VME10
INSTALL
GUIDE

MOTOROLA

VME/10
Microcomputer System
Installation Guide

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VME/10

MICROCOMPUTER SYSTEM

INSTALLATION GUIDE

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WARNING

THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY. THIS EQUIPMENT HAS BEEN TESTED AS A CLASS A COMPUTING DEVICE AND HAS BEEN FOUND TO COMPLY WITH PART 15 OF FCC RULES. HOWEVER, OPERATION OF THIS EQUIPMENT MAY CAUSE INTERFERENCE, IN WHICH CASE THE USER, AT HIS OWN EXPENSE, WILL BE REQUIRED TO TAKE WHATEVER MEASURES MAY BE REQUIRED TO CORRECT THE INTERFERENCE.

First Edition

SAFETY SUMMARY
SAFETY DEPENDS ON YOU

The following general safety precautions must be observed during all phases of operation, service, and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment. Motorola Inc. assumes no liability for the customer's failure to comply with these requirements. The safety precautions listed below represent warnings of certain dangers of which we are aware. You, as the user of the product, should follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

GROUND THE INSTRUMENT.

To minimize shock hazard, the equipment chassis and enclosure must be connected to an electrical ground. The equipment is supplied with a three-conductor ac power cable. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter, with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable meet International Electrotechnical Commission (IEC) safety standards.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE.

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS.

Operating personnel must not remove equipment covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE.

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

USE CAUTION WHEN EXPOSING OR HANDLING THE CRT.

Breakage of the Cathode-Ray Tube (CRT) causes a high-velocity scattering of glass fragments (implosion). To prevent CRT implosion, avoid rough handling or jarring of the equipment. Handling of the CRT should be done only by qualified maintenance personnel using approved safety mask and gloves.

DO NOT SUBSTITUTE PARTS OR MODIFY EQUIPMENT.

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification of the equipment. Contact Motorola Microsystems Warranty and Repair for service and repair to ensure that safety features are maintained.

DANGEROUS PROCEDURE WARNINGS.

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed. You should also employ all other safety precautions which you deem necessary for the operation of the equipment in your operating environment.

WARNING

Dangerous voltages, capable of causing death, are present in this equipment. Use extreme caution when handling, testing, and adjusting.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

GENERAL INFORMATION

CHAPTER 1

GENERAL INFORMATION

1.1 INTRODUCTION

This installation guide provides general information, VME/10 installation, I/Omodule expansion card cage, and VME+I/Omodule expansion card cage equipment installation information for the VME/10 Microcomputer System (hereafter referred to as VME/10) as shown in Figure 1-1. Included in this chapter are the unpacking instructions, equipment supplied listing, and equipment specifications necessary for the user to unpack and install the VME/10.

1.2 UNPACKING INSTRUCTIONS

NOTE

If shipping cartons are damaged upon receipt, request carrier's agent be present during unpacking and inspection of equipement.

Unpack equipment from shipping cartons. Refer to packing list and verify that all items are present. Save packing material for storing or reshipping the equipment.

1.3 SYSTEM EQUIPMENT SUPPLIED

The VME/10 Microcomputer System should be inspected for missing or damaged items before attempting installation. Items supplied are listed below:

- Keyboard
- Control unit chassis
- Display unit
- Keyboard cable (6-wire cable)
- Chassis power cord (3-wire cable)
- Monitor data cable (14-wire ribbon cable)
- Monitor dc power cable (3-wire cable)
- Tilt/swivel mechanism

Two types of tilt/swivel mechanism are utilized in the production of the VME/10. One type is mounted on the display unit; the other type (first production units) is provided in a kit form which is mounted on the control unit chassis by the user.
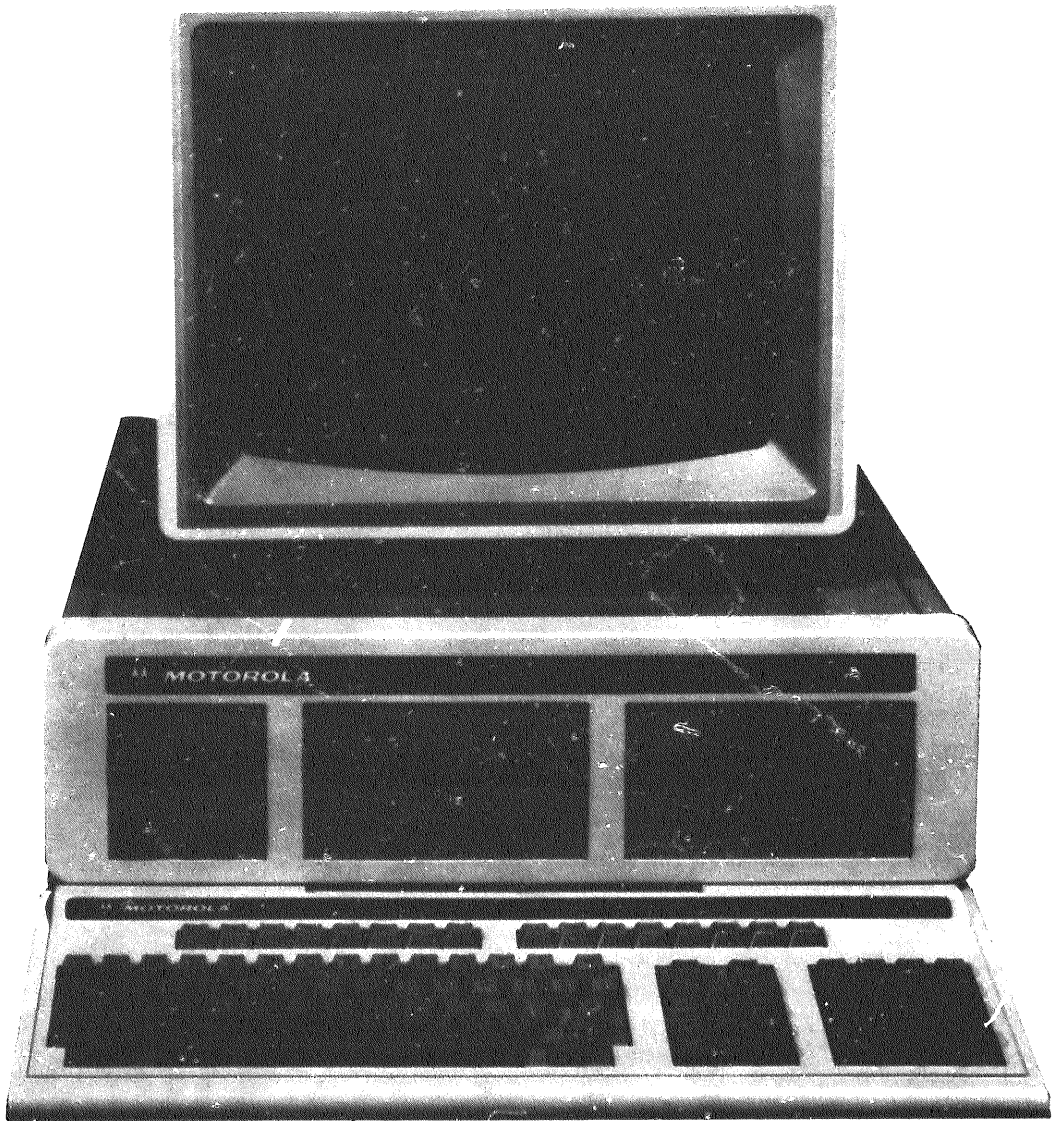
6-83-1537

FIGURE 1-1. Typical VME/10 Microcomputer System

1.4 SPECIFICATIONS

Table 1-1 lists the specifications required for the installation of the VME/10.

TABLE 1-1. VME/10 Specifications

CHARACTERISTIC	SPECIFICATION	
Temperature		
Operating	10° to 40° C	
Storage	-40° to 60° C	
Relative humidity	10% to 80% (noncondensing)	
Physical dimensions	Chassis and monitor	Keyboard
Length	22.8 in. (57.9 cm)	8.3 in. (21.1 cm)
Width	19.0 in. (48.3 cm)	19.0 in. (48.3 cm)
Height	20.0 in. (50.8 cm)	2.0 in. (5.1 cm)
Weight	50 lbs. (23 kg)	5 lbs. (2.3 kg)
Power requirements	90-132 Vac, 47-63 Hz, 500 W	
	180-264 Vac, 47-63 Hz, 500 W	

1.5 RELATED DOCUMENTATION

Documentation applicable to VME/10 installation is as follows:

. Input/Output Channel Specification Manual, M68RIOCS

. VMEbus Specification Manual, MVMEBS

INSTALLATION

CHAPTER 2

VME/10 INSTALLATION

2.1 INTRODUCTION

An area should be selected which enables access to the control unit chassis rear expansion card cage to facilitate cabling of peripheral equipment. Two types of installation procedures are described. The first procedure is for VME/10 equipment having the tilt/swivel mechanism installed on the display unit by the factory. The second procedure is for the 67-W2420B01 Tilt/Swivel Kit to be installed on the control unit chassis by the user.

2.2 INSTALLATION PROCEDURE 1

This system installation procedure pertains to equipment that has the tilt/swivel mechanism installed on the display unit by the factory as shown in Figure 2-1.

10-83-1800

FIGURE 2-1. Display Unit with Tilt/Swivel Mechanism

Perform the installation procedure as follows:

a. Place control unit chassis in desired location.

b. If display unit tilt/swivel mechanism requires tension adjustment, remove four screws that secure tilt/swivel mechanism to display unit. Tension adjustment is accomplished as illustrated in Figure 2-2.
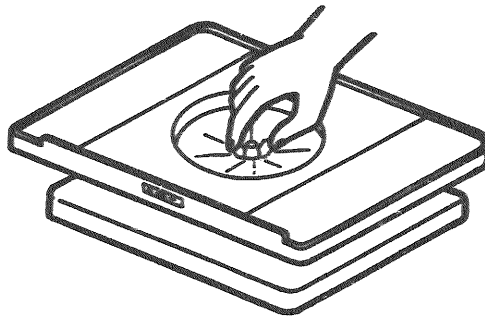
FIGURE 2-2. Display Unit Tilt/Swivel Adjustment

c. Place display unit on top of control unit chassis.

d. Connect one end of the monitor data cable to the display unit connector J1. Use two phillips M3.5 x 0.6 x 10 screws to secure the cable connector to the display unit. Connect the other end of the cable to the control unit chassis connector J3. Use the remaining two phillips M3.5 x 0.6 x 10 screws to secure the cable connector to the control unit chassis.

e. Connect one end of the monitor dc power cable to the display unit connector labeled 24 Vdc. Connect the other end of the cable to the control unit chassis connector labeled 24 Vdc.

f. Connect one end of the keyboard cable to the keyboard rear mounted modular RJ type connector. Connect the other end of the cable to either modular RJ type connector located on the control unit chassis front panel.

g. Connect power cord into the control unit chassis power receptacle.

h. With the control unit chassis power switch placed in the off position (0), connect the power cord to ac power source.

i. Refer to the VME/10 Microcomputer System Overview Manual, Motorola publication number M68KVSOM, for VME/10 system power-up and operating instructions.

