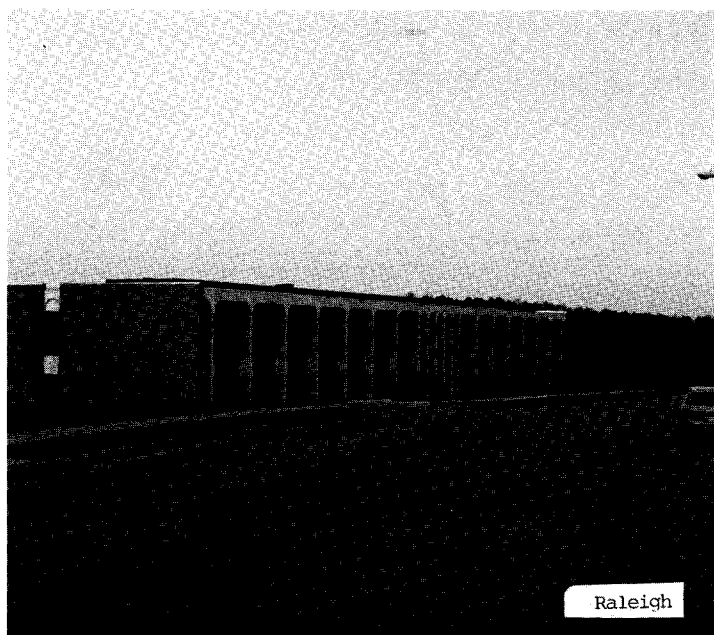
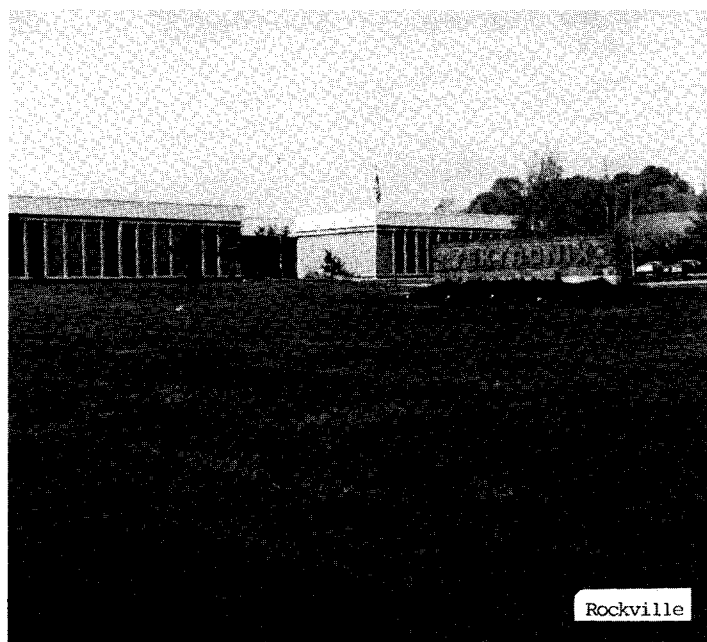


# SERVICETEKNOTES



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### DC503A GATE LIGHT DIMMING AT FAST TIME SETTINGS

#### Reference:

Main Ckt Board Schematic  U1423, M44408

#### Serial Number:

DC503A - B022560 and Below  
Opt 1 - B022710 and Below

Due to a change in the vendors' part, P/N 156-0578-02, the old part will cause the gate light to look dim during fast time settings. To increase the intensity of the gate light, U1423 now changes to P/N 156-1152-00. The new part is not a direct replacement so the following parts must be changed:

- U1423 changes to P/N 156-1152-00
- R1531 changes to 5.1K ohm P/N 315-0512-00
- C1431 changes to .0018 micro-farrad P/N 281-0852-00

OR Mod Kit P/N 050-1634-00 has the needed parts to complete this modification.

W<sup>2</sup> Issue 12-13

### MI5010/MX5010/SI5010 FIRMWARE UPDATED FOR COMPATIBILITY

REFERENCE: MI/MX5010 Instruction Manual, 070-3712-00; SI5010 Instruction Manual, 070-3721-00, Foldout 3, A20U1200

AFFECTED SERIAL NUMBERS: MI/MX5010  
- B010221 and below; SI5010 - B010250 and below.

MOD PRIORITY: Mandatory installation in all units returned for service.

Firmware Version 3 has been implemented to ensure compatibility with controllers that do not assert the EOI line at the end of GPIB messages. If a controller of this type is used and two consecutive messages are sent to the same instrument, the first character of the second message will be dropped. The Tektronix Part Number for A20U1200 changes from 160-1484-00 to 160-1484-01.

Some units with serial numbers below that given above may have this version already installed. Check the part number of the chip installed to determine if the unit needs to be updated. All units that have not been updated MUST have this new firmware installed.

W<sup>2</sup> Issue 12-11

### OF150 IMPROVED INTERLOCK CONTACT RING, P/N: 352-0654-01

The OF150 Interlock Contact Ring P/N: 352-0654-01 has been improved to allow for easier insertion and removal from the optical fiber connector plug. The part number has stayed the same. The new contact ring has no beveled edge on the side opposite to the metal ring. The new part will also have the same rough surface on both the edge and sides.

Please purge your stock of the OLD Interlock contact rings, and re-order as necessary.

W<sup>2</sup> Issue 12-13

### SC504 HALO SUPPRESSION ADDED

REFERENCE: M44233

SERIAL NUMBER: B02400 and below.

Halo suppression is now available for the SC504. To convert older  
(ARTICLE CONTINUED ON THE NEXT PAGE)

SC504 HALO SUPPRESSION ADDED (cont.)

instruments, a new CRT must be added along with the following circuit changes:

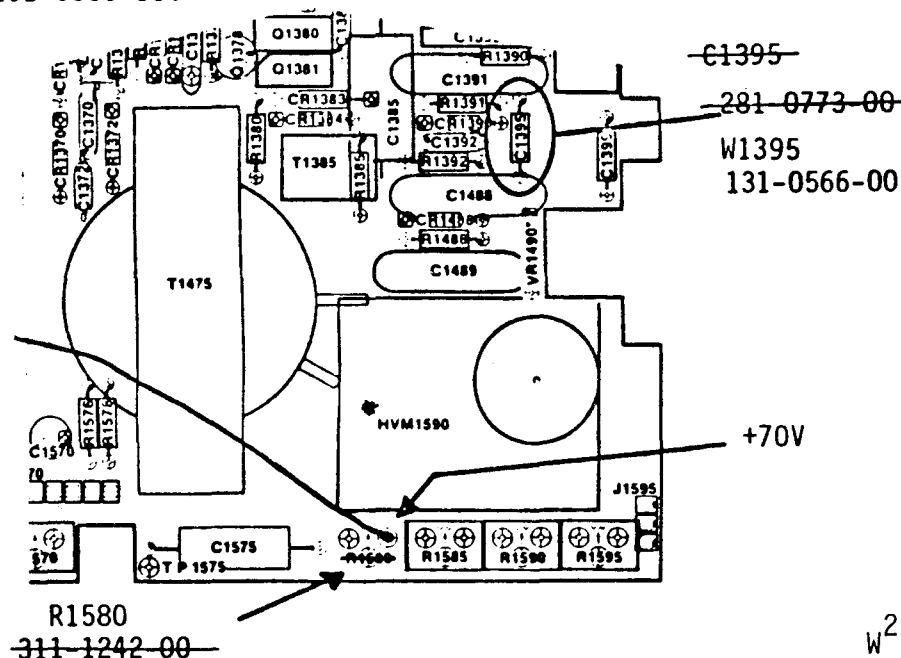
1. V1000 CRT changes to P/N 154-0859-00

2. C1395 replaced with W1395, wirestrap, P/N 131-0566-00.

3. R1580 removed.

4. Add a 6 inch length of wire from pin 13 of the CRT socket to the +70 volt terminal from which R1580 was removed.

There will be 050 kit number published later.



W<sup>2</sup> Issue 12-13

S-3200 D70/D80 SECTOR CARD RELIABILITY IMPROVEMENT, MOD M43789

Improved reliability of D70 and D80 Sector Cards can be accomplished by replacing power supply filtering capacitors. The following paragraphs provide modification instructions. The figures and manual inserts are provided to assist implementation of this modification (M43789) into the latest versions of the Pin Electronics Cards.

Note: These modifications should also be incorporated into all earlier versions of the D70 (670-5347-XX) and D80 (670-5412-XX) Pin Electronics Cards.

