

Honeywell

DPS 8

SYSTEM

INSTALLATION

MANUAL

WCPU66LB

WMMU66LB

WIOU100A

WIOU100B

WIOU66LA

58010048

HARDWARE

This manual has been prepared to serve as a guide for Honeywell personnel to install, verify, and deinstall a DPS 8 System.

Each Preinstallation and Installation Task is numerically and chronologically listed on the System Checkoff list, providing the installer with a synoptical view of each task to be performed. This listing is printed on heavy paper and is found immediately after the Table of Contents.

After the Preinstallation and Installation Tasks have been identified, classified, and listed, they are defined in the appropriate section of the System Installation manual.

Other features include instructions for unpackaging, unpacking, inspection, cable routing, and connections. Power system checkout procedures to help assure correct equipment operation and performance and deinstallation procedures required for safe disconnection and return of equipment are also included in this manual.

The following notice is provided in accordance with the United States Federal Communications Commission's (FCC) regulations:

Warning: This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. The equipment manufactured after October 1, 1983 has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to 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.

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CHECKOFF LISTS

PREINSTALLATION CHECKOFF LIST

<u>TASK NO.</u>	<u>TASK TITLE</u>	<u>TASK PERFORMED BY</u>	<u>TASK CHECKED BY</u>
1.	TURN TO PREINSTALLATION CHECKOFF LIST	_____	_____
2.	SITE INSPECTION	_____	_____
3.	RECEIVE EQUIPMENT	_____	_____
4A.	UNPACKAGING A NONCRATED PACK	_____	_____
4B.	UNPACKAGING A CRATED PACK	_____	_____
5.	UNPACKAGING	_____	_____
6.	INSPECT EQUIPMENT	_____	_____
7.	POSITION CABINETS	_____	_____

INSTALLATION CHECKOFF LIST

<u>TASK NO.</u>	<u>TASK TITLE</u>	<u>TASK PERFORMED BY</u>	<u>TASK CHECKED BY</u>
1.	TURN TO INSTALLATION CHECKOFF LIST	_____	_____
2.	INSTALL MMU CABINET	_____	_____
3.	INSTALL CPU CABINET	_____	_____
4A.	INSTALL IMU CABINET	_____	_____
4B.	INSTALL IOM CABINET	_____	_____
5.	INSTALL DPU CABINET	_____	_____
6.	INSTALL SYSTEM CONSOLE	_____	_____
7.	INSTALL PORT CABLES AND HARNESES	_____	_____
8.	INSTALL CABLES FROM IOM/IMU TO PCM CONTROLLERS	_____	_____
9.	INSTALL I/O, PORT, AND SYSTEM CONSOLE CABLES	_____	_____
10.	INSTALL AC POWER CABLES	_____	_____
11.	ACTIVATE & CHECK POWER SYSTEM	_____	_____
12.	INSTALL LOWER TRIM STRIPS	_____	_____
13.	CONFIGURE CENTRAL SYSTEM	_____	_____
14.	TEST TAC REMOTE CONNECTIONS	_____	_____
15.	FUNCTIONAL VERIFICATION	_____	_____

1.0 GENERAL

This manual has been prepared to serve as a guide for the Customer Services Engineer (CSE) to install or deinstall the DPS 8 system. The CSE should be familiar with each section of this manual and the Options Installation Manual prior to installation. Refer to the System Options Manual, 58010049, for options installation instructions.

This manual does not include installation or deinstallation instructions for peripheral devices, peripheral device controllers, or auxiliary processors such as those performing front-end processing functions.

1.1 INTRODUCTION

This manual is divided into the following sections:

SECTION 1 GENERAL

This section contains an introduction to the manual, including an overview of the DPS 8 field documentation structure.

SECTION 2 PHYSICAL OUTLINE

This section contains an illustration of the three-cabinet system.

SECTION 3 PREINSTALLATION

This section includes procedural steps or TASKS for receiving, handling, unpackaging, unpacking, inspection, and placement of cabinets.

SECTION 4 INSTALLATION

This section provides procedural steps or TASKS to install the equipment.

SECTION 5 DEINSTALLATION

This section includes deinstallation, handling, and shipping procedures.

1.2 PURPOSE

In addition to the CSE, this manual will also be useful to Customer Services Training for classroom studies and for field study reference. Training will usually be supported with additional instruction material; however, the student should use this document as primary reference. This manual can also be used for remote field support and should be included in the Technical Assistance Center (TAC) library.

1.3 TOOLS REQUIRED

The Customer Services Department standard tool kit 71001001-001 is required to install this system. For a listing of DPS 8 system tools, refer to System Tools List, 58059036.

1.4 TEST EQUIPMENT REQUIRED

Standard test equipment.

1.5 TEST MEDIA REQUIRED

- o Off-Line T and D System Tape (Pas 2/Monitor)
- o System Acceptance Test Tape (IMCV)
- o Integrated Firmware and Diagnostic Tape
- o NFT Diskettes

1.6 REFERENCE DOCUMENTATION

The following documents are listed for your convenience only and are not included in this manual:

- o Site Layout Plan..... Provided by CSD
- o Site Preparation Manual..... DU34
- o General Packaging Specification..... 58067223
- o DPS 8 System Manual..... 58010047
- o System Logic Block Diagrams.....
- o SMTCS Manual.....
- o Test and Repair Manual..... 58010012
- o Hardware Operation Manual..... 58010011
- o System Console Installation Manual.....58010084
- o System Tools List..... 58059036
- o MQX Circuit Set..... 58009843
- o Power and Cooling Unit Manual (IOM)..... 58009911
- o Power and Cooling Subsystem Manual (IMU, CPU, MMU).. 58010065

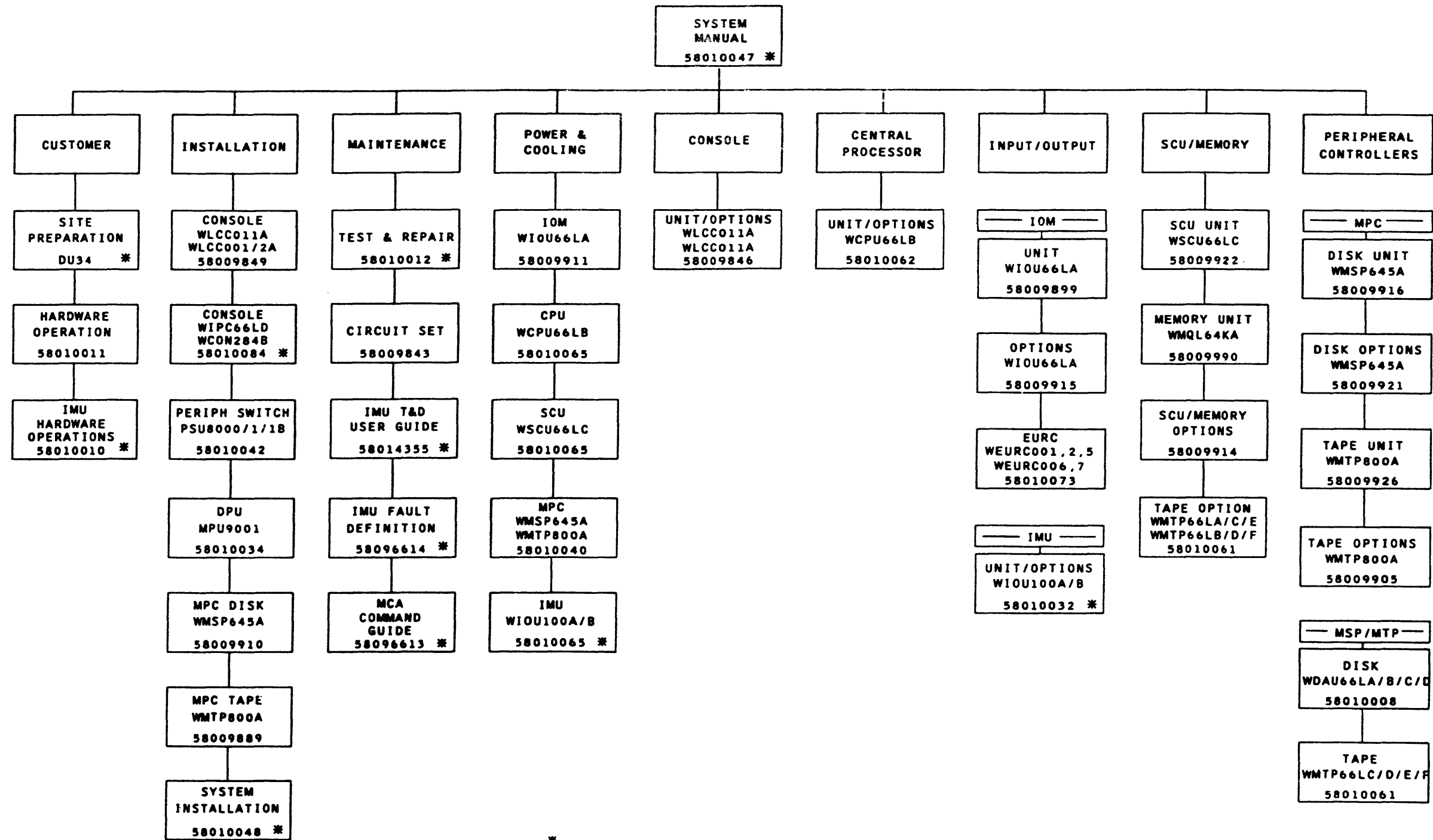
1.7 DOCUMENTATION TREE

DPS 8 field documentation structure is shown in Figure 1.7-1.

1.8 FEEDBACK

In order to maintain this manual as a functional, topical, and accurate document, please submit your comments through the normal technical support channels by utilizing the System Technical Action Request (STAR) system, or by mailing your comments directly to:

Honeywell Large Systems Hardware Publications
 P. O. Box 8000, MS C84
 Phoenix, Arizona 85066-8000



* REQUIRED FOR IMU SHIPMENTS

FIGURE 1.7-1. DPS 8 DOCUMENTATION TREE

2.0 PHYSICAL OUTLINE

A pictorial representation of the three-cabinet DPS 8 system (including cablecabinet) is found in Figure 2.0-1.

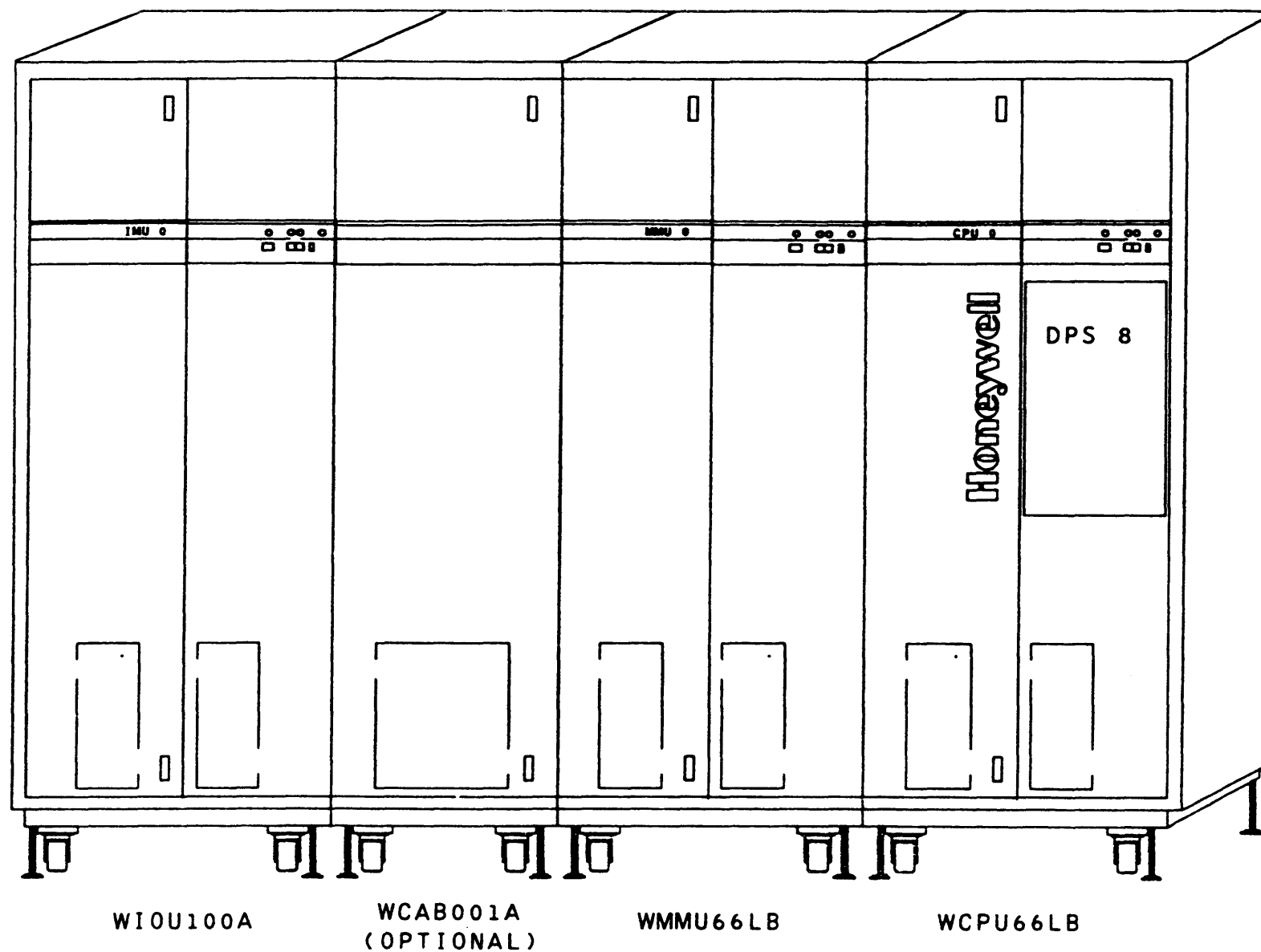


FIGURE 2.0-1. PHYSICAL OUTLINE (SHEET 1 OF 3)

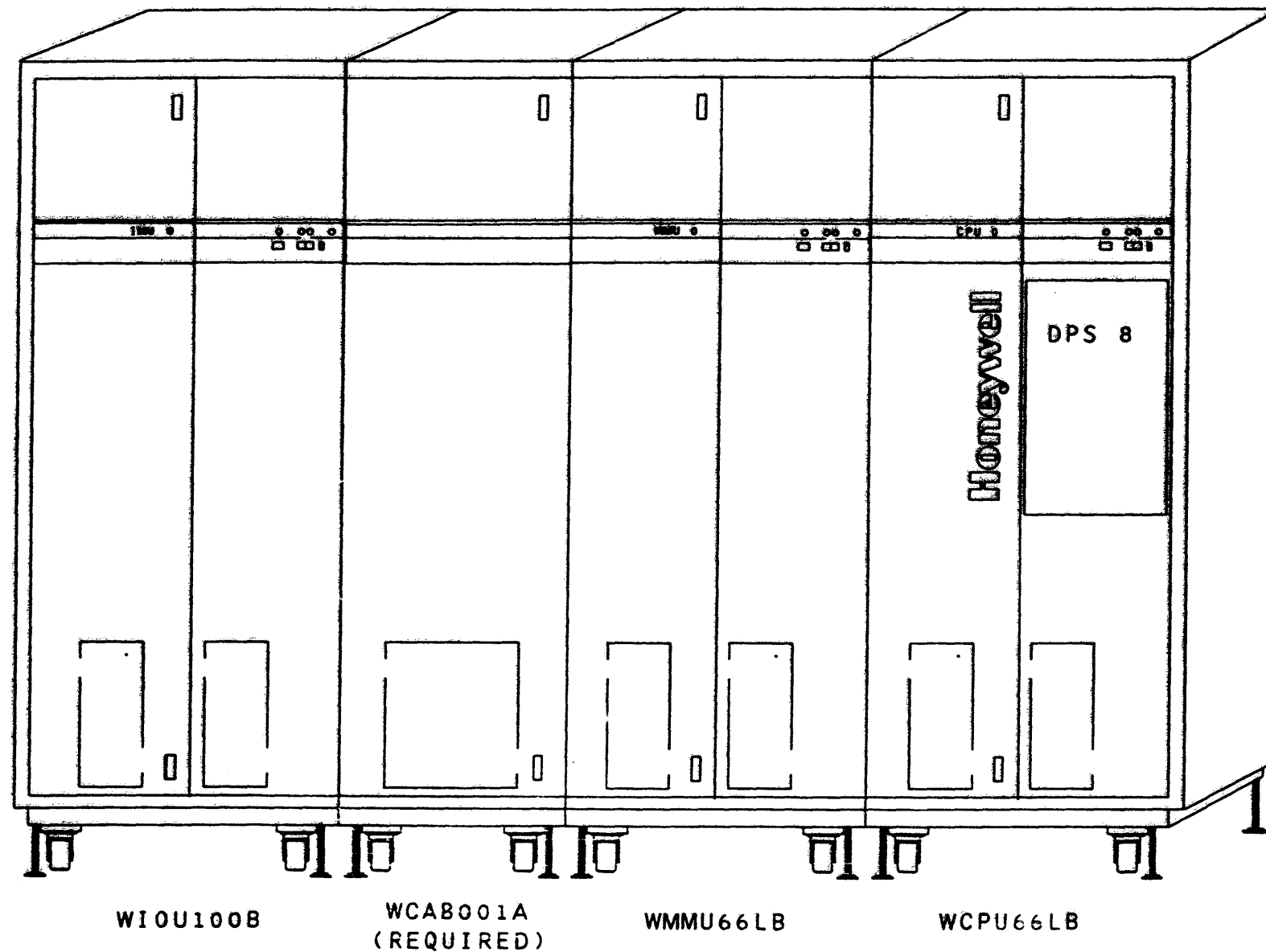


FIGURE 2.0-1. PHYSICAL OUTLINE (SHEET 2 OF 3)

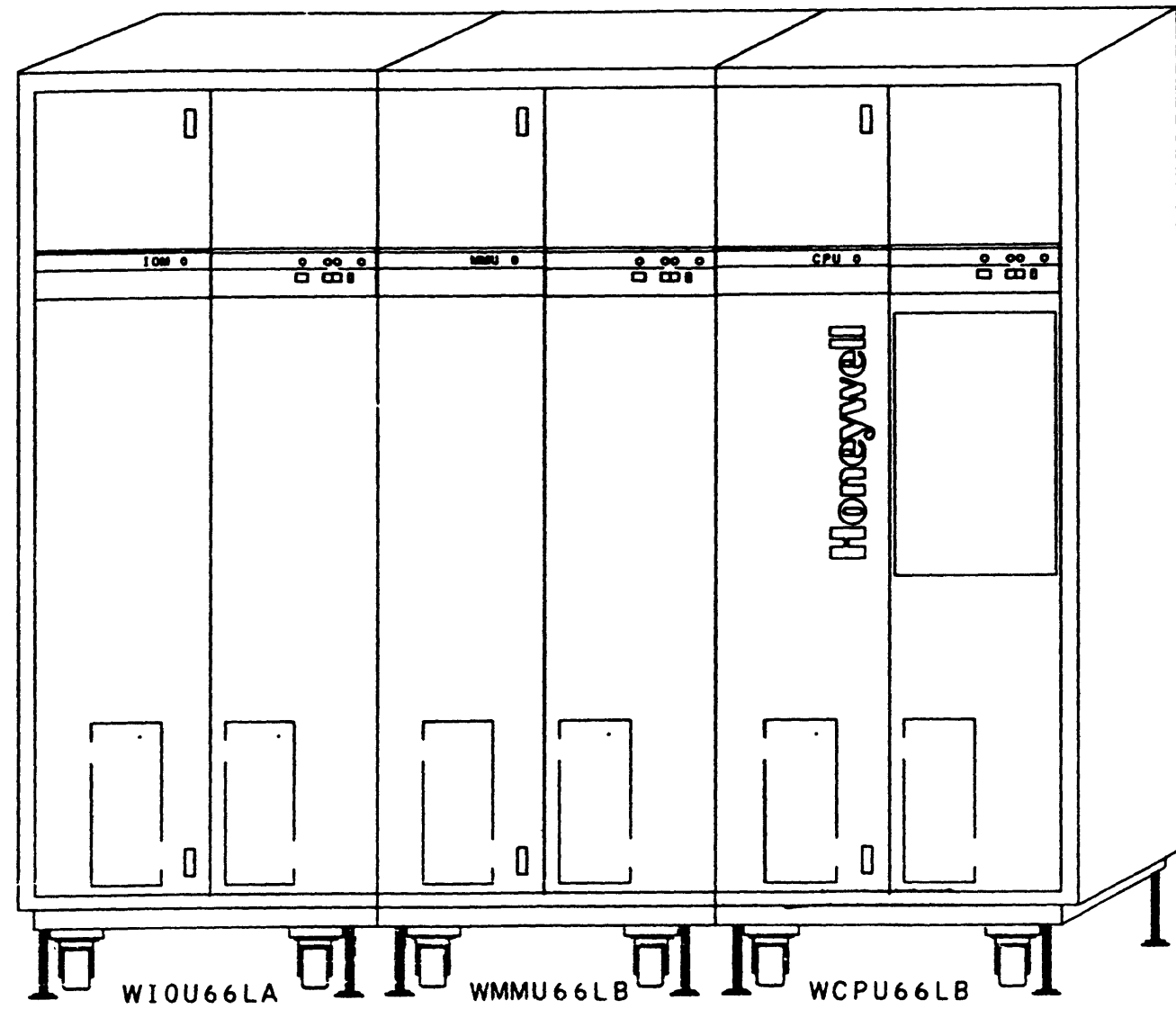


FIGURE 2.0-1. PHYSICAL OUTLINE (SHEET 3 OF 3)

3.0 PREINSTALLATION TASKS

Certain Preinstallation steps or TASKS must be performed after the site has been prepared to receive the system, but prior to the actual system installation. The PREINSTALLATION TASKS are procedural steps beginning with PREINSTALLATION TASK 1, "TURN TO PREINSTALLATION CHECKOFF LIST", and includes tasks for receiving, handling, and unpacking the equipment packs and unpacking, inspecting, and positioning cabinets.

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TASK 1 TURN TO PREINSTALLATION CHECKOFF LIST

1. TURN TO PREINSTALLATION CHECKOFF LIST. THIS LIST IS PRINTED ON HEAVY PAPER STOCK AND IS LOCATED IN THE FRONT OF THIS MANUAL.

COMPLETE CHECKOFF LIST WHEN PROCEEDING THROUGH EACH TASK.

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TASK 2 SITE INSPECTION

1. ASSURE THAT THE CUSTOMER IS READY TO RECEIVE AND INSTALL THE EQUIPMENT.
2. REVIEW THE SITE PREPARATION CHECKLIST AND THE SITE PREPARATION AUDIT REPORT FOR COMPLETENESS. THESE DOCUMENTS MAY BE OBTAINED FROM THE HONEYWELL DISTRICT MANAGER, IF NOT AVAILABLE ON SITE.

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TASK 3 RECEIVE EQUIPMENT

CAUTION

HANDLE SHIPPING PACKS WITH CARE TO AVOID EQUIPMENT DAMAGE.

1. CSE SHOULD ASSURE THAT THE CUSTOMER HAS RECEIVED SHIPPING DOCUMENTS FROM CARRIER AND ASSISTS INVENTORY OF EQUIPMENT AGAINST THE SHIPPING DOCUMENTS (BILL OF LADING, MEMORANDUM OF SHIPMENT, ETC.). CUSTOMER SHOULD BE ADVISED AGAINST SIGNING ANY PAPERS AT THIS TIME. (THE CUSTOMER MAY ACCEPT EQUIPMENT FROM CARRIER AFTER COMPLETING PREINSTALLATION TASK 6.)
2. CHECK WRAPPING, CRATES, AND CARTONS FOR BREAKS, TEARS, OR OTHER EVIDENCE OF DAMAGE OR ROUGH HANDLING.
3. CSE SHOULD NOTE ANY LOSS, DAMAGE, MOISTURE, CORROSION, OR MISHANDLING ON THE "REPORT OF DAMAGE OR LOSS", FORM "HIS 2174". THIS FORM MAY BE OBTAINED FROM THE HONEYWELL DISTRICT MANAGER.
4. CSE SHOULD ASSIST CUSTOMER WHEN NOTIFYING HONEYWELL TRAFFIC MANAGER OF ANY LOSS OF, OR DAMAGE TO, EQUIPMENT. NOTIFICATION MAY BE PERFORMED THROUGH TELEPHONE CONTACT, BUT MUST BE PROMPTLY CONFIRMED IN WRITING TO THE HONEYWELL TRAFFIC MANAGER. REFER TO BILL OF LADING FOR CURRENT TELEPHONE NUMBER.

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TASK 4A UNPACKAGING A NONCRATED PACK

NOTE

EQUIPMENT MAY BE PACKAGED IN PLASTIC-WRAPPED, UNCRATED PACKS FOR DOMESTIC SHIPMENTS OR IN CRATED PACKS FOR EXPORT SHIPMENTS IN ACCORDANCE WITH HONEYWELL PACKAGING SPECIFICATIONS. UNCRATED PACKS ARE SHIPPED IN AN UPRIGHT POSITION, PROTECTED BY FOUR WOODEN CORNER ASSEMBLIES AND STRAPPED PLASTIC WRAPPING. CRATED UNITS ARE ALSO SHIPPED IN AN UPRIGHT POSITION.

WARNING

BEFORE REMOVING BINDING STRAPS, ENSURE THAT NO ONE IS NEAR THE PACK. WHEN CUT, THESE STRAPS MAY SPRING FREE, STRIKING ANY CLOSE OBJECT OR PERSONNEL.

CSE SHALL UNPACKAGE EQUIPMENT AS FOLLOWS:

1. CUT BINDING STRAPS.
2. REMOVE WOODEN CORNER ASSEMBLIES.

CAUTION

DO NOT PULL TAPE OR PLASTIC WRAPPING OFF CABINETS. CUT PLASTIC WRAPPING ALONG ALL FOUR CORNERS FROM BOTTOM UP. GENTLY ROLL CUT PANELS TO TOP OF CABINET AND REMOVE WRAPPING. PULLING PLASTIC WRAPPING FROM CABINET COULD GENERATE HIGH POTENTIAL OF STATIC ELECTRICITY WHICH MAY CAUSE EQUIPMENT DAMAGE.

3. REMOVE PLASTIC WRAPPING.
4. ADMINISTRATIVELY DISPOSE OF ANY PACKAGING MATERIAL.

TASK 4B UNPACKAGING A CRATED PACK

WARNING

BEFORE REMOVING BINDING STRAPS, ENSURE THAT NO ONE IS NEAR THE PACK. WHEN CUT, THESE STRAPS MAY SPRING FREE, STRIKING ANY CLOSE OBJECT OR PERSONNEL.

1. CUT BINDING STRAPS.
2. REMOVE BOLTS FROM AROUND LOWER EDGE OF CRATE.
3. REMOVE CRATE FRONT PANEL (IT MAY BE TACKED IN PLACE WITH NAILS), LIFT REMAINING PANELS, AND SLIDE CRATE BACK AWAY FROM CABINET.
4. CUT EXPOSED BINDING STRAPS. THIS ACTION FREES THE CABINET FROM PALLET.
5. REMOVE ONE BASE BLOCK ASSEMBLY TO FACILITATE REMOVAL OF CABINET FROM THE PALLET.
6. CAREFULLY REMOVE CABINET FROM PALLET WITH A FORK LIFT OR HOIST; EXERCISE CARE TO AVOID EQUIPMENT DAMAGE.

CSE SHALL UNPACKAGE EQUIPMENT AS FOLLOWS:

1. CUT AND REMOVE ANY REMAINING BINDING STRAPS.

CAUTION

DO NOT PULL TAPE OR PLASTIC WRAPPING OFF CABINETS. CUT PLASTIC WRAPPING ALONG ALL FOUR CORNERS FROM BOTTOM UP. GENTLY ROLL CUT PANELS TO TOP OF CABINET AND REMOVE WRAPPING. PULLING PLASTIC WRAPPING FROM CABINET COULD GENERATE HIGH POTENTIAL OF STATIC ELECTRICITY WHICH MAY CAUSE EQUIPMENT DAMAGE.

2. REMOVE PLASTIC WRAP OR OTHER PACKAGING MATERIAL FROM CABINET.
3. ADMINISTRATIVELY DISPOSE OF ALL PACKAGING MATERIAL.

TASK 5 UNPACKING

CSE SHALL PERFORM THE FOLLOWING TASK:

1. OPEN CABINET DOORS USING A 4mm HEX WRENCH, 58020342.

NOTE

UNPACKING REFERS TO THE REMOVAL OF ANY MATERIAL, INCLUDING SPECIAL BRACKETS OR DEVICES, WHICH HAS BEEN PLACED INSIDE CABINETS TO PROVIDE PROTECTION FROM OR HANDLING HAZARDS. UNPACKING IS PERFORMED BY CSE.

2. UNPACK CABINET.
3. ASSURE THAT ALL PACKING MATERIAL, INCLUDING PACKING BRACKETS AND HARDWARE, HAS BEEN REMOVED FROM CABINET.
4. UNPACK DPU CABINET IN ACCORDANCE WITH DPU INSTALLATION MANUAL, 58009848, SECTIONS 1.1.1, 1.1.2, AND 1.1.3.
5. ADMINISTRATIVELY DISPOSE OF ALL PACKING MATERIAL.

