



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

Please join Frank Ortega in welcoming JERRY GATES to the Tek In-House Service Organization. Jerry comes to Tek-Cleveland with an extensive TV repair background. He also is a part-time Electronics instructor for McKim Technical Institute. Jerry's hobbies include sailing.

Welcome aboard, Jerry!

Terry Skiles of our Concord Field Office has announced the hiring of two new people and one promotion.

PAT HAWKINS is a retired U.S. Air Force radar and computer systems technician with twenty years of electronic experience.

RON BLACK also comes to Tek from the U.S. Air Force with twenty years experience. This includes microwave and data terminal equipment as well as management training experience.

Both Pat and Ron are Field Service Specialists II. Welcome!

DARYL MITCHELL has been promoted to Field Service Specialist III for his outstanding performance the past two years as an FSII. Daryl has been with Tek since July of 1975. Congratulations!

--Editor
53-027, Ext. 8939

GENERAL

BATTERY CARE AND MAINTENANCE

Nickel Cadmium Batteries may be damaged or suffer a shortened life if they are not properly maintained. The highest cell temperature that still allows maximum cell life is 50°C. Temperatures in excess of 65°C will decrease the life-expectancy. Maximum battery life will be maintained when batteries are stored in a cool space: $\leq 25^{\circ}\text{C}$.

When Tektronix instruments are operating on battery power the maximum run time depends on the following:

- 1) The cell case temperature at the time of charging.
- 2) The duration of charge.
- 3) The quality of individual cells.
- 4) The load on the battery pack.

Cell Memory

Nickel Cadmium Batteries may suffer from a condition called memory. Memorization develops when a battery is not allowed to cycle from fully charged to completely discharged. Battery control circuitry is found in many Tek instruments. This circuitry will shut down the instrument should the battery voltage be insufficient to continue operating. This shutdown does not allow a complete discharge and may cause cell memory.

Cell memory is caused by two different charging situations.

- 1) Repeated charging cycles with mis-matched cells.
- 2) Extended over charging at high ambient temperatures.

When charging a battery pack that contains mis-matched cells, one or more cells may reach its peak charge level before surrounding cells. If the charging persists, the cells begin to overcharge, generating heat which could cause thermal runaway and reduce their charge acceptance. Repeated charging cycles will memorize a new "lower" charge level in the battery-pack.

Charging a battery pack for extended periods may result in what is called Voltage-Step depression (VSD). The rate at which VSD accumulates is dependent upon the duration of over charge, and the rate worsens as temperature rises. (See Fig. 1)

(continued on the following page)

BATTERY CARE AND MAINTENANCE (CONTINUED)

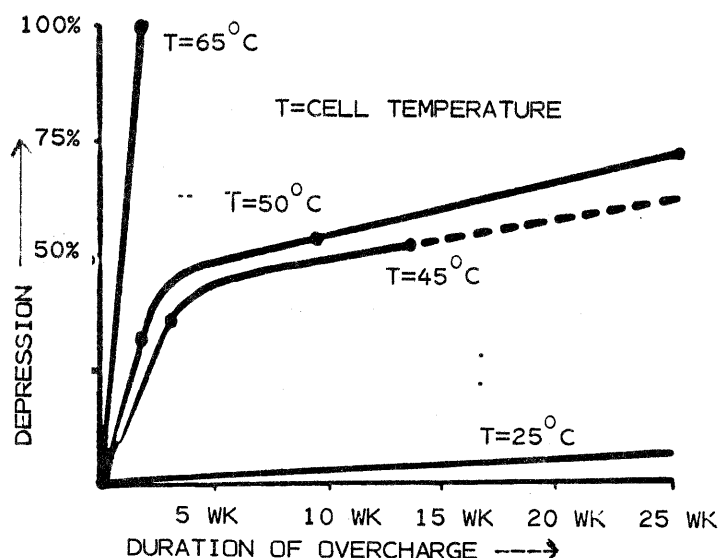


Figure 1 - Voltage-step depression as a function of overcharge time and cell temperature, T .

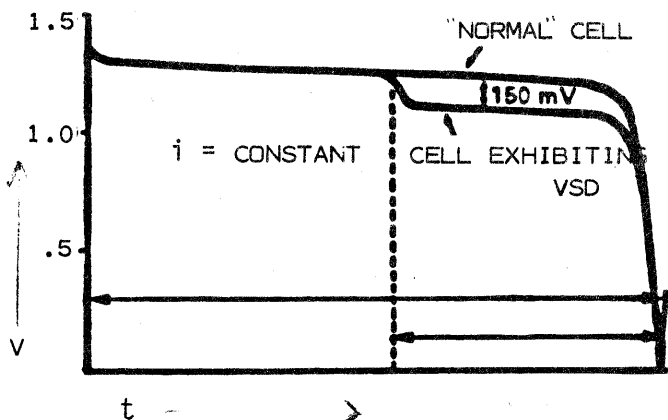


Figure 2 - Discharge curves for a "normal" NiCd cell and a cell exhibiting voltage-step depression.

Voltage-Step Depression is not a limiter to the charge level, rather VSD has an effect on the cells discharge characteristic. Cells have shown a VSD of 150 mV per cell, which could result in a 600 mV battery pack voltage drop in a 4 cell pack. The VSD occurs sometime during the discharge cycle, and the remaining discharge rate parallels the normal discharge curve, but at a lower voltage. (See Fig. 2) With either form of battery degradation the operating time is shortened, sometimes only allowing a few minutes of run time.

The above effects are not permanent and the next section will explain methods of rejuvenation.

Restoration

There are three alternatives for correction when an instrument is showing signs of battery degradation.

- 1) Replace battery pack.
- 2) Rejuvenate the batteries.
- 3) Do not use battery power with the instrument.

Of the preceding possibilities rejuvenation is the best method for restoring battery operation without maintaining an expensive inventory and sacrificing the portability batteries offer.

(continued on the following page)

BATTERY CARE AND MAINTENANCE (CONTINUED)

CAUTION - *Refer to the safety section before attempting any rejuvenation procedures.*

Procedure for rejuvenating a battery-pack.

- a) Remove battery pack from the instrument.
- b) Being careful not to short out any cells, dismantle the battery pack to a point where the cells are accessible.
- c) Connect a 1-to 5-ohm, 3-to 5-watt wirewound resistor across each cell and discharge the cell to 0.7 volts.
- d) Remove the resistor and charge the battery pack as specified in your instruments manual.

NOTE: REASSEMBLY OF THE BATTERY PACK MAY BE NECESSARY BEFORE RECHARGING THE BATTERIES.

- e) Steps "c" and "d" should be performed a minimum of 1 time for best results.
- f) Assemble the battery pack taking care to avoid pinching the wires.
- g) Perform a charge-operate to automatic shutdown-charge cycle to test the instrument for run time.
- h) Compare that time to the specified time in the manual.

Upon completion of this procedure two or more times with negative results, replace the battery-pack.

Safety Precautions

Nickel Cadmium cells have low internal impedance and thus are capable of delivering high currents if externally shorted. The resultant heat can cause severe burns and is a potential fire hazard. Particular caution should be used when the person working near the open terminals of cells is wearing metal rings or watch bands.

Inadvertently placing these metal articles across the terminals could result in severe skin burns.

Cells that have a white powder (Potassium Carbonate) around the seals have leaked and must be replaced.

(continued on the following page)

BATTERY CARE AND MAINTENANCE (CONTINUED)

GLOSSARY OF TERMS

- Cell: An electrochemical system which converts chemical energy into electrical energy and also the reverse for rechargeable units.
- Charge: The conversion of electrical energy to chemical energy in a cell.
- Cycle: A charge plus a discharge.
- Cycle Life: The number of cycles obtainable from a cell under given conditions.
- Discharge: The conversion of chemical energy to electrical energy in a cell.
- Internal Impedance: The apparent change in voltage as a function of current caused by resistive and polarization effects.
- Thermal Runaway: A condition in which a cell or battery on constant-potential charge can destroy itself through internal heat generation.

--Dave McKinney
58/511, Ext. 7072

Contributing Author--
Tom Fox
58/511, Ext. 7349

PELTOLA CONNECTOR SYSTEM PART NUMBERS

For replacement of coax cables with Peltola connectors on each end, in instruments where no replacement part number is listed in the manual, the following may be substituted:

<u>Part Number</u>	<u>Length in Inches</u>
175-1824-00	6.875
175-1825-00	8.875
175-1826-00	10.875
175-1827-00	12.875
175-1828-00	14.875
175-1829-00	16.875
175-1830-00	18.875

These part numbers are fully assembled with the peltola connectors installed on 175-1255-00 RF cable which has no color code on the white wire jacket.

