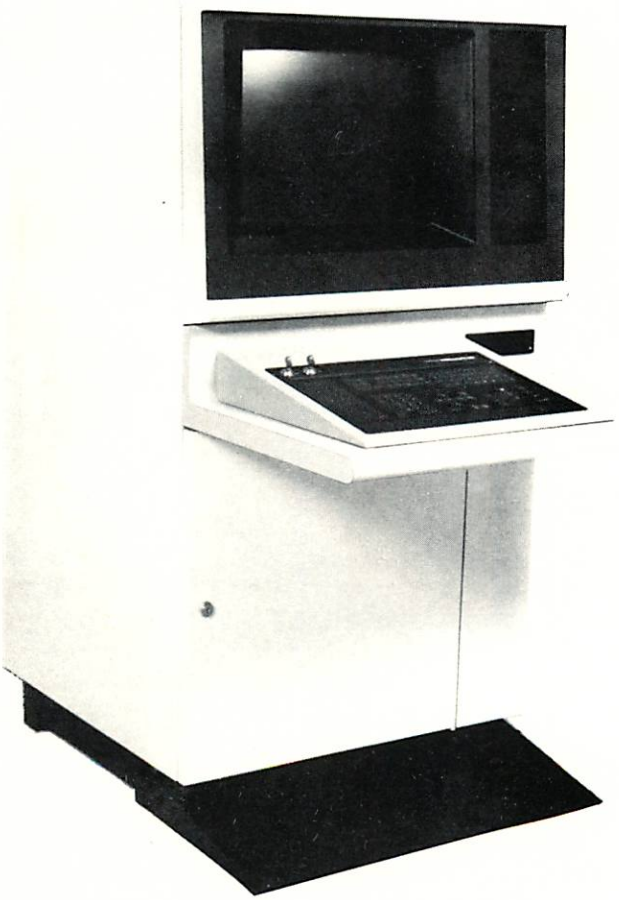
Bailey®
network 90®

Management Command System Operation/Configuration Manual Software Release L.2



Product Instruction

E93-901-23

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.

NOTICE

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MANAGEMENT COMMAND SYSTEM (MCS)
SOFTWARE RELEASE L.2
HARDWARE MANUAL
INSTRUCTION UPDATE

The L.2 software release results in several hardware changes. These are:

Dipswitch setting changes on Intelligent Serial Interface Card.

Jumper changes on Disk Server Card.

Jumper changes on CPU Cards 1 and 2.

Switch addition to 2 Meg RAM Memory Card.

Jumper addition for Color Graphics Controller Cards.

New printer configurations.

Jumper changes on Touch Screen Controller Card.

The changes in this update will be included in the next printing of the MCS Hardware Manual.

Integrate the attached pages into your MCS Hardware manual in accordance with the following instructions:

1. Replace cover.
2. Replace Preface/List of Effective Pages.
3. Replace pages iii through x.
4. Replace page 1-5/1-6.
5. Replace page 2-3/2-4.
6. Replace page 3-5/3-6.
7. Insert page 3-6a/3-6b after page 3-6.
8. Replace page 3-7/3-8.
9. Replace page 3-9/3-10.
10. Replace page 3-11/3-12.
11. Replace page 3-31/3-32.
12. Replace page 4-5/4-6.
13. Replace page 4-17/4-18 with page 4-17/4-17a.
14. Insert pages 4-17b/4-17c and 4-17d/4-18 after page 4-17/4-17a.
15. Replace page 4-35/4-36.
16. Replace page 6-1/6-2.

June 15, 1989

Preface

This manual serves as a reference manual for the Management Command System. It includes standard jumper configurations, switch settings, and cable and wire connections for all internal components. This information is provided should existing setups be inadvertently changed or modules be replaced. **The hardware configuration as stated in this manual is based on the requirements of MCS Software Revision L.2.**

If problems encountered in the installation, setup or servicing of the MCS are not addressed by this manual, or you believe the material contains inaccuracies, notify your nearest Bailey service center or sales office of the problem and request assistance.

It is recommended that you read the entire manual before beginning installation and power-up of your MCS.

This revision supersedes and replaces the Product Instruction for the K.0 software release. For information about hardware setup requirements for revisions previous to this software release, refer to instruction E93-901-23A dated 3/87, MCS Disk Server Unit instruction E93-901-24 dated 11/87 and MCS Remote Electronics Driver Cabinet instruction E93-901-52 dated 7/87.

List of Effective Pages

Total number of pages in this manual is 149, consisting of the following

Page No.			Change No.
Preface			June 15, 1989
List of Effective Pages			June 15, 1989
iii	through	x	June 15, 1989
1-1	through	1-4	Original
1-5			June 15, 1989
1-6			Original
2-1	through	2-3	Original
2-4			June 15, 1989
3-1	through	3-5	Original
3-6	through	3-7	June 15, 1989
3-8	through	3-9	Original
3-10			June 15, 1989
3-11			Original
3-12			June 15, 1989
3-13	through	3-30	Original
3-31			June 15, 1989
3-32	through	3-44	Original
4-1	through	4-4	Original
4-5			June 15, 1989
4-6	through	4-16	Original
4-17	through	4-17d	June 15, 1989
4-18	through	4-34	Original
4-35			June 15, 1989
4-36	through	4-38	Original
5-1	through	5-28	Original
6-1			Original
6-2			June 15, 1989
A-1	through	A-12	Original

When an update is received, insert the latest changed pages and dispose of the superseded pages.

NOTE: On an update page, the changed text or table is indicated by a vertical bar in the outer margin of the page adjacent to the changed area. A changed figure is indicated by a vertical bar in the outer margin next to the figure caption. The date the update was prepared will appear under the page number.

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List of Figures (Continued)

List of Tables

Safety Summary

General Warnings
Static Shock

Electrical Shock Hazard During Maintenance
Disconnect power or take precautions to insure that contact with energized parts is avoided when servicing.

Special Handling
The MCS uses Electrostatic Sensitive Devices (ESD). ESD protection during handling is required.

Avertissement D'Ordre General
Decharge Statique

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.

Precautions de Manutention
Le MCS contient des composantes sensibles aux decharges electrostatiques.

Specific Warnings

Do not operate the MCS with doors or covers opened or removed. Figure 2 is only for illustrative purposes. (p. 1-4)

Flip main circuit breaker to Off, before attempting to remove any cards. (p. 3-4)

Disconnect from electrical supply before attempting repair or replacement. (p. 5-27)

Avertissement D'Ordre Specifique

Ne pas faire fonctionner le MCS lorsque les portes ou les panneaux d'acces sont ouverts ou enleves. Le MCS n'est represente a la figure 2 qu'a titre d'illustration seulement. (p. 1-4)

Debrancher de la source electrique avant de proceder a des travaux de reparation ou de remplacement. (p. 5-27)

SPECIFICATIONS

Line Voltage	103 to 132 V rms						
Line Frequency	47 to 63 Hz						
Current							
Inrush (half-cycle)	63.2 amps						
Nominal	NCRT01/05	NCRT02/09	NCRT03	NCRT04	NCRT06	NMCS02	NMED01
120 Vac	1.5	1.75	8.0	2.75	1.5	10.75	9.0
240 Vac	0.75	N/A	N/A	N/A	0.75	N/A	4.5
Power Factor	0.65						
Crest Factor	2.19						
Power Consumption	NCRT01/05	NCRT02/09	NCRT03	NCRT04	NCRT06	NMCS02	NMED01
Watts	126	140	886	262	124	925	785
Environmental Constraints							
Temperature							
Operating	4° to 40°C (40° to 104°F)						
Storage	-22° to 60°C (-8° to 140°F)						
Transportation	-30° to 60°C (-22° to 140°F)						
Relative Humidity							
Operating	20% to 80% noncondensing						
Storage	10% to 90% noncondensing						
Transportation	5% to 95% noncondensing						
Altitude	-1,000 feet to +10,000 feet						
Cooling Requirements	NCRT01/05	NCRT02/09	NCRT03	NCRT04	NCRT06	NMCS02	NMED01
BTU/hr.	430	477	3021	893	423	3154	2677
Weight	453 lbs (305.5 kg)						
CRT Resolution	640 x 480 pixels						
Touch Screen Resolution	4,096 x 4,096 points						
Configuration	Non-volatile ROM and hard disk memory						
Display Screens	1,000; 200 dynamic items per screen						
Control/Display Selects	200 selects from touch screen 200 selects from keyboard						
Tags	10,000 standard						
Trends	1,000						
Logs	100 in any combination of Trend, Trip and Periodic Logs; Sequence of Events logs are additional.						
Certification	CSA certification for use in an ordinary (nonhazardous) location pending.						

Specifications Subject To Change Without Notice

3b. **NMED01:**
Located just below the Power Supply near the top of the cabinet is the Power Entry Panel (PEP). The PEP accepts 120 V ac or 240 V ac at 50/60 Hz. A switch located on top of the power supply (Figure 2-2) is used to select the desired input voltage. Refer to **MCS REMOTE ELECTRONICS DRIVER CABINET, Power Entry Panel** in Section 4 of this manual for wire connections. If other power is present at your plant, a compensating transformer is required.

NOTE: If remote CRTs are being installed, ensure they are powered using the same polarized power and ground as the MCS to prevent ground loops. Failure to do so may cause display distortion. If ground loops are still suspected, use of optically isolated modems will eliminate the problem.

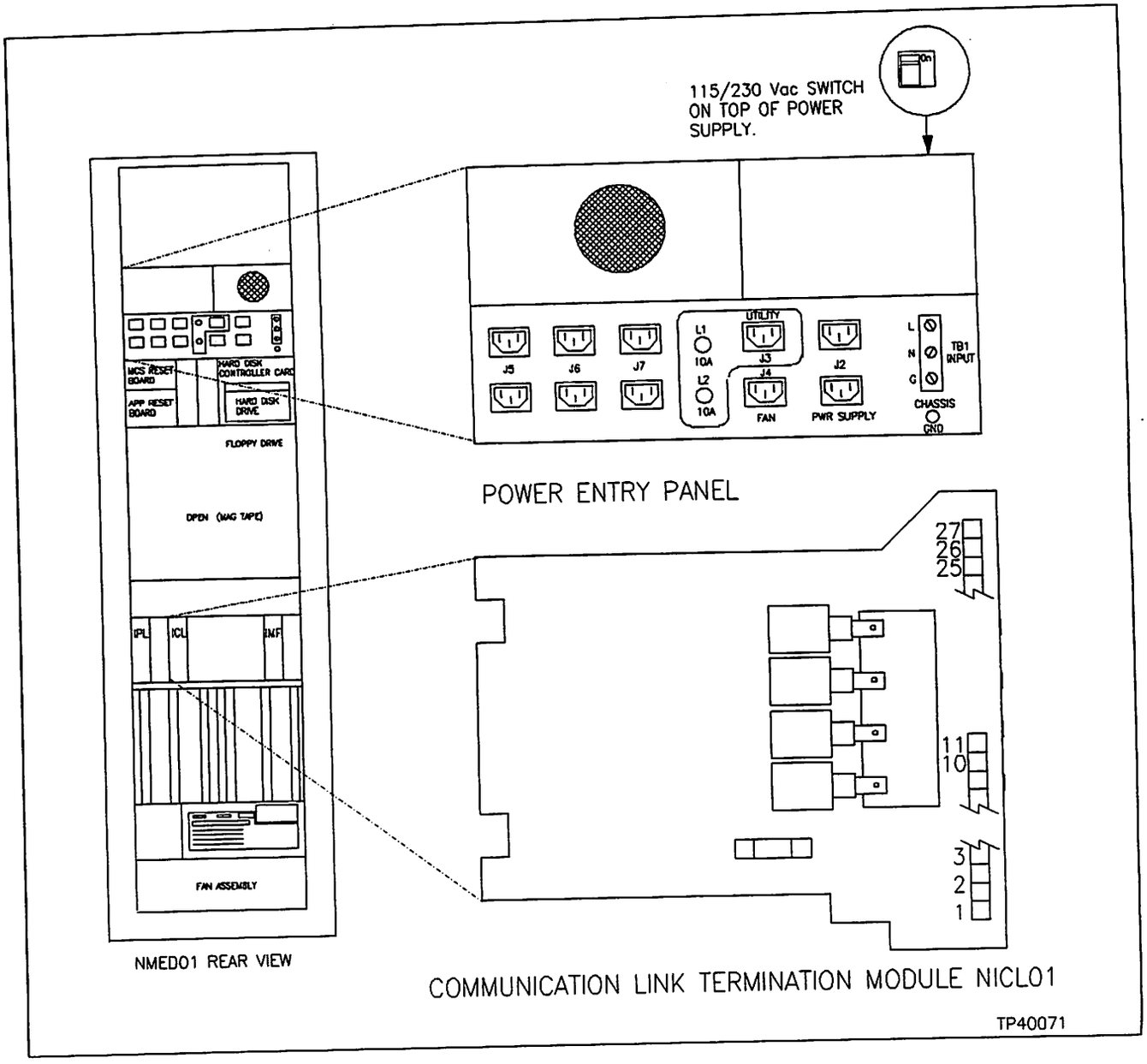

Figure 2-2. NMED01 PEP and NICL01 Location

4. During shipping, some problems may occur. Before applying power to the MCS, perform the AC and DC power-up tests in Section 5 of this manual. Adjust the supplies as shown, if necessary.