D70 Sector Cards (672-0687-04):

Replace 4 each, Capacitor 4.7uf, 20%, 50V (283-0194-00) located at

C510, C511, C512, and C513 with 4 each, Capacitor 0.22uf, 10%, 100V (285-1241-00). Replace 2 each, Capacitor 1uf, +80-20%, 25V (283-0177-03) located at C443 and C453 with 2 each, Capacitor 0.1uf, 20%, 50V (283-0111-00). The D70 Pin Electronics Card changes from 670-5347-03 to 670-5347-04. See Figures 1, 3, 4, and 6.

D80 Sector Cards:

Replace 4 each, Capacitor 4.7uf, 20%, 50V (283-0194-00) located at C510, C511, C512, and C513 with 4 each, Capacitor 0.22uf, 10%, 100V (285-1241-00). The D80 Pin Electronics Card changes from 670-5412-02 to 670-5412-04. See Figures 2, 3, and 5.

(ARTICLE CONTINUED ON THE NEXT PAGE)



FIGURE 1

**Figure 5-1. Component Locations, D70 Main Board**

Backside of Circuit Board

C510 & C513

Remove: 4.7uf(283-0194-00)

Add: 0.22uf(285-1241-00)

C511 & C512

Remove: 4.7uf(283-0194-00)

Add: 0.22uf(285-1241-00)

C443 & C453  
Remove: 1.0uf(283-0177-03)  
Add: 0.1uf(283-0111-00)

MANUAL REFERENCE:  
D70 PIN ELECTRONICS CARD ASSEMBLY  
070-3323-00

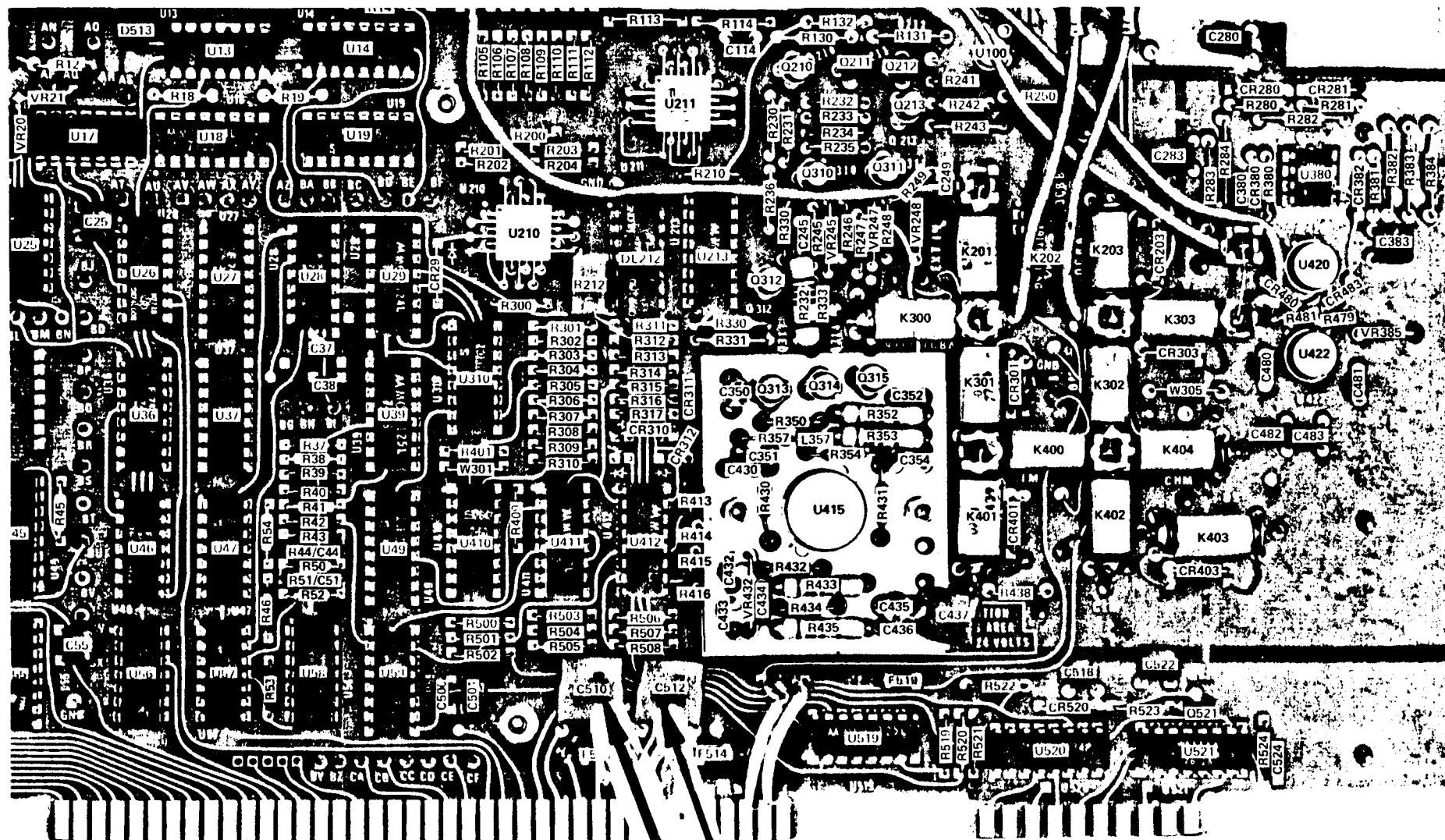
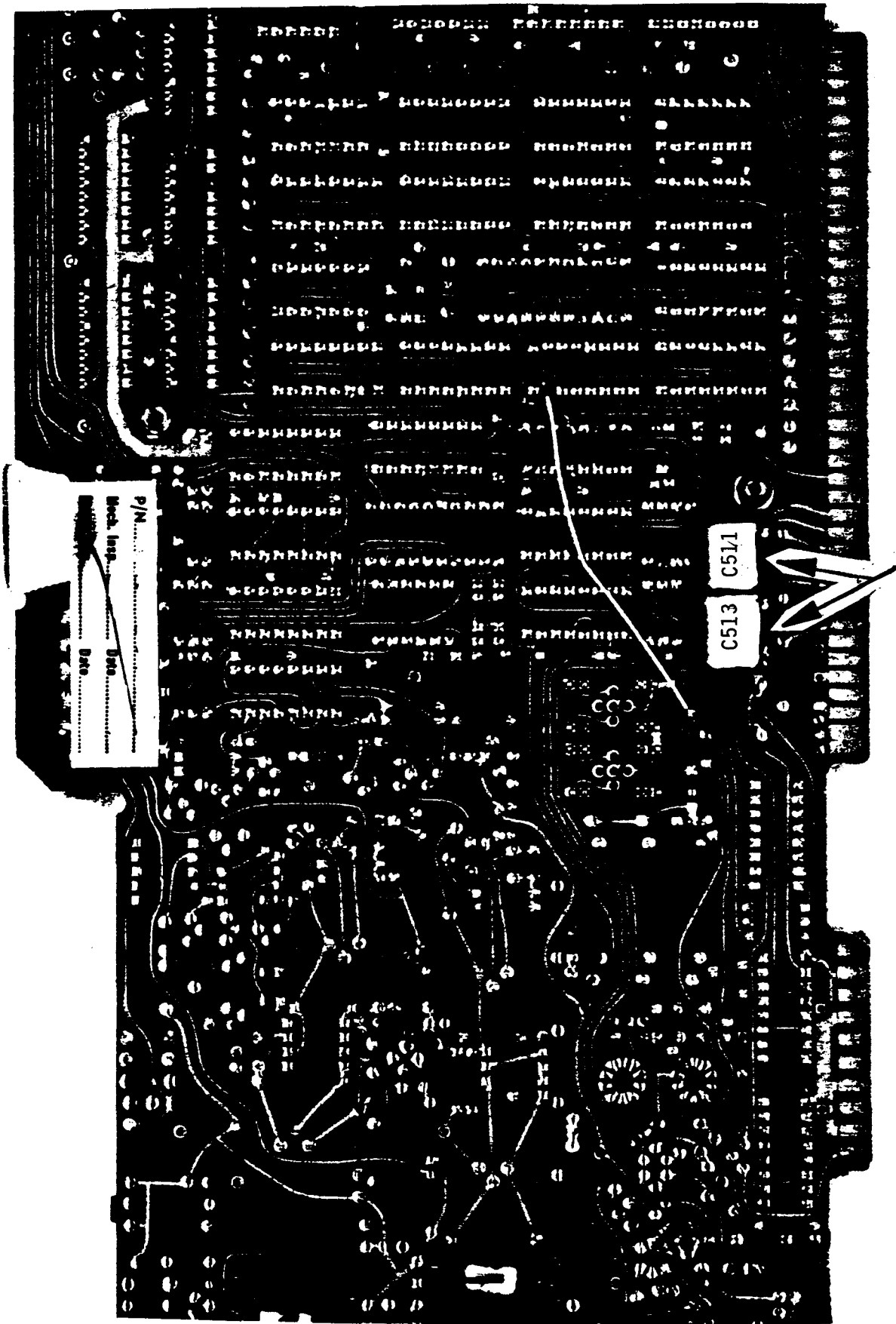


