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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## COMMUNICATIONS DIVISION

1980

## PERSONNEL CHANGES

*LARRY ANDERSON* has recently joined Tek as a Field Service Specialist I in the Atlanta Field Office. Larry comes to Tek after completing a tour of duty with the U.S. Navy.

Welcome Larry!

******

*DAVE JACKSON* is the newest member of the Orlando Service Center T&M team. Dave joins Tek as an ET II with over thirteen years experience, the past ten with Syntonic Technology, a division of Control Data Corporation.

Welcome to Tek, Dave!

******

Boston is pleased to welcome the following technicians to their team.

*PETER MARKUS* - ET I

Peter recently graduated from Lane Community College (ASEE) in Eugene, Oregon. He has also owned a Graphic Arts business and a company that designed and manufactured bio-medical instrumentation. His varied background includes working as a financial chartist on Wall Street and a camera man in New York.

His hobbies include photography, chess, and reading science fiction.

Welcome to Tek Peter!

---

*RALPH LADABOUCH* - ET II

Ralph has a 20 year U.S. Air Force Electronics background with the last 12 years of his military career in the precision measurement field (PMEL/ Metrology). He has worked as a bio-medical technician in a large hospital and also has excellent supervisory qualifications.

Ralph's hobbies of bowling and fishing are going to sit on the side lines while he completes the remaining 60 credits towards a degree in Accounting.

Welcome aboard Ralph!

---

## PERSONNEL CHANGES (CONTINUED)

*JAMES GOWLER* - ET II

Jim recently returned to the U.S. from Perth, Western Australia where he was employed as Assistant Manager for a two way radio company. Jim has served in the U.S. Navy Electronics field with assignments in New Zealand, Antarctica and Hawaii. He has received a degree in Business Administration and has a good supervisory background.

Jim has a truly international family as he is an American, his wife Australian, and their children are New Zealanders. His hobbies include golf, softball and jogging.

A warm welcome to Jim and a wish for success here at Tek!

********

## PROMOTION

Congratulations are in order for *HARRY TURNBULL* on his promotion to Service Center Manager for Santa Clara. Harry's previous position was Field Service Supervisor for both IDD and Systems in our Seattle Field Office.

Harry will assume his new position in Santa Clara effective August 18, 1980.

Best wishes and continued success for the future!

--Editor
56-037, Ext. 8939

## STOLEN INSTRUMENTS (INTERNATIONAL)

The following instruments have been reported by EMC as missing.

| PRODUCT | SERIAL NUMBER | LOCATION MISSING FROM |
|---|---|---|
| 465 | 706-492 | Rhode & Schwarz, Munich |
| 465 | 100810 | Customer in Finland |
| D32 | E 703272 | MSSRS. Helf, Vienna, Austria |

If any of these instruments appear in your service area or you have any information regarding them, please contact the Service Support group in EMC.

-- Editor
56-037, Ext. 8939

## REPORT DISTRIBUTION

Please ensure technicians, CSR's and supervisors are mailing the following forms and reports to the appropriate mail station. There appears to be an increase in mis-addressed mailings.

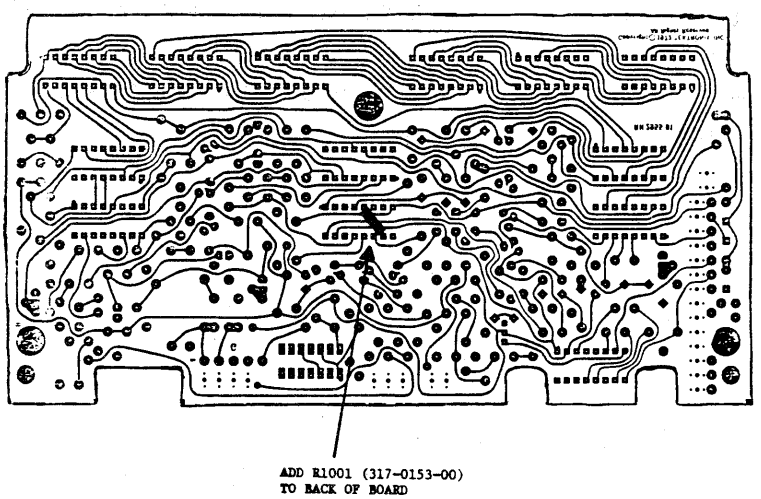
| | | |
|---|---|---|
| 1. | Time Distribution Sheets (TDS) | M/S 56-063 |
| 2. | Service Information System Copies of the Service Record | M/S 53-114 |
| 3. | Module Exchange Packets Of The On-Site Service Record | |
| | a. With Module For Exchange | M/S 56-095 |
| | b. If Repair Done In Field | M/S 53-114 |
| 4. | Component Failure Warranty Information Copy of the Service Record with Component | M/S 53-114 |
| 5. | Job Number Reports | M/S 56-037 |

--Bill Duerden
56-037, Ext. 8938

## 5440/R, 5441/R READOUT MALFUNCTION

Reference: 5440/R Instruction Manual P/N 070-2139-01
5441/R Instruction Manual P/N 070-2140-00

To prevent possible readout malfunctions, such as decimal point placement or wrong numbers, a resistor is being added to the character skip line. The resistor, a 15K ohm 5% 1/8 watt, P/N 317-0153-00, is being added on the back of the readout board. It is installed between pin 4 of U1000 and ground.




--John Eaton
58-511, Ext. 6902

## 5440/R, 5441/R TRANSISTOR AVAILABILITY

Reference: 5440/R Instruction Manual P/N 070-2139-01
5441/R Instruction Manual P/N 070-2140-00
Corporate Mod #M39493

Due to limited availability of P/N 151-0271-00 transistors used in the vertical amplifiers of the above instruments, they are being replaced as necessary with P/N 151-0434-00 transistors. The circuit numbers of the effected parts in the above instruments are Q148 and Q165.

--John Eaton
58/511, Ext. 6902

067-0883-99/067-0919-99

Inquiries from various field offices indicate the above combination is desired to be programmed and used on certain older power supplies. Information on what the minimum and maximum loads required were not specified for the older power supplies. Evaluation Engineering empirically determined these values for 7904, 7704A and the 7600 Series.

