Bailey®
network 90®

Operator Interface Unit
Hardware Manual

Bailey® Seamless, Real-Time Process Management Solutions

WARNING notices as used in this manual apply to hazards or unsafe practices which could result in personal injury or death.

CAUTION notices apply to hazards or unsafe practices which could result in property damage.

NOTES highlight procedures and contain information which assist the operator in understanding the information contained in this manual.

WARNING

INSTRUCTION MANUALS

DO NOT INSTALL, MAINTAIN OR OPERATE THIS EQUIPMENT WITHOUT READING, UNDERSTANDING AND FOLLOWING THE PROPER **Bailey Controls** INSTRUCTIONS AND MANUALS, OTHERWISE INJURY OR DAMAGE MAY RESULT.

RADIO FREQUENCY INTERFERENCE

MOST ELECTRONIC EQUIPMENT IS INFLUENCED BY RADIO FREQUENCY INTERFERENCE (RFI). CAUTION SHOULD BE EXERCISED WITH REGARD TO THE USE OF PORTABLE COMMUNICATIONS EQUIPMENT IN THE AREA AROUND SUCH EQUIPMENT. PRUDENT PRACTICE DICTATES THAT SIGNS SHOULD BE POSTED IN THE VICINITY OF THE EQUIPMENT CAUTIONING AGAINST THE USE OF PORTABLE COMMUNICATIONS EQUIPMENT.

POSSIBLE PROCESS UPSETS

MAINTENANCE MUST BE PERFORMED ONLY BY QUALIFIED PERSONNEL AND ONLY AFTER SECURING EQUIPMENT CONTROLLED BY THIS PRODUCT. ADJUSTING OR REMOVING THIS PRODUCT WHILE IT IS IN THE SYSTEM MAY UPSET THE PROCESS BEING CONTROLLED. SOME PROCESS UPSETS MAY CAUSE INJURY OR DAMAGE.

AVERTISSEMENT

MANUELS D'OPERATION

NE PAS METTRE EN PLACE, REPARER OU FAIRE FONTIONNER CE MATERIEL SANS AVIOR LU, COMPRIS ET SUIVI LES INSTRUCTIONS REGLIMENT AIRES DE **Bailey Controls** TOUTE NEGLIGENCE A CET EGARD PURRAIT ETRE UNE CAUSE D'ACCIDENT OU DE DEFAILLANCE DU MATERIEL.

PERTURBATIONS DE LA FREQUENCE RADIOPHONIQUE

LA PLUPART DES EQUIPEMENTS ELECTRONIQUES SONT SINSIBLES AUX PERTURBATIONS DE LA FREQUENCE RADIO. DES PRECAUTIONS DEVRONT ETRE PRISES LORS DE L'UTILISATION DE MATERIEL DE COMMUNICATION PORTATIF. LA PRUDENCE EXIGE QUE LES PRECAUTIONS A PREDRE DANS CE CAS SOIENT SIGNALEES AUX ENDROITS VOULOUS DANS VOTRE USINE.

PERTES PROCEDE RENVERSEMENTS

L'ENTRETIEN DOIT ETRE ASSURE PAR UN PERSONNEL QUALIFIE ET EN CONSIDERATION DE L'ASPECT SECURITAIRE DES EQUIPEMENTS CONTROLES PAR CE PRODUIT. L'ADJUSTEMENT ET/OU L'EXTRACTION DE CE PRODUIT LORSQUI'IL EST INSERE A UN SYSTEME ACTIF PEUT OCCASIONINNER DES A-COUPS AU PROCEDE CONTROLE. SUR CERTAINS PROCEDES, CES A-COUPS PEUVENT EGALEMENT OCCASIONNER DES DOMMAGES OU BLESSURES.

Foreword

This manual provides installation, setup, and servicing information for the 500/1400/5000 Tag Operator Interface Units (NOIU01/02/03) by trained personnel. Additional installation information for Console Array Assembly units and printers are also provided.

Related hardware and printer information can be found in the following Bailey manuals:

IE93-901-1 OIU Operation/Configuration Manual
IE93-900-5 NETWORK 90 Site Planning, Preparation and Equipment Installation Instructions
IE93-911 Termination Unit Manual (and Cable Supplement)
IE93-908-1 Loop Interface Module (NLIM01/02
IE93-905-2 Enhanced Computer Interface Unit (NCIU02/03)
IE93-905-2 Enhanced CIU Programmer's Reference Manual

The information contained herein was accurate at the time of its publication. However, Bailey Controls (Bailey) reserves the right to revise the design of the OIU Hardware without prior notification.

If this manual does not address any difficulties met in the installation, setup, or servicing of the OIU Hardware, notify the nearest Bailey service center or sales office and request assistance. NOTE: Service charges may accompany any services provided.

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SAFETY SUMMARY

General Warnings

System Maintenance

System maintenance must be performed by qualified personnel and only after securing equipment controlled by the circuit. Altering or removing components from an active circuit may upset the process being controlled.

Electrical Shock Hazard During Maintenance

Disconnect power or take precautions to ensure that contact with energized parts is avoided when servicing.

Equipment Environment

All components, whether in transportation, operation, or storage must be in a noncorrosive environment.

L'entretien du Systeme

L'entretien du systeme doit etre effective par des personnes competentes et uniquement a partir du moment ou les elements controles par le circuit ont ete isoles. Le fait d'enlever ou d'alterer les composants d'un circuit sous tension peut perturber le processus controle.

Risques de chocs electriques lors de l'entretien

S'assurer de debrancher l'alimentation ou de prendre les precautions necessaires a eviter tout contact avec des composantes sous tension lors de l'entretien.

Environnment de l'equipment

Ne pas soumettre les composantes a une atmosphere corrosive lors du transport, de l'entreposage ou de l'utilisation.

</div>

SAFETY SUMMARY (continued)

Specific Warnings

CAUTION

Although a DB-25 connector is used, damage will occur if connected to an RS-232 device. On the NOIU01 this connector joins in the rear of the unit. On the NOIU02 the connector joins in the front just below the diskette drive (pg. 4).

Do not operate the OIU with doors or covers opened or removed. Figures 2.3 and 2.4 are only for illustration (pg. 10).

Do not insert or remove circuit cards with the power on (pg. 17).

These modules contain metal oxide semiconductor (MOS) devices. MOS devices require attention during shipping and handling to avoid damage from static discharge and improper grounding. Bailey Controls Ships the card in a special anti-static bag. Do NOT remove the card from its bag until ready to put into service. Save the bag for future use. Ground the bag before opening. NEVER touch the circuitry when handling the card (pg. 18).

Due to RS-232C published distance limitations, NOIU03 systems are commonly (and NOIU01 less commonly) furnished with wire or fiber-optic short-haul modems. However, opto-isolated, wired short-haul modems with 38.4 Kbaud capability are frequently required when console and driver safety grounds and chassis are not directly connected to the same junction point. Intermittent data errors can result if this practice is not followed (pg. 18).

Do NOT try to remove a floppy diskette from its drive when the diskette drive LED is lit. While the LED is lit the diskette operates, either storing or transmitting data. Removing the diskette from its drive while the LED is lit interrupts diskette operation. Data going onto the diskette can be lost or damaged. On later style diskette drives, a module reset is required to release the door if the system crashes with LED still illuminated (pg. 39).

Figures 7.3 through 7.9 detail only the MINIMUM recommended clearances for each component. Local building, electrical, and/or fire safety codes may require additional clearances (pg. 45).

Disconnect from electrical supply before attempting repair or replacement (pg. 66).

WARNING

Exercise extreme caution when performing the following checks. Circuit must be energized while performing checks (pg. 21).

SAFETY SUMMARY (continued)

ATTENTION

Malgre qu'une fiche de type DB-25 soit utilisee ici, ne pas y relier un peripherique de type RS-232 sous peine d'endommager le circuit. Dans le cas d'un NOIU01, cette fiche se trouve a l'arriere de l'appareil, tandis que dans le cas d'un NOIU02, elle se trouve a l'avant, au bas de l'unite de disque souple (pg. 4).

Ne pas faire fonctionner le OIU lorsque les portes ou les panneaux d'acces sont ouverts ou enleves. Le OIU n'est represente a la figure 2.3 et 2.4 qu'a titre d'illustration seulement (pg. 10).

Ne pas inserer ou retirer les cartes de circuits imprimes sans interrompre l'alimentation (pg. 17).

Ces modules sont munis de dispositifs MOS. Les dispositifs MOS sont susciptibles d'etre endommages par de decharges statiques et une mauvaise mise a la terre; elles necessitent donc des precautions particulieres lors de l'expedition et de la manutention. Les cartes de circuits imprimes sont expediees par Controle Bailey dans des sacs speciaux anti-statiques. Ne retirer la carte de son sac qu'au moment l'installation. Conserver le sac pour usage ulterieur. Effectuer la mise a la terre du sac avant d'ouvrir celui-ci. Ne JAMAIS toucher directement aux circuits de la carte (pg. 18).

A cause des restrictions quant a la distance maximale de communication des circuits RS-232C, de modems a courte distance a fils ou a fibres optiques sont frequemment fournis avec les systemes NOIU03 (moins frequemment dans la cas des systems NOIU01). Lorsque des modems de 38.4 Kbaud a courte distance a fils sont utilises et que les mises a la terre de securite du pupitre et de l'armoire de commande ne sont pas reliees a un point commun, les modems doivent etre dotes de coupleurs optiques. Sans cette isolation, des erreurs de transmission pourraient survenir (pg. 18).

NE PAS tenter de retirer le disque souple de l'unite de disque lorsque le temoin a DEL est allume. Ce temoin indique que l'unite enregistre ou lit des donnees sur le disque souple. L'interruption de ces operations par le retrait du disque peut provoquer la perte ou l'endommagement des donnees. Dans le cas des modeles recents d'unites de disques, un verrou epeche l'ouverture de la porte de l'unite lors de son fonctionnement. Dans l'eventualite d'une defaillance du systeme pendant que le temoin est encore illumine, actionner l'interrupteur RESET pour degager le disque (pg. 39).

Les figures 7.3 a 7.9 n'illustrent que l'lespace MINIMUM requis entre chaque element. Les codes du batiment, de l'electricite, et/ou de prevention des incendies peuvent dicter des espaces plus importaants (pg. 45)

Interrompe l'alimentation avant de proceder a la reparation ou au remplacement (pg. 66).

AVERTISSEMENT

Faire preuve d'une grande vigilance en effectuant les tests suivants. Le circuit doit etre sous tension au moment des tests (pg. 21).

Section I
Introduction

Overview — Network 90/Operator Interface Unit

Figure 1.1 shows an example of a NETWORK 90 plant control system. The three major system elements are the Process Control Units (PCUs), the Plant Communication Loop (PCL), Management Command System (MCS) and the Operator Interface Units (OIUs).

The PCU equipment interfaces to the process, executing control algorithms. The process interface uses conventional signal wiring (e.g., 1-5 V dc, 4-20 mA, and contact closure). Modues supporting both sequential and modulating control are available. The microprocessor-based modules select control and signal processing algorithms from a library and link them together for execution. Each module contains a complete library of algorithms to support its system function, as well as nonvolatile memory to store its control scheme.

A PCU can be a stand-alone control system using panelboard devices for operator interface and a Configuration and Tuning Module (CTM) for building/maintaining control schemes. The CTM lets the user build his control scheme in the PCU modules and modify it as necessary. Each module stores the selected control scheme in its on-board, nonvolatile memory. PCU modules can also communicate with each other to share control information.

The Plant Communication Loop connects plant system PCUs and OIUs enabling communication between these elements for the following.

- sharing control variables among modules of different PCUs.

- monitoring PCU control scheme operations with and OIU or MCS
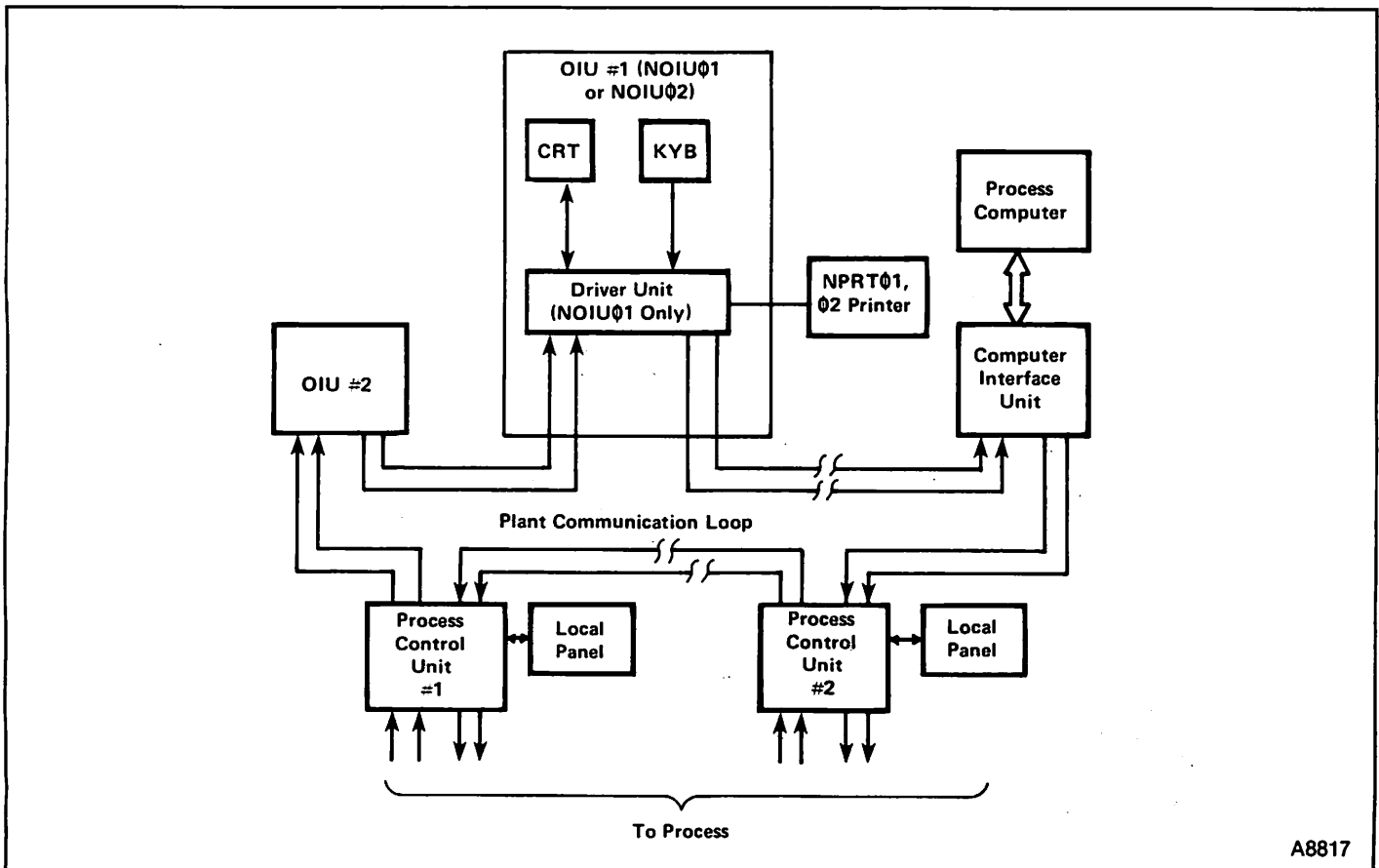
FIGURE 1.1 — NETWORK 90 Plant Control System Major Elements

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- controlling plant process from an OIU or MCS

- configuring/maintaining PCU control schemes from an OIU or MCS

- monitoring PCU equipment status from an OIU or MCS

The OIU enables access to the NETWORK 90 PCUs for process control, control engineering, and system troubleshooting. The operator uses the OIU to monitor the control schemes in any PCU, taking control action as necessary. The OIU displays control variables and alarm status to the operator via its color graphic CRT screen.

The plant engineer uses the OIU to configure and to maintain control schemes throughout the plant loop. The OIU can read and display the control configuration of any module in a PCU. The engineer can modify the control configuration having the OIU write it back to the module. The engineer can also use the OIU to read a module configuration, saving it onto diskette, or he can read a configuration previously saved on diskette, writing it to a module.

OIU Hardware

The OIU hardware consists of either the NOIU01, NOIU02, or NOIU03 Operator Interface Units, and any optional Printers (Figures 1.2, 1.3, 1.4).

The NOIU01 consists of a Driver Cabinet and a CRT/Keyboard Console. The NOIU02 integrates the NOIU01 Driver Cabinet and CRT/Keyboard Console into a single assembly but performs the same functions as the NOIU01.

The NOIU03 consists of a Driver Cabinet and a stand-up CRT/Keyboard console designed for process (NEMA 4) environments.

The driver cabinet is the main component of the NOIU01/03. The Driver executes all programs controlling OIU operation. The Driver communicates with the user through the CRT and printer. The Driver accesses NETWORK 90 PCU's through the Plant Communication Loop. The Driver enables all interaction between the OIU user and the NETWORK 90 Plant Communication Loop. The NOIU02 also performs the same functions, but has integral CRT/Keyboard and external printer.
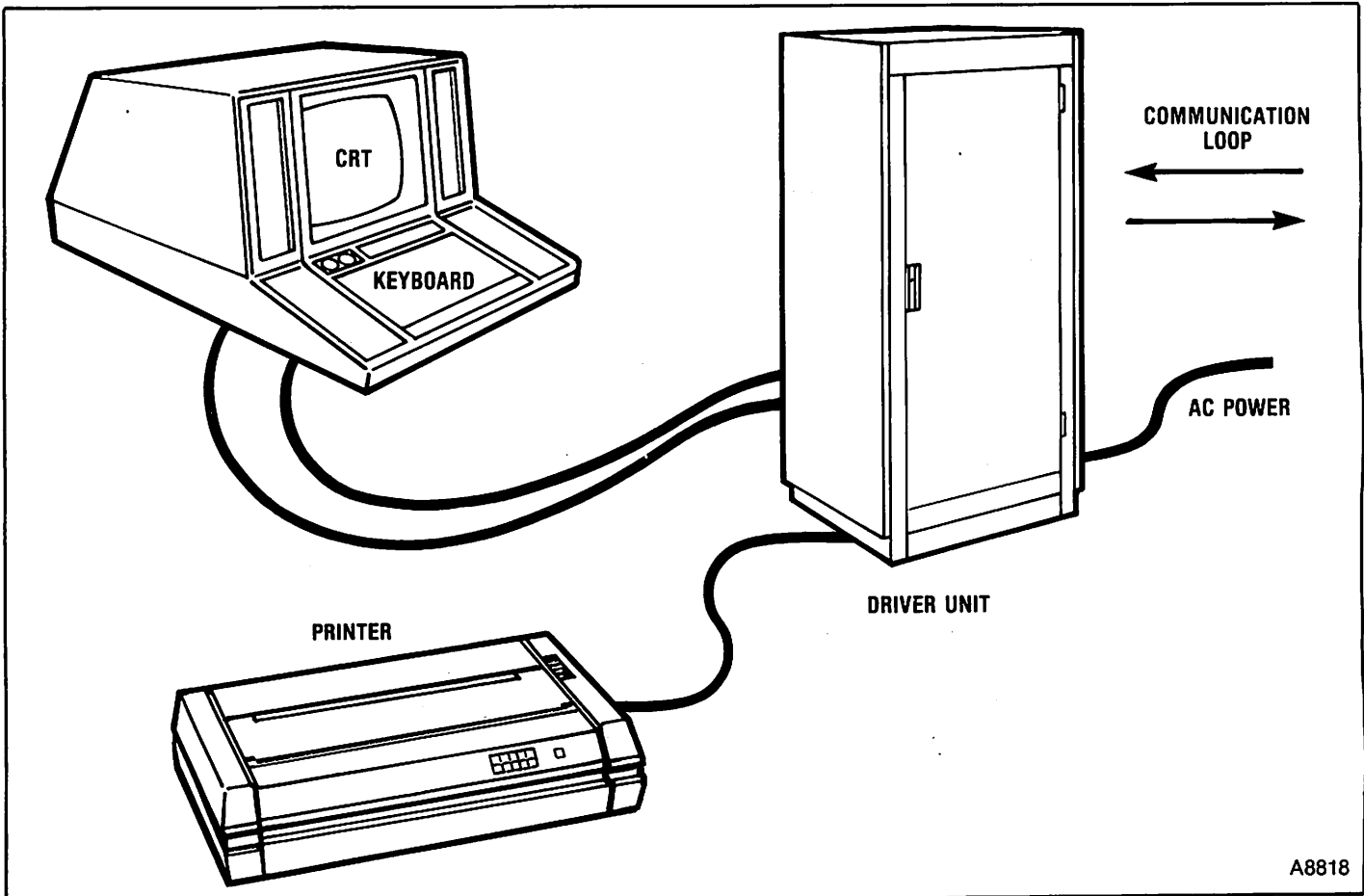
FIGURE 1.2 — NOIU01 Hardware
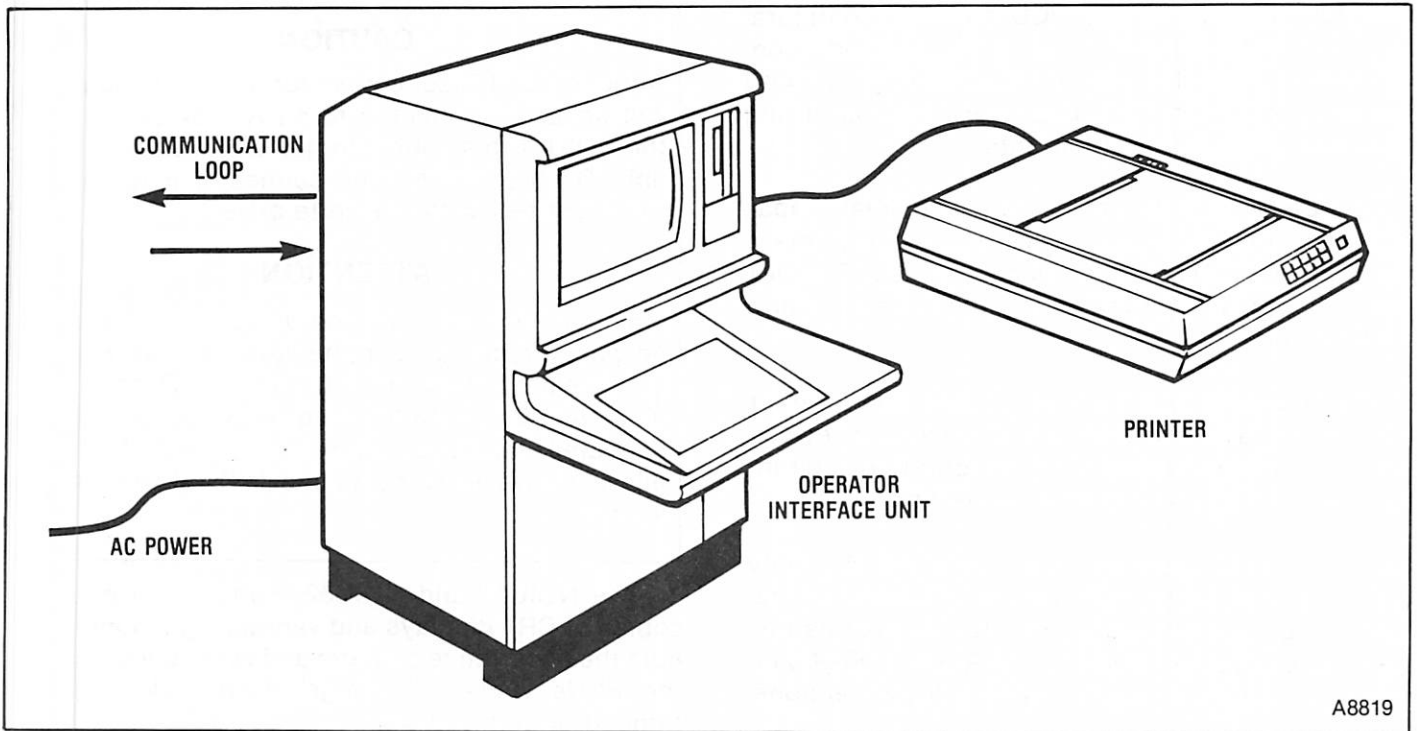
FIGURE 1.3 — NOIU02 Hardware
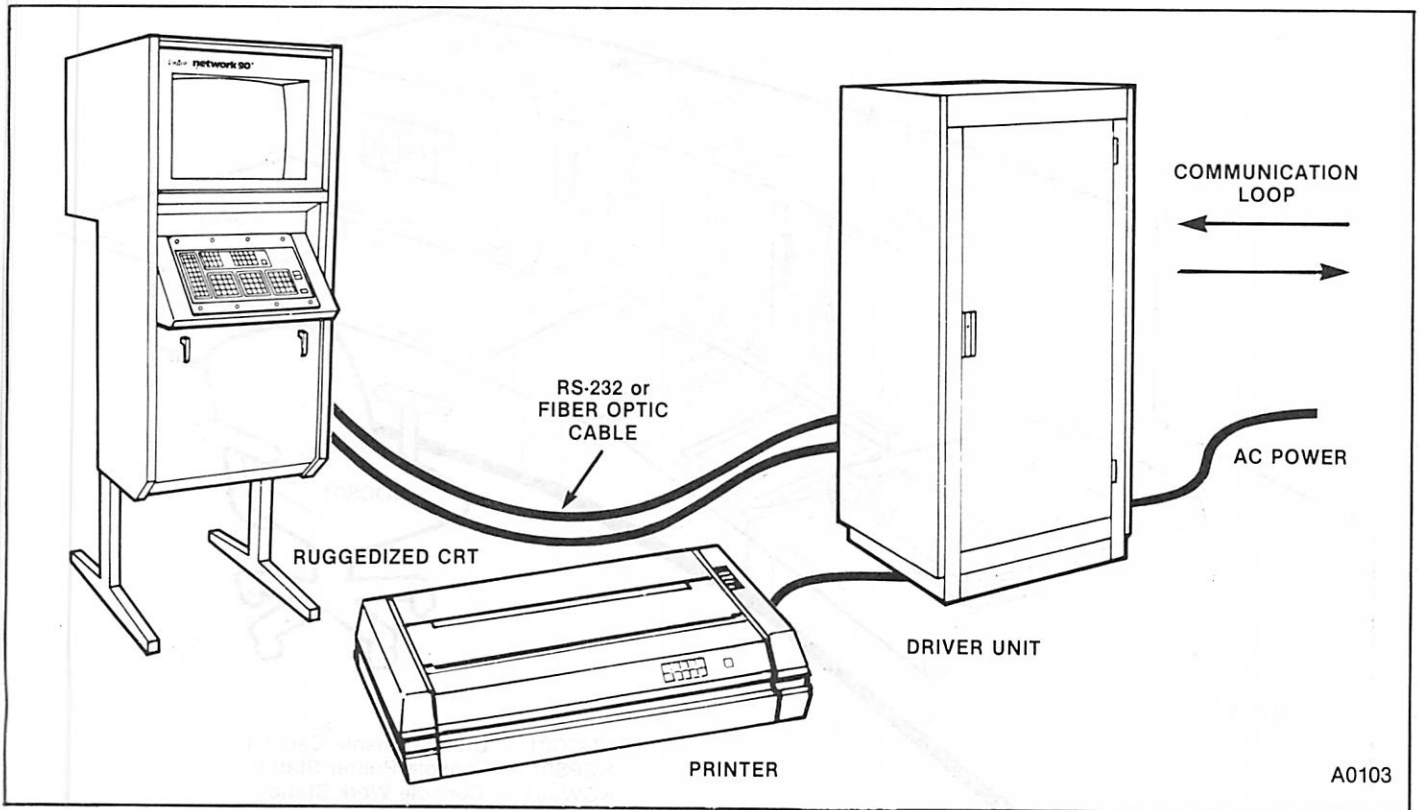
FIGURE 1.4 — NOIU03 Hardware

A disk system consisting of a 256k byte diskette (floppy) drive, and a 10M byte Winchester fixed rigid-disk drive is part of 500 and 1400 tag versions of the NOIU01/03 Driver Cabinet and the NOIU02. (5000 tag OIU hardware uses a 20M byte Winchester.) The diskette drive uses removable floppy diskettes for

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such functions as saving PCU and OIU configurations. The Winchester drive uses a fixed (non-removable) rigid-disk for online storage of OIU operating software, historical trend and archiving data, and OIU configuration data.

The CRT provides color graphic display capability on a 19-inch screen. The CRT is the primary means for presenting information to the user. The OIU uses a variety of displays to accomplish its full range of functions.

The Keyboard lets the user access and interact with OIU displays. The Keyboard also has two keylock switches that can restrict OIU configuration and tuning capabilities to authorized personnel.

NOTE: All OIU versions also have an Auxiliary Keyboard used for graphic editing. (The OIU Operation/Configuration Manual (IE93-901-1) explains this keyboard and its use in detail.) The Auxiliary Keyboard console connects to the console in all OIU versions.

The NOIU01 and NOIU02 Printers can produce copies of CRT displays and various logs. Some logs note the occurrence of alarm and event conditions in the PCUs while other logs show collections of trended or archived data.

FIGURE 1.5 — Typical Console Array Assembly

Section II
Description

Overview — Operator Interface Unit

OIU hardware conducts all interaction between the OIU user and the NETWORK 90 PCUs. OIU hardware consists of the following devices (See Figure 2.1):

"Console" Functions

Operator's keyboard
Color graphic terminal

"Driver Cabinet" Functions

Four Multi-Function Processor Module (MFPM) Boards
Three I/O Expander Module (IOXM) boards (4 for 5000 tag units)
Loop Interface Module (LIM)
Processor Interface Module (PIM), (BTM for 5000 tag units)
Loop Storage Module (NLSM02 - 5000 tag use only)
"Winchester" fixed rigid-disk drive
"Floppy" diskette drive
Disk Controller Board
DC Power supplies and cooling system
Termination Units (Plant Loop, Printer)
Racks

NOTE: The preceding listings show the standard hardware. Options can add additional pairs of boards (such as OIU BASIC programming and/or auxiliary printer).

In the NOIU01/03, all hardware except the CRT/Keyboard consle is contained inside the Driver Unit. The keyboard, associated power supply, and color graphic terminal form the CRT/Keyboard console.

Each of the MFPM/IOXM pairs is identical in physical hardware. Each MFPM is a TI 9900-based microcomputer containing 32K bytes of Electrically Programmable Read Only Memory (EPROM) and a single serial I/O diagnostic port. Each MFPM also has identical file utilities, diagnostics, and monitor firmware resident in its EPROM in addition to the hardware.

NOTE: The 500/1400 OIU contains an NMFP01 with 128 K byte of Random Access Memory (RAM), while the 5000 tag unit contains and NMFP02 with 512 K byte of RAM. Some recent 500/1400 tag OIUs contain an NMFP02.

An IOXM does not contain a processor but connects to its associated MFPM via a ribbon cable. Each IOXM provides both serial and parallel I/O ports, form-C dry relay contacts, and a Watchdog Timer.

The MFPM/IOXM pairs have very distinct functions when configured into an OIU. The module dipswitch configuration and the software operating in each MFPM defines the functional differences for each board pair.

The MAIN MFPM/IOXM pair operates the main OIU application software including:

- display generation
- display updating
- data collection
- data base updating
- alarm handling
- keyboard servicing
- process control
- tuning interfacing

The OIU operator's keyboard connects to the IOXM board of the Main MFPM/IOXM pair. This module pair also provides the four alarm contacts and the crystal-controlled oscillator that drives the OIU main real-time clock.

The DataBase MFPM/IOXM pair (DBP) is a data manager providing interface between the NCIU02 modules and the OIU. The DBP MFPM changes the form of point table data extracted from the NCIU02 LSM02 module to a form emulating OIU Processor Interface Module (PIM) semaphore. This MFPM also improves message throughput by maintaining a buffer of the most frequently or recently used information.

NOTE: The PIM is used on 1400 and 500-tag OIUs. The NCIU02 arrangements replaces it on all 5000-tag OIUs.

FIGURE 2.1 — OIU Hardware Functional Interface

NOTE: (1) - For NOIU02, these are one assembly

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PLANT COMMUNICATION LOOP

SERIAL DATA

NTPL01 PLANT LOOP TU

LIM

PIM

PARALLEL BUS

MFPM Disk | MFPM LP/CRT | MFPM Main

IOXM Disk | IOXM LP/CRT | IOXM Main

DISK CONTROLLER

PRINTER TU

DISKETTE DRIVE

FIXED DISK DRIVE

FROM ALARM CONTACTS

PRINTER

CRT

KEYBOARD

NOIU01/03 CRT/KEYBOARD CONSOLE

NOIU01/03 UNIT DRIVER

(1)
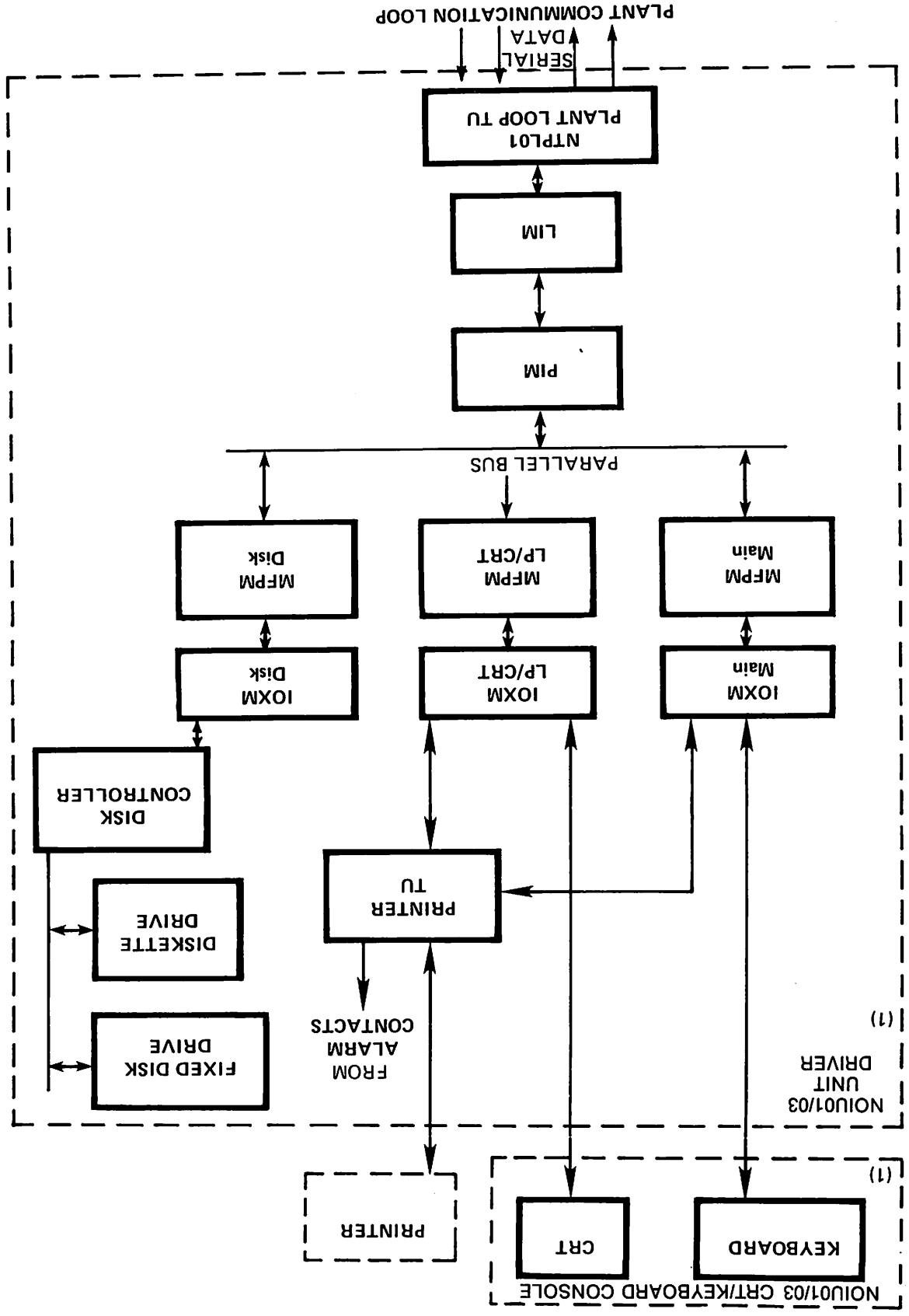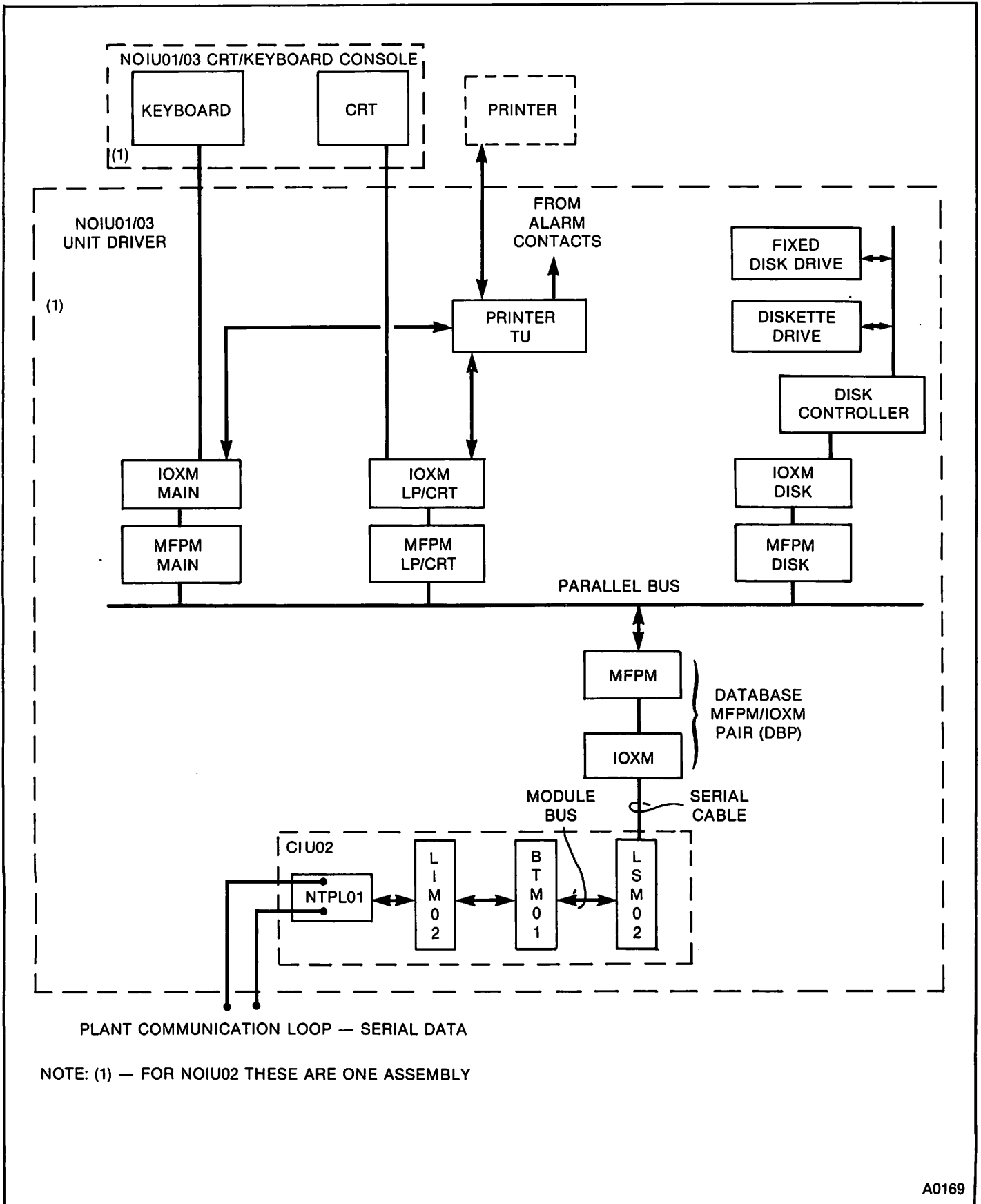
FIGURE 2.2 — OIU Hardware Functional Interface (5000 tag)

NOTE: (1) — FOR NOIU02 THESE ARE ONE ASSEMBLY

PLANT COMMUNICATION LOOP — SERIAL DATA

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The DBP IOXM serves as a serial port for the RS-232C connection of this board pair with the NCIU02 modules.

The Disk MFPM/IOXM pair (associated with the OIU disk hardware) serves along with the separate Disk Controller to implement the necessary I/O operations for the Winchester fixed rigid-disk and floppy diskette drives. The Disk board pair operates OIU file management software enabling programs running on the Main MFPM to access files on both the Winchester and floppy disks.

The OIU File Manager Utilities program enables the following functions in addition to those above:

- initializing both disks
- creating files
- deleting files
- saving & restoring for either disk
- transferring data from one disk to the other.

This software also "caches" certain highly accessed RAM files on the MFPM. Caching a file refers to the MFPM maintaining a copy of that file in its RAM. This provides fast access to the data in that file. Whenever these files are updated they are also written to the disk.

The Disk IOXM provides the parallel interface for communicating with the Disk Controller.

The LP/CRT MFPM/IOXM pair provides communication with the Color Graphic Terminal and the Printer. The LP/CRT MFPM operates the software that provides both Terminal and Printer output buffering. This software also performs the Terminal screen read and information formatting for Printer output for the OIU screen copy function.

This board pair handles all direct communication with the Color Graphic Terminal and Printer (such as interrupt handling, handshaking and so forth). The LP/CRT MFPM/IOXM provides a serial port to the Terminal as well as the necessary parallel port for communicating with the Printer.

The second printer option utilizes an additional MFPM/IOXM pair and printer termination. Screen data is accessed from the first LP/CRT pair allowing dedication of one printer for logging functions.

The 5000-tag OIU has a NCIU02 to increase point table size compared to the PIM. The NCIU02 contains the modules necessary to interface between the Plant Communication Loop and the OIU DBP MFPM/IOXM board pair. These modules are:

- Loop Interface Module (LIM)

- Bus Transfer Module (BTM)

- Loop Storage Module (LSM02)

The OIU LIM consists of an SDLC half-board and a processor board. The processor is joined to the BTM by a Direct Memory Access (DMA) ribbon cable. The LIM and BTM thus form a communication link between the PCL and the LSM02. The BTM is a single printed circuit board. The LSM02 consists of two printed boards: the CPU and the MEM (memory) boards. The 68000 microprocessor of the CPU board actually controls the LSM02. The MEM board contains battery-backed Random Access Memory, (RAM), and on-board ROM. The LSM02 is the interface between messages from the PCL and the OIU via a special serial cable to the DBP IOXM board.

The LIM transmits outgoing messages to the PCU. The LIM places all converted incoming messages directly into the BTM board. In addition, the LIM monitors PCU status and retries failed messages.

The BTM transfers the incoming data from the LIM via its module bus connection to the LSM02 while placing outgoing messages in an output buffer. (The LIM transmits such messages to the PCL.) The BTM also monitors the status of the LIM and LSM02, as well as exchanging information with the LIM.

The LSM02 captures incoming module bus data from the BTM, sending it via the serial port to the DBP MFPM/IOXM board pair. The LSM02 also sends outgoing messages from the OIU via the module bus to the BTM.

Plant Communication Loop data can include:

- exception reports
- tuning and control requests
- configuration information.

The operating software in the NCIU02 controls the communication over these interface modules, providing data buffering between the OIU and the PCL. To do this, the software supporting the NCIU02 interfacing operations uses its module microprocessors and their associated RAM and ROM.

Physical Description — Operator Interface Unit

An NOIU01 consists of a Driver cabinet and a CRT/Keyboard console (Figure 1.2). The NOIU02 consists of a single unit, integrating the NOIU01 Driver unit and CRT/Keyboard console functions into one assembly (Figure 1.3). The NOIU03 is an NOIU01 with CRT and Keyboard in an air conditioned NEMA-4 enclosure bringing OIU functions to a standing plant operator (Figure 1.4). All OIUs may also include an optional NPRT02 or NPRT03 (color) printer.

NOIU01/03 Driver Cabinet Description

The NOIU01/03 Driver Cabinet dimensions are 51 inches high x 24 inches wide x 26 inches deep. Front and rear door locks are keyed alike. The doors have slotted sections to aid the front intake and rear exhaust of the internal cabinet cooling system. The cabinet has bottom access openings for interconnecting cabling. Cabinet entry cables normally include four or six data cables and an AC power input cord. Most of the internal cabinet subassemblies mount on

standard 19-inch rails. Figure 2.3 identifies the NOIU01/03 Driver Cabinet subassemblies and locations.

NOIU01 Console Description

The NOIU01 CRT/Keyboard console dimensions are 19 inches high x 26 inches wide x 37 inches deep. This console is an integrated enclosure designed for tabletop use. The console contains a Color Graphic Terminal, a Keyboard, and associated electronics. The Keyboard also has two keylocks that prevent/permit system configuration/tuning changes from the OIU. Interface cabling associated with the CRT/Keyboard console includes two RS232 cables, one for the CRT and one for the Keyboard, as well as an AC power cord.

The NOIU02 dimensions are 53 inches high x 28 inches wide x 46 inches deep. The NOIU02 also has front and rear swing-out doors with individual locks keyed alike. The rear door and the keyboard undersurface have slotted sections to aid air intake and exhaust for the internal cooling system. The NOIU02
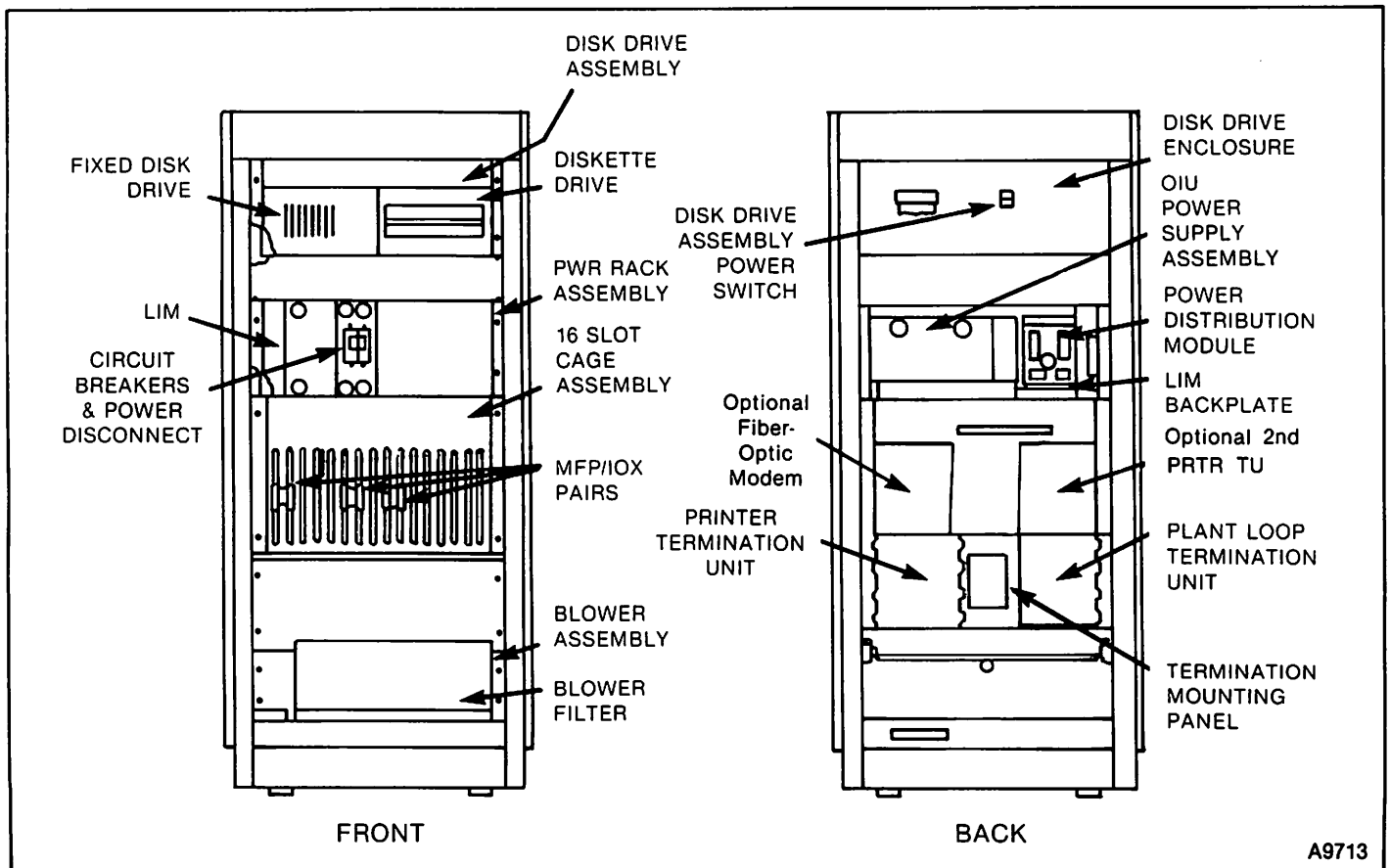
FIGURE 2.3 — NOIU01/03 Driver Cabinet Subassemblies

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FIGURE 2.4 — NOIU02 Cabinet Subassemblies

FRONT view labels:
DISKETTE DRIVE
BRIGHTNESS CONTROL
CRT
FIXED DISK DRIVE ASSEMBLY (IN FRONT OF POWER SUPPLY)
KEYBOARD
KEYBOARD COUNTER
RESET/LOAD SWITCH
PLANT LOOP TERMINATION UNIT
LIM
POWER RACK ASSEMBLY
CIRCUIT BREAKERS AND POWER DISCONNECT
PRINTER TERMINATION UNIT
MFP/IOX PAIRS
16 SLOT CARD CAGE ASSEMBLY
FRONT

BACK view labels:
CRT ASSEMBLY FAN (IN FRONT OF FIXED DISK DRIVE)
DISK POWER SUPPLY ASSEMBLY
OIU POWER SUPPLY ASSEMBLY
POWER DISTRIBUTION MODULE
LIM BACKPLATE
Optional 2nd Printer TU
BLOWER ASSEMBLY
BLOWER FILTER
BACK

A9714

FIGURE 2.4 — NOIU02 Cabinet Subassemblies

also has a stabilizer that must attach to its front when the unit is not secured to the floor (Figure 7.3). The unit has two cable entry areas: a 2.5-inch diameter entry at its bottom right rear and one at the top right rear. Figure 2.4 identifies the NOIU02 subassemblies and locations.