FIGURE 2

Figure 4-1. D80 Component Locations (Front)

MANUAL REFERENCE:  
D80 PIN ELECTRONICS CARD ASSEMBLY  
070-3316-00

- C512 Remove: 4.7uf(283-0295-00)  
Add: .22uf(285-1241-00)
- C510 Remove from Front: 4.7uf(283-0194-00)  
Add to Backside: .22uf(285-1241-00)
- C511 Remove from Backside: 4.7uf(283-0294-00)  
Add to Front: .22uf(285-1241-00)
- C513 Backside Remove: 4.7uf(283-0294-00)  
Add: .22uf(285-1241-00)



CAPACITOR LOCATIONS FOR D70 & D80 PIN CARDS

D70 & D80 BACKSIDE PIN ELECTRONICS CARDS

FIGURE 3



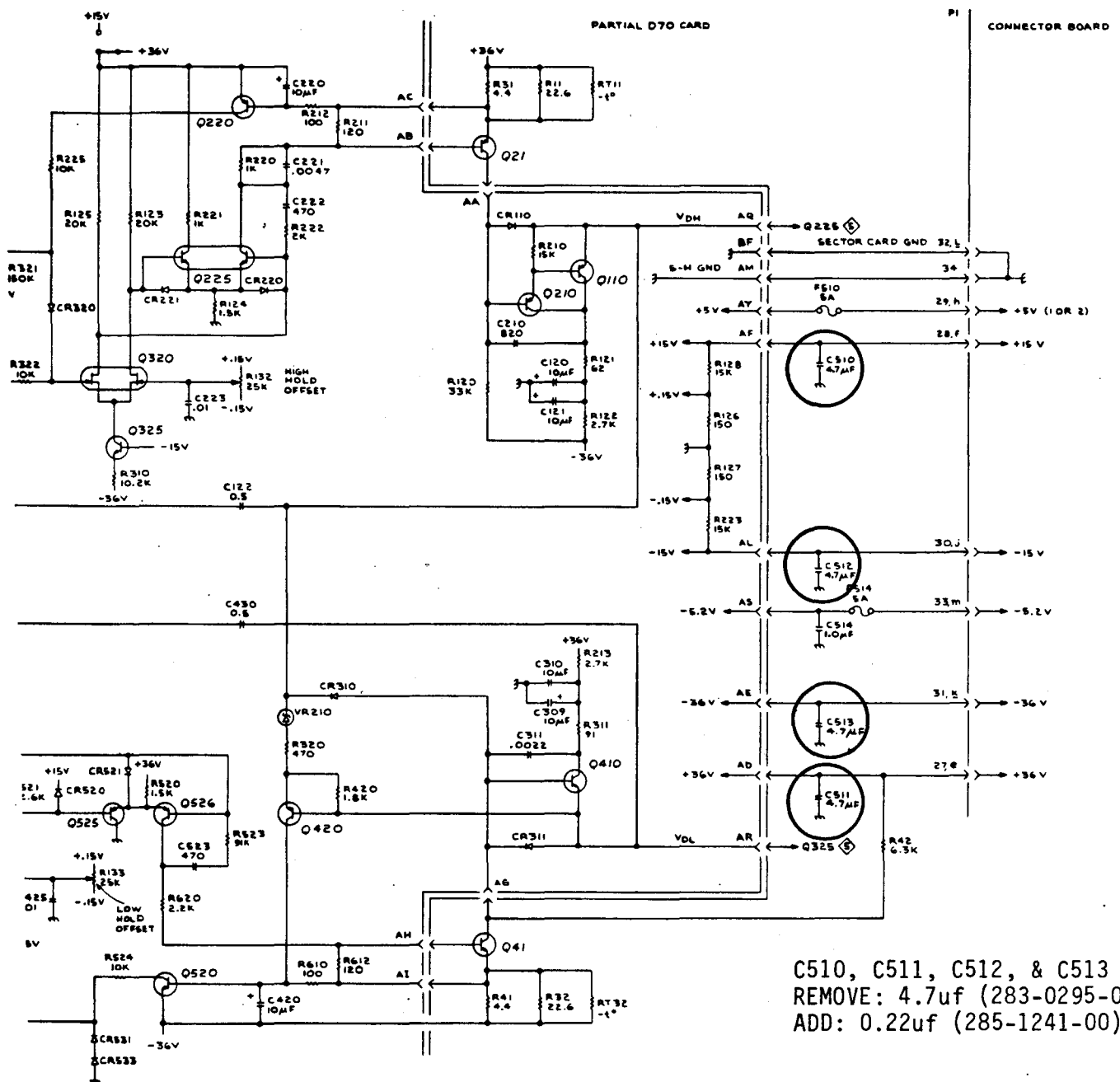
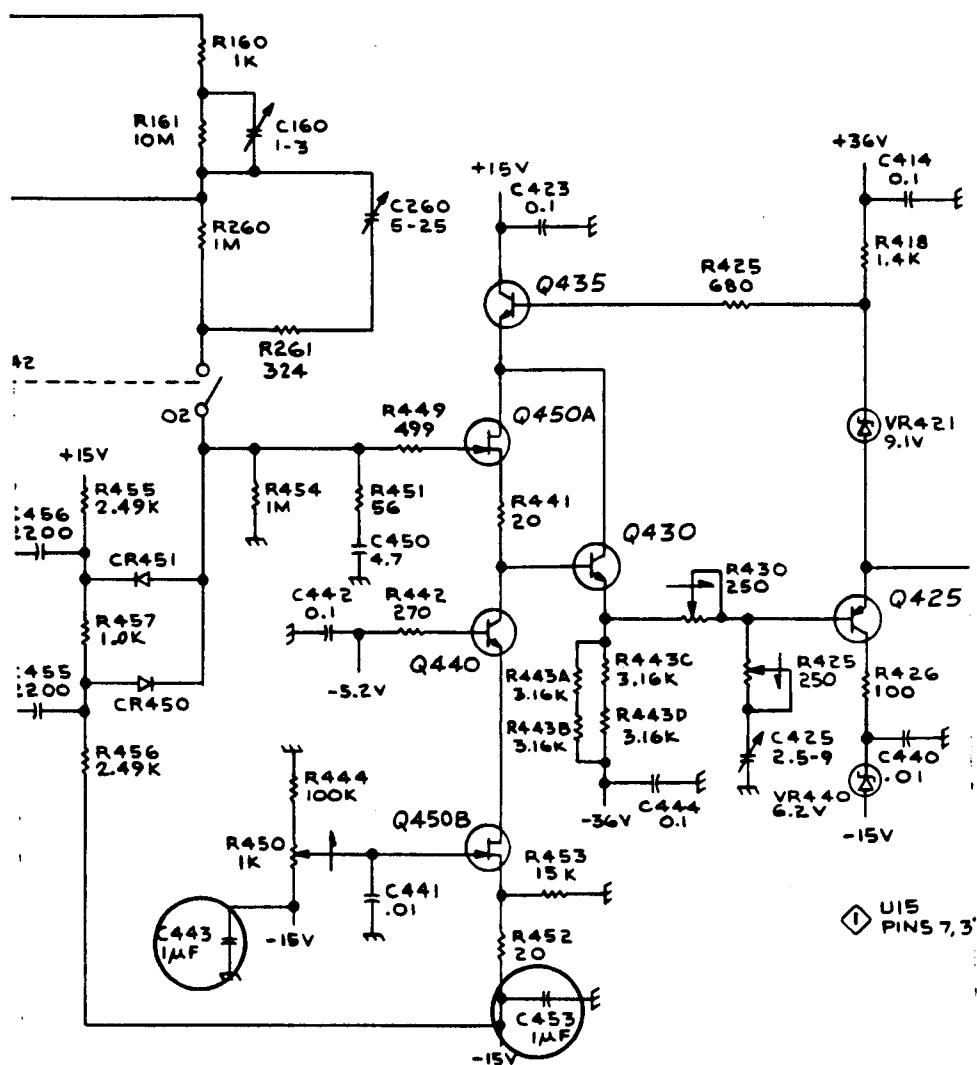


FIGURE 4





## BUFFER AND COMPARATORS

C443 & C453  
 REMOVE: 1uF (283-0177-03)  
 ADD: 0.1uF (283-0111-00)

REFERENCE MANUAL:  
 D70 PIN ELECTRONICS CARD  
 070-3323-00

FIGURE 6

S-3200 POWER CORD CONSIDERATIONS

Due to mechanical movement, vibration, normal heat cycling, or through abuse, the mechanical connections in the power plug and receptacle may become loose over a period of years. If the terminal screws are not absolutely tight, a resistive contact and hence excessive connector temperatures could result.