There is a Cable End to Cable End adaptor that connects 2 male peltola connectors together that you may want to use to extend a cable length for troubleshooting. That part number is 103-0169-00.

There is also a Peltola female to GR adaptor that enables the connection of a Peltola male cable end to a GR cable. That part number is 017-0093-00.

--Lynn Sperley
58/511, Ext. 6902

QUALITY CHECK PROGRAM FOR ASSEMBLIES

I am conducting a quality check program for assemblies in the field. In order to reduce manufacturing errors on assemblies sent to service centers, we need more direct feedback.

Whenever you have a defective board or assembly (an assembly also includes cables, mechanical packages, oscillators, attenuators, etc.), remove it from inventory via the reject stock procedure and then send the assembly to:

TOM PETERS
DEL STN 58-511

Please include the following information:

DATE
PART NUMBER
INSTRUMENT TYPE
REASON FOR REJECTION

Your assistance in this project will aid your productivity by reducing defective assemblies in stock.

--Tom Peters
58-511, Ext. 6507

LABORATORY INSTRUMENT DIVISION

TM500

NOTICE ABOUT RMC CAPS IN DM501A'S AND DM502A'S

All RMC Brand Caps found in Part Numbers 283-0431-00 and 283-0434-00 have been purged from CMS stock and the same should be done in all service centers. A large number of these capacitors have been found to have a poor humidity seal which eventually causes an AC hook problem. Reorder as necessary.

--Terry Turner
92-236, Ext. 1288

7000 SERIES

7B53A, 7B71, 7B92/A, 7D11 HELIDIAL SETTINGS

Below are listed the Helidial settings for the 7000 Series plug-ins. All settings are stated with the pot being set fully counter-clockwise.

<u>INSTRUMENT</u>	<u>"ZERO" SETTING</u>
7B53A	0.00
7B71	0.00
7B92	-0.01
7B92/A	- .02
7D11	0

NOTE: The 7B92/A sets up with the D.T.M. set less than zero.

--John Eaton
58/511, Ext. 6902

COMMUNICATIONS DIVISION

MEDICAL

410 PATIENT CABLES

The following 410 patient cables have been removed from the Repair and Return Program effective May 1 1980.

<u>Part Number</u>	<u>Description</u>
012-0120-00	Cable, ECG and EEG Leads
012-0161-00	Cable, Chest Lead
012-0559-01	Cable, Chest Lead
012-0567-01	Cable, Limb Lead

If one of these cables fails while under warranty, it will be replaced. After the warranty period has expired, the customer must purchase a new cable.

--Dave McKinney
58/511, Ext. 7072

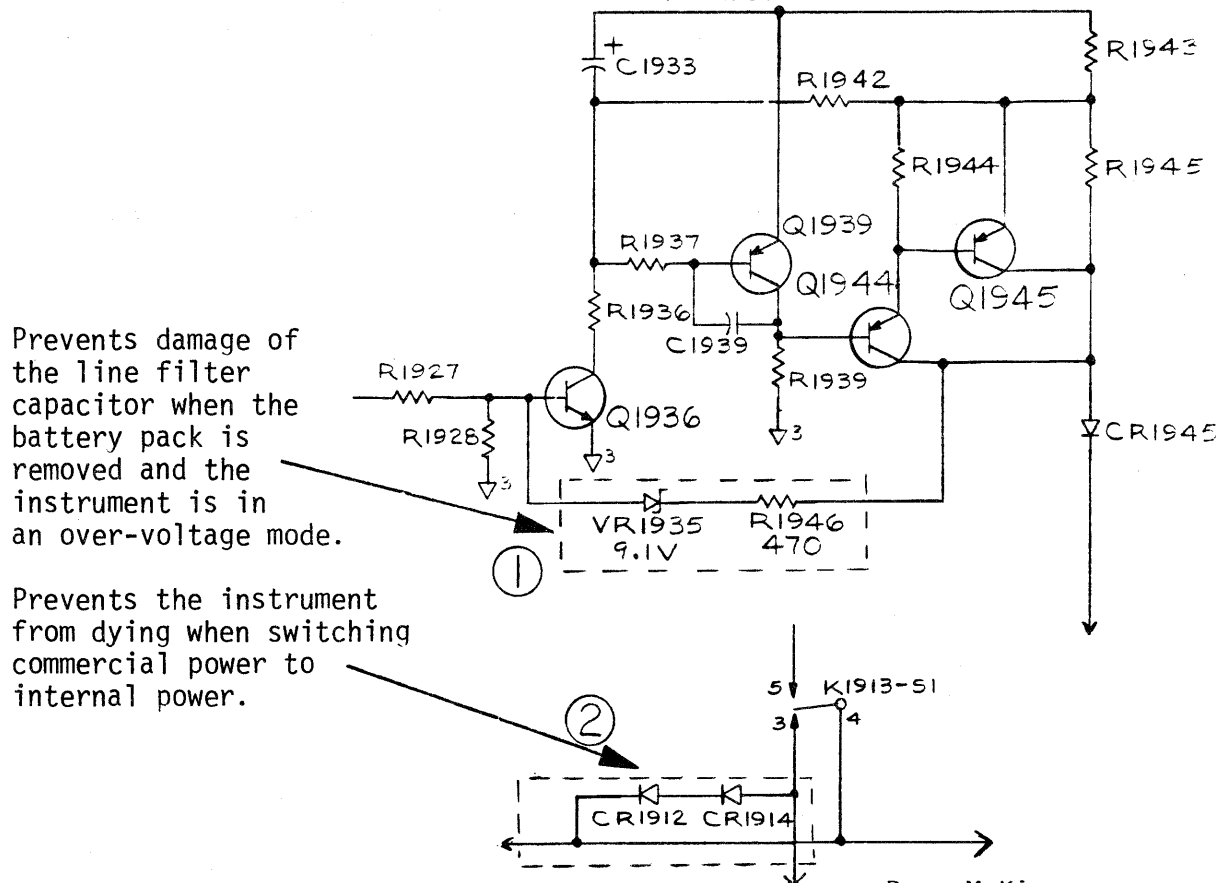
413 POWER SUPPLY KIT

Reference: Manual P/N 070-2277-00 Schematic 9
 Kit P/N 040-0961-00 (S/N B010100 - B049999)

To incorporate the mods below on the 413 Medical Monitor, S/N B010100 - B049999, refer to the Kit P/N 040-0961-00. Manufacturing is implementing the change effective S/N B050000.

Refer to the picture for location of changes:

CIRCUIT NUMBER	PART NUMBER	DESCRIPTION
CR1912	152-0198-00	Semiconductor; Silicon, 200V, 3A, 1N4721
CR1914	152-0198-00	SAME AS ABOVE
R1946	315-0471-00	Res., FXD, CMPSN, 470 Ω , 5% 0.25W
VR1935	152-0306-00	Semiconductor Device Zener, .4W, 9.1V, 5% 1N960B



--Dave McKinney
 58/511, Ext. 7072

TELEVISION PRODUCTS

520A/ PART NUMBER FOR SLIDE DOOR TRACK SPACER

Reference: 520A P/N 070-1709-00
521A P/N 070-1794-00

Figure 1 (Front) of 520A manual does not include the spacer for the slide track. The 521A manual does show this part (item 115). The part number is 361-0232-00. A manual correction form has been submitted.

Thanks to Bob Anderson, Santa Clara Service Center for bringing this to our attention.