Foldback currents are approximations and may vary by as much as 20%. Greater variances indicate a problem in the foldback circuit.

Some power supply types may not accommodate all voltages being in maximum current at the same time. An example is the 7904. 7000 Series oscilloscopes are rated at 16.5 watts per plug-in. 16.5 x 4 is 66 watts. The mainframe itself consumes approximately 50 watts. The 7904 power supply then must reliably provide a total of 116 watts, but not necessarily 207 watts, the total of all maximum wattages.

Currents, minimum, maximum and fold back for the three instrument supplies are:

| Supply | Minimum | Maximum | Foldback |
|---|---|---|---|
| **7704A** | | | |
| -50 | .08 | .48 | .62 |
| -15 | .7 | 3.2 | 3.55 |
| + 5 | .45 | 2.8 | 3.5 |
| +15 | .7 | 3.8 | 4.5 |
| +50 | .2 | .62 | .7 |
| + 5 Lights | .3 | 3.5 | None |
| **7904** | | | |
| -50 | .08 | .54 | .58 |
| -15 | .8 | 3.4 | 3.75 |
| + 5 | .4 | 2.9 | 3.3 |
| +15 | 1 | 3.7 | 3.8 |
| +50 | .2 | .65 | .81 |
| +130 | .036 | .07 | None |
| + 5 Lights | .3 | 3.5 | None |

(Continued next page)

| Supply | Minimum | Maximum | Foldback |
|---|---|---|---|
| 76ØØ (Derived from 7633) | | | |
| -50 | .18 | .48 | .52 |
| -15 | .84 | 2.5 | 3.3 |
| + 5 | .6 | 2.3 | 3.28 |
| +15 | .6 | 3.0 | 3.2 |
| +50 | .23 | .55 | .64 |
| +130 | .035 | .07 | Fused .15A |
| + 5 Lights | .01 | .6 | None |
| +15 Raw | .5 | 1.0 | Fused 2A |

Some suggestions for the wiring interface to the ULU are offered.

1. Install the same capacitance as the power supply sees when connected to the instrument in the shells of the Blue Ribbon connector; a small piece of vector board may be helpful in some cases.

2. Use as short as comfortable cables out of the Blue Ribbon connector to harmonicas. In production they use a short extension Harmonica to Harmonica with an appropriate square pin strip interconnect to prevent having to change the whole cable when the end harmonica wears out. The square pin strip is 131-1343-00.

3. Use #20 wire or larger for the power connections. #26 is okay for the sense lines.

4. One cable will service 7903, 7904, and the 7844.

5. Connections to the +130 are best made with an insulated clip lead.

Information on other supplies will be published when available. Our thanks to Jim Peterson, Evaluation Engineering and Del Weaver, Production Engineering, for supplying the foregoing information.

--Dean Hager
92-236, Ext. 1284

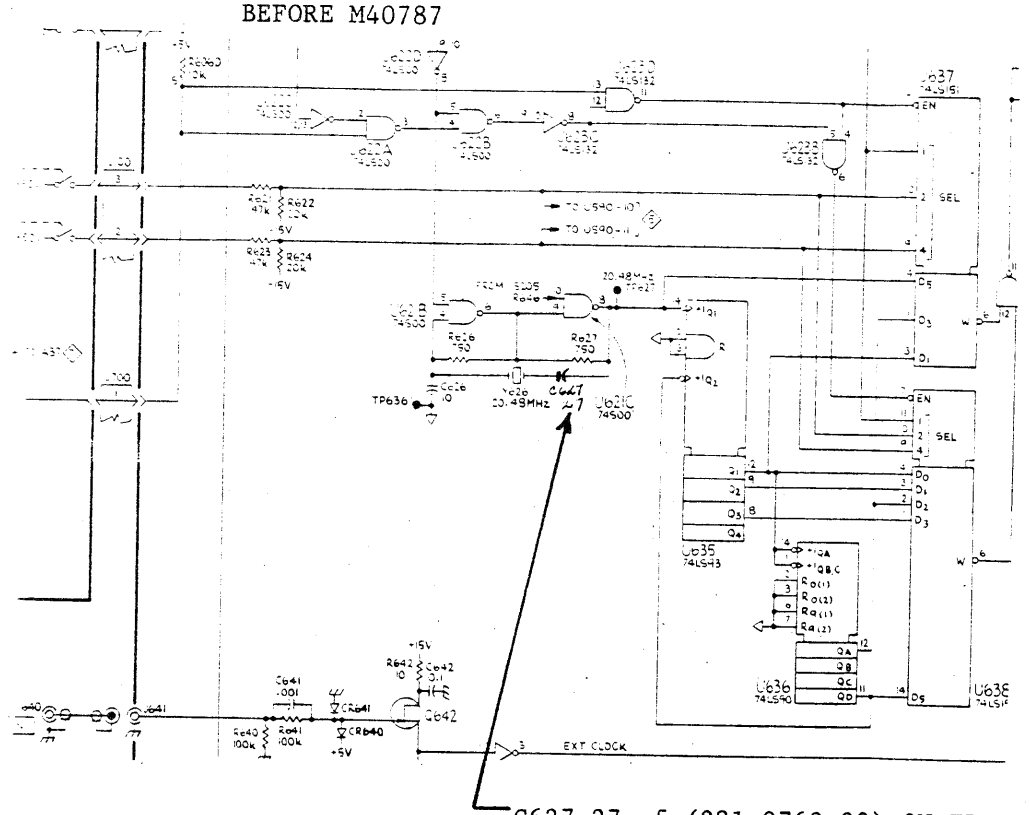
## 7B87, INSURE STARTING OF CLOCK OSCILLATOR

Reference: 7B87 Instruction Manual P/N 070-2788-00
Corporate Mod #M40787
Clock Generator ◇6◇

At serial #B010121 a mod was installed to insure that the clock generator would start at any sweep speed when the unit was powered up. The problem would only show up when the time per division was set to very fast sweep speeds. The mod consisted of changing C627 from 27pf, P/N 281-0762-00, to a 0 ohm resistor, or terminal link connector, P/N 131-0566-00. Also change C626 from a 10pf, P/N 281-0811-00, to LR626, a 2.45μh, P/N 108-0797-00. LR626 must be installed on the back side of the boards. Cut the run between LR626 and Y626 and add C625, .01μf cap P/N 281-0775-00, in series with LR626. Connect the other end of the capacitor to R626, 7.5 ohm resistor, on the end connected to pin 4 of U621B, as shown on the following schematics.