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TASK 6 INSPECT EQUIPMENT

AFTER EQUIPMENT HAS BEEN UNPACKED, THE CSE SHOULD ASSIST CUSTOMER IN COMPLETING THE FOLLOWING TASK:

CAUTION

REMOVE ANY VISIBLE MOISTURE AND ALLOW EQUIPMENT TO STABILIZE IN OPERATING ENVIRONMENT FOR AT LEAST 24 HOURS PRIOR TO POWER UP TO AVOID EQUIPMENT DAMAGE DUE TO CONDENSATION.

1. CHECK EQUIPMENT FOR DENTS IN DOORS AND END PANELS, BROKEN INDICATORS, SWITCHES, OR DAMAGE TO OTHER PARTS, MOISTURE CONDENSATION, OR MISSING ITEMS, INCLUDING SPARE PARTS.

NOTE

CSE SHOULD TELEPHONE THE PHOENIX INSTALLATION CONTROL CENTER TO REPORT ANY LOSSES, CORROSION OF, OR DAMAGE (CONCEALED OR OTHERWISE) TO THE EQUIPMENT, INCLUDING SPARE PARTS.

2. RECORD ALL LOSSES, CORROSION OF, OR DAMAGE (CONCEALED OR OTHERWISE) TO EQUIPMENT, ON SHIPPING DOCUMENTS.
3. REPORT ANY LOSS, CORROSION, OR DAMAGE IN WRITING TO THE HONEYWELL TRAFFIC MANAGER.
4. SHIPPING DOCUMENTS MAY NOW BE SIGNED BY CUSTOMER.
5. RETURN MEMORANDUM OF SHIPMENT TO HONEYWELL'S GENERAL ACCOUNTING DEPARTMENT AT:

HONEYWELL INFORMATION SYSTEMS
P.O. BOX 8000
PHOENIX, ARIZONA 85066

c/o MANAGER, GENERAL ACCOUNTING
MAIL STATION A75

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TASK 7 POSITION CABINETS

1. CSE SHOULD ASSURE THAT SITE IS CLEAN AND FREE FROM EXTRANEIOUS MATERIAL THAT COULD HAMPER INSTALLATION.

CAUTION

MOVE CABINETS WITH CAUTION TO PREVENT THEM FROM TIPPING OVER AND TO AVOID PERSONAL INJURY OR EQUIPMENT DAMAGE.

2. POSITION CABINETS NEAR FOOTPRINT TEMPLATES. REFER TO SITE LAYOUT PLAN. DO NOT PLACE CABINETS ON FOOTPRINT TEMPLATES AT THIS TIME.
3. POSITION SPARE PARTS CABINET IN ACCORDANCE WITH SITE LAYOUT PLAN.

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4.0 INSTALLATION

After the site has been prepared to receive equipment and all PREINSTALLATION TASKS have been successfully completed, the CSE may then proceed with the INSTALLATION TASKS.

4.1 SCOPE

The Installation section of this manual sequentially lists and defines each Installation Task.

Option installation information is compiled in the System Option Installation Manual, 58010049.

4.2 ELECTROSTATIC DISCHARGE

Electrostatic discharge may be damaging to certain static-sensitive components; therefore, it is imperative to exercise caution when installing or handling equipment.

CAUTION

IT IS MANDATORY THAT ALL PERSONNEL WEAR AN ELECTROSTATIC DISCHARGE (ESD) WRIST STRAP WHEN HANDLING ANY STATIC-SENSITIVE COMPONENTS SUCH AS LOGIC BOARDS TO PREVENT STATIC ELECTRICITY DAMAGE TO THESE COMPONENTS. THIS STRAP MUST BE PLUGGED INTO AN ESD SOCKET LOCATED ON CABINET FRAME AS SHOWN IN FIGURE 4.2-1. THIS FRAME MUST BE GROUNDED WITH THE ASSURANCES LISTED BELOW:

1. ASSURE THAT CABINETS ARE PROPERLY JOINED TOGETHER IN ACCORDANCE WITH SECTION 4.4 AND THAT MMU CABINET IS PROPERLY GROUNDED TO SITE EARTH GROUND IN ACCORDANCE WITH SECTION 4.3.
2. ASSURE THAT WHEN CABINETS ARE NOT BOLTED TOGETHER, EACH CABINET IS PROPERLY GROUNDED TO SITE EARTH GROUND IN ACCORDANCE WITH SECTION 4.3.

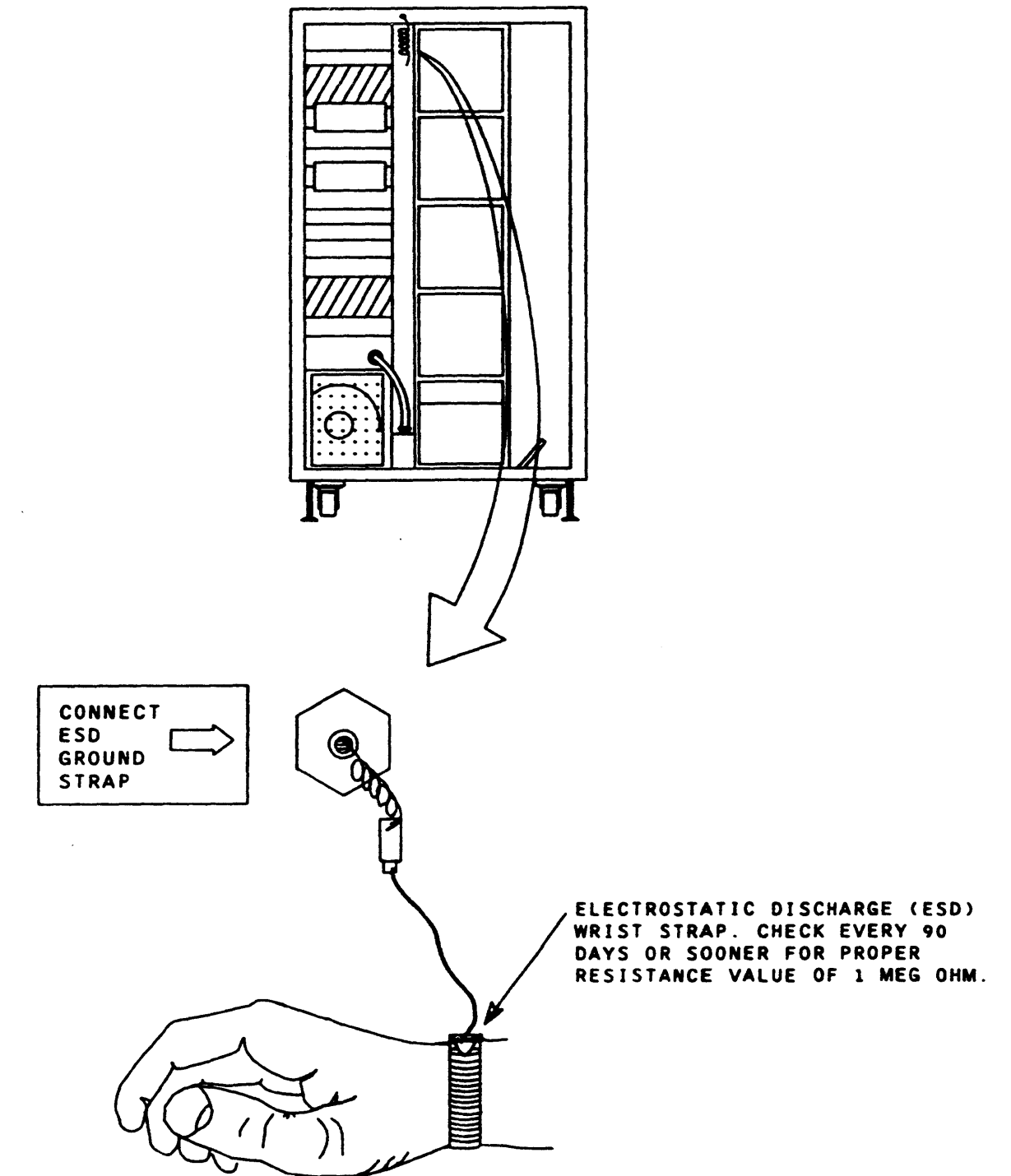


FIGURE 4.2-1. ELECTROSTATIC DISCHARGE WRIST STRAP APPLICATION

4.3 SYSTEM GROUND

Ground DPS 8 system in accordance with the following steps:

1. Assure all MGs or UPSs are connected to site earth ground. Refer to Section 4 of Site Preparation Manual, DU34.
2. Assure that the MMU cabinet has been grounded to earth ground in accordance with Figure 4.3-1 and Site Preparation Manual, DU34.
3. Assure that the system cabinets are properly bolted together in accordance with Section 4.4.

NOTE: Ground both the CPU and IMU cabinets to MMU cabinet with separate ground straps whenever these cabinets are not bolted to each other. Refer to site plan.

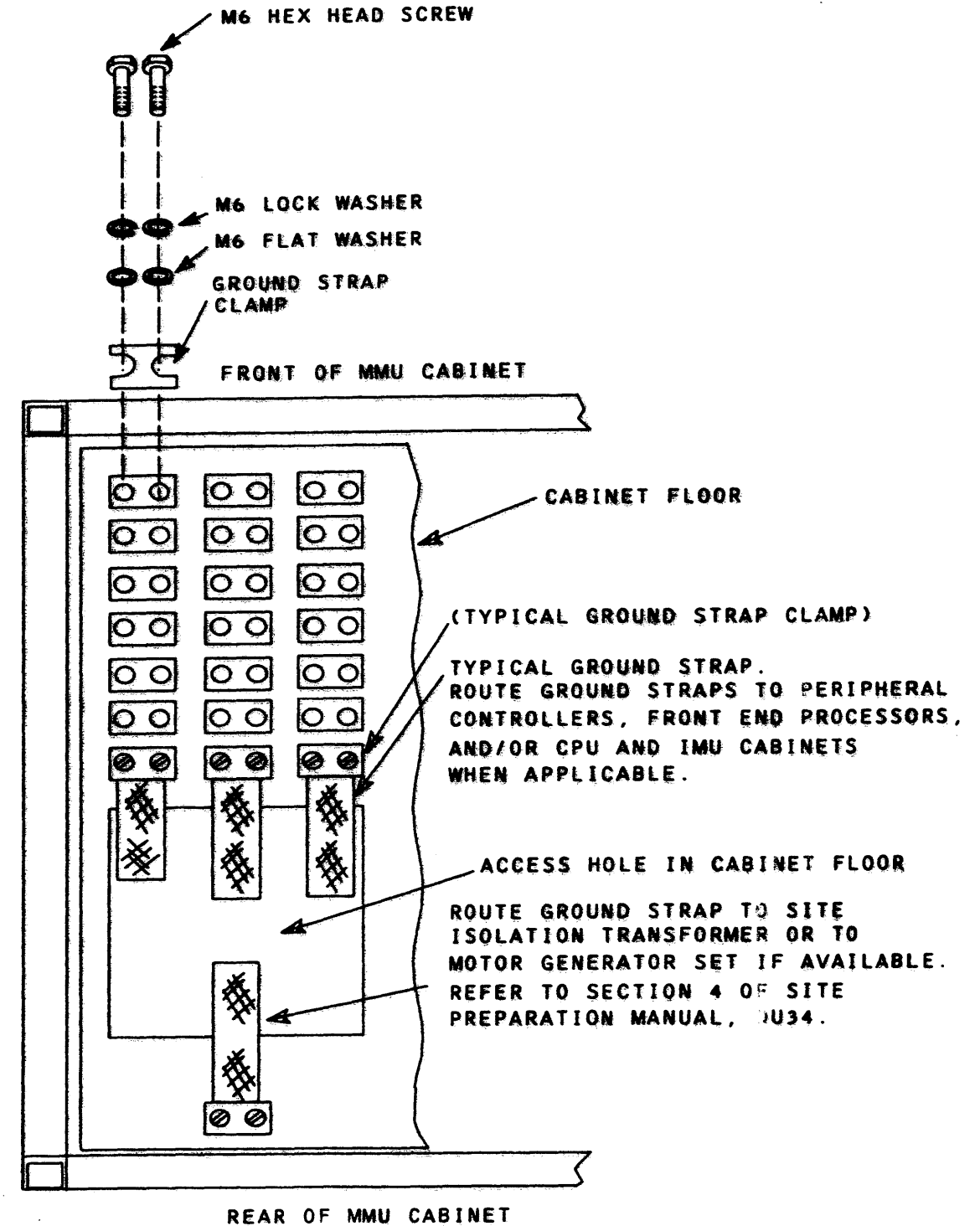


FIGURE 4.3-1. TOP VIEW OF SYSTEM GROUND AREA IN MMU CABINET

4.4 JOIN CABINETS

Cabinet frames are finished with electrically conductive paint to provide intercabinet grounding surfaces. Before bolting cabinets together, prepare mating surfaces by wiping with a clean, dry, lint-free cloth to remove dust or dirt particles.

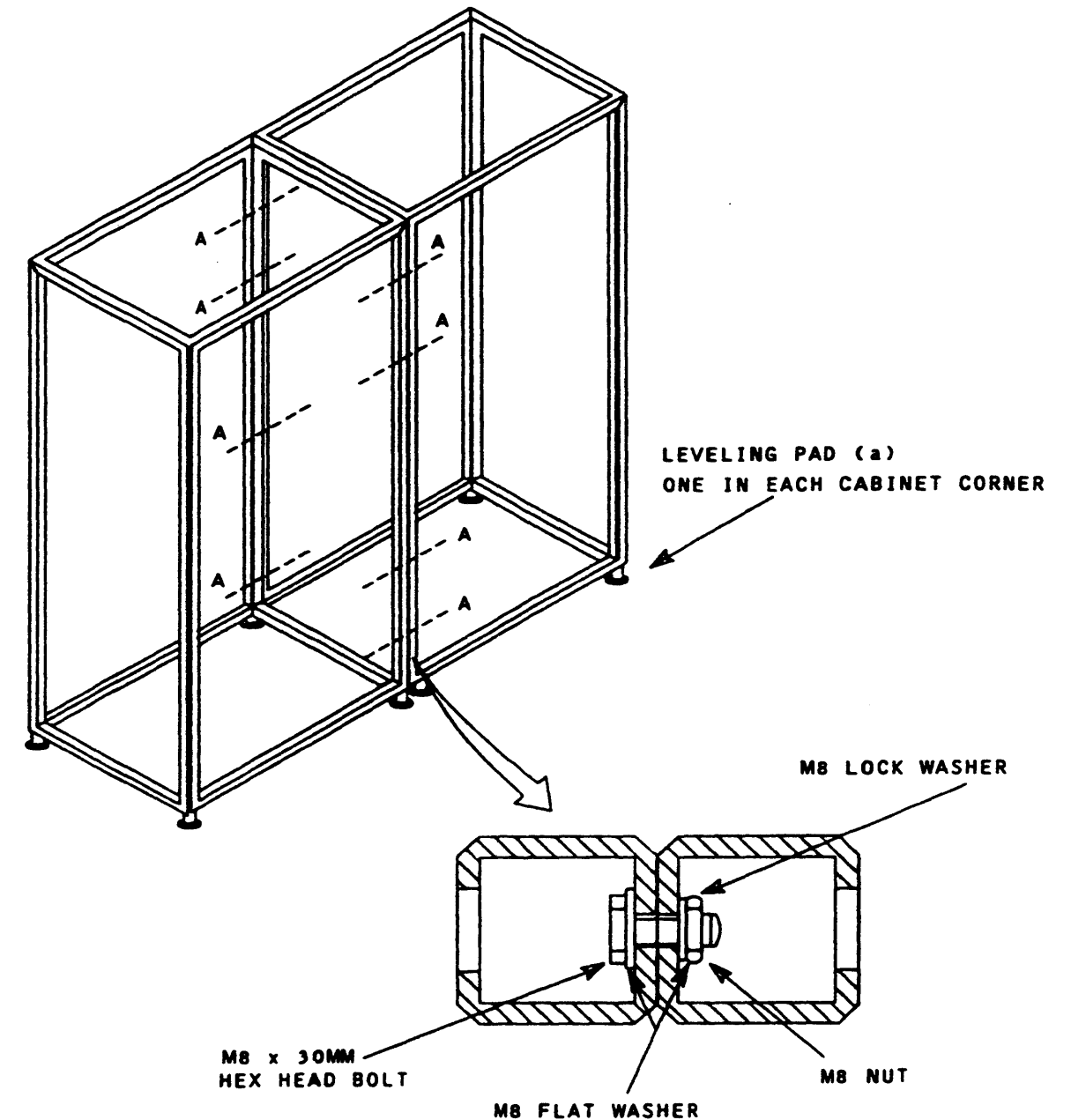
NOTE: Review site layout plan to determine if cabinets are to be bolted together or installed separately. Cabinets are first bolted together in INSTALLATION TASK 3.

Bolt cabinets together in accordance with the following steps:

CAUTION

DO NOT MOVE CABINETS WHEN LEVELING PADS ARE TOUCHING FLOOR AS EQUIPMENT OR FLOOR DAMAGE COULD OCCUR.

1. Verify that cabinets are positioned in accordance with site layout plan.
2. Place a spirit level, one to two feet in length, on top of lower frame member. Use a 5/8-inch open-end wrench to adjust each leveling pad until cabinet is level and stable. See Figure 4.4-1.
3. Repeat step 2 for mating cabinets.
4. Use M8 metric hardware to bolt cabinets together. This hardware is packaged separately and is found in marked shipping pack.
5. Bolt cabinets together and tighten with 13mm socket wrench. See Figure 4.4-1. (Tightly bolting cabinets together provides electrical ground continuity.)



(a) POSITION THE CABINET PER THE SITE LAYOUT PLAN AND LOWER EACH LEVELING PAD TO ENSURE A STABLE AND LEVEL INSTALLATION. DO NOT MOVE THE CABINET(S) WHEN THE LEVELING PADS ARE TOUCHING THE FLOOR.

FIGURE 4.4-1. JOINING CABINETS TOGETHER

4.5 CABLE/HARNESS ROUTING OVERVIEW FOR DUAL SYSTEM

TO BE SUPPLIED

TABLE 4.5-1. DUAL SYSTEM - CABLE/HARNESS ROUTING

TO BE SUPPLIED

TO BE SUPPLIED

FIGURE 4.5-1. DUAL SYSTEM - CABLE/HARNESS ROUTING

4.6 CABLE/HARNESS ROUTING OVERVIEW FOR TANDEM SYSTEM

TO BE SUPPLIED

TABLE 4.6-1. TANDEM SYSTEM - CABLE/HARNESS ROUTING

TO BE SUPPLIED

TO BE SUPPLIED

FIGURE 4.6-1. TANDEM SYSTEM - CABLE/HARNESS ROUTING

4.7 INSTALLATION TASKS

Installation Tasks are procedural steps designed to aid the CSE in installing a DPS 8 system. Installation Tasks to install cabinets, harnesses, and cables, to activate and check power system, to install trim strips, and to perform functional verification tests are included in this section.

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TASK 1 TURN TO INSTALLATION CHECKOFF LIST

1. TURN TO INSTALLATION CHECKOFF LIST. THIS LIST IS PRINTED ON HEAVY PAPER STOCK AND IS LOCATED IN THE FRONT OF THIS MANUAL.

COMPLETE CHECKOFF LIST WHEN PROCEEDING THROUGH EACH TASK.

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TASK 2 INSTALL MMU CABINET

1. POSITION MMU CABINET USING FOOTPRINT TEMPLATE. SEE FIGURE 4.7-1.
2. VERIFY THAT MMU CABINET, FIGURE 4.7-1, IS CLEAN AND FREE OF FOREIGN MATERIAL.
3. LOWER LEVELING PADS INTO POSITION WITH 5/8-INCH OPEN-END WRENCH. LEVEL CABINET WITH SPIRIT LEVEL. REFER TO SECTION 4.4.
4. VERIFY GROUND FROM MOTOR GENERATOR. REFER TO SECTION 4.3 AND SECTION 4 OF THE SITE PREPARATION MANUAL, DU34.
5. WEAR ESD STRAP AND VERIFY THAT ALL CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-2.
6. WEAR ESD STRAP AND VERIFY THAT ALL FREE-EDGE CONNECTORS ATTACHED TO CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-2.
7. CAREFULLY REMOVE CIRCUIT BOARD RESTRAINING TAPE (AND ANY TAPE RESIDUE) TO AVOID BOARD DAMAGE AND PAINT REMOVAL.
8. VERIFY THAT COOLING SYSTEM AIR FILTERS, BLOWER HOUSING, PLENUM, AND AIR INTAKE LOUVERS ARE CLEAN AND FREE FROM ANY OBSTRUCTIONS. REFER TO FIGURE 4.7-3.
9. ENSURE THAT CABINET SHUTDOWN SWITCH, LOCATED ON OPERATOR CONTROL PANEL, IS IN OUT POSITION. REFER TO FIGURE 4.7-3.
10. ENSURE THAT ALL CIRCUIT BREAKERS LOCATED AT S02 AND S03 ARE IN OFF POSITION. REFER TO FIGURE 4.7-3.
11. VERIFY THAT COOLING FANS ARE SET AT LOW SPEED AND 50 OR 60HZ, AS APPLICABLE. REFER TO INSTRUCTION LABEL INSIDE COOLING FAN HOUSING AND FIGURE 4.7-3.

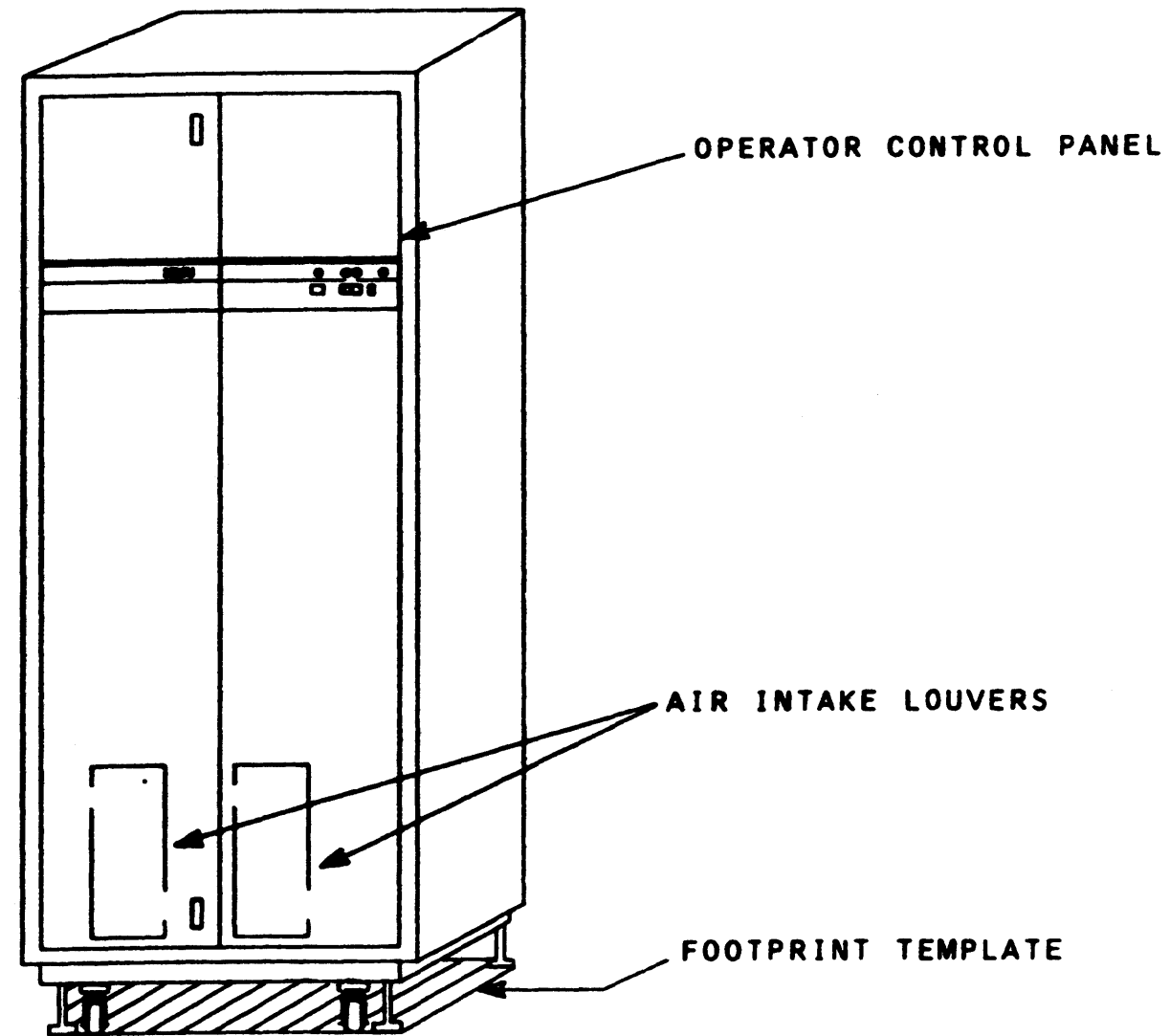
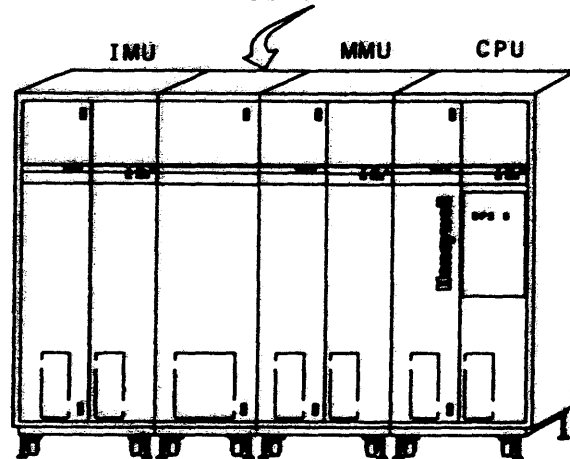


FIGURE 4.7-1. POSITION MMU CABINET

CAUTION

WEAR PROPERLY GROUNDED ESD WRIST STRAP WHEN TOUCHING ANY LOGIC BOARD.

IMU CABLE CABINET (OPTIONAL)



A0	SCAMH
B	SCAME
C	SCAMJ
D	SCAMK
E	SCAMC
F	SCAMF
G	SCUMY
H	SCUMY
J	SCUMY
K	SCUMY
L	SCAMX
M	SCAMX
N	SCAMX
P	SCAMX
Q	SCAMX
R	SCAMX
S	SCAMX
T	SCAMX
U	SCURH

WSCU66LC SCU OPTION (INCLUDES BACKPANEL)

A0
A1
B0
B1
PORT 0
PORT 1
PORT 2
PORT 3
PORT 4
PORT 5
PORT 6
PORT 7

MEMORY PORTS WMP066LA

OPTION NO. 1
ONE M64 BD = 1MB

A1 OR A2	M64 (WM0S64KA)
B	M64
C	M64
D	M64
E	M64
F	M64
G	M64
H	M64
J	M64
K	M64
L	M64
M	M64
N	M64
P	M64
Q	M64
R	M64
S	ML20D (WM0S64KA)
T	ML20D
U	ML2RP/ML2RQ/ML2RR

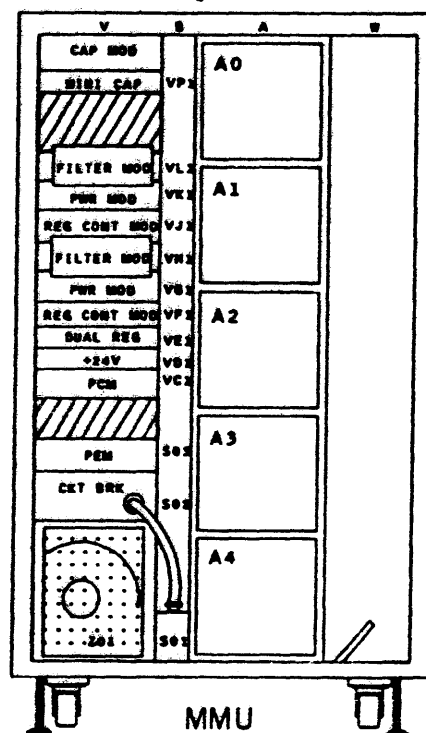
EDAC

TO SCU

WMQL64KA/KE/KH MEMORY MODULE OPTIONS (INCLUDES BACKPANEL)

CONTROL BOARDS ASSIGNMENT

- WMQL64KA = ML2RP .75 MSEC.
- WMQL64KE = ML2RQ 1.2 MSEC.
- WMQL64KH = ML2RR 1.4 MSEC.



