Tektronix®
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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.
****

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MEDICAL MONITORS

Beaverton Patient Monitoring Corporation has officially changed its name to Vitatek, Inc. Please continue to use the BPM name for billing purposes on Service Records. The Tek invoicing system has been set-up under the BPM name. The address has not changed.

The Tek Field Service responsibility is limited, essentially, to providing technical and maintenance support. Any questions on sales of parts, accessories, or instruments should be directed to your area representative, or the customer should be directed to contact Vitatek by the Watts line number (800-547-8805).

--Todd Paulus
58/511, Ext. 1493

SAMPLING TRAINING PACKAGE

A self-study training package is now available providing a service technician with the capabilities of becoming knowledgeable with sampling oscilloscope concepts and in particular the 7S11, 7T11, and S1 sampling units. This package was developed by Steve Gentis, and provides excellent depth into the circuits of these units.

Order from the Training Publications group, Mailing Station 56-086, Extension 8077 Merlo Road. These is no cost-transfer charge.

Submitted by--
Dick Hornicak
54-077, Ext. 8834 MR

SERVICE RECORD PROCESSING

During the month of April, the Exchange Center received 2570 defective modules for exchange or as return of loans. Of this total, 552 (or over 21%) were received without any service record. When a defective module is received without a service record, the Exchange Center must fill one out before the module can be forwarded to the repair area. Since the proper activity code is not known, Activity Code 01 is assigned to all of these service records.

Because of this, we are overstating our expense for repair business operations and understating the correct activities.

Again, we must remind everyone concerned of the importance of following FRM procedures (see Sec. 700C2, pages 4, 41 thru 44, 50 and 51) regarding the return of defective modules with service records to the Beaverton Exchange Center.

--Bill Duerden
56-037, Ext. 8938

TROUBLESHOOTING FLOWCHART FOR CG551AP DRIFT

In the event of voltage or current output drift problem with the CG551AP, this troubleshooting flowchart will be helpful in the isolation of the faulty components.

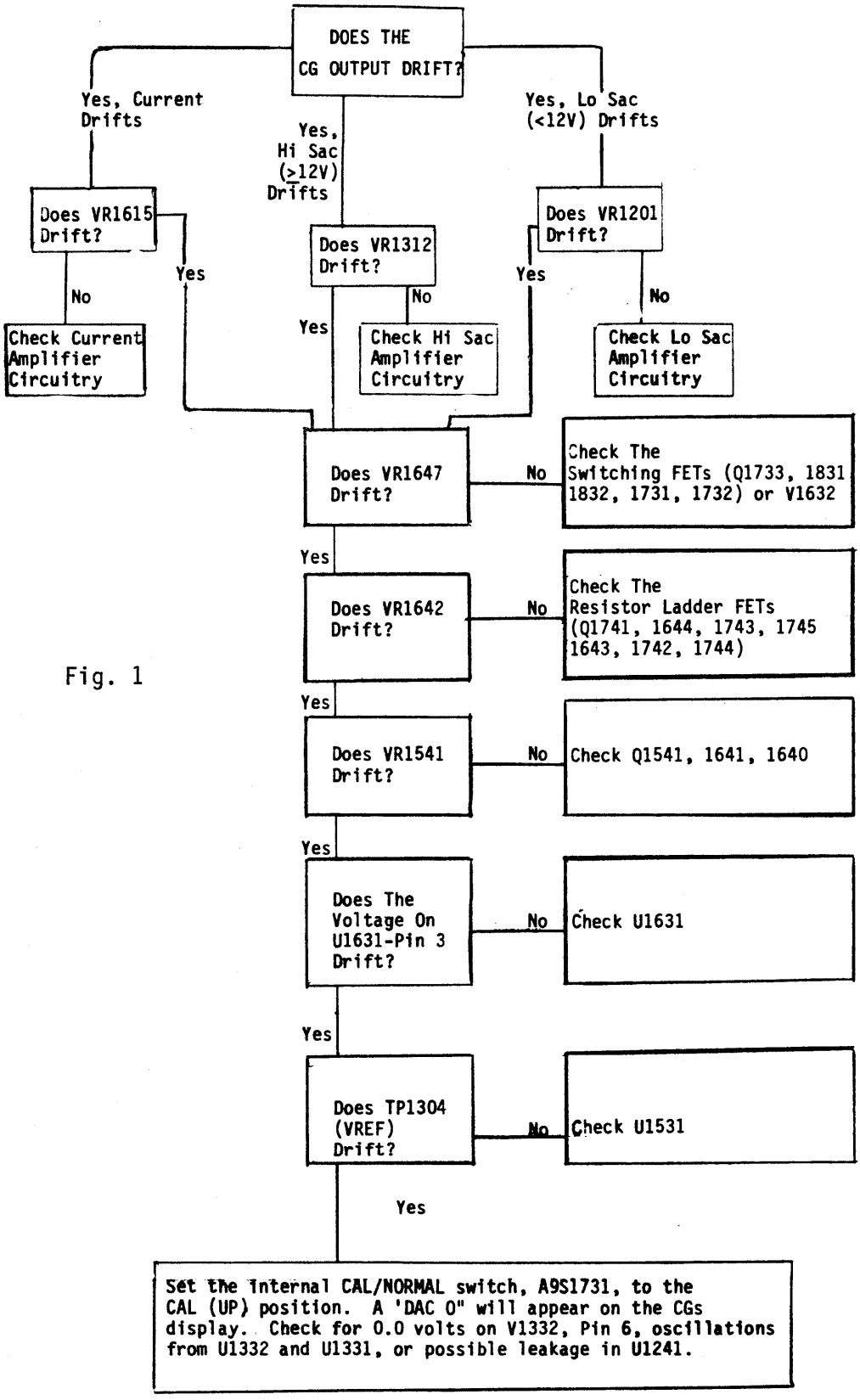


Fig. 1

To date, the most common cause of output drift has been the resistor ladder FETs which are used only in the cutoff and saturation modes.

