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4P:011	26-1080A	Aug 14, 1984	To describe 128K upgrade procedure.
4P:012	26-1080	Sep 11, 1984	Modification for installing Model 4 Hires into Gate Array CPU, and to.eliminate
4P:013	26-1080	Oct 5, 1984	AC harness causing power supply failures and revise resistor modification.
4P:014	26-1080A	Nov 14, 1984	To eliminate excessive "jailbar" pattern on video output when Hires Graphics is
4P:015	26-1080A	Dec 13, 1984	To prevent lockup or reboot in 4 MHz mode under Trsdos 1.3
4P:016	26-1080	Nov 12, 1987	Installation of the Astec power supply without a separate fan power connector.

DATE: January 26, 1984

REVISION DATE: January 26, 1984

BULLETIN NO.: 4P:1

PRODUCT: 26-1080

SUBASSEMBLY: AX-9426

PURPOSE: To correct for Model 4P video dimness.

DISCUSSION: Early production Model 4Ps have low video contrast. To increase the apparent brightness of the 4P, the video drive must be increased. To accomplish this, one resistor R101 must be deleted and R106 must be replaced with one of a lesser value. Later video boards will have this change incorporated into their design.

PROCEDURE:

WARNING

THERE MAY BE A HIGH VOLTAGE CHARGE ON THE ANODE OF THE CRT. TO DISCHARGE, CONNECT ONE END OF AN INSULATED WIRE TO CHASSIS GROUND AND THE OTHER END OF THE WIRE TO THE BLADE OF A COMMON SCREWDRIVER. INSERT THE SCREWDRIVER BLADE UNDER THE SUCTION CUP AND TOUCH IT TO THE CLIP HOLDING THE WIRE TO THE CRT.

Remove the top and rear shields. Remove the edge connector going to the monitor board. Carefully disconnect the circuit board connector on the rear of the CRT neck and the white wire going to the ground strap. Remove the connector going from the yoke to the monitor board at the monitor board. Remove the anode lead at the CRT. Please see warning above. Remove the four screws at the four corners of the monitor board. An offset screwdriver may be needed for two of the screws. The monitor board will now be free.

Two changes will be made to the monitor board. First delete R101 from the board. Do not jumper across the location R101 previously occupied as this may cause damage. Secondly replace R106. The present value of R106 is 120 ohms. Replace it with a value of 91 ohms 1/4 watt +/-5%.

A 91 ohm resistor maybe ordered under catalog number 26-9999R and part number NO-129EEC.

DATE: January 27, 1984

REVISION DATE: January 27, 1984

BULLETIN NO.: 4P:2

PRODUCT: 26-1Ø8Ø Model 4P

SUBASSEMBLY: AX-9446

PURPOSE: To describe tuning procedure for C231 on Model 4P PCB.

DISCUSSION:

The Model 4P main logic PC board contains a phase locked loop (PLL) circuit to synchronize the 64 character and 8Ø character video clocks. This circuitry will prevent the "swimming" or apparent rolling of the video display.

PROCEDURE:

1) Hold down the <N> key and turn on the computer. Insert a TRSDOS 6.x diskette into drive Ø. Note that the diskette must be inserted with the label facing to the left. Close the drive door lever. After the Tandy Logo appears, remove your finger from the <N> key.

2) Move jumper E1/E2 to E9/E1Ø. The video will roll and probably be unreadable. These jumpers are found near the front of the PCB, near U148.

3) Using a non-metallic adjustment tool, adjust C231 until the video display is as stable as you can possibly adjust it. The video display may not lock into sync, but should be adjusted so that any rolling is very slow.

4) Move jumper E9/E1Ø to E1/E2. The video should lock tightly into sync.

DATE: February 27, 1984

REVISION DATE: February 27, 1984

BULLETIN NO.: 4P:3

PRODUCT: 26:1Ø8Ø Model 4P

SUBASSEMBLY: AX-9446

PURPOSE: Describe the 64K to 128K Memory upgrade.

DISCUSSION: The Model 4P can be upgraded to 128K of RAM using the following procedure.