5. Once the wiring is complete, and the DC voltage sources have been checked, you are ready to apply power to the MCS. If problems occur, refer to the Troubleshooting Chart in Section 5 of this manual.

MCS peripherals (keyboards, monitors, printers, etc.) are connected to the I/O Distribution Board. Refer to I/O DISTRIBUTION BOARD in Section 3 of this manual for wiring connections. If connecting an MCS touch screen, refer to TOUCH SCREEN in Section 4 of this manual.

HARDWARE SETUP ELECTROSTATIC DISCHARGE (ESD) CONTROL

Static susceptible devices (SSD) are liable to damage from handling due to inadvertent contact with potential static charges in excess of the device's maximum rating (6.25 volts or greater). This potential, when placed across the leads of SSD can damage the oxide layers within the package. Latent or immediate damage may result. Latent damage may not be detectable under normal circuit check-out, but may result in a severe degradation of equipment or system reliability. Methods for preventing damage involve equalizing the potentials across all SSD terminals and across the SSD working area, tooling and operator. The most common method to accomplish this is to electrically connect tools, assembly equipment and the operator to earth ground. The requirements of this procedure shall be followed at all stages of handling.

These special handling procedures should be followed to avoid damage to the printed circuit boards:

1. Personnel working with or handling printed circuit boards should be properly grounded by wearing conductive wrist ground straps.

2. Personnel wearing silk, wool, synthetic clothing shall wear a conductive material smock. Personnel shall keep all plastic and textiles which are not anti-static away from SSD and work stations.

3. Anti-static containers and bags should be used. Store ESD-sensitive equipment in these containers/bags as much as possible when not in the system.

4. Containers and bags should be grounded before opening.

5. Ground test and assembly equipment.

6. Work stations should be constructed or covered with conductive materials.

7. Work area shall be free of plastic, styrofoam, cellophane, vinyl materials (e.g., coffee cups, cup holders, cigarette packages, combs, books, folders).

8. Tools that come into contact with SSD shall be constructed of conductive materials and provide a means for connection to ground.

9. Soldering irons shall be the grounded tip type approved for use on SSD.

The MCS Color Graphics Controller card drives the MCS monitor. The card address is set by wire-wrapping jumpers to the appropriate pins. The location of the pins is shown in Figure 3-4.

NOTE: Refer to Section 4, MCS Options, for the jumper settings of any additional color graphics cards.

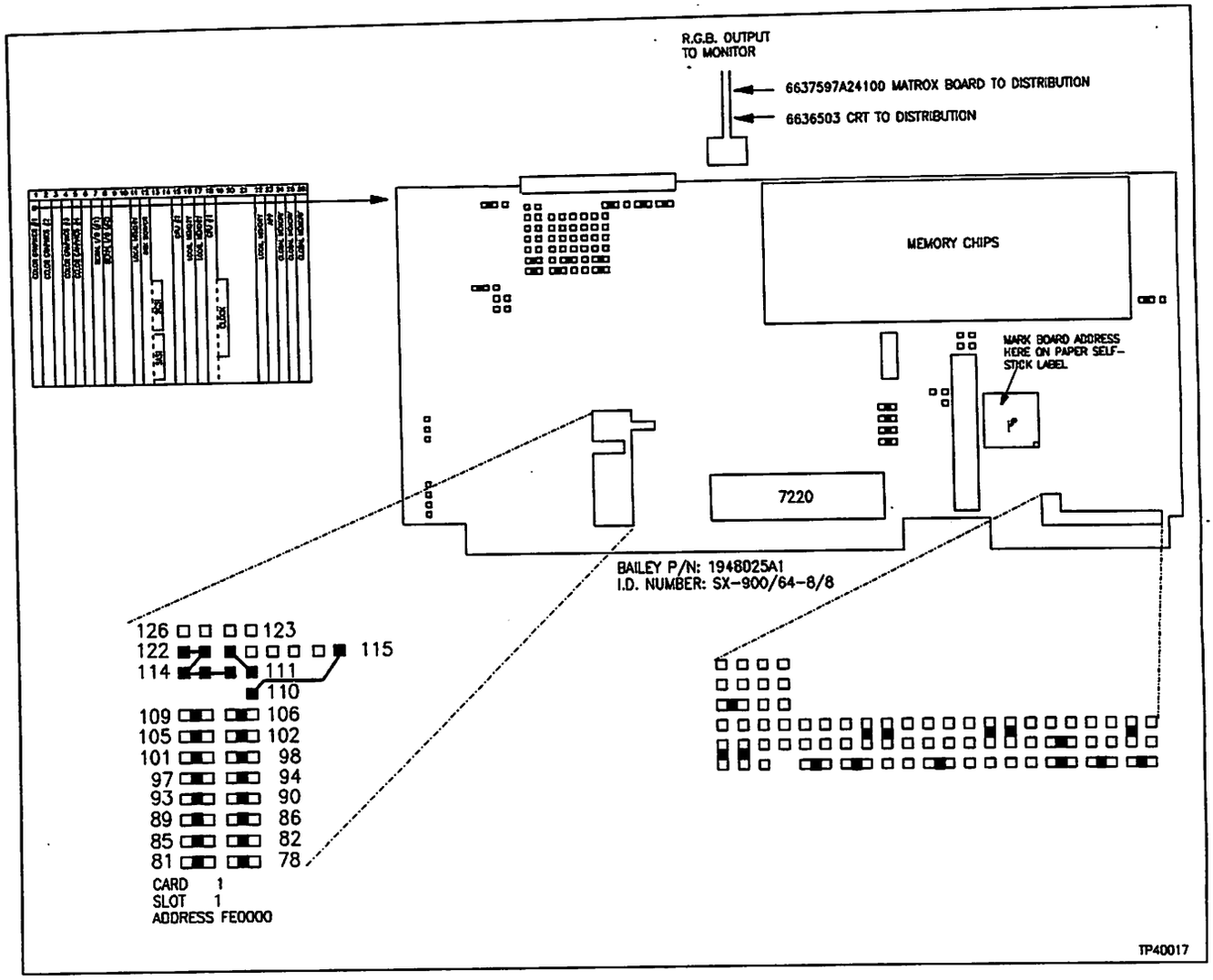

Figure 3-4. Color Graphics Controller Card

Intelligent Serial Interface Card
Bailey P/N 1948021_2

The MCS interfaces with various peripherals through the Intelligent Serial Interface Card. The peripherals include keyboards, printers and terminals. This card is configured by setting jumpers and dipswitches (Figure 3-5). Refer to Table 3-4 for port assignments.

NOTES:
1. Jumpers located below IC32 must be set according to the size of RAM used for IC32, 16K or 64K. The number 16 or 64 (located within the chip number) is printed on IC32. Set the jumper according to this number.

2. See Figure 3-5A for Serial Interface Card Number 2 switch settings.

Table 3-4. Serial Port Function

Port	Card 1	Card 2
1	Keyboard 1	Spare
2	Keyboard 2	Spare
3	Keyboard 3	Spare
4	Aux/CIU	Spare
5	Printer 1	Printer 3
6	Keyboard 4	Spare
7	Printer 2	Printer 4
8	Diagnostic Terminal (DDT)	Spare
	I/O Port 0100	I/O Port 0102
	RAM Address FA0000 to FAFFFF	RAM Address FB0000 to FBFFFF
	64K Block	64K Block

