Tektronix®
COMMITTED TO EXCELLENCE

COMBINATION EDITION

Wizards Workshop

ALL SERVICE QUESTIONS FROM EUROPE, MIDDLE EAST, AND AFRICA SHOULD BE ADDRESSED TO THE EUROPEAN MARKETING CENTER SERVICE GROUP IN THE NETHERLANDS.

TEKTRONIX INTERNAL USE ONLY

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PERSONNEL CHANGES

DAN LUKE - FSI Seattle

Dan is a graduate of Renton Vocational Institute and comes to Tek from Commodore Business Machines. Dan enjoys spending his free time with his family and "fishing". Welcome to Tek Dan!

MIKE PETER - FSI Seattle

Mike joins Seattle's field Service Team with three years experience in Field engineering magnetic analysis, Eddy current and ultrasonic NDT. Mike completed his electronic education in Minneapolis and enjoys his home in the Pacific Northwest where he actively pursues his hobbies of skiing, flying and sailing. Welcome aboard Mike!

TOM LOWE - Boston

Tom is the newest member of the Boston team filling the position of ET-1 on the T&M second shift. Tom comes to Tek with 10 years in the USAF as an Avionics Instrument Systems Technician.

Following assignments in New Mexico and Thailand, Tom has spent the last six years stationed in California. Tom returns to his native New Hampshire with his wife, Jane and daughter, Megan. His hobbies include photography, snow and water skiing, and camping. Welcome Tom!

MARTIN PEREA - Albuquerque

Martin is the newest member of the IDD Field Service Team and comes to Tek from NCR Field Service. Welcome to Tek Martin!

DOUGLAS RUPP - Albuquerque

Doug has recently joined Systems Field Service after recently being discharged fron the U.S. Navy. Welcome aboard Doug!

CHARLES DUNDAS - Orlando

Charlie joins Tek as an ET-1 after six years as an electronics technician in the Navy. Welcome Charlie!

MORE PERSONNEL CHANGES...

GUS DIAZ - Woodbridge

Prior to joining Tek in October 1980, Gus worked several years for Perkin-Elmer Corp. where he bagan as a Technician and worked his way up to a Nation Tech. Support position. That is some track record. Welcome Gus!

RICH SANTUCCI - Woodbridge

Rich transferred to Field Service following a year and a half of outstanding service in the Woodbridge In-House group. Rich exemplifies one who sets goals and puts forth the effort required to achieve them. We wish you continued success in your new endeavor Rich!

ROBERT DOWD - Woodbridge

Prior to joining Tek in January, 1981, Rob worked for Perkin-Elmer Corp. for several years as a Technician where his abilities and contributions were recognized and respected by his employer. Welcome to Tek Rob!

We welcome all of our new hires to Tek and want to express our best wishes for much success in your future with our Service Team.

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PROMOTION

HENRY MCNAIR - Dallas

Henry has accepted promotion from ET II to Service Center Supervisor I. and will be supervising a portion of the day shift operation.

Many of you will remember Henry as the Evening Shift Supervisor in Dallas before his departure from Tek about a year and a half ago. Henry returned six months ago as an ET II.

Congratulations Henry and we wish you continued success.

--Editor

GENERAL

NEW HONG KONG DISTRIBUTOR

An agreement was signed recently with Schmidt & Co. (Hong Kong) Ltd., providing for sales of our products by that firm in Hong Kong. Thus, Schmidt's service department, headed by S.H. To, has undertaken support of Tek oscilloscope, communication, design automation and information display products in that country.

We welcome Schmidt & Co. to the organization of distributors, subsidiaries, and service centers that service Tek products worldwide. For more information, contact Stan Jewett in the Distributor Sales Office, M/S 51-297, Extension 8864-Y3.

Submitted by--
Stan Jewett

NEW VIDEO TAPES/SERVICE TECHNICIANS

The following tapes can be requested from Marketing Distribution, Ext. 8078 Merlo, MS: 54-031. (60 day no charge loan)

General Purpose Logic Analyzer Concepts 068 0120-00

Super good tape for introduction to logic analyzer concepts. It explains modes of operation, hook-up, data acquisition and triggering. A must for a technician who wants to advance has electronic knowledge. (10 minutes)

Advanced Logic Analyzer Concepts 068-0118-00

Explains the applications of serial-logic analysis, signature analysis. Viewer needs a logic analyzer background to understand the content. This is an excellent follow-on to the first logic analyzer tape. (15 minutes)

4611/4612 Hard Copy Introduction 068-0123-00

An excellent tape. It explains how to load paper rolls, the dry-toner, and how to set-up unit for good copy. Preventive maintenance in general. A must tape for Field Service Specialists group.

4611/4612 Concepts, Disassembly, Assembly, Alignment 068-0124-00

Another excellent tape which explains the concepts of electrostatic copying and operation of the styli-tape. It also has a good description of repair, and alignment for good copy. This tape, plus the manual, are the recommended training tools. A must for all Field Service Specialists. (60 minutes)

Tektronix GPIB Implementation

Ask for by name
Not for customers

A reasonably good explaination of what GPIB is all about. Informative tape for someone who knows nothing about GPIB and is curious. It mentions codes and standards but not to a useful depth. Good sales oriented tape. (26 minutes)

Submitted by--
Dick Hornicak
Maintenance Trng.

TROUBLESHOOTING SYMPTOMS HANDBOOKS

There are now available three (3) "Troubleshooting Symptoms" handbooks.

Graphic Terminals - (401X, 4610, 4631)

Raster Scan - (4025, 4027)

Graphic Systems (4051, 4052, 466X, 4907)

You can obtain a copy of these handbooks from the following locations:

Maintenance Training Group - Beaverton
Eastern Service Training Manager
Western Service Training Manager

Submitted by--
Dick Hornicak
54-077, Ext. 8843 MR

TM500

DM502 AC HOOK

If you are experiencing erroneous readings on the 20V, 200V, and 500V AC ranges, there is a mod to correct this problem. C145 and R144 (Ref. Schematic #1) were made test selectable but typical values were not given for these parts.

Typical values are: C145 - Part Number 281-0622-00 (47pf, 500V, 1%); R144 - Part Number 317-0106-00 (10M Ω, 125W, 5%).

Adding R144 and C145 using the above values will almost always cure this problem, but it may be necessary to vary these values slightly. The mod was originally written to compensate for varying capacitance between batches or circuit boards. The problem will normally be noticed between 20Hz and 2KHz.

--Terry Turner
92-236, Ext. 1288

FG504 FUSE MODIFICATION KIT

Mod Kit 040-0997-00 is now available to implement Mod Number 41569 (Reference: Wizard's Workshop, December 12, 1980, FG504 1 amp fuse modification).