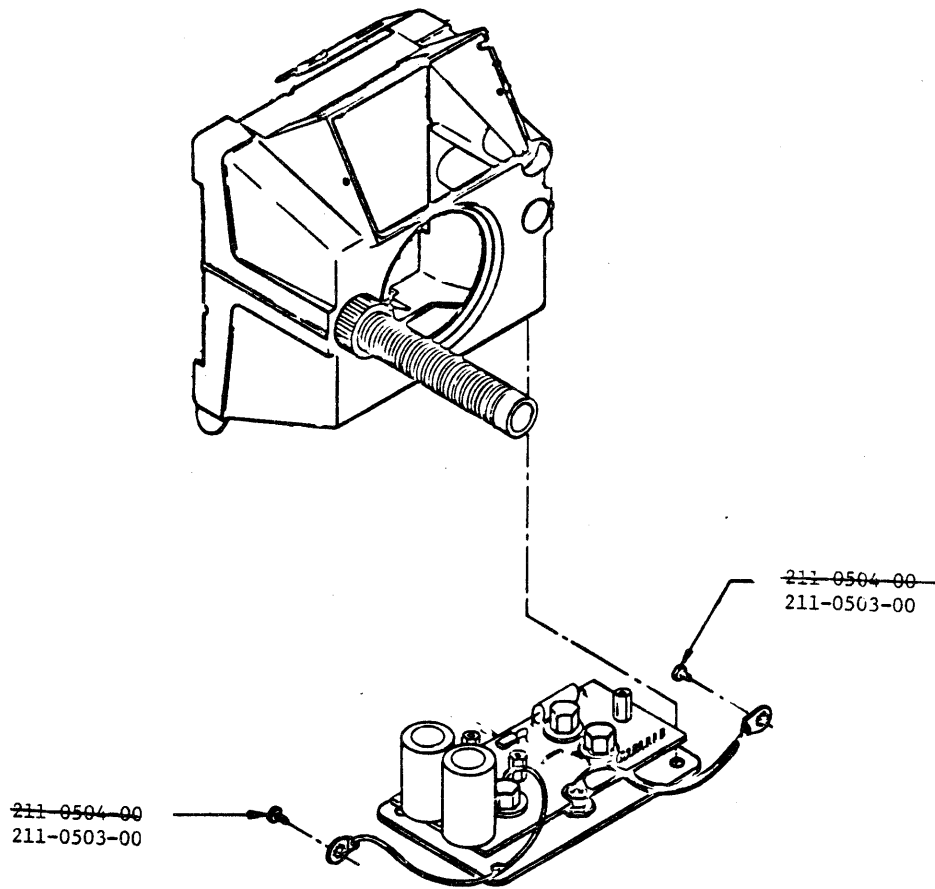
--Steve Schmelzer
58/511, Ext. 6507

SERVICE INSTRUMENT DIVISION

ACCESSORIES

C28 CAMERA

The present screw, P/N 211-0504-00, is bottoming out in the hole on the main frame assembly. (See sketch.) Replace the screw P/N 211-0504-00 with P/N 211-0503-00.



--Dave McKinney
58/511, Ext. 7072

PROBE CROSS REFERENCE INDEX - CORRECTION

This article is being repeated because some of the part numbers in the first printing were not orderable. Please disregard the first article.

The PROBE CROSS REFERENCE INDEX enables the user to cross reference the "P" number of the probe to the "010" part number of the probe. The following should be added to that index:

PART NUMBER	PROBE TYPE/DESCRIPTION
010-6101-07	P6101 Probe, Voltage, 1 Meter W/Accessories
010-6101-08	P6101 Probe, Voltage, 2 Meter W/Accessories
010-6101-09	P6101 Probe, Voltage, 3 Meter W/Accessories
010-6104-07	P6104 Probe, Voltage, 1 Meter Blue W/Accessories
010-6106-07	P6106 Probe, Voltage, 10X Meter Blue W/Accessories
010-6106-08	P6106 Probe, Voltage, 2 Meter Yellow W/ Accessories
010-6106-09	P6106 Probe, Voltage, 3 Meter Red W/Accessories
010-6107-02	P6107 Probe 10X
010-6107-03	P6107 Probe 10X 2 Meter W/Accessories
010-6303-01	P6303 Current Probe 2 Meter W/Accessories
010-6406-01	P6406 Word Recognizer Probe (Multilead) W/Accessories
010-6451-03	P6451 Data Acquisition Probe (Multilead) W/Accessories
010-6451-05	P6451 Data Acquisition Probe Right Angle Version W/Acc.
010-6601-01	P6601 Temp Probe

NOTE: If you need a copy of the entire Probe index, please contact me.

--Dave McKinney
58-511, Ext. 7072

DIGITAL SERVICE INSTRUMENTS

832 CLARIFICATION OF OPTION 2 FIELD MOD KIT - PART NUMBER 040-0897-00

If you are experiencing problems when attempting to install the Current Loop (Option 2) Field Mod Kit, Part Number 040-0897-00, make sure you have the latest version of the instructions. At the bottom of the front page, in the center, you should find the date that the instructions were printed on. The latest version should state "3-18-80 supersedes 10-15-79". If you are having trouble, please contact your local service center or refer to your microfiche mod summary information which should have the latest version.

There still appears to be a need for additional information to clarify the steps which require the cutting of circuit board runs. Please refer to Figure 1. One step requires the cutting of a run between U1332-9 and U1325-25. This run is easily identified on the rear of the Processor (A1) board and is not illustrated. Another step requires the cutting of a run between U1312-2 and P1335-4. This is illustrated just above U1312 in Figure 1 or you can cut the run near P1335, Pin 4. The other step is to cut a run between U1312-5 and U1325-25. This can be accomplished by cutting the run just to the left of U1325, Pin 5 which is at a forty-five degree angle, see Figure 1.

A request is being made to include Figure 1 in the next version of the Current Loop (Option 2) Field Mod Kit, Part Number 040-0897-00.

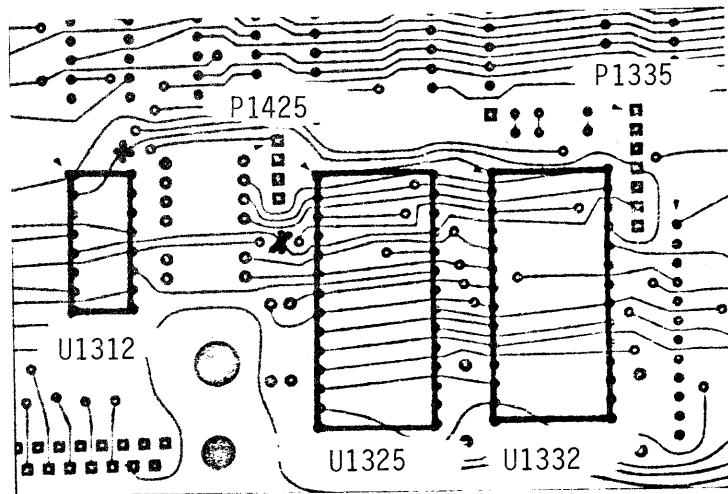


Figure 1 P/O A1 Processor Board
(Front View)

Inserted By:
Rich Andrusco
92-236, Ext. 1582

851 CALIBRATION AID

When calibrating the 851, the front panel assembly needs to be removed to gain access to test points and adjustments. The only problem with the removal of the front panel is that the Function switch no longer has a means for determining its position. To help alleviate this problem, Ted Milke from our Huntsville Service Center has suggested the following:

1. Glue Figure 1 to a stiff piece of cardboard.
2. Cut out Cal Aid and place over Function Switch.

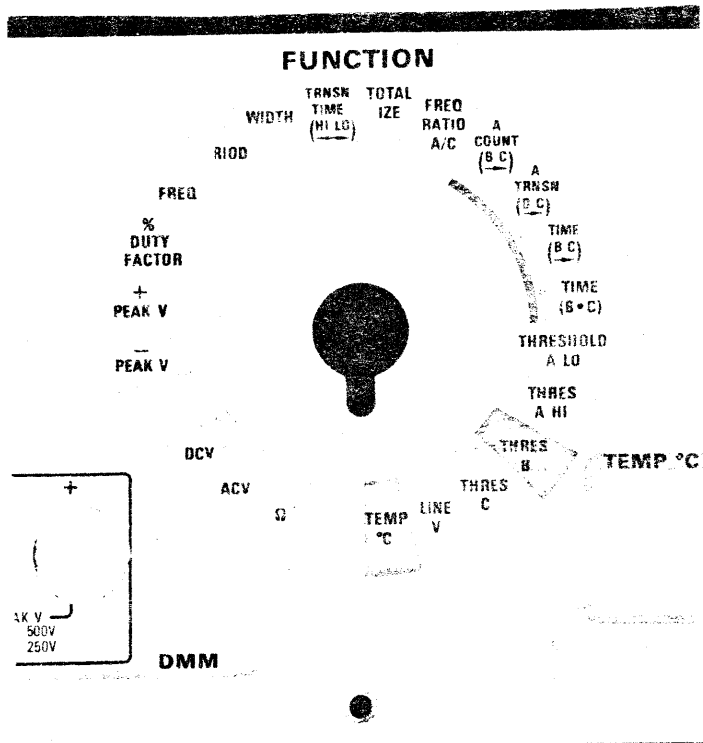


Figure 1

My thanks again to Ted for his time saving hint.