It is recommended, per good service practices and as part of normal planned maintenance, that the power cord connector (P1) and receptacle (J1) terminals be checked for tight connections semi-annually. Before checking connection tightness, be sure to disconnect the power cord at both ends.

Because the temperature rise can cause the plug and the receptacle contacts to become oxidized and

the plastic connector housing to soften and flow, thereby reducing contact pressure holding the contacts together, it is prudent to replace both the plug and the receptacle at the same time. This prevents early failure of the same connection due to residual damage in the unchanged connector. When installing the new connector, be sure to cut off the old wire ends back far enough to obtain non-discolored insulation and bright copper wire (non-oxidized) for which to make a low resistance connection. Strip the wire to the proper length (a strip gauge is molded into most connectors for convenience), install wire, check to make sure that the insulation will not be pinched by the terminal clamp (this would cause a poor mechanical bond of the copper wire to the terminal and early failure of the connector), and tighten securely.

TABLE 1

## AC POWER CORD CONNECTORS

<u>Part Number</u>	<u>Description</u>
131-1349-00	Conn. rcpt, Pwr female 125V, 15A
131-1380-00	Conn. Rcpt, Pwr, Male, 120VAC, 30A
131-1381-00	Conn. plug, Pwr, Female, 120VAC, 30A
131-1492-00	Conn. plug, Pwr, Female, 250V AC-DC, 30A
131-1509-00	Conn. plug, Pwr, Male, 120/208 VAC, 30A
131-1514-00	Conn. plug, Pwr, Female, 125VAC, 30A
131-1552-00	Conn. rcpt, Pwr, Female, Duplex, 250V, 15A
131-1628-00	Conn. rcpt, Pwr, Male, 250V, 30A
131-1767-00	Conn. rcpt, Pwr, Female, 125V, 15A
131-2082-00	Conn. rcpt, Pwr, Female, 250V, 15A

7L5 PLUG-IN SAFETY LATCH MOD KIT  
P/N: (040-1012-00)

RE: 7L5 S/N B010100 to B092404  
040-1012-00  
M34397

The 040-1012-00 Product Modification Kit contains parts and instructions to add a safety latch, to supplement the standard plug-in latch, to hold the 7L5 Spectrum Analyzer in the mainframe in applications where the system may be subjected to unusual mechanical shock.

W<sup>2</sup> Issue 12-12

7L12 IMPROVED ATTENUATOR, FREQUENCY SPAN/DIV AND RESOLUTION KNOBS  
(040-1056-00)

RE: 7L12 S/N B190000 to B213489  
040-1056-00  
M37660, M43771

The 040-1056-00 modification kit provides parts and instruction to replace the Gain Selector & ATTENUATOR knob assembly with an improved knob assembly, and to replace the FREQ SPAN/DIV & RESOLUTION knob assembly with an improved knob assembly.

Conversion to the new FREQ. SPAN/DIV knob assembly ELIMINATES the VARIABLE FREQ SPAN FUNCTION.

W<sup>2</sup> Issue 12-12

7L13 ATTENUATOR KNOB REPLACEMENT KIT (P/N: 050-1504-00)

RE: 7L13 S/N B010100 to B139999  
M37660

The 050-1504-00 Parts Replacement Kit provides parts and instructions to replace the ATTENUATOR Knob Assembly, with an improved knob assembly that is easier to adjust.

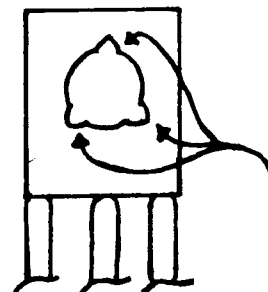
W<sup>2</sup> Issue 12-12

464/465/465B/466/475/A INTERMITTENT POWER SUPPLY

RE: P/N 151-0349-00  
151-0390-00  
151-0436-00

If the power supply in a portable scope is intermittent, check the power supply series pass transistors mounted to the rear of the scope. By flexing the chassis or by loosening the securing screw for the transistor the intermittent transistor can be varified.

Remove the transistor. If by visual inspection, looking at the exposed metal inside the transistor, it is noticed the metal (collector) is not protected and could short to the securing screw, replace the transistor (see diagram indicating where to look).



W<sup>2</sup> Issue 12-12

485 HI Z, LOW Z CIRCUIT BOARDS  
UNAVAILABLE

RE: HI Z CIRCUIT BOARD, P/N 670-1512-06  
LOW Z CIRCUIT BOARD, P/N 670-1513-00  
HI Z MOD KIT, P/N 050-1177-01  
ATTENUATOR ASSEMBLY, P/N 672-0036-03

The Hi Z board, Low Z board and Hi Z board mod kit listed above will no longer be available as individual replacements. The Attenuator Assembly, P/N 672-0036-03, will be the only replacement unit available for these assemblies.

W<sup>2</sup> Issue 12-11

492/P OPTION 3 ERROR AMPLIFIER CIRCUIT  
BOARD REPLACEMENT KIT (P/N 050-1579-00)

RE: 492 OPTION 3 S/N B010276 TO B031129  
492P OPTION 3 S/N B011000 TO B031460  
M42651

The 050-1579-00 replacement kit contains the Error Amplifier circuit board, A50A4, PN 670-5521-05, which replaces the Error Amplifier circuit boards, part numbers 670-5521-00, 670-5521-01, 670-5521-02, 670-5521-03, and 670-5521-04, which are no longer available. Use of the new Error Amplifier circuit board necessitates replacement of several components on the Phase Lock Control circuit board, A51.

If the serial number of your instrument is above those listed, or if this kit or Parts Replacement Kits, PN 050-1577-XX or 050-1578-XX, has been installed, you can use the Error Amplifier circuit board, A50A4, PN 670-5521-05, as a direct replacement.

W<sup>2</sup> Issue 12-12

492 OPTION 3 ERROR AMPLIFIER CIRCUIT  
BOARD REPLACEMENT KIT (PN 050-1586-00)

RE: 492 OPTION 3 SN B010100 TO B010275  
M42651, PC-442

The 050-1586-00 Parts Replacement Kit contains the Error Amplifier circuit board A50A4, PN 670-5521-05 which replaces the Error Amplifier circuit boards, part numbers 670-5521-00, 670-5521-01, 670-5521-02, 670-5521-03 and 670-5521-04, which are no longer available. Use of the new Error Amplifier circuit board necessitates several component changes on the Phase Lock Control circuit board A51.

If this Parts Replacement kit, or Parts Replacement kit, PN 050-1585-XX, has been installed, you can use the Error Amplifier circuit board, PN 670-5521-05, as a direct replacement.

W<sup>2</sup> Issue 12-12

492 OPTION 3 PHASE LOCK ASSEMBLY  
REPLACEMENT KIT (P/N 050-1585-00)

RE: 492 OPTION 3 S/N B010100  
TO B010275  
PC442, M42651, M39577

The 050-1585-00 Parts Replacement kit contains the Phase Lock Assembly (A50), PN 119-1069-02 which replaces the Phase Lock Assemblies, part numbers 119-1069-00 and 119-1069-01, which are no longer available. Use of the new Phase Lock Assembly necessitates the replacement of several components on the Phase Lock Control circuit board A51.

W<sup>2</sup> Issue 12-12

492/492P/496/496P HANDLE REPLACEMENT  
KIT P/N 050-1569-00

RE: 492/P S/N B010100 TO B041979  
496/P S/N B010100 TO B010279  
M39979

The 050-1569-00 Parts Replacement kit contains parts and instructions to replace the carrying handle with an improved carrying handle that is better able to support the weight of the instrument.

W<sup>2</sup> Issue 12-12

496 PORTABLE TO RACKMOUNT CONVERSION  
KIT (P/N: 040-1062-00)

Re: 496 S/N B010100 & UP

The 040-1062-00 Product Modification Kit provides parts and instructions to convert a Portable Spectrum Analyzer to a Rackmount Spectrum Analyzer.

