow the technician to receive the replacement transistor and the capacitor.

W² Issue 12-23

1800 LOAD BOARD EXTRACTOR

The part number for the load board extractor (puller) shown below is 003-0774-00. The part number for the extractor is listed in the accessories section of the 1804 Volume 2 Manual, but no illustration was provided.



Load Board Extractor
P/N 003-0774-00

W² Issue 12-22

2213/2215 CAPACITOR, P/N 283-0057-00 EXCESSIVE FAILURE RATE

P/N 283-0057-00, 0.1μF, 200V capacitor, is used in 10 locations in the 2213 and 2215. 6 component locations have shown a high number of failures, either shorted or with high leakage.

It appears to be a batch problem. Parts received about week 27 of 1981 (date code 127) probably were only 100V parts instead of the specified 200V.

SUSPECT PARTS:

Color	Blue
Date Codes	117 to 137
2213, 2215	B012500 - B016000 (75% of failures)
Date shipped	Nov. 81 to Jan. 82

The following number of warranty failures were reported from AP205 to AP304:

(ARTICLE CONTINUED ON THE NEXT PAGE)

2213/2215 CAPACITOR, P/N 283-0057-00
EXCESSIVE FAILURE RATE (cont.)

<u>A10 CIRCUIT #</u>	<u># FAILURES</u>
C799	11
C849	15
C852	29
C854	18
C861	9
C877	9
C871	1
C873	0
C876	0
C886	0

C849, C852, C854 X AXIS CIRCUIT 6

If any or all of these capacitors short, the scope will typically have no display. R849, R850, R851 and/or R854 may overheat and Q847/Q850 may be damaged.

C799 +100 V DECOUPLING 7

C799 shorting will cause no display and the +100 V supply will become loaded, possibly affecting other supply voltages.

C861 CRT GRID BIAS 9

If C861 shorts or becomes leaky, you will typically lose Intensity control.

C877 CRT MESH 9

The CRT mesh is at approximately - 100 V. If C877 shorts or becomes leaky, the display may be lost.

C871 GEOMETRY CIRCUIT 9

1 failure was reported where C871 shorted when the Geometry pot was turned to the +100V end.

C873, C876, C886 CRT CIRCUIT 9

These 3 parts have no reported failures.

Since these 3 parts are used in circuits using +30 and -8.6V supplies and have no failures and the 6 other locations are used in 100 Volt

circuits, it does appear to be a batch of underrated capacitors.

Although failures have occurred in all serial number ranges, the majority of failures have occurred in the B012500 to B016000 range. In units with no display or +100V supply problems, suspect the capacitors listed.

W² Issue 12-22

4014/14-1, 4015/15-1 LVPS R483, R485, R487 BURNING - ADDENDUM

Corning and Allen Bradley brand resistors are being used interchangeably in R483, R485 and R487 of the LVPS. These resistors should be installed so the element is located halfway between the PCB and the plastic shield and separated from each other by one-half inch (at leads near element).

W² Issue 12-21

4052/4052A/4054/4054A OPTION 27/28 MANUAL CORRECTION

Ref: 4052/54, 4052A/54A Extended Memory File Manager.
 Service Manual 070-4384-00

A couple of changes to the above referenced Service Manual will appear in its next reprint. They are repeated here for your information.

Page A-20, figure A-21; in the picture the label "Black-Brown wire to terminal 1" should read "... to terminal 2".

Pages A-13 and A-25, step b should read as follows;

"Connect the +5V cable to J21 on the Extended RAM board (Fig. A-XX). The brown-black wire of the wire pair should line up with the pin on the board labeled '1'. This pin is the one on the inside."

(ARTICLE CONTINUED ON THE NEXT PAGE)

4052/4052A/4054/4054A OPTION 27/28
MANUAL CORRECTION (cont.)

Figures A-13 and A-26 show a wrong housing on the cable going to J21. Because of this, pin 1 appears to be the pin on the left, closest to the edge. This is incorrect, pin one is the inside pin. The correct housing does not indicate a pin 1 and should be connected as stated in step b above.

W² Issue 12-23

mode switch to SELF TEST and power up. There should be a failure and one of the front panel LED's should be on. The LED that is lit indicates which RAM bit is bad, as shown in the table on p. 5-10 of the 834 Instruction Manual. Replace the RAM which supplies the bit that is suspect.

W² Issue 12-20

7704A/7834/7844/7844R/7854/7904/R7903
VERTICAL BOARD ½ TURN WIRE LOOP
INDUCTORS NEW PART NUMBER

When a high frequency compensation is accomplished on these instruments, it is sometimes necessary to change the length of the ½ turn coil to optimize the step response. The part was only .750 inch to start and sometimes a longer wire was needed. A 1.625 inch wire is now available and may be ordered as 195-8673-00.

W² Issue 12-23

067-0986-00 INCORRECT ERROR MESSAGE

Reference: Diagnostic Rom Pack
Instruction Manual, P/N 070-3536-00;
834 Instruction Manual, P/N
070-3399-00, p. 5-69 and p. 5-10

When using the Diagnostic Rom Pack to run the SVC-INT DATA test if the error message "BAD CS RAM BIT 0" is displayed, you must suspect all the RAM's. There is a bug in the code of the Rom Pack which does not increment the bit counter. This causes the instrument to display 0 as the bit number any time this test fails.

If this condition occurs, power down, remove the Rom pack, set the

The Tektronix Service Organization firmly supports a policy of assuring continued utility of products sold by Tektronix.

This publication is meant to provide technical information to the customer who has decided to maintain his own Tektronix products. It contains product servicing information and is written for the technician.

Articles are submitted primarily by Service Support Staff Engineers thoroughly familiar with the products they support. SERVICE TEKNOTES also encourages you, the user, to submit articles for publication. If you have knowledge of a technique, procedure or idea that enables you to service your Tektronix product more effectively, write it down so others may benefit from your experience.


Articles for publication should be submitted directly to:

Tektronix, Inc.
P.O. Box 500
Beaverton, Oregon 97077

Attention: Janet Hemenway
SERVICE TEKNOTES Editor

Delivery Station: 53-037

SERVICE TEKNOTES is distributed by Service Administrative Support free of charge to customers who maintain their own Tektronix equipment. A customer may be added to the distribution list by applying through his local Tektronix Sales Engineer.

Copyright ©1981, Tektronix, Inc. All rights reserved. Printed in U.S.A. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX, TEK, SCOPE-MOBILE, and  are registered trademarks of Tektronix, Inc. TELEQUIPMENT is a registered trademark of Tektronix U.K. Limited.

The Editor and staff of SERVICE TEKNOTES provide the material in this publication as a service to users of Tektronix Products. While we have tried to be diligent in assuring the accuracy of the material which we have printed, we cannot guarantee its accuracy. Neither SERVICE TEKNOTES, its editor and staff, Tektronix, Inc., nor its representatives assume any responsibility for the use of the material printed in SERVICE TEKNOTES; nor can we assume any responsibility for any errors or for the resulting effects of any errors.