Inserted by--
Rich Andrusco
92-236, Ext. 1582

851 INTERMITTENT DISPLAYS

If you are experiencing erroneous displays or just an intermittent display, suspect dirty edge board connectors on either the Counter Board (A9 Assy) or I/O Board (A1 Assy). Manufacturing has found that J138 on the I/O Board has been the biggest culprit. When assembled, lock tight is used on J155, 'Cal. Out', and when the board is cleaned some of the lock tight has a tendency to sometimes run off on the edge board connectors of J138 leaving a film.

The recommended procedure for cleaning the edge connector would be to use a stiff brush or pipe cleaner with isopropyl alcohol, but manufacturing has had poor results with this procedure. They have been using a pearl eraser with very light pressure. Caution! Excessive pressure or rubbing will remove the gold plating.

My thanks to Roger Ness (Chicago Service Center) and Jeremy Parsons (Rockville Service Center) for bringing this to my attention.

Inserted by--
Rich Andrusco
92-236, Ext. 1582

851 "CLEAR TEST" - OPERATOR TRAP

"When the front panel "Display" switch is placed in the "Clear Test" position, it gives a display test reading of + 8.8.8.8.8. It initiates one measurement cycle when released except in Totalize Mode whereas the display holds zero." That is the description of this control noted on Page 2-4 of the 851 Service Manual, Part Number 070-2192-01.

However, when you are in the DMM Mode with your "Display" switch set in the "Save" position, be careful on a possible trap. If you now connect your test leads to a voltage and momentarily place the "Display" switch to "Clear/Test" the new display may not indicate the true voltage being measured. That is due to the fact that the displayed information in the "Save" position will only update after one measurement cycle. If the "Display" switch is not held in the "Clear/Test" position long enough (for one complete measurement cycle to occur) your new displayed information will be incorrect.

My thanks to Ed Ohlman, Factory Service, for bringing this to my attention.

Inserted By:
Rich Andrusco
92-236, Ext. 1582

PORTABLES

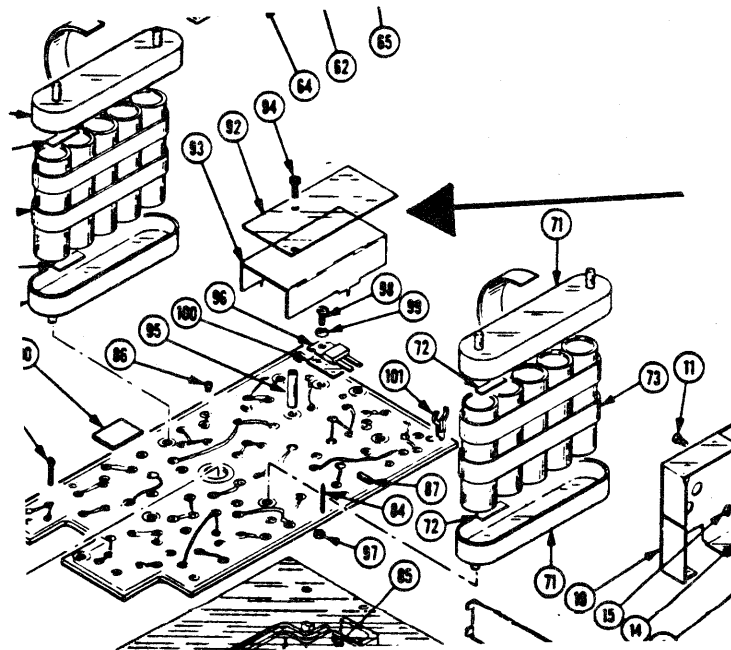
221 TRANSFORMER SHIELD ASSEMBLY CORRECTION

Reference: 221 Manual, P/N 070-1573-01
Fig. 1 Exploded, Index Numbers 92, 93 and 94

Serial Numbers: All

The mechanical parts exploded view illustrates the assembly of the transformer shield with the screw going through a hole in the insulator film and through the shield into a spacer post. This assembly is not correct and is pictured incorrectly in the manual as shown in Fig. 1. The Mechanical Parts List calls for a nylon screw; however, the nylon screw has never been used in regular production due to stripping. A metal screw has been and is now being used.

If the shield is assembled wrong, the screw head--which is secured in the post which has A.C. line on it--will short to the CRT shield, which is at probe ground. It is then possible for A.C. line to be present on the ground clip of the probe. If for any reason the shield is removed, make sure upon reassembly the screw head is covered with the insulation film.



INCORRECT ASSEMBLY

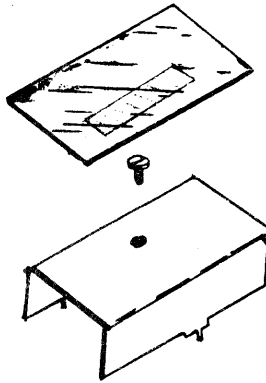
FIG. 1

(continued on the following page)

221 TRANSFORMER SHIELD ASSEMBLY CORRECTION - (CONTINUED)

The correct assembly has the screw going through the transformer shield only. The screw used is a metal screw, P/N 211-0087-01. The insulator film is placed over the shield and screw, and is held in place with double side tape, P/N 006-1342-00 as illustrated in Fig. 1B.

The insulator film has been modified by removing the hole so there will be no temptation to insert the screw through the film. The new number for the shield is P/N 342-0213-01. If the old film is used, make sure the hole in the insulator film is rotated so that it is not over the head of the screw.



CORRECT ASSEMBLY

FIG. 1 B

342-0213-01 insulator film
211-0087-01 screw, machine
337-1871-00 shld,electrical

All 221's have been assembled correctly in the plant. The error is with the exploded view, which has always been drawn incorrectly. As of this publication, the manual has been corrected and all new manuals will show the correct assembly and part numbers.

--Mike Laurens
58-511, Ext. 7173

465 MOD UC, INCORRECT IC PART NUMBER

Reference: 465 Mod UC Manual, P/N 061-1904-00

On page 42 of the manual, a wrong part number is listed for U952 and U954, which reads 156-1027-00. (This P/N is a 16 pin I.C.) The correct part number is 156-1127-01, which is an 18 pin Type 2114L I.C. Please correct your parts list.

Thanks to Ed King of Pittsburgh for bring this to my attention.

--Roy Lindley
58/511, Ext. 7173

INFORMATION DISPLAY DIVISION

QUESTIONS & ANSWERS, REVISION AND CORRECTIONS

Reference: Wizard Workshop Article "Questions & Answers"
May 16, 1980, Issue 10-10 page 19

It has been brought to my attention that a few errors exist in the original article as follows:

Question #2: Q. Does the 4006 have any means of stopping the display at page full?

A. No, the host has to be programmed for this type of control.

This answer is correct for the Standard 4006. But there is a Custom MOD available to stop at page full. It is MOD AF.

Question #5: Q. Customer ordered an 012-0717-00 Cable....

These numbers need clarification.

012-0716-00 192"(16') cable for 021-0074-01

012-0717-00 600"(50') cable for 021-0074-01

012-0400-00 192"(16') cable for 021-0074-01

012-0373-00 192"(16') cable for 021-0065-00

Question #6: Q. What does the "REP"...

Should say what does the "PER"...

--Dennis Painter
63/503, ext. 3597

4027: HIGH VOLTAGE TRIPLER DEFECT MAY CAUSE FOCUS TO CHANGE

An investigation revealed that the vendor, High Voltage Devices Inc., has had a problem with the series resistor for the focus circuit in the High Voltage Tripler part number 152-0712-00. This may cause the focus to intermittently change on the 4027. All date codes prior to 8005 are affected and should not be used. Return the affected parts to Beaverton delivery station 78/092. Parts can be identified by the name "High Voltage Devices Inc." and the date code stamped on the package.

In a 4027 where this problem occurs, replace the defective high voltage tripler with only date code 8005 or higher. Only replace high voltage triplers in instruments which are found to have this focus problem.

--Marty DeVall
63/503, ext. 3927

4027 LINE FILTER MODULE: INTERMITTENT POWER ON/OFF

Recently manufacturing has noticed some line filter modules with the contact between the voltage selector card and the contacts in card slot to be poor or intermittent. The cause was due to contamination on the selector card. If intermittent power on/off occurs, or failure to power on occurs check selector card and line filter contacts for contamination. Use normal cleaning fluids to remove suspected contamination.