NOIU01/03 Driver Cabinet and NOIU02 Subassembly Views

Figure 2.3 shows front and rear views of the NOIU01/03 Driver Cabinet with its doors removed. Figure 2.4 shows front and rear views of the NOIU02 Unit with its doors removed. The figures show the physical relationship between the subassemblies of each Unit. Figures 7.1, 7.2, and 7.3 show the associated details for installation, air flow, and interface of the NOIU01/03 Driver Cabinet, NIOU01 and NOIU03 CRT/Keyboard Consoles, and NOIU02.

```
CAUTION

Do not operate the OIU with doors or covers
opened or removed. Figures 2.3 and 2.4 are only
for illustration.

ATTENTION

Ne pas faire fonctionner le OIU lorsque les portes
ou les panneaux d'acces sont ouverts ou enleves.
Le OIU n'est represente a la Figure 2.3 et 2.4 qu'a
titre d'illustration seulement.
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NOIU03 Console Description

In the NOIU03 Console, the previously described NOIU01 Console electronics are supplemented by an air conditioner and optional fiber optic modems. These link the CRT and keyboard to the Driver cabinet which is in an equipment room environment.

NPRT01/02/03 Description

The NPRT01 consists of an NPRT02 printer plus stand. The NPRT02 Printer dimensions are 7 inches high x 25 inches wide x 31 inches deep with paper basket installed. NPRT02 specifications appear in Figure 7.4. The NPRT03 is the color version of this printer and requires a "Genicom 3404" four color process ribbon for use with the OIU. Refer to the Genicom User's Manual for a detailed description of these printers.

NOIU01/03 Driver Cabinet Disk Drive Assembly/ NOIU02 Disk System

The NOIU01/03 Disk Drive Assembly (Figure 2.3 and 7.16) contains the OIU disk system elements. This assembly contains the following components:

- Disk Drive Enclosure (including the fan and the +5 V dc, —5 V dc, and +24 V dc disk power supply)

- Floppy diskette drive

- Winchester fixed rigid-disk drive

- Disk controller.

The NOIU02 contains the same components as NOIU01/03 but front mounts the diskette drive. The NOIU02 fixed disk drive assembly contains the Winchester fixed rigid-disk drive and the disk controller. Figure 2.4 shows the location of this assembly and the other components of the NOIU02 disk system.

Power Rack Assembly

The Power Rack Assembly (Figures 2.3 and 2.4) contains the OIU Power Supply Assembly, Power Distribution Module, and Connector Plate Assembly for the plant interface modules.

The OIU Logic Power Supply Assembly (Figure 7.20) consists of the +5 V and ±12 V dc power supply.

The Power Distribution Module (Figure 7.20) includes the circuit breaker, varistor, indicator, outlet, and fuse elements of the cabinet power distribution circuit. A module front panel indicator signals live AC at the module rear panel J1 BLOWER and J2 UTILITY outlets. Rear panel fuse F1 is overload protection for the J2 UTILITY outlet circuit. The Driver Unit 120 V ac power cord interfaces to terminal block TB1. TB2 provides 120 V ac power to the Logic and Disk Power Supplies. An integral ±15 V dc supply provides power via TB3 to the plant interface modules.

NCIU02 Unit — Loop Interface Module (LIM)

The LIM is common to all data users communicating over the Plant Communication Loop (PCL). It enables the OIU to receive and transmit information. The LIM has plant loop functions of a receiver, transmitter, and two buffers. The buffers provide message storage in case the module is busy when new messages arrive. The OIU LIM handles incoming OIU information transfers by working with the Bus Transfer Module (BTM) and Loop Storage Module (LSM02).

Outgoing OIU information transfers (LSM02 to BTM/LIM to Plant Communication Loop) occur on an interrupt basis. The modules send out information only when a significant data change occurs and not as part of OIU module polling. Specific OIU loop interface functions including Startup, Message Format, Message Transmission, Security, Message Reception and Interrupts are identical to those of the NETWORK 90 Process Control Unit LIM. Product Instruction IE93-908-1 describes the LIM functions in greater detail.

The OIU LIM is the same module as that used in the NETWORK 90 System PCU. The LIM uses a 4 slot backplane in the Module/Power Rack Assembly. The LIM has a cable connection to the Plant Loop Termination Unit (NTPL01) and connects to the BTM via a Direct Memory Access (DMA) ribbon cable.

Human interfaces include two 8-pole dipswitches and 8 edge mounted LEDs. The LED function is dipswitch selectable. The dipswitch functions are:

S1 — sets memory for LED readout
S2 — sets node addresses

The Installation and Start-up Section of this manual (Section III) further describes the settings of dipswitches and the positioning of jumpers on the LIM.

NCIU02 Unit — Bus Transfer Module (BTM)

The BTM occupies a slot adjacent to the LIM and is connected to it by the DMA ribbon cable. The BTM consists of a microprocessor module bus interface, a direct memory access controller and associated circuits. It provides functional input and output buffers facilitating message transfer to/from the Plant Communication Loop and LSM02. The BTM transfers incoming messages from the Plant Communication Loop through the LIM to the module bus. The Loop Storage Module (LSM02) captures the information from the Module bus, transferring it to the DBP MFPM/IOXM board pair. The BTM places outgoing messages in its output buffer, enabling the LIM to transfer them to the Plant Communication Loop. The BTM also monitors LIM and LSM02 status.

Components mounted on the PC board include one five-pole dipswitch (S1) for off-line testing and a module status LED. The LED is on the module front

plate and shows the current BTM operating state (Green = satisfactory and red = error/reset).

The S1 dipswitch provides a combination of off-line tests. The P1 edge connector at the rear edge of the BTM board provides power and Module Bus connections. The Installation/Start-up section of this manual describes the SW1 locations and settings.

NCIU02 Unit — The Loop Storage Module (LSM02)

The LSM02 interfaces with the DBP MFPM module by the special serial interface cable and with the BTM via the Module Bus. The LSM02 is a 68000 based module with two PC boards (CPU and MEM) connected to each other via ribbon cable and attaching to a double width faceplate.

The LSM02 sends incoming messages from the Plant Communication Loop to the DBP MFPM/IOXM board pair of the OIU. The LSM02 also sends outgoing OIU information to the Plant Communication Loop via the BTM and module bus.

LSM02 human interfaces include a Status LED at the top left side of the module faceplate, a column of eight LEDs on the left, and a column of two LEDs on the right side of the faceplate. The left side LEDs indicate CPU board operating/error code information while the right side LEDs categorize errors on the MEM Board.

Processor Interface Module (PIM)
(used on existing 500/1400 tag units)

The PIM interfaces with the main MFPM module by the 16 slot card cage bus, and with the LIM by a ribbon cable. It provides system initialization by establishing lines of communication to other nodes and also (by the LIM) transfers Plant Communication Loop data to and from the OIU. Transfers into the OIU are similar to those into the BIM of the NETWORK 90 PCU. Transfers out of the OIU (PIM to LIM to Plant Communication Loop) are performed on an interrupt basis rather than a polling basis.

The PIM mounts in slot 4 of the 16 slot card cage. P1 is the PIM main edge connector. It interfaces with the card cage backplane +5 V dc, +12 V dc, and —12 V dc buses and signal lines. P1 is keyed for the insertion of the PIM in the card cage with its components facing the OIU front right edge. P4 (the LIM cable interface) and P5 (test plug for communicating with a test CRT) are 40 pin front edge connectors.

The PIM components include display LEDs, an 8 switch dipswitch, and a reset switch. Normal periodic resetting of the LIM machine fault timer circuit is indicated by green on the PIM red/green LED. If the fault timer should fail to reset, the PIM shuts down and provides a red indication on the LED. The PIM 8 switch dipswitch may be set at various positions during start-up testing. Indications on the display port LEDs (8 red LEDs) verify normal or specific test mode operation. A manual pushbutton reset switch (located just below the 8 switch dipswitch) must be momentarily pushed in to reset the PIM each time it is to be operated in a different mode. Specific settings for PIM components are detailed in the PIM setup table in Section III.

Multi-Function Processor Modules (MFPM)

Each MFPM combines with an associated I/O Expander Module (IOXM). Each MFPM or MFPM/IOXM pair is mounted in the 16-slot Card Cage. Respective MFPM Card Cage locations are:

5000 Tag OIU Positions

Slot 1 — Main MFPM

Slot 4 — DBP MFPM

Slot 7 — Disk MFPM

Slot 10 — LP/CRT MFPM

Slot 13 — BASIC option MFPM

Slot 15 — AUX LP option MFPM

500/1400 Tag OIU Positions

Slot 1 — Main MFPM

Slot 6 — Disk MFPM

Slot 9 — LP/CRT MFPM

Slot 13 — BASIC MFPM

Slot 15 — AUX LP MFPM

The descriptions given in the OIU Overview at the beginning of this section cover the specific functions of the MFPMs operating as Main MFPM/IOXM, DBP MFPM/IOXM, Disk MFPM/IOXM, and LP/CRT MFPM/IOXM pairs.

Jumper terminals, LEDs, dipswitches, resistors, and a timing adjustment potentiometer are key MFPM display and adjustment components. Section III of this manual details setups for dipswitches, jumpers, and resistors for the respective MFPM board pair applications.

A 100-pin rear edge connector on each MFPM interfaces with the Card Cage backplane. A 40-pin front edge connector on each MFPM interfaces with a similar 40-pin connector on an adjacent IOXM by short ribbon cable. Each MFPM also contains a RS-232 connector available for testing.

Six LEDs on the front edge of each MFPM display status information about data transfer in associated MFPM circuits.

A momentary toggle switch on each MFPM generates a reset in the UP position and a load vector in the DOWN position. Interfaces between this switch and the adjacent IOXM can make this local manual load/reset switch global. (This can generate an OIU Reset or OIU load — rear to Section III of this manual, OIU RESET, for the use of this switch.)

The top 3 switches of the MFPM dipswitch assign module address: 7 - main, 0 - disk, 1 - CRT/Printer, 4 - DBP, 6 - second printer. Switch position 4 is closed for main (master bus clock) and closed for others. See Section III for other switch settings. The Main MFPM must also have its bus terminator U47 (1.0 Kohms) installed and crystal connected (E18 jumpered to E19).

Input/Output Expansion Modules (IOXM)

The IOXM is the companion module in the MFPM/IOXM module pairs. The OIU Overview at the beginning of this section covers the specific functions of the IOXM when used in Main, DBP, Disk, and LP/CRT IOXM applications. The product instructions provided with the BASIC option IOXM cover the specific functions of that IOXM.

LEDs, dipswitches, resistors, and timing adjustment potentiometers are key IOXM display and adjustment components. Section III of this manual details the setups for dipswitches and resistors for the respective Main, DBP, Disk, LB/CRT, and Basic option IOXM applications.

Each IOXM (also the MFPM and PIM) uses MOS (metal oxide semiconductors) bipolar integrated circuit components to implement logic functions. A 100-pin connector on the rear edge of each IOXM provides electromechanical interface with the Card Cage backplane. A 40-pin connector on each IOXM front edge interfaces by ribbon cable to its adjacent MFPM. Other connectors on an IOXM module include:

- a RS-232 connector (P3)
- A 50-pin connector (P4) that interfaces with the Disk Controller or the Printer Termination Unit
- a 26-pin connector (P5) connecting the Main IOXM to the Printer Termination Unit for annunciator relay functions (see below).

Each IOXM has four FORM-C dry contact relays providing system and process alarm contact outputs, two of which have timed outputs. Software CRU (Communication Register Unit) operations control these relays. Variable resistors VR1 and VR2 at the front edge of the main IOXM module set the time periods of the timed relays. The timing period is continuously variable from a minimum of approximately one second to a maximum of approximately 48 seconds.

Eight LEDs on the front edge of each IOXM display the status of backplane signals: PRES—, and INT1— through INT7— when switch 1 of IOXM dipswitch A is open, and INT8— through INT15— when switch 1 is closed. The associated illuminated LED indicates activity in the respective signal line.

Dipswitch DPSA consists of eight switches located near the module front edge. DPSA-1 selects the display function of the 8 LEDs on the board front edge. DPSA-2 (open-enable, closed-disable) is the watchdog timer enable/disable switch. Its setting overrides all software commands. DPSA-3 (open-utility, closed-normal) is the utility mode/normal mode switch. DPSA-4 through -8 are local status switches.

Dipswitch DPSB, having 10 switches, (U34 on the module) is at the back edge of the IOXM. DPSB-1 through 5 are IOXM Communications Register Unit base address select switches for setting IOXM global functions (functions under module backplane and data line control). DPSB-6 through -9 are watchdog timer time out select switches. These switches are set for 3, 6, 11, and 21-second time out periods. (The par-

ticular time switch is set open and the other three are set closed.) DPSB-10 is not used.

DPSC (U22) is in the middle of the IOXM board and has 8 switches. DPSC-1 through -4 are the enable/disable switches for the backplane/relays interrupt output, alarm contact output, and real time clock functions. DPSC-5 and -6 select the MFPM module load and reset switch as either local (open) or global (closed) functions. DPSC-7 and -8 are not used.

Dipswitch DPSD (U27) is an 8-switch dipswitch in the middle section of the IOXM board. This dipswitch configures the the IOXM serial I/O port. DPSD-1 and -2 set to configure the serial port as a modem or a terminal. DPSD-3 through -6 provide the power and reset signals necessary for the module microterminal. DPSD-7 connects ground to pin 1 of the serial I/O connector. According to the needs of various terminals or equipment using the serial I/O port, DPSD-7 is enabled or disabled, DPSD-8 is not used.

16-Slot Card Cage Assembly

The 16-slot Card Cage provides electromechanical interface for the PIM, MFPMs and IOXMs. A terminal block, TB1, (Figure 7.25) mounts on back of the card cage backplane and has labeled terminals for the backplane wired-in external signal and power bus inputs. The backplane also has three power-on LEDs visible from the front of the card cage: CR1, CR2, and CR3. When power is applied during normal operation these LEDs turn on indicating $+5$, -12 and $+12$ V dc respectively. Other features of the card cage backplane (see the backplane schematic, Figure 7.24) include:

- 46 bus termination resistors

- a 100-pin bus interface

- Bus Mastership daisy chain jumpers.

Plant Loop Termination Unit (NTPL01)

The NTPL01 is a 7 in. x 7 in. printed circuit board assembly having terminal blocks (TB1 and TB2) for connecting Plant Communication Loop cabling and connector P1 for coupling the LIM cable. Key components on the board used in electrical isolation, surge protection, and bypass circuits are:

- Transformers

- relays

- arc suppressors

Push-on terminals (E1 and E2) connect to the $+12$ V and -12 V (respectively connected to the NTPL01 $+24$ V and COM terminals) from the OIU Power Supply Assembly.

Printer Termination Unit

The Printer Termination Unit (Part No. 6634274-1) is a 7 in. x 7 in. board. This board interfaces the printer cable (Part No. 6634320A30-25) with its P3 connector. Its P1 and P2 connectors are tie points for the LP/CRT IOXM 50-pin cable and the Main IOXM 26-pin cable. Terminal blocks TB1 and TB2 on the board provide connection points linking external alarm contacts. Figure 7.21 shows interface details. Jumper J1 provides isolation for the printer chassis from the OIU cabinet chassis (J1-1 & J1-2 jumpered).

Blower

The main cooling system consists of a blower assembly with associated mounting hardware. The blower uses a fractional horsepower motor with two centrifugally operated fans that have vertical exhaust. For supplemental cooling, there is a fan in the NOIU01 Disk Drive Assembly and one located between the Fixed rigid-disk drive assembly and keyboard of the NOIU02.

The Blower draws air in through the door's lower slotted inlet, filters it, and propels it upward through the 16-slot Card Cage, finally exhausting it from slotted openings in an upper section of the cabinet rear door (and/or the bottom of the NOIU02 keyboard counter). Figure 7.1 shows the cabinet blower mounting and cabinet air cooling paths for the NOUI01/03 Driver Cabinet while Figure 7.3 shows the same for the NOIU02.

NOTE: The Blower Unit Filter must be cleaned periodically.

NOIU02 CRT/Keyboard

The NOIU02 unit also includes a color graphic terminal section and a keyboard section (for the NOIU01 CRT/Keyboard console, see the following heading). The terminal mounts inside the NOIU02 and functions as an independent unit except for sharing a common AC power input and interfacing data with the rest of the OIU. See the heading: Overview — Operator Interface Unit at the beginning of this section for a general description of the interface between the CRT and keyboard sections and of the OIU, including the printer.

The CRT is an Intecolor Model 8001 or Aydin Model 5219 Terminal adapted for OIU use with unique firmware and hardware options. The AC POWER input of the terminal connects to the output receptacle of the power supply assembly (Figure 7.15).

Major components of the keyboard section include:
- the keyboard assembly

- the keyboard housing

- console counter.

The keyboard assembly (Figure 7.23) consists of:
- a switchboard assembly

- a CPU board assembly

- two key switches

- a keyboard switch cable

- a keyboard

- keylock and logo graphic plates.

NOIU01/03 CRT/Keyboard Console

Each NOIU01/03 CRT/Keyboard Console is a separate unit from the NOIU01/03 Driver Cabinet (Figure 1.2, 1.3) and consists of a color graphic terminal and a keyboard. The Keyboard hardware includes the keyboard and power supply. The Terminal functions as an independent unit except for sharing a common AC power input. Refer to the Overview — Operator Interface Unit heading at the begin-

ning of this section for a general functional interface between the CRT and keyboard section of the CRT/Keyboard Console, and the Driver Unit and the Printer.

The CRT Terminal is an Intecolor Model 8001 Terminal adapted for OIU use. Internal wiring connects the AC POWER input of the terminal to the enclosure AC PWR input (See Figure 7.14).

The keyboard assembly (Figure 7.23) is the major component in the Keyboard section of the CRT/Keyboard Consoles. This assembly includes the following subcomponents:

- a switchboard assembly including a CPU board assembly

- a CPU board assembly

- a keyboard switch cable

- a keyboard

- keylock and logo graphic plates.

Additional subassemblies of the NOIU01/NOIU03 CRT/Keyboard console include (Figure 7.22):

- the keyboard/CPU power supplies

- the Shroud Assembly

- the Base Assembly

- the Upper Back Plate

- the Lower Back Plate

NOIU01 Console Mechanical Details

The Upper Back Plate holds the supplemental fan assembly and joins to the back of the Shroud. The Base Assembly supports the Shroud, the CRT Terminal (not shown in Figure 7.22), the Keyboard Assembly, and the Lower Back Plate.

The Lower Back Plate of the enclosure (Figure 7.22) contains the labeled cutouts for external interface connectors and provides mounting for the power switch and AC power input connector/filter.

The Keyboard Assembly (Figure 7.23) includes:

- the Decoder Board
- the Tuning Keyswitch
- the Configuration Keyswitch
- the Switchboard Assembly.

The Assembled Chassis (Figure 7.22) provides mounting for:

- the Keyboard 5 V and ± 12 V dc supplies
- the CPU board (through 1982)
- the Keyboard RS-232 interface connector
- the fan cord receptacle
- fuses F1 and F2
- two power circuit terminal blocks.

NOIU03 Mechanical Details

Otherwise similar, the NOIU03 console sports short-haul modem mounting brackets and power outlets. The added air conditioner has a thermostat accessible when the external air filter is removed.

Printer

Refer to appropriate Model 3400, 3404, or 3410 Matrix Impact Printer Service Manual, Genicom No. GEK-884☐ ☐ (see printer label).

Console Array Assembly

The Console Array is a custom assembly. This assembly may include one or more Utility Console Cabinets (NUCC01), Console Work Stations (NCWS01), Console Printer Surfaces (NCPS01), 15-degree Wedge Consoles (NPIE01), and/or Operator Chair (NOCS01) either as a separate assembly or integrated with one or more NOIU02 Operator Interface Units (Figure 1.5).

Section III
Installation and Start-Up

Unpacking and Visual Inspection

Upon receipt of the OIU hardware, examine the shipping crates for damage. Report any observed damage immediately to the carrier. If immediate repair or replacement is necessary, notify the nearest Bailey sales office.

If the OIU hardware is not to go into service immediately, keep it packaged in the original shipping crates. If placing the OIU hardware in storage, maintain the storage environment as specified in Section V of this manual (Specifications).

OIU Installation

Refer to Bailey Controls Product Information PIE93-900-5 "Site Planning Preparation and Equipment Installation" for site selection, preparation, and hardware installation of the NETWORK 90 control system, including the OIU. PIE93-900-5 includes requirements and/or recommendations for the following items:

- load bearing of floors
- space around equipment
- temperature
- humidity
- shock and vibration
- AC power wiring
- AC power and DC signal common grounding
- uninterruptible power supplies
- radio frequency and electromagnetic interference
- electrostatic discharge
- lightning
- equipment protection
- equipment handling and storage.

Options

Input Power Other Than 120 V ac

Where the input power source is other than 120 V ac, a stepdown or stepup transformer (as applicable) must be installed external to the OIU Hardware. The external transformer must provide 102 to 132 V ac over the range of the available input power source. This transformer must also have sufficient power for the OIU hardware (See Section V for power requirements and consumption). Figure 7.10 shows the stepdown autotransformer, Bailey P/N 1947492-1, that is available for installation with the OIU for non-USA and non-Canadian 240 V ac input power sources.

BASIC Option

If the OIU is to have the BASIC option, insert the BASIC MFPM and IOXM pair (if not already installed) in slots 13 and 14 respectively of the 16-slot Card Cage. Verify tht jumper J30 is removed. (J30 is on the Card Cage backplane and at the top left of J14 as viewed from the front of the NOIU01 Driver Unit or the NOIU02.)

Logging Option

If the OIU is to have the logging option, the Logging MFPM, if not already installed, should be inserted in slot 12 of the 16 slot card cage. Verify that jumper J28 (located on 16 slot card cage backplane and at the top left of J12 as viewed from the front of the NOIU01 Driver Unit or NOIU02) has been removed.

AUX LP Option

If the OIU is to have the AUX LP/CRT option, insert the AUX LP/CRT MFPM and IOXM pair (if not already installed) in slots 15 and 16 respectively of the 16-slot Card Cage. Verify that jumper J31 is removed.

CAUTION

Do not insert or remove circuit cards with the power on.

ATTENTION

Ne pas inserer ou retirer les cartes de circuits imprimes sans interrompre l'alimentation.

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NOIU01 Driver Unit/NOIU02 Installation

Verify that power sources are de-energized. Install the NOIU01/03 Driver Cabinet per Figure 7.1, verifying cables and wiring are connected according to Figure 7.13. Install the NOIU02 per Figure 7.3, verifying cables and wiring are connected according to Figure 7.15.

Power Wiring and Grounding

The recommended minimum size for power wiring to the NOIU01 Driver Cabinet or NOIU02 is No. 12 AWG minimum with a 600 V, 75°C rating and thermoplastic insulation. Wire with a 300 V or 150 V rating is also usable provided it is acceptable by local wiring codes, is protected by cable trays or conduit, and is suitable for service voltage. Do not use wiring rated at 150 V for 240 V distribution. If the installation environment to contain the NOIU01 Driver Cabinet or NOIU02 does not allow internal equipment temperature to exceed 60°C, wiring rated at 60°C is also usable.

Power wiring to the NOIU01/03 Driver Cabinet or NOIU02 must include a third-wire grounding conductor. The grounding conductor must not be of smaller gauge than the power wiring, and must be either bare or green colored if insulated. The grounding conductor must terminate at the system safety ground connection. Figure 7.1 shows the location of this connection for the NOIU01/03 Driver Cabinet while Figure 7.3 shows it for the NOIU02.

Size the overcurrent protection (protects the power wiring) provided for your AC distribution to allow for the inrush current required by the OIU hardware. Section V details the peak inrush current and duration for each unit of the OIU hardware.

For other power wiring and grounding, such as line conditioning, electromagnetic interference (EMI) refer to Product Information PIE93-900-5, "Bailey NETWORK 90 Site Planning, Preparation, and Equipment Installation.

Plant Loop Termination

Wire the NKPL01 Plant Loop cable (see Product Instruction IE93-915-6) to the OIU Plant Loop Termination Unit (NTPL01) per Figure 7.12 wire list. Figure 7.12 contains details of a plant loop communication interconnection with a redundant loop. Figure 7.12 also details the TB1 and TB2 termination connections for the NTPL01. Figure 2.3 shows the location of the NTPL01 in the NOIU01/03 and Figure 2.4 shows the location for the NOIU02.

ADJUST CRT 4 PLACES
TO MEET BEZEL

ATTACHED CRT
GLARE SHIELD

CRT TERMINAL POWER
CORD INTERFACE WITH
ENCLOSURE HARNESS

MOUNTING SCREWS (4 CORNERS
OF CRT TERMINAL)

TO CRT TERMINAL
AC POWER FILTER

COLOR	CONN. TO
GRN	4
BLK	5
WHT	6
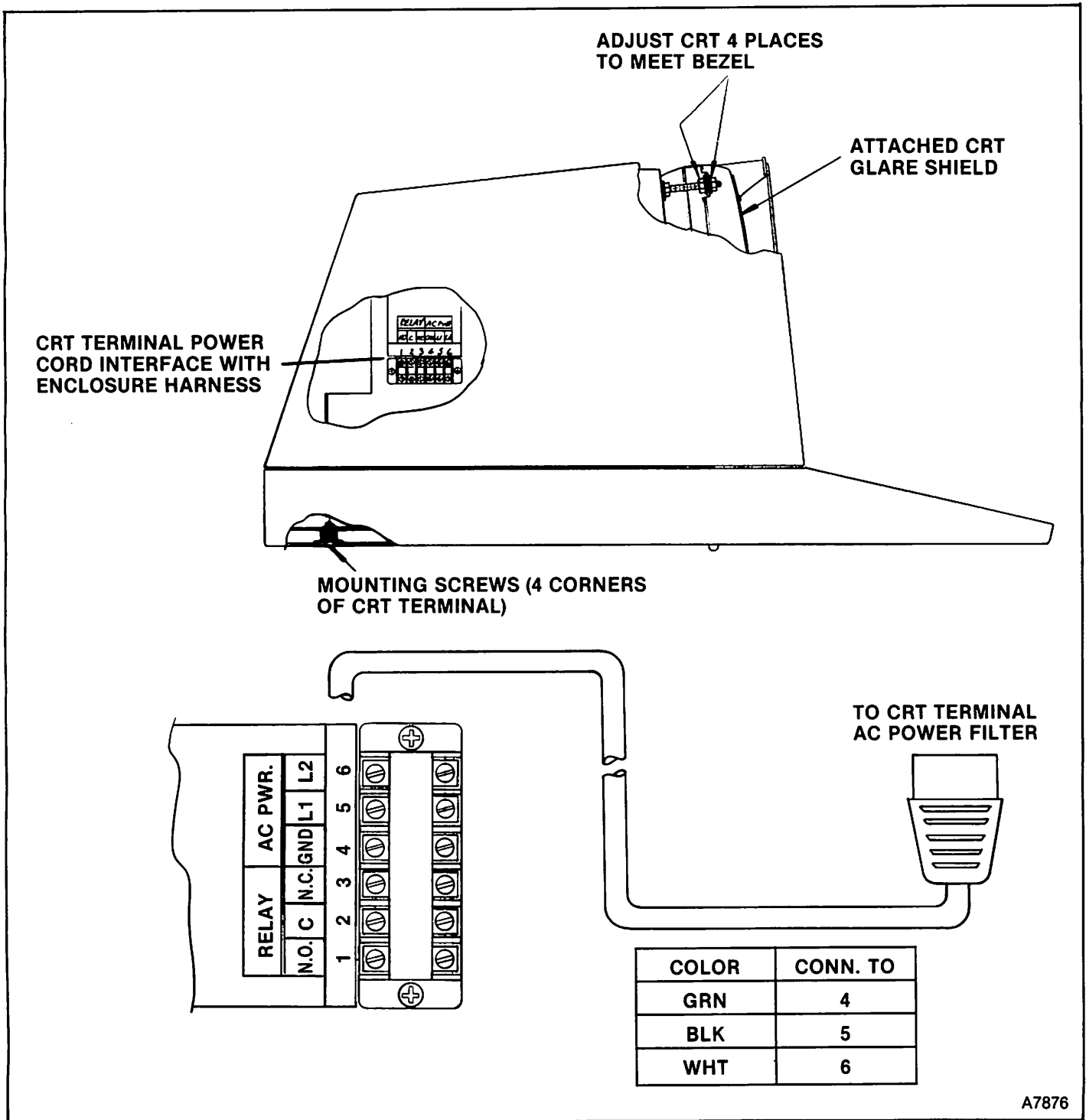
A7876

FIGURE 3.1 — NOIU01 CRT/Keyboard Console

NOIU01/03 CRT/Keyboard Console Installation

Verify power sources are de-energized and install the Operator Console per Figure 7.2. Connect 120 V ac, 15 A power to the terminal blocks of the NOIU01/03 CRT/Keyboard Console. If the CRT/Keyboard Console does not have the optical isolation feature, it is suggested that the Console and Driver Cabinet have the same source of power and grounding. This prevents data errors due to a difference in ground potentials.

Connect CRT/Keyboard Console cables as in the following steps.

STEP 1 — "CRT" to LP/CRT IOXM (slot 11), P3.
STEP 2 — "OIU Keyboard" to Main IOXM (slot 2), P3.

Inspection Before Operation

Verify the following items before applying power (Step 6) and starting operation:

1. Modules and cards are secure within respective card cage or plug-in mountings.

2. Circuit boards are securely inserted into edge connectors.

3. Dark edge (or color strip on ribbon cables) corresponds with the first pin of respective connector junctions and connectors are securely joined.

4. All mounted components are securely in place.

5. Jumpers to the left of each MFPM board on the 16-slot Card Cage are removed. These jumpers are accessible from the front of the NOIU01/03 Driver Unit or NOIU02.

Connect power cables to the NOIU01/03 cabinet and console or to the NOIU02.

Set the power switch on the printer to OFF. Place the Disk Drive Assembly power switch of NOIU01/03 Driver Cabinet to the ON position.

6. Apply power to the respective OIU units and verify that:

- the NOIU01/03 Driver Cabinet and NOIU02 Cabinet Blower starts.
- the Disk Drive Fan starts.
- the three Card Cage power bus LEDs light up.
- the NOIU01/03 CRT/Keyboard Console fan motors start.
- the Power On indicator lights up

7. Remove power from the OIU units.

NOIU01/03 Driver Cabinet and NOIU02 Setup

Disk Drive Power Supply Setup

NOTE: Bailey Controls sets these power supplies during factory checkout. Experience has shown that these supplies can be checked once annually.

Perform the following steps using a Digital Voltmeter for testing.

STEP 1 — (NOIU01/03 Driver Cabinet Only). Remove attaching screws and top cover of the Driver Unit. Remove attaching screws and Disk Drive Assembly top cover.

STEP 2 — Apply power to NOIU01 Driver Unit or NOIU02.

STEP 3 — Locate the 6-pin DC power connector to Diskette Drive. Using the voltmeter probes at the appropriate connector lead-in voltage and voltage return wires (Figure 3.2), measure the following voltages.

5 V ± 0.1 V dc - Pos. to brown (Pin 5); Ref. to blue (Pin 6)

—5 to ± 0.1 V dc - Neg. to white (Pin 4); Ref. to blue (Pin 3)

+ 24 V ± 0.2 V dc - Pos. to orange (Pin 1); Ref. to red (Pin 2).

STEP 4 — If voltages are out of tolerance, remove power from the NOIU01 Driver Cabinet or NOIU02 and complete steps 5 through 11. Otherwise, replace top covers of the NOIU01 Disk Drive Assembly and Driver Unit (NOIU01 only).

STEP 5 — (NOIU01/03 Driver Cabinet Only) Disconnect the line cord at the Power Distribution Module rear panel J3 DISK outlet. Cut any cable ties retaining the line cord. Disconnect ribbon cable from connector at the rear of the Disk Drive Assembly.

6-PIN D.C. CONNECTOR (FROM POWER SUPPLY)

+5 VOLT GROUND
(BLUE LEAD) 2 *   6

-5 VOLTS DC
(WHITE LEAD)   4

+24 VOLT RETURN
(RED LEAD)   2

5   +5 VOLTS DC
           (BROWN LEAD)

3   -5 VOLTS GROUND
           (BLUE LEAD)

1   +24 VOLTS D.C.
           (ORANGE LEAD)

*PINS 3 AND 6 AT SAME POTENTIAL (+5/-5 V GROUND)

A8825
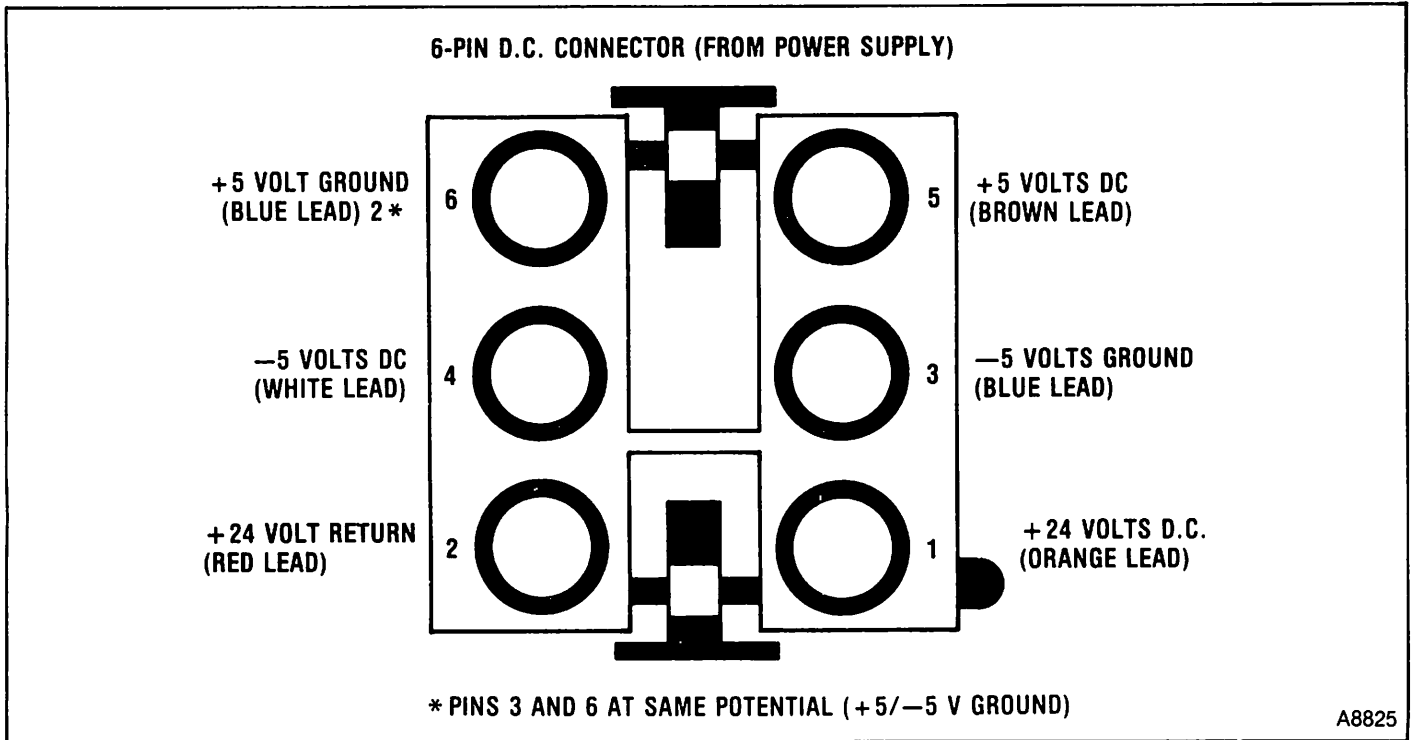
FIGURE 3.2 — Disk 6-Pin dc Supply Connectors with Leads Identified.

STEP 6 — (NOIU01 Driver Cabinet Only) Remove screws attaching the Disk Drive Assembly to the Driver Unit rails. Remove assembly from the Driver Unit, placing it upside down on work bench. Remove the seven screws holding the back of the disk enclosure in place. Slide back plate out of disk enclosure, locating the power supply (see Figure 7.16). Connect the line cord of NOIU01/03 Disk Drive Assembly to an energized 120 V ac receptacle or apply power to the NOIU02 as applicable. Referring to Figure 3.3 (NOIU01/03) or 3.4 (NOIU02), adjust the output voltages as below.

WARNING

Exercise extreme caution when performing the following checks. Circuit must be energized while performing checks.

AVERTISSEMENT

Faire preuve d'une grande vigilance en effectuant les test suivants. Le circuit doit etre sous tension au moment des tests.

STEP 7 — +5 V adjustment — Connect the "ground" lead of the voltmeter to the "+5 RET" (NOIU01/03) or "±5 V COM" (NOIU02) terminal on the power supply. Connect the "+" lead of the voltmeter to the "+5 OUT" (NOIU01/03 or "+5 V" (NOIU02) terminal on the power supply Using the "+5 V ADJUST" trim potentiometer on the power supply, adjust the output for 5 V, ±.05 V dc.

STEP 8 — -5 V Adjustment — Connect the "ground" lead of the voltmeter to the "-5 V —12 RET" (NOIU01/03) or the "+5 V COM" (NOIU02) terminal of the power supply. Connect the "+" lead of the voltmeter to the "-5 —12 OUT" (NOIU01/03) or "-5 V" (NOIU02) terminal on the power supply. Using the "-5 V ADJUST" trim potentiometer, adjust the output voltage for -5 ±.05 V dc.

STEP 9 — 24 V adjustment — Connect the "ground" lead of the voltmeter to the "+24 RET" (NOIU01/03) or "+24 V COM" (NOIU02) terminal on the power supply. Connect the "+ lead of the voltmeter to the "+24 OUT" (NOIU01/03)

21
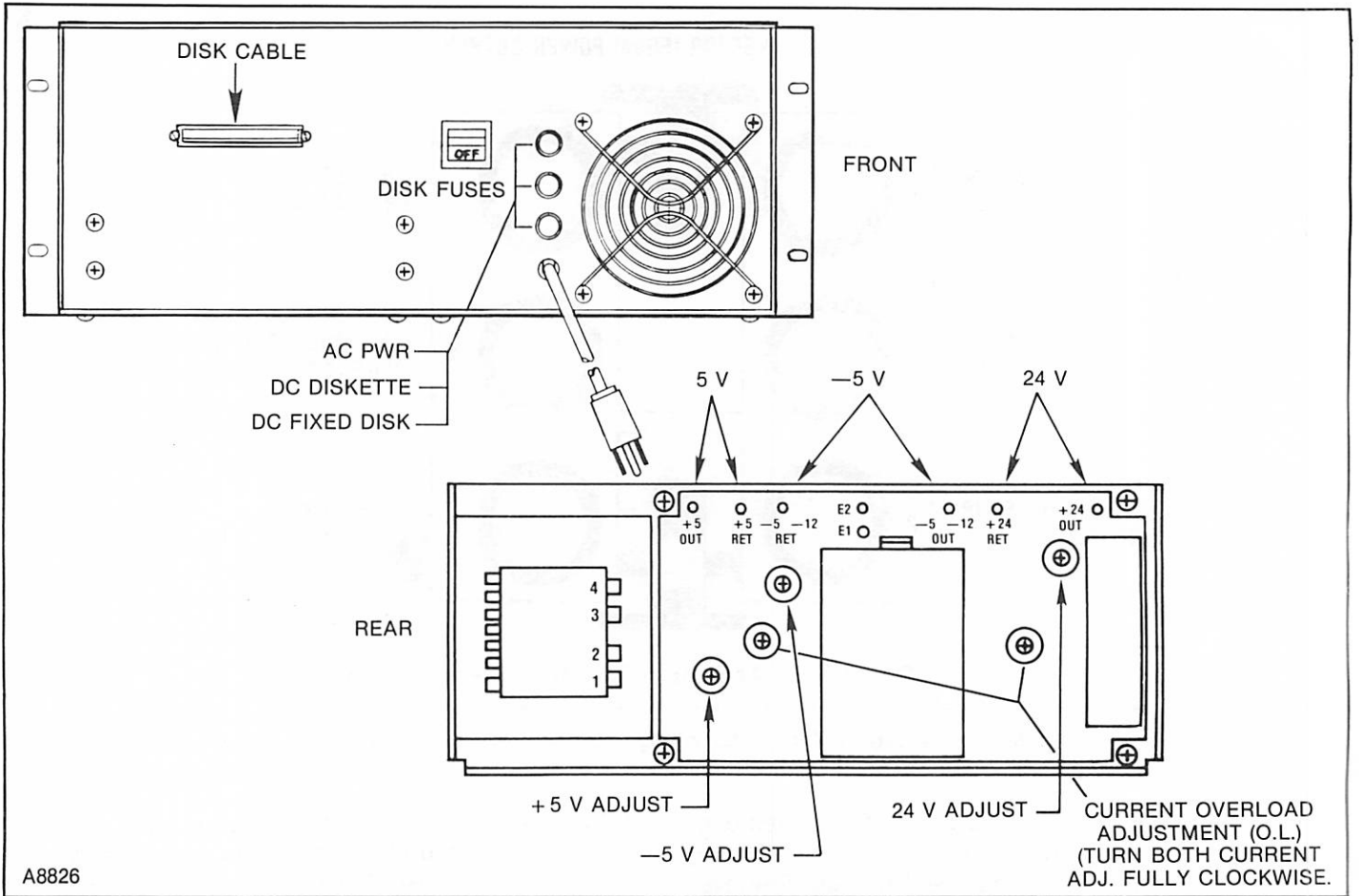
FIGURE 3.3 — NOIU01/03 Driver Cabinet Disk Power Supply Adjustment
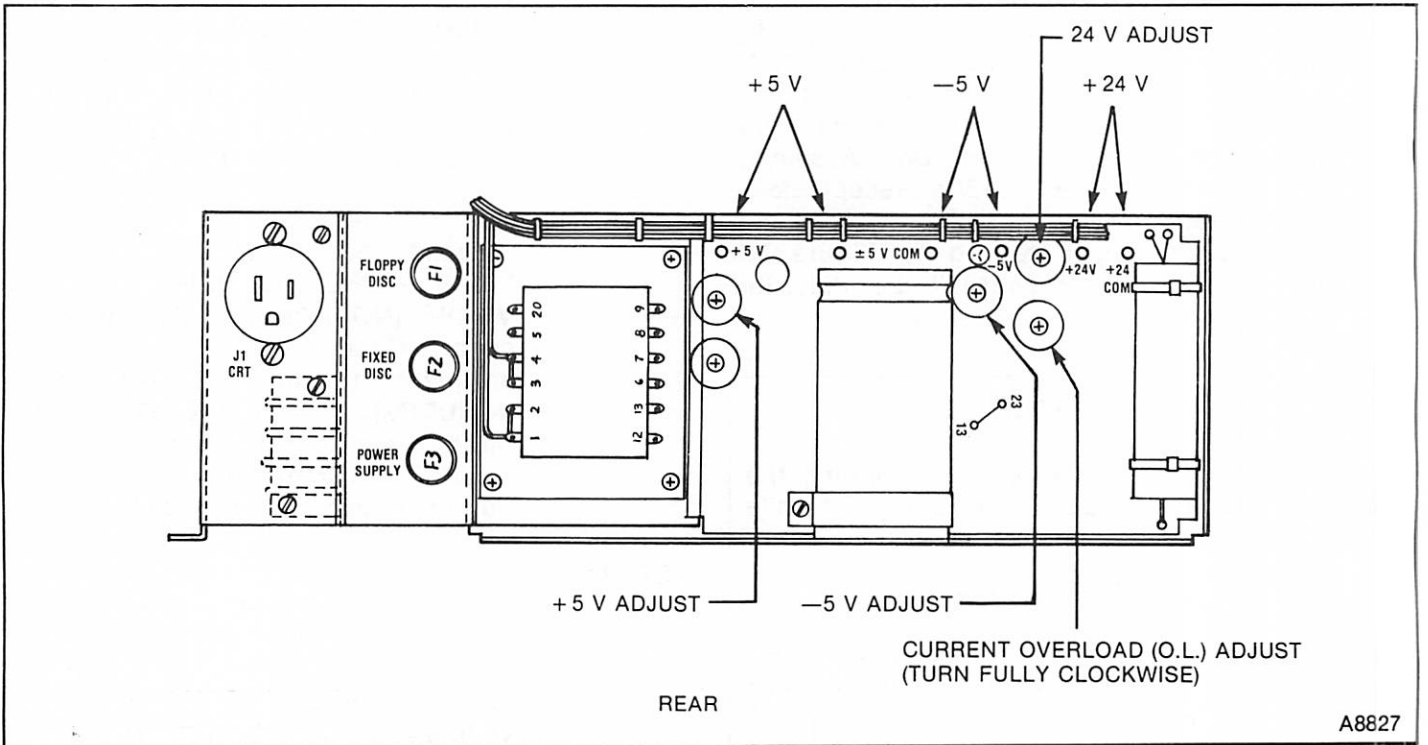
FIGURE 3.4 — NOIU02 Disk Power Supply Adjustment

or "+24 V" (NOIU02) terminal on the power supply. Using the "24 V ADJUST" trim potentiometer on the power supply, adjust the output voltage for 24 V, ±0.1 volts dc.

STEP 10 — Disconnect the NOIU01/03 Disk Drive Assembly line cord or remove power from the NOIU02 as applicable.

STEP 11 — (NOIU01/03 Driver Cabinet Only) Reassemble and reinstall the Disk Drive Assembly, reversing the operations of Steps 1, 5, and 6.

Power Rack Assembly DC Power Supply Setup

Perform the following steps using a digital voltmeter while referring to Figures 7.19 and 7.25.

STEP 1 — Open rear door of OIU cabinet, locate TB1 of the 16 slot card cage and the Power Rack supply units, and verify AC power is on.

STEP 2 — Connect voltmeter (Neg. to card cage TB1-1, Pos. to card cage TB1-4) and adjust "5 V ADJUST" for a voltmeter reading of 5 ±.05 V dc.

STEP 3 — Connect voltmeter positive lead to card cage TB1-8 and adjust upper lefthand power supply turnpot for a voltmeter reading of 12 ±.05 V dc.

STEP 4 — Connect voltmeter positive lead to card cage TB1-7 and adjust lower lefthand power supply turnpot for a voltmeter reading of −12 ±.05 V dc.

NOTE: Bailey Controls sets these modules up during factory checkout. Experience has shown that these supplies can be checked once annually.

NOIU01/03 CRT/Keyboard Console Setup

STEP 1 — Remove back (See Section IV procedure) for access to power supplies, CRT, and adjustments.

STEP 2 — Measure power supply voltages (Figure 3.5). The voltage must measure as below:

5 ±0.1 V dc
12 ±0.6 V dc
±12 ±0.6 V dc

Only the 5 V dc is adjustable. Readjust or replace as necessary.

Module Setups (LIM, BTM, LSM02, MFPM, IOXM, PIM)

NOTE: Bailey Controls sets these modules up during factory checkouts. The folowing information is useful where module replacement becomes necessary or switch settings become inadvertently changed.

Loop Interface Module (LIM) Setup

Refer to Figure 3.6 for locations of LIM setup components. Perform the setup as below.

Swich S1 — S1 selects the event or error counter to display on the LED Display Port. S1 can be set and not interfere with normal LIM operation. Set positions 1, 2, 5, 6, and 8 of S1 to a logic 0 (closed). Set positions 3, 4, and 7 to a logic 1 (open).

Switch S2 — S2 contains the address of the OIU. Set positions 1 and 2 to a logic 0 (closed). Set positions 3 through 8 to a binary value in the range 1 to 63.

EXAMPLE: 1 2 3 4 5 6 7 8
0 0 1 0 1 0 0 1 = 41

The Loop Interface Module Product Instruction, E93-908-1 provides the binary equivalents for 1 through 63.

Jumpers — Locate detail of J1 and J2 on Figure 3.6
J1 and J2 — and verify that posts 1 and 2 are conected for a standard U4 socket setting for Type 2532 and 25L32 EPROMs. Figure 3.6 also shows Type 2732 EPROM jumper settings.

NOTE: These jumpers are set at the factory and should not have to be changed. This information is provided for user's knowledge.
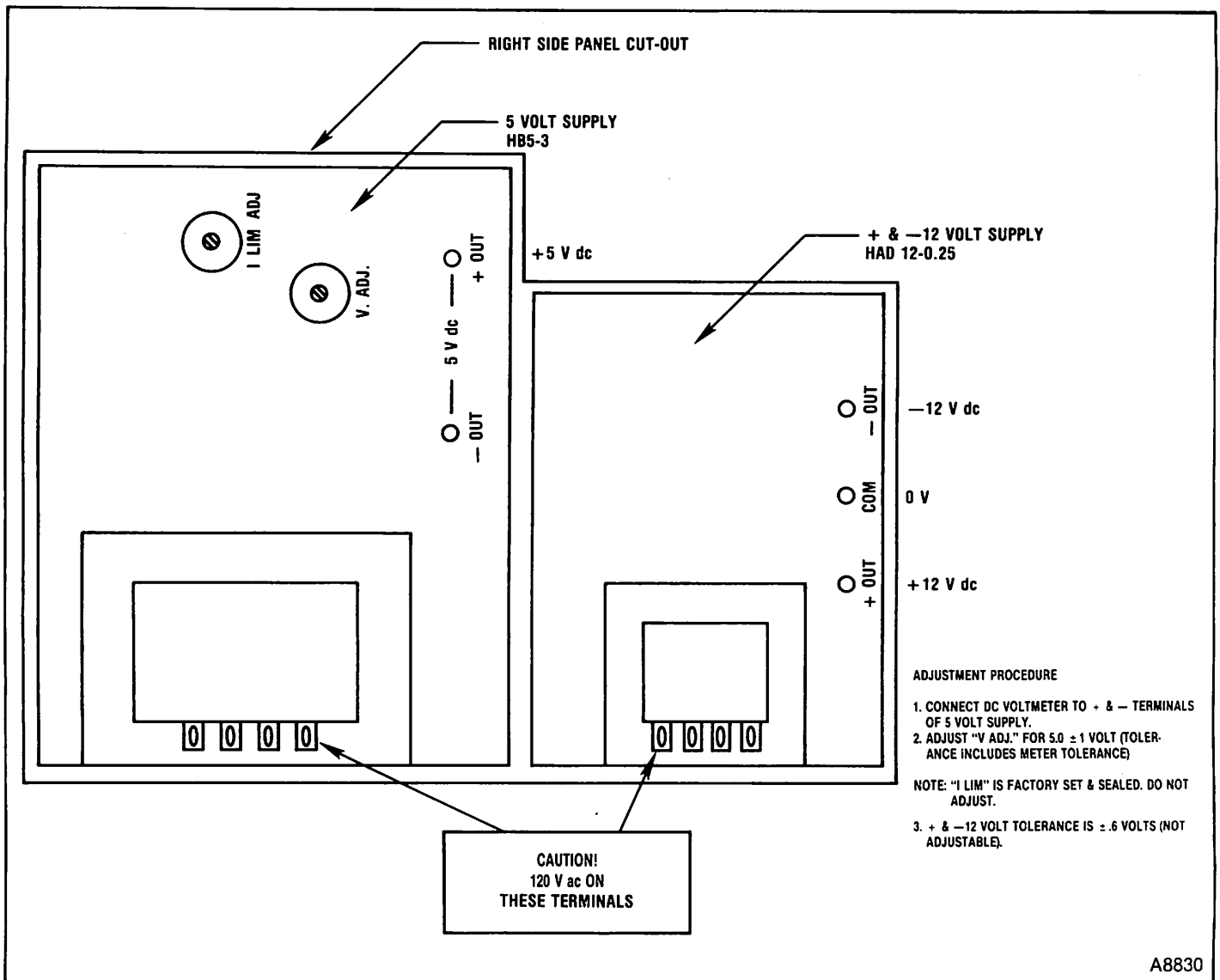
FIGURE 3.5 — NOIU01/03 CRT/Keyboard Console Power Supply Adjustments

Bus Transfer Module (BTM) Setup

Refer to Figure 3.7. The BTM contains one pushbutton RESET switch and one 5-pole dipswitch. Perform the setup as below.

Switch S1   S1 selects either normal operation or testing conditions. For normal operation, set positions 1 through 5 to a logic 0 (closed). Position 2 through 4 can define software execution codes and off-line testing (see the Product Instruction IE93-905-2, Enhanced Computer Interface Unit). The BTM does not use positions 1 and 5. The CIU firmware sets the module address rather than using a switch.

Loop Storage Module (LSM02) Setup

Refer to Figure 3.8. The LSM02 contains two PC boards: CPU and MEM. The CPU board has two 8-pole dipswitches (U72 and U73, one 5-pole dipswitch (U75), a STOP switch (SW2), a pushbutton RESET switch (SW1), and three jumpers (J1, J2, and J3). The MEM board has no user-configurable components. Figure 3.8 shows the LSM02 board and setup component locations.

L.E.D. DISPLAY PORT

CABLE CONNECTOR
TO PIM MODULE

'J1' JUMPERS

'J2' JUMPERS

'U4' EPROM

S1

S2
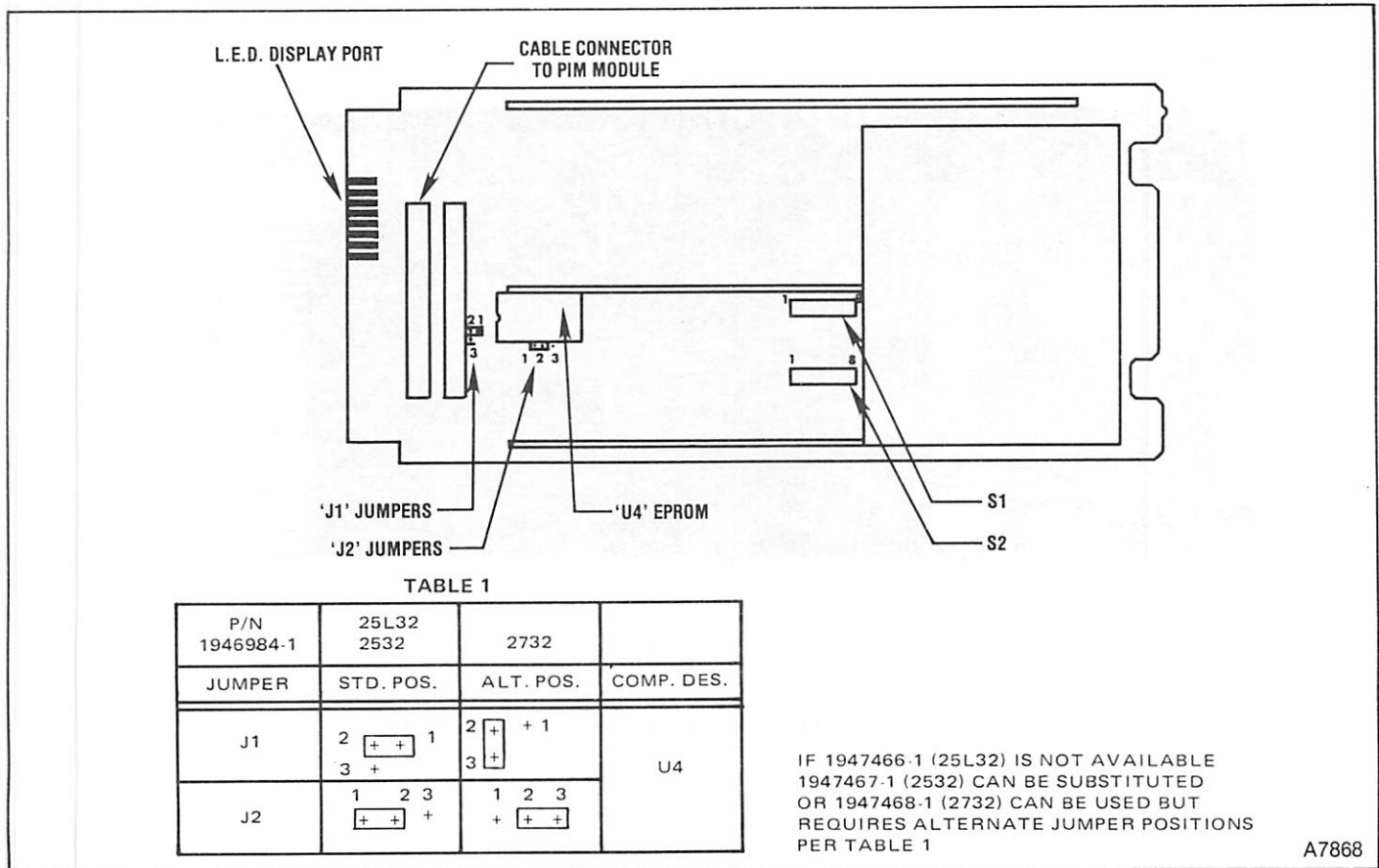
TABLE 1

P/N 1946984-1	25L32 2532	2732	
JUMPER	STD. POS.	ALT. POS.	COMP. DES.
J1	2 [+ +] 1 / 3 +	2 [+] + 1 / 3 [+]	U4
J2	1 2 3 / [+ +] +	1 2 3 / + [+ +]	

IF 1947466-1 (25L32) IS NOT AVAILABLE
1947467-1 (2532) CAN BE SUBSTITUTED
OR 1947468-1 (2732) CAN BE USED BUT
REQUIRES ALTERNATE JUMPER POSITIONS
PER TABLE 1

A7868

FIGURE 3.6 — LIM Setup Components

RESET
SWITCH

XU15

XU14

DIPSWITCH
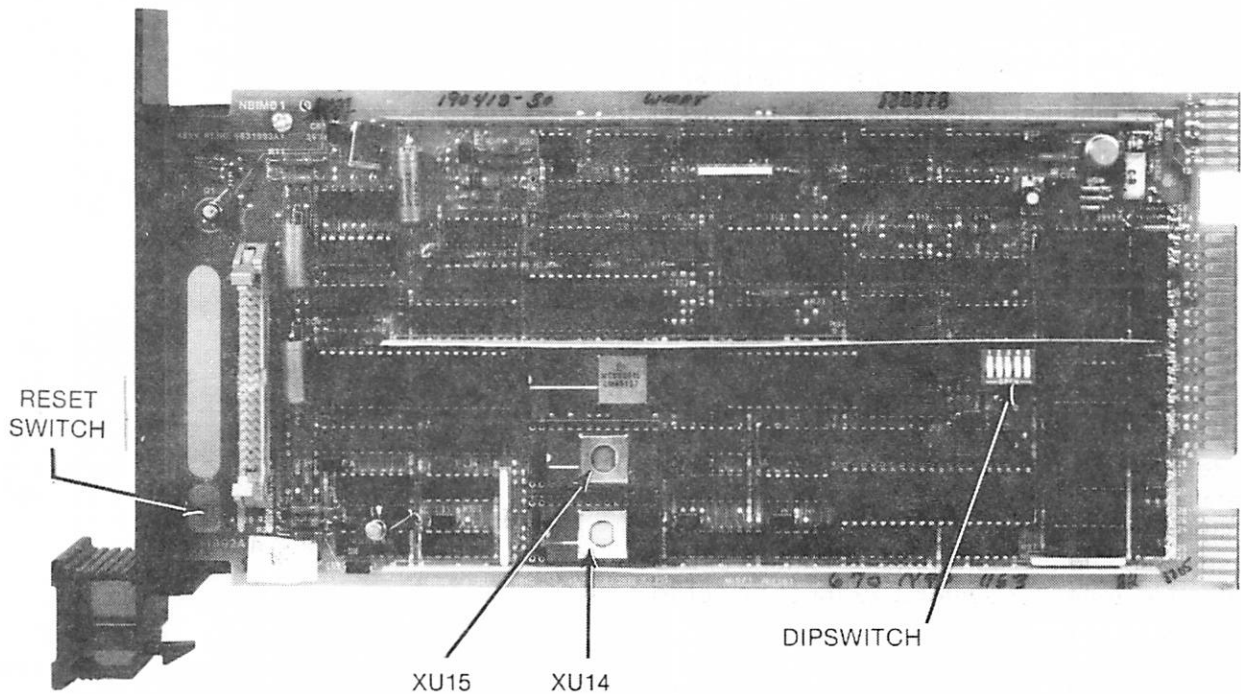
A7543

FIGURE 3.7 — BTM Setup Components
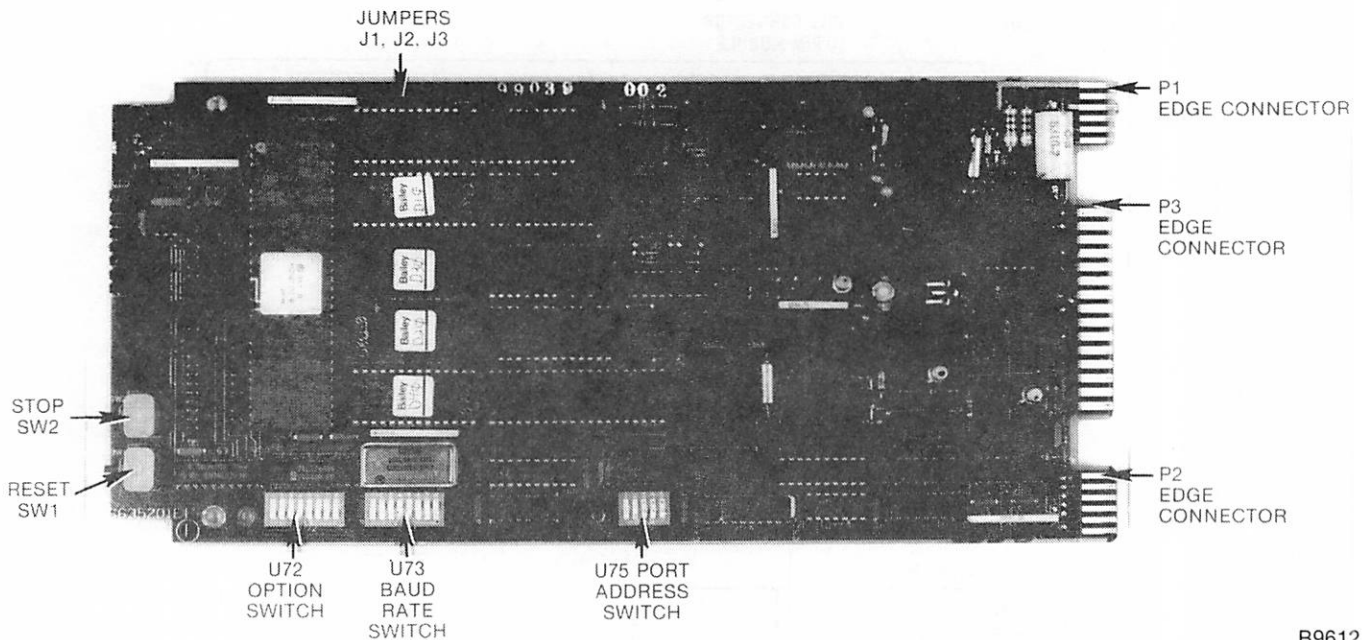
FIGURE 3.8 — LSM02 Setup Components (CPU Board)

Perform LSM02 setup as below.

Switch U72   U72 selects I/O functions. For standard operation, set positions 2, 4, 7 to logic 1 (open).

Switch U73   U73 selects the transmission baud rates for the two RS232C ports of the NTMF01 termination unit (between 50 and 19,200). Set positions 1 through 8 to logic 1 (open).

Switch U75   U75 selects the NCIU02 binary port address corresponding to the decimal LSM02 module address equivalent (between 0 and 31). Set positions 1 through 5 to logic 0 (closed).

NOTE: Refer to Product Instruction IE93-095-2 for more detail on all options for the closed and open and pole positions of the LSM02 CPU board dipswitches. For the selected address port switch positions of U75 to be effective, pole 6 of switch U72 must be set to a logic 1 (Open or Off).

TABLE 3.1 — Switch U73 Baud Rates

1 = OPEN = OFF; 0 = CLOSED = ON

POLE	PORT 0				PORT 1				BAUD RATE
	1	2	3	4	5	6	7	8	
Settings	0	0	0	0	0	0	0	0	50
	1	0	0	0	1	0	0	0	75
	0	1	0	0	0	1	0	0	110
	1	1	0	0	1	1	0	0	134.5
	0	0	1	1	0	0	1	1	150
	1	0	1	0	1	0	1	0	300
	0	1	1	0	0	1	1	0	600
	1	1	1	0	1	1	1	0	1.2 K
	0	0	0	1	0	0	0	1	1.8 K
	1	0	0	1	1	0	0	1	2.0 K
	0	1	0	1	0	1	0	1	2.4 K
	1	1	0	1	1	1	0	1	3.6 K
	0	0	1	1	0	0	1	1	4.8 K
	1	0	1	1	1	0	1	1	7.2 K
	0	1	1	1	0	1	1	1	9.6 K
	1	1	1	1	1	1	1	1	19.2 K

TABLE 3.2 — Switch U75 — Port Addresses

1 = OPEN = OFF; 0 = CLOSED = ON

PORT ADDRESS DECIMAL	POLE NUMBER					PORT ADDRESS DECIMAL	POLE NUMBER				
	1	2	3	4	5		1	2	3	4	5
0	0	0	0	0	0	16	1	0	0	0	0
1	0	0	0	0	1	17	1	0	0	0	1
2	0	0	0	1	0	18	1	0	0	1	0
3	0	0	0	1	1	19	1	0	0	1	1
4	0	0	1	0	0	20	1	0	1	0	0
5	0	0	1	0	1	21	1	0	1	0	1
6	0	0	1	1	0	22	1	0	1	1	0
7	0	0	1	1	1	23	1	0	1	1	1
8	0	1	0	0	0	24	1	1	0	0	0
9	0	1	0	0	1	25	1	1	0	0	1
10	0	1	0	1	0	26	1	1	0	1	0
11	0	1	0	1	1	27	1	1	0	1	1
12	0	1	1	0	0	28	1	1	1	0	0
13	0	1	1	0	1	29	1	1	1	0	1
14	0	1	1	1	0	30	1	1	1	1	0
15	0	1	1	1	1	31	1	1	1	1	1

Multi-Function Processor Module (MFPM) Setup

The MFP module contains jumper posts, one resistor pack (U47) and one dipswitch (Figure 3.9). For proper OIU operation, all these components must be correctly set. Figure 3.9 shows the component setup for the NMFP01 Printed Circuit (PC) Board, while Figures 3.10 and 3.11 show the NMFP02 PC Board, and the NMFP01 Multiwire Board. Refer to Table 3.3 for standard MFPM component setups.

SWITCH S1

DPSW
SWITCH DPSW

L.E.D. DISPLAY PORT

P2 CONNECTOR

P3 CONNECTOR

E3,2,1   E4, 5, 6, 7, 8, 9,10, 11, 12, 13

U26

U28

RESISTOR PACK

U47

E18, 19

INSERTED
FOR SLOT 1
USE ONLY

E15 JUMPERED

*Jumper posts E20, E21, E22 on NMFP03 only. (4/15/87 NMFP03 replaced NMFP02).

A8829
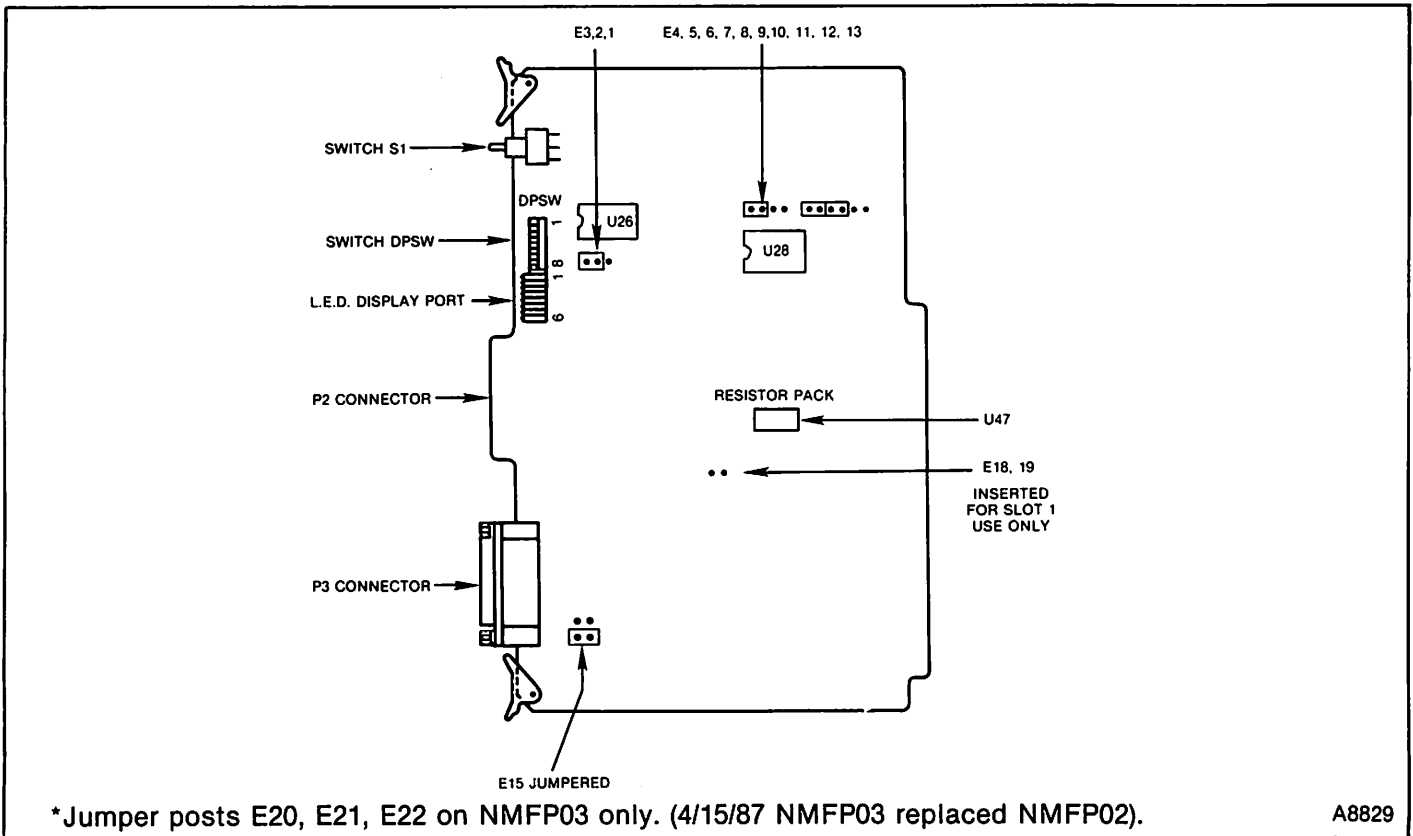
FIGURE 3.9 — NMFP01 Setup Components (PC Board)

SWITCH S1

DPSW
SWITCH DPSW

L.E.D. DISPLAY PORT

P2 CONNECTOR

P3 CONNECTOR

E3,2,1   E4, 5, 6, 7, 8, 9,10, 11, 12, 13

U26

U28

RESISTOR PACK

R

U47

E18, 19

INSERTED
FOR SLOT 1
USE ONLY

E15 JUMPERED

A0170
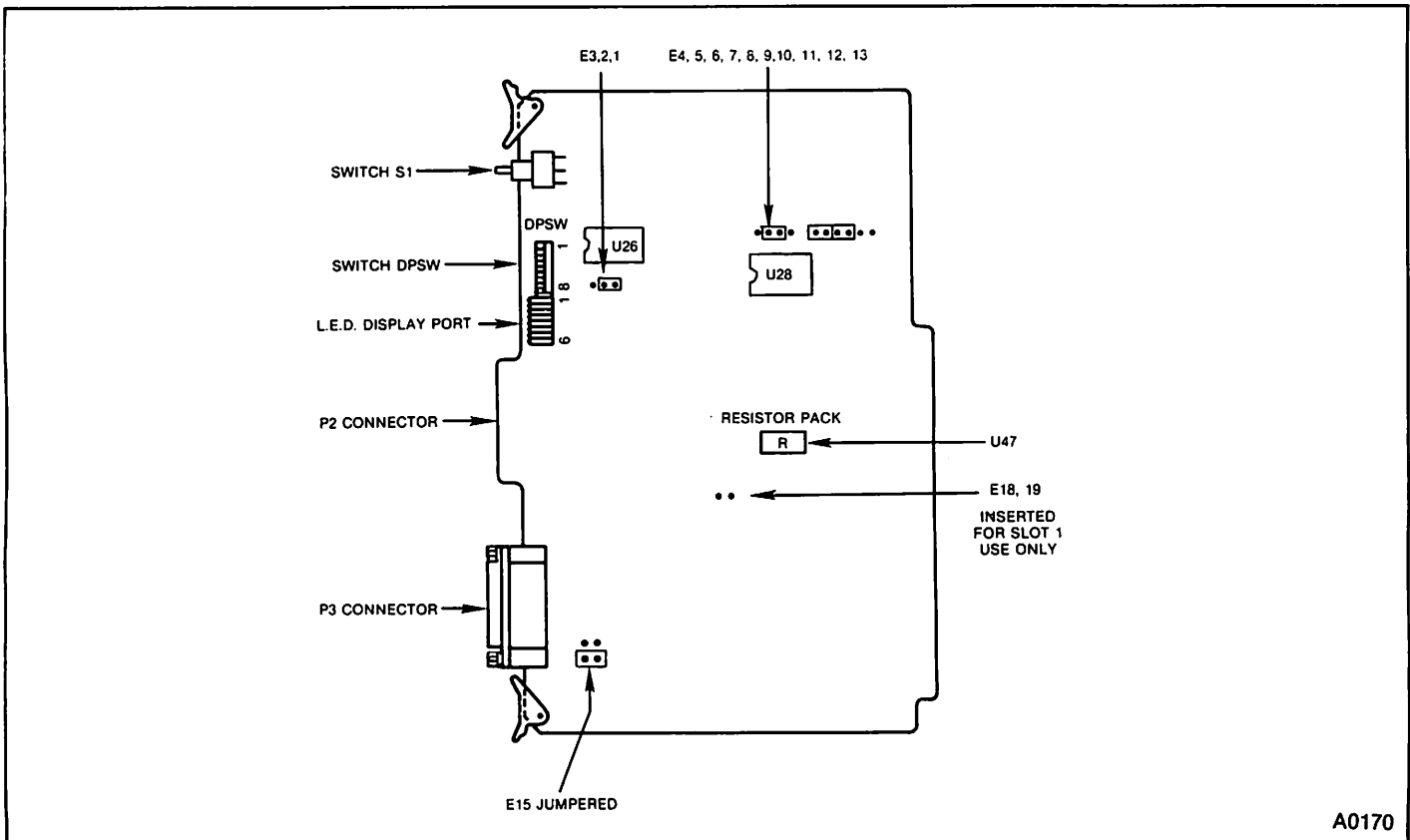
FIGURE 3.10 — NMFP02 Setup Components (PC Board)
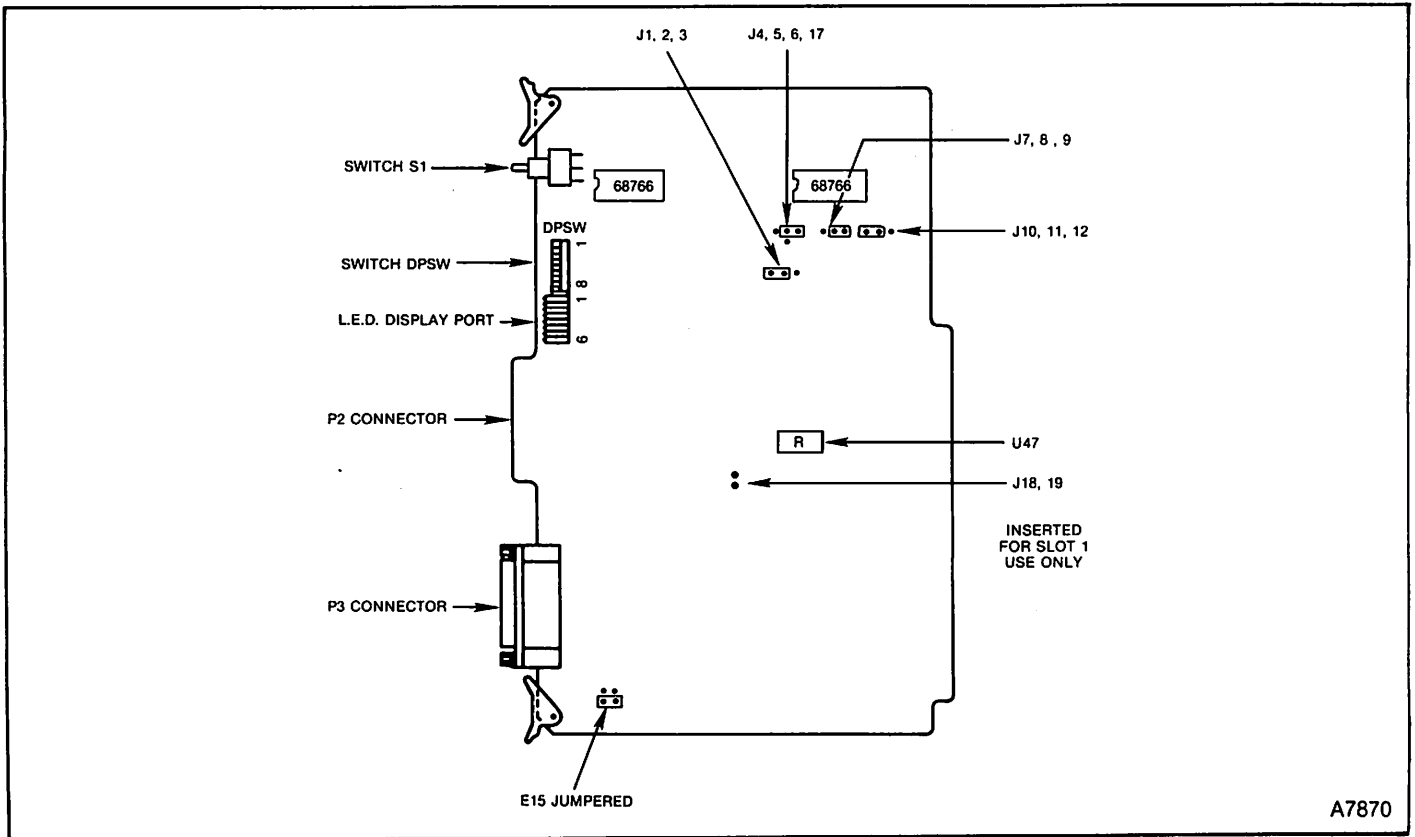
FIGURE 3.11 — *NMFP01 Setup Components (Multiwire Board)*

TABLE 3.3 — MFPM Component Setup

1 = OPEN = OFF; 0 = CLOSED = ON

SWITCH	DESCRIPTION	1 = OPEN = OFF	0 = CLOSED = ON	MAIN MFP (SLOT 1)	DBP MFP (SLOT 4)	DISK MFP (SLOT 7)	LP/CRT MFP (SLOT 10)	AUX LP MFP (SLOT 15)	BASIC MFP (SLOT 13)
DPSW-1	Module Address	1	0	1	1	0	0	0	0
DPSW-2	Module Address	1	0	1	0	0	0	1	1
DPSW-3	Module Address	1	0	1	0	0	1	1	0
DPSW-4	Master/Slave Control	Slave (1)	Master (0)	0	1	1	1	1	1
DPSW-5	Auto Test Mode	Enabled (1)	Disabled (0)	0	0	0	0 ·	0	0
DPSW-6	Auto Load After Reset	Enabled (1)	Disaabled (0)	1	1	1	1	1	1
DPSW-7	Debug Baud Rate*	1	0	0	0	0	0	0	0
DPSW-8	Debug Baud Rate*	1	0	0	0	0	0	0	0
Resistor Pack U47 (1.0K ohms)				Installed	Removed	Removed	Removed	Removed	Removed
E18 - 19 or J18 - J19				Installed	Removed	Removed	Removed	Removed	Removed

Fixed Jumper Settings:	PC Board (P/N 6634163J1 thru P1)	Multiwire Board (P/N 6634163G1) & Earlier
MCM68766(24-pin ROM)	E2-E3,E5-E6,E10-E11,E12-E13,E14-E15	J2-J3,J5-J17,J8-J12,J9-J11,J13-J14
2764-3 (28-pin ROM)	E2-E3,E5-E6,E9-E10,E11-E12,E14-E15	J2-J3,J4-J5,J8-J9,J10-J11,J13-J14
**27128 (28-pin ROM)	E1-E2, E5-E-6,E9-E-11,E11-E12,E14-E15	
***1400 Tag/128 kbyte	E20-E21	
***5000 Tag/512 kbyte	E21-E22	
*Debug Baud Rate	DPSW-7	DPSW-8
19.2 K (Standard)	0	0
9.6K	0	1
1.2 K	1	0
.3 K	1	1

** NMFP02 and NMFP03
*** NMFP03 only (4/15 NMFP03 replaces NMFP02)

Processor Interface Module (PIM) Setup

Verify that the PIM is set up according to Figure 3.12.

Input/Output Expansion Module (IOXM) Setup

The IOXM has four dipwitches and one resistor pack used to configure the module. Table 3.4 shows definitions, functions, and standard settings for the switches and resistors, while Figure 3.13 shows the setup component locations.
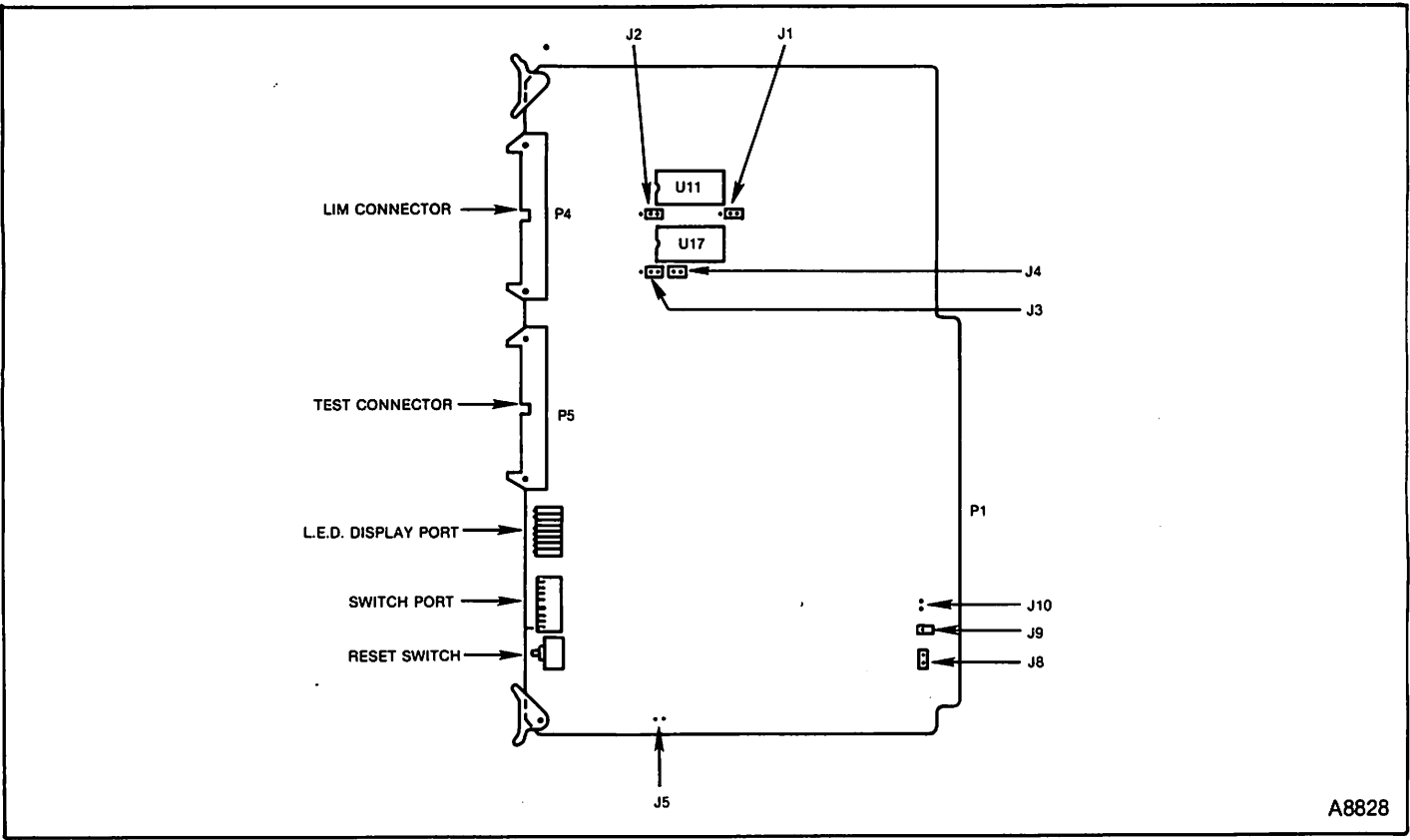
FIGURE 3.12 — PIM Setup Components
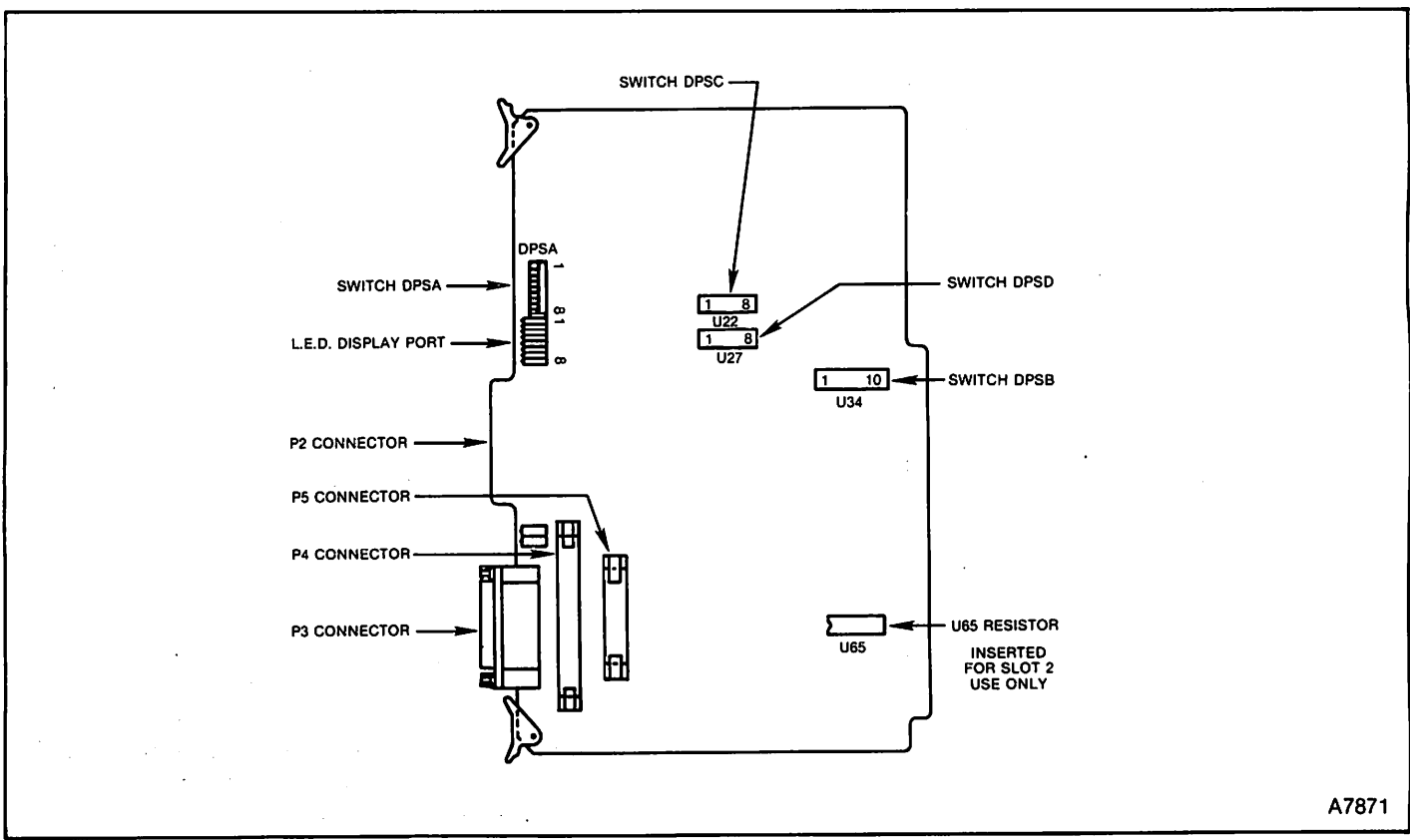
FIGURE 3.13 — IOXM Setup Components

TABLE 3.4 — IOXM Component Setup (Standard Settings)

SWITCH	DESCRIPTION	1 = OPEN 1 = OFF	0 = CLOSED 0 = ON	Main IOX (SLOT 2)	DBP IOX (SLOT 5)	DISK IOX SLOT 8)	LP/CRT IOX (SLOT 11)	AUX LP IOX (SLOT 16)	BASIC IOX (Slot 14)	NOTES
DPSA-1	LED Display Control	Reset, Int 1-7	Int Int 8-15	1	0	0	0	0	0	
DPSA-2	"Watch Dog" Timer	Enable	Disable	1	0	0	0	0	0	
DPSA-3	System Mode	Utility Mode	Normal Mode	0	0	0	0	0	0	
DPSA-4	Main IOX	Reserved	—	0	—	—	—	—		
	Disk IOX	Floppy	Winchester	—	—	0	—	—	—	
	LP/CRT IOX CRT Baud Rate	38.4 K	9.6 K	—	—	—	1	1	—	
	BASIC IOX	Reserved	—	—		0	—	—	0	
DPSA-5	Load Mode	Debug Mode	Normal Mode	0	0	0	0	0	0	
DPSA-6	Main IOX, Keyboard Type	Bailey Keyboard CPU	Data Panel Keyboard CPU	1		—	—	—		
	Disk IOX	Reserved	—	—	—	0	—	—	—	
	LP/CRT IOX Printer Type	Genicom 3404	Okidata	—	—	—	1	1	—	
	BASIC IOX	Reserved	—	—		—	—	—		Select Test in auto test mode
DPSA-7	Main IOX	Reserved	—	0	—	—	—	—	—	
	Disk IOX	Reserved	—	—	—	*	—	—	—	
	LP/CRT IOX Plot Char. Color Diff. on Hard Copy	Disable	Enable	—	—	—	0	0	—	
	BASIC IOX	Reserved	—	—	0	—	—	—	0	
DPSA-8	Reserved	—	—	0	0	*	0	0	0	

*For 8 inch Winchester fixed drive and "1403" controller set to "Closed". Refer to Table 3.4B for variations based on drive, controller, and tag count capacity.

TABLE 3.4 — IOXM Component Setup Continued (Standard Settings)

SWITCH	DESCRIPTION	1 = Open = OFF	0 = Closed = ON	MAIN IOX (SLOT 2)	DBP IOX (SLOT 5)	DISK IOX (SLOT 8)	LP/CRT IOX (SLOT 11)	BASIC IOX (SLOT 14)	NOTES
DPSB-1	CRU Base Address	1	0	1	1	1	1	1	
DPSB-2	CRU Base Address	1	0	0	0	0	0	0	
DPSB-3	CRU Base Address	1	0	0	0	0	0	0	
DPSB-4	CRU Base Address	1	0	0	0	0	0	0	
DPSB-5	CRU Base Address	1	0	0	0	0	0	0	U34
DPSB-6	"Watchdog" Timeout	Deselected	3 sec	1	1	1	1	1	
DPSB-7	"Watchdog" Timeout	Deselected	6 sec	1	1	1	1	1	
DPSB-8	"Watchdog" Timeout	Deselected	11 sec	1	1	1	1	1	
DPSB-9	"Watchdog" Timeout	Deselected	21 Sec	0	0	0	0	0	
DPSB-10	Reserved	—	—	0	0	0	0	0	
DPSC-1	Backplane/ Relay Cntrol	Enable	Disable	1	0	0	0	0	
DPSC-2	Interrupt Control	Enable	Disable	1	0	0	0	0	U22
DPSC-3	Alarm Contact Control	Enable	Disable	1	0	0	0	0	
DPSC-4	Clock Control	Enable	Disable	1	0	0	0	0	
DPSC-5	Load Control	Local	Global	0	0	0	0	0	
DPSC-6	Reset Control	Local	Global	0	0	0	0	0	
DPSC-7	Reserved	—	—	0	0	0	0	0	
DPSC-8	Reserved	—	—	0	0	0	0	0	

TABLE 3.4 — IOXM Component Setup Continued (Standard Settings)

Switch	Description	1 = OPEN = OFF	0 = CLOSED = ON	Main IOX (SLOT 2)	DBP IOX (SLOT 5)	DISK IOX (SLOT 8)	LP/CRT IOX (SLOT 11)	BASIC IOX (SLOT 14)	NOTES
DPSD-1	Tie RTS to CTS	Disable	Enable	0	1	0	0	0	
DPSD-2	CTS on Pin 16	Disable	Enable	1	0	1	1	1	U27
DPSD-3	+12 V on Pin 12	Disable	Enable	1	1	1	1	1	All DPSD
DPSD-4	+5 V on Pin 14	Disable	Enable	1	1	1	1	1	Functions
DPSD-5	−12 V on Pin 13	Disable	Enable	1	1	1	1	1	Apply to
DPSD-6	Reset on Pin 16	Disable	Enable	1	1	1	1	1	RS232
DPSD-7	Ground on Pin 1	Disable	Enable	0	0	0	0	0	
DPSD-8	Reserved	—	—	0	0	0	0	0	
Resistor Pack U65 (4.7 K ohms):				Installed	Removed	Removed	Removed	Removed	

TABLE 3.4B — Disk IOXM Settings for Fixed Drive Variations

SWITCH DPSA-7	SWITCH DPSA-8	MFP TYPE	CONTROLLER	DRIVE
0	0	MFP01 or MFP02	1403	SA 1004, SA 1002
0	1	MFP01	DTC 535	ST 212, TM 252
0	1	MFP02	OMTI 5200 (DTC 520D)	ST 212, TM 252
1	0	MFP01	OMTI 5200 (DTC 520D)	ST 212, TM 252
1	0	MFP02	OMTI 5200 (DTC 520D)	225*
1	1	MFP01 or MFP02	OMTI 5200 (DTC 520D)	ST213

MFP01 = 128 KB MFP Boards
MFP02 = 512 KB MFP Boards (only on 5000 Tag Units)

ST 212 = 4 Heads, 306 cylinders, 10 Megabytes
ST 225 = 4 Heads, 612 cylinders, 20 Megabytes
ST 213 = 2 Heads, 612 cylinders, 10 Megabytes

*Not covered in 1400 Tag software, only 5000 Tag software

Printer Installation and Set Up

Genicom Printer

To set up the Printer, perform the steps below.

STEP 1   Prepare the printer for use, removing packaging material, installing printer ribbon and paper, and connecting the power cord per Chapter 2 of the Genicom Operator's Manual.

STEP 2   Turn the printer on (the power switch is at the rear of the printer and and above the power cord connection).

STEP 3   The printer display now indicates either **Lo** (live off) or **On** (on-line). If the printer displays **On**, depress the ON LINE pushbutton momentarily. This changes the display to **Lo.**

STEP 4   Place both the LOAD and PROGRAM switches to the UP position. These switches are inside the printer at the right rear side (viewed from the front). Access the switches by lifting up the front edge of the top rear cover. After placing the switches to UP, the printer display indicates **SU..**

STEP 5   Depress the TEST pushbutton switch momentarily. The display changes first to **IS** and then to **8.8.** After a few seconds the display reverts to **SU.**

STEP 6   Place the LOAD switch in the DOWN position. (The PROGRAM switch must stay in the UP position.) The display changes to **Lo.**

STEP 7   Depress the PRG pushbutton switch momentarily. The display changes to **P9** and a listing of the printer configuration prints out.

STEP 8   Depress the No. 4 pushbutton switch momentarily. This selects Interface Controls for modification. A listing of Interface Controls modification options prints out.

STEP 9   Depress the No. 1 pushbutton switch momentarily. This selects Interface Type for modification. A listing of Interface Type modification options prints out.

STEP 10   Depress the No. 2 pushbutton switch momentarily. This selects "Centronics" as the interface type. The printer now lists the interface type as "Centronics."

STEP 11   Depress pushbutton 2 momentarily to select LPI menu. Depress pushbutton 4 to select 8 LPI.

STEP 12   Depress the No. 0 pushbutton switch momentarily. This returns the printer to normal operation. The printer display now indicates **Lo.**

STEP 13   Depress the ON LINE pusbutton switch momentarily. The printer display now indicates **On.**

STEP 14   Connect one end of the printer cable, Bailey Controls P/N 6634330-3ON25, to the P3 connector of the Printer Termination Unit in the NOIU01 Driver Unit cabinet or in the NOIU02. Secure the male cable connector in place using the bail locks of P3. Connect the other end of the printer cable to the 36-pin "Centronics" type connector at the left rear (viewed from the rear) of the printer. Secure the male cable connector in place using the bail locks of the female printer connector.

NOTE: Do not use the 25-pin DB type connector at the rear of the printer.

STEP 15   Connect one end of the static ground strap (supplied with paper basket) to the paper basket and the other end to the terminal under the 25-pin DB type connector at the rear of the printer.

Handling/Inserting Floppy Diskettes

Handling floppy diskettes with care as detailed below extends their useful life and minimizes the risk of losing their valuable stored data.

When inserting a floppy diskette into the OIU diskette drive, insert it carefully. Do not force it in or use so much force that the diskette bends. If meeting resistance on insertion that causes the diskette to bend, check for misalignment of the diskette with the drive. Withdraw the diskette from the drive and reinsert it.

When handling floppy diskettes, do not bend nor fold them. Bending or creasing a diskette makes is unusable and renders any previously stored data thereon unretrievable. Although floppy diskettes are *flexible*, they are not designed to bend more than that necessary during normal operation in the diskette drive.

Never touch the exposed recording surface of a diskette. The surface is fragile and easily scratched by fingernails or other foreign objects. Scratching the magnetic recording surface causes loss of stored data rendering the diskette unusuable. Touching the recording surface deposits body oils enabling dust particles to stick to it. Dust buildup under the diskette jacket or on the diskette drive head can scratch the diskette recording surface.

When a diskette is not in use, store it inside its envelope. The envelope protects the exposed diskette recording surface from accidental contact and dust buildup. Storing diskettes in hard plastic-enclosed diskette library cases provides additional protection. (Such diskette library cases are readily available from office and computer supply houses.)

Nevery try to clean the diskette recording surface. Brushing or rubbing the recording surface scratches it. Never smoke near diskettes. Carelessly dropped hot ashes or embers can damage the diskette.

Do not write on the plastic jacket using either pencils or ball point pens. Hard tipped writing implements can damage the recording surface under the jacket. Mark the necessary identification on adhesive backed labels before affixing such labels to the jacket. If wiring on labels already affixed to the jacket, press lightly using a felt tip pen.

Keep diskettes away from magnetic fields. Magnetic fields can accidentally erase or damage stored data. Never lay diskettes on electrical or electronic equipment (printers, computers, oscilloscopes, an so on). Motors, transformers, dot matrix printer heads, and other such equipment generate magnetic fields that can erase or damage data stored on diskettes if the diskettes are placed near them.

Keep bulk magnetic erasers away from the OIU work area. Keep such erasers in a separate, or service area. When required to erase diskettes, take them to the bulk eraser instead of bringing the bulk eraser to the OIU work area. Keeping the bulk eraser away from the OIU work area minimizes damage or accidental erasure of stored data.

Do not store or use diskettes at a temperature less than 10°C (50°F) or greater than 52°C (125°F). Diskettes become brittle and if flexed at extremely low temperature, can split or crack. At extremely high temperature the diskette jacket can warp. If the jacket warps, the diskette either cannot insert into the diskette drive or, if it does insert, cannot function properly. Always keep diskettes away from heat sources like direct sunlight or the heated exhaust of electrical equipment.

When required to store data on an OIU floppy diskette, always ensure the diskette has a Write Enable tag covering its Write Protect slot before inserting the diskette into its drive (see Figure 3.14).

When inserting a diskette into the NOIU01/03 diskette drive, orient the diskette horizontally so that its identification label is on the UPPER facing surface (faceup) and the edge having the Write Protect slot (covered by a Write Enable Tag if desiring data storage) fits into the drive first (Figure 3.15). Insert the diskette completely into the drive. While holding the diskette in position inside the drive, close and latch
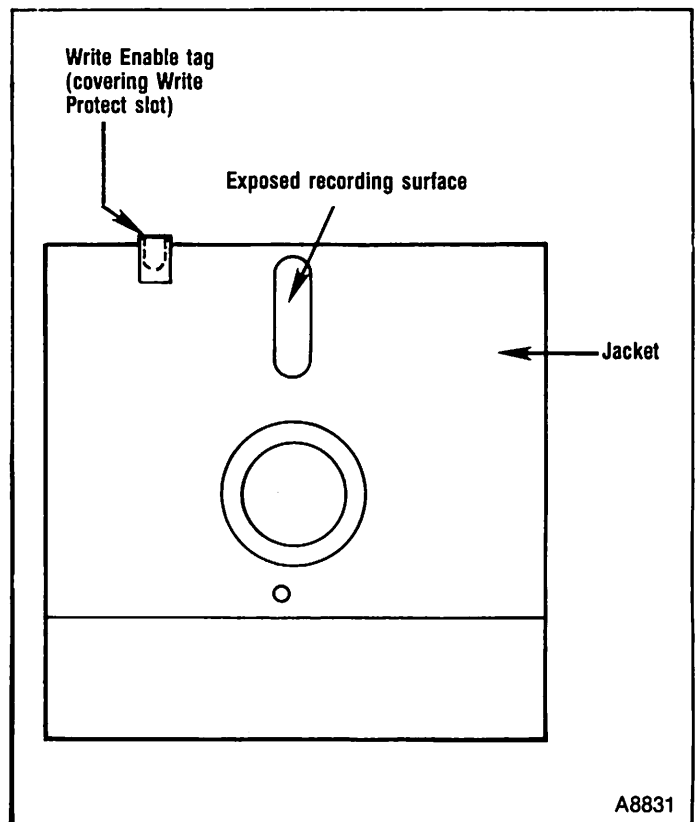
FIGURE 3.14 — OIU Floppy Diskette
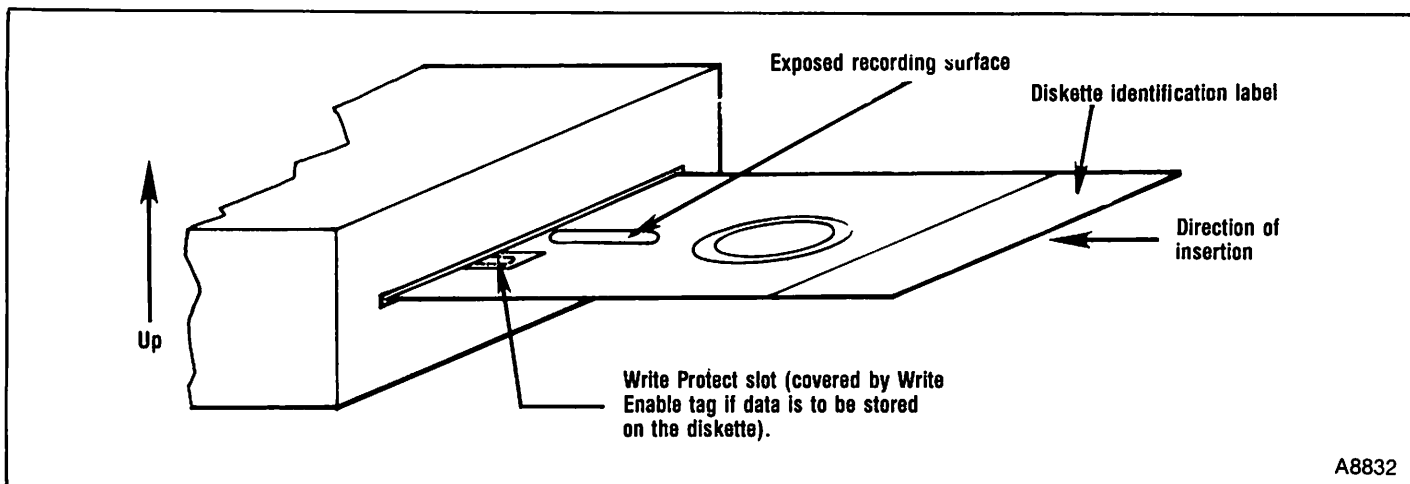
FIGURE 3.15 — Inserting Floppy Diskette Into NOIU01/03 Drive
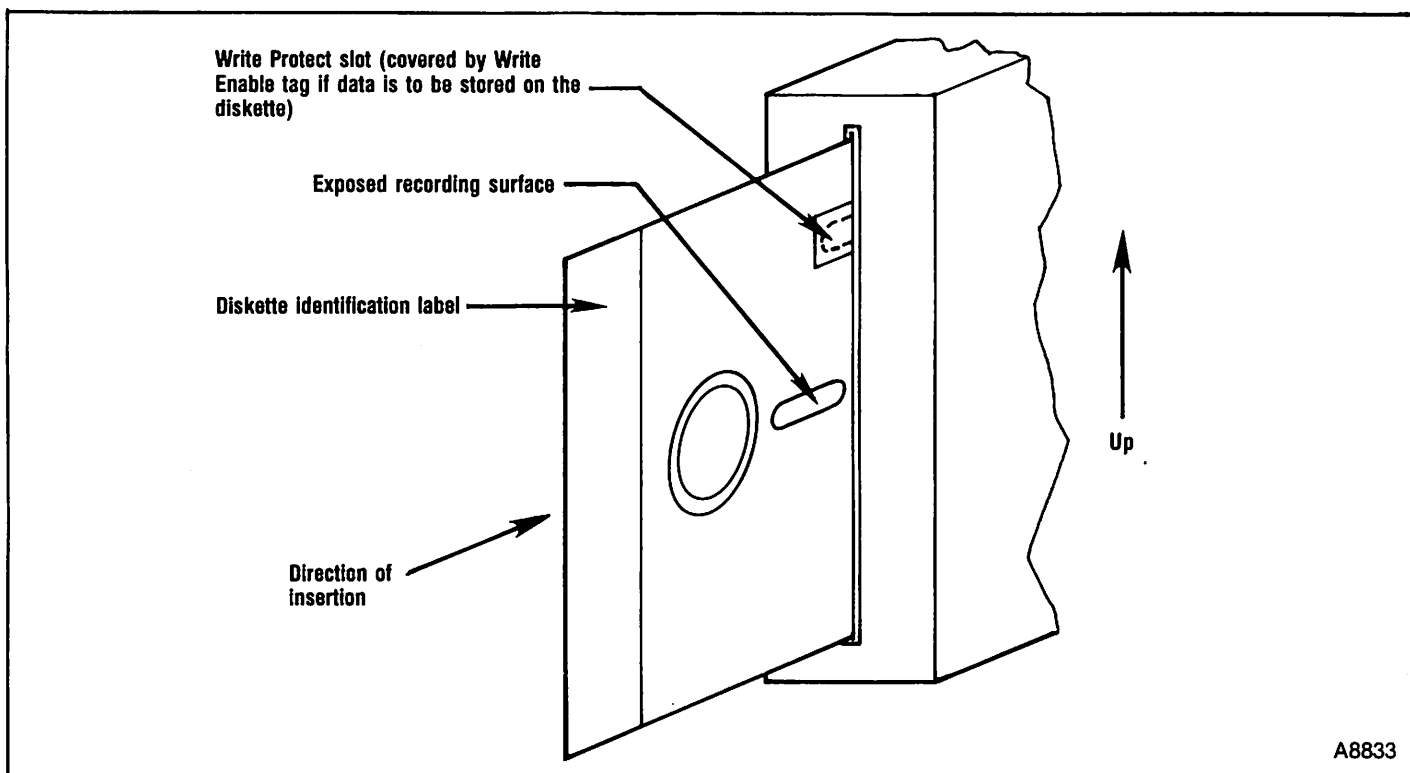
FIGURE 3.16 — Inserting Floppy Diskette into NOIU02 Drive

the drive door. (Push the edge of the diskette gently upwards with your fingertips while sliding the diskette door downward with your thumb. After the drive door moves as far as it can go it latches in place.)

NOTE: Some Floppy Diskette do not have a Write Protect slot and do not require a Write Enable tag.

When inserting a floppy diskette into the NOIU02 diskette drive orient the diskette vertically so that its identification label is on the right facing surface (right side) and the edge having the Write Protect slot (covered by a Write Enable tag if desiring data storage) fits into the drive first (see Figure 3.16). Insert the diskette into the drive, close and latch the drive door. (Push the diskette gently to the left with your fingertips while sliding the drive door to the right with your thumb. After the door moves as far as it can go it latches in place.)

To remove a diskette from its drive, unlatch the drive door. The door slides open and the diskette moves slightly out of its position in the drive. Grasp the edge of the diskette between thumb and first finger, pulling the diskette completely out of the drive.

CAUTION

Do NOT try to remove a floppy diskette from its drive when the diskette drive LED is lit. While the LED is lit the diskette operates, either storing or transmitting data. Removing the diskette from its drive while the LED is lit interrupts diskette operation. Data going onto the diskette can be lost or damaged. On later style diskette drives, a module reset is required to release the door if the system crashes with LED still illuminated.

ATTENTION

NE PAS tenter de retirer le disque souple de l'unite de disque lorsque le temoin a DEL est allume. Ce temoin indique que l'unite enregistre ou lit des donnees sur le disque souple. L'interruption de ces operations par le retrait du disque peut provoquer la perte ou l'endommagement des donnees. Dans le cas des modeles recents d'unites de disques, un verrou epeche l'ouverture de la porte de l'unite lors de son fonctionnement. Dans l'eventualite d'une defaillance du systeme pendant que le temoin est encore illumine, actionner l'interrupteur RESET pour degager le disque.

OIU Reset

Reset the OIU under the following circumstances:

1. Whenever changing the OIU System Mode (See Table 3.4, switch DPSA-3):

FROM Normal Mode to Utility Mode
or
FROM Utility Mode to Normal Mode

2. Whenever the AC power supply to the OIU becomes interrupted.

To reset the NOIU01/03, push up the bat handle of any ONE reset/load switch on the DBP, Disk, or LP/CRT MFPM board (Figures 3.9 and 3.10, and 3.11, switch S1) momentarily and then release it. Each switch is spring-loaded and returns to its normal OFF position (handle is parallel to the floor) when released. If the Main, DBP, Disk, and LP/CRT MFPM boards are not set up for auto load after reset (switches DPSW-6 on the MFPM boards are set to the closed/auto load after reset disabled position), OIU load must be done manually after each reset. To load manually, push down the bat handle of any ONE of these reset/load switches momentarily and then release it.

To reset the NOIU02, push up the bat handle of the global reset/load switch momentarily and release it. The global reset/load switch is behind the access door on the lower right front of the console just below the diskette drive (Figure 2.4). To open the access door, lift its bottom edge until the door is perpendicular to the console surface. Then slide the door inward, under the diskette drive. The global reset/load switch is spring-loaded and returns to its normal OFF position when released. If the NOIU02 MFPM boards are not set to the closed/auto load after reset (switches DPSW-6 on the MFPM boards set to "closed/Auto load after reset disabled position), OIU load must be done manually after each reset. To load manually, push down the bat handle of the global reset/load switch momentarily and then release it.

NOTE: The NOIU02 can be reset using any MFPM reset/load switch, (except "Main"), or its global reset/load switch. Using the global reset/load switch, located on the NOIU02 below the diskette drive, is the preferred method.

OIU Startup

To perform OIU startup, follow the steps below.

STEP 1 - Set swtich DPSA-3 (Figure 3.13) on all IOXM boards to the Normal Mode (closed) position (see Table 3.4).

STEP 2 - Set the OIU power disconnects (main power switches shown in Figure 2.4) to the **ON** (UP) position.

STEP 3 - (NOIU01 only) Set the power switch at the rear of the disk drive enclosure to the **ON** (UP) position (see Figure 2.3).

STEP 4 - Reset the OIU (See OIU RESET above). After the NETWORK 90 Logo displays and

a short delay occurs, the AREA 1 display automatically appears on the CRT.

STEP 5 - Refer to the OIU Operation/Configuration Manual, Product Instruction IE93-901-1, for further details on operating and configuring the OIU.

Files Utilities

The OIU file utilities provide basic operations useful for maintaining OIU functions. The operations are:

- initializing the Winchester fixed rigid-disk
- loading system software
- loading (uploading) OIU configuration from diskette
- saving (downloading) OIU configuration to diskette
- initializing a floppy diskette
- saving data from a diskette
- restoring data to a diskette
- loading a blank configuration.

Before using any of the file utilities, place the OIU in the Utility Mode. To do this, set the DPSW-3 switches on all IOXM boards to the open/Utility Mode position (see Table 3.4 and Figure 3.13) and then reset the

OIU (see OIU RESET above). After placing the OIU in Utility Mode the File Utility Operations Menu automatically appears on the CRT (Figure 3.17).

After completing all desired File Utility operations, return the OIU to the Normal Mode. Set the DPSA-3 switches on all IOXM boards to the closed/Normal Mode position and reset the OIU (See OIU STARTUP above).

NOTE: In all utility sequences the volume name SYS0 is reserved to identify the Winchester fixed rigid-disk. Do NOT use SYS0 to identify a floppy diskette.

Initializing Disk/Loading System Software Utilities

NOTE: These two utilities are necessary ONLY IF the Winchester fixed rigid-disk drive malfunctions and/or is replaced.

To perform these utilities, follow the steps below.

STEP 1 - Set switches DPSA-3 on all IOXM boards to the Open/Utility Mode position.

STEP 2 - Set switch DPSA-4 on the Disk IOXM board to the open/Floppy Diskette IPL Device position (see Table 3.4 and Figure 3.13).

File Utilities Operations