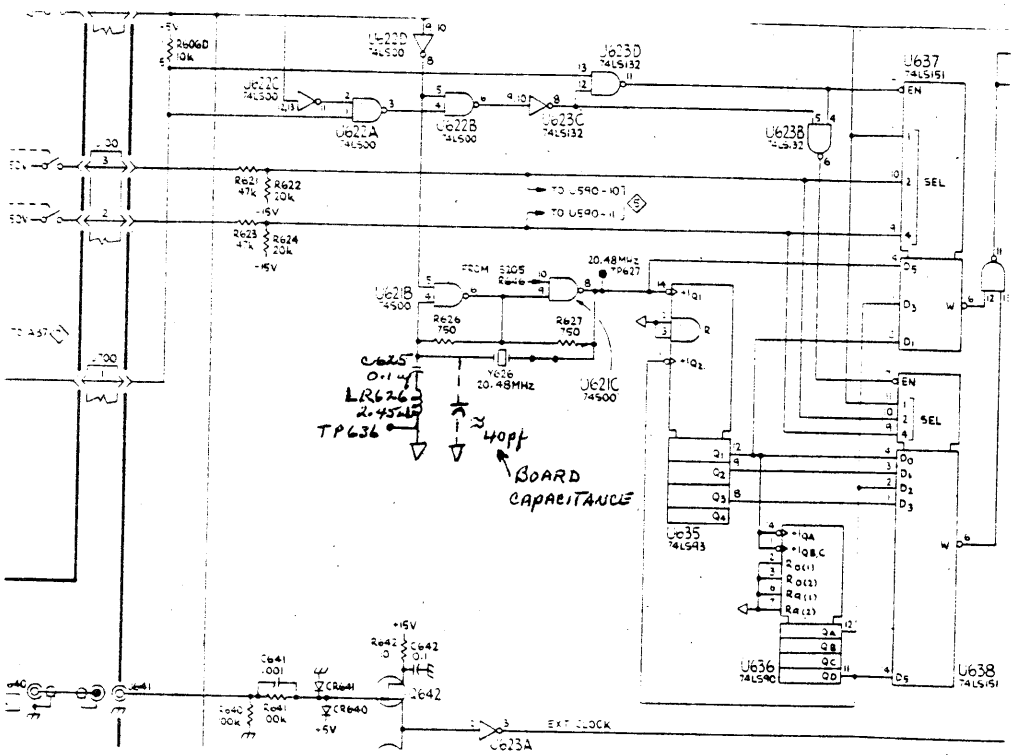
(continued on the following page)

BEFORE M40787




C627 27 pf (281-0762-00) ON ELECTRICAL LIST, BUT NOT ON SCHEMATIC

AFTER M40787




CLOCK GENERATOR 6

--John Eaton
58/511, Ext. 6902

## CRT SOCKET KIT P/N 040-0876-01

The modification kit P/N 040-0876-01 is no longer available and the order entry system will not process this part number.

The recall associated with the socket problem has been terminated. The FDA has stated that Tektronix has fulfilled its obligation for this recall.

Replacement parts for the CRT socket are available. Refer to the Service Manual parts list.

--Dave McKinney
58/511, Ext. 7072

## 400 RECORDER TENSION GATE

Reference: Kit P/N 050-1309-00
S/N B020000 - B024419

To provide a stronger adjustable tension gate for the chart-paper holder, an aluminum block, P/N 214-2684-02, replaces the plastic version P/N 214-2684-00. Use of the new hinge requires changing two mounting screws from flat-head to pan-head screws. All replaceable parts are included in the Kit, P/N 050-1309-00.

If the S/N of your instrument is above those listed or if the kit has been installed, disregard the kit and install P/N 214-2684-02 as a direct replacement.

--Dave McKinney
58/511, Ext. 7072

## 492 - 33KHZ POWER SUPPLY SPURS

Reference: 492 Service Volume #2

◇15◇ 829MHZ Diplexer (A23A4)
Effective Serial Numbers - All Below B010445

33KHZ spurs caused by the mixer bias line can be eliminated by changing L1010 from a 108-0598-00 to a 108-1043-00 and C1012 from a 283-0339-00 to a 283-0203-00.

This mod should only be put in instruments below S/N B010445 if the 33KHZ spurs are present.

Tektronix Internal Use Only

Corporate mod number is M40151.

--Rich Kuhns
58/511, Ext. 6782

## 1410 SERIES/EXTENDER BOARDS AVAILABLE FOR SPG, TSG & TSP PLUG-INS

Service Support has 10 P/N 670-4441-01 extender boards and accessories available. Any Service Center that would like to have one should contact me.

--Steve Schmelzer
58/511, Ext. 6507

## 650A/670A DEFECTIVE EHT'S

All EHT's, P/N 119-0320-05 and 06, with date codes 8020-2, 8024-1, 8024-2, 8024-3, and 8024-4, are defective. All EHT's, P/N 119-0724-01, with the above date codes and including 8024-5, are defective.

These EHT's may also be identified by the coloring of the coating applied to the area of the board that is encapsulated. A small area of this coating is visible at the junction of the board and the encapsulating material. The EHT's that are defective have a clear coating. The good EHT's have a slight pinkish cast to the coating.

Please purge and discard all EHT's with these date codes and reorder as necessary.

--Steve Schmelzer
58-511, Ext. 6507

PORTABLES

## 211, 212, 213, 214, 221 POWER CORD

Serial Numbers: All
Reference: Power Cord, P/N 161-0078-01

Due to a change of vendors, a larger, two-terminal plug power cord for the 200 Series scopes was put into the stock system (see Fig. 1). This large plug will fit into the storage compartment for the AC plug on the 212 and 214 instruments, and will not fit the 211, 213, and 221 instruments.

