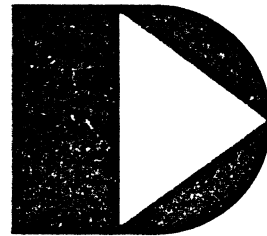


DUAL DISKETTE DRIVE

1842

FIRST LEVEL MAINTENANCE MANUAL

DATAPOINT CORPORATION



The leader in dispersed data processing™

Manual No.75218-00

July, 1978

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SECTION 1

EQUIPMENT DESCRIPTION

1.1 GENERAL

The Datapoint 1842 Dual Diskette Drive is a self contained, table top module consisting of two drives, a controller, and power supply. This drive is to be used with the Datapoint 1800 processor.

The 1842 Dual Diskette Drive communicates to the processor through a micro-bus cable. The diskette drive can operate in both standard and double density modes of operation, and with the 1800 processor can be used to convert data from standard to double density. Storage capacity for the dual unit in standard density operation is 0.5 megabyte, and in double density operation is 1.0 megabyte. A maximum of four 1842 drives can be daisy-chained to the 1800 processor for a maximum storage capacity of four megabytes.

The standard nominal primary power is 115 VAC, 60 Hz. Power input circuits are field changeable for operation with primary power of 100 to 254 VAC at frequencies of 50 or 60 Hz.

NOTE

This manual covers only the 1842 Dual Diskette Drive. For information on the 1800 processor, refer to First Level Maintenance Manual No. 75217-00.

1.2 EQUIPMENT SUPPLIED

The Datapoint 1842 Dual Diskette Drive is shipped with the 1800 System with one each of the following equipment:

- a. 1800 Processor.
- b. 1842 Dual Diskette Drive.
- c. Micro Bus I/O Cable.
- d. Micro Bus Terminator

Table 1-1 shows the equipment supplied by model and part number. Table 1-1 is for general information only. Current shipping lists take precedence in specifying the equipment supplied.

TABLE 1-1

EQUIPMENT SUPPLIED		
<u>MODEL NUMBER</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
<u>1800 SYSTEM</u>		
1800	Processor	11-0522-XXX
1821	Processor, 32K Memory	-001
1822	Processor, 64K Memory	-002
1823	Processor, 96K Memory	-003
1824	Processor, 124K Memory	-004
1842	Dual Diskette Drive	11-0525-001
	Micro bus I/O Cable	10-1147-XXX
	Cable, 7 in. (used with extension drive)	-001
	Cable, 36 in.	-002
	Micro bus Terminator	10-1145-001

1.3 PHYSICAL DESCRIPTION

The 1842 Dual Diskette Drive (Figure 1-1) consists of one major assembly. The device is modular in design and is enclosed in a molded, top removable housing. Electronic components and circuitry are on printed wiring boards. Equipment specifications for the dual diskette drive are given in Table 1-2.

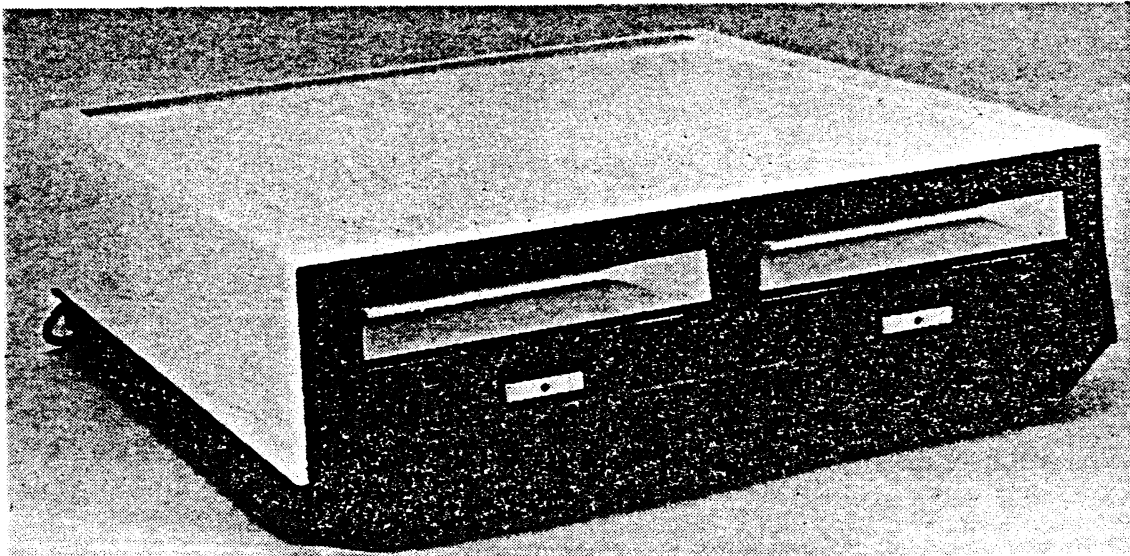


Figure 1-1. 1842 Dual Diskette Drive

TABLE 1-2

EQUIPMENT SPECIFICATIONS FOR
1842 DUAL DISKETTE DRIVE

DIMENSIONS

Width	55.4 cm	21.8 in.
Height	18.3 cm	7.2 in.
Depth	60.7 cm	23.9 in.
Weight	31.75 kg	70.0 lbs.

POWER

Input (nominal)	115/230 VAC, 50/60 $\pm$ 1 Hz
Optional Input (jumper selected)	100 thru 127 VAC 200 thru 254VAC
Consumption	300 Watts

ENVIRONMENT

Temperature	10 to 38 degrees C 50 to 100 degrees F
Humidity	20 to 90 percent non-condensing

CHARACTERISTICS

Controller Formatting	Sequential Sectors (26 per track)
Buffer Capacity	512 bytes
Buffer Organization and Addressing	1 page, random or sequential addressing
Error Detection	CRCC check on diskette transfers
Transfer Rate	500 K bytes/sec
Rotational Speed	360 rpm
Access Time:	
Track-to-Track	10 msec
Settling Time	20 msec
Average Rotational Latency	83 msec
Settling Time (after head loads)	50 msec
Tracks per Diskette	77
Sectors per Track	26
Bytes per Diskette	512,512
Bits per Byte	8
Bits per Inch (inside track)	6600
Bytes per Sector	256

1.4 FUNCTIONAL DESCRIPTION

1.4.1 FUNCTIONAL COMPONENTS

Functional items or circuits of major importance in the 1842 dual diskette are as follows:

- a. Disk drives (2), each with:
 1. Read/write head.
 2. Head load solenoid.
 3. Track stepper motor.
 4. Track-00 flag and detector.
 5. Index/sector detector.
 6. Write/Protect detector.
 7. Drive motor and drive mechanism.
- b. Diskette controller consisting of left and right digital boards.
- c. Analog board (one mounted on each drive).
- d. Interconnect board.
- e. Micro bus interface board.
- f. Power supply.

The only exterior control on the dual diskette drive is the diskette eject button on each drive. Controls on the drive interior are:

- a. Write/protect switches for each drive on the right digital board. The RH switch (S1) protects drive 0 and the LH switch (S2) protects drive 1.
- b. Circuit breaker on power supply.
- c. Power enable switch on power supply.

All controls, except write/protect switches, for reading and writing data on the diskette are provided by the processor.

The only external indicator on the dual diskette drive is the lamp on each diskette eject button. This indicator is under program control. A typical use may be to indicate when the drive is performing an I/O operation.

There are two LED's on the left digital board. When lit, the RH LED indicates that the head in drive 0 is loaded, and the LH LED indicates that the head in drive 1 is loaded.

Drive 0 is the RH drive. Drive 1 is the LH drive.

1.4.2 DUAL DISKETTE FUNCTIONS

The dual diskette performs three basic functions, which are:

- a. Generation and definition of control signals.
- b. Positioning of the read/write head to the selected track.
- c. Reads or writes data on the diskette.

The controller informs the disk drive what operation must be performed. The disk drive then positions the read/write head to the next track on the diskette. In the drive unit, the head load actuator loads the read/write head against the diskette. Data can now be written to or read from the diskette. A simplified block diagram of the dual diskette showing basic data and command flow is shown in Figure 1-2.

1.4.2.1 DISKETTE DRIVE

The diskette drive performs six functions:

- a. Drives the diskette.
- b. Loads the read/write head against the diskette.
- c. Steps the read/write head to the next track.
- d. Senses track zero.
- e. Senses the track sectors.
- f. Senses write/protect cutout on diskette.

1-6

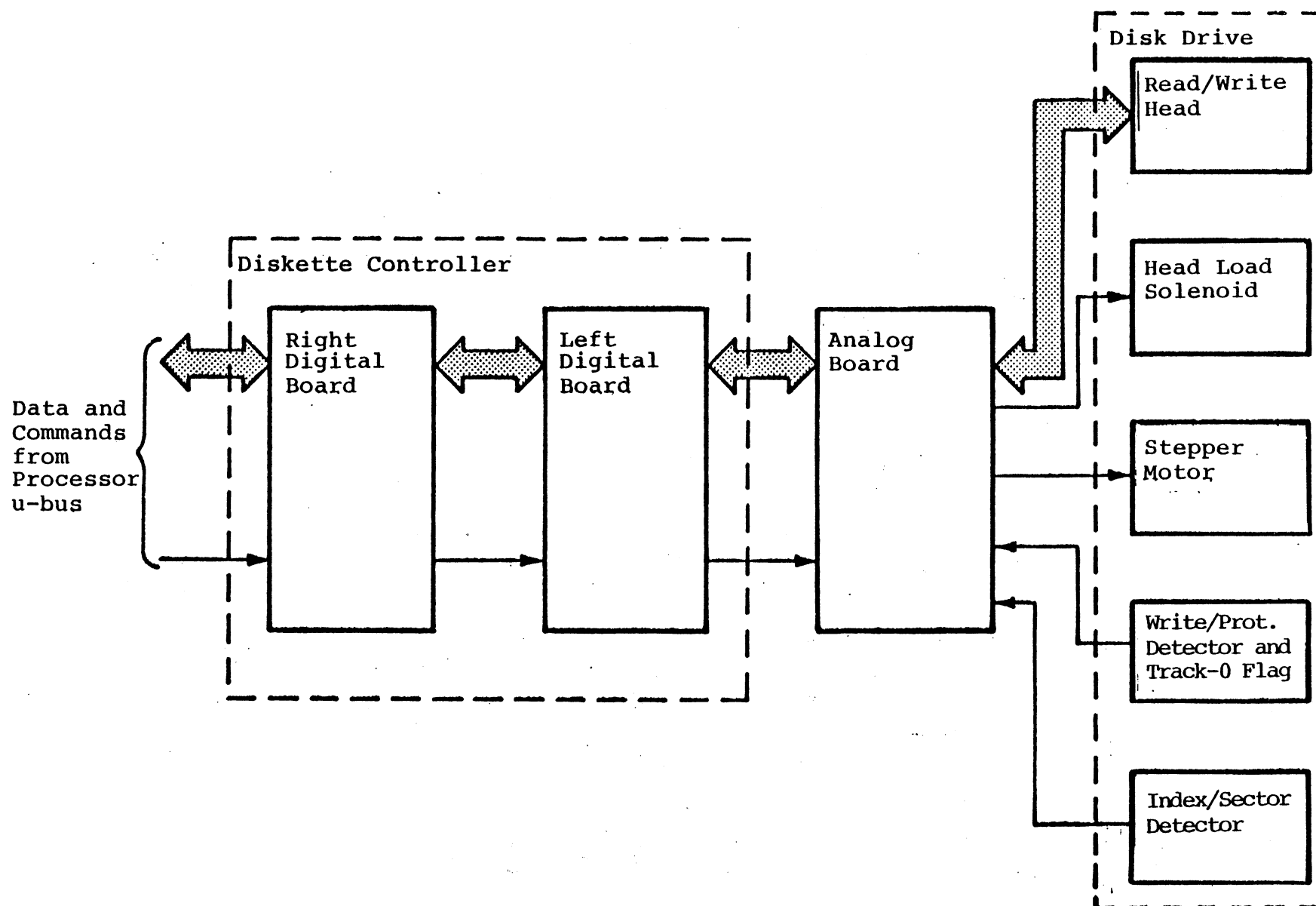


Figure 1-2. Dual Diskette Simplified Overview

The diskette drive motor rotates the drive spindle at 360 rpm through a belt-drive system. The Read/Write head is mounted on a carriage which is located on the head position actuator lead screw. The Read/Write head is positioned over the selected track by the lead screw and an electrical stepping motor (Head Position Actuator). The stepping motor rotates the lead screw in 15 degree increments; each increment moving the Read/Write head one track. The diskette is loaded against the head via a load pad, which is actuated by the head load solenoid. The Read/Write head is in direct contact with the diskette. The Diskette is a flexible magnetic disk enclosed in a protective plastic jacket; the interior of the jacket covering the disk is lined with a wiping material to clean the disk of foreign matter. The disk rotates within the jacket, and head and index access to the disk is gained through cutouts in the jacket. Data is written onto the disk using modified frequency modulation. If the diskette contains a write/protect cutout in the disk jacket, the drive will sense the cutout and write/protect the disk. To inhibit write/protect when the disk contains a write/protect cutout, the write/protect cutout must be covered with a piece of tape, etc. The write/protect sensor on the drive is a LED/photodetector circuit.

1.4.2.2 DRIVE CONTROLLER

The disk drive controller consists of the right and left digital boards. The right digital board connects through the micro bus interface board, to the bi-directional micro bus from the processor. Both the left and right digital board connects to the analog board on the disk drives. The interface between the two boards carries various signals pertaining only to the circuitry on the boards.

The drive controller acts as an interface between the processor and disk drives. Functional circuitry of major importance in the controller are as follows:

- a. A 512 byte memory used as a buffer between the processor and drives.
- b. A parallel to serial converter and miller code generator to convert the processor data to recording form.
- c. A sync byte detector and serial to parallel converter to convert disk data to processor form.
- d. Memory addressing circuitry.
- e. Command decoder.

- f. Read/Write timing circuitry.
- g. Disk drive mode select and control circuitry.
- h. Interrupt control.
- i. Data input and output latches and multiplexers.

The controller 512 byte memory is used as a buffer between the microprocessor and the diskette. The microprocessor is capable of setting both the disk pointer and the processor pointer to even buffer positions, i.e., the microprocessor will be selecting the 8 most significant bits of the buffer pointers while the controller will set the least significant bit to 0. The microprocessor can read the disk buffer pointer's 8 most significant bits for reference to disk operations.

After each read from the buffer to the microprocessor, the microprocessor pointer is incremented and the buffer is read to the buffer output register. Following each write from the microprocessor to the buffer, the microprocessor pointer will also be incremented. After each read from the buffer to the diskette or write to the buffer from the diskette the disk pointer will be incremented. Wrap around will occur if the initial buffer setting and the requested character count is greater than 512.

A block diagram of the drive controller is shown in Figure 1-3.

1.4.2.3 DRIVE ANALOG BOARD

The disk drive analog board (one mounted on each drive) is electronically positioned between the left digital board and the disk drive. Functional circuitry of major importance on the analog board are as follows (Figure 1-4):

- a. Write and erase drivers.
- b. Read/write switch.
- c. Read amplifier.
- d. Phase-locked loop.
- e. Clock/data separator.
- f. Index, file protect, and track zero flag amplifiers.
- g. Stepper motor and head load signals feed thru.

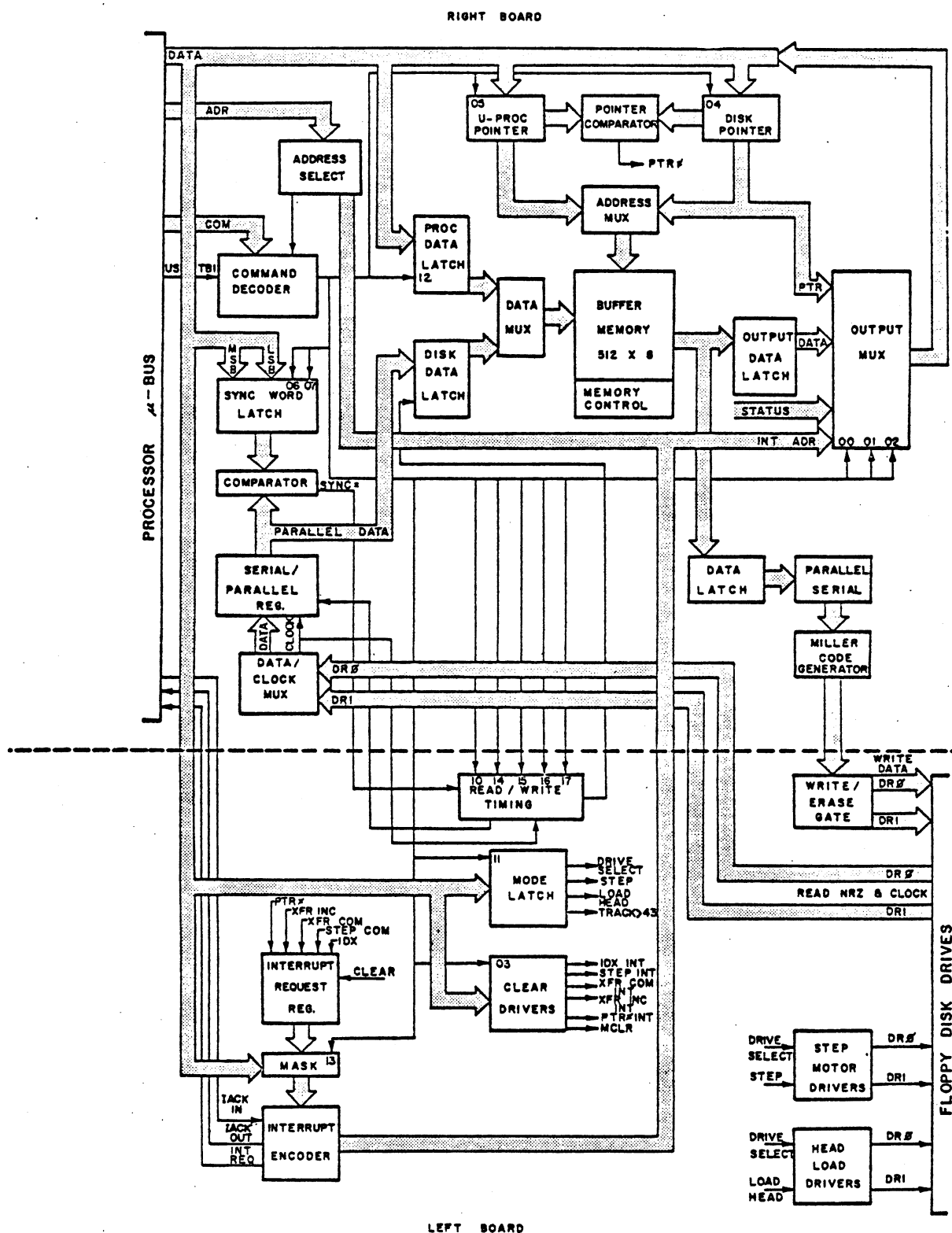


Figure 1-3. Dual Diskette Disk Controller
(Right and Left Digital Boards)

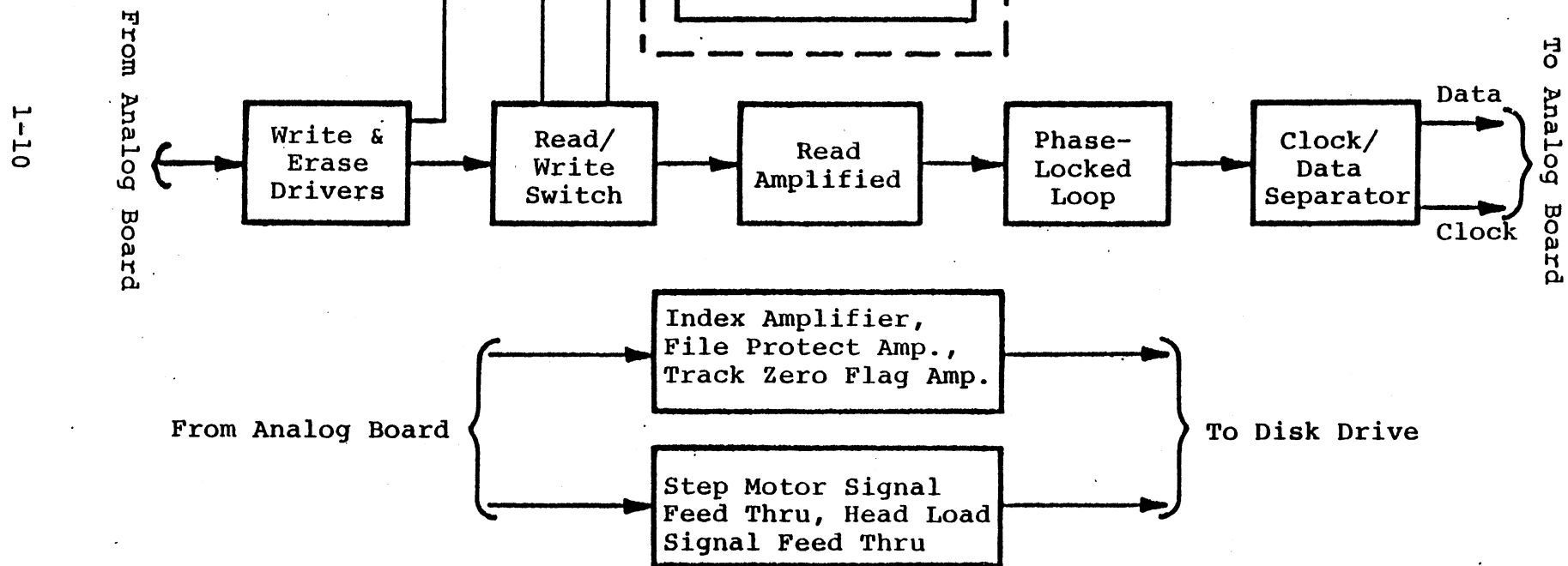


Figure 1-4. 1842 Dual Diskette Analog Board

1.4.3 DUAL DISKETTE TRACK FORMAT

The 1842 dual diskette records data in either a standard or double density format. The data field in the track format is 256 bytes long versus 128 for a standard density format. Pictures of both track formats are shown in Figures 1-5 thru 1-7.

1.4.4 DUAL DISKETTE COMMANDS

Output Micro Processor Pointer

Transfers buffer address from micro bus to processor pointer register. Transfer is complete on the trailing edge of USTB1.

Output Disk Pointer (004)

Transfers buffer address from micro bus to disk pointer register. Transfer is complete on the trailing edge of USTB1.

Input Disk Pointer (002)

Transfers disk buffer address from the disk buffer pointer register to the micro bus. Transfer is complete on the trailing edge of USTB1.

Set Mode (011)

A general command which in conjunction with the micro bus lines sets the following functions:

- Bit 0--True selects drive 0
- Bit 1--True selects drive 1
- Bit 2--True loads head
- Bit 3--True unloads head
- Bit 4--True moves head in one step
- Bit 5--True moves head out one step
- Bit 6--Track less than or equal to 43
- Bit 7--Track greater than 43

Output Character (012)

Transfers data from micro bus to the buffer location specified by the microprocessor pointer.

Input Data (001)

Transfers data from the buffer location as specified by the microprocessor pointer to the micro bus. After each buffer read to the micro bus, the buffer address is incremented and then

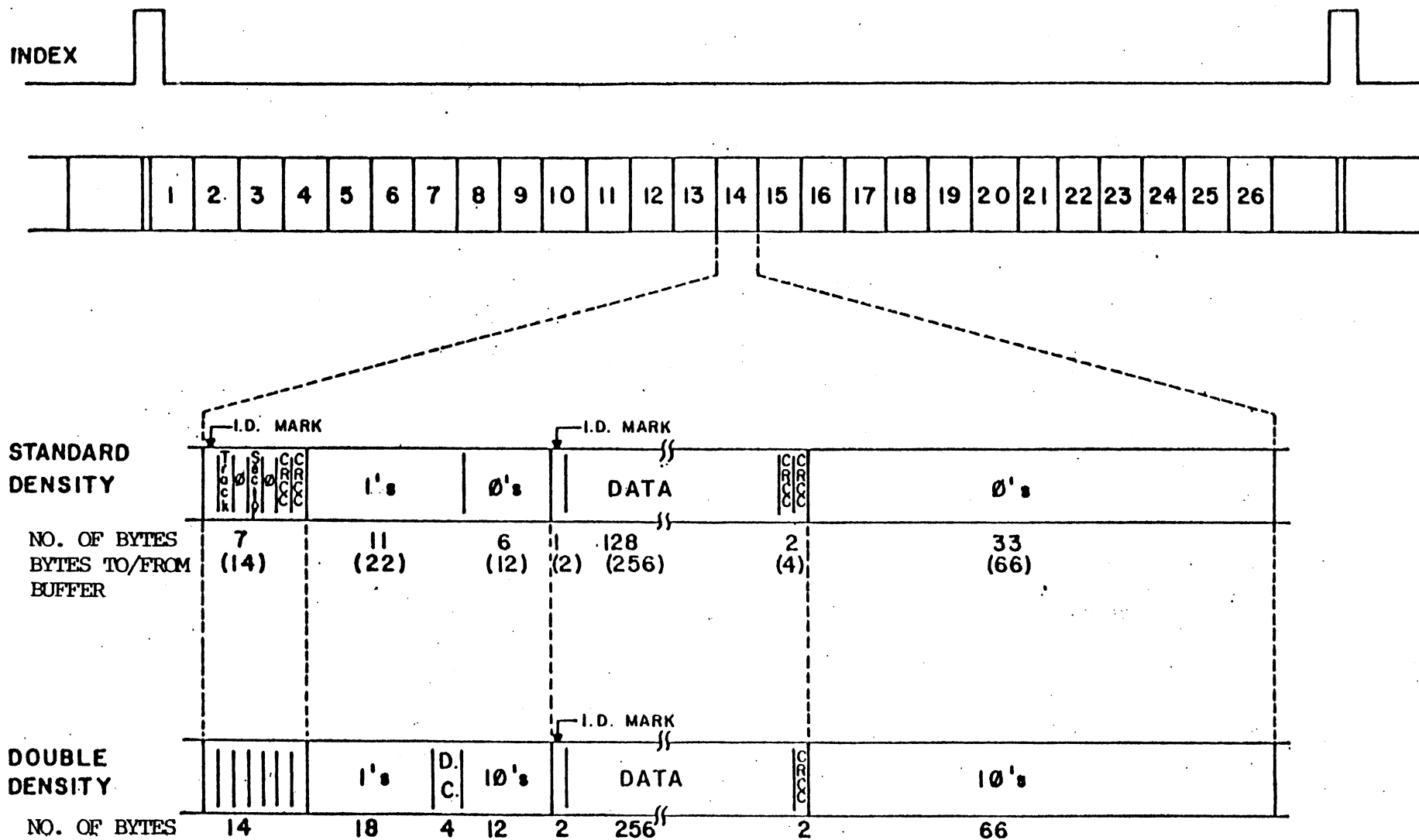


Figure 1-5. Dual Diskette Floppy Disk Format

STANDARD DENSITY

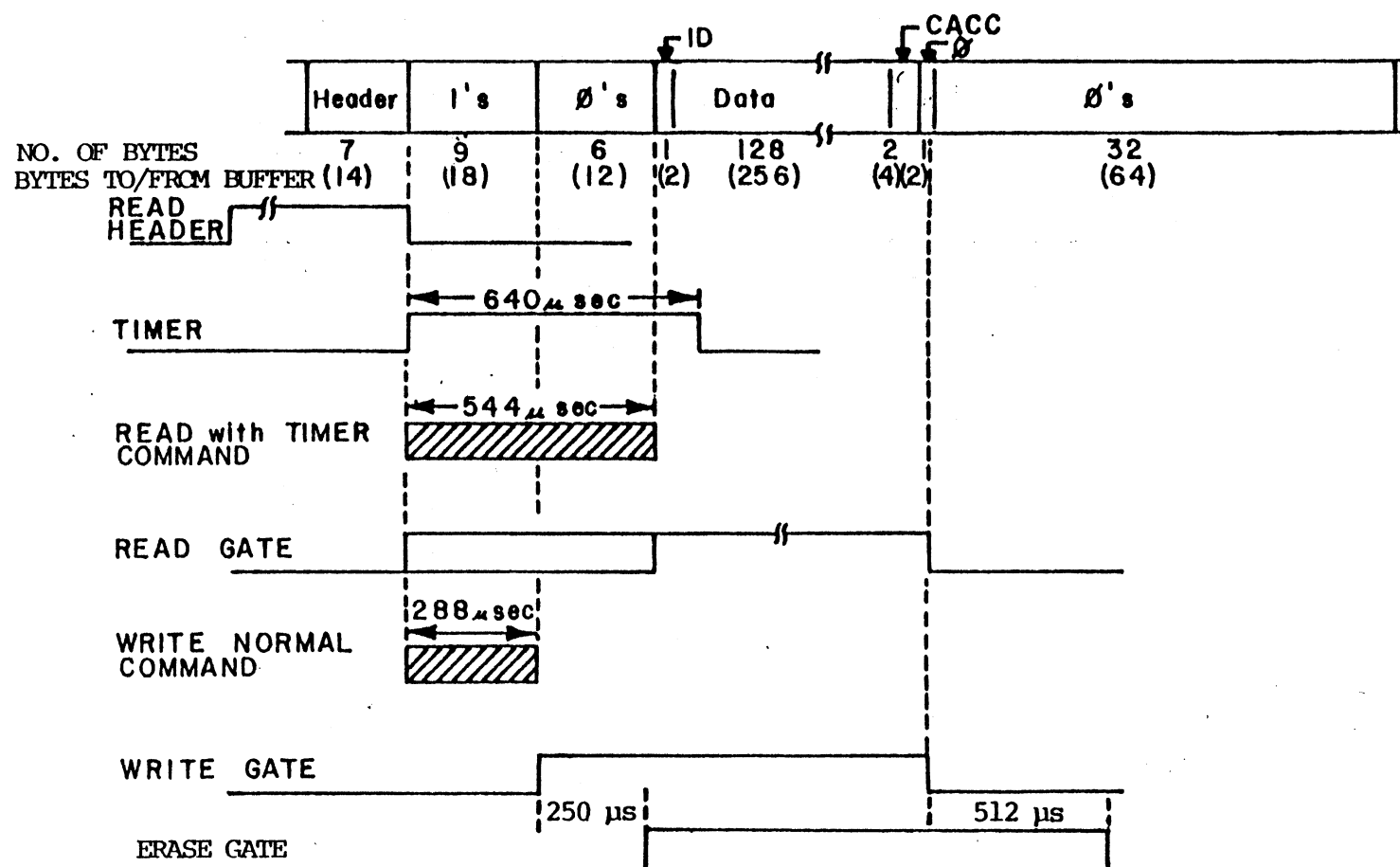


Figure 1-6. Dual Diskette Standard Density Track Format

DOUBLE DENSITY

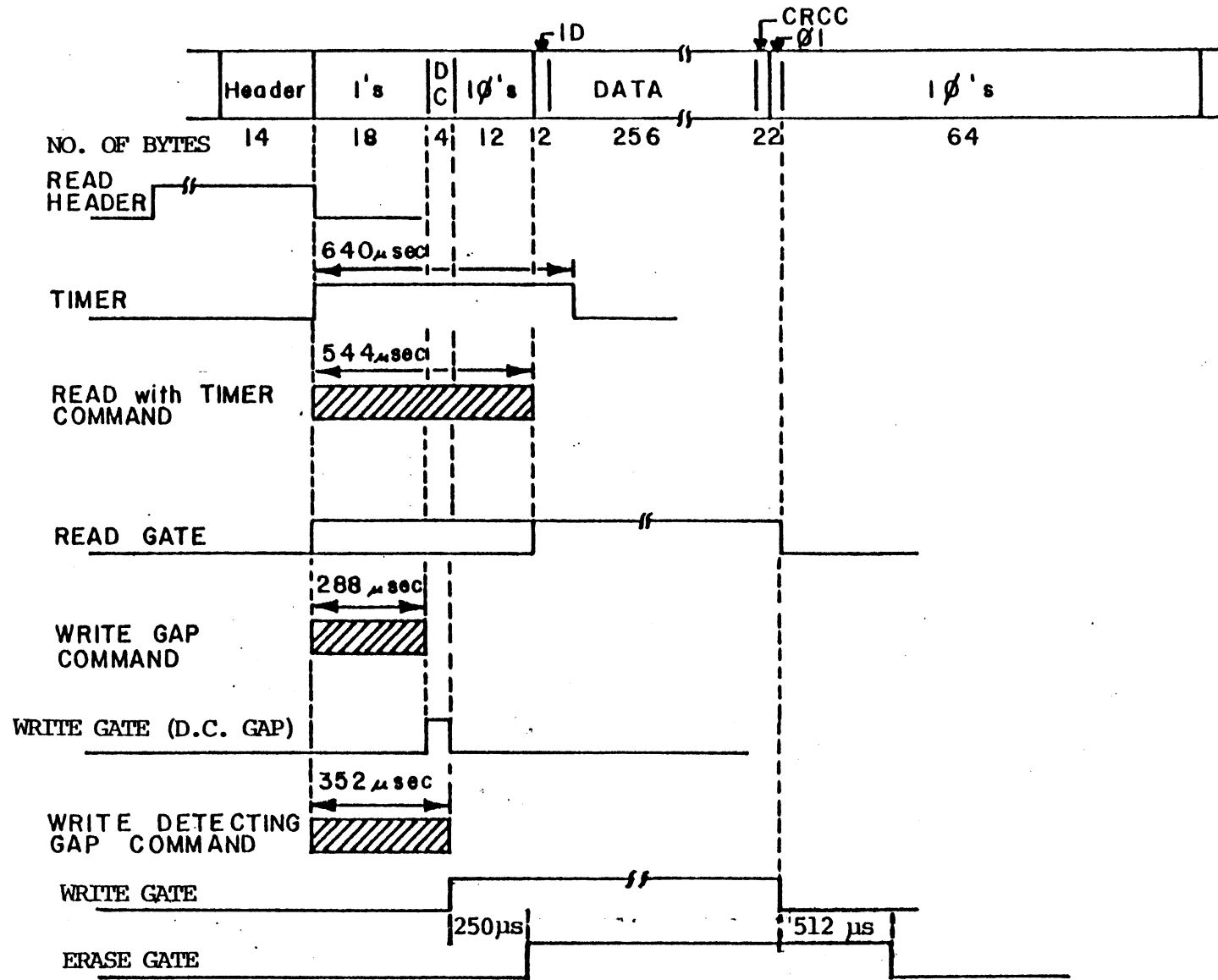


Figure 1-7. Dual Diskette Double Density Track Format

read to the buffer output register.

Input Status (000)

Transfers status from the selected drive to the micro bus.

Set MSB Byte of Sync Mark (006)

Transfers the 8 bits of the micro bus to the most significant byte register for the sync mark word.

Set LSB Byte of Sync Mark (007)

Transfers the 8 bits of the micro bus to the least significant byte register for the sync mark word.

The following commands for read and write will make reference to a character count register which determines how many characters are to be written or read. Since there are 8 data lines but more than 256 bytes can be written at a time the register will actually be 9 bits wide. The 8 lines from the microprocessor will be used to set the 8 most significant bits of the register. The lowest bit will always be set to 0 by the controller.

Read Header (014)

Starts header read for comparison with the sync mark register, and then reads the number of characters storing them in the buffer beginning with and including the sync pattern specified by the micro bus. After the assigned number of characters have been read timers are set for READ WITH TIMER, WRITE NORMAL, WRITE DETECTING GAP, and WRITE GAP.

Read With Timer (015)

Start data read for comparison with the sync mark register, and then reads the number of characters specified by the micro bus storing them in the buffer beginning with and including the sync pattern. If the sync mark is not found before the "READ WITH TIMER" times out then status bit 7 for sync mark not found is set.

Write Normal (016)

Starts data write after the "WRITE NORMAL" timer has timed out. If the WRITE NORMAL command is not received within the time of the "WRITE NORMAL"

timer then the write does not take place and status bit 2 is enabled. The number of bytes written is that as specified by the micro bus including all preamble, sync and postamble data.

Write Detecting Gap (017)

Starts data write after the "WRITE DETECTING GAP" timer has timed out. If the WRITE DETECTING GAP command is not received within the time of the associated timer and/or a wide D. C. gap is not detected then the write will be aborted and status bits for write disabled, (Bit 2) will be set and/or WIDE GAP SENSE (Bit 4) will be reset. The number of characters to be written including all preamble, sync and postamble data is set by the micro bus.

Write Gap (010)

Write a D. C. gap of four bytes duration after the WRITE GAP timer has timed out. If the write gap command is issued after the "WRITE GAP" timer has timed out then Bit 2 (WRITE DISABLED) will be set.

Interrupt Mask (013)

The interrupt mask register is loaded with the bits of the data bus. All interrupt sources will be either enabled or disabled depending on the contents of this register. A true bit will enable interrupting and a false bit will inhibit interrupts from that particular source. The bit assignments are as follows:

- Bit 0--Index
- Bit 1--Step complete
- Bit 2--Transfer complete
- Bit 3--Transfer aborted
- Bit 4--Processor buffer pointer unequal to
disk buffer pointer
- Bit 5--Spare
- Bit 6--Spare
- Bit 7--Spare

1.4.5 DUAL DISKETTE INTERRUPTS

The drive controller will generate interrupts for the following reasons:

Index

If an index pulse is detected.

Step Complete.

The carriage has been stepped in or out one track position.

Transfer Complete.

Indicates that a read or write transfer has been completed.

Transfer Aborted.

Indicates that a read or write has been aborted because of time out of a read or write timer, or because a wide gap was not detected under a "WRITE DETECTING GAP" command.

Processor Buffer Pointer Unequal to Disk Buffer Pointer.

Will interrupt as long as the two pointers are unequal. This can be used for loading or unloading the buffer with proper use of the two buffer pointers.

All interrupts will be priority encoded in the controller and the number of the highest priority interrupt which has been activated will be placed on the micro bus along with the device address upon receiving an IACKIN.

1.4.6 DUAL DISKETTE STATUS BITS

The drive controller provides a status word to the micro bus to indicate the condition of the drive and controller as follows:

BIT 0--READY

Indicates that the selected drive has a diskette inserted and the drive door is closed.

BIT 1--TRANSFER IN PROGRESS

Indicates that a diskette transfer is in progress. This bit is set true during a read or write command and remains true until the transfer is complete or the operation is terminated. This bit will be reset with POR.

BIT 2--WRITE DISABLED

Set true when a write has been discontinued because of a failure to receive the appropriate write command in the allotted time. This bit is reset by any write command or POR.

BIT 3--FILE PROTECT

Indicates that the selected drive is write inhibited.

BIT 4--WIDE GAP SENSE

True when a wide gap has been sensed. This bit is reset with a "WRITE NORMAL" or POR.

BIT 5--STEP IN PROGRESS

Indicates that the head carriage is in the process of stepping in or out one track.

BIT 6--TRACK 0 FLAG

True when the selected diskette is restored to track zero.

BIT 7--SYNC MARK NOT FOUND

True when under a "READ WITH TIMER" command the sync mark has not been found within the allotted time. This bit is reset with a "READ WITH TIMER" command or POR.

1.4.7 DUAL DISKETTE POWER SUPPLY

The dual diskette power supply block diagrams are shown in Figures 1-8 thru 1-13. The schematics shown in the blocks are abbreviated. They are used only to indicate some of the major components in the circuit.

The power supply operates on 115 or 230VAC. The 115VAC version is discussed here. Conversion from 115VAC to 230VAC input is done by changing strapping in the power supply. See Section 6 in this manual for conversion to 230VAC.

Power supply control is provided by the following three methods:

- a. Remote control from the processor.
- b. Power enable switch on the power supply.
- c. Circuit breaker on the power supply.

The power supply delivers power to the dual diskette in five different voltages +24, +12, -12, +10, and +5VDC. To supply the DC voltages, the power supply uses one transformer that has one secondary winding with taps to provide nominal 38, 26, and 18 AC voltages.

Functional items or circuits of major importance in the power supply are as follows:

- a. Circuit breaker and fuses.
- b. Power enable switch and relay.
- c. Transformer.
- d. Three rectifier and filtering circuits.
- e. Two regulators (including heatsinks).

These items are shown connected to each other in Figure 1-8. In addition to the above, the power supply provides a fused, but not switched, AC power source to operate external equipment.

1.4.7.1 PRIMARY DISTRIBUTION AND CONTROL

The dual diskette power supply operates on 115VAC (or 230VAC) input power. The recipients of this AC power are (Figure 1-9):

- a. Power supply transformer.
- b. Power supply fan.
- c. Diskette drives (thru connectors P3 and P4).
- d. External equipment connector J1.