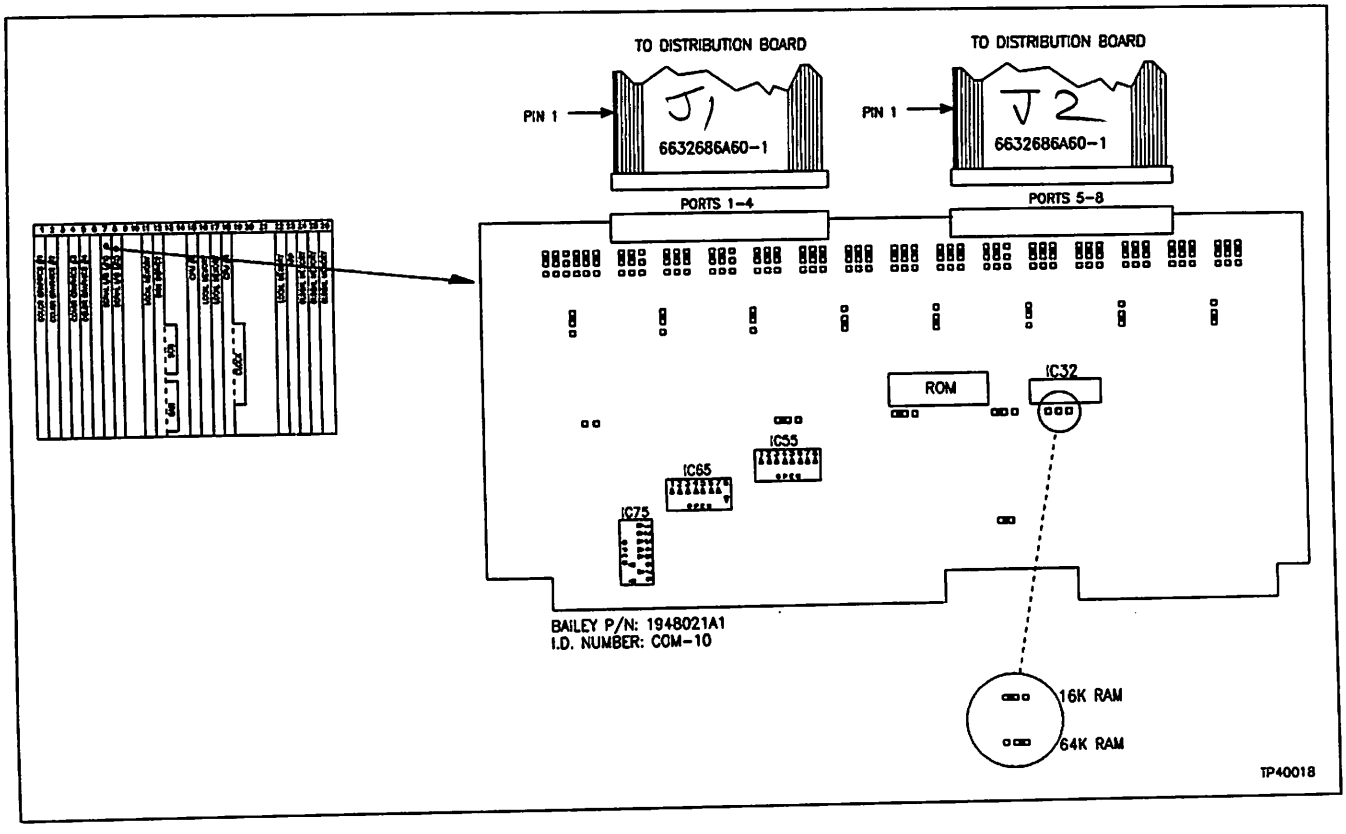

Figure 3-5. Intelligent Serial Interface Card

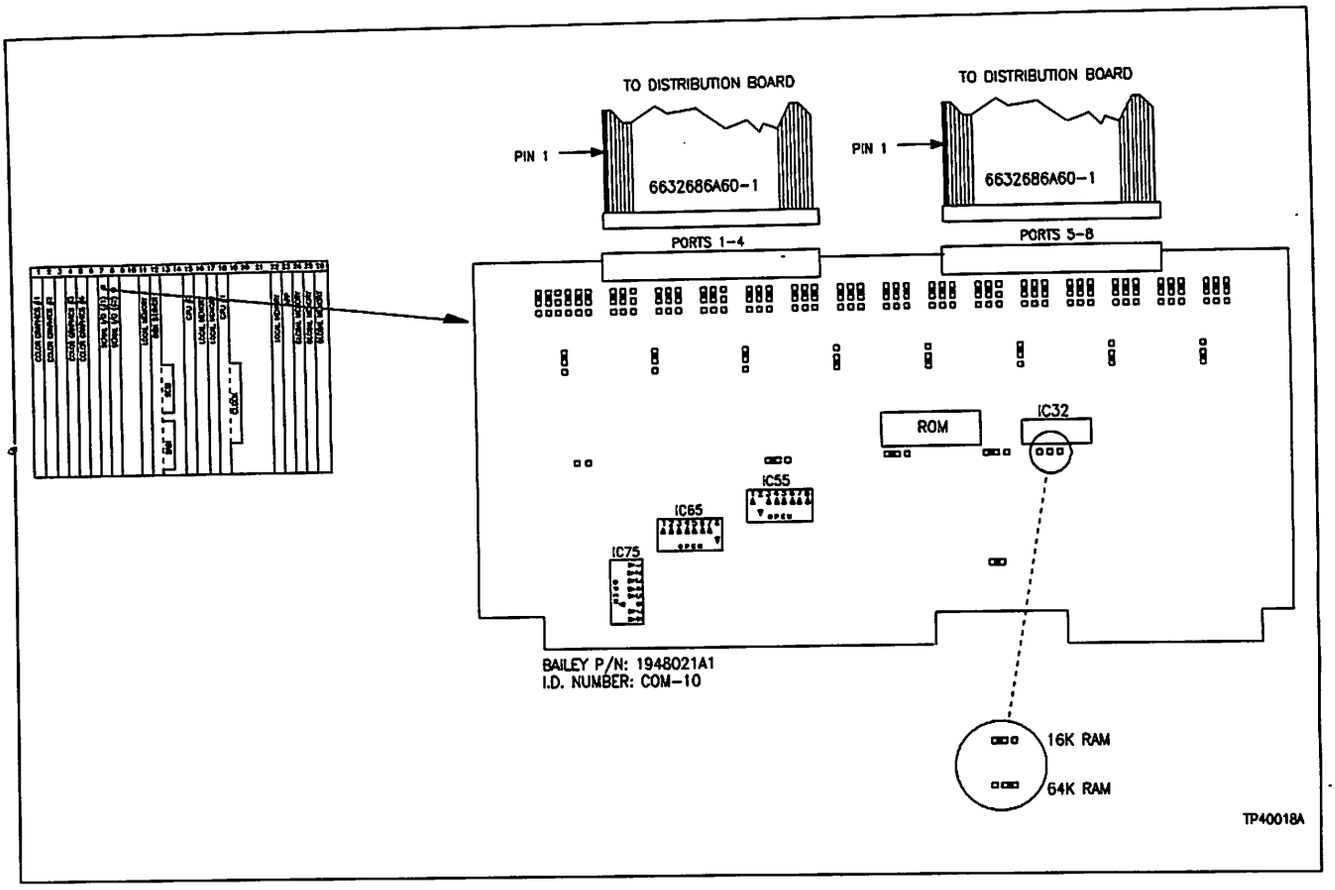

Figure 3-5A. Intelligent Serial Interface Card 2

The Disk Server Card has different firmware than a CPU Card. This allows it to handle all system disk functions. It is connected to an adjacent Local Memory Card with a ribbon cable. A Small Computer System Interface (SCSI) adapter may be added for use with 9-track tape and optical disk units (Refer to Section 4, MCS Options, for information concerning this adapter).

Configure the Disk Server Card by setting the jumpers as shown in Figure 3-6.

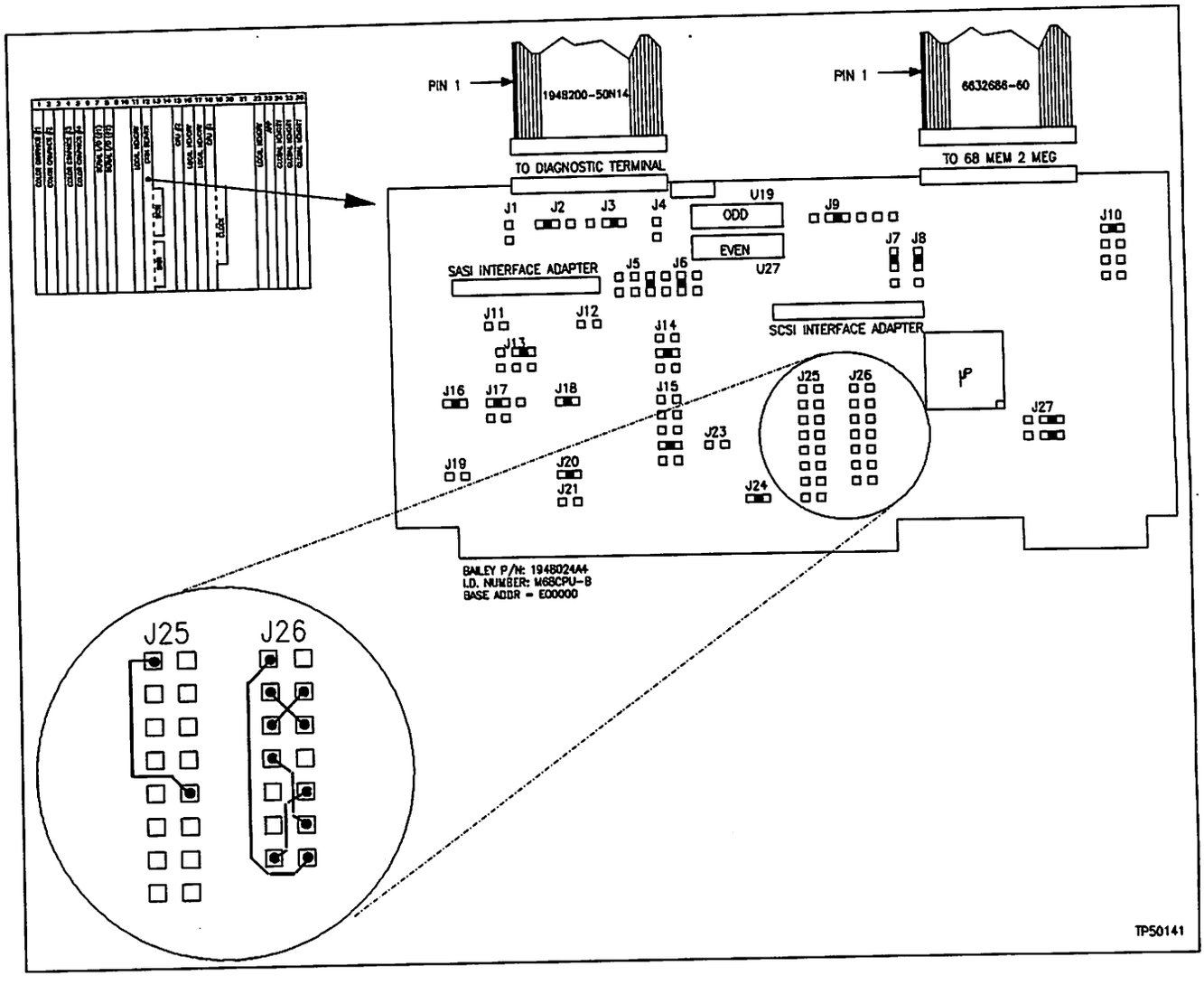

Figure 3-6. Disk Server Card

SASI Disk Bus Interface Adapter

Bailey P/N - 1948023_1

The Disk Bus Interface Adapter provides the Shugart Associates System Interface (SASI) between the disk drives and the Disk Server Card. Shown in Figure 3-7, it attaches to the Disk Server Card and occupies physical space allotted to slot 13.

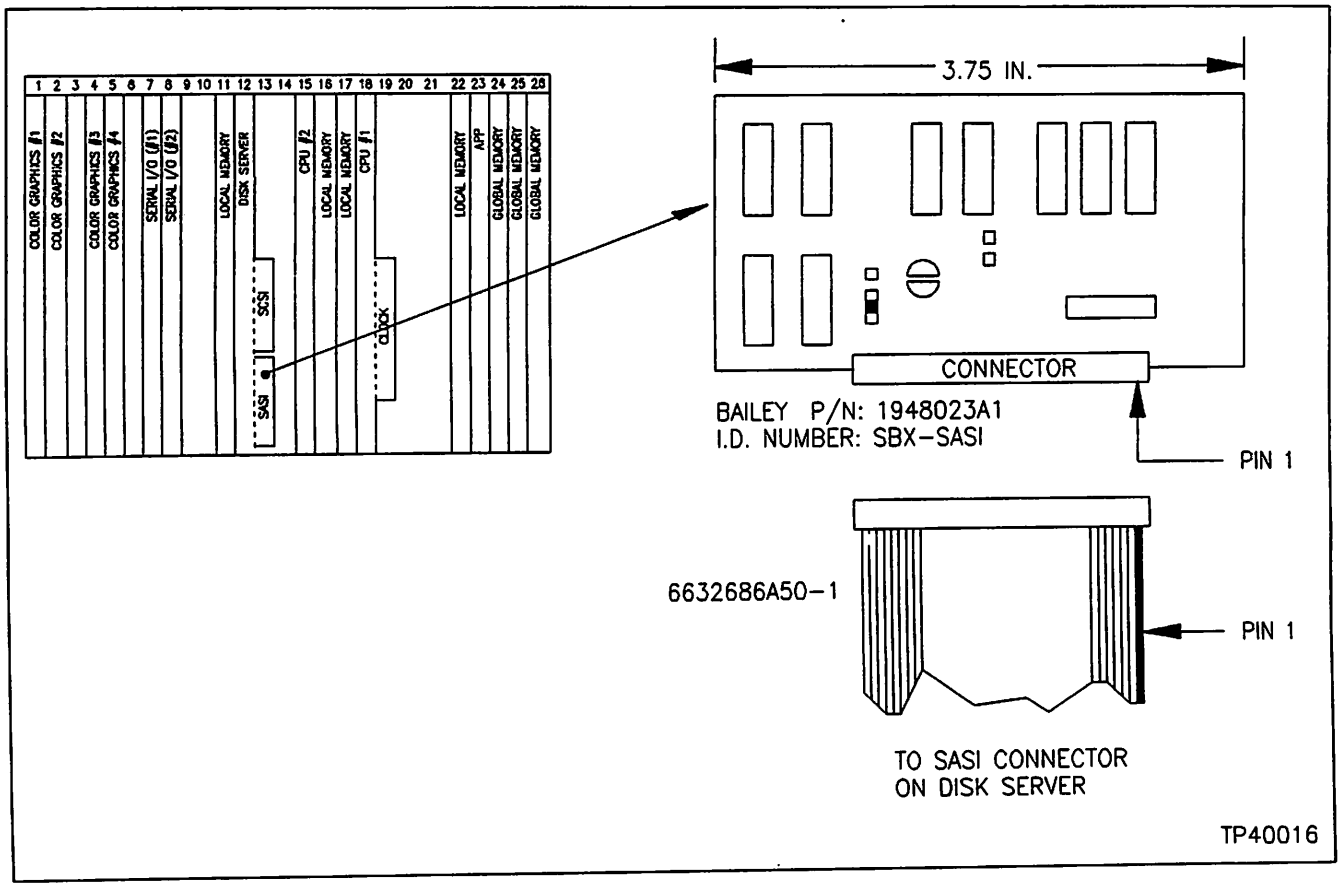

Figure 3-7. SASI Disk Bus Interface Adapter

Each MCS CPU Card (including the Disk Server Card) requires 2 Megabytes of local memory. A Local Memory Card is connected to each CPU card via a ribbon cable. This card contains 2 MEG of total on-board RAM. Refer to Figure 3-8 when setting jumpers J1 through J9 on these cards. These jumper settings apply to the memory cards for all CPU cards.