2.3 INSTALLATION PROCEDURE 2

The following installation instructions provide the user with the necessary information to install the 67-W2420B01 Tilt/Swivel Kit on a control unit chassis as shown in Figure 2-3. This tilt/swivel kit is designed to mount the display unit to the control unit chassis.
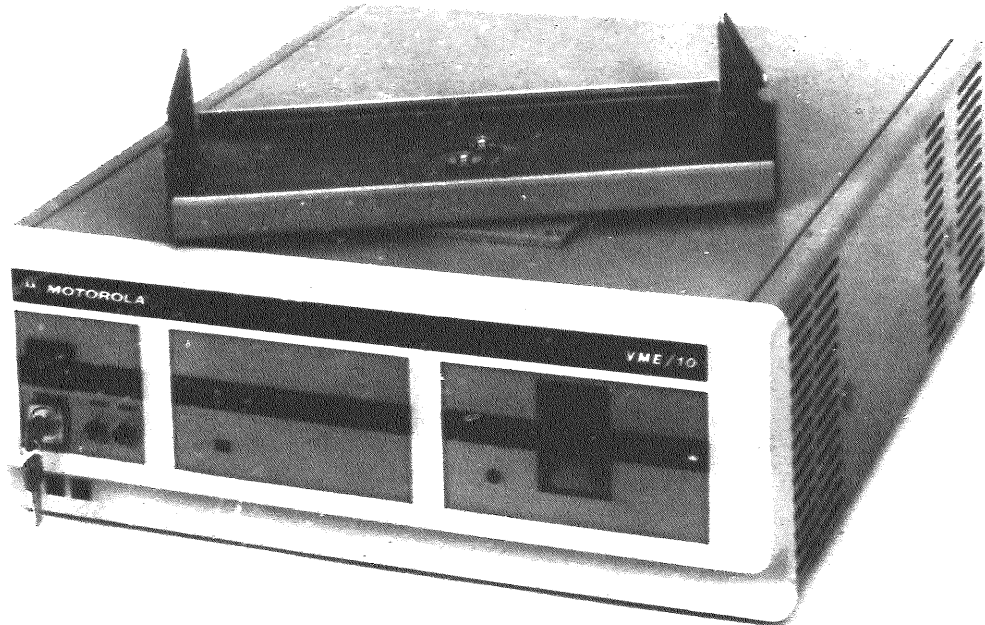
10-83-1799

FIGURE 2-3. Control Unit Chassis with Tilt/Swivel Assembly

2.3.1 Equipment Supplied

The tilt/swivel kit should be inspected for missing or damaged parts before attempting installation. Parts supplied are listed below.

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
1	07-W4472B01	Assembly, tilt/swivel	1
2	03SW994D904	Screw, phillips, M5 x 0.8 x 10	4
3	03SW993D910	Screw, phillips, M3.5 x 0.6 x 10	4

2.3.2 Tilt/Swivel Assembly Installation

The user should read the following procedure completely before starting the installation.

a. Place control unit chassis in desired location.

b. Position tilt/swivel assembly on control unit chassis as shown in Figure 2-4.

c. Install two, item number 2, phillips M5 x 0.8 x 10 screws as shown in Figure 2-4.

d. Position tilt/swivel assembly on control unit chassis as shown in Figure 2-5.

e. Install the remaining two, item number 2, phillips M5 x 0.8 x 10 screws as shown in Figure 2-5.

f. Lubricate tilt/swivel brackets as shown in Figure 2-6. An all purpose lubricant, such as Lubriplate number 23-2S or equivalent, is recommended.

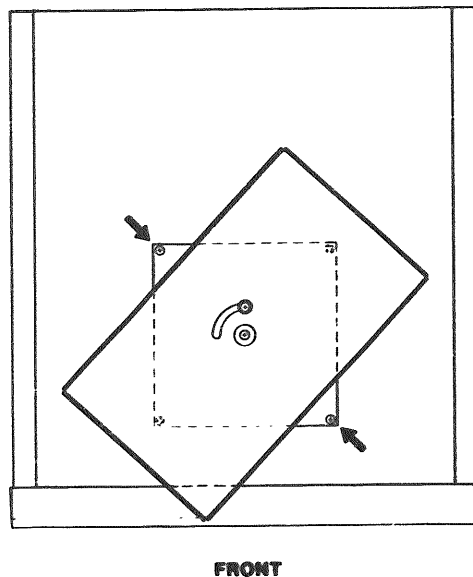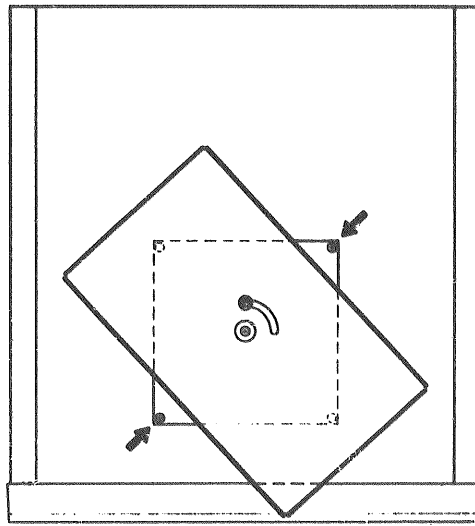g. Proceed to the display unit installation instructions.

FRONT

FIGURE 2-4. Control Unit Chassis Tilt/Swivel Assembly Position 1

FRONT

FIGURE 2-5. Control Unit Chassis Tilt/Swivel Assembly Position 2

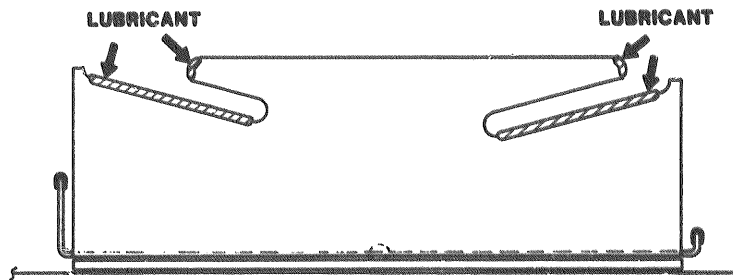LUBRICANT   LUBRICANT

FIGURE 2-6. Control Unit Chassis Tilt/Swivel Assembly Lubrication

2.3.3 Display Unit Installation

Upon completion of the tilt/swivel assembly installation, the display unit is mounted to the control unit chassis (via the tilt/swivel assembly) as follows:

NOTE

Underside of display unit contains two
channels where tilt/swivel brackets are
inserted.

a. Loosen display unit cover screws (two per side) closest to front monitor bezel. This enables easy insertion of the tilt/swivel bracket into the display unit.

b. Position display unit over tilt/swivel bracket as shown in Figure 2-7. Align screw position over bracket channel as depected in illustration.

c. Insert display unit onto tilt/swivel brackets and slide display unit forward as shown in Figure 2-8.

NOTE

While sliding display unit forward,
display unit will drop into the
forward tilt/swivel bracket channels.

d. Push display unit down as shown in Figure 2-9. Display unit is now properly inserted into the tilt/swivel assembly.

e. Tighten display unit cover screws (two per side) closest to front monitor bezel to obtain the desired display unit tilt adjustment tension.
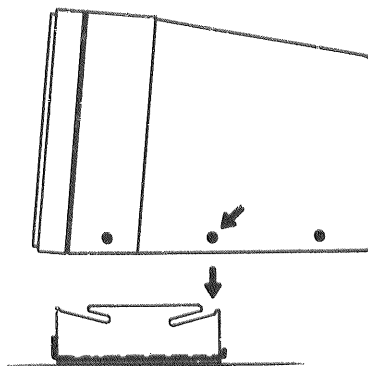
FIGURE 2-7. Display Unit Installation Step 1
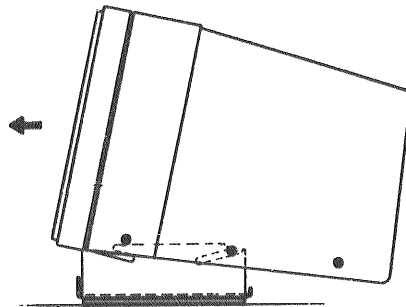
FIGURE 2-8.   Display Unit Installation Step 2
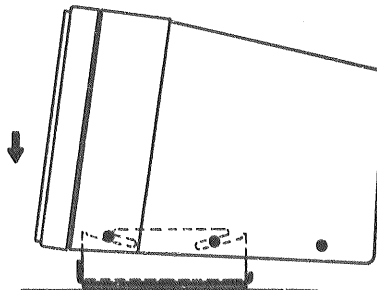
FIGURE 2-9.   Display Unit Installation Step 3

2.3.4   System Cabling Installation

Upon completion of the display unit installation, system cabling is installed as
follows:

    a. Connect one end of the monitor data cable to the display unit connector
        J1.   Use two, item number 3, phillips M3.5 x 0.6 x 10 screws to secure
        the cable connector to the display unit.   Connect the other end of the
        cable to the control unit chassis connector J3.   Use the remaining two,
        item number 3, phillips M3.5 x 0.6 x 10 screws to secure the cable
        connector to the control unit chassis.

b. Connect one end of the monitor dc power cable to the display unit connector labeled 24 Vdc. Connect the other end of the cable to the control unit chassis connector labeled 24 Vdc.

c. Connect one end of the keyboard cable to the keyboard rear mounted modular RJ type connector. Connect the other end of the cable to either modular RJ type connector located on the control unit chassis front panel.

d. Connect power cord into the control unit chassis power receptacle.

e. With the control unit chassis power switch placed in the off position (O), connect the power cord to ac power source.

f. Refer to the VME/10 Microcomputer System Overview Manual, Motorola publication number M68KVSOM, for VME/10 system power-up and operating instructions.