--Marty DeVall
63/503, ext. 3927

4663 PLATEN CLEANING PROCEDURE

Customer complaints about a lack of static hold-down, even when the plotter surface has been "cleaned", may lead to unnecessary replacement of the platen when proper cleaning could correct the problem. There has not been a recommended cleaning procedure for the 4663 platen so there has been some confusion as to which method should be used. Products containing ammonia, oils, liniment, scents, etc. were avoided for good reasons, but it left a long list of "to be avoided" products. The question is, "what's left"? The answer is water or industrial grade isopropyl alcohol.

Water will not always clean sufficiently and isopropyl alcohol when poured (liquid form) onto the platen may run under the paper guides and reduce their adhesive properties allowing them to shift position or detach.

Use water as the first choice in cleaning the platen. When something stronger is required there are disposable cleaning pads available that contain enough isopropyl alcohol to clean the platen without creating paper guide adhesive problems.

After cleaning, the alcohol pads leave a thin film on the platen surface that should be rinsed off with water. This is easily done with a soft moist cloth which should be turned frequently to prevent smearing the residue to a different location on the platen.

Part number 006-2398-00 is for one (1) pad only. To receive a box of 50 pads, order the quantity of 50 using that same part number.

--Larry North
63/503, ext. 3926

4907 POWER SUPPLY MODIFICATION #40319

There has been a reliability modification to the 4907 Power Supply (P/N 670-5441-02) which will decrease its sensitivity to line voltage transients. The modification is corporate MOD #40319.

The 4907 Power Supply part number will go from a 670-5441-02 to a 670-5441-04.

The parts required for the MOD are:

- 1 each 119-1330-00 Line Filter
- 1 each 283-0067-00 Capacitor
- 1 each 151-0606-00 Transistor
- 1 foot 175-0859-00 22 gauge wire
- 6 each 131-0621-00 Contacts (harmonica connector)

The procedure is as follows:

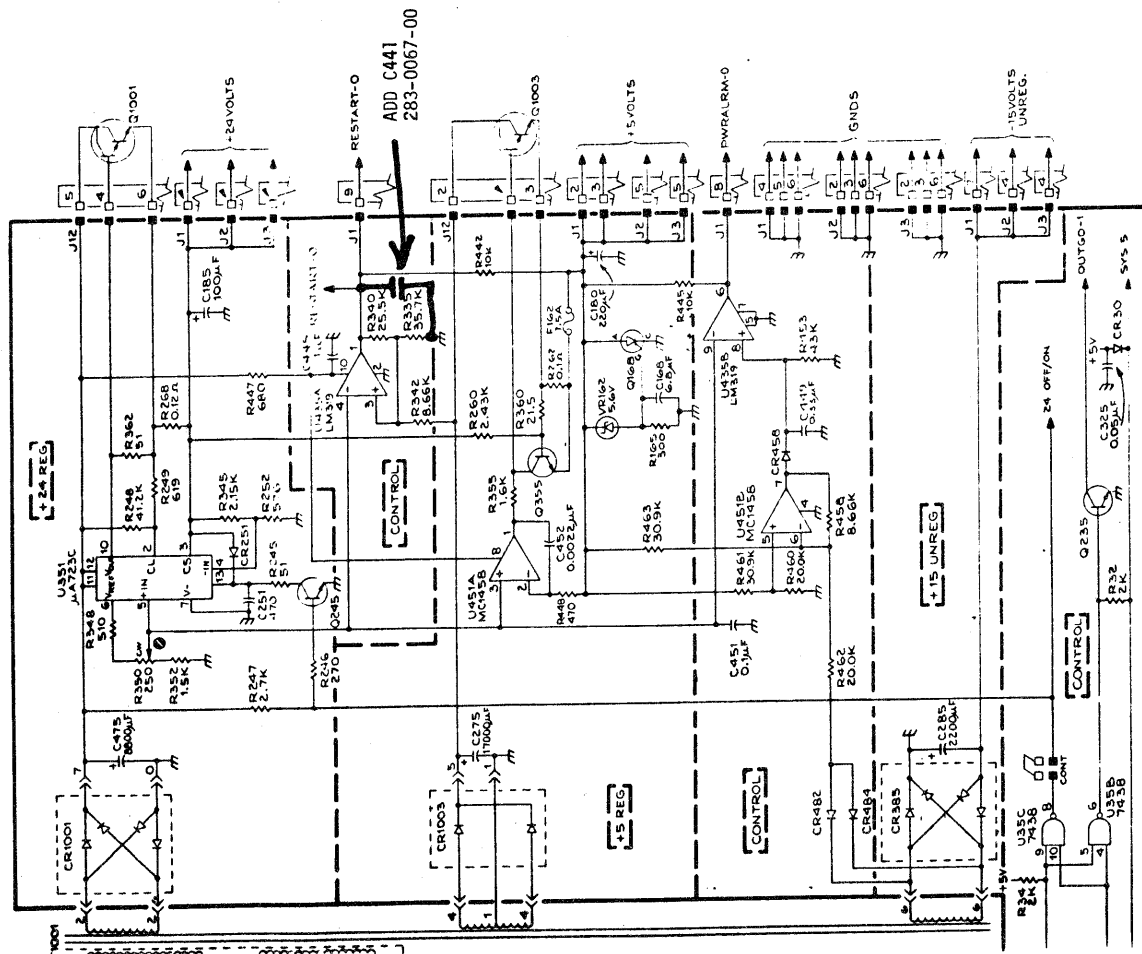
1. Remove line filter A1001 (119-0873-00) from the unit
2. Replace A1001 with a 119-1330-00
3. Remove transistor Q1001 (151-0656-00) and insulator (342-0328-00) from the rear panel.
4. Replace Q1001 with a 151-0606-00, use the mica insulator which comes with the 156-0606-00 instead of the 342-0328-00.
5. Add capacitor C441 (283-0067-00) to the Power Supply Board (670-5441-02) from the grounded end of R335 to the end of R340 which is connected to pin 1 of U435. Refer to Figure 1 & 2.
6. Replace the cable assembly that runs from J12 on the power supply to Q1001 and Q1003 on the back panel with 22 gauge wire (175-0859-00). Six harmonica connectors 131-0621-00 will be needed to make the connection to the Power Supply's J12. Solder the cable leads to the back panel transistors. (refer to Wizards Workshop Issue 10-5 March 7, 1980, page 45 - "4907 POWER SUPPLY CABLE PROBLEM" for more background on this step).

This MOD should be done on any 4907 Main & Auxillary units that are exhibiting intermittent problems that could be related to line voltage transients.

Make appropriate changes in the 4907 Service Manual (070-2405-00) schematics and parts list.

--Frank Lees
63/503, ext. 3929

(continued on the following page)



2405-7
REV A, JUNE 1979

670-5441-02 POWER SUPPLY 3-1

FIGURE 1

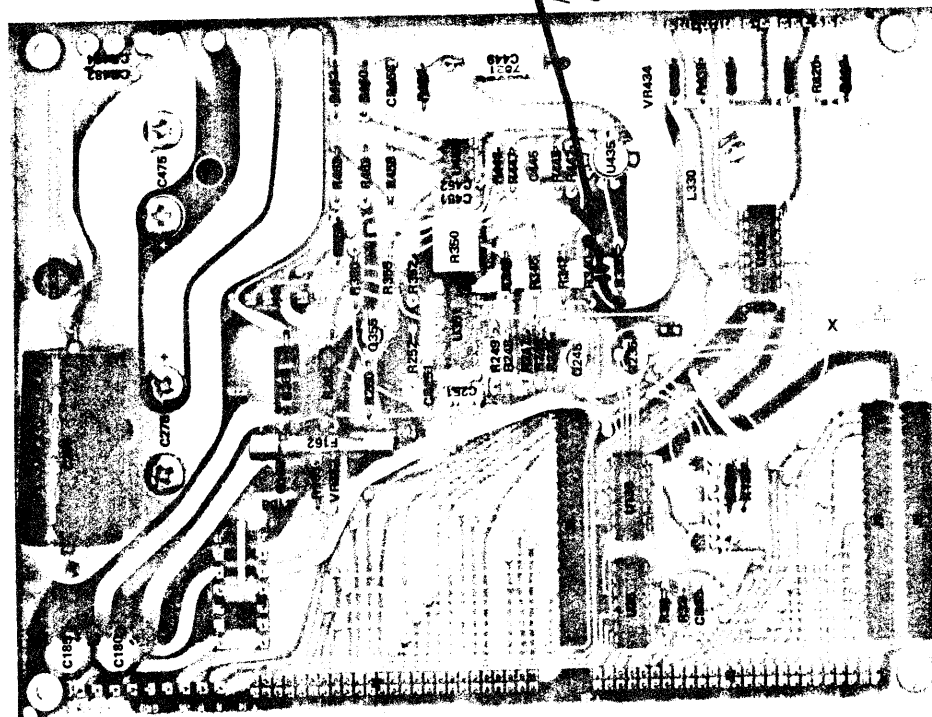


Figure 8-9. Power Supply Board Component Locations.

