DATE: May 14, 1982

REVISION DATE: August 26, 1983

BULLETIN NO.: I/O:41

PRODUCT: 26-4104 Model II Hires Graphics Board

SUBASSEMBLY: N/A

PURPOSE: To correct small hash marks in the first eight inches of the left side of the video display.

DISCUSSION/PROCEDURE: This problem will occur when updating the video memory on revision A boards. To modify install the following cuts and jumpers:

Cuts: (See figure 1)
- U26 pin 6 (pin 26 on the edge card connector)
- U28 pin 5 (cut at the first feed through)

Jumpers:

U38 pin 39	to	U32 pin 4
U38 pin 40	to	U32 pin 5
U32 pin 6	to	U26 pin 6
U26 pin 14	to	U28 pin 5

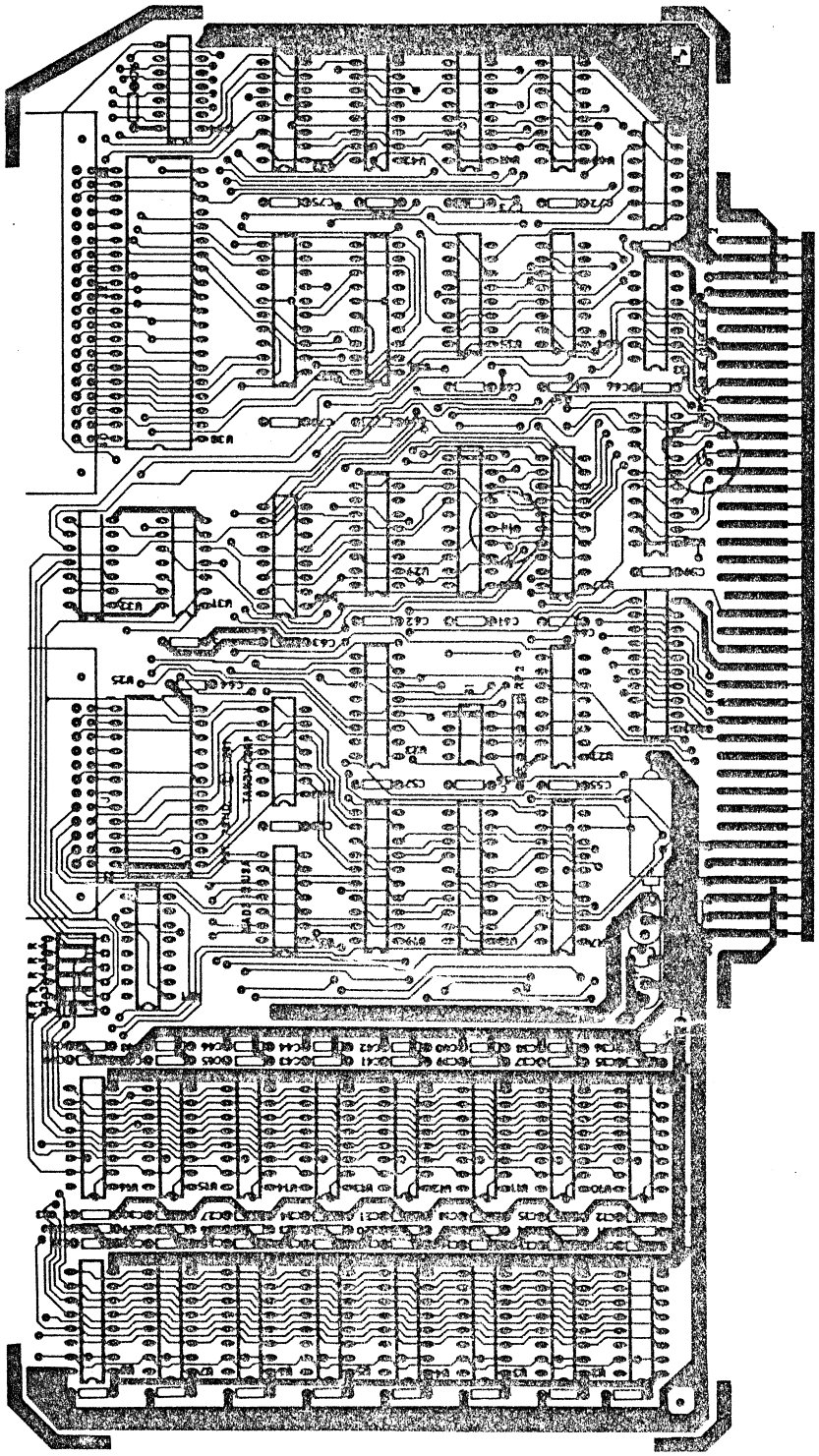


Figure 1

10-8-86

DATE: December 2, 1985

REVISION DATE: September 8, 1986

BULLETIN NO: I/O:1ØØ

PRODUCT: 26-1245 Tandy Disk Cartridge System
26-1246 Drive 1 Upgrade Kit

SUBASSEMBLY: Entire item

SUBASSEMBLY REVISION: N/A

PURPOSE: To describe controller ROM replacement to enable the use of a secondary cartridge drive.

DISCUSSION:

In order for a secondary disk cartridge drive to work successfully, the controller ROM U33 must be at least code version 65 in addition to the installation of the secondary drive unit. This is to allow correct spinup/spindown of the secondary drive.

If the code version of the U33 ROM is 65 or greater, only the installation of the secondary drive unit need be performed.

** **Compliance With This Bulletin Is Mandatory** **

PROCEDURE:

For instructions on the mechanical installation of the secondary drive unit, refer to the instruction pamphlet enclosed with the upgrade kit.

When you have reached the point in the upgrade procedure where you have removed the primary disk cartridge unit and controller board from the case, perform the following steps:

1) Remove the four (4) slotted screws which attach the controller board to the top of the primary cartridge drive. The controller is the large board which is oriented component side down on the top of the drive unit.