NOTE: These FETs are very susceptible to static discharge, so take the appropriate precautions.

The drift occurs when the defective FET is in the cutoff mode, but allows leakage between source and drain. To isolate the leaky FET, one by one remove the FETs that are in the cutoff mode until the drifting stops. (A low on the FET gate will indicate the cutoff mode.)

--Pat Wolfram
92-236, Ext. 1582

SPECTRUM ANALYZERS

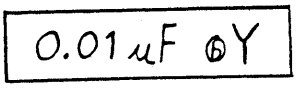
492/P INCORRECT POWER SUPPLY CAPACITORS INSTALLED

Manufacturing has experienced mixed stock on P/N 285-1196-00. This is a 0.01µf capacitor used for C1095, C2096, C3064, C3085, and C3089. These capacitors are located on the A30A1 main Power Supply board. It is possible that a 0.1µf capacitor was installed in some 492/P's by Manufacturing. This will show up as an intermittent failure of no line trigger. *CHECK ALL 492/P's THAT COME IN FOR SERVICE FOR THE CORRECT CAPACITORS.* The correct part may or may not have the "Y" noted on the part. (See Figure #1.) If an incorrect part is found, replace it with the 0.01µf capacitor.

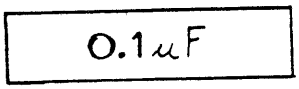
Thanks to Russ Lett in the Santa Clara Field Office for working with us to resolve this problem.

Figure 1

TOP VIEW



Correct Part



Wrong Part

--Rich Kuhns
58/511, Ext. 1240

492/P MICROPROCESSOR LOCK-UP DURING TURN ON

Reference: Corporate Mod #42858

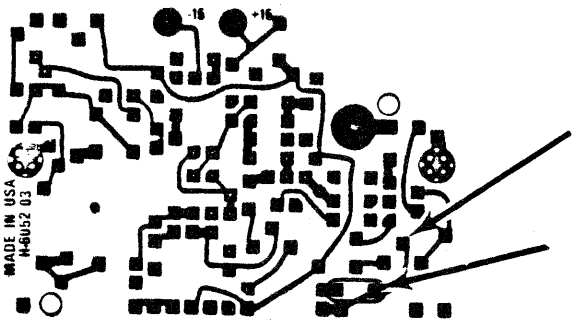
Intermittently, U4035, the 6875 clock IC on the Microprocessor board (A58 P/N 670-5542-00) will start at three times its normal frequency preventing the microprocessor from initializing. This appears as a catastrophic failure to the user. To prevent U4035 from oscillating on the third harmonic of 3.4133 MHZ, remove R3034, a 2.7 ohm resistor and replace it with a wire strap.

--Rich Kuhns
58-511
Ext. 1240 DR

492/P OSCILLATIONS OF 320 MHZ ON THE 110 MHZ IF AMP BOARD

The Business Unit Manufacturing area had discovered 320MHZ oscillations were occurring on the 110MHZ IF Amp Board (A32A1), P/N 119-1015-00. To alleviate these oscillations, change C5045 from .01µf to .001µf (P/N 283-0156-00).

See Figure #1.



Change C4045 to
283-0156-00 on back of board
at base of Q4053 and ground.

C4045 changed from
283-0204-00

FIGURE #1

--Rich Kuhns
58/511, Ext. 1240

492/P REPLACEMENT OF A30A1 F3038

I have had numerous requests for the correct value of F3038 on the main Power Supply Board (A30A1). To clarify the P/N of F3038, I have attached a section of the 492/P manual (P/N 070-2852-02, Rev. D, Oct. 1980) Page 6-23.

A30A1F3038	159-0122-00 ----- -----	FUSE,CARTRIDGE:0.75A,125V,0.04 SEC (492 ONLY)	75915	279.750
A30A1F3038	159-0122-00 B011000 B011059 ----- -----	FUSE,CARTRIDGE:0.75A,125V,0.04 SEC (492P ONLY)	75915	279.750
A30A1F3038	159-0116-00 B011060	FUSE,CARTRIDGE:1A,125V,0.4 SEC,0.17 LEADS (492P ONLY)	75915	273001

--Rich Kuhns
58/511, Ext. 1240

650 SERIES/SOCKETS, 136-0220-00

These parts have shown poor reliability after component insertion. Replace with 136-0252-07 whenever socket is suspected of causing problems in the following instruments:

650A
650A-1
651A
651A-1
652A
652A-1

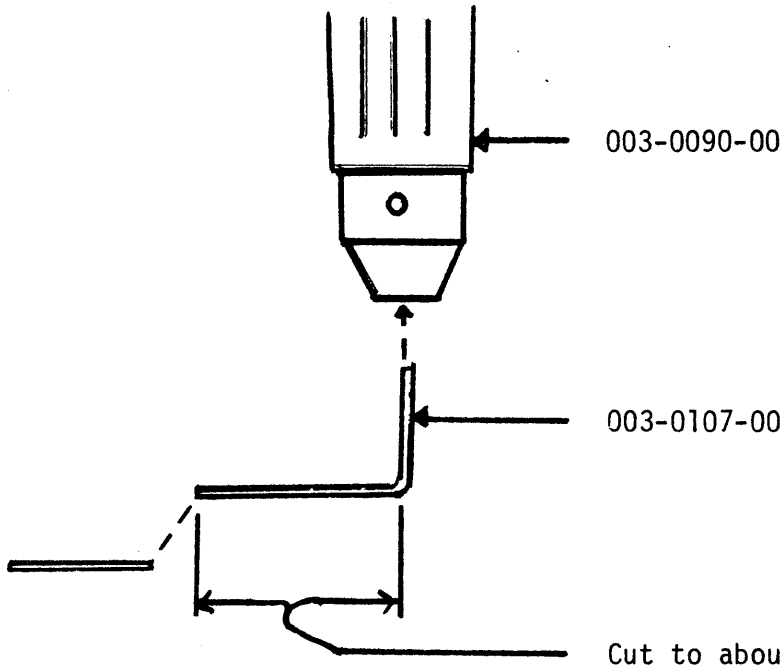
--Bill Bean
58/511, Ext. 1498

TDC 1/2 FIRST LO ADJUSTMENT

Adjusting C10 in the first LO using the tools specified has not worked as easily as it should. Manual Change Requests have been written to reflect the need for a 5/64" Allen Wrench to be used in adjusting C10; however, even this is not optimum--the short end of a standard Allen Wrench being too short for this application, and the long end too long.