WHTP66LA/LC OPTION

A	MT8CB
B	MT8RC
C	MT8BH
D	MT8ER
E	MT8SB
F	MT8AC
G	MT8PB
N	MT8FX
J	MT8WD
K	MT83A
L	MT83A
M	MT83A
N	MPCHC
P	DURIM
Q	MPCFN
R	MT8RA
S	DURRO
T	MT8MT
U	MT8MT

WGR66LA OPTION

WTC166LB OPTION

WADE66LA OPTION

WHTP66LB/LD OPTION

A	MT8CB
B	MT8RC
C	MT8BH
D	MT8ER
E	MT8SB
F	MT8AC
G	MT8PB
H	MT8FX
J	MT8WD
K	MT83A
L	MT83A
M	MT83A
N	
P	
Q	
R	
S	
T	MT8MT
U	MT8MT

WGR66LA OPTION

WTC166LB OPTION

WADE66LA OPTION

FIGURE 4.7-2. MMU CABINET - CIRCUIT BOARD LOCATION

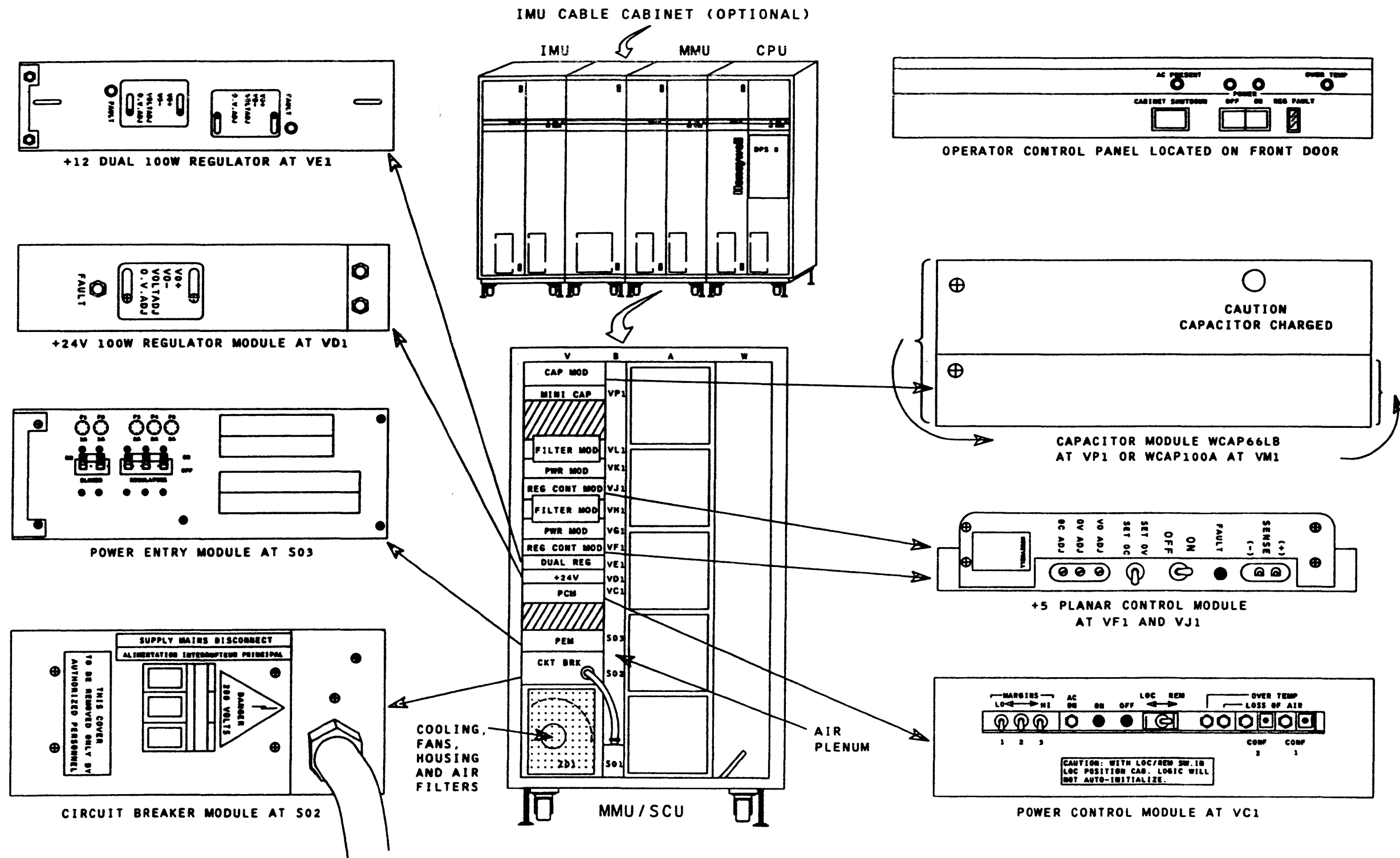


FIGURE 4.7-3. MMU CABINET - POWER PANELS

TASK 3 INSTALL CPU CABINET

1. POSITION CPU CABINET USING FOOTPRINT TEMPLATE. SEE FIGURE 4.7-4.
2. VERIFY THAT CPU CABINET, FIGURE 4.7-4, IS CLEAN AND FREE OF FOREIGN MATERIAL.
3. JOIN CPU CABINET TO MMU CABINET IN ACCORDANCE WITH SECTION 4.4.
4. IF CPU CABINET IS NOT BOLTED TO MMU CABINET, CONNECT GROUND CABLE FROM CPU TO MMU.
5. WEAR ESD STRAP AND VERIFY THAT ALL CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-5.
6. WEAR ESD STRAP AND VERIFY THAT ALL FREE-EDGE CONNECTORS ATTACHED TO CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-5.
7. CAREFULLY REMOVE CIRCUIT BOARD RESTRAINING TAPE (AND ANY TAPE RESIDUE) TO AVOID BOARD DAMAGE AND PAINT REMOVAL.
8. VERIFY THAT COOLING SYSTEM AIR FILTERS, PLENUM, BLOWER HOUSING, AND AIR INTAKE LOUVERS ARE CLEAN AND FREE FROM ANY OBSTRUCTIONS. REFER TO FIGURE 4.7-6.
9. ENSURE THAT CABINET SHUTDOWN SWITCH, LOCATED ON OPERATOR CONTROL PANEL, IS IN OUT POSITION. SEE FIGURE 4.7-6.
10. ENSURE THAT ALL CIRCUIT BREAKERS, LOCATED AT S02 AND S03, ARE IN OFF POSITION. SEE FIGURE 4.7-6.
11. VERIFY THAT COOLING FANS ARE SET AT LOW SPEED AND 50 OR 60HZ, AS APPLICABLE. REFER TO INSTRUCTION LABEL INSIDE COOLING FAN HOUSING AND FIGURE 4.7-6.

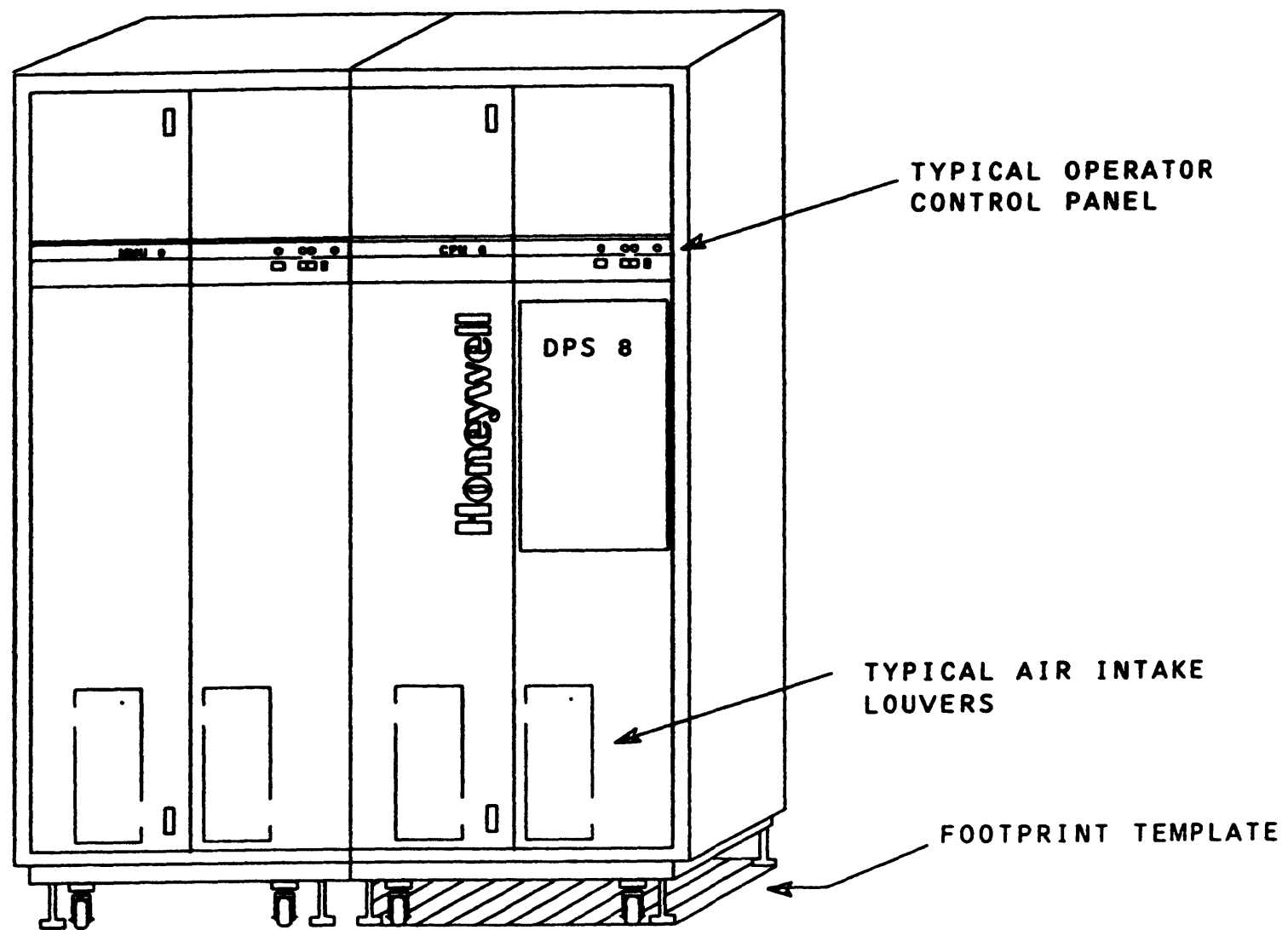


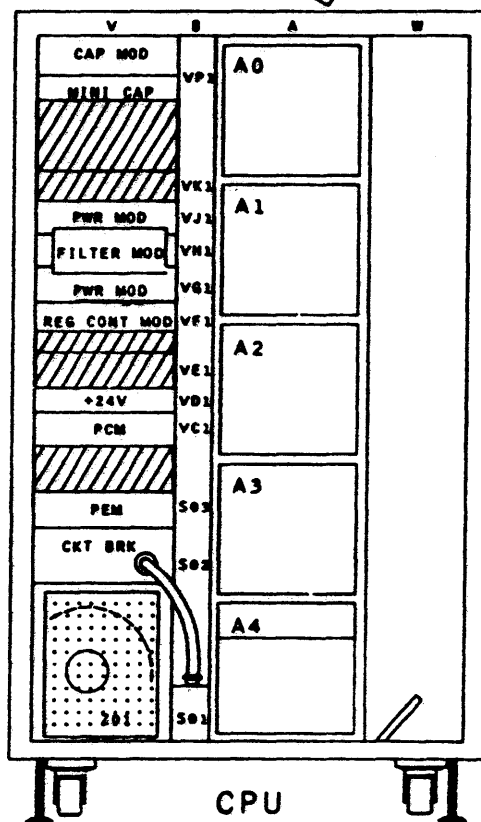
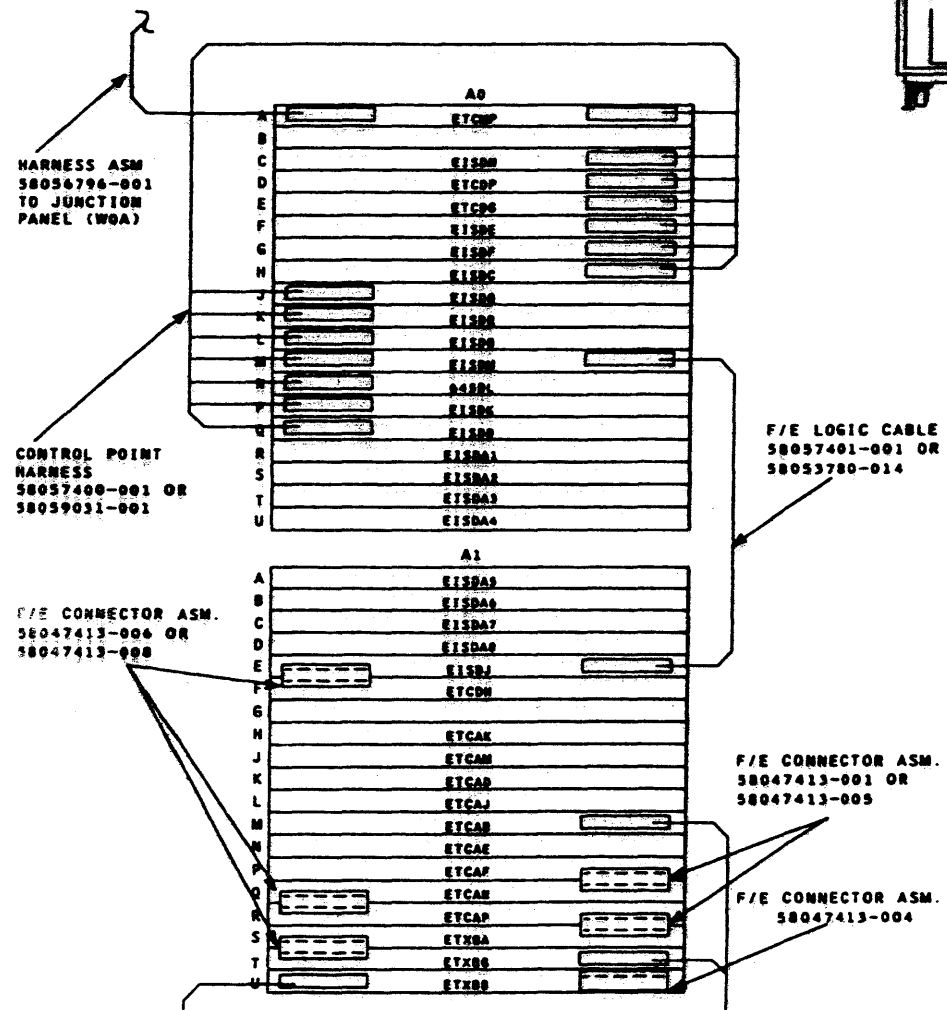
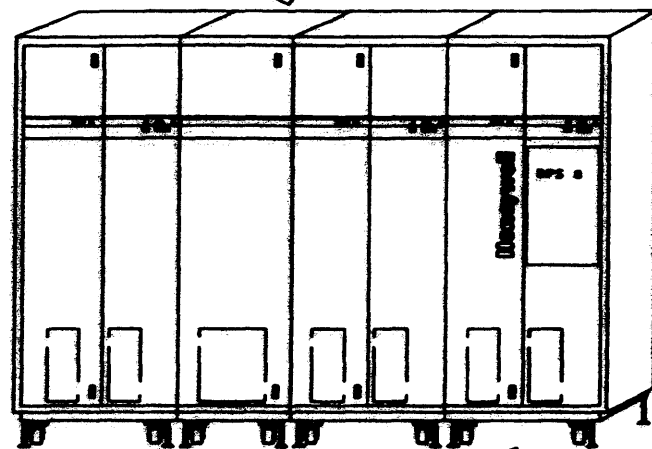
FIGURE 4.7-4. POSITION CPU CABINET

CAUTION

WEAR PROPERLY GROUND ESD WRIST STRAP WHEN TOUCHING ANY LOGIC BOARD.

IMU CABLE CABINET (OPTIONAL)

IMU MMU CPU



TO RIGHT F/E CONNECTOR ON ETXBG LOCATED IN A1T AND RIGHT F/E CONNECTOR ON ETCAB LOCATED AT A1M.

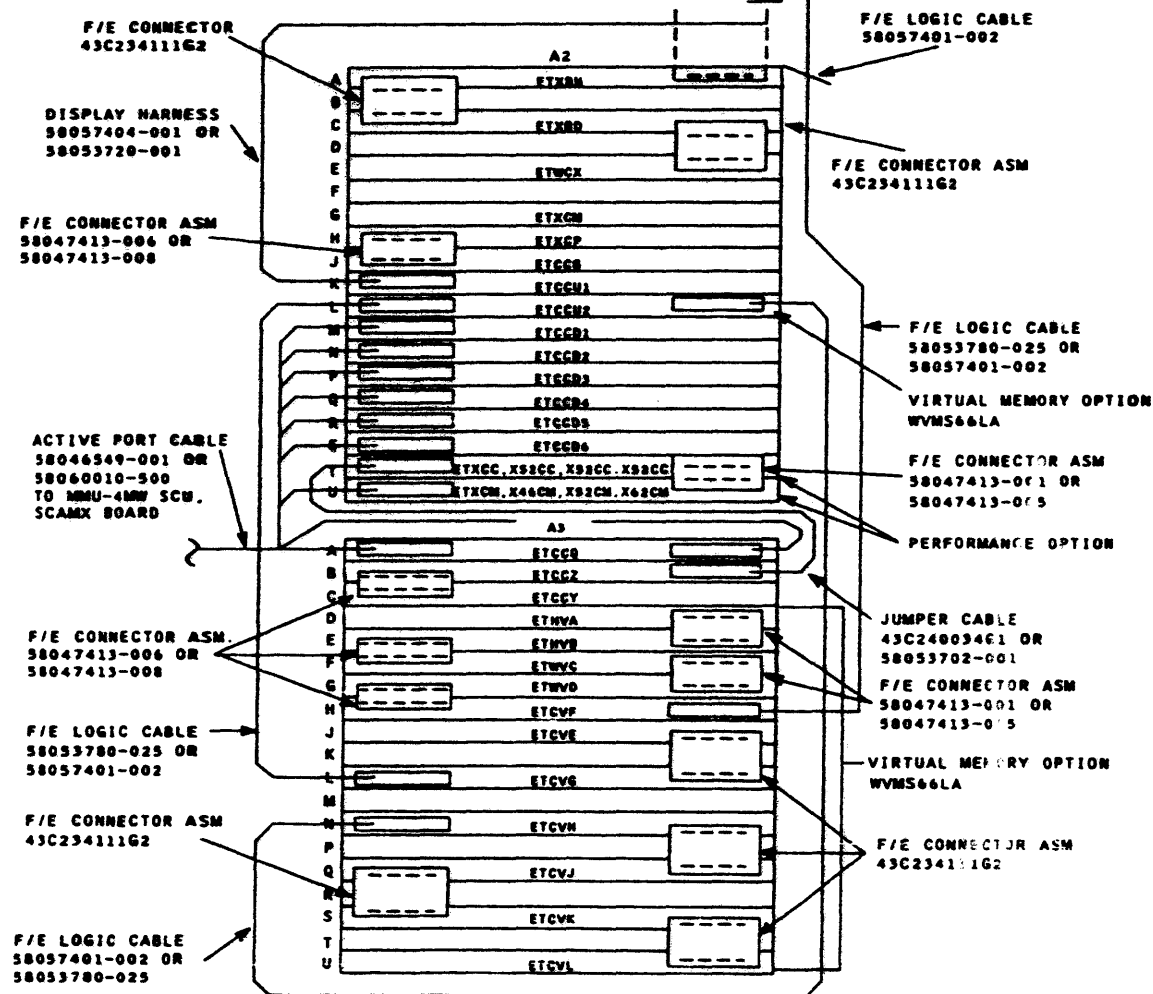


FIGURE 4.7-5. CPU CABINET - CIRCUIT BOARD LOCATION

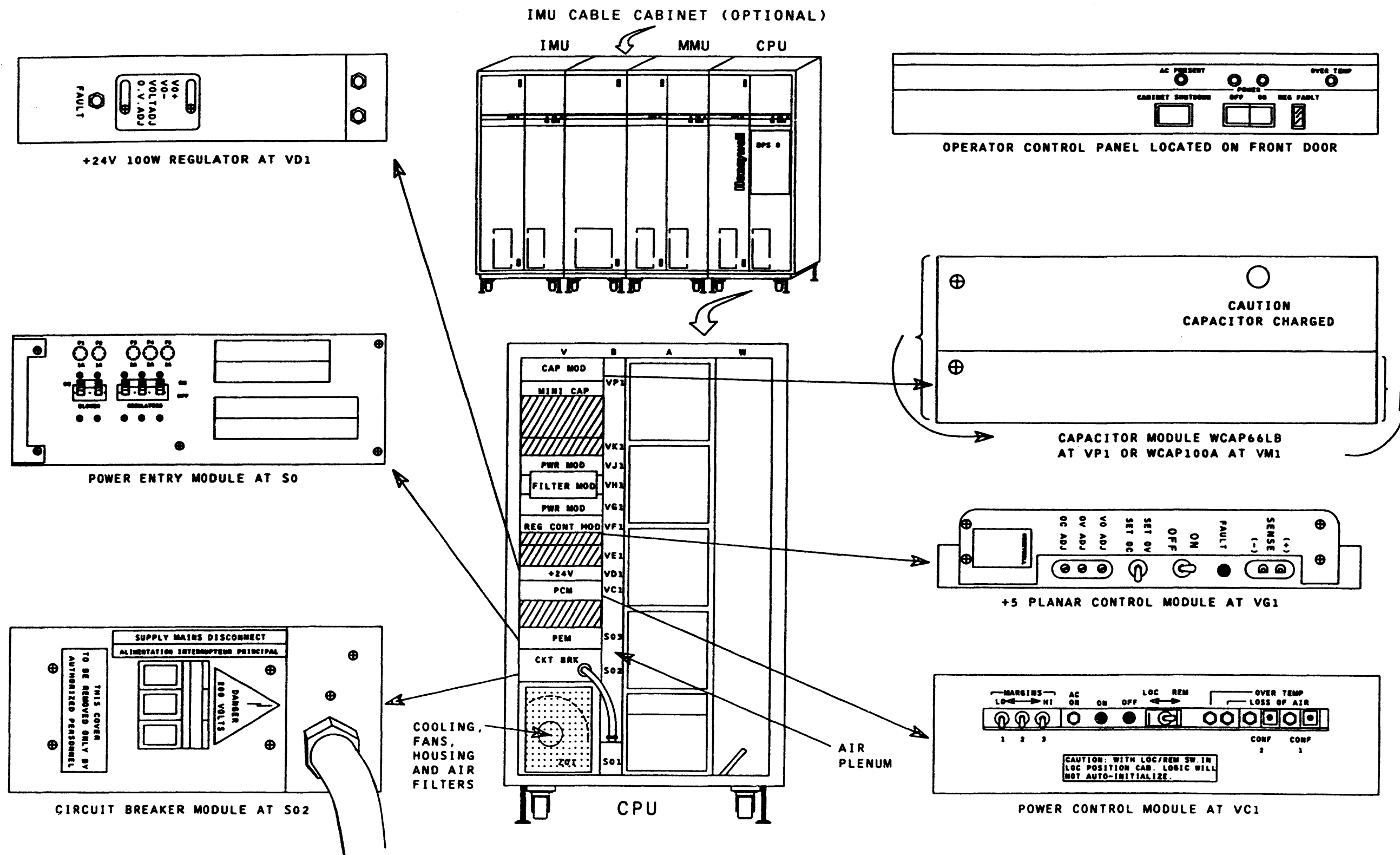


FIGURE 4.7-6. CPU CABINET - POWER PANELS

TASK 4A INSTALL IMU CABINET

1. POSITION IMU/IMU CABLE CABINET(S) USING FOOTPRINT TEMPLATE. SEE FIGURE 4.7-7.
2. VERIFY THAT IMU/IMU CABLE CABINET(S), FIGURE 4.7-7, ARE CLEAN AND FREE OF FOREIGN MATERIAL.
3. JOIN IMU/IMU CABLE CABINET TO MMU CABINET IN ACCORDANCE WITH SECTION 4.4.
4. IF IMU/IMU CABLE CABINET IS NOT BOLTED TO MMU CABINET, CONNECT GROUND CABLE FROM IMU TO MMU.
5. WEAR ESD STRAP AND VERIFY THAT ALL CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-8.
6. WEAR ESD STRAP AND VERIFY THAT ALL FREE-EDGE CONNECTORS ATTACHED TO CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-8.
7. CAREFULLY REMOVE CIRCUIT BOARD RESTRAINING TAPE (AND ANY TAPE RESIDUE) TO AVOID BOARD DAMAGE AND PAINT REMOVAL.
8. VERIFY THAT COOLING SYSTEM AIR FILTERS, PLENUM, BLOWER HOUSING, AND AIR INTAKE LOUVERS ARE CLEAN AND FREE FROM ANY OBSTRUCTIONS. REFER TO FIGURE 4.7-9.
9. ENSURE THAT CABINET SHUTDOWN SWITCH, LOCATED ON OPERATOR CONTROL PANEL, IS IN OUT POSITION. SEE FIGURE 4.7-9.
10. ENSURE THAT ALL CIRCUIT BREAKERS, LOCATED AT S02 AND S03, ARE IN OFF POSITION. SEE FIGURE 4.7-9.
11. VERIFY THAT COOLING FANS ARE SET AT HIGH SPEED AND 50 OR 60 HZ, AS APPLICABLE. REFER TO INSTRUCTION LABEL INSIDE COOLING FAN HOUSING AND FIGURE 4.7-9.

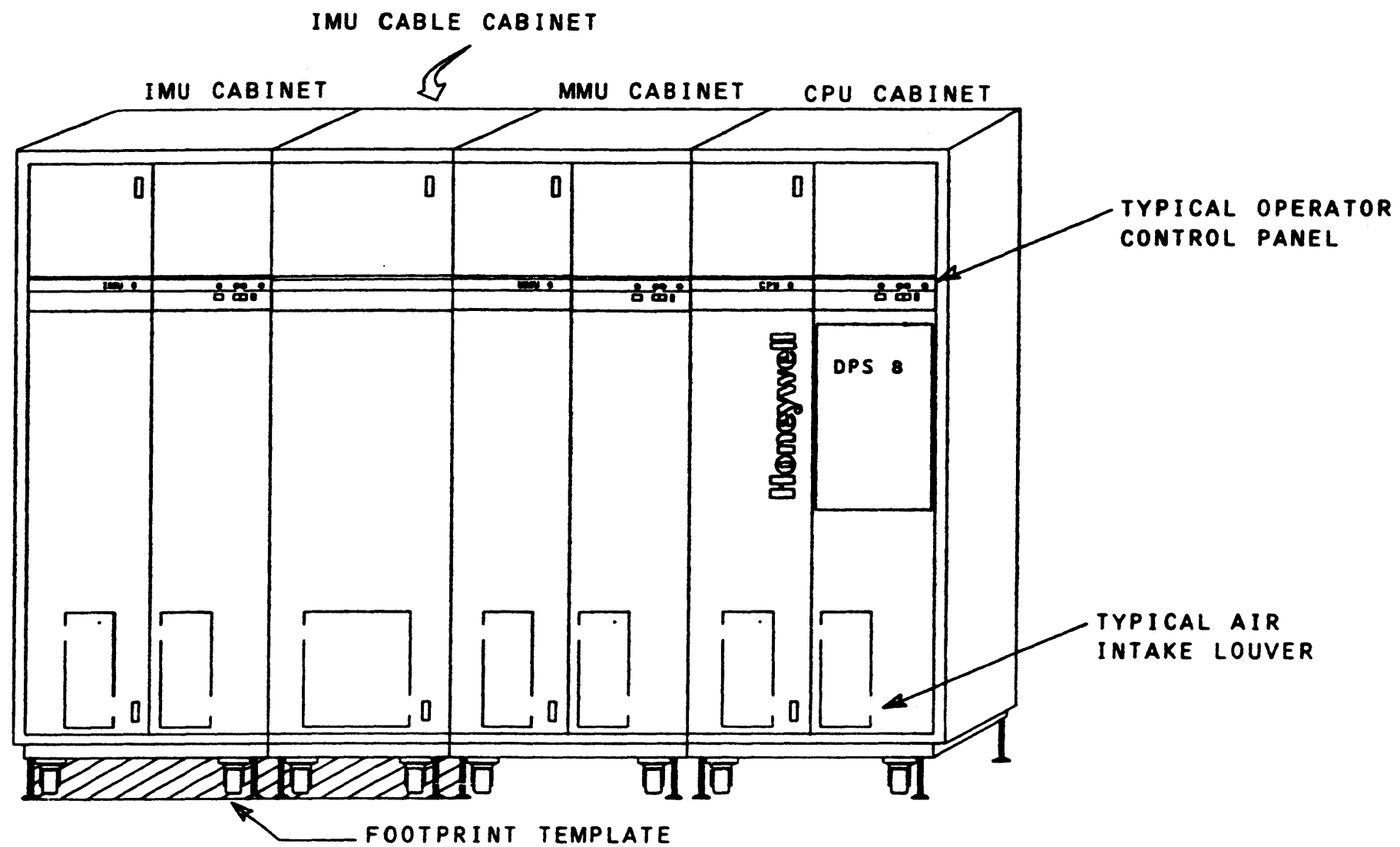
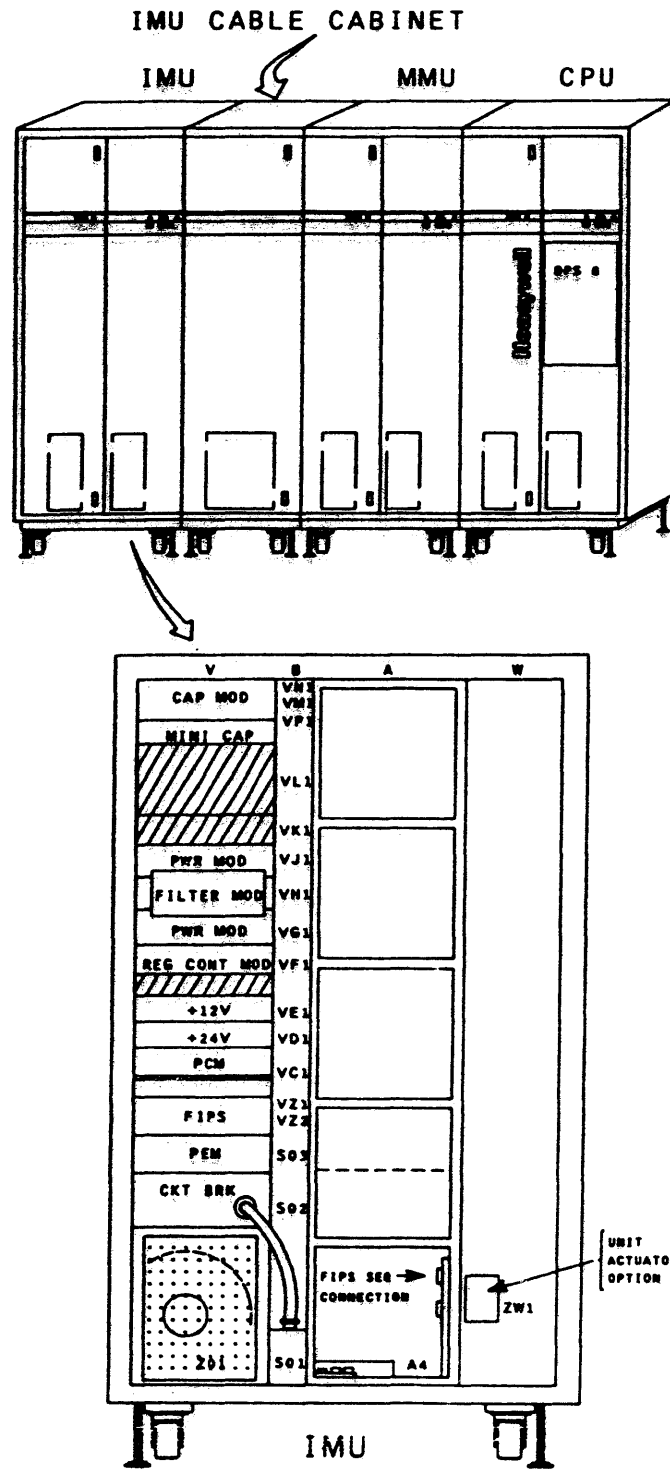


FIGURE 4.7-7. POSITION IMU CABINET

CAUTION

WEAR PROPERLY GROUNDED ESD WRIST STRAP WHEN TOUCHING ANY LOGIC BOARD.