2) Examine the old ROM in position U33 and compare the material on its identification label to the table below. **If it is code version 65 or later, do not replace it.**

ROM label	Code Version	Replace?(y/n)
IOMEGA A1ØH CONTROL U33 PN ØØ7192Ø2	63	Yes
IOMEGA A1ØH CONTROL U33 PN ØØ7192Ø3	64	Yes
IOMEGA A1ØH CONTROL U33 PN ØØ7192Ø4	65	No
IOMEGA A1ØH CONTROL U33 PN ØØ19Ø4ØØ	67	No
IOMEGA A1ØH CONTROL U33 PN ØØ19Ø4Ø1	68	No

3) If the U33 ROM needs to be replaced, remove the old U33 ROM on the board and replace it with the new ROM which should be labelled "IOMEGA A1ØH, CONTROL U33, PN ØØ7192Ø4". This ROM should come with the upgrade kit; if it did not, it may be obtained as:

Part # MX-4341, Cat. # 26-1246

3) Replace the controller board on the primary cartridge drive.

4) Continue with the remainder of the upgrade procedure.

When you have completed the upgrade procedure, test both cartridge drives under diagnostics and Xenix Ø3.Ø1.ØØ (or later). If the disk cartridge system is to be used with an MS-DOS system, format and test the operation of both drives with the appropriate version of MS-DOS.

Rcvd 7-22-86

TECHNICAL BULLETIN

TANDY COMPUTER PRODUCTS

DATE: June 23, 1986

REVISION DATE: June 23, 1986

BULLETIN NO: I/O:1Ø4

PRODUCT: 26-1245 Disk Cartridge System

SUBASSEMBLY: Boschert Power Supply

SUBASSEMBLY REVISION: N/A

PURPOSE: To remedy possibly unstable or overly low output voltages which may cause erratic malfunctions of the disk cartridge drives.

DISCUSSION:

Some of the Boschert power supplies used in the Disk Cartridge System had faulty potentiometers installed at R24. This potentiometer serves to adjust both the +5V and +12V outputs. Symptoms may include low voltages (both +5V and +12V), random read/write errors, unexplainable spin-down of both drives, scrambled information, and lost data. This symptoms may be very intermittent and therefore difficult to duplicate.