2.3.5 Display Unit Positioning

The display unit can be positioned on the control unit chassis by grasping the front part of the display unit as shown in Figure 2-10. Slight downward thumb pressure tilts the display unit downward. Lifting upwards tilts the display unit upwards.

<u>NOTE</u>

Display unit tilt adjustment tension is accomplished by loosening/tightening of the display unit cover screws (two per side) closest to front monitor bezel.
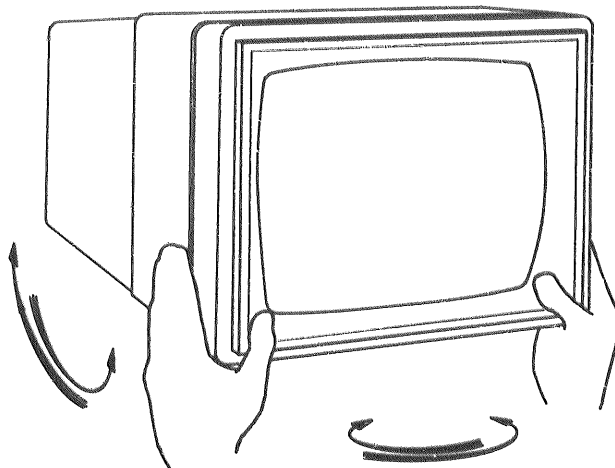
FIGURE 2-10. Display Unit Positioning

CHAPTER 3

I/Omodule EXPANSION CARD CAGE EQUIPMENT INSTALLATION

3.1 INTRODUCTION

This chapter describes the I/Omodule expansion card cage installed in the VME/10 as shown in Figure 3-1. Two most common VME/10 peripheral equipment installation procedures utilizing I/Omodules are also described. The first procedure installs a modem to the VME/10 via an MVME400 Dual RS-232C Serial Port Module. The second procedure installs a Centronics-compatible printer to the VME/10 via an MVME410 Dual Parallel Port Module.

3.2 I/Omodule EXPANSION CARD CAGE

Figure 3-2 illustrates the I/Omodule expansion card cage installed in the VME/10. This card cage is designed to accept up to five "single-wide" I/Omodules. J1 connectors installed at card slot locations (A1) through (A5) form the I/O Channel via ribbon cable connections.

CAUTION

EQUIPMENT DAMAGE MAY RESULT FROM OVERHEATING
IF BLANK PANELS ARE NOT INSTALLED ON CARD
CAGE UNUSED CARD SLOTS.

Unused card cage card slots must always have blank panels installed to avoid VME/10 equipment overheating due to escaping cooling air.
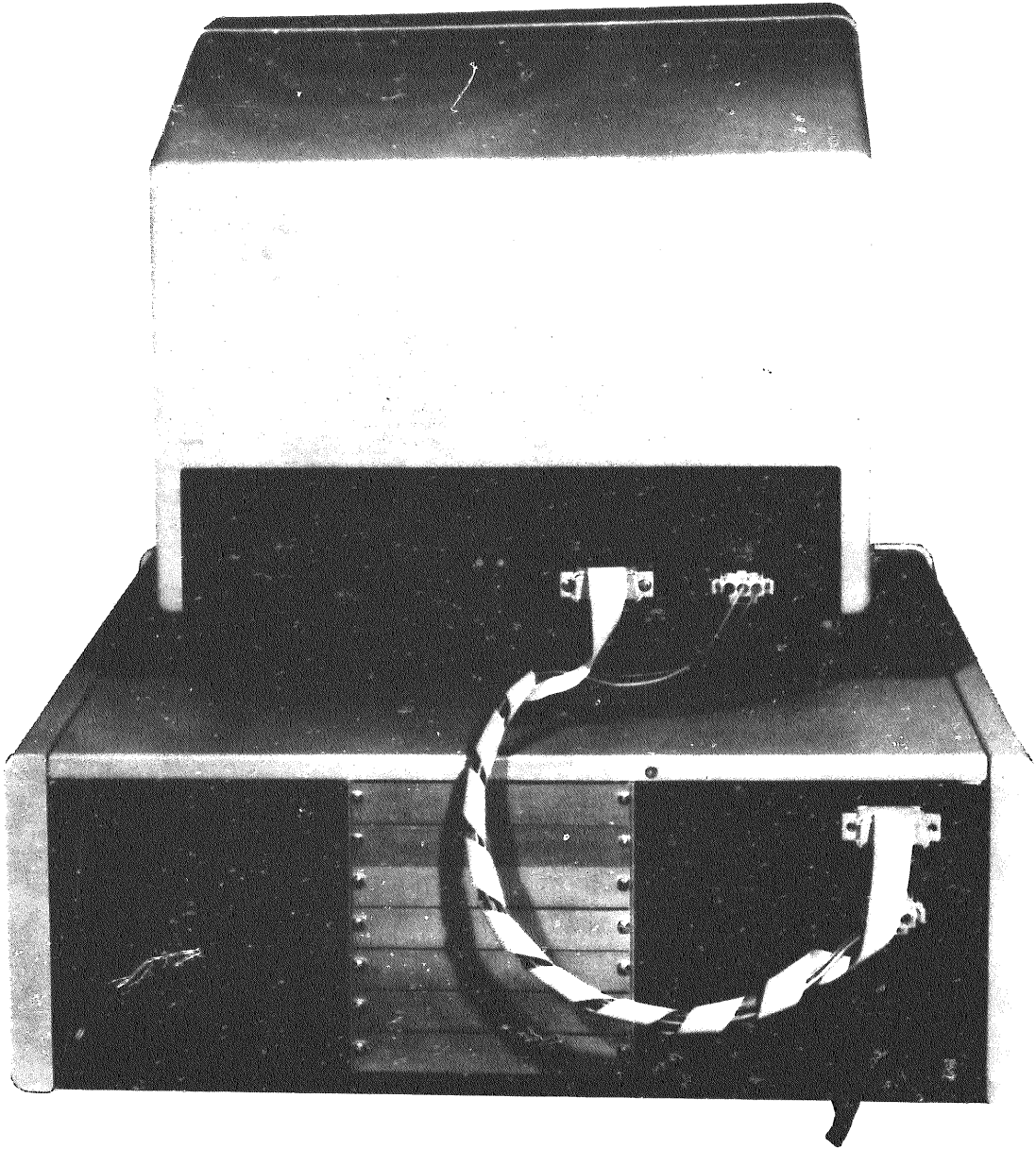
6-83-1538

FIGURE 3-1. VME/10 with I/Omodule Expansion Card Cage

(TOP)

(A1)

(A2)

(A3)

(A4)

(A5)

(FRONT VIEW)
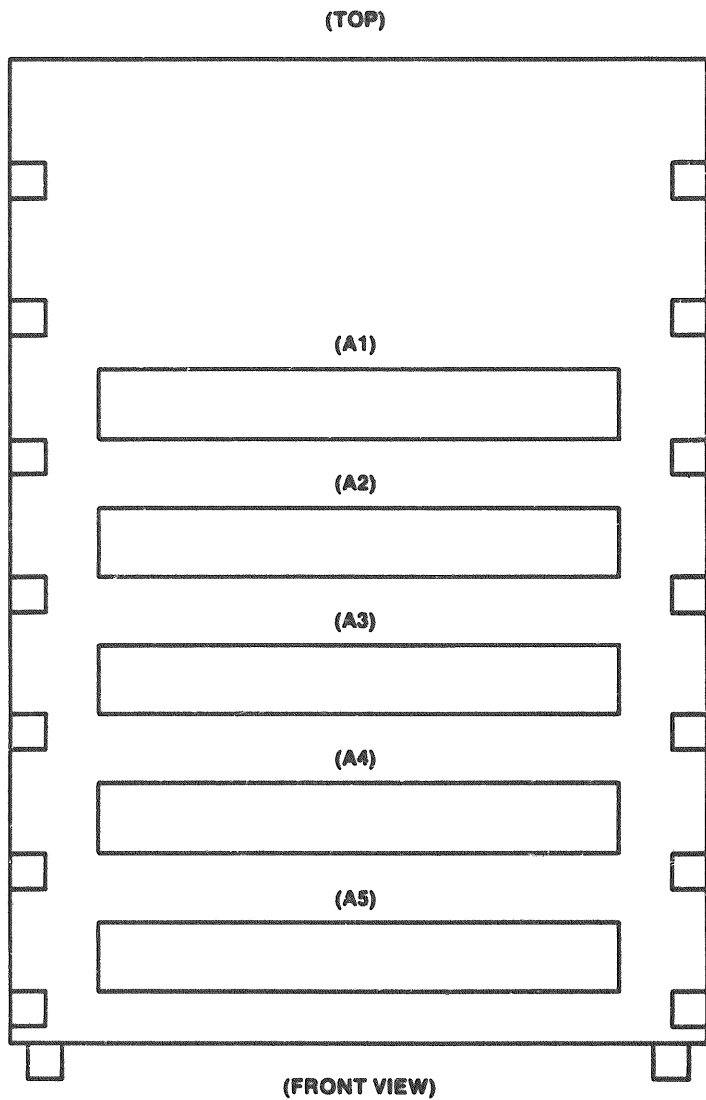
NOTE: (A1) THRU (A5) DENOTE CARD SLOT LOCATIONS.

FIGURE 3-2. I/Omodule Expansion Card Cage

3.3 VME/10 TO MODEM INSTALLATION

To connect the VME/10 to a modem, the MVME400 Dual RS-232C Serial Port Module jumper headers are prepared as listed in Table 3-1 and as shown in Figure 3-3. For specific details about the jumper header configurations, refer to the MVME400 Dual RS-232C Serial Port Module User's Manual, Motorola publication number MVME400.

NOTE

The MVME400 Dual RS-232C Serial Port Module is supported by the VME/10 VERSAdos SYSGEN command file.