--Pat Wolfram
92-236, Ext. 1582

5000 SERIES

5223, +86 VOLT POWER SUPPLY

Reference: 5223 Instruction Manual P/N 070-2932-00
Corporate Mod #M42033

To assure that the +86 volt supply stays within specifications, a resistor is being changed on the Power Supply Board, A7. R1120 is being changed from a 113K ohm to a 111K ohm, P/N 321-0617-00.

--John Eaton
58/511, Ext. 5222

MEDICAL

MEDICAL BUSINESS UNIT PHASE-OUT PLAN

The Squibb Corporation has purchased the Tek Portable Patient Monitor (PPM) Business. There is a Medical Monitor Business Phase-Out Service Plan that has been written and distributed to all Service Center Supervisors. The intent of the Support Plan is to detail the process of turning over to the designated SQUIBB subsidiary the responsibility of providing service to our currently installed PPM base.

If you have not seen this document, then I suggest getting with the Service Center Supervisor.

--Dave McKinney
58/511, Ext. 7072

MEDICAL PRODUCTS, ROLE OF SERVICE SUPPORT

Effective *IMMEDIATELY* Factory Service will assume the role of providing technical support for all troubleshooting types of questions on Portable Patient Monitor products.

Questions relative to reliability, mods, parts problems, etc., should be directed through the normal channels that resolve those specific problems.

--Dave McKinney
58/511, Ext. 7072

492 2ND CONVERTER (P/N 119-1096-00) REPLACEMENT

A Field Mod Kit (P/N 050-1461-00) has been set up to replace the 2nd converter (P/N 119-1096-00) in the following instruments:

492 B010100 - B010739

492P B011000 - B011053

The 050-XXXX-XX kit contains a 2nd converter replacement (P/N 119-1096-00), a new tunable 2nd L.O. Assembly (P/N 119-1022-01), a harmonica cable assembly, and a data sheet. The tunable 2nd L.O. provides a means of matching the 2nd L.O. to the 2nd converter to assure proper operation. If your instrument is above the listed serial numbers or already has a tunable 2nd L.O. assembly installed, use the 119-1096-00 as a direct replacement for your defective 2nd converter.

--Rich Andrusco
58/511, Ext. 5609

492/P 2ND L.O. REPLACEMENT

The tunable 2nd L.O., part number 119-1022-01, is not a direct replacement for the fixed frequency 2nd L.O., part number 119-1022-00, which is no longer available.

An 050-1460-00 Kit is set-up to replace the 2nd L.O. part number 119-1022-00 for 492's within S/N B010100 to B010739.

If your instrument has the tunable 2nd L.O. (P/N 119-1022-01) use P/N's 119-1022-01 as a direct replacement.

Refer to the following calibration procedure for the calibration of the tunable 2nd L.O. (P/N 119-1022-01).

ELECTRICAL PARTS LIST

Ckt No.	Part Number	Description
A20	119-1022-01	Oscillator, R.F., 2nd L.O.

CALIBRATION

A. Check/adjust oscillator frequency to 2182.0 MHz as follows:

1) Set the FREQUENCY RANGE to Band 1 and FREQ SPAN/DIV to MAX on the 492 under test.

2) Connect a microwave frequency counter, such as Hewlett Packard 5342A, with a sensitivity of -20 dBm, or better, to the 2nd L.O. output connector.

3) Measure the 2nd L.O. frequency. Frequency should read 2182.0 MHz ±1.0 MHz; if not, proceed with the next step.

CAUTION

Do not adjust the two slotted slugs. These are Varactor diode mounts. Adjustment of these slugs could cause damage to the 2nd L.O.

(CONTINUED)

4) Using a 5/16-inch open-end wrench and a 5/64-inch Allen wrench, loosen the lock nut and adjust the Fine Tune slug in the cavity for a counter reading of 2182.0 MHz ±1.0 MHz.

5) Tighten the lock nut, check the oscillator frequency and, if it is not correct, go back to Step 4.

6) Refer to page 3-43, Step 6 for 2nd L.O. frequency and tuning range adjustments in the 492/P, Volume 1, Service Instruction Manual (pn 070-2727-02).

ALTERNATE CALIBRATION METHOD

(If you don't have a 2.26 GHz counter, use the alternate procedure on the following page.)

ADJUST 2nd LO FREQUENCY

A. Test equipment setup is shown in Fig. 3-32. Apply 10ns and 0.1μs markers from the time mark generator to the Input of the test spectrum analyzer (frequency range 2.0GHz to 3.0GHz). This should produce accurate frequency markers every 10MHz around a center frequency of 2.2GHz.

B. Tune the test spectrum analyzer to the 2180MHz marker and reduce the Freq Span/Div to 1 MHz, keeping the 2180MHz marker centered. 2182MHz (correct 2nd LO frequency) signal should appear two divisions above 2180MHz.

C. Remove the time markers from the test spectrum analyzer Input and connect the 2nd LO output to the test spectrum analyzer input.

D. Switch the 492 FREQUENCY RANGE to 0-4.2GHz (0-1.8GHz, Option 1) or band 1.

E. Check--that the 2nd LO frequency is 2182 MHz ±1MHz (1 to 3 divisions above the 2180 center frequency with a span/div of 1MHz). If the 2nd LO frequency is out of tolerance, proceed to Step F.

****CAUTION**** -- *Do not adjust the two slotted slugs. These are Varactor diode mounts. Adjustment of these slugs could cause damage to the 2nd L.O.*

F. Using a 5/16-inch open-end wrench and a 5/64-inch Allen wrench, loosen the lock nut and adjust the Fine Tune slug in the cavity for a counter reading of 2182.0 MHz ±1.0 MHz.

G. Tighten the lock nut, check the oscillator frequency and, if it is not correct, go back to Step F.

H. Refer to page 3-43, Step 6 for "2nd L.O. Frequency and Tuning Range Adjustments" in the 492/P Service, Volume 1 (P/N 070-2727-02).