Figure 2

613 MOD JA: CM 020-0509-00

Reference: CM 020-0509-00 Field Kit For 613 MOD JA Manual 061-2096-00

Field Service personnel have brought to my attention a potential problem which exists in the component kit for CM 020-0509-00. One of the resistors is suppose to be a 32.4K ohm (321-0338-00), but is marked as a 3.24K ohm. The resistor does in fact measure as 32.4K. If installed this could cause future problems for a technician troubleshooting this circuit. It is therefore recommended if you encounter such a resistor that you do not use it, but discard and order a replacement (P/N 321-0338-00).

Thanks go to Pete Sobilo out of the Woodbridge Field Office for identifying this problem.

--Dennis Painter
63/503, ext. 3597

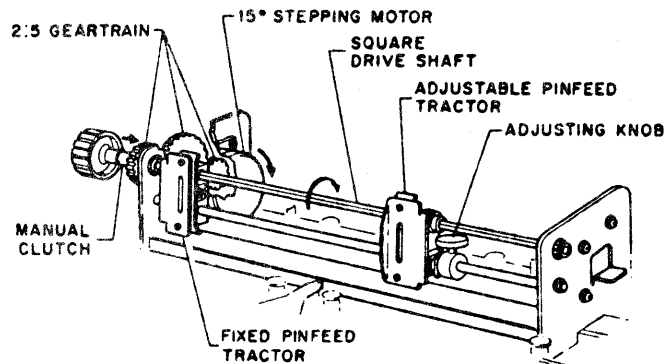
LABORATORY INSTRUMENT DIVISION

MICROCOMPUTER DEVELOPMENT PRODUCTS (MDP)

LP8200 UNEVEN VERTICAL LINE SPACING

Uneven spacing between lines or line bunching as it's sometimes called is characteristic of excessive tractor tension. This condition can usually be corrected by moving the tractors closer together.

It has been brought to our attention that adjusting the tractor tension may not solve the problem of uneven spacing. If the line printer has received considerable use and the tractor tension will not correct the problem, check the free play between the square tractor drive shaft and the drive clutch gear. The drive clutch gear is part of the manual clutch assembly. There should be very little or no free play between the tractor drive shaft and the drive clutch gear. The presence of free play indicates excessive wear of the Clutch Hub that rotates the tractor drive shaft. To correct the problem, replace the Clutch Hub, Tektronix part number 118-0093-00. We would like to thank Charles Gelsinger for bringing this problem to our attention.



--Kevin King, Brad Griffin
92-236, Ext. 1636, 1608

SBP9900 ADAPTER AVAILABLE

An adapter to convert both the UTF (067-0873-99) and the 9900 evaluation aid (067-0844-99) from TMS9900 to SBP9900 compatibility is now available. Both the UTF and evaluation aids are used by service centers but are currently unavailable from C.S.G. However, adapters for conversion of existing units can be ordered under part number 067-0979-99.

Unfortunately, the new adapters have one drawback. The boards were originally designed to have Z.I.F. sockets installed. Due to unknown reasons, the Z.I.F. socket part number has been deleted. Consequently, the adapters don't have the Z.I.F. sockets installed. In fact, a standard 64 pin socket won't fit on the board correctly either. Assembly was finally accomplished by using a standard 64 pin socket cut apart to make (2) 32 pin strips. These were then installed in the boards slightly tilted toward each other so the adapter will accommodate our probe tip or microprocessor.

A suggestion to SB9900 adapter users: Acquire another 64 pin socket (136-0716-00), install it into the adapter socket for a "socket saver". (Double socket). When the "socket saver" wears out, install a new one.

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

SEMICONDUCTOR TEST SYSTEMS

PROCEDURE FOR CLIP AND SOLDER UPDATE OF D1B SECTOR CARDS

The following parts placement diagram indicates the primary IC's to be soldered in along with the power transistors Q21 and Q41. The older type sample holds without Expect Data Delay will not be involved in this procedure.

1. Remove the sample-hold and pin guide from the data card. Also, remove the power strip from the back of the data card.
2. Remove the sockets for Q21 and Q41 (power strip) by heating them with a soldering iron and pushing them through the board, front to back. Using a scratch awl remove excess solder with solder wick or a solder sucker.
3. Reinstall power strip and solder transistor leads directly to the board.
4. These solder connections as with all IC soldering should be cleaned using FOTOCAL or ALCOHOL and an acid brush.
5. Lift the designated IC's, one at a time, from the sockets far enough to prevent the IC pins being clipped when the sockets are clipped. You may want to remove the IC completely. Caution should be taken to prevent swapping or reversing the IC's.
6. Clip the sockets as close to the pads as possible. Work lengthwise to the row of sockets as shown in the diagram. This will permit easier insertion of the IC.
7. Reseat the IC firmly and solder each pin to the remaining portion of socket and pad. Care should be taken to make a good solder connection without applying excessive heat. This is difficult due to the white insulating material remaining in each socket.
- *8. Avoid solder bridging between IC pins.
9. Reinstall straps to U210 and diodes to U311 and U312 on back of board.
10. Clean all solder connections.
11. Reinstall pin guide and sample-hold
12. Each sector card should be thoroughly tested after this procedure is completed.

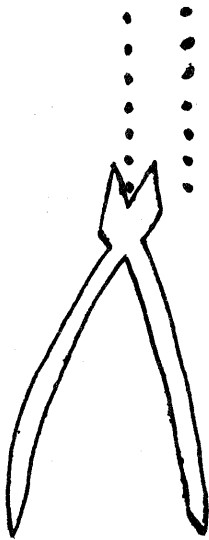
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PROCEDURE FOR CLIP AND SOLDER UPDATE OF D1B SECTOR CARDS (CONTINUED)

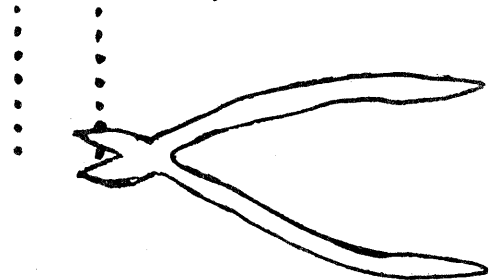
13. In addition, the reeds indicated on the diagram IM,OM, 02, etc. are susceptible to poor solder joints on the signal path lead due to a contaminated surface before the connection is made or to insufficient heat being applied when the connection is made to the large pads. I suggest you pick at the reed signal path connections with a scribe. The poor connections will come loose without much difficulty leaving a dark tarnished surface on the pad. This is rosin, and should be cleaned off before the new connection is made using FOTOCAL or equivalent. Resolder these using plenty of heat and solder.