NOTE: Some users may have memory cards containing 4 Megabytes of RAM. Jumper setting differ on these cards (Figure 3-8). This card is the same card used for the 2 Megabytes RAM card, but with all RAM chip sockets filled.

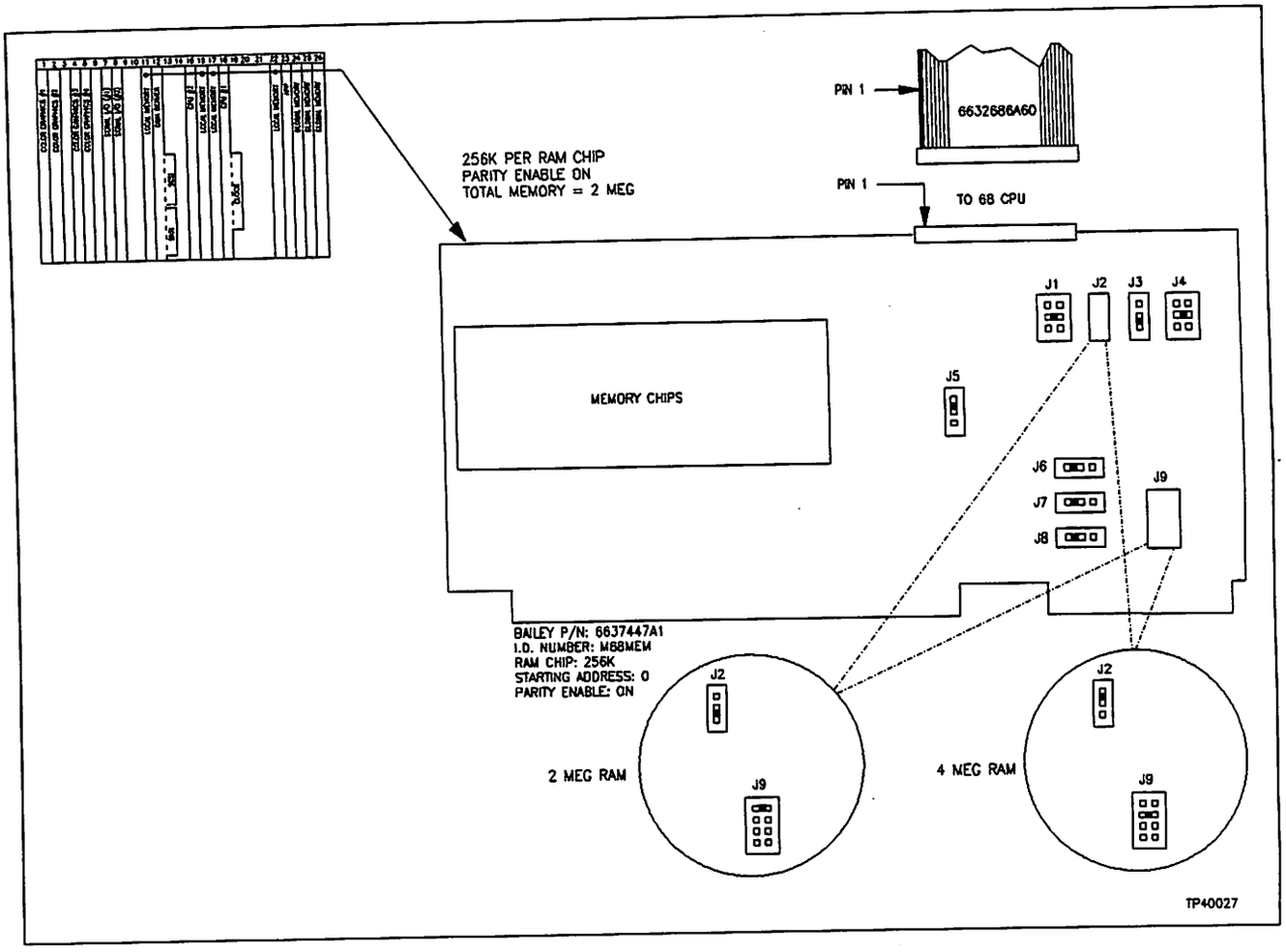

Figure 3-8. Local Memory Card

CPU Card

Bailey P/N - 6637033_2 (CPU Card 1 - Slot 18)
6637033_3 (CPU Card 2 - Slot 15)

The CPU card can access up to 2 Megabytes of RAM from the adjacent memory card connected by a ribbon cable. It contains Electrically Erasable Programmable Read Only Memory (EPROM) with a total storage capacity of 64 kbytes, and connection ports to a diagnostic terminal and the clock calendar card. Refer to Figure 3-9 when setting the jumpers on CPU Card 1 or 2.

NOTE: Figure 3-9 applies only to systems manufactured after February 1, 1986, which have a backplane connected electronic reset switch. Contact your nearest Bailey Sales or Service office for information on units manufactured previous to this date.

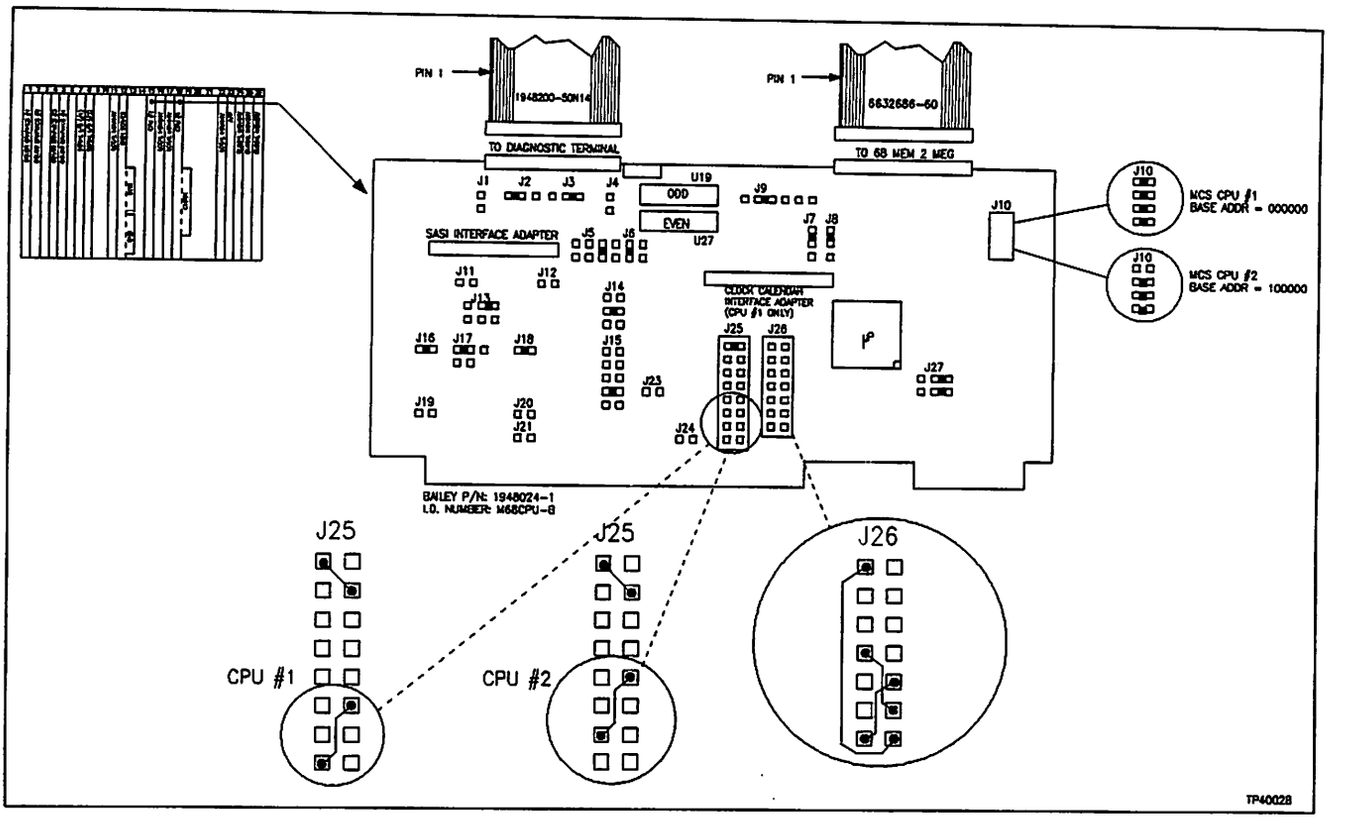

Figure 3-9. CPU Cards 1 and 2

Clock Calendar Card

Bailey P/N -1947999_1

The Clock Calendar Card gives the MCS real time capability. This card has an on-board battery if a power backup is ever needed. The Clock Calendar Card, shown in Figure 3-10, resides on the CPU card and occupies physical space allotted to slot 19.

NOTE: If the MCS or replacement Clock/Calendar cards are stored for a duration of one week or more, remove the jumper located next to the battery (Figure 3-10). Failure to do so will result in excessive battery drain.

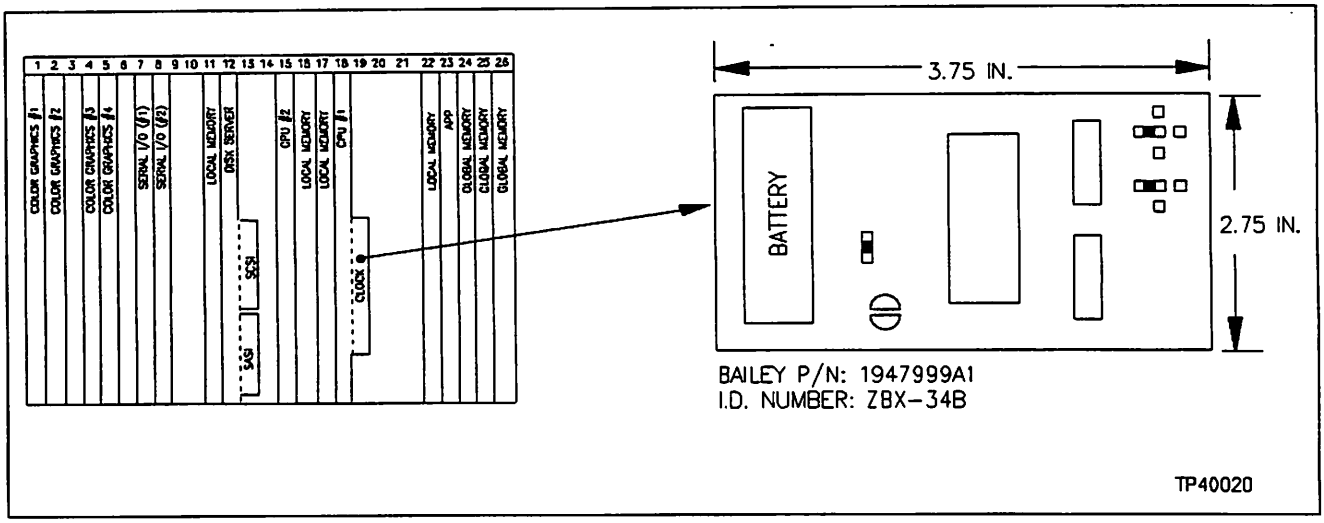

Figure 3-10. Clock Calendar Card

Global Memory Card - I.D. Number: PSM-2P

Bailey P/N - 6637446_7 - Global Memory Card 1
6637446_8 - Global Memory Card 2
6637446_9 - Global Memory Card 3

Global Memory cards provide memory accessible by the entire MCS system. Two versions are currently in use: I.D. Number PSM-2P and INTEL SBC020EX (Figure 3-11 and 3-12). Three cards are required, and may consist of either version. Configure the cards by setting jumpers and dipswitches.