The following parts can be made into an acceptable tool as illustrated below.

(1) One 003-0090-00 Allen Handi-Hex
(1) One 003-0107-00 5/64" Hex Key



--Bill Bean
58/511, Ext. 1498

485 HF ADJUSTMENTS

Reference: M38853
485 Manual, P/N 070-1193-00
Schematic ◇1◇ Ch 1 & 2 Attenuators (Hi Z)

At S/N B188389, changes were made by Manufacturing to improve the 1 Megohm vertical system HF compensation adjustments.

CHANGE	FROM	TO	PART NUMBER
C57	1 pF (Fixed)	1-5 pF (Var)	281-0218-00
R57	430Ω	680Ω	317-0681-00
Attenuator Shield	(Adjustment Hole Added)		337-1478-03

--Mike Laurens
58/511, Ext. 1499

4024/25 MOTOROLA MONITOR CHANGES

REFERENCE: 4024/25 Service Manual Volume 2, P/N 070-2831-00
New Motorola Monitor, P/N 119-0908-01
New Power Supply Board, P/N 118-0372-01
New Horizontal Board, P/N 118-0373-01
New Vertical/Video Board, P/N 118-0371-01
Mod #39338

The new Motorola Monitor, P/N 119-0908-01 will be contained in all 4025's above S/N B054353 and 4024's above S/N B031218.

The reason for changing to the new Motorola Monitor is due mainly to a cost savings to Tektronix. The new monitor looks very similar to the original. The only changes are electrical changes to the horizontal, vertical/video and power supply boards. A dynamic focus adjustment has been added; however, there is only a slight focus improvement over the 119-0908-00 monitor, and in some cases no change at all. The new circuit boards are a direct replacement for the old circuit boards.

The new adjustment procedure for the monitor can be found in Manual Change Information which has been sent out to all Service Centers and can also be found in microfiche.

The new Electrical Parts List will be published in the next printing of the 4024/25 Service Manual (within the next 3 months). In the meantime the new electrical parts are as follows.

CKT. NO.	PART NO.	DESCRIPTION
C5	285-1116-00	Cap .047 UF 400V
C11	118-0906-00	Cap 47UF 50V
C13	285-0916-00	Cap .01 UF 5%, 100V
C15,C16	285-1170-00	Cap .047, 10%, 600V
C17		
C18	118-0896-00	Cap .001, 10%, 500V
C50	118-0897-00	Cap 10 PF, 10%, 500V
C59	118-0905-00	Cap 220 UF 10V
C62	118-0904-00	Cap .47, 10%, 630V
C63	285-1090-00	Cap .01, 5%, 1600V
C66	285-1170-00	Cap .047 UF, 10%, 600V
C67	118-0903-00	Cap 0.15 UF, 10%, 630V
C70	283-0077-00	Cap 330 PF, 5%, 500V
D2	152-0066-00	Semicond 400V
D3	152-0120-00	Semicond 10V, 5%
D4,D6	152-0233-00	Semicond 80V
D50,D55, D61,D63		
D5	152-0066-00	Semicond 400V
D60	152-0040-00	Semicond 600V
D64	118-0902-00	Semicond Four Layer
D65	118-0891-00	Semicond 65V
D154	152-0279-00	Semicond 1V, 5%
D155	152-0282-00	Semicond 30V, 5%

(Article continued on the following pages)

CKT. NO.	PART NO.	DESCRIPTION
L1	118-1047-00	Coil
L2	118-0894-00	Coil, Tube Defl.
L50	118-1048-00	Coil
L51	118-0899-00	Coil, Linearity
L52	118-0895-00	Coil, Tube Defl.
L53	118-1049-00	Coil
L100	118-1050-00	Coil
L151	151-0121-00	Transistor 2N3500
Q2	151-0188-00	Transistor 2N3906
Q5,Q6 Q7,Q9, Q54	151-0190-00	Transistor 2N3904
Q4	151-0314-00	Transistor 2N1517
R8	315-0362-00	Res. 3.6K, 5%
R10	315-0102-00	Res. 1K
R11	118-0907-00	Res. 100K Ohm
R12	118-0910-00	Res. 500K, Ohm
R13	323-0154-00	Res. 1%, 5W, 3920 HM
R14	316-0123-00	Res. 12K Ohm 10%
R15	316-0185-00	Res. 5W 1.8M Ohm 10%
R17	118-0909-00	Res. Trmr, 50K
R18	315-0393-00	Res. 39K, 5%
R19	315-0303-00	Res. 30K, 5%
R20	315-0471-00	Res. 470 Ohm 5%
R21	316-0123-00	Res. 12K Ohm 10%
R23	315-0562-00	Res. 5.6K Ohm 5%
R24	305-0120-00	Res. 120 Ohm 5% 2W
R27	308-0292-00	Res. 2.2K Ohm 5% 3W
R28	316-0822-00	Res. 8.2K Ohm 10%
R29	316-0332-00	Res. 3.3K Ohm 10%
R30	316-0333-00	Res. 33K Ohm 10% 25W
R31	316-0102-00	Res. 1K Ohm 10% .25W
R32	316-0472-00	Res. 4.7K Ohm 10% .25W
R33	316-0222-00	Res. 2.2K Ohm 10%
R35	316-0473-00	Res. 47K Ohm 10%
R36	316-0122-00	Res. 1.2K Ohm 10%
R37	316-0223-00	Res. 22K Ohm 10%
R38	316-0153-00	Res. 15K Ohm 10%
R39	316-0103-00	Res. 10K Ohm 10%
R40	316-0152-00	Res. 1.5K Ohm 10%
R42	316-0102-00	Res. 1K Ohm 10%
R43	316-0470-00	Res. 47 Ohm 10%
R44	315-0223-00	Res. 22K 5%
R45	118-0898-00	20K Varistor
R46	315-0680-00	Res. 680 Ohm 5%
R47	316-0101-00	Res. 100 Ohm 10%
R50	316-0562-00	Res. 5.6K