However, some 212 and 214 instruments are shipped with a power plug adapter, P/N 161-0077-01, and the large plug will not fit into this adapter because the female receptical is recessed. (The adapter has one end to accept the smaller plug and one end which has just a power cord, so the user may adapt any type power plug he desires.)

All the large plug-type power cords have been removed from stock, and all service center stocks should be purged. Reorder the cords as necessary. Both styles of power cords have the same part number.

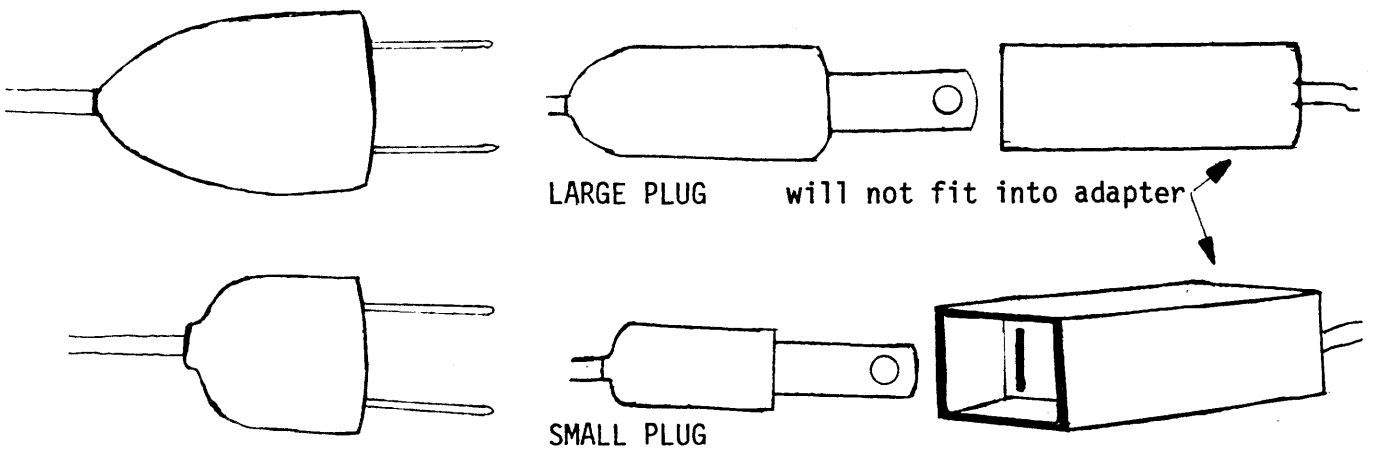



FIG. 1

--Mike Laurens
58-511, Ext. 7173

## TLS22/TLS61 OSCILLOSCOPES

These oscilloscopes use blanking rather than unblanking pulses to the control grid of the CRT. The pulses are capacitively coupled combined with a D.C. restorer circuit. Therefore, in the absence of blanking pulses, i.e. no signal input and out of AUTO trigger, a bright spot will appear on the CRT face. Under these conditions the bright spot is not a malfunction. The spot brightness can always be controlled by the INTENSITY control.

--Tom Herd
43-000, Ext. 6205

## 4052/4054 TAPESEND ENHANCEMENT ROMPACK CHECKSUM

Listed below is the ROM checksum for the 4052/4054 Tapesend Enhancement ROMpack. Please include it with the list of 4052/4054 ROM checksums published in Wizards issue 10-13, 27 June 1980, page 28 & 29.

Tapesend Enhancement ROMpack

U100 160-0870-00 73A6 Level 1.1

--Frank Lees
63/503, ext. 3929

## 600 SERIES PRODUCTS

The 600 series marketing, manufacturing and engineering groups have moved to the Wilsonville facility. Consequently, IDD Service Support already in Wilsonville, will assume responsibilities for that product line.

Personnel to contact will be; Kent Barnard, Service Program Specialist, ext. 3598

George Kusiowski, Product Assurance Engineer, ext. 3928

| Product | Product Assurance Eng. Technical Questions | Business Questions |
|---|---|---|
| 602 | Factory Service | Kent Barnard |
| 603 | Factory Service | Kent Barnard |
| 603A | George Kusiowski | " |
| 604 | Factory Service | " |
| 604A | George Kusiowski | " |
| 605 | Factory Service | " |
| 606 | Factory Service | " |
| 606A | George Kusiowski | " |
| 606B | George Kusiowski | " |
| 607 | Factory Service | " |
| 607A | George Kusiowski | " |
| 608 | George Kusiowski | " |
| 620 | George Kusiowski | " |
| 624 | George Kusiowski | " |
| 634 | George Kusiowski | " |

--Kent Barnard
63/503, ext. 3598

## MICROCOMPUTER DEVELOPMENT PRODUCTS (MDP)

### 8002A, MICROLAB 1 AND MICROLAB PERSONALITY CARD PART NUMBERS

In the following list the part numbers for the Microlab, Personality Cards and the standard accessories shipped with each will be listed. The part numbers for only the available production models will be listed. The standard accessories are included with each item when it is shipped from the Factory. The optional accessories must be ordered separately. I would like to thank Dave Butler for bringing it to our attention that this list would be beneficial.

| | |
|---|---|
| Microlab 1 (120V, North American) | 067-0892-00 |
| Microlab 1 (220V, Universal European) | 067-0892-01 |
| Microlab 1 (240V, U.K.) | 067-0892-02 |
| Microlab 1 (240V, Australian) | 067-0892-03 |
| Microlab 1 (240V, North American) | 067-0892-04 |

Standard Accessories

| | |
|---|---|
| Instruction Manual | 070-2827-01 |
| Cassette Cable Assembly | 175-5100-00 |
| Cassette Cable Assembly | 175-5101-00 |
| (Also included will be one of the following power cords depending upon the location). | |
| Power Cord (120V, North American) | 161-0066-00 |
| Power Cord (240V, European) | 161-0066-09 |
| Power Cord (240V, U.K.) | 161-0066-10 |
| Power Cord (240V, Australian) | 161-0066-11 |
| Power Cord (240V, North American) | 161-0066-12 |