The MVME400 is configured to operate in the VME/10 I/O Channel at interrupt level 4. This is established by the VME/10 VERSAdos SYSGEN file specifically for the MVME400. Baud rate operation is hardware-configured and software-selected.

To install the MVME400 into the I/Omodule expansion card cage, proceed as follows:

a. Turn off equipment power.

CAUTION

CONNECTING MODULES WHILE POWER IS ON COULD RESULT IN DAMAGE TO COMPONENTS ON THE MODULE.

b. Refer to Table 3-1 and Figure 3-3 and configure the MVME400 jumper headers for port 1 modem operation, interrupt level 4, and baud rate 9,600.

c. Remove two blank panels and insert MVME400 in desired card slot.

d. Secure MVME400 in place with two captive screws.

e. Connect modem device via Motorola part number M68RS232-10, -25, -50 RS-232C type cable to the MVME400 front panel connector labeled PORT 1.

f. Turn on equipment power.

g. Refer to the System Generation Facility User's Manual, Motorola publication number M68KSYSGEN, for details on setting the parameters in the VME/10 VERSAdos SYSGEN command file (VMES10.SYSCMD.SA) to reflect the desired MVME400 configuration.

TABLE 3-1. MVME400 Port 1 Modem Configuration

| HEADER NUMBER	FUNCTION	CONFIGURATION
J2	Port 2 TxC select	1-2
J3	Port 2 external clock select	No jumpers
J4	Port 2 internal clock select	1-2, 3-4 9-10, 11-12
J5	Interrupt level select	4-6, 10-12, 16-18
J6	Base address select	7-8
J7	Port 2 CTS flow control	5-7, 6-8
J8	Port 2 to modem select	No jumpers
J9	Port 2 to terminal select	1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16, 17-18, 19-20
J10	Baud rate port 1 and 2 select	3-4, 5-6, 9-10, 11-12
J11	Port 1 TxC select	1-2
J12	Port 1 external clock select	No jumpers
J13	Port 1 internal clock select	1-2, 3-4 9-10, 11-12
J14	Port 1 to modem select	1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16, 17-18, 19-20
J15	Port 1 to terminal select	No jumpers
J16	Port 1 CTS flow control	5-7, 6-8
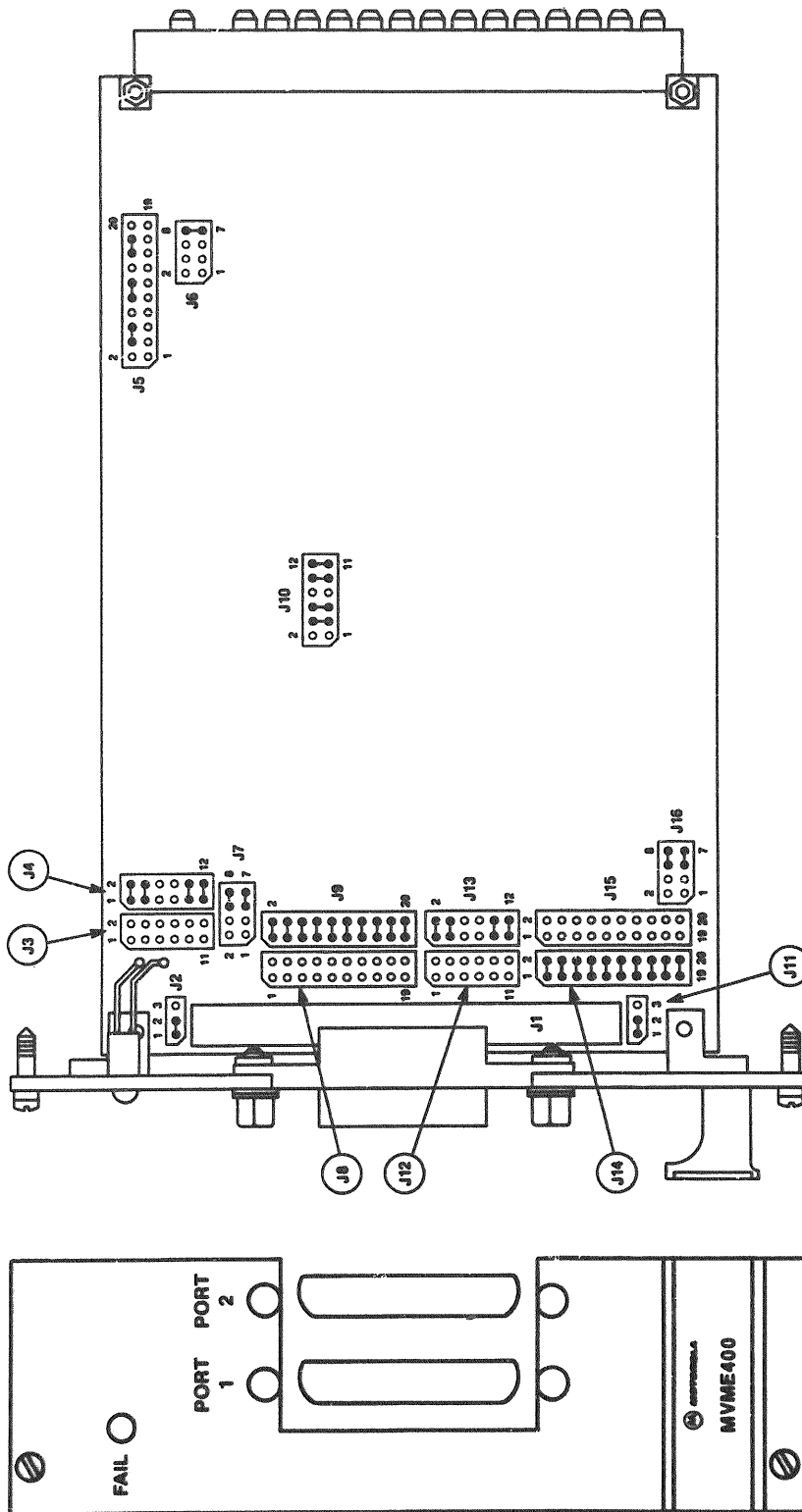
FIGURE 3-3. MVME400 Port 1 Modem Configuration

3.4 VME/10 TO PRINTER INSTALLATION

To connect the VME/10 to a Centronics-compatible printer, the MVME410 Dual Parallel Port Module jumper headers are prepared as listed in Table 3-2 and as shown in Figure 3-4. For specific details about the jumper header configurations, refer to the MVME410 Dual Parallel Port Module User's Manual, Motorola publication number MVME410.

NOTE

The MVME410 Dual Parallel Port Module is supported by the VME/10 VERSAdos SYSGEN command file.

The MVME410 is configured to operate in the VME/10 I/O Channel at interrupt level 1. This is established by the VME/10 VERSAdos SYSGEN file specifically for the MVME410.

To install the MVME410 into the I/Omodule expansion card cage, proceed as follows:

a. Turn off equipment power.

CAUTION

CONNECTING MODULES WHILE POWER IS ON COULD RESULT IN DAMAGE TO COMPONENTS ON THE MODULE.

b. Refer to Table 3-2 and Figure 3-4 and configure the MVME410 I/Omodule jumper headers for port 1 printer operation and interrupt level 1.

c. Remove one blank panel and insert MVME410 in desired card slot.

d. Secure MVME410 in place with two captive screws.

e. Connect printer device via Motorola part number M68KVMPRTCE type cable to the MVME410 front panel connector J1.

f. Turn on equipment power.

g. Refer to the System Generation Facility User's Manual, Motorola publication number M68KSYSGEN, for details on setting the parameters in the VME/10 VERSAdos SYSGEN command file (VMES10.SYSCMD.SA) to reflect the desired MVME410 configuration.

TABLE 3-2. MVME410 Port 1 Printer Configuration

| HEADER NUMBER	FUNCTION	CONFIGURATION
J2	LED monitor	2-3
J3	Port 1 (P1CA2, P1PA0-P1PA7) direction	1-2
J4	Port 1 (P1CA2, P1PA0-P1PA7) direction	1-2
J5	Port 1 (P1CB2, P1PB0-P1PB7) direction	1-2
J6	Port 1 (P1CB2, P2PB0-P1PB7) direction	No jumper
J8	Port 2 (P2CA2, P2PA0-P2PA7) direction	1-2
J9	Port 2 (P2CA2, P2PA0-P2PA7) direction	1-2
J10	Port 2 (P2CB2, P2PB0-P2PB7) direction	1-2
J11	Port 2 (P2CB2, P2PB0-P2PB7) direction	No jumper
J12	Interrupt select	2-4, 8-10
J13	Interrupt select	2-4, 8-10
J14	Base address select	No jumper
J15	LED control	2-3
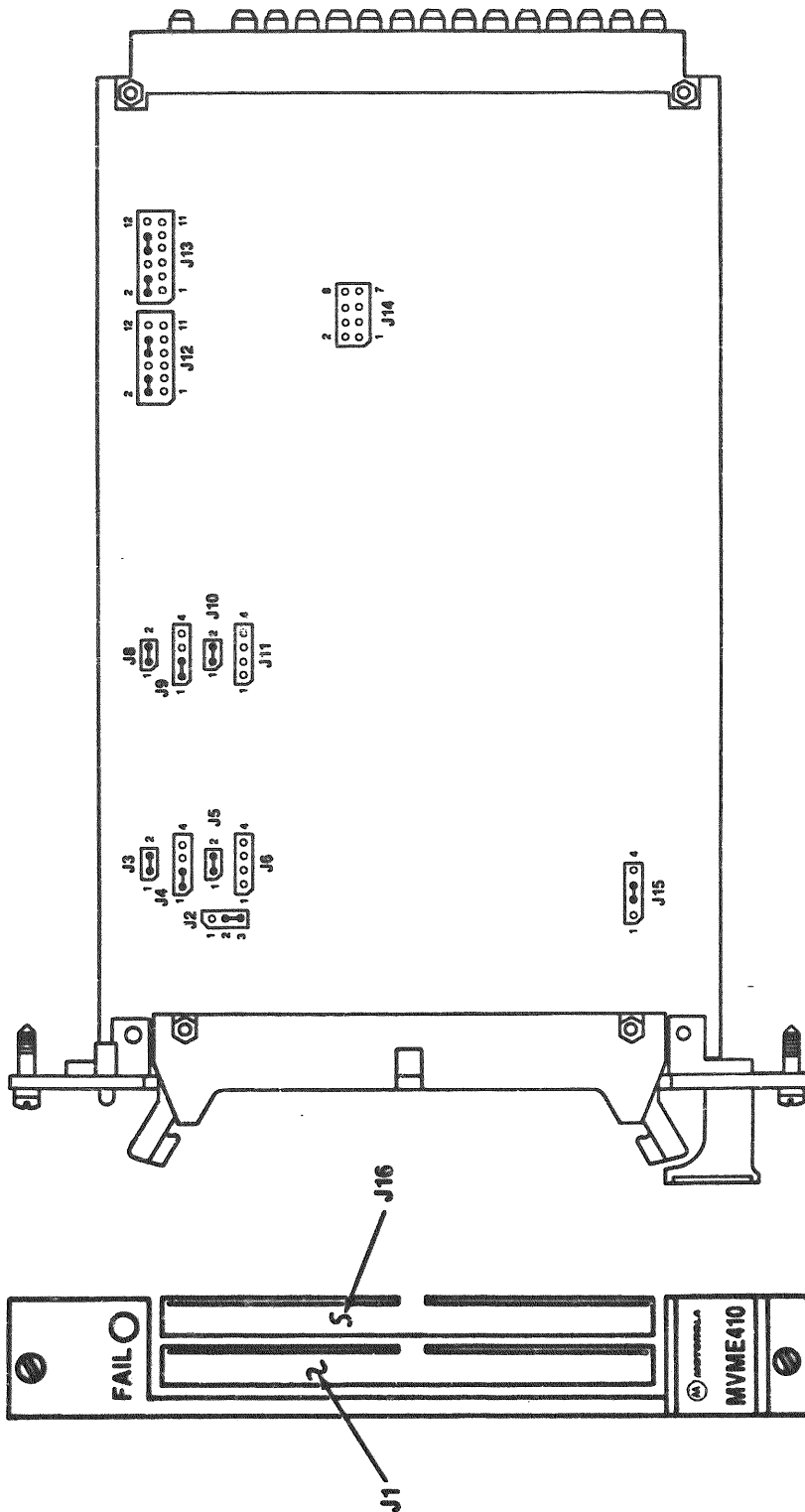
FIGURE 3-4. MVME410 Port 1 Printer Configuration