(CONTINUED)

CKT. NO.	PART NO.	DESCRIPTION
R67	306-0472-00	Res. 4.7 2W
R72	316-0271-00	Res. 270
R73	302-0395-00	Res. 39M ½W
R74	302-0154-00	Res. 150K ½W
R75	316-0102-00	Res. 1K
R76	316-0332-00	Res. 3.3K
R78	308-0703-00	Res. 1.82W
R82	316-0682-00	Res. 6.8K
R84	315-0183-00	Res. 18K 5%
R85	315-0512-00	Res. 5.1K 5%
R102	316-0680-00	Res. 68
R114	316-0222-00	Res. 2.2K
R150	302-0101-00	Res. 100 ½W
R151	302-0123-00	Res. 12K ½W
R152	304-0103-00	Res. 10K 1W
R155	302-0472-00	Res. 4.7K ½W
R156	304-0562-00	Res. 5.6K 1W
R160	302-0223-00	Res. 22K 50W
T51	118-0900-00	Transformer
T150	118-0901-00	Transformer
V1	118-0403-00	Electron Tube

--Marty DeVall
63/503, ext. 3927 (WI)

4051 CPU BOARD TO EXTENDED MEMORY BOARD CABLE INSTALLATION

Ron Kersey, of the Module Repair Center, has noticed that the cable connecting the 4051 extended memory (J-10) board to the CPU board (J-1) can cause catastrophic failures if not properly installed. When the cable P/N 175-1726-00 is manufactured, the ribbon cable is sandwiched in the plug. The end of the ribbon cable extends out of the plug with the ends of the cable exposed. When installed, these wire ends will short to the board (+12 volts on the CPU, ground on the EXT MEM). This will blow out I.C.'s on the CPU board, the extended memory, and the backpack. To prevent this damage, install the cable so that the wire ends are away from the board.

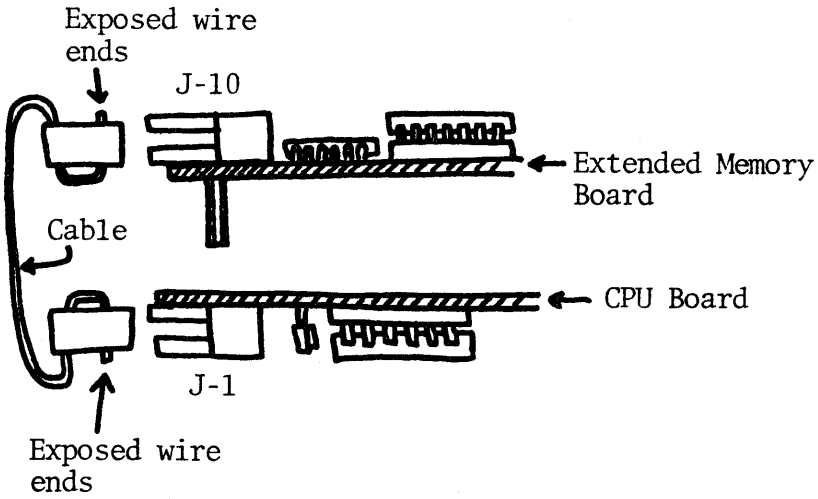


Figure 1 CORRECT CABLE INSTALLATION

Written by--
John Stillmaker
MRC, Ext. 8615

4052/4054 VERSION 4.3 FIRMWARE

Version 4.3 firmware is now being shipped in 4052s and 4054s. Listed in Figure 1 is a table showing the ROM checksums using the Diagnostic ROM Pack for all firmware levels previously and currently shipped in 4052s and 4054s.

To check system ROM checksums without the patches, remove the even and odd FPLA's - U485 and U863.

The serial number breaks for level 4.3 firmware are:

4052 - B024078 and up
4054 - B011753 and up

The MAS Board changes from a 670-6030-04 to a 670-6030-06 with 32K RAM memory and from 672-0799-03 to 672-0799-04 with 64K RAM memory.

The parts numbers for version 4.3 kits are:

050-1402-01 to upgrade from 4.1 or 4.2 to 4.3
050-1282-03 to upgrade from 2.1, 3.1 or 3.2 to 4.3

This is not a Service Update Program; customers that are on maintenance agreement, warranty or rental will not be charged for the upgrade. All other customers will be charged as follows. If the MAS board is exchanged, the upgrade is included in the exchange price. If the customer wants the upgrade, the customer pays the 050 kit price plus labor and travel.

