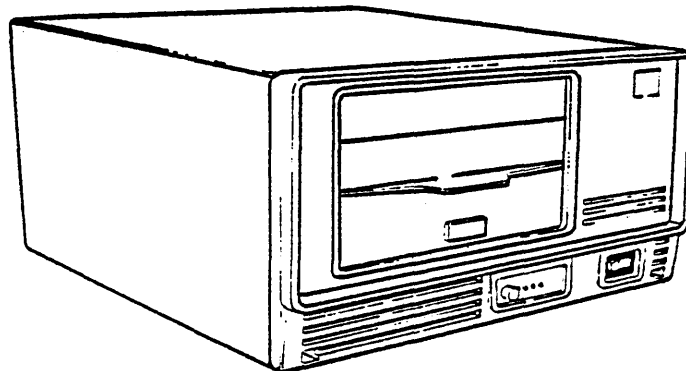




**CDC® 40003-203/204/205/206
PLATO® FLEXIBLE DISK SUBSYSTEM
AND
40003-200
16K RAM EXPANSION**



**HARDWARE MAINTENANCE MANUAL
(SITE AND SUPPORT INFORMATION)**

REVISION RECORD

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MANUAL TO EQUIPMENT LEVEL CORRELATION SHEET

This manual reflects the equipment configurations listed below.

EXPLANATION: Locate the equipment type and series number, as shown on the equipment FCO log, in the list below. Immediately to the right of the series number is an FCO number. If that number and all of the numbers underneath it match all of the numbers on the equipment FCO log, then this manual accurately reflects the equipment.

EQUIPMENT TYPE	SERIES	WITH FCO'S	COMMENTS
FA501-A	01 02 03 04	14571	ECO's 14165 14328, 14376, 14454 14468
FA501-B	01 02 03 04	14571	ECO's 14165, 14328, 14376, 14454 14468
BR810-A	01 01 02		14165, 14328 14468 only
BR810-B	01 01 02		14165, 14328 14468 only
XA243-A	01		
FT116-A	01		

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LIST OF EFFECTIVE PAGES

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PREFACE

This manual provides information to aid in the installation, checkout, and maintenance of the CDC® PLATO® Flexible Disk Subsystem. Information is provided for both on-site and technical support use. The subsystem provides flexible disk storage capability to a PLATO Information Systems Terminal (IST-II and IST-III).

Product and equipment number correlation for the various subsystem configurations and associated memory options is as follows:

<u>Product Number</u>	<u>Equipment Number</u>	<u>Description</u>
40003-203	FA501-A	PLATO Master Flexible Disk Subsystem, 60 Hz, 120 V ac.
40003-204	BR810-A	PLATO Slave Flexible Disk Drive, 60 Hz, 120 V ac.
40003-205	FA501-B	PLATO Master Flexible Disk Subsystem, 50 Hz, 220/240 V ac.
40003-206	BR810-B	PLATO Slave Flexible Disk Drive, 50 Hz, 220/240 V ac.
40003-200	XA243-A	Additional 16K by 8-bit RAM Option (up to three RAM options may be added).
40003-211	FT116-A	Terminator assembly for IST parallel I/O channel.

Organization of this manual is divided into eight major sections:

- Section 1 - General Description
- Section 2 - Operation
- Section 3 - Installation and Checkout
- Section 4 - Theory of Operation
- Section 5 - Diagrams
- Section 6 - Maintenance
- Section 7 - Parts Data
- Section 8 - Wire Lists

Other manuals providing reference and operator information on the flexible disk subsystem, maintenance information on the flexible disk drive assembly, and maintenance information on the IST terminal are listed as follows. All manuals may be ordered from:

Control Data Corporation
Literature and Distribution Services
304 North Dale Street
St. Paul, Minnesota 55103

<u>Title</u>	<u>Publication Number</u>
PLATO Flexible Disk Subsystem Hardware Operators Guide	62940005
9406 Flexible Disk Drive Assembly Hardware Maintenance Manual	77614903
Information Systems Terminal II Hardware Maintenance Manual (IST-II)	82100083
Information Systems Terminal III Hardware Maintenance Manual (IST-III)	62940007

In addition to these publications, an instructional flexible disk and user's installation guide are available as follows:

Micro Plato Instructional Flexible Disk	76773000
Micro Plato User's Installation Guide	76368339

The disk and the guide may be ordered, using an Education Order Form, from:

Order Administrator
Education Company
8100 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

Disks for general use (formatted or unformatted) may be ordered by phoning as follows:

in Minnesota, Alaska, or Hawaii	612-830-7352	(call collect)
in other parts of United States	800-328-6207	(toll-free)
in Canada	416-291-7151	(call collect)

Note, these numbers are for ordering disks only.

In other countries, contact the nearest CDC Business Products representative.

The IST II and the IST III have been approved by the Federal Communications Commission (FCC) as not being harmful to the telephone network when connected directly to the telephone lines. Instructions for fully complying with Part 68, FCC Docket 19528 can be found in the Site and Support manuals that accompany the particular terminal being used.

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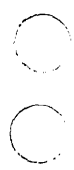
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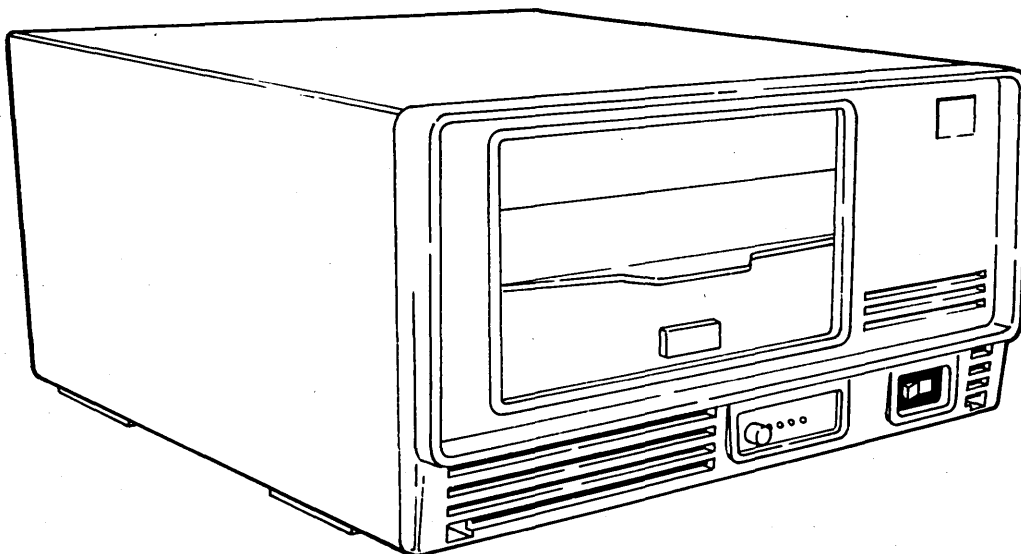
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This section provides a general description of the PLATO Flexible Disk Subsystem (PFDS) configuration including the related equipment specifications. The PFDS is a Z80 microprocessor-based programmable storage subsystem that is intended for use by a PLATO Information Systems Terminal. The subsystem interfaces with the terminal via the PLATO parallel I/O channel. Refer to figure 1-1 for an exterior view of the subsystem.



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Figure 1-1. PLATO Flexible Disk Subsystem

SUBSYSTEM CONFIGURATION

The PFDS is configured as two basic versions:

- PLATO Master Flexible Disk Subsystem
- PLATO Slave Flexible Disk Drive

Each version is available as either a 60-Hz or 50-Hz product/equipment. Refer to the preface for product/equipment number correlation.

The subsystem can consist of a single master unit or a master unit and one slave unit. The two units (master and slave) are interfaced by attaching the signal lines of both 9406 Disk Drives together via a 50-pin interconnecting I/O cable. The net effect is that the controller logic board of the master unit is interfaced to both 9406 Disk Drives connected in parallel as shown in figure 1-2.

PLATO MASTER FLEXIBLE DISK SUBSYSTEM

The PLATO Master Flexible Disk Subsystem contains a CDC 9406 Flexible Disk Drive, a 50-Hz or 60-Hz ac power entry panel, a mother-board backplane, a dc power supply, and a Z80-based controller logic board.

PLATO SLAVE FLEXIBLE DISK DRIVE

The PLATO Slave Flexible Disk Drive is identical to a master unit except that the Z80-based controller logic board is removed.

RAM EXPANSION FEATURE

The standard subsystem random-access memory consists of 16K 8-bit words. The RAM size may be expanded to a total of 64K 8-bit words in 16K-word increments. Each 16K RAM option consists of eight 16-pin integrated circuits (ICs). IC sockets are provided on the controller logic board for installation of the RAM chips.

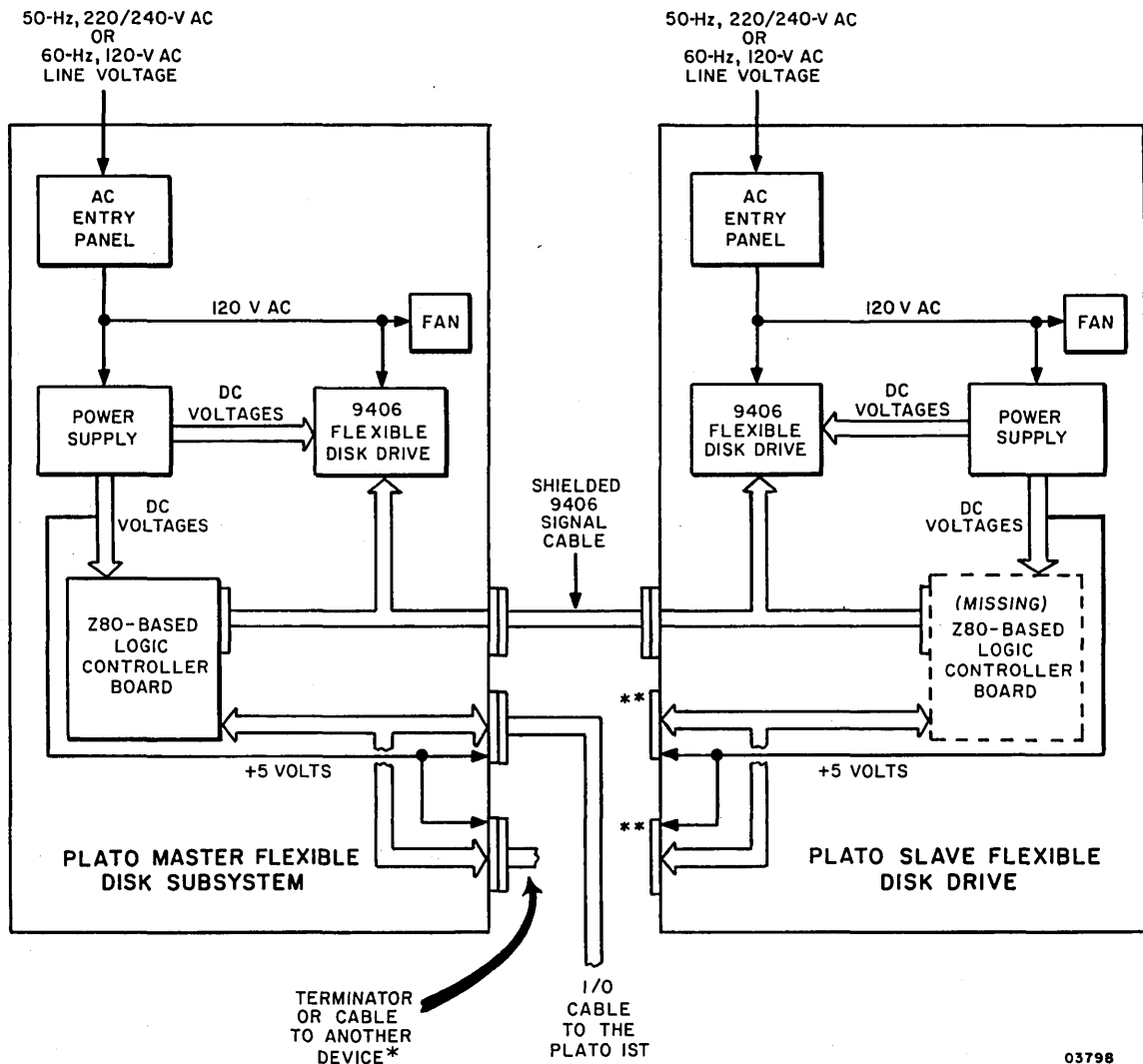
ROM EXPANSION FEATURE (FUTURE AVAILABILITY)

The standard subsystem read-only memory consists of a two 2K by 8-bit EPROM that uses memory addresses 0000_{16} through $0FFF_{16}$.

MEDIA

The media that can be used in the subsystem are the CDC 423 (single-sided, double-density), CDC 425 (double-sided, double density), or CDC approved equivalents. These flexible disks have the following characteristics:

- Index - 1
- Sectors - Programmable
- Cylinders - 77
- Tracks per cylinder - 1 for single-sided disk, 2 for double-sided disk.
- Surfaces - 2
- Tracks per inch 48
- Bits per inch - 6816 double density



03798

*The other device could be another PLATO Master Flexible Disk Subsystem, Graphic Printer, etc.

**These connectors are not used.

Figure 1-2. PFDS Master and Slave Unit Details

EQUIPMENT SPECIFICATIONS

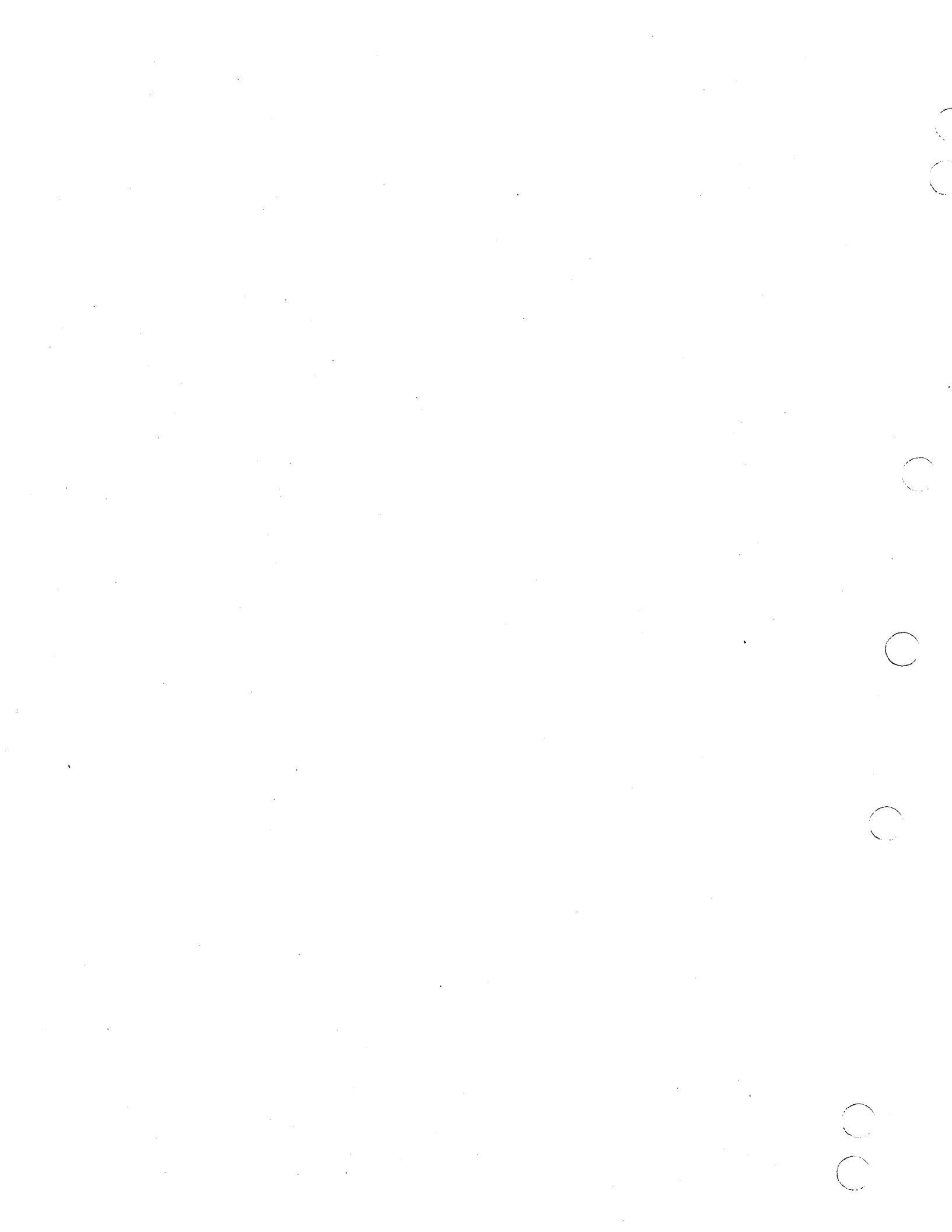
Equipment specifications for the subsystem are listed in table 1-1.

TABLE 1-1. EQUIPMENT SPECIFICATIONS

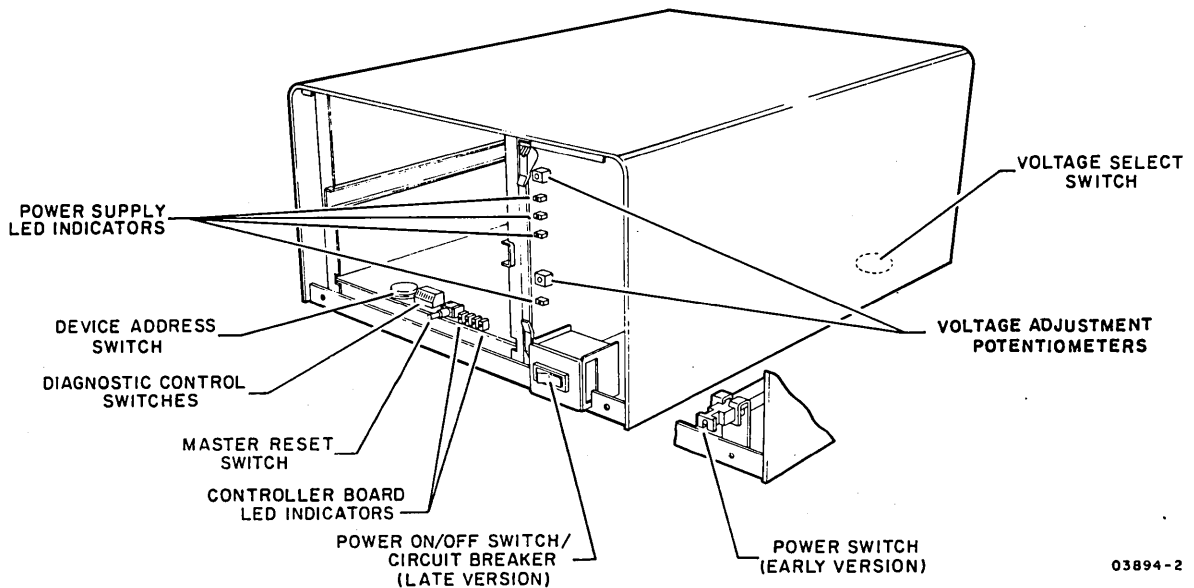
CHARACTERISTIC	SPECIFICATION
Dimensions:	
Height	202.85 mm (7.99 in)
Width	381 mm (14.99 in)
Depth	502.5 mm (19.78 in)
Weight:	
FA501-A (60-Hz master)	16.78 kg (37 lb) maximum
FA501-B (50-Hz master)	20.19 kg (44.51 lb) maximum
BR810-A (60-Hz slave)	16.33 kg (36 lb) maximum
BR810-B (50-Hz slave)	19.73 kg (43.5 lb) maximum
Power Requirements:	
(Nominal)	
FA501-A	120 V ac, 60 Hz, 1.4 A, 0.18 kW maximum
FA501-B	220/240 V ac, 50 Hz, 0.8 A, 0.19 kW maximum
BR810-A	120 V ac, 60 Hz, 1.2 A, 0.16 kW maximum
BR810-B	220/240 V ac, 50 Hz, 0.68 A, 0.16 kW maximum
Temperature:	
Operating	10°C to 32°C (50°F to 90°F)
Nonoperating	-34°C to 66°C (-30°F to 150°F)
Change/h	6.7°C (12°F)
Relative Humidity:	
Operating	10% to 80%
Nonoperating	5% to 95%
Change/h	10%
Operating Altitude:	3000 m (9850 ft) maximum
Heat Dissipation (Air):	555 Btu/h (161.3 W) maximum, fan cooled

TABLE 1-1. EQUIPMENT SPECIFICATIONS (CONTD)

CHARACTERISTIC	SPECIFICATION
Disk Storage Capacity:*	<u>Double Density</u>
Bytes/Track	10 416
Bytes/Cylinder**	20 832
Bytes/Surface	802 032
Bytes/Diskette**	1 604 064
Bits/Byte	8
Transfer Rate:*	<u>Double Density</u>
	500 k b/s
	62.5 bytes/s
Seek Time:	3 ms
Head Stabilization Time:	20 ms
Head Load Time:	40 ms
Diskette Rotation:	360 r/min <u>+3.5%</u>
Latency:	
Maximum	166.7 ms
Average	83.3 ms
Recording Method:	Modified Frequency Modulation (MFM)
<p>*Storage capacity and data transfer rates are a function of the formatting used on the diskette and the programming of the controller.</p> <p>**Applies to double-sided diskettes only.</p>	



This section describes the controls and indicators of the flexible disk subsystem. Locations are shown in figure 2-1. Refer to the Micro Plato user's installation guide and Micro Plato instructional flexible disk for information on associated operating programs (see preface for publication/part numbers).



03894-2

Figure 2-1. Control and Indicator Locations

VOLTAGE SELECT SWITCH

The voltage select switch is present on 220/240-V, 50-Hz units only. The switch is located on the bottom of the cabinet and selects taps on the transformer primary winding to match the input site voltage available. A metal plug covers the access hole.

POWER ON/OFF SWITCH/CIRCUIT BREAKER

Two versions of the Power On/Off switch/circuit breaker exist. Early units have the switch/circuit breaker mounted toward the

rear of the unit with a connecting rod attached to a push/pull control knob at the front of the unit. Power is applied by pulling the knob forward and power is removed by pressing the knob in. Later units have a rocker switch/circuit breaker mounted on the front of the unit.

A power application initializes all internal control logic circuits, and if bit 2⁷ of the diagnostic control switches is down, initiates the self-test diagnostics.

The circuit breaker provides necessary overload protection for the subsystem.

DEVICE ADDRESS SWITCH (MASTER UNITS ONLY)

The subsystem device address is established by a 10-position binary-coded-decimal rotary switch at the front of the controller board. A slave unit is addressed by selecting Drive No. 2. This is accomplished by clearing operation control register bit 2⁴. The master unit is selected by setting bit 2⁴.

MASTER RESET SWITCH (MASTER UNITS ONLY)

Pressing the Master Reset switch reinitializes the operating program. Holding the switch pressed more than three seconds, reinitiates the self-test diagnostics (if selected), and reloads the operating program into RAM memory. The operating program is loaded from the flexible disk if available. If a flexible disk is not present, the flexible disk subsystem tries to load from the PLATO system.

DIAGNOSTIC CONTROL SWITCHES (MASTER UNITS ONLY)

There are eight switches on the front of the controller board that provide manual control of the program and self-test diagnostics. Diagnostic test descriptions are provided in section 6. Control functions selected by these switches are as follows:

SWITCH 2⁰ - Not used

SWITCH 2¹

- Up - Allows result of detailed memory test to be displayed in LEDs per switch 2² setting.
- Down - Bypasses displaying result of detailed memory test selected by switch 2².

SWITCH 2²

- Up - Allows failing memory IC within a RAM bank to be displayed in LEDs. Switch 2¹ must be in up position to view this display. Also note that for subsystems having more than 16K of RAM, failing memory bank must first be determined by having switch 2² down.
- Down - Allows failing memory bank to be displayed in LEDs. Switch 2¹ must be in up position to view this display.

SWITCH 2³

- Up - Bypasses test 7 (write/read on disk) of diagnostics.
- Down - Enables execution of diagnostic test 7.

SWITCH 2⁴ and 2⁵

These switches define what banks of RAM are installed:

<u>Switch 2⁵</u>	<u>Switch 2⁴</u>	<u>RAM BANKS AVAILABLE</u>	<u>ADDRESS RANGE (HEX)</u>
Down	Down	1 (16K)	4000 - 7FFF
Down	Up	1, 2 (32K)	4000 - BFFF
Up	Down	1, 2, 3 (48K)	4000 - FFFF
Up	Up	0, 1, 2, 3 (64K)	0000 - FFFF

SWITCH 26

- Up - Allows looping on diagnostic tests.
- Down - Does not loop on diagnostics.

SWITCH 27

- Up - Bypasses diagnostic test execution.
- Down - Enables execution of the diagnostics except when switch 20 is up.

LED INDICATORS

Master units have four red LED indicators on the controller board that are visible through holes in the front panel. The LEDs are used by the self-test diagnostics to indicate detected errors. LED 2³ (leftmost) indicates a diagnostic error and LEDs 2⁰ through 2² identify the failing memory bank or IC as determined by the settings of switch 2⁰, 2¹, 2², and 2⁷ of the diagnostic control switches.* At successful completion of the diagnostics, LED 2⁰ is assigned as the power-on indicator. These LEDs are also user programmable.**

Both master and slave units have four red voltage LEDs on the power supply PC board. The front panel must be removed to view the indicators. These LEDs indicate presence of +24 V, +12 V, +5 V, and -5 V at the power supply outputs. Note that a lit LED does not conclusively indicate that the correct voltage is present, only that there is sufficient voltage to bias the device on.

Two adjustment potentiometers are also on the power supply PC board. These provide for adjusting the +24-V and +5-V power supply outputs.

*LEDs 2⁰ through 2² define which test section has failed. If diagnostic control switch 2¹ is up and there is a memory error, then LEDs 2⁰ through 2² identify the failing memory bank or IC depending on setting of switch 2².

**After completion of the self-test diagnostics, the operating system uses LED 2³ as an Error indicator, LED 2² as a Read indicator, LED 2¹ as a Write indicator, and LED 2⁰ as a Power-on indicator.

This section provides information on packaging, installation, and checkout of the flexible disk subsystem.

CAUTION

Observe MOS circuit handling precautions (described in section 6 of this manual) when handling or packaging the controller board.

PACKAGING

The flexible disk subsystem is packaged for shipment using foam-in-place chemicals (figure 3-1). If the subsystem is to be reshipped it must be packaged as it was originally received from the factory. Use the existing packing materials or if not available, order new packing materials from CDC Corporate Traffic. Request pre-formed packing materials for the FA501/BR810 per packing instructions 41039800. Packaging materials may be obtained from:

Control Data Corporation
Corporate Traffic
8100 34th Avenue South
Minneapolis, Minnesota 55440

When returning other assemblies for repair, use the packaging material that the spared assembly was shipped in.

NOTE

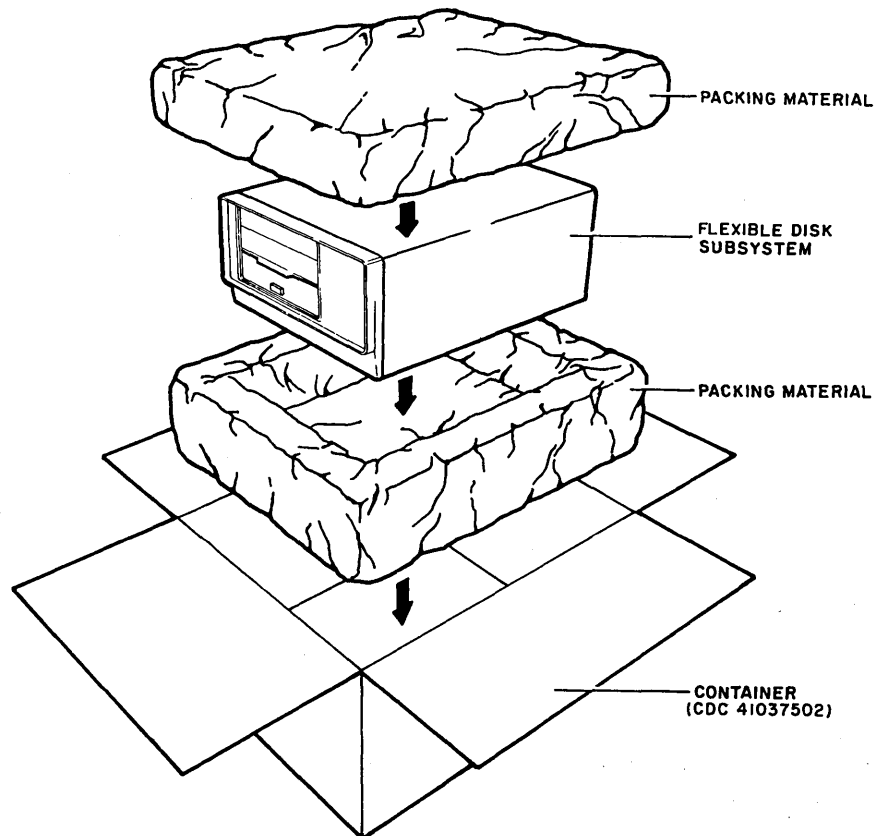
When shipping any disk drive be sure to insert the cardboard head-protect flexible disk into the drive unit.

INSTALLATION

This subsection provides information for installing the flexible disk subsystem (master and slave units) and for field installation of the RAM options applicable to a master unit.

NOTE

Selective FCO CD14283 must be installed if the disk is to be used on an IST-II with a serial number below 3000. This FCO provides a new ROM with a disk loader. The part number for FCO CD14283 is 66202932.



03896-1

Figure 3-1. Flexible Disk Subsystem Packaging

SUBSYSTEM INSTALLATION

Install the flexible disk subsystem per the following. Procedure numbers used in the steps refer to specific procedures contained in section 6B of this manual.

1. Unpackage subsystem (refer to figure 3-1), and move to desired location. Remove cardboard head-protective flexible disk from drive unit and store with subsystem packaging materials. Note that slave unit may be stacked on top of master unit or master unit may be stacked on top of slave unit or units may be placed side-by-side if desired.
2. Inspect for any shipping damage.
3. For 50-Hz units, verify that Voltage Select switch (bottom of cabinet, metal plug covers access hole) is set

correctly to match site ac primary input voltage as follows:

<u>Switch Position</u>	<u>Voltage Range</u>
120 V	Not Used
220 V	191 V to 235 V
240 V	208 V to 257 V

NOTE

Cover unused voltage designation on ID plate (figure 3-4) with black tape.

4. This step applies to master flexible disk units only. Remove front panel of unit (procedure 3) and locate switches at front of controller board (figure 3-2).
- Set Device Address Switch to address 7 if only one master unit is being installed or to desired device address (address must not match address of any other device on same parallel I/O channel) if more than one master unit is present. Address is determined by system software (see site director).

- Set Diagnostic Control Switches as follows:

Switch 2⁰ - Not used

Switch 2¹ - Down (bypasses displaying result of detailed memory test selected by switch 2²).

NOTE

Switch 2¹ must be down to display the failing test number in the LEDs. If a test 1 (memory test) failure is detected, place switch 2¹ up to display the specific memory bank or IC failure as selected by switch 2².

Switch 2² - Down (allows failing memory bank to be displayed in LEDs).

Switch 2³ - Up (disables running test 7 of resident diagnostics).

Switch 2⁴ and 2⁵ - Set to RAM memory size available as follows (each XA243-A option adds 16K of RAM):

<u>Switch 2⁵</u>	<u>Switch 2⁴</u>	<u>RAM Size</u>
Down	Down	16K (Standard)
Down	Up	32K (Option)
Up	Down	48K (Option)
Up	Up	64K (Option)

Switch 26 - Down (does not loop on diagnostics).

Switch 27 - Down (enables running diagnostic tests).

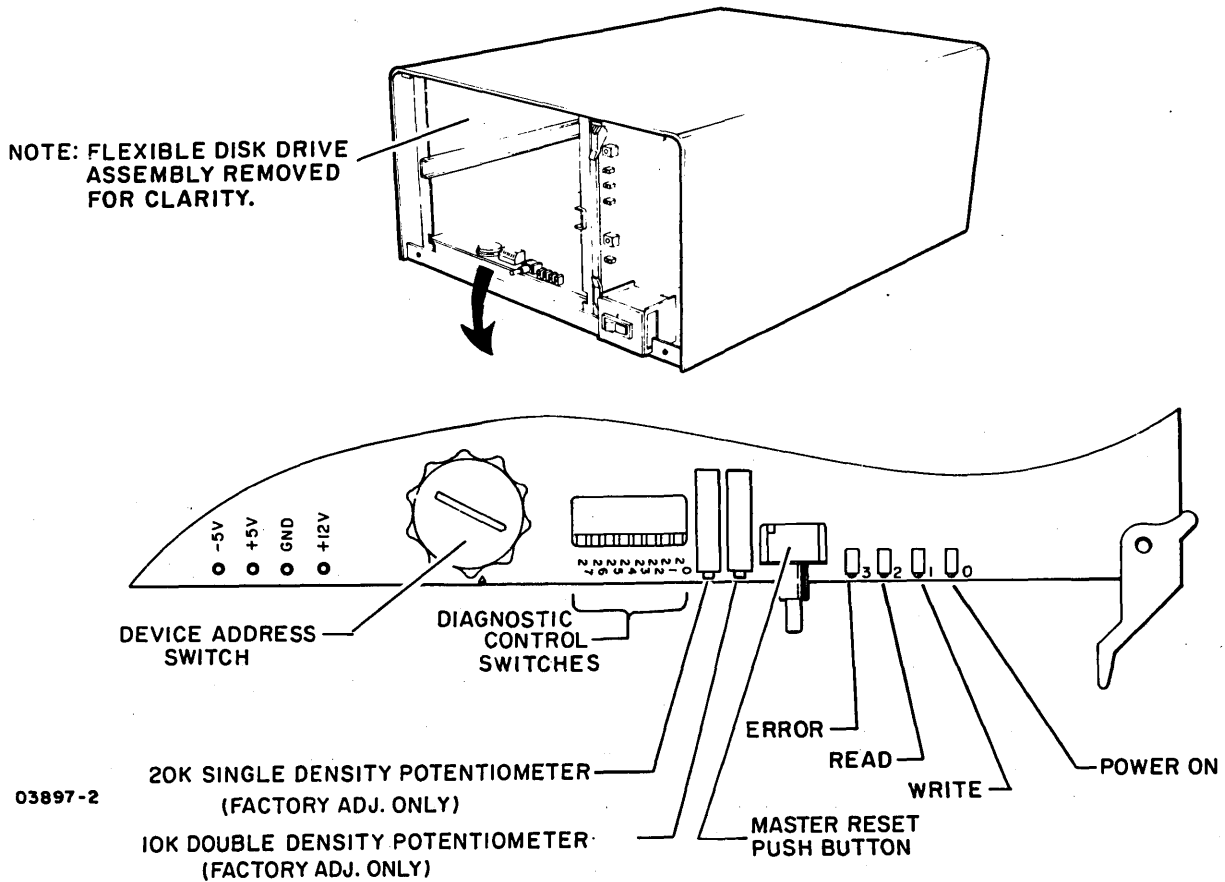


Figure 3-2. Controller Board Switches and Indicators

5. Refer to figure 3-3 and install I/O cable and terminator assembly per the following as applicable:

NOTE

A standard 25-pin RS-232-C compatible cable CANNOT be substituted for the specified I/O cable.

- Master flexible disk unit - If there are no other devices attached to IST parallel interface channel, connect 25-pin I/O cable (CDC 61408865) from parallel interface channel of IST terminal to either 25-pin I/O connector at rear of flexible disk unit. Connect terminator assembly (type FT116-A) to other 25-pin I/O connector of drive unit. Tighten retaining screws to hold cable connectors in place.

If other devices are already attached to IST parallel interface channel, remove terminator assembly from last device on channel and connect 25-pin I/O cable (CDC 61408865) between last device and either 25-pin connector at rear of flexible disk unit. Install the terminator assembly to other I/O connector of drive unit. Tighten retaining screws to hold cable connectors in place.

- Slave flexible disk unit - Connect 50-pin I/O cable (CDC 61408976) between 50-pin connectors of master and slave flexible disk units. Note that 25-pin I/O connectors are not used on slave unit.
- Verify that no flexible disk is installed in drive unit(s).

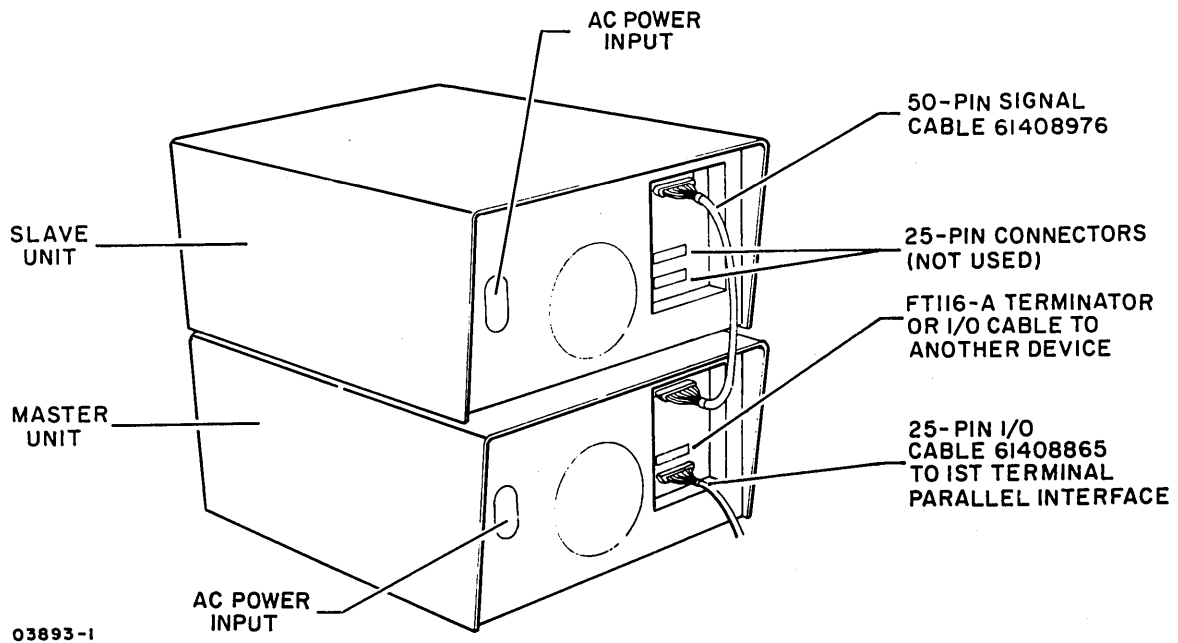


Figure 3-3. I/O Cable and Terminator Installation

6. Connect ac power cord to rear of unit, check that power on/off switch is in off position and plug ac line cord into site outlet.

WARNING

Applying improper voltage to the flexible disk subsystem can damage components. Read label on back of unit for proper voltage and frequency.

RAM OPTION INSTALLATION

Perform the following steps to install a 16K by 8-bit RAM option (XA243-A). Up to three RAM options can be installed in a master unit to expand the memory size to a total of 64K 8-bit words. Observe MOS circuit handling precautions described in section 6 when installing RAM ICs.

1. Remove controller board from unit.
2. Install RAM ICs in existing sockets on controller board as follows:
 - First RAM option in locations C1, C2A, C2B, C3, C4A, C4B, C5, and C6.
 - Second RAM option in locations D1, D2A, D2B, D3, D4A, D4B, D5, and D6.
 - Third RAM option in locations A1, A2A, A2B, A3, A4A, A4B, A5, and A6.
3. Set Diagnostic Controls Switches 2⁴ and 2⁵ to total RAM size available (see step 4 of Subsystem Installation for required switch settings).
4. Reinstall controller board in unit.
5. Affix FCO log and equipment identification tag to rear of unit as shown in figure 3-4.

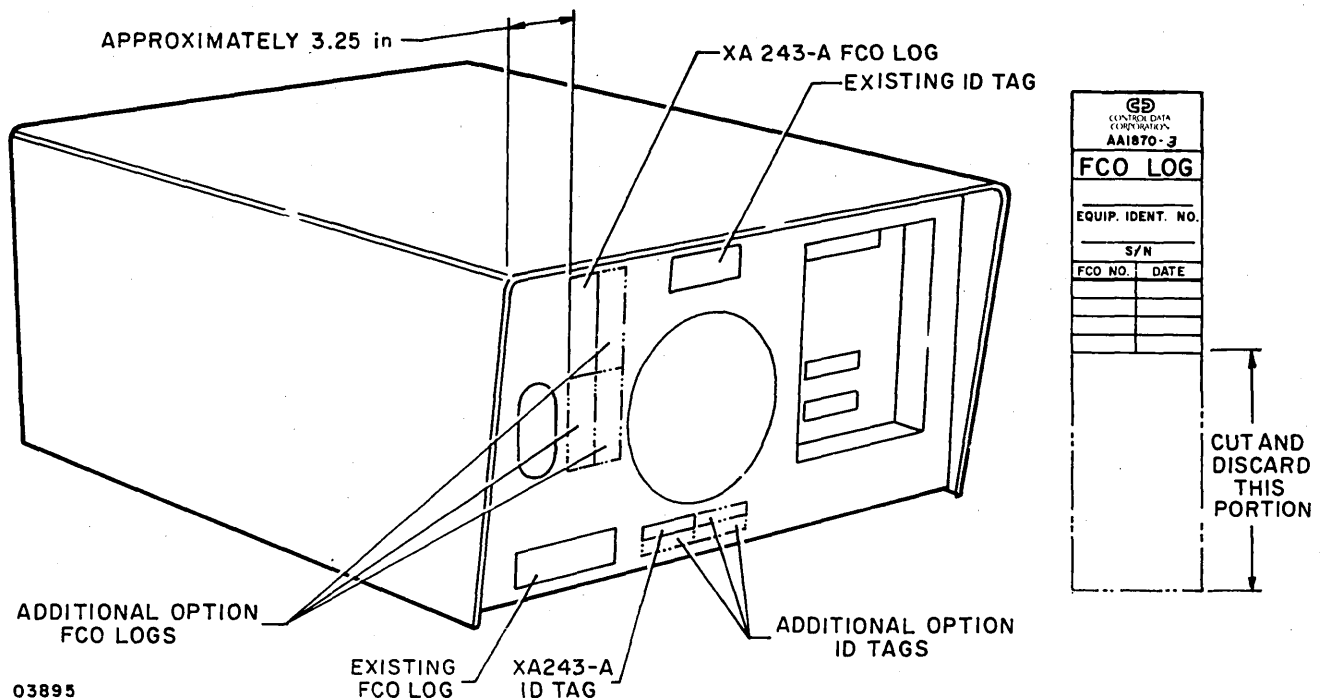


Figure 3-4. RAM Option FCO Log and ID Tag Placement

CHECKOUT

Perform the following steps to checkout the operational capability of the flexible disk subsystem including any installed options. If any problems are encountered, refer to the SAM listings in section 6A for corrective action.

1. Apply power to disk subsystem (procedure 1) and verify that four LEDs on power supply are lit (figure 3-5).
2. Observe four LEDs at front of controller board (figure 3-2). Immediately after turning power on (at start of diagnostic test execution) all four LEDs are turned on for a short period of time as an LED test. As the self-test diagnostic executes, the lower three LEDs indicate which test is in process. LED 2³ lit indicates a diagnostic test error. Note that with no flexible disk installed, LEDs 2⁰, 2¹, and 2² should be lit and LED 2³ should be unlit indicating that diagnostic is at test 7 but drive is not ready.

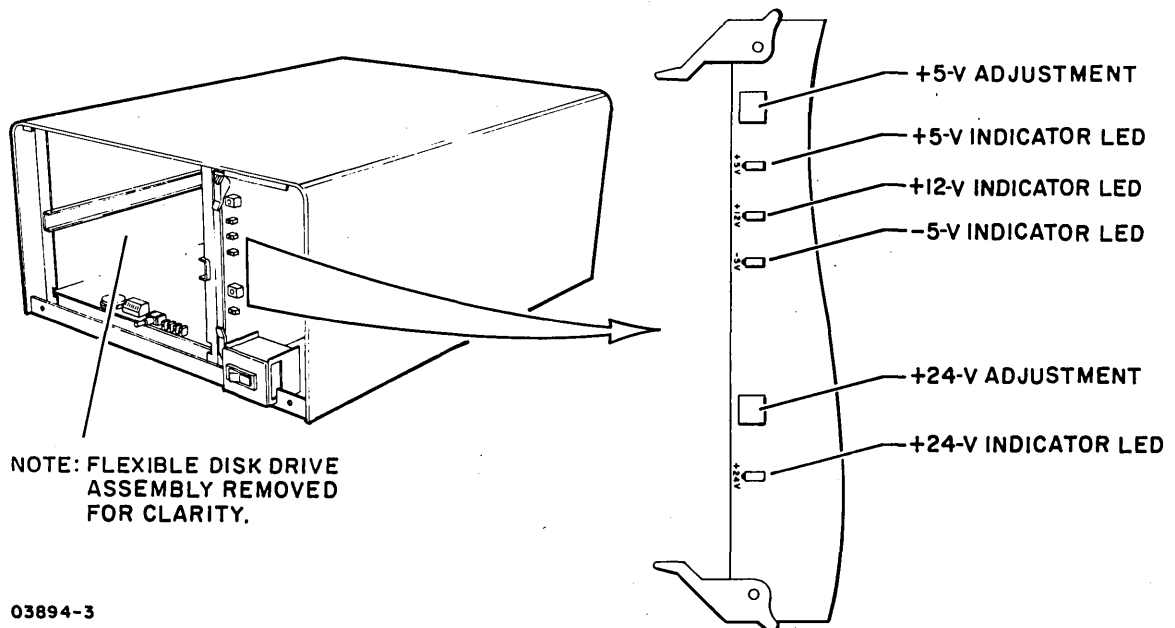


Figure 3-5. Power Supply Voltage Indicators

3. Install Micro Plato instructional flexible disk (CDC part number 76773000)* in drive unit (procedure 2). This initiates write/read checks of test 7 (last resident diagnostic test). Upon successful completion, LED 20 remains lit and functions as a power-on indicator.
4. Remove Micro Plato instructional flexible disk from drive unit.
5. Verify that power is applied to last peripheral device connected to parallel interface channel. Note that last device must be powered on for correct operation of parallel interface channel as this device provides +5 volts to terminator.
6. Load and execute DIAG Flexible Disk Diagnostics from IST terminal as follows:

NOTE

The DIAG Flexible Disk Diagnostics only work with IST display terminals having a 16K memory option.

NOTE

There are two modes of operation in the flexible disk subsystem that allow the terminal to load information into subsystem memory. One mode is via DMA operations and the other mode is via interrupt routines. Both operating modes are tested by the DIAG Flexible Disk Diagnostics.

For terminal log-in or diagnostic loading problems, refer to the applicable terminal hardware maintenance manual (see preface for publication number).

*A single-density formatted flexible disk (CDC part number 66312995) is provided on an interim basis that can be used in place of the Micro Plato instructional flexible disk for initial subsystem checkout.

- a. Use assigned log-in procedure and select Flexible Disk Diagnostics found under DIAG. When selected, crt displays:

Flexible Disk Diagnostics
Now Loading Local Programs

This loads a controlware program into memory of terminal that allows terminal to communicate with flexible disk subsystem.

- b. At completion of local programs load, crt displays:

Now Loading Flexible Disk Subsystem

This loads a second controlware program into memory of IST terminal, which loads same program into flexible disk subsystem memory via DMA operations. This second program is required by flexible disk subsystem to allow its internal Z80 CPU to interpret commands from IST terminal in order to perform additional testing of flexible disk subsystem.

- c. At completion of flexible disk subsystem load, crt displays:

Good Load (or Disk System Not Ready to Load)

If Incorrect Load Please Try Option Ten (10)
And Long Master Clear of FDSS. If Good Load
Please Put Disk Into Unit Now.

Choose Which FDSS Diagnostic You Want to Run

1. Seek Test
2. Terminal/FDSS Communication Check
3. Device Address Test
4. Media Test
5. Test Number of Sides
6. Head Loaded Test
7. Terminal Interrupt Test
8. Line Sync Test
9. Index Pulse
10. Try Loading Again

Install diskette in drive unit to be tested or retry loading again per option 4 as applicable.

NOTE

Flexible disk must be installed only in device to be tested. For example, if testing slave unit, remove flexible disk from master unit and install in slave.

d. Make appropriate keyboard entry for action desired.

- If test 1 (Seek Test) is selected, crt displays:

Is your disk single or double density?

1. Single
2. Double

What Side Do You Want to Seek? (0 or 1)

What Track Do You Want to Seek? (0 to 76)

Enter values for desired side and track. Upon completion of a track seek, crt displays:

Good Seek (or Bad Seek)
Test Completed
Press Next to Continue

- If test 2 (Terminal/FDSS Communication Check) is selected, terminal sends a 256-byte block of data to subsystem memory. Subsystem returns data block and terminal checks for correct content. Upon completion, crt displays:

Comm Line OK (or type of error, such as Status Error, Data Error, etc.)

Test 2 writes to, and reads from, subsystem memory via interrupt mode. This assures that both operating modes (DMA and interrupt) are working OK.

- If test 3 (Device Address Test) is selected, crt displays:

What Channel Number do You Want to Check?
(If Communications Are Established Test Will be Good, If Communications Are Not Established Test Will Fail. Channel Numbers Are 0 - 9 With Channel 7 Being The Normal One).

Enter assigned device address of flexible disk subsystem. Upon completion, crt displays:

Comm Line OK (if device address check is OK, or Status Error if device address entered does not match device address of FDSS).

- If test 4 (Media Test) is selected, crt displays:

Is your disk single or double density?

1. Single
2. Double

This test takes about three minutes to run. If the disk has a media problem the error LED (2³) will come on. Press NEXT to perform this test.

Upon completion, crt displays:

GOOD DISK OR BAD DISK

Then press NEXT to select a new test.

- If test 5 (Test Number of Sides) is selected, crt displays:

If a write fault status exists, LED 2³ (Error) will go on. If not, all LEDs will remain unlit. Press NEXT to perform this test.

Execute test 5 per display prompts and observe result.

- If test 6 (Head Loaded Test) is selected, crt displays:

If the head will not load correctly, LED 2³ (Error) will come on. If head loads correctly, all LEDs will remain unlit.

Press NEXT to perform this test.

Execute test 6 per display prompts and observe result.

- If test 7 (Terminal Interrupt Test) is selected, crt displays:

INTERRUPT OCCURRED (or NO INTERRUPT if test fails)

Press NEXT to continue.

Observe test 7 result and press NEXT to continue.

- If test 8 (Line Sync Test) is selected, crt displays:

If the line sync will not work, LED 2³ (Error) will come on. If line sync will work, all LEDs will remain unlit. Press NEXT to perform this test.

Execute test 8 per display prompts and observe result.

- If test 9 (Index Pulse Test) is selected, crt displays:

If there is no index pulse, LED 2³ (Error) will come on. If there is an index pulse, all LEDs will remain unlit. Press NEXT to perform this test.