CHAPTER 4

VME+I/Omodule EXPANSION CARD CAGE EQUIPMENT INSTALLATION

4.1 INTRODUCTION

This chapter describes the VME+I/Omodule expansion card cage installed in the VME/10 as shown in Figure 4-1. VMEmodule and I/Omodule installation procedures are also provided.

4.2 VME+I/Omodule EXPANSION CARD CAGE

Figure 4-2 illustrates the VME+I/Omodule expansion card cage installed in the VME/10. This card cage facilitates the installation of up to five "double-wide" VMEmodules and up to four "single-wide" I/Omodules. The card cage houses the MVME923 Backplane which contains five connectors (J1 through J5) that mate to VMEmodule P1 connectors, and two connectors (J14 and J15) that mate to I/Omodule P1 connectors. Connectors J1 through J5 form the VMEbus, and connectors J14 and J15 form the I/O Channel. The I/O Channel is extended from the backplane by the addition of two connectors (card slot locations A8 and A9) via ribbon cable connection.

The card cage also provides a connector mounting area. See Figure 4-2. Up to five connectors can be installed by the user to facilitate VMEmodule P2 I/O cabling.

4.2.1 Daisy-Chain Jumpering (J6-J13)

Vacant card slots should not exist between inserted VMEmodules requiring Interrupt Acknowledge (IACK) and Bus Grant (BG) signals in the card cage unless the vacant slots have been daisy-chain jumpered on the MVME923 backplane. Daisy-chain jumpering permits the IACK and BG signals to propagate from card slot (A1) to the last card slot (A5). Remaining vacant slots following the last active card slot (Ax) are not required to be daisy-chain jumpered. Jumper headers J6 through J13 on the backplane facilitate the daisy-chain jumpering technique. Figure 4-2 illustrates the backplane daisy-chain jumper header locations. Card slot (A1) is not assigned a jumper header. Headers J6 and J10 are assigned to slot (A2), headers J7 and J11 to slot (A3), headers J8 and J12 to slot (A4), and headers J9 and J13 to slot (A5). Backplane jumper header pin and signal assignments are illustrated in Figure 4-3.

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FIGURE 4-1.   VME/10 with VME+I/Omodule Expansion Card Cage
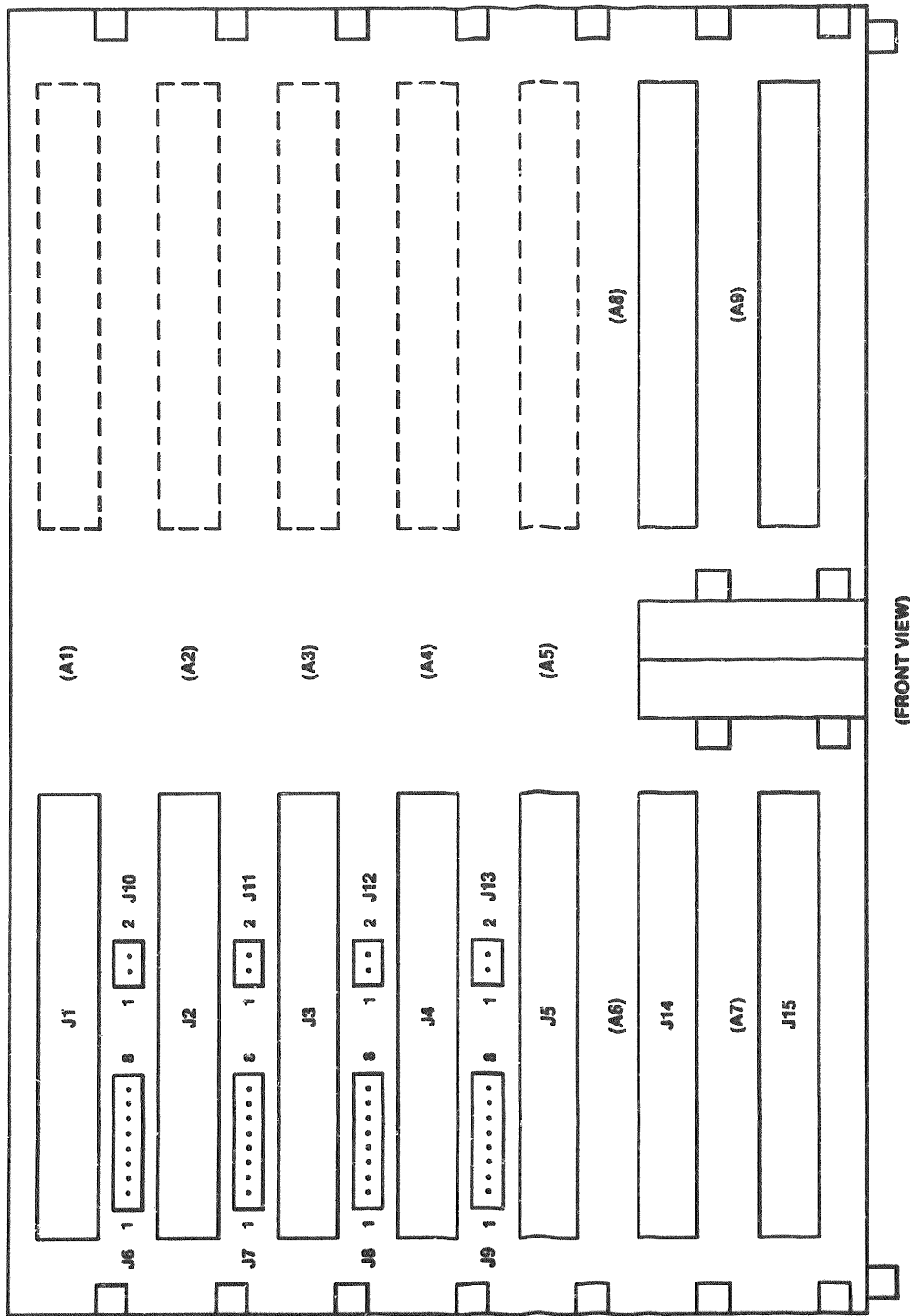
NOTE: (A1) THRU (A9) DENOTE CARD SLOT LOCATIONS.