NOTE: Where both types of Global Memory Cards are present, the same type must be grouped side-by-side, in contiguous memory locations. For the Intel SBC020EX, the E15 - E16 jumper (Figure 3-12) must be installed in the memory card in the highest address range. For example, if an Intel SBC020EX is installed in slot 24 and slot 25, and a PSM-2P is installed in slot 26, the Intel SBC020EX in slot 25 requires a jumper on E15 - E16.

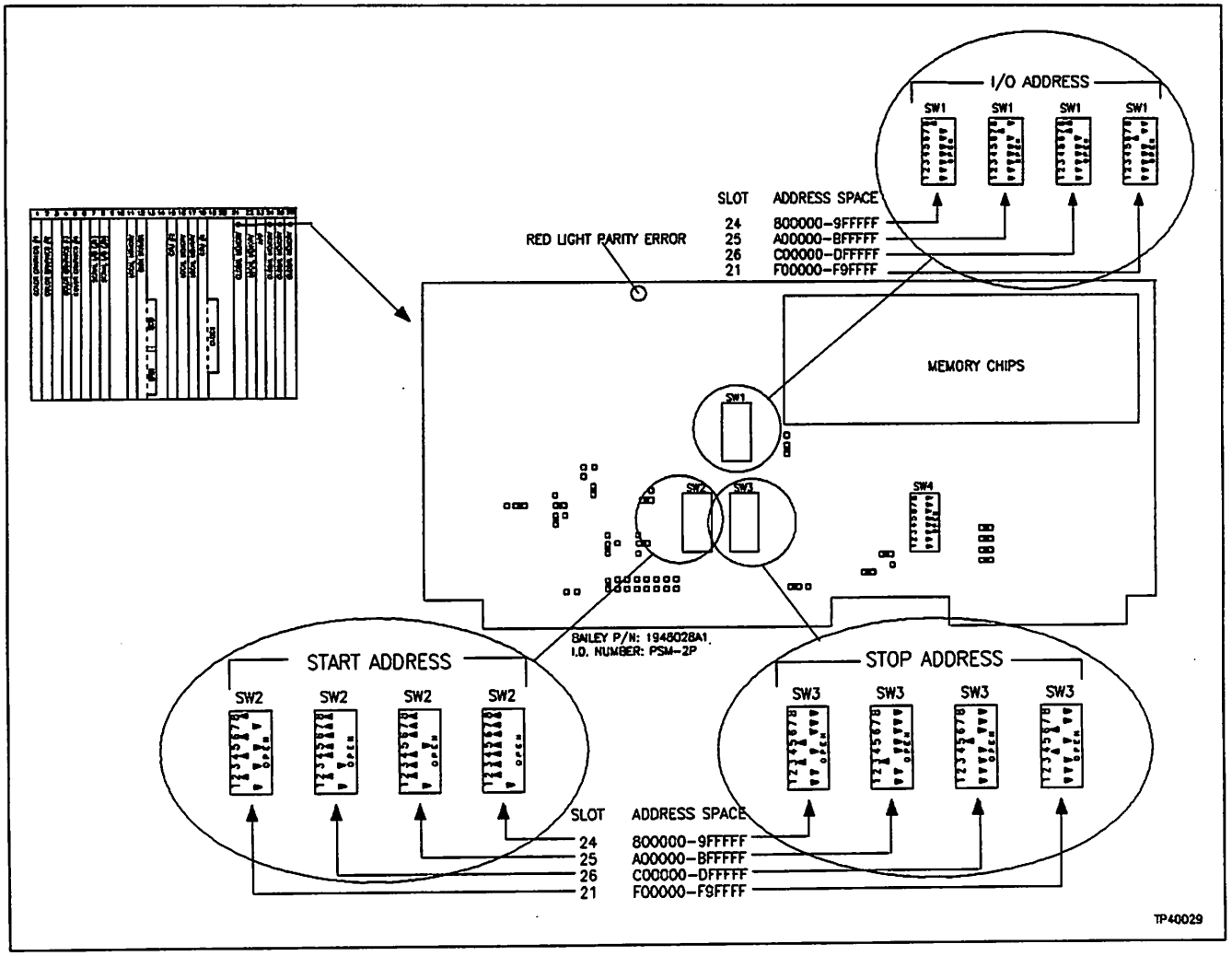

Figure 3-11. 2 Megabyte RAM Memory Card (ID Number PSM-2P)

Figure 3-28 shows the required jumper configuration for the VERTEX hard disk drive.

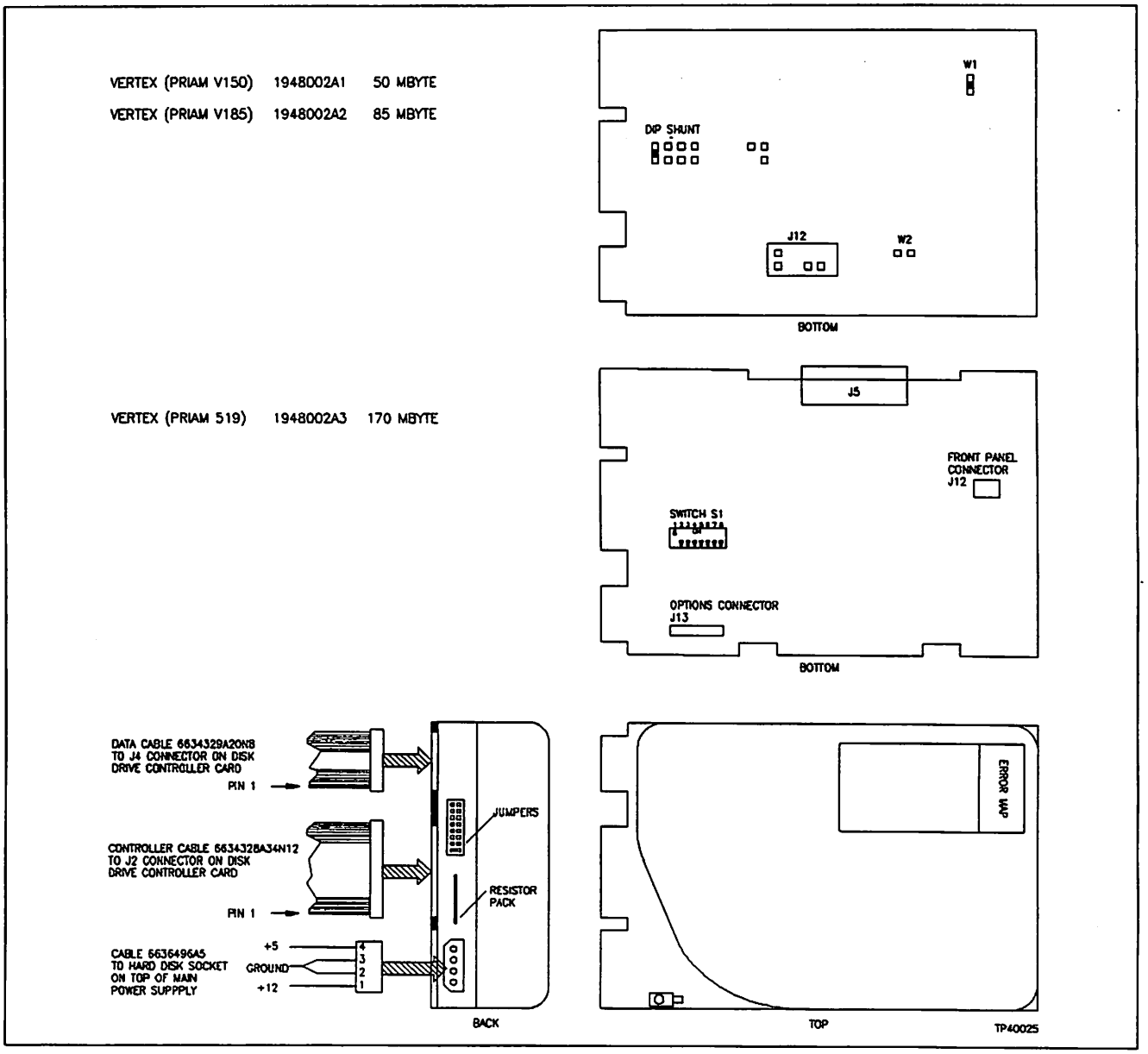

Figure 3-28. VERTEX (PRIAM) Hard Disk Drive

Figure 3-29 shows the required jumper configuration for the PRIAM V185A hard disk drive.