--Frank Lees
63-503, Ext. 3929

(Diagram on article continued on the following page)

4052/4054 VERSION 4.3 FIRMWARE (CONTINUED)

IC	PART NUMBER	V2.1			V3.1			V3.2			V4.1			V4.2			V4.3		
		P/N LEVEL	WITH PATCH	WITHOUT PATCH	P/N LEVEL	WITH PATCH	WITHOUT PATCH	P/N LEVEL	WITH PATCH	WITHOUT PATCH	P/N LEVEL	WITH PATCH	WITHOUT PATCH	P/N LEVEL	WITH PATCH	WITHOUT PATCH	P/N LEVEL	WITH PATCH	WITHOUT PATCH
U810	160-0260	01	BB83	BB83	01	4A4E	BB83	01	4A4E	BB83	02	5B67	267D	02	5B67	267D	02	5B67	267D
U820A	160-0261	01	E396	E396	01	E396	E396	01	E396	E396	02	3EAB	3EAB	02	3EAB	3EAB	02	3EAB	3EAB
U820B	160-0261	01	8C00	D684	01	E306	D684	01	E306	D684	02	E7CB	9BBE	02	12A0	9BBE	02	00F1	9BBE
U825	160-0262	01	AD91	1AF1	01	0468	1AF1	01	0468	1AF1	02	D098	8BA8	02	D098	8BA8	02	7403	8BA8
U835	160-0263	01	75A8	00DE	02	E810	D515	02	E810	D515	03	0CA2	9254	03	27B0	9254	03	241B	9254
U870A	160-0264	01	C1FA	C1FA	01	C1FA	C1FA	01	C1FA	C1FA	02	7132	7132	02	7132	7132	02	7132	7132
U870B	160-0264	01	EC8B	4383	01	C5D9	4383	01	C5D9	4383	02	04C8	43B3	02	026A	43B3	02	95BC	43B3
U880	160-0265	01	876A	9E7B	01	92BB	9E7B	01	92BB	9E7B	02	E7F0	AF39	02	E7F0	AF39	02	3FE5	AF39
U885	160-0266	01	641A	030C	02	1344	593F	02	1344	593F	03	2E15	7369	03	97C6	7369	03	026F	7369
U893	160-0267	01	FABF	FABF	01	0613	FABF	01	0613	FABF	02	CB18	CB18	02	1F38	CB18	02	1F38	CB18
U805A	160-0340	00	1E52	XXXX	01	5DD7	XXXX	03	B9D1	XXXX	02	9407	XXXX	04	98AC	XXXX	05	68D3	XXXX
U805B	160-0340	00	XXXX	XXXX	01	XXXX	XXXX	03	XXXX	XXXX	02	XXXX	XXXX	04	XXXX	XXXX	05	XXXX	XXXX
U897A	160-0341	00	97F7	XXXX	01	B742	XXXX	01	B742	XXXX	02	F080	XXXX	03	C7CD	XXXX	04	4A20	XXXX
U897B	160-0341	00	XXXX	XXXX	01	XXXX	XXXX	01	XXXX	XXXX	02	XXXX	XXXX	03	XXXX	XXXX	04	XXXX	XXXX
U845	160-0379	00	XXXX	XXXX	01	XXXX	XXXX	01	XXXX	XXXX	02	XXXX	XXXX	03	XXXX	XXXX	04	XXXX	XXXX
U863	160-0380	00	XXXX	XXXX	01	XXXX	XXXX	01	XXXX	XXXX	02	XXXX	XXXX	03	XXXX	XXXX	04	XXXX	XXXX

XXXX NOT APPLICABLE

Editor ROMPAK 4052/54 R06
U1 160-0268-00 2D58 Level 1.0

SPS ROMPAK #1 4052/54 R07
U1 160-0278-00 B6B3 Level 1.0

SPS ROMPAK #2 4052/54 R08
U1 160-0348-00 FF43 Level 1.0

Real Time Clock ROMPAK 4052/54 R09
U21 160-0762-00 B257 Level 1.0
U21 160-0762-01 968D Level 2.0

4907 File Manager ROMPAK
U1 160-0279-00 C5C4 Level 1.0

4052/54 Option 10 Printer Interface
U100 160-0342-01 F578 (PROM) Level 1.0
U100 160-0342-01 IECA (ROM) Level 1.0

4042/54 Tapesend Enhancement ROMPAK
U100 160-0870-00 72FF Level 1.0

4052/54 Diagnostic ROMPAK
U101 160-0381-00
U111 160-0382-00 C08A (1 CRC for both) Level 1.0

U101 160-0381-01
U111 160-0382-01 D4B6 (1 CRC for both) Level 1.4

463X PROCESSOR BAFFLE REMOVED

The 463X heat processors have been known to consume their baffles (378-2023-00). As the rotary blade cuts the paper, the aluminum paper guide mounted within the rotary blade pinches the baffle against the heater belt. Since the heater belt is moving, the baffle eventually gets tugged out of place and consumed by the processor. This has been aggravated by the new 105-0781-00 actuator with a longer throw.

It has been found that the heater baffle has a negligible effect on copy quality. Therefore, modification #42775 has been run to remove this baffle from the 463X processors. The baffle will no longer be available. The part numbers of the processors will remain the same.

It is advised that the baffles in existing products be removed and discarded whenever convenient.

--George Kusiowski
63-503; Ext. 3928 WI

4642 APPLICATION COMPATIBILITY

A majority of the questions regarding the 4642 printer deal with application and compatibility issues. Hopefully, after reading this article the reader will know the unique characteristics of the 4642 as well as what can be done, if anything, to accommodate the 4642 to any given application requirement.

1. The 4642's standard configuration is not set up to automatically line feed (L/F) whenever it receives a carriage return (C/R).

   Symptom: The printer prints lines of text on top of each other.

   Solutions:

   A. Have the host send an automatic L/F with every C/R. Example: The 4050 series does an automatic L/F on C/R when printing to its own screen; however, it does not include the auto L/F with a C/R when talking to external products. To have the 4052 transmit an auto L/F on C/R the command:

      PRINT @ 37,26:1

      needs to be done before sending the text to the printer. If desired, the command "PRINT @ 37,26:0" can be used to restore the 4050 series to its normal default condition after the printer output is accomplished (i.e.; No auto C/R on L/F).

      NOTE: On the 4050 series the "PRINT @ 37,26:1" command results in an auto L/F on C/R with all its communications except when the 4050 is executing the "TLIST" command.

   B. On the 4642 logic board change the X5 jumper platform's configuration to auto L/F on C/R by changing the jumper going from pin 14 to pin 3 to go from pin 14 to pin 2. This will cause the 4642 to automatically line feed one step for every carriage return received.