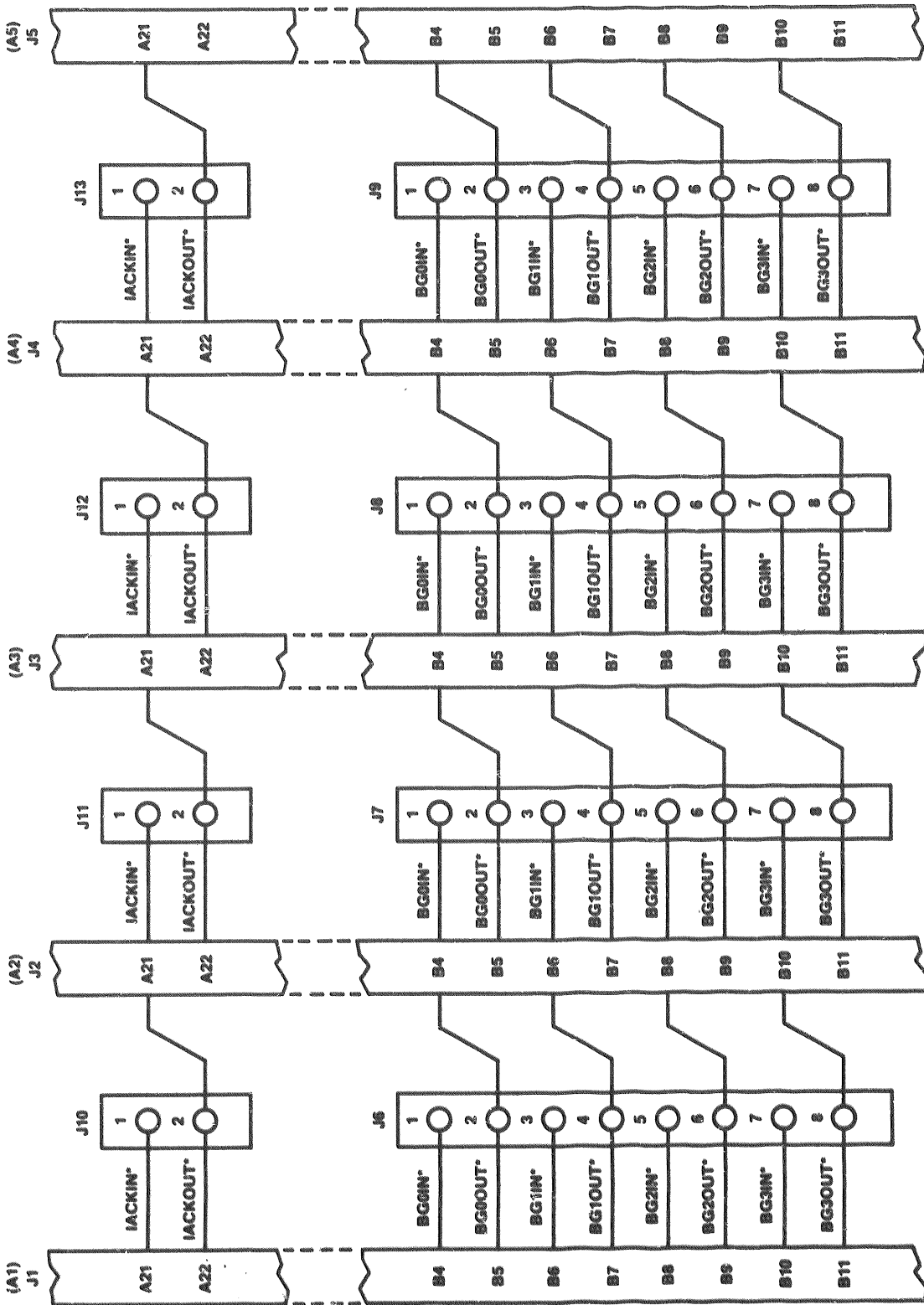(FRONT VIEW)

FIGURE 4-2. VME+I/Omodule Expansion Card Cage

FIGURE 4-3. MVME923 Backplane Daisy-Chain

4.2.1.1 VMEmodules Not Containing IACK/BG Circuitry. If a VMEmodule which does not contain IACK/BG circuitry (e.g., MVME200 64K-Byte Dynamic Memory Module) is inserted into the card cage, one of two operations must be performed:

    a. the applicable card slot jumper headers on the backplane must be daisy-chain jumpered, or

    b. the applicable VMEmodule must be jumpered for IACK/BG signal bypass operation.

VMEmodule edge connector IACK/BG signal bypass method is illustrated in Figure 4-4. This bypass method ensures that the IACK/BG signals will propagate to the next card slot, without the use of the backplane jumper headers.

4.2.1.2 VMEmodules Containing IACK/BG Circuitry. If a VMEmodule which contains IACK/BG circuitry (e.g., MVME300 GPIB Controller) is inserted into the card cage, the BG circuitry must have jumpers installed to receive the selected BG signal and to transfer the unused BG signals to the next card slot. For this application, the applicable card slot jumper headers on the backplane should not have jumpers installed. Installed jumpers will bypass all IACK/BG signals to the next card slot, thus defeating the purpose of the module IACK/BG circuitry.

Figure 4-5 illustrates a typical VMEmodule bus arbitration level select jumper header. In this figure, BG2* signals are the only signals permitted to be received/transferred by the VMEmodule BG circuitry by the placement of the horizontal jumpers. Unused BG0*, BG1*, and BG3* signals are bypassed to the next card slot by the placement of the vertical jumpers.
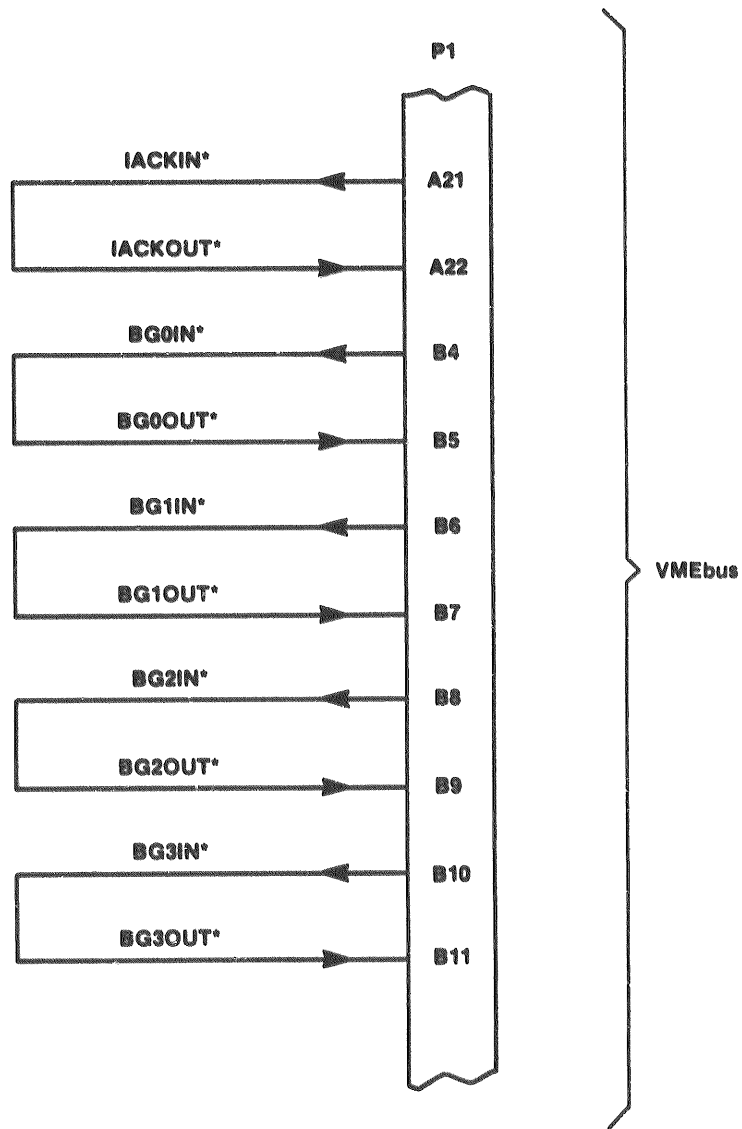
FIGURE 4-4. Typical VMEmodule Bus Arbitration Bypass

BUS
ARBITRATION
LEVEL SELECT
JUMPER HEADER

P1

BG0IN*   B4

BG0OUT*   B5

LEVEL 0

BG1IN*   B6

BG1OUT*   B7

VMEmodule
BG
CIRCUITRY

LEVEL 1

VMEbus

BG2IN*   B8

BG2OUT*   B9

LEVEL 2

BG3IN*   B10

BG3OUT*   B11

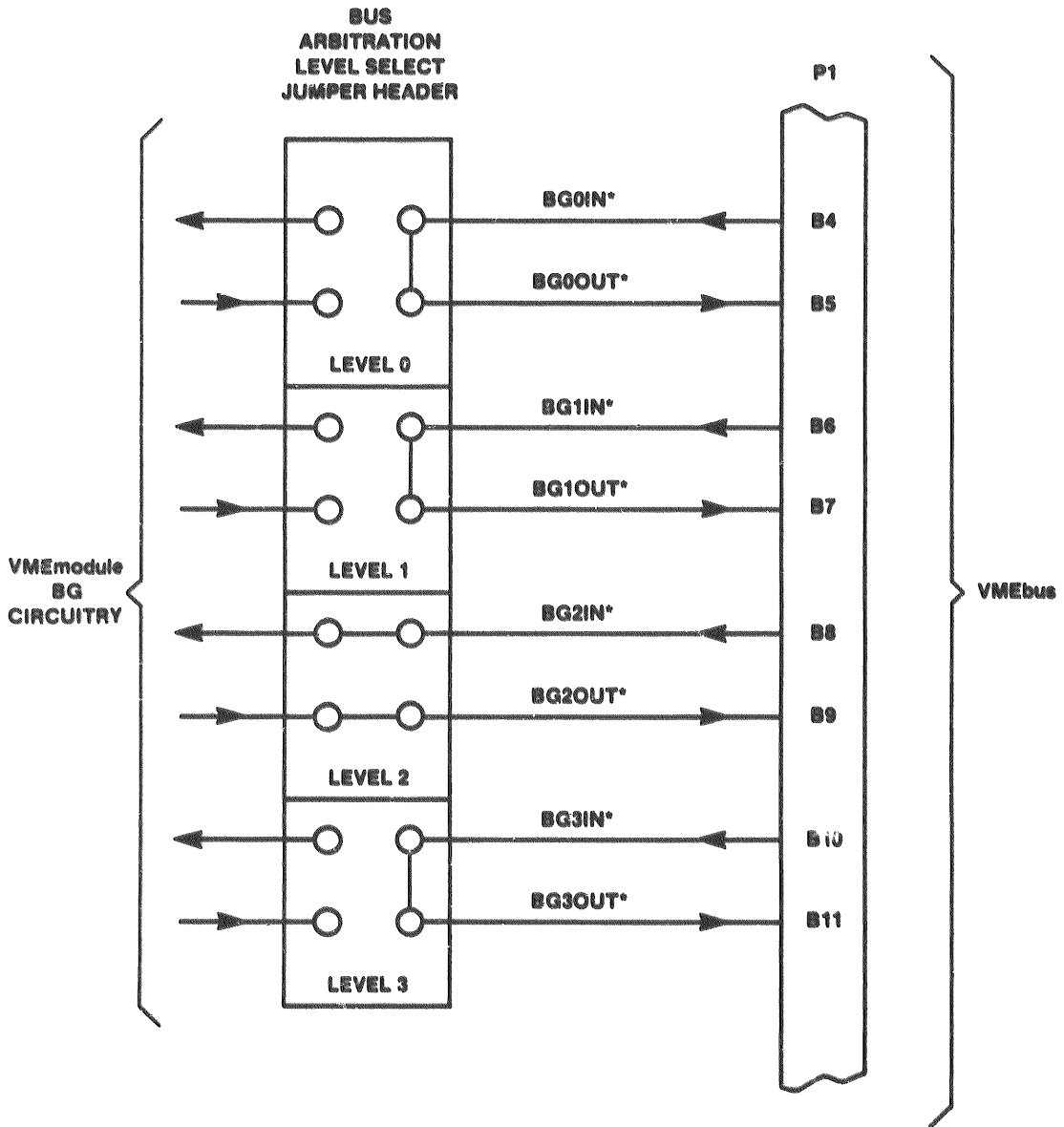LEVEL 3

FIGURE 4-5.   Typical VMEmodule Bus Arbitration Level Selection

4.3 VMEmodule INSTALLATION

VMEmodules are installed in card slot locations (A1) through (A5). See Figure 4-2.