PROCEDURE:

Place 64K RAM chips in sockets U153 to U16Ø. Move jumper E12-E13 to E11-E12. Run the Model 4/4P memory test to verify the memory upgrade.

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DATE: March 22, 1984

REVISION DATE: March 11, 1985

BULLETIN NO.: 4P:4

PRODUCT: 26-1080, 26-1080A Model 4P

SUBASSEMBLY: ATA-1015 Tandy 65 watt Power Supply

PURPOSE: To correct problem of power supply going into current limiting and the Model 4P appearing dead.

DISCUSSION:

The Tandy 65 watt power supply incorporates a current limiting mode. This current limiting mode shuts down the supply in the event that the unit draws too much current. The 65 watt power supply is overly sensitive to current load and may shut down without there being a problem with the Model 4P. To correct this, values of two resistors need to be changed. This will increase the amount of current the 65 watt power supply may draw. Additionally, R-15 (Variable Pot) may not be making proper contact or may be defective. To correct this problem, the pot needs to be changed to a network of resistors.

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PROCEDURE:

R-21 must remain a 220 ohm resistor.

Change R7 from 4.7k ohm to 1k ohm and change R35 from 47 ohm to 68 ohm.

Remove R-15 and install two (2) 510 ohm resistors, joining them where the center tap on the trim pot was. Check the 5 volt line (V1) for a tolerance of 4.95 to 5.25 volts. To trim the power supply, an additional 1k resistor may be used. To raise the output, locate R14 and install the 1k resistor across the 510 ohm resistor closest to R14. To lower the output, locate R16 and install the 1k resistor across the 510 ohm resistor closest to R16.

The fix kit needed for this modification may be ordered as:

Catalog # 26-1080 Part # AXX-7098

All units should be checked for these modifications.
Please note that only the power harness modification and not the resistor modifications apply to Astec power supplies.

DATE: March 20, 1984

REVISION DATE: March 20, 1984

BULLETIN NO.: 4P:5

PRODUCT: 26-1080 Model 4P

SUBASSEMBLY: CPU board

PURPOSE: Prevention of RAM problems due to glitch in the 240ns delay tap output.

DISCUSSION: There is a glitch in the 240ns delay tap of Valor delay devices with a date code of 8351 or less. This glitch causes RAM problems, usually preventing the unit from booting. In the following procedure, "anding" the 150ns, and the 240ns delay tap, stabilizes the 240ns line to properly clock U115.

PROCEDURE:

All of the following cuts, and jumps are to be made on the **SOLDER** side of the printed circuit board.

1.) Cut the run to the solder pad NEXT to U115 pin 4. (see attached art work)

2.) Jumper from U129 pin 8, to U115 pin 13.

3.) Jumper from U129 pin 9, to U97 pin 10.

4.) Jumper from U129 pin 10, to U97 pin 6.

Below is the PCB art work for U115 as viewed form the solder side of the board. The required trace cut for this modification is as indicated.

Below is the PCB art work for U97 as viewed from the solder side of the board. U97 pin ten of the delay device as referred to in the above procedure is as indicated below.

DATE: April 17, 1984

REVISION DATE: April 17, 1984

BULLETIN NO.: 4P:6

PRODUCT: Model 4P (26-1080)

SUBASSEMBLY: Modem board (26-1084)

PURPOSE: Enable the modem board to support multiline phones.

DISCUSSION:

To enable the modem board in the model 4P to work on multiline telephone systems jumper W1 must be installed.

PROCEDURE:

Install a jumper at W1, which is located between K1 and K2 on the component side of the modem board.

DATE: April 27, 1984

REVISION DATE: April 27, 1984

BULLETIN NO.: 4P:7

PRODUCT: 26-1084 Model 4P Modem A

SUBASSEMBLY: AX-9453 Model 4P Modem A PCB

PURPOSE: Increase reception sensitivity of the Model 4P modem

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DISCUSSION: Some reception difficulties have been noted in the model 4P modem A. This has been traced to oscillation of amplifier U10. By tying the unused inputs of U10 to ground, you can significantly reduce these oscillations, increasing modem sensitivity.