Execute test 9 per display prompts and observe result.

7. After successful completion of preceding tests, check that all diagnostic control switches on controller board are set as required and reinstall front panel of unit (procedure 3). If Micro Plato instructional flexible disk (CDC part number 76773000) is being used, additional testing can be performed through use of stored programs on this disk. Refer to Micro Plato User's Installation Guide for test information (see preface for publication number).

7. After successful completion of preceding tests, check that all diagnostic control switches on controller board are set as required and reinstall front panel of unit (procedure 3). If Micro Plato instructional flexible disk (CDC part number 76773000) is being used, additional testing can be performed through use of stored programs on this disk. Refer to Micro Plato User's Installation Guide for test information (see preface for publication number).

00
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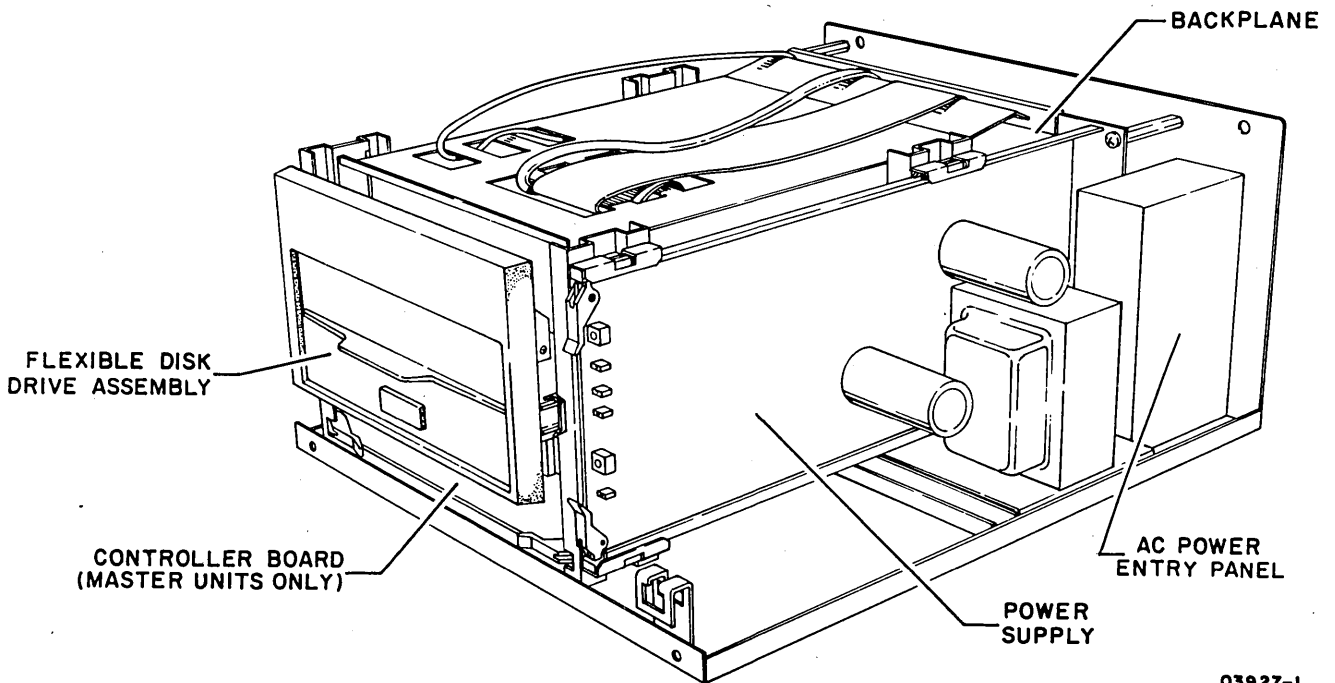
C

This section provides a functional description of the five major elements of the flexible disk subsystem:

- AC Power Entry Panel
- Power Supply
- Backplane
- Flexible Disk Drive (FDD) Assembly
- Controller Board (Master Units Only)

Also provided are the connector pin assignments for the external parallel I/O channel and slave flexible disk unit interfaces, and the connector pin assignments for the internal signals of the flexible disk subsystem.

Refer to figure 4-1 for location of the major elements within the subsystem and to figure 4-2 for a block diagram of the subsystem configuration.



03927-1

NOTE: COVER AND FRONT
PANEL REMOVED
FOR CLARITY.

Figure 4-1. Major Elements of Subsystem

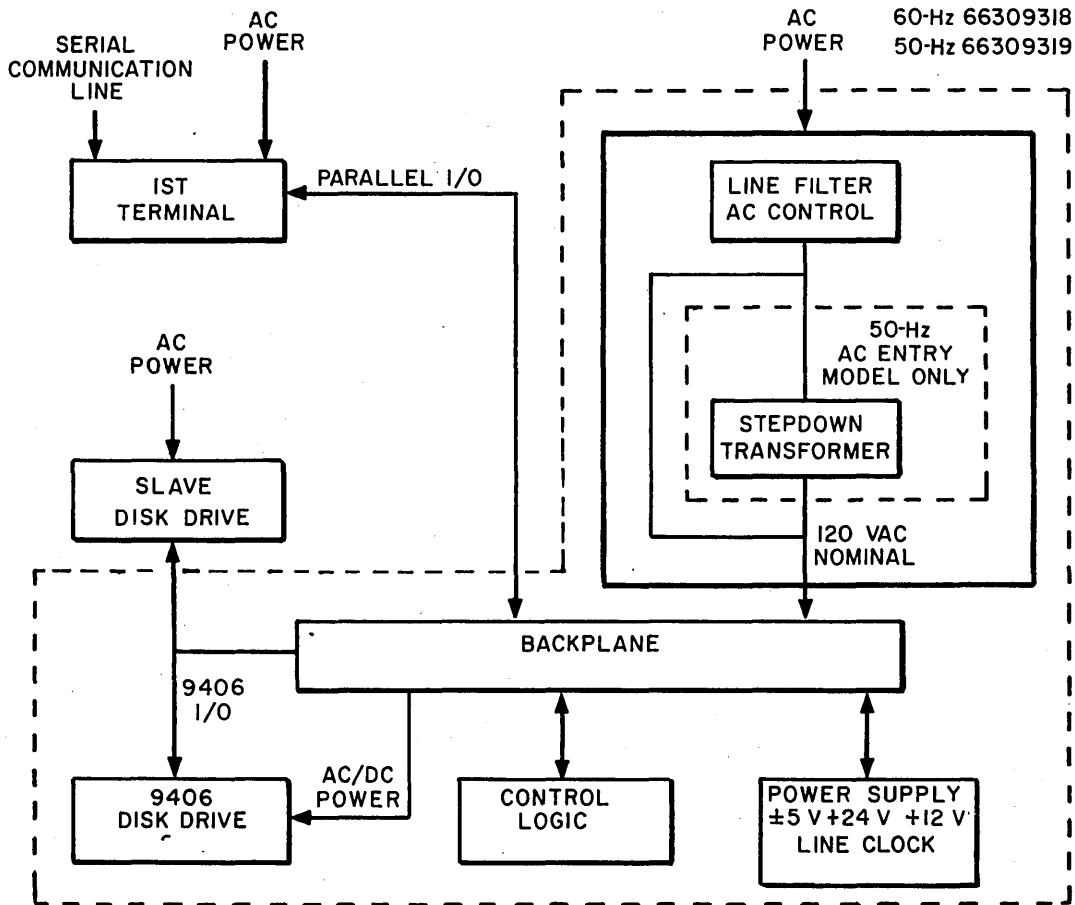


Figure 4-2. Subsystem Block Diagram

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AC POWER ENTRY PANEL

The ac power entry panel contains an RFI line filter and a detachable ac power cord. A separate ac power entry panel is used for the 60-Hz and 50-Hz equipments. The 50-Hz panel also contains a step-down transformer and a 220/240-volt selector switch. Early versions of both the 60-Hz and 50-Hz panels contained the primary power circuit breaker. Later versions have the circuit breaker mounted at the front of the unit.

POWER SUPPLY

The power supply is a switching supply contained on a single PC card. Input voltage is 120 V ac nominal. The 50-Hz units require an external step-down transformer (provided by the 50-Hz ac entry panel) to lower the 220-V/240-V ac input voltage to 120 V. The power supply provides the following nominal dc output voltages and full-load currents:

- +12 V at 0.45 A
- -5 V at 0.1 A
- +5 V at 5 A
- +24 V at 2 A

The power supply is divided into two basic sections, a +24-V section, and a logic voltage section for the +12-V, +5-V, and -5-V output voltages. All dc outputs have over-current protection and are not damaged by short circuits. The +5-V output has an over-voltage sensing circuit that shuts off all outputs when the +5-V output rises between +5.5 V to +6.0 V. No other outputs have over-voltage protection.

The input ac line voltage is full-wave rectified and is chopped at a high-frequency rate (25 to 40 kHz) through the primary of the input transformer by a switching transistor. The transformer steps down the high-frequency ac to the secondary windings. These ac voltages are then rectified and filtered to provide the various power supply outputs.

Voltage control is performed in each power supply section by a regulator IC that compares a sample of the output voltage to an internal reference voltage. A resulting error difference is used to control the conduction time of a switching transistor through an optical coupler. Only the +24-V and +5-V output voltages are sensed to control the switching transistor pulse width in their respective power supply section. All other outputs have 3-pin IC regulators to regulate their output voltages.

The power supply contains four red board-edge LEDs that indicate the presence of the +24-V, +12-V, +5-V, and -5-V outputs. Two adjustment potentiometers are also provided for adjusting the +24-V and +5-V outputs. Test points on the board edge of the controller board are to be used when performing the +5-V alignment procedure. The +12-V, +5-V, and -5-V test points are available on the controller board edge.

BACKPLANE

A printed-circuit mother-board backplane provides the internal signal and power connections for the various modules of the disk subsystem and provides the external I/O channel interface connections.

FLEXIBLE DISK DRIVE (FDD) ASSEMBLY

The flexible disk drive (FDD) assembly is a random-access, data-storage device that writes and reads data from a rotating flexible disk. All input/output data and control operations are performed under microprocessor control from the controller board. The basic function of the drive assembly is to indicate to the controller when it is ready for operation, and respond to controller commands to:

- Receive and generate control signals
- Position the read/write heads to selected tracks
- Write or read data on the flexible disk when selected

Signals received and transmitted by the FDD are shown in figure 4-3. All signals received by the FDD are gated with Unit Select so that no stepping, reading, or writing can be performed on an unselected FDD. Also, all signals generated within the FDD, except the Ready signal, are gated with Unit Select so that no signals can be transmitted from an unselected FDD.

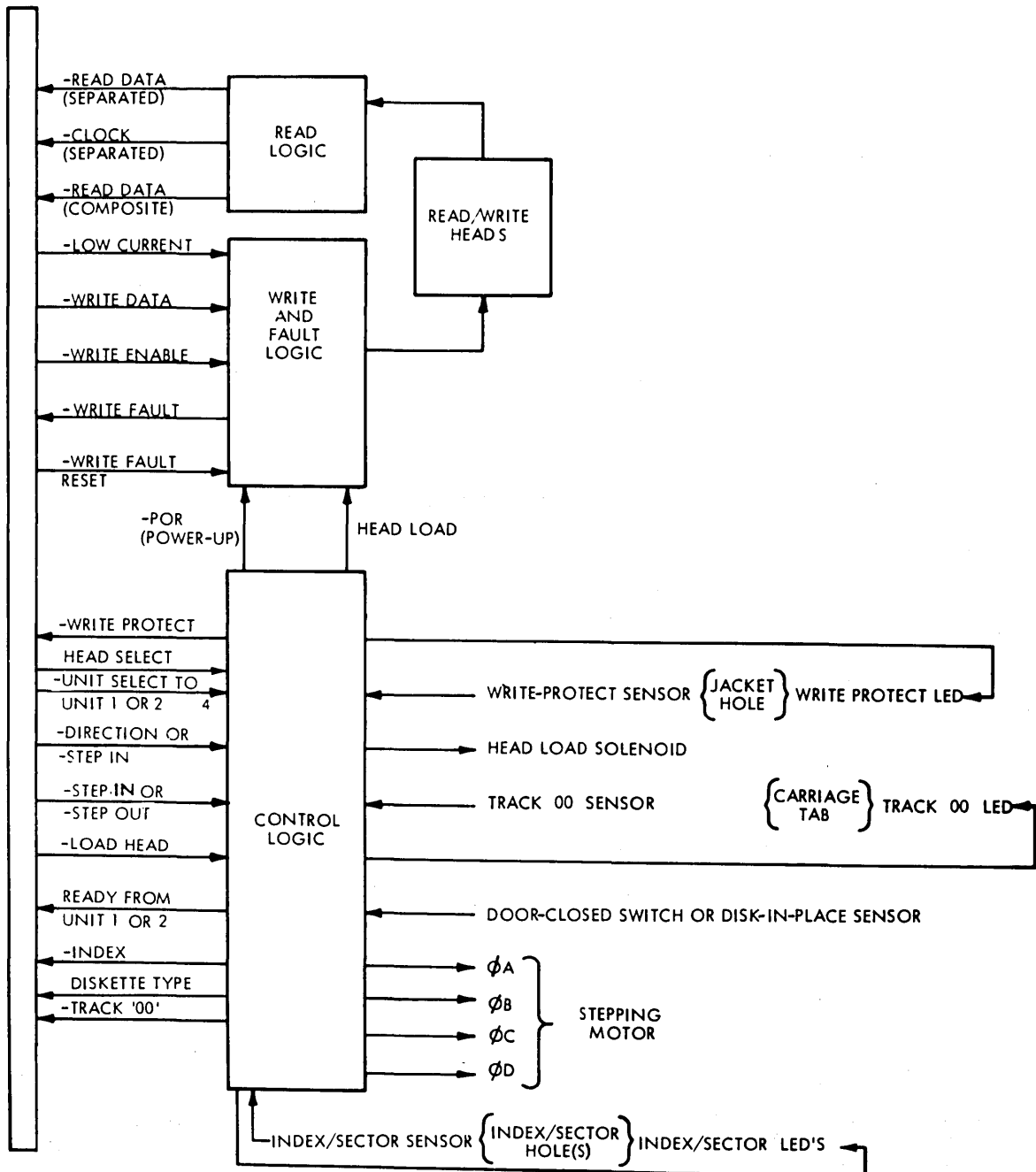
Controller Step and Direction commands initiate a track-seek operation on a selected FDD. The FDD transmits Index pulses as long as it selected. The selected FDD also transmits a Track 00 signal to the controller whenever the read/write heads are at Track 00.

Positioning of the carriage-mounted read/write heads is accomplished by a band-driven stepper motor. Each step command increments the stepper motor which moves the band. The band increments the read/write heads one track position for each step command.

During a write operation, the selected FDD receives Head Select, Write Enable, Write Data, and Low Current (Track 43 or greater) signals. If a write fault occurs, a Write Fault signal is transmitted to the controller. During a read operation, the selected FDD receives a Head-Load command. The Write Enable line remains high thereby specifying a read operation and the FDD transmits Composite Read Data signals to the controller.

A read or write operation begins by placing the read/write heads in contact with the flexible disk with a Head-Load command at the desired track. To write on the disk, a Write Enable is sent by the controller to condition the write logic. The write current then in the head reverses polarity synchronously with

the low-to-high transitions of the Write-Data pulses from the controller. The current reversals cause magnetic flux reversals on the desired disk track. Erasure of previously recorded data is simultaneously accomplished during the writing operation in addition to a delayed-tunnel erase, which ensures disk interchangeability.



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Figure 4-3. Drive Assembly Functional Block Diagram

To read from the flexible disk, magnetized bits in the format of the pre-recorded data are sensed by the read/write heads. This signal is amplified, digitized, and transmitted to the controller.

Refer to the 9406 Flexible Disk Drive Assembly Hardware Maintenance manual for additional information (see preface for publication number).

CONTROLLER BOARD (MASTER UNITS ONLY)

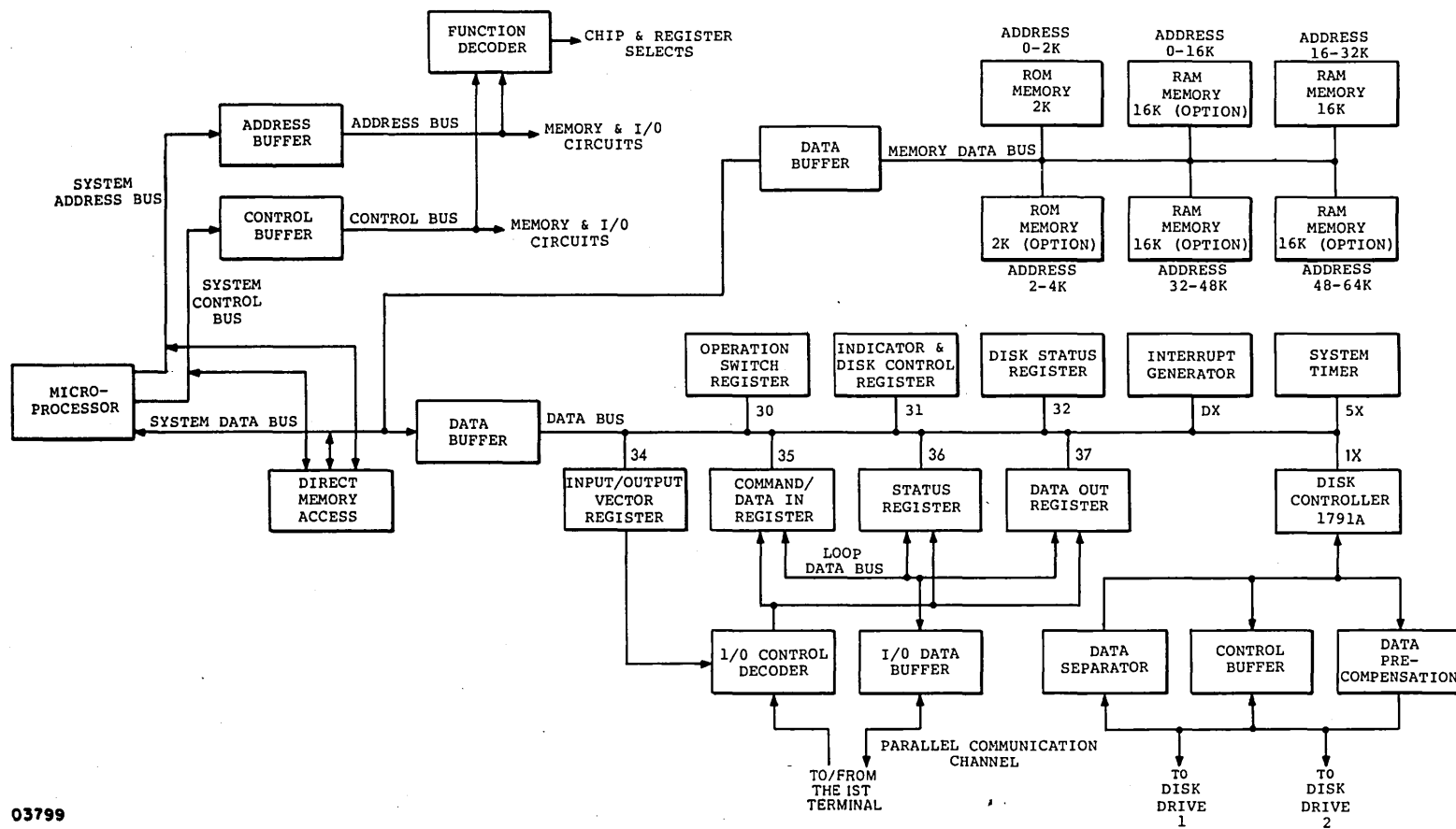
The controller board is present only in the master units. A single controller board provides control and directs all operations of both a master and optional slave unit. This is accomplished by interfacing the controller board to both 9406 Disk Drive assemblies (master and slave) connected in parallel via an external 50-pin signal cable.

Large-scale integrated circuits (LSI) are used in all major areas of the controller's operation. This includes:

- A Z80A microprocessor clocked at 4 MHz.
- A 9517A-4 direct-memory-access (DMA) controller.
- A 1791A-02 flexible-disk controller (FDC).
- Two 2716 (2K by 8-bit) erasable programmable read-only memories (EPROM).
- A Z80 Counter/timer circuit (CTC).
- A 9519A interrupt controller.
- 16K by 8-bit bytes of random access memory (RAM). IC sockets are available for expansion to 64K by 8-bits.
- Three 74LS374 8-bit data latches for I/O data, status, and commands.

The controller board also includes eight switches that can be read by the microprocessor for control and option-available information, a device address switch for the PLATO parallel I/O channel, a master reset switch that provides its status to the control program, and four LEDs that provide visual status indications.

A detailed block diagram of the controller board is shown in figure 4-4. The following paragraphs describe the major logic circuits. Refer to the applicable vendor manuals for details of operation as required.



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Figure 4-4. Controller Board Block Diagram

Z80A MICROPROCESSOR

A Z80A microprocessor is used as the major control element of the module. The Z80 provides three major buses (16-bit address bus, 8-bit bi-directional data bus, 13-line control bus); 158 different instructions; 208 bits of read/write memory; two sets of data, control, and address registers; an arithmetic and logic unit (ALU); and necessary instruction decode and control logic.

As each instruction is read from memory, it is placed in an instruction register and decoded. The internal control logic performs this function and then generates all the necessary control signals to read/write data from or to the registers, controls the ALU, and provides all required external control signals.

All instructions are executed by stepping through a specific series of basic control operations applicable to a given instruction.

Each basic control operation - such as OP code fetch, memory read, memory write, etc. - takes from three to six clock periods to complete and may be lengthened to synchronize the CPU to the speed of external devices. The additional clock periods are termed wait states and increase the total instruction execution time accordingly. The CPU examines the Wait line during T2 (and every subsequent TW) of each machine cycle and adds in a wait state of one clock period if the Wait signal is active.

Accessing RAM memory on the controller board does not require any addition of wait states. The EPROM memory, used only for the initial power-on diagnostics and autoloading, requires the addition of one wait state for each memory reference. The 1791A flexible disk controller requires one wait state for each reference made to it by the Z80. The Write Fault Reset to the 9406 Flexible Disk Drive assembly requires one wait state.

9517A-4 DIRECT-MEMORY-ACCESS (DMA) CONTROLLER

The 9517A-4 direct-memory-access (DMA) controller is a peripheral interface IC that allows direct memory access to the subsystem RAM. Four independent DMA channels are provided. Each channel is designed to enable an external device to transfer information to or from the subsystem memory. In the flexible disk subsystem design, however, only three channels are wired for external device use. Channels 1 and 3 are both used by the 1791 flexible disk controller IC, and channel 2 is used by the PLATO parallel I/O channel. Channel 0 is not used.

Separate internal registers are provided in each channel for mode control, current address, base address, current word count, and base word count.

1791A-02 FLEXIBLE DISK CONTROLLER (FDC)

The 1791A-02 flexible disk controller (FDC) performs the functions of a flexible disk formatter and controller in a single integrated circuit. The FDC controls both single-density and double-density formatting. The FDC provides a 16-bit cyclic redundancy check (CRC) with the polynomial: $G(X) = X^{16} + X^{12} + X^5 + 1$. The IC is designed for bidirectional one's-complemented data transfers. Therefore, all commands sent to the FDC, and status read from the FDC, must be transmitted and received by the Z80 as one's-complemented data. Data is complemented when written on the flexible disk and complemented when read off the flexible disk. Therefore, true data written to the FDC is also read from the FDC as true data.

It is possible to read and write to/from the FDC on a byte-by-byte basis for single-density storage. However, to operate in double density it is necessary to use the 9517A-02 DMA controller to maintain the proper data rate for flexible disk read/write operations.

2716 ERASABLE PROGRAMMABLE READ-ONLY MEMORY (EPROM)

The 2716 EPROM is a 16 384-bit (2K by 8-bit) ultraviolet erasable and electrically programmable read-only memory. The read access time for the IC is 450 ns. The standard subsystem EPROMs uses memory addresses 0000_{16} through $0FFF_{16}$.

The stored program in the EPROM provides subsystem diagnostics that include LED testing, ROM checksum, LSI device testing, memory testing, disk read/write testing, autoloader, and initial PLATO parallel I/O channel interfacing with the host terminal.

Z80 COUNTER/TIMER CIRCUIT (CTC)

The Z80 counter/timer circuit is a programmable IC with four 8-bit internal independent channels that provide counting and timing functions under control of the Z80 microprocessor. The Z80 can configure the CTC channels to operate under various modes and conditions as required. In either timer or counter mode, an 8-bit, Z80-readable down-counter indicates the number of counts-to-go until zero. Interrupts can be programmed to occur on the zero count of any channel. The interrupt logic provides automatic interrupt vectoring.

All four of the counter timer circuits have external enables that can be selected by the Z80. Three of the counters have count-zero outputs. Two of the outputs are wired to the inputs of two of the other counters. This provides the ability to cascade the network into two 8-bit counters or essentially one 16-bit counter for each two CTCs used. Each of the CTCs used as an enable to one of the other has an external logic signal wired to its own input (figure 4-5). One external input is the Head-Down-Load (HDL) signal that indicates the disk was instructed to lower its read/write head. The counters can then be programmed to time out the mechanical delay that will take place in the 9406 drive (approximately 40 milliseconds). The zero-count output is sent to the 1791 flexible disk controller IC as a status bit. This status input means that the read/write head should be on the disk surface. This status bit is called Head-Load Timing (HLT).

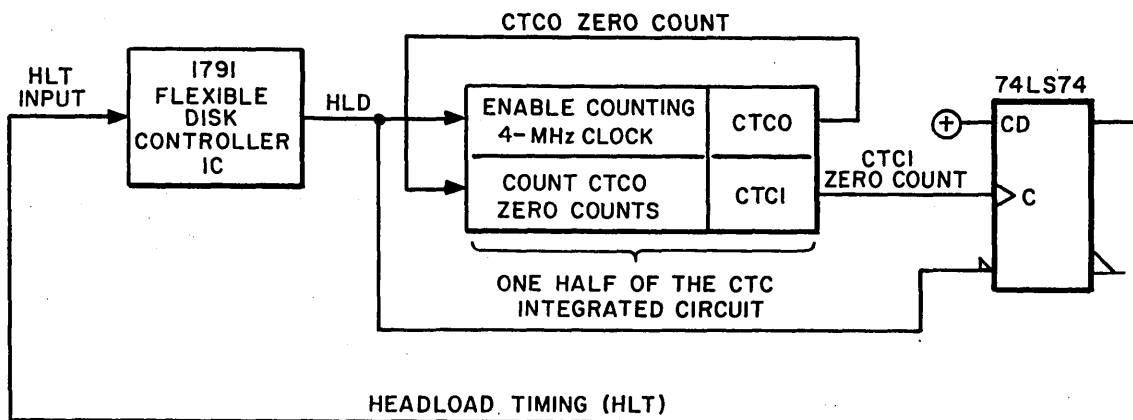


Figure 4-5. External Wiring of the CTC for Head-Load Timing

The other two CTCs of the integrated circuit are wired to allow them to be used for timing as a real-time clock. There is a circuit in the power supply that generates a pulse for every period of line voltage that occurs. This pulse is wired to the input of one of the CTCs (CTC2). The output of this CTC (CTC2) is wired as the input of the fourth CTC (CTC3). Together, these two CTCs provide a programmable down-counter 16 bits long (figure 4-6).

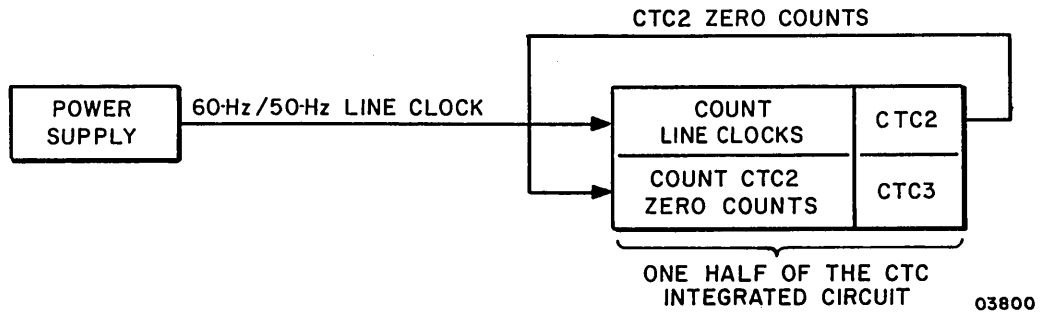


Figure 4-6. External Wiring of the CTC for Real-Time Clock

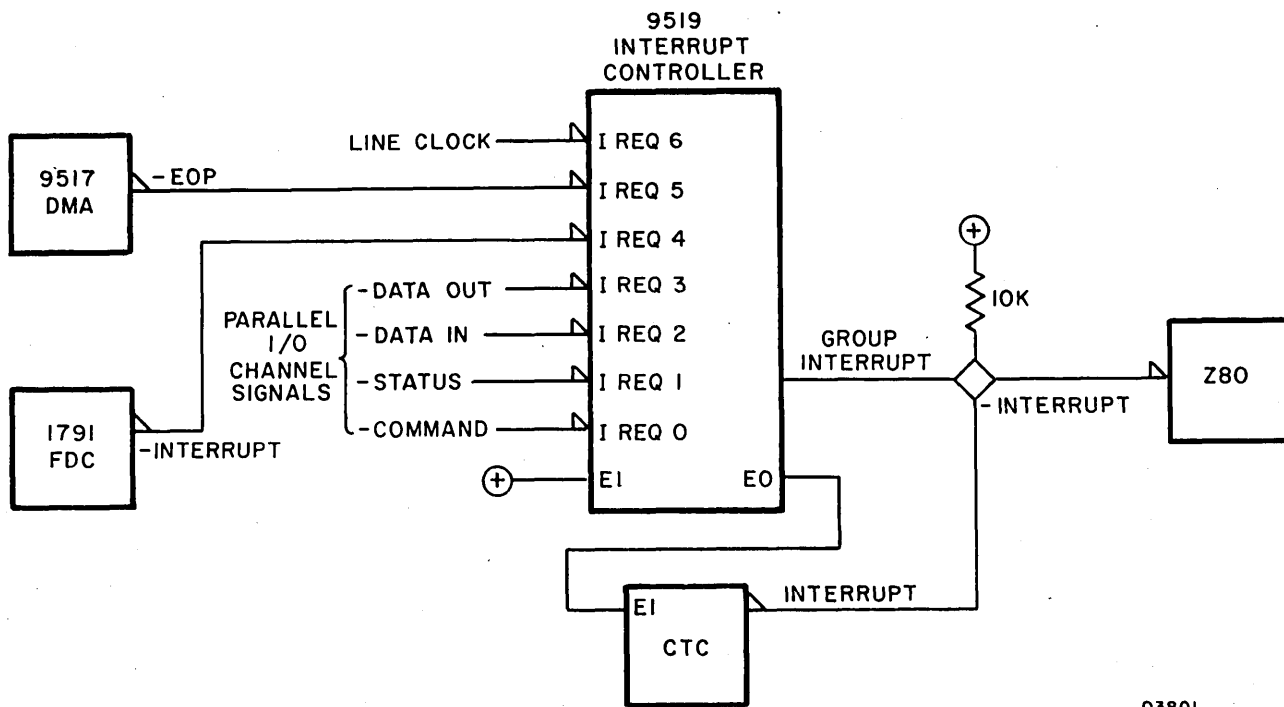
Note that it is possible to use the four CTC circuits in the CTC IC as four distinct timers by ignoring the input enables (selected only by program control) and use the four CTCs to count down the 4-MHz clock input to the IC.

9519 INTERRUPT CONTROLLER

The 9519 interrupt controller can manage up to eight maskable interrupt request inputs, resolve priorities, and supply up to four bytes of programmable response for each interrupt. The controller board only uses seven of these interrupts. They are:

- IREQ7 Not Used
- IREQ6 Line Clock
- IREQ5 DMA End of Processes
- IREQ4 1791 FDC Interrupt
- IREQ3 Parallel I/O Data Out (to the terminal)
- IREQ2 Parallel I/O Data In (from the terminal)
- IREQ1 Read Status (to the terminal)
- IREQ0 Write Command (from the terminal)

The interrupt network is shown in block diagram form in figure 4-7.



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Figure 4-7. Flexible Disk Interrupt Network

EXTERNAL INTERFACE PIN ASSIGNMENTS

Tables 4-1 and 4-2 list the external interface pin assignments for the parallel I/O channel and slave drive unit channel, respectively. Both of the interfaces use standard TTL-to-TTL circuits and logic levels. For external signal definitions, refer to the applicable hardware maintenance manual listed in the preface.

INTERNAL CONNECTOR PIN ASSIGNMENTS

Figure 4-8 shows the internal connector pin assignments for the flexible disk subsystem. For signal definitions, refer to the 9406 Flexible Disk Drive Hardware Maintenance Manual (publication number is listed in the preface).

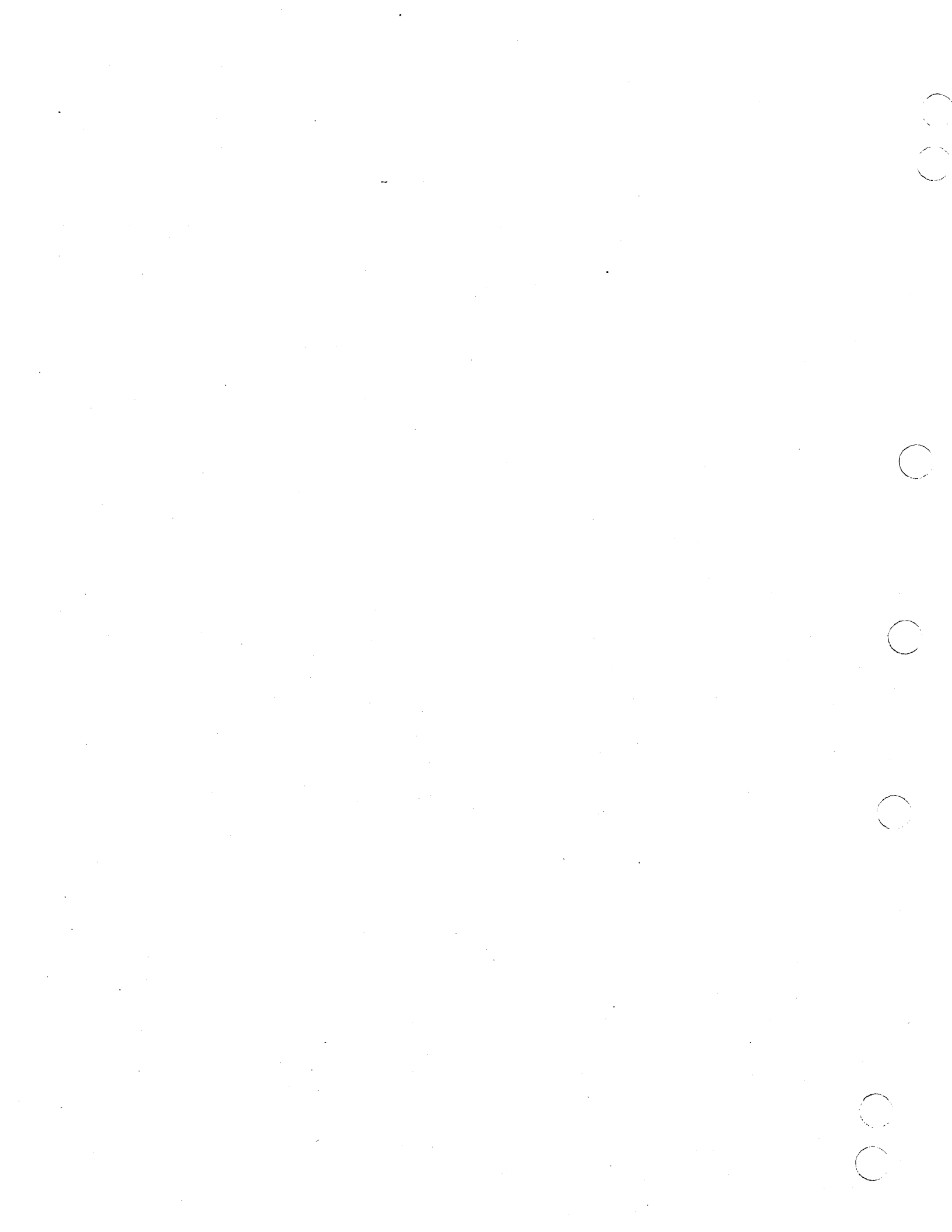
TABLE 4-1. PARALLEL I/O CHANNEL PIN ASSIGNMENTS

Signal	In/Out	Active Level	Pin Number
Data 2 ⁰	Both	High	J6, J7-15
Data 2 ¹	Both	High	J6, J7-16
Data 2 ²	Both	High	J6, J7-17
Data 2 ³	Both	High	J6, J7-18
Data 2 ⁴	Both	High	J6, J7-21
Data 2 ⁵	Both	High	J6, J7-22
Data 2 ⁶	Both	High	J6, J7-23
Data 2 ⁷	Both	High	J6, J7-24
+5 V (Terminator only)			J6, J7-13
Address 2 ⁰	In	High	J6, J7-2
Address 2 ¹	In	High	J6, J7-3
Address 2 ²	In	High	J6, J7-4
Address 2 ³	In	High	J6, J7-5
Address 2 ⁴	In	High	J6, J7-6
Not Used (in this device)			J6, J7-7
Not Used (in this device)			J6, J7-9
-External Write	In	Low	J6, J7-8
-External Read	In	Low	J6, J7-10
-External Interrupt	Out	Low	J6, J7-12
Not Used (in this device)			J6, J7-11
Ground			J6, J7-1
Ground			J6, J7-14
Ground			J6, J7-19
Ground			J6, J7-20
Ground			J6, J7-25

TABLE 4-2. SLAVE DRIVE UNIT CHANNEL PIN ASSIGNMENTS

Signal	In/Out	Active Level	Pin Number*
-Read Data Composite	In	Low	J5-2
-Head Load	Out	Low	J5-4
-Track 00	In	Low	J5-6
-Index	In	Low	J5-8
-Low Write Current	Out	Low	J5-10
-Step	Out	Low	J5-12
-Direction (Increase)	Out	Low	J5-14
-Write Enable	Out	Low	J5-16
-Write Data	Out	Low	J5-31
-Unit Select 1	Out	Low	J5-33
-Unit Select 2	Out	Low	J5-29
-Unit Ready Status 1	In	Low	J5-50
-Unit Ready Status 2	In	Low	J5-48
-Write Protect	In	Low	J5-42
-Head Select (low = head 1; high = head 0)	Out	Low	J5-40
-Write Fault	In	Low	J5-38
-Write Fault Reset	Out	Low	J5-36
-Diskette Type (Two Sided)	In	Low	J5-34

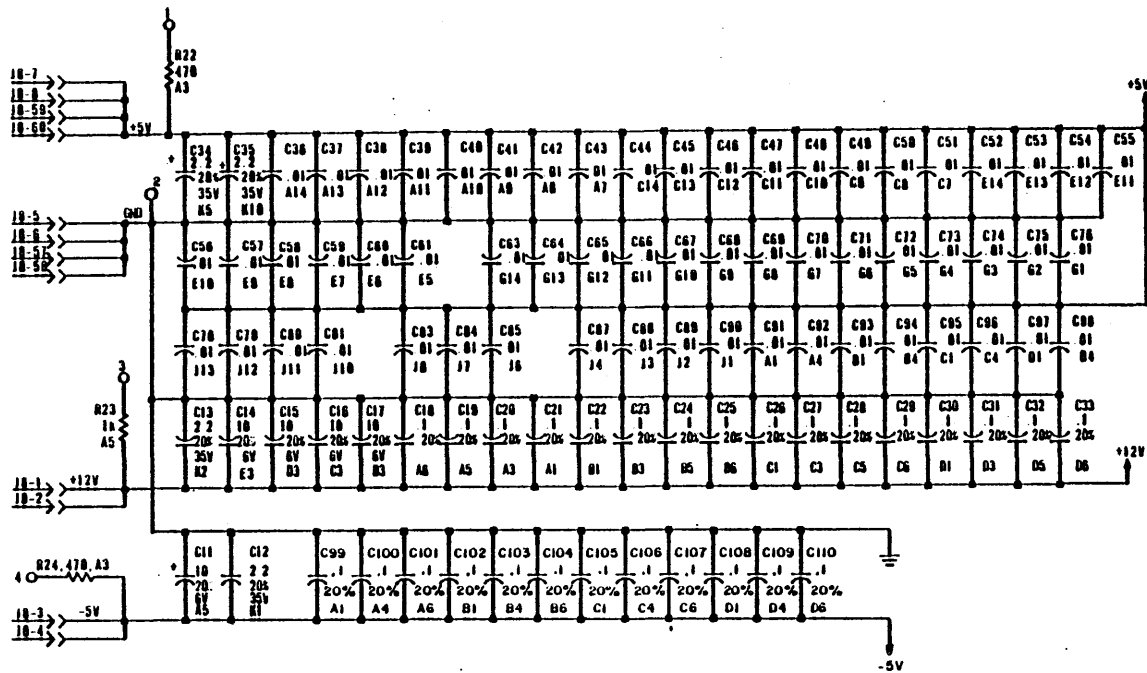
*Pins 1, 3, 5, 7, 9, 11, 13, 15, 17, 18, 20, 22, 24, 26, 28, 30, 32, 35, 37, 39, 41, 43, 45, 47, and 49 are at logic ground; pins 19, 21, 23, 25, 27, 44, and 46 are open.



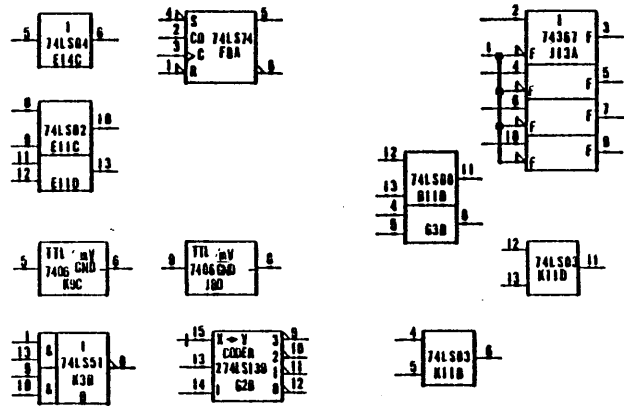
DIAGRAMS

This section contains logic and schematic diagrams for the controller board (9BED), power supply (9BKD), backplane (9BMD), and ac power wiring of the flexible disk subsystem. For logic diagrams on the drive unit, refer to the 9406 Flexible Disk Drive Hardware Maintenance Manual (publication number is listed in the preface).

SHEET REVISION STATUS											REVISION RECORD						
18	17	16	15	14	13	12	11	10	9	8	REV	CO	DESCRIPTION	DRFT	DATE	CHKD	APP
A	A	A	A	A	A	A	A	A	A	A	A	13089-14	RELEASED CLASS "A"	-	12/1/60	EE	90P
A	A	A	A	A	A	A	A	A	A	A	B	14469	REVISED PER ELO	EE	1/19/61	WJG	90P
A	A	A	A	A	A	A	A	A	A	A	C	14671	REVISED PER ECO	WJG	3-1-61	WJG	90P



SPARES

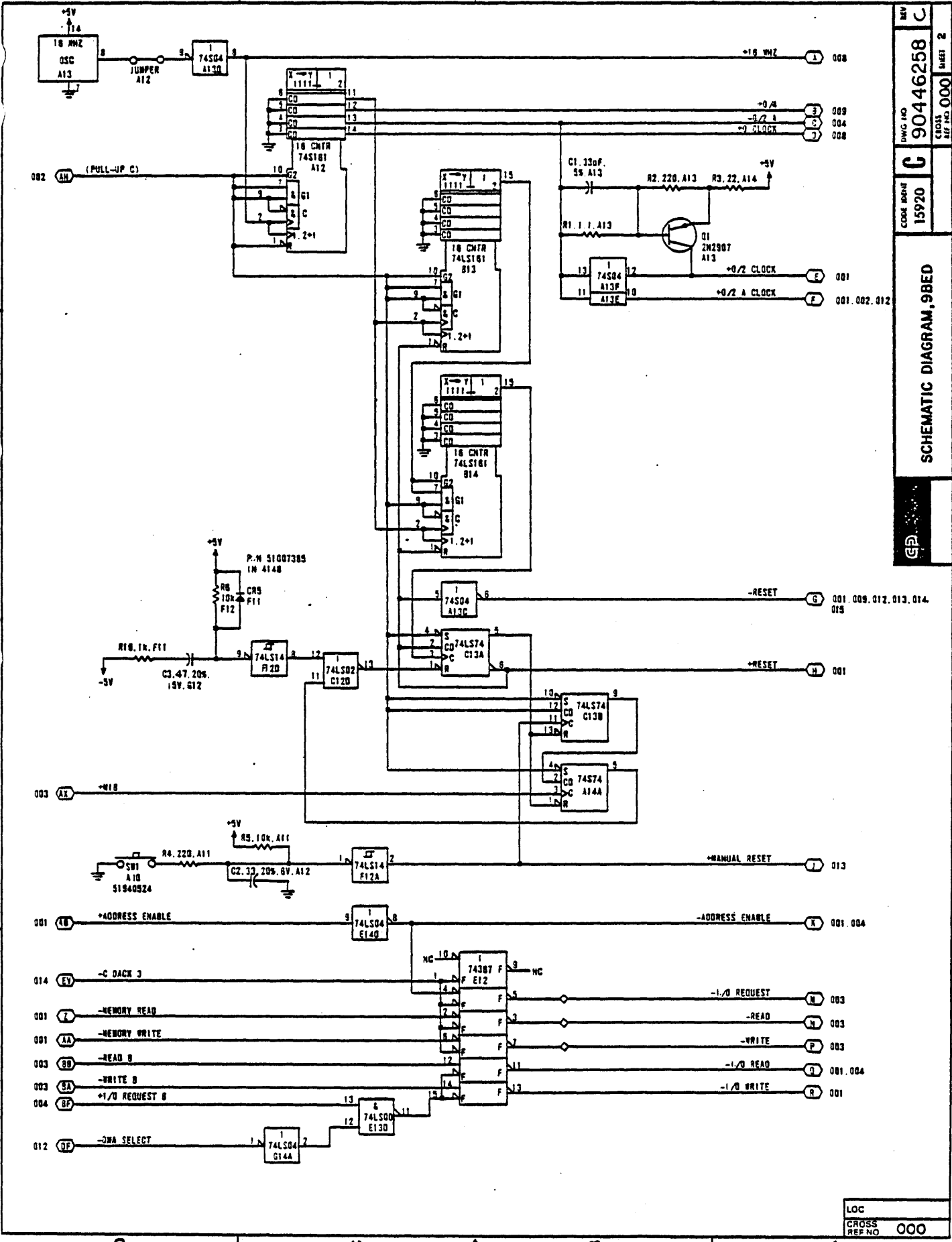


NOTES:

- UNLESS OTHERWISE SPECIFIED POWER AND GROUND PINS OF INTEGRATED CIRCUITS ARE AS LISTED BELOW:
 14 PIN INTEGRATED CNTS: PIN 14 = +5V, PIN 7 = GND
 16 PIN INTEGRATED CNTS: PIN 16 = +5V, PIN 8 = GND
 24 PIN INTEGRATED CNTS: PIN 24 = +5V, PIN 12 = GND.