The Rackmount Spectrum Analyzer can be mounted in a standard 19 inch wide rack that has Universal, E.I.A., R.E.T.M.A., or Western Electric hole spacing.

W<sup>2</sup> Issue 12-12

496P PORTABLE TO RACKMOUNT CONVERSION  
KIT (P/N: 040-1063-00)RE: 496P SN B010100 & UP

The 040-1063-00 Product Modification Kit provides parts and instructions to convert a Portable Spectrum Analyzer, to a Rackmount Spectrum Analyzer.

The Rackmount Spectrum Analyzer can be mounted in a standard 19 inch wide rack that has Universal, E.I.A., R.E.T.M.A., or Western Electric hole spacing.

W<sup>2</sup> Issue 12-12528AWJ SERVICE MAINTENANCE INFORMATIONRE: 528AWJ MANUAL, 070-4241-00  
528 MANUAL, 070-3662-00

The 528AWJ is a modified 528A Television Waveform Monitor with the added capability of operating in either the 525/60 (NTSC) or the 625/50 (PAL) systems. Necessary changes to the circuitry are made by energizing internal relays affecting sweep timing and chroma response, using either a front panel switch or the rear panel remote connector (J370). Front panel lights indicate which system is being used.

The instruction manual for the 528AWJ contains information that is peculiar to the 528AWJ in the operation and technical description sections. It is to be used with the 528A manual for overall operation/troubleshooting purposes.

Service impact is expected to be generally light with the only center seeing much action being Denver. The 528AWJ is serviced in house to the component level or self-serviced by the customer. No new or unusual test equipment is required.

The 528A Service Maintenance Information of February 24, 1981 can be useful when working on the 528AWJ.

No new or unusual parts are recommended for stock beyond that which is in place for the 528A.

W<sup>2</sup> Issue 12-14529 GRATICULESRE: 529 INSTRUCTION MANUAL 070-0509-01

The following graticules for the 529 are per CCIR requirements.

331-0184-00 Composite CCIR  
331-0185-00 Composite CCIR plus  
K factor

W<sup>2</sup> Issue 12-13606B OUTPUT AMPLIFIER MODIFICATION  
46302

The 606B x-y output amplifier may not meet bandpass or settling time specifications if resistors R133, R139, R233, and R239 are always 91 ohms. The optimal values of these four resistors range from 20 ohms to 150 ohms, with 62 ohms being typical. This is because the circuitry is highly dependent upon the characteristics of the individual transistors, especially Q150, Q155, Q250, and Q255.

Modification 46302 changes R133, R139, R233, and R239 from 91 ohms to 62 ohms, 5%, 1/4 watt (p.n. 315-0620-00), SELECTED. The "selected" in the description means that 62 ohms is only a nominal value and that other values may be substituted.

The optimal value for the four resistors is found by trial and error according to the following guidelines:

- If a 606B fails the bandwidth specification, the values of R133, R139, R233, and R239 need to be reduced.
- If the product fails settling time specifications (excessive ring on

(ARTICLE CONTINUED ON THE NEXT PAGE)

### 606B OUTPUT AMPLIFIER MODIFICATION 46302 (cont.)

the front corner), the resistor values must be increased.

- If a change in value is necessary, all four resistors must be increased or decreased by the same amount.

The above guidelines will be added to the 606B Service Manual calibration procedure, pages 5-37 through 5-44.

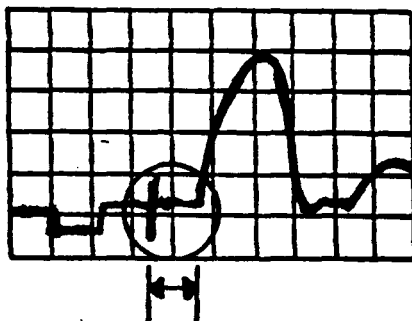
W<sup>2</sup> Issue 12-13

### 670 SERIES MOD KIT 050-1369-00

RE: 670A MANUAL, 070-2201-01

Mod Kit 050-1369-00 was designed to provide correction to horizontal deflection problems that were caused by unspecified turn off times of Q5030. Some of the effects of this defect are horizontal breakup and oscillations, an apparent heat sensitivity associated with T5090, and failures of Q5030.

As vendors for Q5030 have changed, and since there is no specification for the turn-off delay of Q5030, a problem has been discovered where installation of the mod kit will cause the circuit to malfunction, whereas the original values of L5085 and R5085 may be the appropriate values to use under certain conditions.



1.5 to 5 usec

Figure 1

DAMPER CONDUCTION TIME

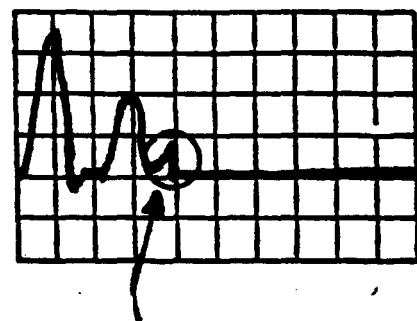
To determine whether or not the 050 kit installation is appropriate, the following guideline is offered.

Observe the waveform at the junction of T5090 and L5085/R5085. This should appear similar to the waveform in Figure 1 (above). Figure 1 illustrates the portion of the waveform that is occurring during the conduction time of the damper diode (CR5020 & CR5021). This time should be between 1.5 to 5 usec.

If the conduction time of the damper diode is less than 1.5 usec, the 050 kit should be installed. If the conduction time of the damper diode is greater than 5 usec, use the original values of L5085 and R5085 to bring this time back to the proper value. The original values for these parts are:

L5085	10 $\mu$ h	108-0813-00
R5085	56 ohm	303-0560-00

Figure 2 illustrates a waveform that may be seen with the mod kit installed. The extra overshoot noted in the figure is caused by the mod, and is a normal waveform to be expected. This does not affect performance of the circuit.



Area of interest

Figure 2

MODED SIGNAL

W<sup>2</sup> Issue 12-14



670 SERIES PARTIAL LOSS OF DISPLAY

RE: 670A MANUAL 070-2201-01

An intermittent, and extremely difficult to troubleshoot problem has occurred in a few 670 series monitors that gives an occasional blank spot in the raster of about 3 to 5 inches in diameter. This spot has most often been observed near the top center of the display. It is a gradual, rather than an abrupt, fade in and fade out. When troubleshooting was attempted, the problem promptly disappeared, not to reappear for sometimes as long as 2 - 3 weeks.

The solution for this problem is to ensure that the ground path through the circuit board mounting screw is maintained. The particular screw of concern here is the lower right-hand mounting screw on the Deflection board (670-2612-XX), but this same concern can be applied to all circuit board mounting screws that provide a circuit path, whether it be to ground, a heat sink or whatever. Insure all screws are tight. And, if necessary, put a star washer under the appropriate screws.

W<sup>2</sup> Issue 12-11690SR TEXT CORRECTIONRE: 690SR INSTRUCTION MANUAL,  
070-3821-00

The following change is required per DHEW regulations. Section 9 Maintenance, page 9-23, step 8, overvoltage calibration, change to read:

8. Turn the POWER switch to OFF. Seal R434 with a small amount of Super Glue to prevent further adjustment.

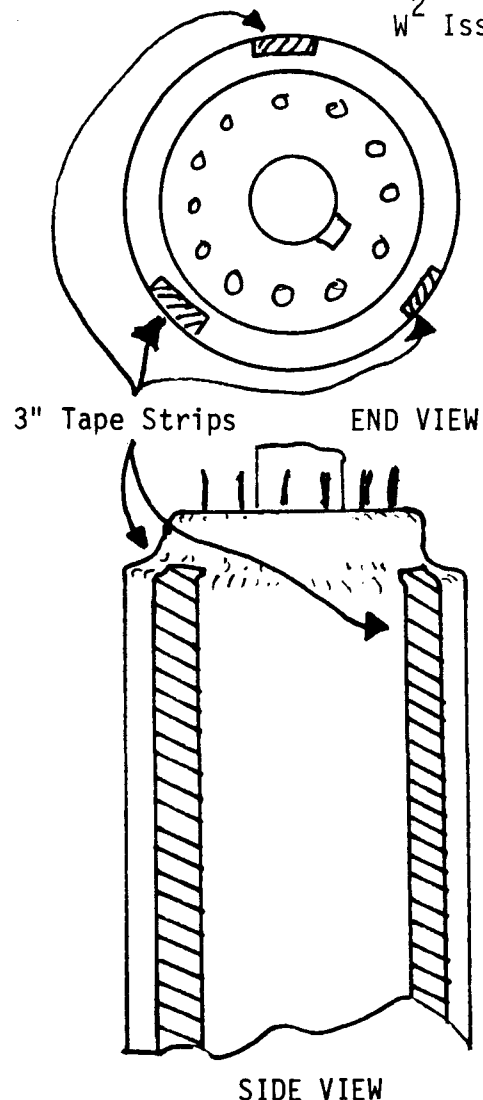
W<sup>2</sup> Issue 12-141420 SERIES CRT MOUNTING

RE: 1420 MANUAL, 070-2899-00

Some people have experienced difficulties with the tape on the CRT retaining clamp falling off during replacement. This will necessitate removing the clamp from the CRT shield to replace the tape, thereby adding unnecessary time to the repair function.