CARD CAGE 0 - CHANNELS

FIRST IPC-CONS-2	A	WXGKA-1
THIRD IPC-CONS-2	B	WXGKA-1
	C	WXGJA
	D	WXGJC
	E	WXGJA
	F	WXGJC
	G	WXGDB-1
	H	WXGDA-1
	J	WXGJD
	K	WXGJA
	L	WXGJB
	M	WXGSA-1
THIRD FIPS	N	WXGSB
	P	WXGSC-1
	Q	WXGSD
	R	WXGSA-1
FIRST FIPS	S	WXGSB
	T	WXGSC-1
	U	WXGSD

MAY BE ANY MIX OF OPTIONS IN ANY ORDER

CARD CAGE 1 - I/O CENTRAL

CLOCK	A	WXGGA
MCA	B	WXGMB
	C	WXGMC-1
	D	
DATA DIRECTOR	E	WXGDA
	F	WXGPC
CONTROL SUPERVISOR	G	WXGPD
	H	WXGPE
BUS ARBITRATOR	J	WXGPE
	K	WXGAA
PORT A	L	WXGCD
PORT B	M	WXGCE
PORT C	N	WXGCD
PORT D	P	WXGCE
	Q	WXGCD
	R	WXGCE
	S	WXGCD
PORT SELECT	T	WXGCE
	U	WXGCA

CARD CAGE 2 - CHANNELS

SECOND IPC-CONS-2	A	WXGKA-1
FOURTH IPC-CONS-2	B	WXGKA-1
	C	WXGJA
	D	WXGJC
	E	WXGJA
	F	WXGJC
	G	WXGDB-1
	H	WXGDA-1
	J	WXGJD
	K	WXGJA
	L	WXGJB
	M	WXGSA-1
FOURTH FIPS	N	WXGSB
	P	WXGSC-1
	Q	WXGSD
	R	WXGSA-1
SECOND FIPS	S	WXGSB
	T	WXGSC-1
	U	WXGSD

MAY BE ANY MIX OF OPTIONS IN ANY ORDER

A3

	A	MPCDI	FIFTH WDDI66LA
	B	MPCDI	THIRD WDDI66LA
	C	MPCDI	FIRST WDDI66LA
	D	WDAEI	
FIRST DAU (WDAU66LA)	E	WDASE	
	F	WDAMP-1	
	G	WDASB	
	H	WDACI	THIRD WDDA66LA
	J	WDACI	FIRST WDDA66LA
	K		
	L	WDACI	SECOND WDDA66LA
	M	WDACI	FOURTH WDDA66LA
	N	WDASB	
	P	WDAMP-1	
SECOND DAU (WDAU66LB)	Q	WDASE	
	R	WDAEI	
	S	MPCDI	SECOND WDDI66LA
	T	MPCDI	FOURTH WDDI66LA
	U	.DI	SIXTH WDDI66LA

FIGURE 4.7-8. IMU CABINET - CIRCUIT BOARD LOCATION

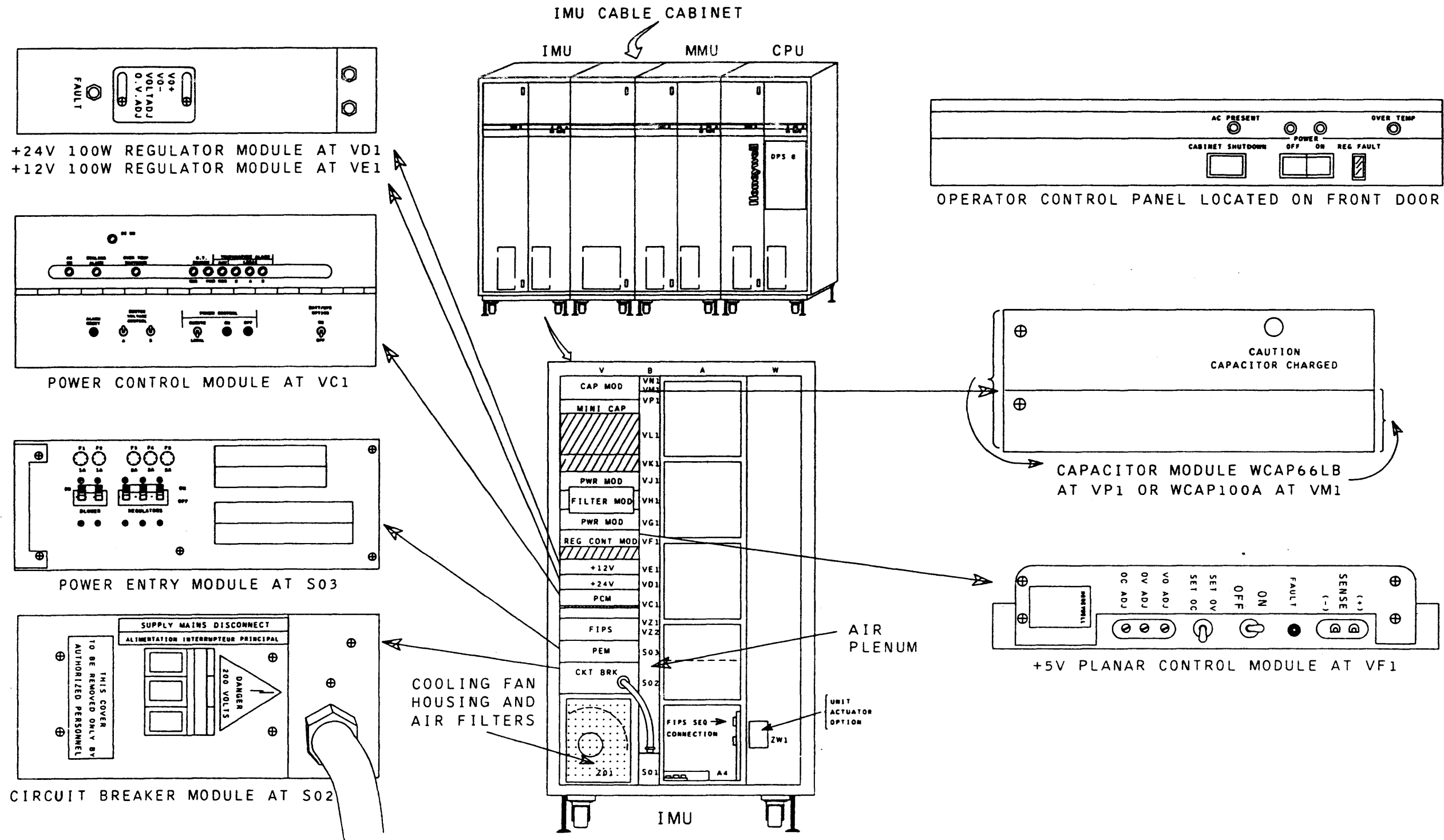


FIGURE 4.7-9. IMU CABINET - POWER PANELS

TASK 4B INSTALL IOM CABINET

1. POSITION IOM/IOM CABLE CABINET(S) USING FOOTPRINT TEMPLATE. SEE FIGURE 4.7-10.
2. VERIFY THAT IOM/IOM CABLE CABINET(S), FIGURE 4.7-10, ARE CLEAN AND FREE OF FOREIGN MATERIAL.
3. JOIN IOM/IOM CABLE CABINET TO MMU CABINET IN ACCORDANCE WITH SECTION 4.4.
4. IF IOM/IOM CABLE CABINET IS NOT BOLTED TO MMU CABINET, CONNECT GROUND CABLE FROM IOM TO MMU.
5. WEAR ESD STRAP AND VERIFY THAT ALL CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-11.
6. WEAR ESD STRAP AND VERIFY THAT ALL FREE-EDGE CONNECTORS ATTACHED TO CIRCUIT BOARDS ARE PROPERLY SEATED. REFER TO FIGURE 4.7-11.
7. CAREFULLY REMOVE CIRCUIT BOARD RESTRAINING TAPE (AND ANY TAPE RESIDUE) TO AVOID BOARD DAMAGE AND PAINT REMOVAL.
8. VERIFY THAT COOLING SYSTEM AIR FILTERS, PLENUM, BLOWER HOUSING, AND AIR INTAKE LOUVERS ARE CLEAN AND FREE FROM ANY OBSTRUCTIONS. REFER TO FIGURE 4.7-12.
9. ENSURE THAT CABINET SHUTDOWN SWITCH, LOCATED ON OPERATOR CONTROL PANEL, IS IN OUT POSITION. SEE FIGURE 4.7-12.
10. ENSURE THAT ALL CIRCUIT BREAKERS, LOCATED AT S02 AND S03, ARE IN OFF POSITION. SEE FIGURE 4.7-12.
11. VERIFY THAT COOLING FANS ARE SET AT LOW SPEED AND 50 OR 60HZ, AS APPLICABLE. REFER TO INSTRUCTION LABEL INSIDE COOLING FAN HOUSING AND FIGURE 4.7-12.

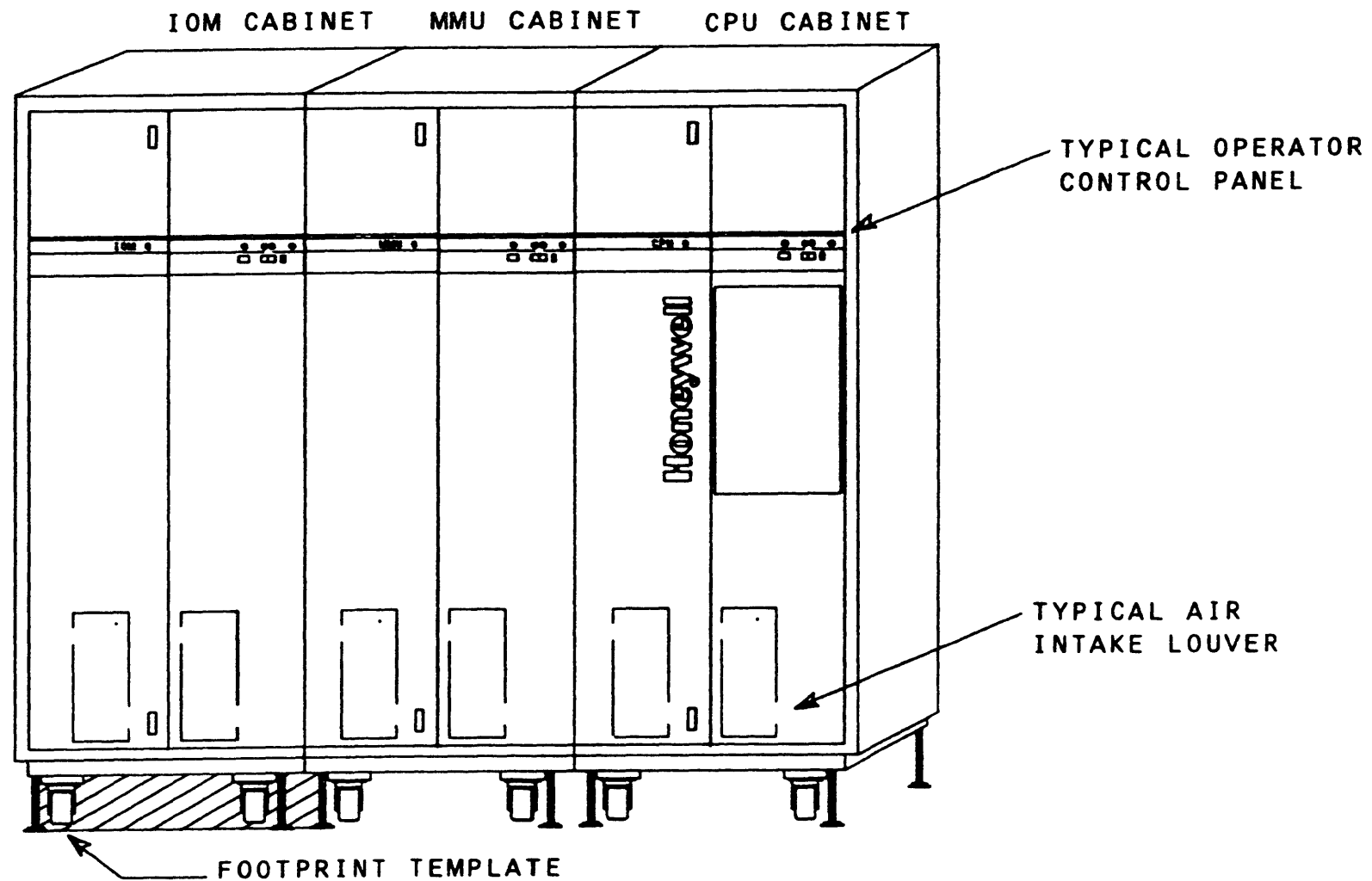
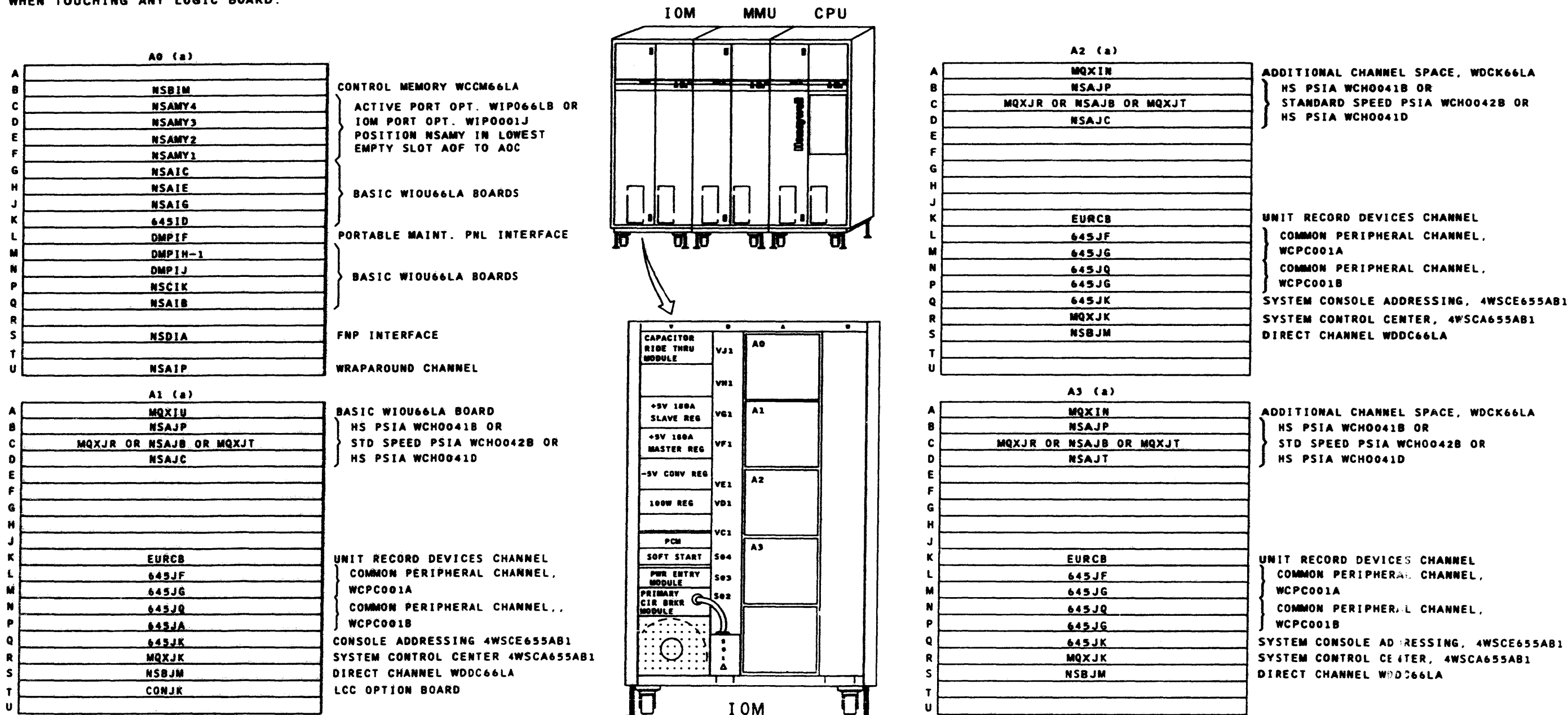


FIGURE 4.7-10. POSITION IOM CABINET

CAUTION

WEAR PROPERLY GROUNDED ESD WRIST STRAP WHEN TOUCHING ANY LOGIC BOARD.



(a) TYPICAL BOARD LOCATIONS. REFER TO OPTIONS MANUAL, 58009915, FOR OPTIONS INSTALLATION INSTRUCTIONS.

FIGURE 4.7-11. IOM CABINET - CIRCUIT BOARD LOCATION

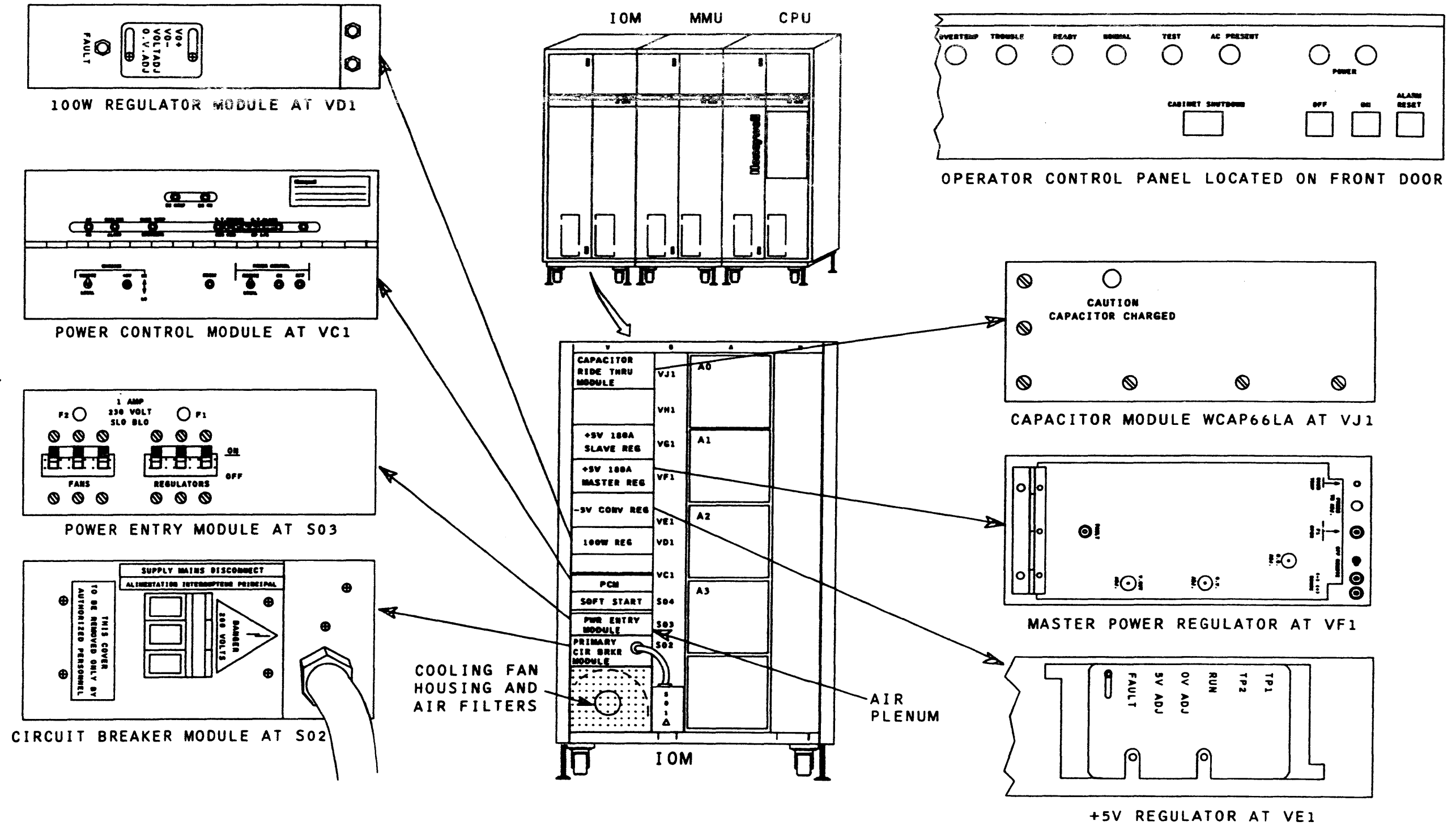


FIGURE 4.7-12. IOM CABINET - POWER PANELS

TASK 5 INSTALL DPU CABINET

1. POSITION DPU CABINET (USING FOOTPRINT TEMPLATE, IF SUPPLIED) IN ACCORDANCE WITH SITE PLAN AND REFER TO DPU INSTALLATION MANUAL, 58009848, SECTIONS 1.2 AND 1.3.
2. LOWER LEVELING PADS INTO POSITION.
3. LEVEL CABINET WITH SPIRIT LEVEL.
4. ENSURE THAT CABINET IS CLEAN AND FREE OF FOREIGN MATERIAL.
5. ENSURE THAT COOLING SYSTEM AIR FILTERS AND AIR INTAKE LOUVERS ARE CLEAN AND UNOBSTRUCTED.
6. ENSURE THAT LOGIC BOARDS ARE PROPERLY SEATED.
7. VERIFY THAT CABINET CIRCUIT BREAKER(S) ARE IN OFF POSITION.

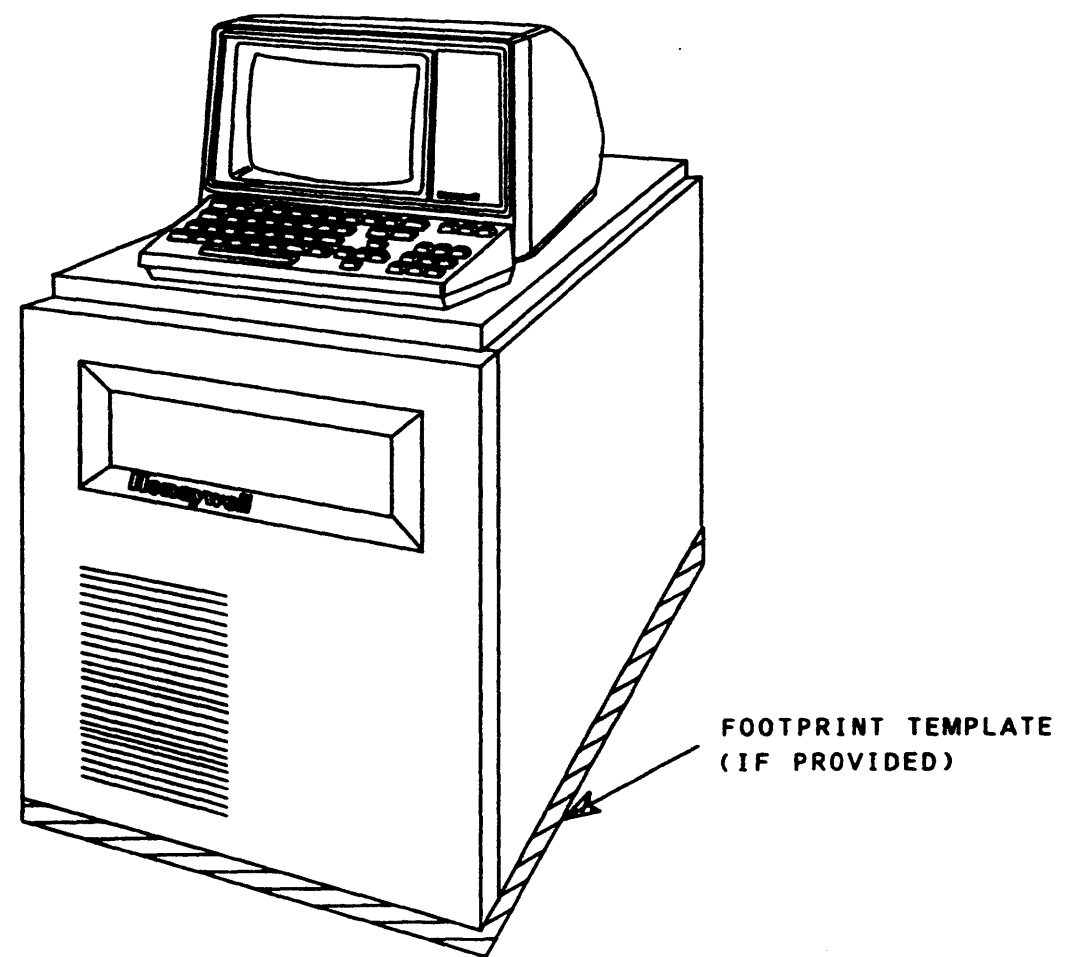


FIGURE 4.7-13. POSITION DPU CABINET

TASK 6 INSTALL SYSTEM CONSOLE

INSTALL SYSTEM CONSOLE (INCLUDING REMOTE MAINTENANCE INTERFACE, RMI)
IN ACCORDANCE WITH SYSTEM CONSOLE INSTALLATION MANUAL, 58010084.