Optional Accessories

| | |
|---|---|
| Personality Extender Card | 067-0910-00 |
| RS-232 Cable | 012-0630-01 |
| Buss Expansion Cable | 015-0393-00 |
| 1802 Personality Card | 018-0144-00 |
| Standard Accessories | |
| 1802 Personality Card Supplement to Microlab Instruction Manual | 070-2866-01 |
| F8 Personality Card | 018-0145-00 |
| Standard Accessories | |
| F8 Personality Card Supplement | 070-2864-01 |

(continued on the following page)

| | |
|---|---|
| 3870/3872 Personality Card | 018-0147-00 |
| Standard Accessories | |
| 3870/3872 Personality Card Supplement | 070-2862-01 |
| 3870/3872 Software Version 1.0 (Personality card operating software) | 062-4125-00 |
| 6800/6802/6808 Personality Card | 018-0151-00 |
| Standard Accessories | |
| 6800/6802/6808 Personality Card Supplement | 070-2939-01 |
| MCS-48 Personality Card | 018-0152-00 |
| Standard Accessories | |
| MCS-48 Personality Card Supplement | 070-2937-00 |
| MCS-48 Software Version 1.1 | 062-4662-00 |
| 6500/1 Personality Card | 018-0153-00 |
| Standard Accessories | |
| 6500/1 Personality Card Supplement | 070-2941-00 |
| 6500/1 Software Version 3.1 | 062-4452-00 |
| 8085 Personality Card | 018-0146-00 |
| Standard Accessories | |
| 8085 Personality Card Supplement | 070-2860-00 |
| Z80 Personality Card | 018-0156-00 |
| Standard Accessories | |
| Z80 Personality Card Supplement | 070-2861-00 |

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

## S-3200: D80 COMPENSATOR WIRES

Individual part numbers have now been set up for the D80 Compensator. D80 Assembly 672-0694-04. Compensator circuit board assembly 670-5437-01 mechanical parts list is located in manual 070-3316-00, page 3-21.

Add:

| Qty. | Part Number | Description | |
|---|---|---|---|
| 1 ea. | 195-1323-00 | 175-0529-00 | 4.5" 9-N |
| 1 ea. | 195-1324-00 | 175-0731-00 | 3.5" 2-1 |
| 1 ea. | 195-1325-00 | 175-0733-00 | 1.25" 0-1 |

The old wire kit 175-2187-00 has been deleted.

--Ron S. Lang
92-236, Ext. 1015

## S-3200: INTERFACE TESTING

There is a new interface checking program for the S-3200 systems. It replaces the ENTER.RUN. The new program which is supportable is called INTFAC.RUN:MNT. I have sent this program with a preliminary manual to each service center. If you have not received this program yet, please contact Service Support. Or you can order it P/N 062-4816-00. I have a request in for the manuals and will send them out when I receive them. If you need to order additional manuals, the part number is 070-3647-00.

--Joe Lipska
92-236, Ext. 1634

## S-3200: NEW FLUKE 8400A DVM CABLE (TEK MADE)

New cable assembly for 021-0134-00 Fluke 8400A interface. Cabling for R1340 to Fluke 8400A.

| | | |
|---|---|---|
| 1 ea. | 012-0623-00 | Cable, Interconnect, 1803 to 8400A DVM |

This cable assembly has the Fluke connector #321661.

--Ron S. Lang
92-236, Ext. 1015

## S-3200: PRAM EDGE CONNECTOR MAY CAUSE INTERMITTENT CLOCK

In S-3200 systems which have the PRAM, the potential exists for failures or intermittent problems caused by misaligning the edge connectors. The pads on these connectors are smaller and closer together.

The PRAM circuit boards as with all ECB's are routed to final size. During this process if one side is shaved closer to the pads, or the ends of the edge connector are not trimmed evenly, an offset may occur when the circuit board is placed in the card nest. When running verdict, if the clock generator won't run or the phases are failing, try reseating the PRAM Error Logic Board. This play at either end of the connector board may have allowed External Enable to become shorted to ground.