```
QQ  - Quit (Return to Monitor)
HH  - Help (Output Menu)
II   - Initialize Disk
CX  - Create Extensible File
DF  - Delete File
DD  - Delete File
LL  - Load Memory Image from File
DD  - Dump Memory Image from File
IP  - IPL Disk Processor
MD  - Map Disk
LU  - Load and Run Utility Manager from SYS0
LD  - Load and Run File from Diagnostic Floppy
```

FIGURE 3.17 — File Utility Operations Menu

STEP 3 - Insert the floppy diskette labeled SYS1 into the OIU diskette drive (see HANDLING/INSERTING FLOPPY DISKETTES above) and reset the OIU (see OIU RESET above). The File Utility Operations menu automatically appears on the CRT.

STEP 4 - Perform the following keying sequence:

Display	Enter	Actuation
Volume Name = SYS0	LL	PRESS: ENTER
File Name = ???????	SYS1	PRESS: ENTER
Start Addr = 2000	UTLMGR	PRESS: ENTER
Map Word = 4E20		PRESS: ENTER
Auto Start = Y		PRESS: ENTER

The following now scrolls onto the screen:

Disk operation started OF - Normal completion
Disk operation started RF - Normal completion
Disk operation started CF - Normal completion
0000XXXX bytes processed (value varies acc. to software)
Program auto started

The File Utility Operations Menu automatically reappears.

STEP 5 - Perform the following keying sequence:

Display	Enter	Actuation
	XF	PRESS: ENTER
Volume Name = SYS0	SYS1	PRESS: ENTER
File Name = ???????	INSYS0	PRESS: ENTER
		(Run time: 50 min)

If the OIU has Distributive Trending, a message now appears asking about establishing a Bad Track Table. If establishing a Bad Track Table, the information supplied with the replacement Winchester fixed disk is added to the initialization (for 8 inch fixed disk only).

STEP 6 - When initialization of the Winchester fixed rigid-disk is complete, the system creates files that list on the CRT.

STEP 7 - After file creation is complete the OIU is ready to copy/verify system software from SYS1, SYS2, SYS3, etc. floppy diskettes to the Winchester fixed rigid-disk. After transfer of files from the SYS1 floppy diskette is complete the CRT prompts for the SYS2 diskette. Remove the SYS1 diskette from the diskette drive, insert the SYS2 diskette, and press ENTER.

STEP 8 - After transfer of files from the installed floppy diskette is complete, the CRT prompts for the next diskette. Repeat the process for each of the diskettes supplied for your software type and revision, in ascending sequence.

STEP 9 - After transfer of files from the highest number floppy diskette is complete, the system is loaded.

STEP 10 - Set switch DPSA-4 on the Disk IOXM board to the closed/Winchester fixed Rigid-Disk IPL Device position (see Table 3.4 and Figure 3.13).

STEP 11 - To perform other file utilities, reset the OIU and proceed to Step 2 of the desired utility. Else, set the DPSA-3 switches on all IOXM boards to the closed/Normal Mode position and reset the OIU.

Utility Manager Operations

Load OIU Configuration Utility
To perform this utility, follow the steps below.

STEP 1 - Set the DPSA-3 switches on all IOXM boards to the Open/Utility Mode position and reset the OIU. The File Utility Operations Menu automatically appears (Figure 3.17).

STEP 2 - Perform the following keying sequence:

Display	Enter	Actuation
	LU	PRESS: ENTER

After normal completion the Utility Manager Operations menu automatically appears (Figure 3.18).