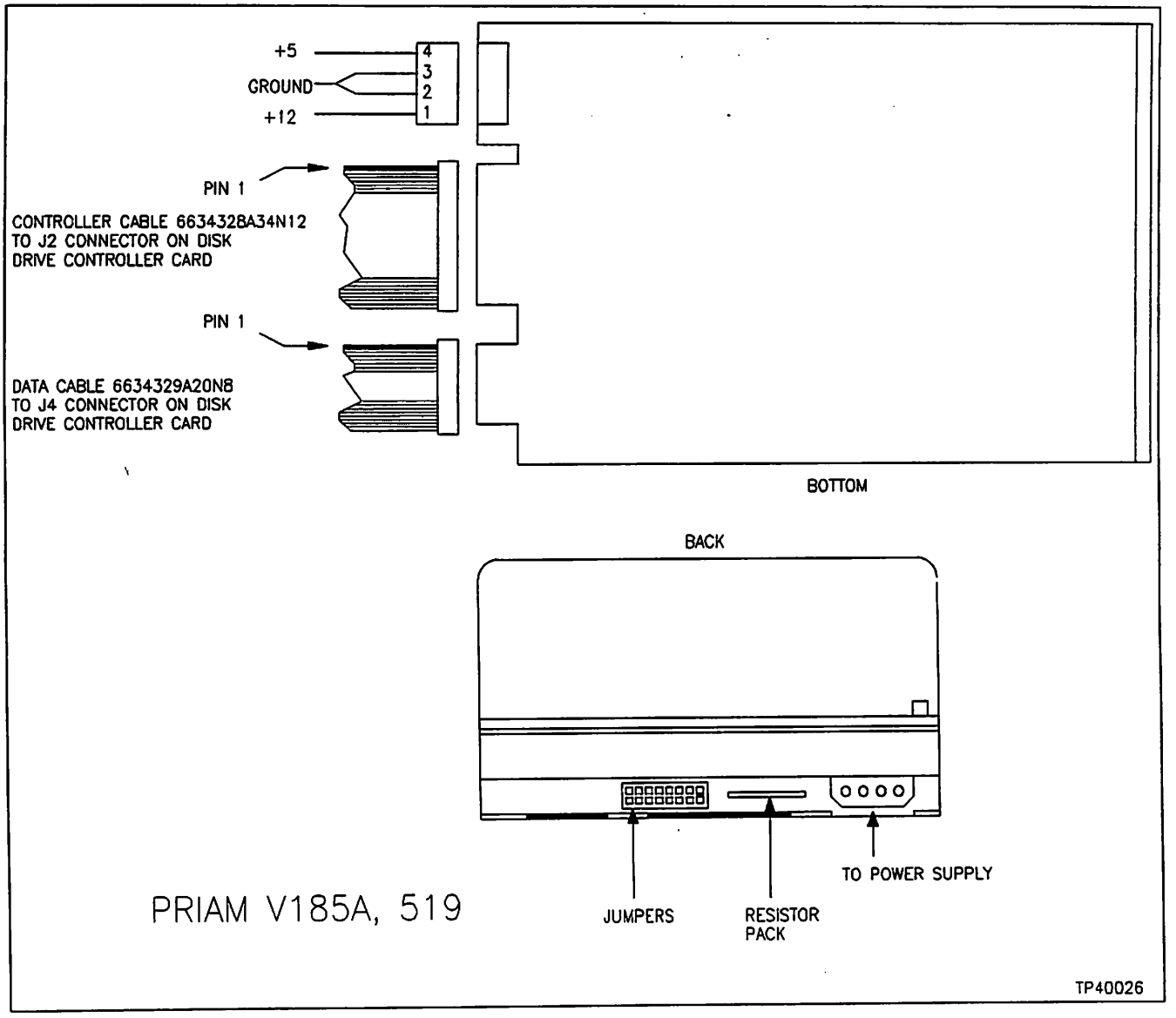

Figure 3-29. PRIAM V185A Hard Disk Drive

Color Graphics cards drive MCS monitors. Each additional MCS monitor requires a Color Graphics Card. Each card must be configured by setting jumpers. Refer to Figure 4-3 for card locations and jumper settings. Refer to COLOR MONITOR(S) of this section for monitor wiring connections.

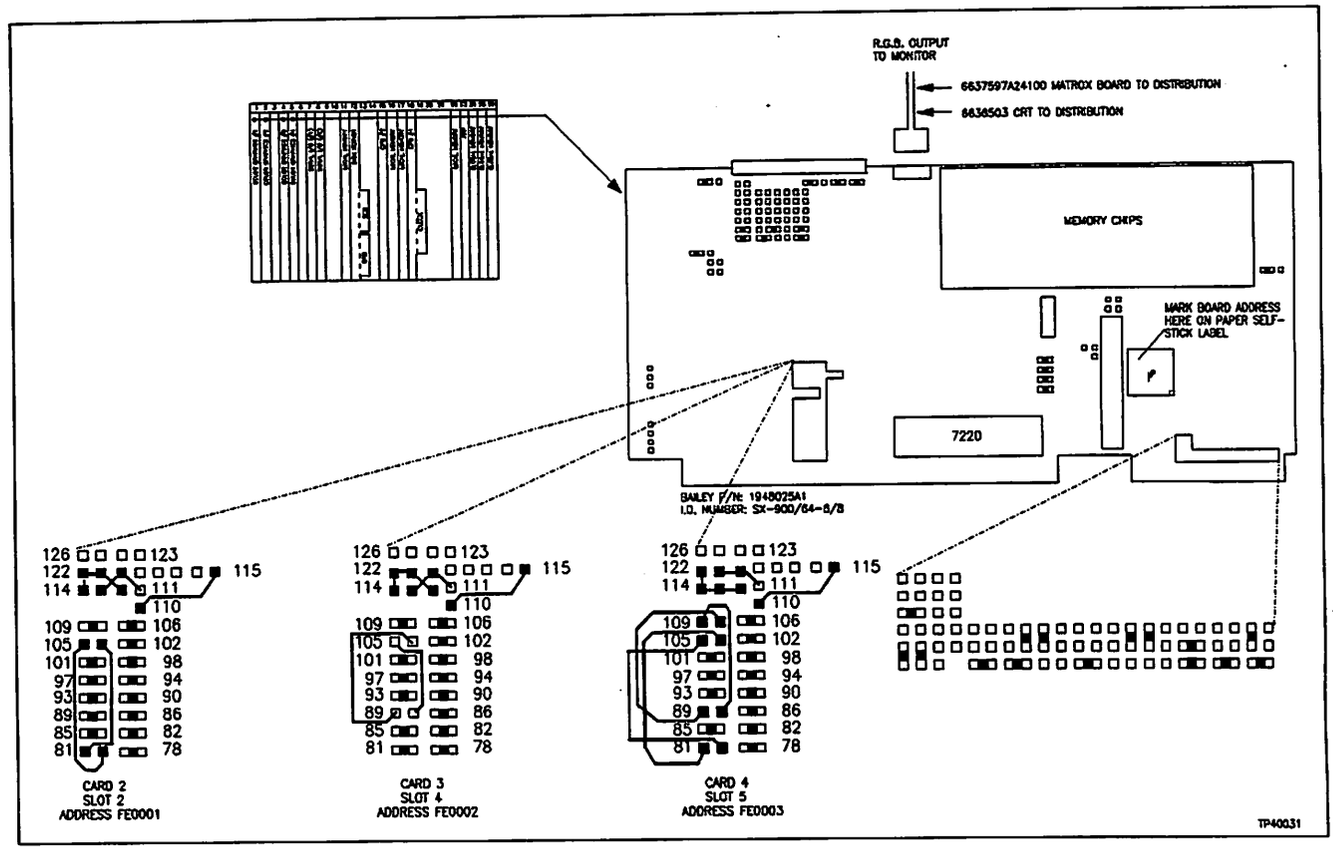

Figure 4-3. Location and Configuration of Color Graphics Controller Cards

COLOR MONITOR(S)

Adding additional color monitors is model dependent. Refer to Table 4-3 for a list of available color monitor options.

A second color monitor requires adding a second color graphics card. Refer to **COLOR GRAPHICS CARD(S)** in this section for card cage location and configuration information. Slide the card into place and secure the two front latches. Plug the RGB inputs line into the socket on the front of the card. Connect the separate Red, Green, and Blue lines to the appropriate points on the back of the I/O distribution board. Next, connect the cable assembly from the front of the I/O distribution board, to the corresponding receptacles on the back of the color monitor. Plug the monitor power line into the proper socket on the AC distribution board.

The procedure for additional monitors is similar to that for adding a second one. Each monitor requires a separate color graphics card.

> NOTE: If remote CRTs are being installed, insure they are powered using the same polarized power and ground as the MCS to prevent ground loops. Failure to do so may cause display distortion. If ground loops are still suspected, use of optically isolated modems will eliminate the problem.

Table 4-3. Color Monitor Options

Bailey P/N	Description
NCRT01 NCRT02	19" CRT table top with keyboard 19" CRT console with keyboard
NCRT03 NCRT04	Stand-up (environmental) unit with 19" CRT and keyboard Two 19" CRTs with one keyboard
NCRT05 NCRT06	19" CRT table top - no keyboard 19" CRT panel mountable - no keyboard
NCRT09	19" CRT in NUCC01 - no keyboard (NCRT02 w/o keyboard)

A maximum of four printers may be added to the MCS. Refer to I/O DISTRIBUTION BOARD in Section 3 for socket allocation. Plug the printer into the appropriate I/O Distribution Board socket. Printers supported are:

GENICOM 3410 with firmware 506111, 507256 respectively

GENICOM 3404 with firmware 00403293

GENICOM 4440 model B with firmware 44A512090

NOTES:
1. For distances over 100 feet, optical modems (using up to 1000 feet of fiber optic cable) are required.

2. Emulation Mode may be either IBM or GENICOM: ANSI x3.64.

3. The line cord must have isolated safety ground referenced to the same point as the main MCS electronics safety ground, without connection to conduit/structural ground. Receptacles must be isolated ground duplex (e.g. Pass and Seymour IG6200 or equivalent).

Attaching Cables

1. Attach one end of cable NKMR01 to the printer's DB25 serial connector.

2. Attach the remaining end to the MCS/MED Terminal Panel. Tighten hood screws.

3. Turn printer power on.

4. Press the ONLINE button to obtain LOCAL Mode.

5. Press and hold the PROGRAM button to obtain the current set-up.

6. If the set-up does not agree with the following set-ups, change the appropriate function by setting numbers accordingly.

```
The Present Configuration is: (00506111)
1. Font:
   Style - (44_506153) Draft
   CPI - 12.0
   Country - USA
   Mode - Normal
2. LPI - 6
3. Forms Control:
   Form Length - 11.0"
   Top Margin - 0.0"
   Bottom Margin - 0.0"
4. Interface Control:
   Interface Type - Serial
   Input buffer length 0512
   Interface Straps A:
   0         1         2         3
   12345678901234567890123456789012
   00001000000010000000100000001000
   Interface Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000000000000000000000000000000
   Speed - 9600
   Parity - Space
5. Margin Settings
   Left Margin - 0.0"
   Right Margin - 13.6"
6. Horizontal Tab Stops:
   None
7. Vertical Tab Stops
   None
8. Printer Control Straps:
   Printer Straps A:
   0         1         2         3
   12345678901234567890123456789012
   10001000101100000000000000000000
   Printer Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000000000000000000000000000000
9. Emulation Mode - IBM
Press the number 0 to return to normal
operation.
To continue modification select (1-8).
```

PRINTER

Bailey_P/N NPRT02 Black and White Printer serial interface
NPRT03 4-Color Ribbon
NPRT05 Black and White Printer, High-Speed Draft

```
GENICOM 3410
FIRMWARE: 507256  RESOLUTION: MED
PRINTHEAD: 18P
1. Font:
   Style - (507339 Draft) 400 CPS 2/144
   CPI - 12.0
   Country - USA
   Mode - Normal
2. LPI - 6
3. Forms Control:
   Form Length - 11.0"
   Top Margin - 0.0"
   Bottom Margin - 0.0"
4. Interface Control:
   Interface Type - Serial
   Input buffer length 0512
   Interface Straps A:
            1         2         3
   12345678901234567890123456789012
   00001000000010000000100000001000
   Interface Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000000000000000000000000000000
   Speed - 9600
   Parity - Space
5. Margin Settings
   Left Margin - 0.0"
   Right Margin - 13.6"
8. Printer Control Straps:
   Printer Straps A:
   0         1         2         3
   12345678901234567890123456789012
   10001000101100000000000000000000
   Printer Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000000100000000000000000000000
9. Emulation Mode - IBM
Press the number 0 to return to normal
operation.
To continue modification select (1-9).
```

```
GENICOM 3410
FIRMWARE: 507256 RESOLUTION: MED
PRINTHEAD: 18P
1. Font:
   Style - (507339 DP) 400 CPS 2/144
   CPI - 12.0
   Country - USA
   Mode - Normal
2. LPI - 6
3. Forms Control:
   Form Length - 11.0"
   Top Margin - 0.0"
   Bottom Margin - 0.0"
4. Interface Control:
   Interface Type - Serial
   Input buffer length 0512
   Interface Straps A:
   0         1         2         3
   12345678901234567890123456789012
   00001000000010000000100000001000
   Interface Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000000000000000000000000000000
   Speed - 9600
   Parity - Space
5. Margin Settings
   Left Margin - 0.0"
   Right Margin - 13.6"
6. Horizontal Tab Stops:
   None
7. Vertical Tab Stops:
   None
8. Printer Control Straps:
   Printer Straps A:
   0         1         2         3
   12345678901234567890123456789012
   10001000101100000000000000000000
   Printer Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000000100000000000000000000001
9. Emulation Mode - GENICOM: ANSI X3.64
Press the number 0 to return to normal
operation.
To continue modification select (1-9).
```

```
GENICOM
FIRMWARE: 506895 RESOLUTION: HI
PRINTHEAD: 9
1. Font:
   Style - (44A506864) DP
   CPI - 12.0
   Country - USA
   Mode - Normal
2. LPI - 6
3. Forms Control:
   Form Length - 11.0"
   Top Margin - 0.0"
   Bottom Margin - 0.0"
4. Interface Control:
   Interface Type - Serial
   Input buffer length 0512
   Interface Straps A:
   0         1         2         3
   12345678901234567890123456789012
   00011000000010000000100000001000
   Interface Straps B:
   0         1         2         3
   12345678901234567890123456789012
   11100000000000000000000000000000
   Speed - 9600
   Parity - None
5. Margin Settings
   Left Margin - 0.0"
   Right Margin - 13.6"
8. Printer Control Straps:
   Printer Straps A:
   0         1         2         3
   12345678901234567890123456789012
   10001000111100000000000000000000
   Printer Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000100110010000011000000000000
9. Emulation Mode - IBM
Press the number 0 to return to normal
operation.
To continue modification select (1-9).
```

```
GENICOM 3310
FIRMWARE: 506895 RESOLUTION: HI
PRINTHEAD: 9
1. Font:
   Style - (44A506864) DP
   CPI - 12.0
   Country - USA
   Mode - Normal
2. LPI - 6
3. Forms Control:
   Form Length - 11.0"
   Top Margin - 0.0"
   Bottom Margin - 0.0"
4. Interface Control:
   Interface Type - Serial
   Input buffer length 0512
   Interface Straps A:
   0         1         2         3
   12345678901234567890123456789012
   00011000000010000000100000001000
   Interface Straps B:
   0         1         2         3
   12345678901234567890123456789012
   11100000000000000000000000000000
   Speed - 9600
   Parity - None
5. Margin Settings
   Left Margin - 0.0"
   Right Margin - 13.6"
8. Printer Control Straps:
   Printer Straps A:
   0         1         2         3
   12345678901234567890123456789012
   10001000111100000000000000000000
   Printer Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000100010010000011000000000000
9. Emulation Mode - GENICOM: ANSI X3.64
Press the number 0 to return to normal
operation.
To continue modification select (1-9).
```