- CONTROL BLOCK INPUTS ARE SHOWN ONLY ONCE, BUT ARE CONNECTED IDENTICALLY TO MUX LOCATED AT B7 & C7
- CONTROL BLOCK INPUTS ARE SHOWN ONLY ONCE, BUT ARE CONNECTED IDENTICALLY TO MEM LOCATED AT A1, A2, A3, A4, A5, & A6
- CONTROL BLOCK INPUTS ARE SHOWN ONLY ONCE, BUT ARE CONNECTED IDENTICALLY TO MEM LOCATED AT B1, B2, B3, B4, B5, & B6
- CONTROL BLOCK INPUTS ARE SHOWN ONLY ONCE, BUT ARE CONNECTED IDENTICALLY TO MEM LOCATED AT C1, C2, C3, C4, C5 & C6
- CONTROL BLOCK INPUTS ARE SHOWN ONLY ONCE, BUT ARE CONNECTED IDENTICALLY TO MEM LOCATED AT D1, D2, D3, D4, D5, & D6
- UNLESS OTHERWISE NOTED ALL LEADS TO BE P 1N0171201

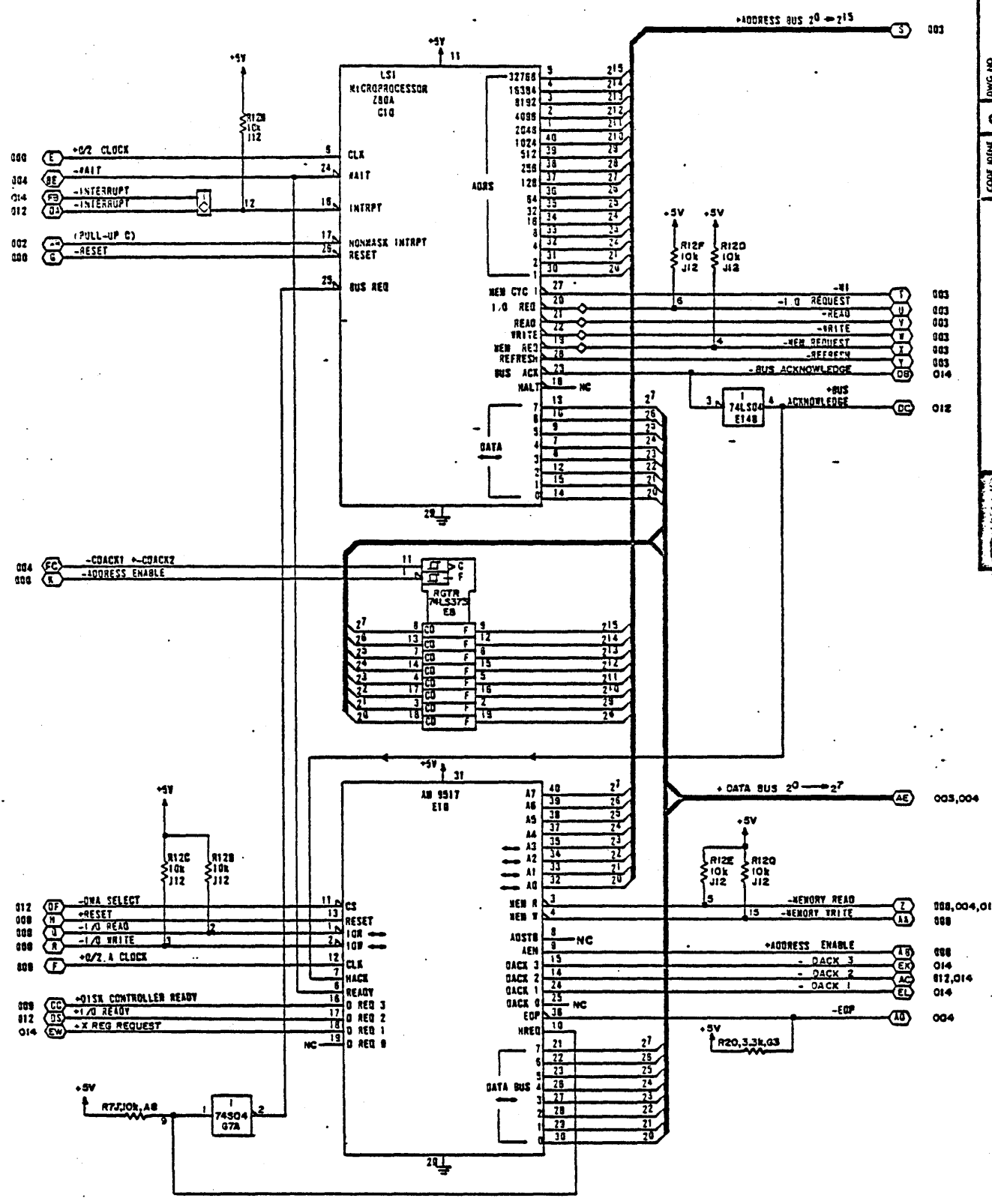
REFERENCE DRAWING		CON'RD 3A7		TITLE	
DETAIL 90446250		FIRST USED ON		SCHEMATIC DIAGRAM, 9BED	
ASSY. 90446288		DWN Mary Dietz 10/13/60		CODE IDENT 15920	
COMPONENTS, EXCEPT AS NOTED		CHKD 12/15/60		DRAWING NO. C 90446258	
TOLERANCE VALUE RATING		ENGR 12/16/60		SCALE	
RES: 5%	OHMS 1/4W	MFG 12/16/60		CROSS REF NO	
CAP: 100-20%	UF 25V	APPR 12-17-60		SHEET 1 OF 18	



REV	C
DWG NO	90446258
CODE IDENT	15920
REV NO	000
SHEET	2
SCHEMATIC DIAGRAM, 9BED	
GP	

LOC
CROSS
REF NO 000

SCHEMATIC DIAGRAM, 9BED



LOC	
CROSS REF NO	001

REV 002,005.
009,010,012

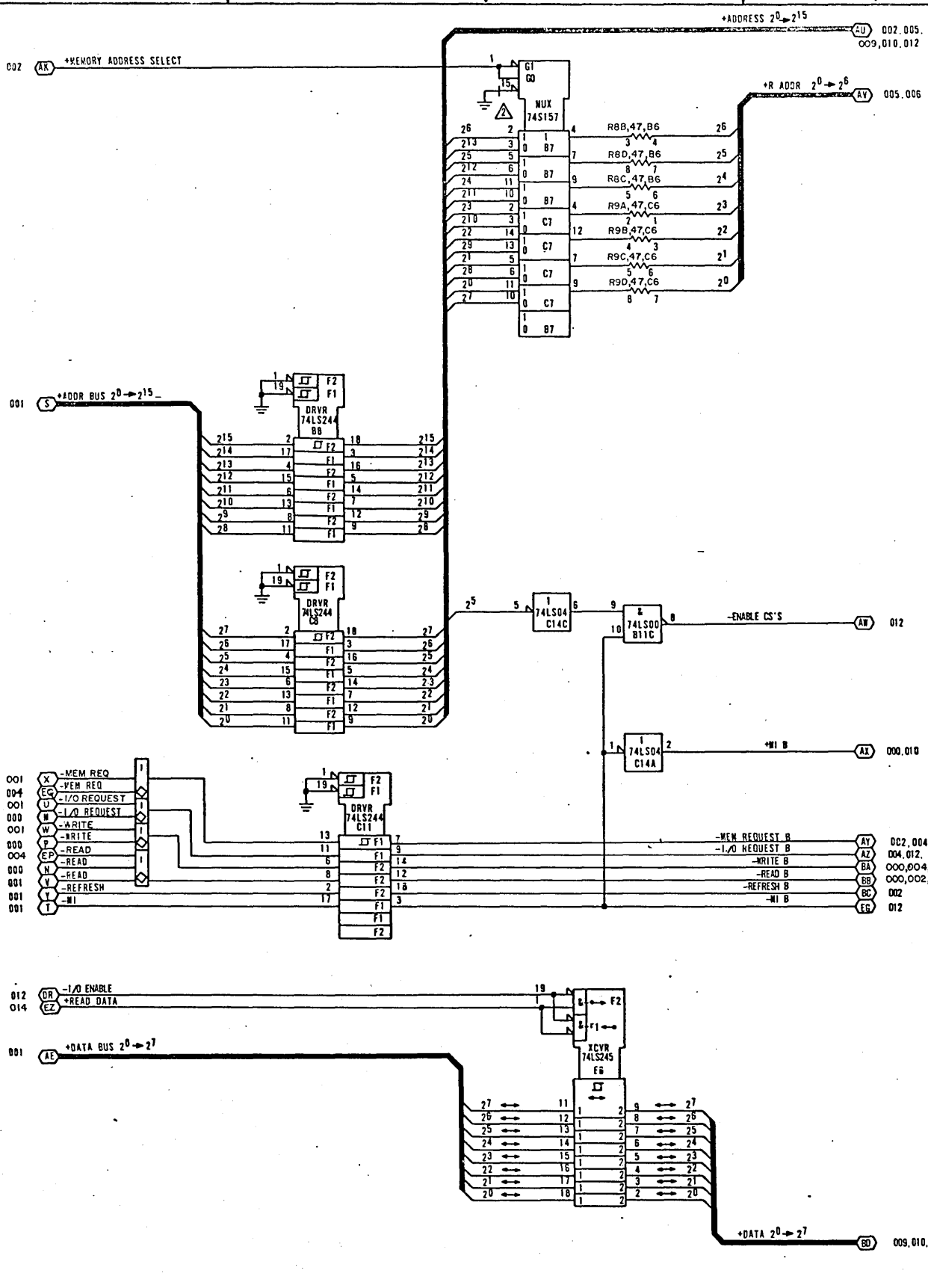
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CODE IDENT 15920

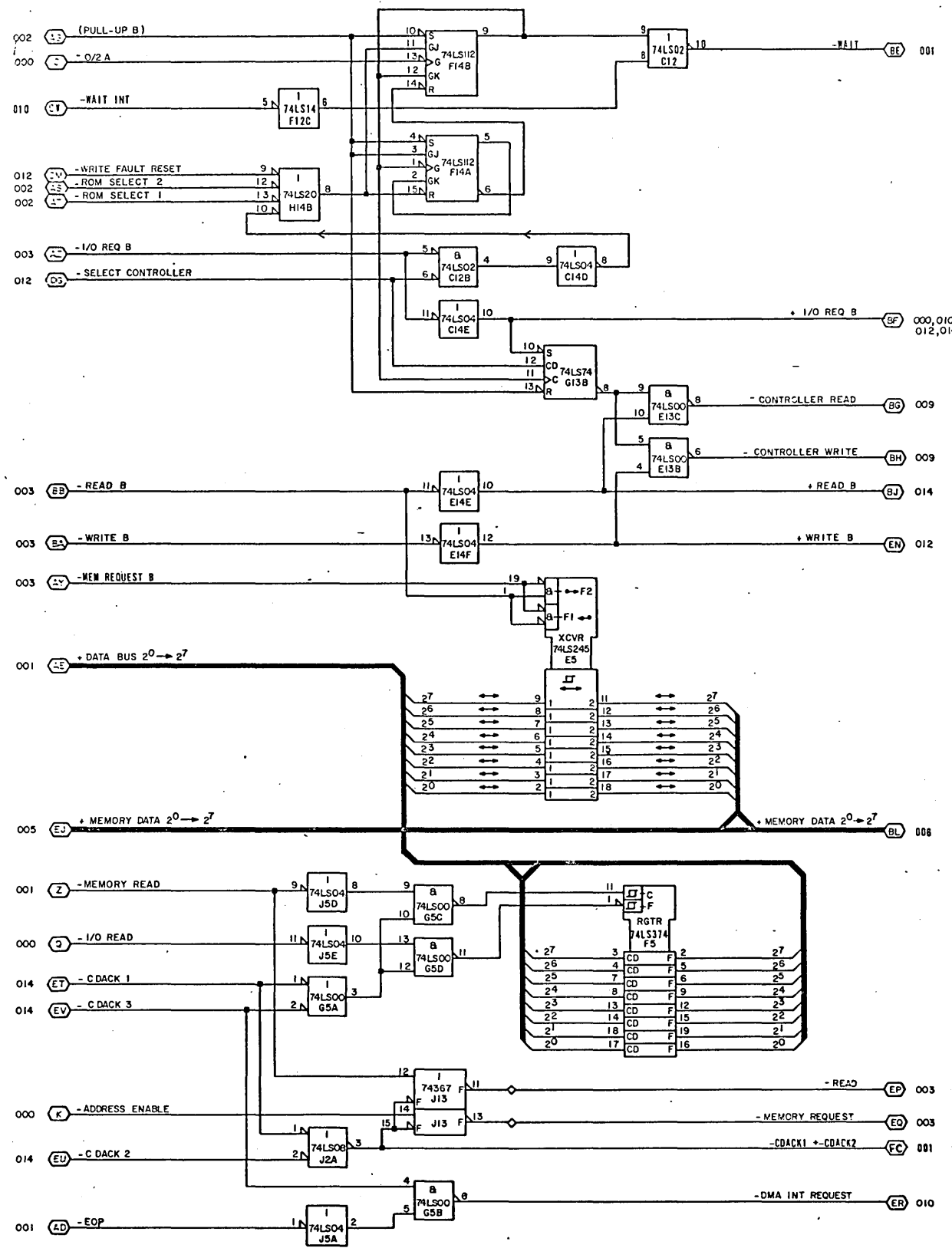
CROSS REF NO 003

SHEET 5

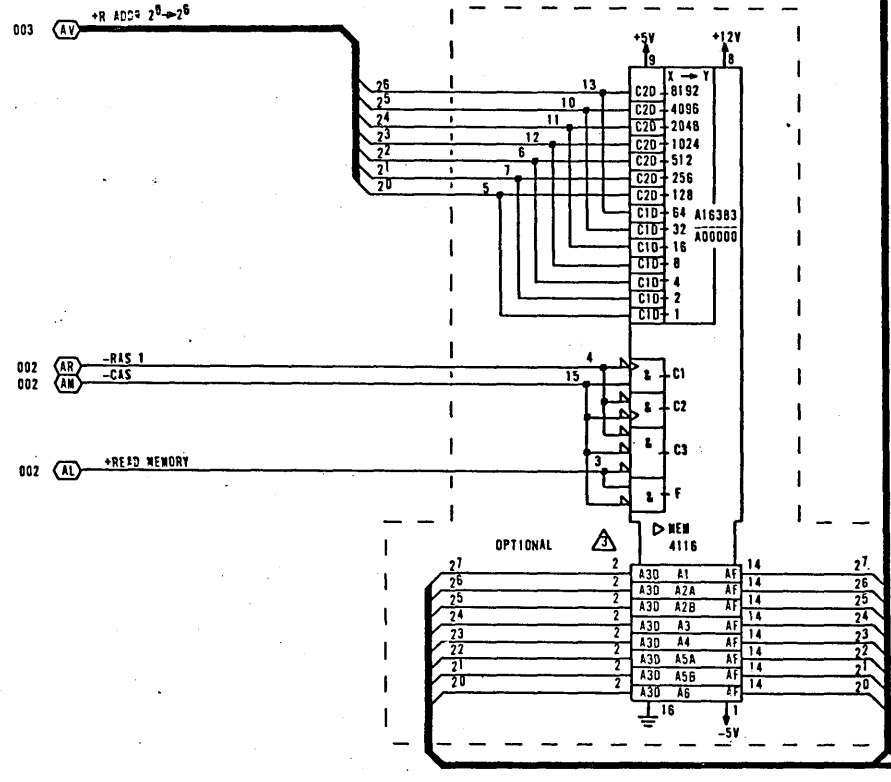
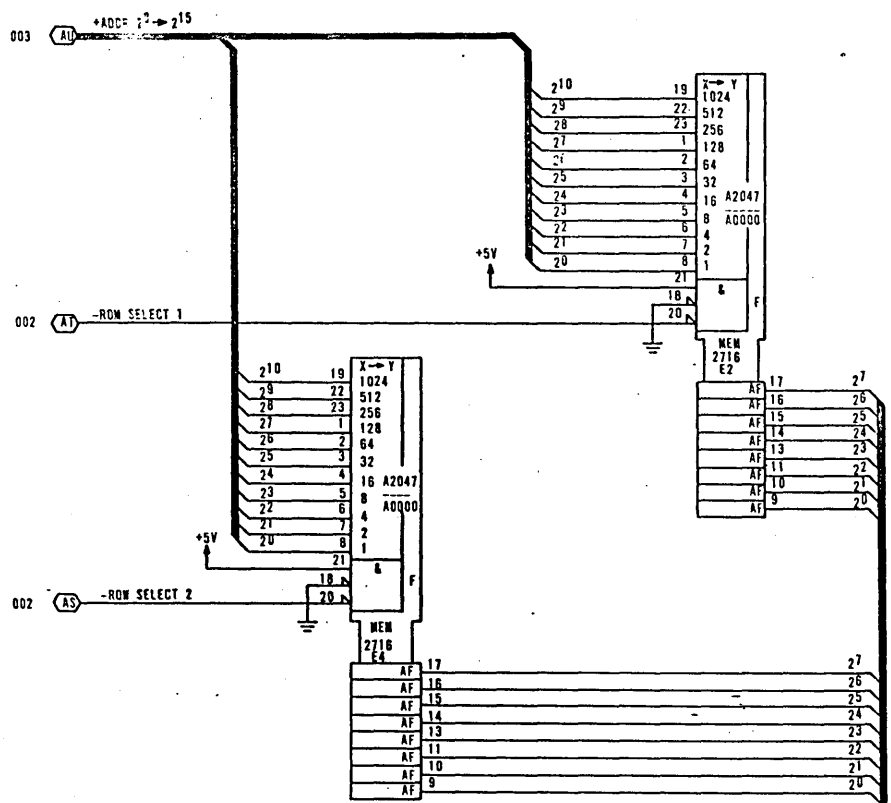
SCHMATIC DIAGRAM, 9BED



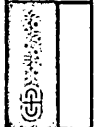
LOC
CROSS REF NO 003



SCHEMATIC DIAGRAM, 9BED



SCHEMATIC DIAGRAM, 9BED



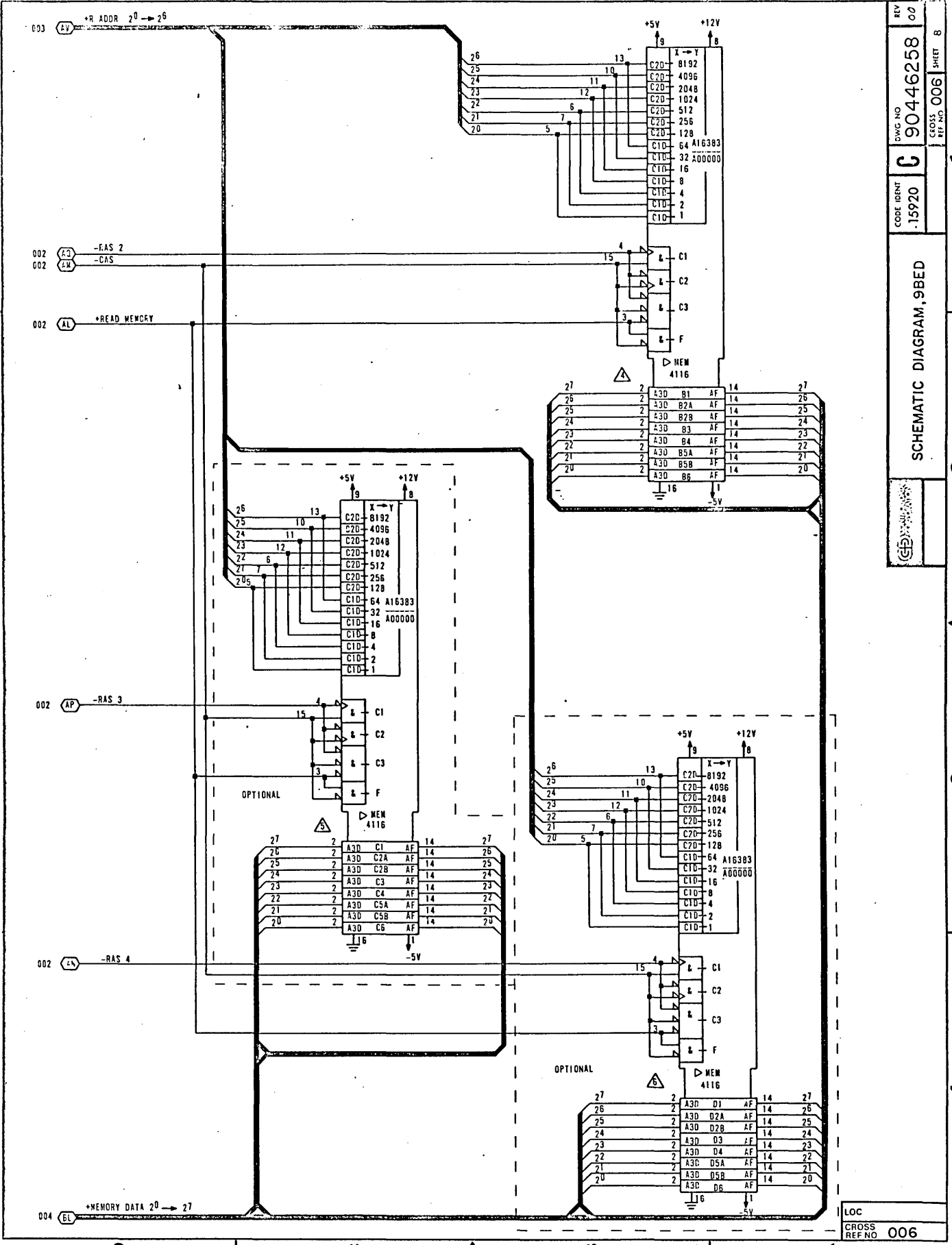
1

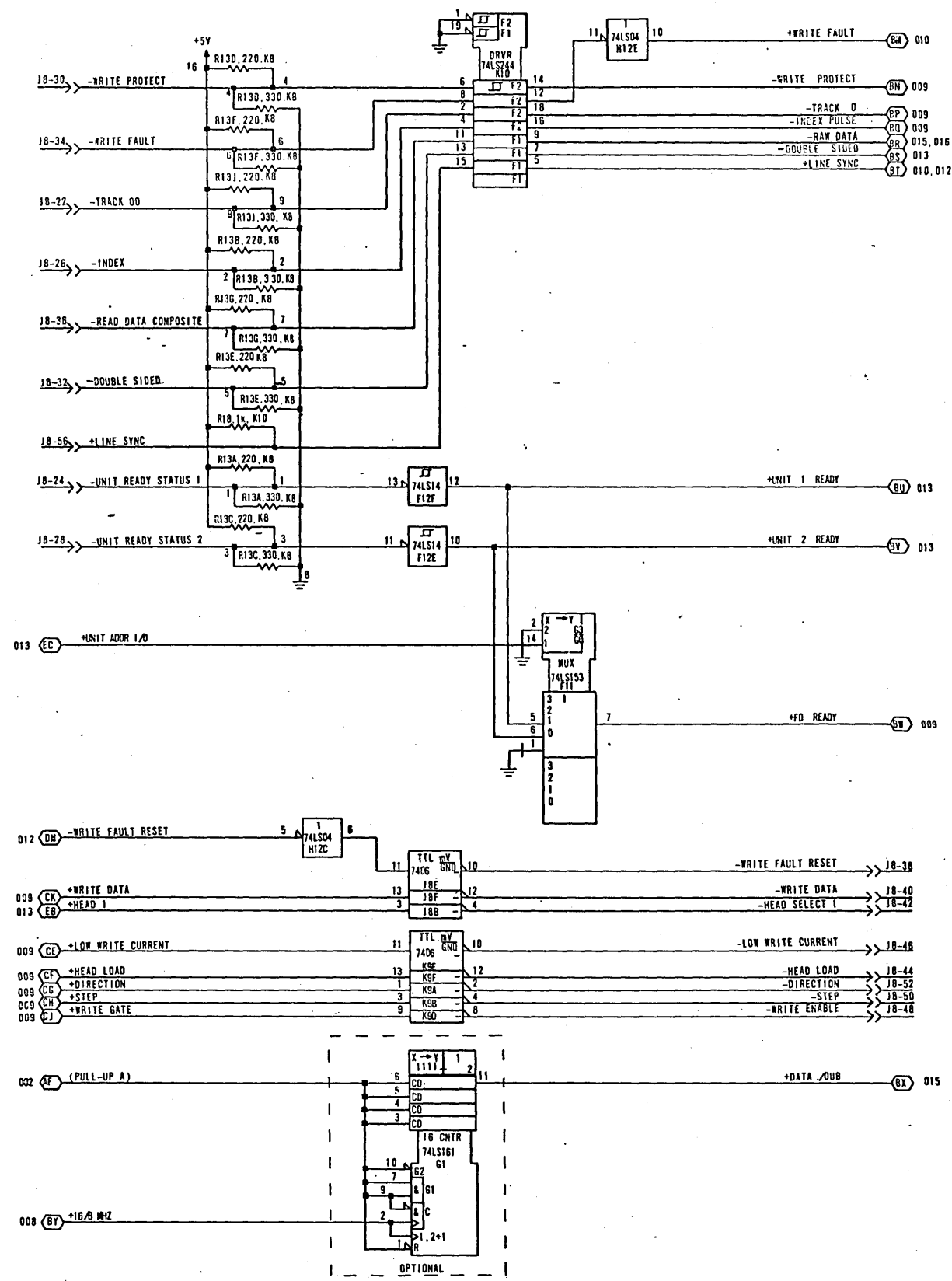
2

4

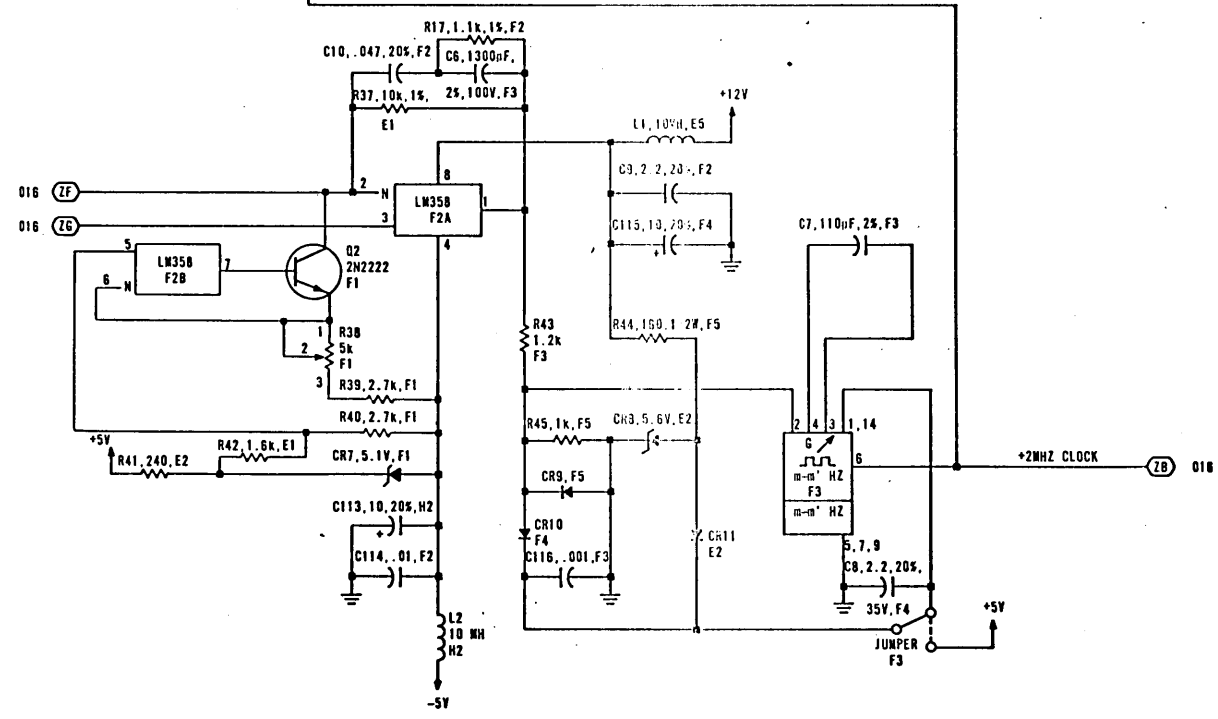
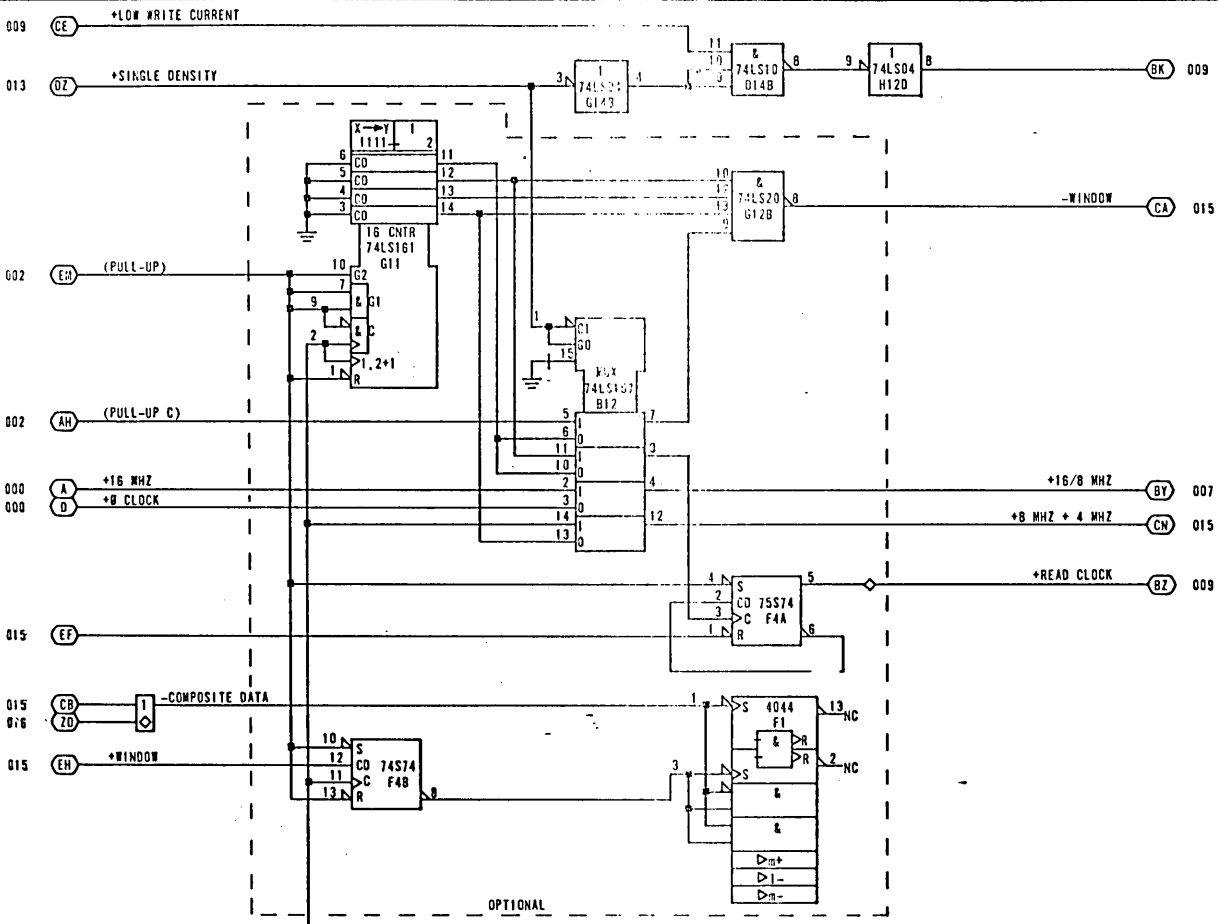
3

4



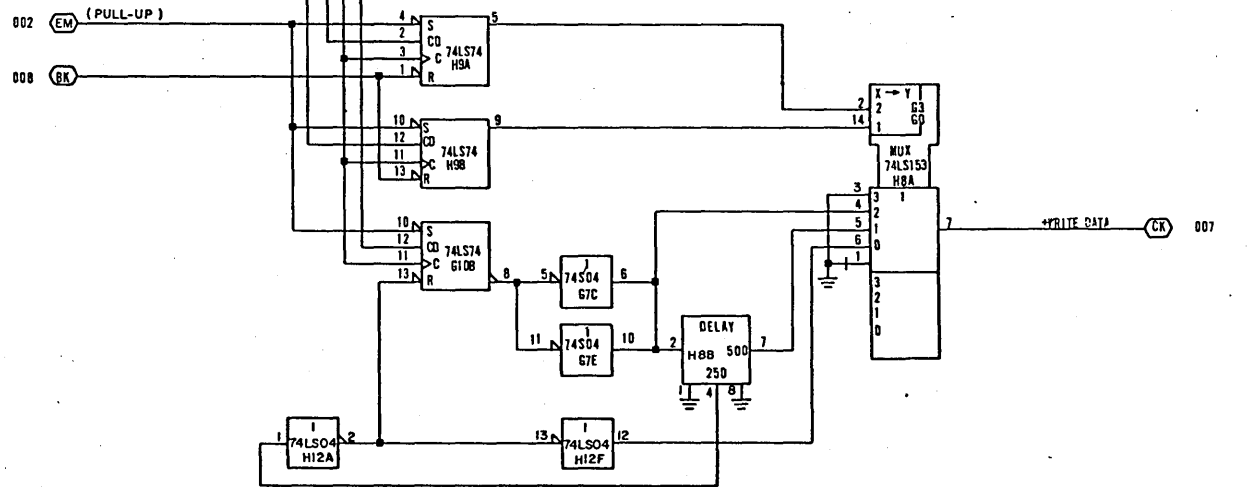
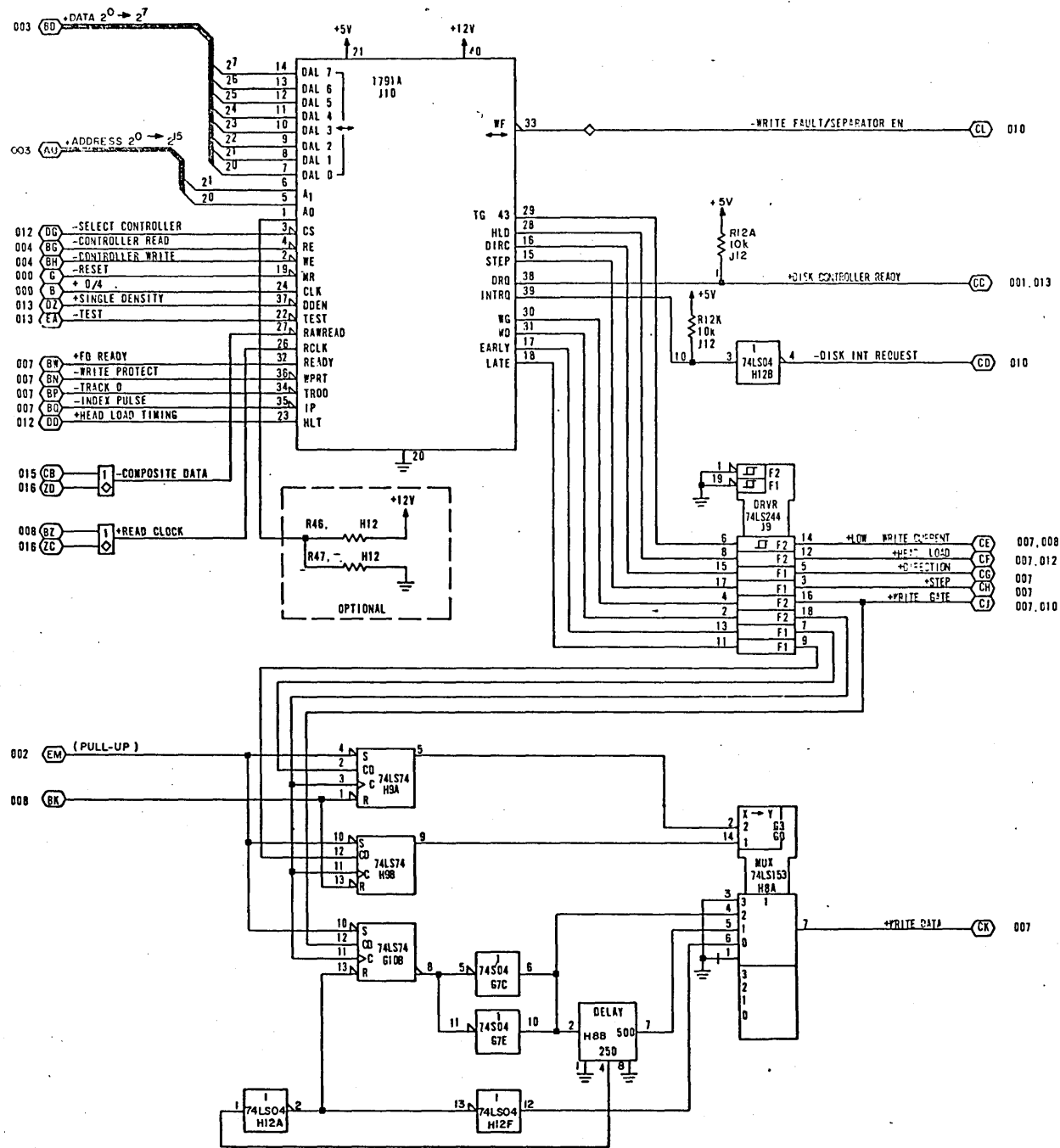


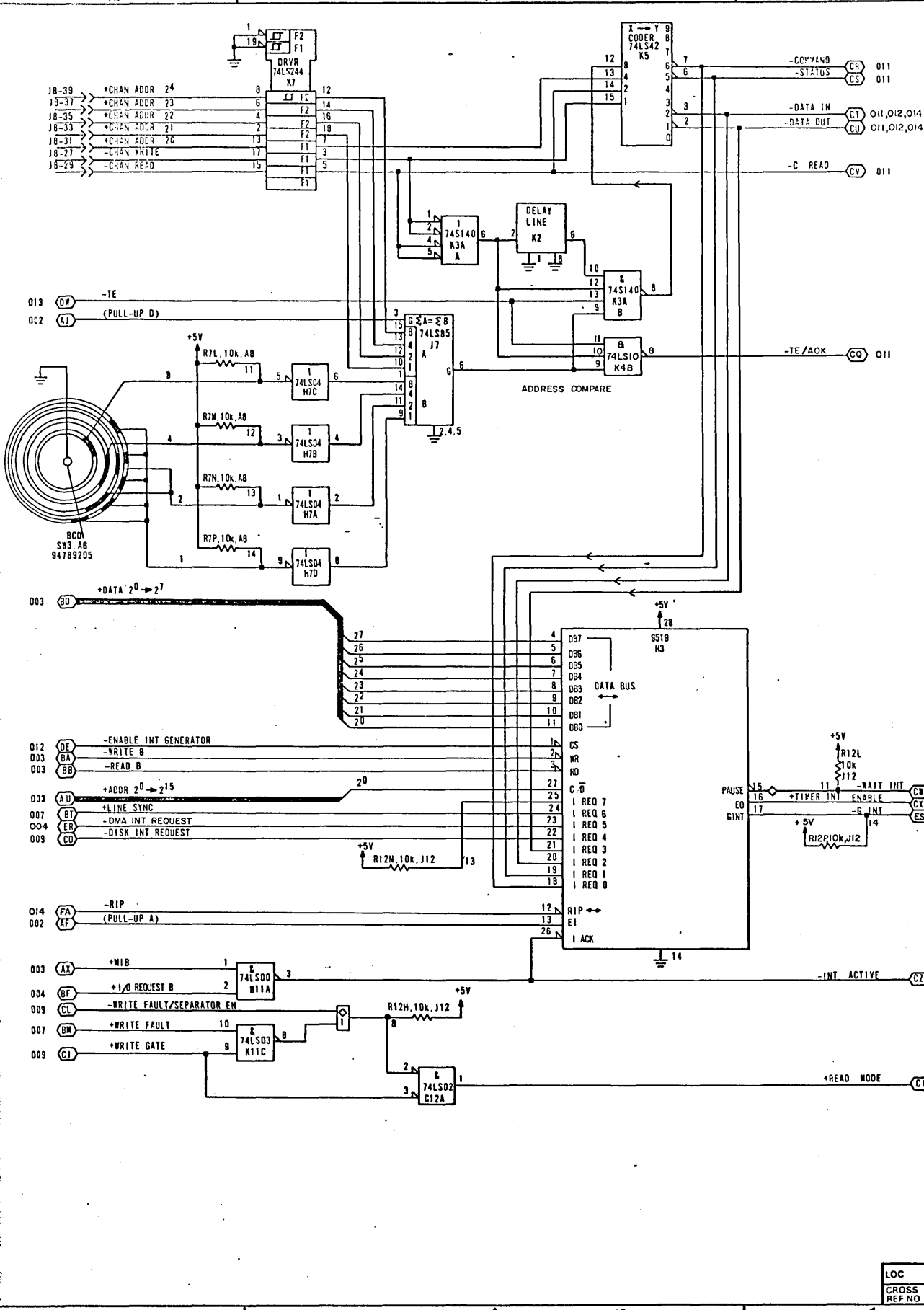
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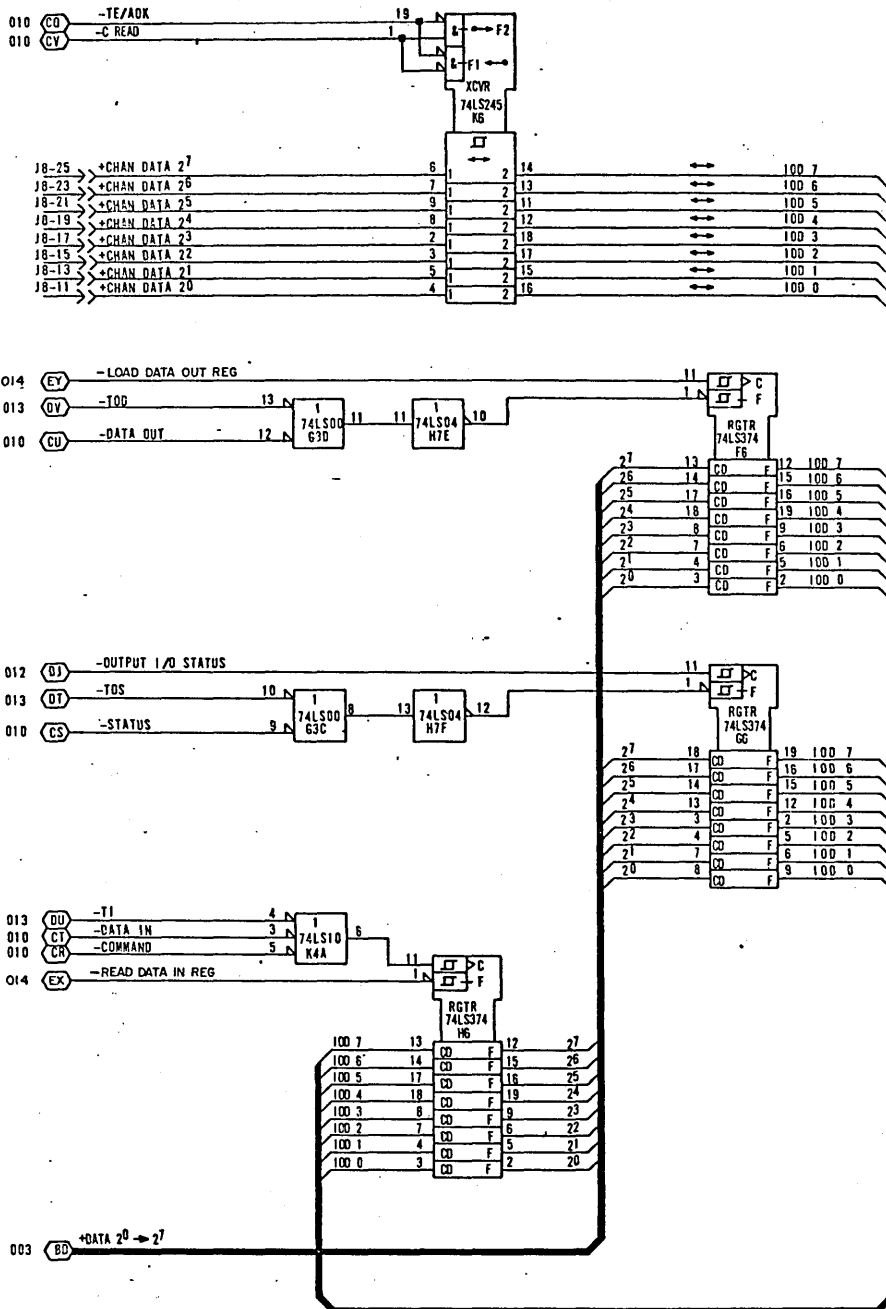
SCHEMATIC DIAGRAM, 9BED

LOC
CROSS REF NO 009





LOC
 CROSS REF NO 010



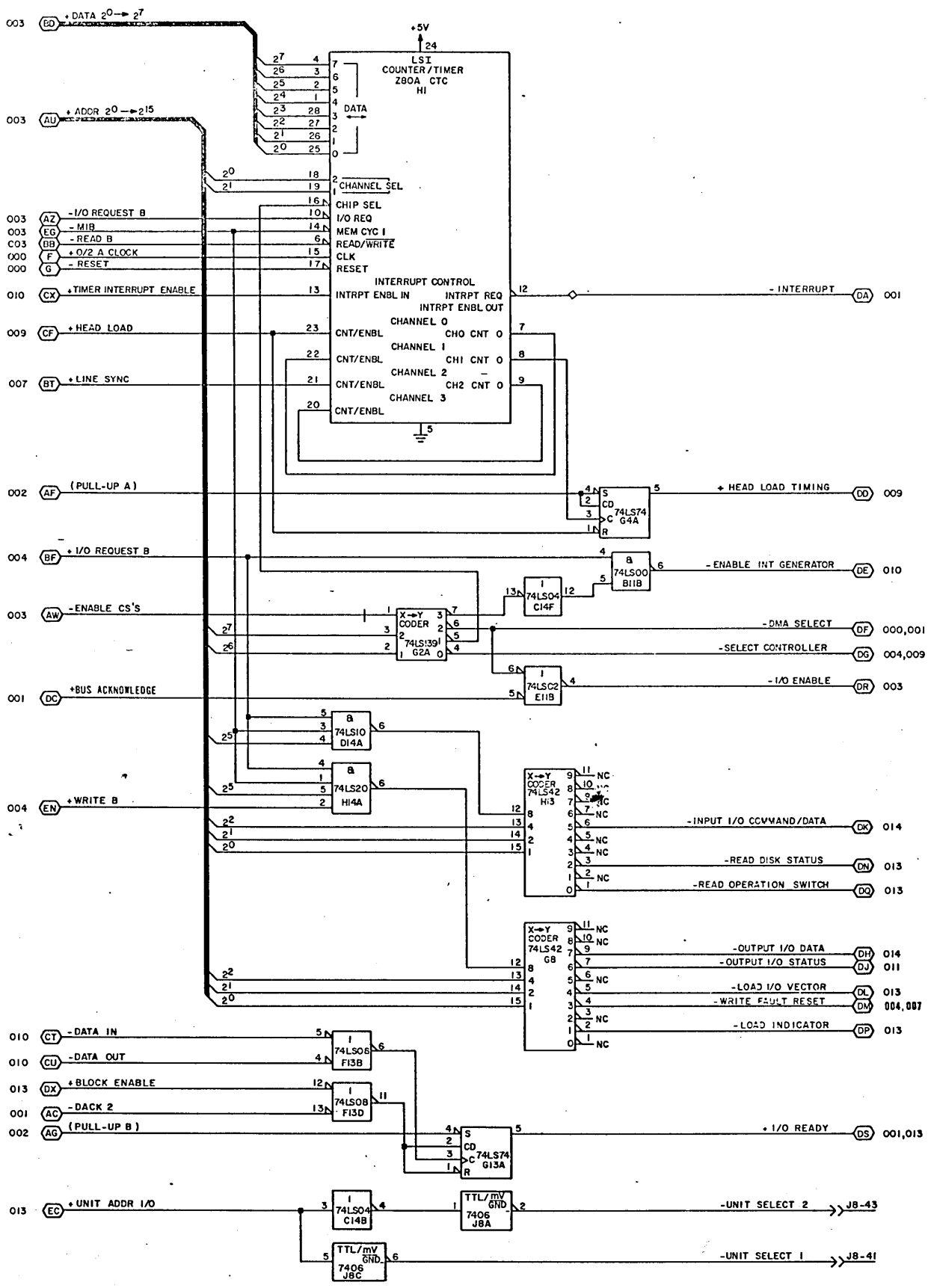
REV 100
 DWG NO 90446258
 CROSS REF NO 011 SHEET 13
 CODE IDENT 15920
 SCHEMATIC DIAGRAM, 9BED