```
QQ    -   Quit (Return to Monitor)
 II    -   Initialize Disk
CF    -   Create Control File
RF    -   Restore Floppy
SF    -   Save Floppy
EF    -   Edit Control File
VF    -   Verify Floppy
XC    -   Execute Command
DS    -   Disk Status
XF    -   Execute Control File
MD    -   Map Disk
```

FIGURE 3.18 — Utility Manager Operations Menu

STEP 3 - Load OIU Configuration from Floppy Diskette (perform the following keying sequence):

Display	Enter	Actuation
Volume Name = SYSO File Name = ???????	XF LDCFG	PRESS: ENTER PRESS: ENTER PRESS: ENTER

STEP 4 - The CRT prompts for the CFG1 diskette. Insert the CFG1 diskette into the OIU diskette drive (see HANDLING/INSERTING FLOPPY DISKETTES above) and press ENTER.

STEP 5 - After CFG1 loads the CRT prompts for CFG2, CFG3, CFG4 . . . . diskettes. As the prompt appears for each diskette, remove the previously inserted one from the drive, insert the currently requested one, and press ENTER. Repeat this process until all diskettes are loaded.

STEP 6 - To perform other file utilities, reset the OIU and proceed to Step 2 of the desired utility. Else, set the DPSA-3 switches on all IOXM boards to the closed/Normal Mode position and reset the IOU.

Save OIU Configuration Utility

To perform this utility, follow the steps below.

STEP 1 - Set the DPSA-3 switches on all IOXM boards to the open/Utility Mode position and reset the OIU. The File Utility Operations Menu automatically appears, after autoloading.

NOTE: This utility requires four initialized floppy diskettes. If the floppy diskettes to receive the OIU configuration are not initialized, proceed to Step 2 of the INITIALIZE FLOPPY DISKETTE utility before proceeding with the current utility.

STEP 2 — Perform the following keying sequence:

Display	Enter	Actuation
	LU	PRESS: ENTER

After normal completion the Utility Manager Operations menu automatically appears.

STEP 3 — Perform the following keying sequence:

Display	Enter	Actuation
Volume Name = SYS0 File Name = ???????	XF SVCFG	PRESS: ENTER PRESS: ENTER PRESS ENTER

STEP 4 - The CRT now prompts for the floppy diskette on which to save CFG1. Insert the initialized diskette into the diskette drive (see HANDLING/INSERTING FLOPPY DISKETTES above) and press ENTER. The OIU then saves CFG1 to the diskette.

STEP 5 - After saving is complete the CRT prompts in sequence for the floppy diskettes on which to save CFG2, CFG3, and CFG4. As the prompt appears for each diskette, remove the previously inserted one from the drive, insert the currently requested one, and press ENTER. Repeat this process until CFG1, CFG2, CFG3, and CFG4 are all saved.

STEP 6 - To perform other file utilities, reset the OIU and proceed to Step 2 of the desired utility. Else, set the DPSA-3 switches on all IOXM boards to the closed/Normal mode position and reset the OIU.

Initialize Floppy Diskette Utility

To perform this utility, follow the steps below.

STEP 1 - Set the DPSA-3 switches on all IOXM boards to the open/Utility Mode position and reset the OIU. The File Utility Operations Menu automatically appears.

STEP 2 - Perform the following keying sequence:

Display	Enter	Actuation
	II	Insert desired floppy diskette into diskette drive and press: ENTER
Volume Name = ???????	Desired volume name - 4 chars (CFG1, CFG2, etc.)	PRESS: ENTER
Disk Operation Started II Normal Completion		

STEP 3 - To restore data (previously saved to the Winchester fixed rigid-disk from another floppy diskette) to this diskette, proceed to Step 2 of the Restore (Copy to) Floppy Diskette Utility.

STEP 4 - To perform other file utilities, reset the OIU and proceed to Step 2 of the desired utility. Else, set the DPSA-3 switches on all IOXM boards to the closed/Normal Mode position and reset the OIU.

Save Floppy Diskette Utility

To perform this utility, follow the steps below.

STEP 1 - Set the DPSA-3 switches on all IOXM boards to the open/Utility Mode position and reset the OIU. The File Utility Operations Menu automatically appears.

STEP 2 - Perform the following keying sequence:

Display	Enter	Actuation
	LU	PRESS: ENTER

After normal completion the Utility Manager Operations menu automatically appears.

STEP 3 - Perform the following key sequence:

Display	Enter	Actuation
Save Complete Verify Complete	SF	Insert the floppy diskette from which to copy/save into the diskette drive and presss ENTER

The OIU now saves (copies) the data from the floppy diskette to the Winchester fixed rigid-disk in a file named FLOPPY.

NOTE: This utility can save (copy) data from only one floppy diskette at a time. To save data from more than one floppy and to restore such data to other diskettes, perform all desired restore floppy diskette utility operations before saving data from the next diskette.

STEP 4 - To restore data just saved to another diskette, proceed to Step 2 of the Restore (Copy to) Floppy Diskette utility. To perform other file utilities, reset the OIU and proceed to Step 2 of the desired utility. Else, set the DPSA-3 switches on all IOXM boards to the closed/Normal Mode position and reset the OIU.

Restore (Copy to) Floppy Diskette Utility

To perform this utility, follow the steps below.

STEP 1 - Set the DPSA-3 switches on all IOXM boards to the open/Utility Mode position and reset the OIU. The File Utility Operations Menu automatically appears.

NOTE: This utility requires an initialized floppy diskette. If the floppy diskette on which to copy the data is not initialized, proceed to Step 2 of the INITIALIZE FLOPPY DISKETTE utility before proceeding with the current utility.

STEP 2 — Perform the following keying sequence.

Display	Enter	Actuation
	LU	PRESS: ENTER

After normal completion the Utility Manager Operations menu automatically appears.

STEP 3 - Perform the following keying sequence:

Display	Enter	Actuation
	RF	Insert initialized diskette into diskette drive and press ENTER
Restore Complete Verify Complete		

STEP 4 - To make diskette copies, repeat Steps 2 and 3 as many times as necessary. Remember to use an initialized diskette each time. To perform other file utilities, reset the OIU and proceed to Step 2 of the desired utility. Else, set the DPSA-3 switches on all IOXM boards to the closed/Normal Mode position and reset the OIU.

Load Blank Configuration Utility

To perform this utility, follow the steps below.

STEP 1 - Set the DPSA-3 switches on all IOXM boards to the open/Utility Mode position and reset the OIU. The File Utility Operations Menu automatically appears.

STEP 2 - Perform the following keying sequence:

Display	Enter	Actuation
	LU	PRESS: ENTER

After normal completion the Utility Manager Operations menu automatically appears.

STEP 3 - Perform the following keying sequence:

Display	Enter	Actuation
VOLUME NAME = SYS0	XF	Insert SYS1 Floppy PRESS: ENTER
	SYS1	PRESS: ENTER
File Name = LDBCFG		PRESS: ENTER

The OIU now copies the file and lists it on the CRT.

STEP 4- To perform other file utilities, reset the OIU and proceed to Step 2 of the desired utility. Else, set the DPSA-3 switches on all IOXM boards to the closed/Normal Mode position and reset the OIU.

Console Array Assembly Installation

The Console Array is a custom assembly and can have one or more of the following components:

- NUCC01 Utility Console Cabinet
- NCWS01 Console Work Station
- NCPS01 Console Printer Surface
- NPIE01 15° Wedge Console
- NOCS01 Operator's Chair.

The Console Array can either be a separate assembly or can integrate one or more NOIU02 Operator Interface Units (OIUs).

Assembling the Console Array

Assemble the Console Array at your installation site according to details shown in Figure 7.5. The following figures show details for the individual components of the Console Array:

The NUCC01 has identical dimensions to the NOIU02 enclosure (Figure 7.6). This cabinet can mount auxiliary equipment. For example, the front panel of the NUCC01 can mount NETWORK 90 Digital Control/Indicator/Logic Stations, and/or Pulverizer Control Stations. The NUCC01 has front and rear lockable doors. The NUCC01 has provisions for rear, bottom, and top entry of cables identical to the NOIU02.

The NCWS01 dimensions are 28 in. high x 28 in. wide x 46 in. deep (see Figure 7.7). This work station can also mount ancillary equipment. Its counter surface can have table top equipment such as the NOIU01 CRT/Keyboard Console. The NCWS01 has front and rear lockable doors. The NCWS01 has provisions for rear and bottom entry of cables identical to the NOIU02

The NCPS01 is identical to the NCWS01 except it has a slot for printer paper and clamps for printer cables at the rear of its counter top (Figure 7.7). The NCPS01 is intended for table top printers susch as the NPRT02.

The NPIE01 is a 15° wedge section used to provide a curve to a Console Array Assembly (See Figure 7.8). The NPIE01 can also mount ancillary equipment. A NETWORK 90 Digital Control Station (or Indicator or Logic Station) or wall-mounted telephone can be mounted on the NPIE01 front panel. The NPIE01 has front and rear lift-off panels.

The NOCS01 is an operator chair with an adjustable seat. The seat has a height adjustable from about 17 to 20 inches (see Figure 7.9).

Figure	Component
7.3	NOIU02 Operator Interface Unit
7.6	NUCC01 Utility Console Cabinet
7.7	NCWS01 Console Work Station and NCPS01 Console Printer Surface
7.8	NPIE01 15° Wedge Console
7.9	NOCS01 Operator's Chair

CAUTION

Figures 7.3 through 7.9 detail only the MINIMUM recommended clearances for each component. Local building, electrical, and/or fire safety codes may require additional clearances.

ATTENTION

Les figures 7.3 a 7.9 n'illustrent que l'espace MINIMUM requis entre chaque element. Les codes du batiment, de l'electricite, et/ou de prevention des incendies peuvent dicter des espaces plus importants.

NOTE: NPIE01 15° Wedge consoles are not designed to be the END units of any Console Array Assembly. Assemble single or multiple NPIE01 components BETWEEN other full width units (NOIU02, NUCC01, NCWS01, or NCPS01).

Place each unit in the desired location, level it, align it with adjacent units, and bolt it to the floor (optional) according to the respective installation figure. Secure each unit to adjacent units using the supplied rear joining brackets and console clamps (see Details A and B of Figure 7.5).

If installing the units without mounting them to the floor, install the supplied stabilizers. The stabilizers prevent the Operator Interface Unit(s) or Console Array from tipping over when placing a heavy weight (such as a printer or the NOIU01 CRT/Keyboard Console) near the front of one or more of the console surfaces.

If desired, add one trim plate at each end of the Console Array. Use two .190 x .500 in. slotted, pan head, thread-forming screws (Type AB) per trim plate. Align the bottom edge of the trim plate flush with the floor before tightening the retaining screws.

Section IV
Maintenance

This section explains periodic maintenance requirements, diagnosic tests, and replacement part procedures. Supplier service manuals list similar procedures for the printer and other Bailey components obtained from your suppliers. The information in Sections II and III of this manual may also be helpful for replacing parts. Review the section on Installation and Start-up for specific adjustments associated with certain replaceable parts before returning your system to normal operation. Table 4.1 lists a reference for Preventive Maintenance procedures.

NOTE: Only qualified personnel should perform repair and adjustment.

Troubleshooting

Table 4.2 is a Fault Correction Guide listing probable causes and corrective actions for commonly seen malfunctions. Executing diagnostics (stored in the ROM on each MFPM) aids OIU Troubleshooting. Table 4.3 lists all diagnostic tests. Initiate tests by setting dipswitch #5 of each MFPM to open and then resetting. Run specific tests and sequences based on dipswitch settings of DPSA 5 - 8 on each IOXM. Binary coded LEDs on the MFPM indicate the tests performed. The bottom four LEDs serve this purpose. (The bottom LED is the least significant bit.) Test failure stops the sequence leaving the corresponding LEDs illuminated. Tables 4.4 and 4.5 provide details for the auto test sequences.

TABLE 4.1 — Preventive Maintenance

UNIT(S)	MONTHLY	QUARTERLY	ANNUALLY	REFERENCE
Floppy Diskette Drive			Clean, inspect, and check Alignment	Refer to SA 800/801, M2896, FD1155 Diskette Storage Drive Maintenance Manual, as applicable
Line Printer	Inspection and	Lubrication	Adjustment	Refer to the printer service manual.
Keyboard electronics Power Supply Adjust (NOIU01 only)			Adjust Power Supply	Refer to Section III "NOIU01 CRT/Keyboard Console Setup"
NOIU01 Driver Cabinet and NOIU02 Blower Assembly	Clean Filter			Rinse with water, blow dry, and resinstall
NOIU01 Driver Cabinet and NOIU02 Power Supplies			Adjust Power Supply	See Section III Driver Unit Setup - Disk Drive Asembly Setup - Power Rack Assembly Power Supply Setup
Power and Grounding Connections			Clean and Tighten	Verify that connections are corrosion-free and tight. Clean & tighten as needed.

TABLE 4.2 — Fault Correction Guide

FAULT	PROBABLE CAUSE	CORRECTIVE ACTION
On OIU power up Area #1 fails to appear	No power to disk drives and Disk Controller. OIU shows only the CRT reset message	Check fuses and ON/OFF switch. Check for correct supply levels.
	Incorrect switch settings on MFPM, IOXM, or LSM02 boards	Check all MFP/IOX switch settings. See Section III — Module Setups. Check NCIU02 Setup.
	LIM not inserted	Insert LIM and Reset.
	Shipping lock not moved from Winchester (ON MODELS WITH SHUGART DRIVES ONLY)	Power down, remove lock and power up again.
	Card Cage power supply problem	Check power supply adjustments
	Incorrect and/or non-secured disk-related cable connections/ jumpers	Refer to jumper drawing Figure 7.11.
	Component failure	Proceed to off-line testing. Run utility mode disk pair diagnostics to isolate hardware fault.
"Time" does not appear	LSM02 or related cabling	Replace defective part.
In Utility Mode "file utility operations" appears and OIU responds to key strokes but does not complete disk operations	Disk Drive power problems	Check disk controller power supply fuses, and voltage levels.
	Faulty component Check: Hard Disk, Disk Controller Board, Disk MFP/IOX Pair, Related cables	Proceed to off-line testing.
NOIU01 does not print screen	OIU possibly has noise problem caused by fans	Remove unused cable from top of CRT CPU Card. Roll it up and store it in bottom of CRT enclosure.

TABLE 4.2 — Fault Correction Guide (continued)

FAULT	PROBABLE CAUSE	CORRECTIVE ACTION
Genicom 3400/3410 Printer does not function correctly.	Incorrect printer configuration	See printer setup instructions
On print screen command, paper feeds without printing	Switch DPSA-6 on LP/ CRT IOXM board is not set open	Set Switch #6 open and reset the OIU.
No response to print command	Line printer disabled by OIU peripheral parameters	Go to OIU Configuration Menu. Select (I) and enter (Yes) for Line Printer available. Press ENTER.
Trend hard copy does not have unique dot patterns for each trend color	Switch DPSA-7 on LP/ CRT IOXM board remembered as open	Set switch #7 closed even if it is already closed. Try reset. The switch may have been open on last reset.
The message "DISK VOLUME FULL" appears on CRT while trying to initialize SYS0	Bad Winchester	Replace Winchester.
All on-board tests fail	AC voltage riding on the DC power supply outputs	Replace power supply.

TABLE 4.3 — Auto Test Sequences (OIU Utilities and Diagnostics)

IOXM BD DPSA Setting				SEQUENCE NO. 9	SEQUENCE FUNCTION	SEQUENCE APPLICATION
(MSD) 5	6	7	(LSD) 8			
0	0	0	0	00	MFPM Test	Any MFPM
0	0	0	1	01	Maximum Test	Complete System (4)
0	0	1	0	02	System Test	System Less Peripherals (4)
0	0	1	1	03	MFPM/IOXM Pair	Any MFPM/IOXM Pair
0	1	0	0	04	PIM Test	Main MFPM/IOXM Pair Only (4,8,10)
0	1	0	1	05	Watchdog Test	Main MFPM/IOXM Pair Only
0	1	1	0	06	Close Relays	Any MFPM/IOXM Pair Only (7)
0	1	1	1	07	CRT Test	LP/CRT MFPM/IOXM Pair Only
1	0	0	0	08	Printer Test	LP/CRT MFPM/IOXM Pair Only
1	0	0	1	09	CIU Test	DBP MFPM/IOXM Pair Only (11)

NOTES:	
1. 1 = OPEN = OFF; 0 = Closed = ON.	6. Sequence 06 opens and closes the relays once only. To repeat the test, reset the MFPM.
2. Unused dipswitch combinations (11-15) access sequence 00.	7. A floppy must already be in the diskette drive.
3. If no IOXM present, the MFPM sees the switches as sequence 00.	8. Set FE (Hex) on PIM to run for test sequences 01,02,04. FE = all switches set OPEN, except the bottom one which is set CLOSED.
4. System tests (sequences 01 & 02) require all three pairs with correct address. Sequence 01 requires a Winchester Disk and the CRT.	9. See Tables 4.6 and 4.7 for explanation of all tests run in each sequence.
5. Sequence 09 runs only on the Main MFPM/IOXM pair in a standard system, but also runs on any pair if enabling the watchdog timer by DPSA-2 (See Table 3.4).	10. PIM test is for 500/1400-tag OIU only.
	11. Only on 5000 tag unit (NMFP02)

TABLE 4.4 — Auto Test Sequences (OIU Utilities and Diagnostics) for Disk Pair Only

IOXM BD DPSA Setting				SEQUENCE NO. 9	SEQUENCE FUNCTION	SEQUENCE APPLICATION
(MSD) 5	6	7	(LSD) 8			
0	1	X (2)	X (2)	01	Maximum Test	Disk MFPM/IOXM Pair
0	0	X (2)	X (2)	02	System Test	Disk MFPM/IOXM Pair
1	0	X (2)	X (2)	08D	Winchester Test	Disk MFPM/IOXM Pair
1	1	X (2)	X (2)	09D	Floppy Test	Disk MFPM/IOXM Pair
NOTES:						
1. 1 = OPEN = OFF, 0 = CLOSED = ON						
2. X = Do NOT change switch settings while running test. These switch settings (Table 4.5 below) designate the Winchester Disk - Disk Controller combinations. Changing the switch settings causes the test to fail.						

TABLE 4.5 — Winchester Disk/Controller Combination IOXM Switch Settings (Test Sequences)

IOXM BD DPSA SETTING		DISK/CONTROLLER COMBINATION	Disk/Controller Capacity
7	(LSD) 8		
0	0	DTC-1403	
1	0	OMIT/ST225	ST225 Combination = 20 MB Disk (1)
0 (*1)	1 (*0)	OMIT/ST212	ST212 Combination = 10 MB Disk
1	1	OMIT/ST213	ST213 Combination = 10 MB Disk
NOTES:			
1. The 20 MB Disk is for the 5000 tag OIU. * OPERATIONAL (NON-DIAGNOSTIC) SETTINGS			

1 = OPEN = OFF; 0 = CLOSED = ON

TABLE 4.6 — Details of Auto Test Sequences

Seq.	Board	Tests
00	ALL	LC MT LR MU
01	MAIN	LC(4) MT LR MU IU CK SSIGNL..IW
	DISK	LC(4) MT LR MU IU SWAIT..SR IT CK WT SWAIT LOOP
	CRT	LC(4) MT LR MU IU SWAIT..SR IT CK CT SWAIT LOOP
02	MAIN	LC(4) MT LR MU IU IT CK SSIGNL..IW
	DISK	LC(4) MT LR MU IU SWAIT..SR IT CK SWAIT LOOP
	CRT	LC(4) MT LR MU IU SWAIT..SR IT CU SWAIT LOOP
03	ALL	LC MT LR MU IT CK
04	ALL	LC PI (SEE NOTE 6)
05	ALL	LC IW
06	ALL	LC RR
07	ALL	LC CT
08	ALL	LC LP
09	ALL	LC CI

NOTES:

1. In sequences 01 & 03 the LED test repeats four times.	4. IW on Main MFPM/IOXM pair causes system reset thus restarting test sequences 01 and 02.
2. SSIGNL = wait and synchronize state for Main IOXM pair.	5. Test sequence 06 does not repeat.
3. SWAIT = wait and synchronize state for Disk and LP/CRT MFPM/IOXM pairs.	6. PIM is used for 500/1400 tag OIU only.

TABLE 4.7 — LED Codes for Auto Tests

Table 4.6 Test Code	LED Code (See NOTE 1)	Explanation
LC	Binary Count (O - F)	LED UP COUNT
MT	1	MAP TRST
LR	2	LOCAL RAM
MU	3	MFPM UART
IU	4	IOXM UART
IT	5	INTERRUPTS
CK	6	1 - SHOT CLOCK
PI	7	PIM INTERFACE (SEE NOTE 4)
SR	8	SELECTED RAM
WT	9	WINCHESTER
CT	A	CRT
IW	B	INT WATCH DOG
FT	C	FLOPPY
LP	D	PRINTER
RR	E	CLOSE RELAYS
CI	F	SEE NOTE 3
SSIGNL, SWAIT	F,E	SEE NOTE 2
LOOP	D	SEE NOTE 2

NOTES:

1. Displays momentarily during test but displays continuously upon test failure. The bottom LED = LSB (Least Significant Bit).

2. In sequence 01 and 02 each board has two WAIT states. In each case the first WAIT displays code F and the second displays code E. While the Main board does the watch dog test (IW) the other boards loop to display code D. In sequence 01 and 02 no tests use these codes.

3. LED code only appears during CIU test run. The SSIGNL indicator only appears on tests in sequences 01 and 02. The CIU test sequence is 09.

4. PIM is used with 500/1400 tag OIU only.

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Part Replacement Procedures

NOIU01/03 Driver Cabinet Disk Drive Assembly Replacement (SA-1000, SA-800/801)

To remove the assembly, refer to Figure 7.26 follow the steps below:

Follow Steps 1-6 of "NOIU01/03 Winchester Drive Retrofit Kit Using Universal 5.25 Inch DC Drive Assembly"

To install the assembly, refer to Figure 7.26 follow the steps below.

STEP 1 — Perform the 'removal' steps of the NOIU01/03 Disk Drive Assembly in reverse order. Replace all cut cable ties.

STEP 2 — If replacing the Winchester Drive of the Disk Drive Assembly, perform the "Initializing Disk/Loading System Software Utility" procedure (Section III, "File Utilities").

NOTE: After answering "Y" to bad track data, press "**ENTER**". If disk has not been formatted, reset and repeat procedure a second time at this point.

NOIU01/03 Driver Cabinet Controller Board Replacement (DTC 1403, OMTI 5200, or DTC 520 D)

To remove the controller board, refer to Figure 7.16 and follow the steps below.

STEP 1 — Disconnect power to the NOIU01/03 Driver Cabinet.

STEP 2 — Remove attaching screws and top of the NOIU01/03 Driver Cabinet.

STEP 3 — Remove attaching screws and top cover of the Disk Drive Enclosure, setting it aside.

STEP 4 — Remove cable connections at controller board (See Figures 4.1, 4.2 — 1403 D/E).

STEP 5 — Loosen controller board attaching screws. Lift out the controller board carefully and keep the washers underneath from dropping into the mechanism.

To install the controller board, refer to Figure 7.16 and follow the steps below.

STEP 1 — Set up Controller Board dipswitch 2H for 1403 D, (Figure 4.1) or 1J for 1403 E, (Figure 4.2) using procedure in controller board section of Table 4.8.