PROCEDURE:

If the date code stamped on the power supply transformer is **8549** or earlier (i.e. a number which is less than 8549), replace the potentiometer at R24 with:

Part # AP-7Ø2Ø, Cat. # 26-1245.

With the system fully reconnected, power up the unit and adjust R24 to obtain +5.ØØ - +5.2ØV on the +5V output and +11.95 - +12.25V on the +12V output. Reassemble the unit, and test for proper operation under diagnostics.

Note: **This modification applies only to the Boschert power supply.** It is not to be applied to the Astec power supply. The Boschert supply may be identified by the "Boschert Inc." silk-screened on the component side of the board near the 4-pin Molex type connector. Additionally, there is a sticker on top of the transformer which says "Boschert Power Supply" which also has the model number and the date code mentioned above printed on it.

I/O: 11-12-86

TECHNICAL BULLETIN

TANDY COMPUTER PRODUCTS

DATE: August 15, 1986

REVISION DATE: October 27, 1986

BULLETIN NO: I/O:1Ø7

PRODUCT: 25-3Ø22 1Ø Meg Disk Cartridge Interface (1ØØØ/12ØØ/3ØØØ)

SUBASSEMBLY: AX-91Ø3 Interface PCB

SUBASSEMBLY REVISION: Ø44Ø4ØØ-ØØ1 (found near interface cable connection)

PURPOSE: To enable the Disk Cartridge System to operate in a Xenix environment in conjunction with the Tape Cartridge System in a Tandy 3ØØØ.

DISCUSSION:

There is a conflict when both the 1Ø Meg Disk Cartridge System Interface and the Tape Cartridge Interface are installed in a Tandy 3ØØØ running Xenix. For Xenix operation, these two devices share the same DMA channel. When using the tape cartridge drive under these circumstances, the disk cartridge interface board will turn on and add some additional bytes to the tape cartridge data stream, causing scrambled data. To correct this problem, it is necessary to modify the disk cartridge interface. These modifications will not affect MS-DOS operation.

PROCEDURE:

These modifications are to be performed on the 1Ø Meg Disk Cartridge Interface Board only.

1) Cut U21, pin 9 and bend it upward. **Do not cut the trace, as it continues onward to the card edge connector.**

2) Jumper U25, pin 6 to U24, pin 5, on the solder side of the board.

3) Jumper U22, pin 9 to U24, pin 4, on the solder side of the board.

4) Jumper the lifted U21, pin 9 to U24, pin 6 on the component side of the board.

Verify correct operation using diagnostics and Xenix.

DATE: August 15, 1986

REVISION DATE: June 29, 1987

BULLETIN NO: I/O:108

PRODUCT: 25-3021 Tape Cartridge Interface

SUBASSEMBLY: AX-6006 Interface PCB

SUBASSEMBLY REVISION: All

PURPOSE: To allow the TCS-100 to work in a Xenix environment.

DISCUSSION:

The interrupt circuit as initially implemented on the tape cartridge interface board is not very efficient in a multi-user environment like Xenix. In order for the TCS-100 to work with Xenix effectively, it is necessary to install a new PAL at U4 on the interface board. This modification will not adversely affect MS-DOS operation.

** **Compliance With This Bulletin Is Mandatory For Xenix Operation** **

PROCEDURE:

1) Remove the old PAL at U4 on the tape cartridge interface board.

2) Install the new PAL at U4 (checksum 2377).

3) **For Xenix operation,** jumper:

ADDR SEL B
ADDR SEL D
ADDR SEL E
ADDR SEL G
DRQ3
DACK3
IRQ3

For MS-DOS operation, jumper:

ADDR SEL B
ADDR SEL D
ADDR SEL E
ADDR SEL G
DRQ1
DACK1
IRQ2

4) Check for correct operation with diagnostics and the operating system which will be used with the board.

The new PAL is available as:

Part # MXP-0496, Cat. # 25-3021

DATE: November 3, 1986

REVISION DATE: November 3, 1986

BULLETIN NO: I/O:11Ø

PRODUCT: 26-1245 1Ø Meg Disk Cartridge System

SUBASSEMBLY: ATA-1Ø83 Astec Power Supply

SUBASSEMBLY REVISION: AC9357

PURPOSE: To correct a problem which may cause the 5 and 12 volt power supply to be low in the 1Ø Meg Disk Cartridge System.