      NOTE: This is not always desirable. Some applications require the printer to C/R only, to allow it to underline text; and some applications may not be able to suppress auto L/F on C/R transmission from the host which results in double spacing.

      NOTE: For a detailed explanation of how to change the jumper platform's configurations, reference an article entitled "4642 Jumper Configurations" that was published in the Wizard Workshop, Issue 11-7, Page 21 and was also published recently in the SoftTalk publication.

(Article continued on the following pages)

2. The 4642 requires pin 8 of the 25 pin RS232 connector to remain active until it's print cycle is complete.

   Symptom:

   A. Characters may be missing or parity errors received for characters. This is especially true if the text lines have more than 70 characters in them.

   B. On a line of text that's divided into two separate print statements, only the text following the second print statement will actually be printed. Using as an example a line of text that is divided by the use of a semi-colon ";" and two print statements. Everything before the semi-colon is lost and only the text following the semi-colon or second print statement will be printed. Example:

      ```
      PRINT @ 41:"This is a test";
      PRINT @ 41:"of the 4642"
      ```

      The printer is expected to print: "This is a test of the 4642" but the actual printout is "of the 4642".

   Solution: The product that's outputing to the printer should hold pin 8 of the RS232 connector high until the 4642 raises pin 20, Data Terminal Ready, indicating he is finished printing the entire line of text. Example: The 4050 series with Option 10 will hold pin 8 high, Data Carrier Detect or Receive Line Signal Detect, if before sending text to the 4642 the following command is used:

   ```
   PRINT @ XX,11:1
   ```

   The I/O address of the printer interface, Option 10, is used in place of the "XX" above; i.e., 41 or 51. If desired, the command "PRINT @XX,11:0" can be used following the print statements to restore the 4050 series to its normal default condition.

3. The 4642 does not come with a Vertical Format Unit which is commonly used for establishing form length.

   Symptom: At the beginning of its print cycle the 4642 performs an undesired line feed or feeds paper continuously until deselected. This is because certain hosts, such as those supplied by Digital Equipment Corp., automatically send Form Feed, Vertical Tab, or other paper movement commands at the beginning of each printer output. Even though the 4642 does not have a Vertical Format Unit, required to perform these commands, it is not configured to ignore these commands. The ability to do so is called DEC software compatible or DSC.

(CONTINUED)

Solutions:

A. Prevent the host from sending F.F., V.T., T.O.F., and any other paper movement commands other than a line feed.

B. Change the 4642's configuration by changing platform X3 on the 4642 logic board to be DSC. This is accomplished by changing the jumper going from pin 4 to pin 12 of X3 to go from pin 4 to pin 13. The DSC does an automatic carriage return upon receipt of a F.F. or V.T. command. If this is unacceptable, changing jumper platform X5 can suppress it. The jumper going from pin 11 to pin 6 of X5 should be changed to go from pin 11 to pin 5. The 4642 will now totally ignore all V.T. or T.O.F. commands.

4. The 4642 Serial Interface cannot be configured to detect a DC1 (printer select) character, even though it can accept a DC3 (printer deselect).

Symptom: Once the printer is deselected the host cannot reselect it by sending a control Q, DC1, to reselect it.

Solution: Due to the design of the 4642 there is no easy way to get around this. The printer must be reselected by pressing the select button on the 4642 operator's control panel.

NOTE: An article that explains this in more detail can be found in the Wizard Workshop, Issue 11-4 on Page 18.

5. The printer has been modified in certain locations to hold the RS232 pin 8 high. This is not an approved modification for the 4642. Step #2 of this article has the proper method of accomplishing the same results.

Symptom: The printer will deselect while doing a TLIST from the 4050 series. Hence, a TLIST cannot be accomplished to a 4642 if this modification has been done to it.

Solution: Remove the modification from the 4642 and use Step #2 of this article to accomplish the RS232 pin 8 high requirement. To determine if a 4642 has been modified, look at the male edge-connector on the 4642 RS232 cable; this is the end that plugs onto the RS232 I/F board inside the printer. There should be a blue wire going to pin 8, and no jumper strap between pin 8 (blue wire) and pin 6 (yellow wire). If the modification has been done replace the blue wire from the wire harness to pin 8 and remove the jumper strap from between these two pins. The 4642 can now successfully accomplish a TLIST if auto C/R or L/F has been established; see Step #1 of this article.

(CONTINUED)

6. General differences between the 4642 printer and the 4641 printer.

   A. The 4642 has no backspace capability.

   B. The 4642 has only a one line buffer, so hardware delays between lines of data are important. (The 4050 series default 25 milliseconds in Option 10 seems adequate.)

   C. Control characters in a given line, regardless of their location, are executed first before the text. This is related to the limitation of a one line input buffer.

   D. The 4642 has no Verticle Format Unit, so Form Feeds and Verticle Tabs are not possible; at best only a L/F can be performed upon receipt of these commands.

   E. The 4642 has an elongated character feature, bold face type, which is enabled by a "control N" character. For every line of elongated characters desired, a separate control N must be sent. This can be done before or included right in each line of text.

   F. Control characters are symbolized by underlined characters. The 4642 will print the underline after the character. Example: L/F is "J" but "J_" will be printed.

My thanks goes out to all the people, too numerous to list, who provided inputs and information that made this article possible.

--Larry North
63-503, Ext. 3926 WI

4642 CONTROL CHARACTER HANDLER

The 4642 prints a control character with the underline directly following the character. An example can be the line feed command which is a control "J". Due to the 4642's hardware limitations it does not print as expected "J"; instead it will print "J_".

The only way around this problem is under software control. The following 4050 series program is an example of this. When the following program is run it will first prompt the operator for the tape file number that is to be output to the printer. Secondly, it will ask for the printer's address. The program will then list out the file, one line at a time, carriage return, and then go back over that same line to underline all control characters. Then it will automatically carriage return and line feed. This process is repeated until the entire file has been listed out.