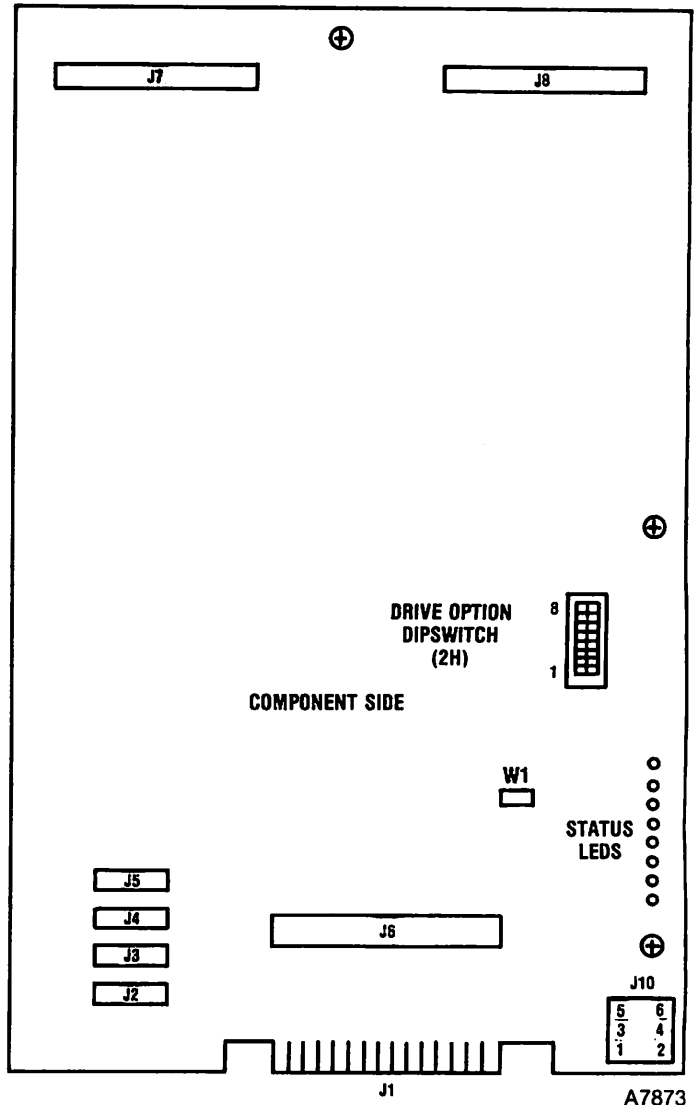**NOTE:** For OMTI 5200 or DTC 520D controller board, set jumpers according to Figure 7.11.

FIGURE 4.1 — *Disk Controller Board Setup Components (DTC 1403D)*

STEP 2 — Perform the steps of the NOIU01/03 Driver Cabinet controller board removal procedure in reverse order.

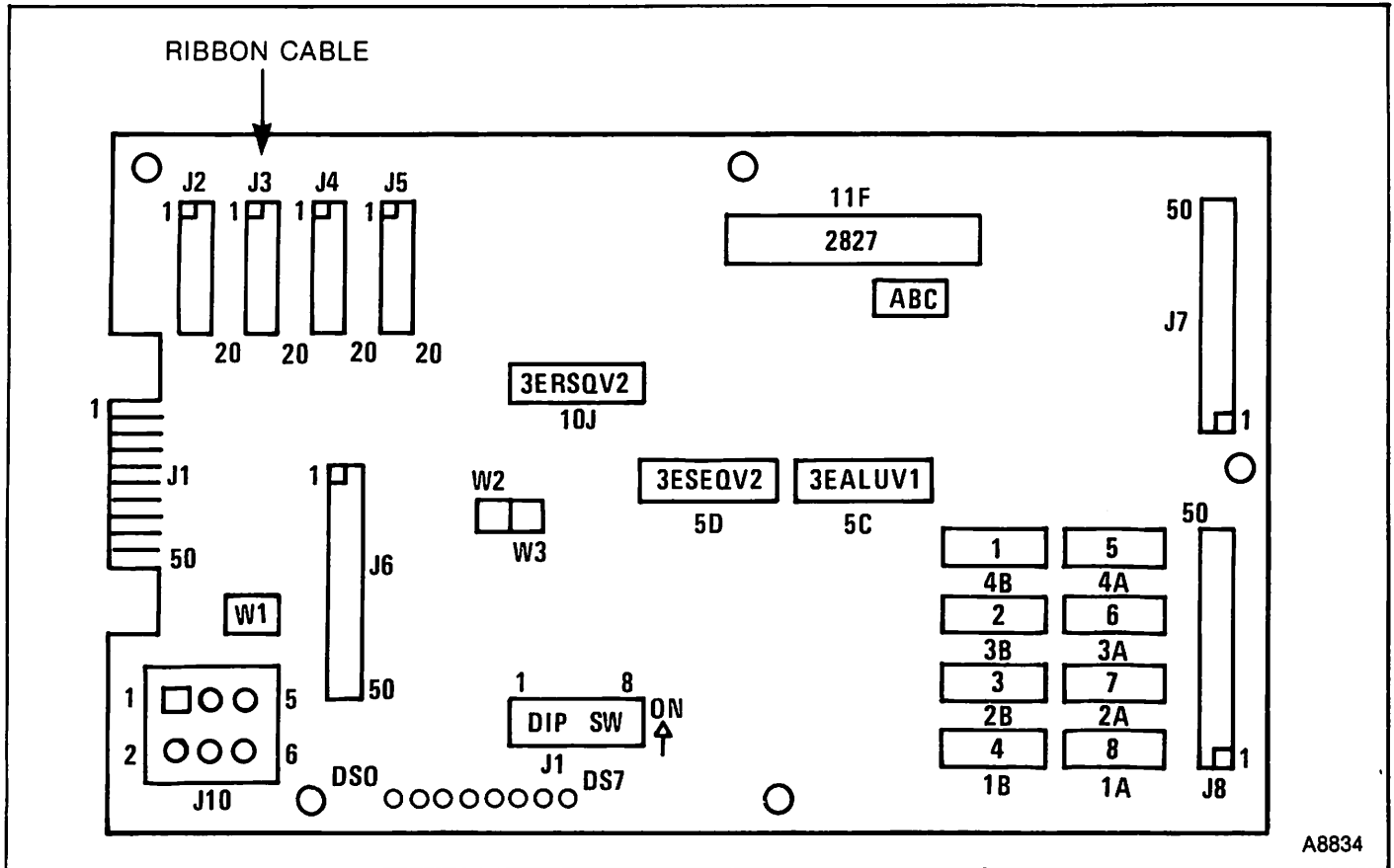STEP 3 — Perform the Disk Drive Enclosure installation procedure.

RIBBON CABLE

J2   J3   J4   J5
1   1   1   1
20   20   20   20

11F
2827
ABC

50
J7
1

1
J1
50

1
J6
50

W2
W3

3ERSQV2
10J

3ESEQV2   3EALUV1
5D   5C

50

1	5
4B	4A
2	6
3B	3A
3	7
2B	2A
4	8
1B	1A

W1

1 □ O O 5
2 O O O 6
J10   DSO

1   8
DIP SW   ON
J1   DS7

J8
1

A8834

FIGURE 4.2 — Disk Controller Board Setup Components (DTC 1403E)

NOIU02 Disk Controller Board Replacement (DTC 1403, OMTI 520D, DTC 520D)

To remove the controller board follow the steps below:

STEP 1 — Disconnect power to the NOIU02.

STEP 2 — Open (or remove) the rear door.

STEP 3 — Remove all power and ribbon cable connectors to the Controller Board.

STEP 4 — Plastic snap locks or machine nuts hold the 1403 Controller Board in place. Release the locks by squeezing them with fingers or needlenose pliers or remove the nuts and lift the Controller Board free of the locks. Remove 4 screws for other controllers. Remove the Controller Board through the rear of the NOIU02.

To install the controller board, refer to Figure 7.16 and follow the steps below.

STEP 1 — Set up Controller Board dipswitch 2H for DTC 1403D (Figure 4.1), or 1J for DTC 1403E (Figure 4.2) using the procedure in the Controller Board section of Table 4.8.

Note: For setup of other controller boards, refer to Figure 7.11.

STEP 2 — Perform the steps of the NOIU02 Controller Board removal procedure in reverse order.

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TABLE 4.8 — Jumper/Switch Settings for Initial Installation of Floppy, Winchester, and Controller Boards***

Floppy Board (Figure 4.4) "SA 801" only			Winchester Board (Figure 4.3) "SA 1000" only		
Jumper Name	**Notes**		**Jumper Name**	**Notes**	
A	Install		DS1	Remove	
B	Install		DS2	Install	Set for
C	Remove		DS3	Remove	Logical
D	Remove		DS4	Remove	Drive 1
DC	Remove		—5/—15	Set to 5	
DS	Install		Fault	Remove	
DS1	Install	Set for	Ready	Remove	
DS2	Remove	Logic Drive 0			

Controller Board **
DTC 1403D (Fig. 4.1)
DTC 1403E (Fig 4.2)

DS3	Remove		Dipswitch Setting			Notes
DS4	Remove					
HL	Remove					
T1	Remove		1403D	E	Set	This sets the Floppy Drive to Logical Unit 0 and the Winchester's drive to Logical Unit 1
T2	Remove*	Termination	2H1	1J1	ON	
T3	Remove*	Resistors	2H2	1J2	ON	
T4	Remove*		2H3	1J3	ON	
T5	Remove*		2H4	1J4	ON	
T6	Remove*		2H5	1J5	OFF	
X	Install		2H6	1J6	ON	
Y	Remove		2H7	1J7	ON	
Z	Install	Set for	2H8	1J8	OFF	
800	Install	Type 800				
801	Remove	mode operation				

JUMPERS

1403D		1403E	
5K	A to B	W1	Install
		W2	Install
		W3	Remove
		10E	A to B

*Install when SA801 is bussed with OMT5200/DTC520D controller

**1403 D/E only

***Settings for other controller and drive boards are on "Jumper Drawing, Figure 7.11.

NOIU01/03 Driver Unit Winchester Fixed Rigid-Disk Drive Assembly Replacement (SA1000)

To remove the Winchester fixed rigid-disk, refer to Figure 7.16 and follow the steps below.

STEP 1 — Perform the steps of the NOIU01/03 Drive Unit Controller Board removal procedure. Disconnect the interconnecting ribbon cable at the Winchester board. Disconnect the Winchester drive's power.

STEP 2 — Remove the screws attaching the Winchester Assembly to the Disk Drive Enclosure (two at the side and four at the bottom). Remove the Winchester Assembly with Winchester board attached from the Disk Drive Enclosure.
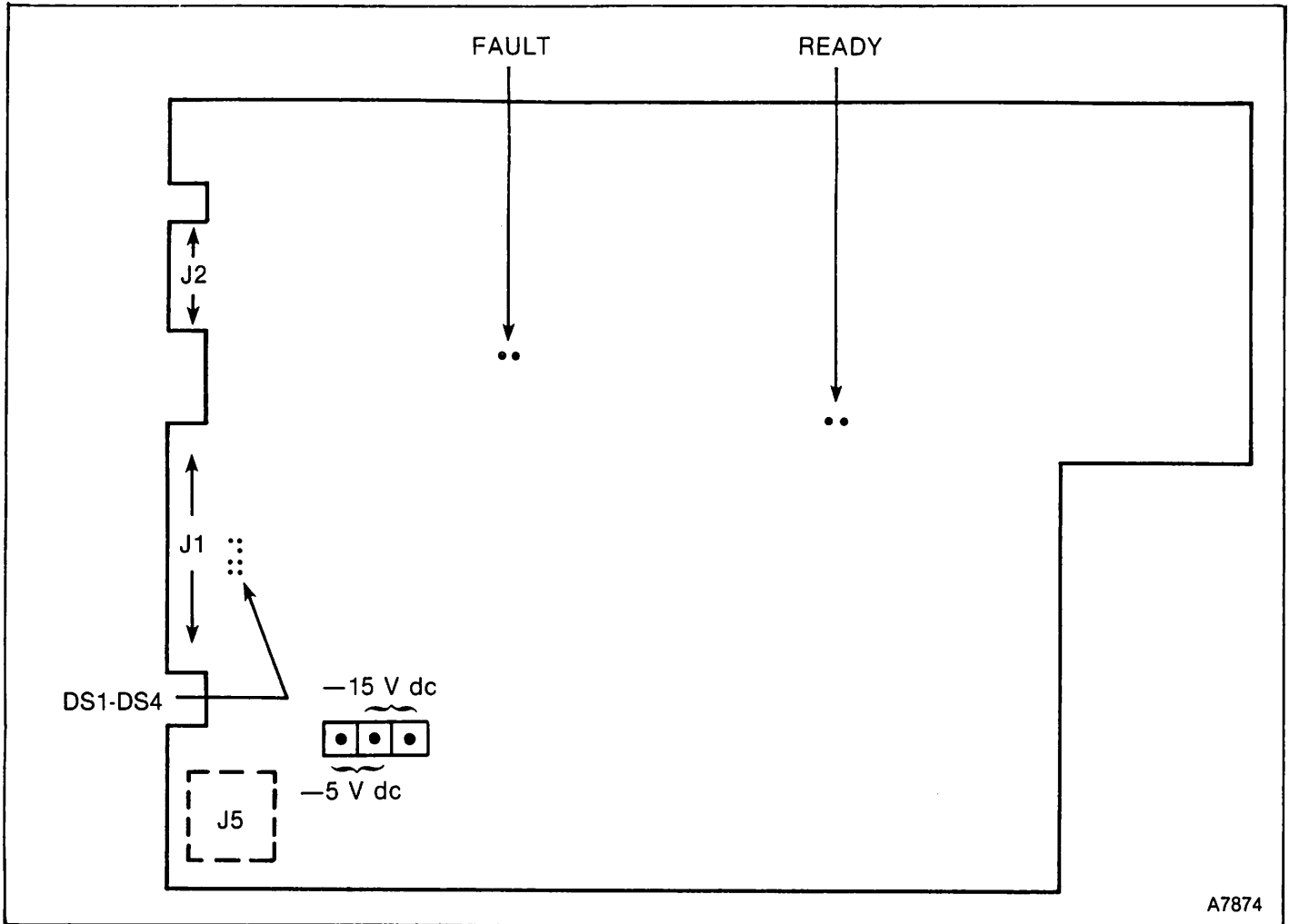
FIGURE 4.3 — Winchester Board Setup Components (SA1000 only)

To install the Winchester fixed rigid-disk, refer to Figure 7.16 and follow the steps below.

STEP 1 — Referring to the Winchester board section of Table 4.8 and Figure 4.3, perform the Winchester Assembly circuit board setup (only required for new or different Winchester Assembly). For Winchester Drives other than SA —1000, refer to Figure 7.11.

STEP 2 — Perform the steps of the NOIU01/03 Driver Cabinet Winchester Drive Assembly removal procedure in reverse order.

STEP 3 — Perform the "Initializing Disk/Loading System Software Utility" procedure (Section III, "File Utilities") if installing a different Winchester drive assembly.

Note: After answering "Y" to bad track data, press "ENTER." If disk has not been formatted, reset and repeat procedure a second time at this point.

NOIU02 Winchester Drive (SA1000)

To remove the NOIU02 Winchester fixed rigid-disk, follow the steps below.

STEP 1 — Perform the removal steps for the NOIU02 Disk Controller Board.

STEP 2 — Disconnect plugs to the disk power supply.

STEP 3 — Loosen the left-most screw (viewed from the rear) but leave in place. Remove the remaining four screws retaining the disk power supply. Swing

the power supply to the left and out of the way to access the Winchester Drive. Cut and remove cable ties securing AC and DC wires.

Note: Where controller board is mounted beside drive, tray subassembly slides between terminal and power supply without removing either one.

STEP 4 — Remove all power and ribbon cable connectors to the Winchester Drive.

STEP 5 — Remove the two screws at the bottom which retain the Winchester Drive in place, sliding the Winchester Drive out the back of the NOIU02.

To install the NOIU02 Winchester fixed rigid-disk, follow the steps below.

STEP 1 — Referring to the Winchester board section of Table 4.8 and to Figure 4.3, perform the setup for the Winchester Assembly circuit board (only required for new or different Winchester Assembly).

Note: For Winchester drives other than the SA-1000, refer to Figure 7.11 to perform setup.

STEP 2 — Perform the steps of the NOIU02 Winchester Drive removal procedure in reverse order.

STEP 3 — Replace any cut cable ties.

STEP 4 — Perform the "Initializing Disk/Loading Software Utility" procedure (Section III, "File Utilities") if installing a different Winchester Drive Assembly.

Note: After answering "Y" to bad track data, press "ENTER". If disk has not been formatted, reset and repeat procedure a second time.

NOIU01/03 Winchester Disk Drive Retrofit Using Universal 5.25 Inch Assembly Kit (For ST 212/213/225, TM 252)

Disk Drive Assembly Removal
(Figures 4.4, 4.5, 4.6, 7.16)

STEP 1 — Disconnect power to the Cabinet.

STEP 2 — Disconnect ribbon cable from connector at rear of Disk Drive Assembly **(1).**

STEP 3 — Disconnect line cord at Power Distribution Module rear panel. Cut and remove any cable ties securing the line cord.

STEP 4 — Remove the four screws from blank panel below the front panel of the Disk Drive Assembly.

STEP 5 — Remove screws attaching the Disk Drive Assembly to Driver Unit rails and remove the assembly from the Driver Unit **(2).**

STEP 6 — Remove attaching screws and top cover of the disk drive enclosure, setting cover aside.

STEP 7 — Place the subassembly on the fixed disk controller side and remove 4 screws from underside.

STEP 8 — Place on base and remove screws from fixed disk side.

STEP 9 — Compare cable location photos (Figures 4.4, 4.5, 4.6) to the installation and mark cables to facilitate reassembly. "Pin 1" end of ribbon cables have a stripe and a board notch.

STEP 10 — Unplug AC power, DC power, 20 conductor signal cable, 50 pin SCSI cable (to rear enclosure apron). The 34 conductor "ST506 control" cable is also reusable.

Step 11 — Remove additional screws bolting an 8-inch controller board, then remove obsolete 8-inch drive and controller board.
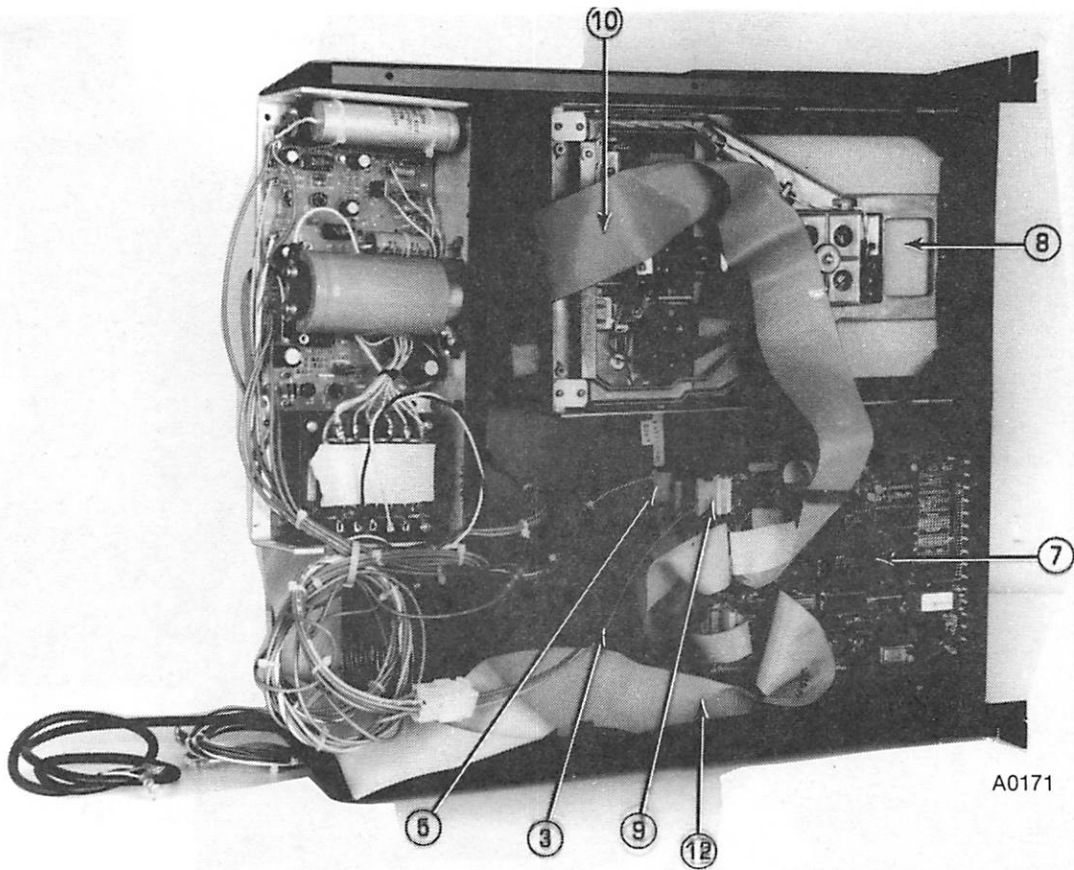
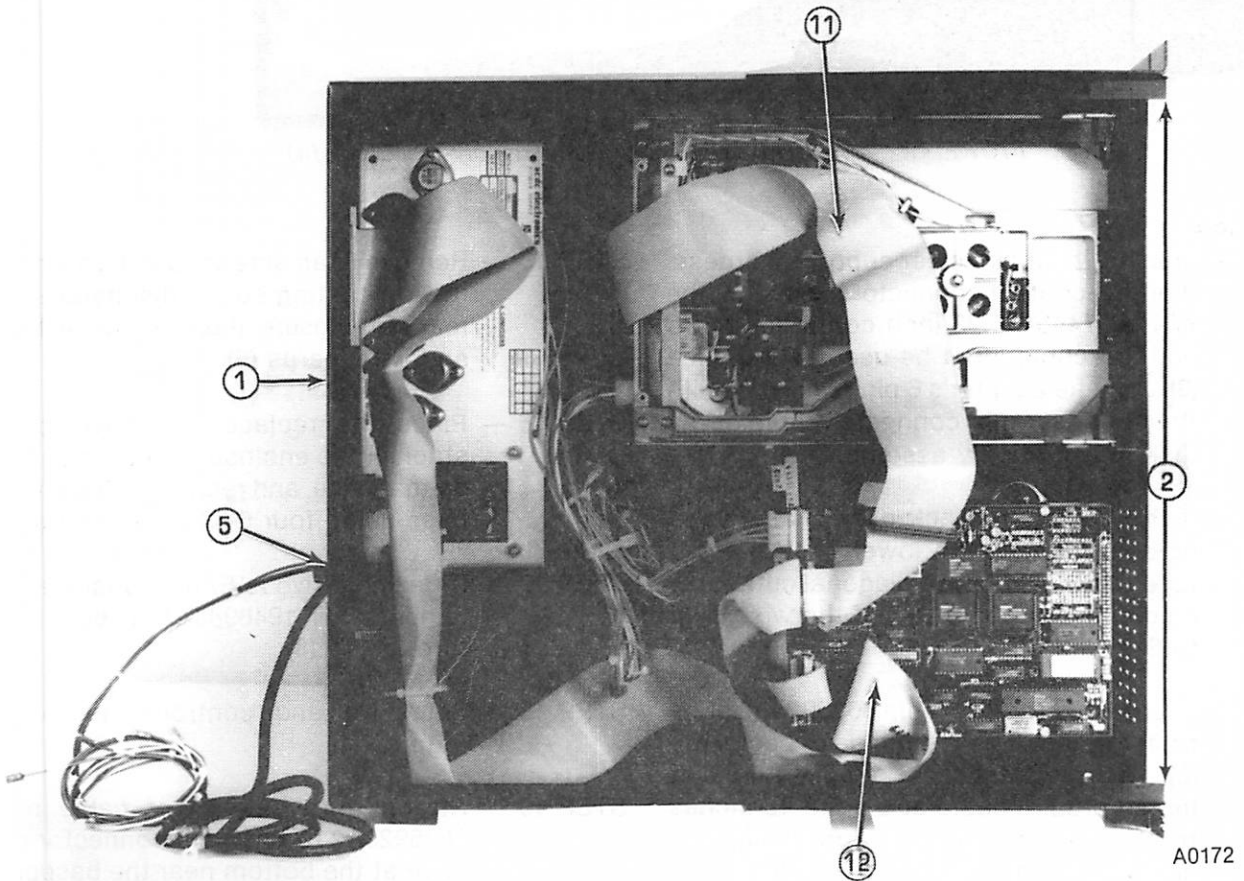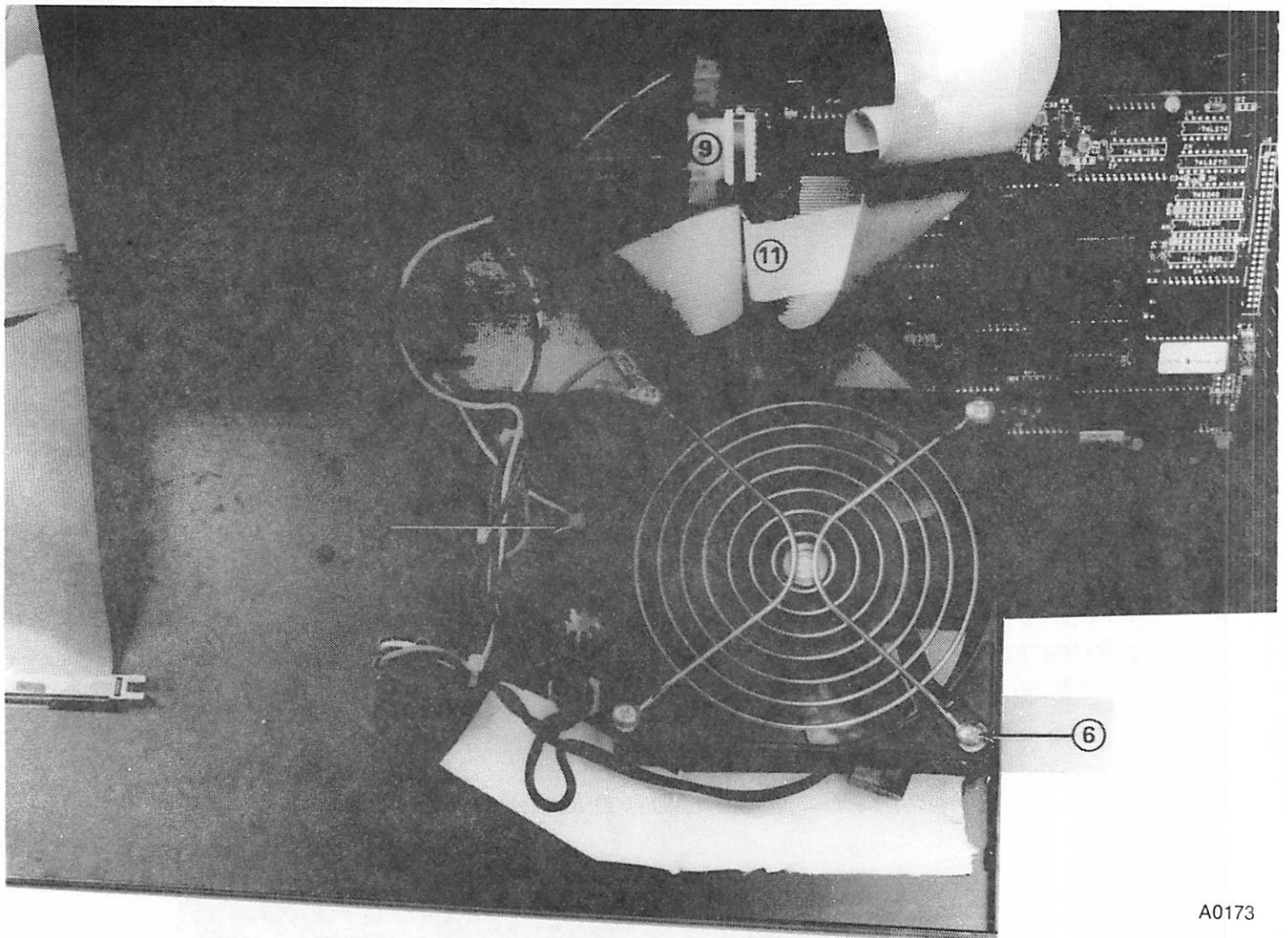FIGURE 4.4 — NOU01/03 Disk Drive Assembly (for Retrofit)

FIGURE 4.5 — NOIU01/03 Disk Drive Assembly (for Retrofit)

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FIURE 4.6 — NOIU01/03 Disk Drive Assembly (for Retrofit)

A0173

Modification

STEP 12 — Inspect the disk power supply's harness. If nnot 4-contact connector is present, the P/N 6637440-1 5.25 inch controller board adapter cable must be used as supplied (3). Join the adapter's 6-pin connector with the shortest 6-pin connector cable of the disk power supply assembly.

STEP 13 — If the enclosure back panel has 3 fuse holders, remove the lower one, clipping fuseholder leads (with diagonal cutters) at adjoining components (4). Otherwise, skip to Step 14.

STEP 14 — Locate and thread cable 6635923A2 (lugs first) through hole to outside of enclosure (5). Locate strain relief supplied (4), and install around cable at a point 13 inches from the 4-pin connector, and snap into enclosure from rear surface side.

STEP 15 — Remove 8 fan screws, position airflow arrow on casting so fan discharges air out rear of enclosure, then remount with finger and wireguards (6).

STEP 16 — Place the replacement drive/controller stack in the enclosure, set the enclosure on that edge, and retain it to the enclosure base using four 6-32 x .375 screws (7).

STEP 17 — If flexible drive is SA801, unbolt and add jumpers PN 1946984A1 in positions T2 through T6 (8).

STEP 18 — Set drive and controller jumpers per Figure 7.11.

STEP 19 — Attach the free end of cable marked 6635923A2 to the 4-pin connector on the drive at the bottom near the basepan (5).

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STEP 20 — At a point 6 inches from the 4 pin connector, strip ½ inch insulation from either blue lead of cable 6635923A2. Fold the bare portion of the lead, insert it into the butt connector on cable 6637440A1, and crimp the connector. Or splice to the blue lead of the 4 pin connector if adapter is not used.

STEP 21 — Attach the adapter cable's (P/N 6637440A1) 4-pin connector to the similar connector on the controller board "5200/520D" (P/N 1947415A2) stacked atop the drive (9).

STEP 22 — Make certain that the ribbon cable from the flexible disk drive is 6635924C50N42 (the A50N2 cable exhibits excessive voltage drop in "signal comm." lead, and should be replaced) (11). Attach the cable's free end to pin headers silkscreen "J7" on the controller board. The pin 1 (striped) edge of all ribbon cables on this board points toward the white 4-pin connector (9). Connector ends should line up with J2 connector.

STEP 23 — Connect the free end of 50-pin SCSI cable from enclosure rear to controller board pin header "J1" (12). Site-'em in; pin header connectors will insert when you're off by one row of pins in any direction. (The electronically damaged subassembly varies with misorientation at power-up).

STEP 24 — Test/debug drive subassembly on floor behind cabinet before remounting: Loosen logic power supply lugs "NEG", "POS," upper left hand "—S," and "+S" terminals. You have the correct "—S" terminal if the adjacent-strapped "—" terminal is joined to the large "Neg" terminal. The connections are as follows:

Lead Marking	Color	Lug Size	Function
Pos	Brown	Large No. 8	5 V dc
Neg	Blue	Large, No. 8	5 V return
—S	Blue	Small, No. 6	12 V return
+S	Yellow	Small, No. 6	12 V dc

Temporarily slip lugs partly under terminal screws, tighten, and check for looseness.

STEP 25 — Temporarily attach white and black power lugs under appropriate terminals of the logic supply's a-c power barrier strip.

STEP 26 — Attach the free SCSI cable from disk IOX board to enclosure rear connector (1).

STEP 27 — With enclosure's rocker switch off, and empty "floppy" door closed, turn on cabinet power breaker and put ear next to hard disk to hear it run-up, then regulate (at 3600 rpm — don't bump the box while spinning). This checks fixed drive except factory checked intercom.

STEP 28 — Watch flexible diskette drive light and head while rocking drive enclosure power switch on. Light on for one second should be accompanied by two "ticks" from head assembly. This checks disk supply, controller board, flexible diskette drive and all except SCSI cable.

If a 19.2 K baud data terminal having only pins 2, 3, and 7 wired 1:1 is cabled to the disk MFP board, drive diagnostics may be run. Diagnostics are operated by: Reset, T, return, WT or FT, return, using "disk" MFP RS-232 connector. Board piano dipswitches DPSA-7 and DPSA-8 and the two ROMs in MFP board(s) must be in agreement with the Disk/ROM/Dipswitch Table for new Disk System Variables supplied with software diskettes/ROMs.

Diagnostics require Main, Disk, and Color Terminal MFP boards to have dipswitch 6 closed — autoload off. It may be wise to have OIU loaded and on-line with box still on floor, or enclosure installed with cabinet and enclosure tops removed. It's not proven working until it is on the plant loop.

STEP 29 — Power down the system, remove Disk MFP board (cabled to Disk IOX which has the 50 pin SCSI ribbon cable leading to the controller board.)

STEP 30 — Presently, 1400 Tag firmware is available on 2764 ROM and 5000 Tag firmware on 27128. Note old jumper settings for back tracking, then remove wire wraps between E8 - E12. Add new jumpers per MFP version available, as illustrated in Table 3.3.

STEP 31 — With autoload off, run disk pair diagnostics as described in the manual except IOX board piano dip switches DPSA-7 and DPSA-8 set per Disk/ROM/Dipswitch Table as furnished with software Diskettes/ROMs. Fault indication is available with data terminal diagnostics.

STEP 32 — Disk activity signals successful ROM changeover and switch setup. Change over the remaining boards one-at-a-time with retrys. Remember that a backplane master (MFP or PIM) removed from a 990/4 backplane requires a grant jumper installed to its left; that the slot 1 main MFP has jumper E19 installed to drive backplane bus clock and switch 4 closed not to sync to it. Control lines are terminated with resistor dip packs in Main MFP and IOX boards only.

STEP 33 — With all new ROMs installed on boards, load the system with software diskettes as described in the Hardware Manual — "Initializing Disk/Loading Software Utility" procedure (Section III, "File Utilities").

Note: After answering "Y" to bad track data, press "ENTER". If disk has not been formatted, reset and repeat procedure a second time.

STEP 34 — Bring up the system on line, record clock time if failure should occur, and assure that Area 1 appears. Observe LIM startup on LEDs.

Reassembly:

STEP 35 — Load configurations, etc, and fully install disk drive assembly, fastening all screws. (Follow steps 1 thru 6 of this procedure in reverse order). Remove spindle lock sticker.

NOIU02 Winchester Drive Retrofit Using Universal 5.25 Inch Disk Assembly Kit (DC Drive)

To remove the NOIU02 Winchester fixed rigid-disk, refer to Figures 4.7, 4.8 and 7.16 and follow the steps below.

STEP 1 — Make backup diskettes of OIU configuration.

STEP 2 — Disconnect power to NOIU02.

STEP 3 — Open or remove rear door.

STEP 4 — Disconnect plugs to the disk power supply, and controller 50-pin cable that leads to the disk IOX board.

STEP 5 — Loosen the left-most screw (viewed from the rear) but leave in place. Remove the remaining four screws retaining the disk power supply. Swing the power supply to left and out of the way to access the Winchester Drive (1). Cut and remove cable ties securing AC and DC wires. **Note:** Where 5¼ inch where controller is mounted beside drive, tray subassembly slides between terminal and supply without removing either one.

**STEP 6 —** Remove all power and ribbon cable connectors to the Winchester Drive.

STEP 7 — Remove the two or three screws at the bottom which retain the Winchester Drive in place, sliding the Winchester Drive out the back of the NOIU02 (2).

STEP 8 — If flexible drive is an SA801, unbolt two retaining screws, top and bottom. Unplug the three connectors (Squeeze two opposite tabs to release 9-pin connector). Remove drive.
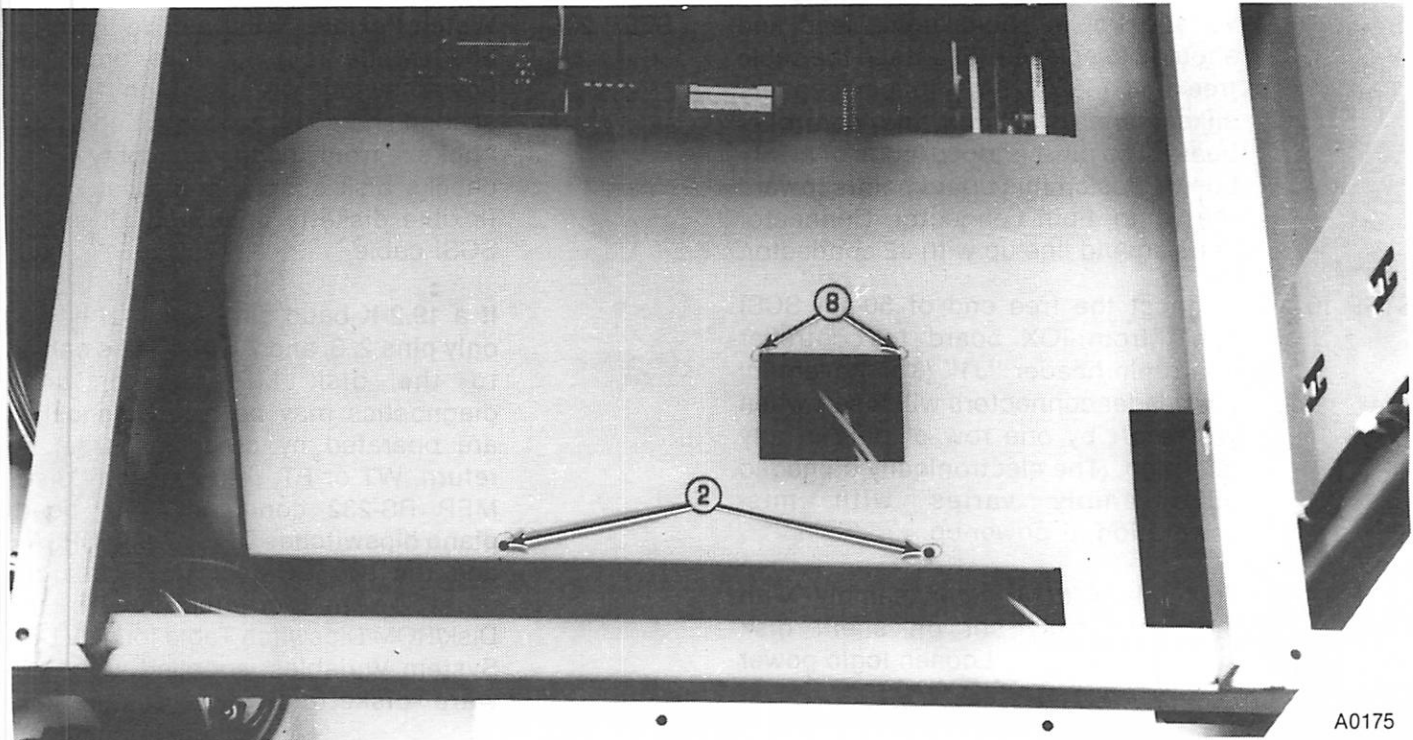
Modification

STEP 9 — Locate silkscreened jumper labeled T2 through T6 on flexible drive. Install jumpers 1946984A1 in these locations.

STEP 10 — Set Winchester drive jumpers per Figure 7.11.
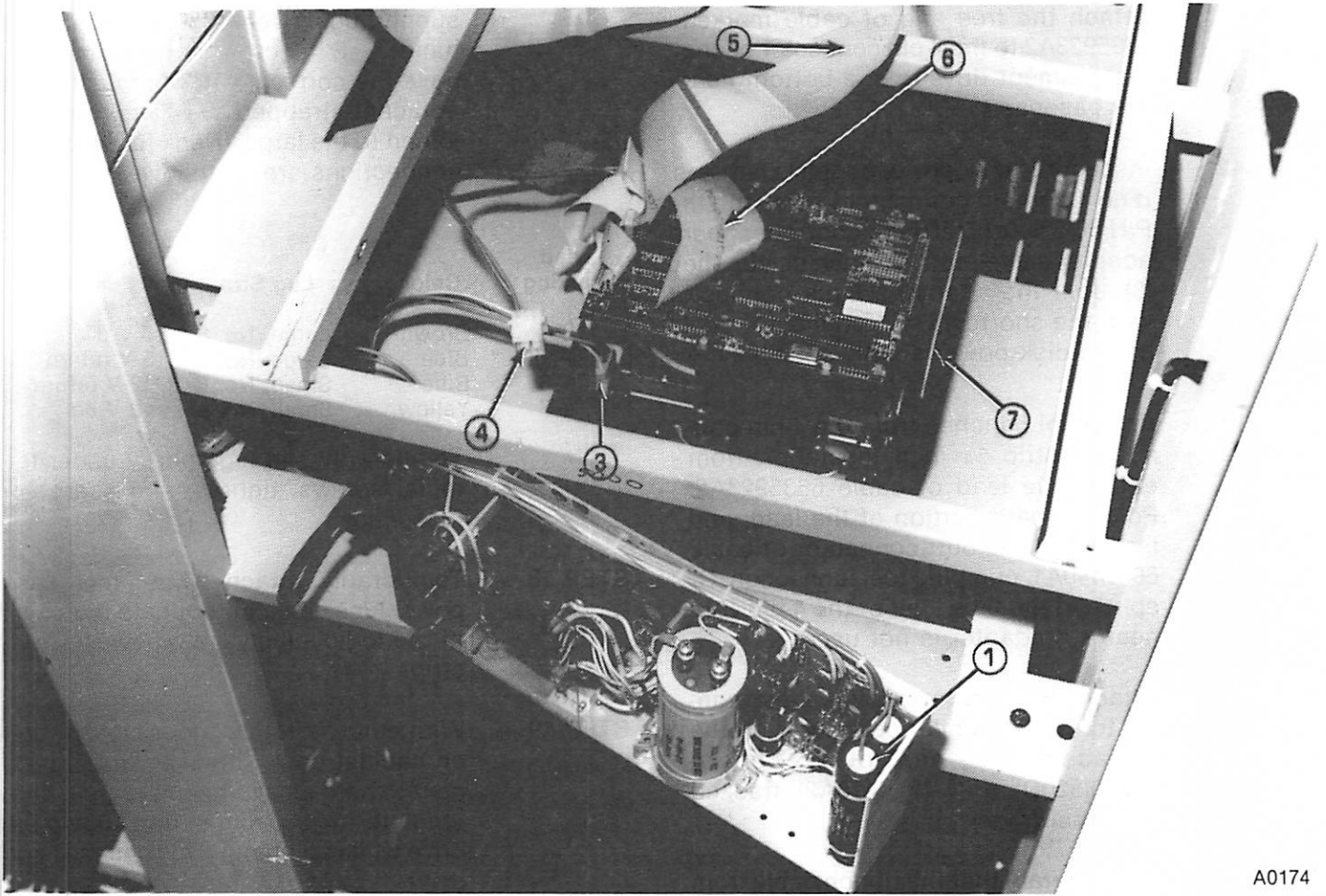
FIGURE 4.7 — *NOIU02 5.25 Inch DC Winchester Disk Drive Installation*

A0174

FIGURE 4.8 — *NOIU02 5.25 Inch DC Winchester Disk Drive Installation*

A0175

STEP 11 — Attach the free end of cable marked 6635923A2 to the 4-pin connector on the replacement drive at the bottom near the basepan **(3)**.

STEP 12 — Inspect the disk power supply's harness. If no 4-contact connector is present, the P/N 6637440-1 5.25 inch controller board adapter cable must be used as supplied **(3)**. Join the adapter's 6-pin connector with the shortest 6-pin connector cable of the disk power supply assembly.

STEP 13 — At a point 6 inches from the 4-pin connector, strip ½ inch insulation from either blue lead of cable 6635923A2. Fold the bare portion of the lead, and insert into the butt connector of cable 6637440A1, crimping the connection. Or splice to the blue lead of the 4-pin connector if adapter is not used.

STEP 14 — Attach the adapter cable's 4-pin connector to the similar connector on the replacement controller board "5200/520D" (P/N 1947415A2) stacked atop the drive.

STEP 15 — Make certain that the ribbon cable from the flexible disk drive is 6635924C50N42 (the A50N42 cable exhibits excessive voltage drop in "signal com." lead, and should be replaced) **(5)**. Attach the cable free end (6635923A2) to pin headers silkscreened "J7" on the controller board. The pin 1 (striped) edge of all ribbon cables on this board points toward the white 4-pin connector. Connector ends should line up with J2 connector.

STEP 16 — Connect the free end of 50-pin SCSI cable from IOX board to controller board pin header "J1" **(6)**. Site-'em in; pin header connectors will insert when you're off by one row of pins in any direction. (The electronically damaged subassembly varies with mis-orientation at power-up.

STEP 17 — Test/debug drive subassembly with drive assembly set on shelf; disk supply not bolted. Loosen logic power

supply lugs "Neg," "Pos," upper left hand "—S" and "+S" terminals. You have the correct "—S" terminal if the adjacent-strapped "—" terminal is joined to the large "Neg" terminal. The connections are as follows:

Lead Marking	Color	Lug Size	Function
Pos	Brown	Large, No. 8	5 V dc
Neg	Blue	Large, No. 8	5 V return
—S	Blue	Small, No. 6	12 V return
+S	Yellow	Small, No. 6	12 V dc

Temporarily slip lugs partly under terminal screws, tighten, and check for looseness.

STEP 18 — Temporarily attach white and black power lugs under appropriate terminals of the logic supply's a-c power barrier strip.

STEP 19 — With empty "floppy" door closed, turn on cabinet power breaker and put ear next to hard disk to hear it run-up, then regulate (at 3600 rpm — don't bump the drive while spinning). This checks fixed drive except factory checked interconnections.

STEP 20 — Watch flexible diskette drive light and head while rocking drive enclosure power switch on. Light on for one second should be accompanied by two "ticks" from head assembly. This checks disk supply, controller board, flexible diskette drive and all except SCSI cable.

If a 19.2 K baud data terminal having only pins 2, 3, and 7 wired 1:1 is cabled to the disk MFP board, drive diagnostics may be run. Diagnostics are operated by pressing: Reset, T, return, WT or FT, return, using "disk" MFP RS-232 connector. IOX board piano dipswitches DPSA-7 and DPSA-8 and the two ROMs in MFP board(s) must be in agreement with the Disk/ROM/Dipswitch Table for new Disk System Variables, supplied with software diskettes/ROMs. Diagnostics

require Main, Disk, and Color Terminal MFP boards to have switch 6 closed — autoload off.

STEP 21 — Power down the system, remove Disk MFP board (cabled to Disk IOX which has the 50 pin SCSI ribbon cable leading to the controller board.)

STEP 22 — Presently, 1400 Tag firmware is available on 2764 (and 5000 Tag firmware on 27128). Note old jumper settings for back tracking, then remove wire wraps between E8-E12. Add new jumpers per version MFP available, as illustrated in Table 3.3.

STEP 23 — With autoload off, run disk pair diagnostics as described in the hardware manual except IOX board piano dip switches DPSA-7 and DPSA-8 set per Disk/ROM/Dipswitch Table as furnished with software Diskettes/ROMs. Fault indication is available with data terminal diagnostics, which are operated by: Reset T, return, WT or FT, return.

STEP 24 — Disk activity signals successful ROM changeover and switch setup. Change over the remaining boards one-at-a-time with retrys. Remember that a backplane master (MFP or PIM) removed from a 990/4 backplane requires a grant jumper installed to its left; that the slot 1 main MFP has jumper E19 installed to drive backplane bus clock and switch 4 closed not to sync to it. Control lines are terminated with resistor dip packs in Main MFP and IOX boards only.

STEP 25 — With all new ROMs installed on boards, load the system with software diskettes as described in the Hardware Manual — "Initializing Disk/Loading Software Utility" procedure (Section III, File Utilities).

Note: After answering "Y" to bad track data, press "ENTER". If disk has not been formatted, reset and repeat procedure a second time.

STEP 26 — Bring up the system on line, record clock time if failure should occur, and assure that Area 1 appears. Observe LIM startup on LEDs.

Reassembly

STEP 27 — Perform the steps of the NOIU02 Winchester Drive removal procedure in reverse order.