To avoid this problem, the manufacturing group is now installing the tape on the CRT neck, thus avoiding clamp related problems.

When replacing the CRT, install three (3) pieces of tape approximately 3" long laterally on the CRT neck, equidistant about the neck circumference. (See illustration). The tape is 006-3436-00 for a 9 foot roll.

W<sup>2</sup> Issue 12-12

1440 MOD I3C (K5N)

RE: 1440 MOD I3C MANUAL INSERT  
061-1448-00

If a condition is observed where the sync gain varies about 5% with a change of luminance in the composite video signal, while in the Auto Correction mode, check Q4256 on the Decoder board (diagram 11) to insure it is P/N: 151-0223-00. Some units may have had a 151-0190-00 installed by mistake.

W<sup>2</sup> Issue 12-12

1450 SERIES OPTION 2B SERVICE  
MAINTENANCE INFORMATION

RE: 1450-1 INSTRUCTION MANUAL  
070-2200-01  
1450 OPT. 2B INSTRUCTION MANUAL  
SUPPLEMENT 070-4349-00

The 1450 Series Option 2B allows the 1450 Demodulators to have proper AGC action on a composite video signal in which the blanking level is shifted to approximately 536 mV (75IRE). The 1450 will back porch AGC on the modified signal by grounding pin 1 of the REMOTE plug (J14), and applying a properly delayed composite sync signal (about 8.5 usec). With pin 1 not grounded, normal instrument operation is obtained. AURAL INTERCARRIER IN is replaced by EXTERNAL SYNC IN. The Aural Intercarrier function is available internally only.

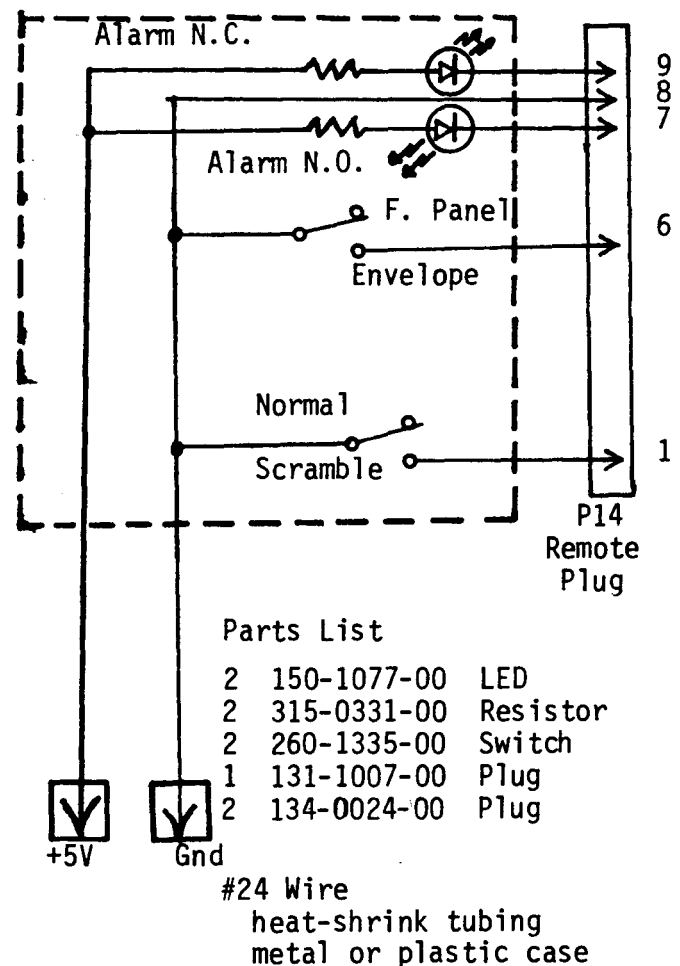
The changes consist of a new AGC Logic board (A60), some cabling changes and an external label. The new board is P/N 670-7702-00.

The instruction manual supplement is designed to be used in addition to the base instruction manual for all of the 1450 series units. It contains a brief description of the changes made, and the appropriate

circuit diagram, parts list, operational theory, and calibration changes that are unique to this option.

No new or unusual parts or test equipment are required, and the maintenance impact of this option will be light.

The option will be installed at the factory and will be maintainable by any service center equipped for 1450-series Demodulator service. Tracability, where required, will also be accomplished at these service centers.



Remote Test Fixture

Figure 1

(ARTICLE CONTINUED ON THE NEXT PAGE)

### 1450 SERIES OPTION 2B SERVICE MAINTENANCE INFORMATION (cont.)

(Note - due to recent information, the above two paragraphs from a departure from the information published previously in the Service Implementation Plan).

An additional service aid can be constructed locally to allow ease of actuation of the option circuitry. It consists of a male plug (131-1007-00), with a SPST switch wired to pin 1. A ground clip is wired to the other side of the switch and can be connected to any convenient ground point. A more "delux" test fixture can be made up to test the remote connector functions of any 1450. See Figure 1.

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### 1470 TIMING

RE: 1470 MANUAL, 070-2096-00

1470 H blanking width should only be measured at Comp Blanking outputs. If it is measured anywhere else, it will be affected by the signal at that point. Hence, H blanking at full field out may be 12 usec if you are measuring a Color Bar Signal.

Color Bar duration is not specified for the 1470. However, some measurements taken at the Factory give the following nominal values.

White	8 Usec	Magenta	5.9 Usec
Yellow	5.8 Usec	Red	5.9 Usec
Cyan	6 Usec	Blue	6 Usec
Green	6 Usec	Black	7.6 Usec

W<sup>2</sup> Issue 12-13

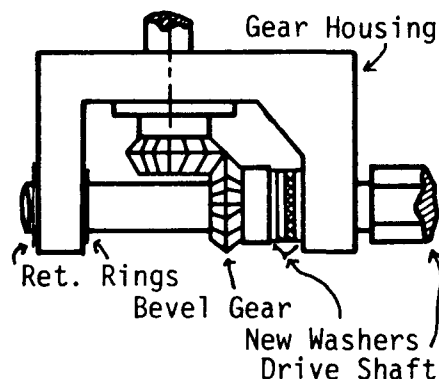
### 1800 ACTUATOR ARM IMPROVEMENT KIT 050-1558-00 (MOD M44006)

There is an 050-1555-00 kit that will improve the operation of the actuator arm that lifts the test head. On some test stations the drive shaft retainer (snap) rings have come loose causing the gears to misalign and making the actuator arm assembly (crank) inoperable.

The 050 kit replaces the drive shaft with a new drive shaft, P/N 384-1298-01. The new drive shaft has had two snap ring slots made deeper and has had the third retainer ring slot deleted. A combination of steel and brass washers are used to obtain proper gear alignment.

Typically, it takes three steel washers and one (or two) brass washers. The thrust washers remove the stress of cranking the table from the snap rings. The stress is now on the level gear, washers, and gear housing, thereby keeping the level gear aligned. (See figure on next page).

Periodic lubrication of the washers should be performed every six months.



W<sup>2</sup> Issue 12-13

### 1800 SERIES TEST STATIONS: INTERMITTENT SHUTDOWN

An intermittent air pressure switch when coupled with the fault detection circuitry can be the source of troubleshooting aggravation. The fault detector circuit was designed to shut the test station off when any power supply fails. The fault detector will also shut the test station off when the pressure switch opens.

When the pressure switch opens for an instant, this shuts off the table power for a short period of time. The power is off just long enough for the fault detector to sense the power loss. The fault detector in turn activates shutting the station down.

On older systems the pressure switch was found to be intermittent. A new pressure switch replaced the older one starting in early 1980. The newer pressure switch part number is 260-1880-00.

To determine if the pressure switch is at fault, do the following: remove power to the test station. Place a shorting jumper across the common and normally closed contacts of the pressure switch and apply power to the station. If the test station does not shutdown while the switch is shorted, replace the pressure switch. Be sure to remove the pressure switch short when finished troubleshooting.