Clipping Technique

Right

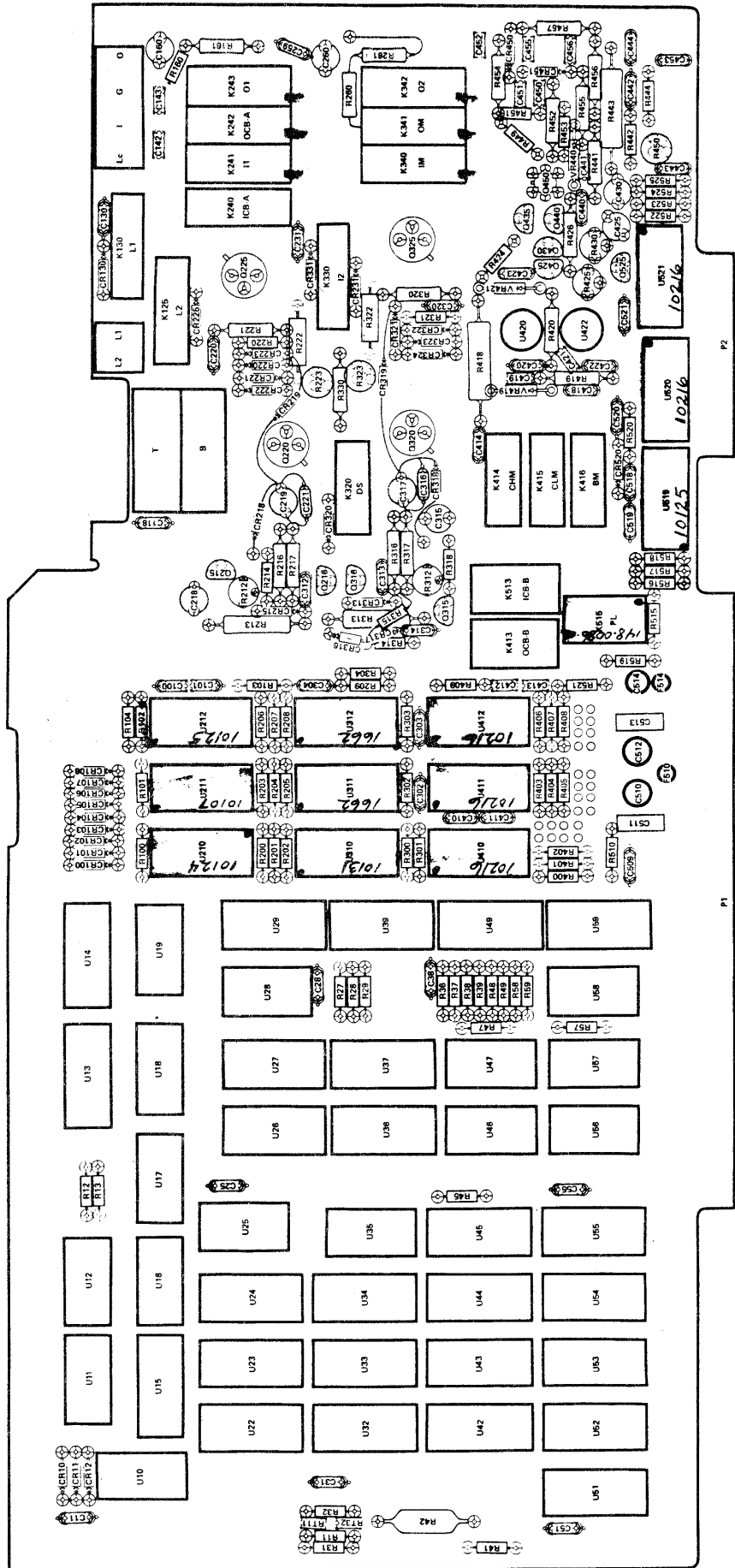


Wrong



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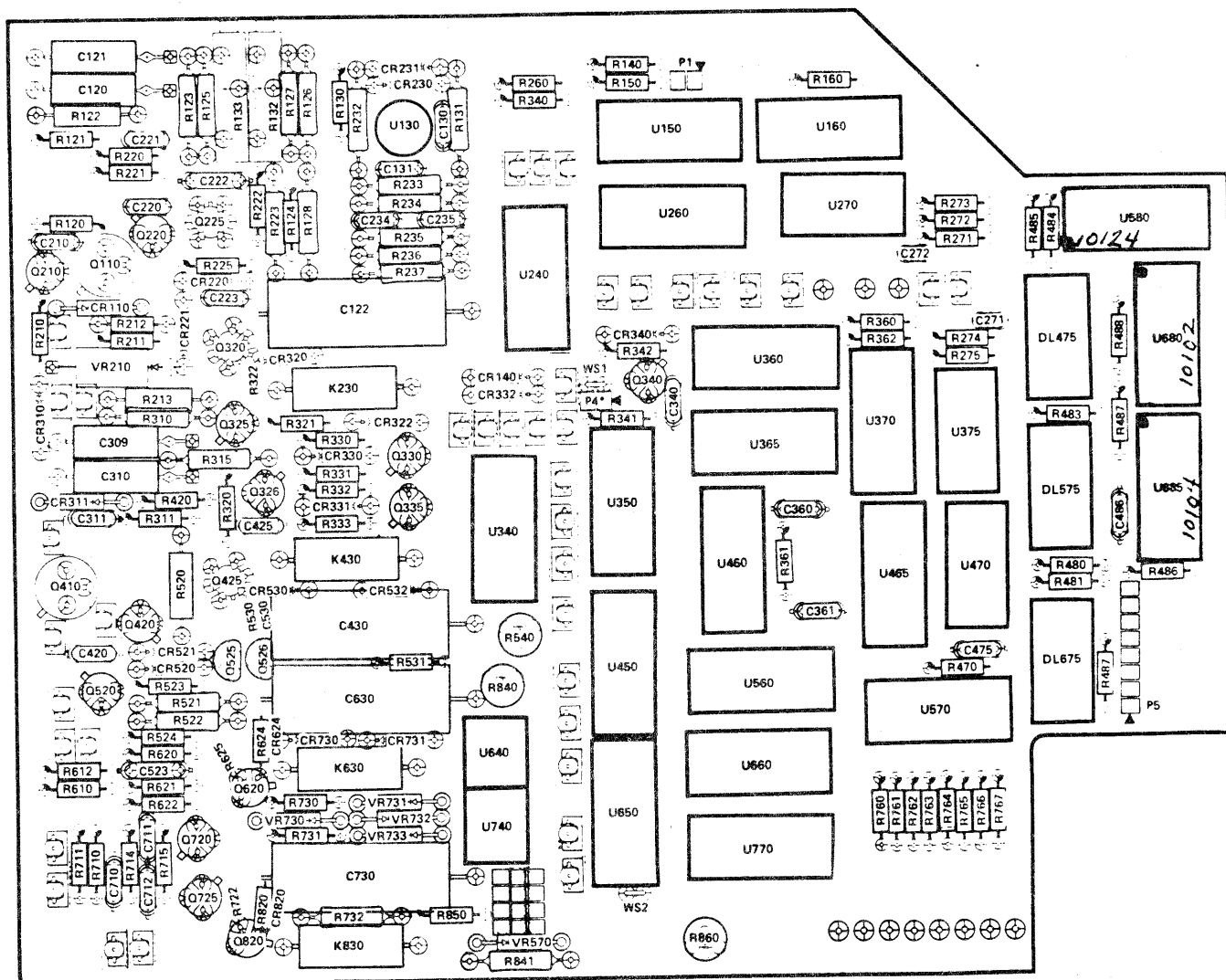
PROCEDURE FOR CLIP AND SOLDER UPDATE OF DIB SECTOR CARDS (CONTINUED)



D-1B/Y Data Card

(continued on the following page)

PROCEDURE FOR CLIP AND SOLDER UPDATE OF DIB SECTOR CARDS (CONTINUED)



Sample and Hold Board

--Jim Stubbs
92-236, Ext. 1287

TEKTEST SOFTWARE PROBLEM REPORTS

Directions for filling out these problem reports (Part #000-5504-00D) are found on the back of the pink sheet of the problem report form. The purpose of this communication is to emphasize the importance of following those directions. Of primary importance are the "Long Form Directory Listing", "Problem Duplication Procedure", and "Problem Demonstration Program."

Long Form Directory Listing - This provides us (Production Engineering) with the program version number. It shows us what version has the problem you are reporting. This way, if a newer version does not exhibit your problem, we can try duplicating your problem with the older version. By doing this we can make sure we can reproduce the problem and be assured the new version fixes it.

Problem Duplication Procedure - We, unfortunately, have not had the advantage of seeing your problem. Most of the obvious problems have been purged from Tektest and now most problems occur only under a specific set of circumstances or sequence of events. If, for example, the problem you're reporting occurs with the system disk in drive 1 and the testdrive in drive 0 we must be told to do that or we will likely try the problem out with the system and testdrive in 0 and fail to see your problem. We essentially need to be told everything that must be done starting after boot-up. Always include such things as DRIVE, TESTDRIVE, LUN assignments, E.C.O. allocations, how to translate, print enabled/disabled, which terminals require what responses. TELL US EVERYTHING, EVEN WHAT MAY SEEM OBVIOUS!