(DIAGRAM CONTINUED ON THE FOLLOWING PAGE)

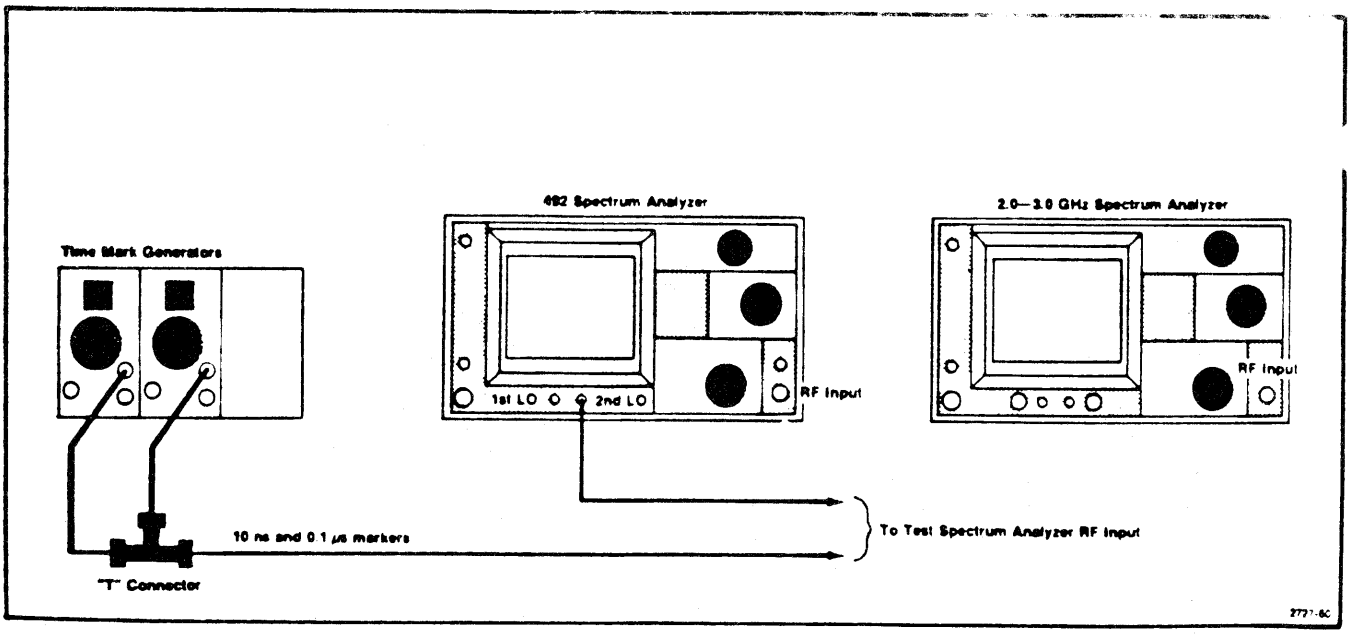


Fig. 3-32. Test equipment setup for check and adjustment of 1st and 2nd LO frequency.

--Rich Kuhns
58/511, Ext. 6782

492/P 100HZ SIDEBANDS CAUSED BY FAN

Its' been found that 100HZ sidebands can be caused by mechanical vibration between the RF deck and the fan. This symptom can be verified by stopping the fan. At present manufacturing is loosening the mounting hardware to the fan to lower the sidebands. An 040 Kit is being set-up to shock mount the fan for instruments that display this symptom.

If you tighten the fan mounting hardware, you must check the 492/P for 100HZ sidebands before returning to the customer. If units with loose fan mounting hardware is causing the customer complaints, please contact Service Support.

--Rich Kuhns
58/511, Ext. 6782

7L18 SPOT-OF-GOLD REPAIR PROGRAM (INTERNATIONAL)

There appears to be some confusion on the Business Units' repair of 7L18 Spot-of-Gold connectors. Any 7L18 that comes into a Service Center with SPOT-OF-GOLD connectors should be returned to Factory Service for repair. When returning 7L18's to Factory Service be sure to indicate on the accompanying paperwork *"ATTENTION 7L18 SPOT-OF-GOLD REPAIR PROGRAM!"*. Factory Service will send units to the FDI Manufacturing line where all SPOT-OF-GOLD connectors will be replaced To identify the rework the manufacturing line will mark the 7L18 on the lower right side of the back panel with *"REV. 1"* and the *"DATE"*.

After rework the 7L18 will be returned to Factory Service where it will be routinely repaired (if necessary) and fully re-calibrated. The 7L18 will be shipped back to the originating Service Center.

This is not a recall and units should be sent in one-at-a-time to help distribute the work load in Factory Service. The estimated turn-around-time will be approximately three weeks plus shipping time. Any questions pertaining to the status of units being reworked should be sent to Jim Bevens, Factory Service, Delivery Station 56/103.

The following is a list of Serial Numbers that have been reworked but were not marked with the "REV. 1". If one of the units comes in for service, please mark it in the lower right corner of the rear panel with *"REV.1"* and the *"DATE"*.

B020187	B020249	B020356	B020471	B020538
B020208	B020265	B020369	B020476	B020553
B020217	B020300	B020398	B020504	B020556
B020225	B020329	B020419	B020528	B020559
B020229	B020350	B020428	B020537	B020636

THIS PROGRAM APPLIES ONLY TO 7L18'S. ALL OTHER SPECTRUM ANALYZERS WITH SPOT-OF-GOLD SHOULD BE SENT IN UNDER THE MANUFACTURING REPAIR PROGRAM, IF QUALIFIED.

THIS PROGRAM WILL BE IN EFFECT UNTIL SEPTEMBER, 1982.

--Rich Kuhns
58/511, Ext. 6782

7L18 SPOT OF GOLD REPAIR PROGRAM (U.S. ONLY)

There is some confusion on the Business Unit's repair of 7L18 Spot-of-Gold connectors. All 7L18's that come into a Field Service Center that have Spot-of-Gold connectors should be returned to Factory Service for repair. Send the 7L18 to Factory Service, Attention 7L18 Spot-of-Gold Repair Program. Factory Service will send the unit to the manufacturing line where all Spot-of-Gold connectors will be replaced. The manufacturing line will mark the 7L18 on the back panel in the lower right side with Rev. 1 and the date. The unit will be sent back to Factory Service, where it will be repaired and calibrated. Repairs and calibration will be billed to the customer if the unit is out of warranty. The 7L18 will be shipped back to the Field Service Center that originally sent the unit in.

This is a list of Serial Numbers that were reworked but not marked. If one of these instruments comes in for service, mark it in the lower right side with Rev. 1 and the date.

B020187	B020419
B020208	B020428
B020217	B020471
B020225	B020476
B020229	B020504
B020249	B020528
B020265	B020537
B020300	B020538
B020329	B020553
B020350	B020556
B020356	B020559
B020369	B020636
B020398	

THIS PROGRAM APPLIES ONLY TO 7L18'S. ALL OTHER SPECTRUM ANALYZERS WITH SPOT-OF-GOLD SHOULD BE SENT IN UNDER THE MANUFACTURING REPAIR AND RETURN PROGRAM, IF QUALIFIED.

THIS PROGRAM WILL BE IN EFFECT UNTIL SEPTEMBER, 1982.

--Rich Kuhns
58/511, Ext. 6782

TSP 1/11 CALIBRATION PROCEDURE

The calibration of Convergence Sync Amplitude and Convergence DC Level cannot be accomplished correctly as described in the TSP1 Instruction Manual (P/N 070-2621-00) or the TSP11 Instruction Manual (P/N 070-2664-00). In both manuals, change Steps 8a and 9a to read as follows:

> *Connect the TSP1 (or 11) Convergence Output (P246) to the input of a 1480 (or 1481). Terminate in 75 ohms.*

Manual changes have been requested. Thanks to Jerry Smith in Irvine for providing this information.