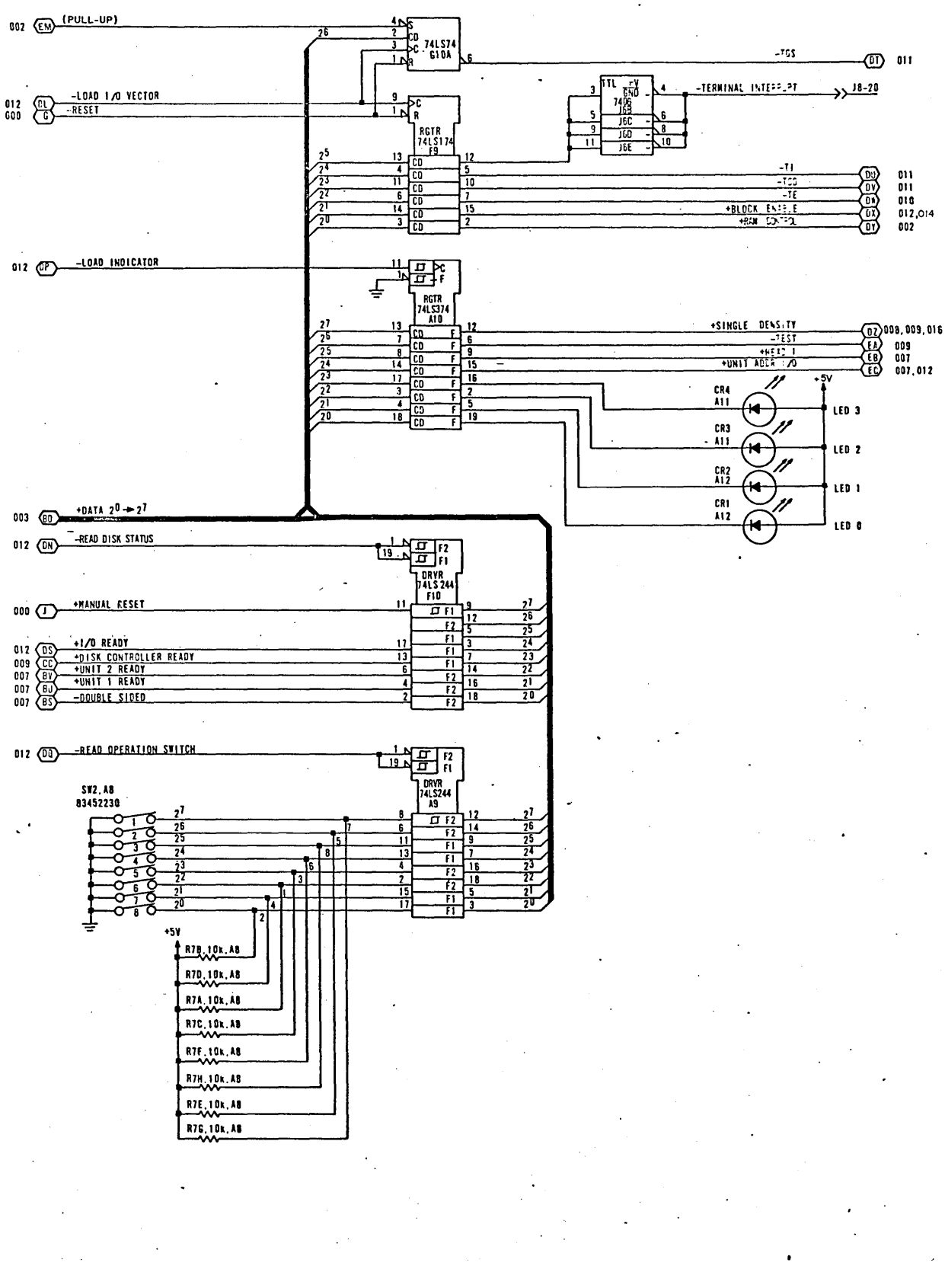
LOC
 CROSS REF NO 011

SCHEMATIC DIAGRAM, 9BED

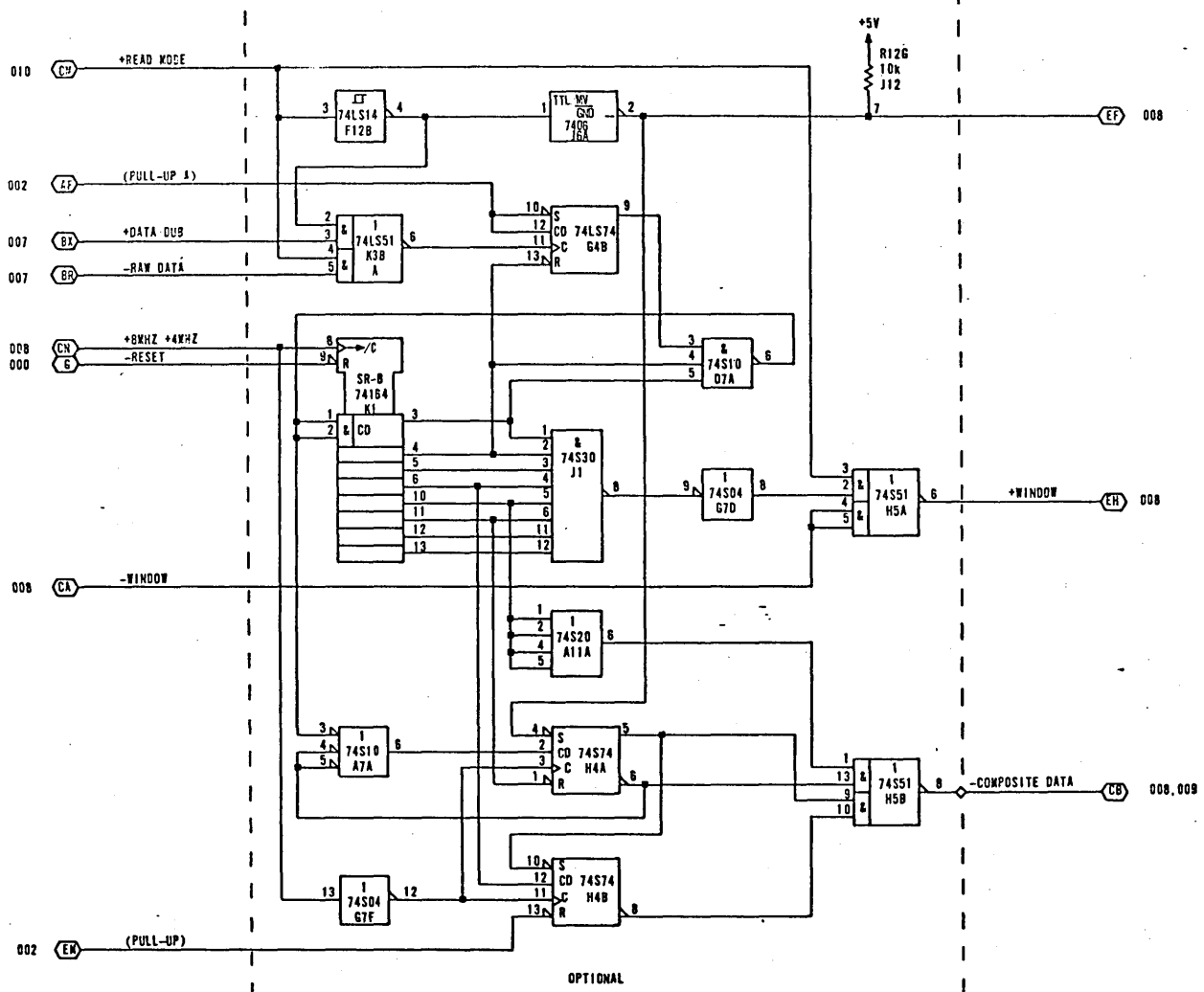
1
2
3
4

LOC
 CROSS REF NO 012

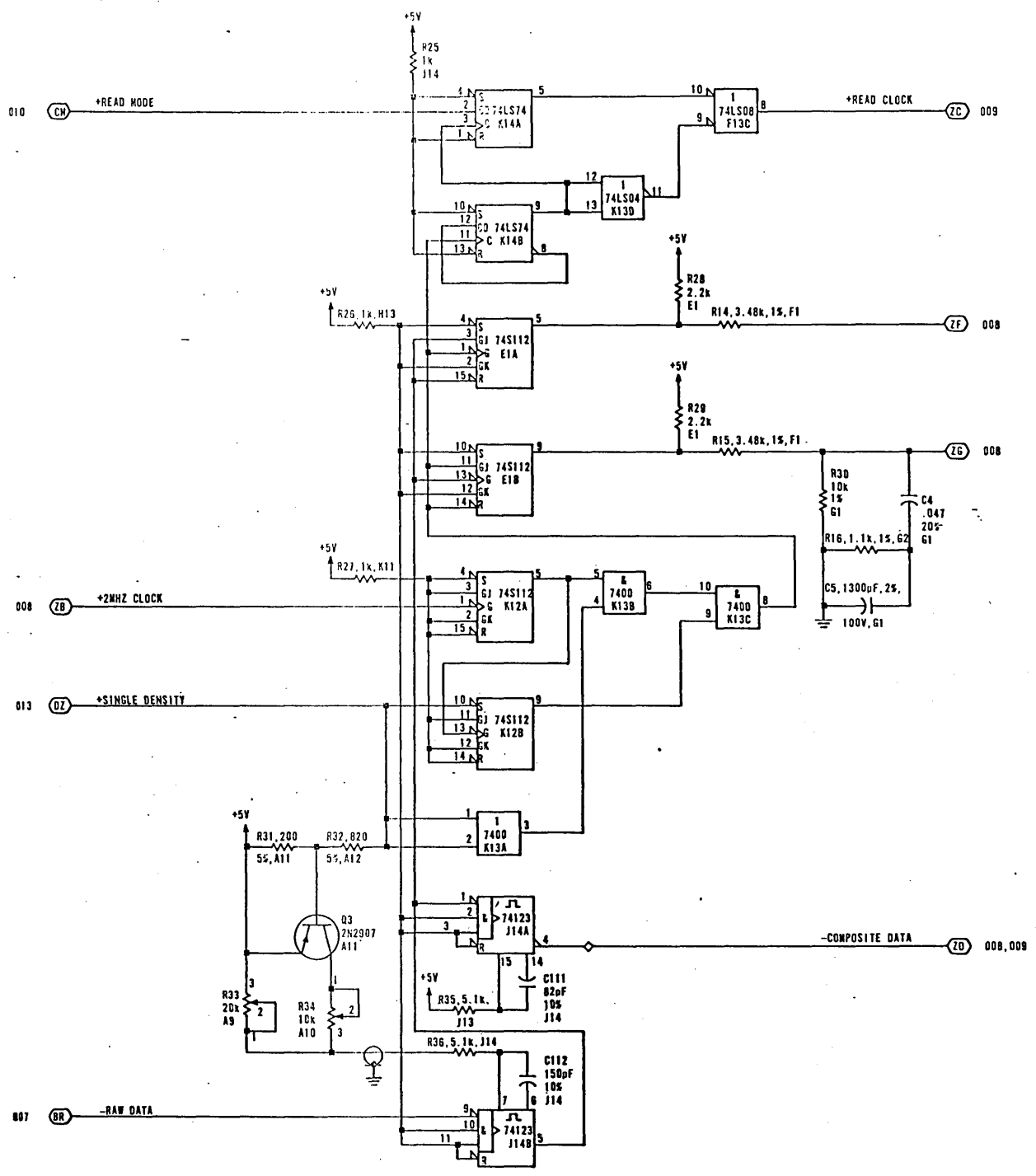




1
2
3
4



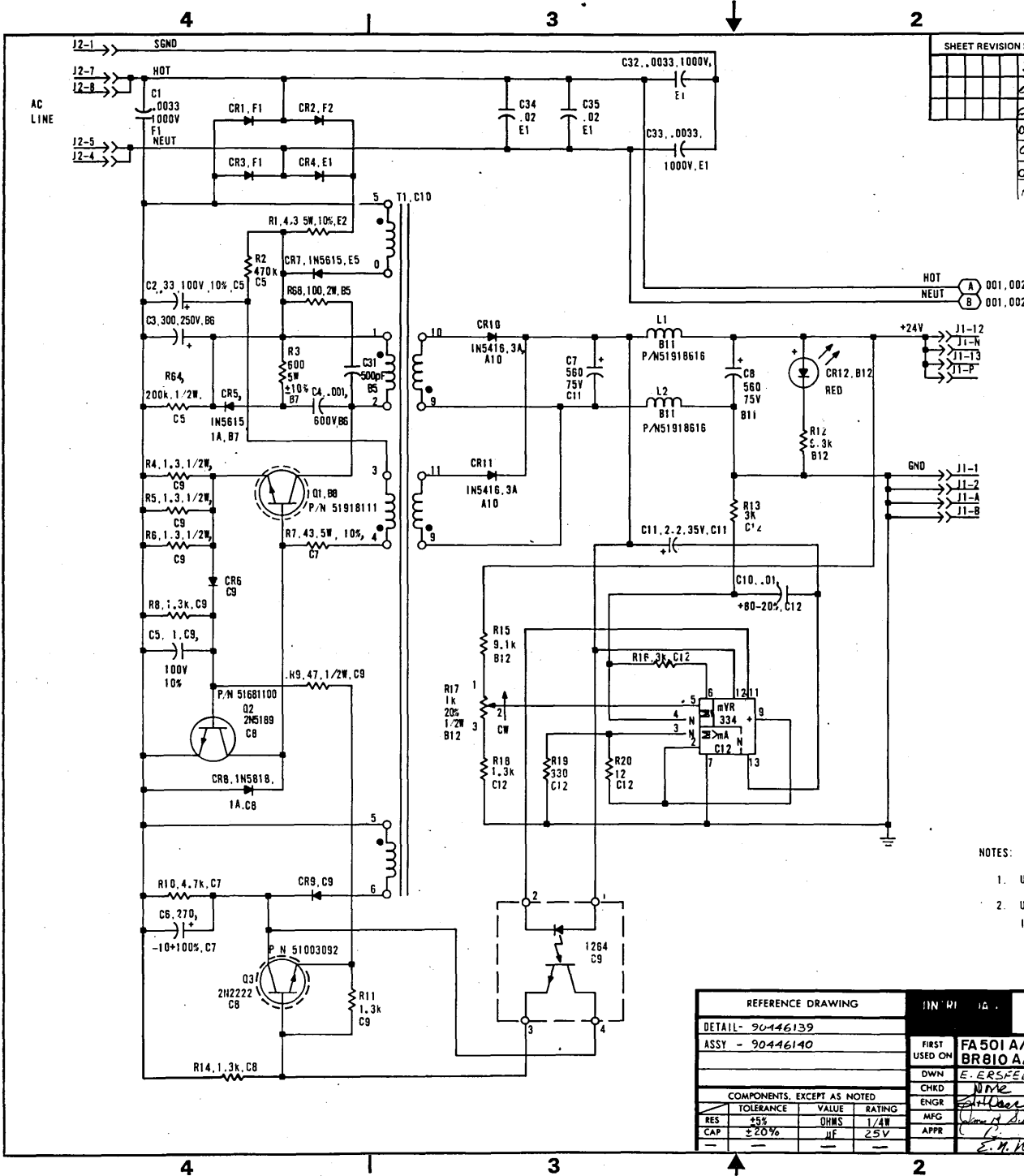
LOC
 CROSS REF NO 015



LOC
CROSS REF NO 016

5-18

62949100



SHEET REVISION STATUS				REVISION RECORD					
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00	0000	00		5/21/78					
01	0101	01		5/9/78					
02	0202	02		5/10/78					
03	0303	03		5/10/78					
04	0404	04		6/4/80					
A A A A 11565-80; RELEASED CLASS 'A' 11/2/80									

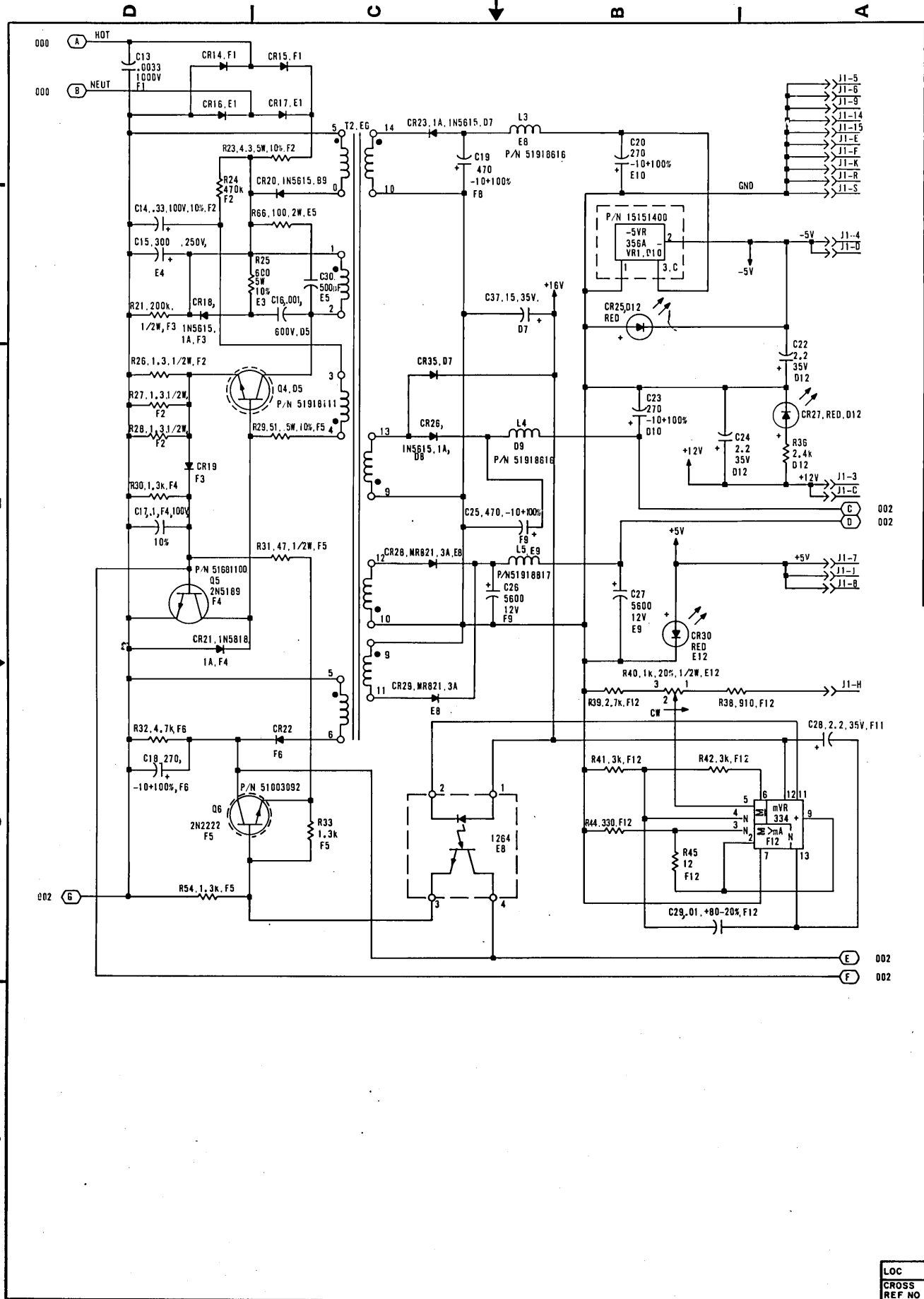
- NOTES:
- UNLESS OTHERWISE NOTED ALL LEADS TO BE P/N 19171201.
 - UNLESS OTHERWISE NOTED ALL DIODES TO BE P/N 95637304 IN4004 1.1V, 1A.

REFERENCE DRAWING		11N 01 1A		TITLE	
DETAIL - 90446139		FIRST USED ON		SCHEMATIC DIAGRAM, 9BKD	
ASSY - 90446140		FA 501 A/B		(PFDS POWER SUPPLY)	
		BR810 A/B			
		DWN E. ERSFELD		10-12-79	
		CHRD NME		10-19-79	
		ENGR [Signature]		10/25/79	
		MFG [Signature]		10/27/79	
		APPR [Signature]		11/1/79	
COMPONENTS, EXCEPT AS NOTED		TOLERANCE		CODE IDENT	
RES ±5%		VALUE		15920	
CAP ±20%		OHMS		C	
		RATING		DRAWING NO	
		1/4W		90446138	
		25V		SCALE	
				CROSS REF NO	
				000	
				SHEET 1 OF 3	

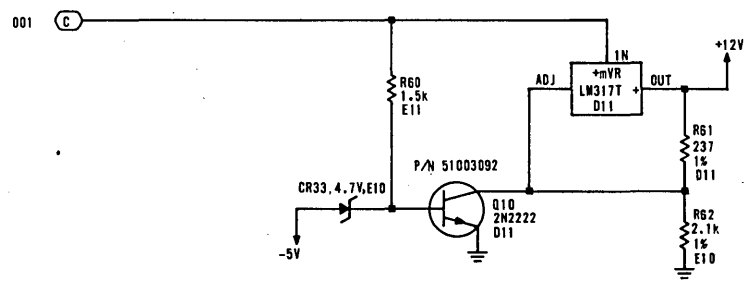
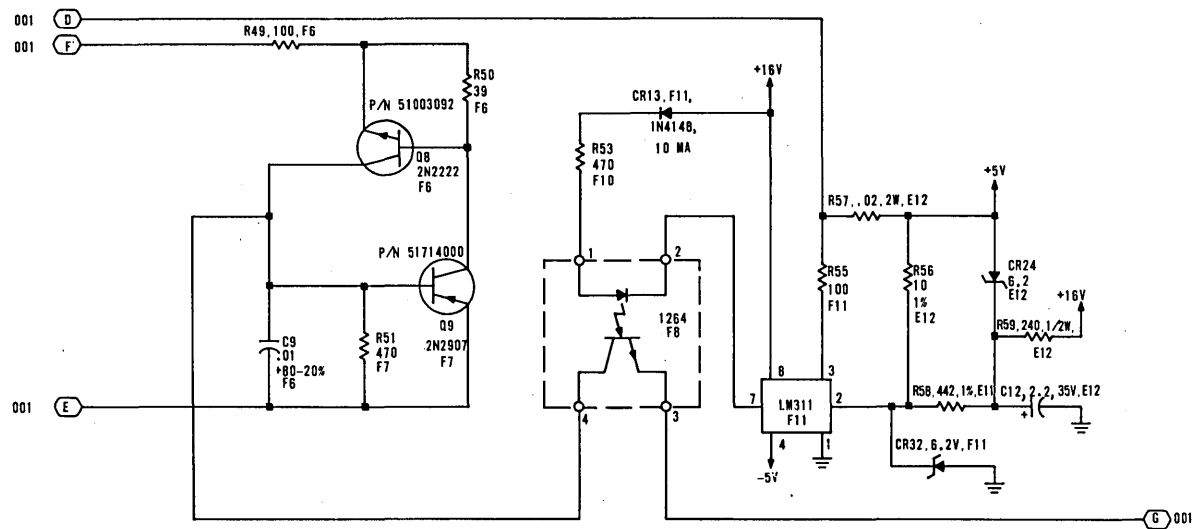
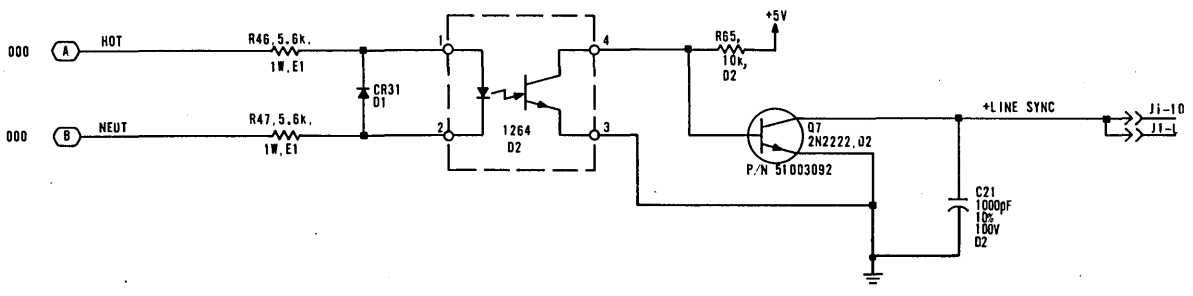
B 90446138

A

SCHEMATIC DIAGRAM
 9BKD



D I C B A

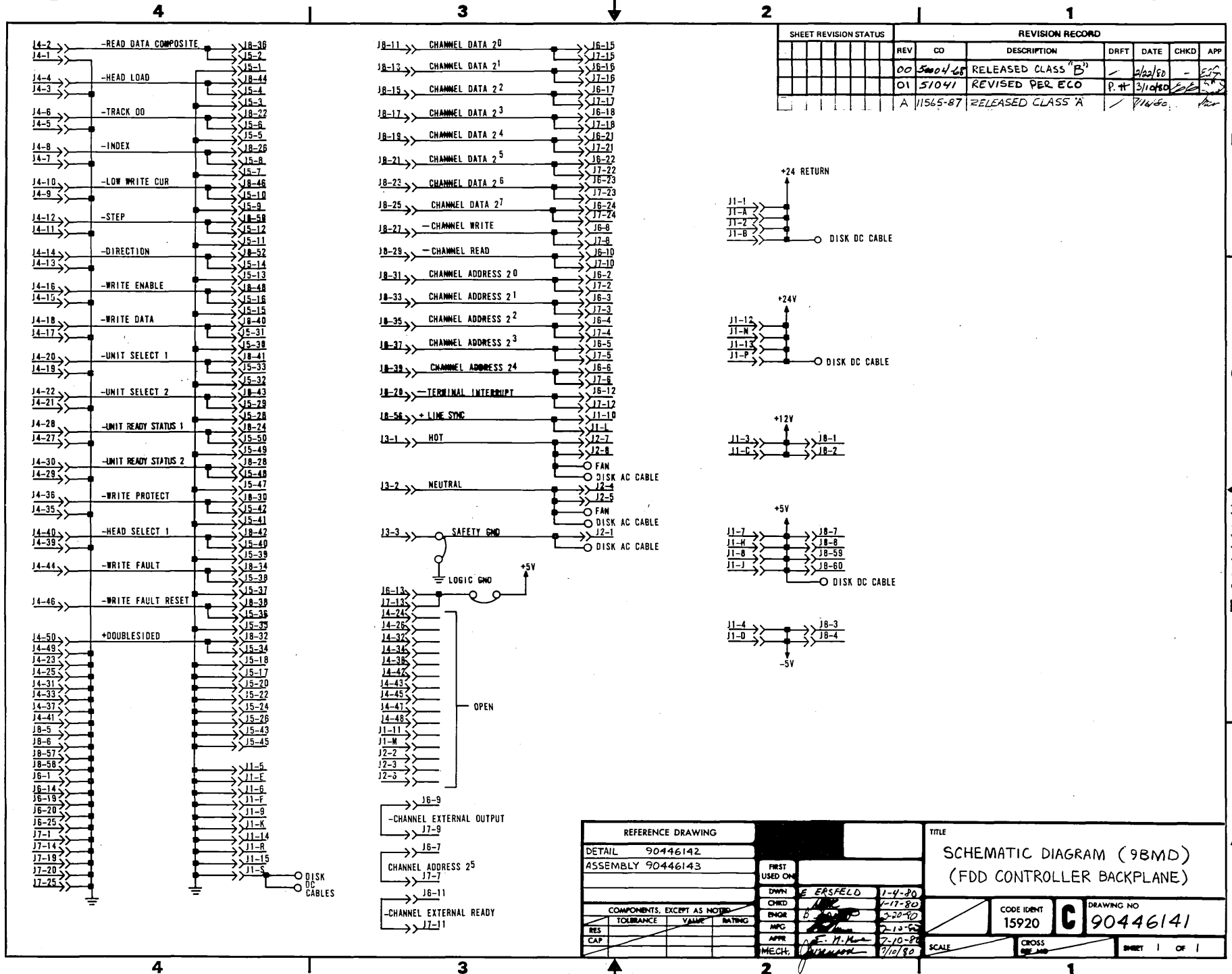


REV	1
DWG NO	90446138
CODE IDENT	C
15920	
CROSS REF NO	002
SHEET	3
SCHEMATIC DIAGRAM	
9BKD	

LOC
CROSS REF NO 002

62949100

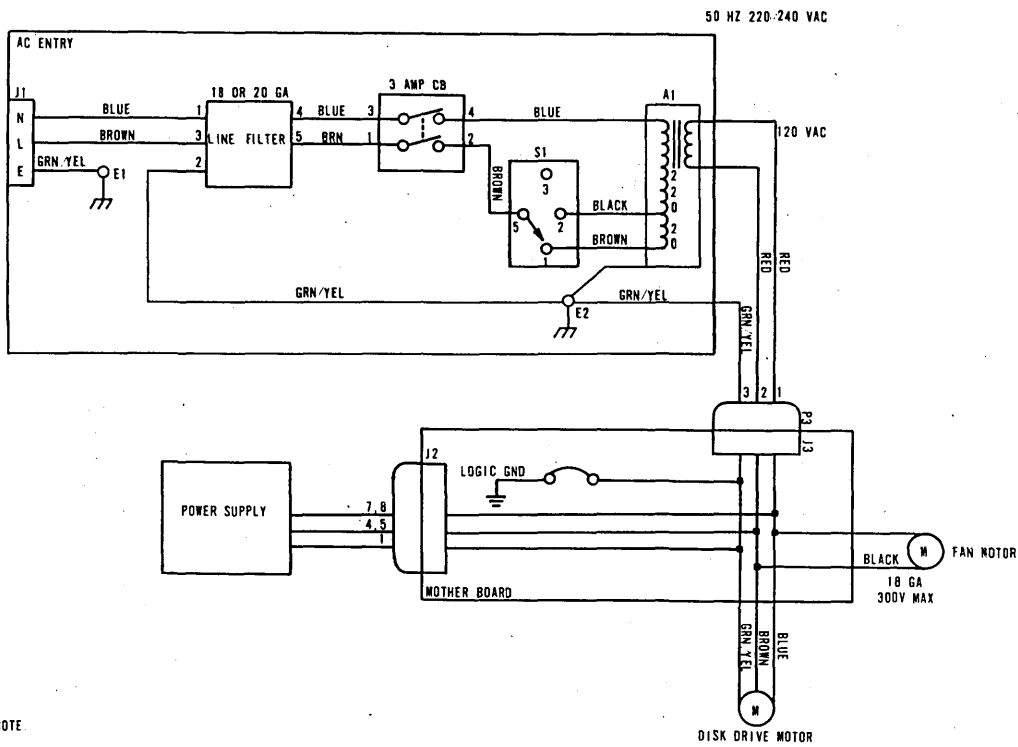
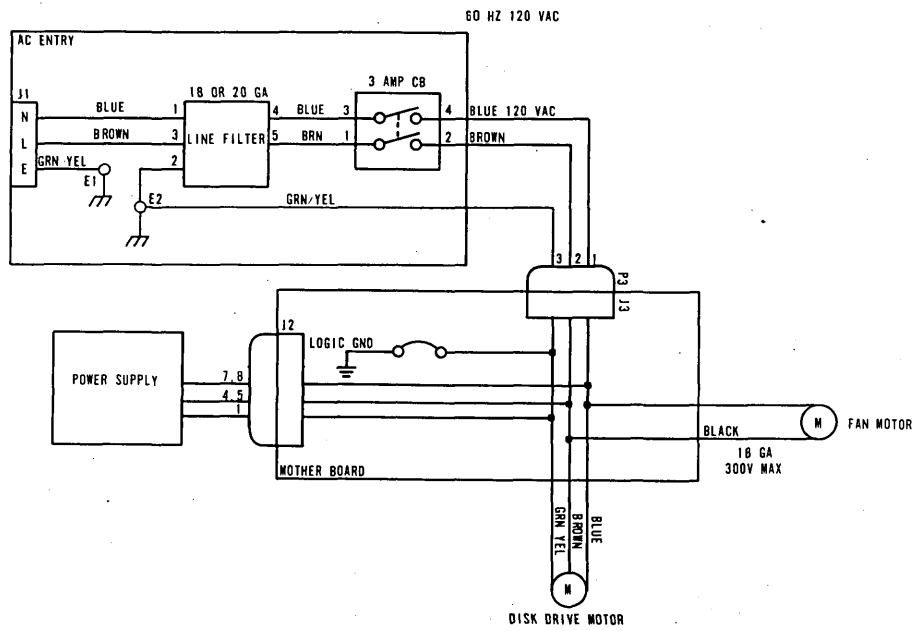
5-21



D
C
B
A

REFERENCE DRAWING				TITLE	
DETAIL	90446142	FIRST USED ON		SCHEMATIC DIAGRAM (9BMD)	
ASSEMBLY	90446143	OWN	E. ERSFELD	1-4-80	(FDD CONTROLLER BACKPLANE)
COMPONENTS, EXCEPT AS NOTED		CHWD	B. [unclear]	4-17-80	
RES	TOLERANCE	VALUE	ENGR	5-20-80	CODE IDENT
CAP			APG	2-13-80	C
			APPR	7-10-80	DRAWING NO
			MECH.	7/10/80	90446141
SCALE				CROSS	SHEET 1 OF 1

SHEET REVISION STATUS		REVISION RECORD			
REV	CO	DESCRIPTION	DRFT	DATE	CHKD
A		12754-76 RELEASED CLASS 'A'		3-3-80	



NOTE
1. ALL WIRES ARE 18 GA. 600V UNLESS OTHERWISE MARKED

TITLE		50/60 HZ A.C. POWER WIRING	
REV	CO	DESCRIPTION	DATE
A		12754-76 RELEASED CLASS 'A'	3-3-80
DRAWING NO		62201057	
CODE IDENT		C	
15920		CROSS REF NO	
SCALE		SHEET 1 OF 1	
REFERENCE DRAWING		FA501-A/B	
FIRST USED ON		9-2-80	
DWG		M. DIETZ	
CHKD		W. J. SAUNDERS	
ENGR		P. M. SAUNDERS	
APP		S. J. SAUNDERS	
DES		S. J. SAUNDERS	
CMT		S. J. SAUNDERS	
COMPONENTS EXCEPT AS NOTED		9-2-80	
TOLERANCE		VALUE	
RATING		5-3-80	

This section provides information necessary to perform on-site maintenance on the flexible disk subsystem. The material presented assumes familiarity with the PLATO system and basic maintenance techniques including use of common CE tools and test equipment. The maintenance information covers checks, adjustments, removal, and replacement of the field-replaceable components as directed by the associated structured analysis method (SAM) listings for the subsystem. Information is organized under the following major headings:

- General Maintenance Information
- Diagnostic and Corrective Maintenance

GENERAL MAINTENANCE INFORMATION

The following paragraphs provide information that the customer engineer should be familiar with before performing maintenance on the terminal. Topics discussed are:

- Suggested Emergency Maintenance Procedure
- Safety Precautions
- Maintenance Tools and Materials
- MOS Circuit-Handling Precautions
- Maintenance Aids
- Location of Major Assemblies

SUGGESTED EMERGENCY MAINTENANCE PROCEDURE

The following procedure provides suggested steps for the customer engineer (CE) to follow when responding to a customer request for maintenance on the subsystem.

Before Leaving For Customer Site

Before leaving for the customer site, the CE should call the customer and talk to the person operating the subsystem at the time the malfunction occurred, then:

1. Determine the following:
 - a. Type of symptoms subsystem exhibited to indicate that a malfunction occurred.
 - b. Whether subsystem is operating and what symptoms, if any, are present when an attempt is made to operate.
2. Decide course of action to take, for example:
 - a. Go to customer site and begin troubleshooting.
 - b. Deduce that subsystem itself is probably not at fault and most likely cause of problem is either terminal communication lines or a power reduction or loss. In either case, CE can notify responsible party (common carrier or customer) of problem.
 - c. Decide that an error in operating procedure, rather than equipment failure, is probably cause of malfunction, and notify customer of correct operating procedure.
3. If a site maintenance trip is required, CE should try to determine a probable cause for failure and gather necessary tools, manuals, and spare parts that may be needed.

Upon Arriving At Customer Site

Upon arriving at the customer site, the CE should locate the appropriate supervisory personnel and again talk to the subsystem operator concerning the malfunction, then:

1. Visually inspect subsystem for correct input/output and power cable connections.
2. Verify that a malfunction does exist, and then begin to troubleshoot subsystem.

3. After source of malfunction is corrected, CE should:
 - a. Run diagnostic self-test routines and appropriate PLATO DIAG tests to ensure that subsystem is operational.
 - b. Demonstrate to customer that subsystem is now operating properly within system.

SAFETY PRECAUTIONS

WARNING

Observe the following safety precautions at all times. Failure to do so may cause equipment damage and/or personal injury.

- Hazardous voltages exist in the subsystem. Do not attempt repair unless qualified to do so.
- Exercise caution any time checks or adjustments are being made to terminal when power is applied.
- Always turn power off and disconnect ac power cord when removing/replacing components or cables.

MAINTENANCE TOOLS AND MATERIALS

The maintenance procedures require the use of metric tools and common CE test equipment. No special materials are required.

MOS CIRCUIT-HANDLING PRECAUTIONS

Special handling procedures are necessary for printed-circuit cards containing metal-oxide semiconductor (MOS) integrated circuits. These ICs are susceptible to damage from static electricity. Observe the following precautions when handling the controller board:

- Turn power off before removing/installing or otherwise connecting/disconnecting any circuits.

- Ensure that any item that comes in contact with card is electrically grounded.
- Touch metal chassis frame to bleed off any accumulated static charge before handling card and continue to touch chassis while removing/installing card.
- Handle card only by a noncircuit portion. Connector pins and circuit paths must not be touched.
- Place card in a special conductive envelope whenever card is removed from chassis.

MAINTENANCE AIDS

There is no scheduled maintenance for the subsystem. In the event of failure, the primary maintenance aids are the voltage LED indicators, self-test routines, and DIAG Flexible Disk Diagnostic tests. These aids in conjunction with the SAM troubleshooting listings are structured to isolate the failure to a field-replaceable component/assembly and to provide a procedure number reference to the applicable maintenance procedure to be used for correcting the malfunction. Refer to the Diagnostic and Corrective Maintenance heading for organization of this material.

LOCATION OF MAJOR ASSEMBLIES

Figure 6-1 shows the location of the major assemblies within the subsystem.

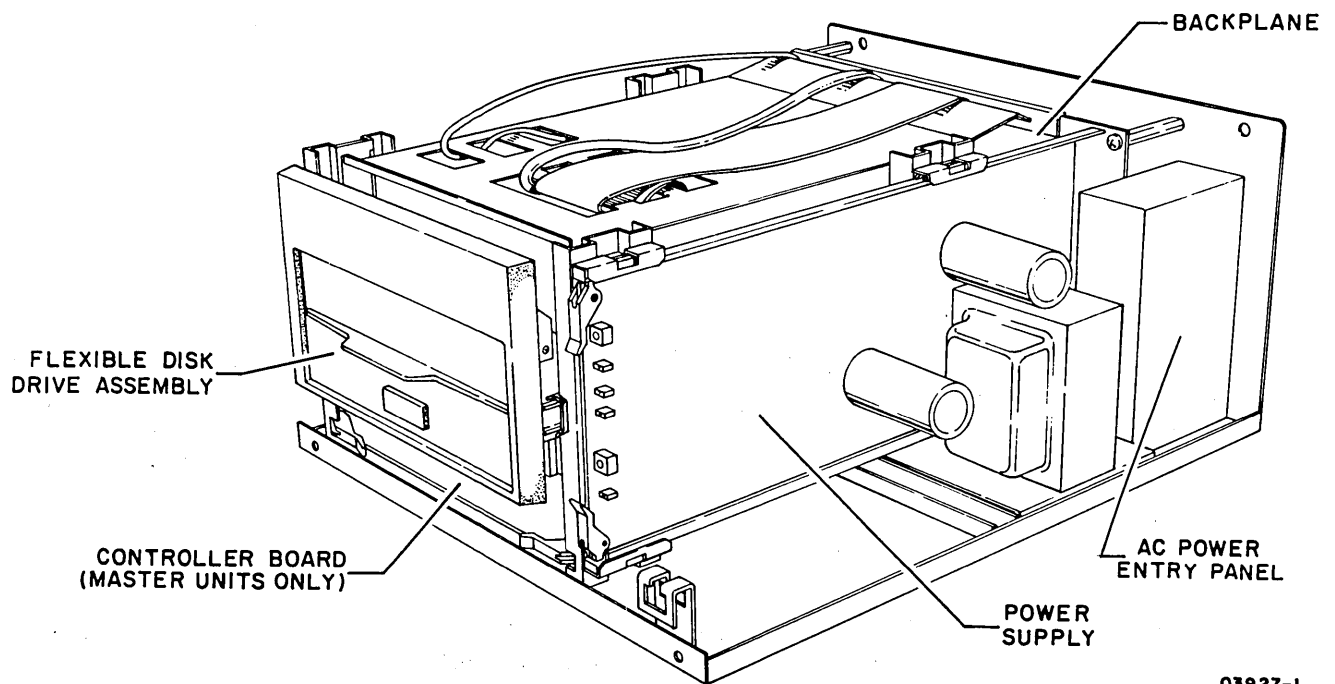
DIAGNOSTIC AND CORRECTIVE MAINTENANCE

The following paragraphs describe the diagnostic self-test routines, the DIAG Flexible Disk Diagnostic tests, provide an explanation of the SAM format used for troubleshooting information, and describe the organization of the SAMS and procedures.

DIAGNOSTIC SELF-TEST ROUTINES

The subsystem contains nine diagnostic tests stored in ROM. The starting address is at 0000₁₆. Diagnostic execution is under control of the diagnostic control switches on the controller

board. Status of the diagnostic tests is indicated by the four LEDs also located on the controller board. Refer to section 2 for a detailed description of the diagnostic control switches and LED indicators. The following paragraphs provide a description of the various test routines.



03927-1

NOTE: COVER AND FRONT
PANEL REMOVED
FOR CLARITY.

Figure 6-1. Location of Assemblies in Subsystem

LED Test

All four LEDs light momentarily following a power application and after a master reset to test the indicators.

Test 0 - ROM Checksum

The ROM checksum routine tests ROM for the correct checksum value of the stored contents.

Test 1 - RAM Test

Test 1 checks RAM memory (as specified by the diagnostic control switches) for correct operation. This test uses the diagnostic control switches and LEDs to isolate to a failing RAM chip. The first level of error detection is to a specific RAM bank, then to the failing chip within that bank.

Test 2 - Interrupt Generator

Test 2 checks for interrupts by performing writes and reads to the available registers in the interrupt controller IC.

Test 3 - Flexible Disk Controller

Test 3 checks the flexible disk controller IC by performing writes and reads to all available registers in the IC.

Test 4 - DMA Test

Test 4 reads data from the flexible disk controller IC data register to memory using DMA channels 1 and 3.

Test 5 - I/O Loopback Test

Test 5 tests the basic I/O capabilities by interfacing the input/output registers and transferring data via the I/O data bus and checking status.

Test 6 - CTC Test

Test 6 checks the counter/timer circuit by loading a count value and determining that the proper interrupt is generated at count 0.

Test 7 - Writing and Reading the Disk

Test 7 checks for a ready disk drive, then seeks side 1, track 76, last sector and executes writes and reads using the disk DMA channel. This surface area is reserved on all diskettes; therefore, no alteration is made to stored disk data.

DIAG FLEXIBLE DISK DIAGNOSTIC TESTS

Testing can be performed using downline-loaded diagnostics from the PLATO system. Use lesson DIAG to call up the flexible disk diagnostic tests. This diagnostic loads and tests information via the terminal parallel I/O channel. Two modes are tested, DMA operations and interrupt routines. Refer to checkout information in section 3 for details of diagnostic operation.

EXPLANATION OF SAM FORMAT

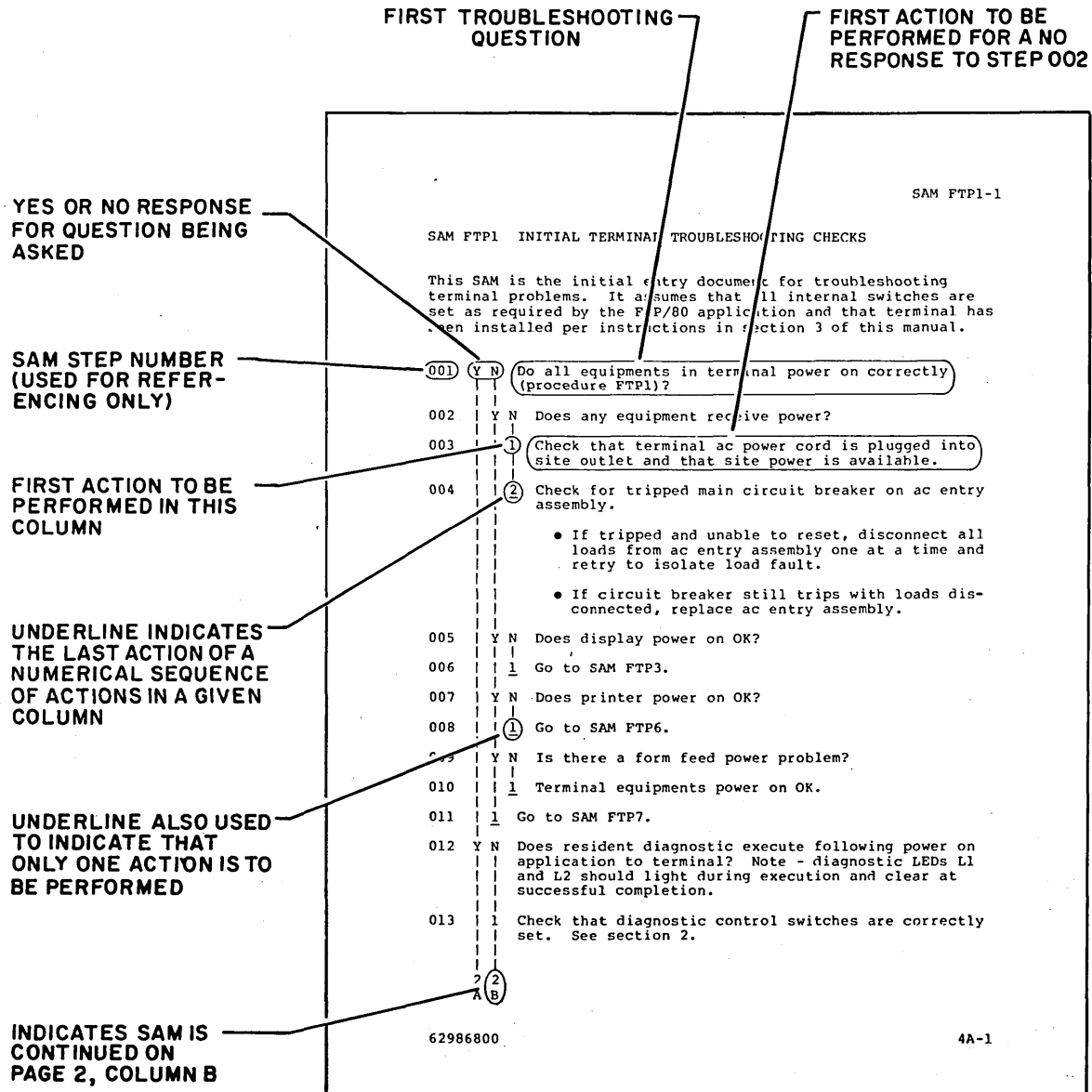
A SAM listing is a specialized format used to present troubleshooting information in a logical manner. Figure 6-2 illustrates the basic SAM format. Any applicable assumptions or advisory information is provided in the header information of the SAM.

To interpret a SAM, start at the top of the page and determine the response for the first question posed. Then follow the appropriate dashed line beneath the Y or N response. Answer the next question, etc. until the action numbers are reached. Perform the action(s) listed in that column in numerical order to correct the problem.

ORGANIZATION OF SAMs AND PROCEDURES

The SAMs and maintenance procedures are organized in two separate subsections of this manual as follows:

- SAM Listings (section 6A)
- Maintenance Procedures (section 6B)



03680

Figure 6-2. SAM Example

SAMS
SECTION 6A

00

C

C

C

00

SAM 1 POWER FAULT ISOLATION

This SAM assumes that the ac power cord is plugged into a live site outlet and is firmly seated at the rear ac connector of the unit.

- 001 Y N Does unit circuit breaker trip when power is applied?
 | | Allow time to cool and retry before proceeding with
 | | additional steps.
- 002 | Y N Are fan and drive motor running?
- 003 | | 1 Check that connector J3 from ac entry panel is
 | | plugged into backplane.
- 004 | | 2 Check internal ac wiring connections (see ac power
 | | wiring schematic in section 5).
- 005 | | 3 Check power cord for continuity.
- 006 | | 4 Check/replace circuit breaker.
- 007 | | 5 Replace fan or drive unit (procedure 6) as applicable.
- 008 Y N Are all LEDs on power supply lit?
- 009 | | 1 Replace power supply (procedure 5).
- 010 | 1 Check that correct power supply voltages are present.
 | Voltages should be:

- +5 V ± 0.1 V } Test points at front edge of
- -5 V ± 0.1 V } controller board.
- +12 V ± 0.1 V } Check at J4 of drive unit (see
- +24 V ± 0.5 V } procedure 5)

NOTE

The +5-V and +24-V outputs are adjustable. Refer to procedure 5. If correct voltages are not obtained, replace power supply (procedure 5).

2 2
A B

A	B	
1	1	
011	Y N	Is Power indicator (LED 2 ⁰) lit on controller board (master units only)?
012	1	Replace controller board (procedure 4).
013	1	Internal power checks are OK.
014	1	Check internal wiring visually for shorts.
015	2	Unseat power supply board and retry. If circuit breaker no longer trips, replace power supply (procedure 5).
016	3	Unseat controller board (master units only) and retry. If circuit breaker no longer trips, replace controller board (procedure 4).
017	4	Disconnect J4 from disk drive unit and retry. If circuit breaker no longer trips, replace disk drive unit (procedure 6).
018	5	Refer to ac power wiring schematic in section 5 and disconnect wiring/connectors from ac entry panel, line filter, and transformer back to circuit breaker to isolate load fault. Replace defective item.

SAM 2 INTERNAL DIAGNOSTIC CHECKS (MASTER UNITS ONLY)

This SAM isolates faults detected by the internal diagnostic tests. Refer to sections 2 and 3 for information on Diagnostic Control Switches and LED Indicators, and to the Diagnostic Self-Test Routines heading in section 6 for test descriptions.

- 001 Y N Do all four LEDs at front of controller board light momentarily following a power application or a master reset?
- 002 | 1 If no LEDs light, check for power fault per SAM 1.
- 003 | 2 Replace controller board (procedure 4).
- 004 N Y Is Error LED (2³) lit and other LEDs off? (Indicates a ROM Checksum Test 0 error.)
- 005 | 1 Replace ROM chips, Z80 chip, or controller board (procedure 4).
- 006 N Y Is Error LED (2³) and Power LED (2⁰) lit? (Indicates a RAM memory Test 1 error.)

NOTE

Verify that switches 2⁴ and 2⁵ are set correctly for number of RAM banks present. See section 3, Sub-system Installation.

- 007 | 1 Replace controller board (procedure 4), or isolate and replace bad RAM chip as follows:
- o Place switch 2¹ up and switch 2² down to display failing RAM bank in LEDs 2⁰ through 2² (bank 0 is row A, bank 1 is row B, bank 2 is row C, and bank 3 is row D).
 - o Place switch 2² up to display failing bit (chip) within bank in LEDs 2⁰ through 2² (bit 0 is at location 6, bit 7 is at location 1. See figure 6B-4 for board layout).
 - o Replace failing RAM chip and rerun internal diagnostic tests.

2
A

- A
1
- 008 N Y Is Error LED (2³) and Write LED (2¹) lit? (Indicates an Interrupt Generator Test 2 error.)
- 009 | 1 Replace controller board (procedure 4). Problem with 9519 Interrupt Controller IC or support logic.
- 010 N Y Is Error LED (2³), Write LED (2¹), and Power LED (2⁰) lit? (Indicates a Flexible Disk Controller Test 3 error.)
- 011 | 1 Replace controller board (procedure 4). Problem with 1791 Flexible Disk Controller IC or support logic.
- 012 N Y Is Error LED (2³) and Read LED (2²) lit? (Indicates a DMA Test 4 error.)
- 013 | 1 Replace controller board (procedure 4). Problem with 9517 DMA IC or support logic.
- 014 N Y Is Error LED (2³), Read LED (2²), and Power LED (2⁰) lit? (Indicates an I/O Loopback Test 5 error.)
- 015 | 1 Replace controller board (procedure 4). Problem with support logic.
- 016 N Y Is Error LED (2³), Read LED (2²), and Write LED (2¹) lit? (Indicates a CTC Test 6 error.)
- 017 | 1 Replace controller board (procedure 4). Problem with Z80 CTC IC.
- 018 N Y Is Error LED (2³), Read LED (2²), Write LED (2¹), and Power LED (2⁰) lit? (Indicates a Writing and Reading the Disk Test 7 error.)
- 019 | 1 Verify correct diagnostic control switch settings (see section 3 of manual).
- 020 | 2 Verify that flexible disk is properly formatted.
- 021 | 3 Verify that flexible disk is Write Protected (slot covered). If not Write Protected, set diagnostic control switch 2³ up.
- 022 | 4 Replace controller board (procedure 4).
- 023 | 5 Replace disk drive unit (procedure 6).

3
A

	A	B	
	2		
024	N	Y	Is Error LED (23) off, and Read LED (22), Write LED (21), and Power LED (20) lit? (Indicates that controller logic is communicating with drive unit, but test is not complete).
025		1	Check that flexible disk is installed in drive unit (procedure 2) and access door is closed.
026		2	Replace controller board (procedure 4).
027		3	Disconnect slave unit (if applicable).
028		<u>4</u>	Replace disk drive unit (procedure 6)
029	N	Y	Is Power LED (20) lit and other LEDs off?
030		<u>1</u>	Indicates successful completion of resident diagnostic.
031	<u>1</u>		Diagnostic test error. Begin at step 001 of this SAM to isolate failure.

SAM 3 DIAG FLEXIBLE DISK DIAGNOSTIC CHECKS

This SAM provides fault isolation information for problems detected by the DIAG Flexible Disk Diagnostics. Use of this SAM assumes that the internal self-test diagnostics execute without error. Refer to section 3, Checkout, for the procedure to be used to load and execute the DIAG Flexible Disk Diagnostics.