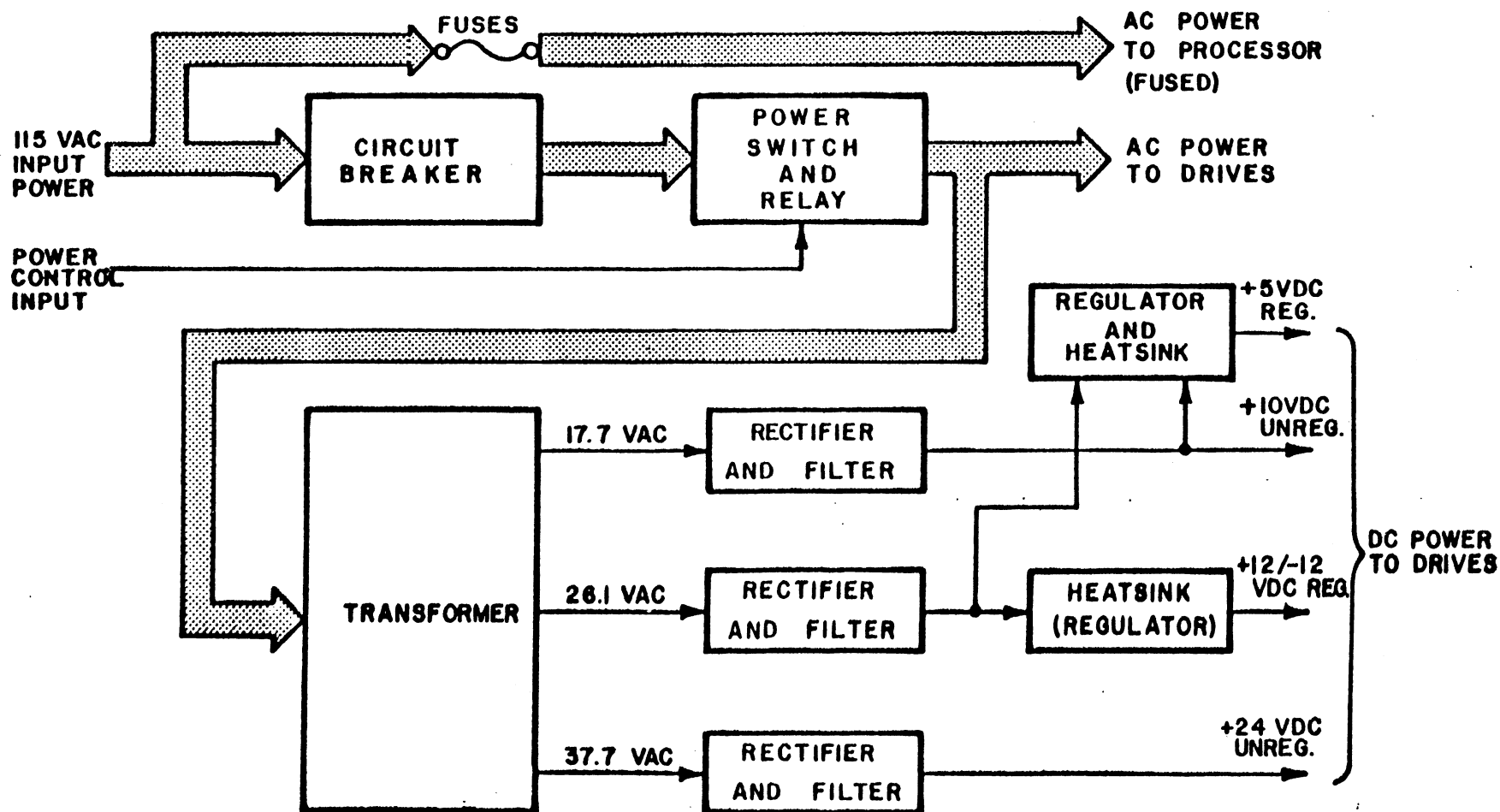


Figure 1-8. Dual Diskette Power Supply Simplified Overview

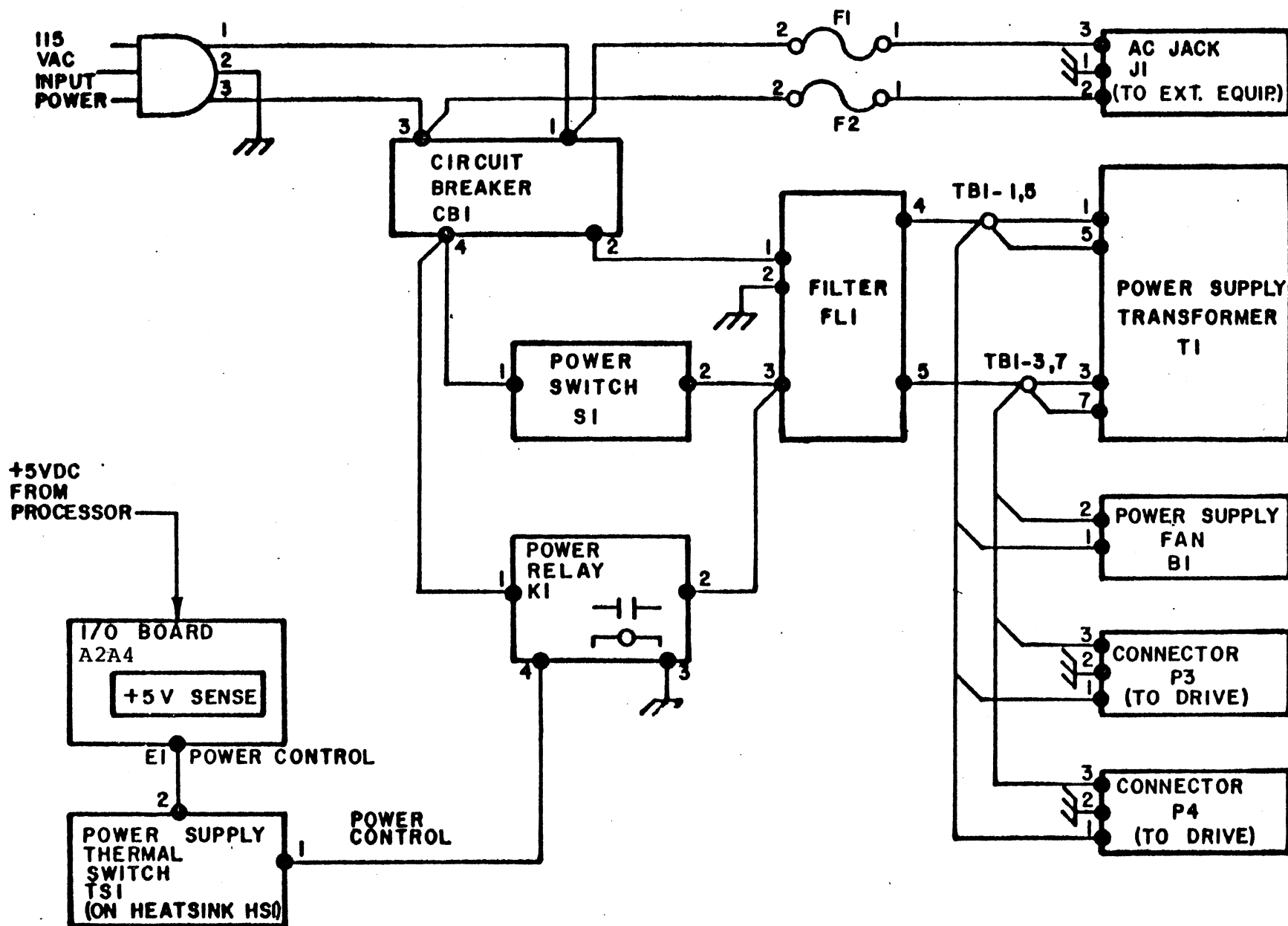


Figure 1-9. Dual Diskette Power Supply AC Distribution and Control

Between the power input and power users, is a circuit breaker, power switch, power relay, power line filter, and a set of fuses. The power relay is used to control the main input power with the power switch used as an alternate power control.

The power relay is turned on and off thru the power control line by a +5VDC signal from the processor. The power control line passes thru the dual diskette I/O board and the thermal switch on heatsink HS1 (+5 volt heatsink). If the thermal switch reaches 90 degrees C, it will open and cut off the power supply.

1.4.7.2 +24VDC UNREGULATED SECONDARY VOLTAGE

The power supply supplies +24VDC unregulated voltage to the dual diskette (Figure 1-10). Thirty-eight volts AC is taken from the transformer and full wave rectified by CR2. The current is then filtered by C1 and sent to the user as +24VDC unregulated power. This voltage is not adjustable.

1.4.7.3 +12/-12VDC REGULATED SECONDARY VOLTAGE

The power supply supplies +12VDC and -12VDC regulated voltage to the dual diskette (Figure 1-11). Twenty-six volts AC is taken from the transformer and doubly full wave rectified by CR3 (a bridge rectifier). Then the current is filtered by C2 and C3. Filtered voltage is then sent to the 5 volt heatsink (HS1), the regulator board (A5), and the 12 volt heatsink (HS2). Q3 and Q4 on the 12 volt heatsink regulate the voltage before the -12 and +12 VDC regulated power is sent to the user. These voltages are not adjustable.

1.4.7.4 +10VDC UNREGULATED SECONDARY VOLTAGE

The power supply supplies +10VDC unregulated voltage to the dual diskette (Figure 1-12). Eighteen volts AC is taken from the transformer and full wave rectified by CR1. Then the current is filtered by C4 and sent to the user as +10VDC unregulated power. The +10VDC is also sent to the regulator board (A5). This voltage is not adjustable.

1.4.7.5 +5VDC REGULATED SECONDARY VOLTAGE

The power supply supplies +5VDC regulated voltage to the dual diskette (Figure 1-13). Ten volts DC and +12VDC is taken from other power supply circuits and fed to the regulator board (A5) and the 5 volt heatsink. The +10VDC is fused by F1 on the regulator board and then regulated by Q1 (on the 5 volt heatsink). From here it is fed back to the regulator board and sent, thru resistor R8, as +5VDC power to

the user equipment. The regulator transistor Q1 is driven by transistor Q2, also on the 5 volt heatsink. This voltage is adjustable by R13 (5V ADJ).

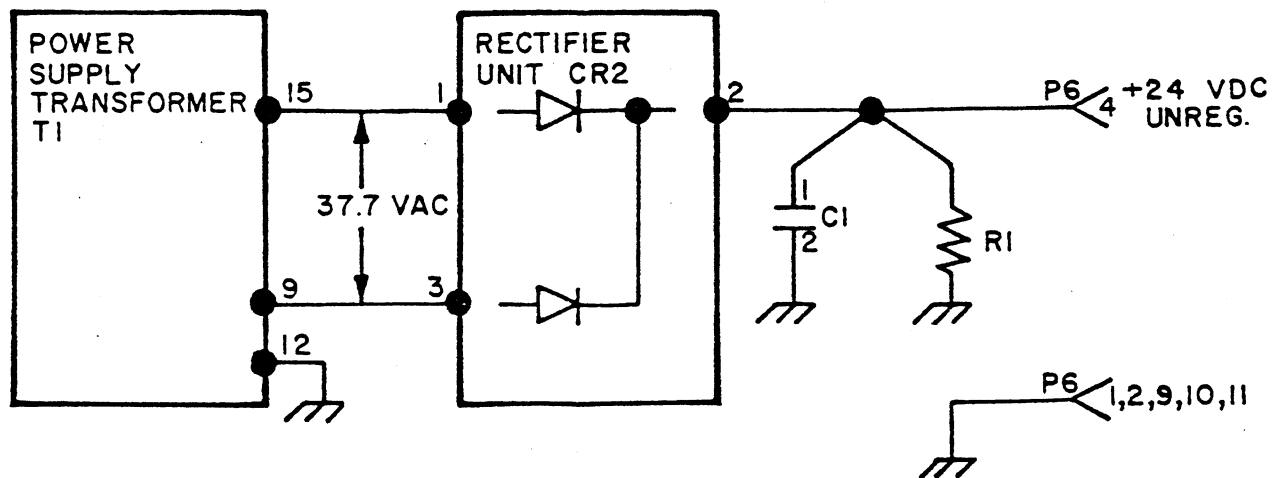


Figure 1-10. Dual Diskette Power Supply +24VDC Unregulated Secondary Voltage

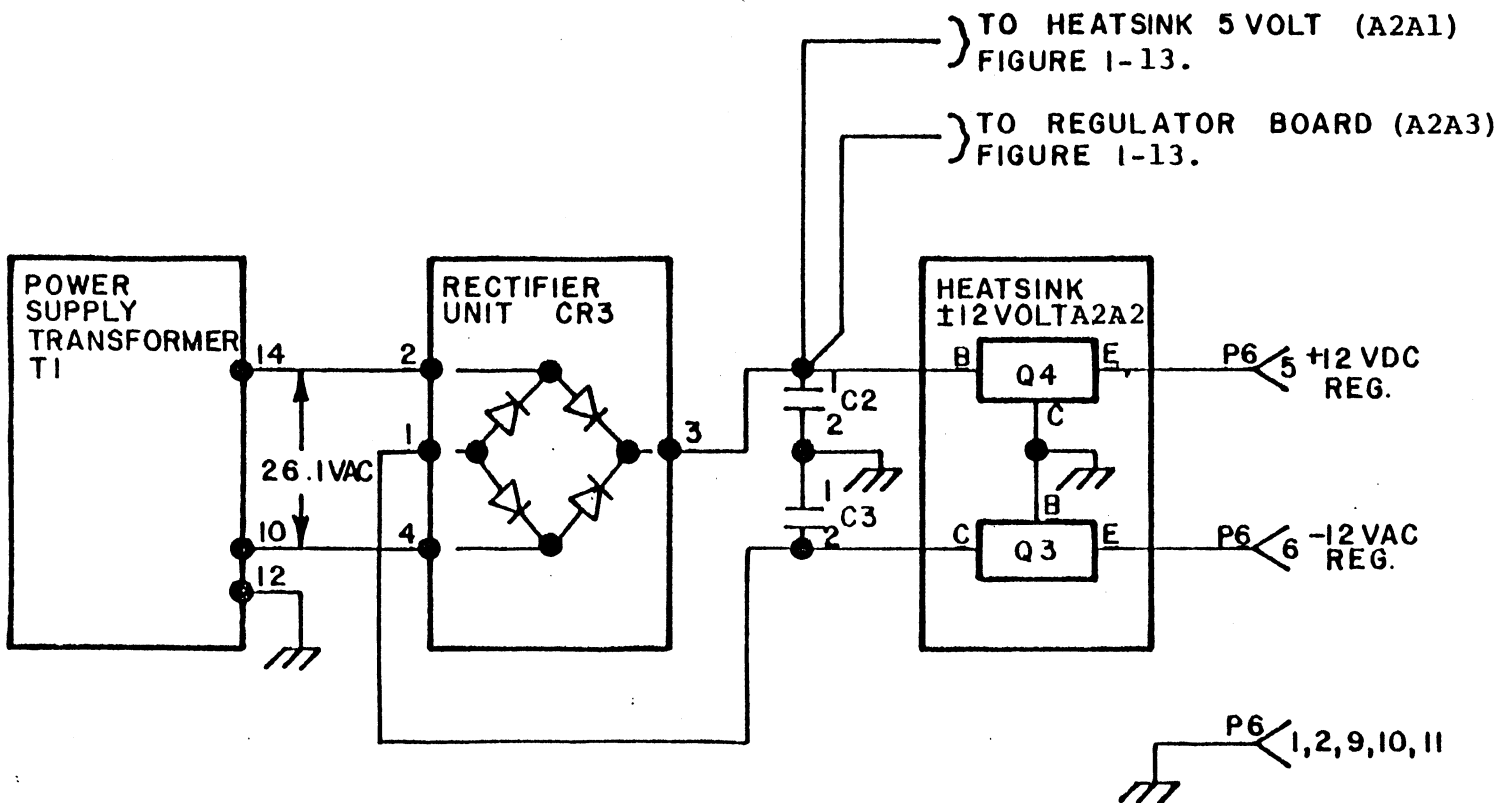


Figure 1-11. Dual Diskette Power Supply +12VDC Unregulated and +12VDC Regulated Secondary Voltages

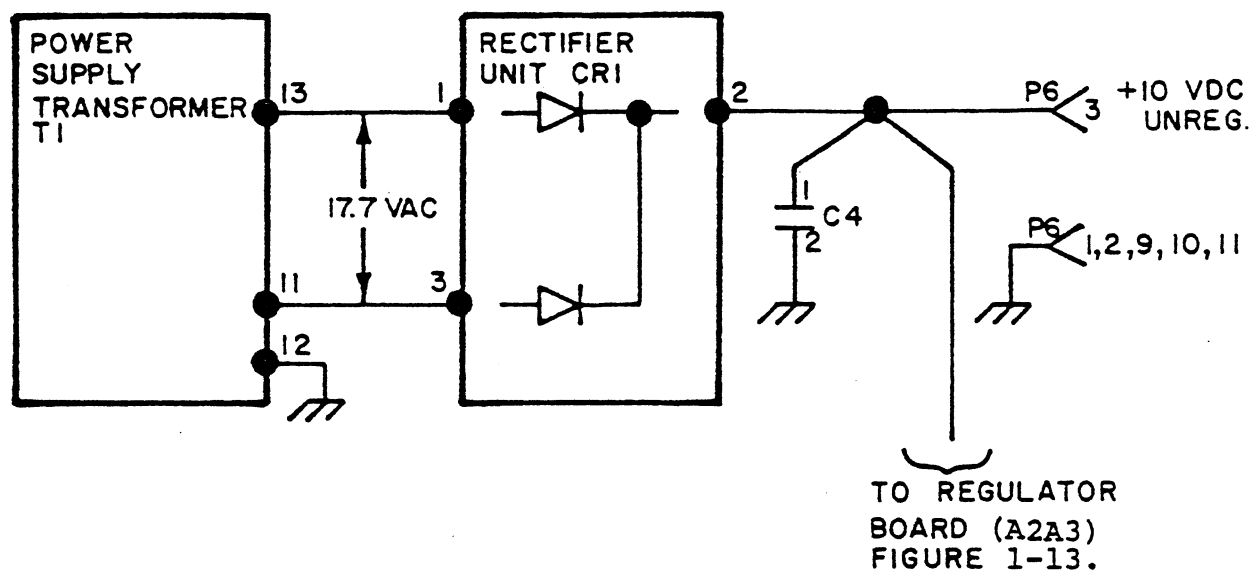


Figure 1-12. Dual Diskette Power Supply +10VDC Unregulated Secondary Voltage

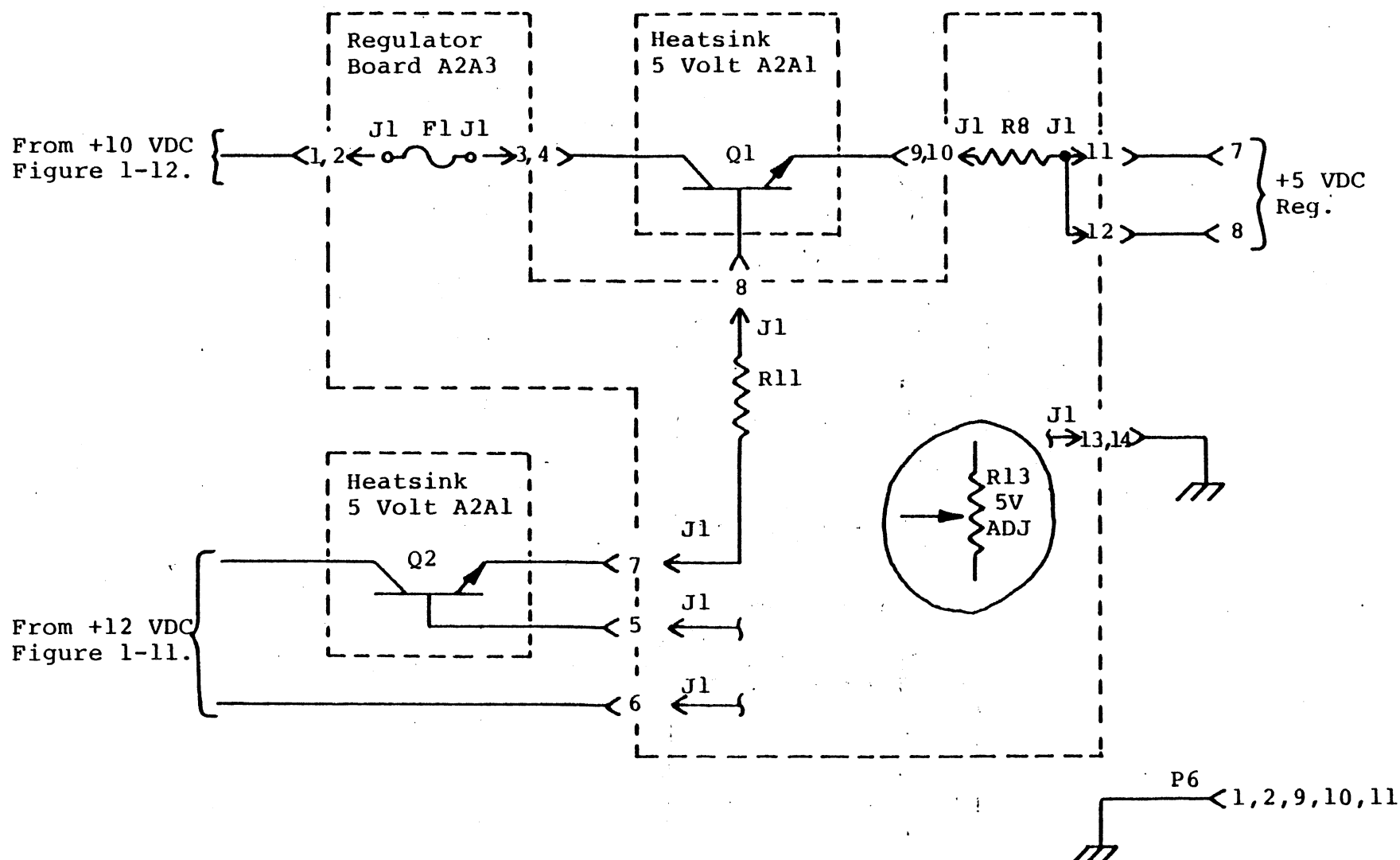


Figure 1-13. Dual Diskette Power Supply +5VDC Regulated Secondary Voltage

SECTION 2

INSTALLATION

2.1 GENERAL

The 1842 Dual Diskette Drive installation procedures are given in this section. Test equipment required for installation is given in Table 3-1. A complete installation includes the following procedure.

- a. Unpacking and inspection.
- b. Initial checkout.
- c. Installation.
- d. System checkout.

The drive is to be placed on a user supplied table or desk. The table or desk must support 70 pounds. If both processor and drives are to be placed on one table, the table must support 70 pounds plus the weight of the processor. Refer to applicable manuals for weights of other equipment.

2.2 UNPACKING AND INSPECTION

The dual diskette drive is shipped in a cardboard container. Inspect the container for exterior damage such as crushed corners and punctures. All damage found during unpacking and inspection must be recorded.

- a. The dual diskette is packed as shown in Figure 2-1. Carefully remove the dual diskette with packing from the container. Verify that all items are present as stated on the shipping list. Missing items must be recorded.
- b. Remove packing and place the dual diskette on a flat surface capable of supporting 70 pounds.
- c. Inspect the dual diskette exterior for cracks, scratches and any other evidence of damage incurred during shipment.
- d. Check power cable connector for bent or broken pins. Do not connect cable at this time.

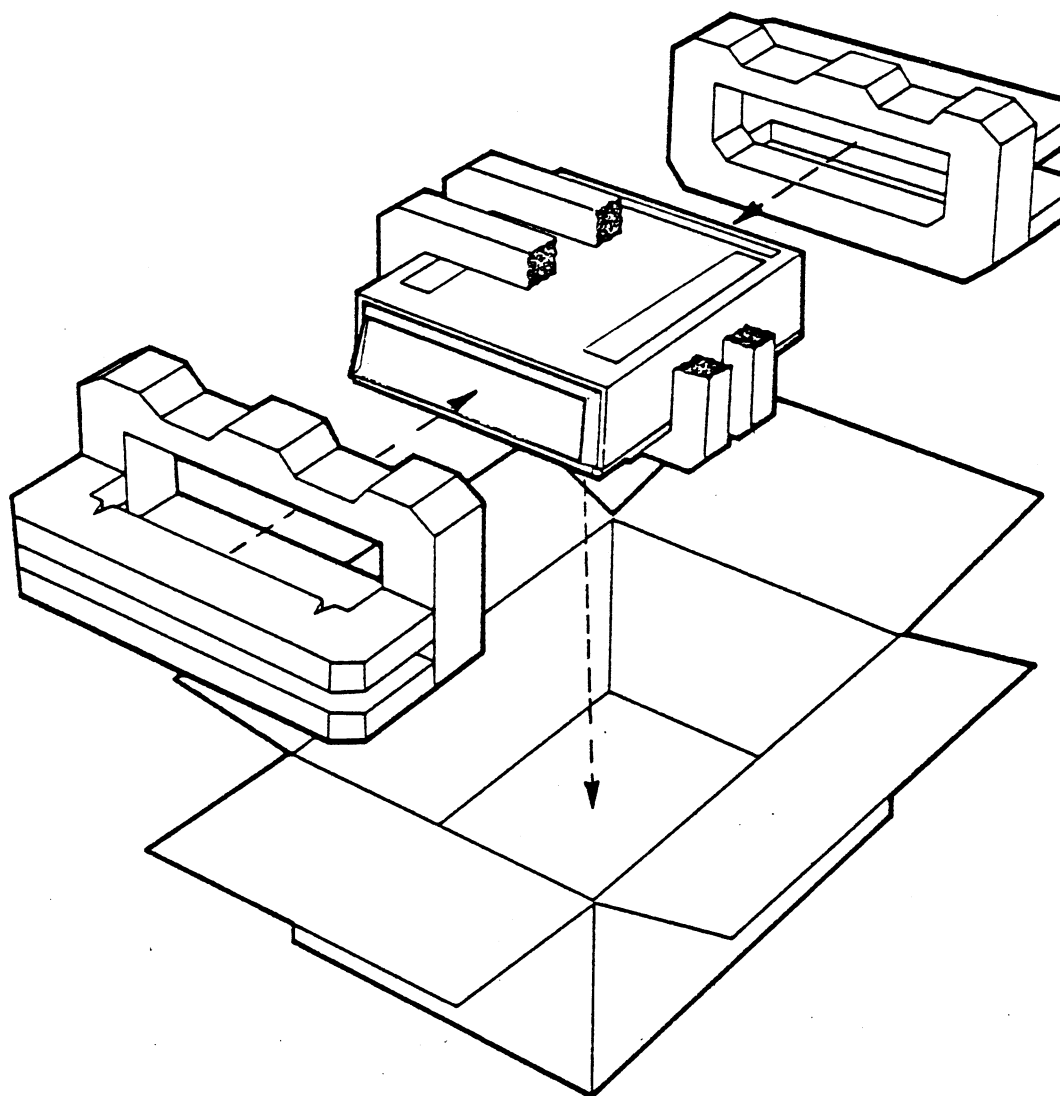


Figure 2-1. 1842 Dual Diskette Shipping Container

- e. Remove the dual diskette housing. The housing is secured to the base plate by four Allen screws (two on each side of the housing). Remove the four screws and lift housing straight up from base plate.
- f. Remove dual diskette rear panel. Loosen two 3/4 turn fasteners and pull panel to rear to remove.
- g. Remove dual diskette dust cover by loosening retaining plate screw, removing retaining plate and loosening one 1/4 turn fastener on the dust cover.

WARNING

Do not push backwards on drives when in vertical position. Undue force on drive may cause drive support assembly to deform or break. This could result in personal injury due to the high tension on the support spring.

- h. Raise drives to vertical position. (Drives are operable in this position).
- i. Check that interconnect board is properly attached and its connectors are firmly seated.
- j. Check analog board (do not remove board) on each drive for foreign material and damaged or broken components. Ensure that connectors J1 thru J4 are firmly seated. Ensure that board mounting screws are secure.
- k. Remove left and right digital boards and check for foreign material and damaged or broken components. Check edge connectors for damage or corrosion. Check for foreign material in housing. Reinstall boards and ensure that boards are firmly seated.
- l. Check each drive for secure drive motor AC connector (located on large capacitor), and that drive belts are installed. Check for damage to head carriage assembly. Check the head load solenoid for freedom of movement and proper spring return action. Check that head load solenoid spring is attached to the outer hole in the head load bail.

- m. Check power supply for loose or broken wiring and damaged components. Check for loose parts such as nuts or screws in the bottom of and around power supply. Check that all power supply connections are secure.
- n. Check that terminator board is securely mounted on I/O connector J1 on rear of power supply.
- o. Lower drives to down position.

NOTE

Do not replace drive unit cover at this time.

2.3

INITIAL CHECKOUT

NOTE

To ensure that moisture has not condensed on cool surfaces, allow equipment to reach room temperature before applying power.

CAUTION

Check input power requirements on identification label to ensure diskette drive is configured for site power service. Check that site power service has correct voltage and has proper third wire ground connection.

- a. Ensure drive CB1 is OFF.
- b. Set power enable switch to service.
- c. Connect voltmeter to monitor +5VDC between J7-1 (or J7-3) on interconnect board and chassis ground.
- d. Connect power cable to input power source.

CAUTION

When applying AC power to unit, if +5VDC is not indicated on voltmeter, immediately remove AC power to prevent damage to printed wiring boards.

- e. Momentarily set drive CB1 to ON, and check for +5VDC on voltmeter. Drive fan and drive motors should operate.

- f. If +5VDC was present, set drive CB1 to ON. Check the output of the +5VDC supply and adjust if necessary (Refer to Paragraph 4.2.3).
- g. Check all power supply input and output voltages. Refer to Paragraphs 4.2.1 and 4.2.2.
- h. Set the drive CB1 to OFF.
- i. Lower drive if up.

2.4

INSTALLATION

- a. Place the diskette drive in its operating location next to processor. Allow at least 6 inches clearance to gain access to rear of unit.
- b. Install -002 micro bus cable (36³ in. cable) between processor J7 and drive I/O connector J2. Ensure that I/O bus terminator is secured to I/O connector J1 on drive. See Figures 2-2 and 2-3.

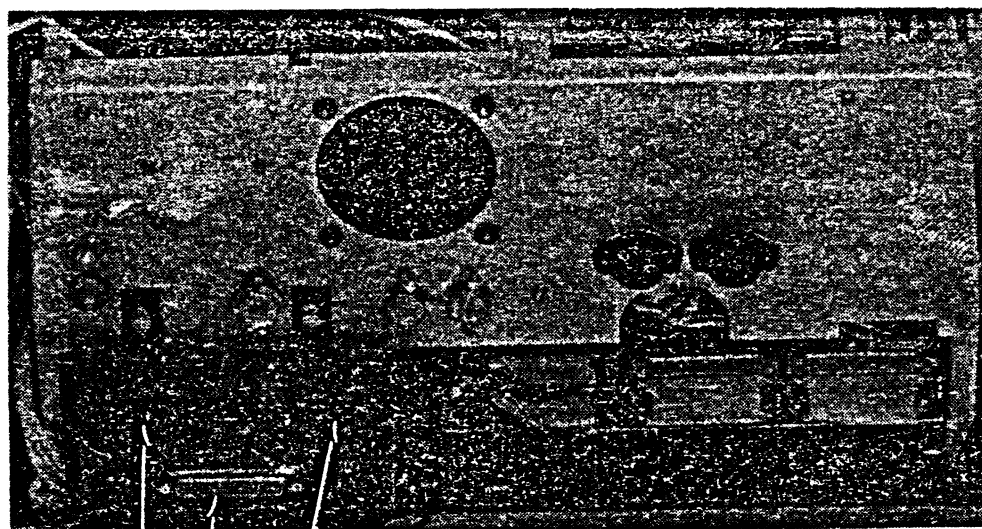
NOTE

Maximum length of micro bus is ten feet.

- c. If extension drive units are to be installed, then perform the following steps (Figures 2-3 and 2-4):
 - (1) Set drive address for stacked drive(s) as follows (Paragraph 6.3):

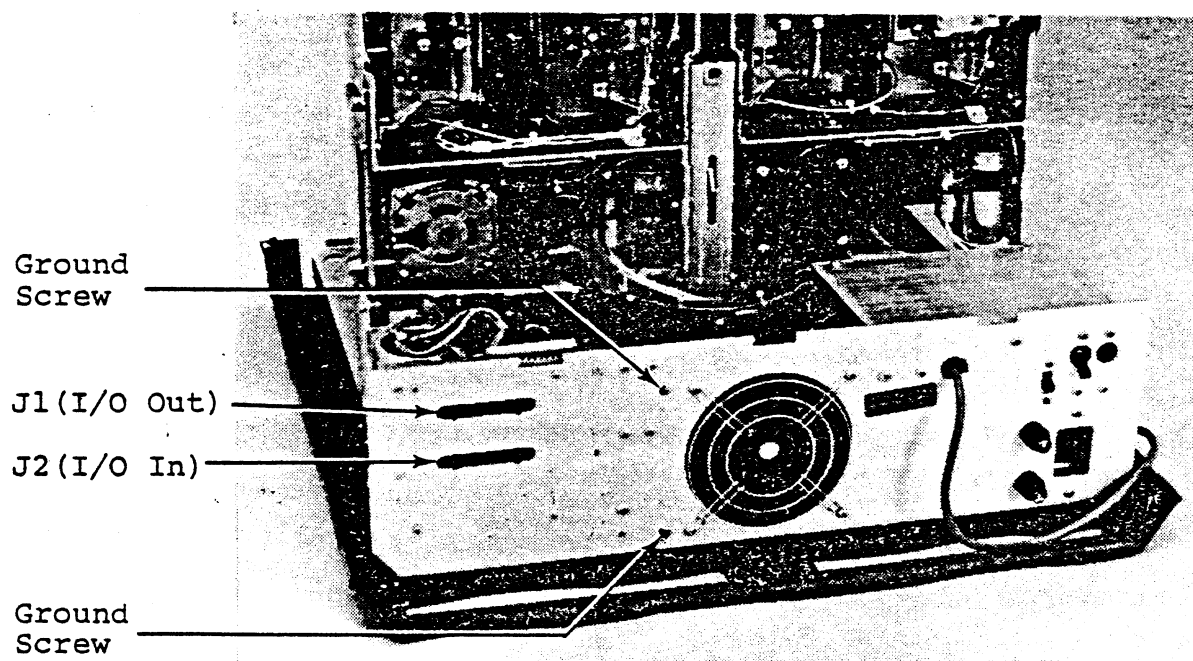
<u>Drive</u>	<u>Address (Octal)</u>
Top	003
Third	002
Second	001
Bottom	000

- (2) Stack extension drive(s) on top of first drive in order of drive address. Drive addresses should range from 000 for bottom drive to 003 for top drive (if four drives are used).



J7, Microbus I/O
 J1, 6600 I/O
 J6, Comm I/O

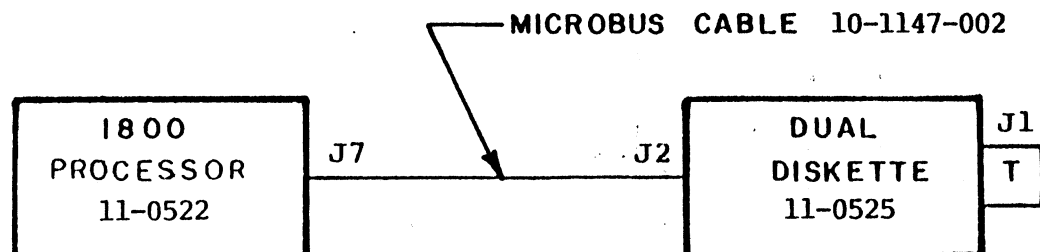
(a) 1800 Processor I/O Connectors



(b) 1842 Dual Diskette I/O Connectors

Figure 2-2. 1800 System I/O Connections

Ⓐ BASIC SYSTEM WITH ONE DISKETTE UNIT



Ⓑ SYSTEM WITH ADDITIONAL DISKETTE UNIT(S)

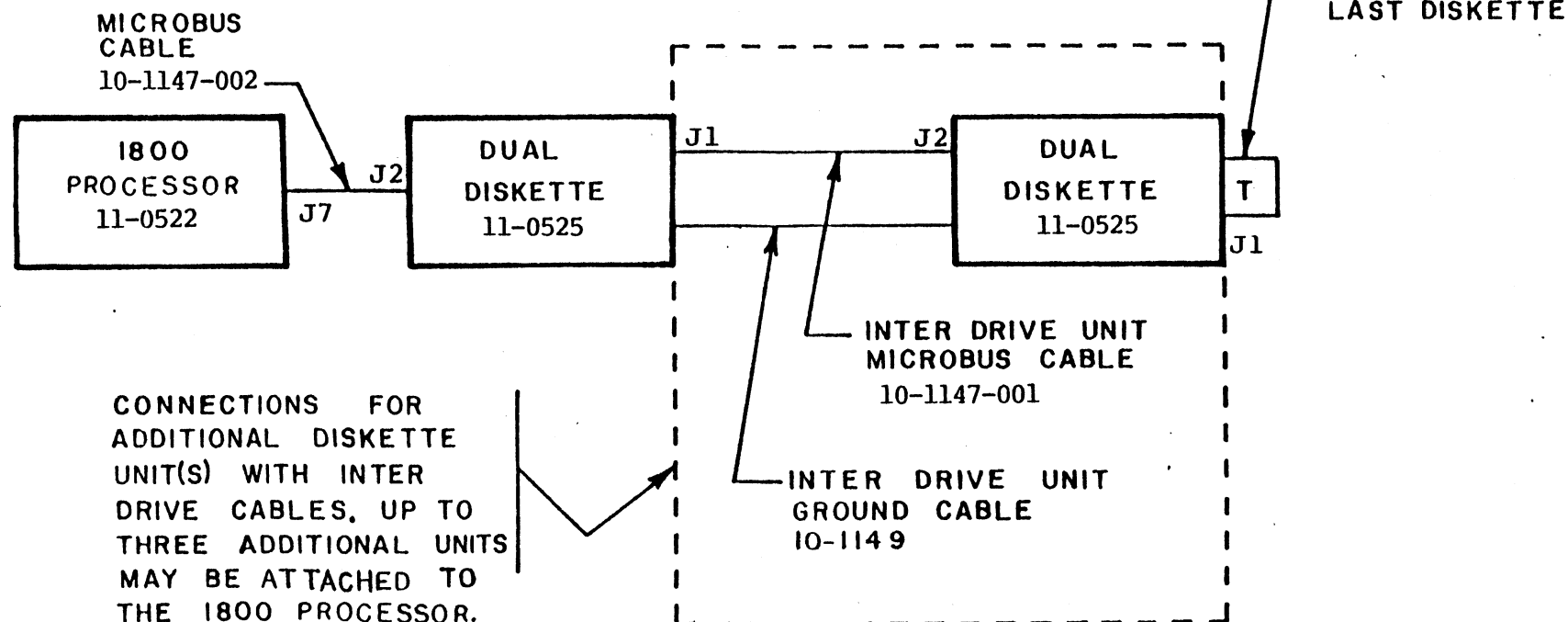


Figure 2-3. Connections for 1842 Dual Diskette Drive(s) to Processor

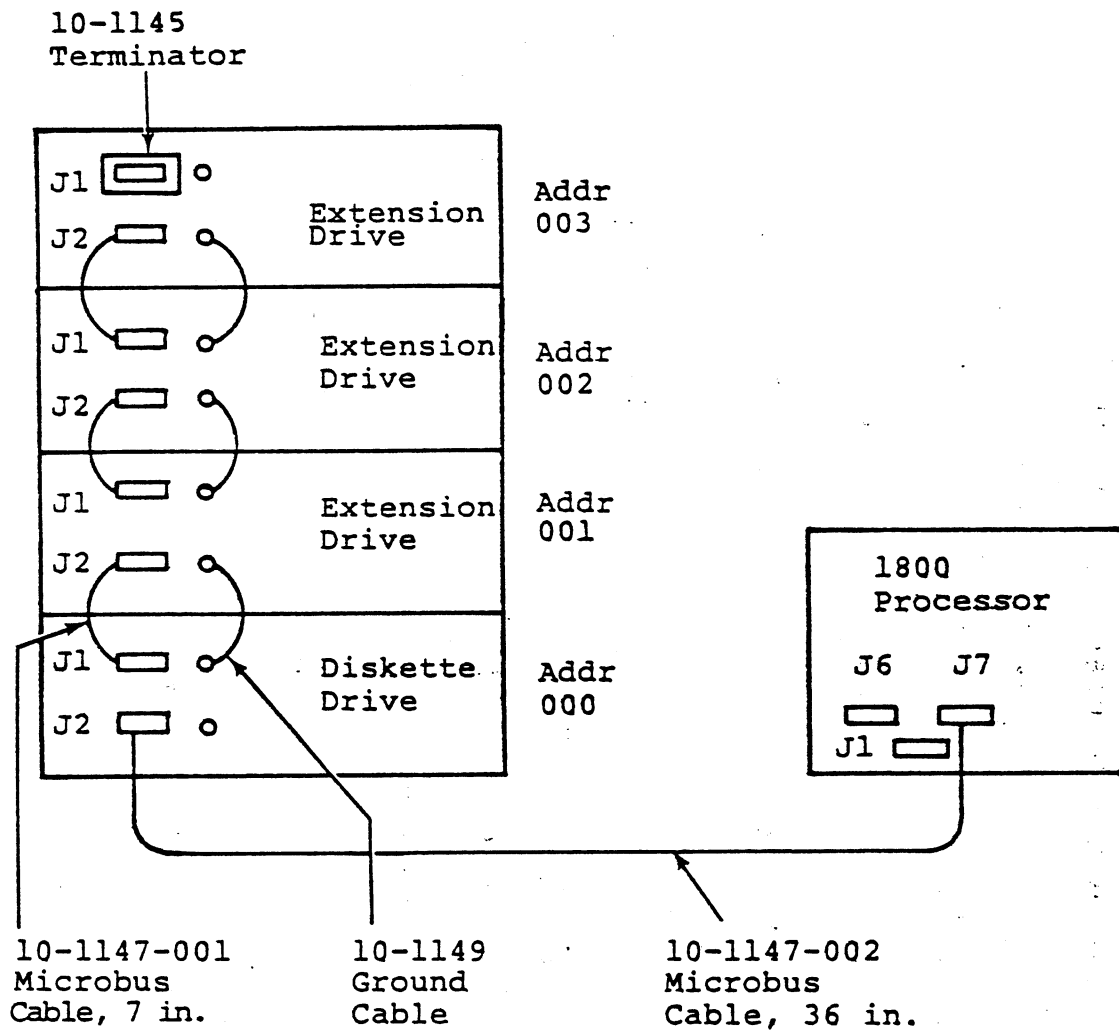


Figure 2-4. Installation of Extension Drive

- (3) Install -001 micro bus cable (7 in. cable) from existing drive connector J1 to next drive connector J2.
- (4) Install I/O bus terminator to connector J1 on last drive.
- (5) Install 10-1149 ground cable between each pair of diskette units. See Figure 2-2 for location of ground screws.
- d. Set drive power enable switch to normal. Set drive CB1 to ON.
- e. Set processor main power switch to OFF.
- f. Connect processor and drive power cords to source power.
- g. Set processor power switch to ON. Fans in processor and drive should run.
- h. Perform system checkout in Paragraph 2.5.