--Bill Bean
58/511, Ext. 6507

1480 SERIES HV MULTIPLIER

A reliability problem exists in some High Voltage Multipliers, (P/N 152-0587-00), from High Voltage Devices, Inc. The following parts are affected:

CMX 192

CMX 192A

CMX 192B

These units are to be replaced with Model CMX 192C as the instrument comes in for service. The model number, Tek part number and manufacturer's name are printed on the part for easy identification.

The affected parts are to be purged from stock and replaced with the CMX 192C or with parts from Murata, Inc., when they become available.

--Bill Bean
58/511, Ext. 6507

P6042 DEFECTIVE PROBE CABLES

Reference: Probe Cable P/N 175-0431-01

The P6042 probe cable, P/N 175-0431-01, is about 3/16" too short and cannot be plugged into the transformer, (see Figure 1). Since the cable cannot be lengthened, I suggest the present stock be checked and purged as necessary.

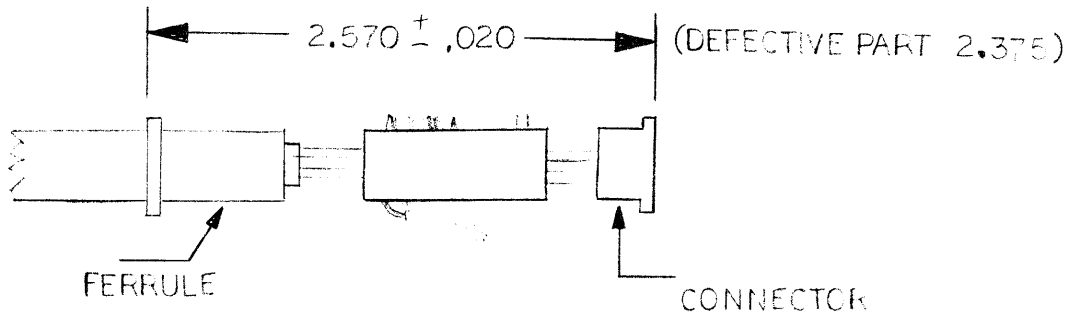


FIGURE 1

--Dave McKinney
58/511, Ext. 7072

834 CHIP SELECT GLITCHES

Some 834's before B020540 have experienced timing problems on the processor board (670-6926-00/01) resulting in glitches occurring on the ROM chip selects.

The symptoms can be seen while looping 30 to 50 times on the internal data test resident in ROM. If the instrument experiences chip-select glitches, loss of some character segments on the display will become apparent while running the data test.

The glitch can be seen with a dual trace oscilloscope such as a 475. Attach Channel #1 to U461 Pin 4 ($\overline{MI}$) and trigger on the falling edge. Select and run the internal data test. Run the test once and check for proper trigger. Next attach Channel #2 to U141 Pins 5, 6, or 7 (these are the chip-select lines for the ROMS). A glitch may occur on either the falling edge or rising edge of $\overline{MI}$. Pictured in Figure 1 is a gross example of a glitch at the trailing edge of $\overline{MI}$, indicating a problem. Any glitch exceeding .5 volt in magnitude should be considered a problem.

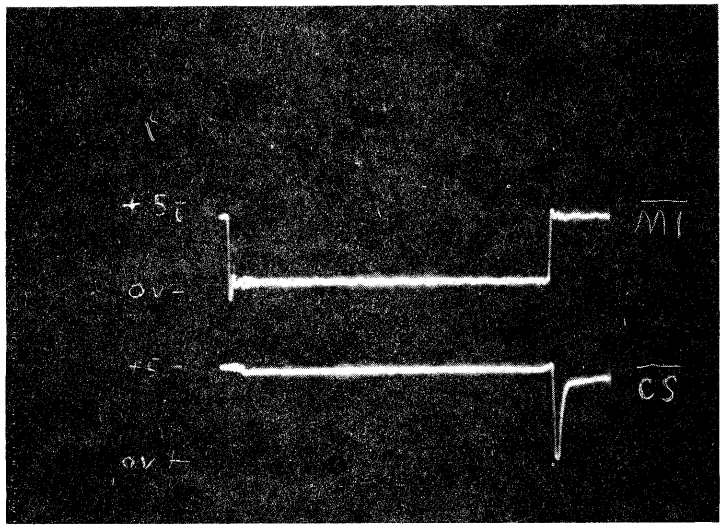


FIGURE 1

(Continued)

To fix, install the following:

1. If two 300pf capacitors (P/N 283-0213-00) are connected from Pin 1 to Pin 3 of U321 and from Pin 1 to Pin 5 of U326, remove them.

2. Change U261 from a 74LS260 to a 74S260 (156-0966-00). Note: Bend and lift Pin 9 of the I.C. before installing into the board.

3. Clip off Pins 5 and 6 of U341.

4. With wire, connect Pin 8 of U335 to the vacant pad under Pin 6 of U341.

5. With a wire, connect Pins 9, 10, and 11 of U335 to the vacant pad under Pin 5 of U341.

6. Cut the run from U141 Pin 3 to U321 Pin 3. Connect a 100 ohm resistor (315-0101-00) in series with the run. Add a 220pf capacitor (283-0108-00) from U141 Pin 3 to ground.

7. Cut and lift Pin 2 of U141 and solder to one end of a 100 ohm resistor (315-0101-00). Solder the other end to Pin 13 of U141. Add a 220pf capacitor (283-0108-00) from the elevated Pin 2 U141 to ground (Pin 7).

8. Cut and lift Pin 9 of U261, and solder to one end of a 100 ohm resistor (315-0101-00). Solder the other end to Pin 4 of U261. Add a 220pf capacitor (283-0108-00) from the elevated Pin 9 to ground (Pin 7).

If any questions, please call. Refer to P.I.C.N. numbers 50 Rev. A & 72 Rev. A.

--Craig Wasson
92-236, Ext. 1564

851: NEW COUNTER BOARD REPLACEMENT

Recently, the 851 counter circuit board, (P/N 670-4829-00), was modified to include the edge trigger piggyback board (P/N 670-5339-00) and is no longer orderable. The 670-4829-00 board is replaced by a 670-4829-02 counter board, which will serve as a direct replacement in 851's between Serial Numbers B010100 - B019999.

If your 851 falls within this serial number range, order 050-1071-01. This kit includes the new counter board and installation instructions. If your 851 falls above B019999, order the 670-4829-02 as a direct replacement.

If any questions, please call.

Reference: Mod M40329.

--Craig Wasson
92-236, Ext. 1564

305 NEW SERVICE MANUAL PART NUMBER

An updated 305 Service Manual is now available. It may be ordered under P/N 070-2423-01.