DISCUSSION:

The Astec power supply used in the 1Ø Meg Disk Cartridge System may display low output voltages on both the 5 and 12 volt supply lines. These low voltages may cause intermittent lockups and failures during operation such as random data errors, failure to correctly spin up, and intermittent spin down. These problems may not manifest themselves until the addition of a second drive. To correct this problem, it is necessary to add a parallel resistor to the power supply feedback circuitry.

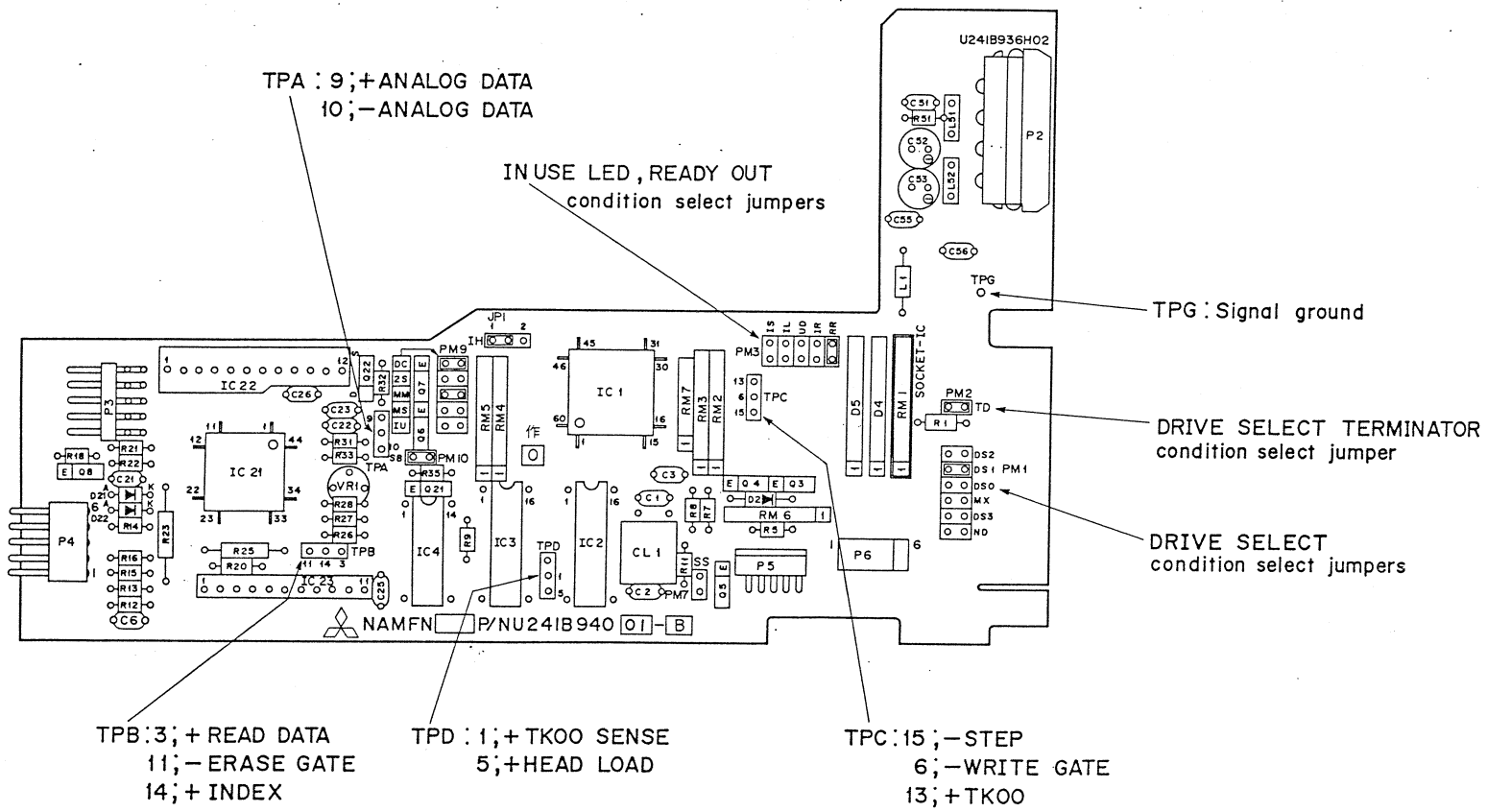
PROCEDURE:

Note: This modification should only be applied to **Astec** supplies. If the unit has a Boschert supply with low voltages, refer to Technical Bulletin I/O:1Ø4.