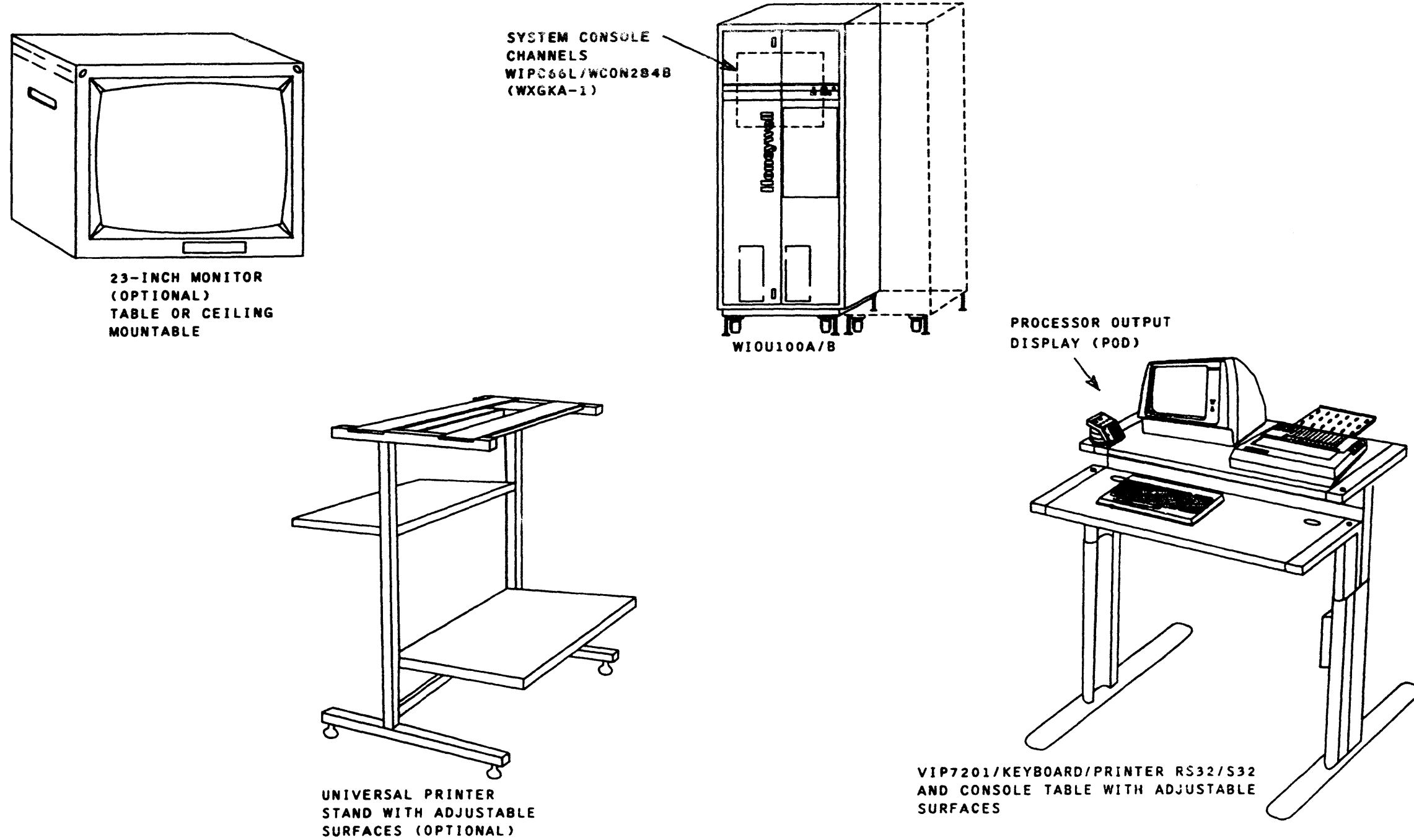


FIGURE 4.7-14. SYSTEM CONSOLE COMPONENTS

TASK 7 INSTALL PORT CABLES AND HARNESSSES

INSTALL PORT CABLES IN ACCORDANCE WITH FIGURES 4.7-15 THROUGH 4.7-20.

REFER TO SYSTEM OPTIONS INSTALLATION INSTRUCTIONS INCLUDED IN THE FOLLOWING LIST. SHOULD ANY DIFFERENCES OCCUR BETWEEN THE INFORMATION IN INSTALLATION TASK 7 AND THE SYSTEMS OPTIONS MANUAL, THE SYSTEMS OPTIONS MANUAL TAKES PRECEDENCE.

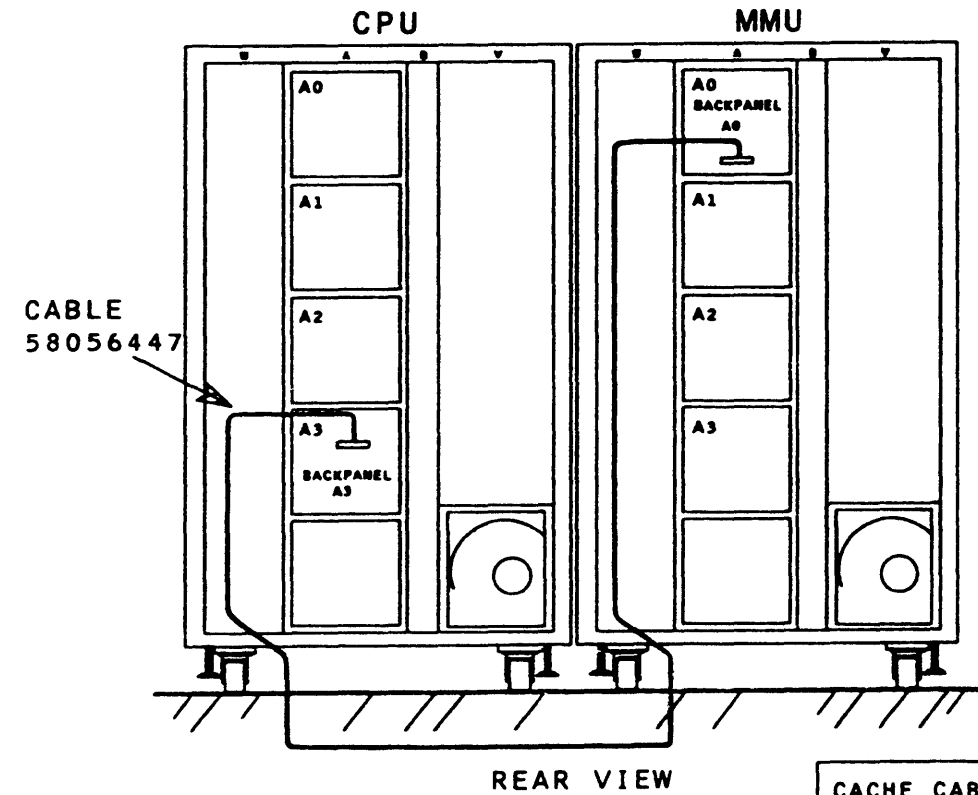
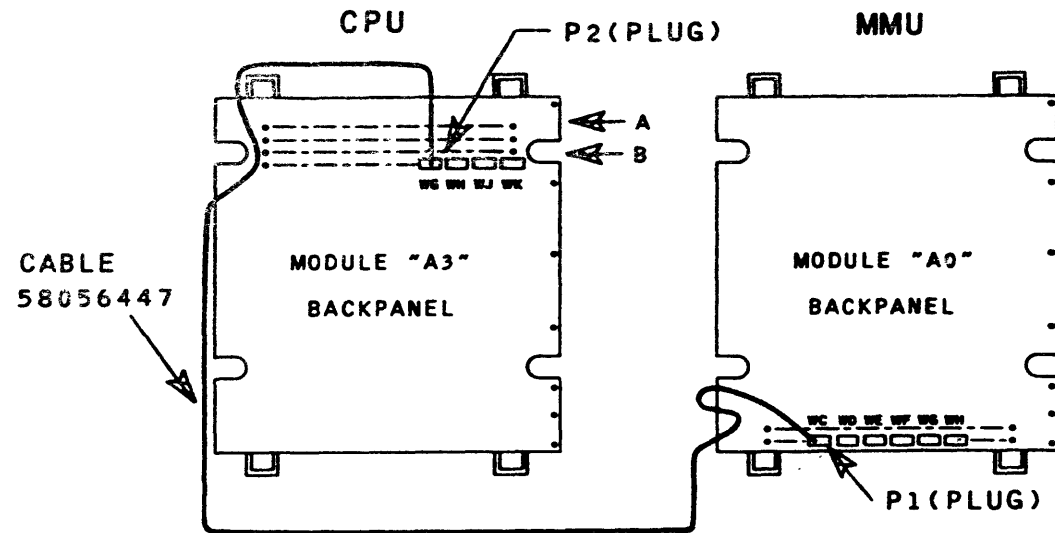
CPU OPTIONS MANUAL	58010062
SCU OPTIONS MANUAL	58009914
IOM OPTIONS MANUAL	58009915
IMU OPTIONS MANUAL	58010032
MPC-TAPE OPTIONS MANUAL	58009905
MPC-DISK OPTIONS MANUAL	58009921

NOTES:

1. HARDWARE CACHE CLEAR OPTION, WHCC66LB, MUST BE INSTALLED BEFORE INSTALLING THIS OPTION. REFER TO SYSTEM OPTIONS INSTALLATION MANUALS.
2. LOW PROFILE CPUs CONTAIN HIGH DENSITY BACKPANELS. EXERCISE CARE WHEN DETERMINING CORRECT BOARD SLOT FROM THE CHART.

"SCU" TO "CPU" CABLE INTERFACE MATRIX

CPU			MMU		
C P U NUMBER	PORT DESIG.	BACKPANEL LOCATION	S C U NUMBER	PORT DESIG.	BACKPANEL LOCATION
0	A	A3-B-WG	0	2	A0-U-WC
1				3	-WD
2				4	-WE
3				5	-WF
0	B	A3-B-WH	1	6	-WG
1				7	-WH
2				2	-WC
3				3	-WD
0	C	A3-B-WJ	2	4	-WE
1				5	-WF
2				6	-WG
3				7	-WH
0	D	A3-B-WK	3	2	-WC
1				3	-WD
2				4	-WE
3				5	-WF
				6	-WG
				7	A0-U-WH



CACHE CABLE OPTION	WHCC66LA
INSTALLATION KIT	58057842
INSTALLATION INSTRUCTION	58057843
CACHE CABLE	58056447

FIGURE 4.7-15. INSTALL CACHE CABLE

ATTACH THE ACTIVE PORT CABLE (58046549) TO THE FREE-EDGE CONNECTORS ON THE "ETCCD", "ETXCM" OR "E52CM", AND "ETCCQ" BOARDS LOCATED IN MODULES "A2" AND "A3" OF THE C.P.U. CABINET. START AT THE LEFT SIDE OF THE BD./CONNECTOR (PORT "A"), FOR THE FIRST OPTION, PROGRESSING IN SEQUENCE TO PORTS "B", "C", AND "D" FOR THE SECOND, THIRD, AND FOURTH OPTIONS.

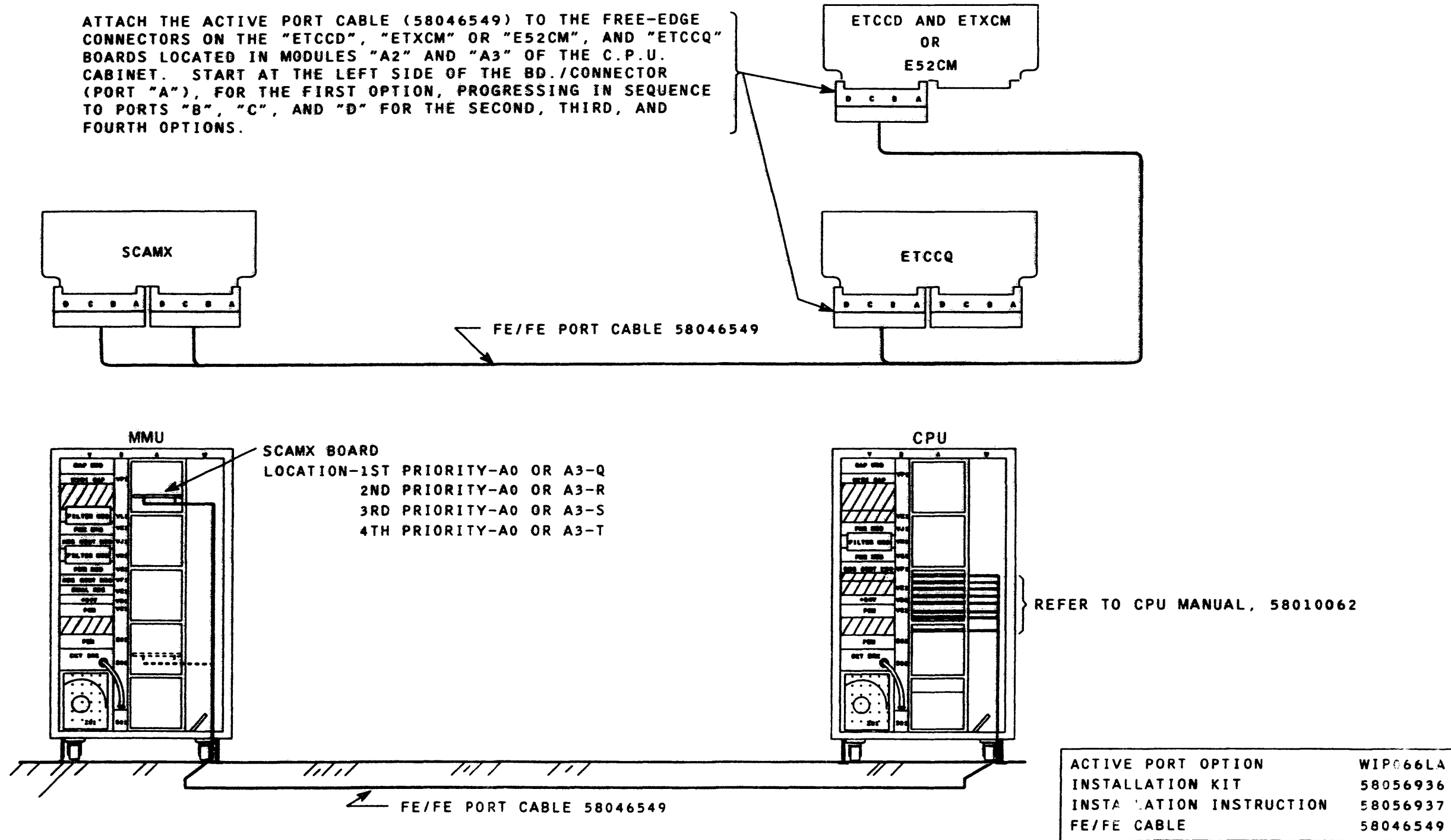
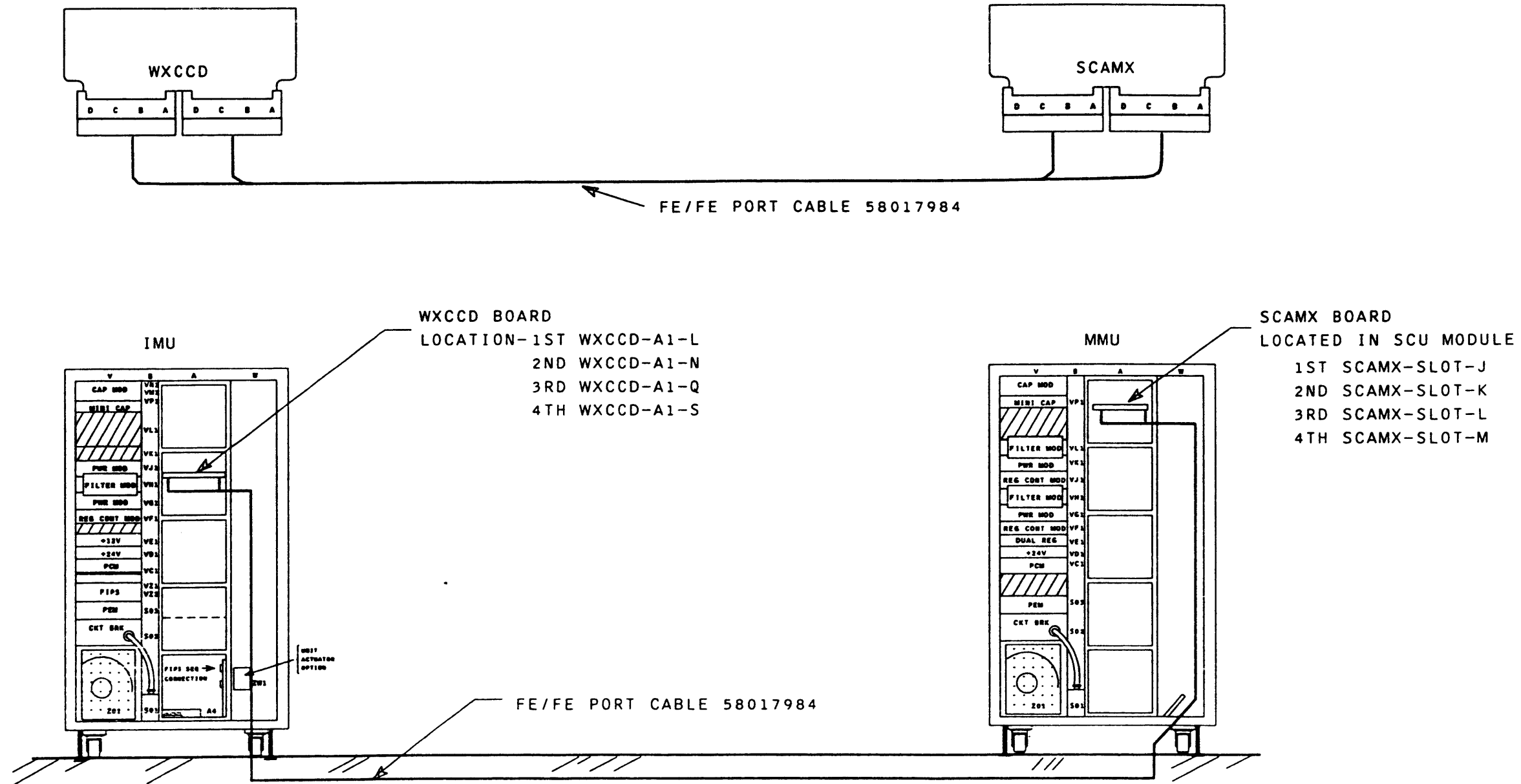