PRINTER

Bailey_P/N NPRT02 Black and White Printer serial interface
NPRT03 4-Color Ribbon
NPRT05 Black and White Printer, High-Speed Draft

GENICOM 3404
THE PRESENT CONFIGURATION IS:
(00403293)

1. Font:
   Style - Draft
   CPI - 12.0
   Country - USA
   Mode - Normal
   Ribbon Type - Process
2. LPI - 6
3. Forms Control:
   Form Length - 11.0"
   Top Margin - 0.0"
   Bottom Margin - 0.0"
4. Interface Control:
   Interface Type - Serial
   Speed - 9600
   Parity - None
   Interface Straps:

```
0         1         2         3
12345678901234567890123456789012
00001000000010000000100000001000
```

5. Margin Settings
   Left Margin - 0.0"
   Right Margin - 13.6"
6. Horizontal Tab Stops:
   None
7. Vertical Tab Stops:
   None
8. Printer Control Straps:

```
0         1
1234567890123456
1000100011110000
```

Press the number 0 to return to normal operation.
To continue modification select (1-8).

NOTE: Will print color only if ribbon type is Process.

GENICOM 4440
THE PRESENT CONFIGURATION IS:
(44A512090 SY - 44A512091 IM)

1. Font:
   Style - 44A512091 Data Processing
   CPI - 12.0
   Country.- USA
   Mode - Normal
   Horizontal Expansion - X1
   Vertical Expansion - X1
2. LPI - 6 lpi
3. Forms Control (inches):
   Form Length - 11.0
   Top Margin - 0.0
   Bottom Margin - 0.0
4. Interface Control:
   Interface Type - Serial
   Input buffer length 2816
   Interface Straps A:

```
0         1         2         3
12345678901234567890123456789012
00011011000010100000101000001000
```

   Interface Straps B:

```
0         1         2         3
12345678901234567890123456789012
11000000000000000000000000000000
```

   Speed - 9600
   Parity - Odd
5. Margin Settings (columns):
   Left Margin - None
   Right Margin - 132
6. Horizontal Tabs (columns):
   None
7. Vertical Tab Stops (inches):
   Default
8. Printer Control Straps:
   Printer Straps A:

```
0         1         2         3
12345678901234567890123456789012
10011000000000010000000000000000
```

   Printer Straps B:

```
0         1         2         3
12345678901234567890123456789012
00000100000000000000000000000000
```

9. Emulation Mode - ANSI X3.64

Options: None
Press the number 0 to return to normal operation.
To continue modification select (1-9).

```
GENICOM 4440
THE PRESENT CONFIGURATION IS: (44A507470 SY
- 44A507471 IM)
1. Font:
   Style - 44A507471 Data Processing
   CPI - 12.0
   Country - USA
   Mode - Normal
   Horizontal Expansion - X1
   Vertical Expansion - X1
2. LPI - 6 lpi
3. Forms Control (inches):
   Form Length - 11.0
   Top Margin - 0.0
   Bottom Margin - 0.0
4. Interface Control:
   Interface Type - Serial
   Input buffer length 2997
   Interface Straps A:
   0         1         2         3
   12345678901234567890123456789012
   00011011000010100000101000001000
   Interface Straps B:
   0         1         2         3
   12345678901234567890123456789012
   11000000000000000000000000000000
   Speed - 9600
   Parity - Even
5. Margin Settings (columns):
   Left Margin - None
   Right Margin - 132
6. Horizontal Tabs (columns):
   None
7. Vertical Tab Stops (inches):
   Default
8. Printer Control Straps:
   Printer Straps A:
   0         1         2         3
   12345678901234567890123456789012
   00000000000000000011000001001010
   Printer Straps B:
   0         1         2         3
   12345678901234567890123456789012
   00000000000000000000000000000000
9. Emulation Mode - ANSI X3.64
Options: None
Press the number 0 to return to normal
operation.
To continue modification select (1-9).
```

REDUNDANCY TRANSFER SWITCH
Bailey P/N - NMRT01

Description
The MCS Redundancy Transfer Switch (MRT) is used to switch control of four keyboards, four monitors, and two line printers between one of two Management Command System Driver Electronics (Figure 4-10).

The switch is a 5" x 19" x 9" open box with two circuit boards and a power supply. It is designed to mount on a standard 19 inch EIA rack. The NMRT01 replaces the I/O Distribution Board and is mounted in the same location. It mounts inside the NMED01 driver cabinet, or in the NMCS01 with rack adapters.

The MRT provides a fail safe configuration mode which transfers all peripherals to the secondary MCS driver cabinet should the primary fail.

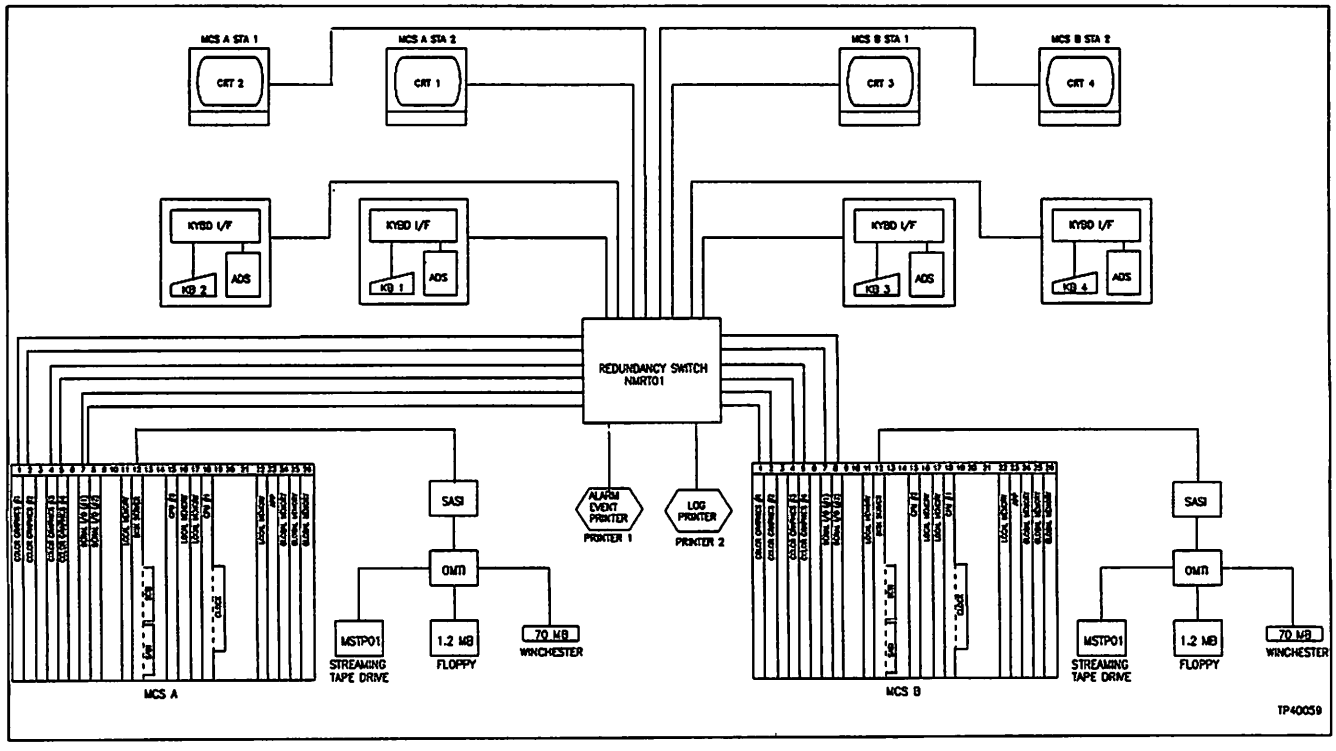

Figure 4-10. MCS Hardware Configuration Using the NMRT01

If MCS Software revision K.0 and the EMKI keyboard controller is installed, an on-line calibration utility is provided. Refer to the MCS Operation and Configuration Manual E93-901-21 for information on the use of this utility.

NOTE: The ROM label on the touch screen controller board must have the checksum 1448. If this checksum number is not on the ROM label, contact your nearest Bailey Service representative to obtain an update.

1. When the controller is sent the proper command, two 4-digit values representing the X and Y coordinates where the screen was touched will be displayed on the terminal. If the controller was retrofit to a three wire touch screen, these values may either not display or may display twice for each touch of the screen. If this is the case, the touchdown sensitivity potentiometer should be adjusted. The touchdown sensitivity potentiometer is on the touch screen controller board, and is shown in Figure 4-24.

To adjust, turn counter clockwise until the count will not display on the terminal, then clockwise until displayed, and two turns further to assure proper operation.

2. To calibrate, type **%C** (upper case C) on the terminal. Call up a grid showing display active area edges, then touch in succession the lower left (0000,0000), then upper right (3600,3600) edges of the active area. Type **%C** and re-calibrate as required. New calibration constraints will be generated, and stored in the controller board's non-volatile memory.