--Jim Stubbs
92-236, Ext. 1287

## S-3200: SECTOR CARD TROUBLE BOOK

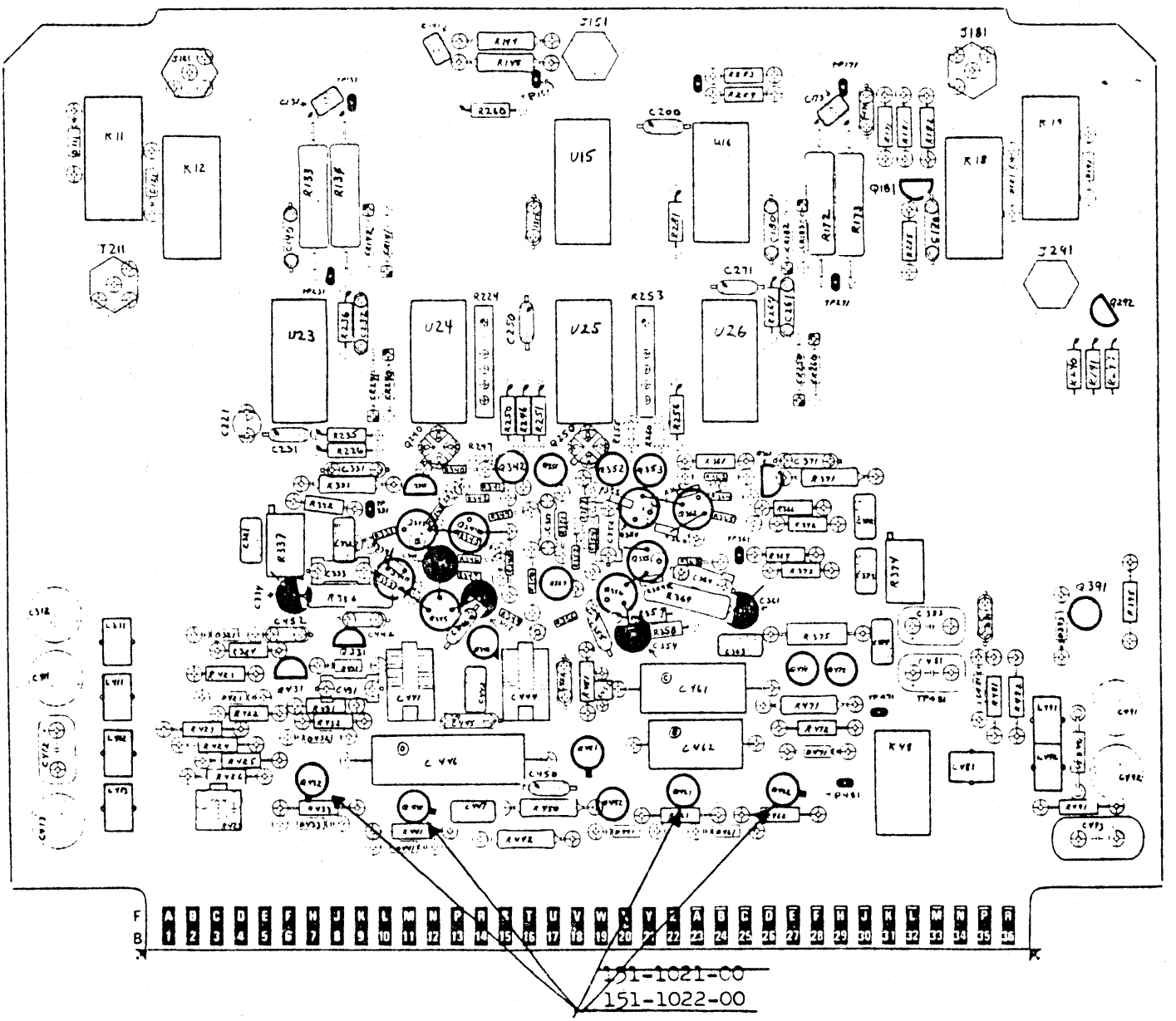
Each service center will receive a copy of this log. It includes hard copies of verdict tests used to verify Sector Card Driver S-H, Data Driver and Comparators. This data can be used as an aid in localizing problem areas or even defective components. Simply locate the graph which is similar to the failure you are experiencing. Check your sector card against the information given in the trouble book. The intention here is to provide some troubleshooting tips. This trouble book is historical data, compiled by STS Manufacturing Test Group. They frequently use it as a reference to speed up Sector Card Repair.

--Jim Stubbs
92-236, Ext. 1287

## S-3200: SSTMS MAY GIVE ERRONEOUS READINGS AT THE BEGINNING OF RTADJ.EDT:VDT

The Delta T subsystem output card has been modified. Q432, 441, 461 and 462 have been replaced with FET's which have lower gate source cutoff voltage. The old part numbers were 151-1021-00. The new part numbers are 151-1022-00. The assembly number changes from 670-2409-02 to 670-2409-03.

(continued on the following page)




Written by--
Carl Baker,
STS Production Engineering

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

067-0883-99/067-0919-99

Inquiries from various field offices indicate the above combination is desired to be programmed and used on certain older power supplies. Information on what the minimum and maximum loads required were not specified for the older power supplies. Evaluation Engineering empirically determined these values for 7904, 7704A and the 7600 Series.

Foldback currents are approximations and may vary by as much as 20%. Greater variances indicate a problem in the foldback circuit.

Some power supply types may not accommodate all voltages being in maximum current at the same time. An example is the 7904. 7000 Series oscilloscopes are rated at 16.5 watts per plug-in. 16.5 x 4 is 66 watts. The mainframe itself consumes approximately 50 watts. The 7904 power supply then must reliably provide a total of 116 watts, but not necessarily 207 watts, the total of all maximum wattages.

Currents, minimum, maximum and fold back for the three instrument supplies are:

| Supply | Minimum | Maximum | Foldback |
|---|---|---|---|
| **7704A** | | | |
| -50 | .08 | .48 | .62 |
| -15 | .7 | 3.2 | 3.55 |
| + 5 | .45 | 2.8 | 3.5 |
| +15 | .7 | 3.8 | 4.5 |
| +50 | .2 | .62 | .7 |
| + 5 Lights | .3 | 3.5 | None |
| **7904** | | | |
| -50 | .08 | .54 | .58 |
| -15 | .8 | 3.4 | 3.75 |
| + 5 | .4 | 2.9 | 3.3 |
| +15 | 1 | 3.7 | 3.8 |
| +50 | .2 | .65 | .81 |
| +130 | .036 | .07 | None |
| + 5 Lights | .3 | 3.5 | None |

(Continued next page)

| Supply | Minimum | Maximum | Foldback |
|---|---|---|---|
| 76ØØ (Derived from 7633) | | | |
| -50 | .18 | .48 | .52 |
| -15 | .84 | 2.5 | 3.3 |
| + 5 | .6 | 2.3 | 3.28 |
| +15 | .6 | 3.0 | 3.2 |
| +50 | .23 | .55 | .64 |
| +130 | .035 | .07 | Fused .15A |
| + 5 Lights | .01 | .6 | None |
| +15 Raw | .5 | 1.0 | Fused 2A |

Some suggestions for the wiring interface to the ULU are offered.

1. Install the same capacitance as the power supply sees when connected to the instrument in the shells of the Blue Ribbon connector; a small piece of vector board may be helpful in some cases.

2. Use as short as comfortable cables out of the Blue Ribbon connector to harmonicas. In production they use a short extension Harmonica to Harmonica with an appropriate square pin strip interconnect to prevent having to change the whole cable when the end harmonica wears out. The square pin strip is 131-1343-00.

3. Use #20 wire or larger for the power connections. #26 is okay for the sense lines.

4. One cable will service 7903, 7904, and the 7844.

5. Connections to the +130 are best made with an insulated clip lead.

Information on other supplies will be published when available. Our thanks to Jim Peterson, Evaluation Engineering and Del Weaver, Production Engineering, for supplying the foregoing information.

--Dean Hager
92-236, Ext. 1284

## 7A16P: READOUT MAY DROP OUT LETTERS WITH HORIZONTALS; 7B92A, 7B53A AND OTHERS

REFERENCES: Manual 070-2308-00 Schematic Diagram 6. Modification #M40107.