NOTE: The 4642 should not be configured to automatically line feed upon receipt of a carriage return if any character underlining is desired.

```
100   INIT
110   ON EOF (0) THEN 380
120   REM:CONTROL CHARACTERS HANDLER FOR THE 4642
130   PRINT "FILE NUMBER TO LIST:";
140   INPUT F
150   PRINT "ADDRESS FOR THE 4642:";
160   INPUT D
170   FIND F
180   INPUT @33:A$
190   IF LEN(A$)=0 THEN 380
200   C$=""
210   D$=""
220   FOR I=1 TO LEN(A$)
230   B$=SEG(A$,I,1)
240   X=ASC(B$)
250   IF X<32 THEN 300
260   C$=C$&B$
270   D$=D$&" "
280   NEXT I
290   GO TO 340
300   B$=CHR(X+64)
310   C$=C$&B$
320   D$=D$&"_"
330   NEXT I
340   PRINT @D:C$
350   PRINT @D:D$
360   PRINT @D:"J"
370   GO TO 180
380   END
```

Our thanks to Steve Duncan for his assistance in providing this program.

--Larry North
63-503, Ext. 3926 WI

S-3200 ELECTROGLAS PROBER INTERFACES (MANUALS)

The 070-3342-01 Electroglas Prober Interfaces Instruction Manual replaces the following:

070-3342-00	Electroglas Prober Interfaces Manual
070-3183-00	Prober Output Interface Manual
070-3184-00	Prober Input Interface Manual

The software manual 070-3631-00 Programming Electroglas 1034 Series Prober should be used with the 070-3342-01 Interfaces manual.

The 021-0140-00 Prober Output Interface has been superseded by the Prober Control Interface 021-0305-00.

Table 1-1 has been removed from the 070-3342-01 for reference regarding Electroglas Interface Configurations and Applications.

(Table on article continued on the following page)

General Information—Electroglas Prober Interfaces

Table 1-1

Interface Packages

Package Number	Major Components Included	Type[a]
021-0268-01	021-0305-00 Prober Control IF 021-0152-00 Prober Input IF 021-0218-00 Signal Interface	high
021-0267-01	021-0305-00 Prober Control IF 021-0218-00 Signal Interface	high
021-0271-01	021-0305-00 Prober Control IF 021-0152-00 Prober Input IF 021-0249-00 Signal Interface	50 Ω
021-0270-01	021-0305-00 Prober Control IF 021-0249-00 Signal Interface	50 Ω
021-0268-00	021-0140-00 Prober Output IF 021-0152-00 Prober Input IF 021-0218-00 Signal Interface	high
021-0267-00	021-0140-00 Prober Output IF 021-0218-00 Signal Interface	high
021-0271-00	021-0140-00 Prober Output IF 021-0152-00 Prober Input IF 021-0249-00 Signal Interface	50 Ω
021-0270-00	021-0140-00 Prober Output IF 021-0249-00 Signal Interface	50 Ω

[a]Refers to the impedance of the signal interface. High is intended to be used on an S-3250, S-3260, or S-3270 System; 50 Ω is intended to be used on an S-3280 System.

--Ron Lang
92-236, Ext. 1015

S-3455 ERROR CONTROL CARD STRAPPING

The Error Control Manual, 070-3276-00, for the 700-7656-XX is missing card strapping information and the strapping information on the schematic for the ◇2 A, Version 04, 06, and 07 needs clarification.

The Version 04 is used in Slot C14, Version 06 in Slot C15 and Version 07 in Slot C16.

The Version 05 can be used in all three slots (C14, C15, and C16) as long as proper strapping and switch set up is done. The following is the strap and switch set up for the 700-7656-XX.

Slot C14 used FN 66, 67, and 60

	FN66 and 67 Set S1	FN60 Set S2
Set Straps: X2 to X5 X4 to X6	1 On 2 On 3 Off 4 On 5 On 6 On	1 On 2 On 3 Off 4 Off 5 Off 6 Off

Slot C15 uses FN 74 and 75

	Set S1
Set Straps: X2 to X5 X4 to X6	1 On 2 On 3 On 4 On 5 Off 6 On

Slot C16 used FN 166 and 167

	Set S1
Set Straps: X1 to X5 X4 to X6	1 On 2 On 3 Off 4 On 5 On 6 On

The delay circuit of 7656 card is not used when the card is in Slot C15 and C16. Therefore, S2 for C15 and C16 were excluded.

--Joe Lipska
92-236, Ext. 1634

Sheila Erickson
Support Services Manager
Ext. 8643 MR

Hello from Factory Service!

To help you when contacting us here's a handy pull-out section. Thought some of you might like to put a face with a name!

Not pictured are; Pat Doerrie - Typist, and Valerie Skuza - Stockhandler II.

--Sheila Erickson

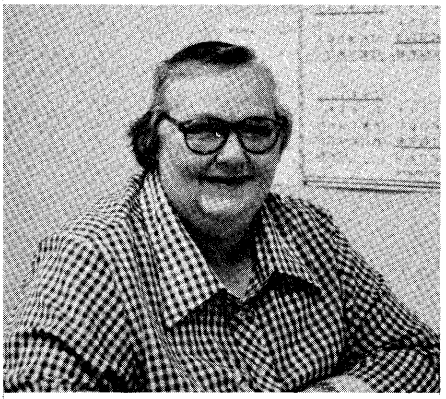
Marlene Pereyda
Secretary
Ext. 8638 MR

Selene Hill
Receptionist
Ext. 8600 MR

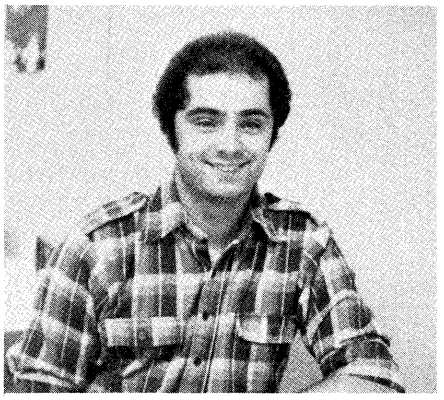
Goldie Greco
Sales-Show-Demo Activity
Ext. 8648 MR