1) Measure the +5 and +12 volt supply at the disk cartridge controller board. With the door (or doors if the system has two drives) closed, check to see that the +5 volt supply is between +5.ØØ - +5.2Ø, and the +12 volt supply is between +12.ØØ - +12.25. If the voltages are within this range, open the doors and check to ensure that they do not exceed +5.2Ø and +12.25 volts. If the supply meets these specifications, it does not need modification.

2) If the voltages are too low, add a parallel resistor across R37 or R38. A good starting value is 68k. Measure the output voltages again according to step (1). If the supply meets specifications, reassemble and test the disk cartridge system with both diagnostics and an appropriate operating system. If the supply does not meet the specifications in step (1), note whether it is too high or too low. If the voltages are too low, the parallel resistor value should be reduced. If they are too high, the parallel resistor value should be increased. If it is necessary to use a parallel resistor which is greater than 1ØØk or less than 47k, the supply is probably defective and should be replaced.

3) After ensuring that the voltages are within the correct range, reassemble the unit and test with diagnostics and the appropriate operating system.



改 定
A
B

MF504A P.C.B NAMFN
PARTS LOCATION DIAGRAM

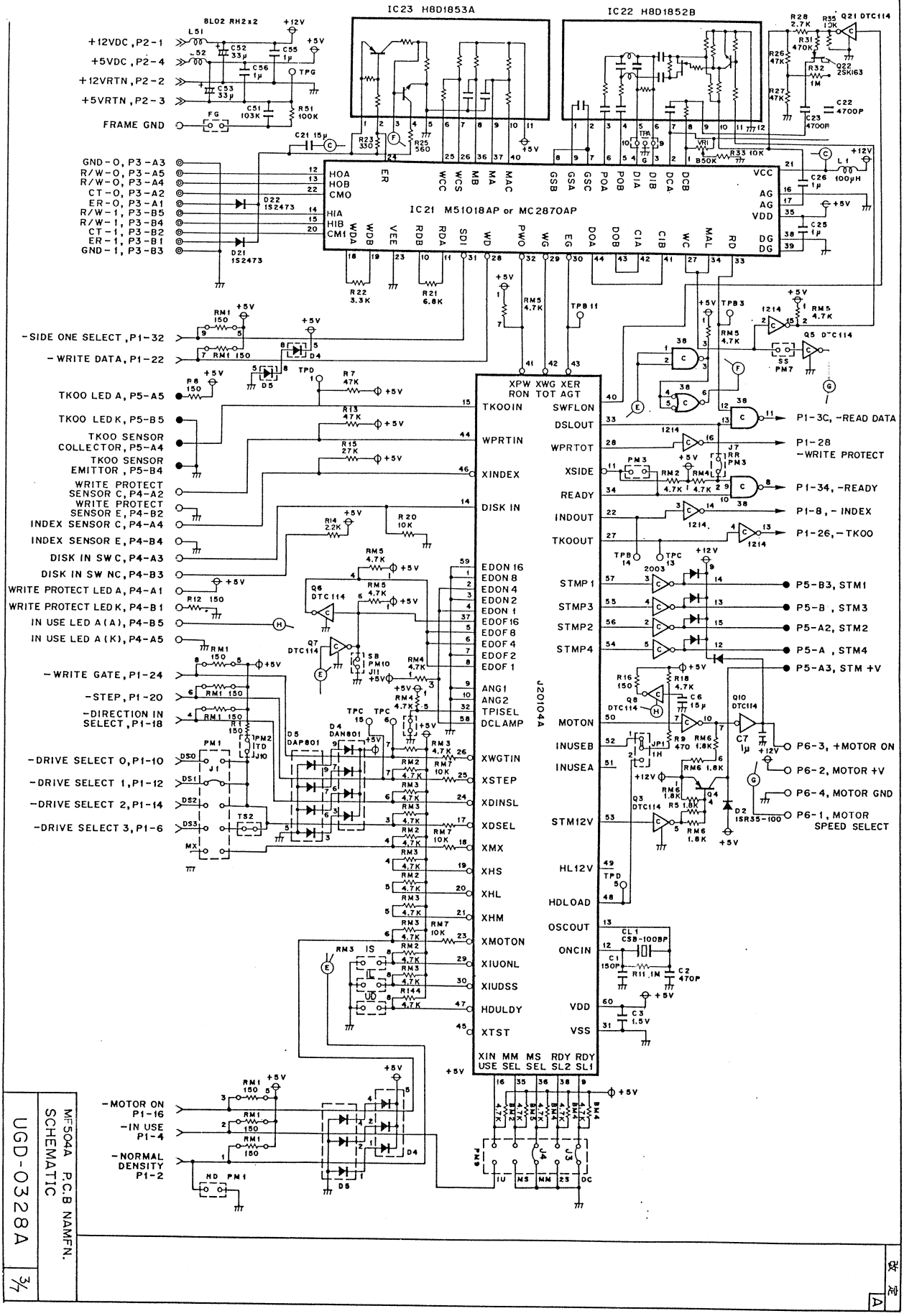
UGD-0328A 4/7

DISK DRIVE SCHEMATICS AND LOGIC MANUAL

MF504A-347UA

MITSUBISHI ELECTRIC CORPORATION

UGD-0328A



UGD-0328A	MF504A P.C.B NAMEN. SCHEMATIC
3/7	

Tandon TM65-2L Floppy Drive Logic Board (figure 98):
This drive is used only in the dual floppy version of the Tandy 12ØØ.
DS1 Both floppy drives in system have DS1 as the cable selects the drive.
J34 B-C Spindle motor controlled by drive select

Mitsubishi M4853, Mark I (figure 4Ø):
3, 4, 5, 6, 7, 8, and 9 are for termination and should only be installed on the last drive on the cable.