If prior drive size was 5.25 inch, save disk tray and reuse to retain the new drive. In this case, remove the eight screws retaining the new drive stack to the two lower mounting brackets. Save screws and bolt new drive to existing (beige) disk tray through the four vibration isolators.

If, alternatively, the prior fixed drive was the 8-inch size, position black drive bracket with its slotted front to the right of the shelf, with fan discharging toward drive assembly (7). Align clearance holes in disk shelf with tapped holes at edge of black bracket, and retain the assembly with two of four 6-32 x .375 inch screws (2). Slip flat washers over the remaining two screws, and thread into black bracket at front-facing corners of the shelf hole cutout visable from underneath shelf (8).

STEP 28 — Load configurations. Remove spindle lock sticker.

STEP 29 — Replace any cut cable ties.

NOIU01/03 Driver Cabinet Diskette Drive Assembly Replacement

To remove the assembly, refer to Figure 7.16 and follow the steps below.

STEP 1 — Disconnect power to the cabinet.

STEP 2 — Disconnect ribbon cable from connector at rear of Disk Drive Assembly.

STEP 3 — Disconnect line cord at Power Distribution Module rear panel. Cut and remove any cable ties securing the line cord.

STEP 4 — Remove the four screws from blank panel below the front panel of the Disk Drive Assembly.

STEP 5 — Remove screws attaching the Disk Drive Assembly to Driver Unit rails and remove the assembly from the Driver Unit.

STEP 6 — Remove top cover screws and top cover of Disk Drive Enclosure and set aside.

STEP 7 — Stand enclosure on the flexible disk end. Remove four screws from baseplate. Unplug edge connector, and a-c power connector from drive's rear surface. Squeeze release tabs to remove 9-pin d-c power connector.

STEP 8 — Remove flexible diskette drive.

STEP 9 — If SA-801 drive is to be reinstalled, skip to step 10.

If retrofit diskette drive is to be installed, perform the following:

Unpack flexible diskette replacement drive, mounting tray P/N 6636269A1, and four 4MM metric screws, P/N 197813A1. Orient the tray vertically with longer bracket at the bottom. Position the drive vertically so that the notch in the rear edge connector is toward the top. Slide drive into center of bracket and position faceplate in line with front bracket surface. Fasten screws through two bracket clearance holes on the top surface into the drive. Flip over the drive and repeat with two remaining screws.

STEP 10 — For half-height drives (M2896 or FD 1165) install jumpers per Figure 7.11.

For SA-801 jumper per Figure 4.9 and Table 4.8.

STEP 11 — Reinstall the drive assembly, reversing the disassembly process.

NOIU02 Diskette Drive Assembly Replacement

STEP 1 — Disconnect power to the cabinet.

STEP 2 — Open the rear door and unscrew two 10-32 slotted screws at left and right upper corners. Hinge top cover upward at rear, then pull backward one inch and lift off.

STEP 3 — Locate and remove the slotted screw projecting above the top center of the exposed flexible diskette drive box.

STEP 4 — Locate and remove the slotted screw at the bottom rear center of the diskette drive box.

STEP 5 — Pull the old diskette drive out the front of the OIU.

STEP 6 — Refer to steps 8 through end of NOIU01/03 diskette drive replacement procedure.

OIU Main Logic Power Supply Replacement

> ### CAUTION
>
> Disconnect from electrical supply before attempting repair or replacement.
>
> ### ATTENTION
>
> Interrompe l'alimentation avant de proceder a la reparation ou au remplacement.

To remove the Logic Power Supply Assembly, follow the steps below.

STEP 1 — Disconnect power to the NOIU01/03 Driver Cabinet or NOIU02.

STEP 2 — Locate the Power Supply assembly at rear of the Power Rack Assembly of the NOIU01/03 Driver Unit or NOIU02 (see Figure 2.3 or 2.4 as appropriate). Disconnect cables on the adjacent Power Distribution Module.

require Main, Disk, and Color Terminal MFP boards to have switch 6 closed — autoload off.

STEP 21 — Power down the system, remove Disk MFP board (cabled to Disk IOX which has the 50 pin SCSI ribbon cable leading to the controller board.)

STEP 22 — Presently, 1400 Tag firmware is available on 2764 (and 5000 Tag firmware on 27128). Note old jumper settings for back tracking, then remove wire wraps between E8-E12. Add new jumpers per version MFP available, as illustrated in Table 3.3.

STEP 23 — With autoload off, run disk pair diagnostics as described in the hardware manual except IOX board piano dip switches DPSA-7 and DPSA-8 set per Disk/ROM/Dipswitch Table as furnished with software Diskettes/ROMs. Fault indication is available with data terminal diagnostics, which are operated by: Reset T, return, WT or FT, return.

STEP 24 — Disk activity signals successful ROM changeover and switch setup. Change over the remaining boards one-at-a-time with retrys. Remember that a backplane master (MFP or PIM) removed from a 990/4 backplane requires a grant jumper installed to its left; that the slot 1 main MFP has jumper E19 installed to drive backplane bus clock and switch 4 closed not to sync to it. Control lines are terminated with resistor dip packs in Main MFP and IOX boards only.

STEP 25 — With all new ROMs installed on boards, load the system with software diskettes as described in the Hardware Manual — "Initializing Disk/Loading Software Utility" procedure (Section III, File Utilities).

Note: After answering "Y" to bad track data, press "ENTER". If disk has not been formatted, reset and repeat procedure a second time.

STEP 26 — Bring up the system on line, record clock time if failure should occur, and assure that Area 1 appears. Observe LIM startup on LEDs.

Reassembly

STEP 27 — Perform the steps of the NOIU02 Winchester Drive removal procedure in reverse order.

If prior drive size was 5.25 inch, save disk tray and reuse to retain the new drive. In this case, remove the eight screws retaining the new drive stack to the two lower mounting brackets. Save screws and bolt new drive to existing (beige) disk tray through the four vibration isolators.

If, alternatively, the prior fixed drive was the 8-inch size, position black drive bracket with its slotted front to the right of the shelf, with fan discharging toward drive assembly **(7)**. Align clearance holes in disk shelf with tapped holes at edge of black bracket, and retain the assembly with two of four 6-32 x .375 inch screws **(2)**. Slip flat washers over the remaining two screws, and thread into black bracket at front-facing corners of the shelf hole cutout visable from underneath shelf **(8)**.

STEP 28 — Load configurations. Remove spindle lock sticker.

STEP 29 — Replace any cut cable ties.

NOIU01/03 Driver Cabinet Diskette Drive Assembly Replacement
To remove the assembly, refer to Figure 7.16 and follow the steps below.

STEP 1 — Disconnect power to the cabinet.

STEP 2 — Disconnect ribbon cable from connector at rear of Disk Drive Assembly.

STEP 3 — Disconnect line cord at Power Distribution Module rear panel. Cut and remove any cable ties securing the line cord.

STEP 4 — Remove the four screws from blank panel below the front panel of the Disk Drive Assembly.

STEP 5 — Remove screws attaching the Disk Drive Assembly to Driver Unit rails and remove the assembly from the Driver Unit.

STEP 6 — Remove top cover screws and top cover of Disk Drive Enclosure and set aside.

STEP 7 — Stand enclosure on the flexible disk end. Remove four screws from baseplate. Unplug edge connector, and a-c power connector from drive's rear surface. Squeeze release tabs to remove 9-pin d-c power connector.

STEP 8 — Remove flexible diskette drive.

STEP 9 — If SA-801 drive is to be reinstalled, skip to step 10.

If retrofit diskette drive is to be installed, perform the following:

Unpack flexible diskette replacement drive, mounting tray P/N 6636269A1, and four 4MM metric screws, P/N 197813A1. Orient the tray vertically with longer bracket at the bottom. Position the drive vertically so that the notch in the rear edge connector is toward the top. Slide drive into center of bracket and position faceplate in line with front bracket surface. Fasten screws through two bracket clearance holes on the top surface into the drive. Flip over the drive and repeat with two remaining screws.

STEP 10 — For half-height drives (M2896 or FD 1165) install jumpers per Figure 7.11.

For SA-801 jumper per Figure 4.9 and Table 4.8.

STEP 11 — Reinstall the drive assembly, reversing the disassembly process.

NOIU02 Diskette Drive Assembly Replacement

STEP 1 — Disconnect power to the cabinet.

STEP 2 — Open the rear door and unscrew two 10-32 slotted screws at left and right upper corners. Hinge top cover upward at rear, then pull backward one inch and lift off.

STEP 3 — Locate and remove the slotted screw projecting above the top center of the exposed flexible diskette drive box.

STEP 4 — Locate and remove the slotted screw at the bottom rear center of the diskette drive box.

STEP 5 — Pull the old diskette drive out the front of the OIU.

STEP 6 — Refer to steps 8 through end of NOIU01/03 diskette drive replacement procedure.

OIU Main Logic Power Supply Replacement

CAUTION

Disconnect from electrical supply before attempting repair or replacement.

ATTENTION

Interrompe l'alimentation avant de proceder a la reparation ou au remplacement.

To remove the Logic Power Supply Assembly, follow the steps below.

STEP 1 — Disconnect power to the NOIU01/03 Driver Cabinet or NOIU02.

STEP 2 — Locate the Power Supply assembly at rear of the Power Rack Assembly of the NOIU01/03 Driver Unit or NOIU02 (see Figure 2.3 or 2.4 as appropriate). Disconnect cables on the adjacent Power Distribution Module.
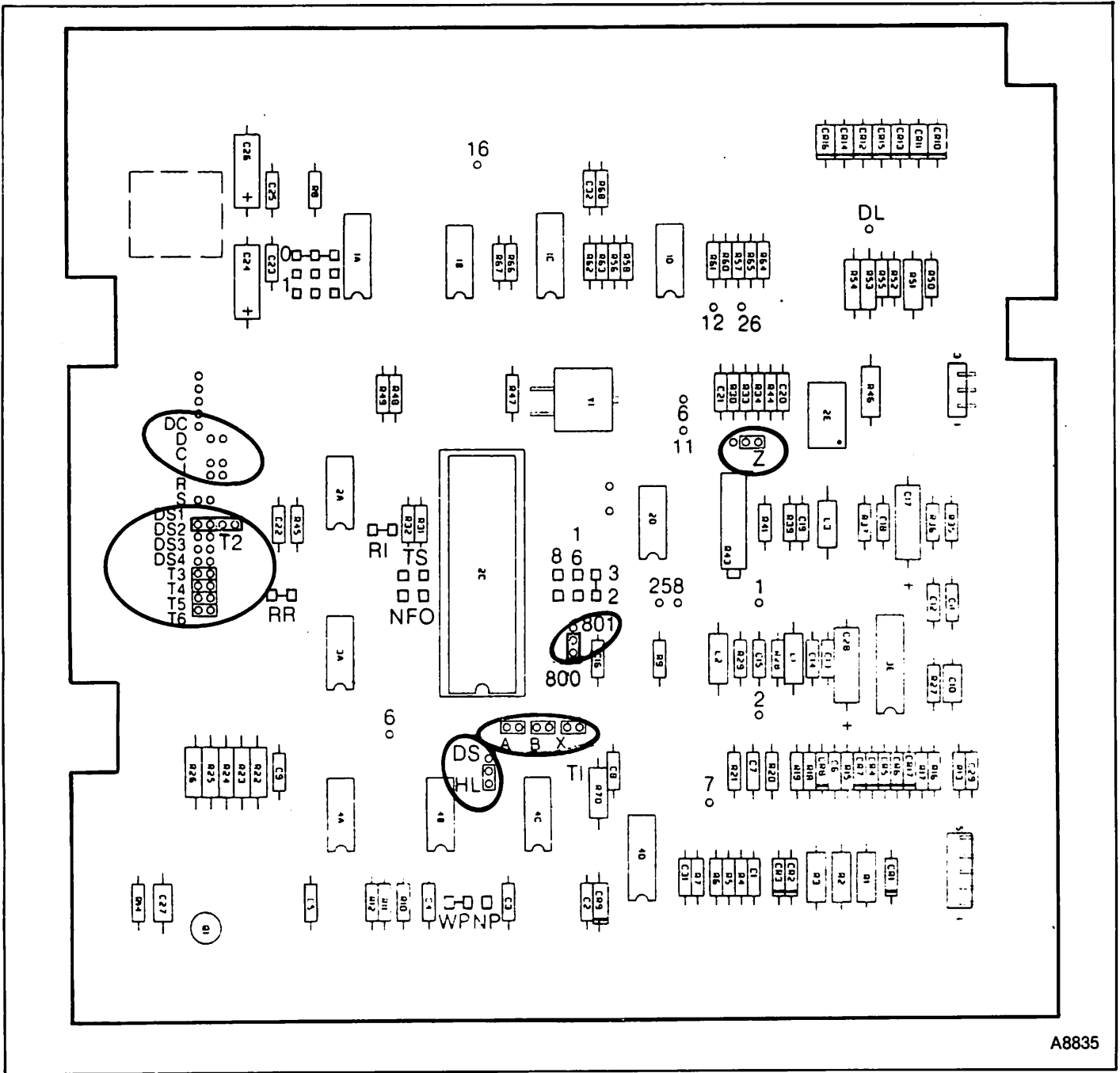
FIGURE 4.9 — SA-801 Floppy Board Setup Components

STEP 3 —   Mark and disconnect the wires connec-
ting the Power Supply Assembly (Figure
7.15).

STEP 4 —   Remove the fasteners on the Power
Supply Assembly. Remove unit from
rear of the Driver Cabinet and place on
a work table. Remove four screws

attaching supply to bracket. The
bracket is reused with the replacement
supply.

To install the OIU Replacement Logic Supply (P/N
1947424A1), follow the steps below.

STEP 1 —   Mount bracket to underside of supply
with four screws.

STEP 2 — Position the Power Supply Assembly in the rear opening of the Driver Cabinet Power Rack Assembly. Reconnect power leads from the Power Distribution Module and connect the wiring between the Power Supply Assembly and driver cabinet components (see Figure 7.15).

STEP 3 — Fasten the power supply assembly into the power rack assembly.

STEP 4 — Perform the "Power Rack Assembly DC Power Supply Setup" adjustment procedures (Section III, "NOIU01/03 Driver Cabinet, NOIU02 Setup").

NOIU01/03 Disk Drive Enclosure; Disk Power Supply Replacement

To remove the NOIU01/03 Disk Drive Enclosure, refer to Figure 7.16 and follow the steps below.

STEP 1 — Perform NOIU01/03 Driver Unit Disk Drive Assembly removal procedure and place assembly on a work bench. Remove four screws retaining power supply to assembly rear surface.

STEP 2 — Replace power supply assembly with 1947655A1. Reuse old harness.

STEP 3 — Set old and new supplies side by side and transfer wires to correspondingly labled terminals on new supply. Use a 5 Amp slow-blow fuse for disk power supply.

STEP 4 — Mount supply onto enclosure, threading untapped power supply holes using 10-32 tap.

STEP 5 — Perform the adjustments in steps 7,8, and 9 of the "Disk Drive Setup" procedure in Section III (NOIU01/03 Driver Unit and NOIU02 Setup) to adjust new disk power supply.

STEP 6 — Perform the steps of the NOIU01/03 Disk Drive Enclosure removal in reverse order. The replacement supply requires a 5 Amp slow-blow fuse be installed in the disk drive fuseholder. Relabel to indicate the new fuse size.

NOIU02 Disk Power Supply Assembly Replacement

To remove the NOIU02 Disk Power Supply, follow the steps below.

STEP 1 — Disconnect power to the NOIU02.

STEP 2 — Open (or remove) the rear door.

STEP 3 — Cut and remove cable ties retaining the AC and DC wires to/from the disk power supply; unplug cables.

STEP 4 — Remove the five screws from the bottom of the Disk Power Supply and remove the power supply by lifting it from its mounting shelf.

To install the NOIU02 Disk Power Supply P/N 663051-1, follow the steps below.

STEP 1 — Perform the steps of the NOIU02 Disk Power Supply removal in reverse order.

STEP 2 — Replace all cut cable ties.

STEP 3 — If one or both drives are AC type (i.e. SA800/801, SA-1000), attach corresponding connectors of cable 6637508-1 to each drive, and plut into Test receptacle of Power Distribution Module.

OIU Modules (LIM, BTM, LSM, MFPM, IOXM)

When a replacement MFP is required for a 1400 Tag OIU, equivalent part NMFP02 assembly P/N 6634163-2 is currently in production for all OIU applications. For 1400 Tag OIU:

1. Obtain conversion ROM firmware from Bailey, referencing your existing software revision level (at bottom of menu screen), and firmware (ROM labeling at MFP board locations U26 and U28).

2. Set jumpers E1 thru E13 per Table 3.3 for new ROM type.

3. Set jumpers to position E19-E20 for 128K (NMFP01, 1400 Tag) applications.

To remove or install the OIU modules, refer to Figures 7.13 (NOIU01/03) or 7.15 (NOIU02) for module locations and connections of the respective module interface cables. Refer to the module setups and tests in Section III after installation.

NOIU01/03 Driver Cabinet Blower Assembly

To remove the Driver Cabinet Blower Assembly, follow the steps below.

STEP 1 - Disconnect power to the NOIU01 Driver Cabinet.

STEP 2 - Remove the four pan head Philips screws from the blower filter panel (Figure 2.3). Remove the blower filter panel.

STEP 3 - Remove the four Philips screws from the blower duct assembly above the filter panel. Remove the blower duct assembly.

STEP 4 - Remove the two screws holding the blower assembly to the cabinet (two on front panel and one at the side of each rear bracket). Cut and remove any cable ties securing the blower line cord. Disconnect the blower line cord from "BLO" of the Power Distribution Module and remove the Blower Assembly from the front of the cabinet.

To install the Blower Assembly, perform the steps of the above removal procedure in reverse order. Make installations where removals are indicated. Replace all cut cable ties.

NOIU02 Blower Unit

To remove the NOIU02 Blower Unit, follow the steps below.

STEP 1 - Disconnect power to the NOIU02.

STEP 2 - Open (or remove) the rear door.

STEP 3 - Cut and remove cable ties securing the blower unit power cord.

STEP 4 - Remove the two screws (at the bottom of the blower unit enclosure) which retain the blower unit in the NOIU02.

STEP 5 - Lift out the blower from the rear of the NOIU02.

To install the Blower Unit, follow the steps below.

STEP 1 - Perform the steps of the NOIU02 Blower Unit removal above in reverse order.

STEP 2 - Replace all cut cable ties.

OIU Keyboard

To remove the OIU Keyboard, follow the steps below.

STEP 1 - Disconnect power to the NOIU01/03 CRT/Keyboard Console or NOIU02.

STEP 2 - Slide the NETWORK 90 Logo plate from the face of the keyboard. (For NOIU03, see NOTE in step 3)

STEP 3 - Remove the two exposed screws holding the keyboard assembly to the keyboard housing, and remove the assembly.
NOTE: The NOIU03 has no logo plate. Remove the screws from the raised plate surrounding the keyboard. Lift the plate from the cabinet and lift out the keyboard assembly.

STEP 4 - Lift the keyboard assembly from the housing. Remove the connections at the CPU Board's P1-P5 connectors. Remove the keyswitch (S1 and S2) cable connectors.

To install the keyboard assembly, perform the removal steps above in reverse order.

OIU CPU Board

NOTE: Located at side of CRT console enclosures on NOIU01 units built prior to March 1980. After March 1980 became part of the OIU keyboard (see above).

STEP 1 - Perform the steps of the OIU Keyboard removal procedure.

STEP 2 - Disconnect the wires of the Keyboard assembly Key SW1 and Key SW2 units at the Decoder board's terminals (Figure 7.23).

STEP 3 - Detach the CPU board from the Keyboard assembly by removing the six connecting Philips head screws.

To install the OIU CPU Board, follow the steps below.

STEP 1 - Perform the OIU CPU Board removal steps above in reverse order.

STEP 2 - Perform the OIU Keyboard assembly removal steps above in reverse order.

OIU Switchboard Assembly
To remove the OIU Switchboard Assembly, follow the steps below.

STEP 1 - Perform the OIU Keyboard removal steps above.

STEP 2 - Detach the Switchboard assembly from the Keyboard assembly by removing the screws holding the Switchboard to the Keyboard assembly spacers and frame.

To install the Switchboard Assembly, follow the steps below.

STEP 1 - Perform the Switchboard Assembly removal steps above in reverse order.

STEP 2 - Perform the OIU Keyboard Assembly removal steps above in reverse order.

NOIU01/03 CRT/Keyboard Console Enclosure Upper Back Plate, Fan, and Shroud
To remove the Upper Back Plate, Fan, and Shroud, follow the steps below.

STEP 1 - Using a Philips screwdriver, remove the seven ¼-turn fasteners holding the upper back plate to the enclosure. Disconnect the fan power cord and lift off the upper back plate. If it is necessary to remove the fan, disconnect the fan by removing its attaching hardware.

STEP 2 - Remove the shroud by sliding it forward and lifting it from the enclosure base (Figure 7.22).

To install the Upper Back Plate, Fan, and Shroud, follow the steps below.

STEP 1 - Engage the Shroud pins with the slots of the enclosure base. Slide the shroud into place (Figure 7.22).

STEP 2 - If installing fan assembly, mount it on the upper back plate by installing it with its attaching hardware.

STEP 3 - Connect the fan cord. Attach the upper back plate to the rear of the enclosure by tightening the ¼-turn fasteners into place.

NOIU01/03 CRT/Keyboard Console + 12 V, −12 V dc Supply
To remove the Keyboard Console dc Supply Assembly, follow the steps below.

STEP 1 - Identify the assembly as the near unit in the rear, left-hand portion of the assembled chassis (viewed from the rear). See Figure 7.22.

STEP 2 - Using a Philips screwdriver, remove the two screws holding the Power Supply assembly to the side panel mounting bracket.

STEP 3 - Lift up the supply assembly. Mark and unsolder the leads from the + 5 V Power Supply Assembly and the enclosure wiring harness. Remove the ± 12 V dc supply assembly.

To install the ± 12 V dc Power Supply Assembly, follow the steps below.)

STEP 1 - Referring to Figures 7.14 and 7.18, solder the wires connecting the replacement unit to the + 5 V dc supply assembly and the wiring enclosure harness.

STEP 2 - Mount the ± 12 V dc supply assembly on the assembled chassis side panel bracket by installing its two mounting screws. Verify power supply voltages are as specified in the "CRT/Keyboard Console Setup" of Section III.

NOIU01/03 CRT/Keyboard Console + 5 V dc Supply
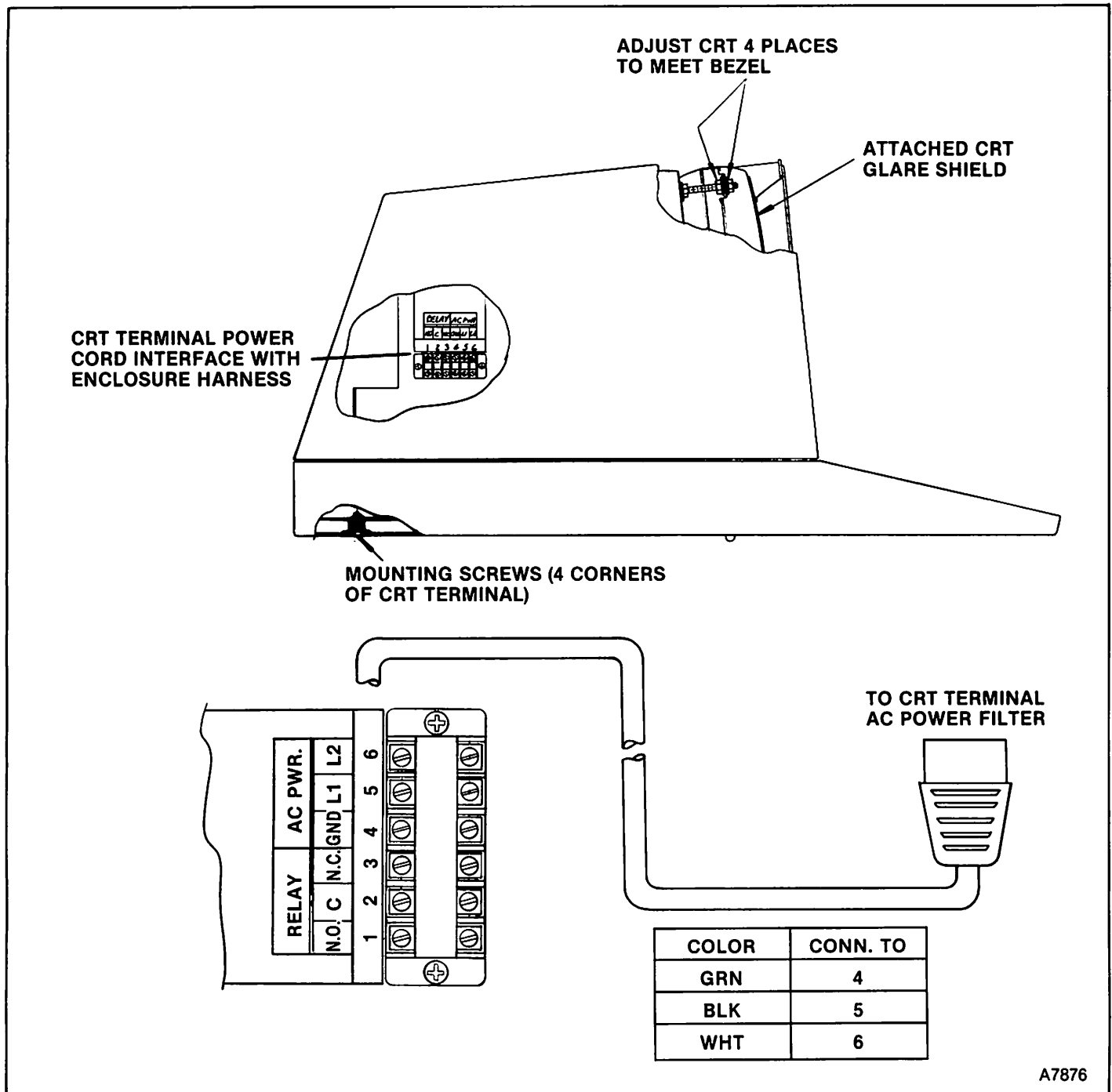To remove the + 5 V dc Supply Assembly, follow the steps below.

STEP 1 - Identify this assembly as the far unit in the rear, left-hand portion of the assembled chassis (viewed from the rear). See Figure 7.18.

STEP 2 - Using a Philips screwdriver, remove the two screws holding the Power Supply to the side panel mounting bracket.

STEP 3 - Mark and unsolder the attached leads from the ± 12 V dc Power Supply assembly and the enclosure wiring harness. Remove the + 5 V dc supply assembly.

To install the +5 V dc Supply Assembly, follow the steps below.

STEP 1 - Referring to Figures 7.18 and 7.14, solder the wires connecting the replacement unit to the ± 12 V dc supply assembly and the enclosure wiring harness.

STEP 2 - Mount the +5 V dc supply assembly on the assembled chassis side panel bracket by installing the two mounting screws.

STEP 3 - Perform the power supply adjustment in Step 2 of the "CRT/Keyboard Console Setup" procedure (see Section III).

ADJUST CRT 4 PLACES TO MEET BEZEL

ATTACHED CRT GLARE SHIELD

CRT TERMINAL POWER CORD INTERFACE WITH ENCLOSURE HARNESS

MOUNTING SCREWS (4 CORNERS OF CRT TERMINAL)

TO CRT TERMINAL AC POWER FILTER

COLOR	CONN. TO
GRN	4
BLK	5
WHT	6

A7876

FIGURE 4.10 - NOIU01/03 CRT/Keyboard Console Terminal Interface

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NOIU01 Color Graphic Terminal
To remove the CRT, follow the steps below.

STEP 1 — Remove the CRT/Keyboard Console upper back plate and shroud (see procedure in this Section).

STEP 2 — Remove the screws attaching lower back plate to the enclosure and, leaving wire attached, move the back plate away from the terminal chassis.

STEP 3 — Unplug the power cord from the filter unit receptacle attached to the terminal chassis.

STEP 4 — Maneuver the CRT/Keyboard Console at the edge of a table and remove the four pan head screws at the bottom corners of the enclosure.

STEP 5 — Lift the terminal carefully from the enclosure and set it aside.

STEP 6 — Locate new line cord. If different connector from one at right rear of enclosure, replace as follows. Cut and strip conductors 3 ft. from rear-of-set connector. Install corresponding wires in place of old ones on terminal block TBI. (See Hardware Manual Console drawing, Figure 4.10)

STEP 7 — Install New Intecolor or Aydin Terminal.

a) ISC bolt brackets (reused) to underside of new Intecolor terminal using four 8-32 x ¼" flathead screws supplied

Aydin — bolt brackets to underside of new Aydin terminal using two 10-32 x 5/8" flathead screws for item #3 and use two 3/4" high spacers and two 10-32 x 1" flathead screws for Item #4.