Debbie Hodge - Expeditor
Ext. 8623 MR

Thelma Bergersen - Parts Returns
Ext. 8624 MR



Dennie Christensen - Stockhandler
Ext. 8623 MR



Richard Zita - Stockhandler
Ext. 8623 MR

Anita Gregg - Service CSR
T&M Ext. 8642 MR

Lori Johnson - Service CSR
T&M Ext. 8645 MR

Lessie Williams - Service CSR
T&M Ext. 8647 MR

Kelly Turner - Service CSR
T&M Ext. 8649 MR

Renee Stampley - Service CSR
IDD Ext. 8646 MR

Kimberly Thompson - Service
CSR - IDD Ext. 8933 MR

REFERENCE PULL-OUT

INFORMATION DISPLAY DIVISION

IDD PRODUCTS POWER LINE REQUIREMENTS AND ENVIRONMENTAL IMPACT

In the following list, where POWER and CURRENT show two values for a given product, the smaller values represent nominal operating conditions. The larger values represent maximum power and current. For example; a hard copy unit will draw the maximum value until the temperature of the heat processor stabilizes.

Temperature and humidity ranges are specified for instruments while operating. If the products temperature or humidity range is limited by required accessories (tapes, discs, plotter pens, etc...) then the range of the accessory is listed. In all cases, humidity is relative, non-condensing. The following table lists conversions from Centigrade to Fahrenheit.

C	F
0	32
10	50
20	68
30	86
40	104
50	122

Heat in BTU/HR is derived from power using the formula HEAT=POWER X 3.41 where POWER is nominal operating power. For those products with devices which cause mechanical motion (motors, solenoids, etc..) this method of computing BTU tends to exaggerate the actual BTU/HR. A new method of computing BTU/HR is under study and will be included when this list is updated.

Line voltage range represents the total range in which the product can be configured to operate. This typically requires strapping the product for low, medium, or high line voltage ranges. Each of these three ranges can tolerate plus or minus 10% line fluctuations. For example, a product set for medium range at 115 volts nominal can operate over the range of 103.5 to 126.5 volts. Refer to the manual for the specific product for details on ranges and tolerances.

(Article & table continued on the following page)

PRODUCT	TEMP DEG C	HUMID. REL %	WEIGHT LBS.	HEAT BTU/HR	HERTZ CPS	POWER WATTS	VOLTS RANGE	CURRENT AMPS
4006-1	10-40	0-95	50	358	48-440	105	90-126	1.1
4010	10-40	0-95	78	801	48-440	235	90-132	2.0
4012/13	10-40	0-95	90	801	48-440	235	90-132	2.0
4014/15	10-40	0-95	156	1432	48-440	420	90-132	3.5
4016	10-40	0-95	250	2626	48-440	770	90-132	6.4
4023	10-40	5-80	46	750	50-400	220	90-136	1.9
4024	10-40	0-70	60	1006	49-63	295	90-125	2.6
4025	10-40	0-70	60	1006	49-63	295	90-136	2.5
4027	10-40	0-75	100	683	48-63	430	90-132	1.7
4051	10-40	20-80	80	682	48-66	200	90-132	1.7
4051C01	10-40	0-80	16	307	50-400	90	90-132	0.8
4051E01	10-40	0-80	16	307	50-60	90	90-132	0.8
4052	10-40	20-80	70	780	48-66	230	90-132	1.9
4054	10-40	20-80	145	1225	48-66	360	90-132	3.0
4610	0-35	30-95	69	1773	48-66	520 1450	92-136	4.3
4611/12	0-40	20-80	45	1023	48-62	290 370	90-128	2.6
4631/32	0-35	30-95	65	818	48-62	240 750	92-132	2.0
4633A	0-35	40-95	67	955	48-62	360 600	92-132	3.0
4634	0-35	30-95	65	820	48-62	240 750	90-132	2.0
4641	10-40	10-90	102	1366	Note 1	400	90-132	3.0
4642	4-38	20-90	60	590	Note 1	173	98-126	1.5
4661	0-50	0-70	40	614	48-66	180	90-132	1.6
4662	0-50	30-60	32	205	48-66	60	90-132	0.5
4663	0-40	30-60	80	982	48-440	288	90-130	2.4
4907	10-38	20-80	51	580	Note 1	170	90-132	1.4
Opt 30	10-38	20-80	50		Note 1		90-132	
Opt 31	10-38	20-80	62		Note 1		90-132	
4921/22	15-38	20-80	70	1023	Note 1	300	90-132	2.5
4923/24	10-40	20-80	17	212	48-66	62	90-132	0.5
4931	10-40	0-95	9	48	48-440	14	90-132	0.1
4953	0-40	0-95	16	103	48-440	30	94-126	0.3
4954	0-40	0-95	65	103	48-440	30	94-126	0.3
4956	15-30	0-95		256	48-66	75	95-132	0.6
611	0-50	-	50	853	48-66	250	90-136	2.5
613	0-50	-	43	614	48-66	180	90-132	1.5
618	0-50	0-90	100	750	48-66	220	90-132	2.6
619	10-40	0-70	112	853	48-66	250	90-132	2.7
GMA101A	0-50	0-90	90	750	48-66	220	90-132	2.6
GMA102A	0-50	0-90	106	1074	48-66	315	90-132	3.6
GMA125	0-50	0-90	106	989	48-440	290	90-132	5.0
TEK21/31	0-50	-	32	648	48-66	190	90-132	1.7

Note 1 - 50 or 60 Hertz must be plus or minus one percent
Refer to product manual for information on line frequency settings.

-- NOTE --
FOR INTERNAL USE ONLY

--Ed Sawicki
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