--Mike Laurens
58/511, Ext. 6246

314,335 IMPROVED RELIABILITY OF VARIABLE CAPACITORS

Serial #314 - 306042 and Below
Serial #335 - 305721 and Below
Reference: 314 Manual P/N 070-1824-00
335 Manual P/N 070-2423-01

To improve reliability change:

314 on Vertical Amplifier Board--

C34 From 1.8 - 10pf to P/N 281-0236-00, 2-12pf
C74 From 1.8 - 10pf to P/N 281-0236-00, 2-12pf
C154 From 2-18pf to P/N 281-0237-00, 2-18pf

335 on Vertical Amplifier Board--

C110 From 2-18pf to P/N 281-0237-00, 2-18pf
C120 From 2-18pf to P/N 281-0237-00, 2-18pf

On Attenuator Board--

C534 From 2-18pf to P/N 281-0237-00, 2-18pf
C537 From 2-18pf to P/N 281-0237-00, 2-18pf

--Mike Laurens
58/511, Ext. 6246

335 P/N CHANGE FOR Q100 & Q200

Serial #306091 and Below
Reference: 335 Manual P/N 070-2423-01

Due to availability, Q100 and Q200 have changed from (old) P/N 151-1091-00 to (new) P/N 151-1032-00. To ensure the circuit performs properly, the following resister must be changed with the addition of the new part number:

R103 From 402Ω to P/N 321-0030-02, 20Ω

R104 From 402Ω to P/N 321-0030-02, 20Ω

R203 From 402Ω to P/N 321-0030-02, 20Ω

R204 From 402Ω to P/N 321-0030-02, 20Ω

In instruments above the serial number range, use P/N 151-1032-00 as a direct replacement.

--Mike Laurens
58/511, Ext. 6246

335 VERTICAL POSITION RANGE INCREASED

Serial #306241 and Below
Reference: 335 Manual P/N 070-2423-01

To extend the vertical position range, change on the Vertical Amplifier board:

R120 From 57.6KΩ to P/N 321-0306-00, 15KΩ

R220 From 57.6KΩ to P/N 321-0306-00, 15KΩ

R121 From 47.5KΩ to P/N 321-0342-00, 35.7KΩ

R221 From 47.5KΩ to P/N 321-0342-00, 35.7KΩ

--Mike Laurens
58/511, Ext. 6246

400 SERIES LOOSE HANDLES

A new screw, P/N 213-0139-01, replaces the old part for securing the handle to the cabinet. A nylon lock patch is used in the new part which is more effective than the nylon plug in the old screw.

--Mike Laurens
58/511, Ext. 6246

442 BNC RELIABILITY

Serial Number B022300 - B023400

The instruments between these serial numbers have shown a higher than normal failure rate of loose BNC connectors and/or cracked vertical input resistors (R4101, R4201). These instruments were shipped without having LOCKTITE applied to the securing BNC nut. Instruments before and after the serial number break do have LOCKTITE applied and show almost no failures for loose BNC's.

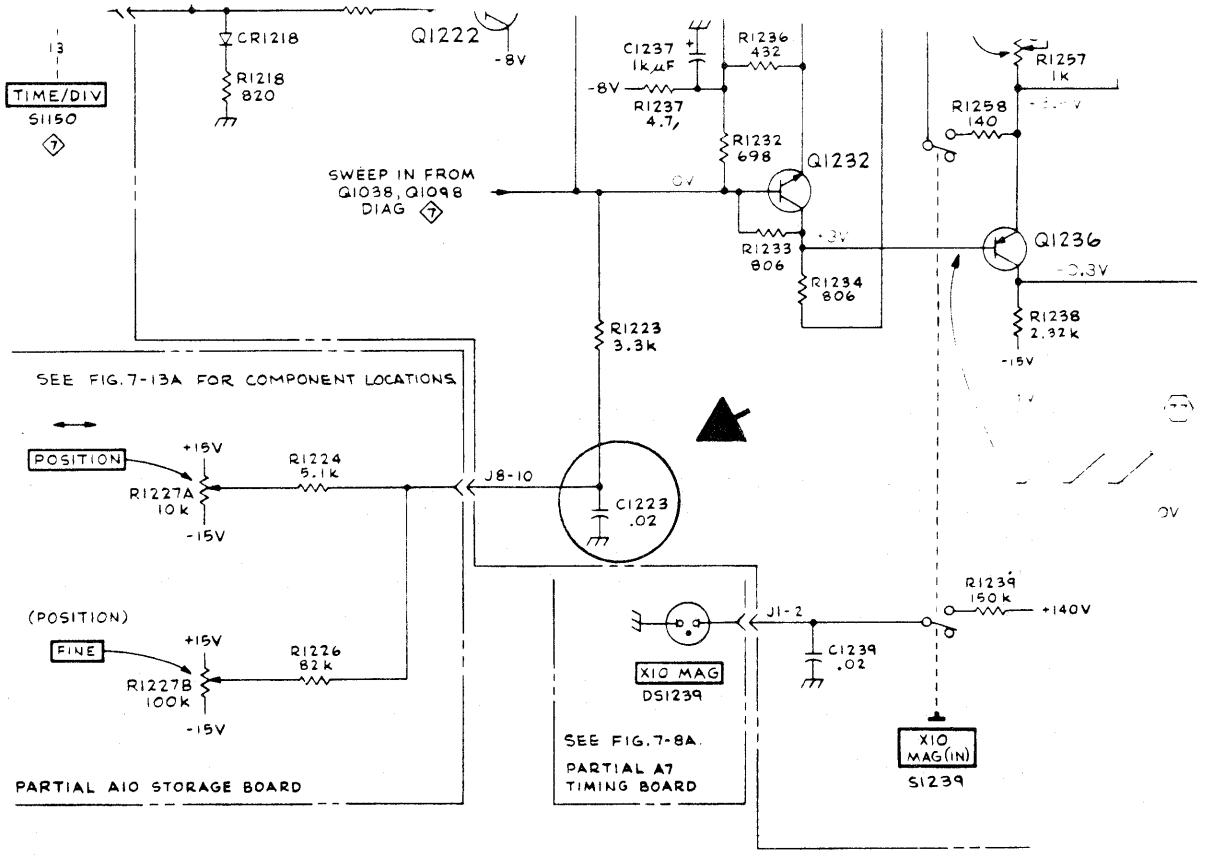
Any instruments in for service which have loose BNC's should be repaired by applying LOCKTITE to the threads of the BNC before the nut is applied. When changing BNC's the same practice is used. LOCKTITE, or any other brand, may be purchased locally or a 10cc bottle ordered as P/N 006-2517-00.