- | | | |
|-----|----------|---|
| 001 | N Y | Is there a terminal log-in or diagnostic loading problem? |
| 002 | <u>1</u> | Refer to applicable terminal hardware maintenance manual for troubleshooting information (see preface for publication number). |
| 003 | N Y | Is there a Disk System Not Ready to Load or Incorrect Load message displayed? |
| 004 | <u>1</u> | Try loading again by entering option 12 of display prompts. |
| 005 | <u>2</u> | Check that power is applied to flexible disk subsystem and last peripheral device connected to parallel I/O channel. |
| 006 | <u>3</u> | Check that no flexible disk is installed in drive unit of master or slave and perform a long master reset (press and hold Master Reset switch longer than three seconds). (1) |
| 007 | <u>4</u> | Check that Device Address switch of flexible disk subsystem is set correctly. |
| 008 | <u>5</u> | Check seating of I/O cable between terminal and flexible disk subsystem and check that terminator is installed at last peripheral device. |
| 009 | <u>6</u> | Reseat controller board. |
| 010 | <u>7</u> | Replace controller board (procedure 4). |
| 011 | <u>8</u> | Refer to applicable terminal hardware maintenance manual for troubleshooting information (see preface for publication number). |
| 012 | N Y | Is there a Bad Seek message displayed? |
| | 2 2 | |
| | A B | |

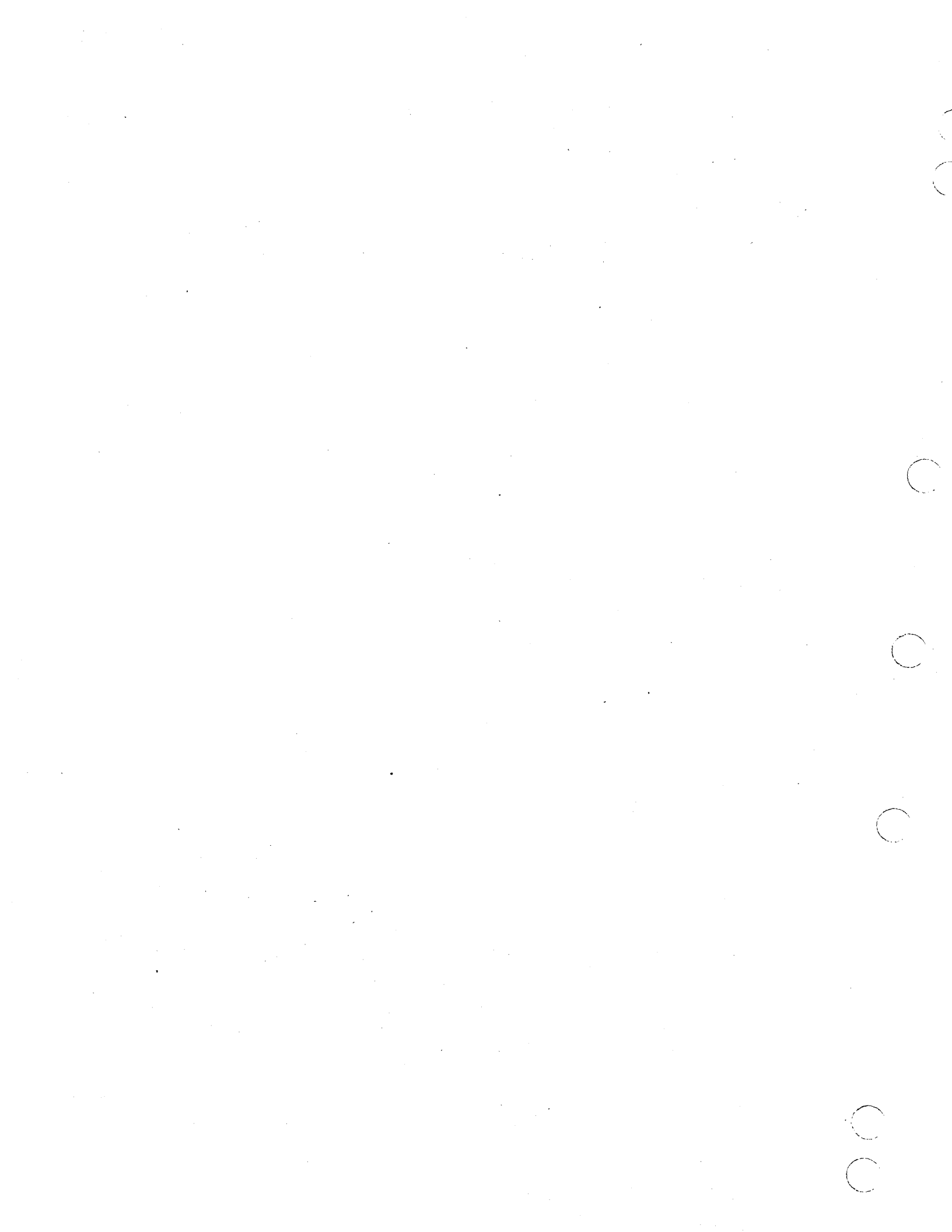
	A	B	
	1	1	
013			Verify that side of flexible disk entered for seek and track number are valid (must seek only to side 0 on a single-sided disk and to a maximum track number of 76).
014		2	Check that a correctly formatted flexible disk is being used.
015		3	Possible bad flexible disk, try another disk.
016		4	Reseat controller board.
017		5	Replace controller board (procedure 4).
018		6	Replace disk drive unit (procedure 6).
019		<u>7</u>	Refer to applicable terminal hardware maintenance manual for additional troubleshooting information.
020	N	Y	Is there a Comm Line test error?
021		1	Reseat controller board.
022		<u>2</u>	Replace controller board (procedure 4).
023	N	Y	Is there a Device Address test error (Status Error)?
024		1	Check that device address entry being made matches Device Address Switch setting.
025		<u>2</u>	Replace controller board (procedure 4).
026	N	Y	Is there a Media Test error?
027			Replace the diskette with known good formatted diskette.
028			Check power supply voltages per procedure 5.
029			Replace controller board (procedure 4).
030			Replace flexible disk driver (procedure 6).
031	N	Y	Is there a Test Number of Sides test error?
032		1	Check flexible disk part number to verify that disk has number of sides being assumed.
033		2	Reseat controller board.
034		3	Replace controller board (procedure 4).
	3	3	
	A	B	

	A	B	
	2	2	
035			Replace disk drive unit (procedure 6).
036	N	Y	Is there a Head Loaded Test error?
037		1	Reseat controller board.
038		2	Replace controller board (procedure 4).
039		3	Replace disk drive unit (procedure 6).
040	N	Y	Is there a Terminal Interrupt Test error?
041		1	Reseat controller board.
042		2	Check seating of parallel I/O cable and terminator assembly.
043		3	Verify correct terminal operation. If other devices are connected to parallel I/O channel, verify that interrupts work correctly to those devices.
044		4	Replace controller board (procedure 4).
045	N	Y	Is there a Line Sync Test error?
046		1	Reseat controller board.
047		2	Check seating of internal cables.
048		3	Replace controller board (procedure 4).
049		4	Replace power supply (procedure 5).
050	N	Y	Is there an Index Pulse Test error?
051		1	Reseat controller board.
052		2	Replace controller board (procedure 4).
053		1	DIAG Flexible Disk Diagnostics executed OK.

(1) If a long master reset or power application is performed with a system flexible disk installed, internal diagnostics will autoloading from disk instead of terminal. Therefore, flexible disk must be removed from drive unit(s), or Switch 23, or Switch 27 must be up in order to bypass test 7 or to bypass internal diagnostic execution, respectively.

	A	B	
	3	3	
056		3	Replace controller board (procedure 4).
057		<u>4</u>	Replace power supply (procedure 5).
058	N	Y	Is there an Index Pulse Test error?
059		1	Reseat controller board.
060		<u>2</u>	Replace controller board (procedure 4).
061	<u>1</u>		DIAG Flexible Disk Diagnostics executed OK.

(1) If a long master reset or power application is performed with a system flexible disk installed, internal diagnostics will autoloading from disk instead of terminal. Therefore, flexible disk must be removed from drive unit(s), or Switch 2³, or Switch 2⁷ must be up in order to bypass test 7 or to bypass internal diagnostic execution, respectively.



PROCEDURES
SECTION 6B



Procedure 1 - Power Application/Removal

This procedure assumes that the flexible disk subsystem is plugged into the site ac outlet.

WARNING

Applying improper voltage to the flexible disk subsystem can damage components. Read label on back of unit for proper voltage and frequency.

NOTE

Correct operation of the IST parallel interface channel requires that power be applied to the last peripheral device on the channel. Last device supplies +5 V to the terminator.

1. First apply power to terminal. Then apply power to disk subsystem by pulling forward on Power On/Off switch connecting rod (early units) or by pressing Power ON/OFF switch to ON position (later units). See figure 6B-1.

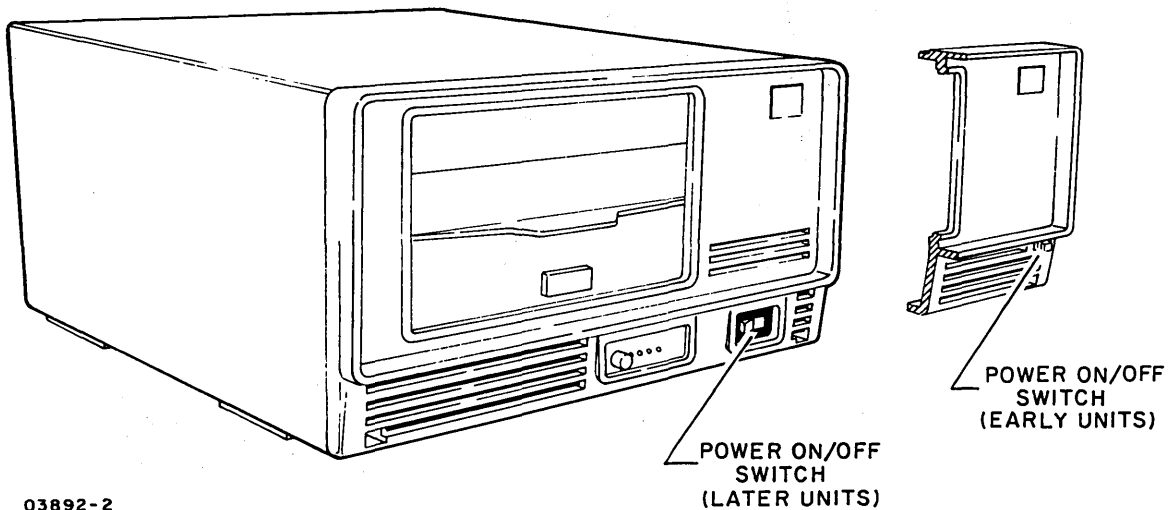


Figure 6B-1. Power On/Off Switch Location

2. Power on is indicated by LED 2⁰ being lit (master units only).

3. Remove power by pushing Power On/Off switch connecting rod in (early units) or by pressing Power On/Off switch to Off position (later units).

Procedure 2 - Flexible Disk Installation/Removal

Install flexible disk in drive unit per the following:

1. Apply power to disk subsystem (procedure 1).
2. Press door latch to open access door (figure 6B-2).

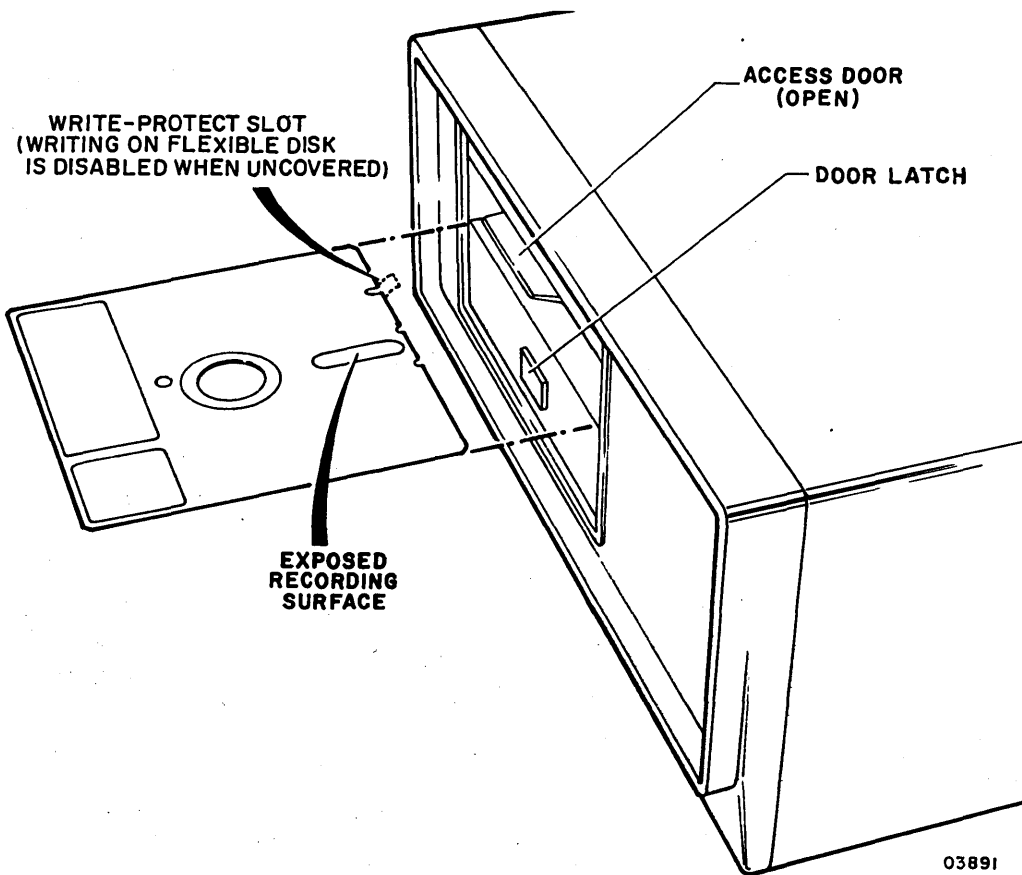


Figure 6B-2. Diskette Installation/Removal

3. Remove flexible disk from storage envelope.

NOTE

If information is to be written onto disk, Write-Protect slot must be covered with tape that is opaque to infrared light.

4. Hold flexible disk so that Write-Protect slot is to left and slide disk into drive unit until solidly seated.
5. Close drive access door by pressing down on door until latched.
6. To remove disk, press door latch to open door and remove disk from drive. Place flexible disk in storage envelope.

NOTE

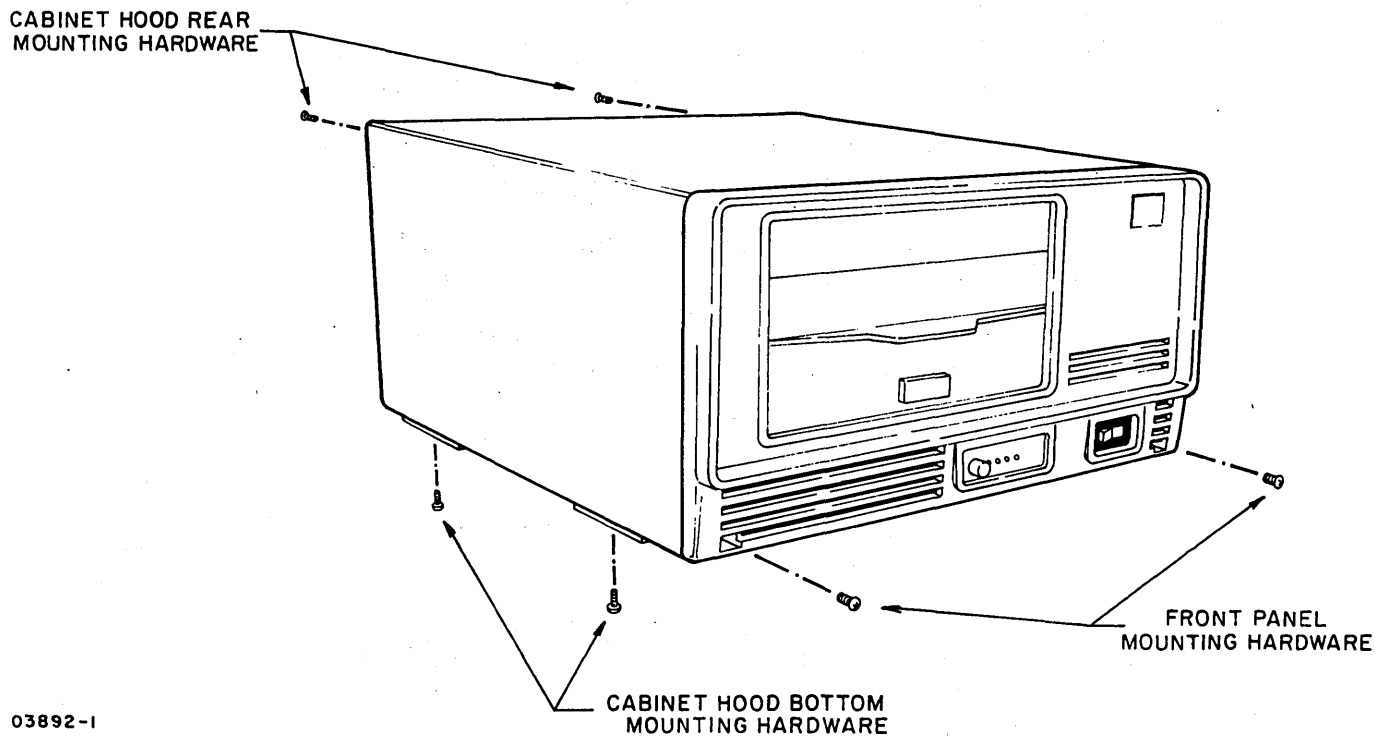
Care should be taken in handling the flexible disks. Recommendations are:

- Do not use lead or grease pencils when writing on flexible disk jacket label as these items deposit flakes. Remove flexible disk before writing on jacket.
- Do not fasten paper clips to flexible disk jacket edges.
- Do not touch disk surface exposed by jacket slot.
- Do not attempt to clean disk surface in any manner.
- Keep flexible disk away from magnetic fields and ferromagnetic materials that may be magnetized.
- Protect flexible disk from liquids, dust, and metallic substances.
- Always place flexible disk in its protective jacket when not in use.
- Store flexible disks loosely in a vertical position, not stacked.

Procedure 3 - Front Panel and Cabinet Hood Removal/Replacement

To remove the front panel or cabinet hood, refer to figure 6B-3 and perform the following:

1. Turn subsystem power off (procedure 1).
2. To remove front panel, remove two screws from panel and tip bottom of panel forward to release.
3. To reinstall front panel, engage retaining slots at top of panel, then tip panel down and install mounting screws.
4. To remove cabinet hood, first remove front panel, then remove four screws from Nylon feet at bottom of unit and two screws at rear of unit.
5. When reinstalling cabinet hood, install two screws at rear of unit first before installing bottom screws and Nylon feet.



03892-1

Figure 6B-3. Front Panel and Cabinet Hood Mounting Details

Procedure 4 - Controller Board Removal/Replacement

Perform the following steps to remove/replace the controller board and/or RAM, EROM, and Z80 chips. See figure 6B-4 for board layout.

1. Turn subsystem power off (procedure 1).
2. Remove front panel (procedure 3).
3. Release controller board extractors and slide pc board out of unit.
4. Remove master reset push button and install on replacement board. This button is eccentric which allows for some adjustment. This adjustment is performed in step 6 of this procedure.

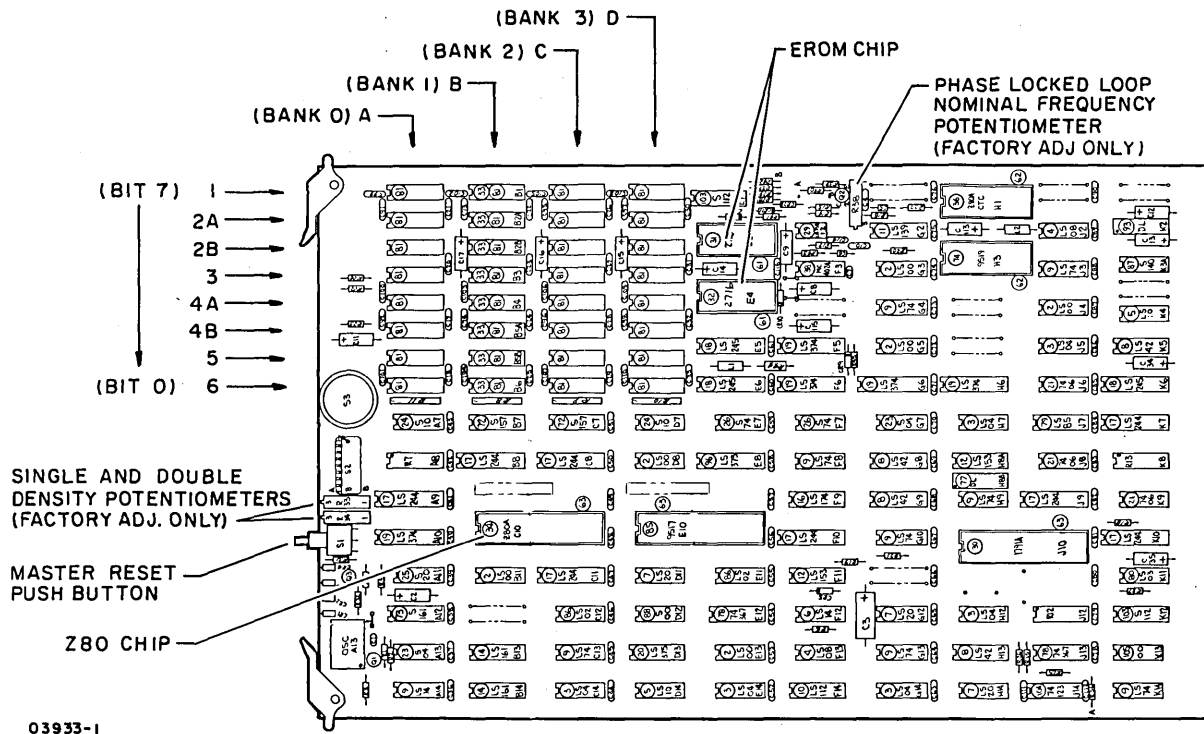


Figure 6B-4. Controller Board Layout

5. When installing a replacement controller board, verify that device address switch* and diagnostic control

*Normally set to address 7 if there is only one flexible disk unit connected on the parallel I/O channel.

switches are set correctly for subsystem operation (see section 3 for switch settings). If RAM options are installed on a controller board that is being replaced, transfer RAM chips to new controller board. Locations for RAM options are:

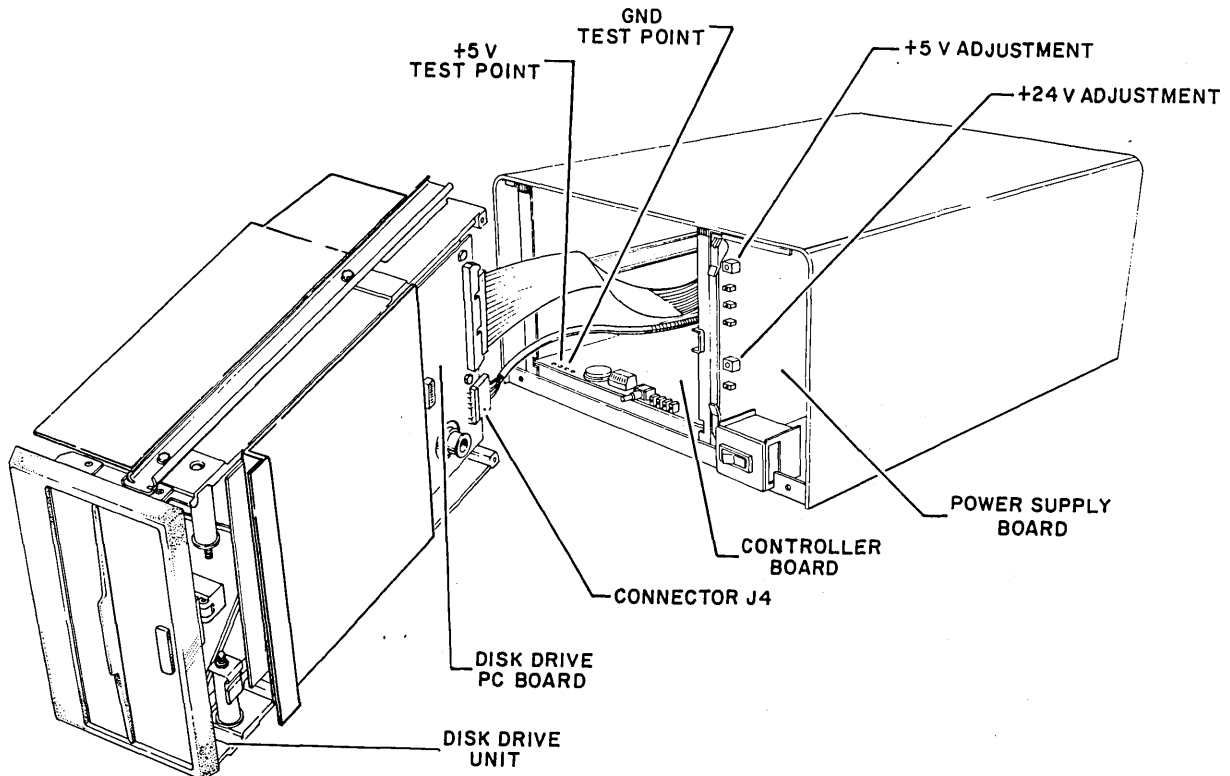
- 1st RAM option - locations C1, C2A, C2B, C3, C4A, C4B, C5, and C6.
 - 2nd RAM option - locations D1, D2A, D2B, D3, D4A, D4B, D5, and D6.
 - 3rd RAM option - locations A1, A2A, A2B, A3, A4A, A4B, A5, and A6.
6. Slide controller board in and replace front panel (procedure 3).
 7. Rotate master reset push button unit until best fit is achieved.

Procedure 5 - Power Supply Removal/Replacement

This procedure describes removal/replacement of the power supply assembly. See figure 6B-5.

1. Turn subsystem power off (procedure 1).
2. Remove front panel (procedure 3).
3. Release power supply board extractors and slide assembly out of unit.
4. After installing a replacement power supply assembly, perform voltage adjustments as follows:
 - +5-V Adjustment
 - a. Connect meter leads as follows:
 - Master units - Attach meter leads to +5-V and GND test points at left front edge of controller board.
 - Slave units - Remove disk drive unit from cabinet by pulling drive unit forward until free of slides. Set drive unit on its side, rotated to the left, to allow access to connector J4 at rear of drive PC board. Check that board connectors are seated firmly. Connect + meter lead to J4 pin 2 (+5 V) and - meter lead to J4 pin 3 (ground)

- b. Apply power to unit.
- c. Adjust top potentiometer on power supply board for $+5\text{ V} \pm 0.1\text{ V}$.



03931-1

Figure 6B-5. Power Supply Voltage Adjustments

● +24-V Adjustment

- a. Turn power off.
- b. Remove disk drive unit from cabinet by pulling drive unit forward until free of slides but cables remain firmly attached. Set drive unit on its side, rotated 90° to the left, to allow access to connector J4 at rear of drive PC board.
- c. Connect + meter lead to J4 pin 4 (+24 V) and - lead to J4 pin 6 (+24-V return).

- d. Apply power to unit.
- e. Adjust bottom potentiometer on power supply board for +24 V +0.5 V.
- f. Turn power off, disconnect meter leads, and reinstall drive unit. Check that cables do not bind when installing drive unit.

Procedure 6 - Disk Drive Unit Removal/Replacement

Refer to figure 6B-6 and perform the following steps to remove/replace the disk drive unit.

1. Turn subsystem power off (procedure 1).
2. Remove front panel (procedure 3).

CAUTION

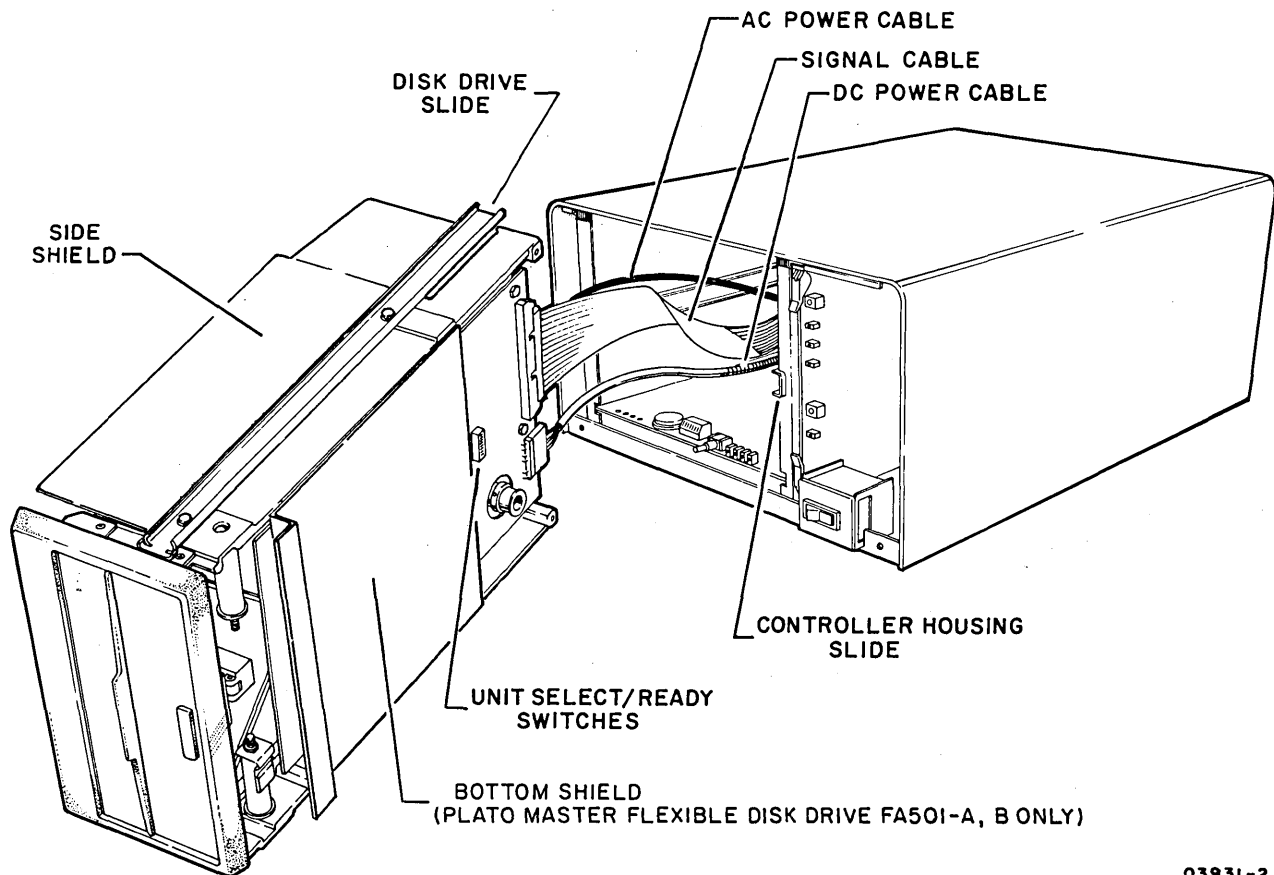
Do not set disk drive unit down with PC board at bottom. Damage to PC components may occur.

3. Remove disk drive unit from cabinet by pulling drive unit forward until free of slides. Set drive unit on its side and disconnect three cables from rear of unit.
4. Remove slides and shields (figure 6B-6) from existing drive unit. The shields are to be installed on the replacement drive as follows:
 - When replacement drive is a master unit (FA501-A,B PLATO Master Flexible Drive), both side and bottom shields must be replaced.
 - When using the slave unit as the replacement (BR801-A,B PLATO Slave Flexible Drive), only the side shield must be replaced (figure 6B-6).
5. Verify that drive pulley on replacement drive unit is installed correctly for 50-Hz/60-Hz operation as required. Pulley must be reversed to change the rotating speed of drive unit. Refer to figure 6B-7 for details.

6. Verify that Unit Select switch (DIP switches 1, 2, 3, and 4) and Ready switch (DIP switches 5, 6, 7, and 8) are set as follows:

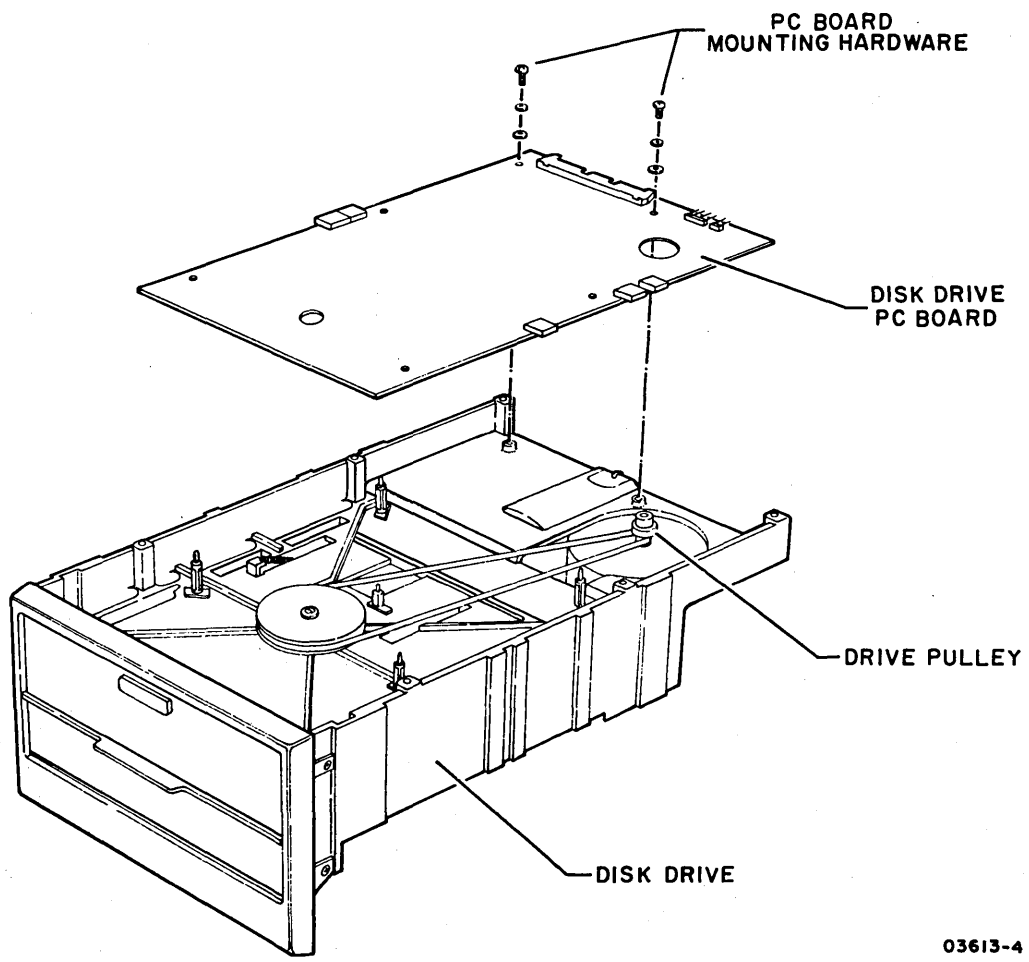
- Master Unit - DIP switch 1 and 5 ON, remaining switches OFF.
- Slave Unit - DIP switch 2 and 6 ON, remaining switches OFF.

7. Remove cardboard head-protective flexible disk from drive unit if replacement unit is being installed.



03931-2

Figure 6B-6. Disk Drive Unit Installation



Note - Refer to the 9406 Flexible Disk Drive Assembly Hardware Maintenance manual for additional information if needed (see preface for publication number).

Figure 6B-7. Drive Pulley Details

This section contains the spare parts lists, genealogy charts, and assembly drawings for the flexible disk subsystem. Parts data for the 9406 Flexible Disk Drive unit is contained in a separate publication (see the preface for publication number).

NOTE

Parts list information is provided under separate dividers for the pre-production and production units. Common parts list information is also provided under a separate divider.

Table 7-1 explains the column headings on the assembly parts lists.

TABLE 7-1. EXPLANATION OF COLUMN HEADINGS ON ASSEMBLY PARTS LISTS

COLUMN HEADING	EXPLANATION
FIND NO.	Identifies an electrical or mechanical part on an assembly drawing. If more than one listing appears for a find number, refer to LI, WK IN, and WK OUT.
LI (Line Item)	Gives a chronological or historical record of the addition of a new part to a find number. For example, 01 indicates that the part was the first one used, and 02 indicates the second, etc. See also WK IN and WK OUT.
PART NUMBER	Gives the Control Data Corporation part identification. Use this number when ordering replacements.
CD (Check Digit)	Gives the information-control system a means of cross-checking the correctness of a part number.
QUANTITY	Lists the total number of a part required to complete an assembly. The vertical line near the center of the column acts as a decimal point. Numbers to the left of the line are whole numbers. Those to the right of the line are tenths, hundredths, and thousandths.
U/M (Unit of Measure)	Indicates how the information-control system counts or supplies a part.
PART DESCRIPTION	Describes the physical appearance, type, or name of a part.
MC (Material Code)	Supplies additional descriptive data to the information-control system.
YLD (Yield)	A 2-digit number that indicates the usable portion of any quantity of parts expressed as a percentage.
ECO NO. IN	Engineering Change Order that adds a new part to an assembly. See also WK IN.
ECO NO. OUT	Engineering Change Order that deletes a part from an assembly. See also WK OUT.
S/N (Serial Number)	Used to specify an ECO's effectivity by serial number.
WK IN (Week In)	Lists the date when manufacturing begins using a new part and when it is available for parts replacement. For example, 7222 means a part is available of the 22nd week of 1972.
WK OUT (Week Out)	Lists the date when manufacturing no longer uses a part in building an assembly. See also WK IN. Do not order a part after its week-out date.

0643-2A



PARTS DATA FOR PRE-PRODUCTION UNITS ONLY

30

C

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C

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C

OWN	S. Trautman	2/80	CONTROL DATA	TITLE	PREFIX	DOCUMENT NO.	REV.
CNCD	C. Trautman	12-6-80		SPL PLATO FLEXIBLE DISK SUBSYSTEM	SPL	66308923	D
ENG	P. O'Hara	7-16-80		FIRST USED ON			
MFG	N/A			FAS01A/B			
APPR	S. V. Van	7-16-80	CODE IDENT			SHEET	1 OF 3
	CA/PLA	7-16-80	15920				

SHEET REVISION STATUS				REVISION RECORD							
3	2	1	REV	ECO	DESCRIPTION	DRAFT	DATE	APP			
			00	00	00	00	5000-62	RELEASED CLASS B	WJK	2/17/80	PKM
			01	01	01	01	51009	ADDED FIN 18 & NOTE 9	WJK	2/17/80	PKM
			02	01	02	02	51011	FIN 18 WAS 66312007	WJK	2-18-80	PKM
			03	03	03	03	51168	FIN 12 WAS 66139318 FIN 13 WAS 66139319	WJK	7-17-80	7-18-80 PKM
			A	A	A	A	11565-80	RELEASED CLASS "A"	WJK	7-23-80	PKM
			B	A	B	B	14165	REVISED PER ECO	WJK	9-1-80	PKM
			C	C	C	C	14376	REVISED PER ECO	EB	1/17/81	JAP
			D	D	D	D	14571	CHG 1,5,19, DELETE NOTE 3	WJK	3-2-81	JAP

NOTES:

EQUIPMENT	EQUIPMENT CONFIGURATOR	TOP LEVEL ASSEMBLY
FAS01A 60HZ	15632205	15632209
FAS01B 50HZ	15632206	15632210

THIS SPL APPLIES ONLY TO A/801 EQUIPMENTS

DETACHED LISTS

443100 REV. 01/71

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 CONTROL DATA CORPORATION	CODE IDENT	SHEET	DOCUMENT NO.	REV.
	15920	2	SPL 66308923	D

NOTES:

- These parts are the total required for a unit with no options installed.
- A unit could have 3 RAM options of 8 RAM ICs for each option for a total of 32 RAM ICs in the unit.

Find Numbers 1 thru 7 and 19 are for the 98ED Controller Board.

Use Find Number 8 for the FAS01A (60HZ unit) and use Find Number 9 for the FAS01B (50HZ unit).

Find Number 10 is for the 50HZ AC Entry only.

Find Number 11 is the signal cable used to connect the PLATO Flexible Disk Subsystem to the IST Terminal.

One of these devices is required on the last device on the Plato IST Parallel I/O channel daisy chain configuration.

443100





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CONTROL DATA			CODE IDENT		SHEET		SPL		DOCUMENT NO.		REV.				
			15920		3				66308923		D				
P/N	PART IDENTIFICATION	QUANTITY REQUIRED										UNIT OF MEAS	NOMENCLATURE OR DESCRIPTION	SPECIFICATIONS, NOTES, OR MATERIAL	
		60 H7	50 H7												
1	66312070	1	1											2716 2KX8 ROM	△4
2	15153821	8	8											4116 16K RAM	△4
3	15163201	1	1											Z80 Processor	△4
4	15163444	1	1											FD1791 Disk Controller	△4
5	15163458	1	1											9517 DMA	△4
6	15163459	1	1											9519 Interrupt Cont.	△4
7	15164429	1	1											Z80A-CTC	△4
8	15165425	1	0											60Hz Power Cord	△5
9	15165426	0	1											50Hz Power Cord	△5
10	52916789	0	1											Step down Transformer	△6
11	61408865	1	1											25 Pin I/O Cable	△8
12	75587103	1	1											Circuit Breaker	
13	15164356	1	1											Line Filter	
14	77618000	1	1											Flexible Disk Assembly	
15	70446284	1	1											78ED Controller Board	
16	70446140	1	1											78KD Power Supply	
17	70446143	1	1											78MD Backplane	
18	15632316	1	1											FT116A Terminator	△7
19	66312071	1	1											2716 2KX8 Rom	

443100 REV. 0771

PRINTED IN U.S.A.

DWN	R Trautman	2-6-80	CONTROL DATA	TITLE	SPL PLATO SLAVE FLEXIBLE DISK	PREFIX	DOCUMENT NO.	REV				
CHKD	R Trautman	2-6-80		SPL	66308921	B						
ENG	P. M. M. M.	2-6-80		FIRST USED ON	BR810A/B	SHEET	1 of 3					
HFC	N/A			CODE IDENT	15920							
APPR	S. J. M. M.	2-16-80										
	RR/idea	2-6-80										
SHEET REVISION STATUS				REVISION RECORD								
				3	2	1	REV	ECO	DESCRIPTION	DRFT	DATE	APP
				00	00	00	00	5000/4	Released Class B		2/7/80	TR
				01	00	01	01	51004	F/N 4 WAS 51897345	WJG 2-11-80		TR 2-11-80
				02	01	02	02	51114	F/N 4 WAS 51940854	WJG 6-6-80		TR 6-6-80
				03	03	03	03	51114	F/N 5 WAS 66309319 F/N 6 WAS 66309318	JS 7/17/80	7-18-80	TR 7-18-80
				A	A	A	A	11565-88	RELEASED CLASS 'A'		7-23-80	TR 7-23-80
				B	A	B	B	14165	REVISED PER ECO	WJG 9/11/80	9-15-80	TR 9-15-80
NOTES:												
EQUIPMENT			EQUIPMENT CONFIGURATOR				TOP LEVEL ASSEMBLY					
BR810A 60HZ			15632207				15632211					
BR810B 50HZ			15632208				15632212					
THIS SPL APPLIES ONLY TO A/801 EQUIPMENTS.											DETACHED LISTS	

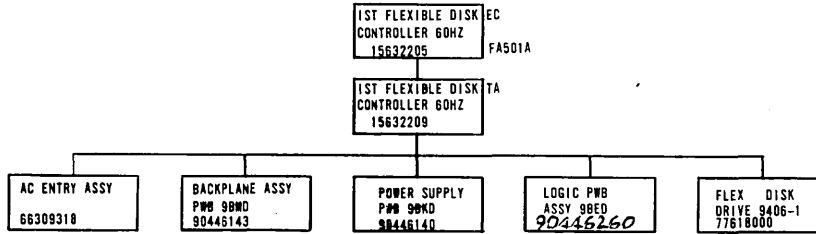
 CONTROL DATA CORPORATION	CODE IDENT	SHEET	DOCUMENT NO.	REV.
	15920	2	SPL 66308921	A
NOTES: <ol style="list-style-type: none"> These parts are the total required for a unit with no options installed  Use find number 1 {60HZ Power Cord} for the BR810A {60HZ unit} and find number 2 {50HZ Power Cord} for the BR810B {50HZ unit}.  Use find number 3 for the 50HZ AC Entry only.  Find number 4 is the Signal Cable used to connect the BR810A or BR810B to the FA501A or FA501B. 				

SERIAL DATA		CODE IDENT		SHEET		DOCUMENT NO.		REV.				
		15920		3		SPL 66308921		B				
FIND NO.	PART IDENTIFICATION	QUANTITY REQUIRED								UNIT OF MEAS	NOMENCLATURE OR DESCRIPTION	SPECIFICATIONS, NOTES, OR MATERIAL
		60 HZ	50 HZ									
1	15165425	1	0								60Hz Power Cord	⚠️ 2
2	15165426	0	1								50Hz Power Cord	⚠️ 2
3	51918789	0	1								Step down Transformer	⚠️ 3
4	61408976	1	1								Slave Signal Cable	⚠️ 4
5	95587103	1	1								Circuit Breaker	
6	15164356	1	1								Line filter	
7	77618000	1	1								Flexible Disk Assembly	
8												
9	90446140	1	1								98KD Power Supply	
10	90446143	1	1								98MD Backplane	

62949100 B

7-7

SHEET REVISION STATUS				REVISION RECORD					
REV	CO	DESCRIPTION	DRFT	DATE	CHKD	APP			
00	5004-12	RELEASED CLASS B		10/1/79					
01	5118	DELETE 90446147	WJG	6-9-80					
A	11565-88	RELEASED CLASS 'A'		7-23-80					

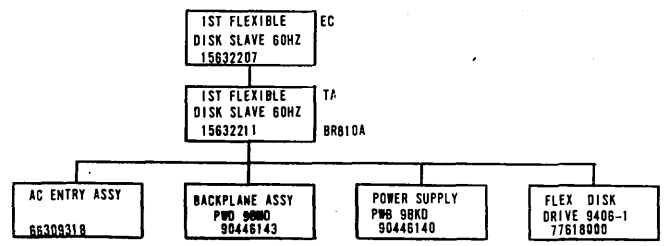


REFERENCE DOCUMENTS

- ENGINEERING SPECIFICATION.....6042257
- SPARE PARTS LIST.....66308923
- SCHEMATIC DIAGRAM (9BKD).....90446138
- SCHEMATIC DIAGRAM (9BMD).....90446141
- SCHEMATIC DIAGRAM (9BED).....90446258

REFERENCE DRAWING				TITLE GENEALOGY CHART PLATO MASTER FLEXIBLE DISK SUBSYSTEM 60 HZ	
FIRST USED ON FA501A				DRAWING NO 66310611	
DWN <i>R. Paulman</i> 7-12-79				CODE IDENT C	
CHKD <i>R. Paulman</i> 10/26/79				CROSS REF. NO	
ENGR <i>R. Paulman</i> 7-10-79				SCALE	
MFG <i>R. Paulman</i> 7-15-80				SHEET / OF /	
APPR <i>E. H. Ho</i> 7-15-80					
COMPONENTS, EXCEPT AS NOTED					
RES	TOLERANCE	VALUE	RATING		
CAP					

SHEET REVISION STATUS					REVISION RECORD					
REV	CO	DESCRIPTION	DRAFT	DATE	CHKD	APP				
00	5000412	RELEASED CLASS B		12/1/79						
01	51118	DELETE 90446147		6-9-80	WJG					
A	11565-88	RELEASED CLASS 'A'		7-27-80						



REFERENCE DOCUMENTS

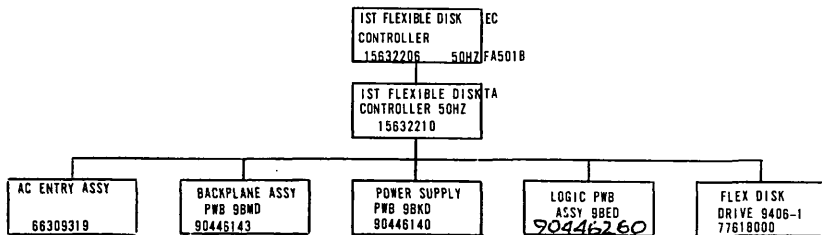
- ENGINEERING SPECIFICATION..... 16242254
- SPARE PARTS LIST..... 66308921
- SCHEMATIC DIAGRAM (98KD)..... 90446138
- SCHEMATIC DIAGRAM (98MD)..... 90446141

REFERENCE DRAWING				TITLE	
				GENEALOGY CHART	
				PLATO SLAVE FLEXIBLE DISK DRIVE 60HZ	
FIRST USED ON				BRB10A	
DWN				R. Plattman 5-12-79	
CHKD					
ENGR				M. H. Lee 11-26-79	
MFG				7-10-80	
APPR				M. H. Lee 7-15-80	
COMPONENTS, EXCEPT AS NOTED				CODE IDENT	
RES	TOLERANCE	VALUE	RATING	15920	
CAP				DRAWING NO	
				C 66310612	
SCALE				CROSS REF. NO.	
				SHEET / OF /	

62949100 B

7-9

SHEET REVISION STATUS				REVISION RECORD					
REV	CO	DESCRIPTION	DRFT	DATE	CHKD	APP			
00	5000412	RELEASED CLASS B		1/21/79					
01	51118	DELETE 90446147	WJG	6-9-80	WJG				
02	51172	SPL WAS 66308922	WJG	7-23-80	WJG				
A	11565-88	RELEASED CLASS A		7-23-80					



REFERENCE DOCUMENTS

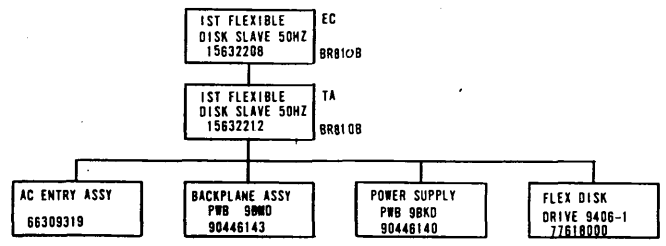
ENGINEERING SPECIFICATION.....	16042854
SPARE PARTS LIST.....	66308923
SCHEMATIC DIAGRAM 98MD.....	90446138
SCHEMATIC DIAGRAM 98MD.....	90446141
SCHEMATIC DIAGRAM 98ED.....	90446258

REFERENCE DRAWING				CONTROL DATA		TITLE	
				FIRST USED ON	FA501B	GENEALOGY CHART	
				DWN	R. Trautman	7-12-79	PLATO MASTER FLEXIBLE DISK
				CHKD			SUBSYSTEM 50 HZ
				ENGR			
COMPONENTS, EXCEPT AS NOTED				MFG			
RES	TOLERANCE	VALUE	RATING	APPR			
CAP				E. H. K...	7-12-80		
						CODE IDENT	DRAWING NO
						15920	C 66310613
						SCALE	CROSS REF. NO
							SHEET / OF /

7-10

62949100

SHEET REVISION STATUS				REVISION RECORD					
REV	CO	DESCRIPTION	DRAFT	DATE	CHKD	APP			
00	6007-12	RELEASED CLASS B		12-2-79					
01	51118	DELETE 90446147	WJG	6-9-80					
02	51172	SPL WAS 66308920	WJG	7-22-80					
03	1156-88	RELEASED CLASS A		11-1-88					



REFERENCE DOCUMENTS

ENGINEERING SPECIFICATION	16042854
SPARE PARTS LIST	66308921
SCHEMATIC DIAGRAM (9BKD)	90446138
SCHEMATIC DIAGRAM (9BMD)	90446141

REFERENCE DRAWING				INTRI 10'		TITLE GENEALOGY CHART PLATO SLAVE FLEXIBLE DISK DRIVE 50HZ	
COMPONENTS, EXCEPT AS NOTED				FIRST USED ON BR810B	DRAWING NO 66310614		
RES	TOLERANCE	VALUE	RATING	DWN R. Vautman 5-12-79	CODE IDENT 15920	CROSS REF. MO	
CAP				ENGR D. J. P. 1/1/80	SCALE		
				MFG 7-10-80	SHEET / OF /		
				APPR S. H. 7-15-80			