2.5 SYSTEM CHECKOUT

For checkout procedures requiring operation of the disk drive, refer to ROM User's Guide in Section 8 of the processor First Level Maintenance Manual for applicable instructions.

CAUTION

When loading a diskette into a drive, the door should not be slammed shut. If door is slammed, the diskette may not have time to center on the spindle hub and may be damaged.

CAUTION

The SA120 Alignment Diskette is used for adjustments on the diskette drive. Caution should be exercised to avoid writing on and destroying pre-recorded tests. Ensure WRITE/PROTECT switches are in WRITE PROTECT position (left), Figure 4-4.

- a. Load SA120 alignment diskette in left hand drive unit, and place drive in WRITE/PROTECT (Figure 4-4).
 - (1) Press the latch on the front of the drive unit.

- (2) Insert diskette with label toward the front and facing up (Figure 2-5).
- (3) Move door handle down to close door.

NOTE

Replace the diskette in its storage envelope when it is removed from the drive. Do not touch or attempt to clean the disk surface. Do not write on the plastic jacket with a lead pencil or ball-point pen. Use a felt tip pen only.

- b. Check the following alignment and adjustments and readjust if necessary.
 - (1) Cartridge guide adjustment. Refer to Paragraph 4.3.4.
 - (2) Head load actuator timing. Refer to Paragraph 4.3.2.
 - (3) Head radial alignment. Refer to Paragraph 4.3.5.
 - (4) Index/sector adjustment. Refer to Paragraph 4.3.3.
 - (5) Track 00 stop adjustment. Refer to Paragraph 4.3.6.
 - (6) Track 00 detector adjustment. Refer to Paragraph 4.3.7.
- c. Run applicable diagnostic tests for system checkout.
- d. Replace disk drive housing as follows:
 - (1) Lower drive if up.
 - (2) Secure drive retaining plate.
 - (3) Replace drive interior dust cover.
 - (4) Replace drive cover and rear panel.

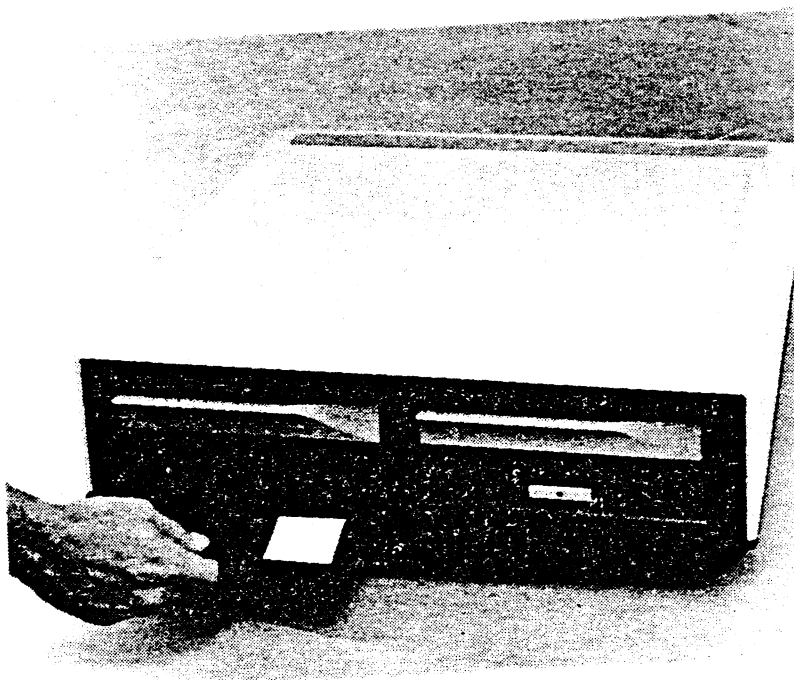


Figure 2-5. Diskette Orientation

SECTION 3

MAINTENANCE

3.1 GENERAL

This section contains procedures for the on-site maintenance of the 1842 Dual Diskette Drive. On-site maintenance in cases of malfunctions is normally limited to replacement of subassemblies and selected components, such as transformers and switches, that are not a part of a readily removable subassembly. In situations where first level maintenance of the system leads into procedures that are considered beyond first level capabilities, assistance should be requested from Customer Service Technical Support. Test equipment required for first level maintenance is listed in Table 3-1.

TABLE 3-1

TEST EQUIPMENT	
Multimeter or DVM	
Oscilloscope (10MHz band width)	
Alignment Diskette SA120	P/N 89 0005
Cartridge Guide Adj. Tool 50377-01	P/N 89 0006
Bail Gauge 50391 (Black Plastic)	P/N 89 0015-01
Paint Brush, 1 inch	

3.2 PHOTOGRAPHIC VIEWS

Four photographic views of the dual diskette drive are given in Figures 3-1 thru 3-4.

3.3 PREVENTIVE MAINTENANCE

Preventive maintenance for the dual diskette drive consists primarily of unscheduled cleaning, inspection and diagnostic checkout. Scheduled maintenance operations should be performed at the indicated intervals to ensure reliable operation of the system.

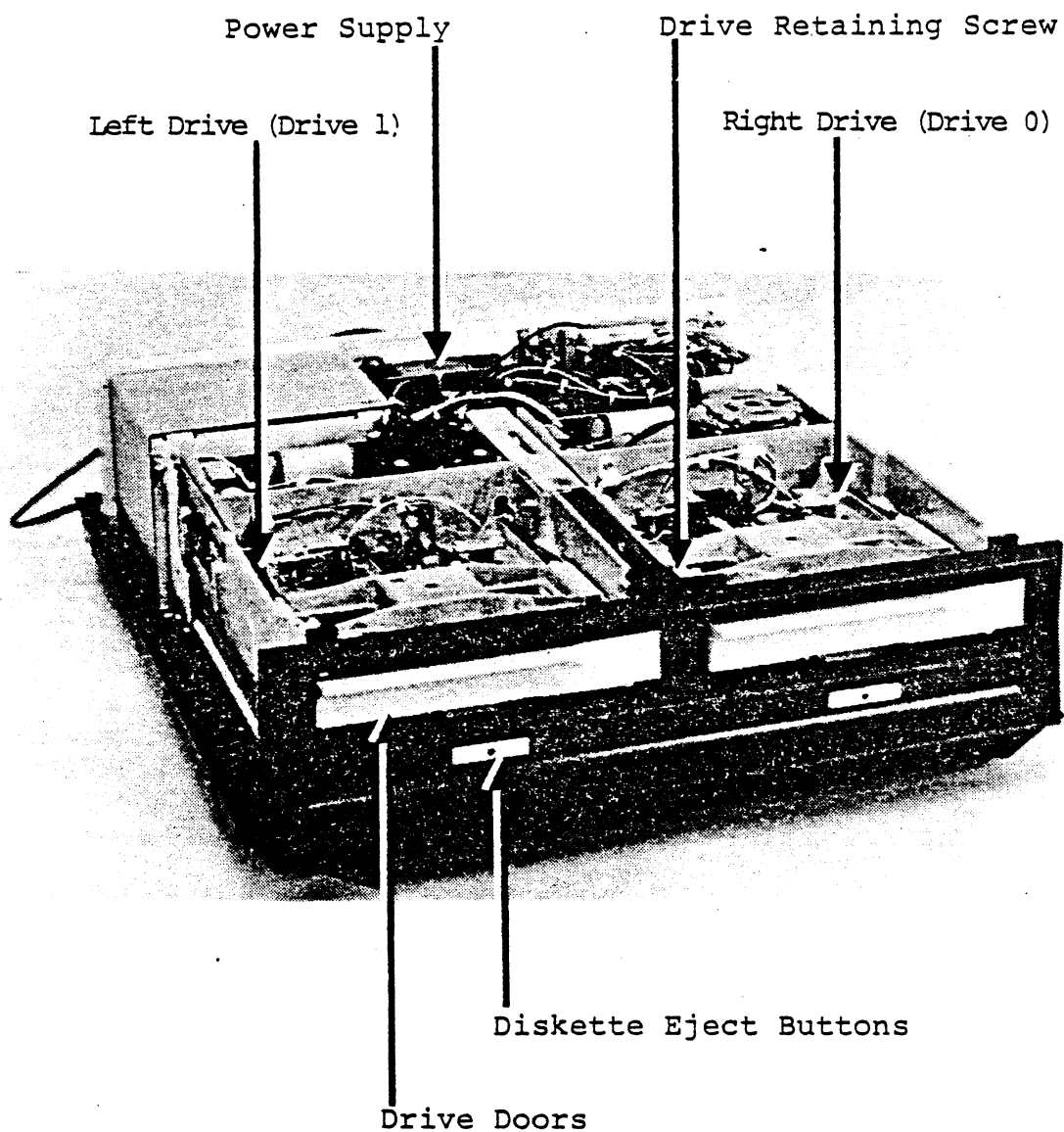


Figure 3-1. Dual Diskette Drive Major Component Locations-
Top/Front View

- | | |
|-------------------------------|------------------------------|
| 1. Right Drive | 6. Left Digital Board (AlA3) |
| 2. Analog Board (AlA1) | 7. Power Supply |
| 3. Interconnect Board (AlA2) | 8. Analog Board (AlA1) |
| 4. Drive Retaining Screw | 9. Left Drive |
| 5. Right Digital Board (AlA4) | |

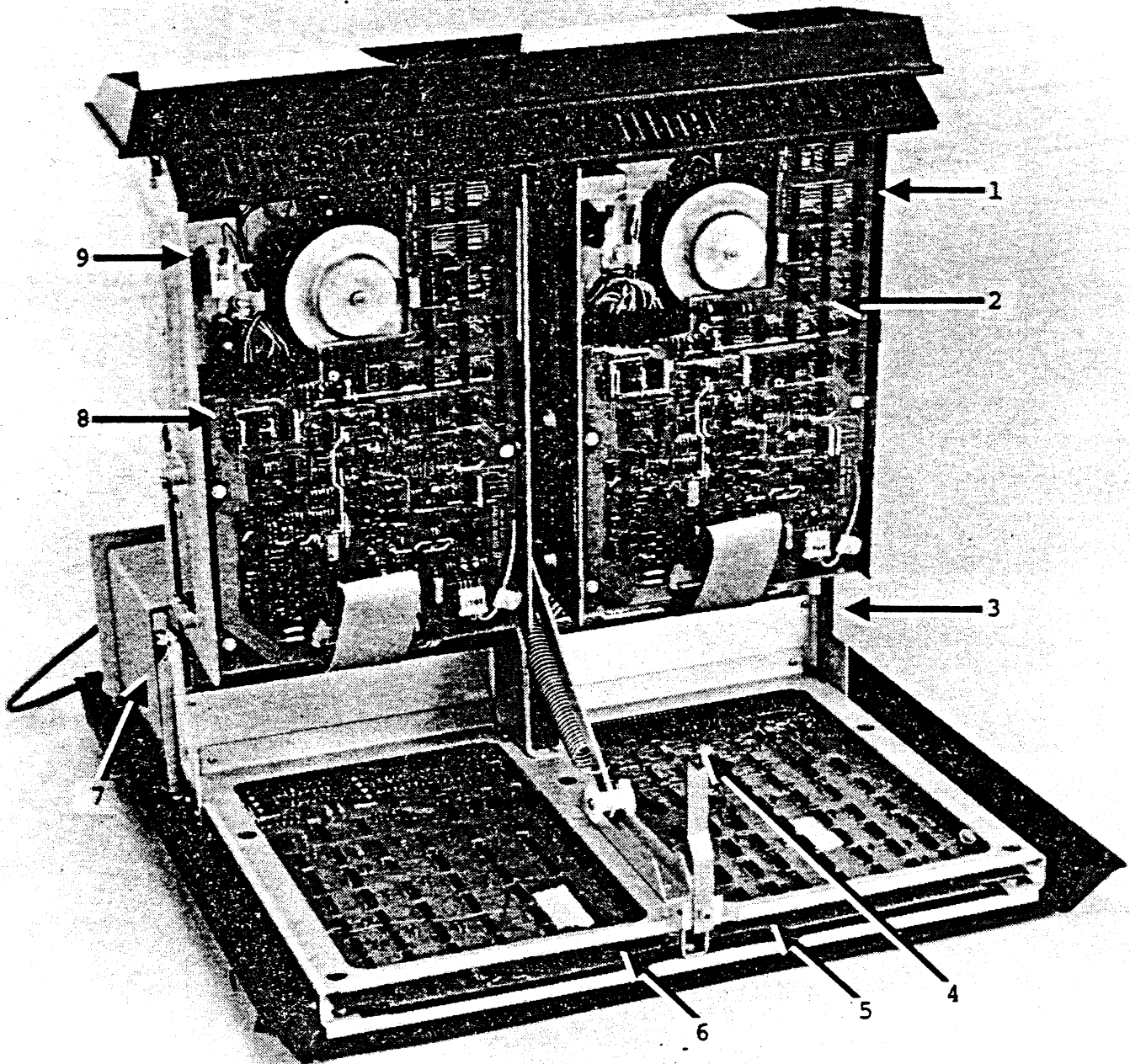


Figure 3-2. Dual Diskette Drive Major Component Locations-Interior View

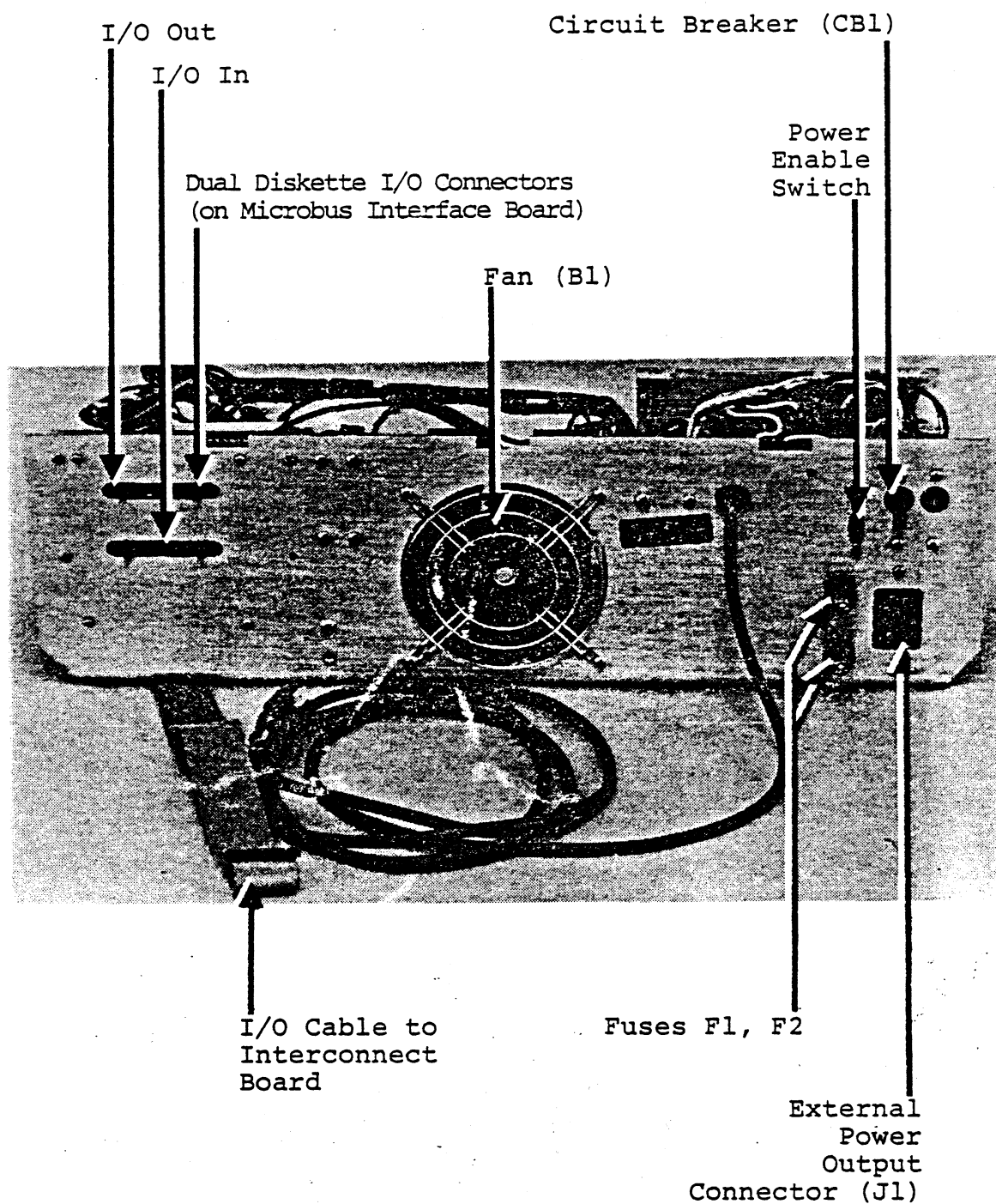


Figure 3-3. Dual Diskette Power Supply-Rear View

- | | |
|------------------------------------|----------------------------|
| 1. Circuit Breaker (CB1) | 8. 12 Volt Heatsink (A2A2) |
| 2. Power Transformer (T1) | 9. Power Harness to |
| 3. Thermal Switch (TS1) | Interconnect Board |
| 4. Fan (B1) | 10. 5 Volt Heatsink (A2A1) |
| 5. Microbus Interface Board (A2A4) | 11. Power Harness to Drive |
| 6. Regulator Board (A2A3) | Motor (One of Two) |
| 7. I/O Cable to Interconnect Board | 12. Solid State Relay (K1) |
| | (Behind Panel) |

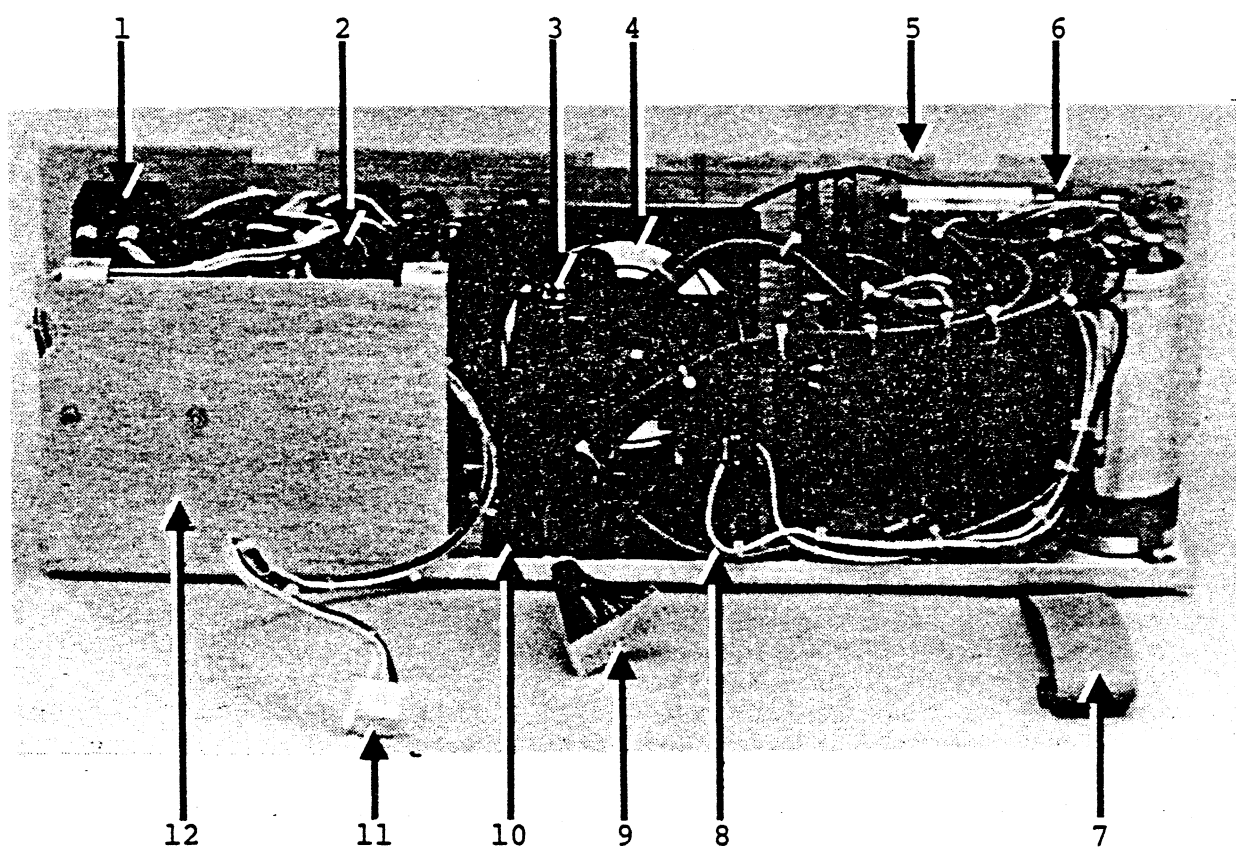


Figure 3-4. Dual Diskette Power Supply-Front View

The following procedures should be accomplished at a minimum interval of 6 months.

- a. Inspect drive belts for frayed or weakened areas or evidence of slippage.
- b. Inspect Read/Write heads for evidence of oxide build-up. If required clean heads with a lint free tissue dampened with 91% isopropyl alcohol.
- c. Check load pad for wear and evidence of oxide build-up. Replace as required (Paragraph 5.11).
- d. Check head alignment (Paragraph 4.3.5).
- e. Check the output of the +5VDC supply and adjust if necessary (Paragraph 4.2.3).
- f. Check signal amplitude at Track 75. Minimum acceptable amplitude is 300 millivolts (Paragraph 4.3.7).
- g. Check operation of the cooling fan. If fan motor is noisy, overheats or fails to operate, replace fan assembly.

3.4 CORRECTIVE MAINTENANCE

Corrective maintenance of the dual diskette drive normally consists of verifying and correcting reported malfunctions incurred during operation.

3.4.1 FAULT ISOLATION

The fault isolation procedures contained in Figure 3-5 are based upon malfunctions that could occur during routine use of the system. All peripheral equipment should be disconnected and remain disconnected until the malfunction has been isolated and corrected, or it has been definitely determined that the malfunction is not in the drive.

Removal and replacement procedures for subassemblies and components are included in Section 5. Section 8 of this manual includes schematics and diagrams required for wiring continuity checks.

SYMPTOM	PROBABLE CAUSE	REMEDY
Disk drive off. Fan off. Drive motors off. Processor on.	1. No input power.	1. Check connection to input power source. 2. Set CBI OFF then ON. 3. Set power enable switch to SERVICE. If drive comes on: a. Check if fan is running. If fan not running, thermal switch TS1 may have operated. Replace fan. b. Check power control voltage on I/O cable. (Probable cause 2). 4. Check for bad circuit breaker or line filter.
	2. No power control voltage (+5VDC) on I/O cable.	1. Check processor I/O cable securely connected to drive I/O connector J2. 2. Check for +5VDC at drive terminator board (A7) from TP1 to ground (TP2). If +5VDC good, check solid state relay (K1) and thermal switch (TS1). (Probable cause 3).

Figure 3-5. Fault Isolation

75218-00

SYMPTOM	PROBABLE CAUSE	REMEDY
	3. Solid state relay (K1) or thermal switch (TS1).	1. Check for +5VDC at solid state relay from K1-4 to ground. 2. Check for +5VDC at thermal switch input from TS1-2 to ground, and output from TS1-1 to ground. Replace components as necessary.
Drive will not read or write.	1. Diskette not loaded properly or diskette upside down.	1. Reload diskette.
	2. Diskette not turning.	1. Check drive motor. 2. Check drive belt. 3. Check for mechanical binding in motor to spindle drive train.
	3. Read/write head will not load.	1. Check +24VDC between P6-4 and ground. Voltage should measure between +24 and +30VDC. 2. Check for +24VDC at purple lead on head load solenoid. If no voltage present, check wiring continuity.

Figure 3-5 (Cont)

SYMPTOM	PROBABLE CAUSE	REMEDY
		3. If +24VDC present, short blue lead on head load solenoid to ground. If solenoid operates, replace drive. 4. Substitute left digital board.
	4. Read/write head will not seek and/or restore.	1. Check for any mechanical binding or cable interference with motion of head carriage. Clean and lubricate if required. 2. Check +24VDC between P6-4 and ground. Voltage should measure between +24 and +30VDC. 3. Substitute left and/or right digital boards.
Drive read/write errors.	1. Worn diskette, worn read/write head, worn head load pad.	1. Visually inspect for wear. If necessary, replace part.
	2. Worn diskette center.	1. Replace diskette.
	3. Dirty read/write head.	1. Clean read/write head.

Figure 3-5. (Cont)

SYMPTOM	PROBABLE CAUSE	REMEDY
	4. +5VDC from power supply.	1. Check +5VDC between P6-8 and ground. Voltage should measure between +5.0 and +5.1VDC. Adjust if necessary (Paragraph 4.3.1.3).
	5. Power supply voltages.	1. Check all non-adjustable power supply voltages (Paragraph 4.3.1.2).
	6. Analog board.	1. Substitute analog board.
	7. Left and/or right digital boards.	1. Substitute left and/or right digital boards.
	8. Read/write head alignment.	1. Check read/write head alignment (Paragraph 4.3.2.5).
	9. Drive defective.	1. Replace drive.
Drive will not write.	1. Write/protect switches.	1. Check that write/protect switches are in write enable (right position).

SYMPTOM	PROBABLE CAUSE	REMEDY
System functioning normally - Suddenly goes into high error rate.	1. High temperature.	1. Check fan operation. 2. Check room temperature within specified limits.
System functions with intermittent errors.	1. No pattern of errors - Various intermittent problems.	1. Check all interface connections and cables. 2. Check for transients on input power. 3. Check +5VDC between P6-8 and ground. Voltage should measure between +5.0 and 5.1VDC. Adjust if necessary (Paragraph 4.3.1.3). 4. Check the physical condition of drives. a. Movement of head carriage. b. Worn or missing pressure pad. c. Clean head if required.

Figure 3-5.. (Cont)

SECTION 4

ALIGNMENT AND ADJUSTMENT

4.1 GENERAL

The following alignment and adjustment procedures should be performed whenever a component is replaced and as a part of preventive maintenance. The tools and test equipment are listed in Table 3-1.

4.2 POWER SUPPLY ADJUSTMENTS

The dual diskette power supply has only one adjustment R13. This adjusts the +5 VDC regulated power and is located on the regulator board (A5).

When making these adjustments, it is advisable to check the non-regulated voltages on the power supply. Therefore, these measurements are included in this section.

4.2.1 INPUT VOLTAGE

Check for 90 to 130 VAC (or 180 to 260 VAC) between circuit breaker terminals CB1-1 and CB1-3 (or CB1-2 and CB1-4).

4.2.2 NON-ADJUSTABLE VOLTAGES

Check the following voltages at the location given in Table 4-1. The voltage may be checked between the location given and ground (the large metal strip connecting the power capacitors).

TABLE 4-1

<u>LOCATION</u>	<u>VOLTAGE</u>	<u>ACCEPTABLE VOLTAGE RANGE</u>
P6-4	+24 VDC UNREG	24 to 30 VDC
P6-5	+12 VDC REG	± 0.1 VDC
P6-6	-12 VDC REG	± 0.1 VDC
P6-3	+10 VDC UNREG	10 to 13 VDC

4.2.3 +5 VDC ADJUSTABLE VOLTAGE

- a. Connect a multimeter between chassis ground and P6-7 or P6-8 (+5 VDC REG). Reading should be from +5.0 to +5.1 VDC. If necessary, adjust R13 (Figure 4-1) for proper reading.

4.3 DISK DRIVE ADJUSTMENTS

For alignment or adjustment procedures requiring a read or seek operation of the disk drive carriage, refer to ROM User's Guide in Section 8 of the processor First Level Maintenance Manual for applicable instructions.

4.3.1 HEAD LOAD ACTUATOR ADJUSTMENT

- a. Step carriage to Track 00.
- b. Place Head Load Actuator adjustment tool on R/W head and place load button in cup of tool.

NOTE

Ensure that solenoid spring is attached to the head load bail in the outer hole (the hole farthest away from the solenoid).

- c. Adjust up stop on Actuator so that bail just touches head load arm. See Figure 4-2(a).
- d. Energize Head Load solenoid by grounding CR2 anode on analog board (Figure 4-3).
- e. Place adjustment tool on platen.
- f. Adjust down stop screw until the top of the Head Load Bail is flush with top of tool. See Figure 4-2(b).
- g. Step carriage between tracks 00 and 76 insuring that there is clearance between Head Load Bail and Head Load Arm.

4.3.2 HEAD LOAD ACTUATOR TIMING

CAUTION

The SA120 Alignment Diskette is used for adjustments on the diskette drive. Caution should be exercised to avoid writing on and destroying pre-recorded tests. Ensure WRITE/PROTECT switches are in WRITE PROTECT position (left), Figure 4-4.

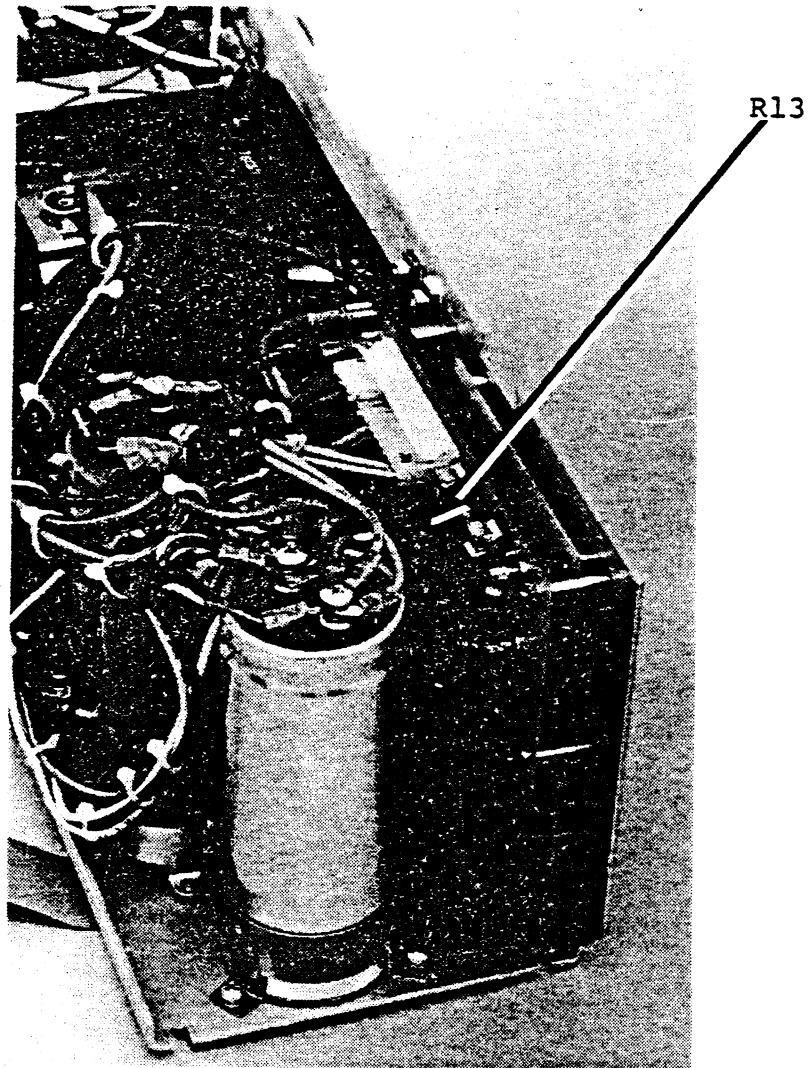
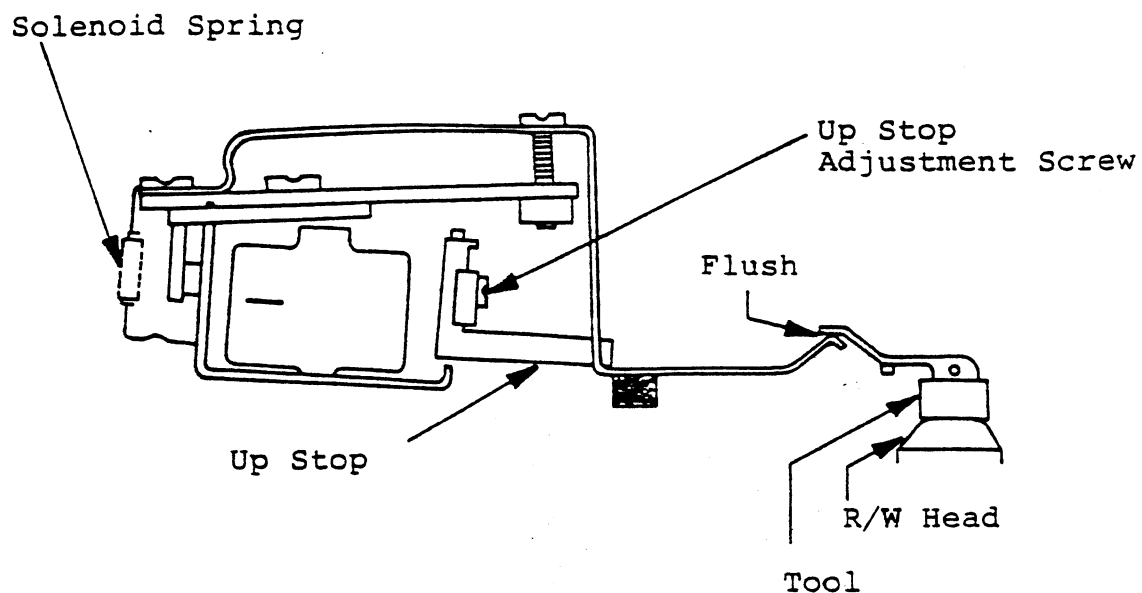
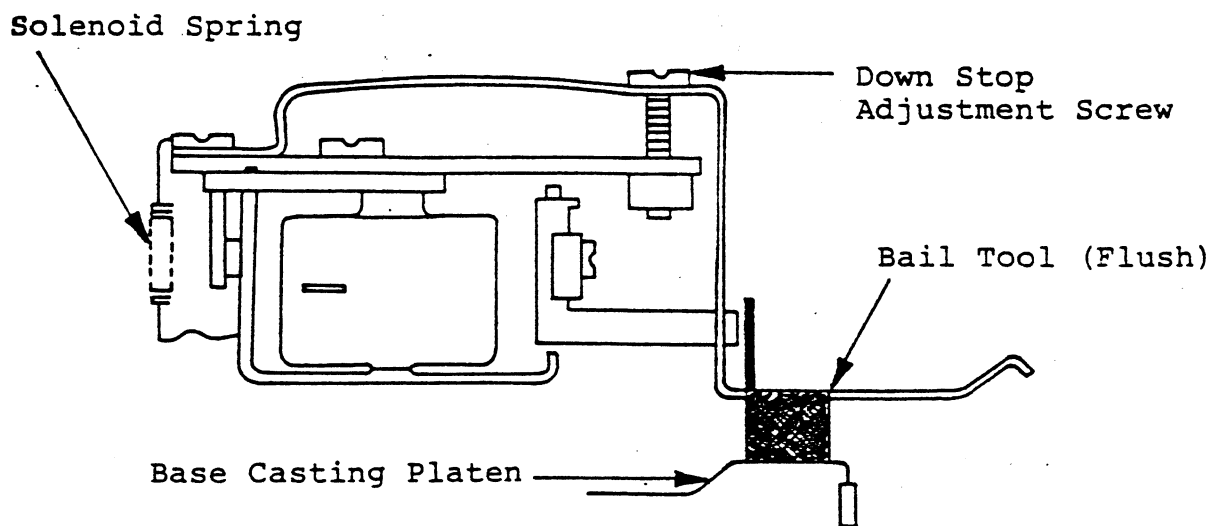


Figure 4-1. Dual Diskette +5VDC Adjustment Potentiometer



(a) Head Load Actuator Up Stop Adjustment



(b) Head Load Actuator Down Stop Adjustment

Figure 4-2. Head Load Actuator Stop Adjustments

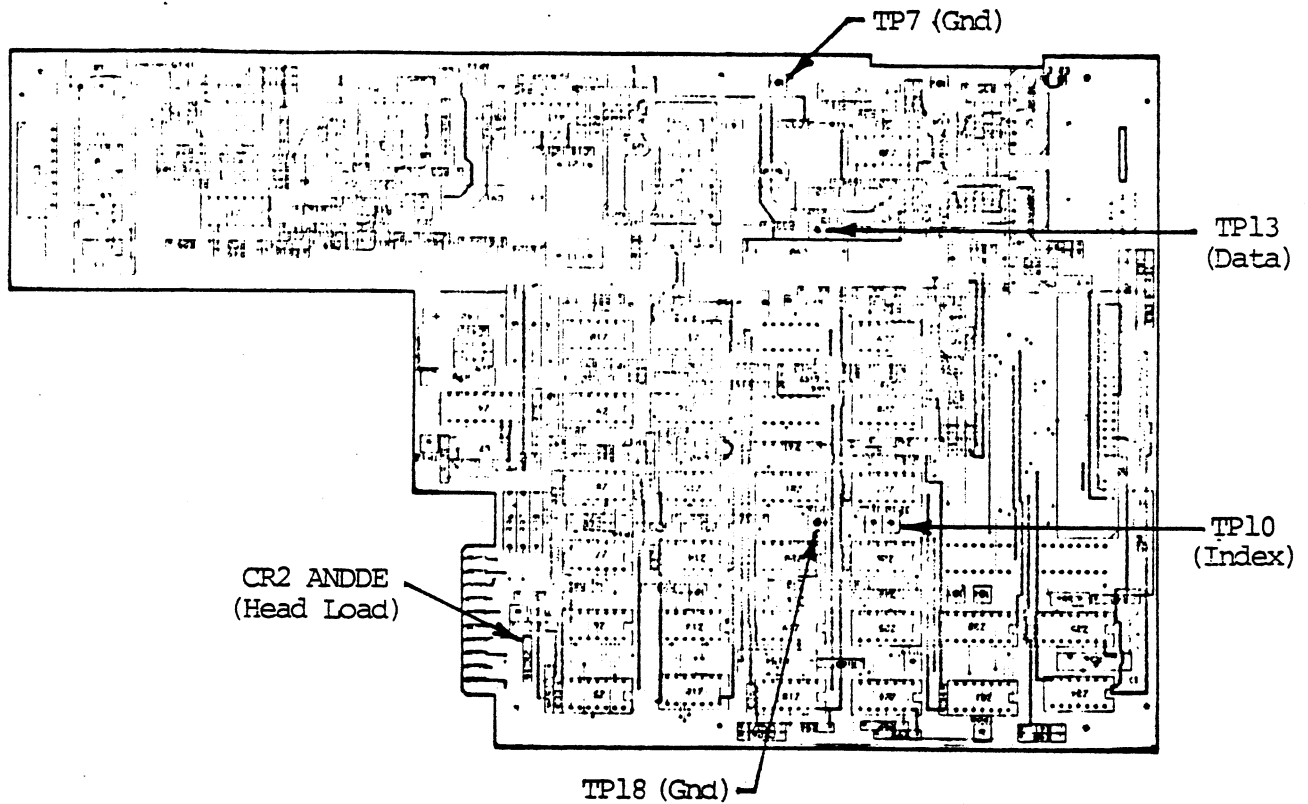


Figure 4-3. Component Locations on Analog Board (A1A1)

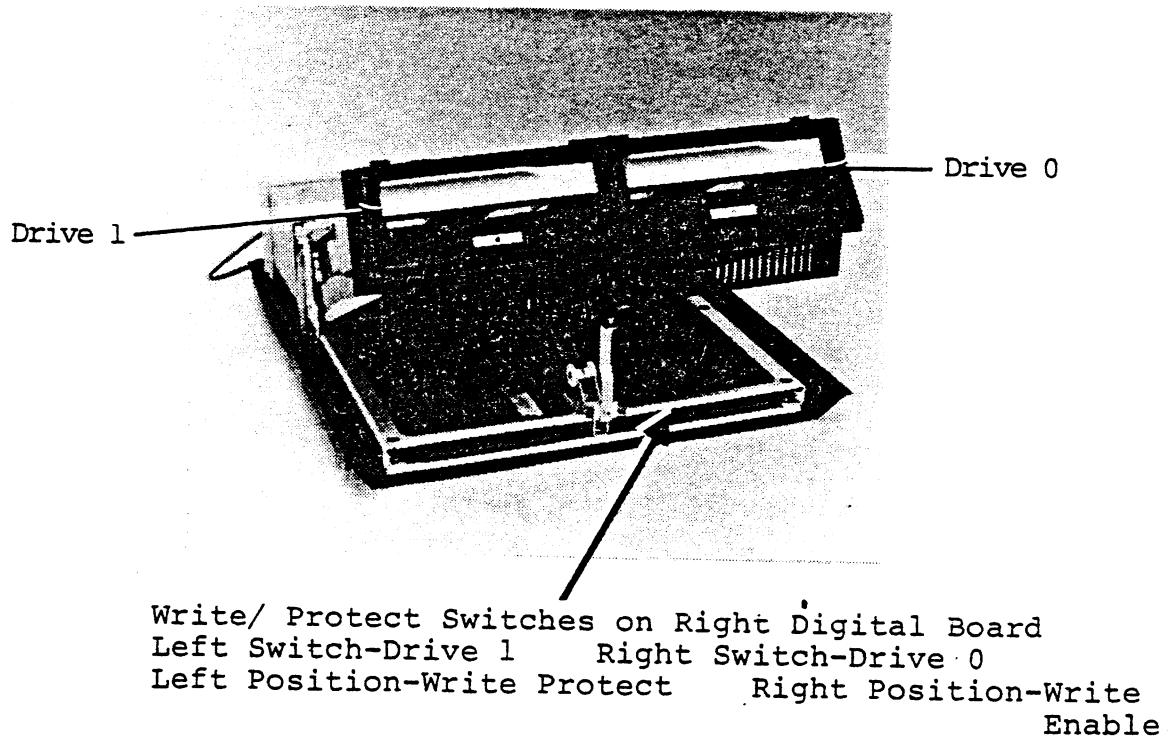


Figure 4-4. Dual Disk Drive Write/ Protect Switches

- a. Insert Alignment Diskette (SA120), and place drive in WRITE/PROTECT. See Figure 4-4.
- b. Step carriage to Track 0.
- c. Sync oscilloscope on CR2 anode (Load Head) on analog board. See Figure 4-3. Set time base to 10 msec/division.
- d. Connect one probe to TP13 on the analog board. Connect probe ground to TP7 (ground) on the analog board. See Figure 4-3.
- e. Energize the head load solenoid by grounding CR2 anode and observe the read signal on the oscilloscope. The signal must be at 50% of full amplitude by 50 msec. See Figure 4-5. If read signal is not within tolerance continue with step "f".