--Mike Laurens
58/511, Ext. 6246

464, 466 TIMING ERROR in 10X MAGNIFICATION

Reference: 464 Manual P/N 070-1653-01
466 Manual P/N 070-1753-01
Schematic 9 Horizontal Amplifier
Serial Numbers: 464 B145635 and Below
466 B151080 and Below

With the timing set for 50µ sec/div X 10 magnification, the first 10 divisions of display may be out of specification. To bring the timing into specification, C1223 changes from a .02uf capacitor to a 2000PF, 500 volt capacitor, P/N 283-0104-00.



--Mike Laurens
58/511, Ex. 6246

T912 STORAGE CIRCUIT, Q942 FAILURE UPDATE

Reference: "T912 Storage Circuit, Q942 Failure", W^2 Issue 9-20, Page 8
Serial Numbers: B016846 and Below

CR944, P/N 152-0141-02, 30V, 150MA, replaces C943 on the base of Q942. C943 was added in a previous mod to protect Q942, but does not provide the reliability needed for the circuit. To protect Q942, first remove the capacitor, if present, then add CR943 with the cathode connected to the base and the anode connected to the emitter.

--Mike Laurens
58/511, Ext. 6246

4663 GPIB HANGS WHEN LOADED DOWN

GPIB communications may hang if there is two or more other GPIB devices connected to the 4663. This problem is found in firmware version 4 and will be corrected in the next F/W version.

The solutions are to disconnect any extra devices to insure that only one GPIB device is connected to the 4663 at a time, or modify the GPIB board as follows:

1) Locate the capacitor C137, which is located at the end of U137.

2) Cut and lift the leg of C137 that goes to pin 9 of U137.

NOTE: If there is no visible connection between C137 and pin 9 of U137 this board is already compatible with version 4 F/W. No modification is necessary.

This modification is temporary, and should be performed only when GPIB problems occur with a version 4 product.

--Larry North
63-503 EXT. 3926

4663 VISCOUS OIL DAMPER

On the end of each pen drive motor capstan, there is a viscous oil damper. It is normal for this damper to contain an air bubble in the oil reservoir and to have a thin residue of oil on its outer surface. The damper is not defective when these items appear. The air bubble helps compensate for tolerances and heat expansion. The thin oil residue is inherently present on the surfaces of the damper, though it serves no purpose. Because of this oil residue the following caution has been added to the 4663 Service Manual.

> CAUTION: *Oil residues with electrical insulating properties are present on the viscous dampers. Do not touch circuit boards or plug connectors without first washing your hands if the dampers have been handled. Oil may prevent electrical contact or result in excess capacitance on circuit boards and plugs.*

Isopropyl alcohol is a partial solvent for silicone oil such as that used in these dampers. It is the primary cleaning agent to be used to clean up oil residues. Most other solvents effective for removing silicone oil will also attack the polycarbonates used in 4663 parts such as the damper covers.

Diesel fuel and Kerosene are two acceptable solvents for cleaning off silicone oil, but these should be used only when a large or excessive amount of silicone oil needs to be removed. Both of these solvents also leave an oily residue which, if left, may continue to attack plastics. The diesel or Kerosene oil film can be removed with Isopropyl alcohol.

The best policy to prevent problems with silicone oil is to avoid handling the dampers whenever possible.

--Larry North
63-503 EXT. 3926

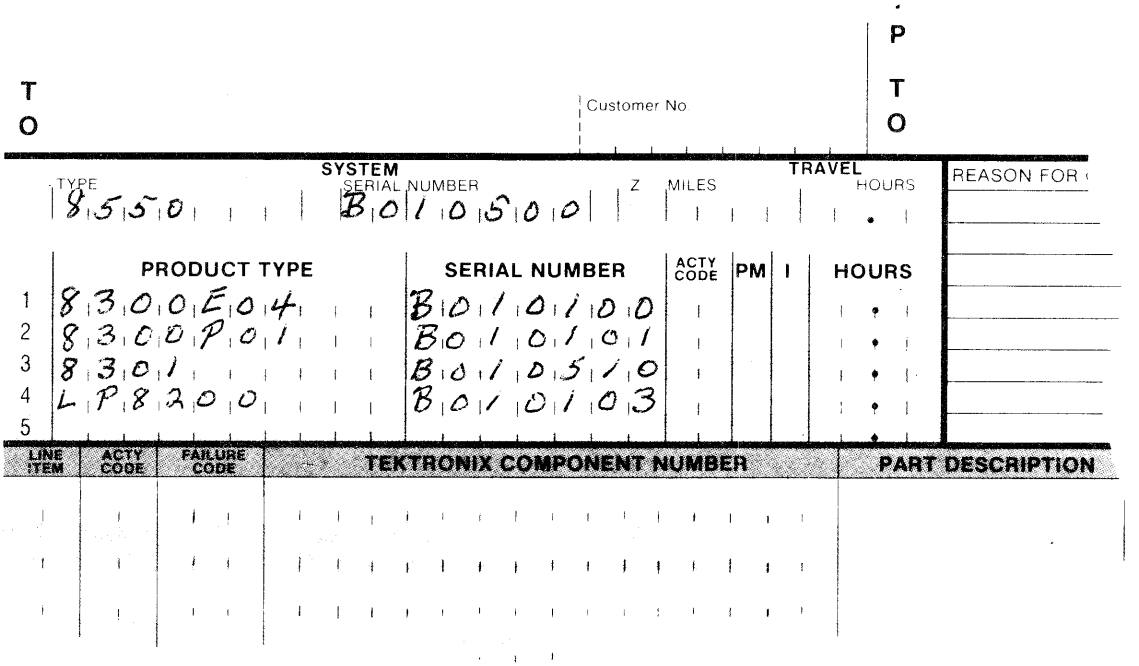
EMULATORS ARE PRODUCTS

In order to have more accurate reporting of service history, I am requesting you to take a closer look at the on-site Service Record (000-2085-01). In particular, examine the system type/product type of the attached partial service record.

The system type and serial number go on the top line of the Box. For MDP products your three choices are 8001, 8002A or 8550.

As you know, an Emulator (with minor electrical changes) will operate in an 8001, 8002A, or 8550. Today, most Emulators are reported as a failure against the System (8001, 8002A, or 8550). This downgrades the reliability data for the mainframe and overstates the reliability of the Emulator. Emulators and Prototype Control Probes are products and must be reported by their product nomenclature.

Product types and serial or ID numbers go on line 1 through 5. See attached pages for product nomenclatures.



The above example on Line 1 shows an 8300E04 (Z80A Emulator) failed in a 8550 System. Line 2 shows an 8300P01 (8080A prototype control probe) failed in a 8550 system. Line 3 shows an 8301 failed in a 8550 system. Line 4 shows an LP8200 failed in a 8550 system.

The above method of reporting failures will state the system and product failure data correctly. The actual problem and corrective action is stated on other portions of the service record.