PROCEDURE: Jumper U10 pin 6, to U11 pin 4.
Jumper U10 pin 5, to U11 pin 4.

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DATE: April 25, 1984

REVISION DATE: April 25, 1984

BULLETIN NO.: 4P:8

PRODUCT: 26-1080 Model 4P

SUBASSEMBLY: 26-1126 Model IV High Resolution Graphics Board

PURPOSE: To describe the proper procedure for installing the Model IV high resolution graphics board in the Model 4P.

DISCUSSION/PROCEDURE: To install the high resolution board, disassemble the unit to expose the main pcb and plug in the graphics board into J7 located closest to the notched end of U85. Remove and discard the jumper from E4-E5 located on the oposite end of U85 next to U125. Run the Model IV high resolution graphics test to insure proper operation and reassemble unit.

DATE: May 18, 1984

REVISION DATE: May 18, 1984

BULLETIN NO.: 4P:9

PRODUCT: 26-1Ø8Ø Model 4P

SUBASSEMBLY: AX-9446 CPU Board

PURPOSE: To prevent lockup or reboot in 4MHz mode under Trsdos 1.3

DISCUSSION: It has been found that in using the Model 4P in the 4MHz mode under Trsdos 1.3, possible lockups or reboots may occur, primarily when doing a read from the interrupt status register (port EØ-E3). This modification will pullup the otherwise not used data lines DØ and D1 to a known high state during a read from this port. This modification applies to all revisions of the Model 4P CPU.

PROCEDURE:

1.) Add a 4.7Kohm 5% resistor from U88 pin 16 to U89 pin 3.

2.) Add a 4.7Kohm 5% resistor from U89 pin 2Ø to U9Ø pin 3.

3.) Verify proper operation of all machine functions.

NOTE: To enter the 4MHz mode, boot a Trsdos 1.3 diskette, load disk basic and enter the following commands:
1.)OUT &HEC,&H4Ø
2.)POKE &H421Ø,&H4Ø.

A 4.7Kohm resistor may be ordered under National Parts part# N-Ø247EEC and catalog# 26-9999R

DATE: July 17, 1984

REVISION DATE: July 17, 1984

BULLETIN NO.: 4P:1Ø

PRODUCT: 26-1Ø8Ø Model 4P

SUBASSEMBLY: 26-1Ø84 Modem 4P Board, Rev A only

PURPOSE: **Mandatory** modification to correct PCB layout error on Rev A boards.

DISCUSSION:

This modification is MANDATORY. All units in for repair should be checked to see if this modification has been installed. The modification should be installed if it is not present, or repaired if it is broken.

On Rev A boards, U3 Pin 1Ø is connected to J3 Pin 21 instead of Pin 2Ø. This prevents DTR from being received by the Modem 4P. For the Modem 4P to operate correctly in any mode, U3 Pin 1Ø must be connected to the RS-232 connector J3 Pin 2Ø.

PROCEDURE:

On the component side of the board cut the trace from U3 Pin 1Ø to J3 Pin 21.

On the solder side, jumper J3 Pin 2Ø to U3 Pin 1Ø using 3Ø gauge wire wrap wire.

DATE: August 14, 1984

REVISION DATE: August 14, 1984

BULLETIN NO.: 4P:11

PRODUCT: 26-1Ø8ØA Model 4P Gate Array

SUBASSEMBLY: Gate Array CPU

PURPOSE: To describe 128K upgrade procedure.

DISCUSSION: In order to upgrade a Model 4P Gate Array CPU to 128K follow the procedure outlined below.

PROCEDURE:

1.) Move the jumper on position E2 to E3 to position E1 to E2.
2.) Install 64K RAM's in positions U153 to U16Ø.
3.) Test machine for proper operation.

DATE: September 11, 1984

REVISION DATE: September 11, 1984

BULLETIN NO.: 4P:12

PRODUCT: 26-1080/A Model 4P/ Model 4P Gate Array

SUBASSEMBLY: 26-1126 Model 4 Hires

PURPOSE: Modification for installation of Model 4 Hires into Gate Array CPU, and to eliminate decoding problems with the RAS, CAS, and XADR7 signals.