FIGURE 4.7-16. INSTALL ACTIVE PORT CABLE



WXCCD BOARD
 LOCATION-1ST WXCCD-A1-L
 2ND WXCCD-A1-N
 3RD WXCCD-A1-Q
 4TH WXCCD-A1-S

SCAMX BOARD
 LOCATED IN SCU MODULE
 1ST SCAMX-SLOT-J
 2ND SCAMX-SLOT-K
 3RD SCAMX-SLOT-L
 4TH SCAMX-SLOT-M

BUS 0 PORT OPTION	WIP066LH
INSTALLATION KIT	58059526
INSTALLATION INSTRUCTION	58059525
PORT CABLE	58017984

FIGURE 4.7-17. INSTALL WIP066LH BUS 0 PORT CABLE

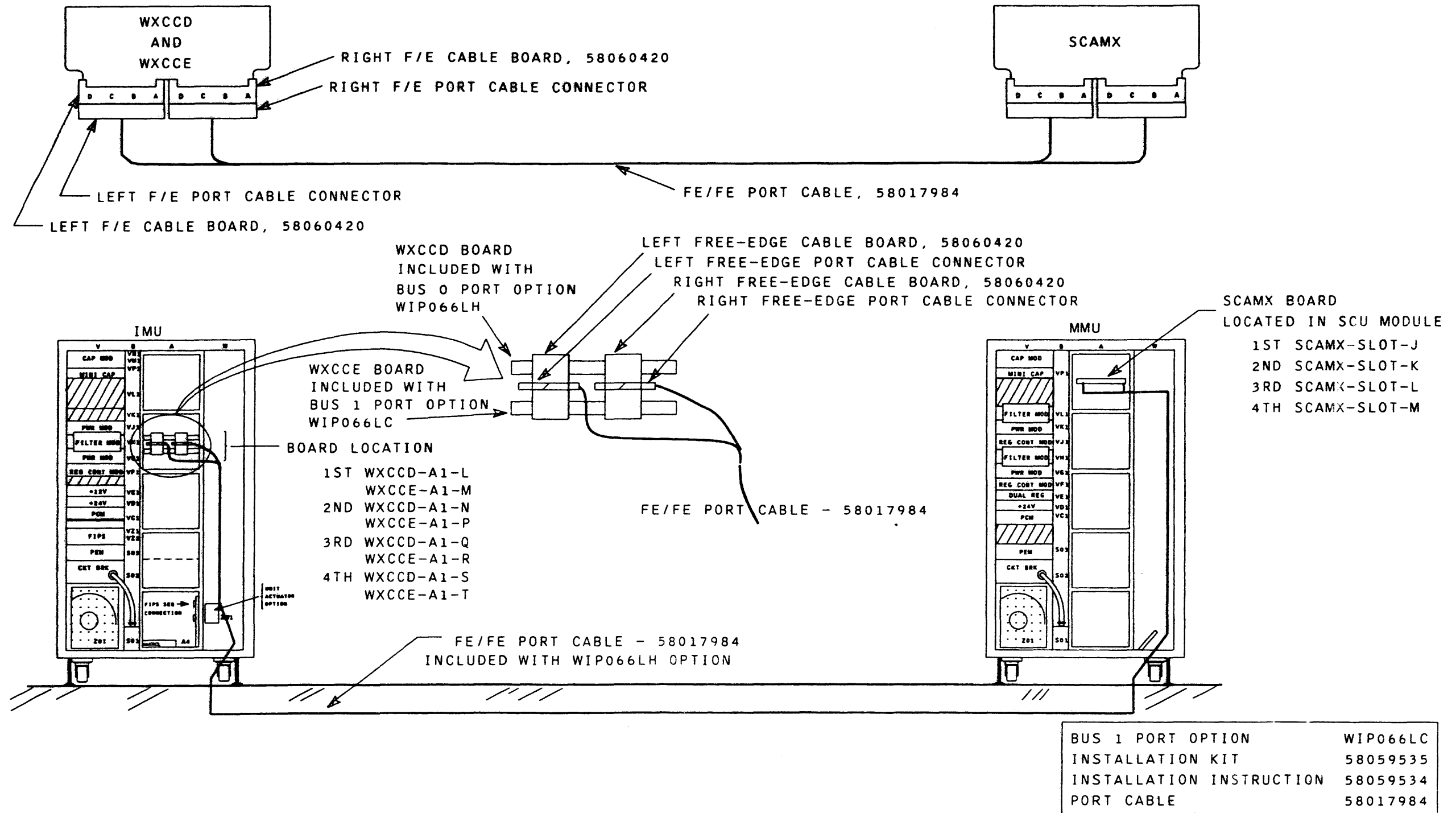


FIGURE 4.7-18. INSTALL WIP066LC BUS 1 PORT CABLE

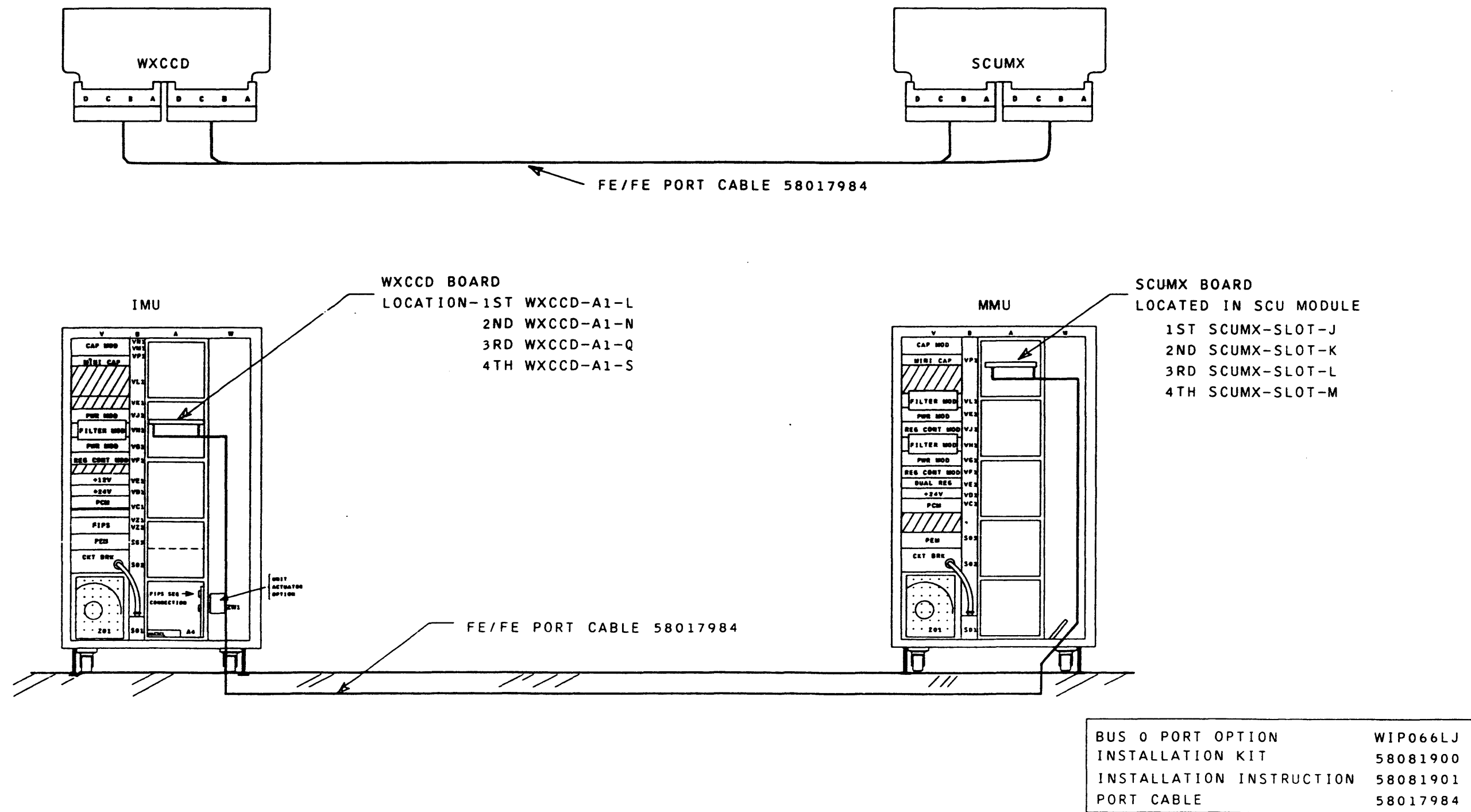


FIGURE 4.7-19. INSTALL WIP066LJ BUS 0 PORT CABLE

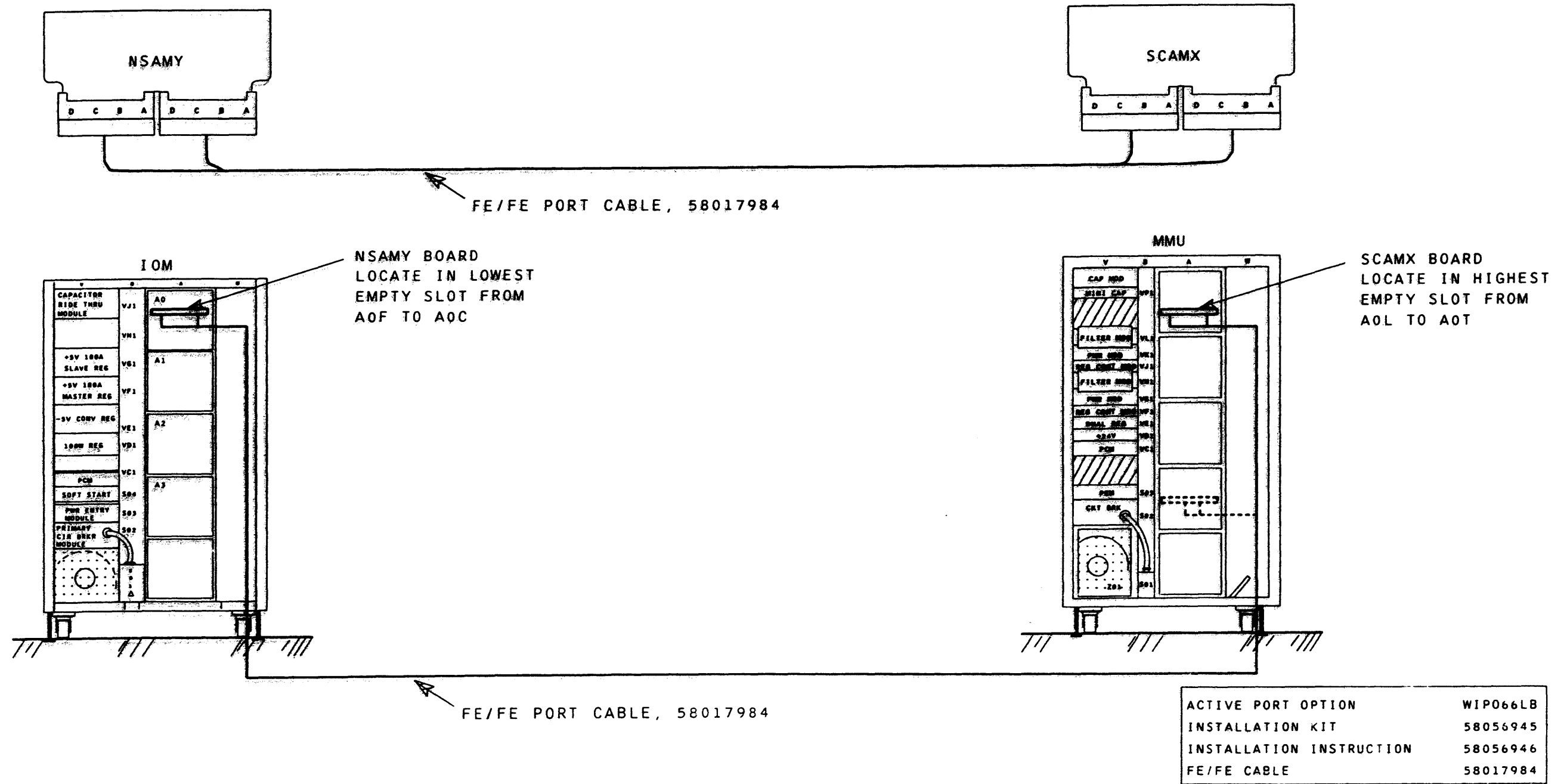


FIGURE 4.7-20. INSTALL ACTIVE PORT CABLE

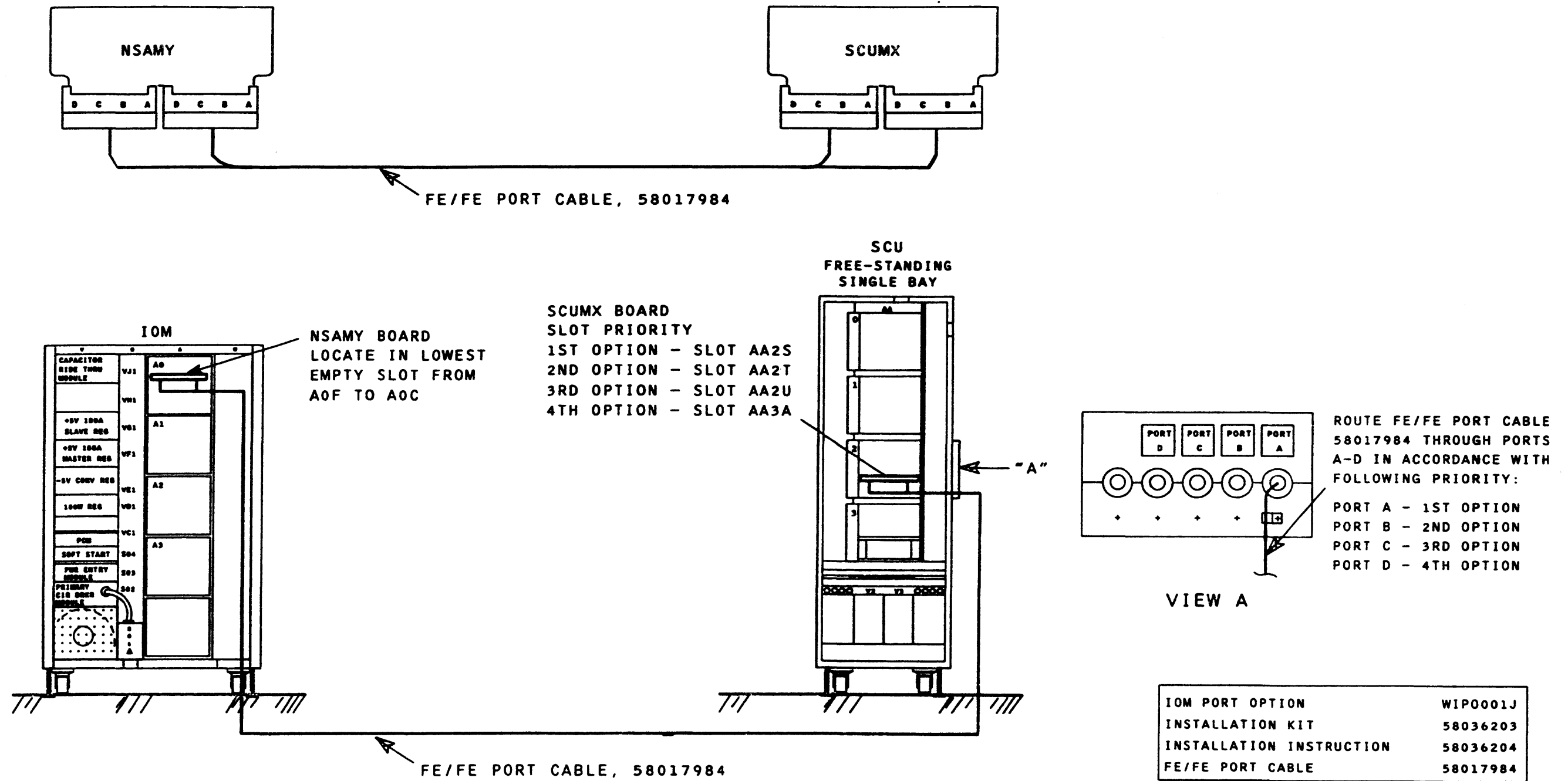
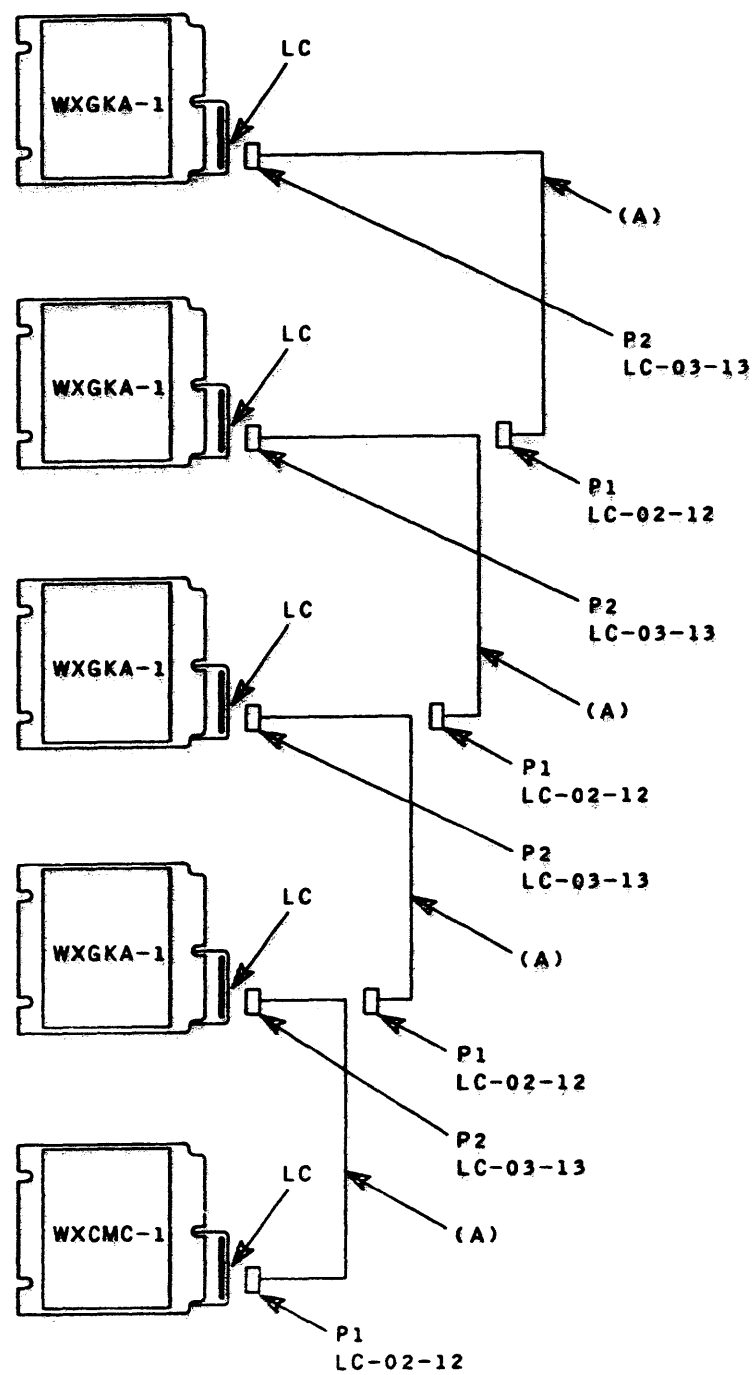
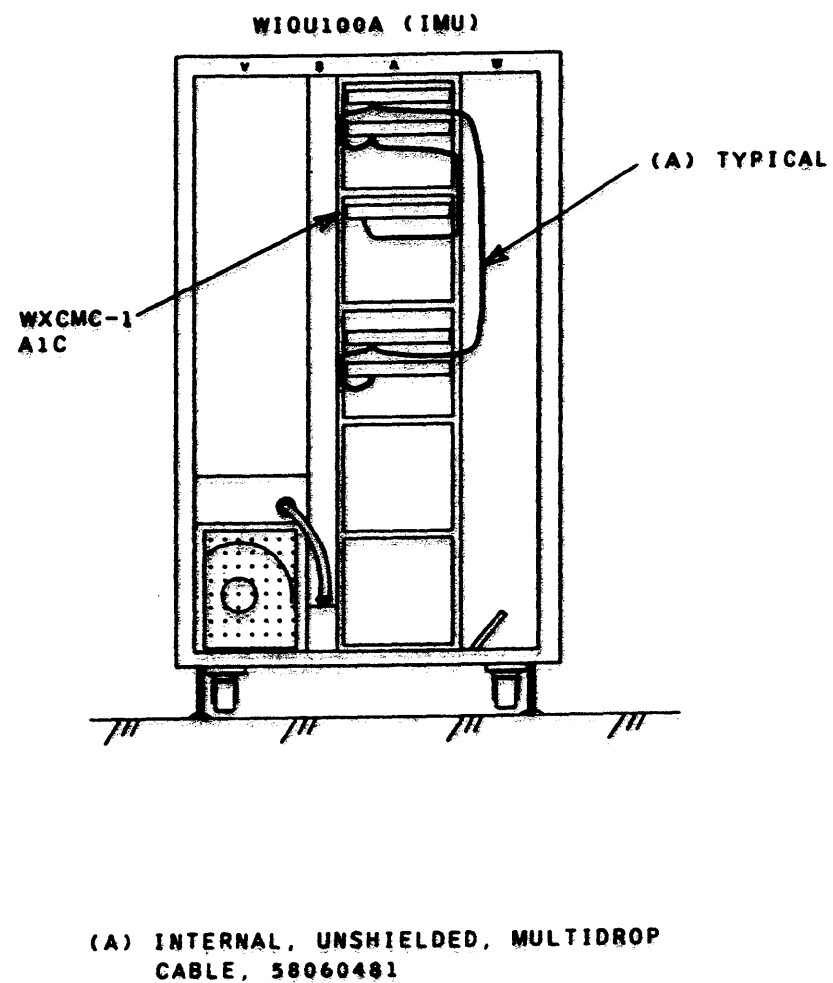


FIGURE 4.7-21. INSTALL IOM PORT CABLE



CONSOLE, IPC	WIPC65LD
INSTALLATION KIT	58055547
INSTALLATION INSTRUCTION	58055546
CABLE CONFIGURATOR	58055585
MULTIDROP CABLE (INTERNAL)	58065841
MULTIDROP CABLE (EXTERNAL)	58065842
CONSOLE INSTL MANUAL	58010084

FIGURE 4.7-22. TYPICAL MULTIDROP CABLE ROUTING (SHEET 1 OF 4)

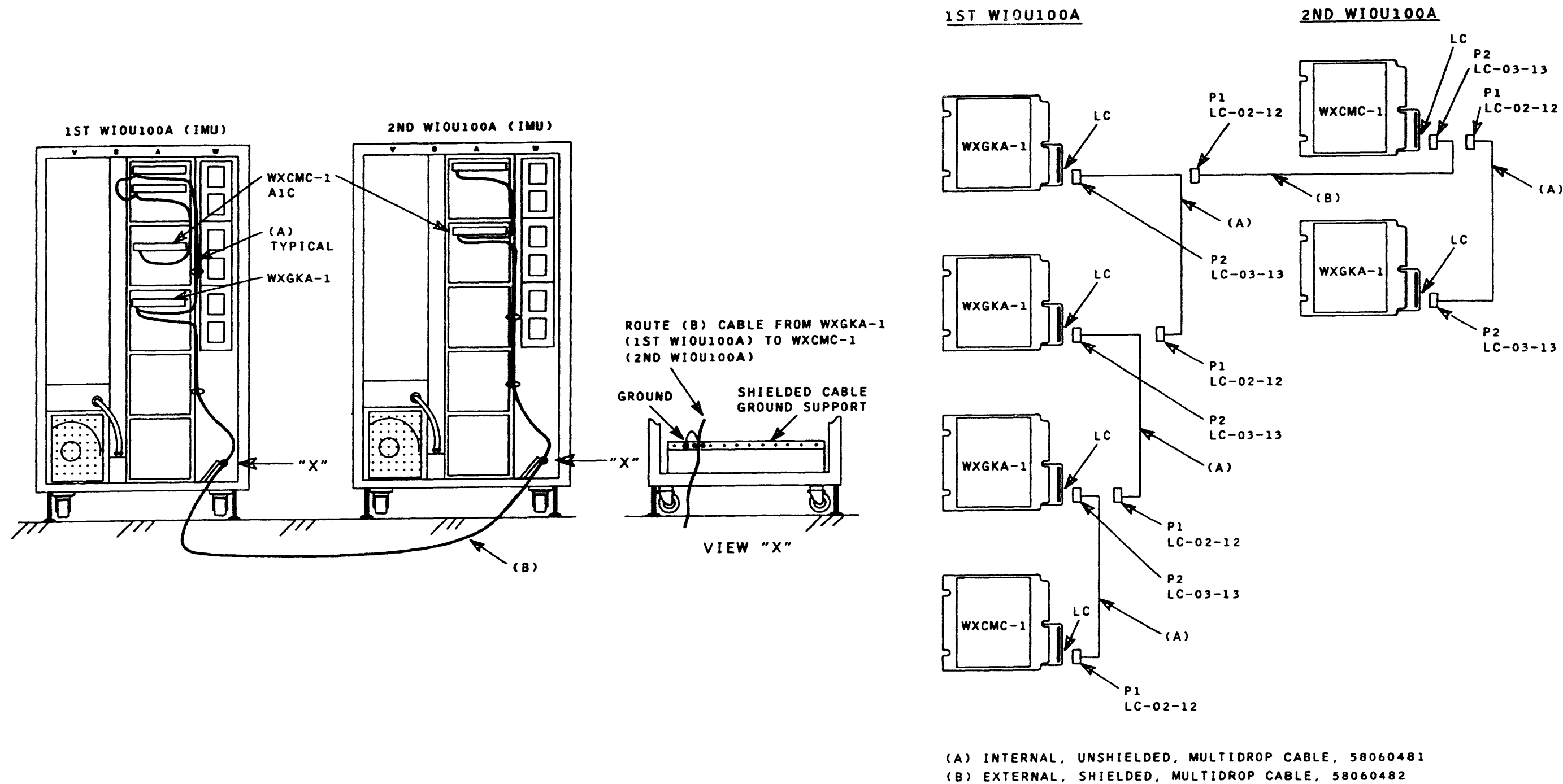
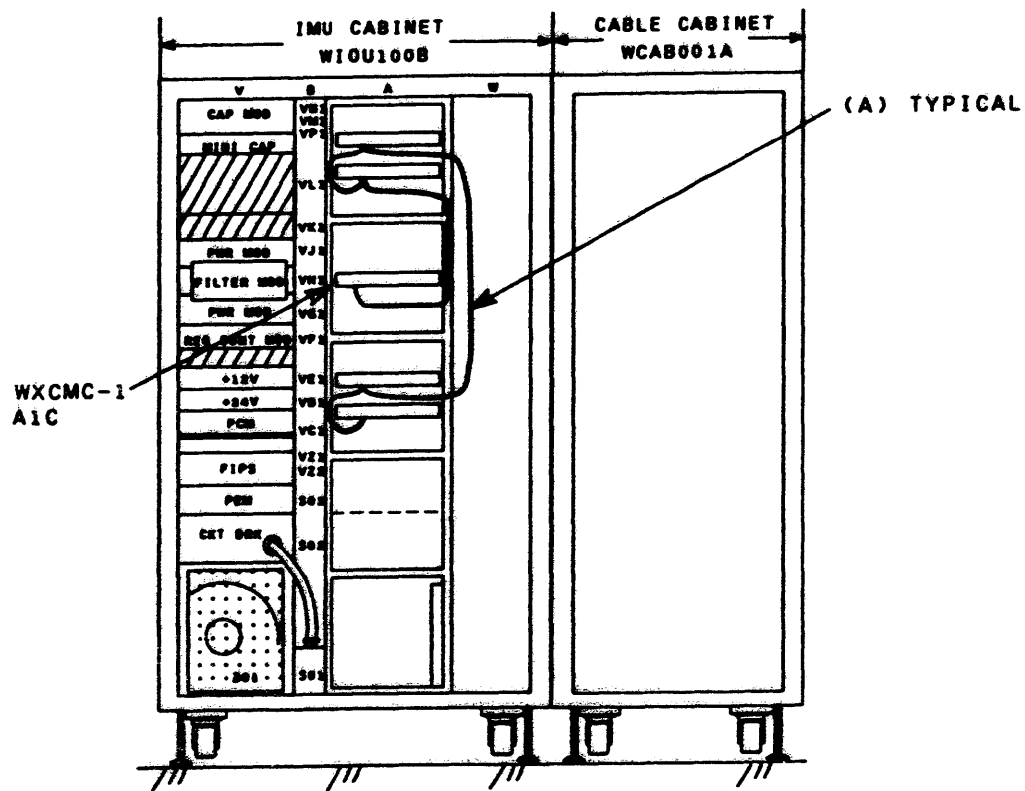
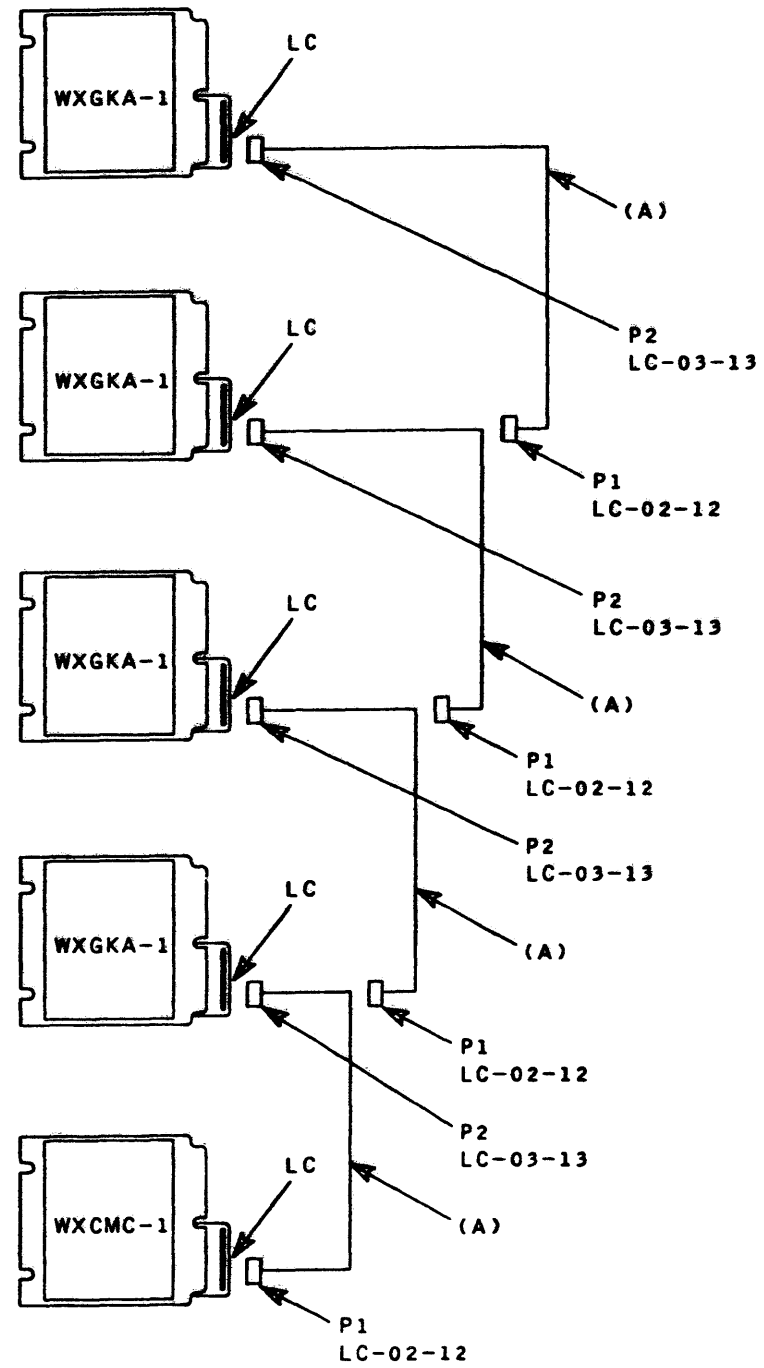


FIGURE 4.7-22. TYPICAL MULTIDROP CABLE ROUTING (SHEET 2 OF 4)



(A) INTERNAL, UNSHIELDED, MULTIDROP CABLE, 58060481



CONSOLE, IPC	WCON284B
INSTALLATION KIT	58082972
INSTALLATION INSTRUCTION	58082973
CABLE CONFIGURATOR	58059885
MULTIDROP CABLE (INTERNAL)	58065841
MULTIDROP CABLE (EXTERNAL)	58065842
CONSOLE INST. MANUAL	58010084

FIGURE 4.7-22. TYPICAL MULTIDROP CABLE ROUTING (SHEET 3 OF 4)

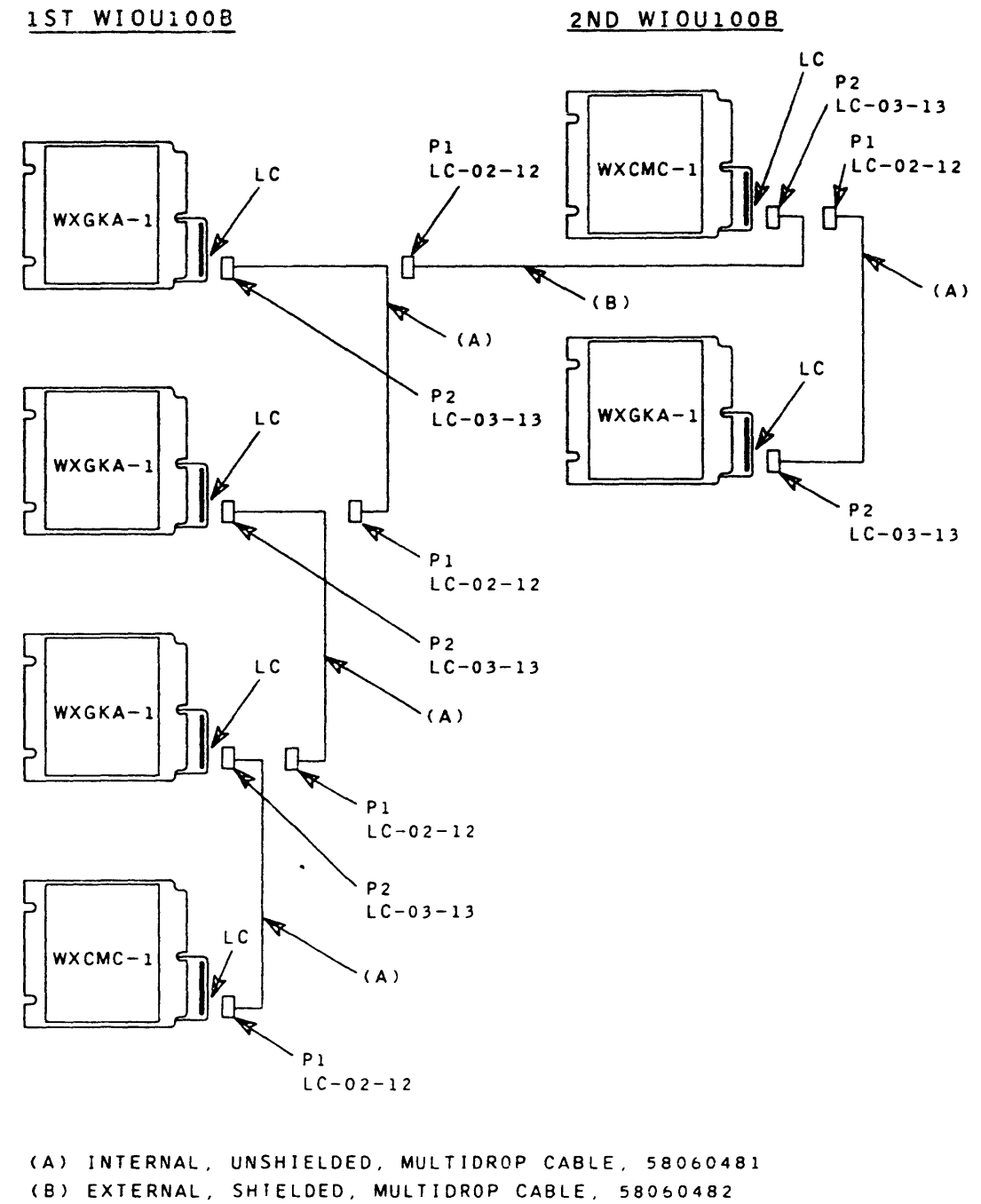
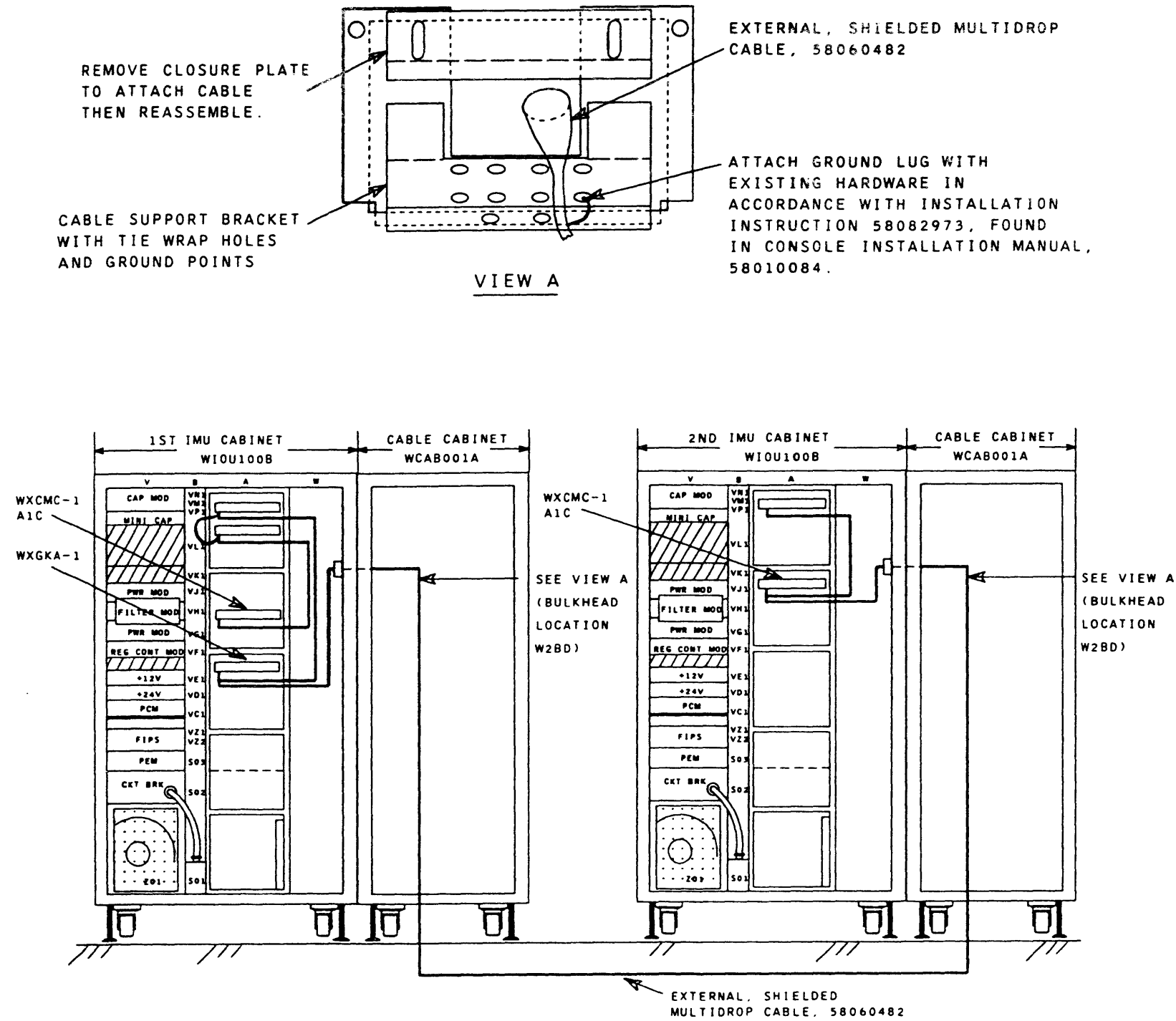


FIGURE 4.7-22. TYPICAL MULTIDROP CABLE ROUTING (SHEET 4 OF 4)