8002A Microprocessor Lab
(Includes 32K Program Memory)

Product Nomenclature

8002F01	8080A Assembler Software Support
8002F1A	MDL/8080A/8085A Software Support (requires 64K Program Memory & Option 01 or 05)
8002F02	6800 Assembler Software Support
8002F2A	MDL/6800 Software Support (requires 64K Program Memory & Option 02)
8002F03	Z80A Assembler Software Support
8002F3A	MDL/8080A/Z80A Software Support (requires 64K Program Memory & Option 03)
8002F04	TMS9900 Assembler Software Support
8002F05	8085A Assembler Software Support
8002F06	F8/3870/3872 Assembler Software Support
8002F07	1802 Assembler Software Support
8002F08	8048/8021 Assembler Software Support
8002F09	6500/1 Assembler
8002F13	8086/8088 Assembler
8002F14	Z8000 Assembler
8002F15	68000 Assembler
8002F16	8080A Emulator Support
8002F17	6800 Emulator Support
8002F18	Z80A Emulator Support
8002F19	TMS9900 Emulator Support
8002F20	8085A Emulator Support
8002F21	F8/3870/3872 Emulator Support
8002F22	1802 Emulator Support
8002F23	8048/8021 Emulator Support
8002F24	6500/1 Emulator Support (Includes Probe)
8002F28	8086 Prototype Debug Support
8002F29	Z8000 Prototype Debug Support
8002F30	68000 Prototype Debug Support
8002F31	8080A Prototype Control Probe
8002F32	6800 Prototype Control Probe
8002F33	Z80A Prototype Control Probe
8002F34	TMS9900 Prototype Control Probe
8002F35	8085A Prototype Control Probe
8002F36	3870/3872 Prototype Control Probe
8002F37	F8 Prototype Control Probe
8002F38	1802 Prototype Control Probe
8002F39	6802 Prototype Control Probe
8002F40	8048 Prototype Control Probe
8002F41	8021 Prototype Control Probe Adapter (requires Option 40)
8002F42	8041A Prototype Control Probe
8002F43	8022 Prototype Control Probe
	32K Program Memory Modules
8002F46	Real-Time Prototype Analyzer
8002F48	2704/2708 PROM Programmer
8002F49	16K Program Memory Module

8001 Microprocessor Lab

Product Nomenclature

8001F01	8080A Microprocessor Support Package
8001F02	6800 Microprocessor Support Package
8001F2A	6802 Prototype Control Probe
8001F2B	6802 Microprocessor Support Package
8001F03	Z80A Microprocessor Support Package
8001F04	TMS9900 Microprocessor Support Package
8001F05	8085A Microprocessor Support Package
8001F06	3870/3872 Microprocessor Support Package
8001F07	F8 Microprocessor Support Package
8001F08	1802 Microprocessor Support Package
8001F09	8048/8021 Microprocessor Support Package
8001F10	8048 Prototype Control Probe
8001F11	8021 Prototype Control Probe Adapter (requires 8001F09 & 8001F10)
8001F12	8041A Prototype Control Probe (requires 8001F09)
8001F13	8022 Prototype Control Probe (requires 8001F09)
8001F14	6500/1 Microprocessor Support Package
	System Options:
——	32K Program Memory Modules
8001F46	Real-Time Prototype Analyzer
8001F48	2704/2708 PROM Programmer
8001F49	16K Program Memory Module
——	220 V at 50 Hz

8550 Microcomputer Development Lab

Product Nomenclature

8300A01	8080A/8085A Assembler	
8300A02	6800/6801/6802 Assembler	
8300A04	Z80A Assembler	
8300A05	TMS9900 Assembler	
8300O07	3870/3872/F8 Assembler	
8300A09	1802 Assembler	
8300A10	8048/8021/8041A/8022 Assembler	
8300A14	6500/1 Assembler	
8300A15	8086/8088 Assembler	
8300A20	Z8000 Assembler	
8300A26	68000 Assembler	
	Emulators:	
8300E01	8080A Emulator Processor and Emulator Control Software	
8300E02	6800/6802 Emulator Processor and Emulator Control Software	
8300E04	Z80A Emulator Processor and Emulator Control Software	
8300E05	TMS9900 Emulator Processor and Emulator Control Software	
8300E06	8085A Emulator Processor and Emulator Control Software	
8300E07	3870/3872/F8 Emulator Processor and Emulator Control Software	
8300E09	1802 Emulator Processor and Emulator Control Software	
8300E10	8048/8021/8041A/8022 Emulator Processor and Emulator Control Software (requires 8300P10, 8300P12, or 8300P13)	
8300E14	6500/1 Emulator Processor, Prototype Control Probe, and Emulator Control Software	
	Probes:	
8300P01	8080A Prototype Control Probe	
8300P02	6800 Prototype Control Probe	
8300P03	6802 Prototype Control Probe	
8300P04	Z80A Prototype Control Probe	
8300P05	TMS9900 Prototype Control Probe	
8300P06	8085A Prototype Control Probe	
8300P07	3870/3872 Prototype Control Probe	
8300P08	F8 Prototype Control Probe	
8300P09	1802 Prototype Control Probe	
8300P10	8048 Prototype Control Probe	
8300P11	8021 Adapter (requires 8300P10)	
8300P12	8041A Prototype Control Probe	
8300P13	8022 Prototype Control Probe	
	Language Products:	
8300G01	Pascal 8080/8085	
8300H01	Modular Development Language; 8080/8085/Z80	
8300H02	Modular Development Language; 6800/6802	
	Prototype Debug Package:	
8300D15	8086 Prototype Debug Support	
	System Options:	
8550F01	Real Time Prototype Analyzer	Option 01
8550F02	32K Static Memory Board	Option 02
8550	Universal Euro 220V/16A Power	Option A1
8550	U.K. 240V/13A Power	Option A2
8550	Australia 240V/10A Power	Option A3
8550	North American 240V/15A Power	Option A4
8550	115V at 50 Hz	Option 4X
8550	230V at 50 Hz	Option 4Y

--Vern Johnson
92-236, Ext. 1289

8550 QUME DRIVE INSTALLATION

Some problems have come up exchanging Qume drives ordered from both Board Exchange and Customer Service. Drives ordered from either source may come with the wrong color bezel, no labels and not configured electrically for 8550 operation. All three problems are being addressed, but the solutions are not in place yet. Until solutions are in place here are some suggestions:

If drive is received with the wrong color bezel, the correct color can be ordered under P/N 101-0066-00.

If drive is received without labels, a kit of labels can be ordered under P/N 020-0676-00.

When at the customer's site both the color problem and label problem can be solved by exchanging the bezel assembly with the customers bezel assembly. This is not usually the most desirable solution, though.