b) ISC position Intecolor terminal in console with CRT against bezel lower edge, and adjust jam nuts on upper CRT mounting ears for CRT conformance to top of bezel.

Aydin — on the Aydin terminal loosen the 4 adjustment nuts on each side of the CRT bezel. Then tighten the top nuts to hold the CRT in position. Remove the terminal and tighten the remaining adjustment nuts.

c) Install four 8-32 x ¼" panhead screws through brackets slots into housing mounting bars.

d) On Intecolor models with black chassis, lower card cage by removing screws at right top corner. Swing open cage and loosen 2 screws joining the hinge to cage. Slide cage down and reassemble.

STEP 8 — Transfer fans from old to new upper rear cover. Secure lower cover to console.

STEP 9 - Attach RS232 cable connector from the keyboard CPU to Intecolor jack 'J' or to the special adapter plate in the J4 cutout position, on the lower rear panel, for the Aydin. The adapter plate is discarded with the Intercolor terminal.

STEP 10 — On the Aydin terminal, remove the brightness pot from the terminal and install it in the holes on the right side of the lower rear panel.

STEP 11 — Attach remaining cables, apply power, and follow set-up procedure in Intecolor user's manual for new terminal; or follow the Aydin documentation for terminal set-up and alignment.

STEP 12 — Install upper-cover half, slide-lock in position, then plug-in rear cover fans to labeled connector and tighten all rear cover ¼ turn fasteners.

STEP 13 — Confirm operation of all fans.

NOIU02 Color Graphic Terminal
To remove the NOIU02 CRT, follow the steps below.

STEP 1 — Disconnect power to the NOIU02.

STEP 2 — Open (or remove) the rear door.

STEP 3 — Remove the two screws at the side of the door that retain the top cover. Remove the top cover by lifting its rear edge and pushing it toward the front of the NOIU02.

STEP 4 — Remove the cable from the J1 connector.

STEP 5 — If supplied with a remote mounted convergence card, remove the cable to the card (delta gun CRTs only). Otherwise, skip this step.

STEP 6 — Remove the cable to the front panel mounted brightness control.

STEP 7 — Remove the power cord.

STEP 8 — Remove the two screws holding the CRT to the rails.

STEP 9 — Slide the terminal out the rear of the NOIU02.

STEP 10 — Remove 7 rubber feet from new terminal, retaining screws.

STEP 11 — Locate and fasten 'wedgie' P/N 6635785A2)Left: Mount on side nearest line cord connector; wedgie tip toward screen). Use screws from step 10.

STEP 12 — Repeat the process for 'wedgie' P/N 6635785A1, mounting it to the right edge of the base pan.

STEP 13 — Examine the OIU02's terminal power cord to see if the connector will insert in the new terminal. If required, cut cable tie 5 and substitute the line cord shipped with the replacement terminal.

To install the NOIU02 terminal, perform the NOIU02 CRT removal steps above in reverse order. Ensure the CRT's protective, anti-glare screen is in place.

NOIU03 Color Terminal
STEP 1 — Hinge open rear door and unplug terminal power cord at right rear apron.

STEP 2 — Remove retaining screws, then RS232 connector at left rear apron.

STEP 3 — Remove screws visable at right and left edges.

STEP 4 — Withdraw terminal and place base-up on the floor.

STEP 5 — With replacement terminal similarly positioned, transfer the mounting strap to the replacement.

STEP 6 — Reverse the above process to reinstall the replacement color terminal.

Section V — Specifications

VOLTAGE/FREQUENCY		
Component	**Voltage**	**Frequency**
NOIU01/03 **Driver Cabinet**	105 - 125 V ac	47 - 63 Hz
NOIU01 CRT/Console	105 - 125 V ac	47 - 63 Hz
NOIU03 CRT/Console	105 - 125 V ac	47 - 63 Hz
NOIU02 Console **Cabinet**	105 - 125 V ac	47 - 63 Hz
NPRT01/02/03 **Printer**	105 - 125 V ac	47 - 63 Hz

NOTE:

1. Input power must be sine wave AC, ±3% total harmonic distortion.

2. All system "Safety Grounds" must be at the same voltage level. If the safety grounds are at different voltage levels, groundloop current in the RS-232 lines can cause erratic system operation.

3. OIU Alarm Contact Ratings: 28 V dc, .25 A switching, 1 A continuous.

CURRENT			
		Inrush Current	
Components	**Run Amps**	**Peak Value (Amps)**	**Duration**
NOIU01/03 **Driver Cabinet**	5.0	60.0 19.5	1 cycle, then 3 seconds
NOIU01 CRT/Console	2.8	20.0	1-2 cycles
NOIU03 CRT/Console	13.8	20.0	1-2 cycles
NOIU02 Console **Cabinet**	7.8	80.0 19.5	1 cycle, then 3 seconds
NPRT01/02/03 **Printer**	2.0	2.0	20 cycles

POWER/COOLING REQUIREMENTS

Component	Watts	BTU/Hr
NOIU01/03 Driver Cabinet	570	1940
NOIU01 CRT/Console	276	940
NOIU03 CRT/Console	1325	940*
NOIU02 Console Cabinet	846	2890
NPRT01/02/03 Printer	204	700

*Does not include air conditioning.

ENVIRONMENT

Component	Operating Temperature % Relative Humidity (non-condensing)	Non-operating (transportation, storage and construction area) Temperature and % Relative Humidity (non-condensing)
NOIU01/03 Cabinet	50 - 104°F (10 - 40°C) 5 - 80% R.H.	—4 to 122°F (—20 to 50°C) 0 - 95% R.H.
NOIU01/03 CRT Console	50 - 104°F (10 - 40°C) 5 - 95% R.H.	—4 to 122°F (—20 to 50°C) 0 - 95% R.H.
NOIU02 Console Cabinet	50 - 104°F (10 - 40°C) 5 - 95% R.H.	—4 to 122°F (—20 to 50°C) 0 - 95% R.H.
NPRT01/02/03 Printer	50 - 104°F (10 - 40°C) 10 - 80% R.H.	—4 to 122°F (—20 to 50°C) 0 - 95% R.H.

NOTE: All OIU hardware must be stored and used in a non-corrosive environment.

PHYSICAL DATA

DIMENSIONS (inches (mm))				
Component	Width	Depth	Height	Weight lbs (kg)
NOIU01/03 Cabinet	23.2 (592)	25.6 (647)	51.1 (1297)	400 (181.4)
NOIU01 CRT Console	26.4 (670)	36.7 (932)	18.6 (473)	152 (68.9)
NOIU03 CRT Console	22.0 (559)	30.0 (762)	70.0 (1778)	290 (131.4)
NOIU02 Integrated Console	28.1 (714)	28.0 (712)	52.5 (1334)	412 (186.9)

Section VI — Parts Ordering Information

OIU Replacement

When ordering an OIU as a replacement or add on to your system, your Bailey representative will need to know the revision of the software presently in your OIU. All OIUs should have the same software revision level to ensure consistent functionality with the rest of the system.

The current software revision level that the OIU is using is located at the bottom of the General Function Menu, obtained by depressing the menu key. Figure 6.1 shows this menu and indicates that the software revision level is N5 (1900063N5).

A0176
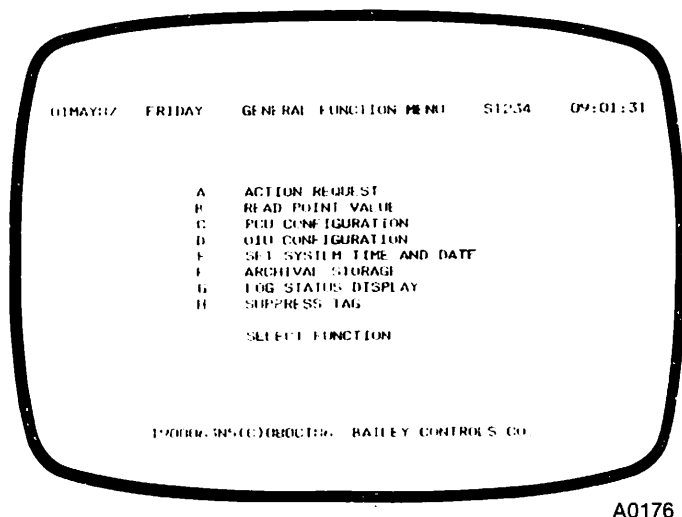
FIGURE 6.1 — General Function Menu

Module Replacement

When ordering a Multi-Function Processor Module (NMFP01/02/03), Bus Transfer Module (NBTM01), Loop Storage Module (NLSM01/02), Loop Interface Module (NLIM01), or Processor Interface Module (NPIM01) as a replacement for your system, supply the revision level of the module firmware to your Bailey representative. The firmware consists of the integrated circuits which control and guide the module. These integrated circuits are Read Only Memory (ROM) chips which contain Bailey operation codes. Bailey changes the operation codes, adding functions and enhancements, improving module efficiency and system integrity.

The firmware revision level, designated by a letter and number(s), is printed on a white tab on the ROM chips. Obtain the module firmware revision from the ROM locations specified below:

NMFP01/02/03 — (Figure 3.10) ROM locations U26 and U28. (Both of these ROM designations should be noted on the order form.)

NBTM01 — (Figure 3.7) either ROM location XU14 or XU15.

NLIM01 — (Figure 3.6) ROM location XU4.

NPIM01 — (Figure 3.12) either ROM location XU11 or XU17.

NLSM01/02 — (Figure 6.2) either ROM location XU45 or XU57.
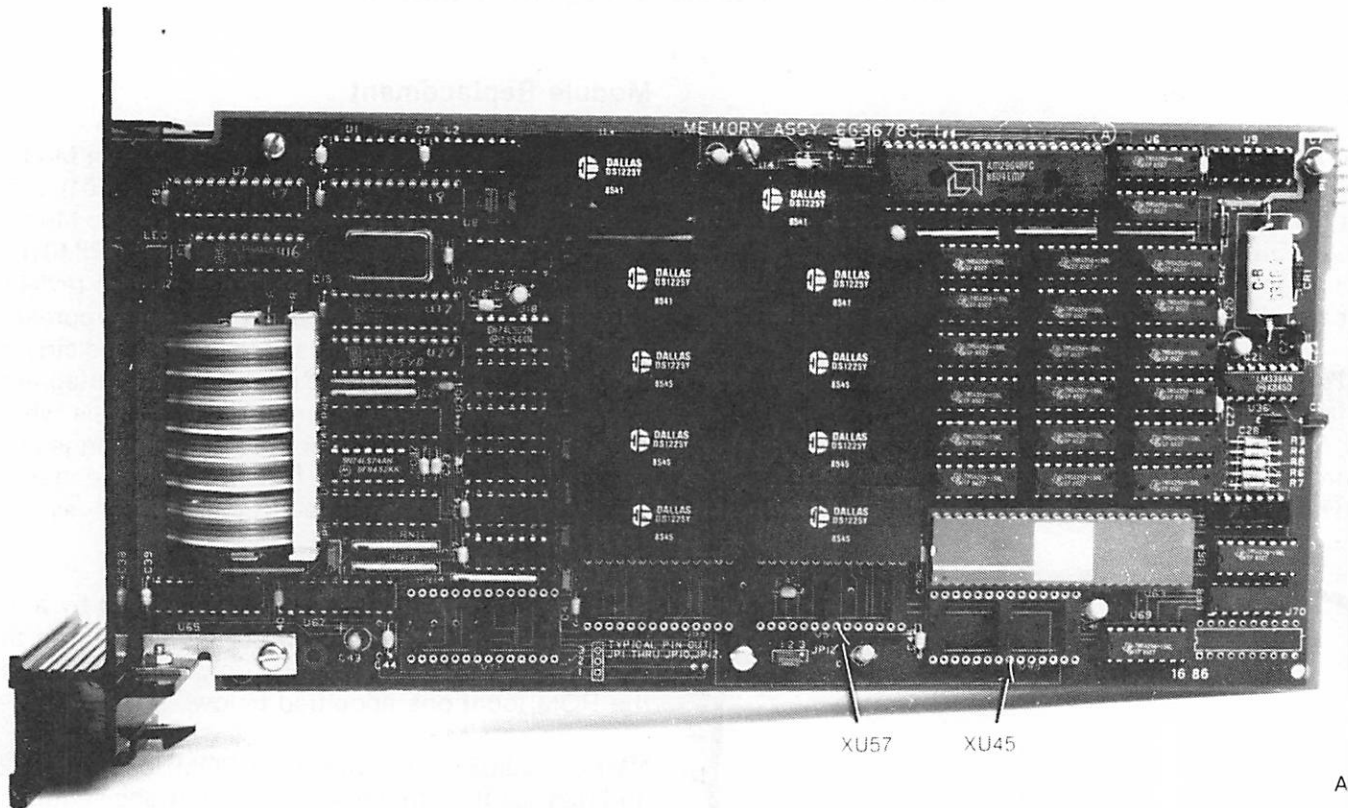
FIGURE 6.2 — *NLSM02 Memory Board ROM Locations*

A0177

Subscription Service

Bailey Controls has released a Software Subscription Service for the OIU. This service allows customers to have all new enhancements that Bailey develops during the subscription period.

AOSOIU0101   1 year subscription
AOSOIU0102   2 year subscription
AOSOIU0103   3 year subscription

If any questions arise on the ordering procedure or the Software Subscription Service, please contact your Bailey representative. Aftermarket Development is also available to answer your technical questions at (216) 585-7206.

Section VII — Supplemental Drawings

.190-32

L N G

BLK WHT GRN

CUSTOMER WIRING
(SEE NOTE 2)

VIEW A-A

66.00   BOTH DOORS OPEN
1676.4

(TOP)

41.00   ONE DOOR OPEN
1041.4

23.31
592.1

(FRONT)

42.00
1066.8

51.06
1296.9

18.88
479.6

25.50
647.7

COOLING
AIR EXH

(SIDE)

COOLING
AIR ENTRANCE

BOT
8 CA

15.31
388.8

4.00
101.6

(BOTTOM)

(4)

FO

3.38
85.8

18.75
476.2
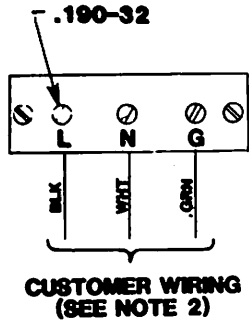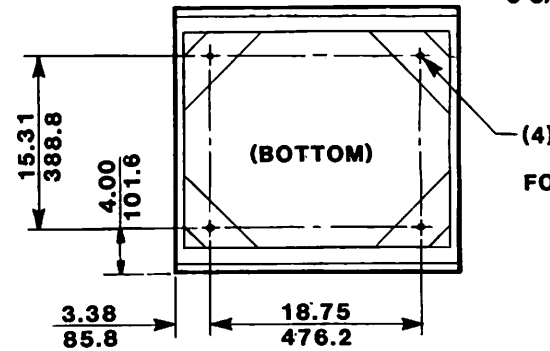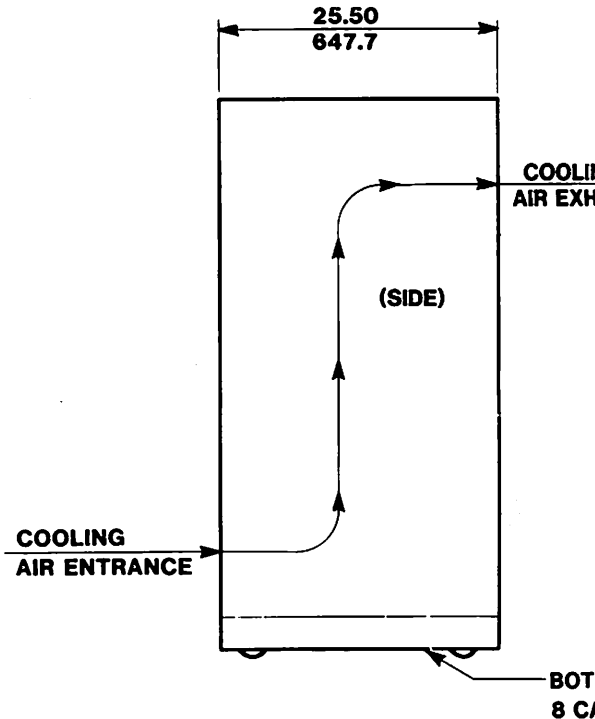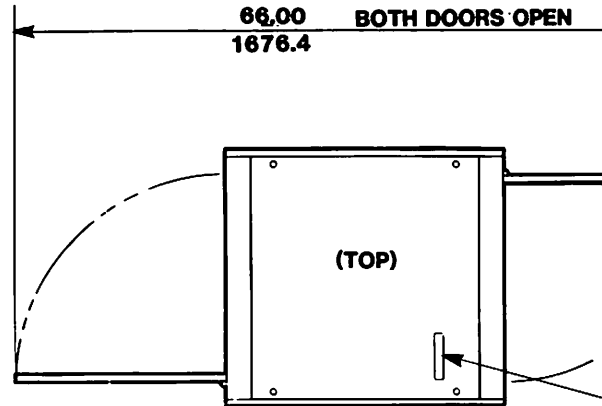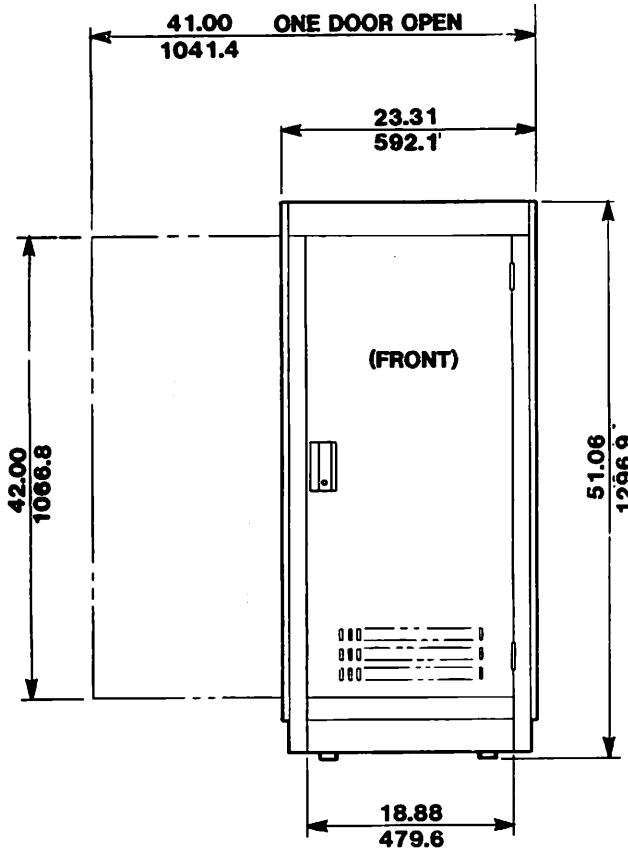
5 V.A.C. , 47-63 Hz.
N 5% T.H.D.
IAↆ
E)
() FOR 1 TO 2 CYCLES

95% RELATIVE HUMIDITY
% RELATIVE HUMIDITY
AND NON-CORROSIVE
JR MAX.

NOTES

1.) UNIT IS SUPPLIED WITH A $\dfrac{72.00}{1829.0}$ A. C. POWER CORD WHICH PLUGS INTO A 125V., 15 AMP, 2 POLE 3 WIRE GROUNDING RECEPTACLE (NEMA 5-15R).

2.) J1 AND J2 CONNECTORS ARE CINCH TYPE DB-25-S OR EQUIVALENT.

3.) TOTAL WEIGHT IS APPROX. 152 LBS. (69 KG)

4.) CUSTOMER MAY FASTEN UNIT TO DESK TABLE PER TAPPED HOLES SHOWN IN SECTION B - B. BOLTS SHOULD NOT PROTRUDE INTO UNIT MORE THAN $\dfrac{.38}{9.6}$ DUE TO INTERNAL INTERFERENCE. DO NOT REMOVE FEET.

5.) ALLOW $\dfrac{30.00}{762.0}$ CLEARANCE BEHIND UNIT FOR CABLES, VENTILATION AND SERVICING & TOP ENCLOSURE AND/OR REAR PANEL REMOVAL.

6.) GROUNDING NOTE - ALL SYSTEM "SAFETY GROUNDS" SHOULD BE TIED TO THE SAME POINT. (ANY VOLTAGE DIFFERENCE ON THE SAFETY GROUNDS CAN CAUSE ERRATIC OPERATION).

7.) 120 VAC POWER SOURCE MUST BE CORRECTLY WIRED. INCORRECT WIRING CAN CAUSE SERIOUS EQUIPMENT DAMAGE.

COOLING AIR
EXHAUST

A

A

OLING AIR
ITRANCE

36.69
932.0

23.73
602.7

1.65
41.9

7.75
197.0

OFF ON J4 GRAPHIC KYBD
J3 AUX. KEY BD.
J2 OIU KEY BD.
A.C PWR J1 CRT

1.16
29.5

1.64
41.6

VIEW A-A

1.31
33.3

5.17
131.3

DIMENSIONS
INCH
MILLIMETER

NOTES

1.) $\frac{6.00}{152.4}$ MINIMUM CLEARANCE REQUIRED WHEN INSTALLING CABLE IN TOP ENTRY.

2.) REMOVE SPINDLE LOCK FROM WINCHESTER DISK DRIVE BEFORE APPLYING POWER.

3.) SUMMARY OF SPECIFICATIONS:

POWER REQUIREMENT: 105-125 VAC, 60 Hz±.5Hz

LINE DISTORTION: NO MORE THAN 5% T.H.D.

POWER CONSUMPTION: 570 W. (MAX)

POWER FACTOR: .8 (WORST CASE)

INRUSH CURRENT: 61 A. (PEAK) FOR 1 CYCLE DROPS TO 19.5 A. PEAK FOR 3 SECONDS, THEN DROPS TO NORMAL POWER CONSUMPTION LEVEL.

ENVIRONMENT:

OPERATING: +10 TO +38°C, 20-80% RELATIVE HUMIDITY

STORAGE: -22 TO -47°C, 1-95% RELATIVE HUMIDITY

ATMOSPHERE: NON-CONDENSING AND NON-CORROSIVE.

HEAT DISSIPATION: 1938 BTU/HOUR MAX.

4.) GROUNDING NOTE: ALL SYSTEM "SAFETY GROUNDS" SHOULD BE TIED TO THE SAME POINT. (ANY VOLTAGE DIFFERENCE ON THE SAFETY GROUNDS CAN CAUSE ERRATIC SYSTEM OPERATION).

5.) 120 VAC POWER SOURCE MUST BE CORRECTLY WIRED. INCORRECT WIRING CAN CAUSE SERIOUS EQUIPMENT DAMAGE.

6.) FOR OTHER THAN 105-125 VAC, 60Hz ±.5 Hz OPERATION SEE BAILEY DWG D3053318.

TOP ENTRY
8 CABLES

IG
AUST

SEE VIEW A-A

(REAR)

TOM ENTRY
BLES

REAR ENTRY
8 CABLES

$\frac{.375}{9.5}$ DIA HOLES

R FLOOR MTG.

DIMENSIONS
INCH
MILLIMETER

REFERENCE D3053254, SHEET 1

FIGURE 7.1 — NOIU01/03 Driver Unit Installation

EXHAUST LOUVERS

KEYBOARD

26.38
670.0

CRT

18.62
473.0

B   B

TYP. 3.42
86.9

RUBBER FEET TYP.(4 PLACES)   **.250-20 TAP TYP.(4PLACES)**

SECTION B - B

18.50   21.51
469.9   546.4

2.75   20.88
69.8   530.3

2.41
61.2

8.) **SUMMARY OF SPECIFICATIONS:**

  POWER REQUIREMENTS: 105-1:
  LINE DISTORTION: NO MORE TH
  POWER CONSUMPTION: 275 W.
  POWER FACTOR: .9 (WORST CA
  INRUSH CURRENT: 19.5AMP (PE/
  ENVIRONMENT:
    OPERATING, +10 TO +38°C, (
    STORAGE, -30 TO +70°C 0-8
  ATMOSPHERE: NON-CONDENSIN
  HEAT DISSIPATION: 938 BTU/H(

FIGURE 7.2 — NOIU01 CRT/Keyboard Console Installation

67.62 **REAR DOOR OPEN**
1717.5

7.00 NOM. FOR AUX.
177.8 KEYBOARD OPTION

46.12
1171.4

(TOP)

49.54 FRONT DOOR OPEN
1258.3

28.12
714.2

71.06 BOTH DOORS OPEN
1804.9

(SIDE)

52.51 (DOES NOT INCLUDE
1333.7 LEVELER ADJ.)

(FRONT)

COOLING AIR
EXHAUST

26.20 MIN.
665.5

1.14   **14.00**   **1.70**
29.0   **355.6**   **43.2**

28.03
712.0

25.00
635.0

(BOTTOM)

5.88
149.4

.312-18UNC-2A x
2.75 MTG. BOLTS
& LOCKWASHERS (4)
(CUSTOMER SUPPLIED)

BOTTOM CABLE
ENTRY AREA

MAX. LEVELER 1.05
ADJ.   26.7

1.56
39.6

17.40
442.0

.465
11.8

5.32
135.1

SEC A-A

NOTES:

1.) UNIT IS SUPPLIED WITH A $\dfrac{\text{7 FT.}}{\text{2.1 METER}}$ A.C. POWER CORD

AND $\dfrac{\text{25 FT.}}{\text{7.62 METER}}$ PRINTER CABLE.

2.)MINIMUM CLEARANCE FOR MAINTENANCE AND OPERATION.

3.) WEIGHT OF PRINTER 20LBS.(9.1 KG.) W/PEDESTAL 61LBS.(27.7KG.)

4.) SUMMARY OF SPECIFICATIONS:
    POWER REQUIREMENT: 100-128VAC,48/65 HZ
    POWER: 180 WATTS

    ENVIRONMENT:
    OPERATING: +40 TO +104 °F (+4 TO +40°C) TEMPERATURE
            5 TO 95% RELATIVE HUMIDITY
            NON-CONDENSING AND NON-CORROSIVE ATMOSPHERE
     STORAGE: -40 TO + 160°F(-40 TO+71°C)
            5 TO 95% RELATIVE HUMIDITY

KET

$\dfrac{30.58}{776.7}$

$\dfrac{16.10}{409.0}$

E 2)

$\dfrac{2.95}{75.0}$

PAPER OUT

(SIDE)

PAPER IN

$\dfrac{12.16}{309.0}$

$\dfrac{18.00}{457.2}$
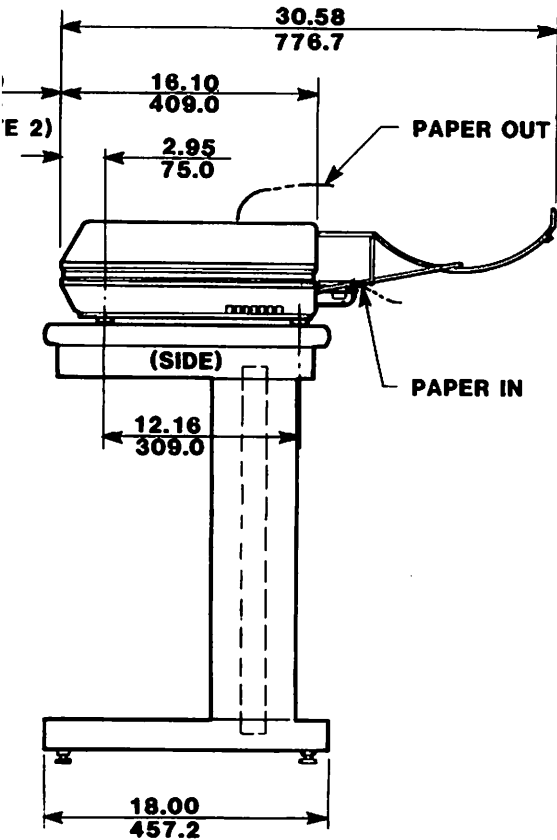
DIMENSIONS
INCH
MILLIMETER

REFERENCE D3053278
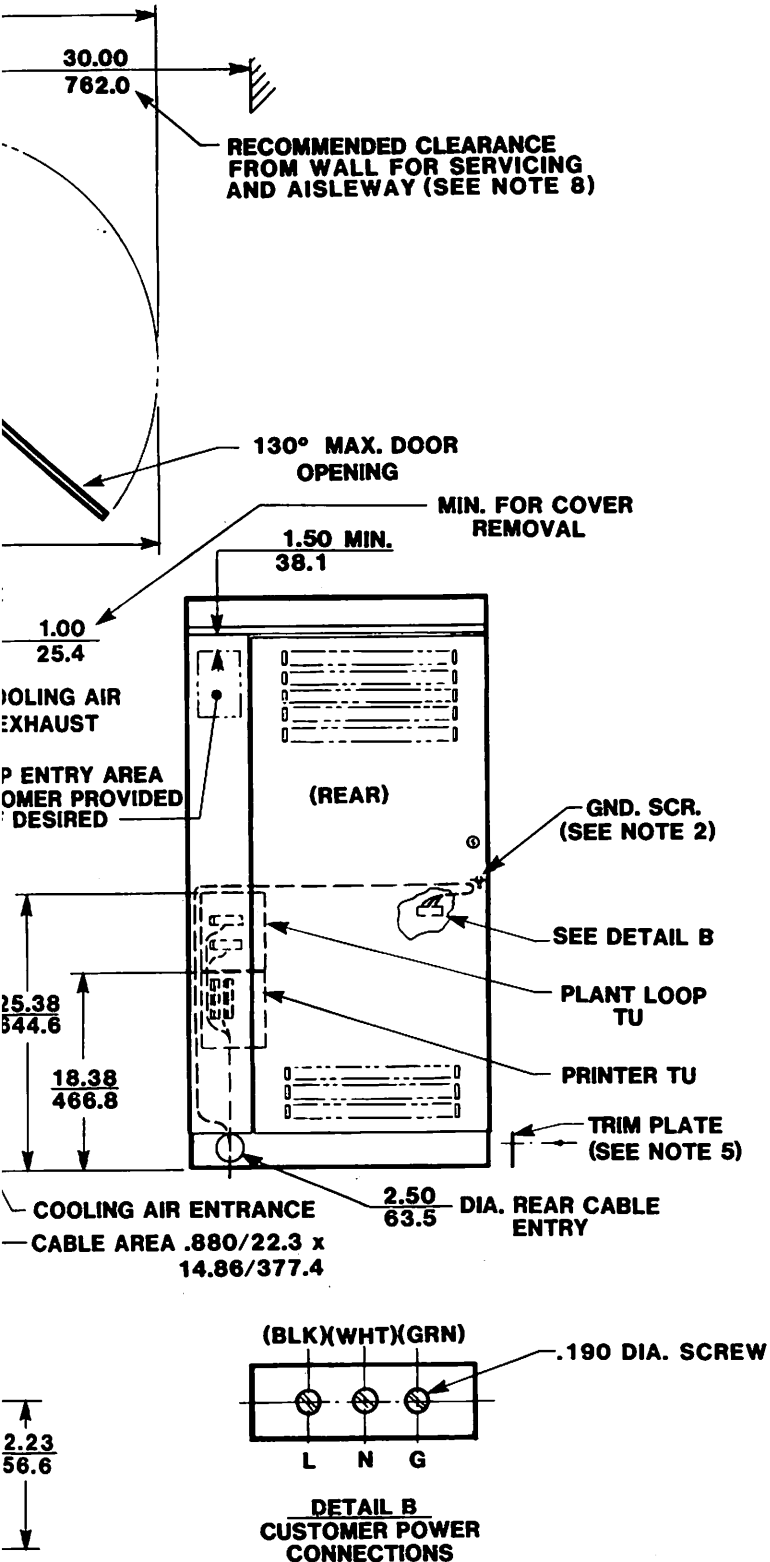
NOTES:

1.) REMOVE SPINDLE LOCK FROM WINCHESTER DISK DRIVE BEFORE APPLYING POWER

2.) SYSTEM SAFETY GROUND CONNECTION.

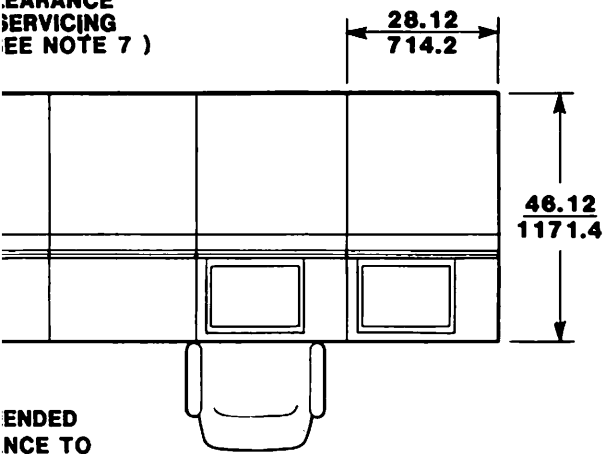3.) 120 VAC POWER SOURCE MUST BE WIRED CORRECTLY INCORRECT WIRING CAN CAUSE SERIOUS EQUIPMENT DAMAGE.

4.) TOTAL WEIGHT IS APPROX. 412 LBS. (186.9 KG).

5.) TRIM PLATE IS REQUIRED ON EACH SIDE OF A FREE-STANDING CONSOLE ,BUT ONLY END CONSOLES NEED TRIM PLATES (1 EACH) IN AN ARRAY.

6.) SUMMARY OF SPECIFICATIONS :

POWER REQUIREMENT : 105-125 VAC , 50/60 HZ ± .5 HZ

LINE DISTORTION : NO MORE THAN 5%T.H.D.

POWER CONSUMPTION : 846W.(MAX.)

POWER FACTOR : .8 (WORST CASE)

INRUSH CURRENT : 80A. (PEAK) FOR 1 CYCLE DROPS TO 19.5 A. PEAK FOR 3 SECONDS, THEN DROPS TO THE NORMAL POWER CONSUMPTION LEVEL.

ENVIRONMENT :

OPERATING :+10 TO +38° C, 20-80% RELATIVE HUMIDITY.

STORAGE :-22 TO +47° C, 5-95% RELATIVE HUMIDITY.

ATMOSPHERE : NON-CONDENSING AND NON-CORROSIVE.

HEAT DISSIPATION : 2976 BTU/HOUR MAX.

7.) STABILIZERS (PROVIDED) MUST BE USED WHEN CONSOLES ARE NOT SECURED TO FLOOR.

8.) APPLICABLE CODES & STANDARDS MAY REQUIRE ADDITIONAL CLEARANCE.

DIMENSIONS
INCH
MILLIMETER

Figure labels:

30.00 / 762.0

RECOMMENDED CLEARANCE FROM WALL FOR SERVICING AND AISLEWAY (SEE NOTE 8)

130° MAX. DOOR OPENING

MIN. FOR COVER REMOVAL

1.50 MIN. / 38.1

1.00 / 25.4

COOLING AIR EXHAUST

P ENTRY AREA OMER PROVIDED DESIRED

(REAR)

GND. SCR. (SEE NOTE 2)

SEE DETAIL B

PLANT LOOP TU

PRINTER TU

TRIM PLATE (SEE NOTE 5)

25.38 / 544.6

18.38 / 466.8

COOLING AIR ENTRANCE

CABLE AREA .880/22.3 x 14.86/377.4

2.50 / 63.5 DIA. REAR CABLE ENTRY

(BLK)(WHT)(GRN)

.190 DIA. SCREW

L N G

2.23 / 56.6

DETAIL B
CUSTOMER POWER CONNECTIONS

DIA. (4) MTG. HOLES FOR FLOOR MTG.

FIGURE 7.3 — NOIU02 Operator Interface Unit Installation

PAPER BAS

ON/OFF SWITCH

CABLE CONNECTION
(SEE NOTE 1)

POWER CORD CONN.
(SEE NOTE 1)

PRINTER

(TOP)

(REAR)

$\frac{24.0}{609.}$
(SEE NO

SECTION A-A

$\frac{36.00}{914.4}$
(SEE NOTE 2)

$\frac{25.00}{635.0}$

$\frac{6.30}{160.0}$

$\frac{18.35}{466.1}$

(FRONT)

$\frac{26.29}{667.7}$

PEDESTAL
(OMITTED ON NPRT02)

$\frac{24.00}{609.6}$
(SEE NOTE 2)

$\frac{21.00}{533.4}$

$\frac{.62}{15.7}$
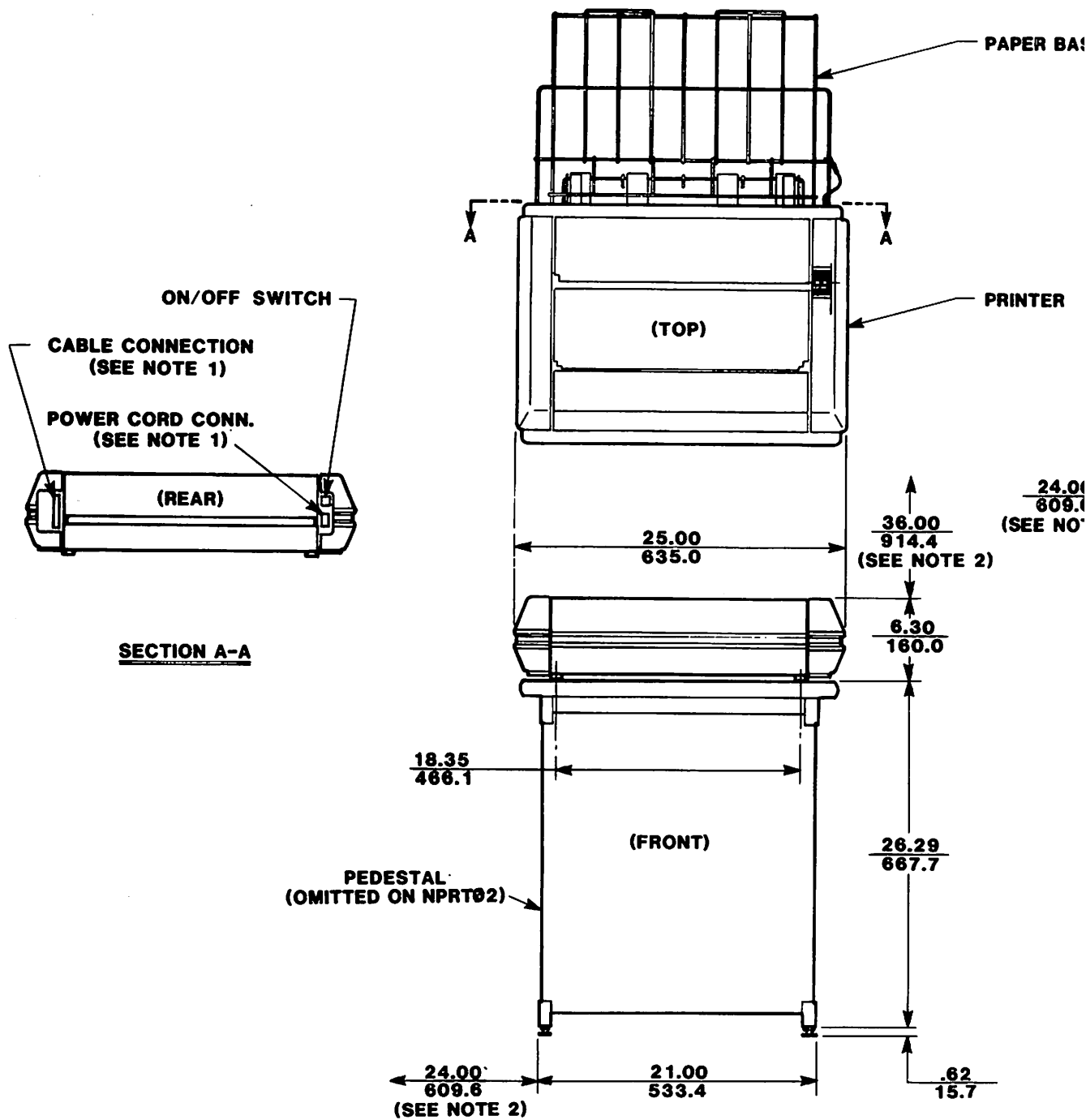
FIGURE 7.4 — Printer Installation

-15°
REF.

$\dfrac{30.00}{762.0}$ **RECOMMENDED C...**
FROM WALL FOR...
AND AISLEWAY (S...

(SEE NOTE 6)

MIN. CLEARANCE FOR CHAIR ENTRY/EXIT — $\dfrac{34.00}{863.6}$ $\dfrac{50.00}{1270.0}$

RECOMM...
ALLOWA...
PROVIDE...
BEHIND...
(SEE N...
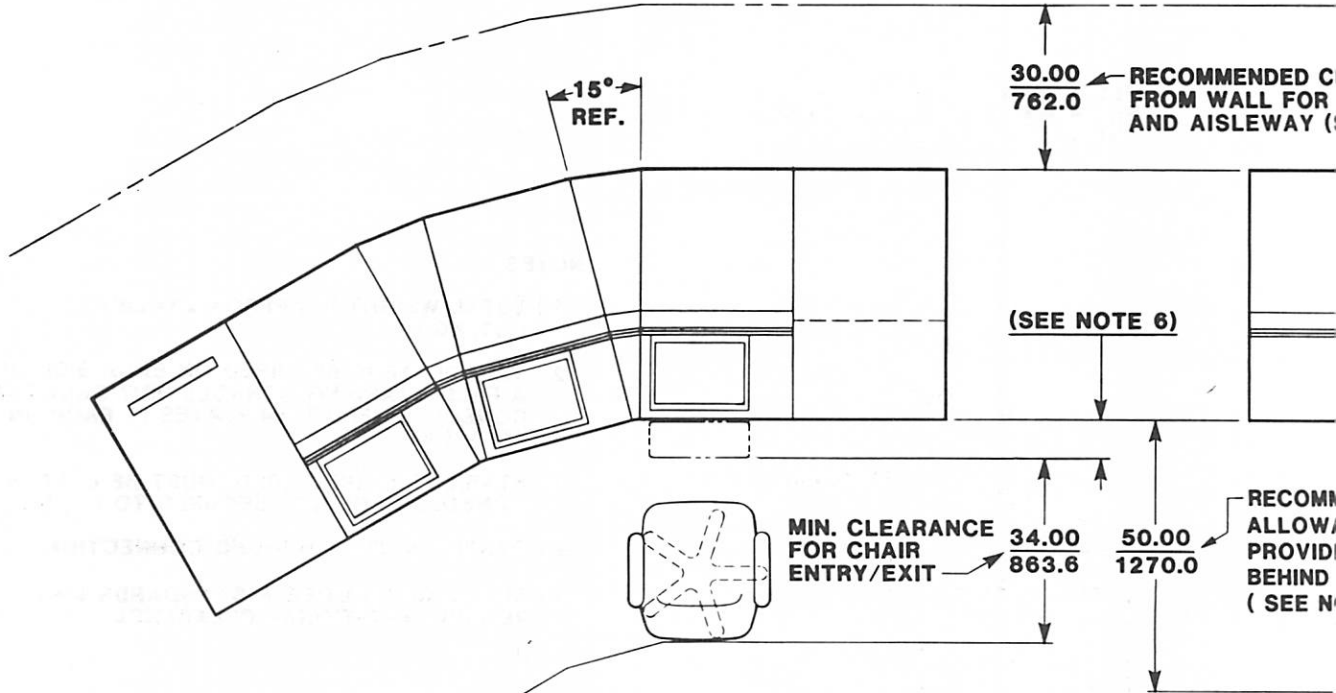
SEE INDIVIDUAL CONSOLE DRAWINGS F...

$\dfrac{1.97}{50.0}$

$\dfrac{17.40}{442.0}$

$\dfrac{1.38}{35.0}$
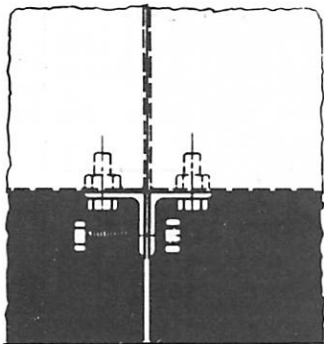
DETAIL A

TIE REAR OF CONSOLES
TOGETHER WITH BRACKETS,
BOLTS AND NUT PROVIDED.

UNITS CAN BE DRAWN
TOWARD EACH OTHER TO
ELIMINATE GAPS WITH
THIS HARDWARE.
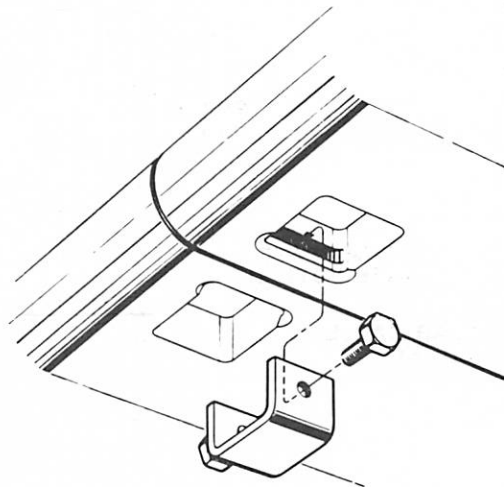
DETAIL B

TIE CONSOLE COUNTERS
TOGETHER WITH CLAMP
AND BOLTS PROVIDED.

TURN BOLTS BY HAND
UNTIL SEATED IN GROOVES
OF RECESSES BEFORE
TIGHTENING WITH WRENCH.

30.00 / 762.0

RECOMMENDED CLEARANCE
FROM WALL FOR SERVICING
AND AISLEWAY (SEE NOTE 5)

130° MAX. DOOR
OPENING

MIN. FOR COVER
REMOVAL

1.50 MIN. / 38.1

1.00 / 25.4
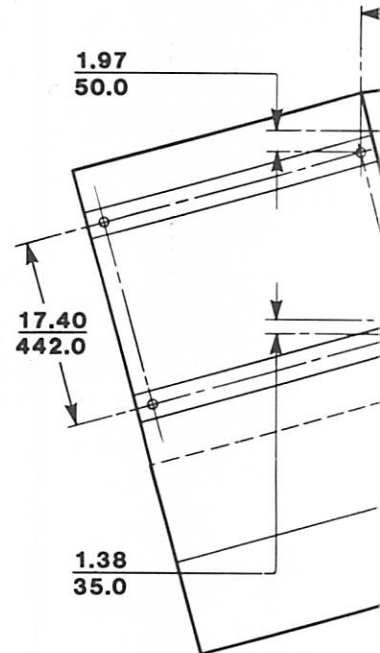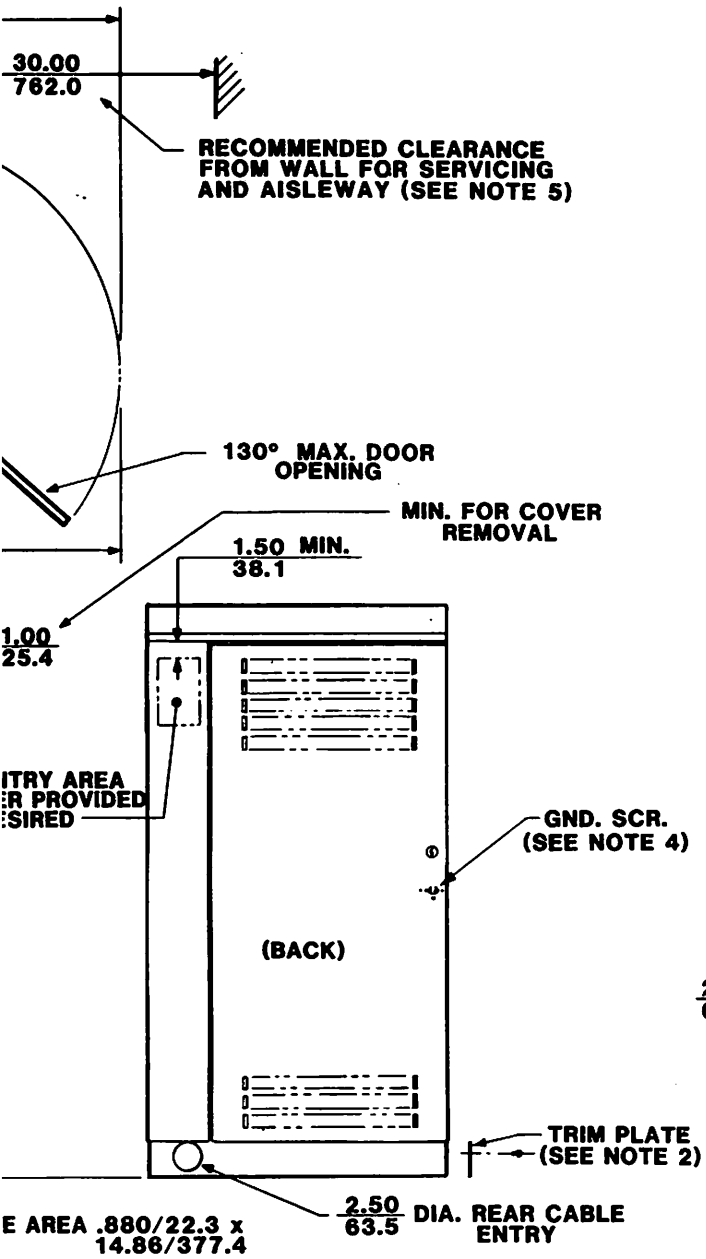
NOTES :

1.) TOTAL WEIGHT IS APPROX. 214 LBS.
(97 KG.)

2.) TRIM PLATE IS REQUIRED ON EACH SIDE OF
A FREE-STANDING CONSOLE BUT ONLY END
CONSOLES NEED TRIM PLATES (1 EACH) IN
AN ARRAY.

3.) STABILIZERS (PROVIDED) MUST BE USED WHEN
CONSOLES ARE NOT SECURED TO FLOOR.

4.) SYSTEM SAFETY GROUND CONNECTION.

5.) APPLICABLE CODES & STANDARDS MAY
REQUIRE ADDITIONAL CLEARANCE.
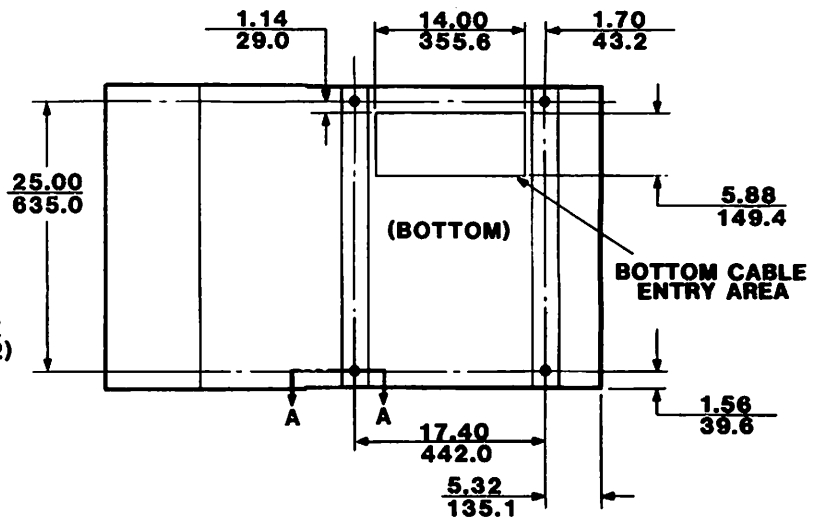
ITRY AREA
R PROVIDED
SIRED

(BACK)

GND. SCR.
(SEE NOTE 4)

1.14 / 29.0 **14.00 / 355.6** **1.70 / 43.2**

25.00 / 635.0

(BOTTOM)

5.88 / 149.4

BOTTOM CABLE
ENTRY AREA

TRIM PLATE
(SEE NOTE 2)

E AREA .880/22.3 x
14.86/377.4

2.50 / 63.5 DIA. REAR CABLE
ENTRY

A   A

17.40 / 442.0

5.32 / 135.1

1.56 / 39.6

DIMENSIONS
INCH
MILLIMETER

4)
ED)

G.

.EARANCE
:ERVICING
EE NOTE 7)

28.12
714.2

46.12
1171.4

ENDED
NCE TO
: AISLEWAY
:EATED OPERATOR
)TE 6)

OR DETAILS OF LEVELING AND MOUNTING HARDWARE.

14.98
380.5

25.00
635.0

3.09
78.5

10.48
266.2

REAR JOINING BRACKETS
(SEE DETAIL A)

INTERUNIT CABLE RUN
(SEE NOTE 1)

TRIM PLATE (SEE NOTE 2)

STABILIZER (SEE NOTE 3)

COUNTER CLAMP (SEE DETAIL B)
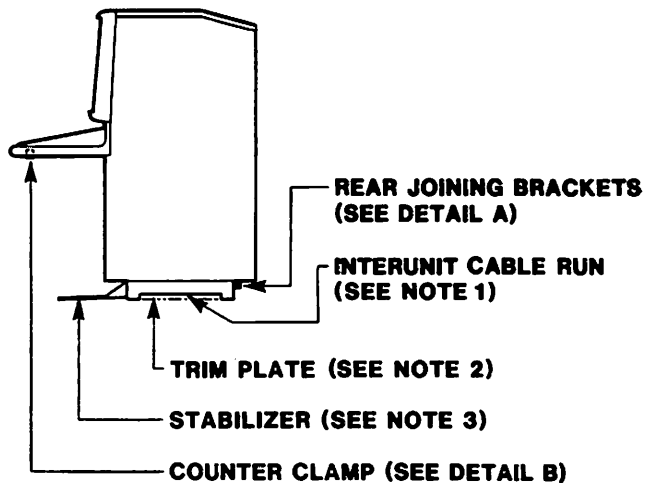
NOTES:

1.) CABLES MAY BE BROUGHT UP THROUGH FLOOR
UNDER ONE UNIT AND ROUTED TO THE OTHERS
IN AN ARRAY VIA 14.86 x .88 (377.4 x 22.3)
CABLE RUN.

2.) TRIM PLATES SHOULD BE INSTALLED ONLY
AT OUTER ENDS OF ARRAY.

3.) STABILIZERS (PROVIDED) MUST BE USED WHEN
CONSOLES ARE NOT SECURED TO FLOOR.

4.) FLOOR MOUNTING:
ALL FULL WIDTH UNITS MUST BE SECURED
TO FLOOR. WEDGES NEED ONLY BE TIED
TO ADJACENT FULL WIDTH UNITS PER
DETAILS A & B.

5.) THE WEDGE UNIT IS DESIGNED TO BE USED
ONLY BETWEEN FULL WIDTH UNITS.

6.) AUXILIARY KEYBOARD REQUIRES 7.00 (177.8)
BE ADDED TO FRONTAL CLEARANCES.

7.) APPLICABLE CODES & STANDARDS MAY
REQUIRE ADDITIONAL CLEARANCE.

DIMENSIONS
INCHES
MILLIMETERS

REFERENCE D3053367

FIGURE 7.5 — Console Array Assembly

.50 / 12.7 TYP. CLEARANCE FROM INSIDE OF BEZEL OPENING

23.82 MAX. / 605.0

14.18 / 360.2

2.09 / 53.1

.125 / 3.2 THK. ALUM. PLATE

1.55 / 39.4

DETAIL B

AREA AVAILABLE FOR CUT-OUTS

67.62 / 1717.5 REAR DOOR OPEN

46.12 / 1171.4

(TOP)

49.54 / 1258.3 FRONT DOOR OPEN

71.06 / 1804.9 BOTH DOORS OPEN

28.12 / 714.2

SEE DETAIL B

52.51 / 1333.7 (DOES NOT INCLUDE LEVELER ADJ.)

(FRONT)

11 INCR. 1.75/44.4 AVAIL.

19.00 EIA STD. / 482.6 RACK

2.14 / 54.4 FROM RAIL MTG. SURFACE

26.20 / 665.5 MIN.

1.44 / 36.6

TO RACK MTG. FACE

(SIDE)

TOP E CUSTOM IF D

28.03 / 712.0

CAB

.312-18UNC-2A x 2.75 MTG. BOLTS & LOCKWASHERS (CUSTOMER SUPPL

2.23 / 56.6

MAX. LEVELER 1.05 / ADJ. 26.7

.465 / 11.8 DIA. (4) MT HOLES FO FLOOR MT

SEC. A-A

FIGURE 7.6 — NUCC01 Utility Console Cabinet Installation
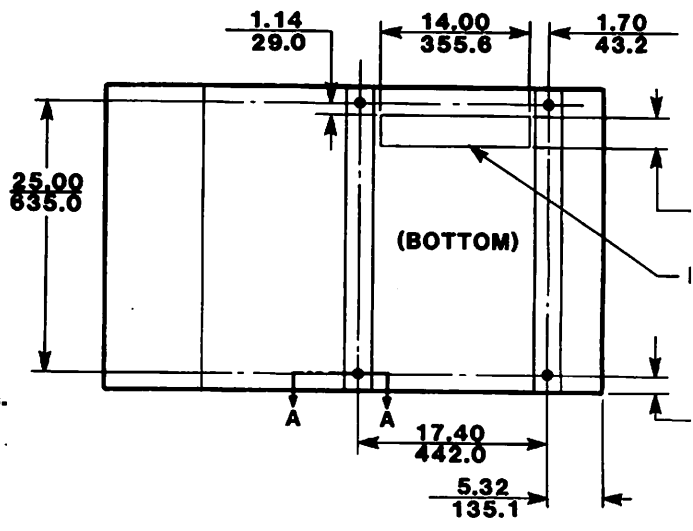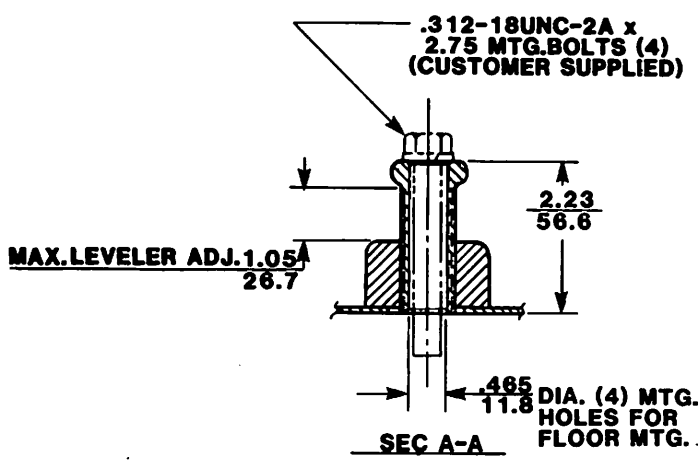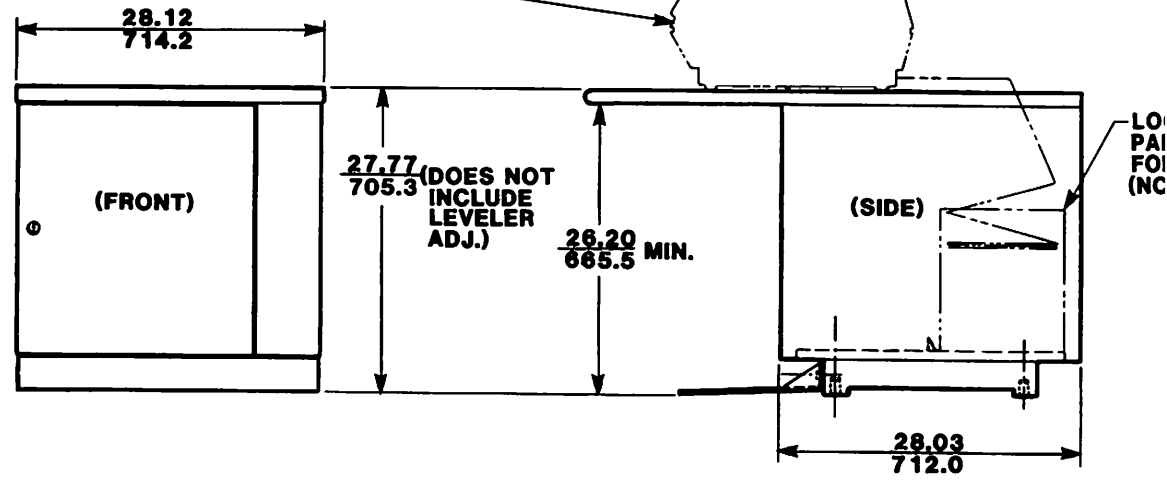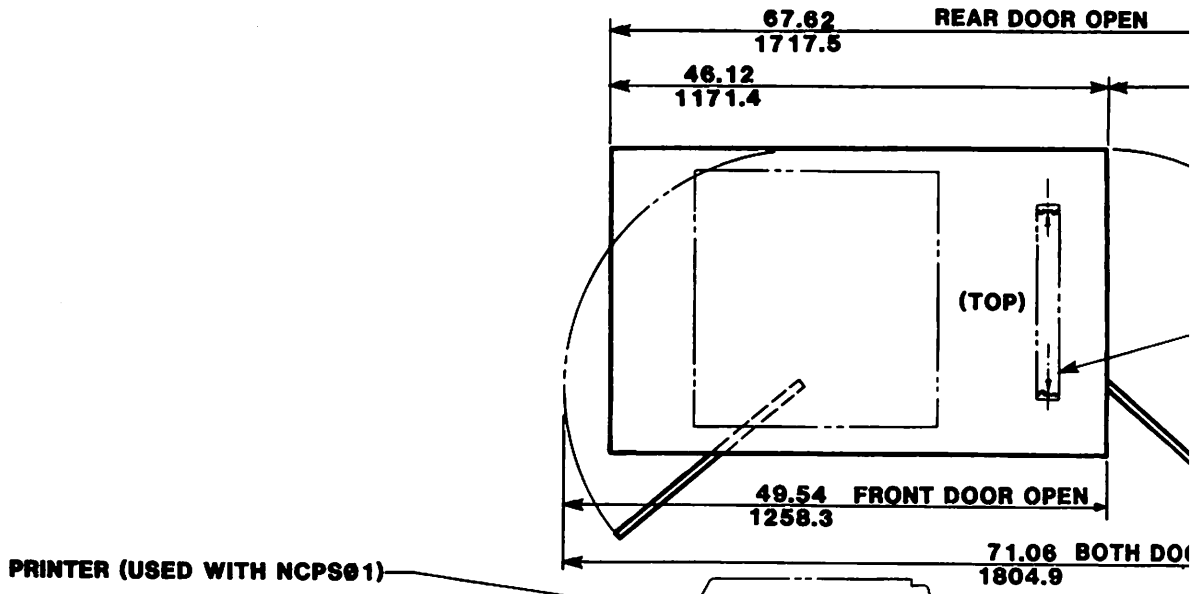
84

REAR DOOR OPEN

$\dfrac{67.62}{1717.5}$

$\dfrac{46.12}{1171.4}$

(TOP)

$\dfrac{49.54}{1258.3}$ **FRONT DOOR OPEN**

$\dfrac{71.06}{1804.9}$ **BOTH DOO**

PRINTER (USED WITH NCPS01)

$\dfrac{28.12}{714.2}$

(FRONT)

$\dfrac{27.77}{705.3}$ (DOES NOT INCLUDE LEVELER ADJ.)

$\dfrac{26.20}{665.5}$ MIN.

(SIDE)

LO
PA
FO
(NC

$\dfrac{28.03}{712.0}$

.312-18UNC-2A x 2.75 MTG.BOLTS (4) (CUSTOMER SUPPLIED)

$\dfrac{2.23}{56.6}$

MAX.LEVELER ADJ.$\dfrac{1.05}{26.7}$

$\dfrac{.465}{11.8}$ DIA. (4) MTG. HOLES FOR FLOOR MTG.

SEC A-A

$\dfrac{1.14}{29.0}$ $\dfrac{14.00}{355.6}$ $\dfrac{1.70}{43.2}$

$\dfrac{25.00}{635.0}$

(BOTTOM)

A   A $\dfrac{17.40}{442.0}$

$\dfrac{5.32}{135.1}$

IDED
CE
ILL
ICING
EWAY
E 4)

(BACK)

O

)FF
IEMOVE
SPING
EDGE
IL &
THEN
G
ID)

RUNIT CABLE RUN
/22.3 x 14.86/377.4
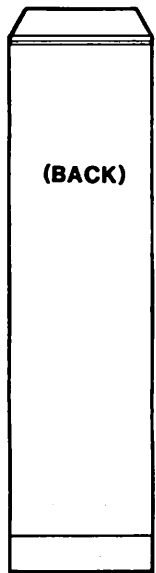
NOTES:

1.) TOTAL WEIGHT IS APPROX. 95 LBS.(43.1 KG.)

2.) STABILIZERS (PROVIDED) MUST BE USED WHEN ADJACENT
FULL WIDTH CONSOLES ARE NOT SECURED TO THE FLOOR.

3.) SINGLE OR MULTIPLE UNITS ARE DESIGNED TO BE USED ONLY
BETWEEN FULL WIDTH UNITS. WEDGES MUST BE SUPPORTED
BY ADJACENT UNITS VIA COUNTER CLAMPS & REAR JOINING
BRACKETS. SEE ARRAY DWG. D3053367 FOR DETAILS

4.) APPLICABLE CODES & STANDARDS MAY REQUIRE
ADDITIONAL CLEARANCE.

DIMENSIONS
INCH
MILLIMETER

REFERENCE D3053366

30.00
762.0

RECOMMENDED CLEARANCE
FROM WALL FOR SERVICING
AND AISLEWAY (SEE NOTE 4)

SLOT & CLAMPS FOR PRINTER
CABLES ARE FEATURES OF
NCPS01 ONLY

NOTES :

1.) TOTAL WEIGHT IS APPROX. 110 LBS.
(49.8KG.)

2.) TRIM PLATE IS REQUIRED ON EACH SIDE OF
A FREE-STANDING CONSOLE, BUT ONLY END
CONSOLES NEED TRIM PLATES (1 EACH) IN
AN ARRAY.

130° MAX. DOOR OPENING

3.) STABILIZERS (PROVIDED) MUST BE USED
WHEN CONSOLES ARE NOT SECURED TO
FLOOR.

OPEN

4.) APPLICABLE CODES & STANDARDS MAY
REQUIRE ADDITIONAL CLEARANCE.

TION OF
SUPPLY
RINTER
01 ONLY)

(BACK)

⊕

TRIM PLATE
(SEE NOTE 2)

2.50
63.5 DIA. REAR CABLE ENTRY

DIMENSIONS
INCH
MILLIMETER

.93
4.4

OTTOM CABLE
ENTRY AREA

.56
9.6

REFERENCE D3053364

FIGURE 7.7 — NCWS01 Console Work Station and NCPS01 Console Printer Surface Installation
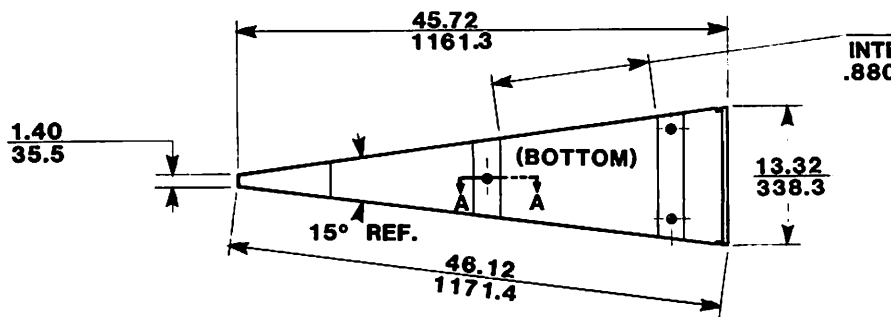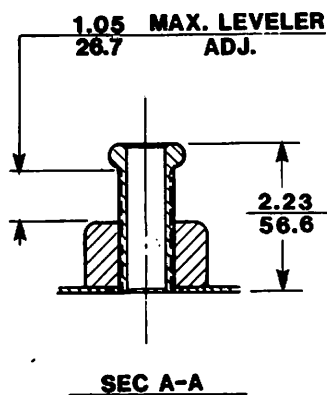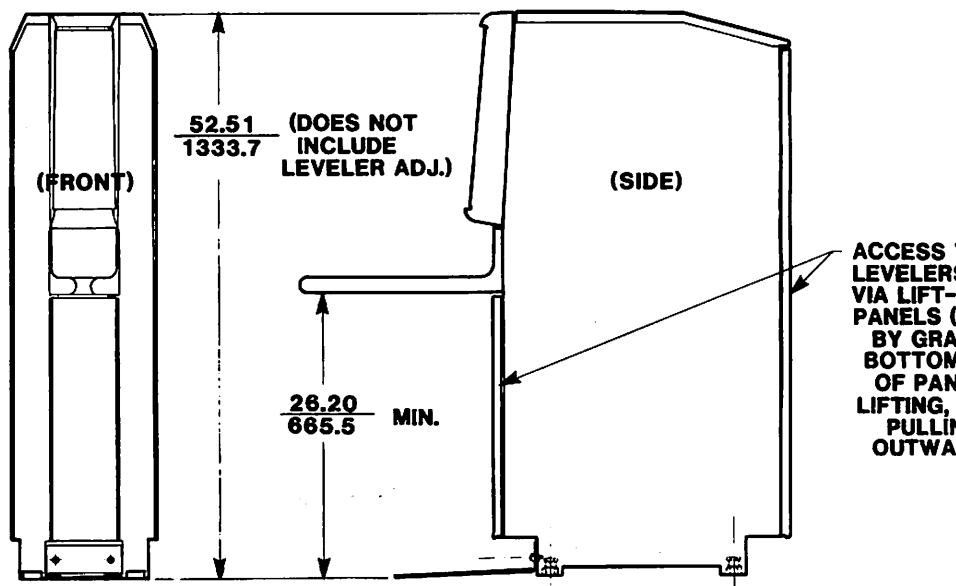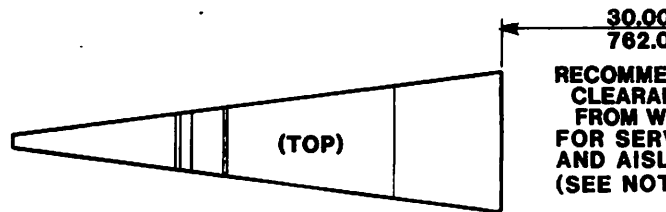