DSx Drive Select (x = Ø-3)
HC Causes a constant head load condition
MM Causes motor on when drive is selected
H1
R3

Mitsubishi M4853-1, Mark II (figure 5Ø):
HC Selects constant head load after door closed
2S Selects constant drive ready
MM Selects active low motor on
DSx Drive select (x = Ø-3)
The terminating resistor pak should be installed at location B6 on the last drive on the cable.

Mitsubishi M4851 36ØK Drive Logic Board (figure 96):
DS1 Both floppy drives in system use DS1 as the cable selects the drive
HC Causes head load with door close
DC Resets status on falling edge of step pulse
MM Selects active low motor on

Mitsubishi MF5Ø1A 36ØK Drive Logic Board (figure 1Ø8):
DS1 Both floppy drives in system use DS1 as the cable selects the drive
MM Spindle motor power controlled by 'MOTOR ON' signal

Mitsubishi M4854-3S 1.2 MEG Drive Logic Board (figure 97):
DS1 Both floppy drives in system use DS1 as the cables selects the drive
TD Termination select
HC Selects constant head load
UD Disables head unload delay
DC Selects active low diskette change
MM Spindle motor power controlled by 'MOTOR ON' signal
RR Output selected by 'DRIVE SELECT' signal
SB Selects 36Ø RPM for both high and low density modes
1IH LED will light with the 'DRIVE SELECT' signal

Mitsubishi MF5Ø4A 1.2 MEG Drive Logic Board (figure 1Ø9):

DS1 Both floppy drives in system use DS1 as the cable selects the drive
TD Connect drive select terminator
DC Diskette Change, activates signal when drive latch opened
MM Spindle motor power controlled by 'MOTOR ON' signal
RR Output selected by 'DRIVE SELECT' signal
SB Selects 36Ø rpm for both high and low density modes

Teac FD-35-FN 3 1/2 inch 72ØK Floppy Drive (figure 132):

DSX Drive select (DSØ=Drive A, DS1=Drive B)
MO Enables use of motor on signal
FG Connects frame ground to logic OV
Termination is internal to the drive.