62949100 C

7-11

15632209	CONTROLLER 60 HZ
15632210	CONTROLLER 50 HZ
15632211	SLAVE 60 HZ
15632212	SLAVE 50 HZ

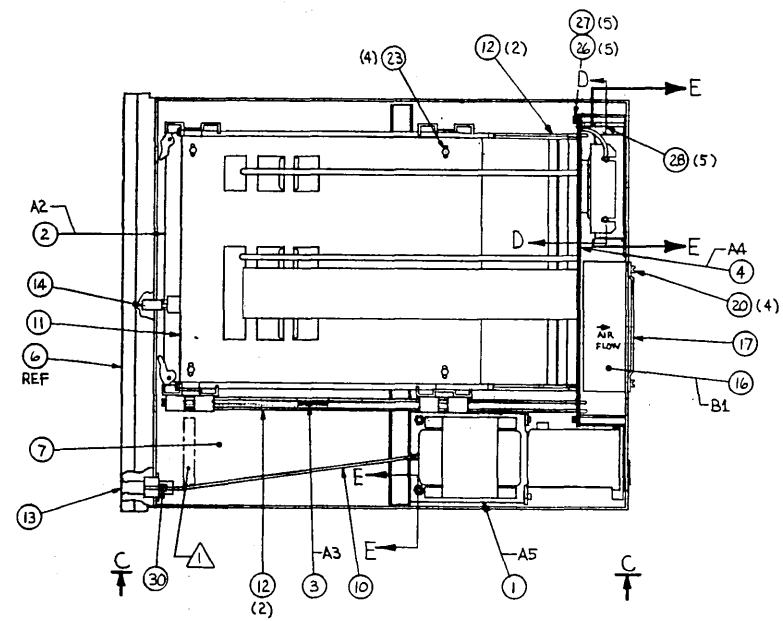
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SHEET REVISION STATUS		REVISION RECORD				
REV	ECO	DESCRIPTION	DEPT	DATE	CHECK	APP
21						
20	06	5000/A	RELEASED CLASS B		11/79	
01	01	50952	REVISED PER E20	WJG	11/80	
01	01	50988	P/N 33 WAS 91522017	WJG	11/80	
03	03	51026	CHANGE TITLE	WJG	3/82	
04	04	51128	ADD P/N'S 34, 35, 36	DC	11/82	
A	A	1565-85	RELEASED CLASS A			
B	B	14165	INACTIVE SERVICE USE ONLY SUPERSEDED BY 156325-718	NJH	7/1/80	

D
C
B
A

→ A

→ A

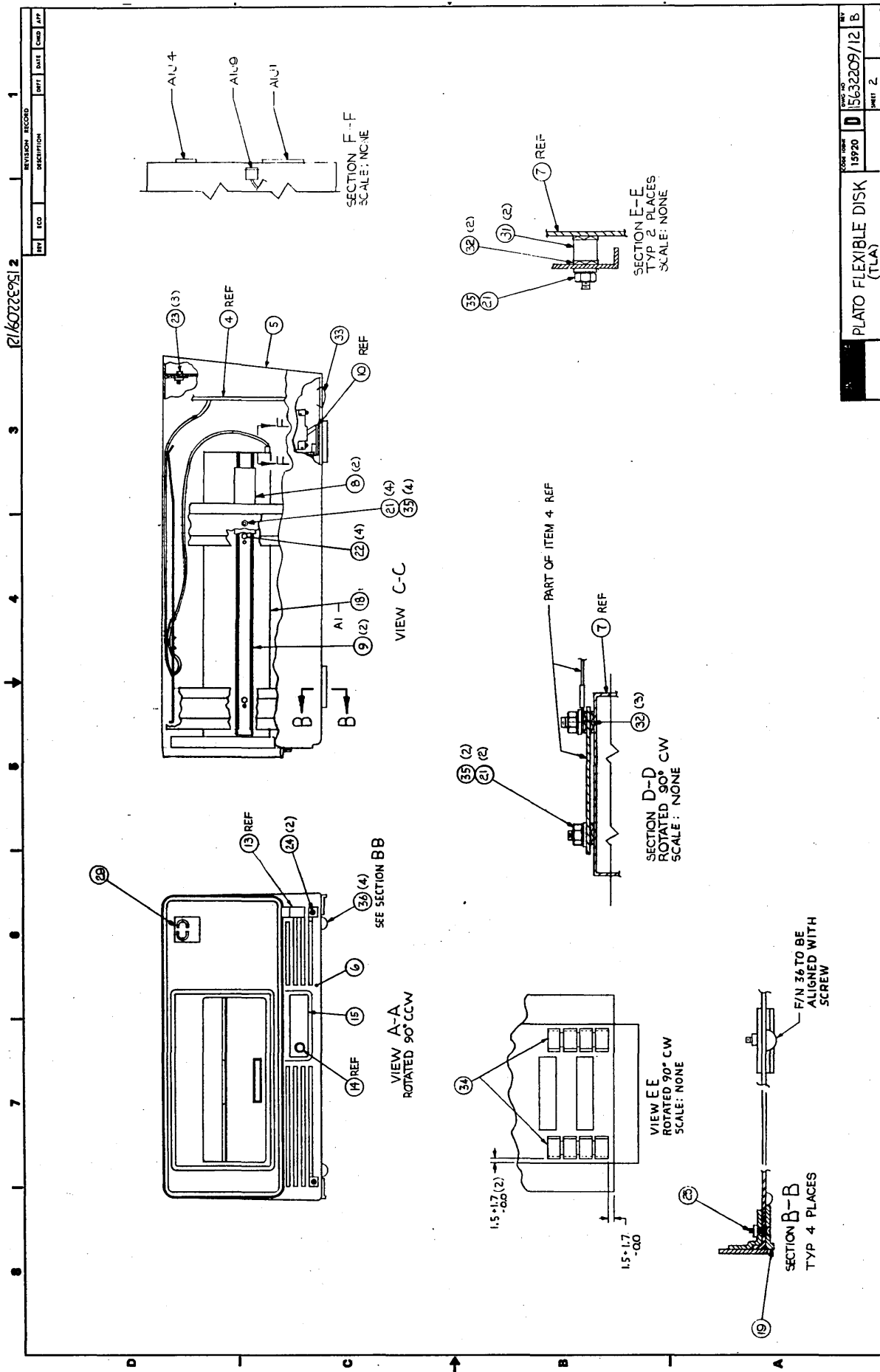


- NOTES:
- 1. MARK "ASSY 156322XX" IN AREA SHOWN PER CDC SPEC :012150B.
 - 2. CONNECT SUBASSEMBLIES AS FOLLOWS:
 - PLUG A4P1 INTO A1J9
 - PLUG A4P2 INTO A1J4
 - PLUG A4P3 INTO A1J1
 - PLUG A4P4 INTO B1J1
 - PLUG A5P1 INTO A4J3

(TOP VIEW SHOWN WITH ITEMS 5, 8, 9, & 18 REMOVED)

INACTIVE
METRIC

APL 15632209 THRU 15632212 DETACHED LIST	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM		TITLE	
	2 PLG 3 PLG 4 PLG	TOLERANCES	FA501	PLATO FLEXIBLE DISK (TLA)
DO NOT SCALE DRAWING	DESIGNED BY	11/80	10-579	DRAWING NO
	CHECKED BY	11/80	10-579	15632209 THRU 15632212
	APPROVED BY	11/80	10-579	15920
	DATE	11/80	10-579	SCALE 1/2
				SHEET 1 OF 2



REV	ECO	DESCRIPTION	DATE	BY	APP
1					

PLATO FLEXIBLE DISK (TLA)

REV	ECO	DESCRIPTION	DATE	BY	APP
1					

7-12

62949100 C

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
09-04-80	1	00014165

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	15632209	1	B	D	REPLACED BY 15632572 14165	G	INA	09-04-80	FA501A	09-04-80			
TP/IND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	66309318	5	1		PC REPLACED BY 61409021 14165	A						
002	01	90446124	1	1		PC CD ASSY 9BED DISK CONTR	S						
003	01	90446140	7	1		PC CD ASSY 9BKD PWR SPLY	A						
004	01	90446143	1	1		PC CD ASSY 9BMD BACKPLANE	A						
005	01	71493032	8	1		PC COVER METAL AL	P						
006	01	71493037	7	1		PC FACE PLATE (SM) PAINTED	P						
007	01	71493050	0	1		PC BASE METAL CRS	P						
008	01	71492950	2	2		PC TRACK DISK MTG	P						
009	01	71492951	0	2		PC SLIDE DISK MTG	P						
010	01	71492954	4	1		PC ROD ACTUATOR	P						
011	01	71492955	1	1		PC PANEL CABLE SUPPORT	P						
012	01	71492966	8	4		PC GUIDE CARD	P						
013	01	71493189	6	1		PC BUTTON, HINGED #PLATIC-BLK)	P						
014	01	71492968	4	1		PC BUTTON SWITCH	P						
015	01	71493053	4	1		PC PANEL SWITCH/INDICATOR	P						
016	01	51886600	9	1		PC FAN, 50CFM 115V 50/60HZ 1PH	P						
017	01	94375401	0	1		PC GUARD, FAN 50/60HZ	P						
018	01	77618000	2	1		PC FLOPPY DISK ASSY	V						
019	01	71493064	1	4		PC FOOT	P						
020	01	91976649	3	4		PC MSCR PAN PHL M4X40MM	B						
021	01	91975724	5	8		PC NUT HEXAGON SZ 5MM	B						

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
09-04-80	2	00014165

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	15632209	1	B	D	REPLACED BY 15632572 14165	G	INA	09-04-80	FA501A	09-04-80			
TP/IND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
022	01	15164911	8	4		PC MSCR HEX=LK PLN M4X8MM STL ZP	B						
023	01	15164917	5	7		PC MSCR HEX=LK PLN M5X8MM STL Z	B						
024	01	91976758	2	2		PC MSCR PNH M5X10MM	B						
025	01	91976864	8	4		PC MSCR MACH FLH M5X10MM	B						
026	01	91976652	7	5		PC MSCR PAN PHL M5X10MM	B						
027	01	91975706	2	5		PC WASHER LK METRIC M5	B						
028	01	71493078	1	5		PC STANDOFF HEX METRIC CRS	B						
029	01	51918435	2	1		PC EMBLEM, CDC ID	P						
030	01	51918188	7	1		PC SPG, COMP	P						
031	01	93109381	9	2		PC STOFF, NO. 1/4 .250L RD ZINC	B						
032	01	91975684	1	7		PC WSHR METRIC SZ 5 SCREW	B						
033	01	93522018	6	1		PC PLUG, SNAP BUTTON 1 1/4 DIA HO	P						
034	01	94374900	2	125		PC STRIP CONTACT	P						
035	01	09040204	1	8		PC WSHR, NO.10 DISHED LOCK STL	B						
036	01	51805700	5	4		PC BUMPER SELF STICKING	P						
						0036 TOTAL LINES							

BUILD ARC 440

ASSEMBLY PARTS LIST

BUILD ARC 440										PRINT DATE		PAGE		FILE CHANGE NO.	
										09-08-80		1		00014165	
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION				MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
0860	15632210	9	B	D	REPLACED BY 15632573 14165				G	INA	09-04-80	FA501B	09-08-80		
FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION			MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	66309319	3	1		PC REPLACED BY 61409022 14165			A						
002	01	90446124	1	1		PC CD ASSY 9BED DISK CONTR			S						
003	01	90446140	7	1		PC CD ASSY 9BKD PWR SPLY			A						
004	01	90446143	1	1		PC CD ASSY 9BMD BACKPLANE			A						
005	01	71493032	8	1		PC COVER METAL AL			P						
006	01	71493037	7	1		PC FACE PLATE (SM) PAINTED			P						
007	01	71493050	0	1		PC BASE METAL CRS			P						
008	01	71492950	2	2		PC TRACK DISK MTG			P						
009	01	71492951	0	2		PC SLIDE DISK MTG			P						
010	01	71492954	4	1		PC ROD ACTUATOR			P						
011	01	71492955	1	1		PC PANEL CABLE SUPPORT			P						
012	01	71492966	8	4		PC GUIDE CARD			P						
013	01	71493189	6	1		PC BUTTON, HINGED #PLATIC-BLK)			P						
014	01	71492968	4	1		PC BUTTON SWITCH			P						
015	01	71493053	4	1		PC PANEL SWITCH/INDICATOR			P						
016	01	51886600	9	1		PC FAN, 50CFM 115V 50/60HZ 1PH			P						
017	01	94375401	0	1		PC GUARD, FAN 50/60HZ			P						
018	01	77618000	2	1		PC FLOPPY DISK ASSY			V						
019	01	71493064	1	4		PC FOOT			P						
020	01	91976649	3	4		PC MSCR PAN PHL M4X40MM			B						
021	01	91975724	5	8		PC NUT HEXAGON SZ 5MM			B						

BUILD ARC 440

ASSEMBLY PARTS LIST

BUILD ARC 440										PRINT DATE		PAGE		FILE CHANGE NO.	
										09-08-80		2		00014165	
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION				MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
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022	01	15164911	8	4		PC MSCR HEX-LK PLN M4X8MM STL ZP			B						
023	01	15164917	5	7		PC MSCR HEX-LK PLN M5X8MM STL Z			B						
024	01	91976758	2	2		PC MSCR PNH M5X10MM			B						
025	01	91976864	8	4		PC MSCR MACH FLH M5X10MM			B						
026	01	91976652	7	5		PC MSCR PAN PHL M5X10MM			B						
027	01	91975706	2	5		PC WASHER LK METRIC M5			B						
028	01	71493078	1	5		PC STANDOFF HEX METRIC CRS			B						
029	01	51918435	2	1		PC EMBLEM, CDC ID			P						
030	01	51918188	7	1		PC SPG, COMP			P						
031	01	93109381	9	2		PC STOFF, NO. 1/4 .250L RD ZINC			B						
032	01	91975684	1	7		PC WSHR METRIC SZ 5 SCREW			B						
033	01	93522018	6	1		PC PLUG, SNAP BUTTON 1/4 DIA HO			P						
034	01	94374900	2	125		PC STRIP CONTACT			P						
035	01	09040204	1	8		PC WSHR, NO. 10 DISHED LOCK STL			B						
036	01	51805700	5	4		PC BUMPER SELF STICKING			P						
0036 TOTAL LINES															

BUILD ARC 440

ASSEMBLY PARTS LIST

BUILD ARC 440											PRINT DATE		PAGE		FILE CHANGE NO.			
0860 15632211 7 B D REPLACED BY 15632574 14165 G INA											09-08-80		1		00014165			
DESCRIPTION											STATUS DATE		ENG. RESP.		FILE DATE			
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION						MC	STATUS	STATUS DATE		ENG. RESP.		FILE DATE	
FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION					MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT	
001	01	66309318	5	1		PC	REPLACED BY 61409021 14165					A						
003	01	90446140	7	1		PC	CD ASSY 9BKD PWR SPLY					A						
004	01	90446143	1	1		PC	CD ASSY 9BMD BACKPLANE					A						
005	01	71493032	8	1		PC	COVER METAL AL					P						
006	01	71493037	7	1		PC	FACE PLATE (SM) PAINTED					P						
007	01	71493050	0	1		PC	BASE METAL CRS					P						
008	01	71492950	2	2		PC	TRACK DISK MTG					P						
009	01	71492951	0	2		PC	SLIDE DISK MTG					P						
010	01	71492954	4	1		PC	ROD ACTUATOR					P						
011	01	71492955	1	1		PC	PANEL CABLE SUPPORT					P						
012	01	71492966	8	2		PC	GUIDE CARD					P						
013	01	71493189	6	1		PC	BUTTON, HINGED #PLATIC-BLK)					P						
014	01	71492968	4	1		PC	BUTTON SWITCH					P						
015	01	71493054	2	1		PC	PANEL SWITCH INDICATOR					P						
016	01	51886600	9	1		PC	FAN, 50CFM 115V 50/60HZ 1PH					P						
017	01	94375401	0	1		PC	GUARD, FAN 50/60HZ					P						
018	01	77418000	2	1		PC	FLOPPY DISK ASSY					V						
019	01	71493064	1	4		PC	FOOT					P						
020	01	91976649	3	4		PC	MSCR PAN PHL M4X40MM					B						
021	01	91975724	5	8		PC	NUT HEXAGON SZ 5MM					B						
022	01	15164911	8	4		PC	MSCR HEX-LK PLN M4X8MM STL ZP					B						

BUILD ARC 440

ASSEMBLY PARTS LIST

BUILD ARC 440											PRINT DATE		PAGE		FILE CHANGE NO.			
0860 15632211 7 B D REPLACED BY 15632574 14165 G INA											09-08-80		2		00014165			
DESCRIPTION											STATUS DATE		ENG. RESP.		FILE DATE			
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FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION					MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT	
023	01	15164917	5	7		PC	MSCR HEX-LK PLN M5X8MM STL Z					B						
024	01	91976758	2	2		PC	MSCR PNH M5X10MM					B						
025	01	91976864	8	4		PC	MSCR MACH FLH M5X10MM					B						
026	01	91976652	7	5		PC	MSCR PAN PHL M5X10MM					B						
027	01	91975706	2	5		PC	WASHER LK METRIC M5					B						
028	01	71493078	1	4		PC	STANDOFF HEX METRIC CRS					B						
029	01	51918435	2	1		PC	EMBLEM, CDC ID					P						
030	01	51918188	7	1		PC	SPG, COMP					P						
031	01	93109381	9	2		PC	STOFF, NO. 1/4 .250L RD ZINC					B						
032	01	91975684	1	7		PC	WSHR METRIC SZ 5 SCREW					B						
033	01	93522018	6	1		PC	PLUG, SNAP BUTTON 1 1/4 DIA HO					P						
034	01	94374900	2	125		PC	STRIP CONTACT					P						
035	01	09040204	1	8		PC	WSHR, NO. 10 DISHED LOCK STL					B						
036	01	51805700	5	4		PC	BUMPER SELF STICKING					P						
0035 TOTAL LINES																		

BUILD ARC 440

ASSEMBLY PARTS LIST

										PRINT DATE		PAGE	FILE CHANGE NO.			
										09-08-80		1	00014165			
DIV.	ASSEMBLY NUMBER			REV.	DWG.	DESCRIPTION				MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
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TRFIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION				MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	66309319	3	1		PC REPLACED BY 61409022 14165				A						
003	01	90446140	7	1		PC CD ASSY 9BKD PWR SPLY				A						
004	01	90446143	1	1		PC CD ASSY 9BMD BACKPLANE				A						
005	01	71493032	8	1		PC COVER METAL AL				P						
006	01	71493037	7	1		PC FACE PLATE (SM) PAINTED				P						
007	01	71493050	0	1		PC BASE METAL CRS				P						
008	01	71492950	2	2		PC TRACK DISK MTG				P						
009	01	71492951	0	2		PC SLIDE DISK MTG				P						
010	01	71492954	4	1		PC ROD ACTUATOR				P						
011	01	71492955	1	1		PC PANEL CABLE SUPPORT				P						
012	01	71492966	8	2		PC GUIDE CARD				P						
013	01	71493189	6	1		PC BUTTON, HINGED #PLATIC-BLK)				P						
014	01	71492968	4	1		PC BUTTON SWITCH				P						
015	01	71493054	2	1		PC PANEL SWITCH INDICATOR				P						
016	01	51886600	9	1		PC FAN, 50CFM 115V 50/60HZ 1PH				P						
017	01	94375401	0	1		PC GUARD, FAN 50/60HZ				P						
018	01	77618000	2	1		PC FLOPPY DISK ASSY				V						
019	01	71493064	1	4		PC FOOT				P						
020	01	91976649	3	4		PC MSCR PAN PHL M4X40MM				B						
021	01	91975724	5	8		PC NUT HEXAGON SZ 5MM				B						
022	01	15164911	8	4		PC MSCR HEX-LK PLN M4X8MM STL ZP				B						

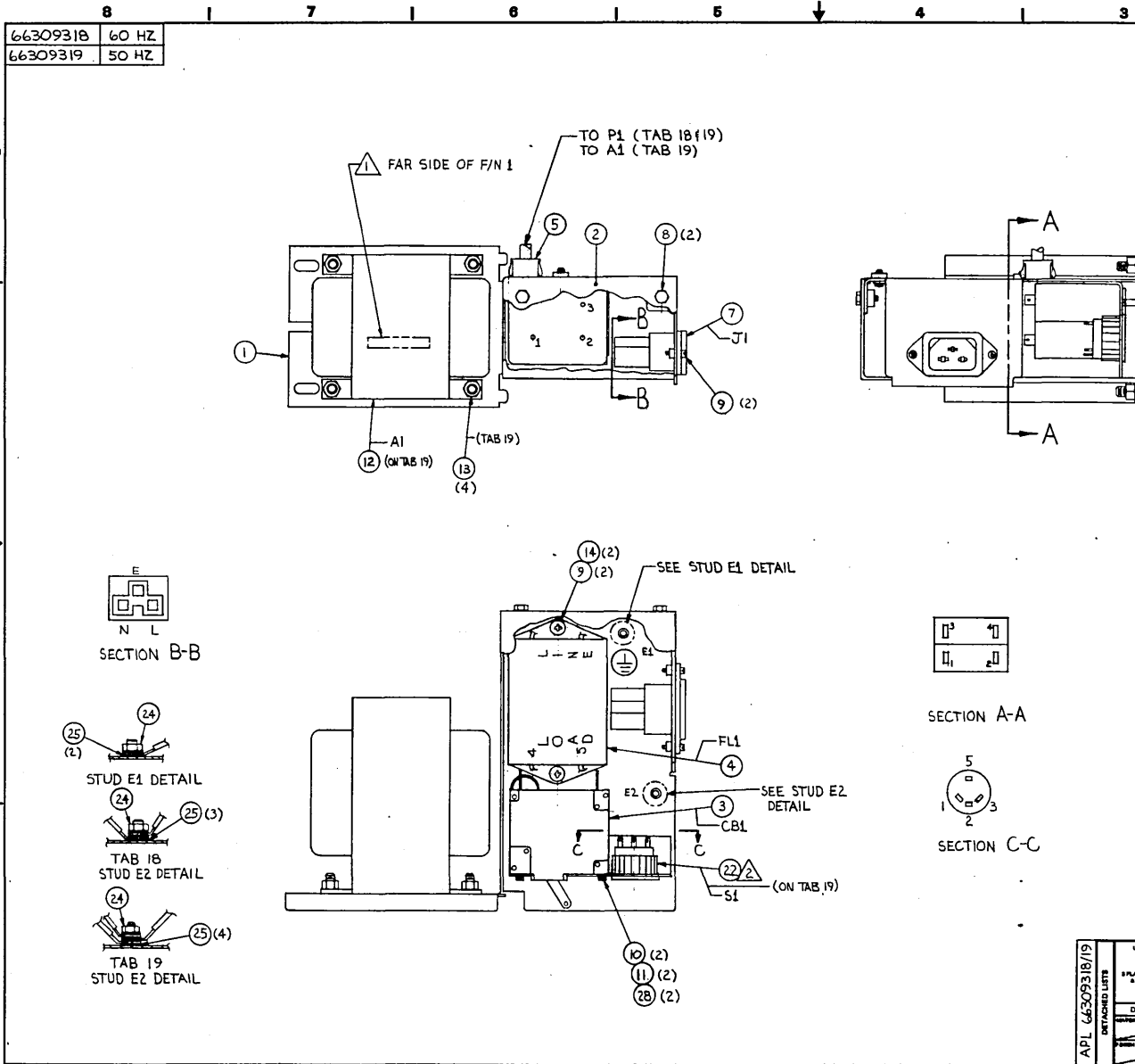
BUILD ARC 440

ASSEMBLY PARTS LIST

										PRINT DATE		PAGE	FILE CHANGE NO.			
										09-08-80		2	00014165			
DIV.	ASSEMBLY NUMBER			REV.	DWG.	DESCRIPTION				MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
0860	15632212			5	B	D	REPLACED BY 15632575 14165				G	INA	09-04-80	BR810B	09-08-80	
TRFIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION				MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
023	01	15164917	5	7		PC MSCR HEX-LK PLN M5X8MM STL Z				B						
024	01	91976758	2	2		PC MSCR PNH M5X10MM				B						
025	01	91976864	8	4		PC MSCR MACH FLH M5X10MM				B						
026	01	91976652	7	5		PC MSCR PAN PHL M5X10MM				B						
027	01	91975706	2	5		PC WASHER LK METRIC M5				B						
028	01	71493078	1	5		PC STANDOFF HEX METRIC CRS				B						
029	01	51918435	2	1		PC EMBLEM, CDC ID				P						
030	01	51918188	7	1		PC SPG, COMP				P						
031	01	93109381	9	2		PC STOFF, NO. 1/4 .250L RD ZINC				B						
032	01	91975684	1	7		PC WSHR METRIC SZ 5 SCREW				B						
033	01	93522018	6	1		PC PLUG, SNAP BUTTON 1/4 DIA HO				P						
034	01	94374900	2	125		PC STRIP CONTACT				P						
035	01	09040204	1	8		PC WSHR, NO. 10 DISHED LOCK STL				B						
036	01	51805700	5	4		PC BUMPER SELF STICKING				P						
0035 TOTAL LINES																

62949100 C

7-17



61/81E60E992

SHEET REVISION STATUS		REVISION RECORD				
REV	ECO	DESCRIPTION	BY	DATE	CHKD	APP
00	66309318	RELEASED CLASS 2				
01	50921	FIN 4 WAS 96744775	WJG	12-27-79	WJG	
02	50952	FIN 4 AND FIN 5 2, 2, 2	WJG	1-16-80	WJG	
03	50971	FIN 6 FIN 8 WAS 96871103	WJG	2-1-80	WJG	
04	51033	FIN 6 FIN 8 TO 96871103	WJG	2-1-80	WJG	
05	51030	FIN 6 FIN 8 WAS 96871103	WJG	2-1-80	WJG	
06	51030	FIN 6 FIN 8 WAS 96871103	WJG	2-1-80	WJG	
07	51030	FIN 3 WAS 96871103	WJG	2-1-80	WJG	
08	51112	FIN 3 WAS 96871103	WJG	2-1-80	WJG	
A	14165	REVISOR CLASS 2	WJG	2-1-80	WJG	
B	14199	REVISED PER ECO	WJG	2-1-80	WJG	
C	14165	INACTIVE SERVICE USE ONLY SUPERSEDED BY 61409021/22	WJG	2-1-80	WJG	

NOTES:
 ⚠ MARK "ASSY 6630931X" IN AREA SHOWN PER CDC SPEC 10121508.
 ⚠ SECURE PLASTIC NUT USING F/N 23.

INACTIVE

METRIC

APL 66309318/19 DETACHED LIST	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES		TITLE	
	FLANGE	FLANGE	ASSEMBLY	FA501A-B
	DO NOT SCALE DRAWING	DATE	ISSUED BY	15920
	DATE	15920	ISSUED BY	66309318/19
APPROVED	DATE	ISSUED BY	15920	SCALE 1/1
DATE	15920	ISSUED BY	15632209	SHEET / OF

BUILD ARC 230

ASSEMBLY PARTS LIST

BUILD ARC 230										PRINT DATE		PAGE	FILE CHANGE NO.	
										09-08-80		1	00014165	
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION			MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
0860	66309318	5	C	D	REPLACED BY 61409021 14165			A	INA	09-04-80	FA501A	09-08-80		
FOUND NO	LT	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION		MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	71492952	8	1		PC	BRACKET SWITCH/FILTER/XFORM	P						
002	01	71492953	6	1		PC	COVER SWITCH/FILTER	P						
003	01	95587103	3	1		PC	CB D-P 250 VAC 3 AMP	P						
004	01	15164356	6	1		PC	FILTER RFI	P						
005	01	15012408	9	1		PC	BSHG, SNAP-IN .500 M/H .38ID	B						
007	01	44674034	2	1		PC	CONN POWER RECEPT	P						
008	01	15164917	5	2		PC	MSCR HEX-LK PLN M5X8MM STL Z	B						
009	01	91976625	3	4		PC	MSCR PAN PHL M3X6MM	B						
010	01	10125803	6	2		PC	WSHR, NO.6 SPG LOCK STL ZP	B						
011	01	10127111	2	2		PC	MSCR PAN PHL 6-32X.250 STL ZP	B						
014	01	91975669	2	2		PC	WSHR METRIC SCREW SZ 3	B						
015	01	44674036	7	3		PC	CONN PWR RECPT	P						
016	01	51797218	8	4		PC	LUG, NO.10 CRMP-R 22-18AWG	B		14199	14199		8030	8030
016	02	51797218	8	3		PC	LUG, NO.10 CRMP-R 22-18AWG	B		14199			8030	
017	01	24534707	5	249		FT	SLVG, 3/16 HT/SHRINK BLK UL	B		14199	14199		8030	8030
017	02	51758103	9	249		FT	INS SLV+CLR,PVC HEAT SHRINK	B		14199			8030	
018	01	51906200	4	3		PC	CONT, SKT 20-14GA .130IT STR	P						
019	01	52810001	9	333		FT	WIR 18GA STRD BRN 600V UL PVC	W		14199	14199		8030	8030
019	02	52810001	9	458		FT	WIR 18GA STRD BRN 600V UL PVC	W		14199			8030	
020	01	52810005	0	708		FT	WIR 18GA STRD GRN 600V UL PVC	W		14199	14199		8030	8030
020	02	52810005	0	833		FT	WIR 18GA STRD GRN 600V UL PVC	W		14199			8030	
021	01	51906001	6	1		PC	CONN, 3 SKT PLUG FIG 1 NYLON	P						
024	01	91975724	5	2		PC	NUT HEXAGON SZ 5MM	B						

BUILD ARC 230

ASSEMBLY PARTS LIST

BUILD ARC 230										PRINT DATE		PAGE	FILE CHANGE NO.	
										09-08-80		2	00014165	
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION			MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
0860	66309318	5	C	D	REPLACED BY 61409021 14165			A	INA	09-04-80	FA501A	09-08-80		
FOUND NO	LT	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION		MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
025	01	91975671	8	6		PC	WASHER EX TOOTH SZ 5	B						
026	01	61408888	8	REF		PC	REPLACED BY 61409023 14165	D						
027	01	52810006	8	417		FT	WIR 18GA STRD BLU 600V UL PVC	W		14199			8030	
028	01	10125605	5	2		PC	WSHR, NO.6 TYP A PLN STL ZP	B		14199			8030	
							0027 TOTAL LINES							

BUILD ARC 230

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
09-08-80	1	00014165

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	66309319	3	C	D	REPLACED BY 61409022 14165	A	INA	09-04-80	FA5018	09-08-80			
FOUND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	71492952	8	1		PC BRACKET SWITCH/FILTER/XFORM	P						
002	01	71492953	6	1		PC COVER SWITCH/FILTER	P						
003	01	95587103	3	1		PC CB D-P 250 VAC 3 AMP	P						
004	01	15164356	6	1		PC FILTER RFI	P						
005	01	15012408	9	1		PC BSHG, SNAP-IN .500 M/H .38ID	B						
007	01	44674034	2	1		PC CONN POWER RECEPT	P						
008	01	15164917	5	2		PC MSCR HEX-LK PLN M5X8MM STL Z	B						
009	01	91976625	3	4		PC MSCR PAN PHL M3X6MM	B						
010	01	10125803	6	2		PC WSHR, NO.6 SPG LOCK STL ZP	B						
011	01	10127111	2	2		PC MSCR PAN PHL 6-32X.250 STL ZP	B						
012	01	51918789	2	1		PC XFMR STEP DOWN 220/240V	P						
013	01	15165001	7	4		PC NUT METRIC HEX-LK M5	B						
014	01	91975669	2	2		PC WSHR METRIC SCREW SZ 3	B						
015	01	44674036	7	3		PC CONN PWR RECPT	P						
016	01	51797218	8	3		PC LUG, NO.10 CRMP-R 22-18AWG	B						
017	01	24534707	5	583	FT	SLVG, 3/16 HT/SHRINK BLK UL	B		14199	14199		8030	
017	02	51758103	9	249	FT	INS SLV+CLR,PVC HEAT SHRINK	B					8030	
018	01	51906200	4	1		PC CONT, SKT 20-14GA .130IT STR	P						
019	01	52810001	9	250	FT	WIR 18GA STRD BRN 600V UL PVC	W			14199		8030	8030
019	02	52810001	9	458	FT	WIR 18GA STRD BRN 600V UL PVC	W		14199			8030	
020	01	52810005	0	708	FT	WIR 18GA STRD GRN 600V UL PVC	W			14199		8030	8030
020	02	52810005	0	833	FT	WIR 18GA STRD GRN 600V UL PVC	W		14199			8030	

BUILD ARC 230

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
09-08-80	2	00014165

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	66309319	3	C	D	REPLACED BY 61409022 14165	A	INA	09-04-80	FA5018	09-08-80			
FOUND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
022	01	51918969	0	1		PC SWITCH VOLTAGE SELECTOR	P						
023	01	51873600	4	001	OZ	VARNISH INSUL RED GLPT	B						
024	01	91975724	5	2		PC NUT HEXAGON SZ 5MM	B						
025	01	91975671	8	6		PC WASHER EX TOOTH SZ 5	B						
026	01	61408889	6	REF		PC REPLACED BY 61409024 14165	D						
028	01	10125605	5	2		PC WSHR, NO.6 TYP A PLN STL ZP	B		14199			8030	
029	01	51758101	3	188	FT	INS SLV CLR PVC HEAT SHRINK	B		14199			8030	
0029 TOTAL LINES													

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PARTS DATA FOR PRODUCTION UNITS ONLY

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OWN	U. Glaser	8/80	CONTROL DATA	TITLE	60 HZ	PREFIX	DOCUMENT NO.	REV.
CHG	D. Z...	8-80		SPL PLATO FLEXIBLE DISK SUBSYSTEM		SPL	66313407	D
ENG				FIRST USED ON	FAS01A		SHEET	1 of 3
MFG			CODE IDENT					
APPR			15920					

SHEET REVISION STATUS				REVISION RECORD						
3	2	1	REV	ECO	DESCRIPTION	DRPT	DATE	APP		
	A	A	A	12759-76	RELEASED CLASS A	/	9-80	Rel		
	B	A	B	14292	ADD F/N 16	DS	9-80	JSP		
	C	C	C	14376	REVISED PER ECO	EE	1/2/81	JSP		
	D	D	D	14571	CHG F/N 1,2,17, DELETE NITE 3	WJG 3-2-81	3-2-81	JSP		

NOTES:
EQUIPMENT CONFIGURATOR - 15632205
TOP LEVEL ASSEMBLY ----- 15632572

DETACHED LISTS

	CODE IDENT	SHEET	PREFIX	DOCUMENT NO.	REV.
	15920	2	SPL	66313407	D

NOTES:

- These parts are the total required for a unit with no options installed.
- A unit could have 3 RAM options of 8 RAM IC's for each option for a total of 32 RAM IC's in the unit.

Find Numbers 1 thru 7 and 17 are for the 98E3 Controller Board.
 Find Number 9 is the signal cable used to connect the PLATO Flexible Disk Subsystem to the IST Terminal.
 One of these devices is required on the last device on the Plato IST Parallel I/O channel daisy chain configuration.

CONTROL DATA		CODE IDENT		SHEET 3		DOCUMENT NO.		REV.				
		15920				66313407		D				
P/N NO.	PART IDENTIFICATION	QUANTITY REQUIRED								UNIT OF MEAS	NOMENCLATURE OR DESCRIPTION	SPECIFICATIONS, NOTES, OR MATERIAL
1	66312070	1									2716 2KX8 ROM	△4
2	15153221	4									4116 16K RAM	△4
3	15163201	1									Z80 Processor	△4
4	15163444	1									FD1791 Disk Controller	△4
5	15163458	1									9517 DMA	△4
6	15163457	1									9517 Interrupt Cont.	△4
7	15164429	1									Z80A-CTC	△4
8	15165425	1									60HZ Power Cord	
9	61408665	1									25 Pin I/O Cable	△5
10	96637907	1									Circuit Breaker	
11	77618000	1									Flexible Disk Assembly	
12	90446284	1									98ED Controller Board	
13	90446140	1									98KD Power Supply	
14	90446143	1									98MD Backplane	
15	15632316	1									FT116A Terminator	△5
16	61409021	1									AC Entry Assy	
17	66312071	1									2716 2KX8 Rom	△4

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CONTROL DATA		CODE IDENT	SHEET	SPL	DOCUMENT NO.	REV.					
		15920	3		66313406	C					
FIND NO.	PART IDENTIFICATION	QUANTITY REQUIRED							UNIT OF MEAS	NOMENCLATURE OR DESCRIPTION	SPECIFICATIONS, NOTES, OR MATERIAL
1	66312070	1								2716 2KX8 ROM	△4
2	15153621	8								4116 16K RAM	△4
3	15163201	1								Z80 Processor	△4
4	15163444	1								F01791 Disk Controller	△4
5	15163458	1								7517 DMA	△4
6	15163459	1								7519 Interrupt Cont.	△4
7	15164429	1								Z80A-CTC	△4
8	15165426	1								50HZ Power Cord	
9	61409022	1								AC Entry Assy	
10	61408865	1								25 pin I/O Cable	△5
11	76837907	1								Circuit Breaker	
12	77618000	1								Flexible Disk Assy	
13	90446284	1								78ED Controller Board	
14	90446140	1								78KD Power Supply	
15	90446143	1								78ND Backplane	
16	15632316	1								F7116A Terminator	△6
17	66312071	2								2716 2KX8 Rom	△4

AA310 REV. 6/71

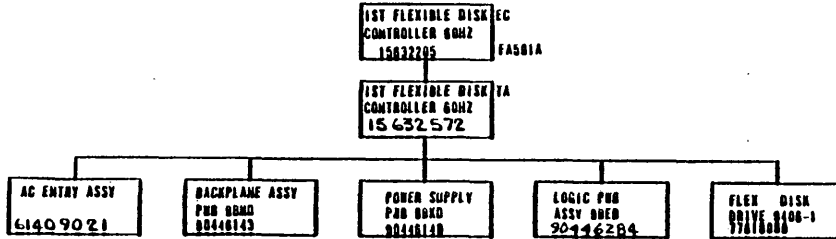
PRINTED IN U.S.A.

DWN	W. Glaser	8/80	CONTROL DATA	TITLE	LD HZ	PREFIX	DOCUMENT NO.	REV.						
CHKD		8/80	BY	SPL PLATO SLAVE FLEXIBLE DISK		SPL	66313409	1						
ENG	<i>Bill</i>	8/80	DATE	FIRST USED ON	BR810A									
MFG		8-3-77	CODE IDENT				SHEET	1 of 3						
APPR		9/2/80	15920											
SHEET REVISION STATUS					REVISION RECORD									
					3	2	1	REV	ECO	DESCRIPTION	DRFT	DATE	APP	
						A	A	A	A	12754-76	RELEASED CLASS A		9-3-80	<i>Bill</i>
						B	A	E	A	14292	ADD F/N 7	DS	9-80	<i>STK</i>
NOTES: EQUIPMENT CONFIGURATOR - 15632207 TOP LEVEL ASSEMBLY ----- 15632574														
												DETACHED LISTS		

 CONTROL DATA CORPORATION	CODE IDENT	15920	SHEET	2	PREFIX	SPL	DOCUMENT NO.	66313409	REV.	A
	NOTES: <ol style="list-style-type: none"> These parts are the total required for a unit with no options installed. <p>  Find number 2 is the Signal Cable used to connect the BR810A or BR810B to the FA501A or FA501B. </p>									

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SHEET REVISION STATUS				REVISION RECORD				
REV	CD	DESCRIPTION	DRFT	DATE	CHKD	APP		
00	6004/12	RELEASED CLASS B		12/60				
01	5118	DELETE 90446147	WJG	6-9-80	WJG	WJG		
A	11565-89	RELEASED CLASS A		7-27-80				
B	14165	REVISED PER ECO	WJG	7/14/80	WJG	WJG		
C	14376	LOGIC WAS 90446124	EE	1/14/81	EE	EE		
D	14371	98ED NJB WAE 90446240	WJG	12-81	WJG	WJG		



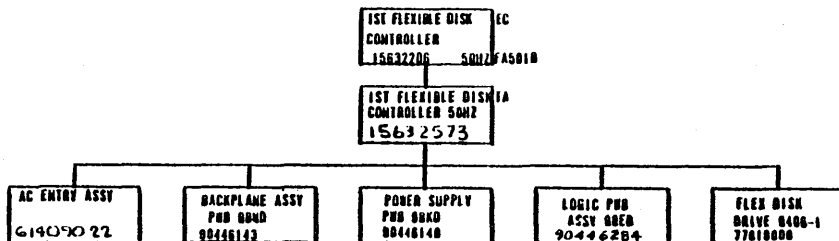
REFERENCE DOCUMENTS

- ENGINEERING SPECIFICATION..... 16042854
- SPARE PARTS LIST..... 66313407
- SCHEMATIC DIAGRAM (0800)..... 88448308
- SCHEMATIC DIAGRAM (0800)..... 88448141
- SCHEMATIC DIAGRAM (0800)..... 88448122
- SCHEMATIC WIRING..... 62201057

REFERENCE DRAWING			FIRST USED ON		TITLE	
			FASOIA		GENEALOGY CHART	
			DWN		PLATO MASTER FLEXIBLE DISK	
			CHKD		SUBSYSTEM 60 HZ	
COMPONENTS, EXCEPT AS NOTED			ENGR		CODE 0800	
TOLERANCE			MFG		15920	
VALUE			APP		DRAWING NO	
DATING			C. H. H.		C 66310611	
			SCALE		CROSS REF. NO.	
					SHEET / OF /	

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SHEET REVISION STATUS				REVISION RECORD				
REV	CD	DESCRIPTION	DRAFT	DATE	CHKD	APP		
00	10004/12	RELEASED CLASS B	/	10/6/79	/	/		
01	51118	DELETE 90446147	WJG	6-9-80	WJG	WJA		
02	51172	SPL WAS 66308922	WJG	7-22-80	WJG	WJA		
A	11545-00	RELEASED CLASS A	/	7-23-80	/	/		
B	14165	REVISED PER ECO	WJH	7-11-80	WJG	WJA		
C	14376	LOGIC WAS 90446124	EE	11/2/81	EE	WJA		
D	14571	98ED PWB WAS 90446260	WJG	3-2-81	WJG	WJA		



REFERENCE DOCUMENTS

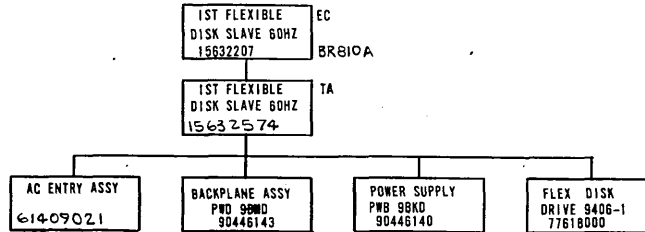
ENGINEERING SPECIFICATION	16842854
SPARE PARTS LIST	66308922
SCHEMATIC DIAGRAM 084D	88446138
SCHEMATIC DIAGRAM 084D	88446141
SCHEMATIC DIAGRAM 084D	88446122
SCHEMATIC WIRING	6220 CS7

REFERENCE DRAWING			CONTROL DATA		TITLE GENEALOGY CHART PLATO MASTER FLEXIBLE DISK SUBSYSTEM 50HZ	
COMPONENTS, EXCEPT AS NOTED			FIRST USED ON FAS01B	CHKD E. Paulman 7-12-79	CODE IDENT 15920	DRAWING NO 66310613
RES	TOLERANCE	VALUE	RATING	MFG	SCALE	CROSS REF NO
CAP				APP E. V. H. 7-8-79		SHEET / OF /

62949100

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SHEET REVISION STATUS					REVISION RECORD				
REV	CO	DESCRIPTION	DRFT	DATE	CHKD	APP			
00	5000412	RELEASED CLASS B		2/21/79					
01	51118	DELETE 90446147	WJG	6-9-80					
A	11565-88	RELEASED CLASS 'A'		7-27-88					
B	14165	REVISED PER ECO	WJG	9/11/80					



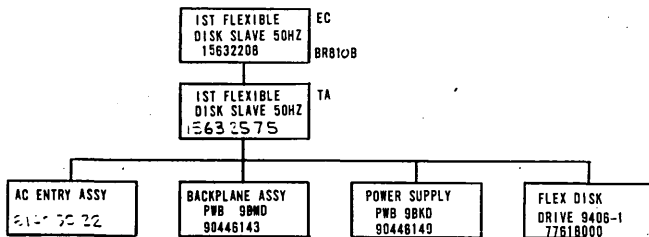
REFERENCE DOCUMENTS

ENGINEERING SPECIFICATION.....66342354
 SPARE PARTS LIST.....66313409
 SCHEMATIC DIAGRAM (98KD).....90446138
 SCHEMATIC DIAGRAM (98KD).....90446141
 SCHEMATIC WIRING.....62201057

REFERENCE DRAWING			IN. WI.		TITLE	
			BR810A		GENEALOGY CHART PLATO SLAVE FLEXIBLE DISK DRIVE 60HZ	
COMPONENTS, EXCEPT AS NOTED			FIRST USED ON	ENGR	CODE IDENT	DRAWING NO
RES	TOLERANCE	VALUE	CHKD	MFG	15920	C 66310612
CAP			APPR			
SCALE					CROSS REF. NO.	SHEET / OF /

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SHEET REVISION STATUS				REVISION RECORD					
REV	CO	DESCRIPTION	DRFT	DATE	CHKD	APP			
00	6000/12	RELEASED CLASS B	/	12/79					
01	51118	DELETE 90446147	WJG	6-9-80	WJG				
02	51172	SPL WAS 66308920	WJG	7-22-80	WJG				
A	11565-88	RELEASED CLASS A	/	11/80					
B	14 65	REVISED PER ECO	/	11/80					



REFERENCE DOCUMENTS

ENGINEERING SPECIFICATION.....	16042854
SPARE PARTS LIST.....	
SCHEMATIC DIAGRAM (9BKO).....	90446138
SCHEMATIC DIAGRAM (9BMD).....	90446141
SCHEMATIC DIAGRAM (9BMD).....	90446141

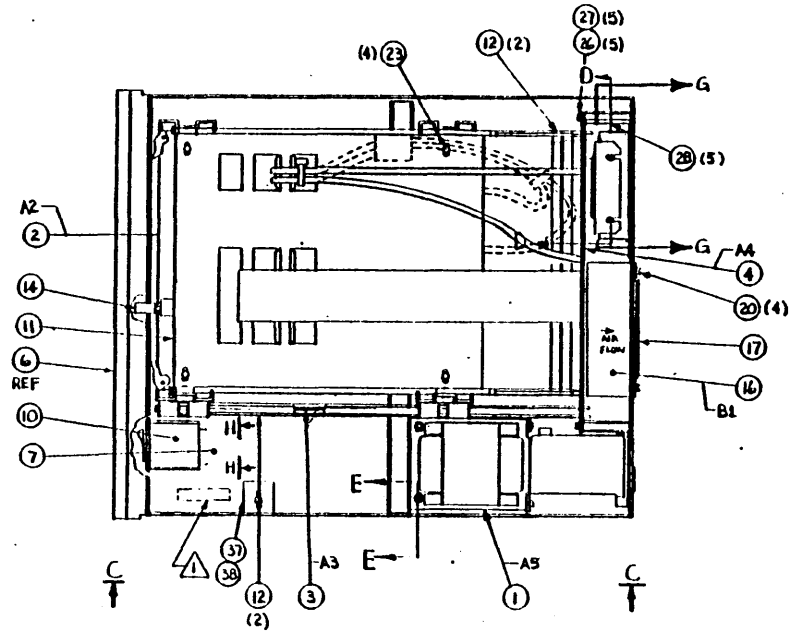
62949100

REFERENCE DRAWING				INITIALS		TITLE	
				BR810B		GENEALOGY CHART	
				DWN		PLATO SLAVE FLEXIBLE DISK DRIVE 50HZ	
				CHKD			
COMPONENTS, EXCEPT AS NOTED				ENGR		CODE IDENT	
RES	TOLERANCE	VALUE	RATING	MFG	DATE	15920	C
CAP				APPR	DATE		66310614
				SCALE		DRAWING NO	
						CROSS REF NO	
						SHEET / OF /	

62949100 D

15632572	CONTROLLER 60 HZ
15632573	CONTROLLER 50 HZ
15632574	SLAVE 60 HZ
15632575	SLAVE 50 HZ

LAST REVISION STATUS		REVISION RECORD			
REV	DATE	BY	DESCRIPTION	APP	CHK
A	1975-7		RELEASED CLASS 'A'		
B	1978-8		CHG PIN 28 AND PINS 18, 19		
C	1978-6		Q/L CHANGE ONLY		
D	1979-1		REVISED PER ECO		
E	1980-4		REVISED PER ECO		
F	1981-7		CHG PIN 2 AND PINS 21, 22		



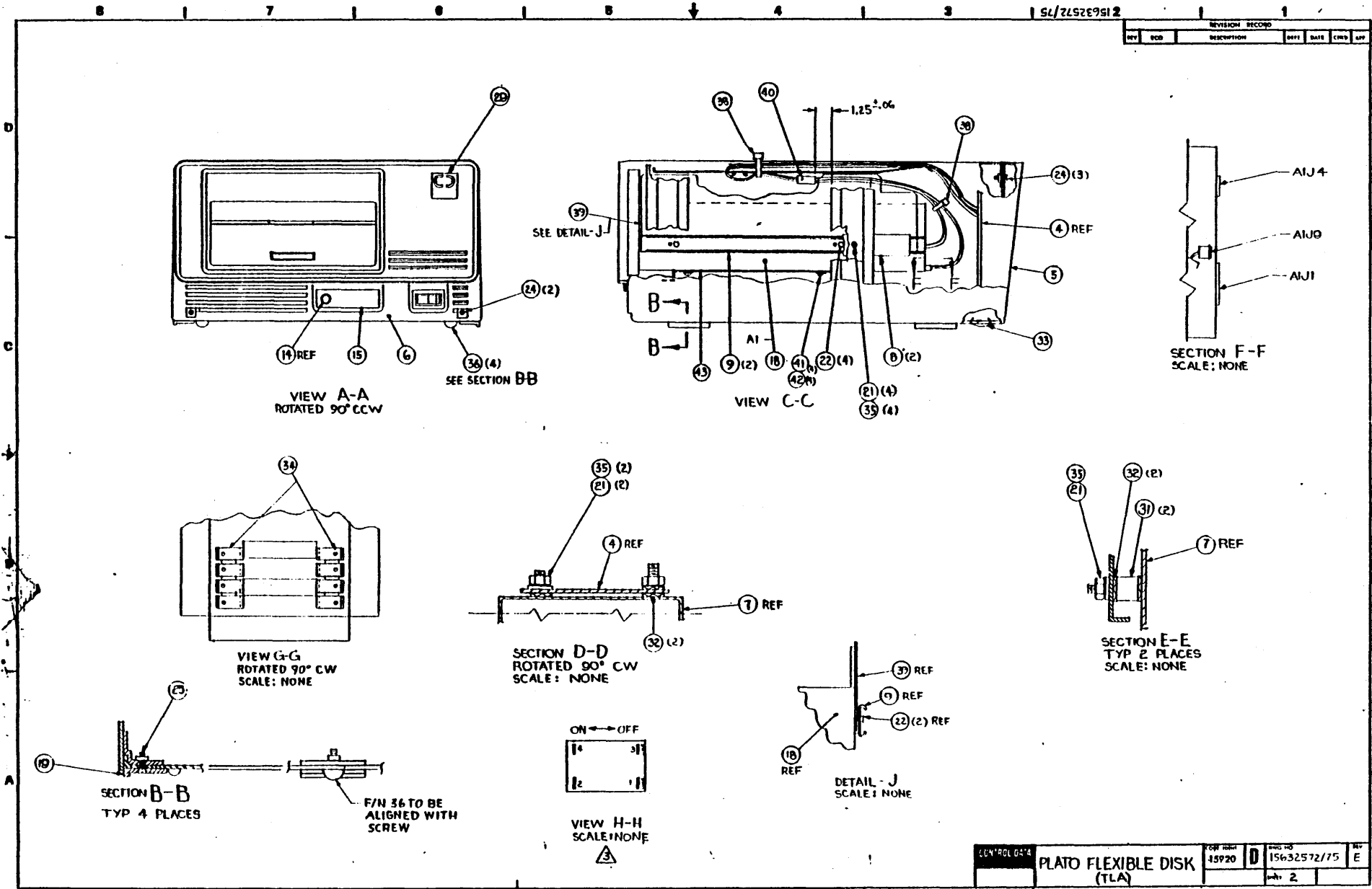
(TOP VIEW SHOWN WITH ITEMS 5, 8, 9, 11, 18 REMOVED)

- NOTES:
- 1. MARK 'ASSY 1563257X' IN AREA SHOWN PER CDC SPEC 10121508.
 - 2. CONNECT SUBASSEMBLIES AS FOLLOWS:
 - PLUG A4P1 INTO A1J9
 - PLUG A4P2 INTO A1J4
 - PLUG A4P3 INTO A1J1
 - PLUG A4P4 INTO B1J1
 - PLUG A5P3 INTO A4J3
 - 3. MARK NO'S ONLY PER CDC SPEC 10121508, .12 HIGH, WHITE, IN LOCATION APPROX AS SHOWN.