FIGURE 7.8 — NPIE01 15° Wedge Console Installation

NOTES :

1.) SHIPPING WEIGHT IS 47 LBS. (21.3KG.) MAX.

2.) FABRIC IS ACRYLIC (CLARET IN COLOR),
ARM RESTS & BASE ARE PLASTISOL COVERED
METAL (DARK BROWN FINISH).

3.) CARE : UPHOLSTERY-VACUUM REGULARLY.
IN CASE OF A SPILL , BLOT IMMEDIATELY
THEN RINSE WITH WATER. VACUUM
WHEN DRY.
PLASTISOL COVERED PARTS-RINSE IN
MILD DETERGENT, RINSE WITH WARM
WATER AND DRY WITH A SOFT CLOTH.

4.) UPHOLSTERY REPLACEMENT KIT
PT. NO. 199938-1

$\dfrac{25.38}{644.7}$

$\dfrac{26.00}{660.4}$

SEAT HEIGHT ADJ.
POSITION

TILT LOCK-OUT
POSITION

* $\dfrac{27.25}{692.1}$ MAX.

* $\dfrac{34.75}{882.6}$ MAX.

* $\dfrac{20.25}{514.3}$ MAX.

TILT TENSION ADJ.
(CLOCKWISE TO INCR.)
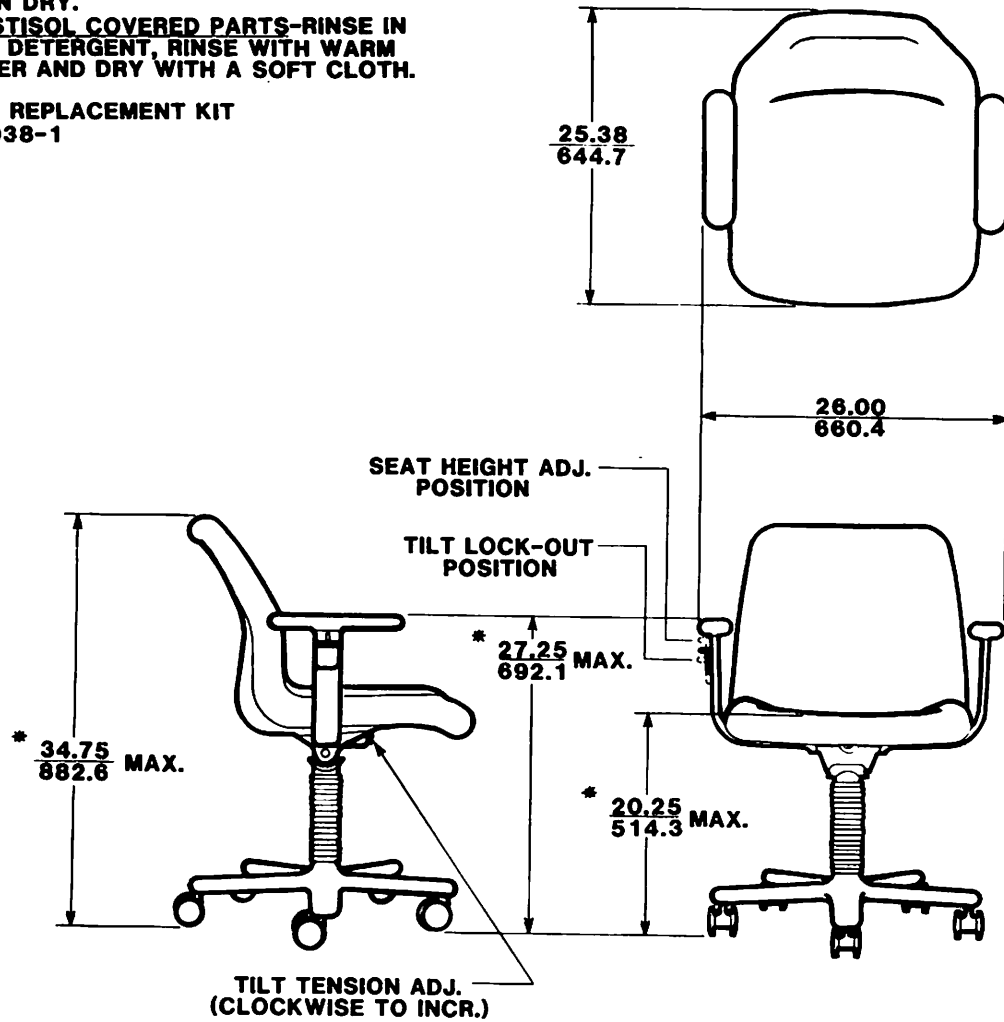
* HEIGHT CAN BE REDUCED A
TOTAL OF (-) $\dfrac{3.25}{82.5}$

DIMENSIONS
INCH
MILLIMETER

REFERENCE C3053365

FIGURE 7.9 — NOCS01 Operator Chair

SA801 ADAPTER

J5

2

P2

50 P1 2
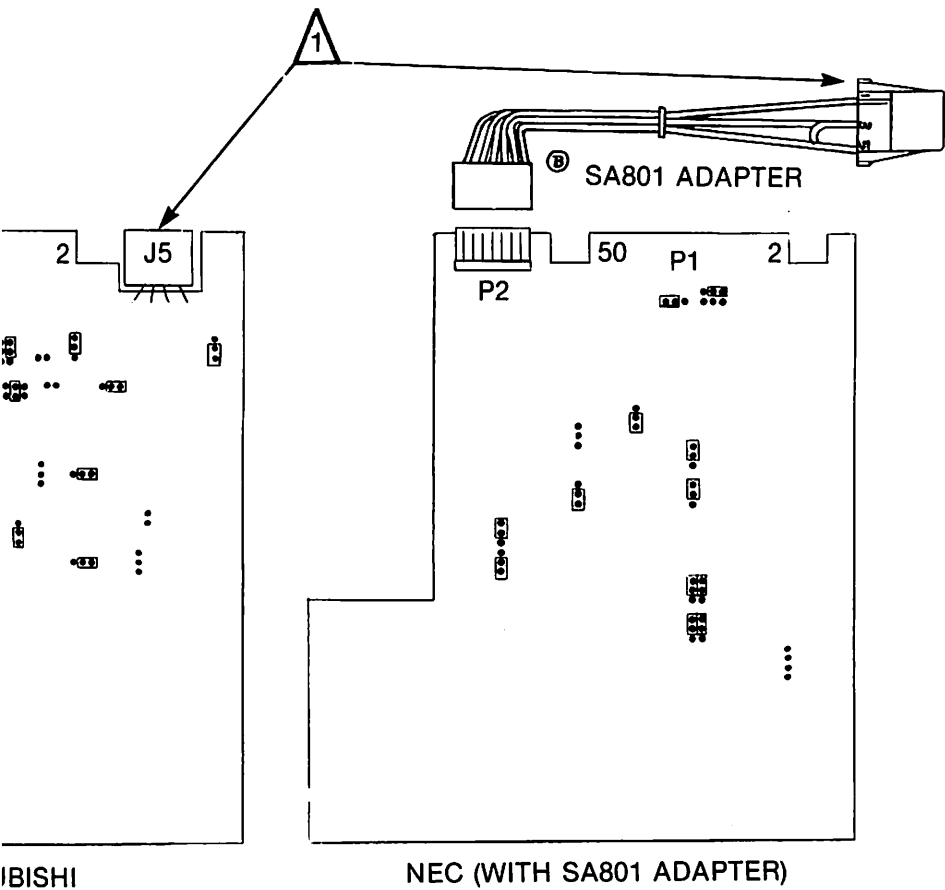
NEC (WITH SA801 ADAPTER)
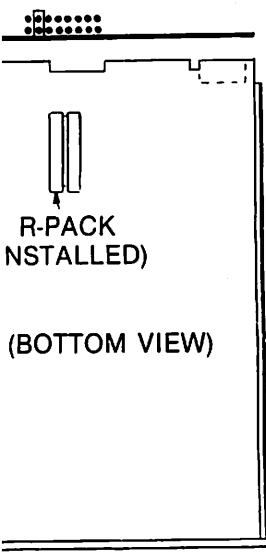
JBISHI

R-PACK
NSTALLED)

(BOTTOM VIEW)

⚠️ 1 DC POWER CONNECTOR FOR MITSUBISHI OR NEC DC
DISKETTE DRIVES. AC POWER CABLE NOT USED.

SEAGATE
ST212
ST225
ST213

B0179

FIGURE 7.11 — Jumper Drawing

TRANSFORMER WIRING

240V INPUT — H1, H2
120V LINE OUTPUT — X1
NEUTRAL — X2
SAFETY GROUND — SAFETY GROUND

AUTOTRANSFORMER 1947492-1
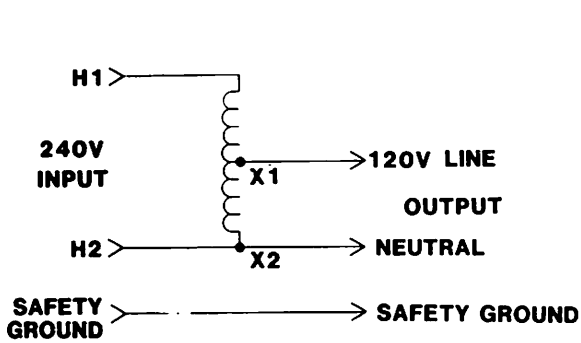
$$\text{WEIGHT} = \frac{25.00 \text{ LB}}{11.4 \text{Kg}}$$
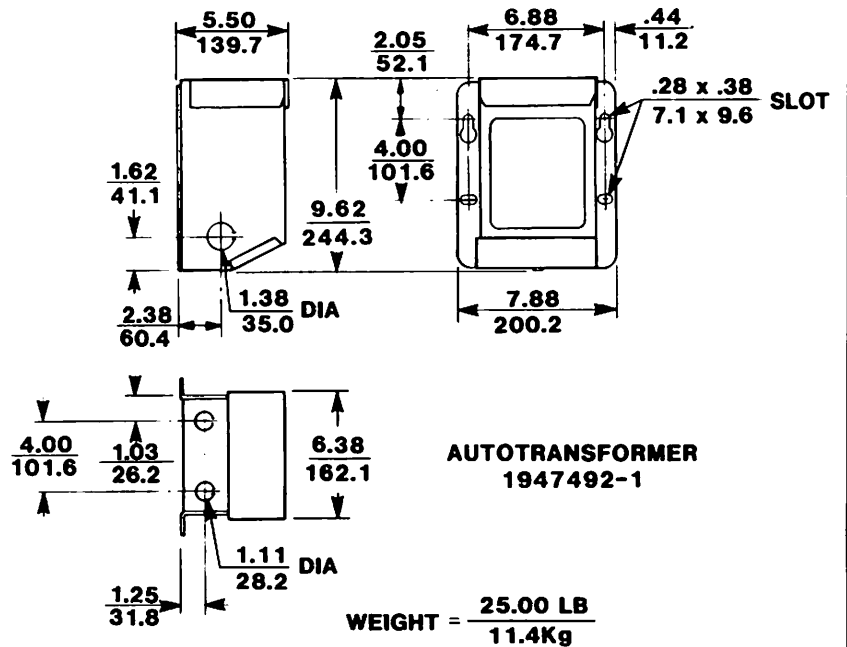
[AUTOTRANSFORMER SHOWN WILL POWER A STANDARD NETWORK 90
NOIUØ1 (1 DRIVER AND 1 CONSOLE)OR NOIUO2 PLUS A PRINTER(NPRTØ☐)].

THE AUTOTRANSFORMER IS FOR USE IN CERTAIN EUROPEAN COUNTRIES,
WITH 240VAC REFERENCED TO NEUTRAL,ONLY.
THIS AUTOTRANSFORMER MUST NOT BE USED WITH NORTH AMERICAN
240VAC(TWO 120VAC LINES-EACH 180° OUT OF PHASE WITH THE OTHER
AND BOTH REFERENCED TO NEUTRAL).

CONSULT SITE PREPARATION MANUAL P.I.-E93-900-5 FOR DETAILS
OF POWER AND GROUND CONNECTION & REQUIREMENTS.

ALWAYS TEST WIRING BEFORE CONNECTING TO A NETWORK 90 NOIUØ☐.
INCORRECT POWER WIRING CAN CAUSE SEVERE EQUIPMENT DAMAGE.

A0178

FIGURE 7.10 — Transformer Installation

WINCHESTER DRIVE

FLOPPY DISK DRIVE

J3
J4
J2
J7
J10

SCS: HOST (IOX) — J1

W15
W14

W1

W12*

W3
W32*
W5
4876

OMT 5200
DTC 520D

*NOT ON ALL UNITS

50

MITSU

P1 P2 P3
Z1
R PACK
(INSTALLED)
RT1234

(TOP VIEW)
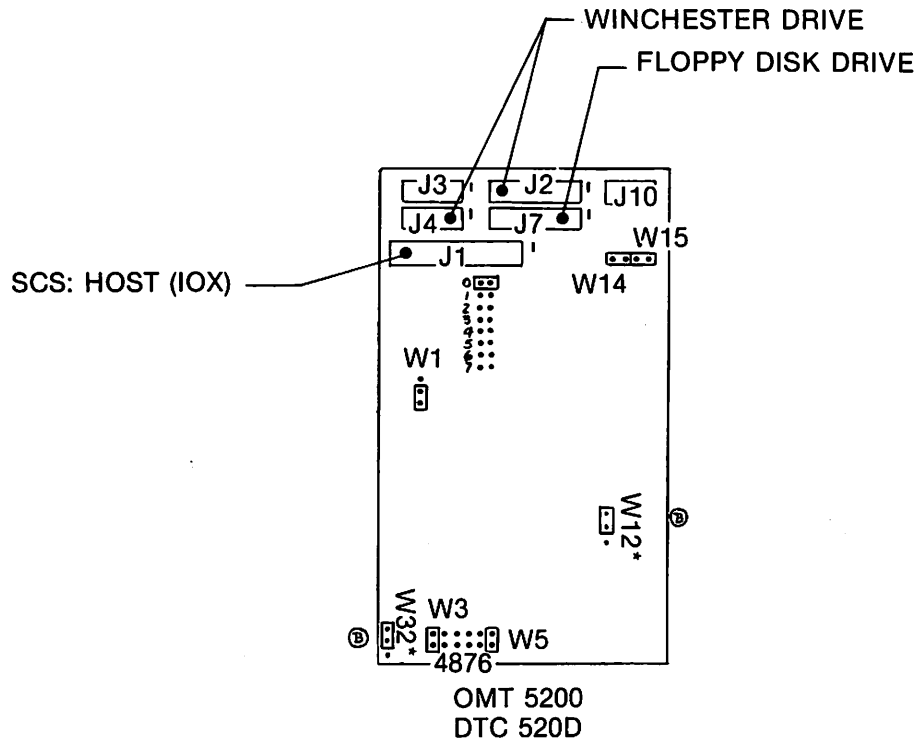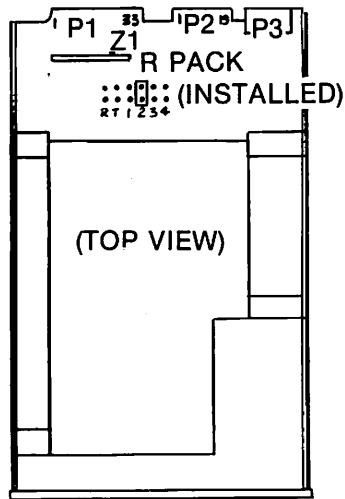
MICROCOMPUTER
MEMORIES
MM212

J1
J2
J3

(TOP VIEW)

TANDON
TM 252

J2
J1
J3

(BOTTOM VIEW)

NEC
D5124

ITEM	NAME	ITEM	NAME	ITEM	NAME
1	BLOWER PLENUM	14	CABLE REAR ENTRY	30	CABLE, NIOX01 TO PRINTER TU
3	DRIVER CABINET	18	CABLE REAR ENTRY	31	CABLE, SCSI,NIOX01 TO DISK
4	990/40 CARD CAGE	21	NMFP0□, 4 REQD		ENCL.
6	POWER RACK (SUPPLY) ASSY.	22	NIOX0□	41	GROUND STUD
9	DISK DRIVE ENCLOSURE	23	NPIM01	52	MODEM, NIOX01 TO KYBD/CRT
10	BLOWER POWER BUTT CNTRS.	26	CABLE, NIOX01 TO KYBD/CRT	53	CABLE, NIOX01 TO KYBD/CRT
11	BLOWER LINE CORD	27	CABLE, NPIM01 to NLIM02	55	CABLE, NLSM02 TO NIOX01
12	NFTP01 TERM. PNL.	28	CABLE, NMFP0□ TO NIOX01	56	NTPL01 PLANT LOOP TU
13	NTPL01 PLANT LOOP TU	29	CABLE, NIOX01 TO PRNTR TU	57	NLIM02 PLANT LOOP INTERFACE MODULE
				60	CABLE, NKLM01

1. NKLM01004 CABLE: CONNECT FROM REAR OF NLIM02(P2)
   TO NTPL01(P1)
2. 6636342A1 CABLE: CONNECT FROM REAR OF NLSM02(P2)
   TO IOX (POS 5) IN CARD CAGE (FRONT)
3. ITEMS WITH ASTERISK (*) FOR 2nd PRINTER OPTION ONLY.

FRONT VIEW OF
ITEMS 4 & 6
(SEE TABLE 2)

VIEW A-A
POS. 2

VIEW B-B
POS 11,16*

REAR VIEW
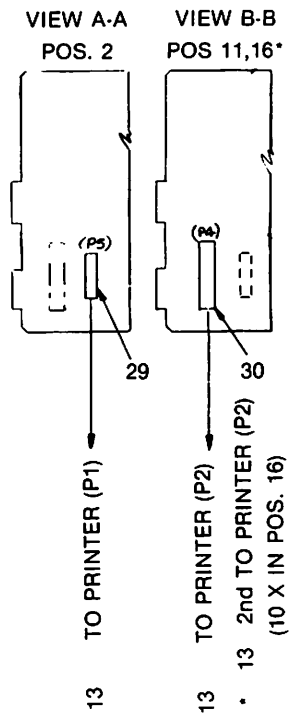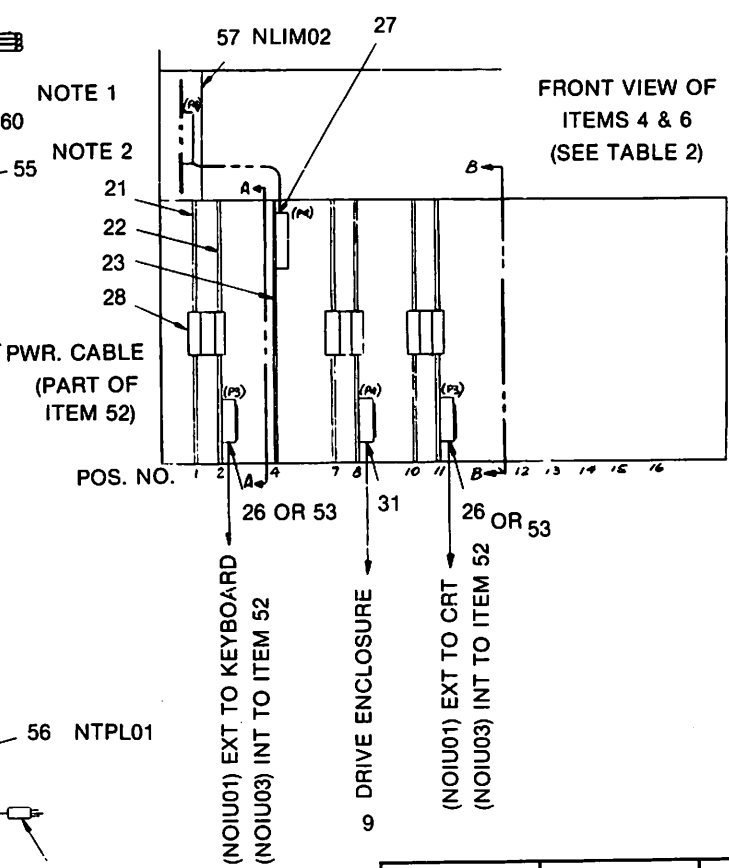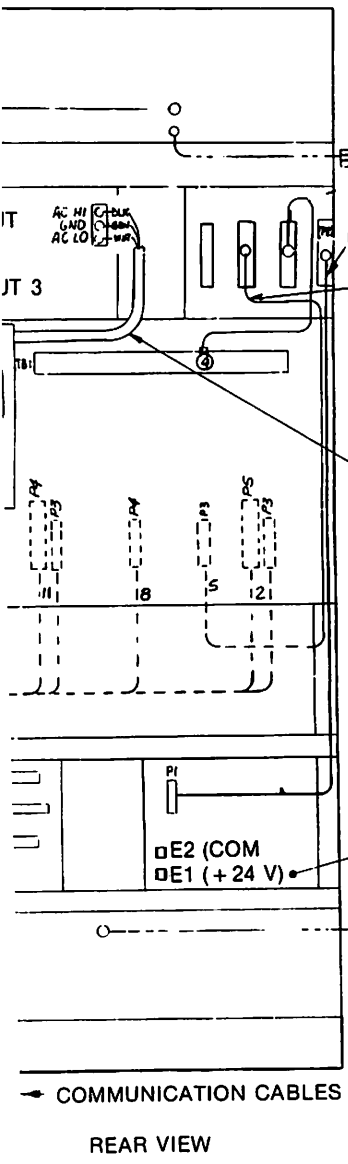
TYPE	ITEM 52	ITEM 53	ITEM 26
NOIU01	OMIT	OMIT	2 REQ'D
NOIU03	1 REQ'D	2 REQ'D	OMIT

COMMUNICATION CABLES

B0180

P 2

P 1

OIU
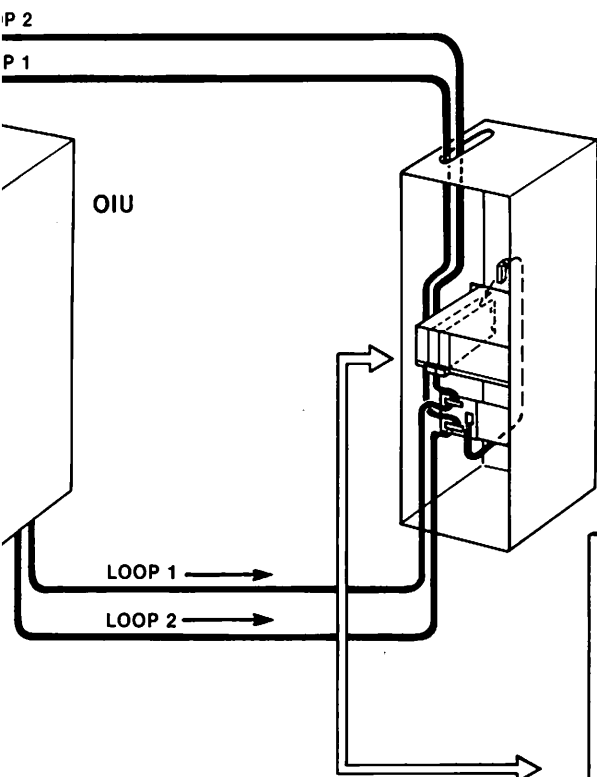
PCU WITH TERMINATION

SEE TYPICAL EQUIPMENT MOUNTING DRAWING, BCCO D3053596, FOR
FURTHER DETAILS OF NETWORK 90 CABINET STRUCTURES.

LOOP 1 →

LOOP 2 →

NLIM02

NBIM02
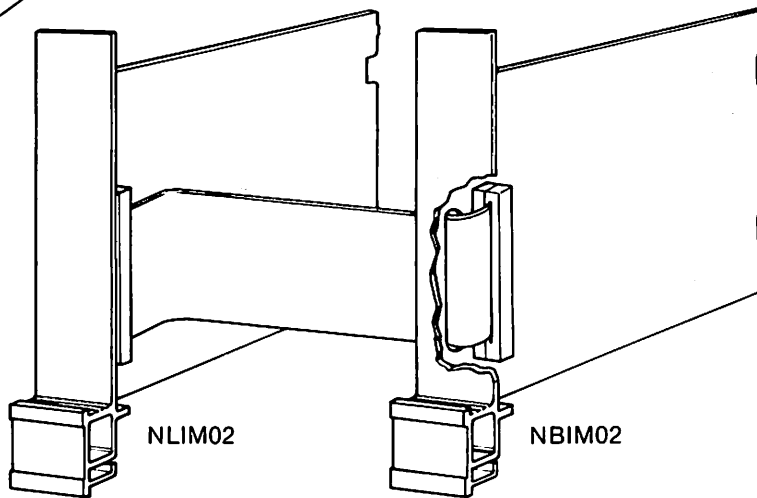
ITION WIRE LIST

SSOCIATED NTPL01 WITH NEXT PROCEEDING PCU OR
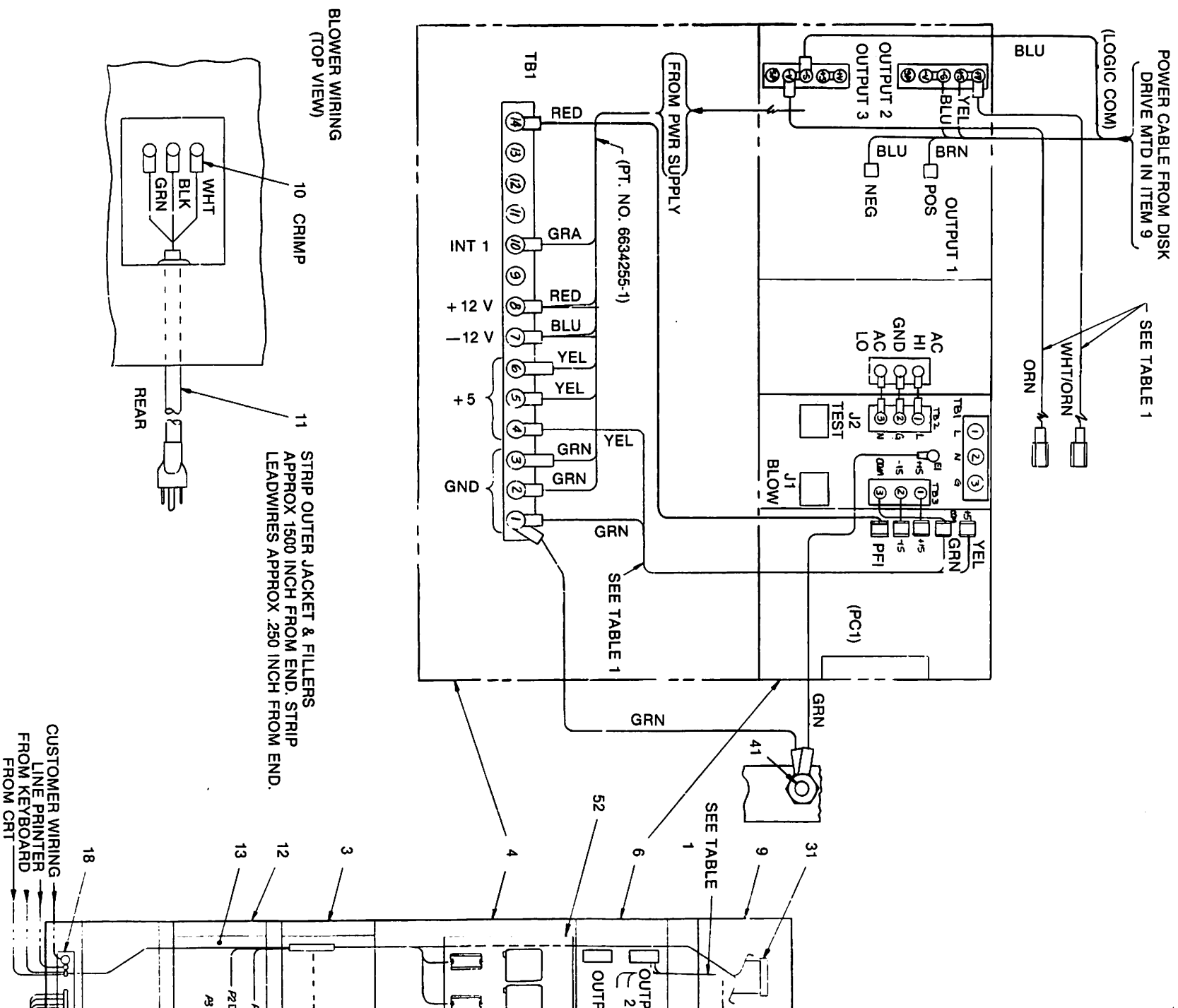OPERATOR INTERFACE UNIT, NOIU, IN PLANT LOOP.

	TO
TERMINAL	SIGNAL DESCRIPTION
TB1-1	LOOP 1 IN (+) (RED TERMINAL OF CABLE WITH TUBING IDENTIFIER).
TB1-2	LOOP 1 IN (—) RED TERMINAL OF CABLE WITH NO IDENTIFIER).
TB1-3	LOOP 1 CABLE SHIELD (BLUE TERMINAL OF CABLE).
TB2-1	LOOP 2 IN (+) (RED TERMINAL OF CABLE WITH TUBING IDENTIFIER).
TB2-2	LOOP 2 IN (—) RED TERMINAL OF CABLE WITH NO IDENTIFIER).
TB2-3	LOOP 2 CABLE SHIELD (BLUE LUG OF CABLE).

THE NLIM01 — NBIM01, BUS INTERFACE MODULE, PAIR INTERFACES A PCU
TO THE PLANT LOOP. THESE MODULES ARE CONNECTED BY 40 CONDUC-
TOR RIBBON CABLE ASSEMBLY WHICH IS SPECIFIED BY THE NBIM01
ASSEMBLY. THE MODULES ARE INSERTED IN ADJACENT SLOTS OF THE
MODULE MOUNTING UNIT, NMMU. THE CONNECTING CABLE PASSES
THROUGH A SLOT IN THE NBIM01 PRINTED CIRCUIT BOARD.

THE OPERATOR INTERFACE UNIT, NOIU, INTERFACES THE PLANT LOOP VIA
THE NLIM01-NPIM01, PROCESSOR INTERFACE MODULE FOR THE 500/1400
TAG UNIT. A NLIM02, NBTM01 (BUS TRANSFER MODULE), AND NLSM02 (LOOP
STORAGE MODULE) ARE USED WITH THE 5000 TAG OIU. THESE MODULES
ARE MOUNTED IN SEPARATE MODULE MOUNTING UNITS WITHIN THE NOIU.
THEY ARE CONNECTED BY A 40 CONDUCTOR RIBBON CABLE ASSEMBLY
WHICH IS SPECIFIED BY THE NPIM01 AND IS KEYED SO PROPER ORIENTA-
TION IS FOLLOWED.

B0162

FIGURE 7.12 — Plant Loop Communication Interface

89

FIGURE 7.13 — NOIU01/03 Driver Unit Wiring Diagram and Cable Connection

TABLE 1									
FROM		TERM (ONE END)		WIRE		TERM (OTHER END)		TO	
		ITEM	PT. NO.	ITEM	COLOR	ITEM	PT. NO.		
ITEM 6 (PWR SPLY ASSY)	OUTPUT 2 +	35	1943825A8	47	WHT/ORN	32	1945861A1	TPL01-E1	+ 24 V
	OUTPUT 3	10	1943825A1	48	ORN	33	1945861A2	TPL01-E2	COM
ITEM 4 (REAR)	TB1-1	25	1941399A11	43	GRN	34	1945861A5	PC1 ON REAR OF ITEM 6	COM
	TB1-4			44	YEL				+ 5 V
ITEM 6 (DIST PANEL)	TB3-1	24	1941399A5	45	RED	32	1945861A1		+ 15 V
	TB3-2			46	BLU				— 15 V
	TB3-3	62	1941399A10	43	GRN	34	1945861A5		COM
ITEM 41 (MTD ON RIGHT REAR RAIL		16	1941399A13	43	GRN	15	1941399A12	ITEM 6 (DIST MOD)	E1
						25	1941399A11	ITEM 4 (REAR)	TB1-1
ITEM 9 (LOGIC COM WIRE)					BLU	ITEM 6 (POWER SUPPLY) OUTPUT 3			—5
DISK DRIVE POWER CABLE (MOUNTED IN ITEM 9)					YEL	POWER SUPPLY ASSY (MOUNTED IN ITEM 6)		OUT 2	+ 5
					BLU				—5
					BRN			OUT 1	POS
					BLU				NEG
ITEM 6 (DIST. MOD.)	TB2-1	61	1941399A2	63	BLK	61	1941399A2	PWR SUPPLY OUTPUT #1	AC HI
	TB2-2			65	GRN				GND
	TB2-3			64	WHT				AC LO
ITEM 9 (LINE CORD)					BLK	ITEM 6 (DIST. MOD)			TB2-1
					GRN				TB2-2
					WHT				TB2-3
ITEM 4	PRES	24	1941399A5	45	RED	32	1945861A1	PC1 ON ITEM 6	PF-1

110 V

WHT
RED
ORN
BLK

WHT
WHT
WHT

P2
6
5
4
3
2
1
KEYBD.

RED
BLK

O +5 V
O COM

YEL
O —12 V
O COM
BLU
O +12 V

PS2

PS1

4 3 2 1

1 3 2 4

D7888
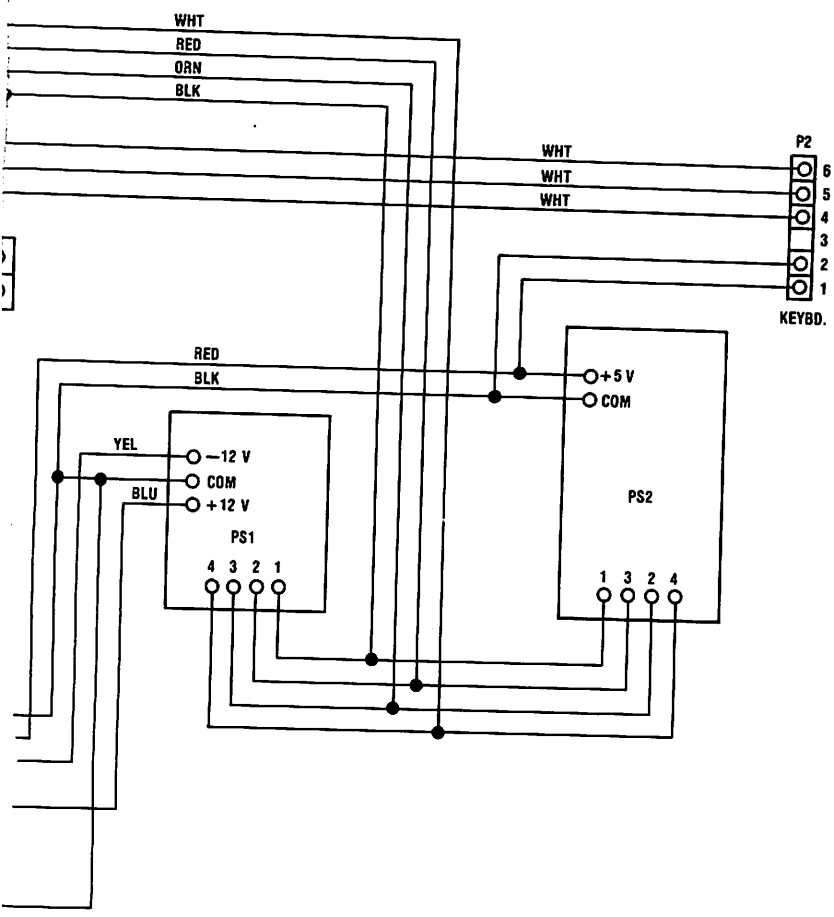
TABLE 2

ITEM	PART NO.	FROM			TO			INSTRUCTIONS
		ITEM	POS	CONN	ITEM	POS	CONN	
28	6634511-40N2	2: MFPM	1,7 & 10	P2	22 IOXM	2,8 & 11	P2	REQUIRED 3 PLACES
27	6634217-40N13	23 PIM	4	P4	NLIM02	IN ITEM 6	P4	ROUTE THRU BOTTOM OF ITEM 6
29	6634512-26N54		2	P5	13		P1	ROUTE THRU CABLE BRKTS. IN IN ITEM 3 (COOLING DUCT)
30	6634512-50N54		11	P14	13 TU PTR	ON ITEM 12	P2	
30*	6634512-50N54		16	P4	13		P2	
31	6634512-50N18	22 IOXM	8	P4	9 DISK DR	REAR CONN		
26	1947422-22050		2	P3	KEYBOARD	EXT	J2	ROUTE THRU CABLE BRKTS IN ITEM 3 (COOLING DUCT) & OUT THRU ITEM 18 (GASKET)
26	1947422-22050		11	P3	CRT	EXT	J1	
53	6635988A2	22 IOXM	2	P3	52 MODEM	KYBD		ROUTE THRU CABLE BRKTS IN ITEM 3 (COOLING DUCT) & UP TO ITEM 52
53	6635988A2		11	P3	52 MODEM	CRT		
54	1948001A1-	52 MODEM	CRT KYBD		KEYBD, CRT	EXT		ROUTE THRU ITEM 18 (GASKET)

TABLE 3

ITEM NO.	POS IN ITEM 4	ITEM 51 IMPRINT
26	2	POS 2 P3 KBD
28	11	POS 11 P3 CRT
29	2	POS 2 P5 PTR
30	11	POS 11 P4 PTR
31	8	POS 8 P4 DSK
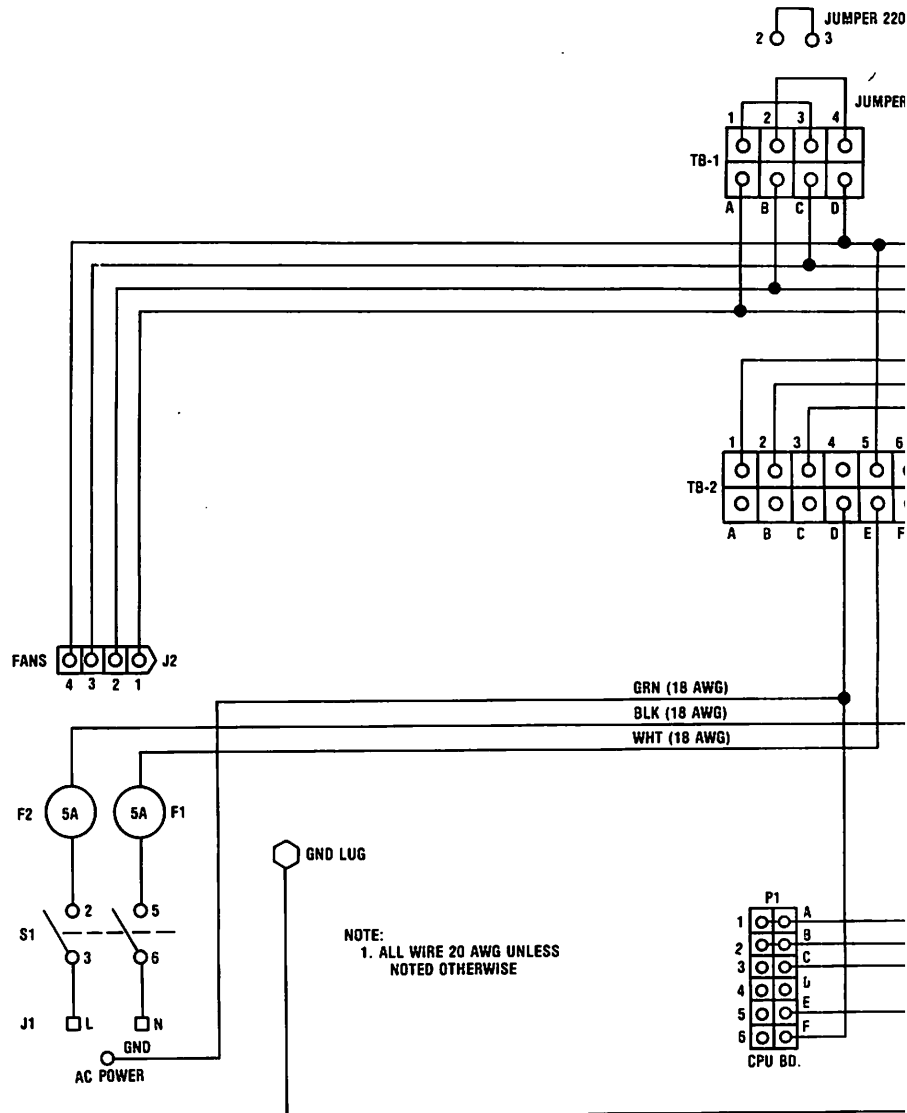
FIGURE 7.14 — NOIU01 CRT/Keyboard Enclosure Wiring

VIEW D
TOP

VIEW F

CONTROLLER BD

OMT

DC POWER

P2

35

4

FAN

(P3)

(LOGIC COM)

TIE WRAP TO "H" SLOTS
SEPARATE P1 & P2

15

J2

J1

58 CPU BD
P1

56 CPU BD
P5

(MID-SHELF)

TO PWR
SUPPLY
(SEE VIEW E)

25

J1

TO CRT (AC)

VIEW C
REAR

35

PIN 1

42

J1

J6 OR J1

57

J1

F3

44

P1

23

TB1 P1

P2

P2

SEE VIEW E

AC

TIE WR

TIE WR

S1

40

BLK
GRN
YEL

3
2
1

44

E1
+24V

COM

E2

RED

BLU

OUTPUT 2
(+V)

(+S)

(-S)

(-V)

(SP)

OUTPUT 1

POS

NEG

OUTPUT 5
(+V)
(+S)
(-S)
(-V)
(SP)

TB1

TB2 TB3

+5V

GRN

+15V

-15V

COM

(PCI)

VIEW E
REAR OF ITEMS 33 & 69
SEE TABLE 1

MTD ON MID-SHELF
E1

GRN

YEL

69

TB1
YEL
GRN
BLK

8 LD
9 COM
10 RESET

TIE WRAP TO
"H" SLOTS   23

FROM PWR SUPPLY

PT. NO. 6634255-1

TB1 (14)(13)(12)(11)(10)(9)(8)(7)(6)(5)(4)(3)(2)(1)

INH 1
+12V
-12 V
+5 V
GND

GRN

33

59
53
57
59

FROM CPU
BD (P5)

TABLE 2

ITEM	PART NO.	FROM ITEM	POS	CONN	TO ITEM	POS	CONN	INSTRUCTIONS
54	6634511-40N2	50 MFPM	1,7 & 10	P2	51 IOXM	2,8 & 11	P2	REQUIRED 3 PLACES
53	6634217-40N13	52 PIM	4	P4	45 LIM	IN ITEM 69	P4	ROUTE THRU BOTTOM OF ITEM 69
53	6634512-26N54	51 IOXM	2	P5			P1	SEE TYPICAL BENDING VIEW. ROUTE ACROSS THE CABINET & TO SPECIFIED DESIGNATIONS (SEE VIEWS B&C)
59	6634512-50N54		11	23	TU PRINTER		P2	
			16•					
			8	P4	15 CONTR BD	DTC OMT	J6 J1	
55	6635183-26N64		2	P3	103 CPU BOARD		P1	
57	1947422-2201C		11	P3	14 CRT ASSY		J1	
56	66315184-1	103 CPU BOARD	P5		POWER SUPPLY IN ITEM 69	POS		ROUTE THRU CABINET (SEE VIEW D). ACROSS TOP OF ITEM 69 AND TO POWER SUPPLY (SEE VIEW E)
						NEG		
						+ V OUT 2		
						− V OUT 3		
41	6635182-26N44	103 CPU BOARD	P2		AUX KYBD CUTOUT		J3	SEE VIEW B
42	6635924-50N42	35 DISKETTE DRIVE	J1		15 CONTR BD	DTC OMT	J9	SEE VIEW C & F
							J7	
25	6635051-1	LOGIC COMMON (CLU)			69 PWR SUPPLY	OUTPUT #	−S	
43	6632029-1N4	(PCI) REAR OF ITEM 69		P2	44 NTPL01		P1	SEE VIEWS C & D
—	CRT AC CORD	14 CRT ASSY		AC	25 ACDC PWR ASSY		J1	ROUTE AS SHOWN IN VIEWS C,D & F
67	6636342A1	46 LSM	ITEM 69	REAR	51 IOXM	5	P3	

TABLE 4

ITEM	NAME	ITEM	NAME	ITEM	NAME
4	FAN	41	CABLE, AUX (GRAPHICS) KYBD	54	CABLE, NMFP0□ TO NIOX01
6	CABLE, PWR STATUS	42	CABLE, CNTRLR. BD. TO FLX. DSK.	55	CABLE,NIOX01 TO KEYBD.
11	FLEX DSK/RST/BRT/CVG ASSY.			56	CABLE, KEYBOARD CPU PWR
14	CRT ASSEMBLY	43	CABLE, NKLM01	57	CABLE, NIOX01 TO CRT
15	DISK DRIVE SUBASSY.	44	NTPL01 PLANT LOOP TU	58	CABLE, NIOX01 TO PRINTER TU
18	BLOWER PLENUM ASSY.	45	NLIM02	59	CABLE, SCSI, IOX TO DSK. DRV.
23	PRINTER TU	46	NLSM02	67	CABLE, NLSM02 TO NIOX01
25	AC POWER ASSY.	50	NMFP0□	69	POWER RACK ASSY.
33	990/4 CARD CAGE	51	NIOX01	103	CPU BOARD
35	DISKETTE DRIVE	52	NPIM01	124	BRACKET, PRINTER TU
40	RESET/LOAD SWITCH	53	NLIM02 TO NPIM01		

11

TIE WRAP

TIE WRAP

J12
PIN 1

P13 — PIN 1

632029-1N4

TOP VIEW OF CRT

A.C. CORD TO CRT &
: CORD TO ITEM 69, 13

25
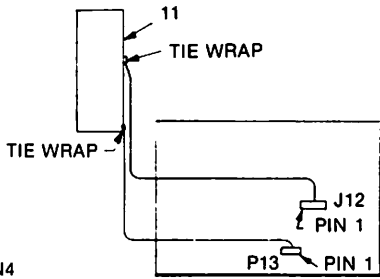
FOR CALLOUT NAME, SEE TABLE 4, NEXT PG.

NOTES:

1. COIL EXCESS LENGTH AND CONNECT TERMINAL
   (RED LEAD) TO PIN 4 OF TB1 ON REAR OF ITEM 33.

2. ITEMS WITH ASTERISK (*) FOR 2nd PRINTER
   OPTION ONLY

VIEW B
FRONT

4

ESS LENGTH TO BE
.ED HERE & TIED
'H" SLOTS

103
BOARD
TO "H" SLOTS
EE TABLE 1

EXCESS AT
THIS END

4
TO "H" SLOTS
NOTE 3

J3

41
TYPICAL
3 PLACES

55

69

33

P3

2

45

P4

69

53
52

33

P4

TYPICAL 51
3 PLACES 50

54
TYPICAL
3 PLACES

P2

P3

POS. NO. 1   2   4

55 104
SEE
TABLE
3

RED STRIPE FORWARD
TYPICAL CABLE FORMING

FRONT VIEW OF ITEMS 33 & 69
(SEE TABLE 2)

P2   P2

P4   P3

7   8   10 11 A

59   57

CPU BD (P1)

CONTR BD (J6, J11)

CRT (J1)

A

VIEW A-A
POS. NO. 2   POS. NO. 11, 16*

P5   P4

58   59

TU PRTR (P1)

TU PRTR (P2)
2nd TU. PRTR (P2)
(10 x IN POS 16)
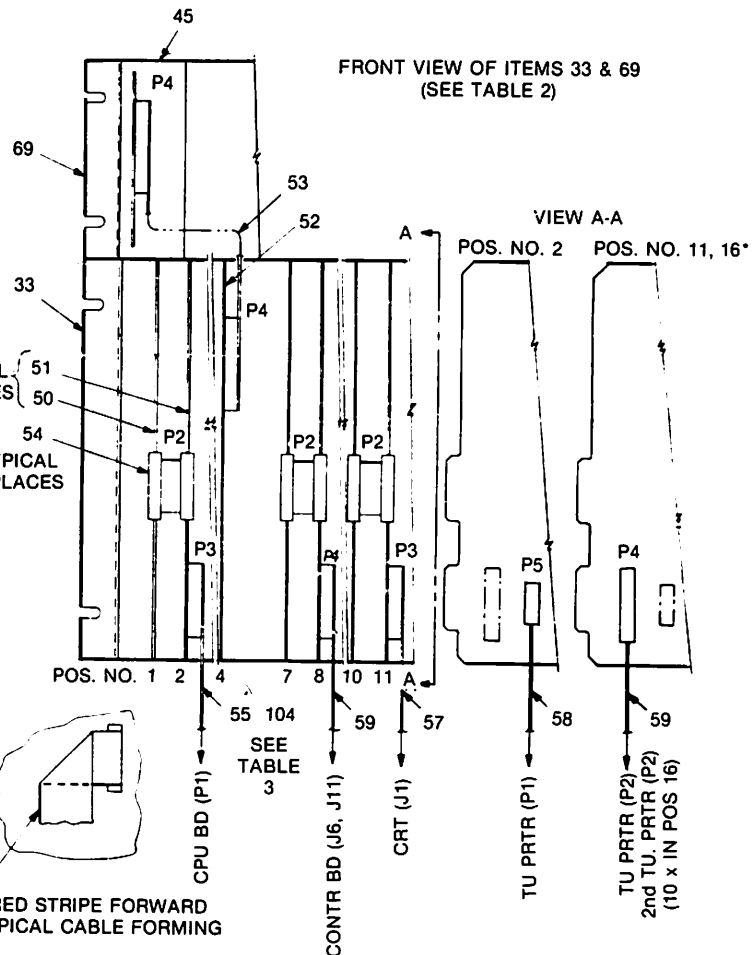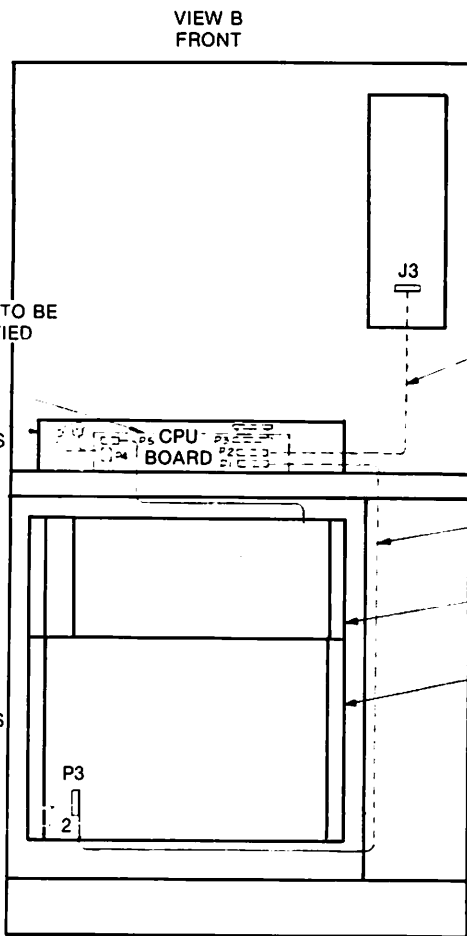
B0181

FIGURE 7.15 — NOIU02 Wiring Diagram and Cable Connection

FIGURE 7.15 — NOIU02 Wiring Diagram and Cable Connection (continued)

TABLE 1

FROM		TERM (ONE END)		WIRE			TERM (OTHER END)		TO	
		ITEM	PART NO.	ITEM	AWG	COLOR	ITEM	PART NO.		
ITEM 33 (REAR VIEW)	TB1-1	107	1941399A10	118	10	GRN	111	1945861A5	(PCI (ON REAR OF ITEM 69)	COM
	TB1-4			117	12	YEL				+ 5 V
	TB3-1	106	1941399A5	115	14	RED	110	1945861A1		+ 15 V
	TB3-2			116		BLU				—15 V
	TB3-3	107	1941399A10	118	10	GRN	111	1945361A5		COM
ITEM 82 ON MID-SHELF	E1	109	1941399A13	118	10	GRN	107	1941399A10	ITEM 33	TB1-1
							108	1941399A12	ITEM 69	E1
IN ITEM 69 (PWR SUPLY ASSY)	OUT 2 (+V)	106	1941399A5	115	14	RED	110	1945861A1	ITEM 24	E1
	OUT 3 (—V)			116		BLU			NTPL01	E2
ITEM 40	S1-1	—	STRIP AND TIN	114	22	YEL	105	1041399A3	ITEM 23	TB1-8
	S1-2			113		GRN				TB1-9
	S1-3			112		BLK				TB1-10
ITEM 15 (DRIVE DISK) POWER CONNECTOR	— —	—	—	—	—	YEL	—	—	ITEM 69 (POWER SUPPLY	OUT 2 / +5
						BLU				—5
						BLU			OUT 1	NEG
						BRN				POS
IN ITEM 69 (PWR SUPPLY)	OUT #1 / AC HI	120	1941399A2	121	18	BLK	120	1941399A2	ITEM 69 (DIST. MOD) TB2	1
	GND			123	18	GRN				2
	AC LD			122	18	WHT				3
(PWR DIST MOD)	TB2 / 1					BLK	ITEM 25 (LINE CORD)			—
	2					GRN				—
	3					WHT				—
ITEM 33	PRES	106	1941399A5	115	14	RED	110	1945861A1	PC1 ON ITEM 6	PFI

TABLE 3

ITEM NO.	POS IN ITEM 33	ITEM 104 IMPRINT
55	2	POS 2 P3 CPU
59	8	POS 8 P4 CONT
57	11	POS 11 P3 CRT
58	2	POS P2 P5 PTR
59	11	POS 11 P4 PTR

ASSEMBLE WITH ½ TWIST TO ALLOW
PIN 1 OF LARGE CONNECTOR TO BE
ASSEMBLED IN POSITION SHOWN

A

PIN 1

J1

PIN 1

D.C. FOR FLOPPY

P2

PIN 1

LOGIC
COM

LOCATE
AS SHOWN

D.C. FOR CONTROLLER
BOARD

P3

PIN 1

J1

FOR
DISK
DRIVE

P
W
R

POWER HARNESS
SUPPLIED WITH
ITEM 1

A

LOGIC
COM

P2   P3

FROM
ITEM 1
POWER
HARNESS

GRN
WHT
BLK

(n)

+5   +5   −5/−12   −5/−12   +24   +24
      COM   COM   COM   COM
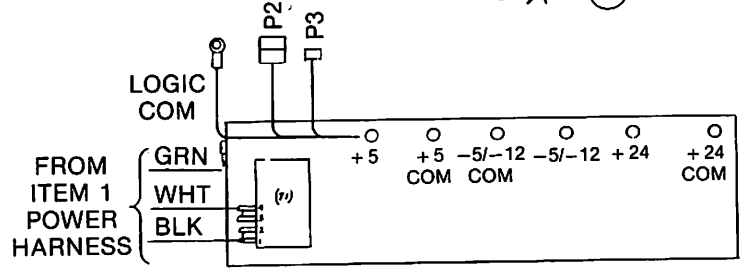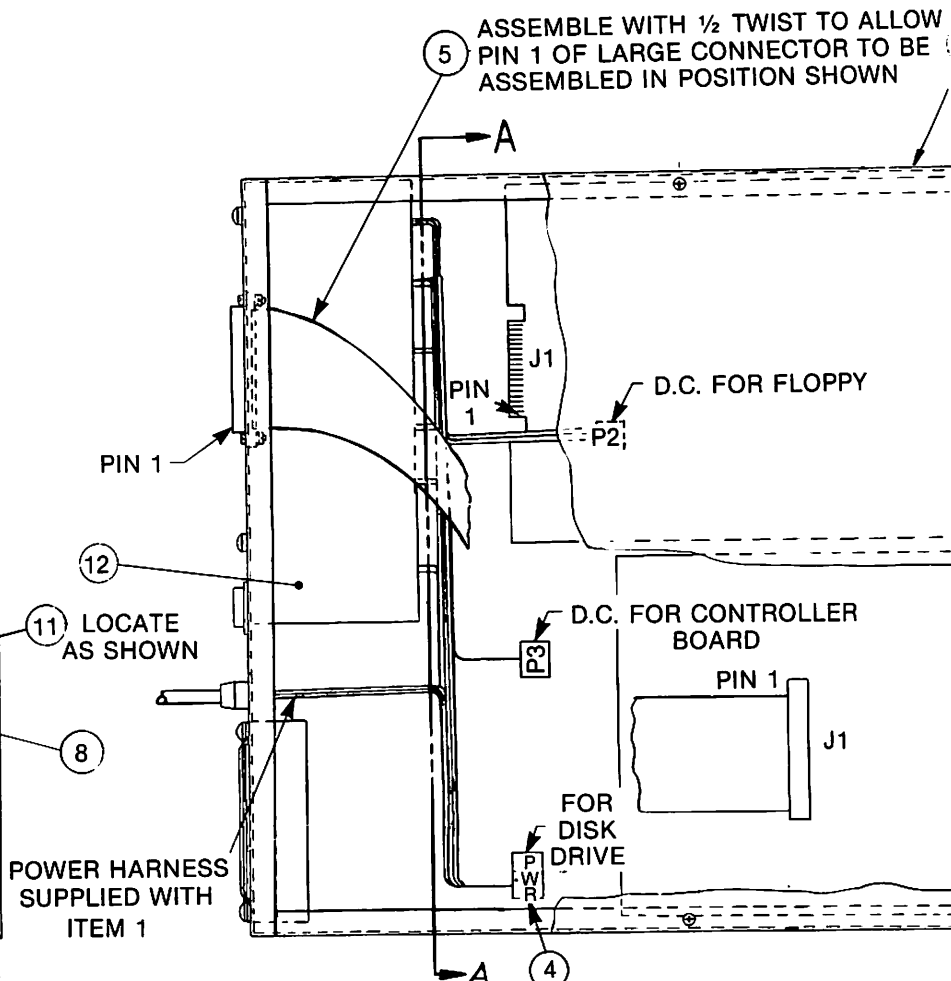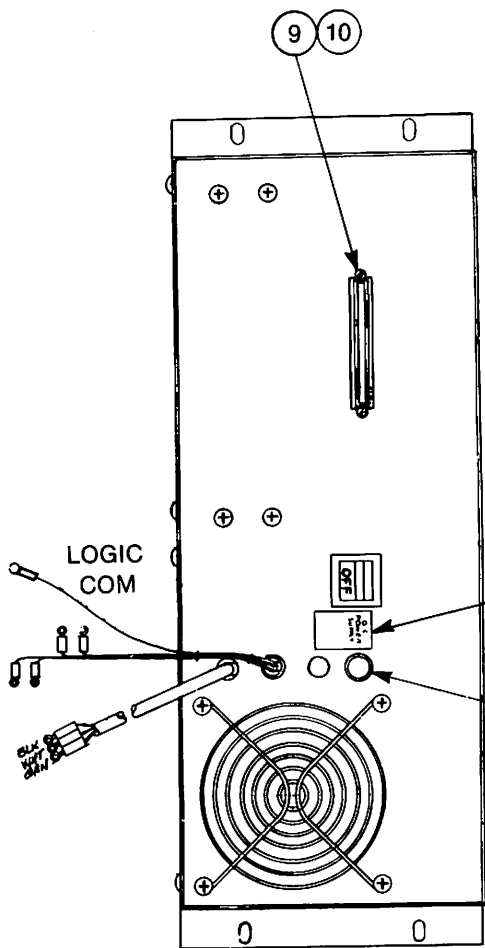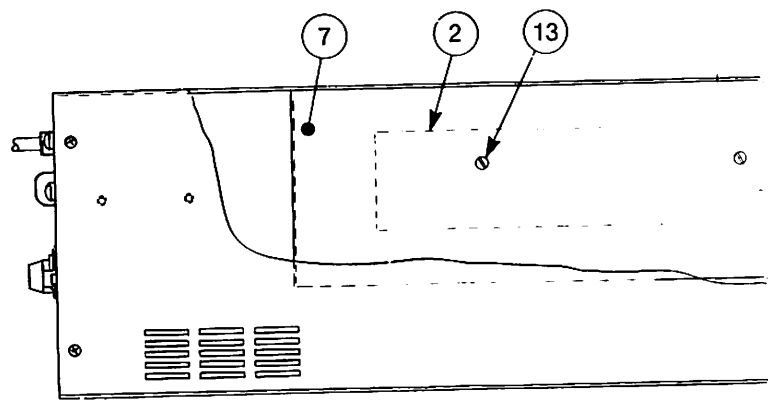
WIRING VIEW OF ITEM 12

SEE DWG FIGURE 7.11 FOR SWITCH SETTINGS
AND/OR JUMPER POSITIONS OF ITEMS 3 & 6.

CONNECT ITEM 7 to J2 OF ITEM 6,
CONNECT ITEM 8 to J4 OF ITEM 6,
PIN 1 TO PIN 1 RESPECTIVELY.

⑫

④

⑫

ITEM	PART NO.	NAME
1		MTG BRACKET
2		VIBRATION ISOLATOR
3		FIXED DISK DRIVE
4		CONTROLLER BRKT
5		FIBER WASHER
6		DISK CONTROLLER
7		CONTROLLER CABLE
8		CONTROLLER CABLE
9		NYLON SCREW
10		MTG CHASSIS
11	NIDAC09003	SEMS SCREW
12	NIDAC13010	SEMS SCREW
13	PRINT (PER M.O.) D6636295A	

ITEM 3	MBYTE
1947418 A2	10
1947418 A3	20

B0183

SECTION A-A

PIN 1

2

3

CONTROLLER
DC POWER

FIXED DISK
DC POWER

J1 CONNECTOR

6 TO CONTROLLER
BOARD (J1)

14
7
2

3
14
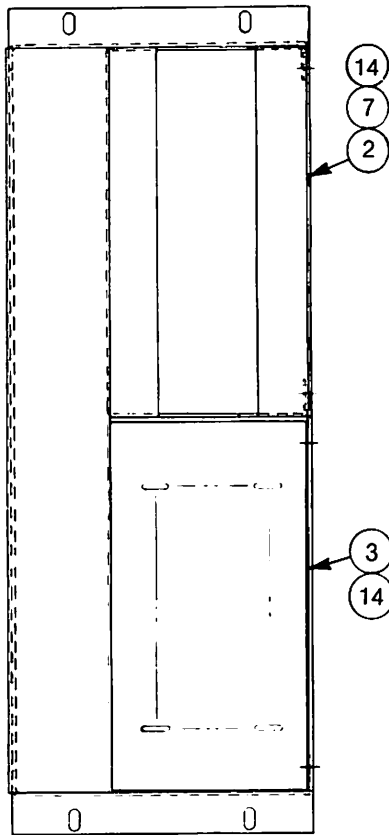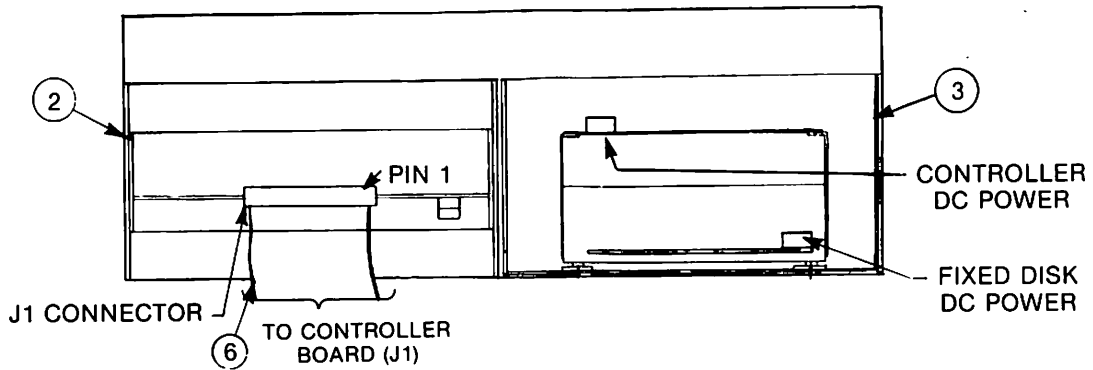
ITEM	PART NO.	NAME
1		DISK DRIVE ENCLOSURE
2		DISKETTE DRIVE
3		DRIVE & CONTR ASSY
4		DRIVE POWER CABLE
5		DISK DRIVE CABLE
6		CONTROLLER CABLE
7		DISK MTG TRAY
8		FUSE (5 AMP, 125 V)
9	.112-40x.375	PAN HD CAD PL STL MACH SCR
10	.112-40	EXT LW STNLS STL HEX KEPS
11		FUSE LABEL
12		POWER SUPPLY ASSY
13		METRIC SCREW
14	NBSAC13004	SCREW

B0182

FIGURE 7.16 — NOIU01/03 Driver Unit Disk Drive Assembly

95

TO DISK
POWER
SUPPLY

J10

J2 J7

J3 J4 J1

19
1
R/W

⚠2 8

TO
LOGIC
POWER
SUPPLY

33
1
PWR CONTR

⚠2 7
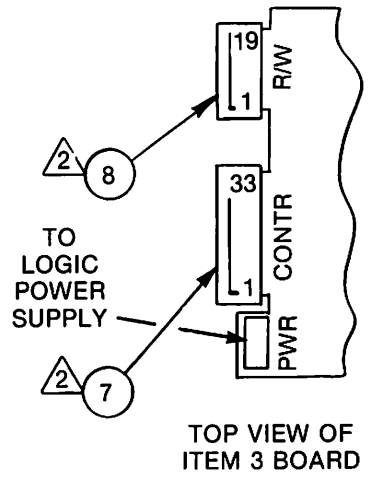
TOP VIEW OF
ITEM 3 BOARD

10   9 6   5

1   2   3

11   11
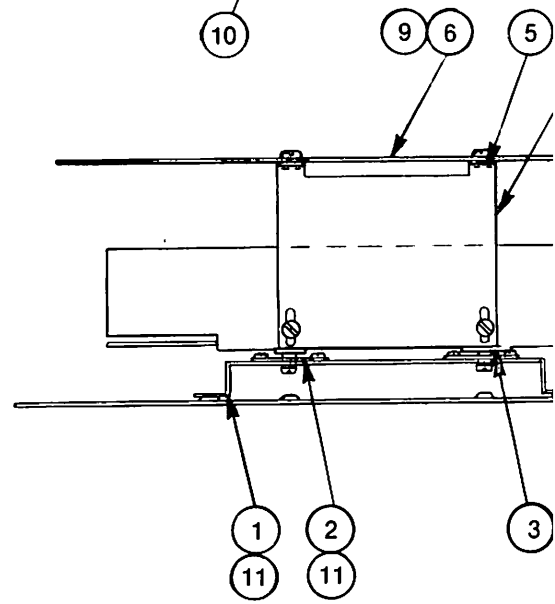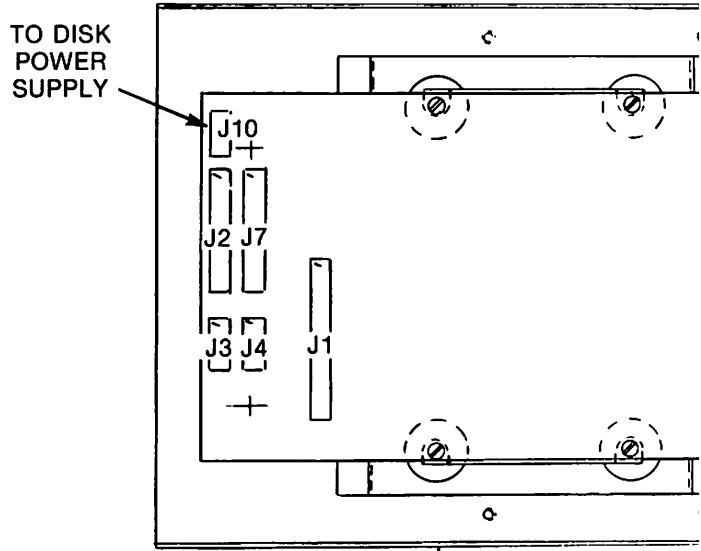
FIGURE 7.17 — Winchester Fixed Rigid-disk Drive Assembly

5
5
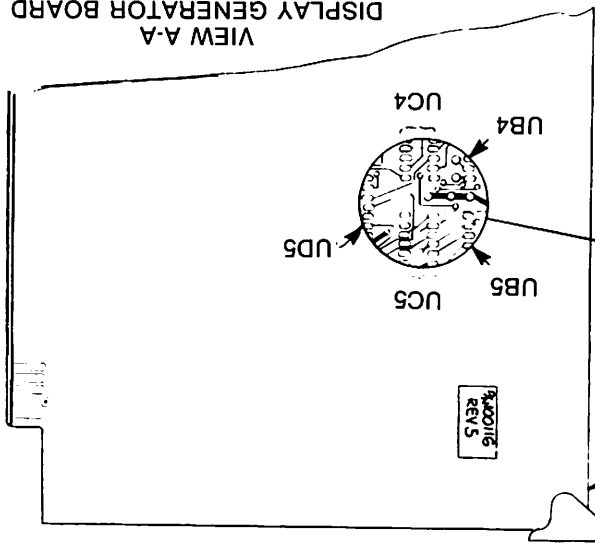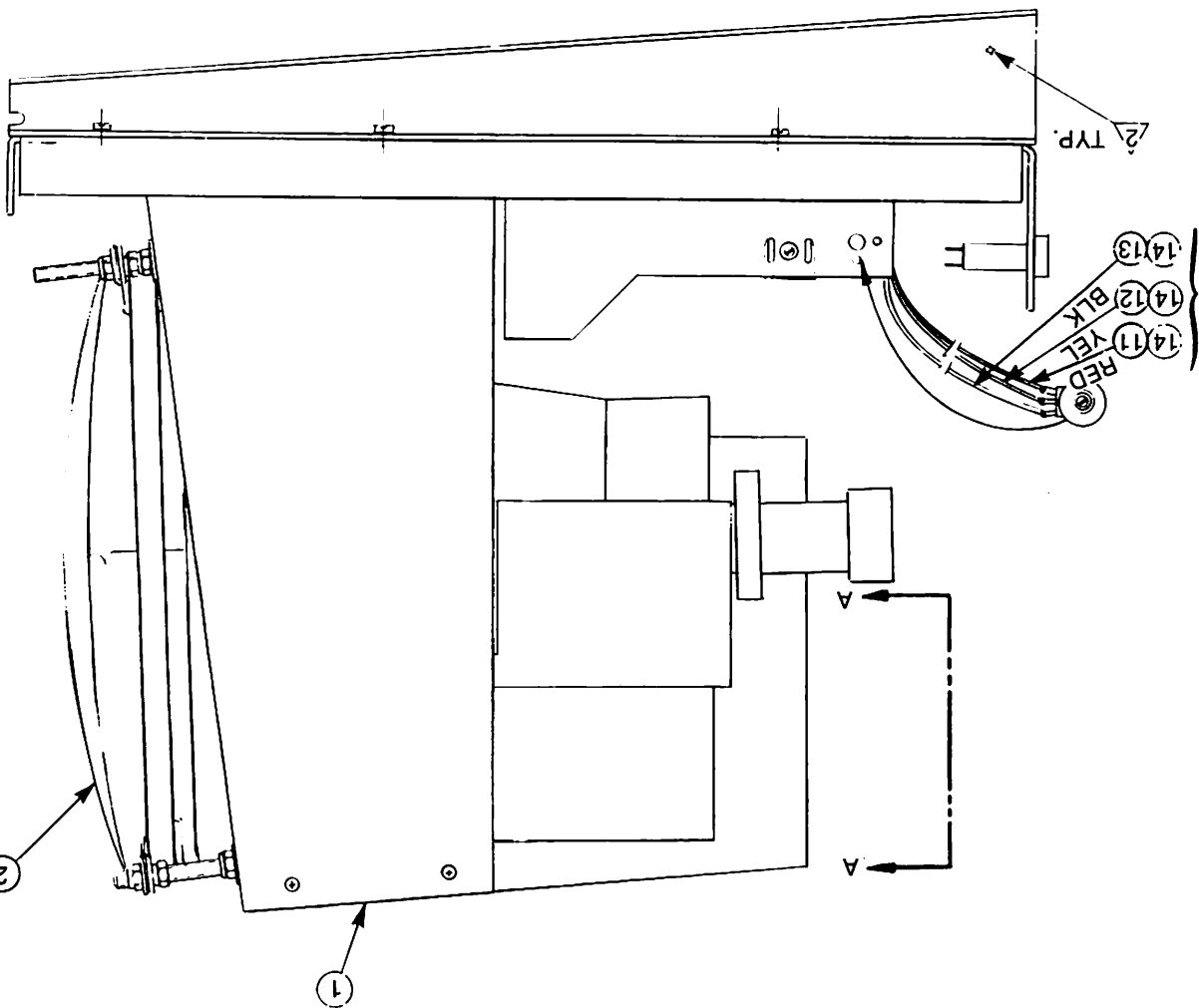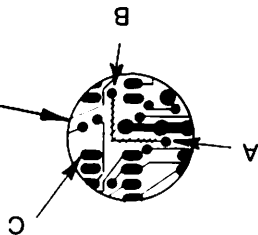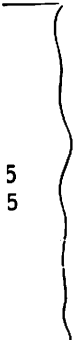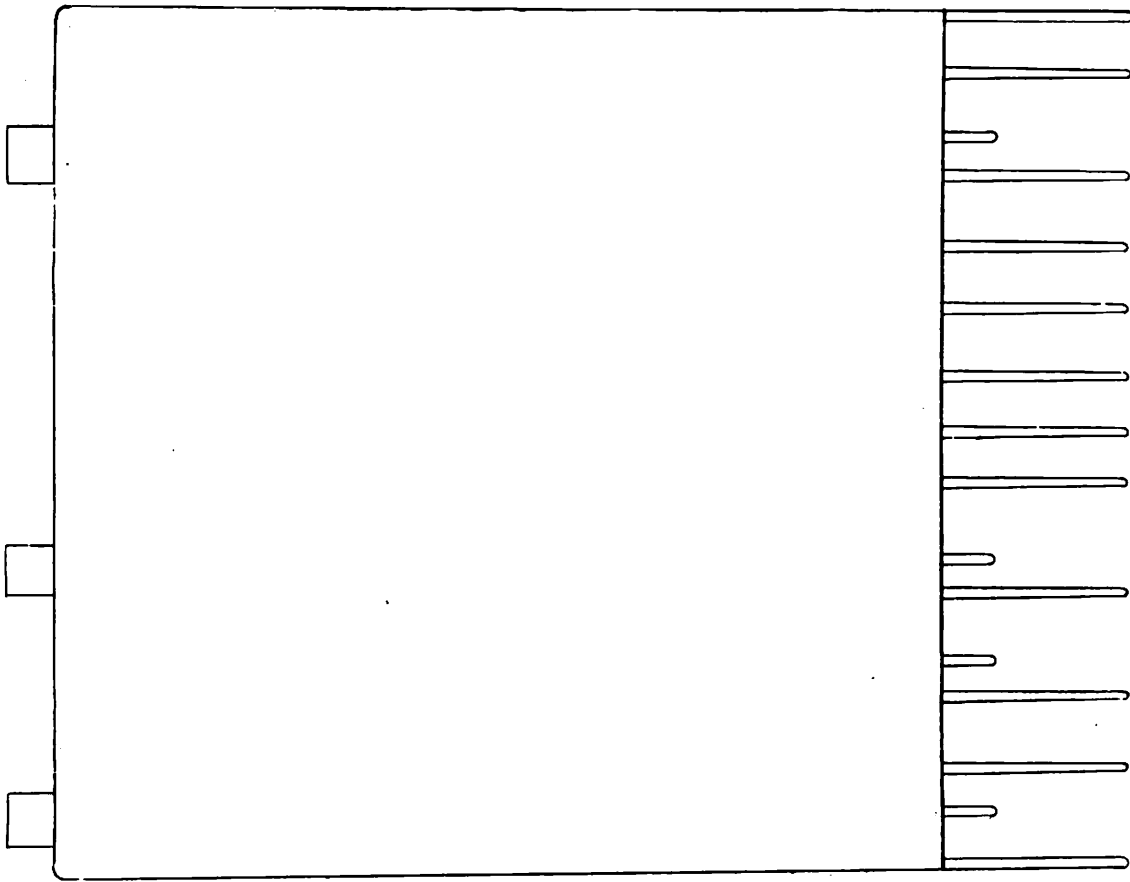
E TWO WIRES BEFORE
.NY OTHER WIRING.

B0185

ACE
HING

TYP.
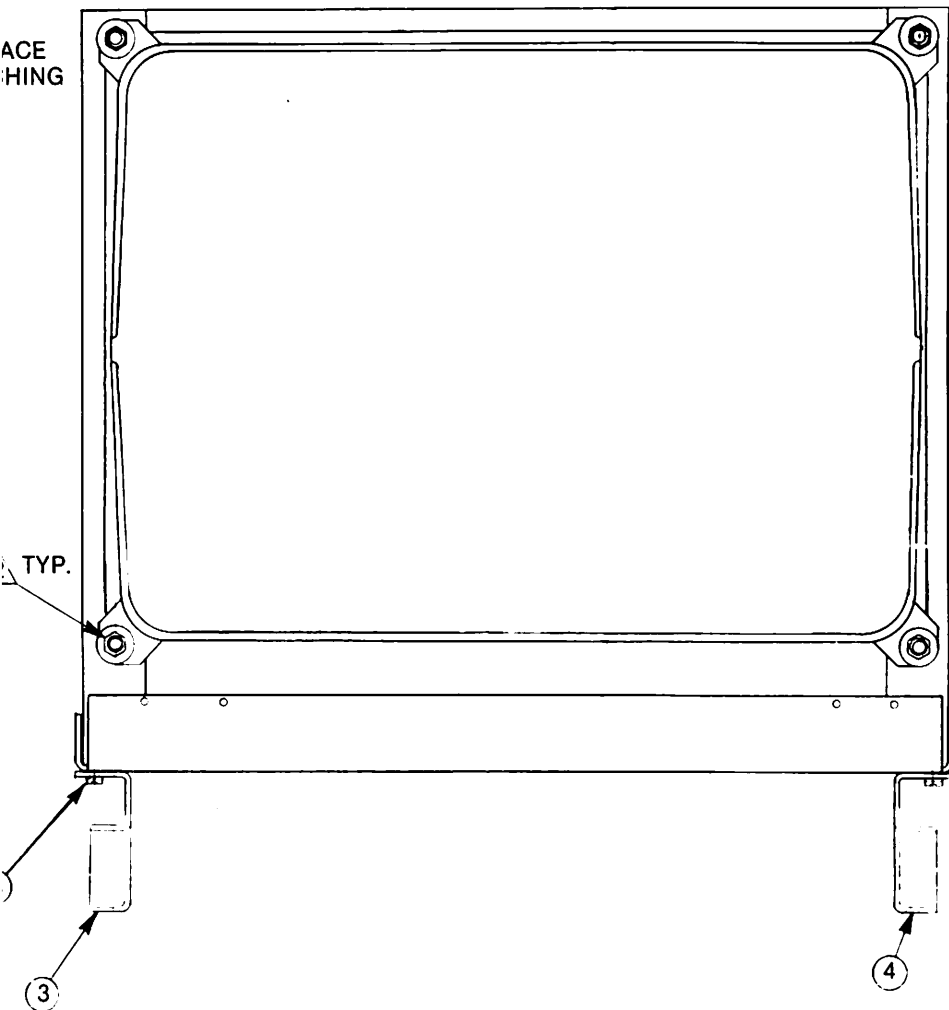
NOTES:

1. SOLDER 36 IN. WIRE EXTENSION TO THE POT SHOWN.
   WIRE COLOR ARE SAME AS EXISTING COLORS TO POT.
   USE HEAT SHRINKABLE TUBING, ITEM 14 OVER SPLICES.
   CUT ITEM 14 INTO 3 ONE INCH PIECES. REMOUNT
   POT I ORIGINAL HOLE.

2. MOUNT CRT ASSEMBLY (2 PLACES) IN ADJUSTMENT
   FIXTURE. ADJUST TUBE FACE 4 PLACES, TO SEAT
   AGAINST MATING SURFACE OF FIXTURE.

Item	Req'd	Name
15	1	30 AWG W&H lead wire
14	3	Tubing, heat shrinkable
13	36	22 AWG Blk leadwire
12	36	22 AWG Yel leadwire
11	36	22 AWG Red leadwire
10		
9		
8	6	.16432 × 375 Lg. Pan Hd
		Cad Pl Stl Sems Ext
7		
6		
5		
4	1	Wedge, CRT MTG (R.H.)
3	1	Wedge, CRT MTG (L.H.)
2	1	Filter, CRT
1	1	Term, CRT Intecolor

B0184

FIGURE 7.18 — CRT Assembly
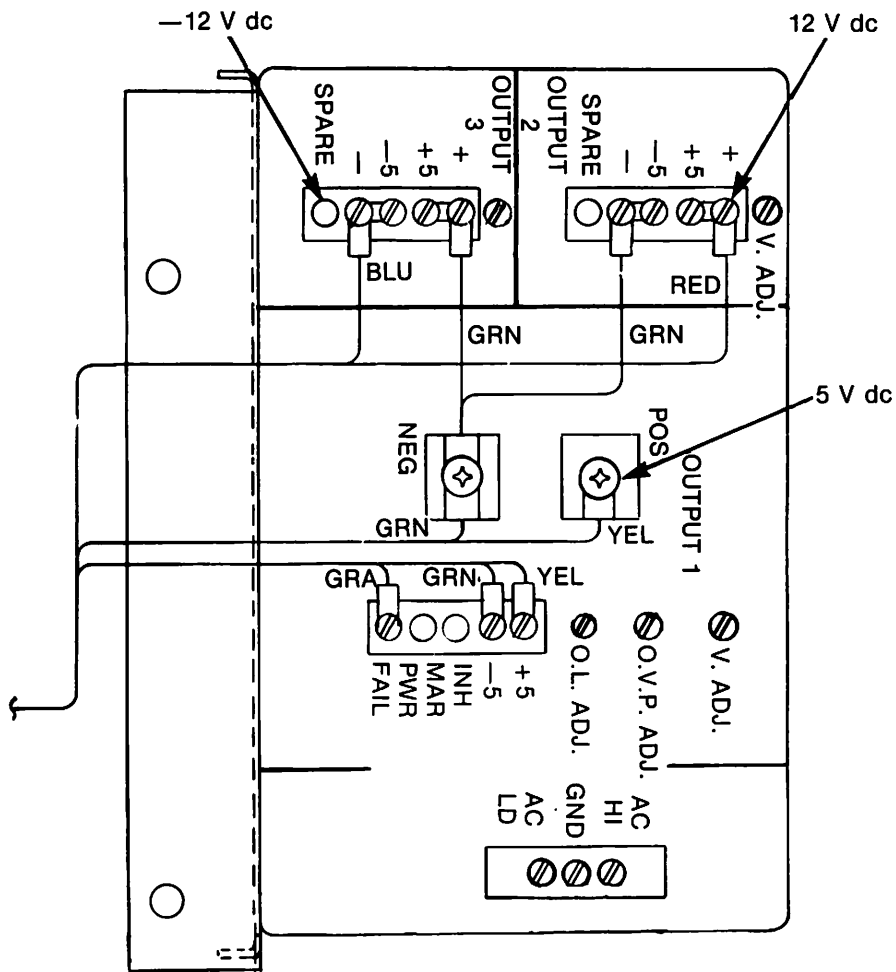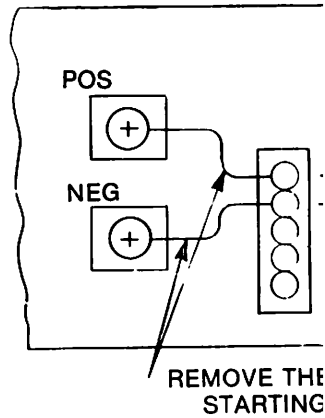
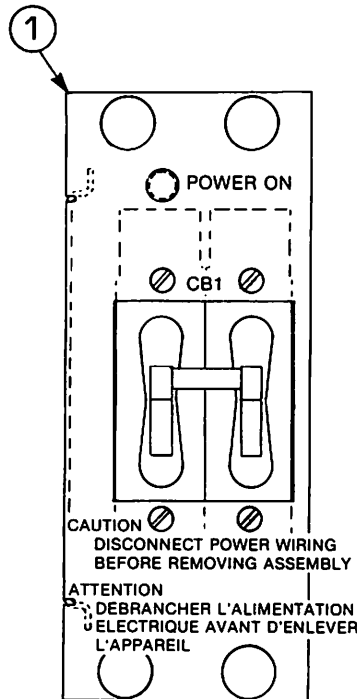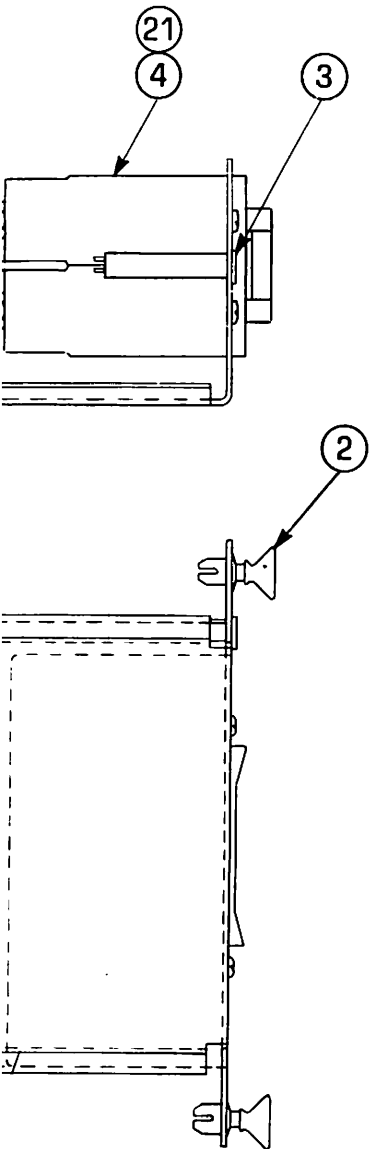*FIGURE 7.19 — OIU Power Supply Assembly (Outline, Wiring ,and Voltage)*

TO
LOGIC
SUPPLY

TB1
TB2
TB3
A
GND
A
+15 V
GND
−15 V
N
COM
J1
J2
UTILITY
3 AMP
BLOWER

(LINE)
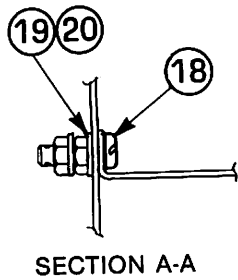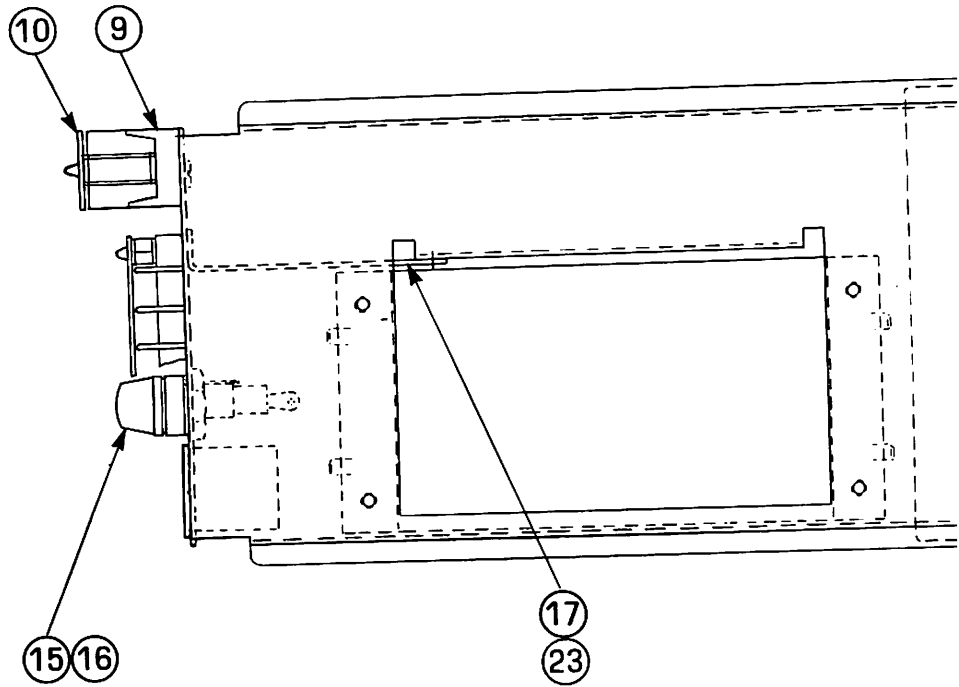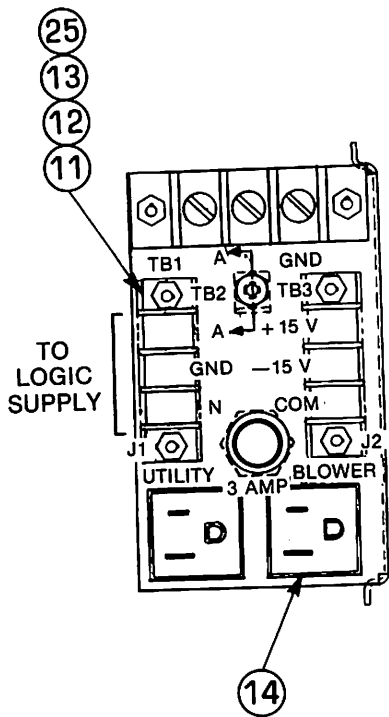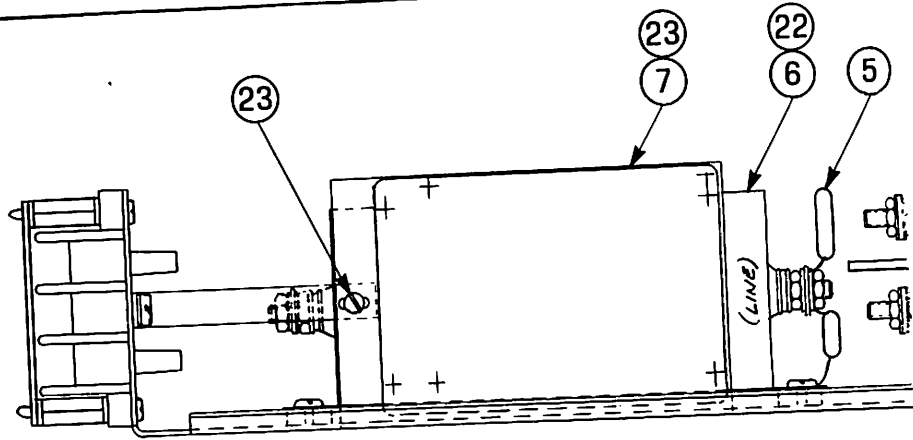
SECTION A-A
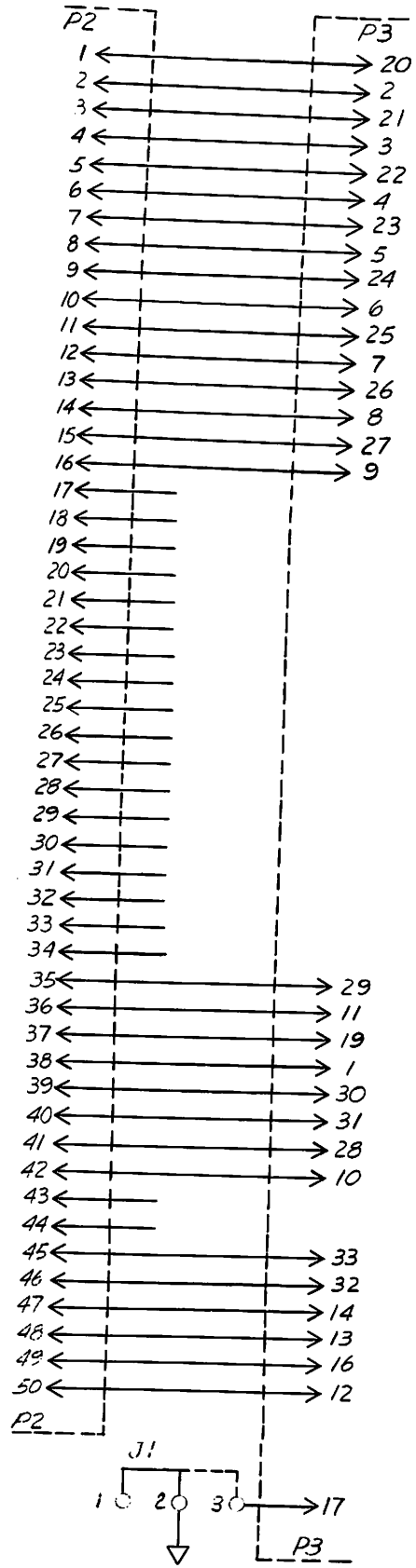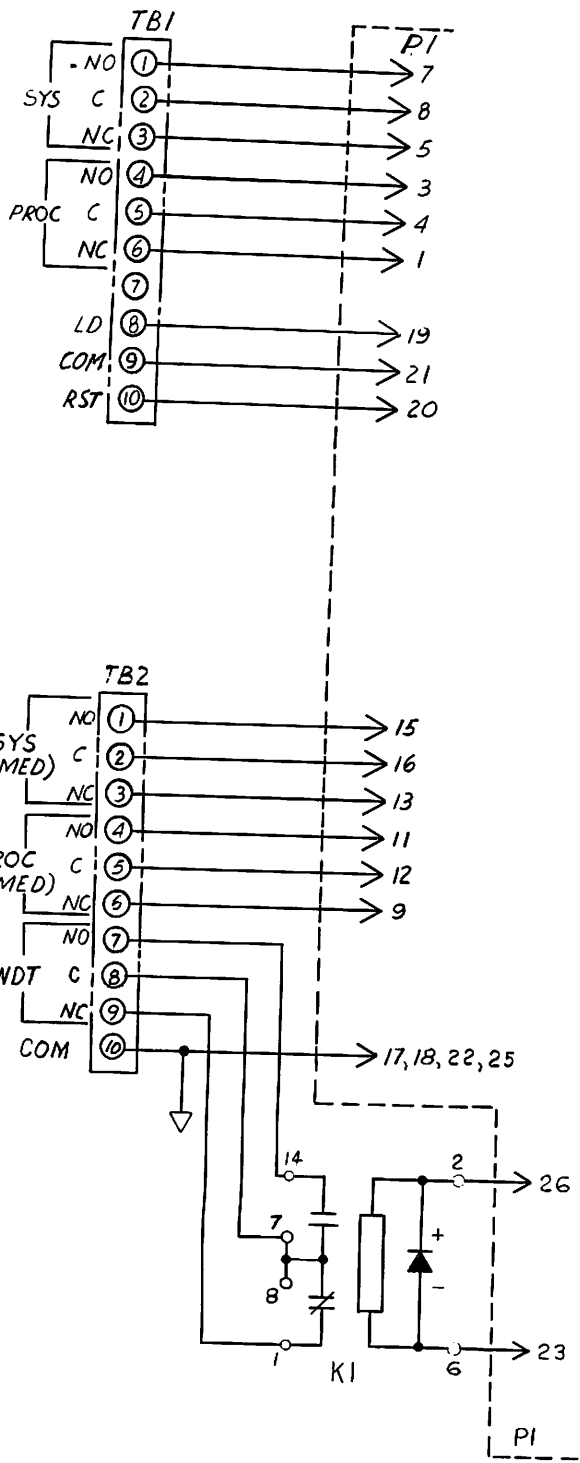
FIGURE 7.21 — Printer Termination Unit Interface

| ITEM	REQD	DWGS. SIZE	PART NO.	NAME
1	1	D	SEE TABLE	POWER DIST. FRAME
2	4	A	1945155A4	PLUNGER LATCH
3	1	B	1947508A1	NEON LAMP
4	1	D	196949A8	CIRCUIT BREAKER
5	1	D	6634333A1	VARISTOR ASSY
6	1	C	1946820A1	LINE FILTER
7	SEE TABLE	—	1948034A1	AC/DC POWER SUPPLY
8	1	B	1946948A3	TERMINAL BLOCK
9	2	A	197727A6	SUPPORT
10	1	A	6633886A3	COVER, TB
11	2	B	1942813A3	TERMINAL BLOCK
12	4	A	197727A1	SUPPORT
13	2	A	6633392A3	COVER, TB
14	2	—	1948035A1	CONVENIENCE OUTLET
15	1	A	1941504A1	FUSE EXTR POST
16	1	3	194776A13001	FUSE, 3 AMP
17	1	A	6636341A1	SUPPORT BRACKET
18	1		NIDAC16012	SCREW, SEMS
19	2		NTLAC19000	LOCKWASHER
20	2		NLLAC16000	NUT
21	4		NIDAC13006	SCREW, SEMS
22	4		NIDAC16003	SCREW, SEMS
23	SEE TABLE		NIDAC09003	SCREW, SEMS
24	2		NFBAC13010	SCREW, TAP
25	4		NFBAC13008	SCREW, TAP

B0186

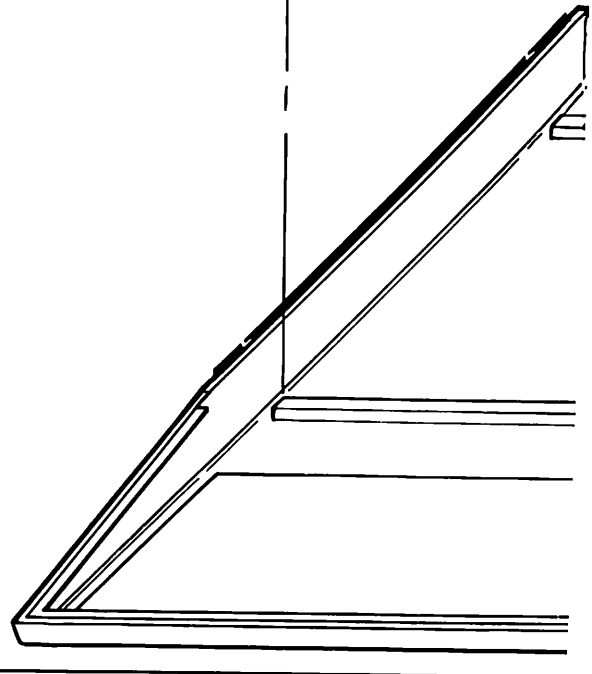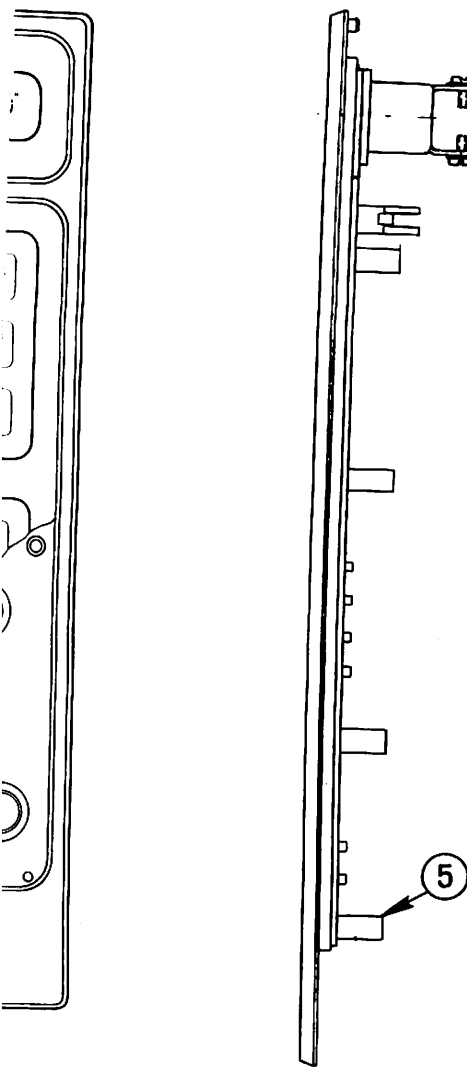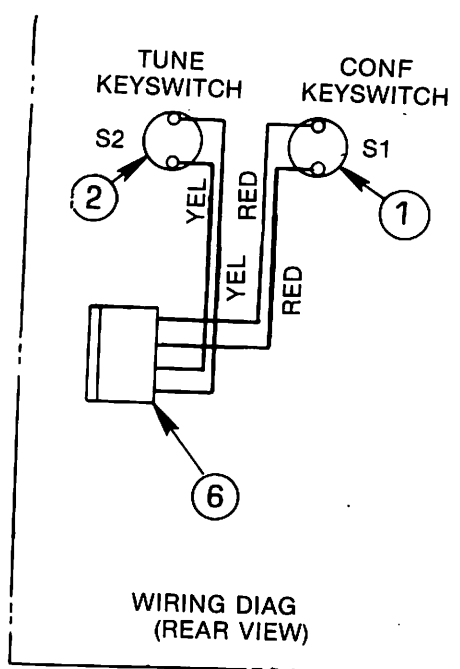*FIGURE 7.20 — Power Distribution Module (Outline and Wiring)*

99
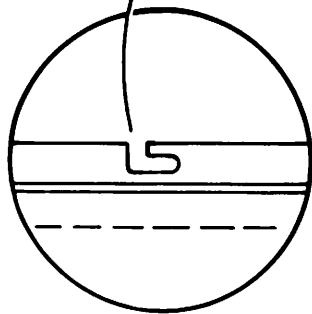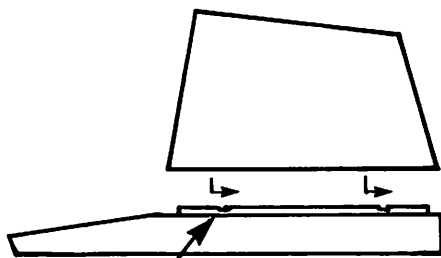
CATCH DETAIL
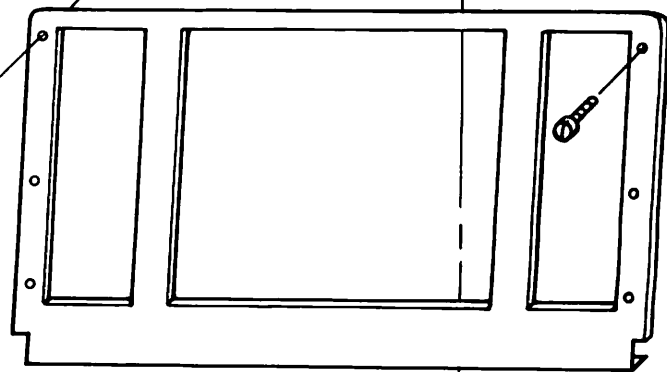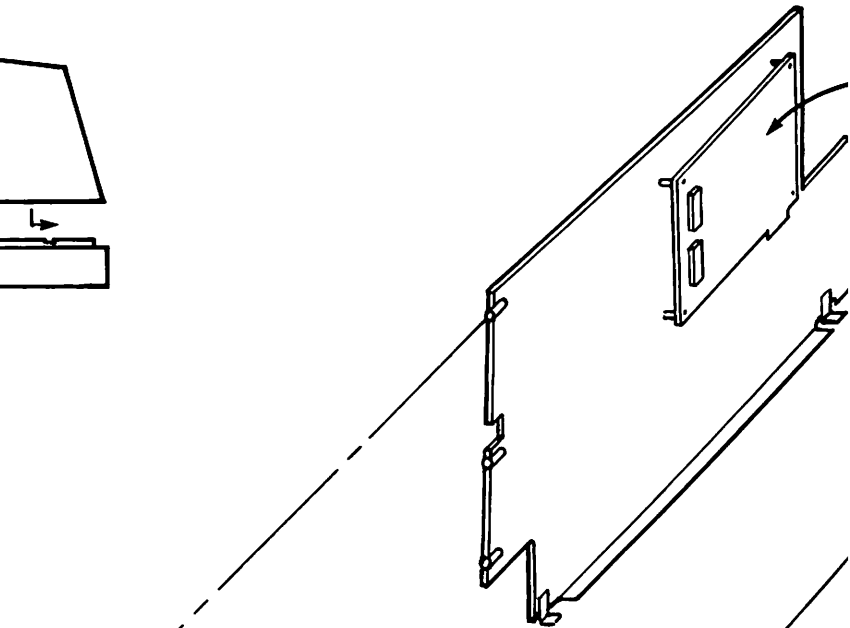
*ON UNITS BUILT PRIOR TO
MARCH 1980, SUBSEQUENTLY
BECAME PART OF KEYBOARD ASSEMBLY

SEE WIRING DIAG.

TUNE KEYSWITCH

CONF KEYSWITCH

S2

S1

YEL

RED

YEL

RED

WIRING DIAG (REAR VIEW)

ITEM	NAME
1	KEYSWITCH, SPST
2	KEYSWITCH, SPST
3	KEYLOCK GRAPHIC PLATE
4	LOGO PLATE
5	SPACER STIFFENER
6	CABLE, KEYBOARD SW
7	PAN HD CD PLT STL MACHINE SCREW

B0187

CPU BOARD*

UPPER
BACKPLATE

± 24 V dc
PWR SUPPLY

5.0 V dc PWR SUPPLY

5.0 V dc
VOLTAGE
ADJUSTMENT
CONTROL

POWER SWITCH

LOWER BACKPLATE

POWER INPUT
PLUG/FILTER
ASSEMBLY

RS-232
CONNECTOR
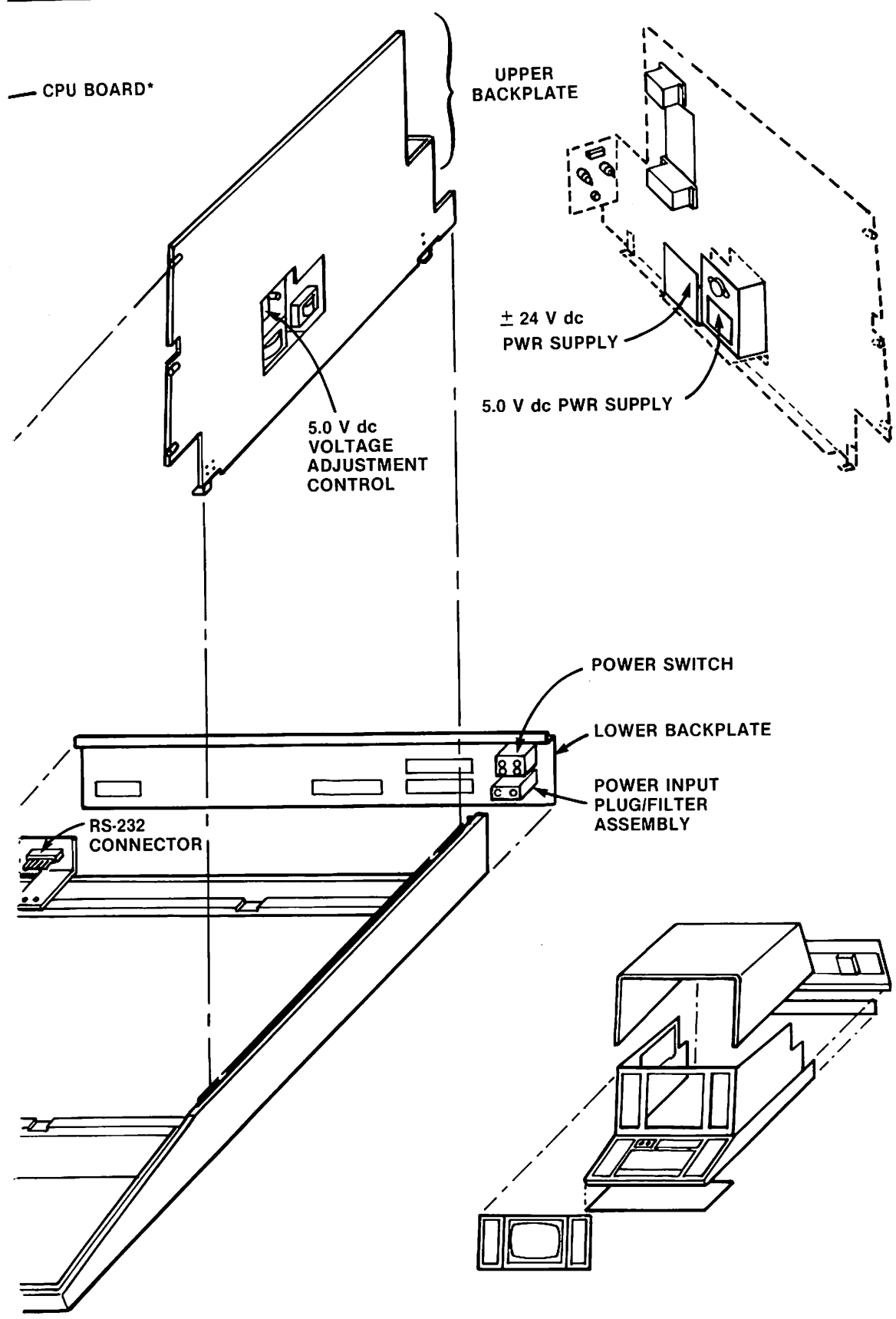
B0102

FIGURE 7.22 — OIU CRT/Keyboard Console Enclosure and Electronics

Bailey network 90

CONF LOCK

TUNE LOCK

A B C

D E F G H I J K L M N O P R S T U V W X Y Z SPACE

ENTER ESCAPE CLEAR

. Ø —

3 2 1

DECR 6 5 4

INCR 9 8 7

SECT

HOME

FIELD

SET

OUT

LOCAL CMPTR CAS RATIO
MAN

PRINT

AREA 10 AREA 9 AREA 8 AREA 7 AREA 6 VALUE GROUP GRAPHIC LAST DISPLAY

AREA 5 AREA 4 AREA 3 AREA 2 AREA 1 NEXT POINT NEXT CALL GROUP

MENU CONF LIST STATUS TUNE ALARM SUMM PREV POINT PREV MARK TAG

CR3

R3

1KΩ

R2

1KΩ

CR2

R1

316 Ω

CR1

C1
.01 µF
1,000 V

SLOT
NO.

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 54 56 58 60 62 64 66 68 70 72

J16
J15
J14
J13
J12
J11
J10
J9
J8
J7
J6
J5
J4
J3
J2
J1

1 3 5 7 9 11 13 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 7 8

10
TBI

12 13
TBI

TBI

GND SPLY
+5V SPLY

1 2 3 4 5 6 9
TBI

-15V SUPPLY
+15V SUPPLY

-12V SUPPLY
+12V SUPPLY

U13, U14-8
U13, U14-7
U13, U14-6

U13, U14-4
U13, U14-2
U9, U10-7
U11, U12-5
U11, U12-4
U11, U12-3
U11, U12-2
U7, U8-8

U7, U8-6
U7, U8-4
U7, U8-2
U3, U4-8
U3, U4-7
U3, U4-6
U3, U4-5
U3, U4-4
U3, U4-3
U3, U4-2

U13, U14-5
U13, U14-3
U9, U10-8
U9, U10-6
U9, U10-5
U9, U10-4
U9, U10-3
U9, U10-2

U7, U8-7
U7, U8-5
U7, U8-3
U5, U6-8
U5, U6-7
U5, U6-6
U5, U6-5
U5, U6-4
U5, U6-3
U5, U6-2

J17-J32 located to left of
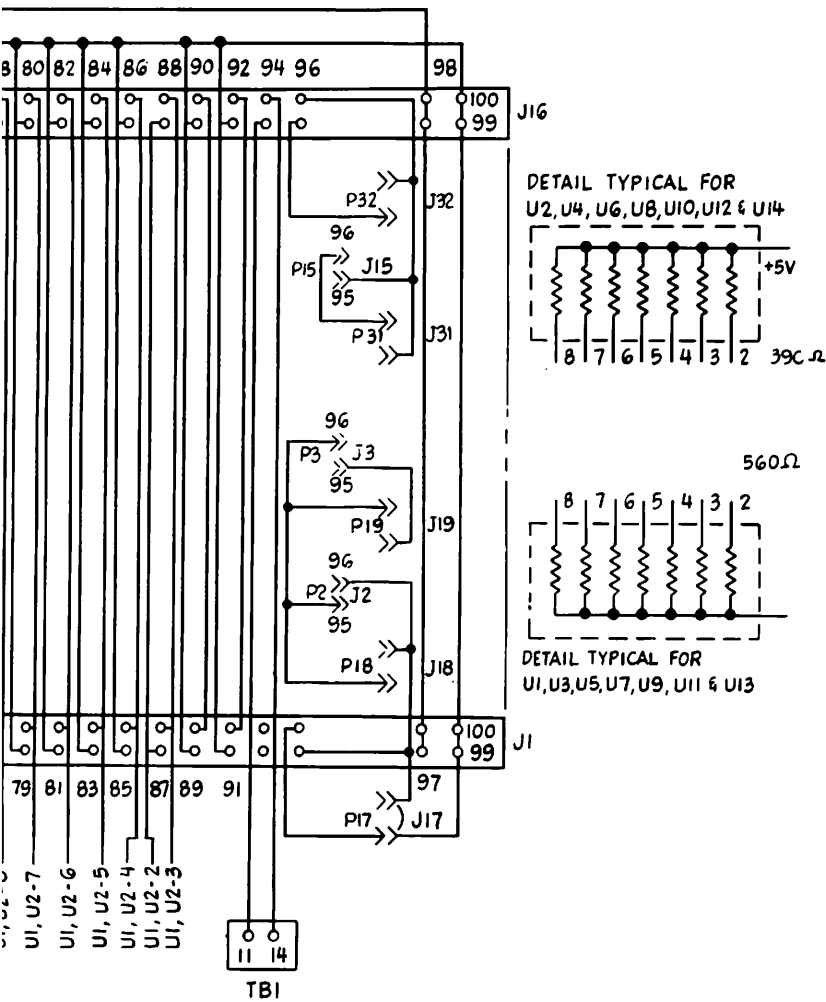J1-J16 respectively

A. Card Cage

B. TB1 (Mounted on Back of the Card Cage)

A8837

FIGURE 7.25 — 16-slot Card Cage Assembly

Component	Description
C1	Cap, ceramic 0.01mF 1KV
CR1-CR3	Lamp, solid state
J1-J16	Edge connector
J17-J32	Conn, PC, Jmpr
	Conn, PC, Post
R1	Res, film, 316Ω, ⅛ W, 1%
R2, R3	Res, film, iK, ⅛ W, 1%
U1, U3, U5, U7, U9, U11, U13	Res, film, Sip 7, 560Ω
U2, U4, U6, U8, U10, U12, U14	Res, film, Sip, 7,390Ω
TB1	Term blk PC

DETAIL TYPICAL FOR
U2,U4, U6,U8,U10,U12 & U14

+5V

8 7 6 5 4 3 2   390Ω

560Ω
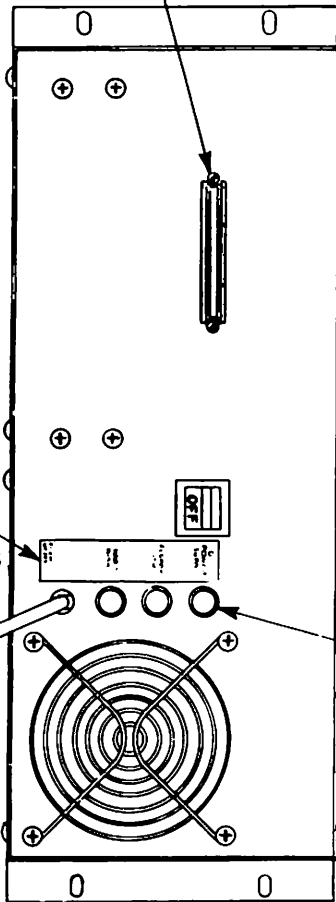
8 7 6 5 4 3 2

DETAIL TYPICAL FOR
U1,U3,U5,U7,U9, U11 & U13

TB1

REFERENCE D8078269

FIGURE 7.24 — 16-slot Card Cage Schematic
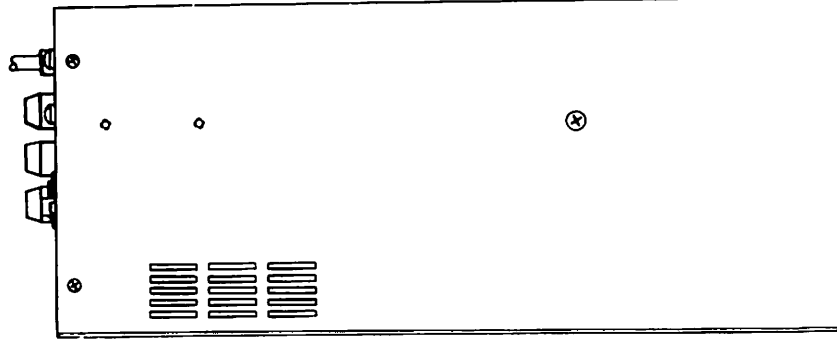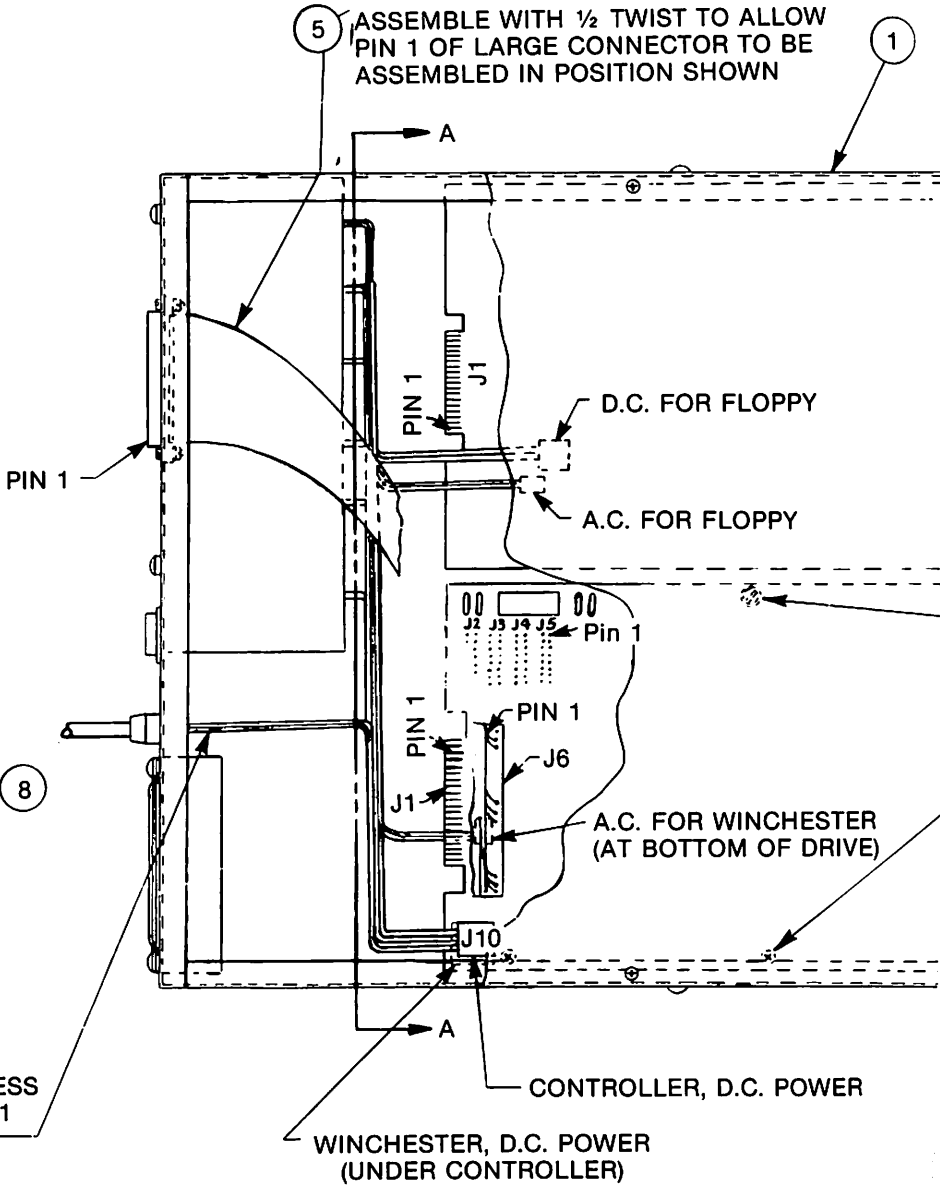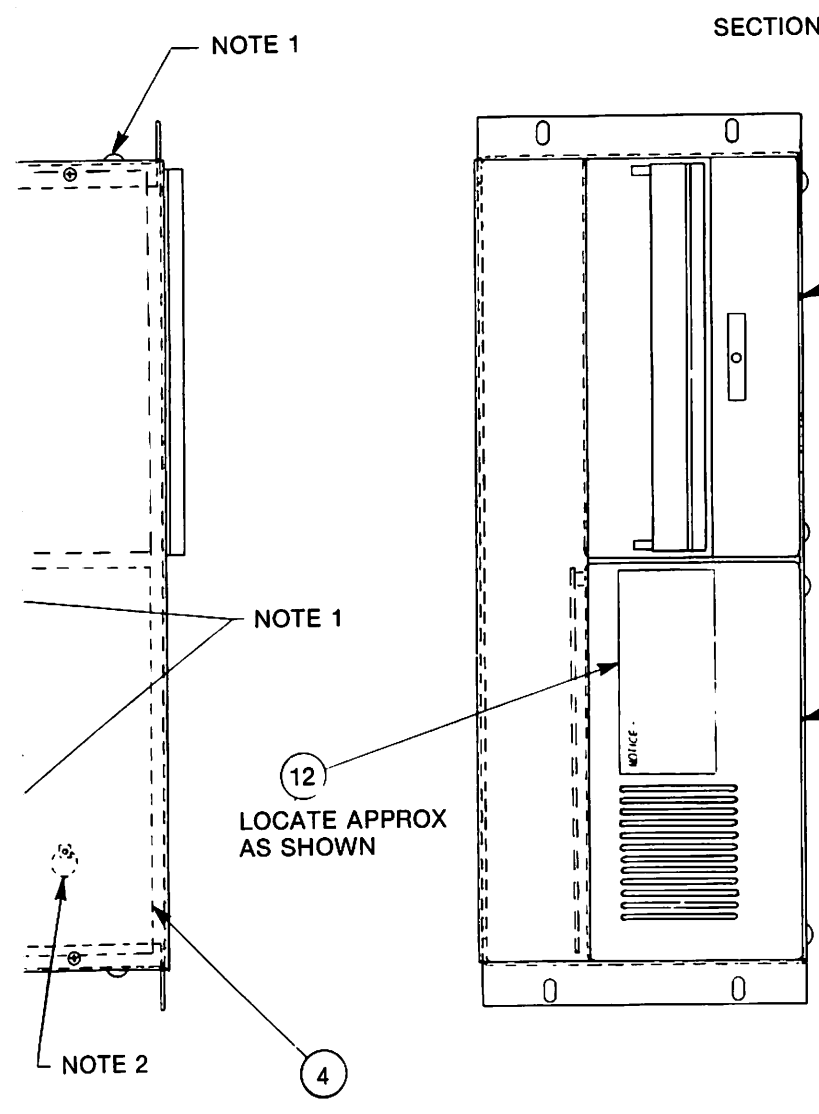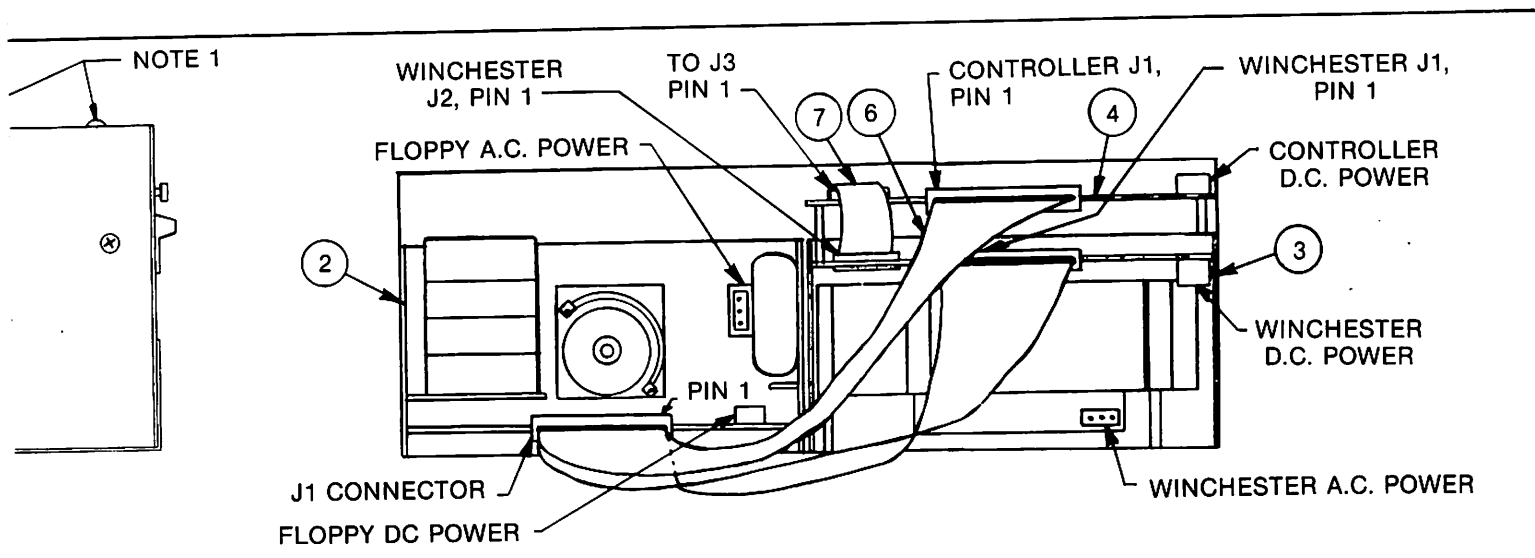
(9) (10)

(11)

LOCATE
APPROX. AS
SHOWN

POWER CABLE HARNESS
SUPPLIED WITH ITEM 1
(SEE NOTE 3)

(5) ASSEMBLE WITH ½ TWIST TO ALLOW
PIN 1 OF LARGE CONNECTOR TO BE
ASSEMBLED IN POSITION SHOWN

(1)

A

PIN 1

J1

PIN 1

D.C. FOR FLOPPY

A.C. FOR FLOPPY

J2 J3 J4 J5   Pin 1

PIN 1

PIN 1

J1

J6

A.C. FOR WINCHESTER
(AT BOTTOM OF DRIVE)

J10

(8)

A

CONTROLLER, D.C. POWER

WINCHESTER, D.C. POWER
(UNDER CONTROLLER)

NOTES:

1. HARDWARE IS SUPPLIED WITH ITEM 1 TO RETAIN ITEMS 2, 3, & 4 IN ITEM 1 AS SHOWN.

2. WINCHESTER "SPINDLE LOCK" MUST BE INSTALLED PRIOR TO SHIPMENT, AND MUST BE REMOVED BEFORE APPLYING POWER TO THE DISK DRIVE ASSEMBLY.

3. ALL AC POWER CONNECTORS ARE 3-PIN CONNECTORS. D.C. POWER IS ON THE 6-PIN CONNECTORS.

Item	Req'd	Name
10	2	.112-40 Ext LW Stnls Stl Hex Keps
9	2	.112-40 × 375 Pan HD Cad Pl Stl Mach Scr
8	3	Fuse (4 amp, 250V)
7	1	SA1403 Cable
6	1	Controller cable
5	1	Disk drive cable
4	1	Disk controller
3	1	Fixed disk drive
2	1	Diskette drive
1	1	Disk drive enclosure

B0188

FIGURE 7.26 — NOIU01/03 Disk Drive Assembly (older version)