W<sup>2</sup> Issue 12-11

### 1800 SERIES TEST STATION QUADRANT OPEN FUSES

Damage to the DUT (Device Under Test) may occur, should a fuse in the +/-36 or +/-15 volt quadrant power lines open. As a result of an open fuse, the sector card drivers will go to one of the 36 volt driver

rails. If the fuse in the +36 or -15 volt lines opens, the sector card driver output goes to -30 volts. If the fuse in the -36 or +15 lines opens, the sector card driver output goes to +30 volts. This voltage swing will occur on all sector cards in the quadrant with the open fuse. Device testing should not be performed under these conditions since the 30 volts may damage the DUT.

To ensure system efficiency close attention should always be paid to consecutive failures. When an unusual number of successive failures occurs, the system should be checked. This can be done by either testing a known good device or by running Verdict. The practice of monitoring test results will ensure maximum system performance.

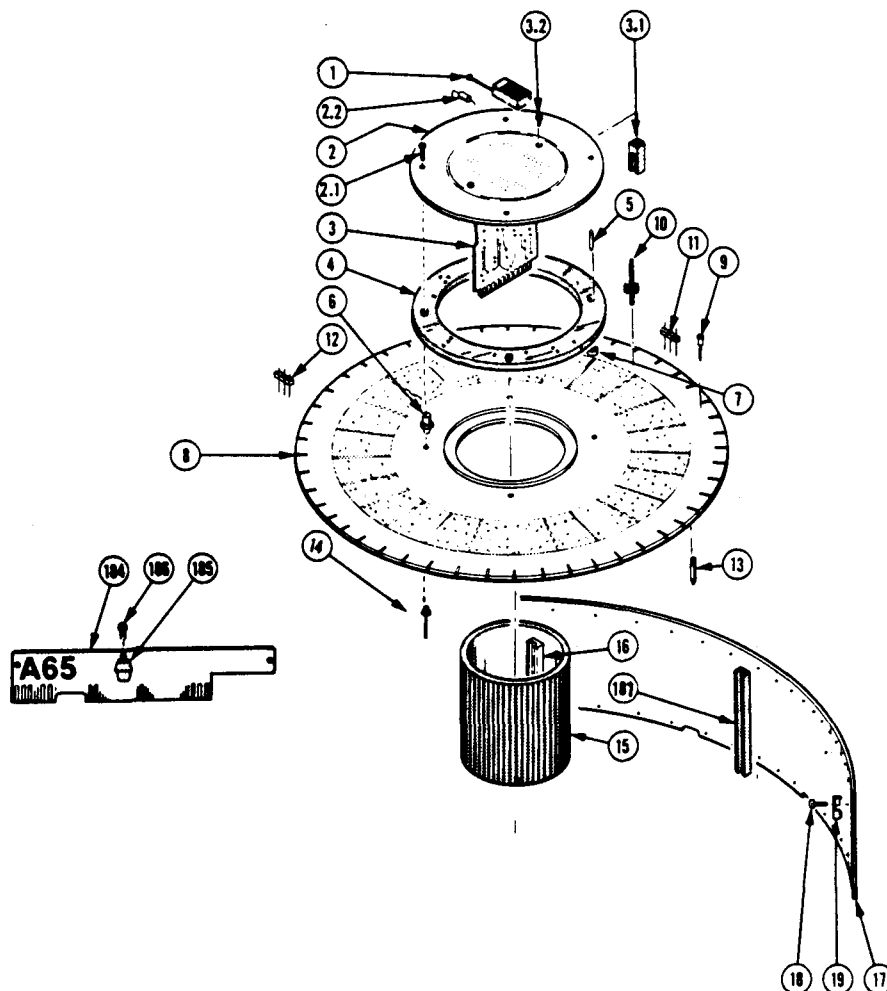
W<sup>2</sup> Issue 12-14

### 1807 FIGURE 2 MANUAL CORRECTION

In the 1807 manual, Volume 2, 070-4134-00, page 6-77 there are errors. The load board and hardware Fig. 2 index numbers 3 through 14 are incorrect. Shown below is the correct mechanical view of the load board and hardware plus the corrected part number listing.

(See illustration on following page)

## 1807 FIGURE 2 MANUAL CORRECTION (cont.)



-2.1 214-1878-00

4 THUMBSCREW:4-40 X 0.48,0.5 DIA,SST

80009 214-1878-00

(EACH CKT BD CONTAINS)

-2.2 131-0556-00

64 . BUS CONDUCTOR:CKT CD,12 FEM,PH BRZ

80009 131-0556-00

-3 020-0080-00

1 ACCESS.KIT,TEST:UNDERSOCKET ASSY

80009 020-0080-00

-----

- (SEE STANDARD ACCESSORIES)

-3.1 352-0139-01

2 . HOLDER,CKT CARD:

80009 352-0139-01

(ATTACHING PARTS)

-3.2 211-0119-00

2 . SCREW,MACHINE:4-40X0.25" 100 DEG,FLH,STL

83385 OBD

-4 354-0533-01

1 . RING,ELEC CONT:W/CONTACTS

80009 354-0533-01

-5 131-1699-00

188 . CONTACT,ELEC:POGO SPR LOADED

80009 131-1699-00

-6 129-0428-02

4 . SPACER,POST:0.45 L,2/4-40 THD THRU,0.25 HEX

80009 129-0428-02

-7 354-0541-00

2 . RING,SECURING:0.0781 ID X 0.188 OD,NYLON

80009 354-0541-00

-8 670-2831-XX

1 CKT BOARD ASSY:DC LOAD

-9 131-1720-00

384 . CONTACT,ELEC:FEM RCPT TO SPR CONT,POGO

80009 131-1720-00

-10 131-0589-00

1298 . TERM,PIN:0.46 L X 0.025 SQ,PH BRZ GL

22526 47350

-11 131-1343-00

2 . TERM. SET,PIN:36-0.525 L X 0.025 SQ

22526 65501-136

-12 131-1614-00

40 . CONTACT ASSY,EL:

22526 65502-136

-13 386-1559-00

4 . SPACER,CKT BD:0.47 H,ACETAL

80009 386-1559-00

-14 131-1401-03

4 . CONTACT,ELEC:RMT OR LOAD TO SCTR,GOLD PLTD

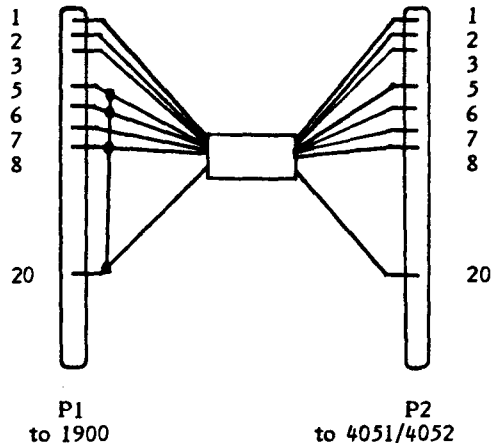
80009 131-1401-03

1900 RS-232 OPERATION

RE: 1900 OPERATORS MANUAL 070-3443-00

The 1900 RS-232 Remote Interface was designed to exercise a basic 3-wire handshake with the controlling terminal. To use a 4051/4052, several functions of the RS-232 must be "by-passed" to compensate for the 4050 series' more complex implementation of the RS-232 standard.

To allow a service tech, equipped with a 4051/4052, the ability to exercise the RS-232 functions, a small adapter must be built for interfacing between the 1900 RS-232 connector and the cable normally supplied with the 4051/4052 Data Communication Interface (Option 1). Construct this cable similar to Figure 1.



## Parts Used

P1 Plug 1 ea 131-0569-00  
 P2 Plug 1 ea 131-0570-00  
 Connector  
 Housing 2 ea 200-1667-00  
 Cable, 8 Conductor 6", 26AWG

RS-232 INTERFACE 4051/4052 TO 1900

FIGURE 1

Once the interface cable is constructed and connected, the following entries to the 4051/4052 will put it into terminal mode and allow the user to program the 1900 via the RS-232 port.

CALL "MARGIN", 0, 0, 0  
 CALL "TERMIN"

W<sup>2</sup> Issue 12-141980 OPT. 3 SERVICE MAINTENANCE INFORMATION

RE: 1980 OPT. 3 MANUAL, 070-4317-00

The 1980 Opt. 3 is a hardware/software option that programs the 1980 for NTSC transmitter monitoring. The system is designed to monitor and measure television signals in conformance with FCC Rules and Regulations (Part 73.689 - 73.699).