METRIC

APL 15632572 THRU 15632575 UNFINISHED PARTS	MANUFACTURED BY 7 7 7	CONTROL DATA FASOIA/B 12780 12780 12780 12780	PLATO FLEXIBLE DISK (TLA)
	DO NOT SCALE DRAWING	DATE 1980	15920 D 15632572 THRU 15632575 1/2 1 of 2

7-33



BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE: 01-06-61
PAGE: 1
FILE CHANGE NO.: 14571 00010000

QTY.	ASSEMBLY NUMBER	CD	REV.	DRAW.	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0844	15432572	2	F	0	FOO PLATO MASTER 60HZ (TA)	0	REL	09-03-60	F4501A	01-06-61				
TPHSD	NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	FILE	ACD. NO. IN	ACD. NO. OUT	I/B	WE IN	WE OUT
001	01		61409021	5	1		PC AC ENTRY, FLEX DISK 60HZ	A						
002	01		90446124	1	1		PC REPLACED BY 90446260 14376	S					8041	8041
002	02		97446260	3	1		PC PW 80 ASSY 98ED	S		14376	14571			
002	03		90446284	1	1		PC PW 80 ASSY 98ED	S		14571				
003	01		90444140	7	1		PC CD ASSY 98KO PWR SPLY	A						
004	01		90446143	1	1		PC CD ASSY 98MO BACKPLANE	A						
005	01		71493032	8	1		PC COVER METAL AL	P						
006	01		71493185	4	1		PC FACE PLATE	P						
007	01		71493188	8	1		PC BASE	P						
008	01		71492950	2	2		PC TRACK DISK MTO	P						
009	01		71492951	0	2		PC SLIDE DISK MTO	P						
010	01		96637967	3	1		PC CXT BRKR MAGNETIC 3.0 AMPS	P						
011	01		71492955	1	1		PC PANEL CABLE SUPPORT	P						
012	01		71492966	8	4		PC GUIDE CARD	P						
014	01		71492968	4	1		PC BUTTON SWITCH	P						
015	01		71493055	9	1		PC PANEL SWITCH IND	P						
016	01		51886608	9	1		PC FAN, 50CFM 115V 50/60HZ 1PM	P						
017	01		94375401	0	1		PC GUARD, FAN 50/60HZ	P						
018	01		77518000	2	1		PC FLEX DISK DRV, 9406 2-SIDED	V						
019	01		71493064	1	4		PC FOOT	P						
020	01		91975649	3	4		PC MSCR PAN PHL MAX40MM	B						
021	01		91975724	5	8		PC NUT HEXAGON SZ 5MM	B						

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE: 01-06-61
PAGE: 2
FILE CHANGE NO.: 14571 00010000

QTY.	ASSEMBLY NUMBER	CD	REV.	DRAW.	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0860	15432572	2	F	0	FOO PLATO MASTER 60HZ (TA)	0	REL	09-03-60	F4501A	01-06-61				
TPHSD	NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	FILE	ACD. NO. IN	ACD. NO. OUT	I/B	WE IN	WE OUT
022	01		15164911	8	4		PC MSCR HEX=LK PLN MAX8MM STL ZP	B						
023	01		15164917	5	4		PC MSCR HEX=LK PLN MAX8MM STL Z	B						
024	01		91976758	2	5		PC MSCR PNM MSX10MM	B						
025	01		91976864	8	4		PC MSCR NACH FLN MSX10MM	B						
026	01		91976852	7	5		PC MSCR PAN PHL MSX10MM	B						
027	01		91975706	2	5		PC WASHER LK METRIC M5	B						
028	01		71493078	1	5		PC STANDOFF HEX METRIC CRS	B						
029	01		51918438	2	1		PC EMBLEM, CDC ID	P						
029	02		66312548	2	1		PC EMBLEM CDC PLATO	P		14328	14328		8044	8044
031	01		93109381	9	2		PC STOFF, NO. 1/4 .250L RD ZINC	B						
032	01		91975684	1	6		PC WSHR METRIC SZ 5 SCREW	B						
033	01		93522018	6	1		PC PLUG, SNAP BUTTON 1 1/4 DIA MO	P						
034	01		94374908	2	125		PC STRIP CONTACT	P						
035	01		09840284	1	8		PC WSHR, NO. 10 DISHED LOCK STL	B						
036	01		51885700	5	4		PC BUMPER SELF STICKING	P						
037	01		62844280	4	1		PC CLAMP=CABLE ADHESIVE BACK	B						
038	01		94277400	1	1		PC STRAP, CBL TIE TYP 1 TO 5/8	B						8047
038	02		94277400	1	2		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391	14391A		8047	8047
038	03		94277400	1	3		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391A			8047	
039	01		71493230	8	1		PC SHIELD	P		14328			8044	
040	01		94982303	9	1		PC CORD CLIP	P		14391A			8047	
041	01		10127193	9	4		PC MSCR PAN PHL 4-40X.312 STL ZP	B		14454			8041	

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE: 01-06-01
 PAGE: 3
 FILE CHANGE NO.: 1457 0000000

QTY.	ASSEMBLY NUMBER	CD	REV.	QTY.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0000	15632572	2	EX	0	PRO. PLATE MASTER 60HZ (TA)	6	REL	09-03-00	FASBIA	01-06-01			
TURNED IN	LI	PART NUMBER	CD	QTY.	U/M	PART DESCRIPTION	MC	YLR	SCD. NO. IN	SCD. NO. OUT	S/N	WE IN	WE OUT
	042	01	10126400	0	*	PC USMR. NO.4 EXT/T LK STL ZP	B		14454			8041	
	043	01	71403209	6	1	PC SHIELD	P		14454			8041	
0045 TOTAL LINES													

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE 01-06-81 PAGE 1 FILE CHANGE NO. 14371 00010050

QTY	ASSEMBLY NUMBER	CD	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0800	15A32573	0	F	0	FDD, PLATO MASTER 50HZ (TA)	0	REL	09-03-80	FAS018	01-06-81				
ITEM NO	LI	PART NUMBER	CD	REV.	QUANTITY	U/M	PART DESCRIPTION	MC	TLB	SCD. NO. IN	SCD. NO. OUT	U/M	WE IN	WE OUT
001	01	61409022	3	1	1		PC AC ENTRY, FLEX DISK 50WZ	A						
002	01	90446124	1	1	1		PC REPLACED BY 90446260 14376	S					8041	8041
002	02	90446260	3	1	1		PC PW 80 ASSY 98ED	S		14376	14376		8041	8041
002	02	90446264	1	1	1		PC PW 80 ASSY 98ED	S		14371	14371			
003	01	90446140	7	1	1		PC CD ASSY 98KO PWR SPLY	A						
004	01	90446143	1	1	1		PC CD ASSY 98MO BACKPLANE	A						
005	01	71493032	6	1	1		PC COVER METAL AL	P						
006	01	71493185	4	1	1		PC FACE PLATE	P						
007	01	71493188	8	1	1		PC BASE	P						
008	01	71492950	2	2	2		PC TRACK DISK MTS	P						
009	01	71492951	0	2	2		PC SLIDE DISK MTS	P						
010	01	96837907	3	1	1		PC CRT BRKR MAGNETIC 3.0 AMPS	P						
011	01	71492955	1	1	1		PC PANEL CABLE SUPPORT	P						
012	01	71492966	6	4	4		PC GUIDE CARD	P						
014	01	71492968	4	1	1		PC BUTTON SWITCH	P						
015	01	71493055	9	1	1		PC PANEL SWITCH 1NO	P						
016	01	51884608	9	1	1		PC FAN, 50CFM 115V 50/60HZ 1PM	P						
017	01	94375401	0	1	1		PC GUARD, FAN 50/60HZ	P						
018	01	77618000	2	1	1		PC FLEX DISK DRV, 9406 2-SIDED	V						
019	01	71493064	1	4	4		PC FOOT	P						
020	01	91976649	3	4	4		PC MSCR PAN PHL MAX40MM	B						
021	01	91975726	5	8	8		PC NUT HEXAGON SZ 5MM	B						

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE 01-06-81 PAGE 2 FILE CHANGE NO. 14371 00010050

QTY	ASSEMBLY NUMBER	CD	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0800	15A32573	0	F	0	FDD, PLATO MASTER 50HZ (TA)	0	REL	09-03-80	FAS018	01-06-81				
ITEM NO	LI	PART NUMBER	CD	REV.	QUANTITY	U/M	PART DESCRIPTION	MC	TLB	SCD. NO. IN	SCD. NO. OUT	U/M	WE IN	WE OUT
022	01	14164911	8	4	4		PC MSCR HEX-LK PLN MAX8MM STL ZP	B						
023	01	15164917	5	4	4		PC MSCR HEX-LK PLN MAX8MM STL Z	B						
024	01	91976758	2	5	5		PC MSCR PNM MAX10MM	B						
025	01	91976864	8	4	4		PC MSCR MACH FLN MAX10MM	B						
026	01	91976652	7	5	5		PC MSCR PAN PHL MAX10MM	B						
027	01	91975706	2	5	5		PC WASHER LK METRIC M5	B						
028	01	71493078	1	5	5		PC STANDOFF HEX METRIC CRS	B						
029	01	51918435	2	1	1		PC EMBLEM, CDC ID	P					8044	8044
029	02	66312548	2	1	1		PC EMBLEM CDC PLATO	P		14320	14320		8044	8044
031	01	93109381	9	2	2		PC STOPP, NO. 1/4 .250L RO ZINC	B						
032	01	91975664	1	6	6		PC WSHR METRIC SZ 5 SCREW	B						
033	01	93522018	6	1	1		PC PLUG, SNAP BUTTON 1 1/4 DIA NO	P						
034	01	94374900	2	125	125		PC STRIP CONTACT	P						
035	01	09848284	1	8	8		PC WSHR, NO. 10 DISHED LOCK STL	B						
036	01	51805700	5	4	4		PC BUMPER SELF STICKING	P						
037	01	62044200	4	1	1		PC CLAMP-CABLE ADHESIVE BACK	B						
038	01	94277400	1	1	1		PC STRAP, CBL TIE TYP 1 TO 5/8	B					8047	8047
038	02	94277400	1	2	2		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391	14391A		8047	8047
038	03	94277400	1	3	3		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391A			8047	8047
039	01	71493230	8	1	1		PC SHIELD	P		14320			8044	8044
040	01	94952303	9	1	1		PC CORD CLIP	P		14391A			8047	8047
041	01	10127103	9	4	4		PC MSCR PAN PHL 4-40X.312 STL ZP	B		14454			8041	8041

BUILD ARC 440

ASSEMBLY PARTS LIST

DIV.		ASSEMBLY NUMBER	CD	REV.	QTY.	DESCRIPTION	MC	STATUS	PRINT DATE	PAGE	FILE CHANGE NO.			
0888		15632573	C	FY	0	FDD, PLATO MASTER 50M7 (TA)	6	REL	01-06-01	3	14871 0000000			
TRNG	NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLS	ECO. NO. IN	ECO. NO. OUT	U/M	WE IN	WE OUT
042	01		10126400	0	4		PC WSHR. NO.4 EXT/T LK STL ZP			14454				8041
043	01		71403269	4	1		PC SHIELD			14454				8041
0045 TOTAL LINES														

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE 01-06-61 PAGE 1 FILE CHANGE NO. 14571 0001-0930

QTY	ASSEMBLY NUMBER	CD	REV.	DRAW.	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0840	1543257A	B	F	0	FOO, PLATO SLAVE 60HZ (TA)	0	REL	09-03-60	BRB10A	01-06-61				
TRNG NO	LI	PART NUMBER	CD	REV.	QUANTITY	U/M	PART DESCRIPTION	MC	YLR	ECO. NO. IN	ECO. NO. OUT	L/R	WE IN	WE OUT
001	01	61409021	5		1		PC AC ENTRY, FLEX DISK 60HZ	A						
003	01	90446140	7		1		PC CD ASSY 98KO PWR SPLY	A						
004	01	90446143	1		1		PC CD ASSY 98MO BACKPLANE	A						
005	01	71493032	8		1		PC COVER METAL AL	P						
006	01	71493185	4		1		PC FACE PLATE	P						
007	01	71493188	8		1		PC BASE	P						
008	01	71492950	2		2		PC TRACK DISK MTO	P						
009	01	71492951	0		2		PC SLIDE DISK MTO	P						
010	01	96837967	3		1		PC CXT BRKR MAGNETIC 3.0 AMPS	P						
011	01	71492955	1		1		PC PANEL CABLE SUPPORT	P						
012	01	71492966	8		2		PC GUIDE CARD	P						
014	01	71492968	4		1		PC BUTTON SWITCH	P						
015	01	71493054	2		1		PC PANEL SWITCH INDICATOR	P						
016	01	51886600	9		1		PC FAN, 50CFM 115V 50/60HZ 1PM	P						
017	01	94375401	0		1		PC GUARD, FAN 50/60HZ	P						
018	01	77618000	2		1		PC FLEX DISK DRV, 9406 2-SIDED	V						
019	01	71493164	1		4		PC FOOT	P						
020	01	91976649	3		4		PC MSCR PAN PHL M4X40MM	B						
021	01	91975724	5		8		PC NUT HEXAGON SZ 5MM	B						
022	01	15164911	8		4		PC MSCR HEX=LK PLN M4X8MM STL ZP	B						
023	01	15164917	5		4		PC MSCR HEX=LK PLN M5X8MM STL Z	B						

BUILD ARC 440

ASSEMBLY PARTS LIST

PRINT DATE 01-06-61 PAGE 2 FILE CHANGE NO. 14571 0001-0930

QTY	ASSEMBLY NUMBER	CD	REV.	DRAW.	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0840	1543257A	B	F	0	FOO, PLATO SLAVE 60HZ (TA)	0	REL	09-03-60	BRB10A	01-06-61				
TRNG NO	LI	PART NUMBER	CD	REV.	QUANTITY	U/M	PART DESCRIPTION	MC	YLR	ECO. NO. IN	ECO. NO. OUT	L/R	WE IN	WE OUT
024	01	91976758	2		5		PC MSCR PNM M5X10MM	B						
025	01	91976864	8		4		PC MSCR NACH FLH M5X10MM	B						
026	01	91976652	7		5		PC MSCR PAN PHL M5X10MM	B						
027	01	91975706	2		5		PC WASHER LK METRIC M5	B						
028	01	71493078	1		4		PC STANDOFF HEX METRIC CRS	B						
029	01	51918435	2		1		PC EMBLEM, CDC ID	P						
029	02	66312548	2		1		PC EMBLEM CDC PLATO	P		14328	14328		8044	8044
031	01	93109381	9		2		PC STOPP, NO. 1/4 .250L RD ZINC	B						
032	01	91975684	1		6		PC WSHR METRIC SZ 5 SCREW	B						
033	01	93522018	6		1		PC PLUG, SNAP BUTTON 1 1/4 DIA MO	P						
034	01	94374960	2		125		PC STRIP CONTACT	P						
035	01	09040204	1		8		PC WSHR, NO. 10 DISHED LOCK STL	B						
036	01	51865780	5		4		PC BUMPER SELF STICKING	P						
037	01	62844288	4		1		PC CLAMP-CABLE ADHESIVE BACK	B						
038	01	94277400	1		1		PC STRAP, CBL TIE TYP 1 TO 5/8	B			14391		8047	8047
038	02	94277400	1		2		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391	14391A		8047	8047
038	03	94277400	1		3		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391A			8047	
039	01	71493230	8		1		PC SHIELD	P		14328			8044	
040	01	94952303	9		1		PC CORD CLIP	P		14391A			8047	
							0840 TOTAL LINES							

BUILD ARC 440

ASSEMBLY PARTS LIST

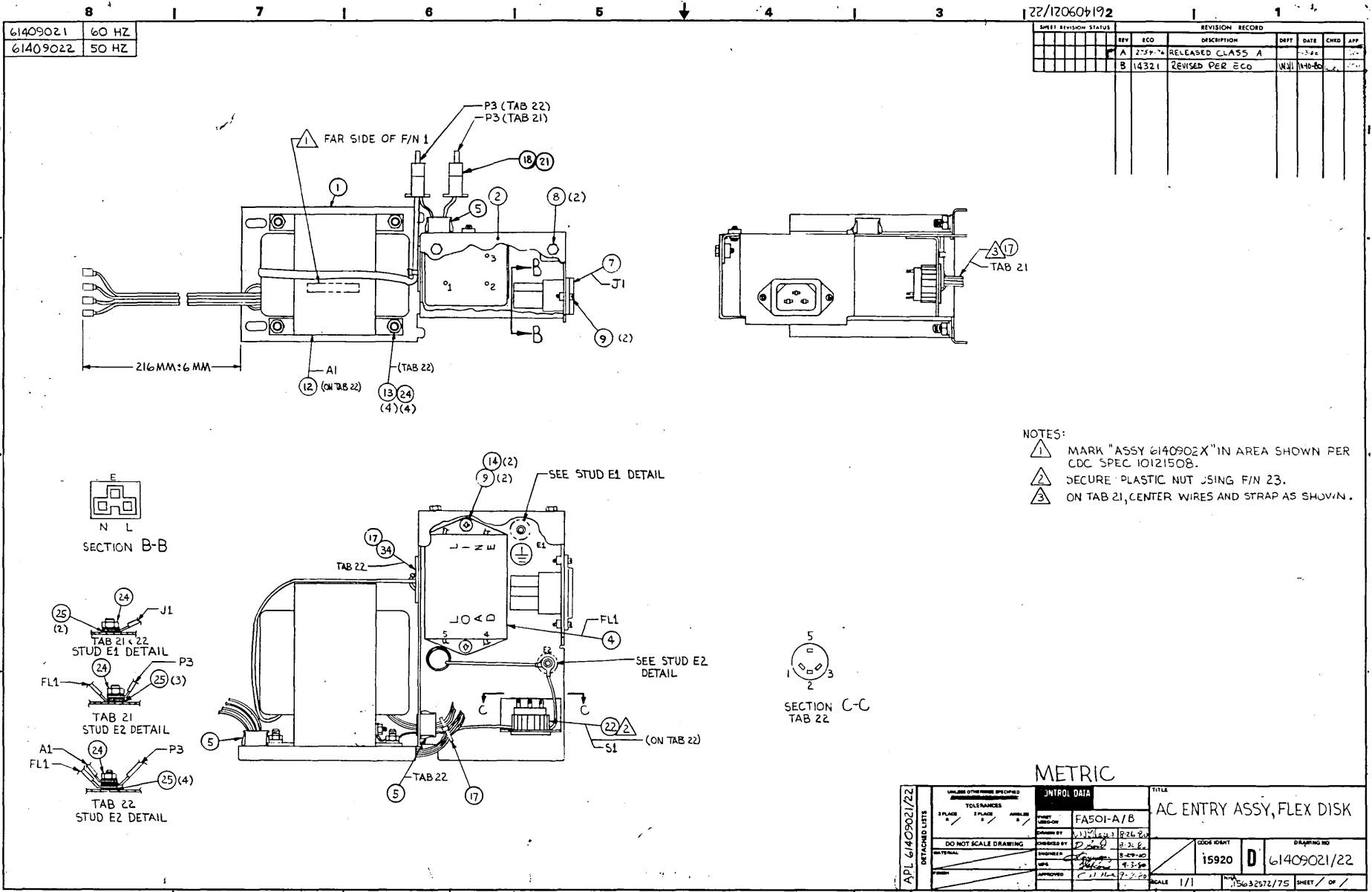
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										01-06-01	1	143710001440	
DIV.	ASSEMBLY NUMBER	CD	REV.	QTY.	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE			
0800	15632575	S	FZ	D	FOO, PLATO SLAVE 50HZ (TA)	0	REL	09-03-80	BR8108	01-06-81			
FORM NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLR	ECO. NO. IN	ECO. NO. OUT	L/N	WE IN	WE OUT
001	01	61409022	3	1		PC AC ENTRY, FLEX DISK 50HZ	A						
003	01	90446140	7	1		PC CD ASSY 98KO PWR SPLY	A						
004	01	90446143	1	1		PC CD ASSY 98MO BACKPLANE	A						
005	01	71493032	8	1		PC COVER METAL AL	P						
006	01	71493185	4	1		PC FACE PLATE	P						
007	01	71493188	6	1		PC BASE	P						
008	01	71492950	2	2		PC TRACK DISK MTG	P						
009	01	71492951	3	2		PC SLIDE DISK MTG	P						
010	01	96837907	3	1		PC CXT BRKR MAGNETIC 3.0 AMPS	P						
011	01	71492955	1	1		PC PANEL CABLE SUPPORT	P						
012	01	71492966	8	2		PC GUIDE CARD	P						
014	01	71492968	4	1		PC BUTTON SWITCH	P						
015	01	71493054	2	1		PC PANEL SWITCH INDICATOR	P						
016	01	11886600	9	1		PC FAN, 50CFM 115V 50/60HZ 1PM	P						
017	01	94375401	0	1		PC GUARD, FAN 50/60HZ	P						
018	01	77-18000	2	1		PC FLEX DISK DRV, 9406 2-SIDED	V						
019	01	71493064	1	4		PC FOOT	P						
020	01	91976449	3	4		PC NSCR PAN PHL M4X40MM	B						
021	01	91975724	5	8		PC NUT HEXAGON S2 5MM	B						
022	01	15164911	8	4		PC NSCR HEX=LK PLN M4X8MM STL ZP	B						
023	01	15164917	5	4		PC NSCR HEX=LK PLN M4X8MM STL Z	B						

BUILD ARC 440

ASSEMBLY PARTS LIST

										PRINT DATE	PAGE	FILE CHANGE NO.		
										01-06-01	2	143710001440		
DIV.	ASSEMBLY NUMBER	CD	REV.	QTY.	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0800	15632575	S	FZ	D	FOO, PLATO SLAVE 50HZ (TA)	0	REL	09-03-80	BR8108	01-06-81				
FORM NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLR	ECO. NO. IN	ECO. NO. OUT	L/N	WE IN	WE OUT	
024	01	91976758	2	5		PC NSCR PNM M5X10MM	B							
025	01	91976864	8	4		PC NSCR NACH FLN M5X10MM	B							
026	01	91976652	7	5		PC NSCR PAN PHL M5X10MM	B							
027	01	91975706	2	5		PC WASHER LK METRIC M5	B							
028	01	71493078	1	5		PC STANDOFF HEX METRIC CRS	B							
029	01	51914435	2	1		PC EMBLEM, CDC ID	P							
029	02	66312548	2	1		PC EMBLEM CDC PLATO	P		14328	14328		8044	8044	
031	01	93109381	9	2		PC STOPP, NO. 1/4 .250L RD ZINC	B							
032	01	91975644	1	6		PC WSHR METRIC S2 S SCREW	B							
033	01	93522.18	6	1		PC PLUG-SNAP BUTTON 1 1/4 DIA HO	P							
034	01	94374900	2	125		PC STRIP CONTACT	P							
035	01	09040204	1	8		PC WSHR, NO. 10 DISHED LOCK STL	B							
036	01	51805708	5	4		PC BUMPER SELF STICKING	P							
037	01	62044200	4	1		PC CLAMP-CABLE ADHESIVE BACK	B							
038	01	94277400	1	1		PC STRAP, CBL TIE TYP 1 TO 5/8	B			14391	14391	8047	8047	
038	02	94277400	1	2		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391	14391A		8047	8047	
038	03	94277400	1	3		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14391A			8047	8047	
039	01	71493230	8	1		PC SHIELD	P		14328			8044		
040	01	94952303	9	1		PC CORD CLIP	P		14391A			8047		
						0040 TOTAL LINES								

62949100 C



61409021	60 HZ
61409022	50 HZ

SHEET REVISION STATUS		REVISION RECORD					
REV	ECO	DESCRIPTION	DEPT	DATE	CHECK	APP	
A	2759	RELEASED CLASS A		7-2-76			
B	14321	REVISED PER ECO	WU	1-10-80			

NOTES:

- ⚠ MARK "ASSY 6140902X" IN AREA SHOWN PER CDC SPEC 10121508.
- ⚠ SECURE PLASTIC NUT USING F/N 23.
- ⚠ ON TAB 21, CENTER WIRES AND STRAP AS SHOWN.

APL 61409021/22		DETACHED LEADS		TOLERANCES		CONTROL DATA		TITLE	
3 PLACE	2 PLACE	3 PLACE	2 PLACE	ANGLES	FRONT VIEW	FA501-A/B	AC ENTRY ASSY, FLEX DISK		
DO NOT SCALE DRAWING		DESIGNED BY	DATE	APPROVED	DATE	1924 R-08	CODE IDENT	DRAWING NO	
		ENGINEER	DATE	APPROVED	DATE	8-29-80	15920	D 61409021/22	
		APPROVED	DATE	APPROVED	DATE	7-2-76	SCALE	1/1	
								35632972/75 SHEET / OF /	

7-39

BUILD ARC 230

ASSEMBLY PARTS LIST

										PRINT DATE	PAGE	FILE CHANGE NO.	
										10-07-80	1	00014321	
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	61409021	5	B	D	AC ENTRY, FLEX DISK 60HZ	A	REL	09-03-80	FA501A	10-07-80			
TFINDNO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	71492952	8	1		PC BRACKET SWITCH/FILTER/XFORM		P					
002	01	71492953	6	1		PC COVER SWITCH/FILTER		P					
004	01	15164356	6	1		PC FILTER RFI		P					
005	01	15012408	9	2		PC BSHG, SNAP-IN .500 M/H .38ID		B					
007	01	44674034	2	1		PC CONN POWER RECEPT		P					
008	01	15164917	5	2		PC MSCR HEX-LK PLN M5X8MM STL Z		B					
009	01	91976625	3	4		PC MSCR PAN PHL M3X6MM		B					
010	01	51809101	2		020	FT TAPE-WIRE MARKING CHAR 1		B					
011	01	51809103	8		020	FT TAPE-WIRE MARKING CHAR 3		B					
014	01	91975669	2	2		PC WSHR METRIC SCREW SZ 3		B					
015	01	44674036	7	3		PC CONN PWR RECPT		P					
016	01	51797218	8	3		PC LUG, NO.10 CRMP-R 22-18AWG		B					
017	01	94277400	1	1		PC STRAP, CBL TIE TYP 1 TO 5/8		B					
018	01	51906200	4	3		PC CONT, SKT 20-14GA .130IT STR		P					
019	01	52810001	9	2	833	FT WIR 18GA STRD BRN 600V UL PVC		W					
020	01	52810020	9		833	FT WIR 18GA STRD GRN YEL STRIPE		W					
021	01	51906001	6	1		PC CONN, 3 SKT PLUG FIG 1 NYLON		P					
024	01	91975724	5	2		PC NUT HEXAGON SZ 5MM		B					
025	01	91975671	8	6		PC WASHER EX TOOTH SZ 5		B					
026	01	61409023	1	REF		PC W/L AC ENTRY 60HZ		D					
027	01	52810006	8	2	833	FT WIR 18GA STRD BLU 600V UL PVC		W					

BUILD ARC 230

ASSEMBLY PARTS LIST

										PRINT DATE	PAGE	FILE CHANGE NO.		
										10-07-80	2	00014321		
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE				
0860	61409021	5	B	D	AC ENTRY, FLEX DISK 60HZ	A	REL	09-03-80	FA501A	10-07-80				
TFINDNO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT	
028	01	93083004	7	2		PC SPLICES 22-16		W						
029	01	62201057	7	REF		PC SCH DIAG 50/60HZ		D						
030	01	95643231	4	4		PC LUG, Q-CONN 22-18AWG FIG 5		P						
031	01	51809102	0		020	FT TAPE-WIRE MARKING CHAR 2		B						
032	01	51809104	6		020	FT TAPE-WIRE MARKING CHAR 4		B						
033	01	24528636	4		333	FT TBG, NO. 2 INS BLK UL PVC		B						
						0027 TOTAL LINES								

BUILD ARC 230

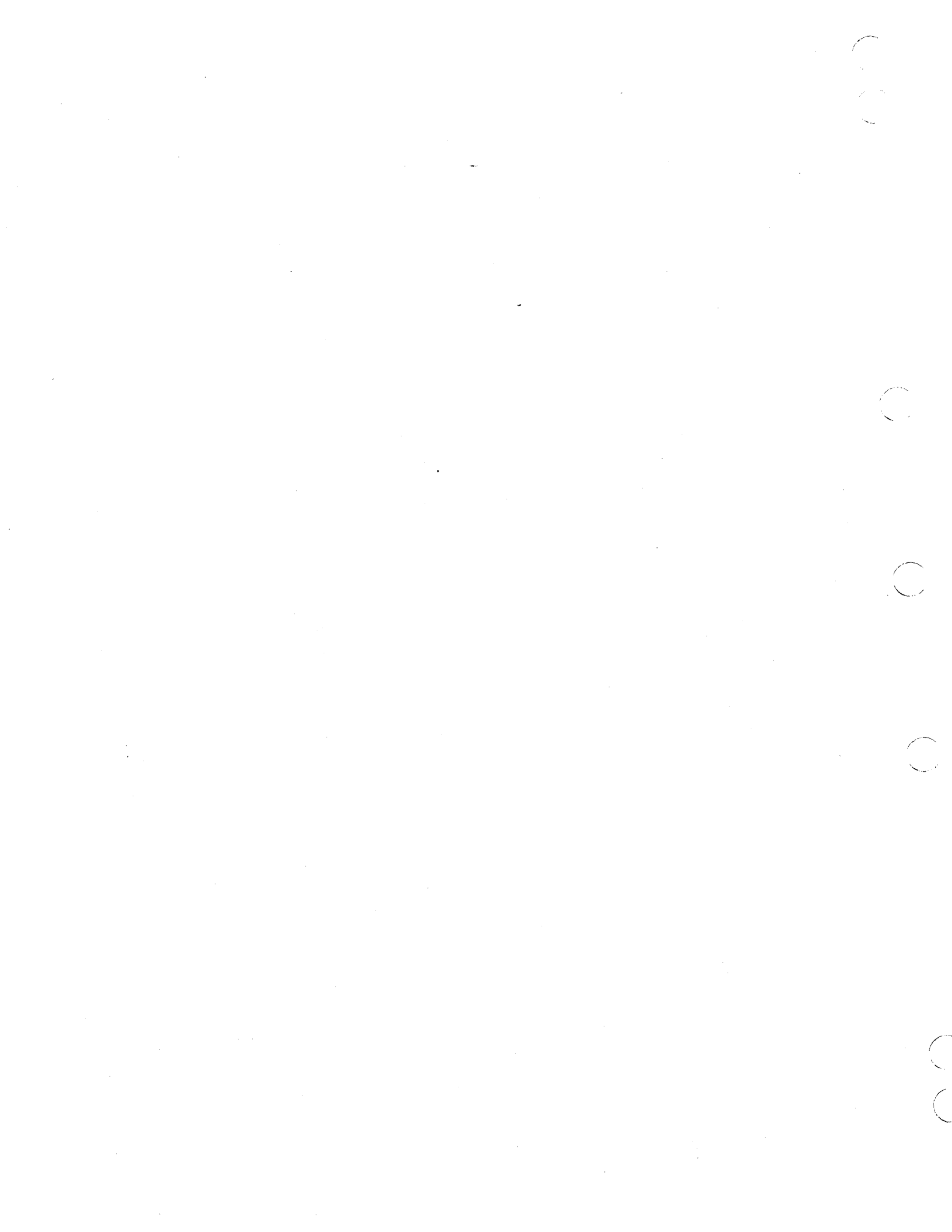
ASSEMBLY PARTS LIST

PRINT DATE		PAGE		FILE CHANGE NO.									
10-07-80		1		00014321									
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	61409022	3	B	D	AC ENTRY, FLEX DISK 50HZ	A	REL	09-03-80	FA501A	10-07-80			
FOUND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	71492952	8	1		PC BRACKET SWITCH/FILTER/XFORM	P						
002	01	71492953	6	1		PC COVER SWITCH/FILTER	P						
004	01	15164356	6	1		PC FILTER RFI	P						
005	01	15012408	9	3		PC BSHG, SNAP-IN .500 M/H .38ID	B						
007	01	44674034	2	1		PC CONN POWER RECEP	P						
008	01	15164917	5	2		PC MSCR HEX-LK PLN M5X8MM STL Z	B						
009	01	91976625	3	4		PC MSCR PAN PHL M3X6MM	B						
010	01	51809101	2		020	FT TAPE-WIRE MARKING CHAR 1	B						
011	01	51809103	8		020	FT TAPE-WIRE MARKING CHAR 3	B						
012	01	51918789	2	1		PC XFHR STEP DOWN 220/240V	P						
013	01	09040204	1	4		PC WSHR, NO.10 DISHED LOCK STL	B						
014	01	91975669	2	2		PC WSHR METRIC SCREW SZ 3	B						
015	01	44674036	7	3		PC CONN PWR RECPT	P						
016	01	51797218	8	2		PC LUG, NO.10 CRMP-R 22-18AWG	B						
017	01	94277400	1	1		PC STRAP, CBL TIE TYP 1 TO 5/8	B		14321	14321		8041	8041
017	02	94277400	1	2		PC STRAP, CBL TIE TYP 1 TO 5/8	B						
019	01	52810001	9	2		FT WIR 18GA STRD BRN 600V UL PVC	W						
020	01	52810020	9	250		FT WIR 18GA STRD GRN YEL STRIPE	W						
022	01	51918969	0	1		PC SWITCH VOLTAGE SELECTOR	P						
023	01	51873600	4		001	OZ VARNISH INSUL RED GLPT	B						
024	01	91975724	5	6		PC NUT HEXAGON SZ 5MM	B						

BUILD ARC 230

ASSEMBLY PARTS LIST

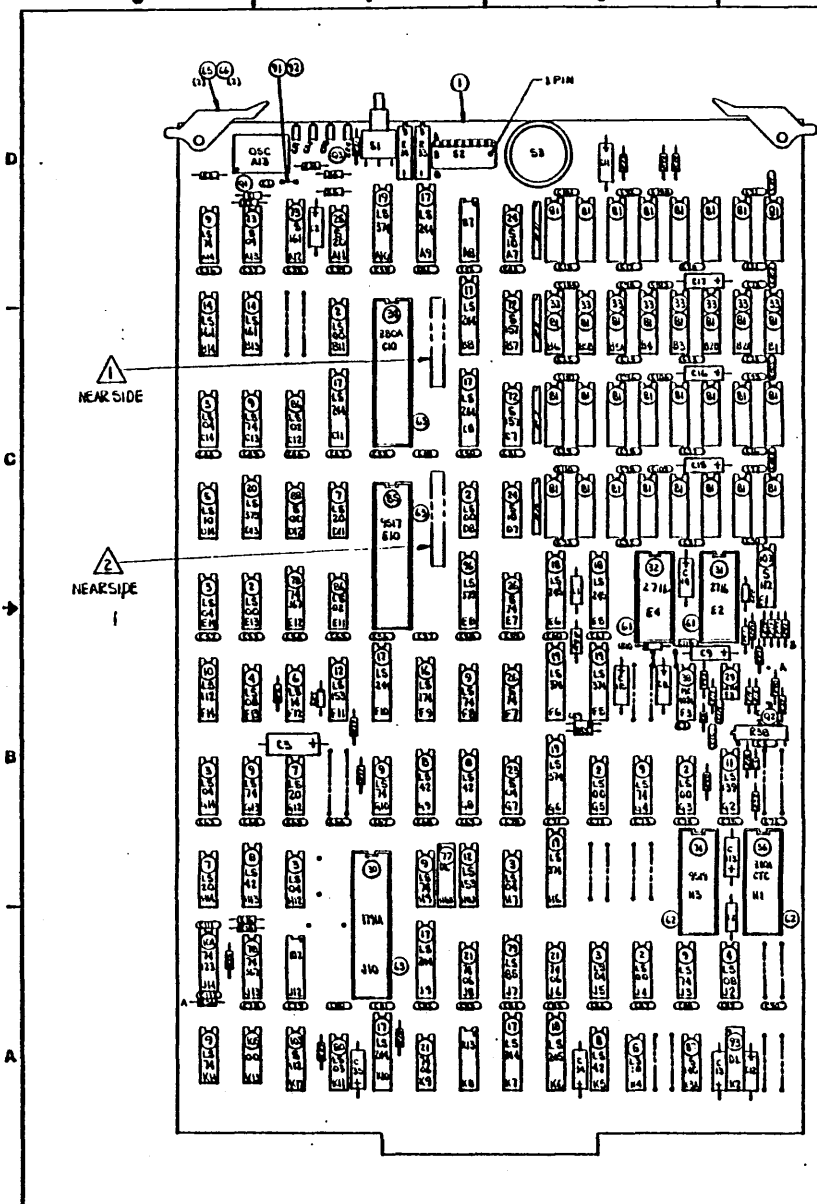
PRINT DATE		PAGE		FILE CHANGE NO.									
10-07-80		2		00014321									
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	61409022	3	B	D	AC ENTRY, FLEX DISK 50HZ	A	REL	09-03-80	FA501A	10-07-80			
FOUND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
025	01	91975671	8	6		PC WASHER EX TOOTH SZ 5	B						
026	01	61409024	9		REF	PC W/L AC ENTRY 50HZ	D						
027	01	52810006	8	1	166	FT WIR 18GA STRD BLU 600V UL PVC	W						
028	01	93083004	7	2		PC SPLICES 22-16	W						
029	01	51758101	3		188	FT INS SLV CLR PVC HEAT SHRINK	B						
030	01	95643231	4	4		PC LUG, Q-CONN 22-18AWG FIG 5	P						
031	01	62201057	7		REF	PC SCH DIAG 50/60HZ	D						
032	01	51809102	0		020	FT TAPE-WIRE MARKING CHAR 2	B						
033	01	51809104	6		020	FT TAPE-WIRE MARKING CHAR 4	B						
034	01	62044200	4	1		PC CLAMP-CABLE ADHESIVE BACK	B						
							0031 TOTAL LINES						



COMMON PARTS DATA APPLICABLE
TO BOTH PRE-PRODUCTION
AND PRODUCTION UNITS



62949100 D



CROSS REFERENCE TABLE	
FIND NUMBER	REFERENCE DESIGNATION
37	OSC
39	S1
41	R3
42	R2R4
44	R1
47	R5R4
48	R13
51	C36 THRU C61 C65 THRU C76 C78 THRU C98 C114
53	C8 C9 C11 C13 C34 C35
54	C11 C14 C15 C16 C17 C19 C19
55	C3
56	C1
57	CR1 CR2 CR3 CR4
58	CR5 CR7 CR8 CR11
59	Q1 Q3
60	S1
63	C7
70	R8 R9 R10 R11
71	S3
75	C18 THRU C33 C37 THRU C110
82	R7 R12
83	R11
90	R18 R19 R21 R23 R25 R26 R27 R28
97	R20
102	C7
106	R33
107	R34
108	R35
110	Q2
111	R16 R17
112	R14 R15
113	R33 R34
114	R28 R29
115	R30 R37
116	R39 R40
117	R43
118	R32
119	R31
120	R42
121	R44
122	C16
124	CEB
125	C5 C6
126	C9 C10
127	C12
129	C11
130	L1 L2
131	R27 R24
132	CR7

REVISION RECORD		DATE	BY	APP
07	51243			
08	51246			
09	51252			
10	51257			
11	51260			
12	51263			
13	51271			

- NOTES:
- ▲ MARK ASSY. NO., REV LEVEL, AND LOC CODE IN AREA SHOWN. MARK PER CDC SPEC 10121508, CHARACTER HEIGHT .12 (10PT) COLOR WHITE.
 - ▲ MARK SERIAL NUMBER IN AREA SHOWN PER RVLOPS P&P NO. 80120134 AND PER MARKING REQUIREMENTS IN NOTE (1) ONE.
 - 3. FIND NUMBERS, ELEMENT IDENTIFIERS, AND REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND DO NOT APPEAR ON PART.
 - 4. AFTER ALIGNING R33, R34 AND R38, SEAL THEM WITH GLYPHIC LOC P/N 51873400.

CHANGE TABLE	
DELETIONS	ADDITIONS
CUT FOIL:	ADD WICE SOLDER SIDE
11K3 B-A	S.S.
21R42-B	S.S.
31R33-1	S.S.
41R34-A	S.S.
	ADD WICE SOLDER SIDE
	11K4-11 TO K3A-13
	21R42-B TO R40-A
	31R40-A TO F2-S
	41R28-2 TO F2-6
	51F27 TO Q2-B
	WADD CENTER LAMP/NE
	COAX FROM R33-1 TO R36-A
	21R0 BRAID SHIELD
	COAX FROM 52-8A TO J14-B

INACTIVE

APL 50446260	UNCLASSIFIED DOCUMENT EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION	CONTROL DATA	P.C. CARD ASSEMBLY, 9BED (DISK CONTROLLER)	
	DATE: 11/80	CLASS: FASQIA	FORM NO: 15920	DRAWING NO: 90446260
DO NOT SCALE DRAWING	PREPARED BY: D. SHED	DATE: 11/80	PAGE 2/1	
APPROVED BY: [Signature]	DATE: 11/80	SHEET 2 OF 1		

BUILD ARC 214

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
02-05-81	1	1497

QTY	ASSEMBLY NUMBER	COL.	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. DESP.	FILE DATE			
0860	90446260	3	D8	0	PM 80 ASSY 98ED ^{REPLACES BY 90446264}	S	DELTA	12-17-80	FAS01A	02-05-81			
T	FROM	U	PART NUMBER	QTY	U/M	PART DESCRIPTION	MC	TID	ENCL. NO. IN	ENCL. NO. OUT	E/W	WE IN	WE OUT
001	01		90446259	5	1	PC PM 80 98ED							
002	01		15144900	6	6	PC IC 74LS00 140LS QUAD 2-INP							
003	01		15145100	2	6	PC IC 74LS04 146LS TTL HEX INV							
004	01		15145400	6	2	PC IC 74LS08 201LS QZINP AND							
005	01		15145600	1	2	PC IC 74LS10 141LS TTL 3I/P NAND							
006	01		15148500	0	1	PC IC 74LS14 943LS TTL 6 NO RCVR							
007	01		15145900	5	3	PC IC 74LS20 208LS TTL 4I/P NAND							
008	01		15147600	9	4	PC IC TYPE 74LS42							
009	01		15146300	7	9	PC IC 74LS74 175LS F/F DUAL D							
010	01		15146500	2	1	PC IC 74LS112 243LS TTL DUAL F/F							
011	01		15146600	0	1	PC IC 74LS139 538LS DECODER 10F4							
012	01		15148700	6	2	PC IC 74LS153 TTL DUAL 4I/P							
014	01		15146800	6	2	PC IC 74LS161 158LS 4BIT COUNTER							
016	01		15147500	1	1	PC IC 74LS174 TTL 6 BIT 16 PIN							
017	01		15163414	4	8	PC IC 74LS244 OCTAL BFR 3-5 OP							
018	01		15163324	5	3	PC IC 74LS245 OCTAL BUS XCEIVER							
019	01		15163404	5	5	PC IC 74LS374 OCTAL D-EDGE F-F							
020	01		15163232	0	1	PC IC 74LS375 TTL 4-8BIT							
021	01		96744155	1	3	PC IC 7406 ORVR HEX INV BUFFER							
023	01		88883700	2	2	PC IC 74S04 146S TTL HEX INVTR							
024	01		88884200	2	2	PC IC 74S10 141S TTL 3 3-IN NAND							

BUILD ARC 214

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
02-05-81	2	1497

QTY	ASSEMBLY NUMBER	COL.	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. DESP.	FILE DATE			
0860	90446260	3	D8	0	PM 80 ASSY 98ED ^{REPLACES BY 90446264}	S	DELTA	12-17-80	FAS01A	02-05-81			
T	FROM	U	PART NUMBER	QTY	U/M	PART DESCRIPTION	MC	TID	ENCL. NO. IN	ENCL. NO. OUT	E/W	WE IN	WE OUT
025	01		88885300	9	1	PC IC 74S20 TTL DUAL 4 I/P							
026	01		88923000	9	2	PC I C 74S74 TTL DUAL							
029	01		15157100	7	1	PC IC LM358N 344 DUAL OP-AMP							
030	01		15163444	1	1	PC IC F01791							
031	01		66312068	1	1	PC FLEXIBLE DISK CODED E-ROM							
032	01		66312069	9	1	PC FLEXIBLE DISK CODED E-ROM							
033	01		15153821	2	8	PC IC 4116 MOS 16384-BIT RAM							
034	01		15163201	5	1	PC IC Z80A MOS 8BIT PROCRESSOR							
036	01		15164429	1	1	PC IC Z80A-CTC SILICON GATE NMOS							
037	01		51904109	9	1	PC OSCILLATOR TTL D I P							
038	01		15105700	7	1	PC IC 4024 582 TTL OL/V CONT MVB							
039	01		83452230	2	1	PC SWITCH DUAL 8POS .88 FIG 2							
041	01		94402116	1	1	PC RES FM 22 OHM 1/4W CARBON							
042	01		94402140	1	2	PC RES FM 220 OHM 1/4W CARBON							
044	01		94402157	5	1	PC RES FM 1.1K OHM 1/4W CARBON							
047	01		94402180	7	2	PC RES FM 10K OHM 1/4W CARBON							
048	01		95894500	8	1	PC RES MOD 16 PINS 28 RESISTORS							
051	01		51001120	8	62	PC CAP CER F-2 .01UF +80-20P 25V							
053	01		24504333	6	6	PC CAP FXD TANT 2.2UF 20P 35VDCW							
054	01		24504369	0	7	PC CAP FXD TANT 10UF 20P 15VDCW							
055	01		24504373	2	1	PC CAP FXD TANT 47UF 20P 15VDCW							

BUILD ARC 214

ASSEMBLY PARTS LIST

BUILD ARC 214										ASSEMBLY PARTS LIST		REVISE DATE	PAGE	REV CHANGED NO.	
										02-05-81	3	14571			
QTY	ASSEMBLY NUMBER	CR	REV.	QTY.	DESCRIPTION	REV.	STATUS	STATUS DATE	QTY. REQ.	REV. DATE					
0860	90446260	3	DE	0	PW 80 ASSY 98ED	REPLACED BY 90446264	S	PCMA 12-17-80	FA501A	02-05-81					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
QTY	U	PART NUMBER	CR	QTY	U/M	PART DESCRIPTION	REV.	YTD	QTY. REQ.	QTY. REQ.	U/M	REV. DATE	REV. DATE		
056	01	75887677	5	1		PC CAP CER 33PF 5P									
057	01	19171201	7	4		PC LIGHT IND									
058	01	51007385	1	4		PC DIO IN4148 10MA MICRO SIL 30V									
059	01	51714000	0	2		PC XSTR 2N2907 PNP SIL									
060	01	51940524	5	1		PC SWITCH PUSH BUTTON RT ANGLE									
061	01	51848404	3	2		PC SOCKET, IC 24 POS D-I-L TIN									
062	01	51848405	0	2		PC SOCKET, IC 28 POS D-I-L TIN									
063	01	51848406	8	3		PC SOCKET, IC 40 POS D-I-L TIN									
065	01	82311900	3	2		PC INJECTOR-EJECTOR, NATURAL PCB									
066	01	93533116	1	2		PC ROLL PIN, .1250 X .250L STL ZP B									
069	01	24504320	3	1		PC CAP TANT 60CHV 33UF 20P									
070	01	94375122	2	4		PC RES 85IP NTWK 470HM 3P									
071	01	94789205	5	1		PC SWITCH ROTARY PC 10 POS									
072	01	15117400	0	2		PC IC TTL 8MUX 2-1 A 1895 DIC16									
073	01	15150400	8	1		PC IC 93516 TTL 4BIT									
074	01	15163459	9	1		PC IC 9519 INT CONT									
075	01	94354826	3	28		PC CAP FXD CER 0.10UF 50V									
077	01	51918283	6	1		PC DELAY LINE TAP 100 OHM FIG 5									
078	01	15140400	1	2		PC IC DM 8097 HEX BUFFER TRI STA									
079	01	15147200	8	1		PC IC 74LS85 COMP TTL 4 BIT									
080	01	15145200	0	1		PC IC 74LS03 202LS TTL 2-I NAND									

BUILD ARC 214

ASSEMBLY PARTS LIST

BUILD ARC 214										ASSEMBLY PARTS LIST		REVISE DATE	PAGE	REV CHANGED NO.	
										02-05-81	3	14571			
QTY	ASSEMBLY NUMBER	CR	REV.	QTY.	DESCRIPTION	REV.	STATUS	STATUS DATE	QTY. REQ.	REV. DATE					
0860	90446260	3	DE	0	PW 80 ASSY 98ED	REPLACED BY 90446264	S	PCMA 12-17-80	FA501A	02-05-81					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
QTY	U	PART NUMBER	CR	QTY	U/M	PART DESCRIPTION	REV.	YTD	QTY. REQ.	QTY. REQ.	U/M	REV. DATE	REV. DATE		
081	01	51848401	9	32		PC SOCKET, IC 16 POS D-I-L TIN									
082	01	75738666	9	2		PC RES PAK 10.0K OHM 1.50W FIG 2									
083	01	94402141	9	1		PC RES FM 240 OHM 1/4W CARBON									
085	01	15163458	1	1		PC IC 9517A MULTIMODE DMA CONT									
086	01	15145000	4	2		PC IC 74LS02 148LS Q2INP NOR									
087	01	15158700	3	1		PC IC T74S140 TTL DUAL 4 I/P GAT									
088	01	88884500	5	1		PC IC 74S00 140S TTL QD 2IN NAND									
090	01	94402156	7	8		PC RES FM 1K OHM 1/4W CARBON									
091	01	51903400	3	2		PC PIN, .025 IN SQ PC MTG 2A									
092	01	77612624	5	1		PC CONNECTOR, JUMPER									
093	01	51918281	0	1		PC DELAY LINE TAP 200 OHM FIG 3									
094	01	90446122	5	REF		PC SCH DIAG 98ED	D		14469	14469			8103		
094	02	90446258	7	REF		PC SCH DIAG 98ED	D		14469				8103		
095	01	16033200	3	REF		PC FABRICATION SPEC 70 PAK	D								
096	01	15163434	2	1		PC IC 74LS373 OCTAL D LATCH									
097	01	94402168	2	1		PC RES FM 3.3K OHM 1/4W CARBON									
102	01	94227227	9	1		PC CAP 110 PF DIPPED MICA									
103	01	15158600	5	2		PC IC 74S112 TTL DUAL J-K NET									
104	01	50254300	2	1		PC IC 74123 193 TTL 2 RETGR MVB									
105	01	66299099	3	1		PC IC 7400 TTL QUAD 2-IN NAND									
106	01	51908710	0	1		PC RES CERM VAR 20K OHM 10P 3/4W									