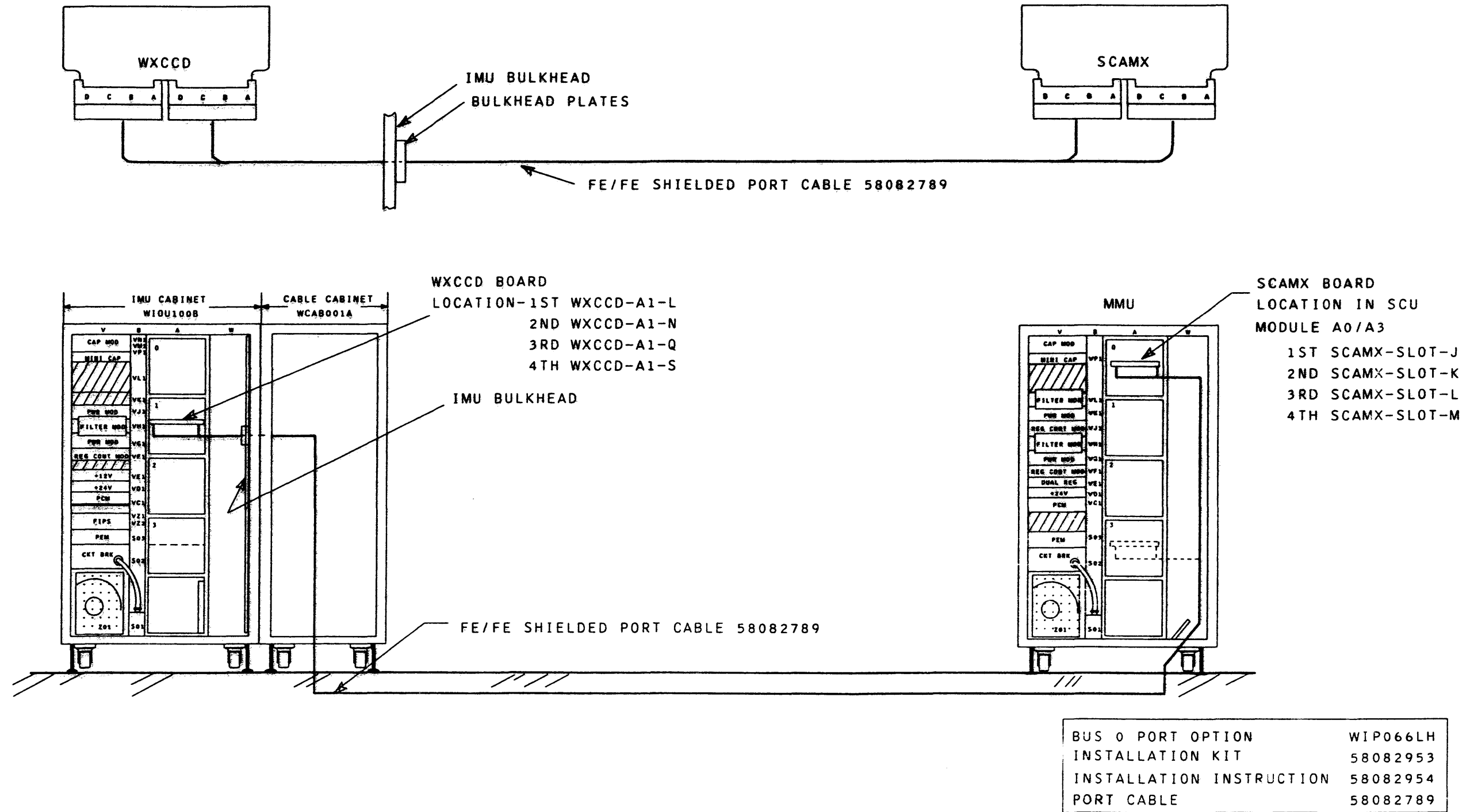


FIGURE 4.7-23. INSTALL WIP084LH BUS 0 SHIELDED PORT CABLE (SHEET 1 OF 2)

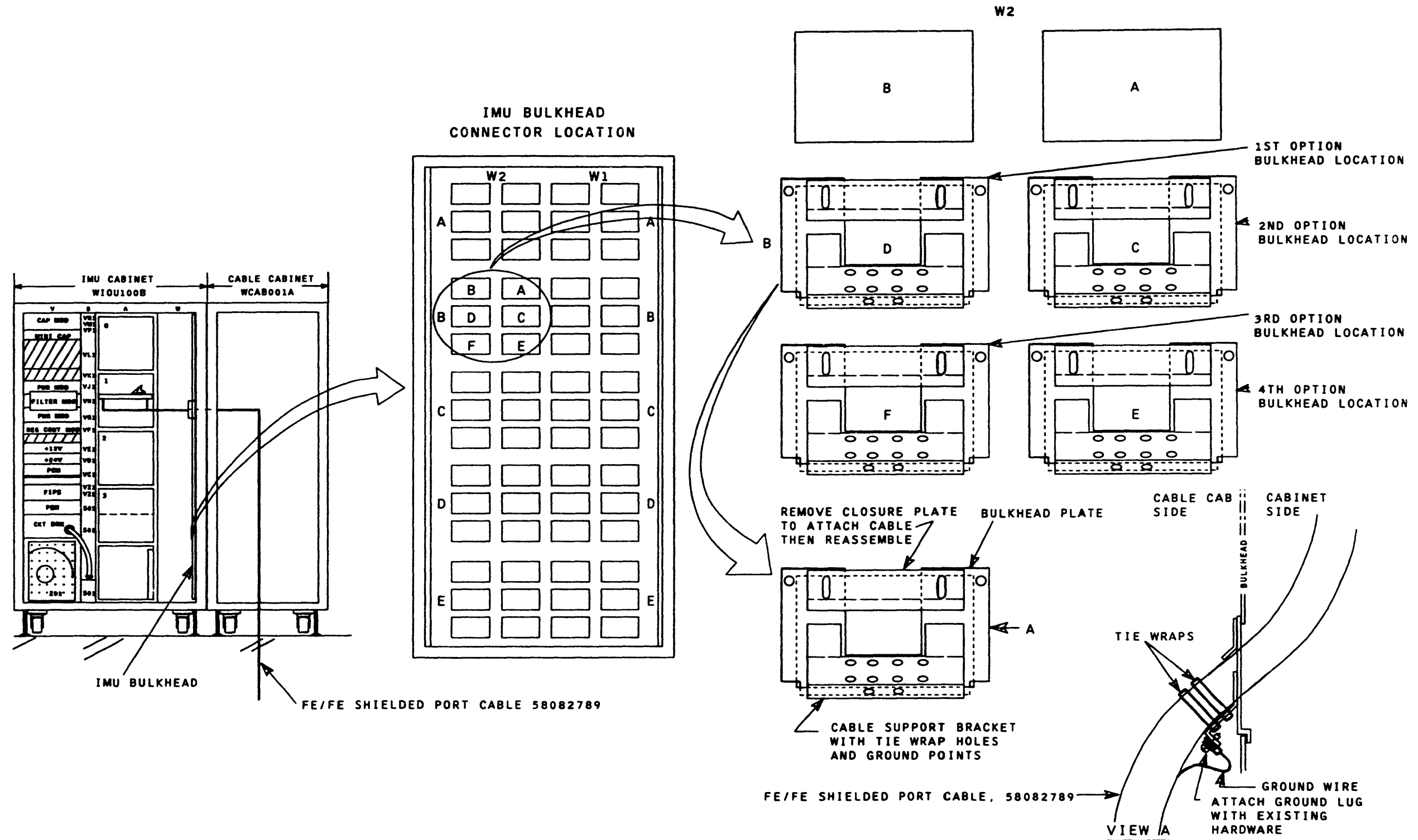


FIGURE 4.7-23. INSTALL WIP084LH BUS 0 SHIELDED PORT CABLE (SHEET 2 OF 2)

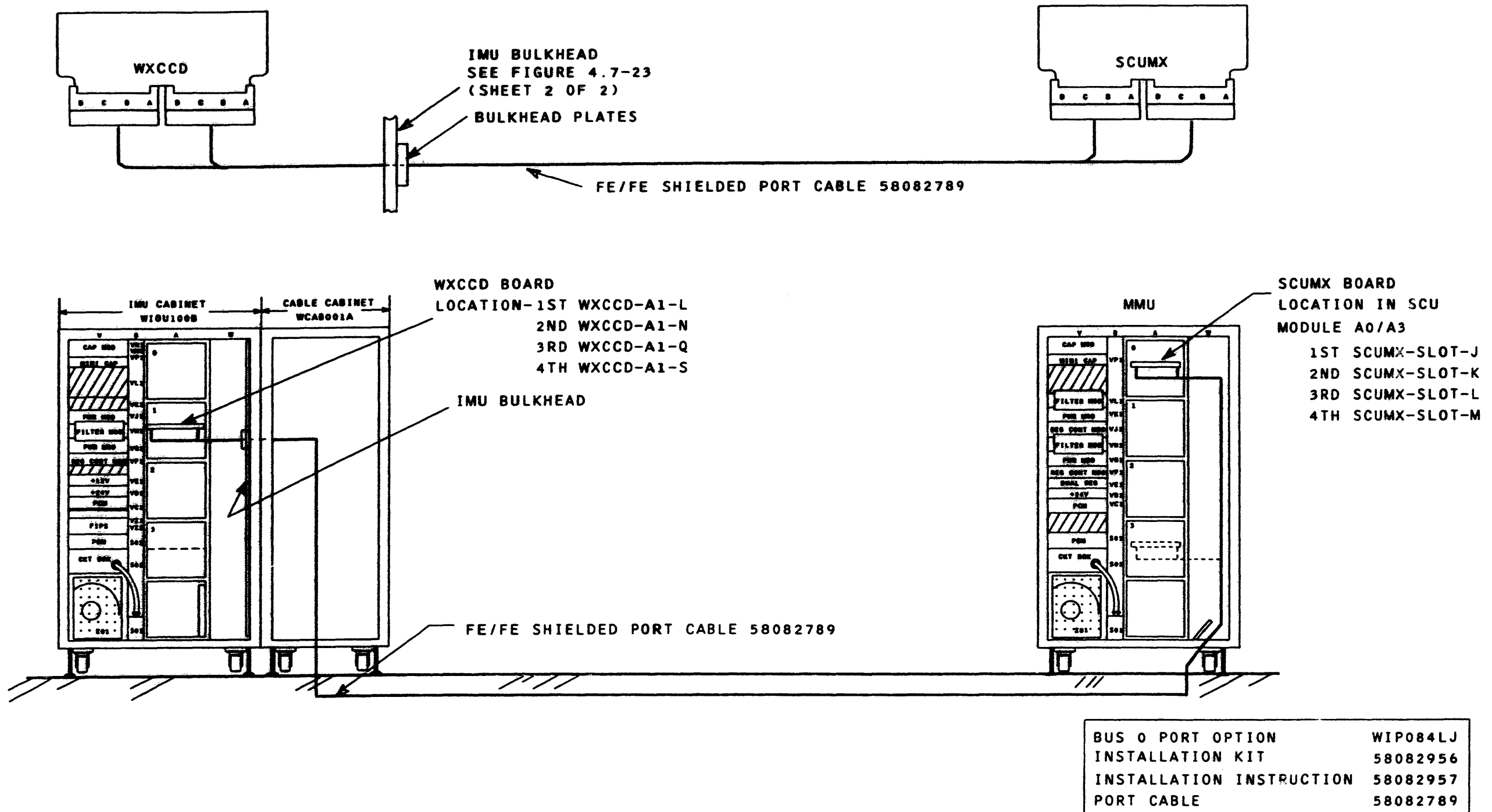


FIGURE 4.7-24. INSTALL WIP084LJ BUS 0 SHIELDED PORT CABLE

TABLE 4.7-1. INTERCABINET UNSHIELDED CABLING

REV B

ITEM NO	OPTION				CACHE AND FREE-EDGE (FE/FE) UNSHIELDED CABLE ROUTING													
	IDENT NO	DESCRIPTION	INSTL KIT	INSTL INSTR	FROM		FE/FE CABLE		TO									
					LOGIC BOARD/BACKPANEL	LOCATION	CONNECTOR(S)	IDENT NO.	QTY/OPTION	LOGIC BOARD/BACKPANEL	LOCATION	CONNECTOR(S)						
1	WHCC66LA	CACHE CABLE	58057842	58057843	MMU CABINET BACKPANEL	A0	BACKPANEL PINS LOCATION-ROW U, WC, WD, WE, WF, WG OR WH(C)	58056447	1	CPU CABINET BACKPANEL	MODULE A3	BACKPANEL PINS LOCATION-ROW#B, WG, WH, WJ OR WK						
2	WIP066LA	ACTIVE PORT	58056936	58056937	MMU CABINET SCAMX	MODULE A0/A3 SLOT PRIORITY 1ST SCAMX-SLOT T 2ND SCAMX-SLOT S 3RD SCAMX-SLOT R 4TH SCAMX-SLOT Q	RIGHT AND LEFT FREE-EDGE	58046549	1	CPU CABINET: ETCCD AND	MODULE A2 SLOTS L THRU R	LEFT FREE-EDGE A, B, C OR D						
										ETXCM OR E52CM	SLOT U	LEFT FREE-EDGE A, B, C OR D						
										AND ETCCQ	MODULE A3 SLOT A	LEFT F/E - A & B OR RIGHT F/E C & D						
3	WIP066LB	ACTIVE PORT	58056945	58056946	IOM CABINET NSAMY	MODULE A0 LOWEST EMPTY SLOT - A0F-A0C	RIGHT AND LEFT FREE-EDGE	58017984	1	MMU CABINET SCAMX	MODULE A0 LOWEST AVAILABLE SLOT - A0L-A0T	RIGHT AND LEFT FREE-EDGE						
4	WIP066LH	BUS 0 PORT	58059526	58059525	IMU CABINET WXCCD	MODULE A1 SLOT PRIORITY 1ST WXCCD-SLOT L 2ND WXCCD-SLOT N 3RD WXCCD-SLOT Q 4TH WXCCD-SLOT S	RIGHT AND LEFT FREE-EDGE	58017984	1	MMU CABINET SCAMX	MODULE A0 SLOT PRIORITY 1ST SCAMX-SLOT J 2ND SCAMX-SLOT K 3RD SCAMX-SLOT L 4TH SCAMX-SLOT M	RIGHT AND LEFT FREE-EDGE						
5	WIP066LC	BUS 1 PORT	58059535	58059534	IMU CABINET WXCCE	MODULE A1 SLOT PRIORITY 1ST WXCCE-SLOT M 2ND WXCCE-SLOT P 3RD WXCCE-SLOT R 4TH WXCCE-SLOT T	RIGHT AND LEFT FREE-EDGE	58017984 (INCLUDED WITH WIP066LH)	—	MMU CABINET SCAMX	MODULE A0 BOARDS PREVIOUSLY INSTALLED IN WIP066LH OPTION	RIGHT AND LEFT FREE-EDGE						
6	WIPC66LD	IPC CONSOLE	58059547	58059546	FIRST IMU CABINET WXGKA-1	MODULE A2	LEFT FREE-EDGE "C"	58060482	1	SECOND OR SUBSEQUENT IMU CABINET(S) WXCMC-1	SLOT A1C	LEFT FREE-EDGE "C"						
7	WIP0001J	IOM PORT	58036203	58036204	IOM CABINET NSAMY	MODULE A0 LOWEST EMPTY SLOT A0F-A0C	LEFT FREE-EDGE	58017984	1	SCU FREE-STANDING CABINET	MODULE AA2-AA3, SLOT AA2S, AA2T, AA2U AND/OR AA3A	RIGHT AND LEFT FREE-EDGE						
8	WIP066LJ	BUS 0 PORT	58081900	58081901	IMU CABINET WXCCD	MODULE A1 SLOT PRIORITY 1ST WXCCD-SLOT L 2ND WXCCD-SLOT N 3RD WXCCD-SLOT Q 4TH WXCCD-SLOT S	RIGHT AND LEFT FREE-EDGE	58017984	1	MMU CABINET SCUMX	SCU MODULE SLOT J, K, L, OR M	RIGHT AND LEFT FREE-EDGE						
													RIGHT AND LEFT FREE-EDGE	58082789	1	MMU CABINET SCAMX	SCU MODULE A0/A3 SLOT J, K, L, OR M	RIGHT AND LEFT FREE-EDGE
9	WIP084LH	BUS 0 PORT	58082953	58082954	IMU CABINET WXCCD		RIGHT AND LEFT FREE-EDGE	58082789	1	MMU CABINET SCAMX	SCU MODULE A0/A3 SLOT J, K, L, OR M	RIGHT AND LEFT FREE-EDGE						
10	WIP084LJ	BUS 0 PORT	58082956	58082957	IMU CABINET WXCCD		RIGHT AND LEFT FREE-EDGE	58082789	1	MMU CABINET SCUMX	SCU MODULE A0/A3 SLOT J, K, L, OR M	RIGHT AND LEFT FREE-EDGE						
11	WCON284B	CONSOLE OPTION	58082972	58082973	1ST IMU CABINET WXGKA-1	MODULE A0 OR A2 SLOT A OR B	LEFT FREE-EDGE	58060482	1	2ND IMU CABINET	MODULE A1 SLOT C	LEFT FREE-EDGE						

TASK 8 INSTALL CABLES FROM IOM/IMU TO PLUG COMPATIBLE MANUFACTURER (PCM) CONTROLLERS

INSTALL CABLES IN ACCORDANCE WITH FIGURE 4.7-25 AND TABLE 4.7-2.

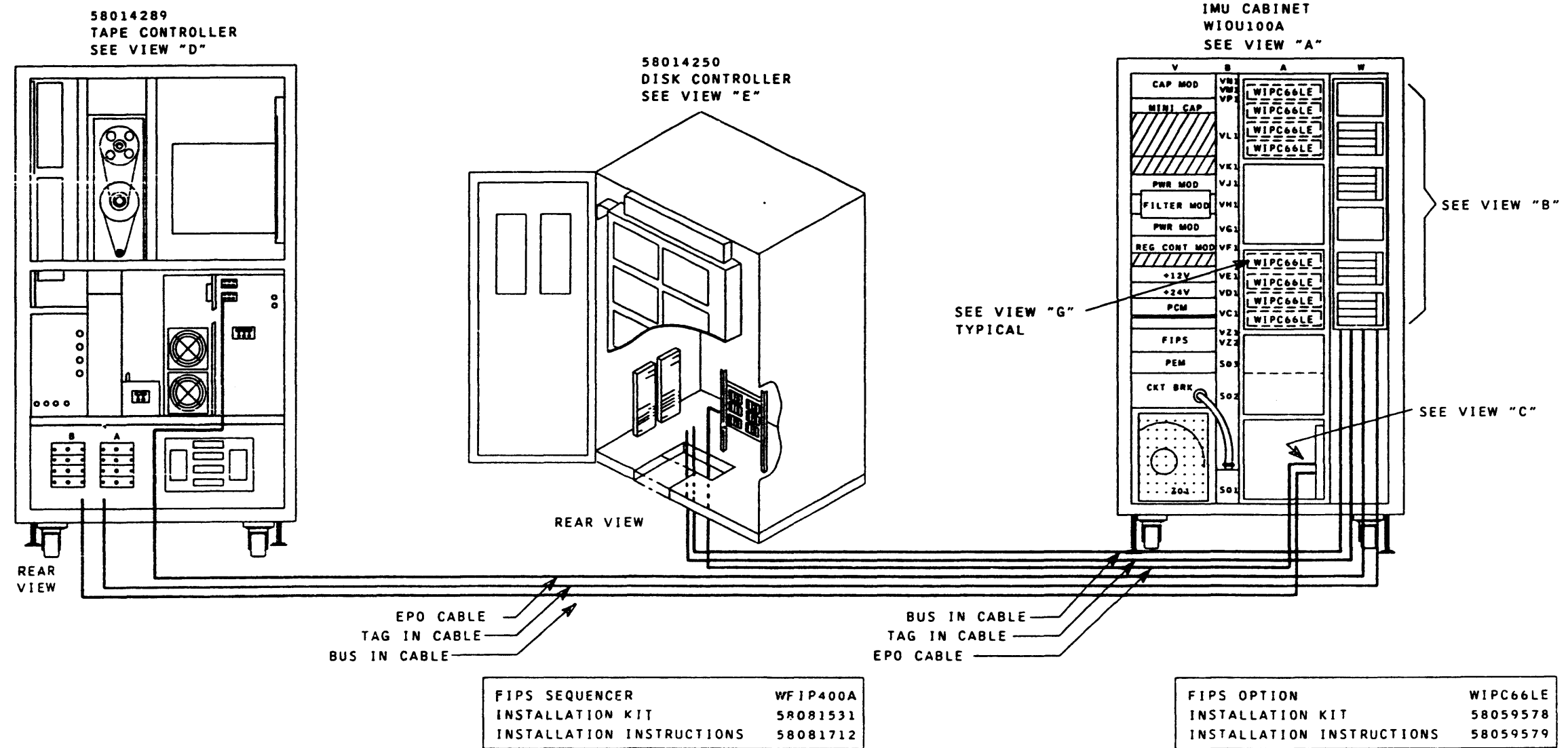


FIGURE 4.7-25 INSTALL CABLES FROM IOM/IMU TO PCM CONTROLLERS (SHEET 1 OF 7)

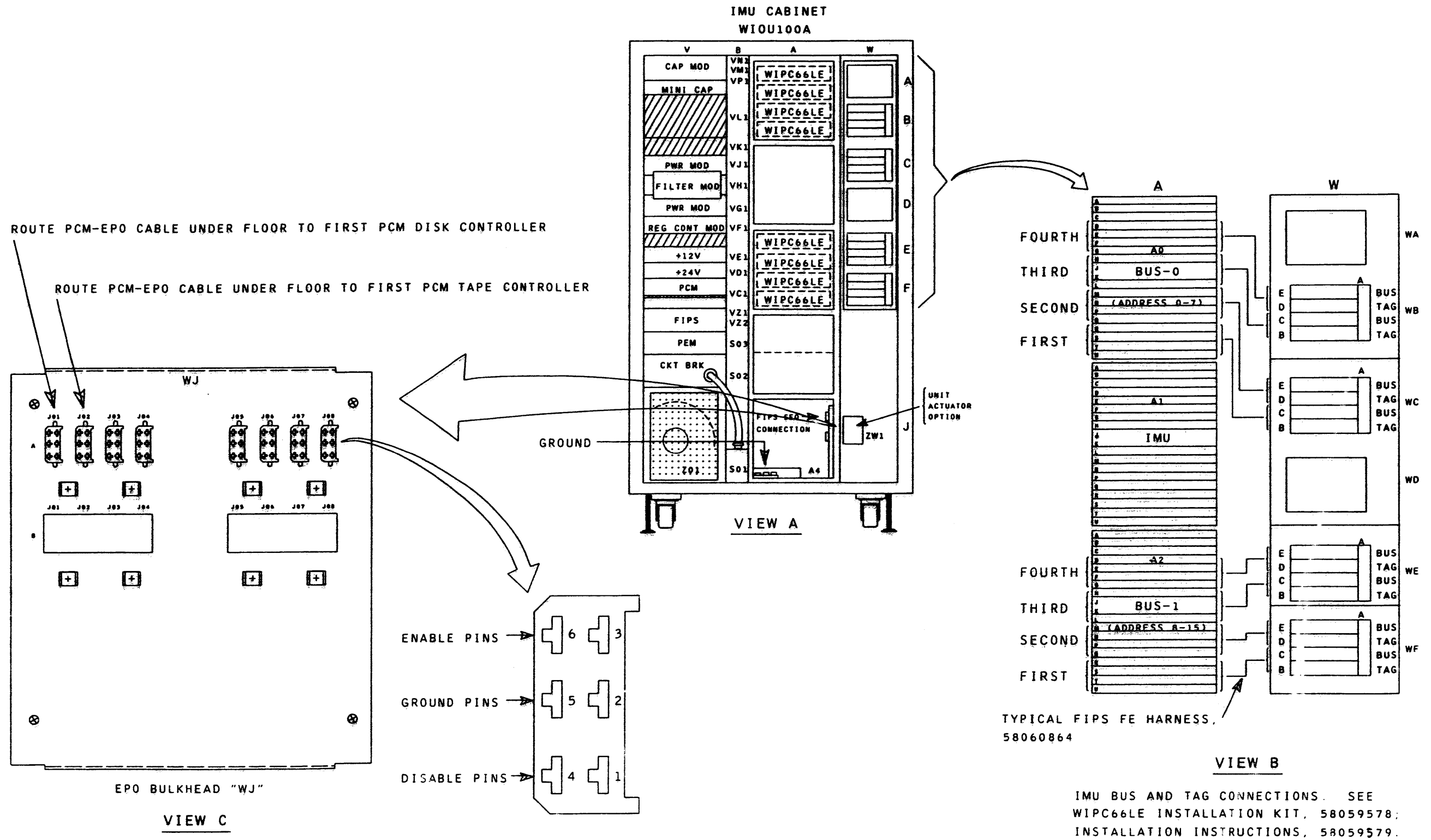


FIGURE 4.7-25. INSTALL CABLES FROM IMU TO PCM CONTROLLERS (SHEET 2 OF 7)

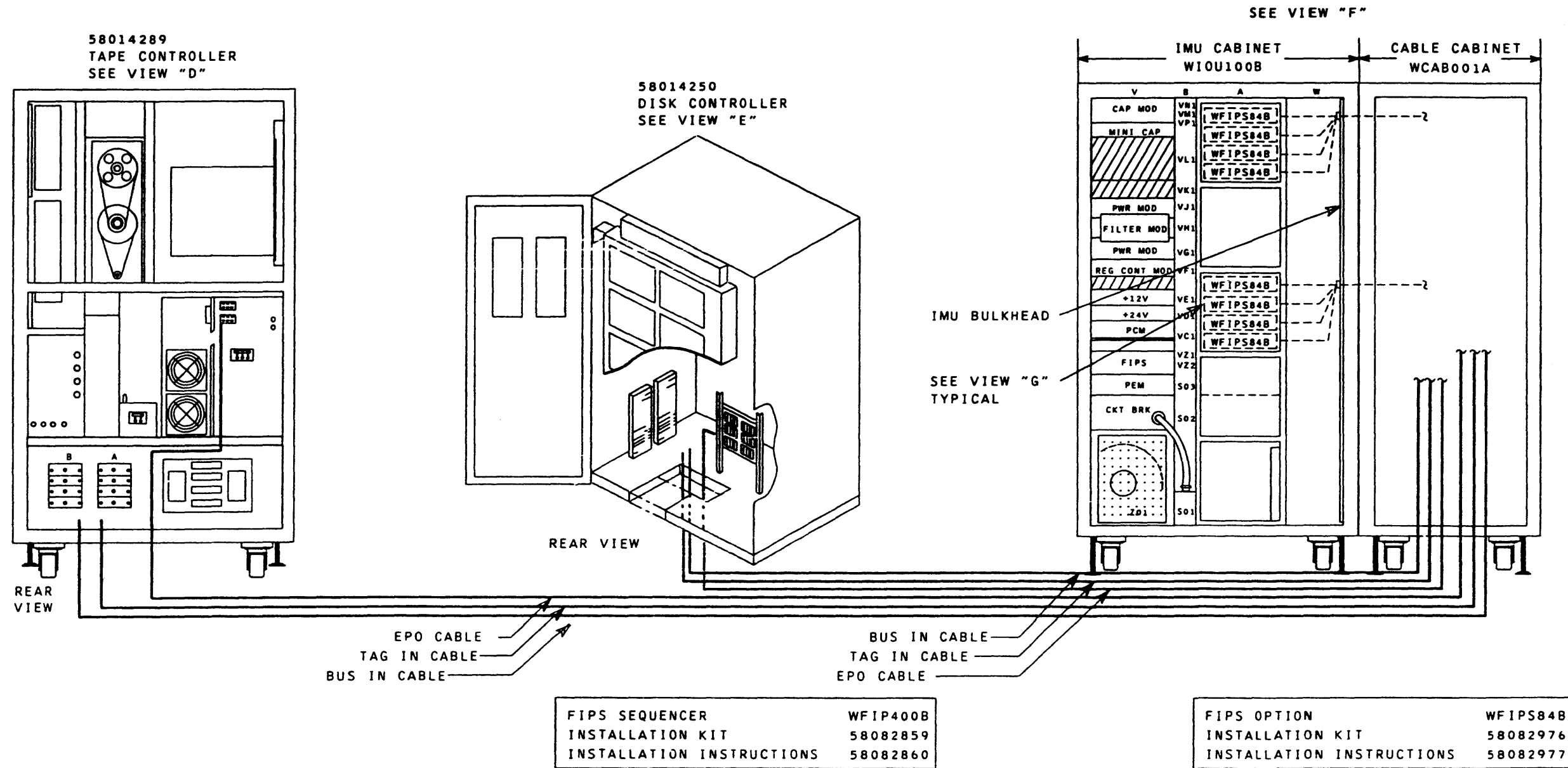


FIGURE 4.7-25. INSTALL CABLES FROM IMU TO PCM CONTROLLERS (SHEET 3 OF 7)