Problem Demonstration Program - With few exceptions, most problems can be demonstrated with a program of 10 lines or less. Often we get programs of 10 to 20 pages. Before we can start tracking down the source of the problem these programs must be reduced to a simple test case. Have you ever read someone else's program? It's usually not easy to tell what's going on and it takes days, perhaps weeks, to understand how it works. With this level of understanding it may take several days to reduce the problem. First of all, we don't have the device and we don't have the socket card/test fixture and any system we have available to us may not be configured close enough to yours to make the device program work. Some devices are awfully

difficult to understand. Furthermore, if you truly have a software problem, the problem can be demonstrated without a device.

If your problem demonstration program is more than 10 lines, please send us a copy on paper tape or mag tape because we must run your program in order to see the problem. Please send us all your patterns, data files, batch files, and pinlists. We would prefer you to use PAP128.PIN (Found in VERDICT) for your pin file.

(continued on the following page)

TEKTEST SOFTWARE PROBLEM REPORTS (CONTINUED)

Please include any information which may make the problem easier to resolve. For example, tell us the problem occurs under conditions A & C, but not B, D, & E.

System time is limited and must be used effectively. There are many people and departments in STS vying for system time. If we have good information for resolving problems we can solve your problem faster and help more people.

Written by--
Dave Suryan
STS Production Engineering
94-512, Ext. 1203

Inserted by--
Jim Stubbs
92-236, Ext. 1287

S-3200 POWER UP SEQUENCER MOD RELAY

On some 220V systems the solid state relay is failing in the power up sequencer. The newer sequencer uses a different solid state relay. The part number 148-1004-00 is the same so the only external difference is that there is a small round sticker with a "-10". This sticker is on top of the solid state relay.

The symptoms that may indicate a marginal or faulty solid state relay might show up as the following: Relays CLM, CHM, ICBA, I2 or I1 weld close. IC's U311, U312 on D1B and U411, U412 on D70, D80 going bad.

All old relays have been purged from the supply system. When you order new relays check for the sticker to be sure.

--Joe Lipska
92-236, Ext. 1634

S-3200: SOFTWARE CHANGES AND PROBLEMS SOLVED FOR AP011

The following list includes all S-3200 software version changes for accounting period 011.

Internal use only: If you have any questions or need software updates, please call.

--Craig Wasson
94-816, Ext. 1564

(continued on the following page)

SOFTWARE CHANGES AND PROBLEMS SOLVED FOR AP011

<u>Program Name</u>	<u>Hardware Supported</u>	<u>Old Version</u>	<u>New Version</u>	<u>Problem Description</u>	<u>Problem Solution or Changes</u>
OTOCAL.FNC	S3200	V02.21	V02.22	The DLYCAL function sometimes returns erroneous values.	Noise spikes can cause a false crossing to be found. The 3S6 is now programmed for smoothing mode.
FLUKE.FNC	S3200	V02.11	V02.22	The Function Statements (DUMDC, DUMAC DUMOHM) return an incorrect value when using "TRACE ON" in TCM.	R4 still pointed to the argument when control was returned to TCM. TRACE ON uses the R4 stack so the argument was corrupted. This is fixed by moving R4 past the argument.
ANALYZ.EDT	S3200			ANALYZ returns -NO DATA- if the /R or /S switch is used with the first entered command.	The /S and /R commands were never intended to be used as part of the initial instruction. Both switches cause the .LOG file to be reset to the previous level marker at the current level. The first time the file is accessed there is no previous level marker. (No further action will be taken).
BACKUP.RUN	S3200	V02.22	V02.23	The verify "/V" switch does not work for backing up files on to Mag Tape. The file is backed up but not verified.	The fix in version V02.21 created this bug. The verify switch now works correctly for Mag Tape.
DDVM.FNC	S3200	V02.11	V02.12		Changed so auto range now checks for OHMS function and acts accordingly.
CUSTOM.RUN	S3200	V02.21	V02.22		Restored stack pointer when necessary. End of buffer word was added.

(continued on the following page)

SOFTWARE CHANGES AND PROBLEMS SOLVED FOR AP011 CONTINUED

<u>Program Name</u>	<u>Hardware Supported</u>	<u>Old Version</u>	<u>New Version</u>	<u>Problem Description</u>	<u>Problem Solution or Changes</u>
PAT10.FNC	S3200	V02.20	V02.21		Changed signed branch to un-signed branch.
LOG.RUN	S3200	V03.01	V03.02		Added double precision unsigned integer divide routine. Added test for 'cr'.
REDUCE.RUN	S3200	V03.01	V03.02		Various fixes in RESTRT, corrected pointers, added a calculation for the LUN assignments.
BARRAY.FNC	S3200	V02.00	V02.01		Fixed to keep 'AC' error in the BARRAY subroutine from occurring.
F03260.RUN	S3200	IDD	IDE		Initialize code for multiple SM-2 signal switches added.

SOFTWARE ADDITION NOTICE SUMMARY FOR AP011

<u>Program Name</u>	<u>Supported</u>	<u>Version No.</u>	<u>Program Description</u>
DANAIF.EDT	S3200	465000	Verifies Dana 8010B counter interfaces and cabling.
E1501I.EDT	S3200	465100	Verifies EH1501 generators interface and cabling.
HPSSIN.EDT	S3200	465700	Verifies HP8660 interface and cabling.
TP450I.EDT	S3200	471100	Verifies TP450 interface and cabling.
W154IF.EDT	S3200	465300	Verifies WAVTEK 154 interface and cabling.
TP450.EDT	S3200	469100	Verifies Temptronics TP450
HANCK.EDT	S3200	469400	Clears common variables used in HANCK.EDT.

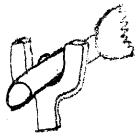
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SOFTWARE ADDITION NOTICE SUMMARY FOR AP011 CONTINUED

<u>Program Name</u>	<u>Hardware Supported</u>	<u>Version No.</u>	<u>Program Description</u>
HANCKØ.EDT	S3200	469300	Clears common variables used in HANCK.EDT.
CF1.EDT	S3270/80	471400	Verifies current programming accuracy and voltage compliance using the DC subsystem for measurement.
CL10.EDT	S3270/80	472100	Operates with 2942 pattern source programs, CL10P.EDT & CL10P1.EDT.
CL10T.EDT	S3270/80	472200	Operates with 2942 pattern source program, CL10P1.EDT.
CL10P.EDT	S3270/80	472300	2942 pattern source for use by CL10.EDT.
CL10P1.EDT	S3270/80	472400	2942 pattern source for use by CL10.EDT and CL10T.EDT.

S-3270, S-3280 SECTOR CARD FUSES

There is a potential problem with fuses on some D70 and D80 sector cards. The assembly group was applying heat to the post with the fuses laying on the post. As soon as solder melted, heat was removed. Because the fuse wire didn't heat up, a cold solder joint was made. Once oxidation takes place a resistance or open circuit will occur. The new procedure is to wrap the fuse lead around the post and apply heat to the lead and post on the side away from the fuse. If you encounter a system that is failing functional and/or driver test, check for cold solder joints on fuse connection.



--Joe Lipska
92-236, Ext. 1634

SIGNAL PROCESSING SYSTEMS

SPS SOFTWARE

The CP56008 7912AD checkout software package has no provision for accessing the checkout software data files and overlay files from a DEC RL01 or RX02 peripheral device. Should the user need or want this option, the following modification of the AD7912.ROM file should be made.

1. COPY "AD7912.ROM" TO "AD7912.BAK"
2. OLD in the file AD7912.ROM
3. Make these changes to existing program lines:

```
4 PRINT 'FOR EXAMPLE -DX1, DKO, ETC. '\INPUT DV$
5 LD$='DKDLXDY'\DV=POS(SEG(DV$,1,2),LD$,1)
6 IF DV=0 THEN 3\CHANGE 'ZZ' TO DV$\LOAD SEG(DV$,1,2)
21 OPEN #3 AS ZZ:'CONUM.ROM' FOR READ
42 OPEN #2 AS ZZ:B$ FOR READ
260 OVERLAY ZZ:'C023.ROM'
1360 OVERLAY ZZ:K$
1985 OVERLAY ZZ:K$
```
4. Delete the following lines:

22, 43, 261, 1361, 1986
5. REPLACE the file AD7912.ROM

Should a P-17 or P-18 error occur as a result of inputting an incorrect peripheral in response to the question in line 4, OLD the program in again, and restart it.

Thanks to Charlie Campbell, SPS Marketing.

--Dean Hager
92-236, Ext. 1284

92-515

MICHAEL A MIHALIK
COMBINATION WIZARDS