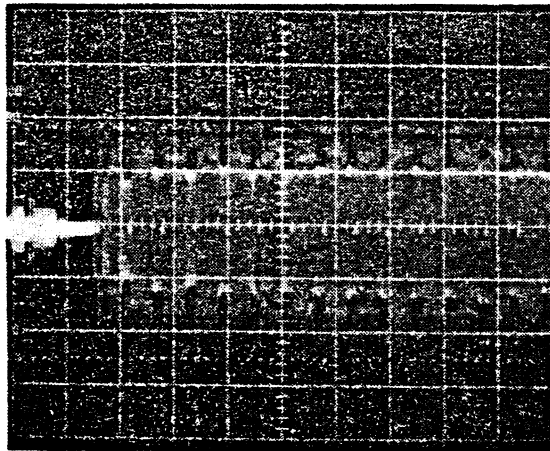
NOTE

Ensure that solenoid spring is attached to the head load bail in the outer hole (the hole farthest away from the solenoid).

- f. Check Head Load Actuator adjustments (Paragraph 4.3.1).
- g. If Head Load Actuator adjustments are correct, adjust the down stop screw (Figure 4-2(b)) clockwise until timing is within tolerance. NOTE: Timing adjustment should not require turning the stop screw more than 1/4 turn. If more than 1/4 turn is required, inspect the actuator assembly for evidence of physical damage.

4.3.3 INDEX/SECTOR ADJUSTMENT

- a. Insert scratch diskette.
- b. Connect oscilloscope probe to TP10 (Index) and ground lead to TP18 on the analog board. See Figure 4-3. Sync internal positive, DC coupled and set vertical scale to 2V/cm. Index pulse should appear as shown in Figure 4-6.
- c. Verify that pulse width is 2.0 $\pm$ 1.0 msec (Figure 4-6).



200mv at 10ms

Figure 4-5. Head Actuator Timing

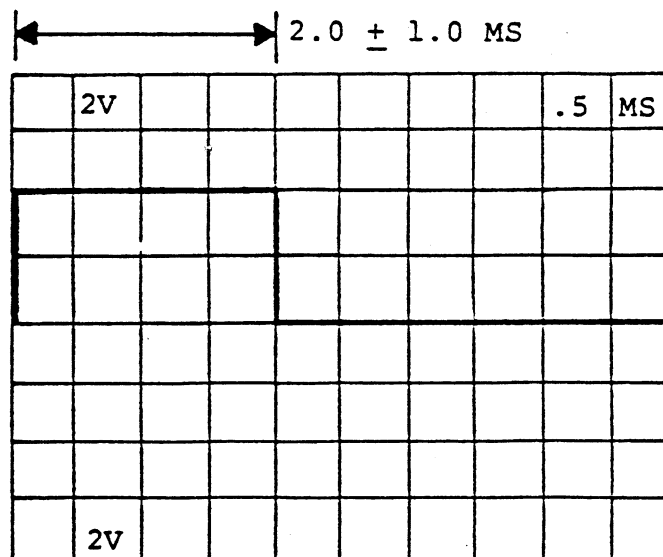


Figure 4-6. Index Pulse

- d. If adjustment is necessary, loosen the holding screw in the index phototransistor assembly until the phototransistor is just able to be moved (Figure 4-7).
- e. Observing the timing, adjust the transducer to obtain a pulse width of 2.0 ± 1.0 msec (Figure 4-6). Ensure that the transducer assembly is against the registration surface on the base casting.
- f. Tighten the holding screw.

4.3.4 CARTRIDGE GUIDE ADJUSTMENT

- a. Insert the shoulder screw (tool P/N 503777-0) through the adjustment hole in the cartridge guide and screw completely into the base casting (hand tight). See Figure 4-8.
- b. Loosen two screws holding the cartridge guide.
- c. Move the handle into the latched position and hold it lightly against the latch.
- d. Tighten two screws holding the cartridge guide to the latch plate (Figure 4-8).
- e. Remove the shoulder screw and check to determine if the flange on the clamp hub clears the cartridge guide when the spindle is rotating. If the clamp hub rubs on the cartridge guide, repeat the adjustment procedure.
- f. Check index/sector adjustment per Paragraph 4.3.3.
- g. Check diskette insertion and ejection, and proper door operation.

4.3.5 HEAD RADIAL ALIGNMENT

NOTE

Head radial alignment should be checked prior to adjusting index/sector, Track 00 flag, or carriage stop.

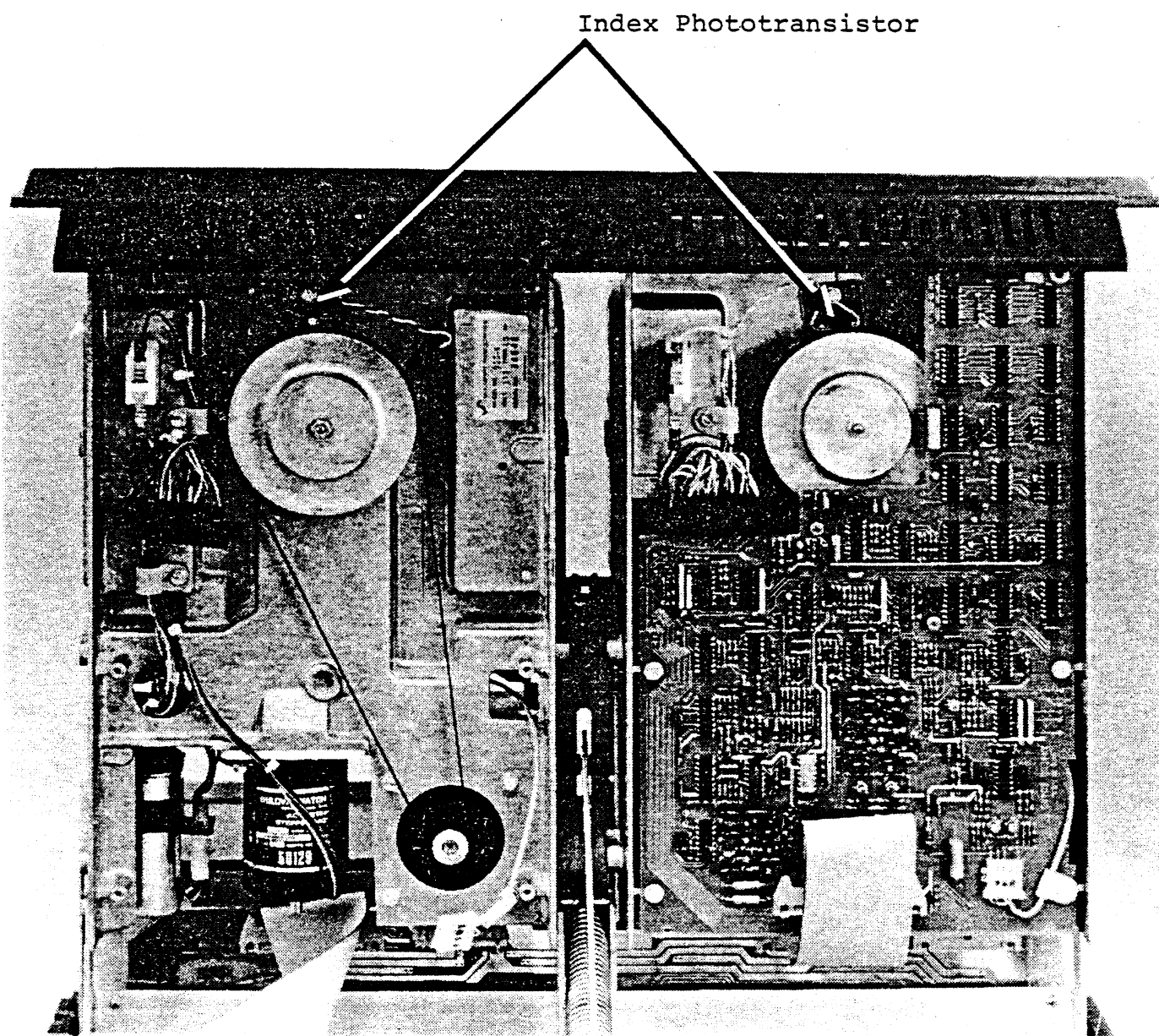


Figure 4-7. Dual Disk Drive Component Locations-
Pulley Side

- | | |
|---------------------------|--------------------|
| 1. Cartridge Guide Adjust | 5. Read/Write Head |
| Screws (Hidden) | 6. Head Load |
| 2. Cartridge Guide | Solenoid |
| Alignment Tool Solt | 7. Head Load Arm |
| 3. Sector Index LED | 8. Stepper Motor |
| 4. Track 0 Flag Screw | 9. Drive Motor |

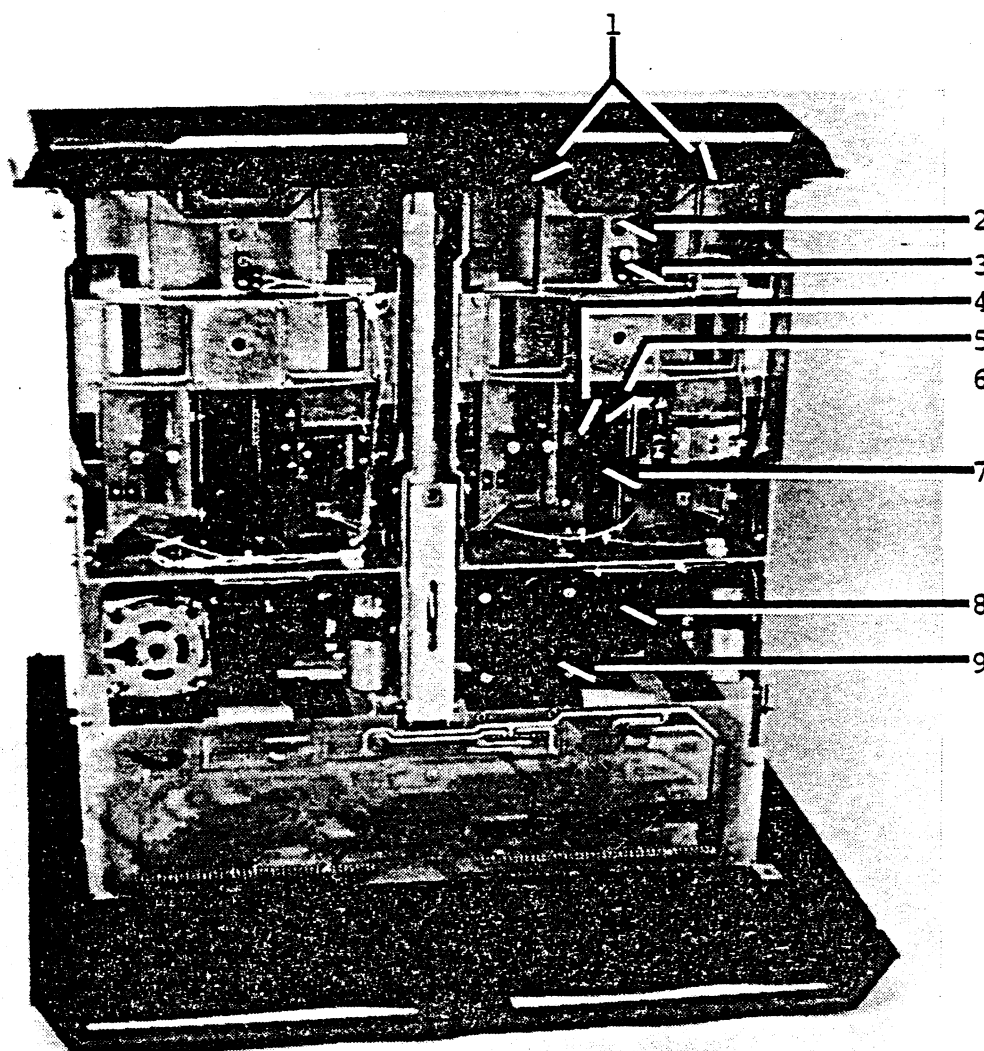


Figure 4-8. Dual Disk Drive Component Locations-
Read/Write Head Side

- a. Load alignment diskette (SA120) in desired drive, and place drive in WRITE/PROTECT. See Figure 4-4.

NOTE

Alignment diskette should be at room conditions for at least twenty minutes before alignment.

- b. Position the carriage to Track 38.
- c. Sync the oscilloscope to TP10 on the analog board (Index). See Figure 4-9. Set the time base to 20 msec per division. This will display over one revolution.
- d. Connect one probe to TP13. Connect probe to TP7 (ground) on the analog board (Figure 4-9). Set the input to AC. Set the vertical deflection to 100 MV/dev.
- e. Decalibrate the time base and adjust the oscilloscope so that two lobes completely appear on the screen (Figure 4-10).
- f. The two lobes must be within 20% amplitude of each other. If the lobes do not fall within the specification, continue the procedure.

CAUTION

Do not loosen three screws (on mounting plate) coated with glyptol.

- g. Loosen the two mounting screws which hold the stepper motor to the mounting plate.

CAUTION

Do not turn stepper motor more than 1/4 turn in either direction when moving head in or out manually.

- h. Rotate the stepper motor to radially move the head in or out. If the left lobe is less than 80% of the right, turn the stepper motor clockwise. If the right lobe is less than 80% of the left lobe, turn the stepper motor counterclockwise. See Figure 4-11.
- i. When the lobes are of equal amplitude, tighten the motor mounting screws.

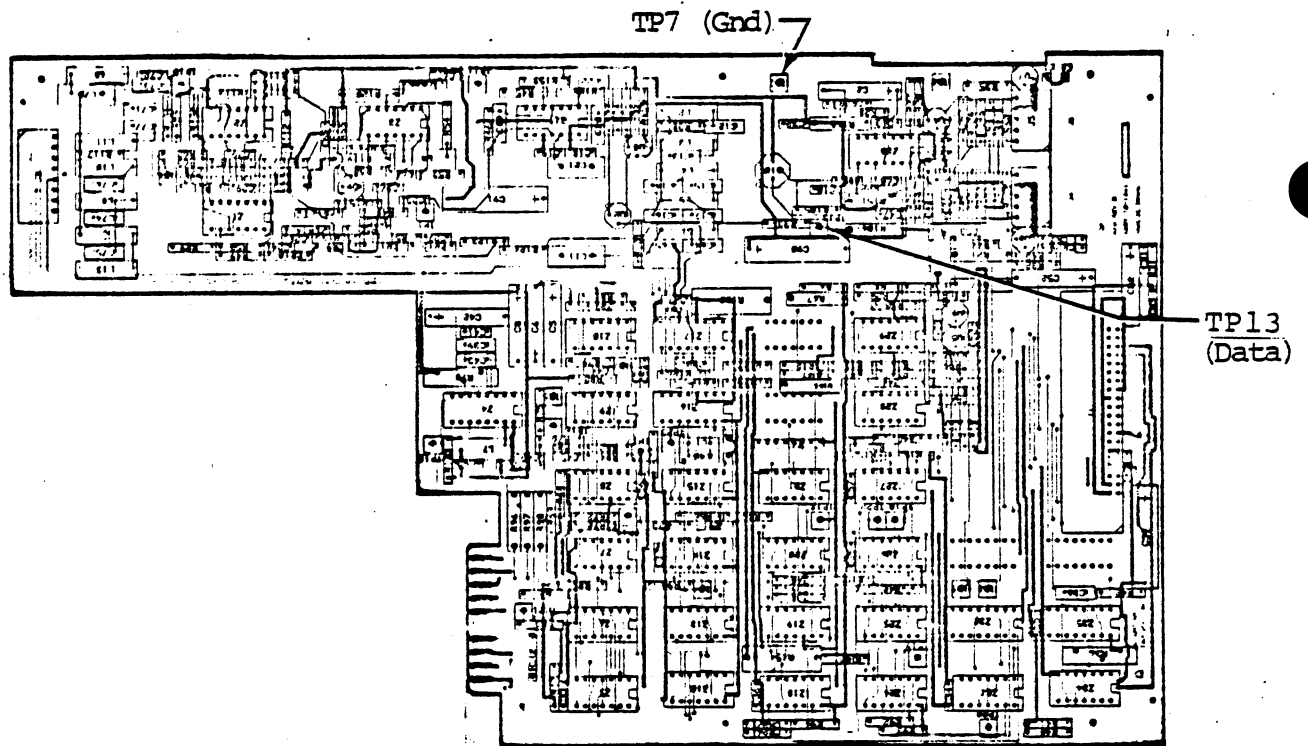


Figure 4-9. Component Locations on Analog Board (AlA1).

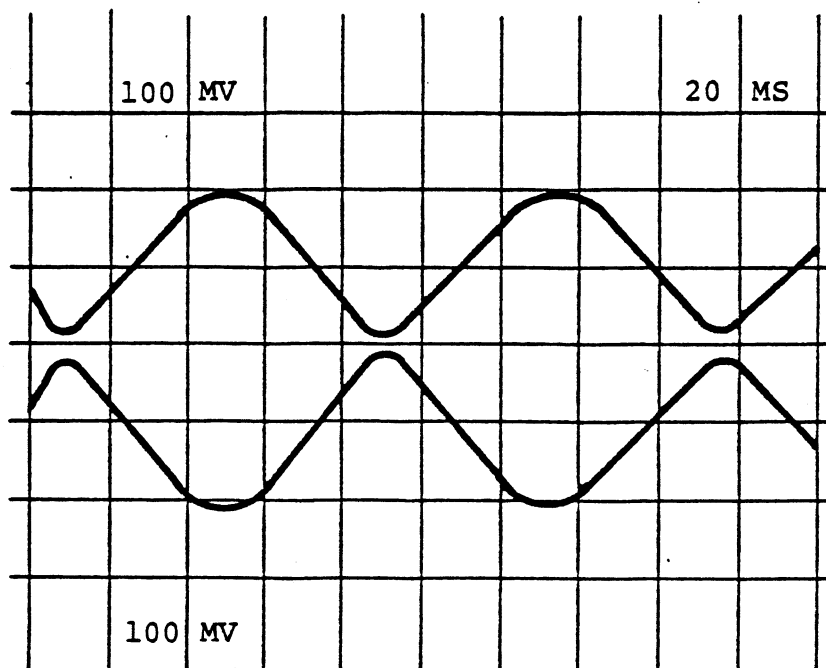


Figure 4-10. Head Radial Alignment

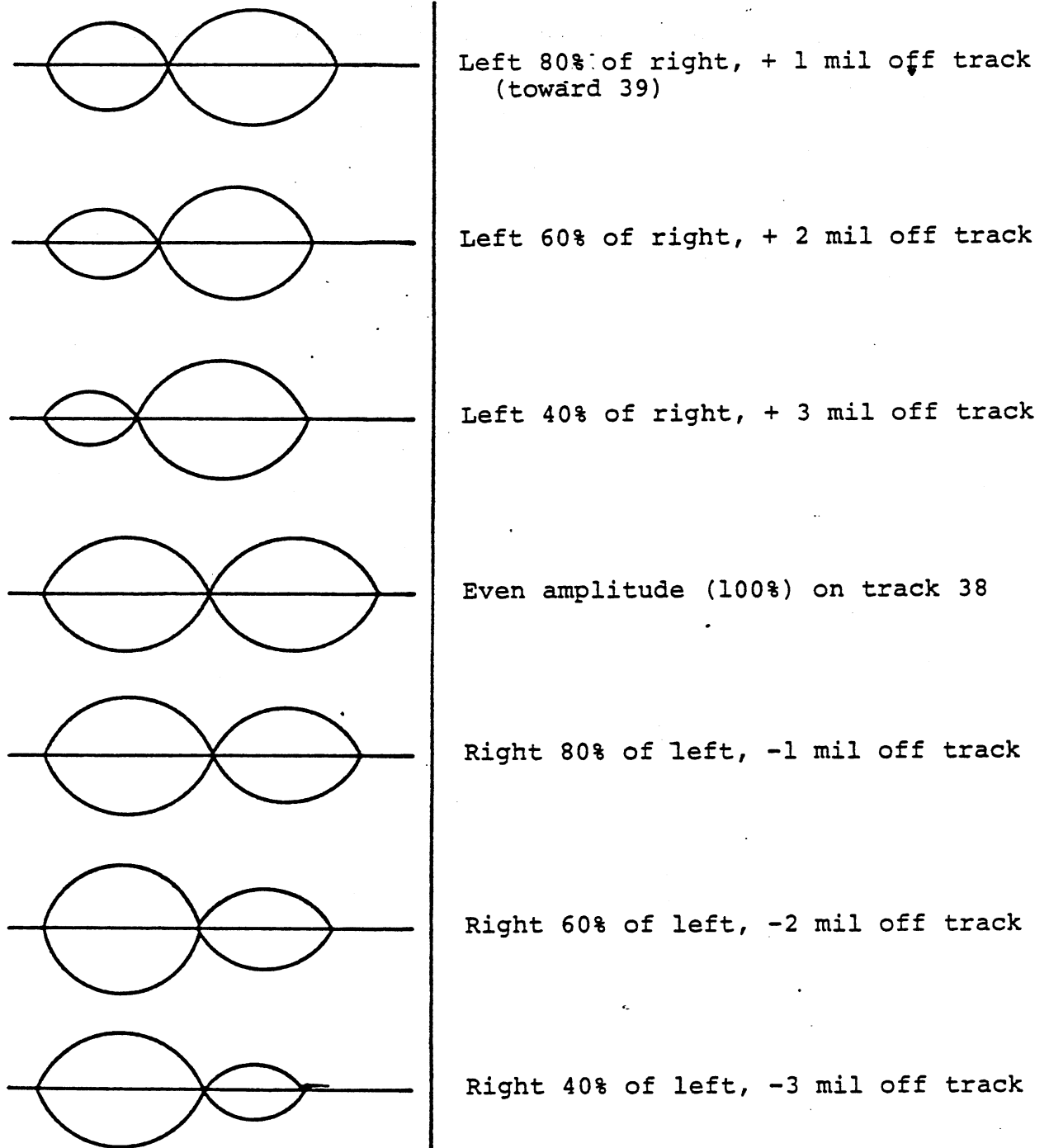


Figure 4-11. R/W Head Radial Alignment

- j. Check the adjustment by stepping off track and returning. Re-adjust if necessary, to obtain equal alignment when seeking Track 38.
- k. When the Head Radial Alignment has been adjusted, the Track 00 detector adjustment and Track 00 stop must be checked.
- l. Remove alignment diskette.

4.3.6

TRACK 00 STOP ADJUSTMENT

- a. Check head radial alignment and adjust if necessary before making this adjustment.
- b. Step carriage to Track 00. Verify that carriage is at 00.
- c. Check that stop has $.030 \pm .010$ " clearance between collar and carriage. Turn power OFF and manually rotate lead screw clockwise (CW) until carriage stops. Check that stop has $.020 \pm .010$ " clearance between collar and carriage.
- d. If clearances are not within tolerance, continue with adjustment procedure (step e).
- e. Turn power ON.
- f. Step carriage to Track 02.
- g. Loosen Track 00 stop collar.
- h. Grasp end of lead screw in back of stepper motor with pliers and manually turn lead screw CW to the Track 01 position. (Next detent position on stepper motor).
- i. Position the stop collar axially along the lead screw until there is $.020 \pm .010$ " clearance between collar and carriage. Rotate the collar toward inside until the pin on the collar contacts the carriage stop surface. Tighten screw.
- j. Step carriage between Track 00 and 76 and check for any binding or interference between the carriage, lead screw, stop, and head cable. Verify that there is data on Track 0.

4.3.7 TRACK 00 DETECTOR ADJUSTMENT

- a. Check head radial alignment and adjust if necessary before making this adjustment.
- b. Connect oscilloscope probe to TP21 on the analog board (Figure 4-12). Set vertical deflection to 1 v/division and sweep to AUTO.
- c. Step carriage to Track 00. The voltage should be 1.0 to 1.5 volts.
- d. Step carriage to track 1. The voltage should remain at 1.0 to 1.5 volts. If voltage is too high, loosen track 0 flag screw and slide flag towards detector until voltage is close to 1.5 volts.
- e. Step carriage to track 2. The voltage should be 4.0 to 5.0 volts. $0m\ 3.0 < 1.5$ If voltage is less than 4.0 volts, slide flag from detector until voltage is 4.0 volts or greater.
- f. Repeat step d to check flag adjustment on track 1.
- g. Adjustment may be checked by performing an alternate track seek between tracks 01 and 02. The waveform at TP21 should be a symmetrical square wave.

4.3.8 VCO ADJUSTMENT

- a. Insert scratch diskette in drive.
- b. Connect multimeter voltage lead to TP3 and ground lead to TP16 on analog board. NOTE: If an oscilloscope is used in lieu of the multimeter, connect oscilloscope 10X probe to TP3 and ground lead to TP16 on analog board. Connect sync probe to TP10 (INDEX) and ground lead to TP18 on analog board (Figure 4-12). Set scope for internal sync, AC coupling, 2 v/div., and 5 msec/div.
- c. Adjust R78 on analog board (Figure 4-12) for 2.3 ± 0.1 VDC.

4.3.9 DATA SEPARATOR ADJUSTMENT

- a. Insert scratch diskette in drive.

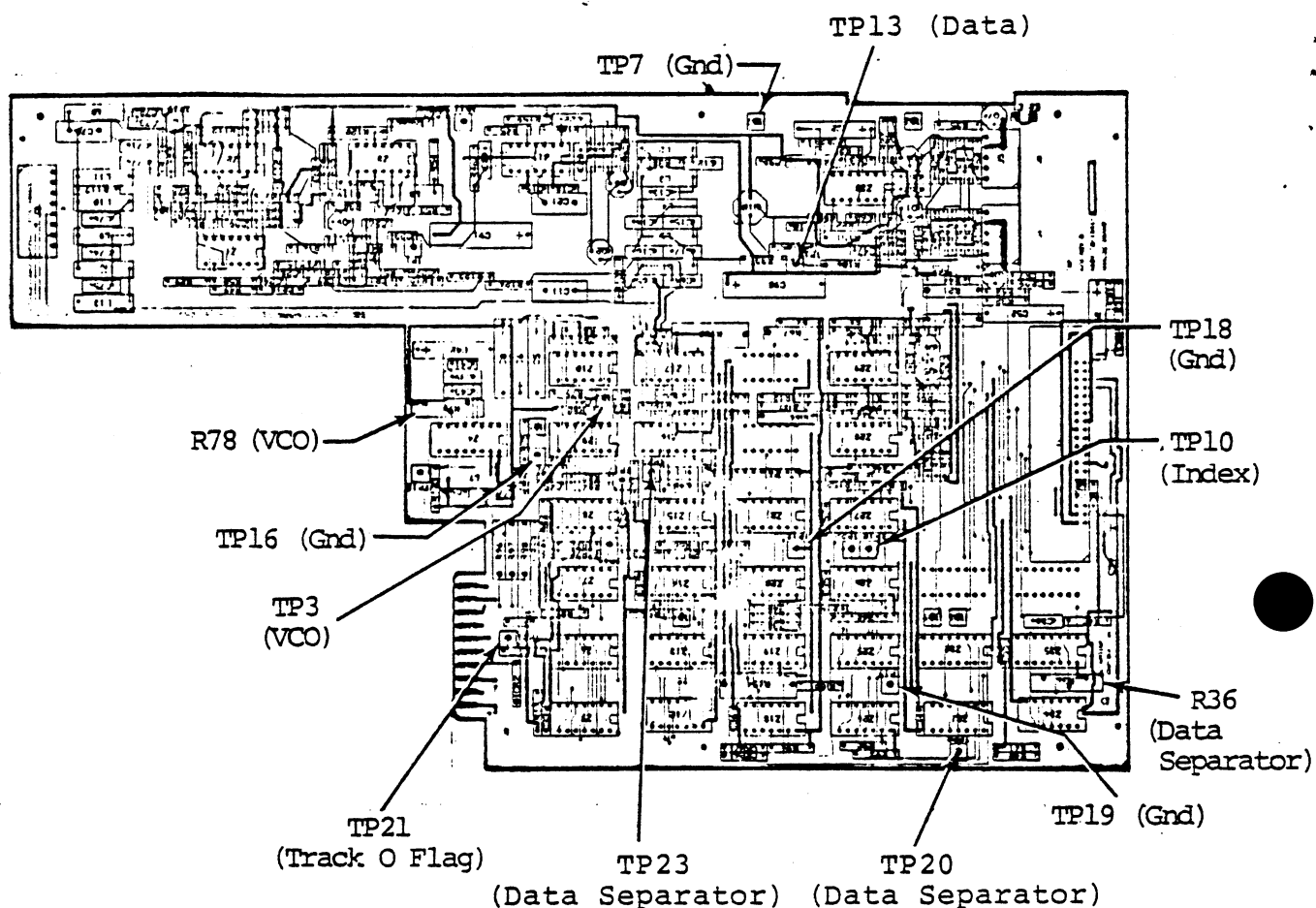


Figure 4-12. Component Locations on Analog Board (A1A1)

- b. Connect oscilloscope channel 1 10X probe to TP23 and ground lead to TP18 on analog board. Connect channel 2 10X probe to TP20 and ground lead to TP19 on analog board (Figure 4-12). Set scope for internal sync, AC coupling, 2.0 v/div., and 0.5 usec/div. Trigger positive on channel 1. Set channels to alternating for scope display as shown in Figure 4-13.
- c. Adjust R36 on analog board (Figure 4-12) for 2.0 ± 0.05 usec internal between leading edge of TP23 (channel 1) and trailing edge of TP20 (channel 2) as shown in Figure 4-13.

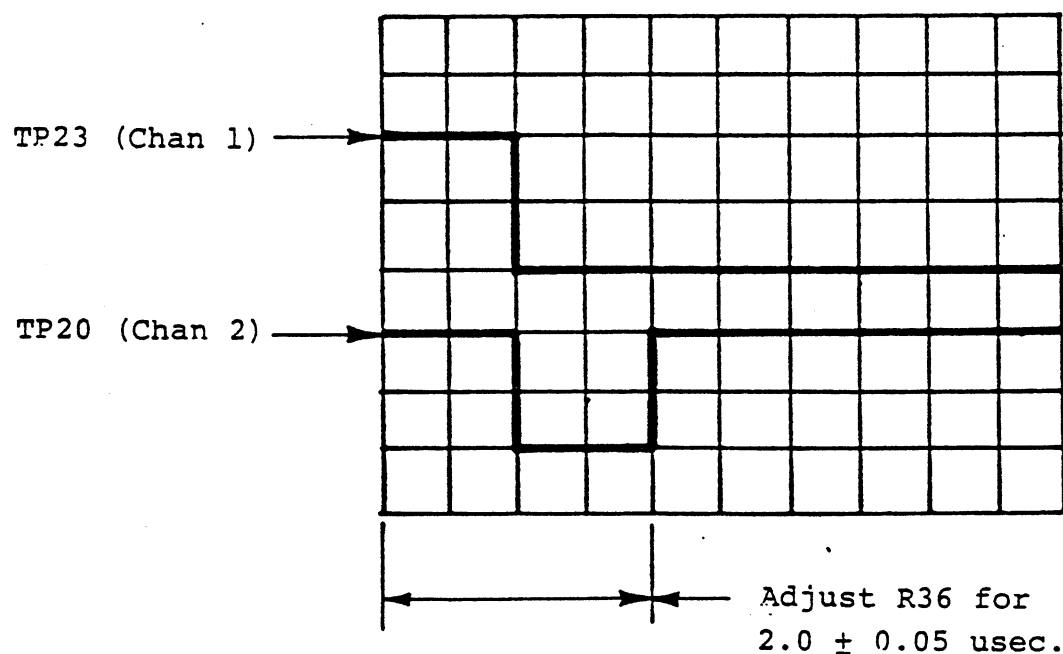


Figure 4-13. Data Separator Adjustment

SECTION 5

REMOVAL AND REPLACEMENT

5.1 GENERAL

Section 5 contains the procedures for removal and replacement of major assemblies and subassemblies. In some cases it may be necessary to remove an assembly (or subassembly) to gain access to another component. If so, a reference will be made to the paragraph that contains the procedure.

5.2 HOUSING

5.2.1 HOUSING TOP

The drive housing is secured to the base plate by four Allen screws (two screws on each side of the housing).

- a. Remove four Allen screws securing the housing to the base plate.
- b. Lift housing straight up from base plate.
- c. Install housing by placing housing on base plate and securing with four Allen screws.

5.2.2 HOUSING REAR PANEL

The rear panel of the drive housing is attached to the rear of the drive assembly with two 3/4 turn fasteners (one fastener at each end of the panel).

- a. Loosen two 3/4 turn fasteners.
- b. Pull panel to rear to remove.
- c. To install, position panel and tighten two 3/4 turn fasteners.

5.3 DRIVE INTERIOR ACCESS

5.3.1 ACCESS DRIVE TOPSIDE

This procedure provides access to the read/write head side of the drive mechanism.

- a. At top front center of drive, loosen (do not remove) retaining plate screw and remove retaining plate. The retaining plate is a small (1-1/2 in X 3/4 in) rectangular plate that secures the drives.

- b. On dust cover, loosen 1/4 turn fastener.
- c. Remove dust cover.
- d. Replace dust cover and secure with 1/4 turn fastener.
- e. Replace retaining plate and tighten retaining plate screw.

5.3.2 ACCESS DRIVE INTERIOR AND ACCESS PRINTED CIRCUIT BOARDS

This procedure raises the drives to a vertical position, and provides access to the drive pulley and belt, and printed circuit boards. See Figure 5-1.

RAISE DRIVE TO VERTICAL POSITION

- a. At top front center of drive loosen (do not remove) retaining plate screw and remove retaining plate.

WARNING

Do not push on drive when in vertical position. Undue force on drive may cause drive support assembly to deform or break. This could result in personal injury due to the high tension on the support spring.

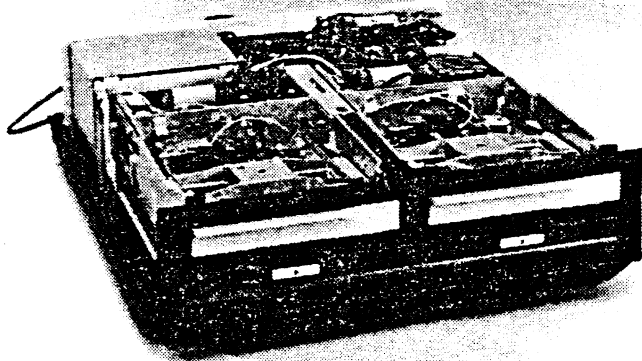
- b. Grasp drive at both front corners and lift drive to first detent (half open) position (drive will remain and will operate in this position).
- c. To completely raise drive, grasp at both corners and gently force drive up until vertical (drive will remain and will operate in this position).

OVER-CENTER POSITION

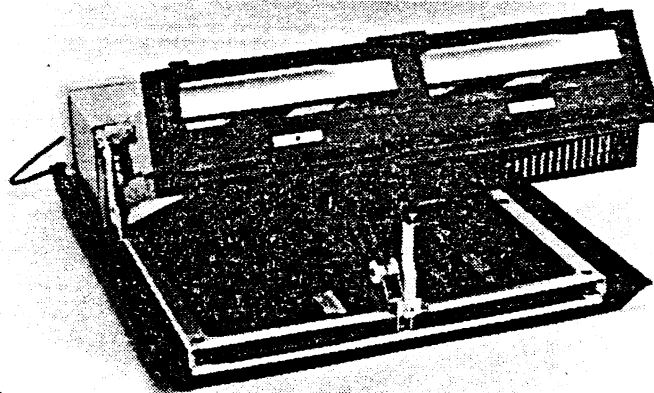
- d. Drive may be moved beyond vertical position by lifting drive support assembly above rear detent. However, drive will not support itself in this position as no firm support is present.

LOWER DRIVE TO CLOSED POSITION

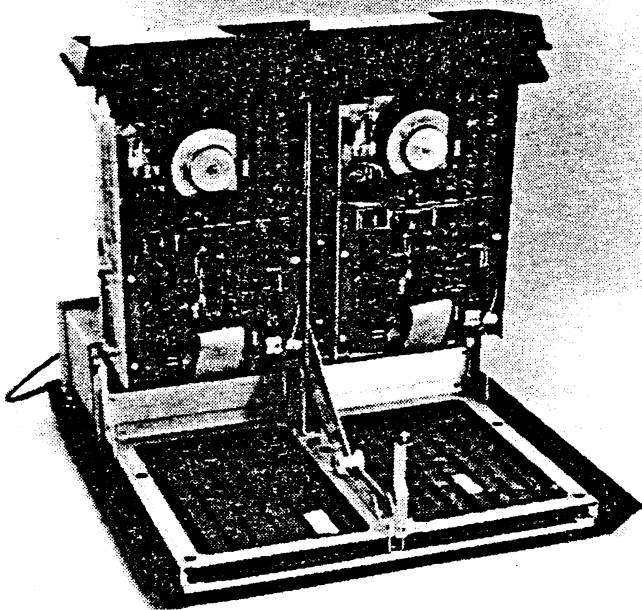
- e. Grasp drive at both front corners and gently lower drive to forward detent position.



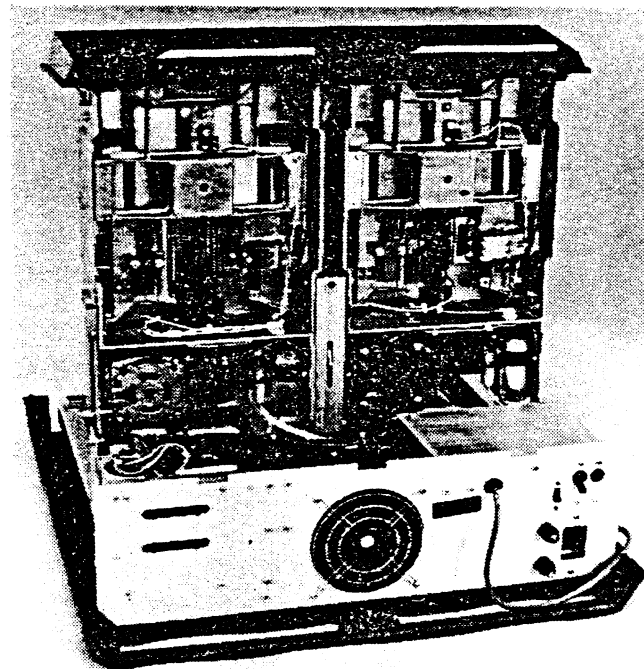
(a) Closed



(b) Half Open



(c) Full Open (Front View)



(d) Full Open (Rear View)

Figure 5-1. Dual Diskette Interior Access

- f. To completely lower drive, grasp at both corners and gently force drive down until closed.
- g. Replace retaining plate and tighten retaining plate screw.

5.4 LEFT AND RIGHT DIGITAL BOARDS

The left and right digital boards are located in guides mounted to the base plate (under the disk drives). See Figure 5-2.

- a. Remove all power from drive.
- b. Access drive underside (Paragraph 5.3).
- c. Extract left and right digital boards with built-in board ejectors.
- d. Replace boards with component side up by pushing boards down guides until boards seat.
- e. Close drive.

5.5 ANALOG BOARD

An analog board is mounted on the underside of each drive with five screws (Figure 5-3).

- a. Remove all power from drive.
- b. Access drive underside (Paragraph 5.3).
- c. On the analog board, disconnect J1, J2, J3 and J4.
- d. Remove analog board by removing five mounting screws.
- e. Install analog board with the component side away from the drive with five mounting screws.
- f. On the analog board, connect J1, J2, J3, and J4.
- g. Close drive.

5.6 DRIVE BELT

The disk drive belt is located on the under side of the drive behind the analog board (Figure 5-3).