DISCUSSION: If U1 is a 10L8 PAL chip, the Hires Graphics Board may display garbage and fail all diagnostics in a Model 4P and not work at all in a Model 4P Gate Array. To remedy this problem the PAL IC is being replaced with a 82S153 IFL IC. For use in the Gate Array CPU the Hires Board also requires an extra cut and jump.

PROCEDURE:

If the Model 4 Hires Board is to be installed in a Gate Array Board, both steps below must be completed. For installation in a regular Model 4P, only step one below should be completed.

(1) Check the IC at location U1. If it is a 10L8 PAL replace it with an 82S153 IFL chip.
(2) For use with the Gate Array CPU cut the trace at pin 7 of U5 on the graphics board and jumper this pin to pin 1 of U1.

NOTE: The jumper at position E4-E5 must be removed on both Main Logic boards to enable the graphics board.

IFL chip Catalog# 26-1126 Part# MX-6503

DATE: October 5, 1984

REVISION DATE: October 5, 1984

BULLETIN NO.: 4P:13

PRODUCT: 26-1080/A Model 4P

SUBASSEMBLY: ATA-1015/1051 Power Supplies

PURPOSE: To describe kit to remedy AC harness problems causing intermittant power supply failures and revise resistor modification on Tandy power supplies.

DISCUSSION: It has been found that an intermittant AC harness has been causing some failures on both the Astec and Tandy 65W power supplies. The current limiting resistor modification described in Technical Bulletin 4P:4 for the Tandy power supply has also been revised. A kit is now availiable from National Parts which incorporates both of these modifications.

PROCEDURE:

Order the modification kit from National Parts and install as per instructions included in the kit.

Catalog # 26-1080 Part # AXX-7098

NOTE: **The AC harness portion of this modification is mandatory to all power supplies. The resistor modification applies only to Tandy power supplies.**

DATE: November 14, 1984

REVISION DATE: November 14, 1984

BULLETIN NO.: 4P:14

PRODUCT: 26-1080A Model 4P Gate Array

SUBASSEMBLY: AX-9500 Main Logic Gate Array Version

PURPOSE: To eliminate excessive "jailbar" pattern on video output when Hires Graphics is installed.

DISCUSSION: Due to an RFI modification to the DCLK signal on the new Model 4P Gate Array, a "jailbar" type pattern may appear on the video when the Hires Graphics board is installed. To eliminate this effect the DCLK signal will no longer be used as a qualifier for the video output signal.

PROCEDURE:

1.) Remove the jumper completely from the staking pins E6-E7-E8.

2.) Solder a jumper from U142 pin 6 to U142 pin 7.

3.) Test the unit completely to verify proper operation.

DATE: December 13, 1984

REVISION DATE: December 13, 1984

BULLETIN NO.: 4P:15

PRODUCT: 26-1Ø8ØA Model 4P Gate Array

SUBASSEMBLY: AX-95ØØ CPU Board Rev A

PURPOSE: To prevent lockup or reboot in 4MHz mode under Trsdos 1.3

DISCUSSION: It has been found that in using the Model 4P gate array in the 4MHz mode under Trsdos 1.3, possible lockups or reboots may occur, primarily when doing a read from the interrupt status register (port EØ-E3). This modification will pullup the otherwise not used data lines DØ and D1 to a known high state during a read from this port. This modification will be necessary on all boards presently in the field. An artwork change will be implemented on later production. Carefully check the board before proceeding with the work to see if it needs to be modified.

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PROCEDURE:

1.) Add a 4.7Kohm 5% resistor from U36 pin 2 to the top end of C36(+5V).

2.) Add a 4.7Kohm 5% resistor from U36 pin 3 to the top end of C36(+5V).

3.) Verify proper operation of all machine functions.

NOTE: To enter the 4MHz mode, boot a Trsdos 1.3 diskette, load disk basic and enter the following commands:
1.)OUT &HEC,&H4Ø
2.)POKE &H421Ø,&H4Ø.

A 4.7Kohm resistor may be ordered under National Parts part# N-Ø247EEC and catalog# 26-9999R