Electrical configuration problem is divided into the following categories:

1. Terminating resistors.
2. Drive select jumper.
3. Optional I/O jumpers.
4. Programmable shunt.

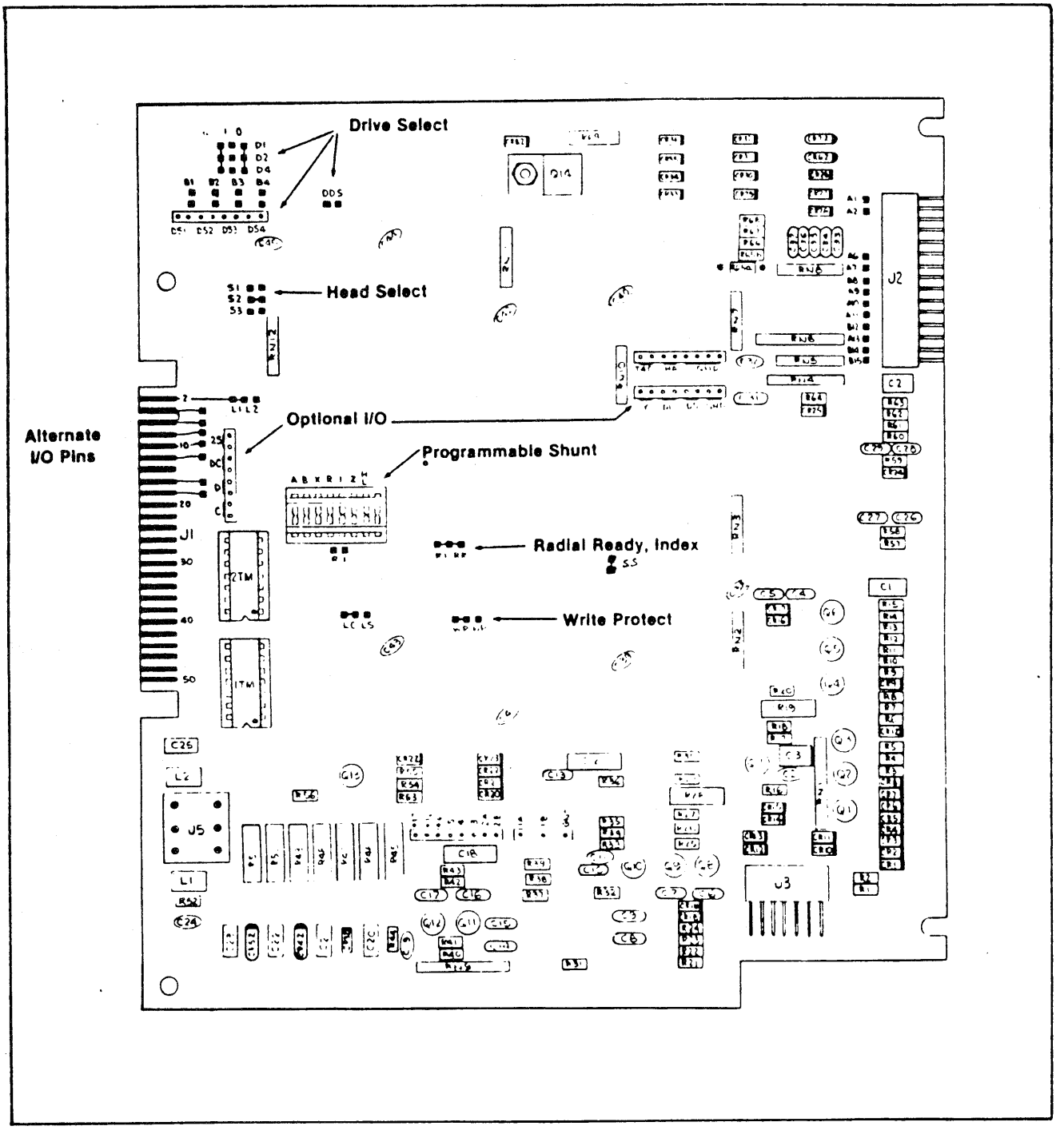
The terminating resistors are installed on the Qume drive control board. The two resistor packs are installed in sockets and labeled 1TM and 2TM (See Figure 1). Only one set (1TM and 2TM) should be used in an 8501 DMU unit. Generally, the set should be installed on the control board in Drive 1. This is to say that Drive 0 should not have any terminating resistors installed and Drive 1 should have terminating resistors installed.

The drive select jumper (P/N 131-0993-00) should be installed on the two pins according to which drive number it is to be used. If the drive is installed in Drive 0 position in the 8501, then the jumper is installed on the 2 pins marked DS1. If the drive is used as Drive 1 then jumper is installed in DS2 position (See Figure 1). There are no added wires or cutable traces cut.

The optional I/O jumpers (P/N 131-0993-00) are installed on the pins corresponding to pins marked 2S, DC and C. The pins are located near the board edge connector J1. (See Figure 1). Pins marked C are left open.

The programmable shunt is located on control board near the terminating resistors. The shunt is installed in a 16 pin socket. Two (2) of the shorted links labeled B and HL should be cut (opened). Manufacturing, in some drives, cuts the pin off on one side of the shunt to create the open.

(DIAGRAM FOLLOWING THE NEXT PAGE)



PCB Jumper Locations

--Brad Griffin/Kevin King
92-236, Ex.t 1608/1636

S-3200: PMC SWITCHING POWER SUPPLIES OUTPUT RIPPLE

PMC (119-1085-00) 15 Volt Power supplies may exhibit 40KHz ripple. The problem is intermittent and may occur after the supply has been running normally for several months.

Evaluation of defective supplies has revealed a high percentage exhibiting excessive ripple when applying a dynamic load and slightly moving C39 (the largest main filter capacitor). This condition is encountered in the test station while running verdict or device tests with a dynamic load applied and while slightly vibrating C39.

The ripple may vary from about 100 millivolts to 1 volt in amplitude and consist mainly of a 40KHz (switching frequency) component.

The best way to test for this is to apply a dynamic load to the supply that switches from 50% of full load to 100% of full load at a 1 KHz rate, and move C39 with a non-metallic tool. This can be done with the power supply cover installed. After the ripple occurs, the load can be changed from dynamic to a DC load and the ripple will still be present.

This problem is caused by poor connections from the terminals of the main filter capacitor (C39) to the wire lugs. The cure is to install four #10 star lock washers (210-0010-00); one between the two wire lugs on each terminal of the capacitor and one between each terminal of the capactor and the bottom wire lugs. This provides a very reliable electrical connection to the filter capacitor.

All warehouse and integration stock of these supplies has been returned to the vendor for this mod.

Information provided by Lee Atkins, STS Production Engineering and Jim McGrath, STS Quality Engineer.

--Jim Stubbs
92-236, Ext. 1287

92-515

MICHAEL A MIHALIK

COMBINATION WIZARD WORKSHOP