The 1980 Opt. 3 consists of one circuit board (672-1069-00) and the instruction manual, in addition to that provided with the base 1980 instrument. A Software Maintenance Manual is being developed as an extra cost accessory. A prerequisite for this manual will be a software license. 1980 Opt. 3 is also being offered as a customer installable option, 1980 F03. The 1980F03 will consist of the option 3 circuit board, the instruction manual, a filter board (670-7459-00) that is to be attached to the Video Data Converter board (672-0777-01), and an instruction sheet. The extra filter board is to be installed in the top filter position (position 1) on the VDC board if a filter is not already in place. Otherwise it will be discarded. This customer installable option will be offered to the customer with a price that will reflect the trade-in of the two option 1 boards that it is meant

(ARTICLE CONTINUED ON THE NEXT PAGE)

1980 OPT. 3 SERVICE MAINTENANCE  
INFORMATION (cont.)

to replace (672-0891-00 and 672-0939-00). A prerequisite for this mod will be that the 1980 must have version 2.1 of the Operating System installed.

The circuit board for 1980 Opt. 3 has been set up and is available for Exchange/R & R. It should be added to the On-Site board kits in those centers expecting to service a 1980 Opt. 3 instrument. As of the date of this publication, two 1980 Opt. 3 units will be in place, one each in Fargo, North Dakota and Maryman, Nebraska.

The 1980 power up diagnostics are not changed for option 3. Troubleshooting to the board/assembly level is basically the same as that covered in the present 1980 Service Manual (070-2936-00). Out-of-service diagnostics using the "SYSTEST FIRM" command will give the following print-out which can be used in further localizing a fault to this board. Those checks common to option 3 start at address 40000 (ADDR 40 below).

Name	Ver.Re1	Addr	Condition
SYSCtl	2.1	00	OK
SCHED	2.1	20	OK
DATMAN	2.1	21	OK
MTHPAK	2.1	22	OK
EVAL	2.1	23	OK
SYSCOM	2.1	24	OK
CMDSUP	2.1	25	OK
STACOM	2.1	26	OK
EDITOR	2.1	27	OK
IOCOM	2.1	28	OK
CLKFIL	2.1	29	OK
GRAPH	2.1	2A	OK
GRAFIX	2.1	2B	OK
MESCM1	2.1	2C	OK
MESCM2	2.1	2D	OK
MEASUP	2.1	2E	OK
MESCLC	2.1	2F	OK
MESRNG	2.1	30	OK
RFFT	2.1	31	OK
TDRV	2.1	32	OK

Name	Ver.Re1	Addr	Condition
TTSUP	2.1	33	OK
VDRIV	2.1	34	OK
VDIAG	2.1	35	OK
NVDRV	2.1	36	OK
TTINT	2.1	37	OK
03AAML	1.2	40	OK
03BBML	1.2	41	OK
03CCML	1.2	42	OK
03DDML	1.2	43	OK
03EEML	1.2	44	OK
03FFML	1.2	45	OK
03GGML	1.2	46	OK
03HHML	1.2	47	OK
03IIML	1.2	48	OK
03JJML	1.2	49	OK
03KKML	1.2	4A	OK
03LLML	1.2	4B	OK
03MMML	1.2	4C	OK
03NNML	1.2	4D	OK
03OOML	1.2	4E	OK
03PPML	1.2	4F	OK
03QQML	1.2	50	OK
03RRML	1.2	51	OK
03SSML	1.2	52	OK
03TTML	1.2	53	OK
ALAAML	2.3	54	OK
ALBBML	2.3	55	OK
ALCCML	2.3	56	OK
ALDDML	2.3	57	OK
ALEEML	2.3	58	OK
ALFFML	2.3	59	OK

READY  
\*

The instruction manual for Option 3 contains the instructions necessary for the user to operate his system in a prescribed manner. It also contains information concerning how waveform measurements are made in the 1980 and, thereby, becomes a useful tool for understanding the 1980 and diagnosing possible problems with the system's operation and some application problems.

W<sup>2</sup> Issue 12-14

### 2335/2336/2337 +40 VOLT REGULATOR OSCILLATES

Serial Numbers 2335 - B011250 or  
below 2336 - B010540 or below  
2337 - started at B10100.

If the 40 volt supply oscillates  
remove A10C231 to stop the  
oscillations.

W<sup>2</sup> Issue 12-12

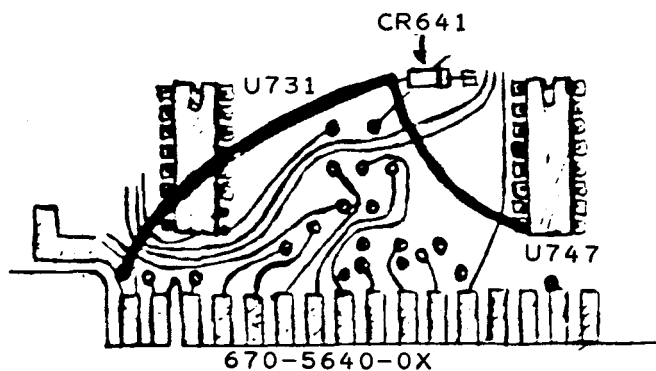
### 4027/4027A DISPLAY CONTROLLER

A sparkling effect, where vertical lines  
and horizontal scan lines jump back and  
forth may be observed on the screens of  
4027s and 4027As. This effect may be  
more noticeable on the "A" version than  
the non "A"s.

The cause of this phenomenon has been  
traced to noise on the Display Control  
boards, 670-5640-02 and below. The  
final fix will be a layout change to the  
ECB which will add a ground plane and a  
+5 volt plane. On the current boards  
there are only runs for these functions.

An easy method to test for this condi-  
tion is to type !CAL and function key 1  
to display a white screen. The symptoms  
will be jitter on the right side of the  
screen.

The manufacturing line has been hand ad-  
ding number 26 gauge wire in strategic  
points to better ground out the noise.  
This is not considered a modification  
because the ground runs are already  
there. Also the revision level of the  
board does not change.



GROUND IMPROVEMENT

The wire is added from Buss pin 72 to  
the anode of CR641 and to U747 pin 8 as  
shown in the drawing.

W<sup>2</sup> Issue 12-13

### 7912AD COMPATIBILITY OF REPLACEMENT POWER SUPPLIES FOR INSTRUMENTS BELOW SERIAL NUMBER B090749

REFERENCES: Modifications #M38841,  
#M39743, #M40488. Wizard's Workshop  
Issue 11-13, July 17, 1981, Pages  
32-42. Manual 070-2385-00, Figure  
3, Figure 5 and Figure 7-57.

Power supplies, Part Numbers  
620-0269-00, 620-0269-01, 620-0269-02  
and 620-0269-03 are no longer  
available.

The new power supply, Part Number  
620-0269-04, is not compatible with  
mainframes with Serial Numbers below  
B090749.

There is an 050-1417-00 mod kit  
available to make mainframes below  
Serial Number B090749 compatible  
with the new power supply.

This mod kit consists of a power  
supply, Part Number 620-0269-04,  
and instructions for installation.

W<sup>2</sup> Issue 12-14

### 7912AD REPLACEMENT HIGH VOLTAGE BRICK COMPATIBILITY FOR INSTRUMENTS BELOW SERIAL NUMBER B100913

REFERENCES: Wizard's Workshop Issue  
10-16, August 8, 1980, page 27.

Manual: 070-2385-00, Figure 4,  
Items 25 and 56.

Modification: #M45656

(ARTICLE CONTINUED ON THE NEXT PAGE)



7912AD REPLACEMENT HIGH VOLTAGE  
BRICK COMPATIBILITY FOR INSTRUMENTS  
BELOW SERIAL NUMBER B100913 (cont.)

The High Voltage brick, Part Number 119-0452-05 is no longer available. The new Part Number for the High Voltage brick is 119-0452-06. The new brick is not compatible with mainframes below Serial Number B100913 which have not been upgraded with the focus centering adjustment modification kit, 040-1073-00. An 050-1616-00 mod kit is available to provide the necessary compatibility. This mod kit consists of a High Voltage brick Part Number 119-0452-06, a focus centering potentiometer, and instructions for installation.

For instruments below Serial Number B050506 requiring the modified rear CRT shield use mod kit 050-1371-01. The mod kit contains a new High Voltage brick Part Number 119-0452-06, a focus centering potentiometer, and a modified rear CRT shield. Mod kit 050-1371-00 is no longer available.

W<sup>2</sup> Issue 12-14

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