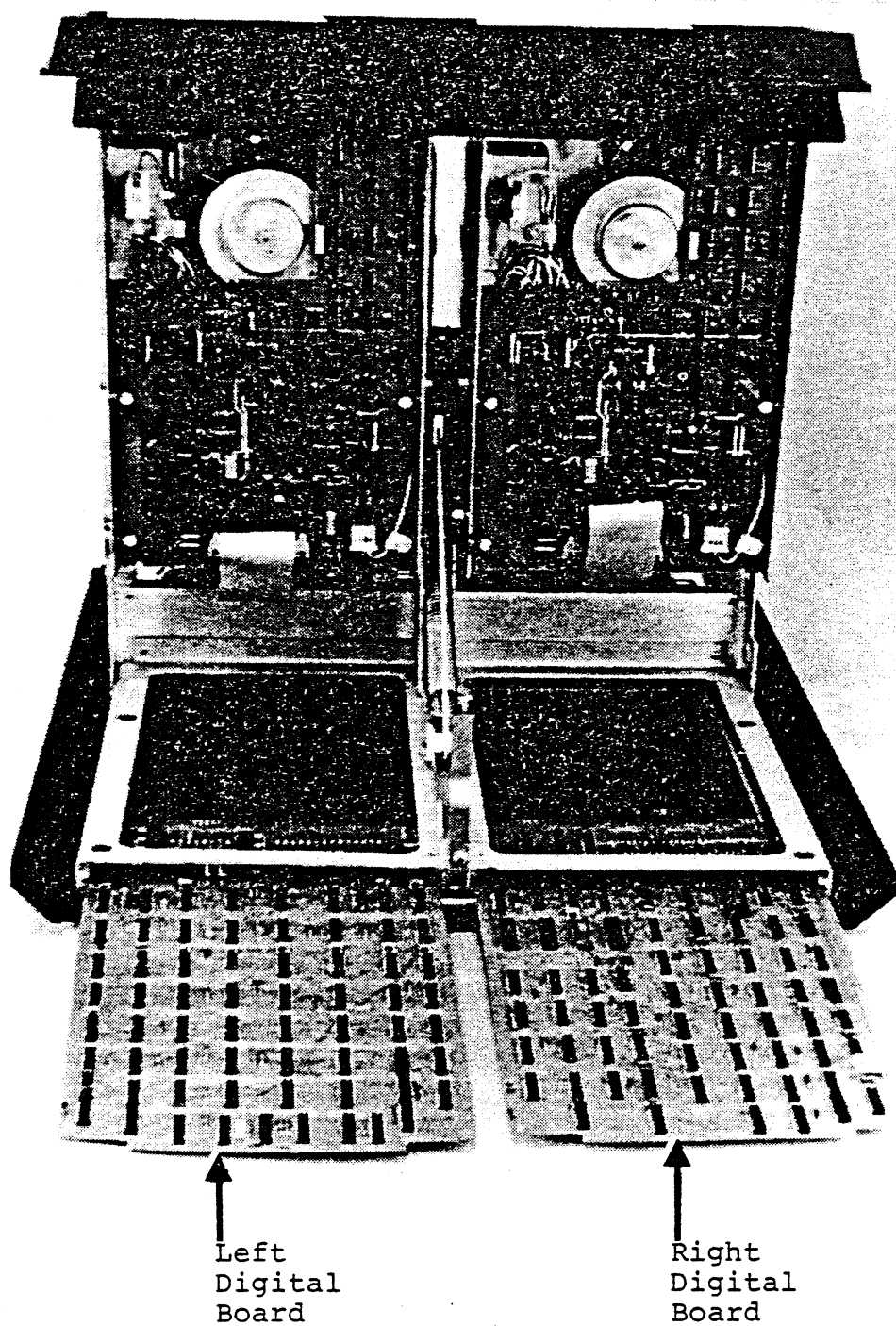


Figure 5-2. Dual Diskette Left and Right Digital Boards

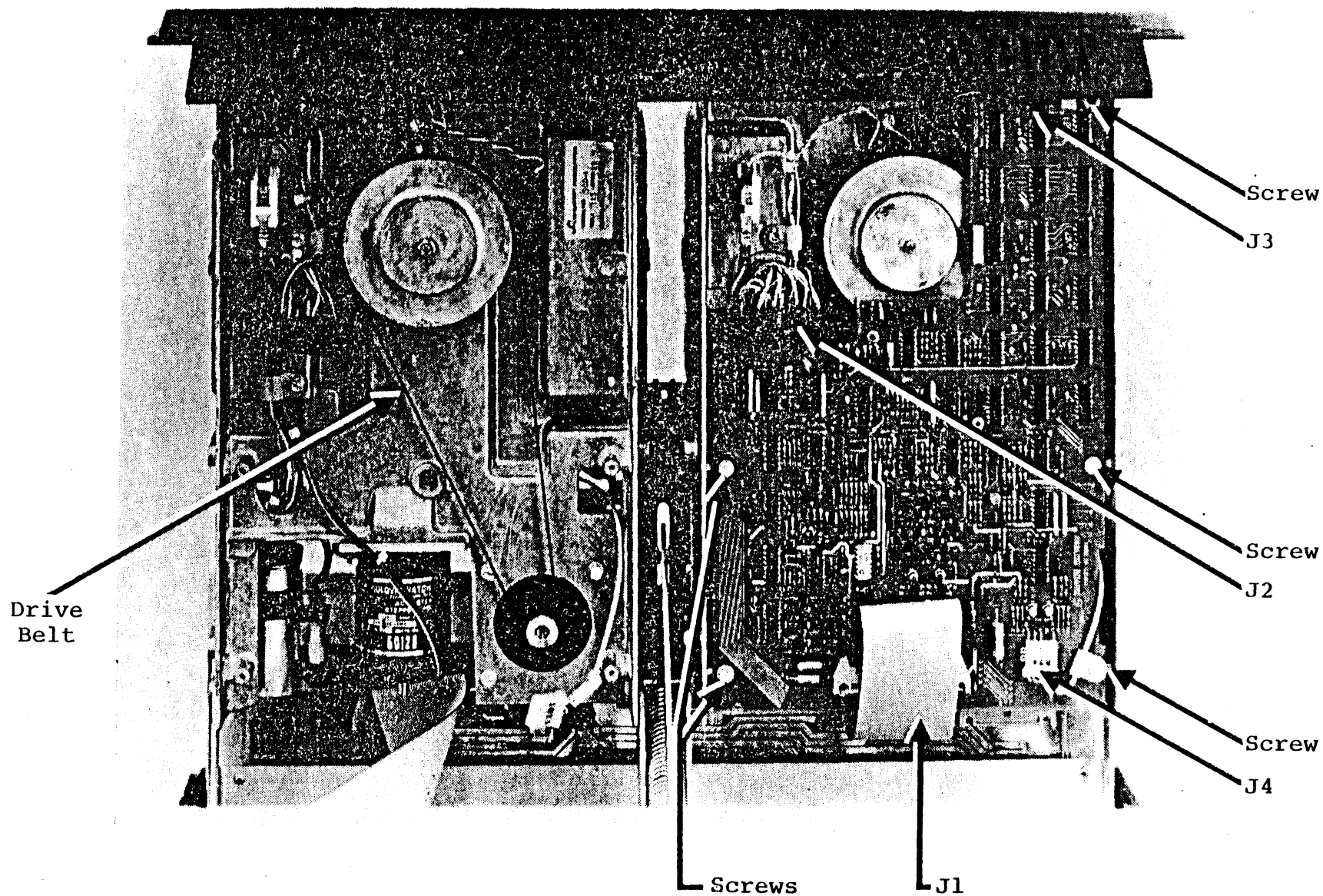


Figure 5-3. Dual Disk Drive Analog Board and Drive Belt

- a. Remove all power from drive.
- b. Access drive underside (Paragraph 5.3).
- c. Remove analog board (Paragraph 5.5).
- d. There are no tension adjustments on the drive pulley or spindle pulley. Roll the belt from the drive pulley and remove.
- e. Position replacement belt on the spindle pulley and roll onto the drive pulley.
- f. Install analog board.
- g. Close drive.

5.7 DRIVE ASSEMBLY REMOVAL AND INSTALLATION

5.7.1 DRIVE ASSEMBLY REMOVAL

This procedure will remove either of the drive assemblies (Figure 5-4).

- a. Remove input power from drive assembly and processor.
- b. Remove housing (Paragraph 5.2).
- c. Access drive topside (Paragraph 5.3).
- d. At drive AC capacitor, disconnect AC line connector J30.
- e. Access drive under side (Paragraph 5.3). Leave drive in vertical position.
- f. On analog board, disconnect J1, and J3. Route J1 ribbon cable to top side of drive to avoid damage to cable and analog board.
- g. Lift drives to over-center position (Paragraph 5.3). Remove spring and drive support arm as follows:
 - (1) Pull the drive support and extension spring towards the front of the drive and disengage the drive support from the drive support bushing (Figure 5-5).

Front Panel Screws

Handle Plate Screws (Hidden)

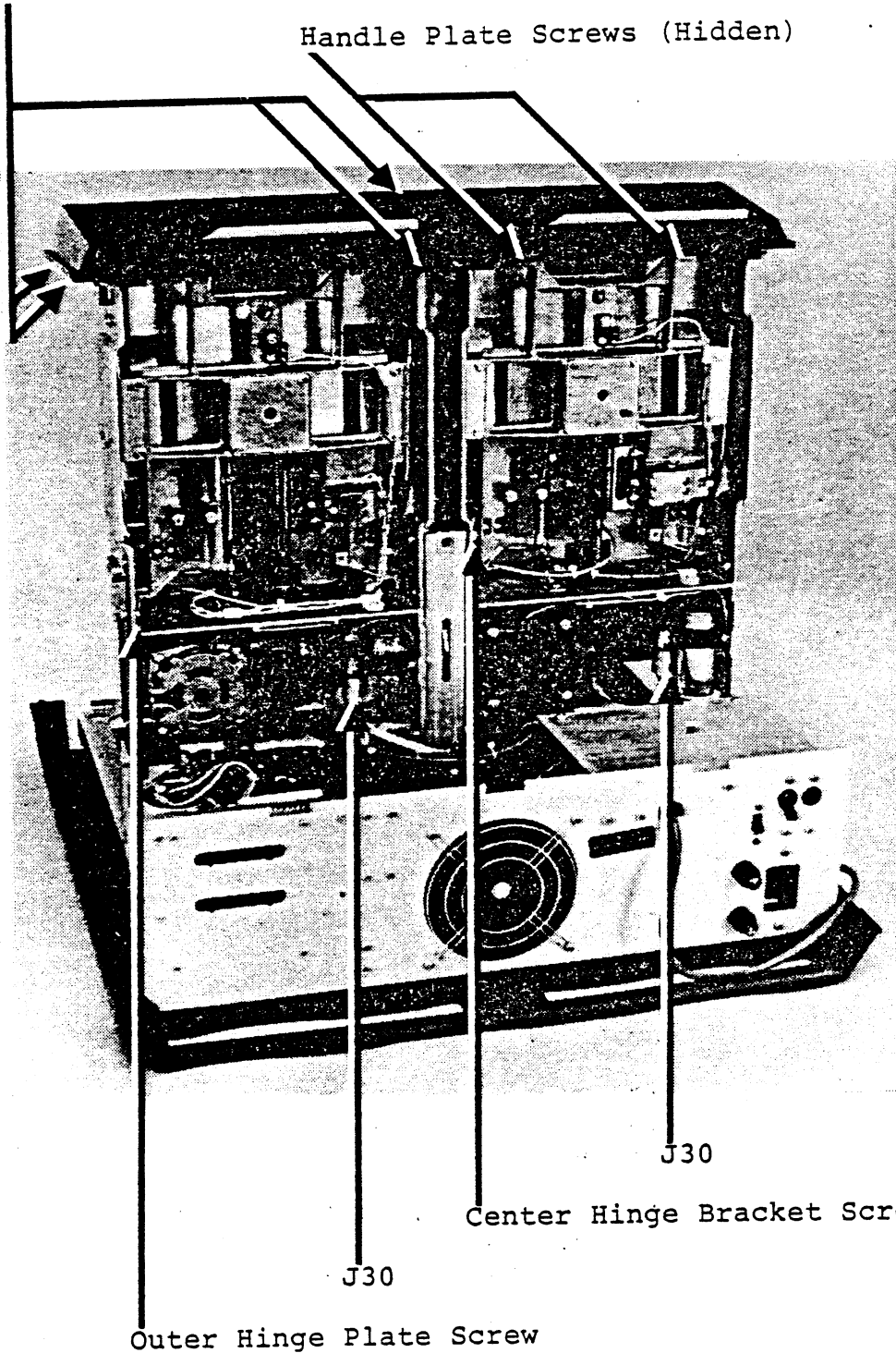


Figure 5-4. Drive Assembly

- (2) Disengage the extension spring from the center hinge bushing and remove the support and spring assembly.
- h. Remove the one lower screw holding drive to front panel.
 - i. Lower drives to closed position.
 - j. Remove the two upper screws holding drive to front panel.
 - k. Loosen handle plate screws.
 - l. Remove screw holding outer hinge plate to drive, and pull plate away from drive.
 - m. Remove screw and nut holding center hinge bracket to drives and lift bracket to approximately 90 degrees.
 - n. Install cartridge guide adjustment tool to secure cartridge guide in down position.
 - o. Remove drive.

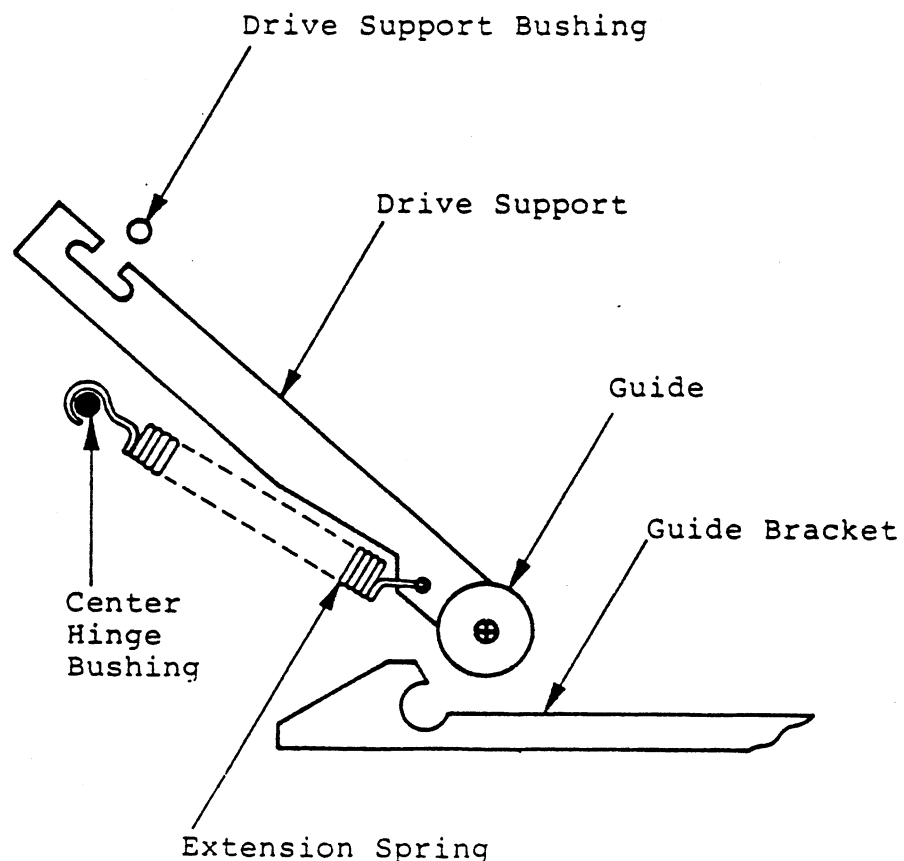


Figure 5-5. Drive Support Assembly

5.7.2 DRIVE ASSEMBLY INSTALLATION

- a. Lift center hinge bracket to approximately 90 degrees and position replacement drive on chassis.
- b. Install the two upper front panel screws.
- c. Mount drive to center hinge bracket with screw and nut.
- d. Position outer hinge plate against drive and secure with screw.
- e. Ensure cartridge guide adjustment tool is in alignment position. Tighten handle plate screws.
- f. Lift drives to over-center position and attach spring and drive support arm. Move drive to vertical position.
- g. Secure drive to front panel with three screws.
- h. On analog board, connect J1, and J3.
- i. Lower drive to closed position.
- j. At drive AC capacitor, connect AC line connector J30.
- k. Replace dust cover with 1/4 turn fastener.
- l. Replace retaining plate and tighten retaining plate screw.
- m. Replace housing.

5.8 INTERCONNECT BOARD

The interconnect board is located between the drive power supply and the rear of the drive assembly chassis. The interconnect board is mounted to the drive chassis with seven Phillips screws. See Figure 5-6.

- a. Remove all power from drives.
- b. On interconnect board, disconnect J1, J2, J5, J6, and J7.
- c. Raise drives to vertical position (Paragraph 5.3).

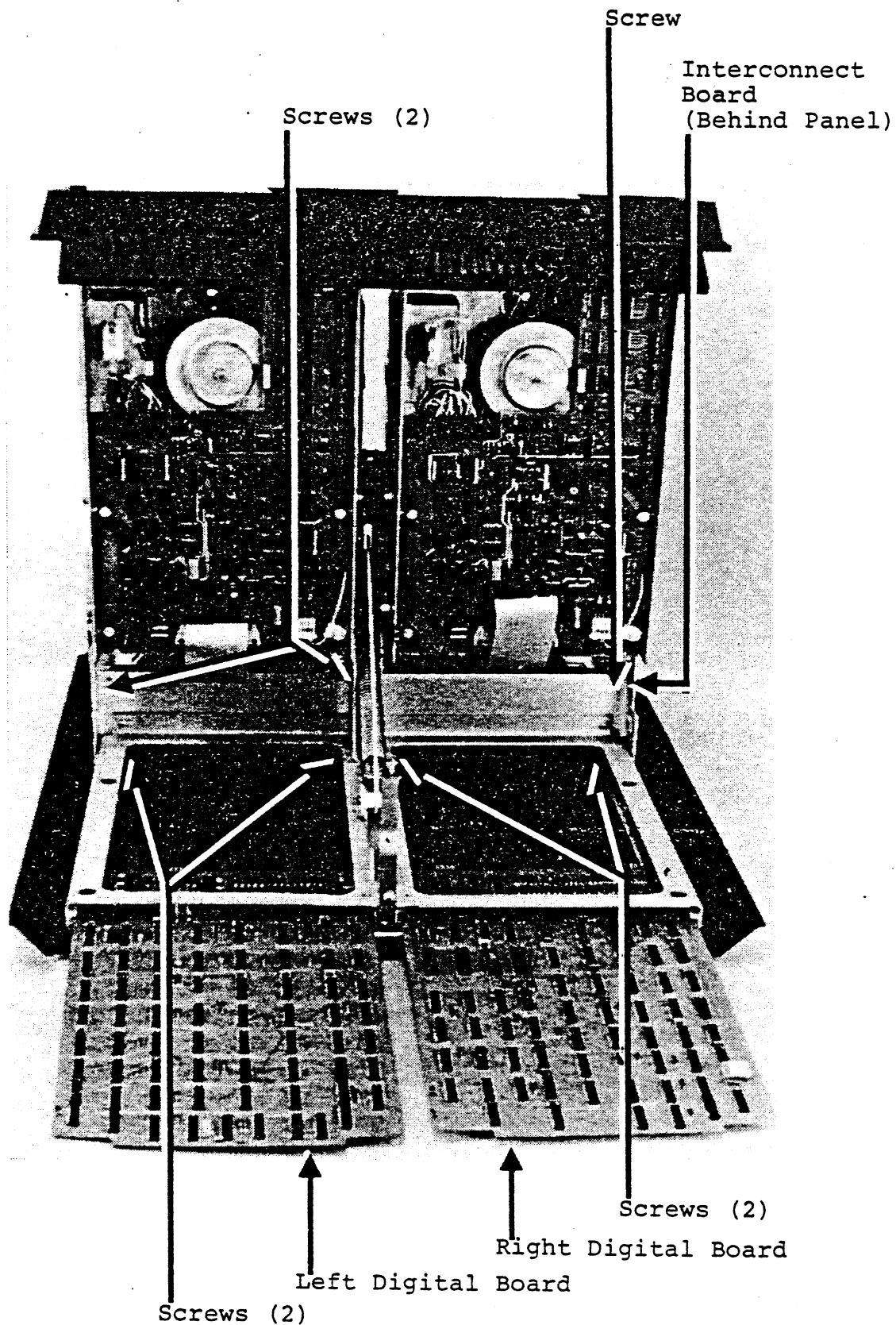


Figure 5-6. Interconnect Board

- d. Pull both left and right digital boards enough to disconnect them from interconnect board.
- e. At rear of drive chassis, remove seven screws holding interconnect board to chassis.
- f. Lift interconnect board from between power supply and drive chassis.
- g. Before positioning replacement board, ensure that left and right digital boards are pulled out of the way.
- h. With drives in vertical position, mount interconnect board to rear of drive chassis with seven screws.
- i. Push in both left and right digital boards until they seat.
- j. Lower drives to closed position.
- k. On interconnect board, connect J1, J2, J5, J6, and J7.

5.9 POWER SUPPLY

The drive power supply is mounted on the rear of the drive assembly (Figure 5-7) with four screws (two on each end of the power supply). See Figure 5-8.

- a. Remove all power from the drive.
- b. At motor capacitor on each drive, disconnect motor harness from J30.
- c. At interconnect board (A2), disconnect I/O cable from J5, power harness from J6, and power cable from J7.
- d. Remove four power supply mounting screws from the drive base plate (two screws at each end of the power supply) and lift power supply from drive.
- e. Place power supply on drive base plate and align mounting holes with screw holes. Be sure that I/O cable to interconnect board passes under power supply. Install four mounting screws.

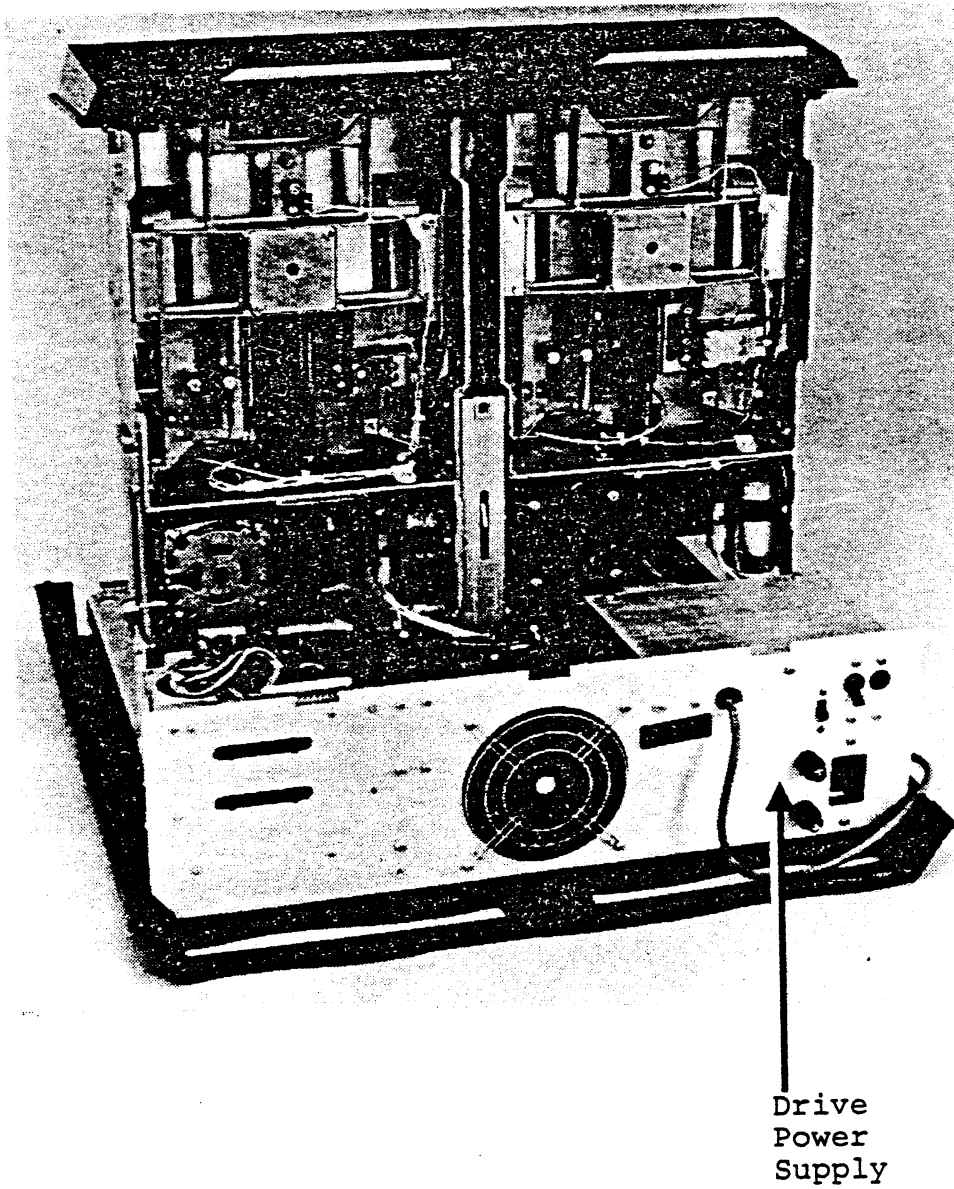


Figure 5-7. Dual Disk Drive Power Supply Attached

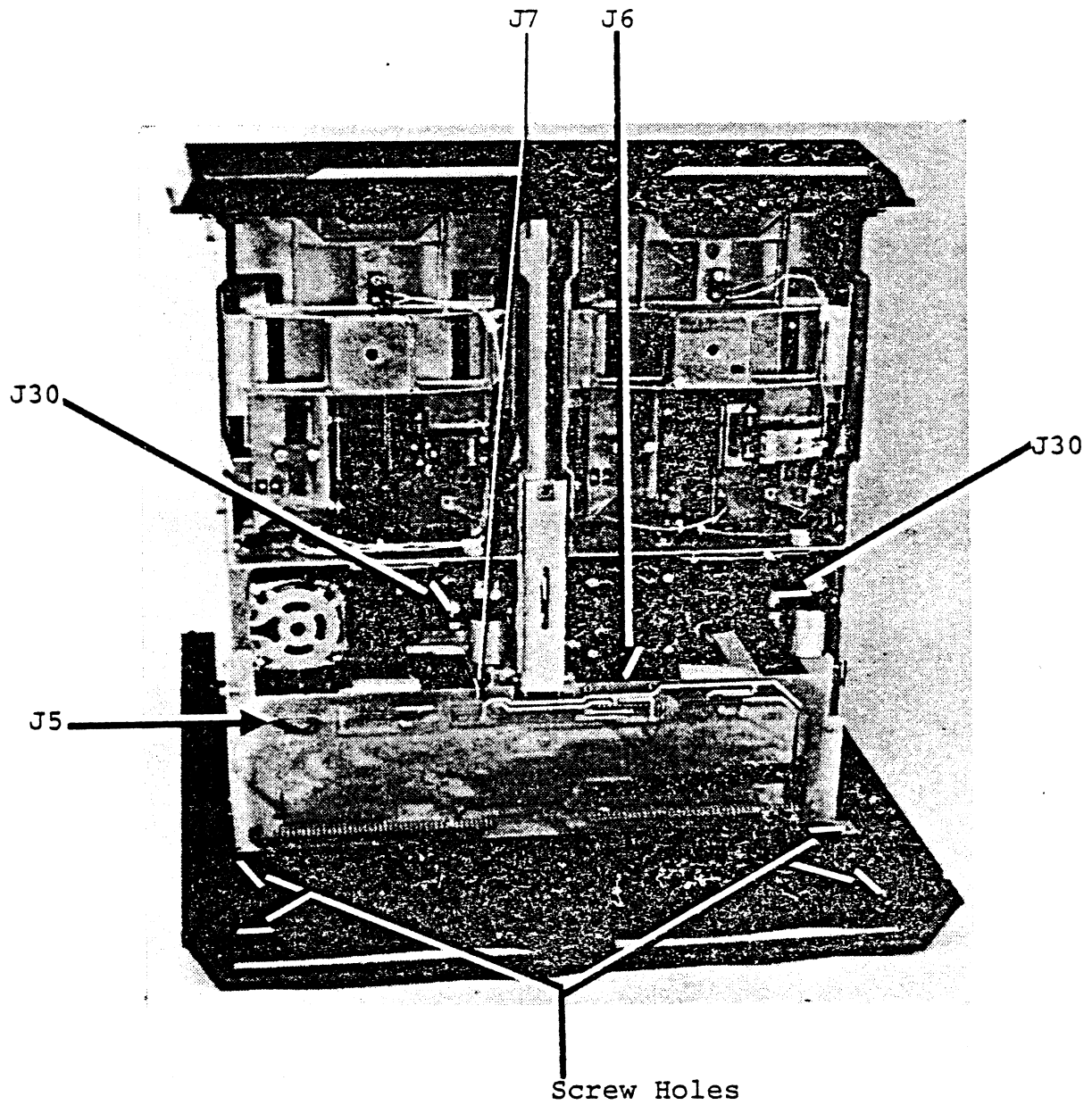


Figure 5-8. Dual Disk Drive Power Supply Removed

- f. At interconnect board (A2), connect I/O cable to J5, power harness to J6, and power cable to J7.
- g. At motor capacitor on each drive, connect motor harness to J30.

5.10 FAN

The drive fan is mounted on the drive power supply chassis with four mounting screws.

- a. Remove all power from drive.
- b. Remove rear panel (Paragraph 5.2.2).
- c. At fan, disconnect fan connector.
- d. Remove four screws holding fan to chassis.
- e. Lift fan straight up from power supply.
- f. Position new fan on power supply chassis.
- g. Position fan finger guard in place and secure fan and guard with four mounting screws.
- h. At fan, connect fan connector.
- i. Install rear panel.

5.11 HEAD LOAD PAD BUTTON

- a. Hold plastic load arm away from head. Squeeze the locking tabs together with long nose pliers and press load pad out of load arm.
- b. Install new load pad by inserting locking tabs thru hole in load arm.

SECTION 6

OPTIONS

6.1 115VAC/230VAC POWER OPTION

The dual diskette drive can be connected to operate on voltages of 100VAC, 115VAC, or 127VAC, or of 200VAC, 230VAC, or 254VAC. The connections for either of these voltages are shown in Figures 6-1 and 6-2. All voltage connections are made on the power supply terminal block TB1.

6.2 60Hz to 50Hz CONVERSION

To convert the dual diskette from 60Hz to 50Hz operation, the drive pulley and belt on each disk drive must be changed. No changes are required to the power transformer connections.

The following procedures are applicable to the Diskette Drive Unit only.

PARTS REQUIRED:

<u>Description</u>	<u>Part Number</u>	<u>Vendor P/N</u>	<u>Quantity</u>
Conversion Kit (50Hz) Consisting of:	08-1013-001(8)		1 per drive
Drive Pulley	20-1375-001(5)		1
Belt	58-0713-001(3)	50355	1

TOOLS REQUIRED:

1/16 Allen Wrench
Common Screwdriver

PROCEDURE:

60Hz to 50Hz

- a. Remove belt and drive pulley.
- b. Replace drive pulley with 50Hz pulley P/N 20 1375.
- c. Replace drive belt with 50Hz belt P/N 58 0713.

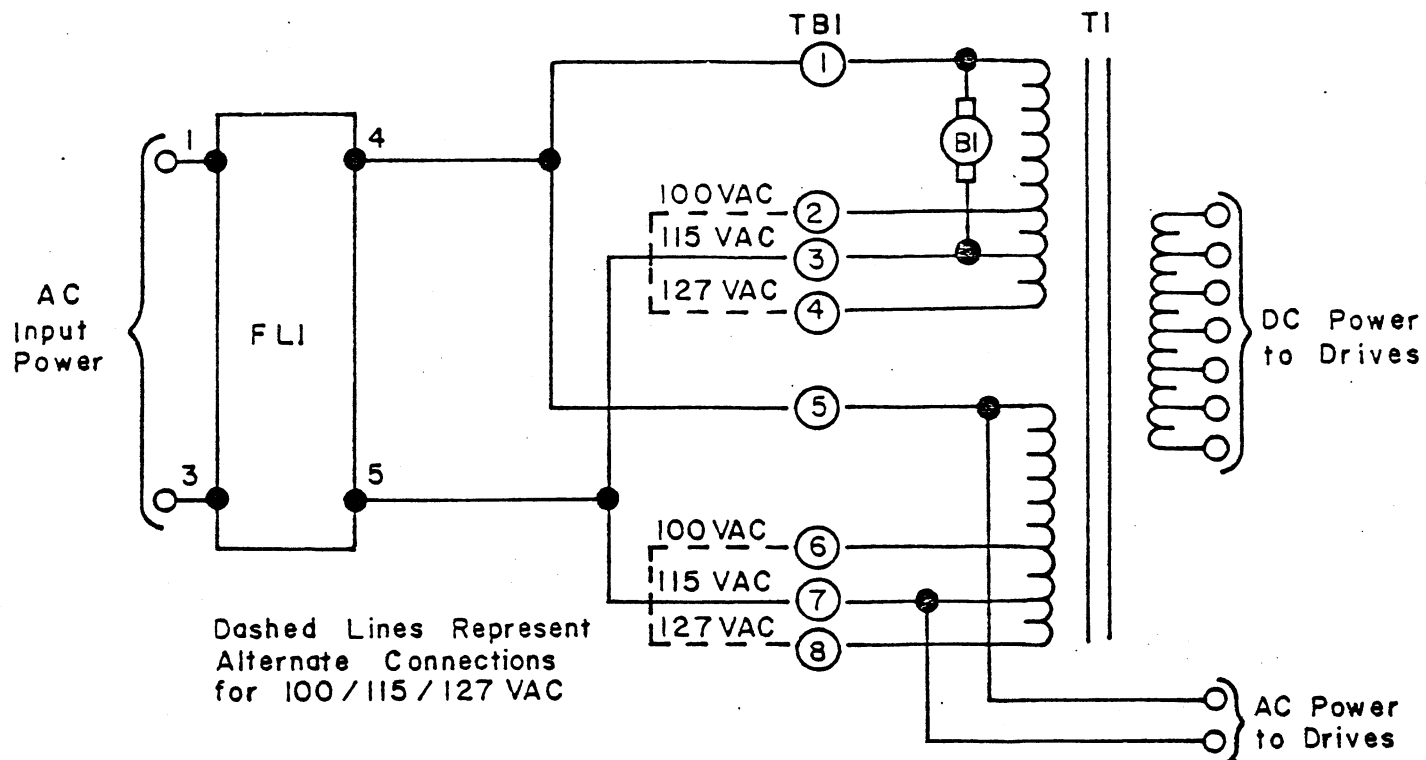


Figure 6-1. Power Supply Connections for 100/115/127 VAC Input Power

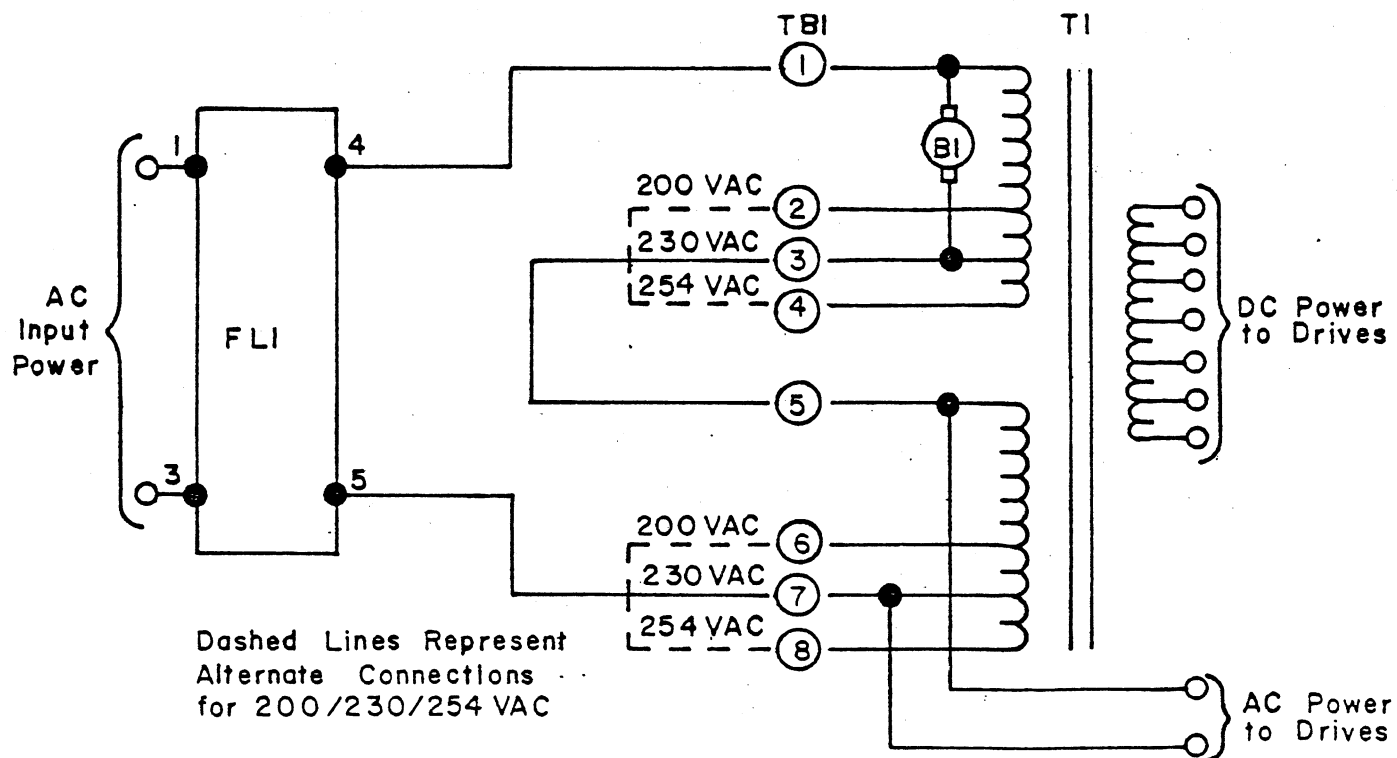


Figure 6-2. Power Supply Connections for 200/230/254 VAC Input Power

6.3 DUAL DISKETTE ADDRESS JUMPERS

The dual diskette address can be jumper selected on the right digital board (Figures 6-3 and 6-4). For an address of 0010 (decimal 2), jumper E-points E1, E2, and E4 to ground. As E-points E5 thru E8 are connected to ground, address 0010 can be selected by jumpering E1 to E6, E2 to E8, and E4 to E5 (Figure 6-4). Legal addresses for the dual diskette are 000 through 003 octal. The dual diskette address is factory set at 000 octal (E1 through E4 jumpered to ground).

The E-point arrangement on the board (Figure 6-4a) is ordered E4, E1, E3, and E2. This is not logical order. Logical order is E1, E2, E3, and E4 where E1 is the most significant bit and E4 is the least significant bit. A logical order drawing of the E-points is shown in Figure 6-4b.

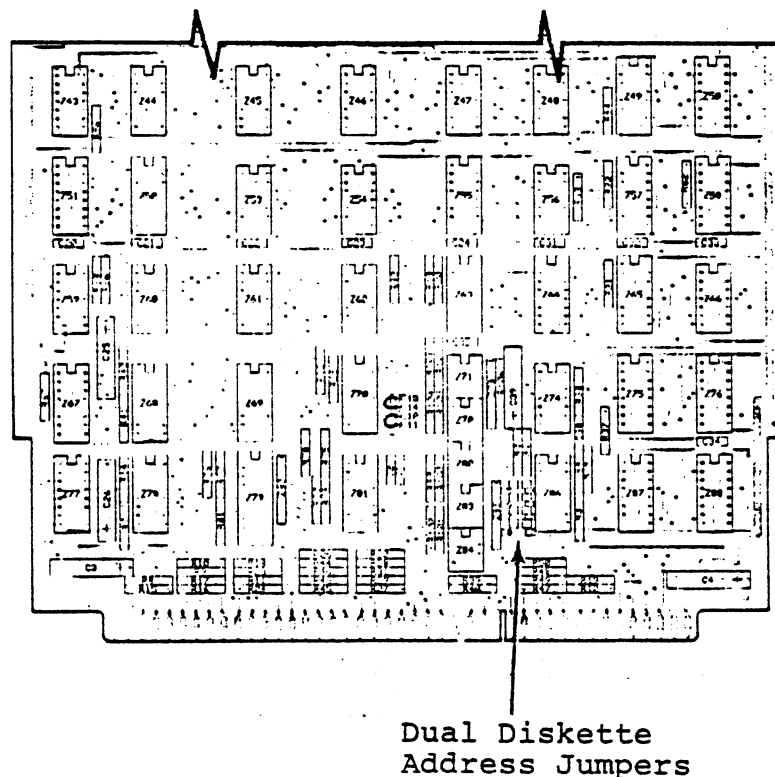
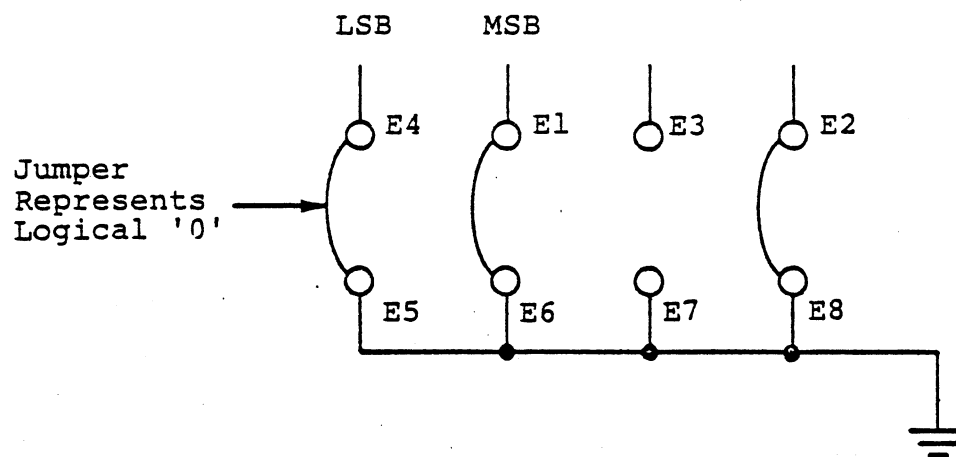
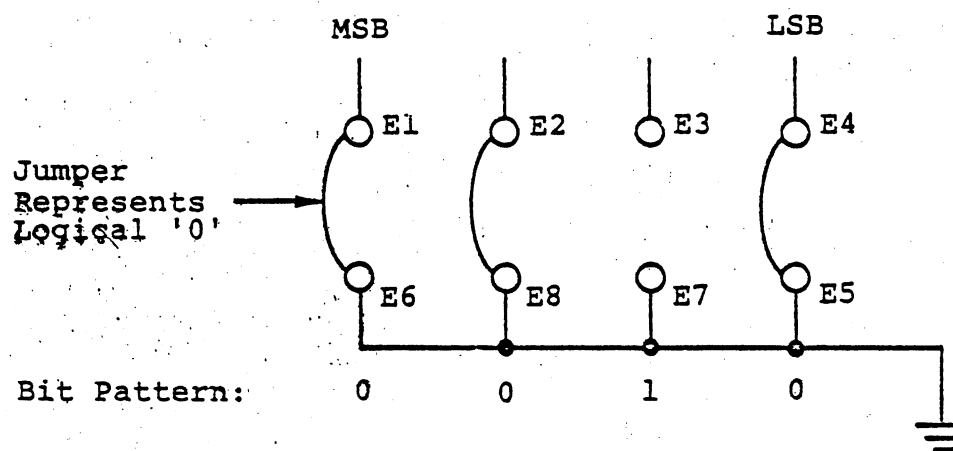


Figure 6-3. Dual Diskette Address Jumpers



Jumpers set for address of 0010.