SYMPTOMS: When the 7A16P is used with other than a programmable plug-in, you may lose the 'S' in the readout from the non-programmable plug-in. This has been seen in the 7912AD using a 7B53A or a 7B92A.

SOLUTION: On the backside of the A30 Programming Logic Board (670-4916-XX) cut the run between Pin 10 of U1330 and Pin 3 of U1620 as shown in Diagram 'A'. Strap Pin 10 of U1330 to Pin 13 of U1530 as shown in Diagram A.

Replace R1432 (7.5 KΩ) with a 10 KΩ resistor Part Number 315-0103-00. This changes 670-4916-02 to a 670-4916-03.

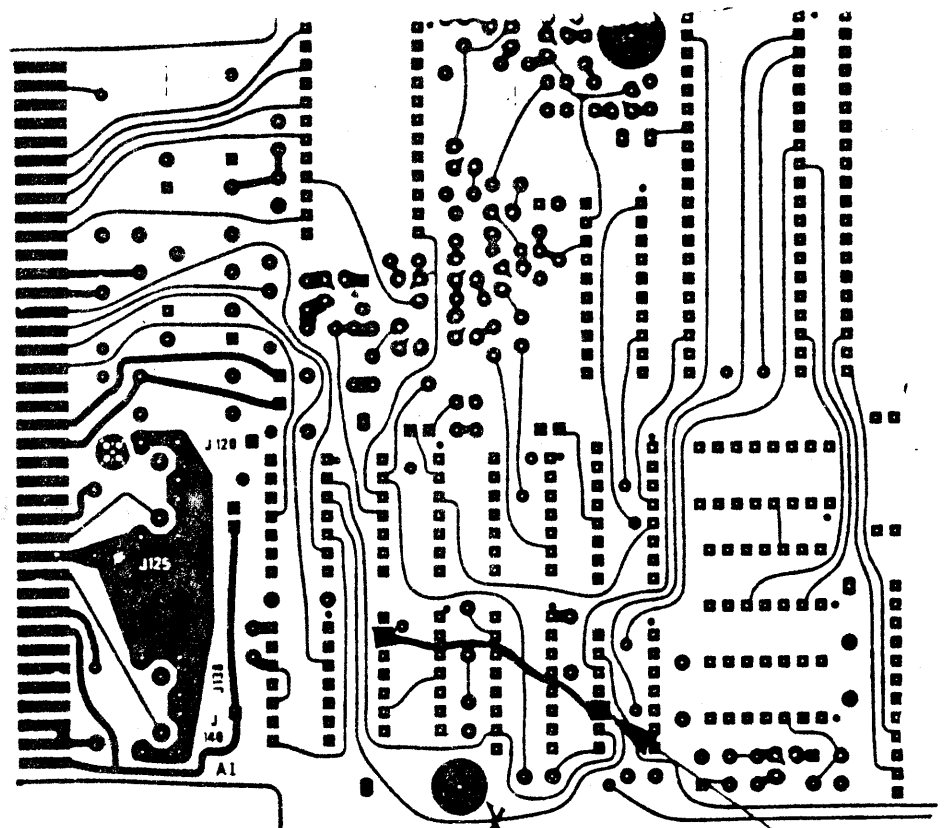
The schematic representation is shown in Diagram B.

Note: A special thanks to Mike Hines for the information on the 7B53A.

(continued on the following page)

DIAGRAM A

BACKVIEW OF THE 670-4916-03 BOARD

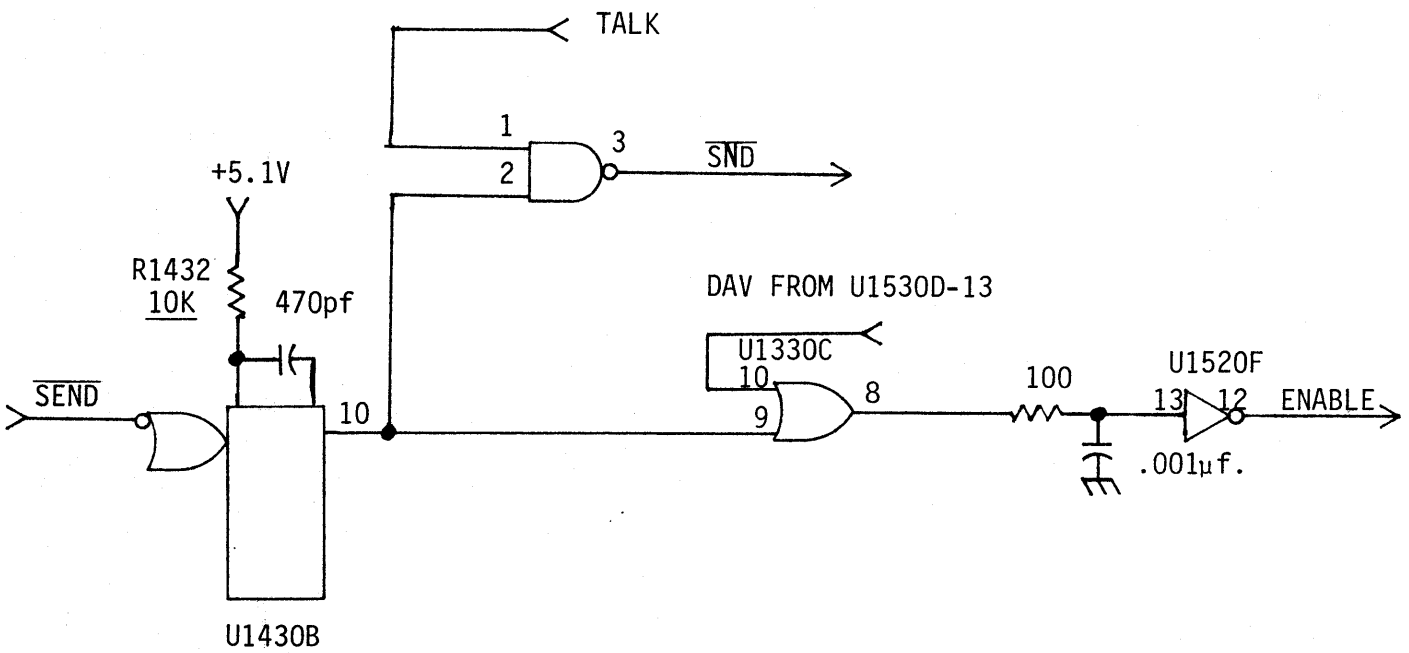



CUT RUN BETWEEN PIN 10 OF U1330
AND PIN 3 OF U1620

STRAP FROM PIN 10 OF U1330
TO PIN 13 OF U1530

(continued on the following page)