CAUTION

EQUIPMENT DAMAGE MAY RESULT FROM OVERHEATING
IF BLANK PANELS ARE NOT INSTALLED ON CARD
CAGE UNUSED CARD SLOTS.

Unused card cage slots must always have blank panels installed to avoid VME/10 equipment overheating due to escaping cooling air.

To install a VMEmodule into the VME+I/Omodule expansion card cage, proceed as follows:

a. Turn off equipment power.

CAUTION

CONNECTING MODULES WHILE POWER IS ON COULD
RESULT IN DAMAGE TO COMPONENTS ON THE MODULE.

b. Refer to the applicable VMEmodule user's manual for hardware preparation procedures.

c. Configure the VMEmodule (via jumper headers) as required.

d. Remove blank panel and insert VMEmodule in desired "double-wide" card slot.

e. If the VMEmodule requires P2 I/O cabling, perform one of the two I/O cabling installation methods described in paragraph 4.3.1 or 4.3.2.

f. Secure VMEmodule in place with two captive screws.

g. Connect peripheral device (if required) to VMEmodule as described in applicable VMEmodule user's manual (Chapter 2, INSTALLATION INSTRUCTIONS).

h. Turn on equipment power.

4.3.1 VMEmodule I/O Cabling Method 1

This installation method enables VMEmodule P2 I/O cabling to be routed through an unused card slot in the VME+I/Omodule expansion card cage. Figure 4-6 illustrates this cabling method and is installed as follows:

a. Remove desired card cage blank panel and install peripheral connector end of I/O cable assembly to blank panel.

b. Connect the other end of the I/O cable assembly (J2 connector end) to the applicable VMEmodule P2 connector.

NOTE

I/O cable assembly J2 connector can be mounted to card cage if desired. Use two M2.5 x 0.45 x 8 metric screws to secure connector to card cage.

c. Configure the VMEmodule (via jumper headers) as required.

d. Install VMEmodule in desired "double-wide" card slot.

e. Secure VMEmodule in place with two captive screws.

f. Secure modified blank panel (containing peripheral connector end of I/O cable assembly) in place with two screws (previously removed).
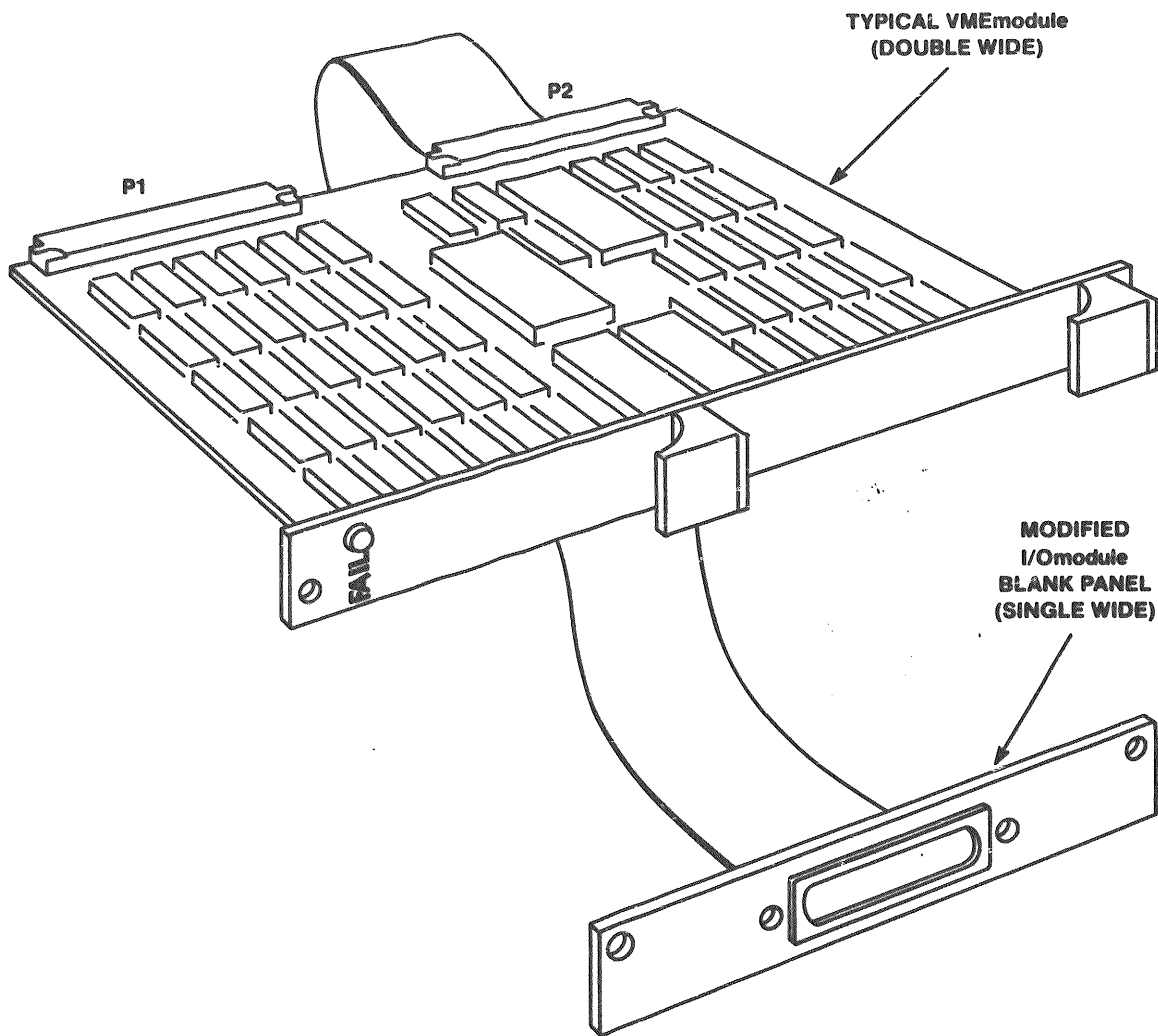
TYPICAL VMEmodule
(DOUBLE WIDE)

P2

P1

MODIFIED
I/Omodule
BLANK PANEL
(SINGLE WIDE)

FIGURE 4-6.   VMEmodule I/O Cabling Method 1

4.3.2 VMEmodule I/O Cabling Method 2

This installation method enables VMEmodule P2 I/O cabling to be routed from the rear of the VME+I/Omodule expansion card cage, under the blower fan, to the rear I/O panel. This cabling method is accomplished by the control unit chassis disassembly, I/O cable assembly installation, and control unit chassis reassembly.

The control unit chassis is disassembled as follows:

a. Disconnect system ac power.

WARNING

AC POWER MUST BE REMOVED TO AVOID ELECTRICAL SHOCKS TO MAINTENANCE PERSONNEL.

b. Remove all external cables from control unit chassis.

c. Remove display unit from control unit chassis.

d. Remove control unit chassis side covers. (Accomplished by the removal of two pan-head screws per side).

e. Remove control unit chassis top cover. (Accomplished by the removal of seven pan-head screws).

f. Remove control unit chassis front panel. (Accomplished by the removal of two flat-head screws per side.)

CAUTION

TWO MODULAR RJ TYPE CONNECTORS SHOULD BE REMOVED FROM FRONT PANEL TO AVOID CONNECTOR WIRING DAMAGE.

g. Remove connector bracket and both modular RJ type connectors from front panel. (Accomplished by the removal of two pan-head screws.)

The System Control Module (SCM) is now removed from the control unit chassis to gain access for the I/O cable assembly installation. The SCM is removed as follows:

a. Disconnect cable assembly connectors at following SCM connector locations: J1, P2, J12, J13, and J14.

NOTE

Observe orientation of connectors J12 and P12. P12 red wire must mate with J12 pin 1.

b. Remove SCM (including bracket assembly) from chassis. (Accomplished by the removal of three flat-head screws per side.)

c. SCM (with bracket assembly) is removed from the chassis by pulling forward on the SCM.