Sony MP-F73W-Ø1D 3 1/2 inch 1.44 Meg Floppy Drive (figure 141):

DS1 ALL Drives Slide Switch on back right corner set to second closest position to the rear of the drive.
Termination is internal to the drive.

Teac FD55BV-221 5 1/4 inch 36ØK Floppy Drive (figure 142):

DSX Drive Select (DSØ=Drive A, DS1=Drive B)
Termination is internal to the drive.

Teac FD55BR-521 5 1/4 inch 36ØK Floppy Drive (figure 143):

DSX Drive Select (DSØ=Drive A, DS1=Drive B)
Termination is internal to the drive.

Sony MP-F63-Ø1D 3 1/2 inch 72ØK Floppy Drive (figure 144):

DSØ Drive A Slide switch all way to rear of drive
DS1 Drive B Slide switch second notch to rear of drive
Termination is internal to the drive.

Mitsubishi MF5Ø4B 1.2 MEG Drive Logic Board (figure 154):

DS1 Both floppy drives in system use DS1 as the cable selects the drive
TD Connect drive select terminator
DC Diskette Change, activates signal when drive latch opened
MM Spindle motor power controlled by 'MOTOR ON' signal
RR Output selected by 'DRIVE SELECT' signal
SB Selects 36Ø rpm for both high and low density modes

DATE: November 4,1982

REVISION DATE: November 4,1982

BULLETIN NO.: I/O:50

PRODUCT: 26-4104 MODEL II/16 GRAPHICS BOARD

SUBASSEMBLY: GRAPHICS PCB

PURPOSE: When using the Model II/16 Graphics Board option; random bits may remain "stuck" on or off. This problem will generally appear within a small column on the left side of the display. Failure of graphics board memory under test may also be a symptom.

PROCEDURE: This fix applies to revision "A" and "B" graphics boards only. Because the modification is different for each revision, these modifications will be outlined seperately.

REVISION "A":

1) Change delay line U44 from a 250ns to a 150ns part.
2) Move tap on MUX* output from U44 pin 4 to U44 pin 12.
   a) Cut trace from U44 pin 4 to U31 pin 5.
   b) Add jumper from U44 pin 12 to U31 pin 5.

REVISION "B":

1) Change delay line U44 from a 250ns to a 150ns part.
2) Change devices U40, U41, U42, and U43 from 74LS153 to 74S153.

The part number for the 150ns Digital Delay Unit is AMX-5756 under catalog number 26-4104.

Controller-to-Disk Drive		
Ground	Signal	Description (Mnemonic)
1	2	Connector clamp
3	4	(Spare) IN USE
5	6	~~(Spare)~~ DRIVE SELECT 3
9	10	SELECT 1 (NDS1)
11	12	SELECT 2 (NDS2)
13	14	SELECT 3 (NDS3)
15	16	MOTOR ON DRIVE-MOTOR ENABLE (NMOTORON)
17	18	DIRECTION
19	20	STEP (NSTEP)
21	22	WRITE DATA (NWRITEDATA)
23	24	WRITE GATE (NWRITEGATE)
31	32	~~SELECT 4 (NDS4)~~ SIDE 1 SELECT

Disk Drive-to-Controller		
Ground	Signal	Description (Mnemonic)
7	8	INDEX (NINDEX/SECTOR)
25	26	TRACK ØØ (NTRKØØ)
27	28	WRITE PROTECT (NWRITEPROTECT)
29	30	READ DATA (NREADDATA)
33	34	~~Connector Clamp~~ READY

TABLE 5-2. DISK DRIVE EDGE CARD PIN ASSIGNMENTS – J2.

Pin	Supply Voltage
1	+12 V DC
2	Return (+12 V DC)
3	Return (+5 V DC)
4	+5 V DC

TABLE 5-3. POWER CONNECTOR PIN ASSIGNMENTS