DIAGRAM B
PARTIAL OF SCHEMATIC DIAGRAM 6




--Randy Newton
92-236, Ext. 1635

## 7B90P: READOUT ON OTHER PLUG-INS MAY LOSE OR CHANGE LETTERS IN DISPLAY

REFERENCES: Manual 070-2309-00 Schematic Diagram 7. Modification #M40107

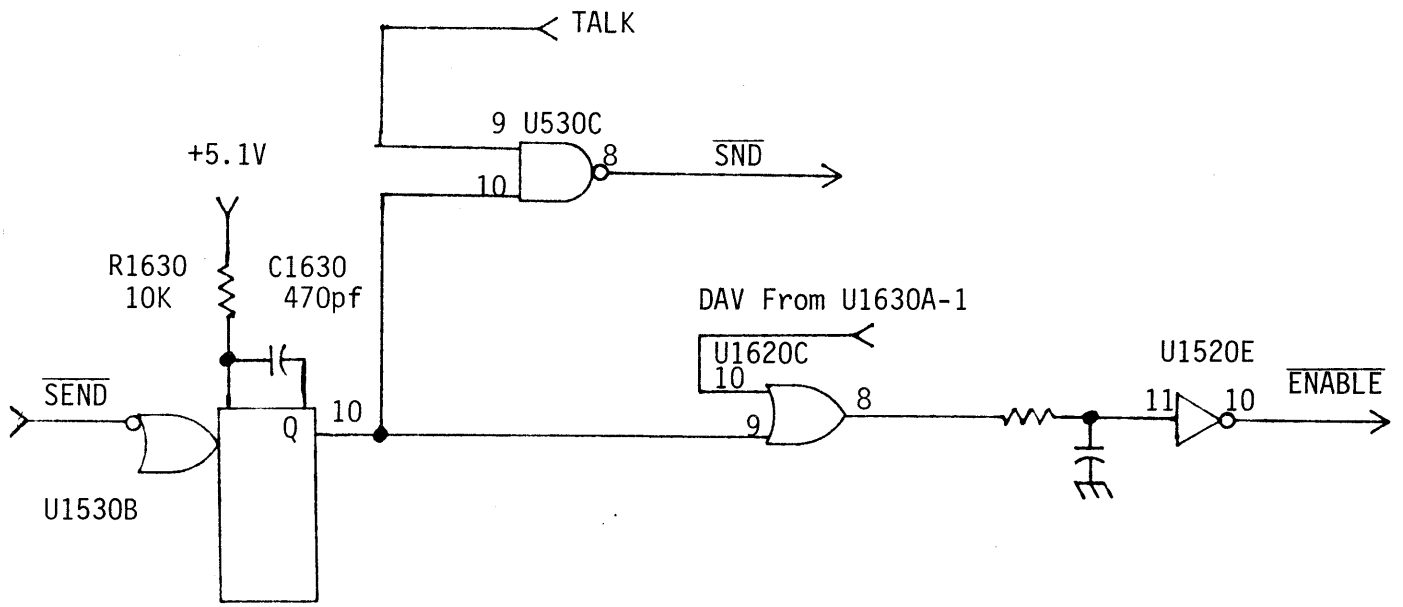
SYMPTOMS: When the 7B90P is used with other than a programmable plug-in, you may lose one of the last letters in the vertical plug-in's readout.

SOLUTION: Lift Pin 10 of U1620 of the A50 Programmer Board (670-5039-00). Then strap lifted Pin 10 of U1620 to Pin 1 of U1630. Remove C1630 and R1630. Replace C1630 with a 470 pf capacitor Part Number 283-0032-00 and replace R1630 with a 10 KΩ resistor Part Number 315-0103-00.

This mod changes the 670-5039-00 to a 670-5039-01.

The schematic representation is shown in the following diagram.

PARTIAL OF SCHEMATIC DIAGRAM 7




--Randy Newton
92-236, Ext. 1635

## 7912AD: FLASHING INTENSITY

REFERENCES: Wizard's Workshop Issue 10-6, March 21, 1980, Page 33.

MANUAL: 070-2385-00, Figure 4, Items 56 & 75

MODIFICATION: #M39282

Symptom: Consistent flashing intensity seen on the TV monitor or the XYZ monitor. Commonly called, "Flashing Bricks."

Solution: There is an orderable 050-1371-00 Mod Kit to be used to replace flashing Hi Voltage Bricks. This kit is only required for instruments under Serial Number B050506. For instruments with this 050 kit installed or instruments above Serial #B050506 the new Hi Voltage Brick part number is 119-0452-05. This brick will not fit old instruments because the CRT shield has been redesigned.

--Randy Newton
92-236, Ext. 1635

## OPTIONAL PATCH ALLOWS GRAPHING VIDEO LINE 263 (ANSWER SERVICE BULLETIN #5)

The following program lines allow a user to sample and graph line 263. This patch is optional and should not be distributed unless the customer requests ability to sample and graph line 263.

### SAMGRP.PCH - ALLOW GRAPHING LINE 263

```
16001 !SAMGRP.PCH 11-JUL-80
16150 PRINT 'ENTER LINE # (1-263): ';\INPUT A$
16170 IF LN>263 THEN 16150
```

--Steve Schmelzer
58/511, Ext. 6507

NOTE: Answer Service Bulletins #1 thru 4 were printed in $W^2$ Issue 10-13. These titles were:

Answer Service Bulletin #1
Additional Recommended Equipment for 1980 (#2)
Returning to Measurement Routines After System Interruption (#3)
False "FPULSE" Errors (#4)

MICHAEL A MIHALIK 92-515

COMBINATION WIZARDS