The control unit chassis rear I/O panel is now removed to mount the peripheral connector end of the I/O cable assembly. The I/O panel is removed as follows:

a. Remove I/O panel from chassis. (Accomplished by the removal of four pan-head screws and associated flat washers, lock washers, and nuts.)

b. Remove J3 connector from chassis I/O panel. (Accomplished by the removal of connector mounting hardware.)

c. Remove 24VDC connector from chassis I/O panel. (Accomplished by squeezing both upper and lower connector locking tabs and pushing in on the connector.)

d. Install peripheral connector end of the I/O cable assembly to chassis I/O panel. Refer to Figure 4-7 for chassis I/O panel templet.
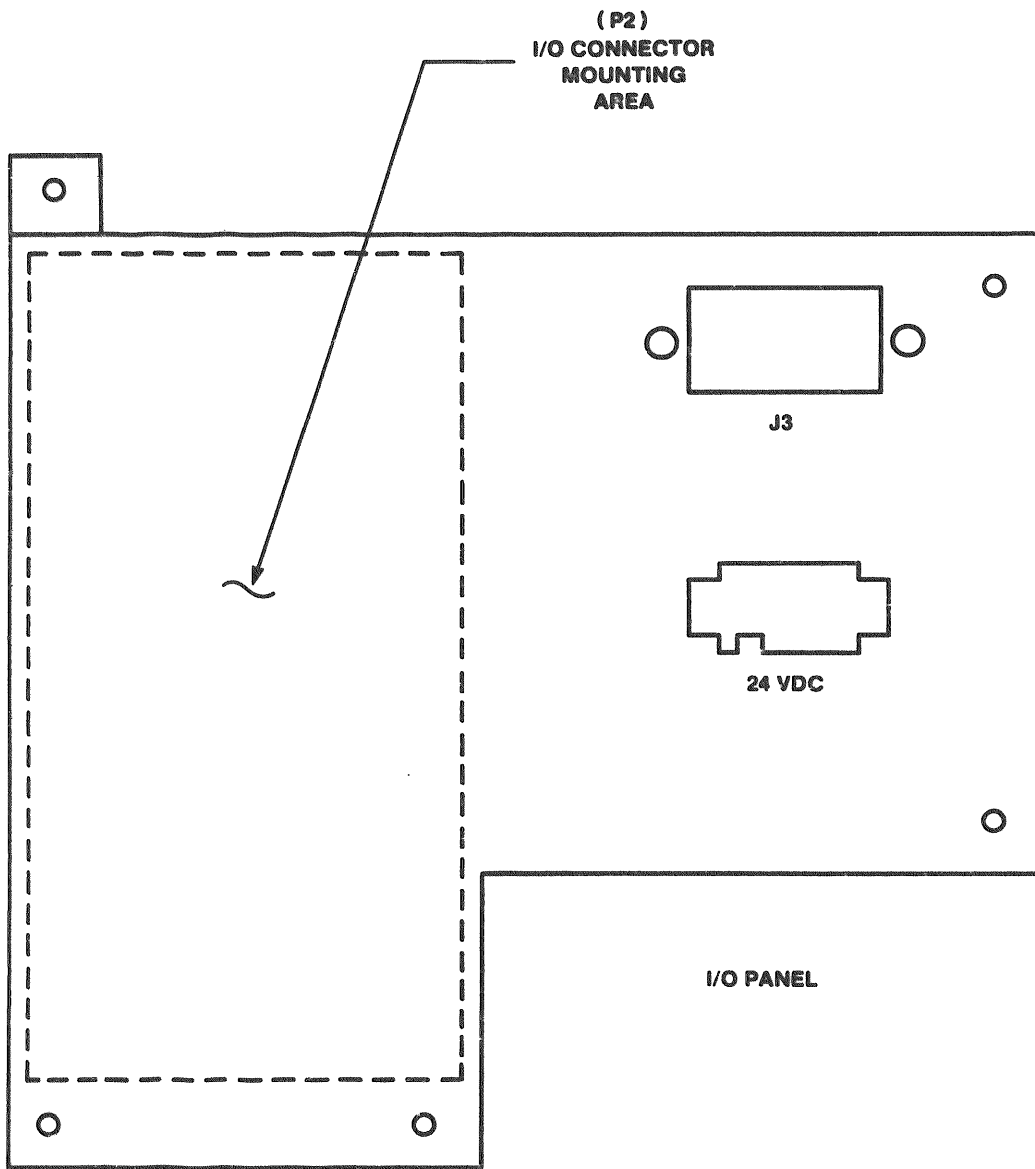
(P2)
I/O CONNECTOR
MOUNTING
AREA

J3

24 VDC

I/O PANEL

FIGURE 4-7. Control Unit Chassis I/O Panel Templet

The I/O cable assembly is now installed into the control unit chassis. Proceed as follows:

a. Route I/O cable assembly as shown in Figure 4-8.

b. I/O cable assembly must be routed under the blower fan and over the EMI filter.

c. Connect the J2 connector end of the I/O cable assembly to the VME+I/Omodule expansion card cage using two M2.5 x 0.45 x 8 metric screws.

d. Reinstall 24VDC connector to chassis I/O panel.

e. Reinstall J3 connector to chassis I/O panel.

f. Reinstall I/O panel to control unit chassis. Ensure that I/O cabling is not blocking air flow from blower fan.

The control unit chassis is reassembled as follows:

a. Reinstall SCM (with bracket assembly) to chassis. (SCM P1 connector mates with card cage connector XJ1.)

b. Reinstall SCM J1, P2, J12, J13, and J14 cabling.

NOTE

Observe orientation of connectors J12 and P12.
P12 red wire must mate with J12 pin 1.

c. Reinstall modular RJ type connectors to front panel.

d. Reinstall front panel to chassis.

e. Reinstall top cover to chassis.

f. Reinstall chassis side covers.

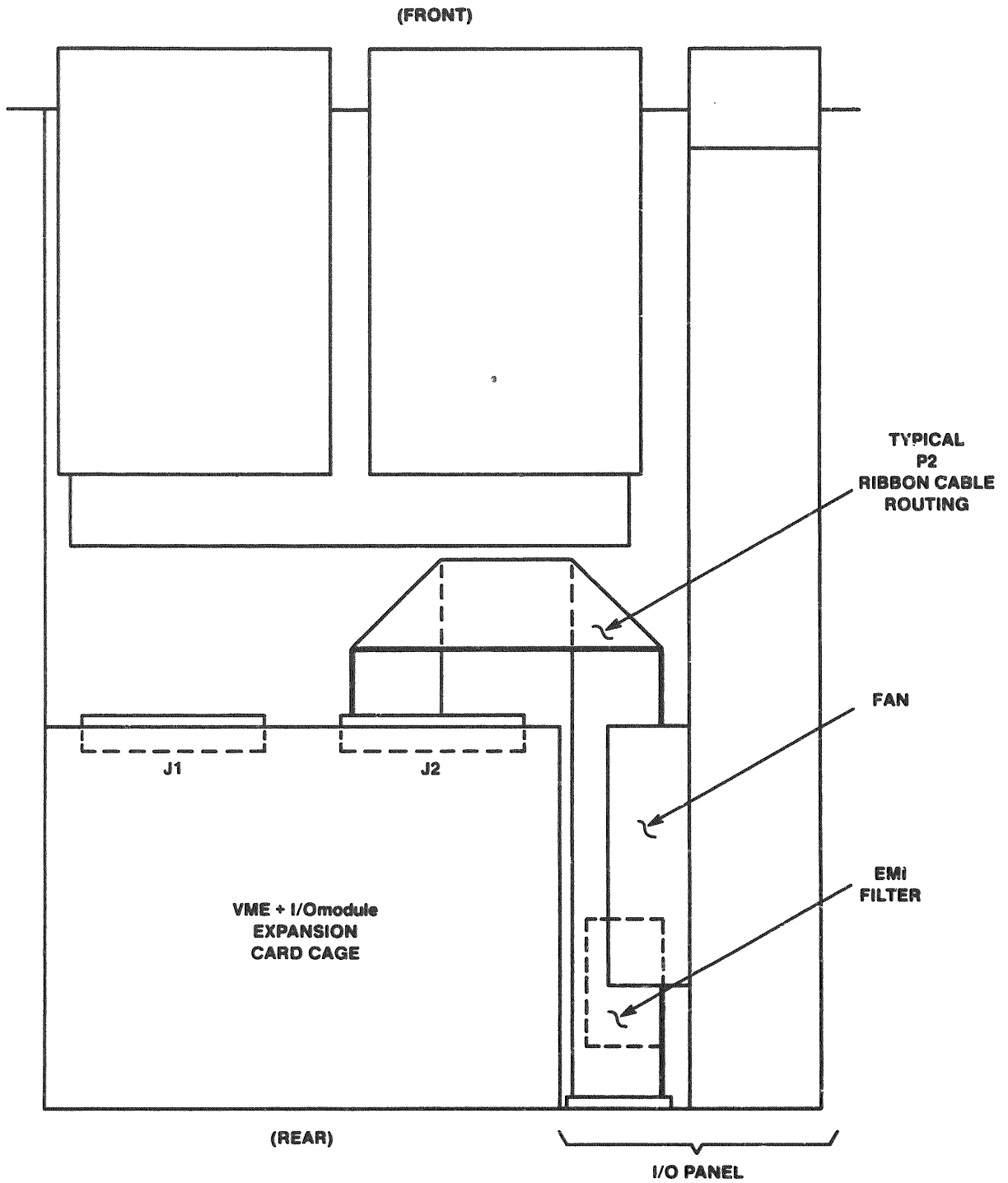VMEmodule, utilizing the I/O cable assembly just installed, can now be prepared and installed. Refer to paragraph 4.3.

TYPICAL
P2
RIBBON CABLE
ROUTING

FAN

EMi
FILTER

J1   J2

VME + I/Omodule
EXPANSION
CARD CAGE

(REAR)

I/O PANEL

FIGURE 4-8. VMEmodule I/O Cabling Method 2

4.4 I/Omodule INSTALLATION

I/Omodules are installed in card slot locations (A6) through (A9). See Figure 4-2.

NOTE

> Both I/Omodule installation procedures described in Chapter 3 are also applicable to the VME+I/Omodule expansion card cage.

When inserting "double-wide" front panel I/Omodules (e.g., MVME400 dual RS-232C Serial Port Module) into this card cage, considerations about sacrificing card slots for specific I/Omodule installations must be made. For an example, if two MVME400 are required, the user has two options available.

. Install both I/Omodules in card slots (A7) and (A9), therefore sacrificing card slots (A6) and (A8).

. Install both I/Omodules in card slots (A6) and (A8), therefore sacrificing card slot (A5) which is a "double-wide" VMEmodule card slot.

CAUTION

> EQUIPMENT DAMAGE MAY RESULT FROM OVERHEATING IF BLANK PANELS ARE NOT INSTALLED ON CARD CAGE UNUSED CARD SLOTS.

Unused card cage card slots must always have blank panels installed to avoid VME/10 equipment overheating due to escaping cooling air.

To install a I/Omodule into the VME+I/Omodule card cage proceed as follows:

a. Turn off equipment power.

CAUTION

> CONNECTING MODULES WHILE POWER IS ON COULD RESULT IN DAMAGE TO COMPONENTS ON THE MODULE.

b. Refer to the applicable I/Omodule user's manual for hardware preparation procedures.

c. Configure the I/Omodule (via jumper headers) as required.

d. Remove blank panel and insert I/Omodule in desired "single-wide" card slot.

e. Secure I/Omodule in place with two captive screws.

f. Connect peripheral device to I/Omodule as described in applicable I/Omodule user's manual (Chapter 2, INSTALLATION INSTRUCTIONS).

g. Turn on equipment power.