(a) E-point Arrangement on Board



Jumpers set for address of 0010.

(b) Logical Arrangement of E-points

Figure 6-4. Dual Diskette Address

SECTION 7
PARTS LIST AND IPB'S

7.1 PARTS LIST

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>REF DES</u>
<u>ASSEMBLIES</u>		
11-0525-001(3)	Assy, Dual Diskette Drive	
10-0975-003(3)	Assy, Floppy Disk Drive	A1A5
10-1036-001(4)	Assy, <u>+12</u> Volt Heatsink	A2A2
10-1037-001(7)	Assy, 5 Volt Heatsink	A2A1
10-1043-001(2)	Assy, Pushbar	A1A7
10-1048-004(6)	Assy, Drive Module	A1
10-1421-001(8)	Assy, Power Supply	A2
<u>PWA'S</u>		
10-1015-002(0)	PWA, Interconnect Board	A1A2
10-1019-001(9)	PWA, Regulator Board	A2A3
10-1145-001(7)	PWA, Terminator	A3
10-1341-001(3)	PWA, Analog Board II	A1A1
10-1414-001(0)	PWA, Left Digital Board III	A1A3
10-1415-001(3)	PWA, Right Digital Board III	A1A4
10-1422-001(1)	PWA, Microbus Interface II	A2A4
<u>WIRE AND CABLES</u>		
10-1047-001(4)	CA, 40 Conductor	A1A6
10-1147-001(3)	CA, 26 Conductor, 7 in.	
10-1147-002(6)	CA, 26 Conductor, 36 in.	
10-1321-001(9)	CA, 26 Conductor PC	

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>REF DES</u>
<u>MISC PARTS</u>		
08-1013-001(8)	Conversion Kit, 60Hz to 50Hz	
36-0075-001(6)	Capacitor, Motor, 5 uf, 370V	C1
45-0045-001(7)	Fan Cord	
45-0146-002(2)	Power Cord, 10a, 96"	P2
47-0031-001(2)	Fuse, 8a, 250V, SB (Power Line)	F1,F2
47-0041-001(9)	Circuit Breaker, 5a	CB1
47-0042-001(2)	Fuse (on Regulator Bd, A5)	F1
48-0001-001(8)	Line Filter, 2a	FL1
55-0014-001(2)	Belt, 60Hz	
55-0014-002(5)	Belt, 50Hz	
57-0009-001(4)	Fan Muffin	B1
57-0022-001(7)	Motor, Drive	B2
58-1031-001(1)	Load Button Kit (Plastic Arm)	
78-0015-001(4)	Thermal Switch	TS1
78-0049-001(7)	Solid State Relay	K1
78-0050-001(7)	Switch, Power	S1
81-0081-001(1)	Transformer, Power	T1

7.2 ILLUSTRATED PARTS BREAKDOWN

The included set of IPB'S cover the major mechanical assemblies of the Dual Diskette. The physical views of the electrical assemblies are located behind their corresponding schematic diagrams in Section 8 of this manual.

The IPB set is composed of the following assembly drawings and their respective parts lists:

<u>FIGURE NUMBER</u>	<u>DRAWING NUMBER</u>	<u>DRAWING TITLE</u>	<u>REF DES</u>
7-1	11-0525	Dual Diskette Drive Unit Assy	U1
7-2	10-1048	Drive Module Assy	U1A1
7-3	10-0975	Drive Assembly, Floppy Disc	U1A1A5
7-4	10-1421	Power Supply Assy II	U1A2

SECTION 8

REFERENCE MATERIAL

8.1 REFERENCE DRAWINGS

The reference drawings consists of wiring and schematic diagrams, and PWA outlines.

NOTE

The schematics and drawings contained in this section are copies of released drawings and may or may not include all existing Engineering Order (E.O.) changes. Schematics and drawings are replaced when outstanding E.O.'s are incorporated in the released drawing. If the accuracy or effectivity of a drawing is questionable, the Customer Service Engineer should review applicable Tech Tips and Field Change Orders for current E.O. status.

<u>FIGURE NUMBER</u>	<u>DRAWING NUMBER</u>	<u>DRAWING TITLE</u>	<u>REFERENCE DESIGNATOR</u>
<u>WIRING AND CABLING</u>			
8-1	01-0200	WD, Motor-Capacitor	
8-2	01-0698	ICD, Power Supply II	U1A2
8-3	01-0702	ICD, Dual Diskette Drive	
8-4	10-0932	HA, Index Floppy Disk Drive	
8-5	10-1043	Assy, Pushbar	
<u>DUAL DISKETTE PWA'S</u>			
8-6	01-0571	SD, Analog Board II	A1A1
8-6A	10-1341	PWA	
8-7	01-0694	SD, Left Digital Board III	A1A3
8-7A	10-1414	PWA	
8-8	01-0695	SD, Right Digital Board III	A1A4
8-8A	10-1415	PWA	

<u>FIGURE NUMBER</u>	<u>DRAWING NUMBER</u>	<u>DRAWING TITLE</u>	<u>REFERENCE DESIGNATOR</u>
--------------------------	---------------------------	----------------------	---------------------------------

DUAL DISKETTE PWA'S (Cont)

8-9	01-0703	SD, Microbus Interface Board II	A2A4
8-9A	10-1422	PWA	
8-10	01-0705	SD, Interconnect Board	A1A2
8-10A	10-1015	PWA	
8-11	01-0224	SD, Regulator Board	A2A3
8-11A	10-1019	PWA	
8-12	01-0344	SD, Terminator Board	U1A3
8-12A	10-1145	PWA	

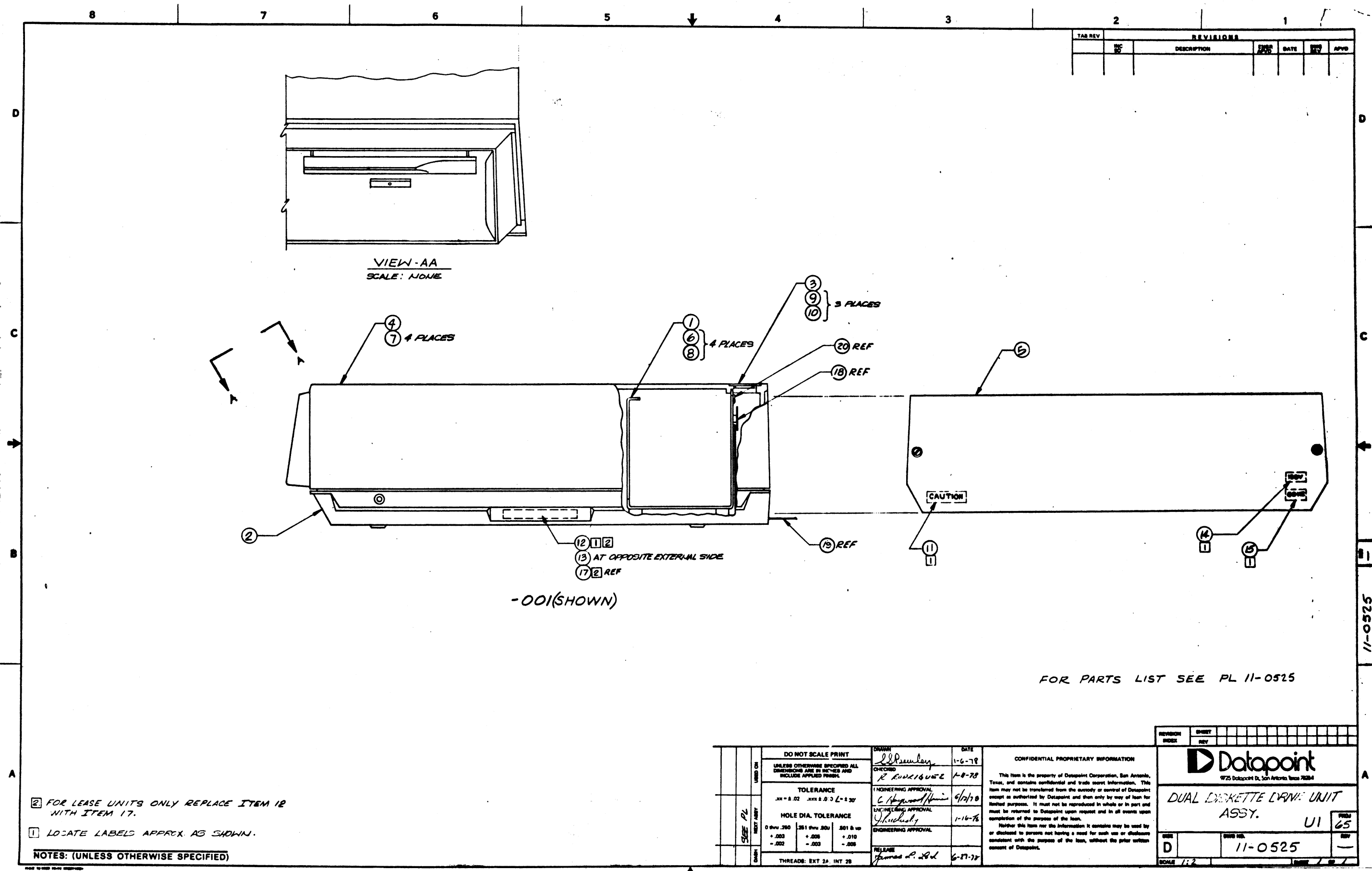


Figure 7-1.

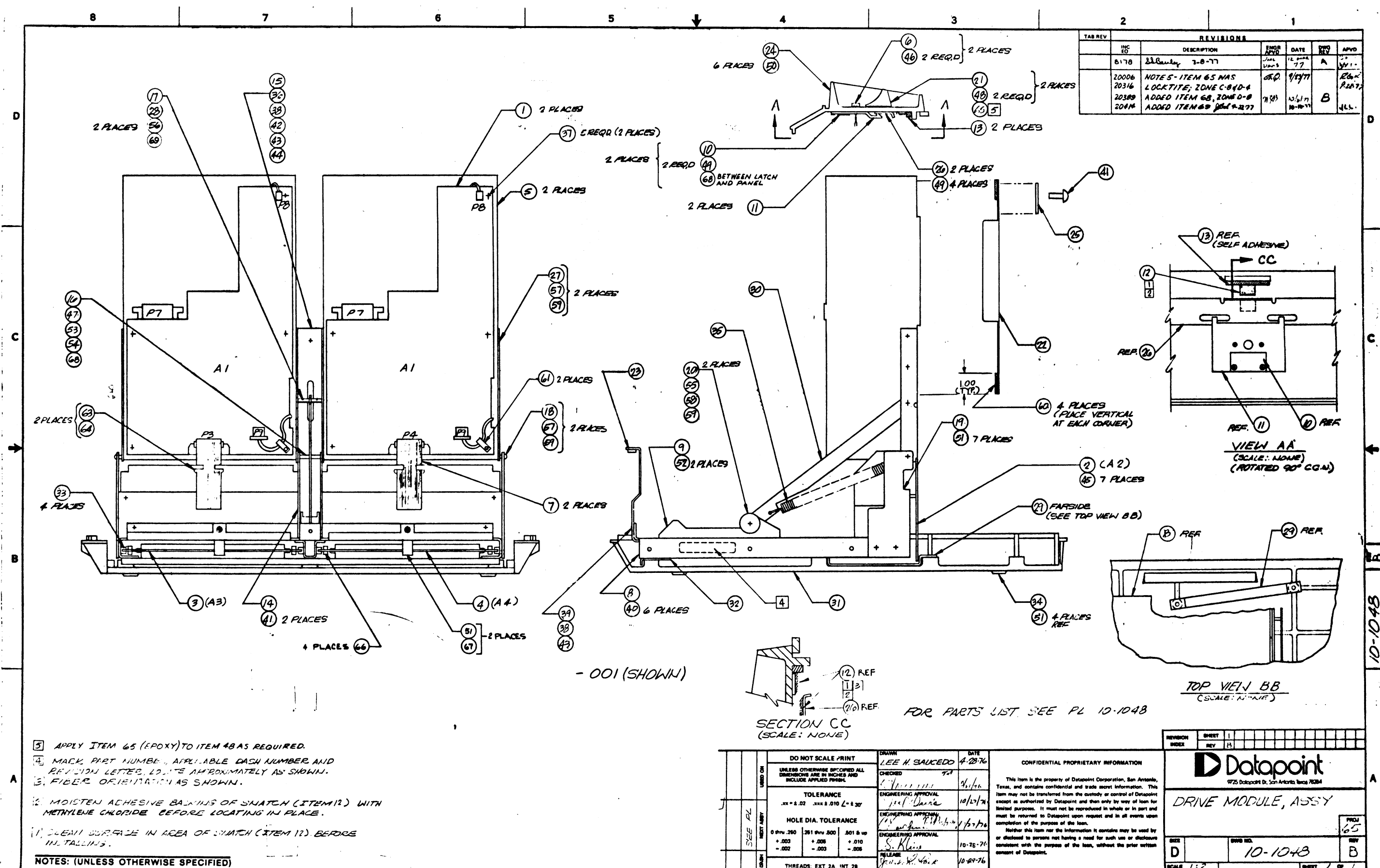
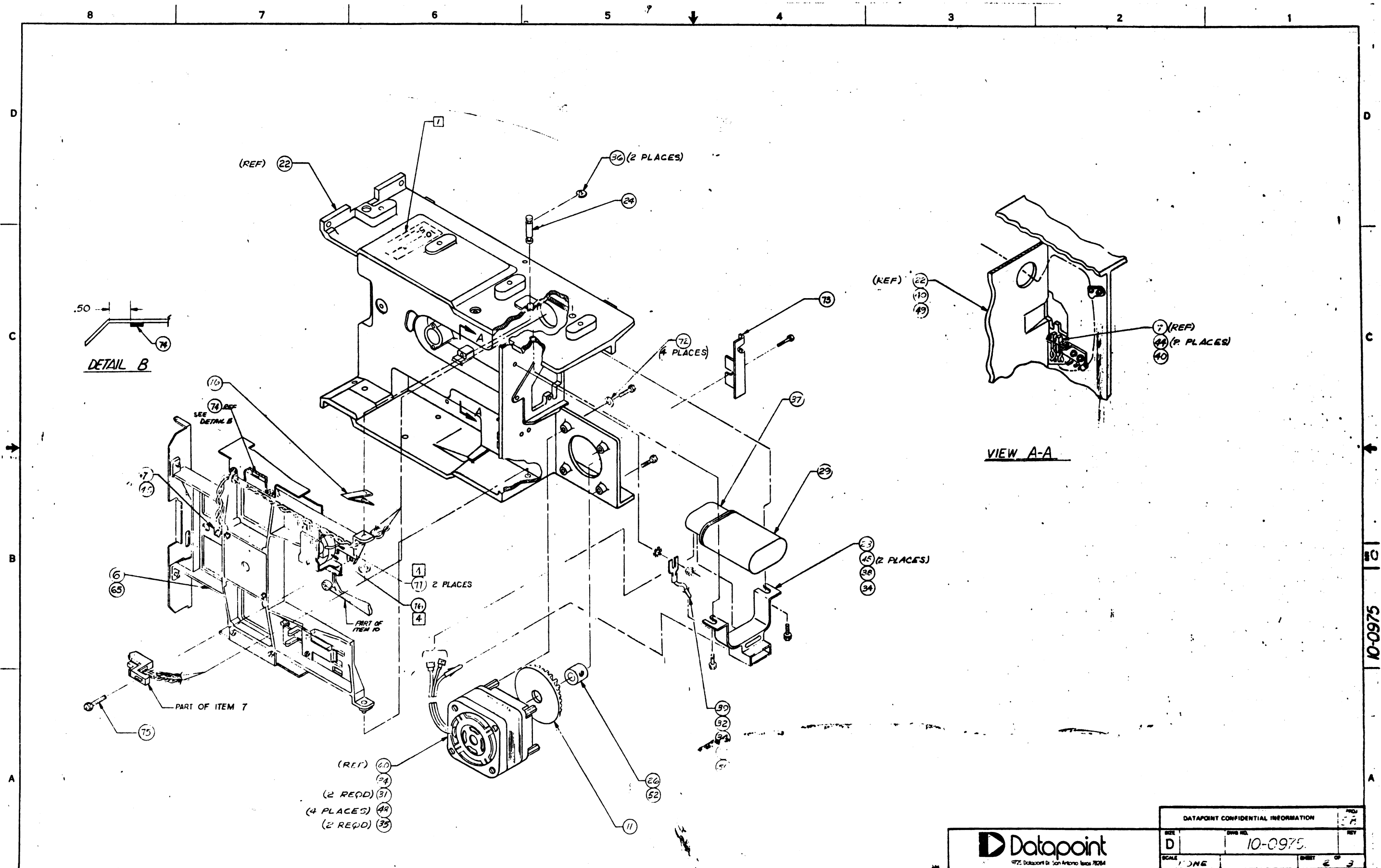


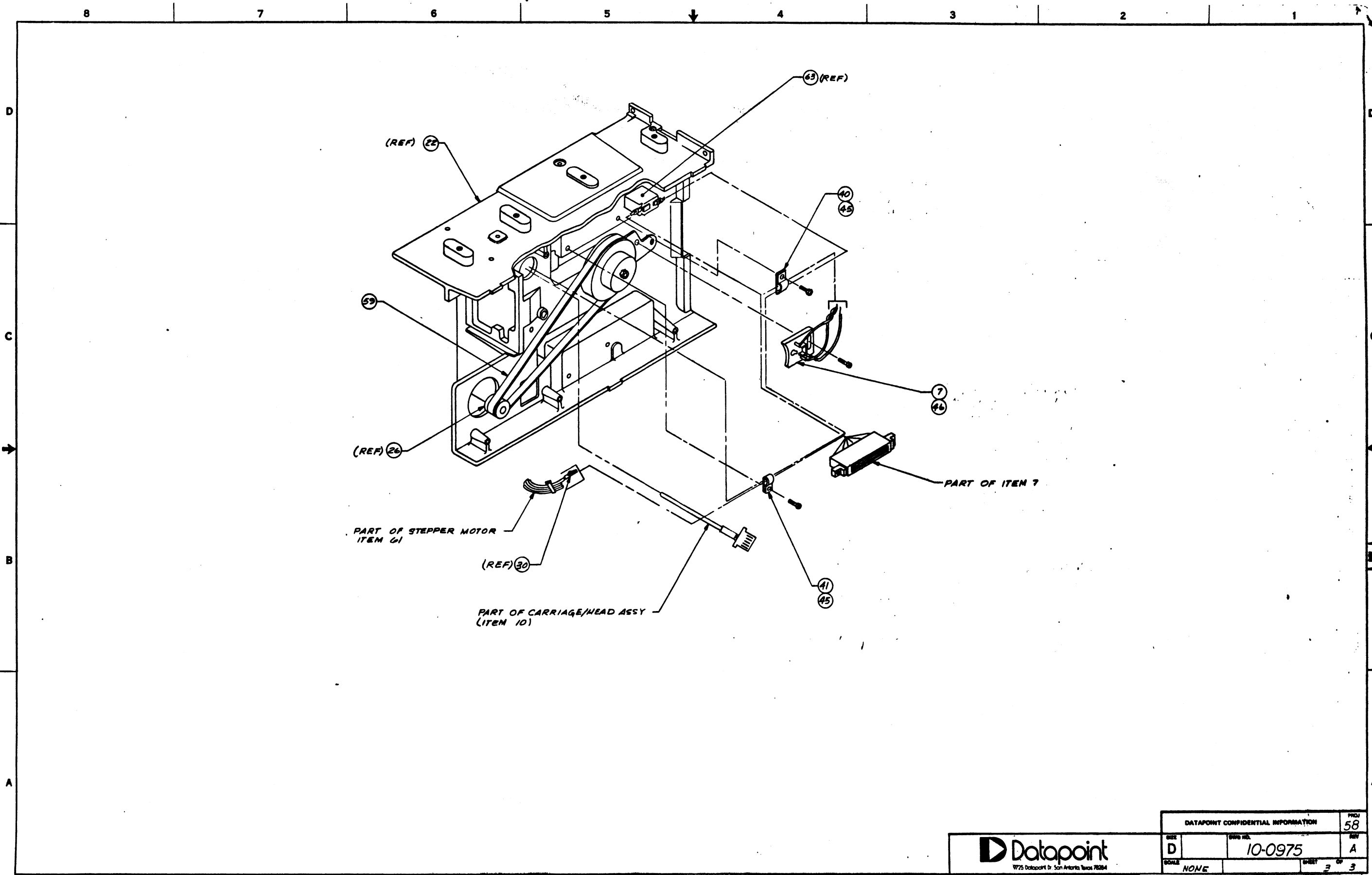
Figure 7-2.



Datapoint
972, Datapoint Dr. San Antonio, Texas 78204

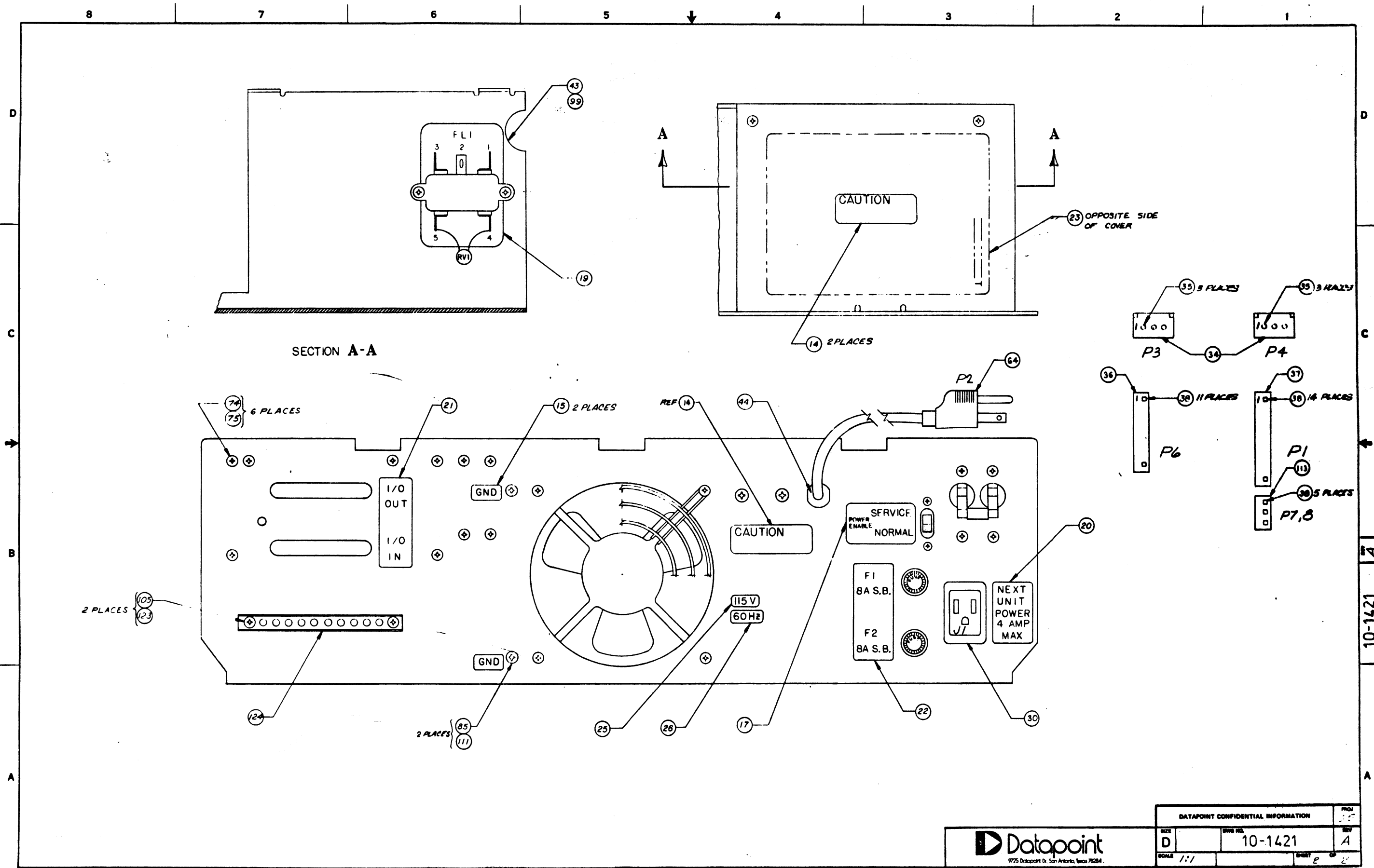
DATAPoint CONFIDENTIAL INFORMATION		
SIZE D	DATE 10-0975	REV 1
SCALE NONE	SHEET 2	OF 3

Figure 7-3. (Sht. 2)



Datapoint				DATAPoint CONFIDENTIAL INFORMATION		PROJ
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NONE				A		REV
3				3		REV

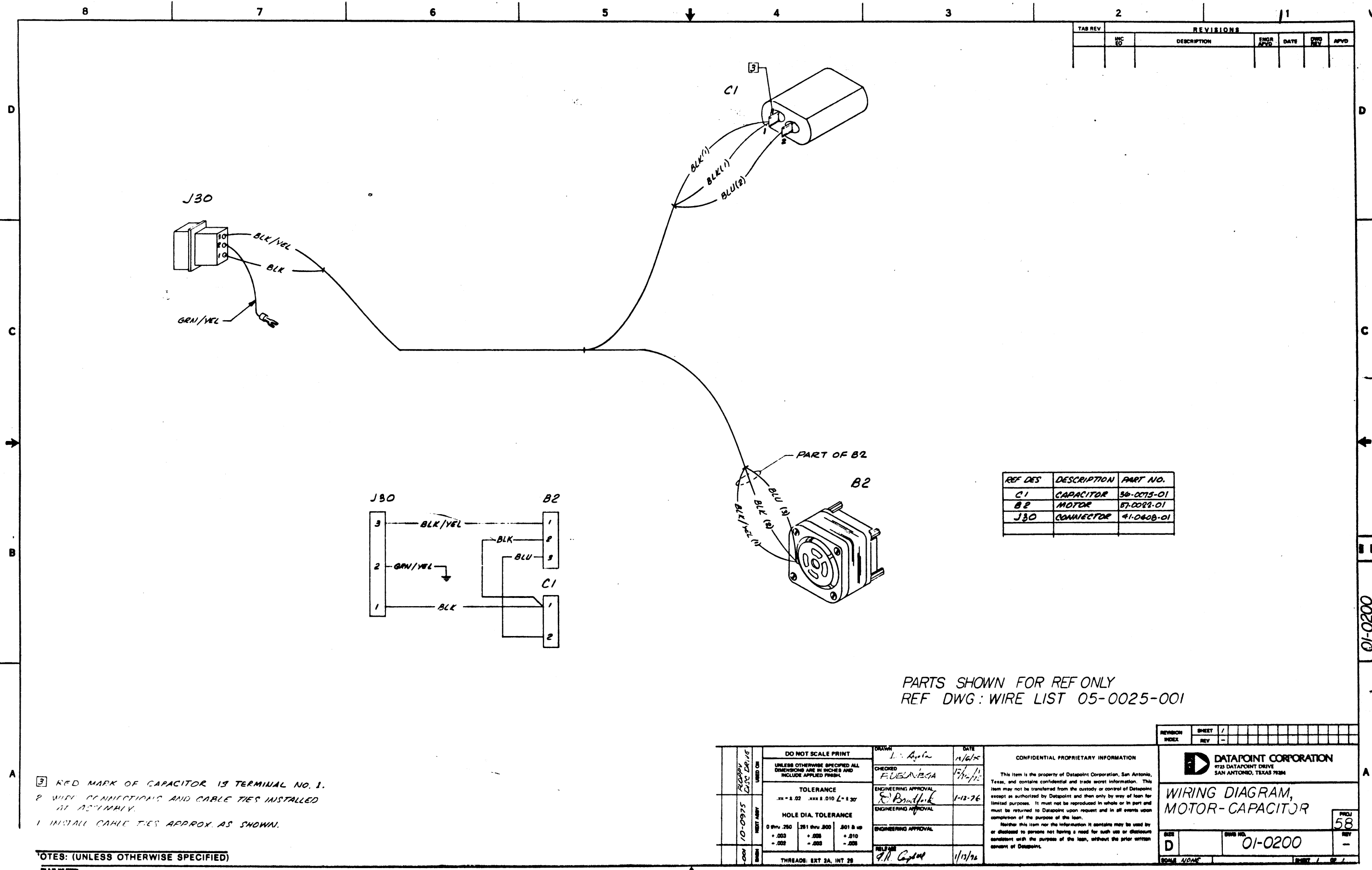
Figure 7-3. (Sht. 3)



Datapoint CONFIDENTIAL INFORMATION			
SIZE	D	DATE	10-1421
SCALE	1:1	SHEET	2
		REV	A

Datapoint
9725 Datapoint Dr. San Antonio, Texas 78264

Figure 7-4. (Sht. 2)



- 3 RED MARK OF CAPACITOR IS TERMINAL NO. 1.
- 2 WIRE CONNECTIONS AND CABLE TIES INSTALLED AT ASSEMBLY.
- 1 INSTALL CABLE TIES APPROX. AS SHOWN.

NOTES: (UNLESS OTHERWISE SPECIFIED)

PARTS SHOWN FOR REF ONLY
REF DWG: WIRE LIST 05-0025-001

DO NOT SCALE PRINT		DRAWN: <i>L. Ayala</i>		DATE: <i>11/6/75</i>	
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND INCLUDE APPLIED FINISH.		CHECKED: <i>F. V. L. BSA</i>		<i>11/12/75</i>	
TOLERANCE - .XX ± .02 .XXX ± .010 L ± .30"		ENGINEERING APPROVAL: <i>R. Bradford</i>		1-12-76	
HOLE DIA. TOLERANCE 0 thru .250 .251 thru .500 .501 & up + .003 + .008 + .010 - .002 - .003 - .008		ENGINEERING APPROVAL:			
THREADS: EXT 2A, INT 2B		RELEASED: <i>G. H. Caplan</i>		<i>1/13/76</i>	

CONFIDENTIAL PROPRIETARY INFORMATION	
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REVISION INDEX	SHEET 1	REV -
DATAPOINT CORPORATION 4723 DATAPOINT DRIVE SAN ANTONIO, TEXAS 78244		
WIRING DIAGRAM, MOTOR-CAPACITOR		
SIZE D	DWG NO. 01-0200	PROJ 58

Figure 8-1.

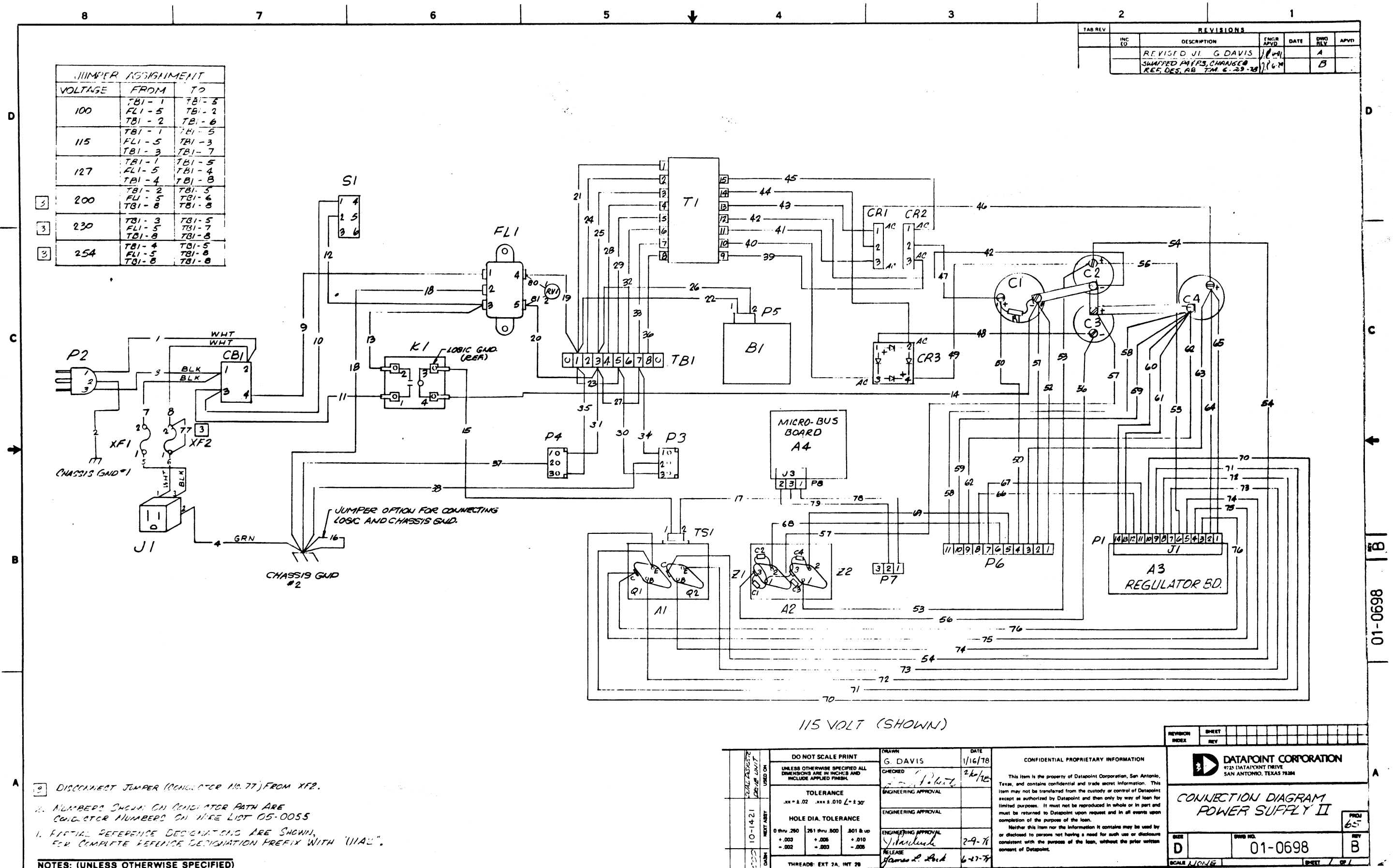


Figure 8-2.

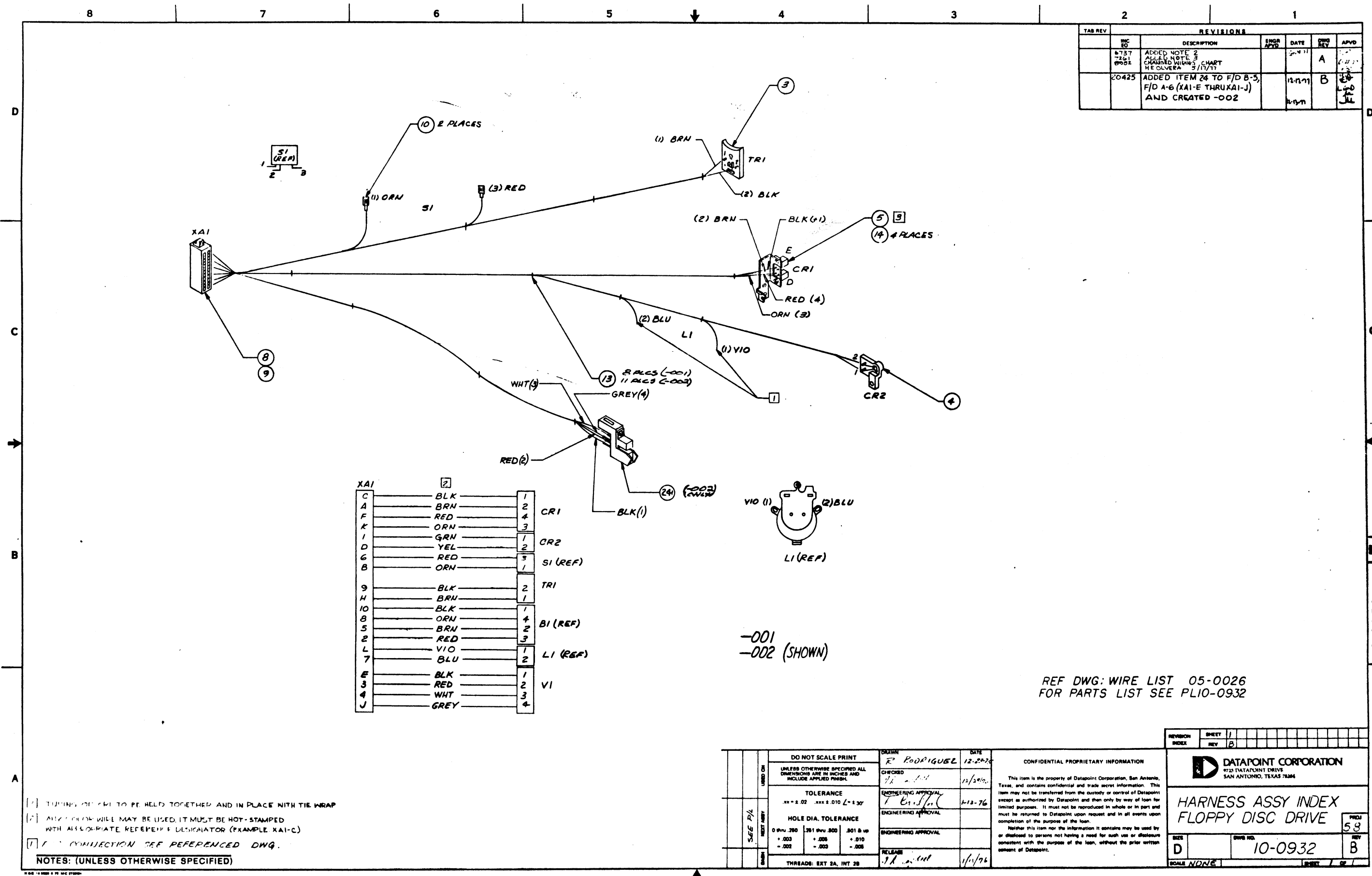


Figure 8-4.