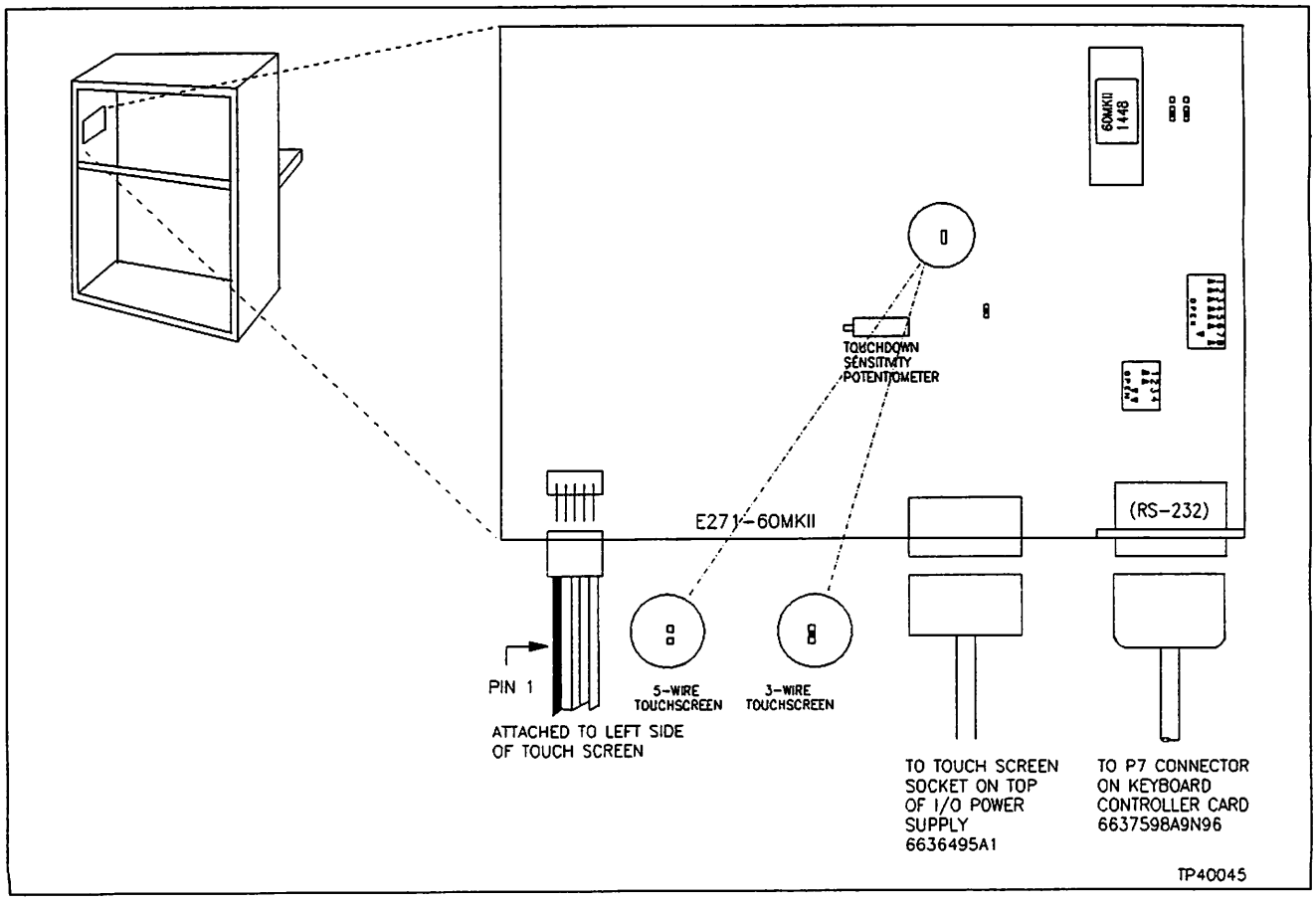

Figure 4-24. Touch Screen Controller Card - I.D. Number E271-60MKII

TOUCH SCREEN

Calibration - Touch Screen Controller I.D. Number E271-60 (1947027_1)

1. Adjust X ZERO (R3) and Y ZERO (R4) controls to get the XXXX,YYYY value as close to **0000,0000** as possible. Do not use the General Functions Menu to adjust your touch screen.

2. Touch the lower left corner of the screen. The test terminal should start displaying a stream of XXXX, YYYY coordinate pairs.

3. Touch the upper, right-hand corner of the screen. Adjust the X-GAIN (R2) and Y-GAIN (R1) controls to get a count of 3600,3600.

4. Repeat steps 1 through 3 at least two times, to **dial-in** the screen as close as possible.

5. After setting the **zero** and **max** points for the screen, try touching the screen at points 25%, 50% and 75% along the X and Y directions. Verify that for each of these points, the reading is approximately what is expected (900, 1800, and 2700 respectively). The required accuracy for this calibration is:

- X zero -0%, +2%0 = 0 to 72 (min)
- Y zero -0%, +2%0 = 0 to 72 (min)
- X max -2%, +2%3600 =3528 to (full) 3672
- Y max -2%, +2%3600 = 3528 to (full) 3672

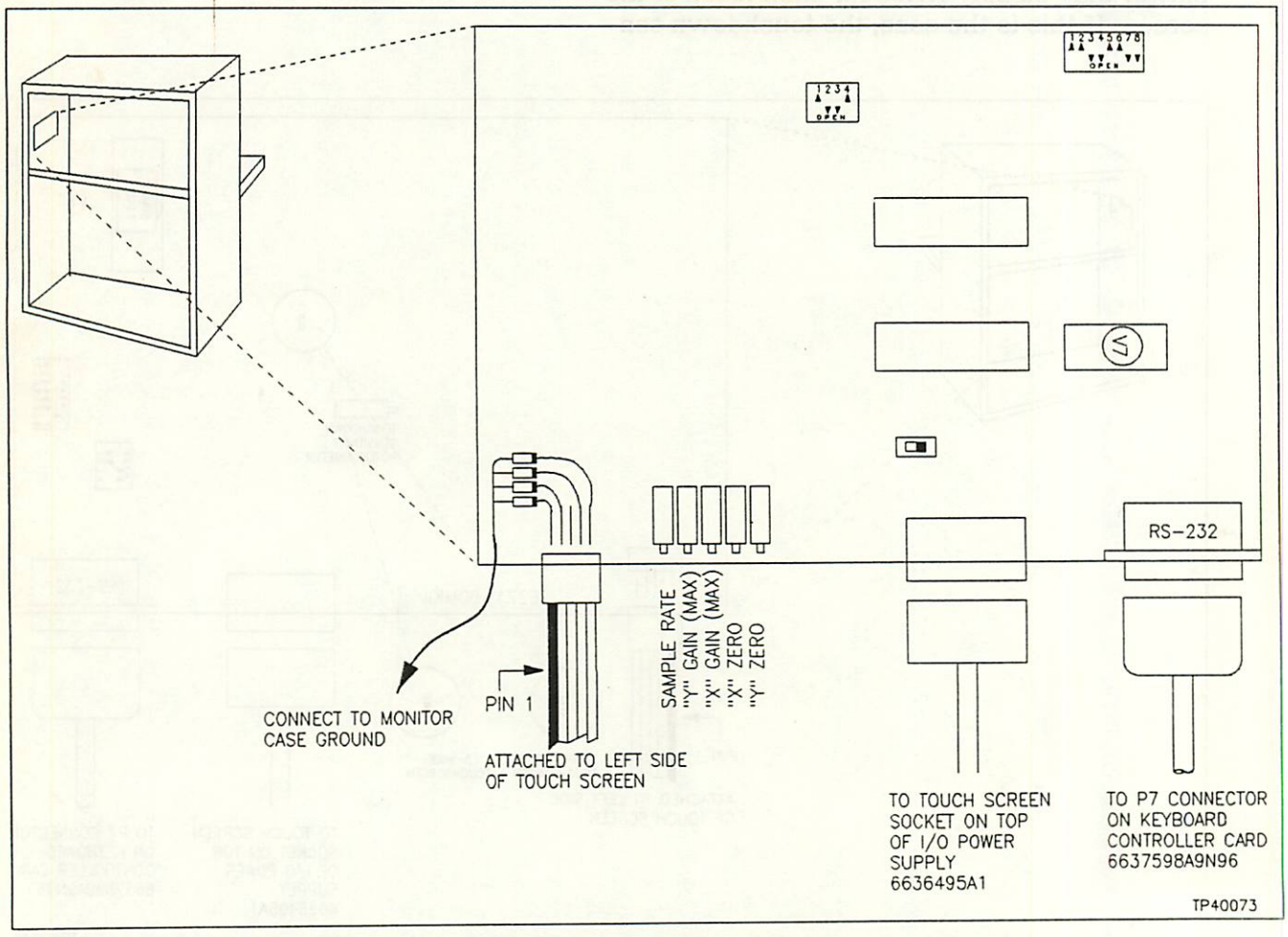

Figure 4-25. Touch Screen Controller Card - I.D. Number E271-60

SECTION 6 – SERVICE AND NEW PARTS

Bailey Controls is always ready to assist its customers in the operation and repair of its products. Requests for sales and/or application services along with installation, repair, overhaul and/or maintenance contract services should be directed to your nearest Bailey sales/service office.

Replacement Parts and Ordering Instructions

If the user wants to make repairs at his facility, replacement parts should be ordered through a Bailey sales/service office. We request that the following information be provided when ordering parts:

1. Part description, part number, and quantity.

2. Model and serial (if applicable) number(s) and ratings of the assembly for which the part has been ordered.

3. Bailey publication number and reference used in identifying the part.

When ordering parts from Bailey, we request that part numbers and part descriptions from respective Renewal Parts sections of pertinent equipment manuals be used. Parts which do not have a commercial description provided must be ordered from your nearest Bailey sales/service office. Recommended spare parts lists, including prices, on standard assemblies are also available through your nearest Bailey sales/service office.

Training

Bailey Controls has a modern training center, equipped to provide service and repair instruction, which is available for in-plant training of customer personnel. Specific information regarding course content and scheduling can be obtained from your nearest Bailey sales/service representative.

Technical Documentation

Price and delivery of additional copies of this publication can be obtained through your nearest Bailey sales/service office.

Table 6-1 is a list of the recommended spare parts for the MCS. Bailey suggests a stock supply of one item each to minimize the duration and cost of down-time in case of component failure. A manual reference for each part is given to quickly locate important service or installation information.

Table 6-2 is a list of the recommended spare parts if you have the optional **NMED01** Remote Electronics Cabinet. Bailey suggests one item each be maintained in your stock supply.

Table 6-3 is a list of the recommended spare parts if your MCS has the optional **touch screen.** Bailey suggests one item each be maintained in your stock supply.

Table 6-1. MCS Recommended Spare Parts List

Description	Part No.
Air Filter	199914_22
Bus Transfer Module	NBTM01
Card Cage	1948017_1
Clock Calendar Card	1947999_1
Color Graphics Controller Card	1948025_1
Color Monitor	6636994_1
CPU Card 1	6637033_2
CPU Card 2	6637033_3
Disk Server Card	6637033_4
Fan Assembly	6634988_1
Floppy Disk Drive	1948018_1
Fuse, 3.0 amp Utility AC	194776_13001
Hard Disk Drive	1948002_1
80 Megabytes	1948002_2
190 Megabytes	1948002_3
High Speed IC Assembly	1947692_148
Interface PCB Assembly	6637273_1
Keyboard Controller:	
MKI	6636278_1
EMKI	6637517_1
Keyboard Assembly	6636166_2
Loop Interface Module	NLIM02
Loop Interface Slave	NLIS01
Loop Storage Module	NLSM02
Global 2 MEG RAM	1948028_1
Private 2 MEG RAM	1948022_1
OMTI Disk Controller	1948013_1
Power Supply Assebly I/O	6636374_1
Power Supply Assembly Main	6636444_1
Local Memory Card	6637447_1
Reset Assembly	6636410
Intelligent Serial Interface Card	1948021_2
SASI Interface Module	1948023_1
Superloop Storage Module	NSSM01
Termination Unit Communication Link	NTCL01
Varistor:	
150 VAC	6634333_1
240 VAC	6634333_2
Optional NMED01 Remote Electronics Cabinet:	
Power Entry Panel[1]	6637587_1
Termination Modules Communication Link[1]	NICL01
Optional touch screen:	
Touch Screen	1948026_1
Touch Screen Controller Card	1948027_2

1. Bailey suggests one item each be maintained in your stock supply.

For a complete list of licensees, representatives and affiliates in over 50 countries worldwide, contact . . .

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