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BUILD ARC 214

ASSEMBLY PARTS LIST

PRINT DATE 02-05-81 PAGE 5 FILE CHANGE NO. 1457

QTY	ASSEMBLY NUMBER	CD	REV.	DATE	DESCRIPTION	INC	STATUS	STATUS DATE	ENCL. APP.	FILE DATE				
0860	90446260	3	02	D	PW 80 ASSY 98ED REPLACED BY 90446264	5	REL	12-17-80	FA501A	02-05-81				
1	QTY	U	PART NUMBER	CD	QTY	U/W	PART DESCRIPTION	INC	YLD	ENCL. NO. IN	ENCL. NO. OUT	1/4	WE IN	WE OUT
107	01		51908709	2	1		PC RES VAR 10K OHM	P						
108	01		51908708	4	1		PC RES CER VAR 5K OHM 10P 3/4W	P						
110	01		51003092	7	1		PC XSTR 2N2222 HI SPEED NPN SIL	P						
111	01		94360304	3	2		PC RES 1100 OHMS 1/4W 1P	P						
112	01		94360352	2	2		PC RES 3480 OHMS 1/4W 1P	P						
113	01		94402173	2	2		PC RES FM 5.1K OHM 1/4W CARBON	P						
114	01		94402164	1	2		PC RES FM 2.2K OHM 1/4W CARBON	P						
115	01		94360400	9	2		PC RES FXD FM 10.0K OHM 1P 1/4W	P						
116	01		94402166	4	2		PC RES FM 2.7K OHM 1/4W CARBON	P						
117	01		94402158	3	1		PC RES FM 1.2KOHM 1/4W CARBON	P						
118	01		94402154	2	1		PC RES FM 820 OHM 1/4W CARBON	P						
119	01		94402139	3	1		PC RES FM 200 OHM 1/4W CARBON	P						
120	01		94402161	7	1		PC RES FM 1.6K OHM 1/4W CARBON	P						
121	01		24500144	1	1		PC RES FXD COMP 160 OHMS 1/2W 5P	P						
122	01		94802154	0	1		PC CAP FXD CER .001UF 10P 1000V	P						
124	01		15101109	5	1		PC DIO 1N752A 400MH ZEN VR 5.6V	P						
125	01		94227253	5	2		PC CAP 1300 PF DIPPED MICA	P						
126	01		94354826	8	2		PC CAP CER 0.047 UF TYPE 1 20P	P						
127	01		94240423	7	1		PC CAP CER 150PF 50V 10P	P						
129	01		94240421	1	1		PC CAP CER 82 PF 50V	P						
130	01		94356324	7	2		PC INDUCTOR 10 MH	P						

BUILD ARC 214

ASSEMBLY PARTS LIST

PRINT DATE 02-05-81 PAGE 6 FILE CHANGE NO. 1457

QTY	ASSEMBLY NUMBER	CD	REV.	DATE	DESCRIPTION	INC	STATUS	STATUS DATE	ENCL. APP.	FILE DATE				
0860	90446260	3	02	D	PW 80 ASSY 98ED REPLACED BY 90446264	5	REL	12-17-80	FA501A	02-05-81				
1	QTY	U	PART NUMBER	CD	QTY	U/W	PART DESCRIPTION	INC	YLD	ENCL. NO. IN	ENCL. NO. OUT	1/4	WE IN	WE OUT
131	01		94402148	4	2		PC RES FM 470 OHM 1/4W CARBON	P						
132	01		15101108	7	1		PC DIO 1N751A 400MH ZEN VR 5.1V	P						
133	01		51850400	6	1	083	PT CABLE RAD/FREQ 200A STRD RG	W						
135	01		51873600	4	015	02	VARNISH INSUL RED GLPT	B		14514			8105	
							0109 TOTAL LINES							

90494628B

3

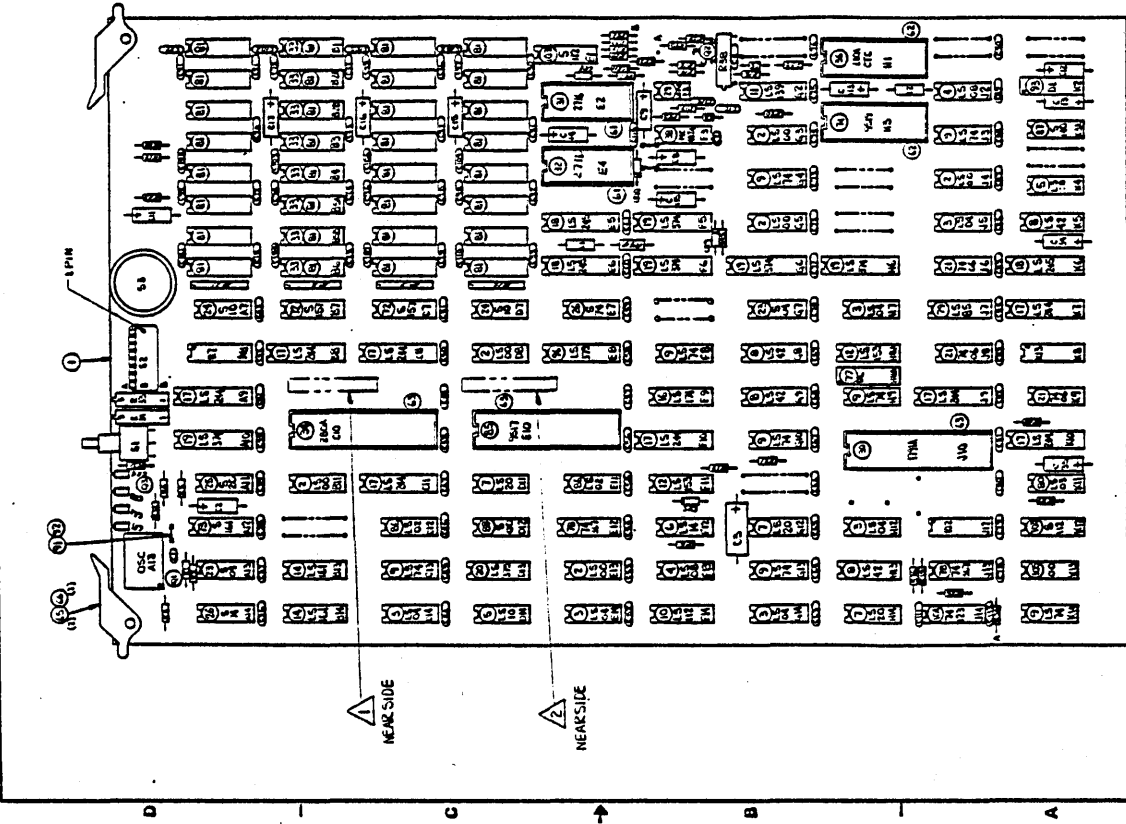
4

6

7

8

REV	DATE	DESCRIPTION	BY	CHKD
1		RELEASED CLASS 'A'		
2				
3				
4				
5				
6				
7				
8				



ITEM NUMBER	REFERENCE DESIGNATION
37	OSC
37	S2
41	R3
42	R1A4
44	R1
45	R5E6
46	R15
51	C36 THRU C45 THRU C76
53	C18 THRU C26
54	C19, C20, C21, C22, C23
55	C1, C10, C15, C17, C18, C19
55	C3
56	C1
57	C61, C62, C63, C64
58	C65 (EP, CD, CE, E)
59	Q1, Q3
60	S1
61	C7
70	R8, R9, R10, R11
71	S3
75	C18 THRU C23, C27 THRU C10
81	R7, R12
83	S1
90	R19, R21, R23, R25, R27, R29
91	R20
106	R33
107	R34
108	R36
110	R32
111	R16, R17
112	R4, R15
113	R35, R36
114	R18, R17
115	R30, R37
116	R39, R40
117	R43
118	R32
119	R31
120	R42
121	R44
122	C116
124	R28
125	C5, C6
126	C15, C10
127	C12
128	C11
130	L11, L12
131	R22, R16
132	R27

- NOTES:
- △ MARK ASSY NO. AND REV LEVEL - 12 HIGH, WHITE IN AREA SHOWN PER CDC SPEC 1012150B.
 - △ MARK SERIAL NUMBER IN AREA SHOWN PER ENVELOPS PPP NO. 801201-34 AND PER MARKING REQUIREMENTS IN NOTE (1) ONE.
 - 3. FIND NUMBERS ELEMENT IDENTIFIERS, AND REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND DO NOT APPEAR ON PART.
 - 4. AFTER ALIGNING R33, R34 AND R36, SEAL THEM WITH GLYPTAL CDC P/N 51873600.

DELETIONS	ADDITIONS
CUT FOIL:	ADD WIDE SOLDER SIDE
R13 B-4	R14 H1 TO R3A-13
R18 B-4	R18 B TO R40-A
R18 B-4	R18 B TO R1-5
R18 B-4	R18 B TO R2-6
R18 B-4	R18 B TO R2-5
	GLASS LEAFER GAMMA
	CDK FROM R33710
	ADD BRAD SHIELD
	CON FORM 57-8A TO
	TIN-8

APL 904628B

DRIVING 1973

CONTROL PANEL

DATE: 2/1

PC CARD ASSEMBLY, 9BED (DISK CONTROLLER)

15920 D 9046284

1 of 1

BUILD ARC 214

ASSEMBLY PARTS LIST

										PRINT DATE	PAGE	FILE CHANGE NO.		
										2-26-81	1	13489-43		
QTY	ASSEMBLY NUMBER	REV.	QTY.	QTY.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. DESP.	FILE DATE				
0860	90446284	3	A	D	PC BN ASSY 9MEN	S	REL	2-26-81	FA501A	2-26-81				
P/N	QTY	U	PART NUMBER	CR	QTY	U/M	PART DESCRIPTION	MC	TYL	COL. NO. IN	COL. NO. OUT	I/N	WE IN	WE OUT
001	01		90446259	3	1		PC PW 80 98EN	P						
002	01		15144900	3	6		PC IC 74LS00 140LS QUAD 2-INP	P						
003	01		15145100	2	6		PC IC 74LS04 140LS TTL HEX INV	P						
004	01		15145400	6	2		PC IC 74LS08 201LS Q2INP AND	P						
005	01		15145600	1	2		PC IC 74LS10 141LS TTL 3I/P NAND	P						
006	01		15148500	0	1		PC IC 74LS14 943LS TTL 6 NO RCVR	P						
007	01		15145900	5	3		PC IC 74LS20 201LS TTL 4I/P NAND	P						
008	01		15147600	9	4		PC IC TYPE 74LS*2	P						
009	01		15146300	7	8		PC IC 74LS74 175LS F/F DUAL D	P						
010	01		15146500	2	1		PC IC 74LS112 243LS TTL DUAL F/F	P						
011	01		15146600	0	1		PC IC 74LS139 539LS DECODER 10F4	P						
012	01		15148700	0	2		PC IC 74LS153 TTL DUAL 4I/P	P						
014	01		15146800	0	2		PC IC 74LS141 159LS 4BIT COUNTER	P						
016	01		15147500	1	1		PC IC 74LS174 TTL 6 BIT 16 PIN	P						
017	01		15163414	4	8		PC IC 74LS244 OCTAL BFR 3-5 OP	P						
018	01		15163324	5	3		PC IC 74LS245 OCTAL BUS XCEIVER	P						
019	01		15163444	5	5		PC IC 74LS374 OCTAL D-EDGE F-F	P						
020	01		15163232	1	1		PC IC 74LS375 TTL 4-BIT	P						
021	01		96744155	1	3		PC IC 7406 INVR HEX INV BUFFER	P						
023	01		88883700	2	2		PC IC 74S04 1465 TTL HEX INVTR	P						
024	01		88884200	2	2		PC IC 74S10 1415 TTL 3 3-IN NAND	P						

BUILD ARC 214

ASSEMBLY PARTS LIST

										PRINT DATE	PAGE	FILE CHANGE NO.		
										2-26-81	2	13489-45		
QTY	ASSEMBLY NUMBER	REV.	QTY.	QTY.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. DESP.	FILE DATE				
0860	90446284	3	A	D	PC BN ASSY 9MEN	S	REL	2-26-81	FA501A	2-26-81				
P/N	QTY	U	PART NUMBER	CR	QTY	U/M	PART DESCRIPTION	MC	TYL	COL. NO. IN	COL. NO. OUT	I/N	WE IN	WE OUT
025	01		88885300	9	1		PC IC 74S20 TTL DUAL 4 I/P	P						
026	01		88923600	9	2		PC IC 74S74 TTL DUAL	P						
029	01		15157100	7	1		PC IC LM358N 344 DUAL OP-AMP	P						
030	01		15163444	1	1		PC IC FD1791	P						
031	01		66312070	1	1		PC FLEXIBLE DISK CODED E-ROM	G						
032	01		66312071	1	1		PC FLEXIBLE DISK CODED E-ROM	G						
033	01		15153821	2	4		PC IC 4116 MOS 16384-BIT RAM	P						
034	01		15163201	5	1		PC IC Z80A MOS 8BIT MICROPROCESSOR	P						
036	01		15164429	1	1		PC IC Z80A-CTC SILICON GATE NMOS	P						
037	01		51904109	9	1		PC OSCILLATOR TTL D I P	P						
038	01		15105700	7	1		PC IC 4024 582 TTL OL/V CONT MVB	P						
039	01		83452230	2	1		PC SWITCH DUAL MPOS .88 FIG 2	P						
041	01		94402116	1	1		PC RES FM 22 OHM 1/4W CARBON	P						
042	01		94402140	1	2		PC RES FM 22 OHM 1/4W CARBON	P						
044	01		94402137	5	1		PC RES FM 1.1K OHM 1/4W CARBON	P						
047	01		94402180	7	2		PC RES FM 1.1K OHM 1/4W CARBON	P						
048	01		95894500	8	1		PC RES MOD 16 PINS 28 RESISTORS	P						
051	01		51001120	8	62		PC CAP CER F-2 .01UF +80-20P 25V	P						
053	01		24504333	9	6		PC CAP FXD TANT 2.2UF 20P 35VDCV	P						
054	01		24504369	1	7		PC CAP FXD TANT 10UF 20P 15VDCV	P						
055	01		24504373	2	1		PC CAP FXD TANT .47UF 20P 15VDCV	P						

BUILD ARC 214

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	REV CHANGES NO.
2-26-81	3	13489-43

QTY	ASSEMBLY NUMBER	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	QTY. REQ.	REV DATE			
0860	90444284	A	0	PW HD ASSY 9RED	S	REL	2-26-81	FA501A	2-26-81			
PART NO.	U	PART NUMBER	QTY	U/M	PART DESCRIPTION	MC	TYE	COL. NO. IN	COL. NO. OUT	I/N	WE IN	WE OUT
056	01	75887677	5	1	PC CAP CER 33PF 5P	P						
057	01	19171211	7	4	PC LIGHT IND	P						
058	01	91007385	1	4	PC DIO IN4148 1:MA MICRO SIL 30V	P						
059	01	91714000	0	2	PC XSTR 2N2907 PNP SIL	P						
060	01	51940526	5	1	PC SWITCH PUSH BUTTON RT ANGLE	P						
061	01	51848404	3	2	PC SOCKET, IC 24 POS 0-I-L TIN	P						
062	01	51848405	0	2	PC SOCKET, IC 28 POS 0-I-L TIN	P						
063	01	51848406	4	3	PC SOCKET, IC 40 POS 0-I-L TIN	P						
065	01	82311900	3	2	PC INJECTOR-EJECTOR, NATURAL PCB	P						
066	01	93533118	1	2	PC ROLLPIN, .1250 X .0250L STL ZP	B						
069	01	24504320	3	1	PC CAP TANT 50CWF 33UF 20P	P						
070	01	94375122	2	4	PC RES 85IP NTWK 470HM 3P	P						
071	01	94789205	5	1	PC SWITCH ROTARY PC 10 POS	P						
072	01	15117400	0	2	PC IC TTL 8MUX 2-1 A 1895 D1C16	P						
073	01	15150400	0	1	PC IC 93516 TTL 4BIT	P						
074	01	15163459	9	1	PC IC 9519 INT CONT	P						
075	01	94354826	3	28	PC CAP FXD CER .10UF 50V	P						
077	01	51918283	0	1	PC DELAY LINE TAP 100 OHM FIG 5	P						
078	01	15140400	1	2	PC IC DM 8077 HF4 BUFFER TRI STA	P						
079	01	15147200	0	1	PC IC 74LS85 COMP TTL 4 BIT	P						
080	01	15145200	0	1	PC IC 74LS07 20PLS TTL 2-I NAND	P						

BUILD ARC 214

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	REV CHANGES NO.
2-26-81		13489-43

QTY	ASSEMBLY NUMBER	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	QTY. REQ.	REV DATE			
0860	90444284	A	0	PW HD ASSY 9RED	S	REL	2-26-81	FA501A	2-26-81			
PART NO.	U	PART NUMBER	QTY	U/M	PART DESCRIPTION	MC	TYE	COL. NO. IN	COL. NO. OUT	I/N	WE IN	WE OUT
081	01	51848401	9	32	PC SOCKET, IC 16 POS 0-I-L TIN	P						
082	01	75738666	9	2	PC RES PAK 10.0K OHM 1/4W FIG 2	P						
083	01	94402141	9	1	PC RES FM 240 OHM 1/4W CARBON	P						
085	01	15163458	1	1	PC IC 9517A MULTIMODE DMA CONT	P						
086	01	15145000	4	2	PC IC 74LS02 14ALS Q2INP NOR	P						
087	01	15158700	3	1	PC IC 7745140 TTL DUAL 4 I/P GAT	P						
088	01	80884500	5	1	PC IC 74500 1405 TTL QD 2IN NAND	P						
090	01	94402156	7	8	PC RES FM 1K OHM 1/4W CARBON	P						
091	01	51903400	3	2	PC PIN, .025 IN SQ PC MTG 2A	P						
092	01	77612624	5	1	PC CONNECTOR, JUMPER	P						
093	01	51910281	0	1	PC DELAY LINE TAP 200 OHM FIG 3	P						
094	01	90446258	7	REF	PC SCH DIAG 9RED	D						
095	01	16033200	3	REF	PC FABRICATION SPEC TO PAK	D						
096	01	15163434	2	1	PC IC 74LS373 OCTAL D LATCH	P						
097	01	94402168	2	1	PC RES FM 3.3K OHM 1/4W CARBON	P						
102	01	94227227	9	1	PC CAP 110 PF DIPPED MICA	P						
103	01	15158000	5	2	PC IC 74S112 TTL DUAL J-K NET	P						
104	01	50254300	2	1	PC IC 74123 193 TTL 2 RETGR MVH	P						
105	01	66290499	3	1	PC IC 7400 TTL DUAL 2-IN NAND	P						
106	01	51908710	0	1	PC RES CERM VAR 20K OHM 10P 3/4W	P						

BUILD ARC 214

ASSEMBLY PARTS LIST

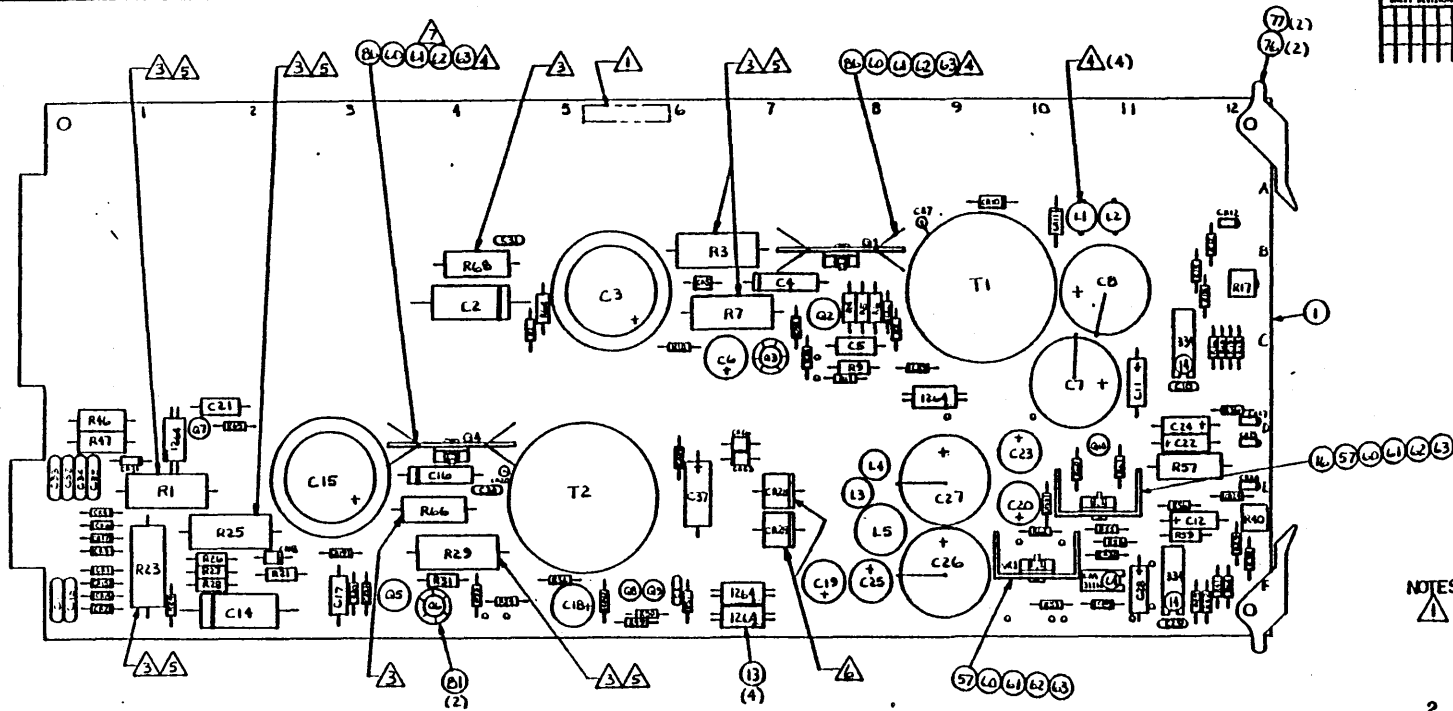
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												3-26-81	5	13489-83
QTY	ASSEMBLY NUMBER	CR	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0860	90446284	3	A	0	PW 8D ASSY 9HED	S	REL	2-26-81	FA501A	2-26-81				
PART NO.	U	PART NUMBER	CD	QTY	U/IN	PART DESCRIPTION	MC	YTD	ECO. NO. IN	ECO. NO. OUT	U/IN	WE IN	WE OUT	
107	01	51908779	2	1		PC RES VAR 10K OHM	P							
108	01	51908700	4	1		PC RES CER VAR 5K OHM 10P 3/4W	P							
110	01	51003092	7	1		PC XSTR 2N222 HI SPEED NPN SIL	P							
111	01	94360304	3	2		PC RES 1100 OHMS 1/4W 1P	P							
112	01	94360352	2	2		PC RES 3480 OHMS 1/4W 1P	P							
113	01	94402173	2	2		PC RES FM 5.1K OHM 1/4W CARBON	P							
114	01	94402164	1	2		PC RES FM 2.2K OHM 1/4W CARBON	P							
115	01	94360400	9	2		PC RES FXD FM 10.0K OHM 1P 1/4W	P							
116	01	94402166	6	2		PC RES FM 2.7K OHM 1/4W CARBON	P							
117	01	94402158	3	1		PC RES FM 1.2KOHM 1/4W CARBON	P							
118	01	94402154	2	1		PC RES FM 820 OHM 1/4W CARBON	P							
119	01	94402139	3	1		PC RES FM 200 OHM 1/4W CARBON	P							
120	01	94402161	7	1		PC RES FM 1.6K OHM 1/4W CARBON	P							
121	01	24500144	1	1		PC RES FXD COMP 160 OHMS 1/2W 5P	P							
122	01	94402154	1	1		PC CAP FXD CER .001UF 10P 1000V	P							
124	01	15101109	5	1		PC DIO 1N752A 400MW ZEN VR 5.6V	P							
125	01	94227253	5	2		PC CAP 1300 PF DIPPED MICA	P							
126	01	94354824	11	2		PC CAP CER 0.047 UF TYPE 1 20P	P							
127	01	94240423	7	1		PC CAP CER 150PF 50V 10P	P							
129	01	94240421	1	1		PC CAP CER 42 PF 50V	P							
130	01	94356324	7	2		PC INDUCTOR 10 MH	P							

BUILD ARC 214

ASSEMBLY PARTS LIST

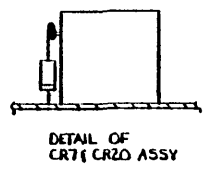
BUILD ARC 214										ASSEMBLY PARTS LIST		PRINT DATE	PAGE	FILE CHANGE NO.
												2-26-81	6	13489-43
QTY	ASSEMBLY NUMBER	CR	REV.	QTY	DESCRIPTION	MC	STATUS	STATUS DATE	ENCL. RESP.	FILE DATE				
0860	90446284	3	A	0	PW 8D ASSY 9HED	S	REL	2-26-81	FA501A	2-26-81				
PART NO.	U	PART NUMBER	CD	QTY	U/IN	PART DESCRIPTION	MC	YTD	ECO. NO. IN	ECO. NO. OUT	U/IN	WE IN	WE OUT	
131	01	94402148	4	2		PC RES FM 470 OHM 1/4W CARBON	P							
132	01	15101108	7	1		PC DIO 1N751A 400MW ZEN VR 5.1V	P							
133	01	51859400	6	1	183	FT CABLE RAD/FRO 26GA STRD RG	W							
135	01	51873600	4		015	OZ VARNISH INSUL RED GLPT	B							

SHEET REVISION STATUS		REVISION RECORD					
REV	ACB	DESCRIPTION	DATE	DATE	CHKD	APP	
30	PLG8 B	RELEASED (1-10-58)		7/1/58			
29	SL103	REVISED (1-10-58)		8/2/58			
28	SL102	FROM WORKING DRAWING					
27	SL101	APP NOTE 7, REVISION 4					
26	SL100	REVISED (1-10-58)					



- NOTES:
- APPLY ASSY NO., REV LEVEL, LOC CODE, AND DATE CODE IN AREA SHOWN. MARK PER CDC SPEC 10121508; CHARACTER HEIGHT .12 (12 PT) COLOR WHITE.
 - FIND NUMBERS, ELEMENT IDENTIFIERS, AND REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND DO NOT APPEAR ON PART.
 - MOUNT RESISTORS .500 INCH OFF BOARD. USE TUBING 1/8 IN OD .75 INCH ON EACH LEAD.
 - APPLY F/N B3 BETWEEN COMPONENT SIDE OF BOARD (L1, L2, L3, L4 TO KEEP STATIONARY. APPLY F/N B3 TO PROTRUDING TABS (2) ON F/N B6 ON SOLDER SIDE OF PCB (2 P. FACE)).
 - RESISTORS TO BE INSTALLED WITH PROTRUSION TOWARD THE BOARD.
 - MOUNT DIODES .300 MIN .500 MAX OFF P.C. BOARD.
 - BEND HEAT SINK FIN STRAIGHT TO KEEP FROM SHORTING TO CR20. (2ND FIN FROM BOTTOM)

CHANGE TABLE	
DELETIONS	ADDITIONS



FIND NO	R/S/S REFERENCE TABLE REFERENCE DESIGNATION	28 C9, C10, C29	45 REQ
1	T1	C20, C31	R49, R58
2	T2	C11, C18, C22, C24, C28	R56
3	Q1, Q8	R61	CR33
4	Q2, Q5	R76, R47	CR8
5	Q3, Q4, Q7, Q8, Q10	R1, R23	R57
6	Q9	R3, R25	C19, C28
7	Q9	R4, R5, R6, R7L, R27, R28	R21, R64
8	CR1, CR7, CR8, CR9, CR9A, CR10, CR10A, CR11, CR11A, CR12, CR13, CR14	R7	R9, R31
9	CR5, CR7, CR9, CR10, CR13, CR16	RD, R11, R14, R18, R20, R22, R24	R19, R44
10	CR8, CR29	RC, R32	CR9, CR11
11	CR12, CR25, CR27, CR30	R31, R33	CR8, CR21
12	CR14, CR22	R39	CE1
13	CR3	R2, R24	R29
14	VR1	A=O	CR4, CR5
15	L1, L2, L3, L4	R20, R45	R9
16	L5	R62	C37
17	L5	R66, R68	
18	C3, C15	R12	
19	C1, C14	R3, R6, R41, R42	
20	C4, C16	R17, R40	
21	C5, C17	R38	
22	C6, C18, C20, C23	R36	
23	C1, C13, C32, C33	R22	
24	C7, C8	R6	
25	C26, C27	R15	

APL 90449100	SHEET NUMBER			CONTROL DATA			TITLE	
	DRAWN BY			CHECKED BY			P.C. CARD ASSEMBLY, 9BKD	
	DATE			DATE			15920 D 90449100	
	SCALE			SCALE			SCALE NONE 15232109 SHEET 1 OF 1	

BUILD ARC 210

ASSEMBLY PARTS LIST

BUILD ARC 210										ASSEMBLY PARTS LIST		PRINT DATE	PAGE	FILE CHANGE NO.
										10-02-80		1	00014279	
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION			MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
0860	90446140	7	B	D	CD ASSY 9BKD PWR SPLY			A	REL	06-30-80	FA501A/B	10-02-80		
T/FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION		MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	90446139	9	1		PC PW BD 9BKD PWR SPLY		P						
002	01	51940599	7	1		PC TRANSFORMER FLYBACK 25KHZ		P						
003	01	51940598	9	1		PC TRANSFORMER FLYBACK 25KHZ		P						
004	01	51918111	9	2		PC XSTR NPN 400V 8A TO 220		P						
005	01	51681100	7	2		PC XSTR 2N5189 NPN SIL		P						
006	01	51003092	7	5		PC XSTR 2N2222 HI SPEED NPN SIL		P						
007	01	51714000	0	1		PC XSTR 2N2907 PNP SIL		P						
008	01	95637304	7	14		PC DIO IN4004 400PIV SIL 1.1V/1A		P						
009	01	95691500	3	6		PC RECT, 1N5615 F-R SIL 1 AMP		P						
010	01	77835261	7	2		PC POWER DIODE FAST RECOVER		P						
011	01	19171201	7	4		PC LIGHT IND		P						
012	01	15101110	3	2		PC DIO 1N753A 400MW ZEN VR 6.2V		P						
013	01	15165538	8	4		PC ISOLATOR OPTICALLY COUPLED		P						
014	01	51718400	8	2		PC IC 723C 334 VOLTAGE REGULATOR		P						
015	01	51007385	1	1		PC DIO IN4148 10MA MICRO SIL 30V		P						
016	01	15163403	7	1		PC IC LM317 ADJ +V RGLTR TO-220		P						
017	01	15151400	7	1		PC IC UA7900-5 356A NEG V RGLTR		P						
018	01	51918616	7	4		PC INDUCTOR		P						
019	01	51918617	5	1		PC INDUCTOR		P						
020	01	51918627	4	2		PC CAP ALUM ELECT 300UF 250V 15P		P						
021	01	24506816	8	2		PC CAP FXD MYL .33UF 10P 100VDC		P						

BUILD ARC 210

ASSEMBLY PARTS LIST

BUILD ARC 210										ASSEMBLY PARTS LIST		PRINT DATE	PAGE	FILE CHANGE NO.
										10-02-80		2	00014279	
DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION			MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE		
0860	90446140	7	B	D	CD ASSY 9BKD PWR SPLY			A	REL	06-30-80	FA501A/B	10-02-80		
T/FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION		MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
022	01	36180753	0	2		PC CAP FXD MYL .001MFD 600V		P						
023	01	51839147	9	2		PC CAP FXD CER .100UF 10P 100VDC		P						
024	01	95691133	3	4		PC CAP ELEC 270UF -10*100P 25VDC		P						
025	01	94842168	0	4		PC CAP FXD CER .0033UF GHV 1000V		P						
026	01	94397161	4	2		PC CAP AL ELECT 560UF OHM 75V		P						
027	01	94397162	2	2		PC CAP AL ELECT 5600UF OHM 12V		P						
028	01	51001120	8	3		PC CAP CER F-2 .01UF +80-20P 25V		P						
029	01	94842145	8	2		PC CAP FXD CER 500PF 20P 1K		P						
031	01	24504333	6	5		PC CAP FXD TANT 2.2UF 20P 35VDC		P						
033	01	94360236	7	1		PC RES FXD FM 237 OHM 1P 1/4W		P						
034	01	24507181	6	2		PC RES FXD COMP 5600 OHM 5P 1W		P						
035	01	95596503	3	2		PC RES FXD WW 4.3 OHM 10P 5WATT		P						
036	01	95596520	7	2		PC RES FXD WW 600 OHM 10P 5WATT		P						
037	01	65019518	3	6		PC RES CARB COMP 1/2W 1.3 OHMS		P						
038	01	95596511	6	1		PC RES FXD WW 43 OHM 10P 5WATT		P						
039	01	94402159	1	7		PC RES FM 1.3K OHM 1/4 W CARBON		P						
040	01	94402172	4	2		PC RES FM 4.7K OHM 1/4W CARBON		P						
041	01	94402148	4	2		PC RES FM 470 OHM 1/4W CARBON		P						
042	02	94402166	6	1		PC RES FM 2.7K OHM 1/4W CARBON		P						
043	01	94402220	1	2		PC RES FM 470K OHM 1/4W CARBON		P						
045	01	94402160	9	1		PC RES FM 1.5K OHM 1/4W CARBON		P						

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ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
10-02-80	3	00014279

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	90446140	7	B	D	CD ASSY 9BKD PWR SPLY	A	REL	06-30-80	FAS01A/B	10-02-80			
FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	TLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
046	01	94402110	4	2		PC RES FM 12 OHM 1/4W CARBON	P						
047	01	94360331	6	1		PC RES FXD FM 2100 OHM 1P 1/4W	P						
048	01	24504839	2	2		PC RES FXD COMP 100 OHM 5P 2WATT	P						
049	01	94402176	5	1		PC RES FM 6.8K OHM 1/4W CARBON	P						
050	01	94402167	4	4		PC RES FM 3K OHM 1/4W CARBON	P						
051	01	51918846	0	2		PC RES VAR CER 1K OHM 20P 1/2W	P						
052	01	94402155	9	1		PC RES FM 9100HM 1/4W CARBON	P						
053	01	94402165	8	1		PC RES FM 2.4K OHM 1/4W CARBON	P						
054	01	24500148	2	1		PC RES FXD COMP 240 OHM 5P 1/2W	P						
056	01	94402180	7	1		PC RES FM 10K OHM 1/4W CARBON	P						
057	01	51918101	0	2		PC HT/SK PLSTC SEMI FIG1 AND2	P						
058	01	94402179	9	1		PC RES FM 9.1K OHM 1/4W CARBON	P						
060	01	51003962	1		001	OZ PASTE, HEAT XFR CMPD NON-COND	E						
061	01	10127103	9	4		PC MSCR PAN PHL 4-40X.312 STL ZP	E						
062	01	10126400	0	4		PC WSHR, NO.4 EXT/T LK STL ZP	B						
063	01	10125103	1	4		PC NUT, HEX 4-40 MSCR STL ZP	B						
064	01	15163443	3	1		PC IC LM311N VOLT COMP HI IMP	P						
065	01	94402122	9	1		PC RES FM 390HM 1/4W CARBON	P						
066	01	94402132	8	2		PC RES FM 100 OHM 1/4W CARBON	P						
067	01	94360100	5	1		PC RES FXD FM 10 OHM 1P 1/4W	P						
068	01	15101107	9	1		PC DIO 1N750A 400MW ZEN VR 4.7V	P						

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ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
10-02-80	4	00014279

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	90446140	7	B	D	CD ASSY 9BKD PWR SPLY	A	REL	06-30-80	FAS01A/B	10-02-80			
FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	TLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
069	01	16006500	9	REF		PC FABRICATION SPECIFICATION	D						
070	01	94360262	3	1		PC RES FXD FM 442 OHM 1P 1/4W	P						
071	01	51903001	9	1		PC RES FXD WW .02 OHM 5P 2WATT	P						
072	01	95691135	8	2		PC CAP ELEC 470UF -10+100P 25VDC	P						
073	01	17720519	2	2		PC RES FXD COMP 0.2MEG .5W 5P	P						
075	01	90446138	1	REF		PC SCH DIAG 9BKD PWR SPLY	D						
076	01	82311900	3	2		PC INJECTOR-EJECTOR, NATURAL PCB	P						
077	01	93533118	1	2		PC ROLLPIN, .125D X .250L STL ZP	B						
078	01	24500131	8	2		PC RES FXD COMP 47 OHM 5P 1/2W	P						
079	01	94402144	3	2		PC RES FM 330 OHM 1/4W CARBON	P						
080	01	95691506	0	2		PC RECT, 1N5416 F-R SIL 3 AMP	P						
081	01	51719600	2	2		PC HEAT SINK ELCTR COMP FAN TOP	P						
082	01	51797418	4	1		FT TBG INS .059 DIA T/W	B						
083	01	94850716	5		050	OZ SEAL, 3M (4400)	E		14279	14279		8040	
083	02	62019900	0		050	OZ EPOXY, 2-PART 5-MINUTE CLEAR	E		14279	14279		8040	
084	01	12081500	6	2		PC DIODE POWER SCHOTTKY	P						
085	01	51839124	8	1		PC CAP FXD CER 1000PF 10P 100VDC	P						
086	01	51906601	3	2		PC HT SINK, SEMI FIG 3 ALUM BLK	P						
087	01	95596512	4	1		PC RES FXD WW 51 OHM 10P 5W	P						
088	01	94842184	7	2		PC CAP FXD CER .02UF +80-20P 1K	P						
089	01	24504343	5	1		PC CAP FXD TANT 15UF 20P 35VDCW	P						

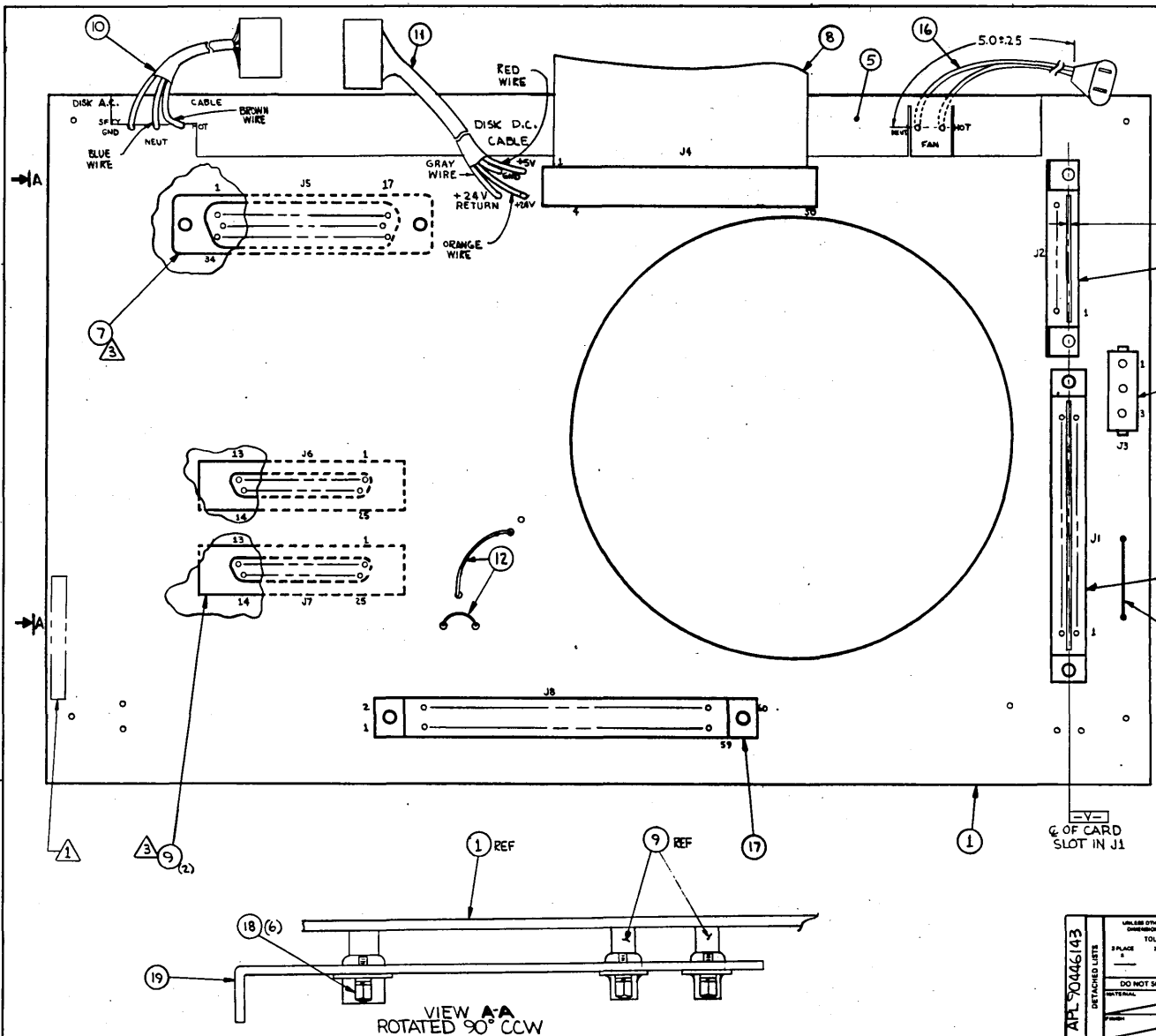
BUILD ARC 210

ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
10-02-80	5	00014279

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	90446140	7	B	D	CD ASSY 9BKD PWR SPLY	A	REL	06-30-80	FA501A/B	10-02-80			
TRIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
						0084 TOTAL LINES							

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SHEET REVISION STATUS		REVISION RECORD				
REV	ECO	DESCRIPTION	DRFT	DATE	CHKD	APP
01	50917	REVISED & REDRAWN PER ECO	WJH	4-8-80		
02	51063	ADD -Y- TOL	WJH	4-30-80		
03	51098	ADD FIN S	WJK	5-4-80		
04	51126	REVISED PER ECO	WJH	6-17-80		
05	51127	REVISED PER ECO	DS	6-18-80		
06	51144	ADD DIM ON PANEL	DS	6-25-80		
A	1425-82	RELEASED CLASS 2				
B	14203	PL CHANGE ONLY	DS	7-5-80		

- NOTES:
- 1. APPLY ASSY NO., REV LEVEL, LOC CODE, AND DATE CODE IN AREA SHOWN. MARK PER CDC SPEC 10121508; CHARACTER HEIGHT .12 (12 PT) COLOR WHITE.
 - 2. FIND NUMBERS, ELEMENT IDENTIFIERS, AND REFERENCE DESIGNATIONS ARE FOR REFERENCE ONLY AND DO NOT APPEAR ON PART.
 - 3. CONNECTORS J6 & J7 F/W 9, J5 F/W 7 TO BE MOUNTED ON SOLDER SIDE OF BOARD IN AREA SHOWN.

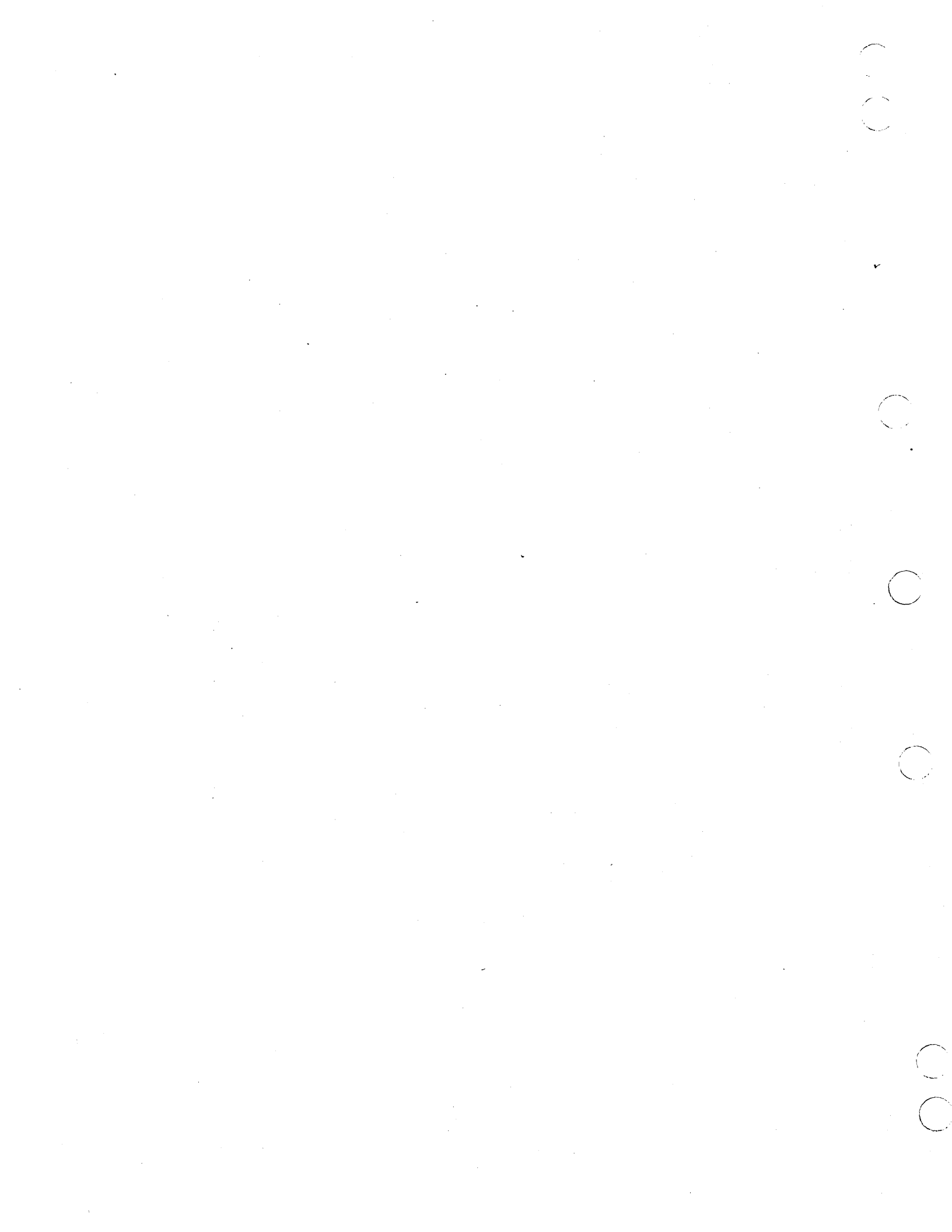
APL 90446143 DETACHED LIST	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		CON. PR. 1274		TITLE	
	TOLERANCES		PART NO. FA501A		P.C. CARD ASSEMBLY, 98MD (FDD CONTROLLER BACKPANEL)	
	SPACE	FINISH	DATE	DESIGNED BY	CODE IDENT	DRAWING NO.
	1/16	1/16	12-79	WJL/EMM	15920	90446143
DO NOT SCALE DRAWING		CHECKED BY	DATE	APPROVED	DRAWING NO.	
		DAK	1-80	WJL/EMM	90446143	
MATERIAL		ENGINEER	DATE	DATE	SCALE 2 / 1	
		P.C. W/KNUM	7-12-80	7-12-80	SHEET 1 OF 1	
		DATE	DATE	DATE		
		11-80	7-12-80	7-12-80		
		DATE	DATE	DATE		
		11-80	7-12-80	7-12-80		

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ASSEMBLY PARTS LIST

PRINT DATE	PAGE	FILE CHANGE NO.
08-04-80	1	00014203

DIV.	ASSEMBLY NUMBER	CD	REV.	DWG.	DESCRIPTION	MC	STATUS	STATUS DATE	ENG. RESP.	FILE DATE			
0860	90446142	1	B	D	CD ASSY 9BMD BACKPLANE	A	REL	07-16-80	FA501A	07-30-80			
FIND NO	LI	PART NUMBER	CD	QTY	U/M	PART DESCRIPTION	MC	YLD	ECO. NO. IN	ECO. NO. OUT	S/N	WK IN	WK OUT
001	01	90446142	3	1		PC PW BD 9BMD BACKPLANE	P						
002	01	51940558	3	1		PC CONN, PC BRD EDGE 8PIN UL	P						
003	01	51940578	1	1		PC CONN, PC BRD EDGE 30PIN	P						
004	01	51906101	4	1		PC CONN, 3 PIN PC MTD TIN FIG 1	P						
005	01	71493161	5	1		PC CHANNEL, EXTRUDED PLASTIC	P						
007	01	83465803	1	1		PC CONN, PLUG FEMALE	P			14203		8047	8047
007	02	10129640	8	1		PC NO DOC CONN PLUG	P		14203			8047	
008	01	61408892	0	1		PC CABLE SIGNAL PLATO FD	A						
009	01	83434704	9	2		PC CONN 25 PIN	P						
009	02	10129648	1	2		PC NO DOC CONN PLUG	P		14203			8047	8047
010	01	61408891	2	1		PC CABLE AC PLATO FD SUBSYSTEM	A						
011	01	61408890	4	1		PC CABLE DC PLATO FD SUBSYSTEM	A						
012	01	24501808	0		250	FT WIRE BUSS 20GA SOLID CU TP	W						
016	01	65642201	1	1		PC CORD, FAN 24.5IN 2CONDCT FEMAL	P						
017	01	51863202	1	1		PC CONN, BRD EDGE 60 PIN	P						
018	01	94288024	6	6		PC LKG DEVICE, CONN TYP 4 W/TYP3	P						
019	01	71493091	4	1		PC PLATE, I/O CONNECTOR	P						
						0017 TOTAL LINES							



No wire lists are contained in this manual. The following wire list document numbers are provided for reference purposes if needed.

<u>Title</u>	<u>Document Number</u>	
	<u>Preproduction Units</u>	<u>Production Units</u>
60-Hz AC Entry Panel Wiring	61408888	61409023
50-Hz AC Entry Panel Wiring	61408889	61409024
DC Cable Wiring (Backpanel)	61408890	61408890
AC Cable Wiring (Backpanel)	61408891	61408891
Signal Cable Wiring (Backpanel)	61408892	61408892

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COMMENT SHEET

MANUAL TITLE: PLATO[®] Flexible Disk Subsystem
Hardware Maintenance Manual

PUBLICATION NO.: 62949100

REVISION: D

NAME: _____

COMPANY: _____

STREET ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____

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