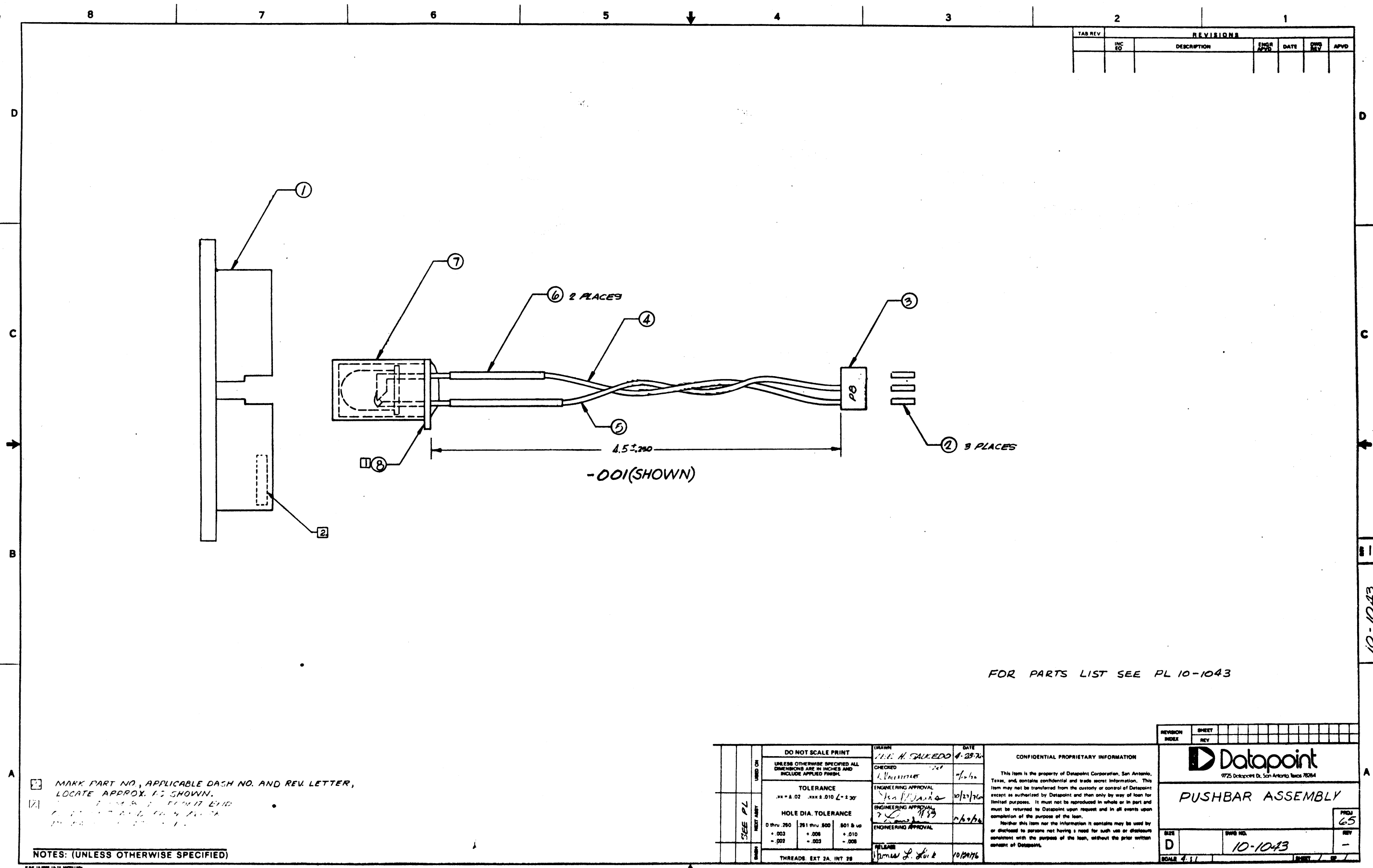
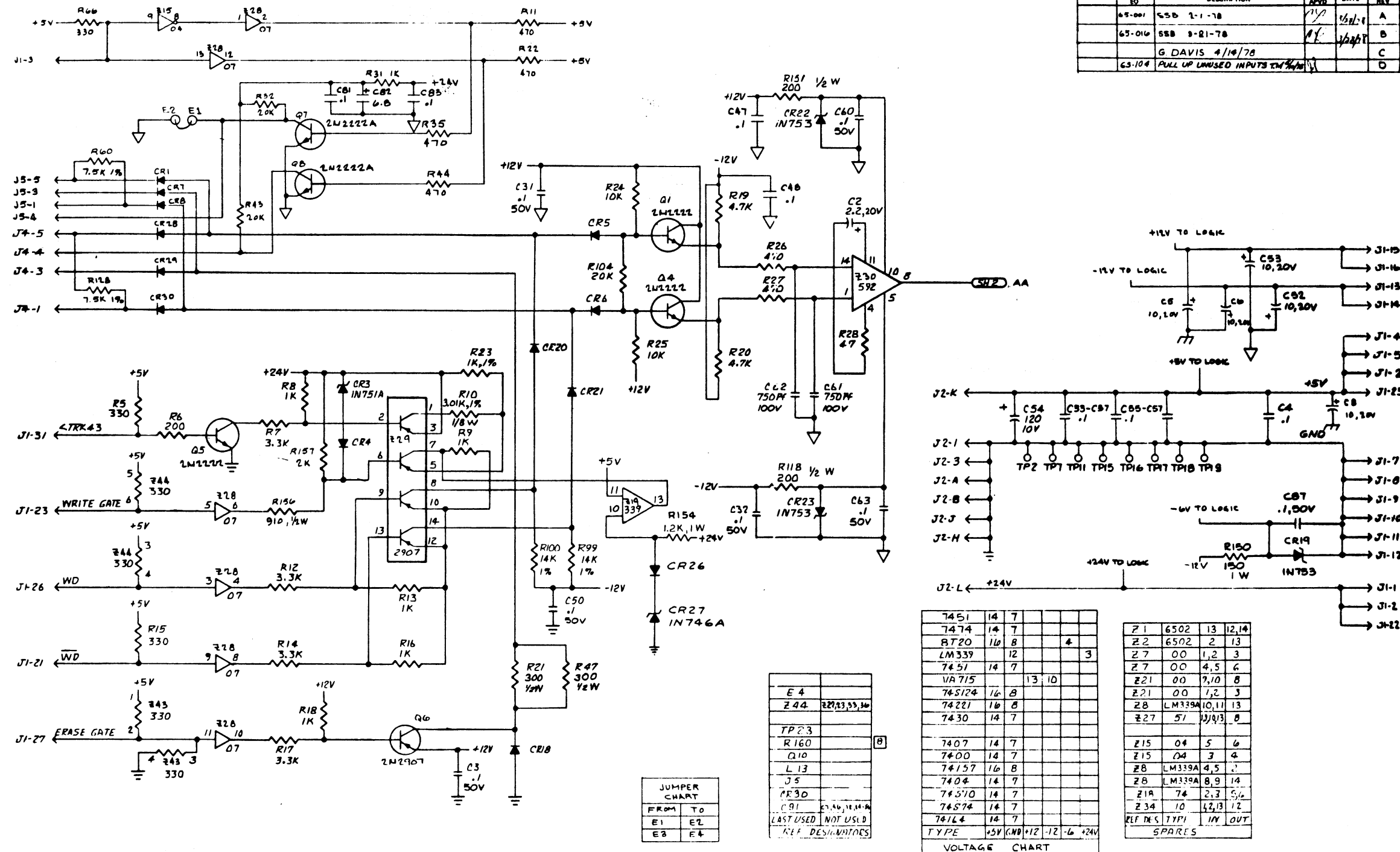


Figure 8-5.

REVISIONS					
REV	DESCRIPTION	DATE	BY	APPD	
65-001	SSB 1-1-78	1/1/78	A		
65-016	SSB 3-21-78	3/21/78	B		
	G DAVIS 4/10/78		C		
65-104	PULL UP UNUSED INPUTS TO 5V		D		



NOT USED R74, 87-89, 95, 107, 107, 129-149.

7. ALL INDUCTANCE VALUES ARE IN MICROHENRYS

8. ALL DIMENSIONS ARE IN INCHES

9. ALL CAPACITANCE VALUES ARE IN MICROFARADS.

10. ALL RESISTANCE VALUES ARE IN OHMS, K Ω , 10 Ω , 15 Ω .

11. LOGIC SYMBOLS PER USA-STD Y32.14 ELECTRONIC

12. LOGIC SYMBOLS PER USA-STD Y32.2-67.

13. NUMBERED PARTS WITHIN LOGIC SYMBOLS

14. LOGIC SYMBOLS PER USA-STD Y32.2-67.

15. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

16. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

17. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

18. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

19. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

20. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

21. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

22. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

23. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

24. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

25. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

26. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

27. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

28. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

29. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

30. PARTIAL REFERENCE DESIGNATION SHOWN; FOR COMPLETE DESIGNATION

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CHECKED		J. RODRIGUEZ
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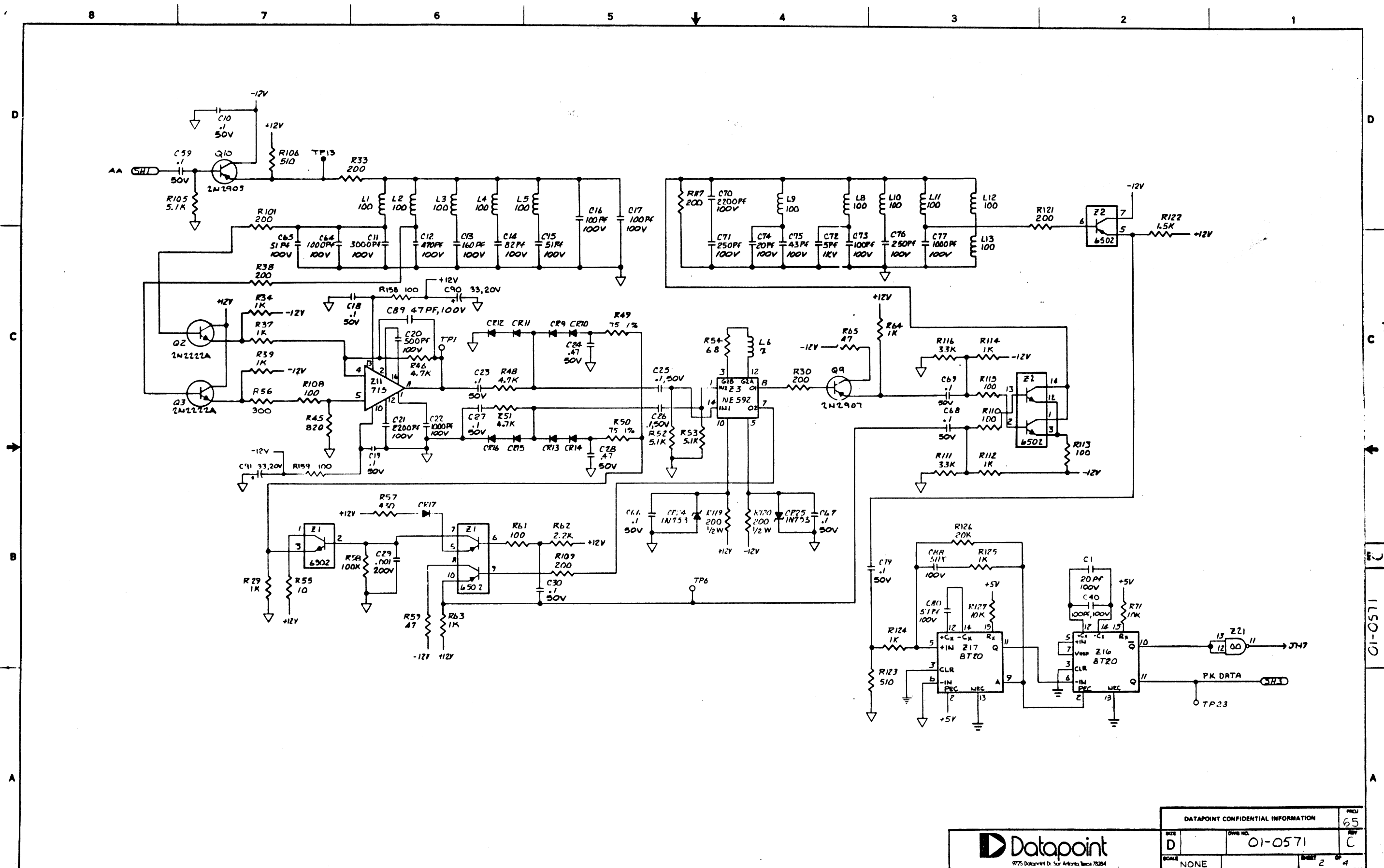
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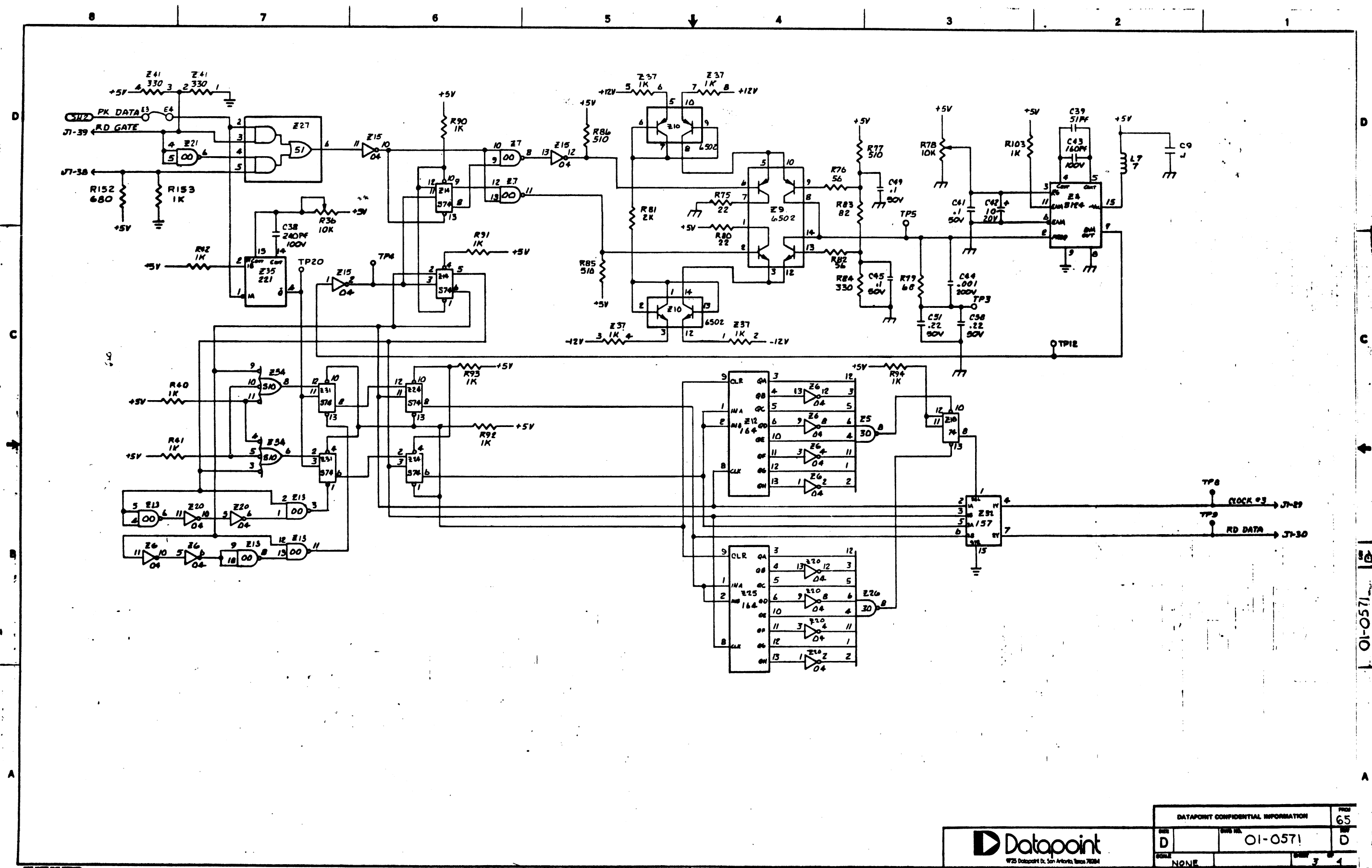
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RELEASE		6-30-78
THREADS: EXT 2A, INT 2B		

DATE		1-4-78
DRAWN		J.



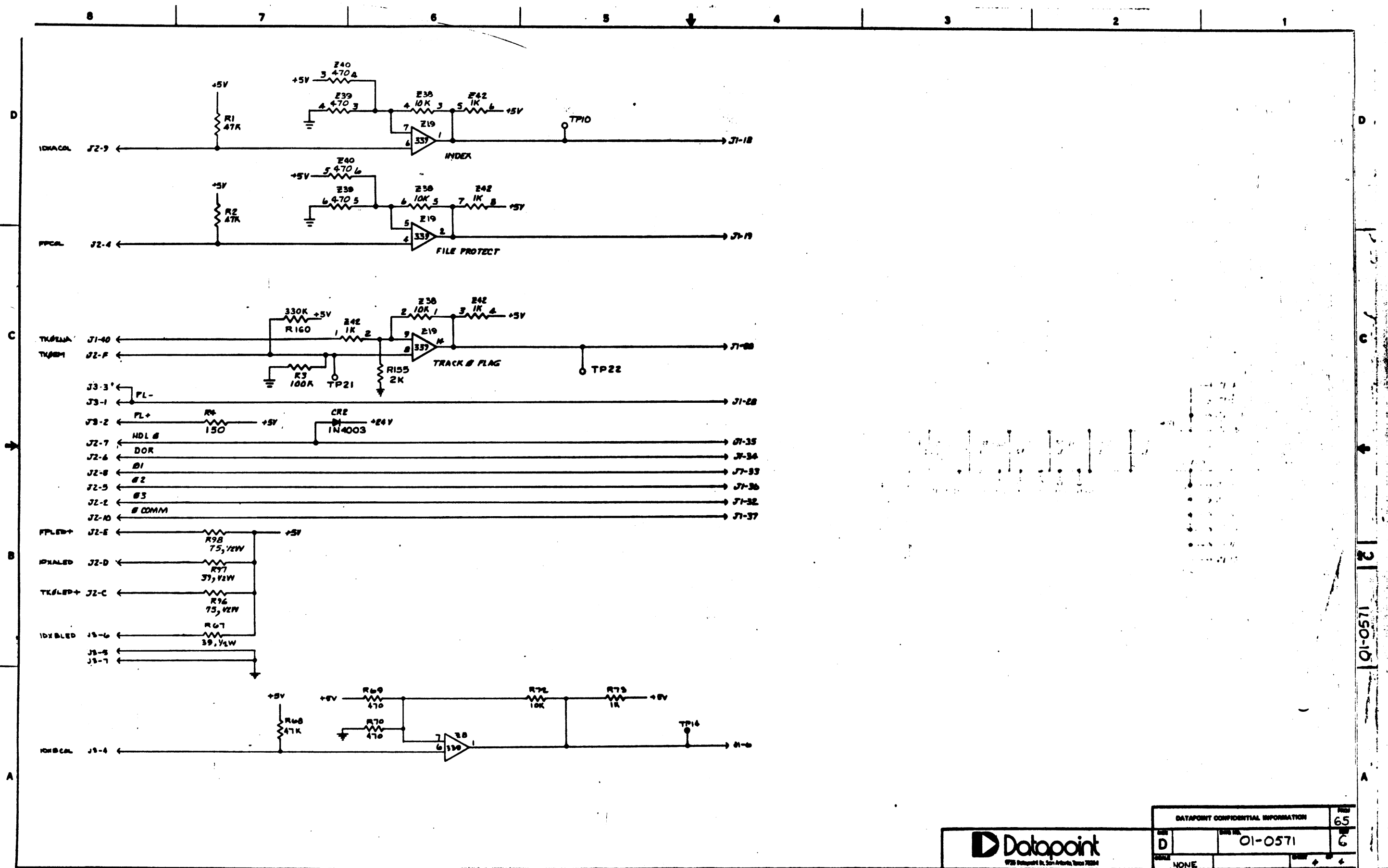
Datapoint
9725 Datapoint Dr. San Antonio, Texas 78204

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SCALE	NONE	REV	C
		SHEET	2 OF 4



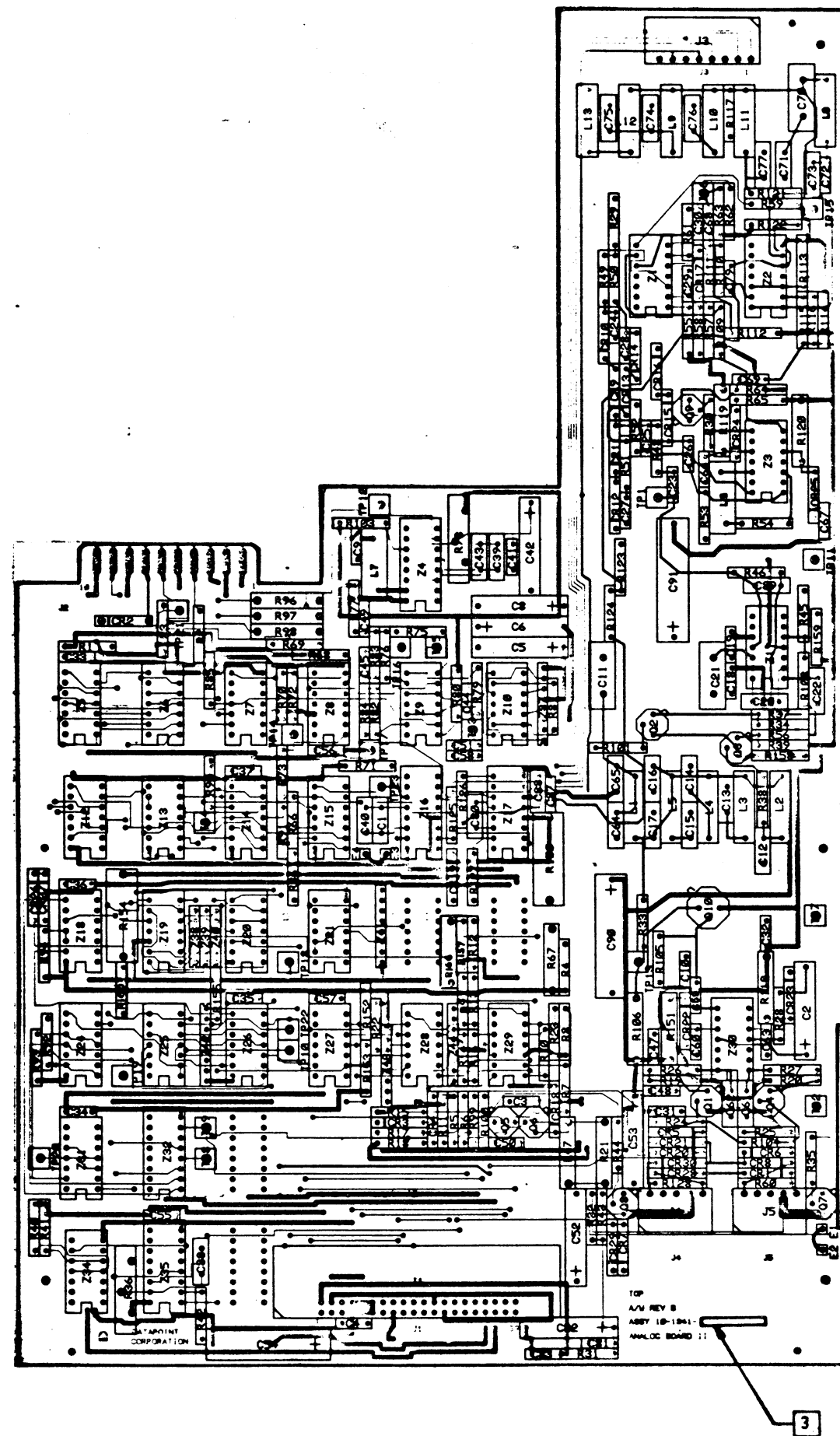
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Doc No	01-0571	Rev	D
Doc No	NONE	Rev	3

Figure 8-6. (Sht. 3)



DATAPoint CONFIDENTIAL INFORMATION			
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BY	D	CHK	C
APP	NONE	USE	

Figure 8-6. (Sht. 4)

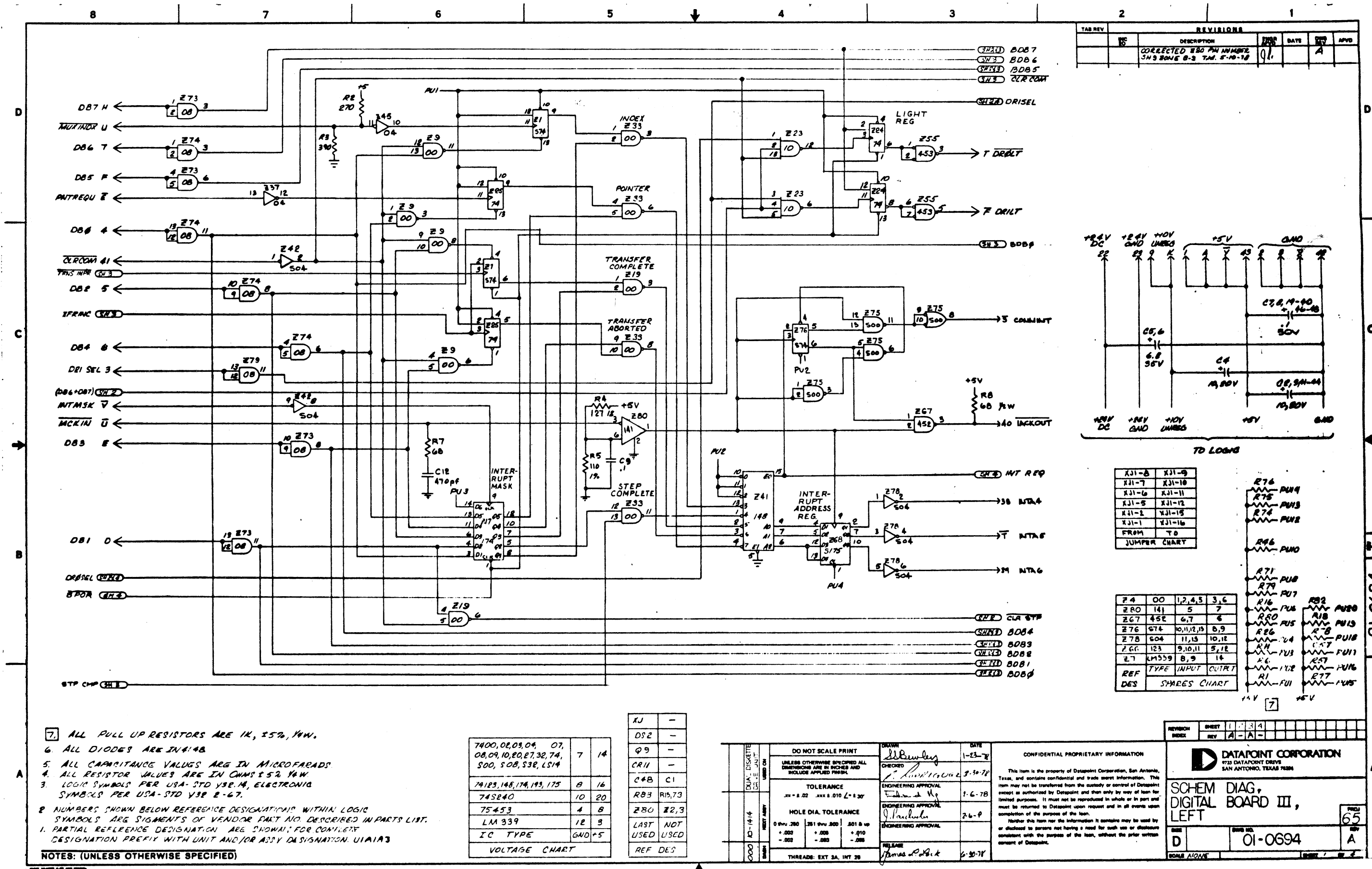


FROM	TO	USE
E1	E2	1C
E3	E4	1C

JUMPER CHART		
FROM	TO	USE
E1	E2	1C
E3	E4	1C

DATAPOINT CORPORATION 7123 DATAPOINT DRIVE SAN ANTONIO, TEXAS 78244		
PRINTED WIRING ASSEMBLY, ANALOG BOARD II		
REV. 65 D	10-1341	B

Figure 8-6A.



7. ALL PULL UP RESISTORS ARE 1K, 25%, 1/4W.
6. ALL DIODES ARE IN4148
5. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL RESISTOR VALUES ARE IN OHMS 1/2 1/4W.
3. LOGIC SYMBOLS PER USA-STD Y32.14, ELECTRONIC SYMBOLS PER USA-STD Y32.2-67.
2. NUMBERS SHOWN BELOW REFERENCE DESIGNATIONS WITHIN LOGIC SYMBOLS ARE SEGMENTS OF VENDOR PART NO. DESCRIBED IN PARTS LIST.
1. PARTIAL REFERENCE DESIGNATION ARE SHOWN FOR COMPACT DESIGNATION PREFIX WITH UNIT AND/OR ASSY DESIGNATION. U1A1A3

NOTES: (UNLESS OTHERWISE SPECIFIED)

7400, 08, 09, 04, 07, 08, 09, 10, 20, 27, 32, 74, 500, 508, 538, LS14	7	14
74123, 148, 174, 193, 175	8	16
74S240	10	20
75453	4	8
LM 339	12	3
IC TYPE	GND	+5
VOLTAGE CHART		

XJ	-
DS2	-
Q9	-
CR11	-
04B	C1
RB3	R15,73
Z80	Z2,3
LAST USED	NOT USED
REF DES	

DISKETTE	DO NOT SCALE PRINT	DRAWN	DATE
10-14-78	UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND INCLUDE APPLIED FINISH.	1-23-78	1-23-78
	TOLERANCE	ENGINEERING APPROVAL	1-6-78
	HOLE DIA. TOLERANCE	ENGINEERING APPROVAL	2-6-78
	THREADS: EXT 2A, INT 2B	RELEASE	6-30-78

REVISION INDEX	SHEET	1	3	4
REV	A	A	A	A
DATAPOINT CORPORATION 7725 DATAPOINT DRIVE SAN ANTONIO, TEXAS 78238				
SCHEM DIAG, DIGITAL BOARD III, LEFT				
SIZE	D	DATE	01-0694	REV
BOM	ALONE			

Figure 8-7. (Sht. 1)



- Figure 8-7. (Sht. 3)

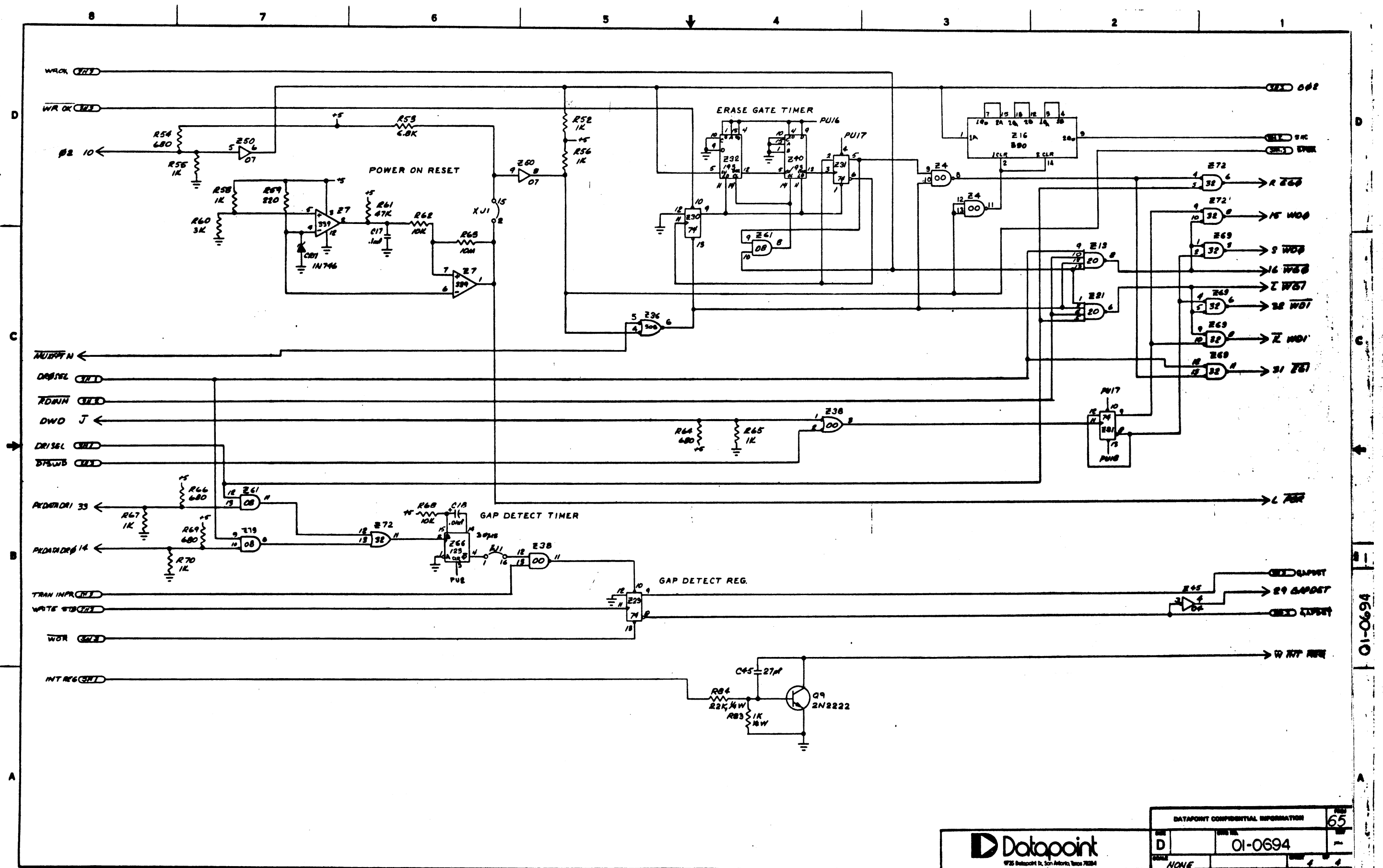
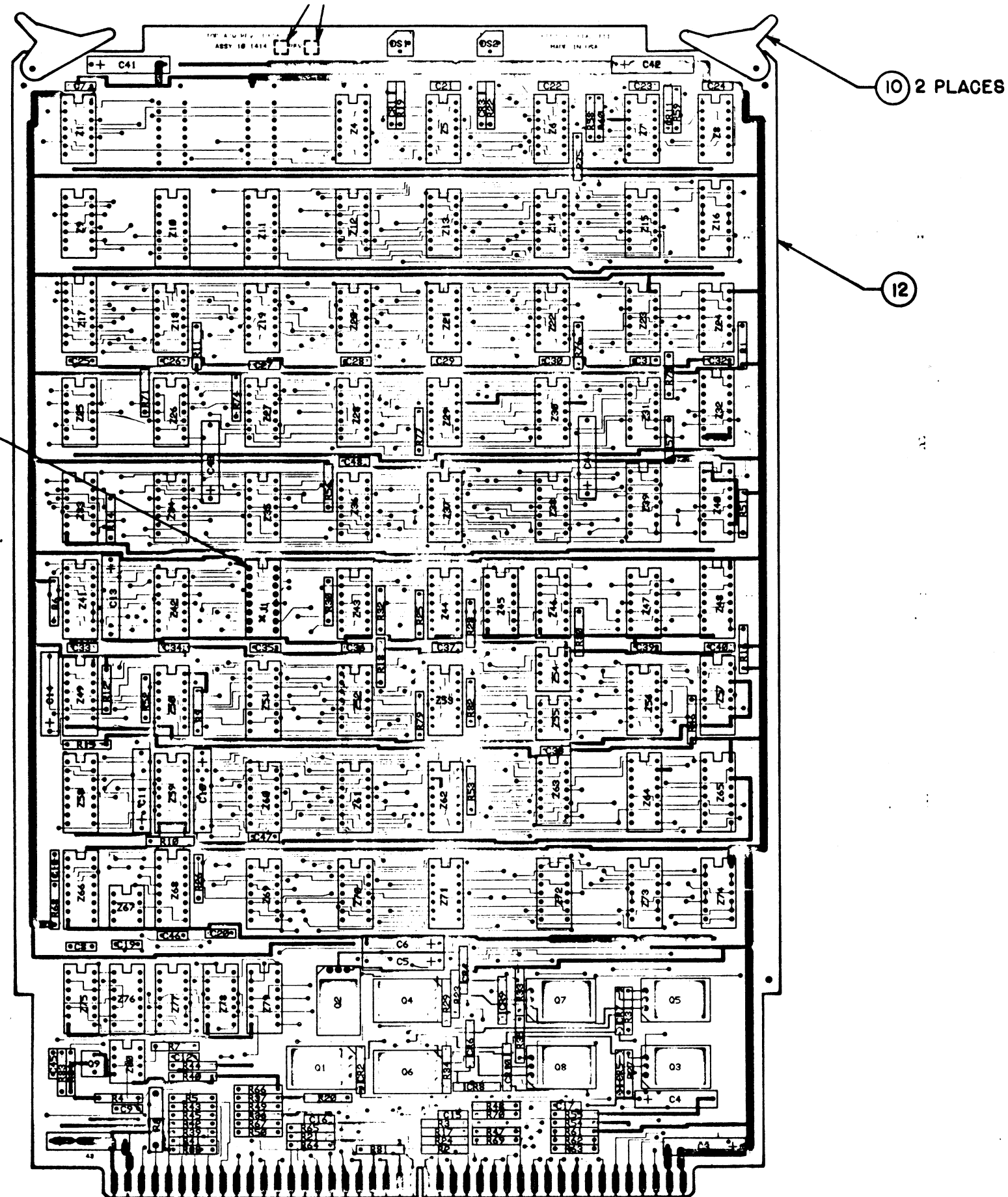


Figure 8-7. (Sht. 4)

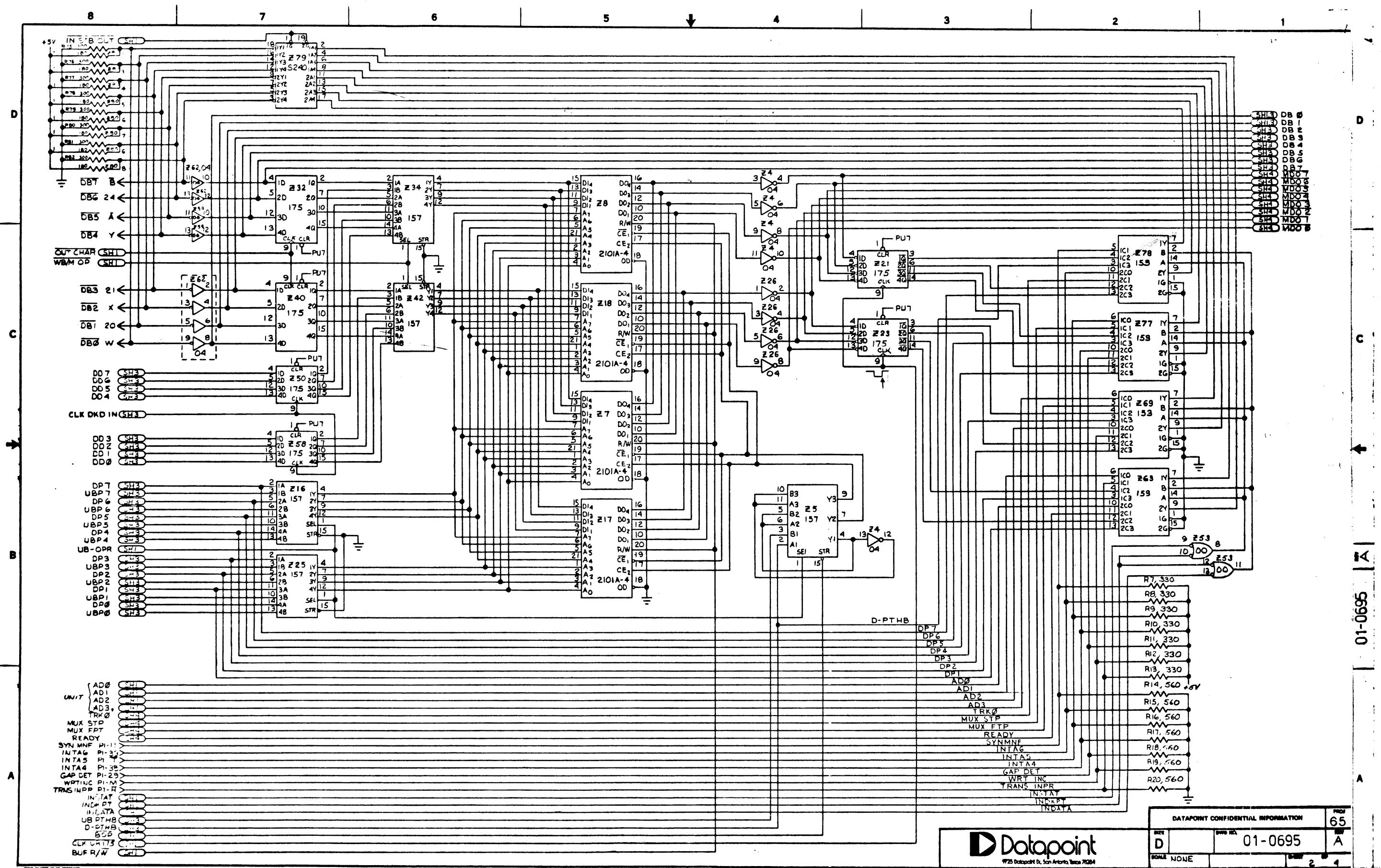
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FROM	TO
XJ1-1	XJ1-16
-2	-15
-5	-12
-6	-11
-7	-10
-8	-9

18 PLACES 9



 DATAPOINT CORPORATION 6725 LINDA LANE DRIVE SAN ANTONIO, TEXAS 78244		PRINTED WIRING ASSEMBLY, LEFT DIGITAL BD. III UIA1A3	PROJ 65
			D
10-1414		A	SCALE 1:1

Figure 8-7A.



Datapoint CONFIDENTIAL INFORMATION			PROJ
REV	01-0695		65
SCALE	NONE		A
			2 4

Figure 8-8. (Sht. 2)

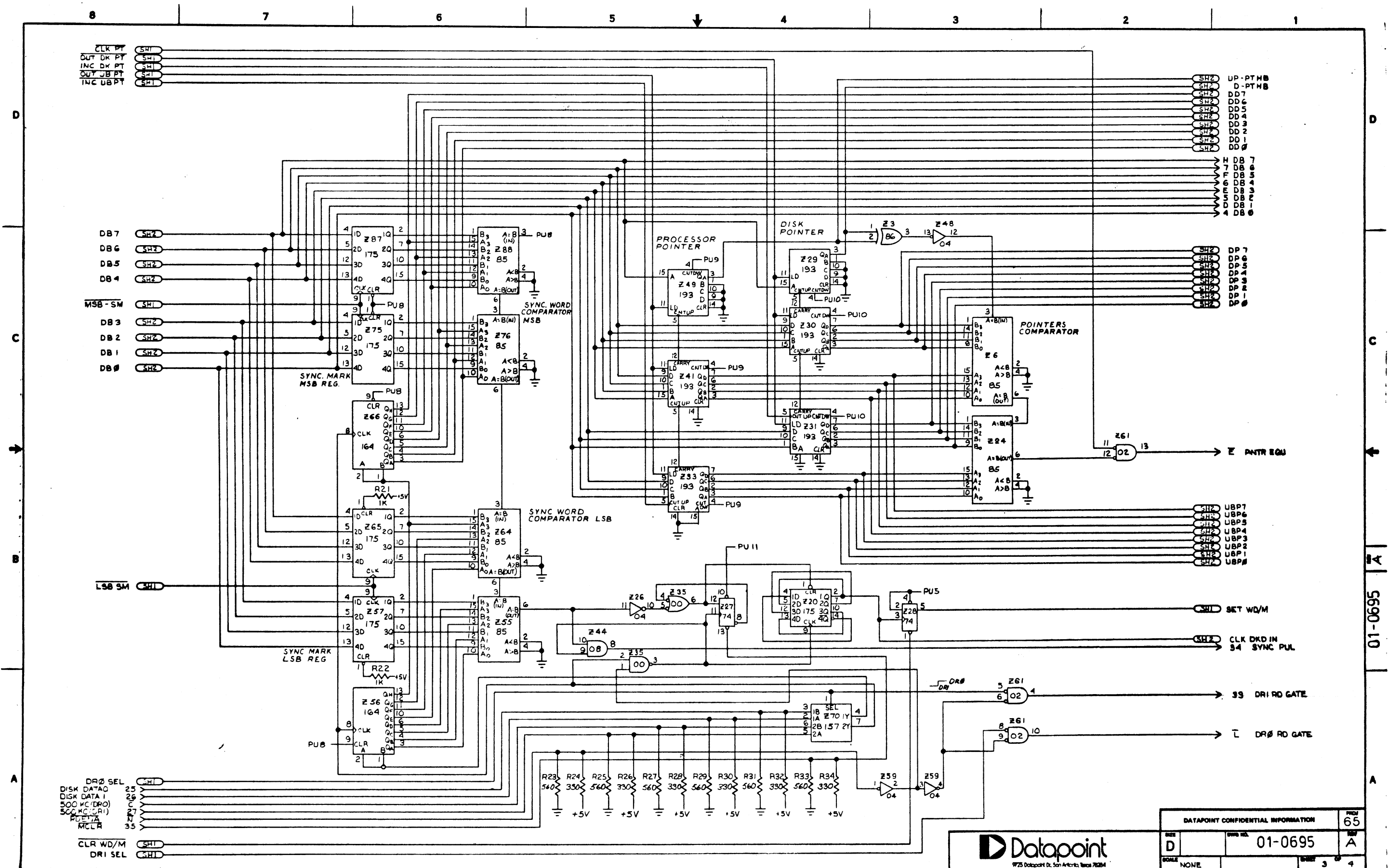


Figure 8-8. (Sht. 3)

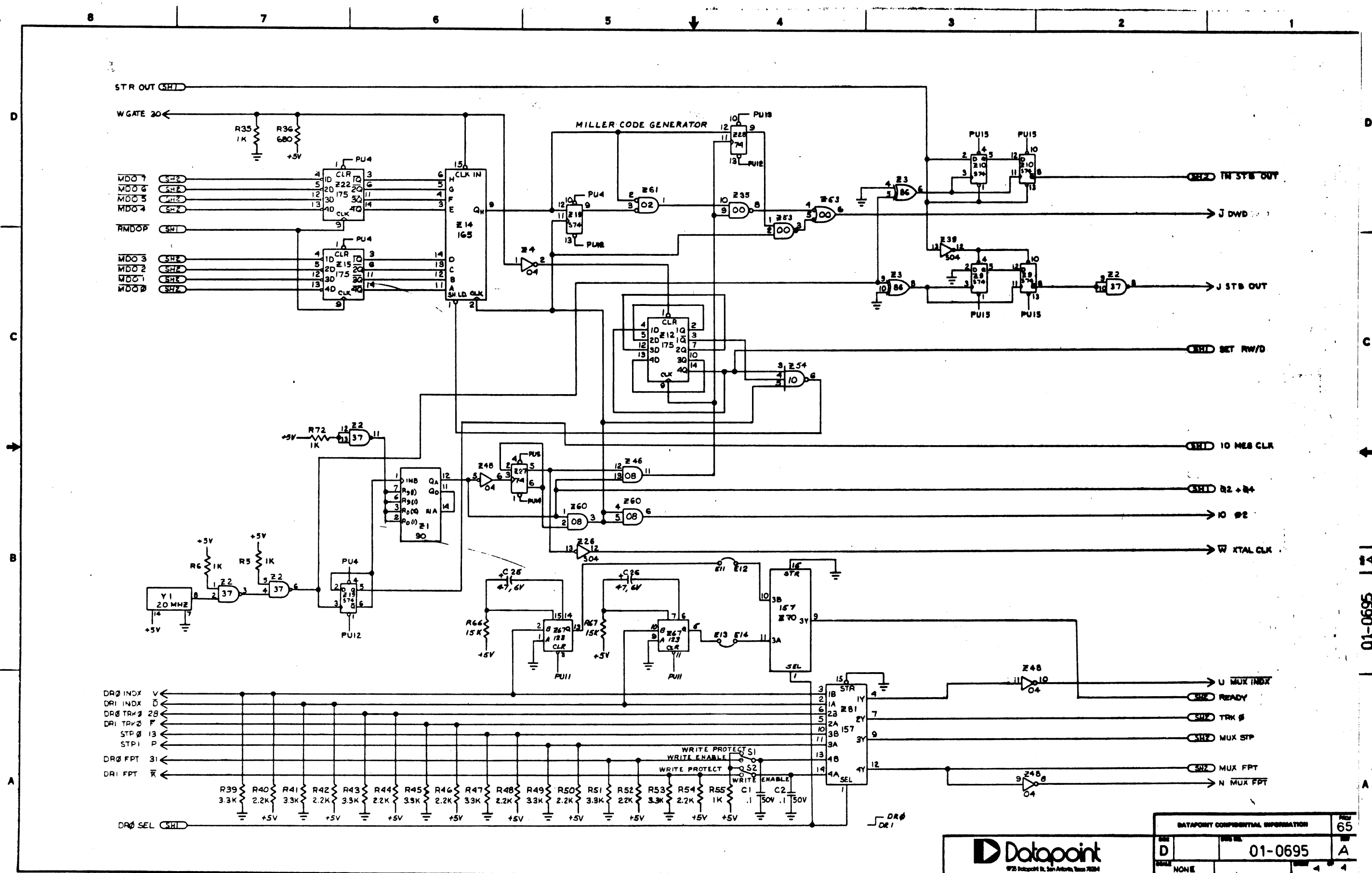
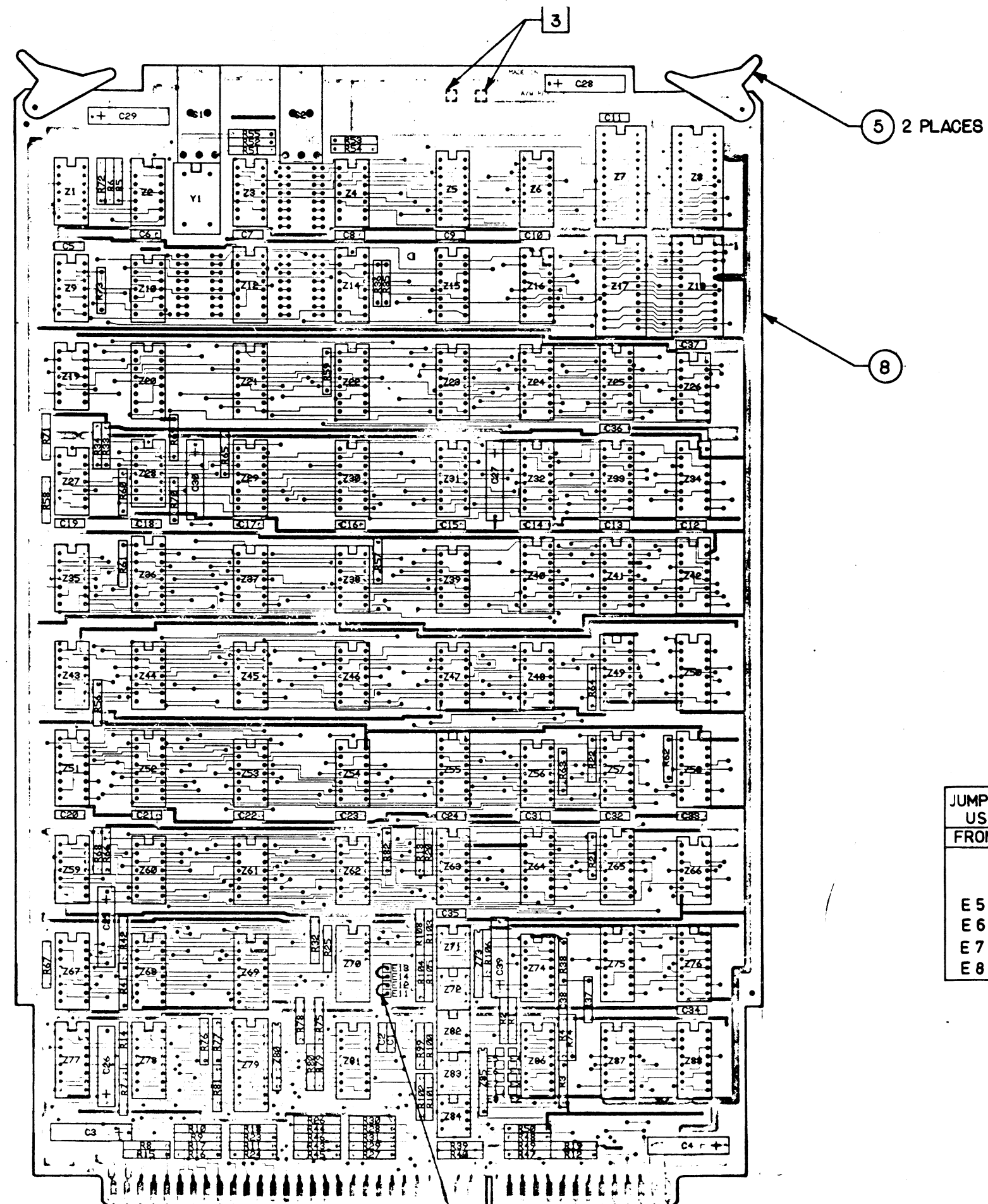


Figure 8-8. (Sht. 4)



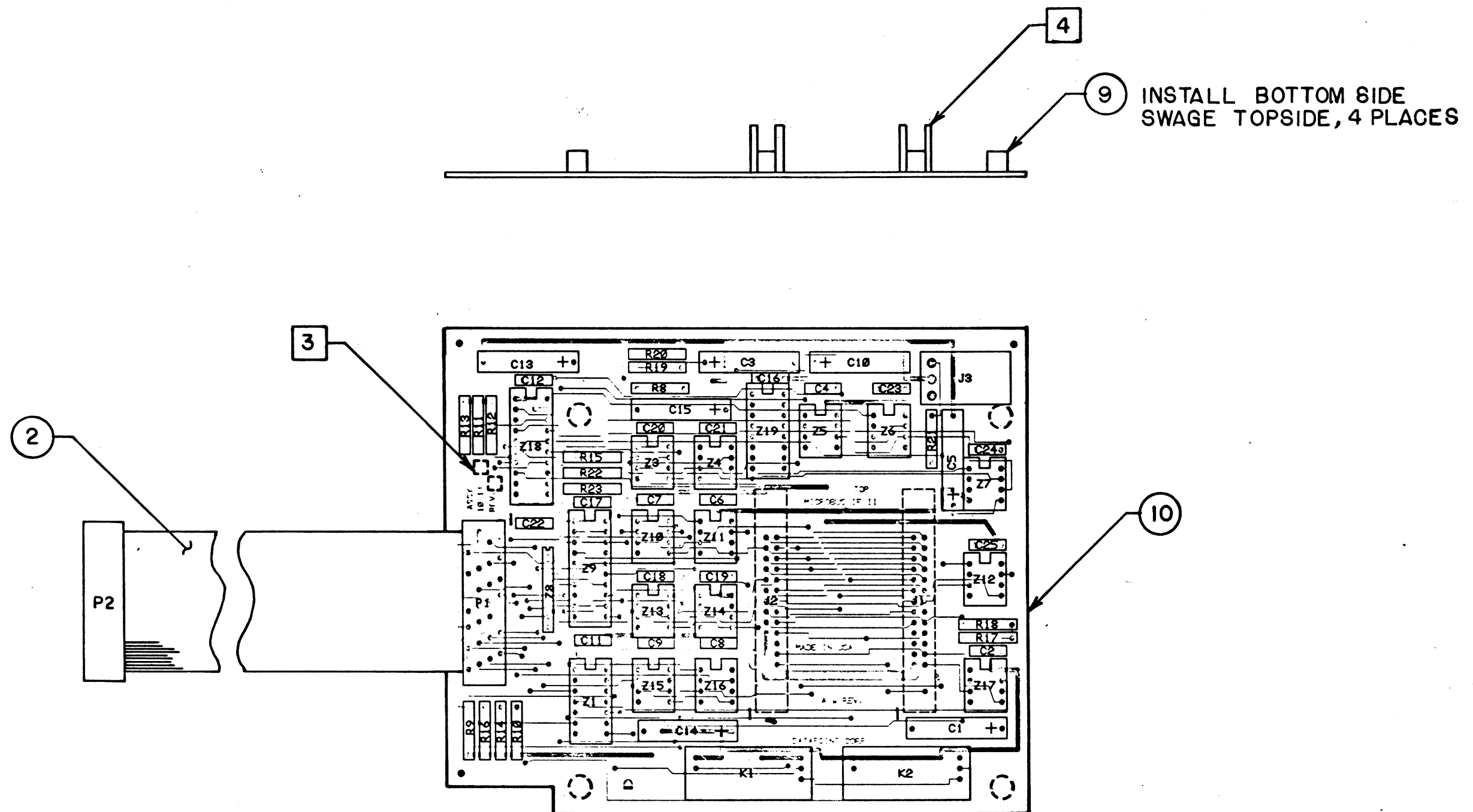
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FROM	TO
E 5	E 4
E 6	E 1
E 7	E 3
E 8	E 2

 DATAPOINT CORPORATION 4732 INDEPENDENT DRIVE SAN ANTONIO, TEXAS 78241	
PRINTED WIRING ASSEMBLY, RIGHT DIGITAL BD. III	
REV. D	DATE 10-14-65
SCALE 1:1	REV. A

Figure 8-8A.



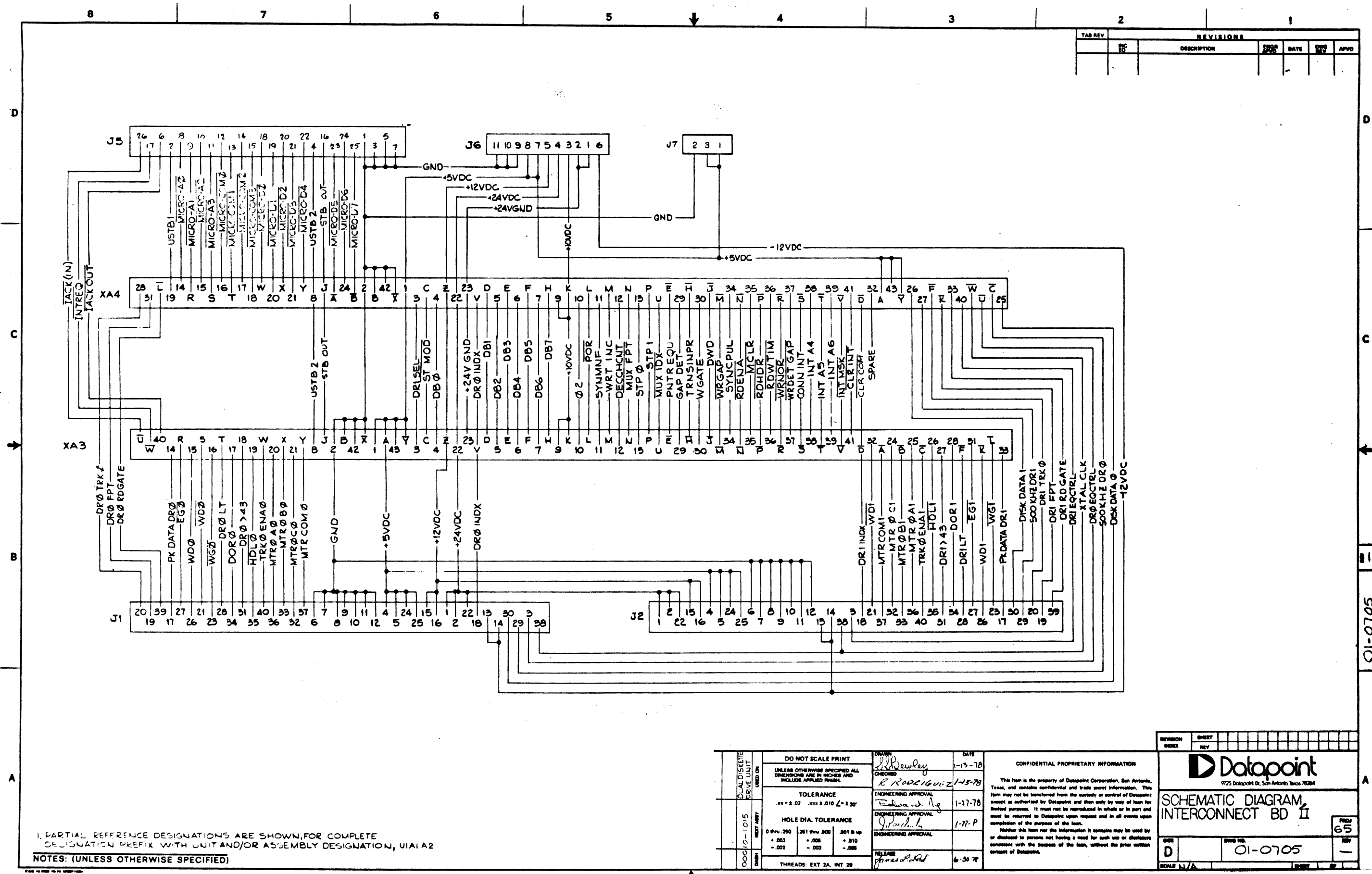
(Sht. 2)



DATAPOINT CORPORATION 4225 VIA VALLEY DRIVE SAN ANTONIO, TEXAS 78244			
PRINTED WIRING ASSEMBLY, MICRO BUS INTER- FACE II			
U1A2A4			65
D	10-1422	REV	-

Figure 8-9A.

-001 (SHOWN)



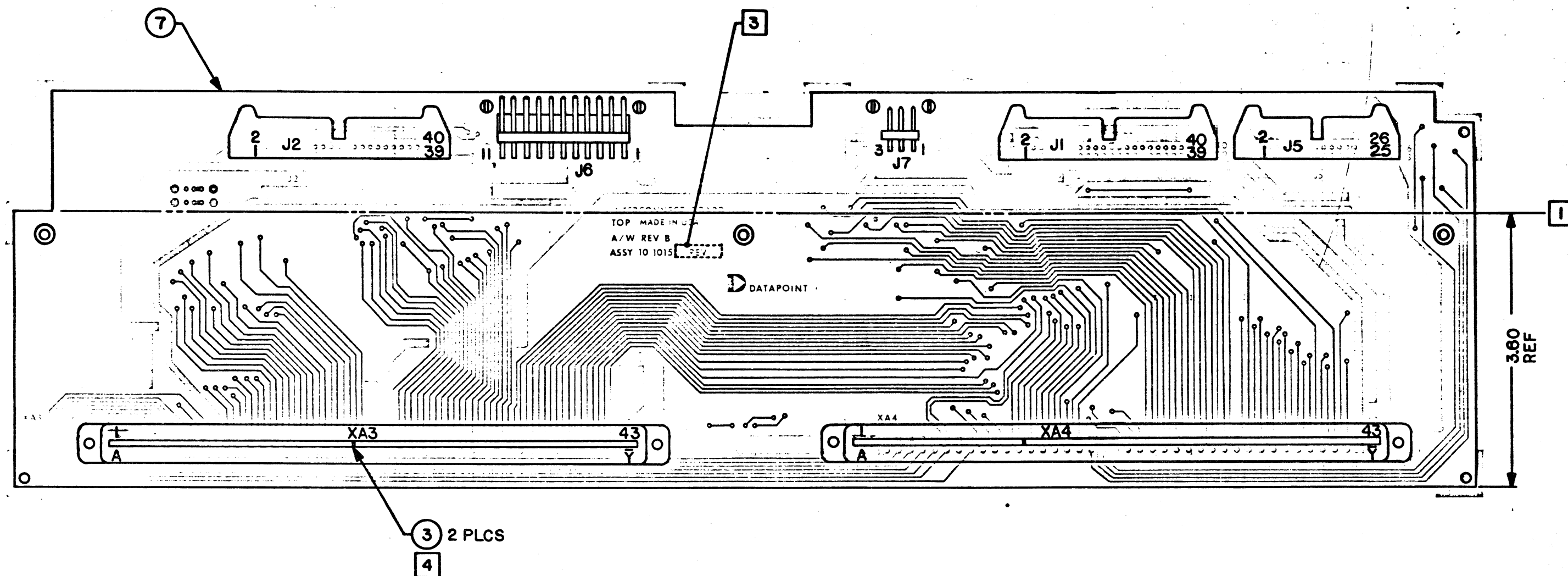
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION, VIA I A2
NOTES: (UNLESS OTHERWISE SPECIFIED)

DO NOT SCALE PRINT		DATE	
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND INCLUDE APPLIED FINISH		1-15-78	
TOLERANCE		1-15-78	
HOLE DIA. TOLERANCE		1-27-78	
THREADS: EXT 2A, INT 2B		1-27-P	

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REVISION INDEX	SHEET	REV	DATE	APPROVED
Datapoint 9725 Datapoint Dr. San Antonio, Texas 78244				
SCHEMATIC DIAGRAM, INTERCONNECT BD II				
SIZE	D	DATE	01-0705	REV
SCALE	N/A			

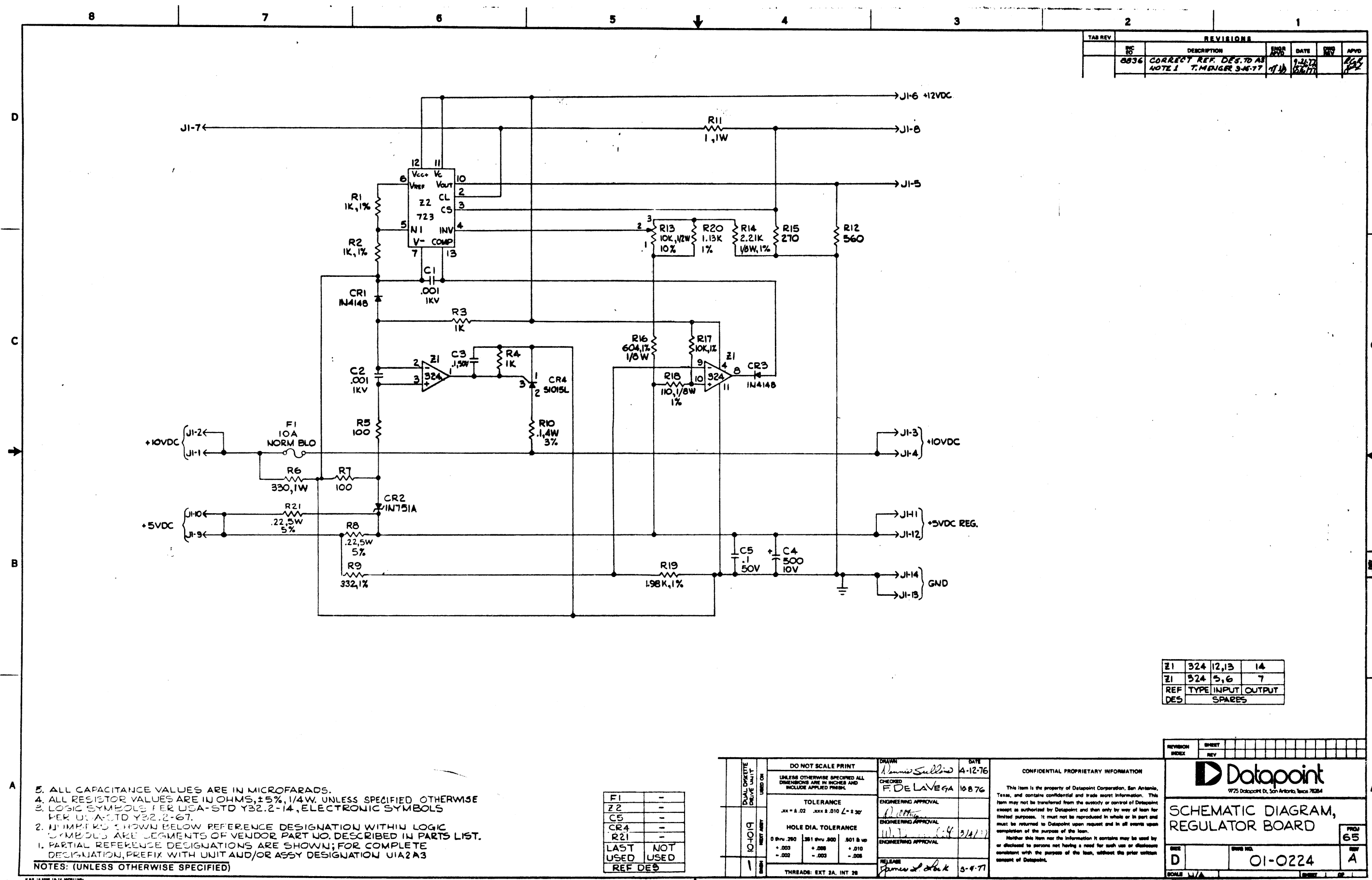
Figure 8-10.



-001 (SHOWN)

 9725 Datapoint Dr. San Antonio, Texas 78204		
PRINTED WIRING ASSEMBLY, INTERCONNECT BD.		
U1A1A2		65
SIZE D	DWG NO. 10-1015	REV B

Figure 8-10A.



TAB REV		REVISIONS					
NO	REV	DESCRIPTION	DATE	BY	CHKD	APVD	
0036		CORRECT REF. DES. TO A3 NOTE 1 T. MENGER 3-4-77	1-10-77				

Z1	324	12,13	14
Z1	324	5,6	7
REF	TYPE	INPUT	OUTPUT
DES		SPARES	

DO NOT SCALE PRINT

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND INCLUDE APPLIED FINISH.

TOLERANCE
JXX = $\pm .02$ JXX = $\pm .010$ L = $\pm .30$

HOLE DIA. TOLERANCE
0 thru .250 +.003
.251 thru .500 +.006
.501 & up +.010
- .002 - .003 - .008

THREADS: EXT 2A, INT 2B

CHECKED
F. DE LA VEGA
10-8-76

ENGINEERING APPROVAL
[Signature]
3/4/77

RELEASE
James J. [Signature]
5-4-77

DATE
4-12-76

DATE
3/4/77

DATE
5-4-77

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REVISION INDEX

SHEET

REV

PROJ
65

SCALE

1/4" = 1"

DATE

BY

CHKD

APVD

Datapoint

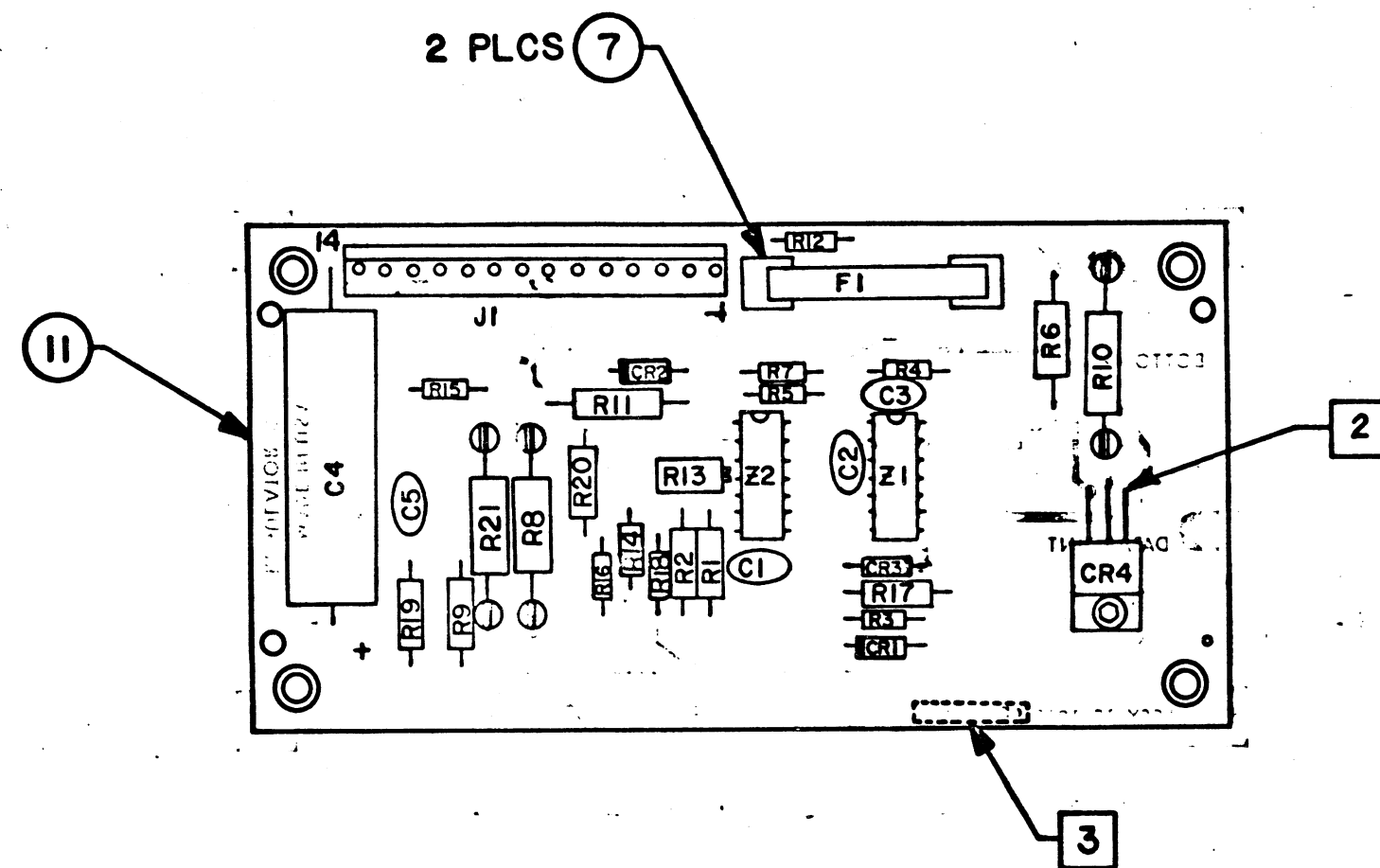
1725 Datapoint Dr., San Antonio, Texas 78244

SCHEMATIC DIAGRAM, REGULATOR BOARD

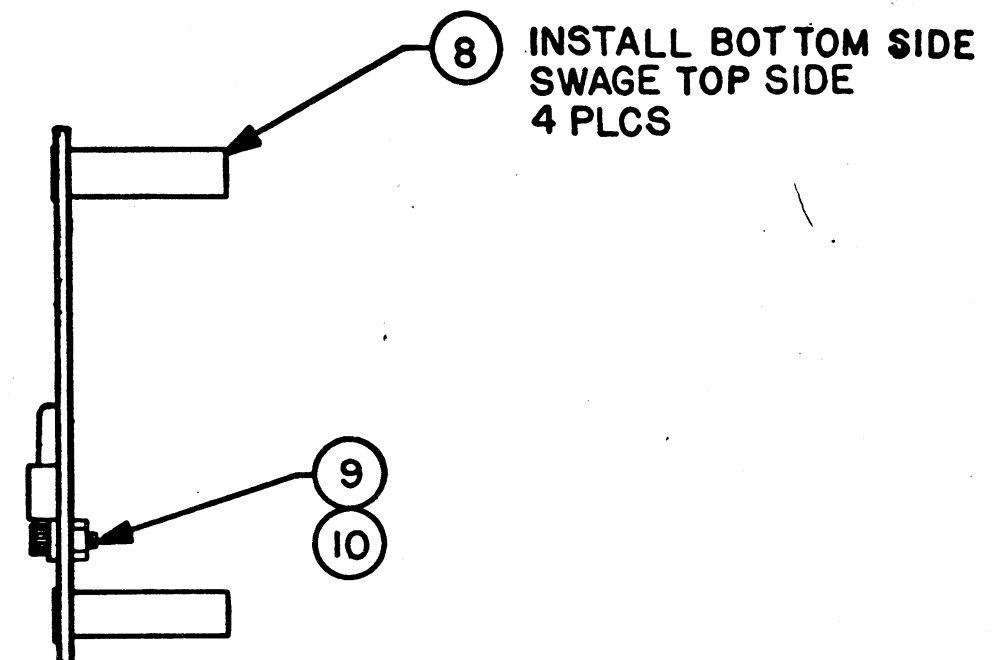
01-0224

A

Figure 8-11.



-001 (SHOWN)



			
1975 Datapoint by San Antonio Texas 78204			
PRINTED WIRING ASSEMBLY, REGULATOR BOARD			PROJ 65
REV D	DATE 10-1019	REV A	PROJ 65
SCALE 1/1			

Figure 8-11A.

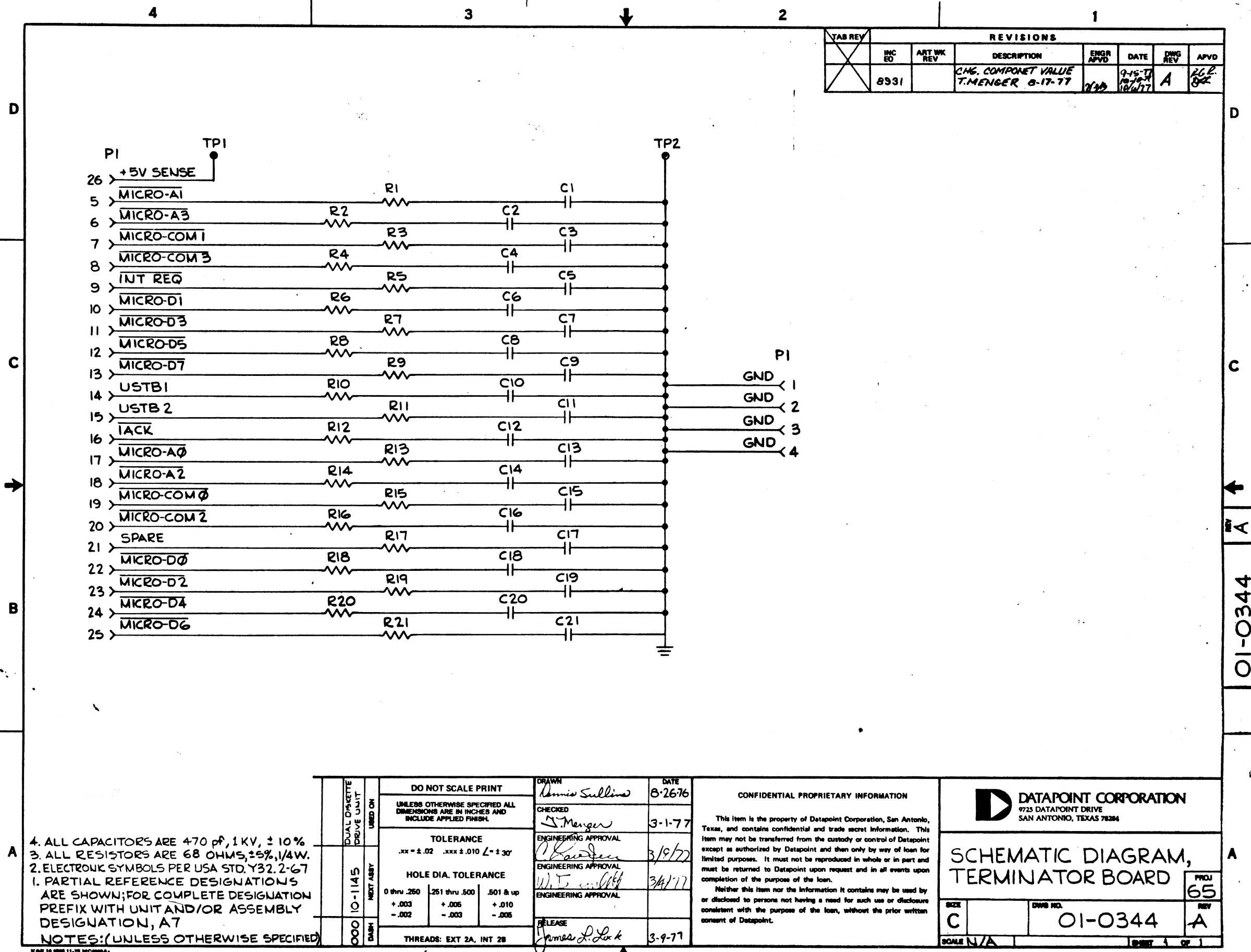
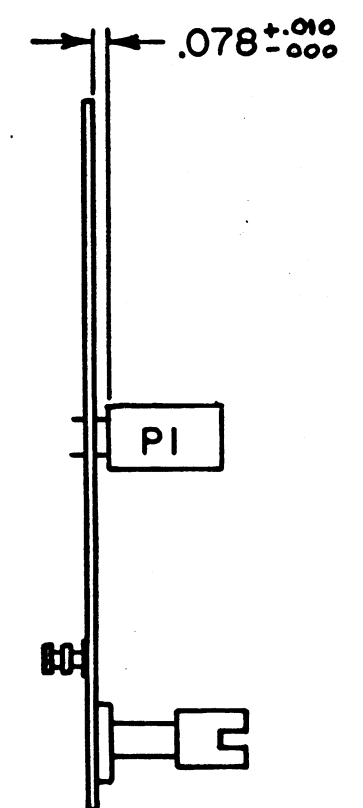
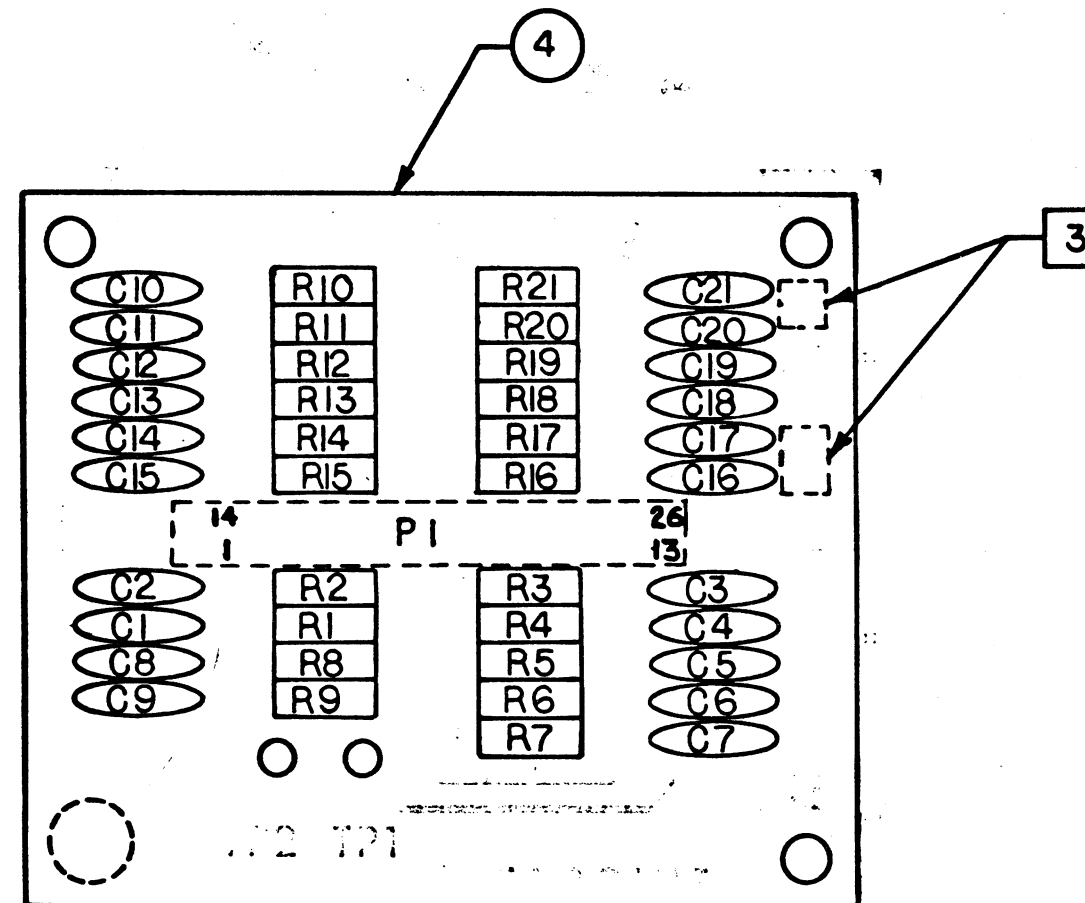


Figure 8-12.



-001 (SHOWN)

DATAPoint CORPORATION 7225 DATAPoint DRIVE SAN ANTONIO, TEXAS 78244			
PRINTED WIRING ASSEMBLY, TERMINATOR BOARD			
UIA3			PCB 65
SIZE D	DRAWING NO. 10-1145	REV A	
SCALE: 1" = 1" SHEET 1 OF 1			

Figure 8-12A.