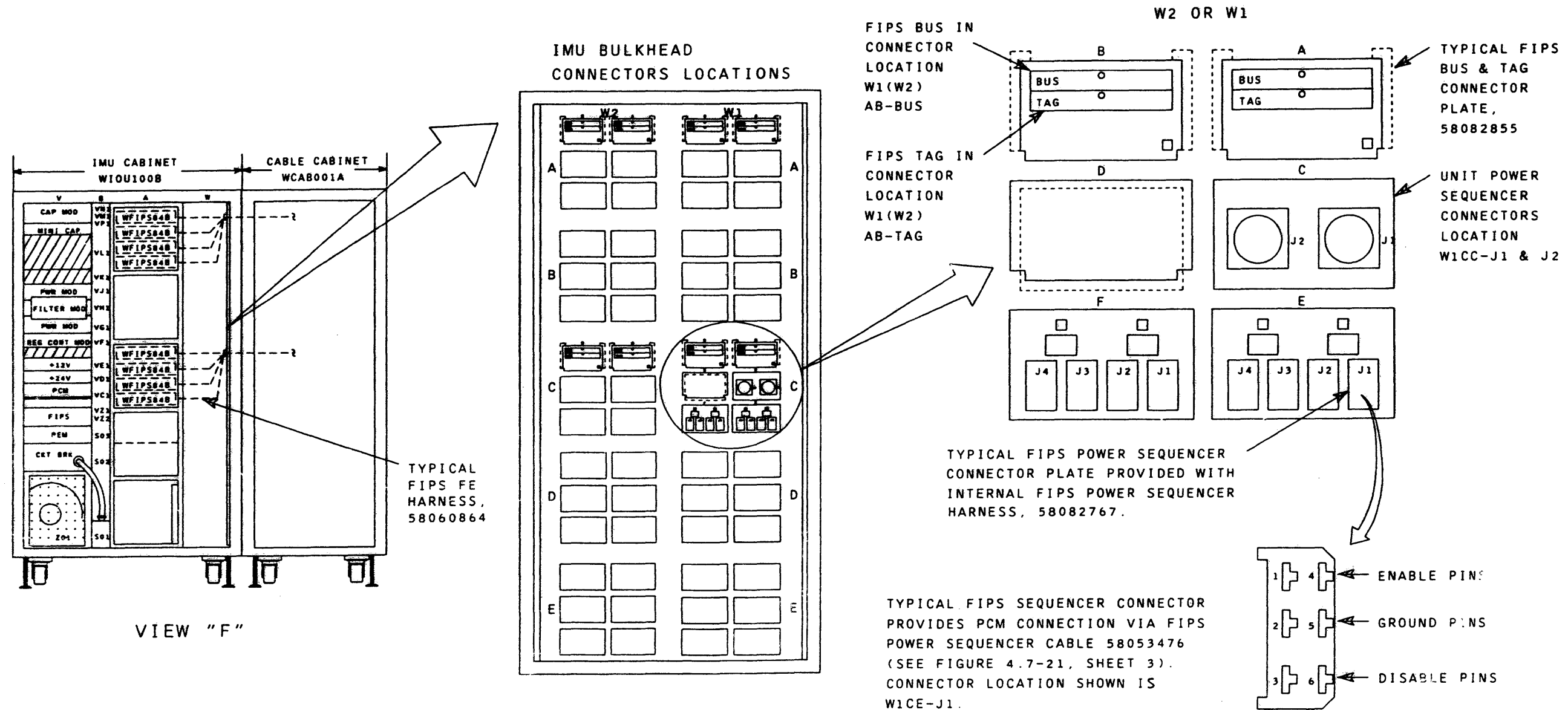


FIGURE 4.7-25. INSTALL CABLES FROM IMU TO PCM CONTROLLERS (SHEET 4 OF 7)

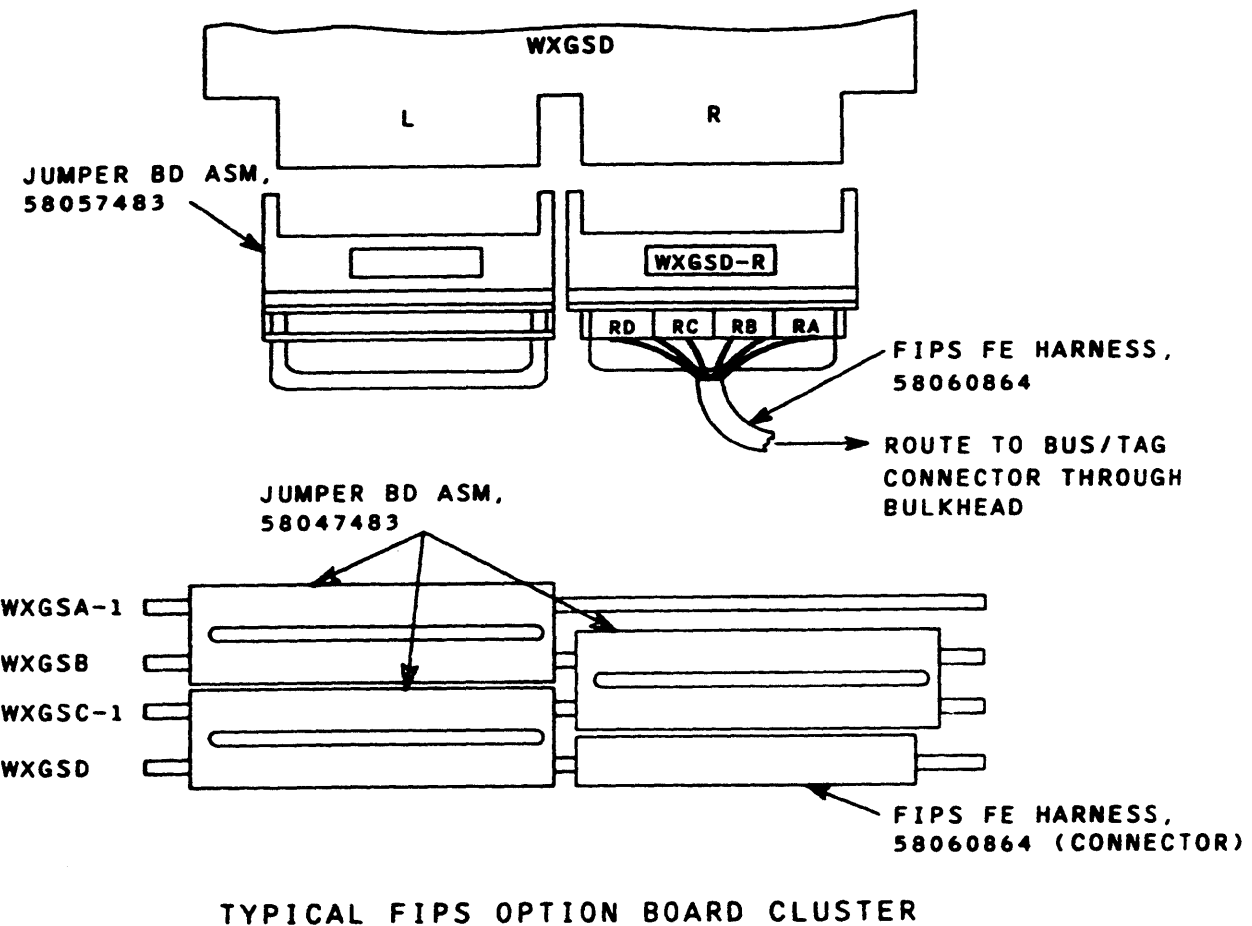
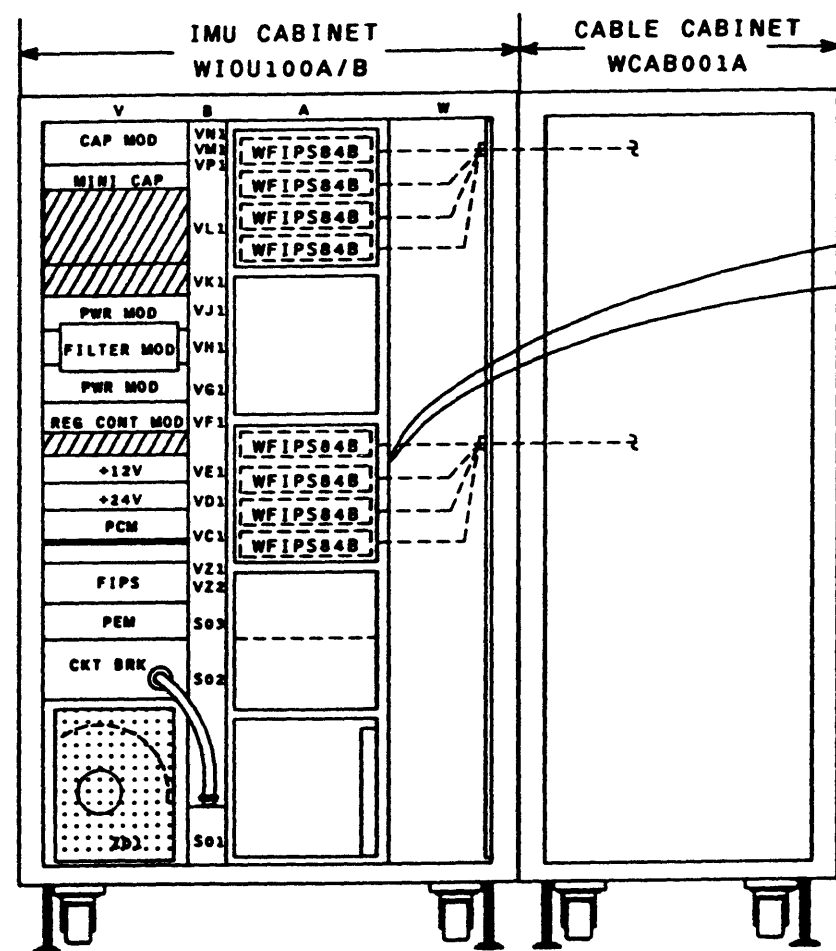


FIGURE 4.7-25. INSTALL CABLES FROM IMU TO PCM CONTROLLERS (SHEET 5 OF 7)

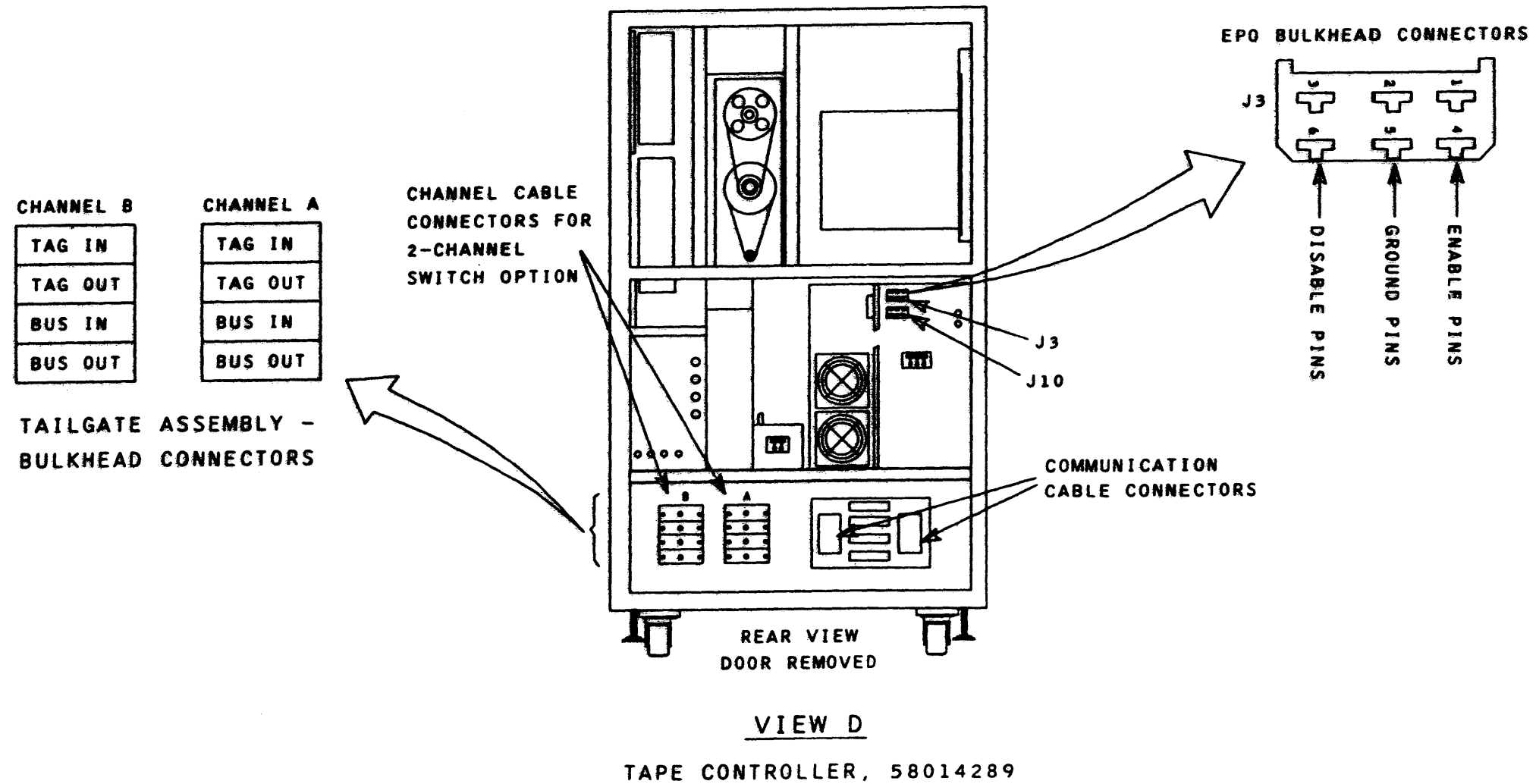


FIGURE 4.7-25. INSTALL CABLES FROM IMU TO PCM CONTROLLERS (SHEET 6 OF 7)

CONNECTOR LOCATIONS - 1, 2, OR 4 CHANNELS

	STORAGE DIRECTOR 1	STORAGE DIRECTOR 2	
CTL-1	NOT USED	NOT USED	CTL-1
	BUS/TAG	BUS/TAG	
CHL-1	BUS IN	BUS IN	CHL-1
CHANNEL A	TAG IN	TAG IN	CHANNEL A
	BUS OUT	BUS OUT	
	TAG OUT	TAG OUT	
CHL-1	BUS IN	BUS IN	CHL-1
CHANNEL B	TAG IN	TAG IN	CHANNEL B
	BUS OUT	BUS OUT	
	TAG OUT	TAG OUT	
CHL-1	BUS IN	BUS IN	CHL-1
CHANNEL C	TAG IN	TAG IN	CHANNEL C
	BUS OUT	BUS OUT	
	TAG OUT	TAG OUT	
CHL-1	BUS IN	BUS IN	CHL-1
CHANNEL D	TAG IN	TAG IN	CHANNEL D
	BUS OUT	BUS OUT	
	TAG OUT	TAG OUT	

TAILGATE VIEWED FROM INSIDE CABINET

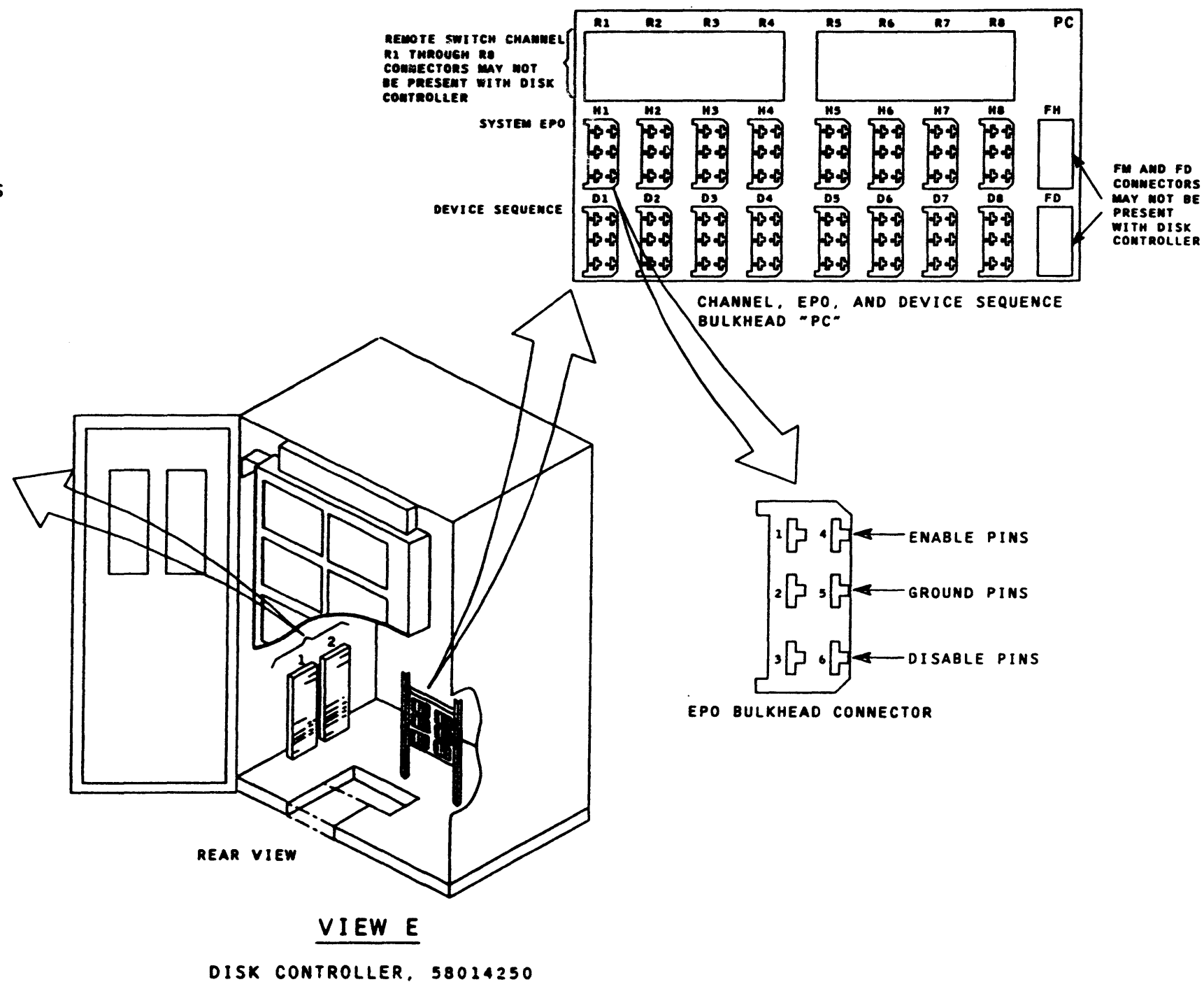


FIGURE 4.7-25. INSTALL CABLES FROM IMU TO PCM CONTROLLERS (SHEET 7 OF 7)

TABLE 4.7-2. TYPICAL PLUG COMPATIBLE MANUFACTURER (PCM) CABLE ROUTING (SHEET 1 OF 2)

FROM WIPC66LE			TO DISK/TAPE CONTROLLER			CABLE (a) OR TERMINATOR (b)
CABINET	BULKHEAD (c)	CONNECTOR	CABINET	BULKHEAD (c)	CONNECTOR	
FIRST FIPS CHANNEL ADAPTER WIPC66LE (f)	WB	D-TAG	DISK CONTROLLER	STO DIR 1	TAG IN (g)	TAG CABLE 58053475(TAB NO.)
	WB	E-BUS		STO DIR 1	BUS IN (g)	BUS CABLE 58053475(TAB NO.)
	N/A	N/A		STO DIR 1	TAG OUT (g)	TAG TERMINATOR 58053477-002
	N/A	N/A		STO DIR 1	BUS OUT (g)	BUS TERMINATOR 58053477-001
	WJA	A-J02		PC (d)	EPO-H1	EPO CABLE 58053476(TAB NO.)
SECOND FIPS CHANNEL ADAPTER WIPC66LE (f)	WB	B-TAG	TAPE CONTROLLER	CHANNEL "A"	TAG IN (g)	TAG CABLE 58053475(TAB NO.)
	WB	C-BUS		CHANNEL "A"	BUS IN (g)	BUS CABLE 58053475(TAB NO.)
	N/A	N/A		CHANNEL "A"	TAG OUT (g)	TAG TERMINATOR 58053477-002
	N/A	N/A		CHANNEL "A"	BUS OUT (g)	BUS TERMINATOR 58053477-001
	WJA	A-J02		EPO (e)	EPO-J3	EPO CABLE 58053476(TAB NO.)

- (a) BUS, TAG, EPO, GROUND CABLES, AND TERMINATOR PLUGS ARE PURCHASED PARTS. AVAILABLE TAB NUMBERS 020, 040, 060, 080, 120, AND 180 INDICATE CABLE LENGTH AS MEASURED IN FEET. FOR EXAMPLE, 020 IS A 20-FOOT CABLE, AND 180 IS A 180-FOOT CABLE.
- (b) INSTALL BUS TERMINATOR PLUG ON BUS OUT CABLE CONNECTOR AND TAG TERMINATOR PLUG ON TAG OUT CABLE CONNECTOR IN LAST CONTROLLER IN STRING. SEE PCM MANUFACTURER'S INSTRUCTIONS.
- (c) WHEN BUS AND TAG CABLES ARE PROVIDED WITH SHIELD GROUND, CONNECT IAU END OF GROUND TO GROUND CONNECTORS ON IAU BULKHEAD. CONNECT TAPE OR DISK CONTROLLER END OF BUS AND TAG CABLES TO GROUND TERMINALS, IF PROVIDED.
- (d) REMOVE AND RETAIN JUMPER PLUG FROM PC-EPO-H1 ON DISK CONTROLLER. REPLACE WITH EPO CABLE ROUTED TO IAU.
- (e) REMOVE AND RETAIN JUMPER PLUG FROM EPO-J3 ON DISK CONTROLLER. REPLACE WITH EPO CABLE ROUTED TO IAU.
- (f) REFER TO FIPS CHANNEL ADAPTER OPTION WIPC66LE, INSTALLATION KIT, 58059578, AND INSTALLATION INSTRUCTION, 58059579. THIS OPTION IS LOCATED IN OPTIONS MANUALS, 58009915 AND 58010032.
- (g) BUS AND TAG CABLES GOING TO TAPE OR DISK CONTROLLERS MUST BE INSTALLED WITH "LIGHT GRAY CONNECTOR" END OF CABLE GOING AWAY FROM CHANNEL. (LIGHT GRAY BUS AND TAG CABLE CONNECTORS ARE ALWAYS INSTALLED ON TAPE AND DISK CONTROLLERS.)

TABLE 4.7-2. TYPICAL PLUG COMPATIBLE MANUFACTURER (PCM) CABLE ROUTING (SHEET 2 OF 2)

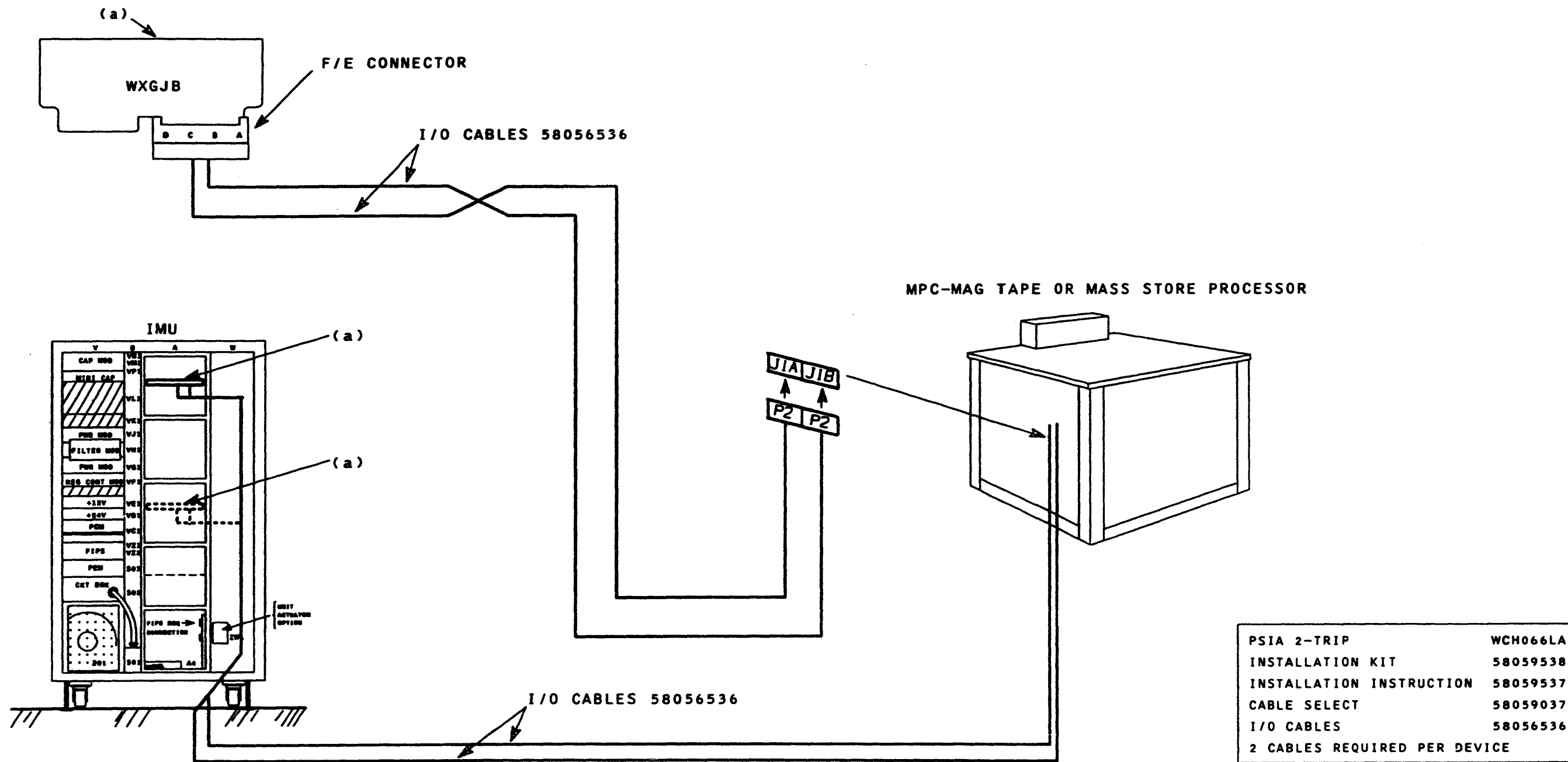
FROM WFIPS84B			TO DISK/TAPE CONTROLLER			CABLE (a) OR TERMINATOR (b)
CABINET	BULKHEAD (c)	CONNECTOR	CABINET	BULKHEAD (c)	CONNECTOR	
FIRST FIPS CHANNEL ADAPTER WFIPS84B (f)	W1A-A	A-TAG	DISK CONTROLLER	STO DIR 1	TAG IN (g)	TAG CABLE 58053475(TAB NO.)
	W1A-B	B-BUS		STO DIR 1	BUS IN (g)	BUS CABLE 58053475(TAB NO.)
	N/A	N/A		STO DIR 1	TAG OUT (g)	TAG TERMINATOR 58053477-002
	N/A	N/A		STO DIR 1	BUS OUT (g)	BUS TERMINATOR 58053477-001
	W1A-C	J01		PC (d)	EPO-H1	EPO CABLE 58053476(TAB NO.)
SECOND FIPS CHANNEL ADAPTER WFIPS84B (f)	W2A-A	A-TAG	TAPE CONTROLLER	CHANNEL "A"	TAG IN (g)	TAG CABLE 58053475(TAB NO.)
	W2A-B	B-BUS		CHANNEL "A"	BUS IN (g)	BUS CABLE 58053475(TAB NO.)
	N/A	N/A		CHANNEL "A"	TAG OUT (g)	TAG TERMINATOR 58053477-002
	N/A	N/A		CHANNEL "A"	BUS OUT (g)	BUS TERMINATOR 58053477-001
	W2A-C	J02		EPO (e)	EPO-J3	EPO CABLE 58053476(TAB NO.)

- (a) BUS, TAG, EPO, GROUND CABLES, AND TERMINATOR PLUGS ARE PURCHASED PARTS. AVAILABLE TAB NUMBERS 020, 040, 060, 080, 120, AND 180 INDICATE CABLE LENGTH AS MEASURED IN FEET. FOR EXAMPLE, 020 IS A 20-FOOT CABLE, AND 180 IS A 180-FOOT CABLE.
- (b) INSTALL BUS TERMINATOR PLUG ON BUS OUT CABLE CONNECTOR AND TAG TERMINATOR PLUG ON TAG OUT CABLE CONNECTOR IN LAST CONTROLLER IN STRING. SEE PCM MANUFACTURER'S INSTRUCTIONS.
- (c) WHEN BUS AND TAG CABLES ARE PROVIDED WITH SHIELD GROUND, CONNECT IAU END OF GROUND TO GROUND CONNECTORS ON IAU BULKHEAD. CONNECT TAPE OR DISK CONTROLLER END OF BUS AND TAG CABLES TO GROUND TERMINALS, IF PROVIDED.
- (d) REMOVE AND RETAIN JUMPER PLUG FROM PC-EPO-H1 ON DISK CONTROLLER. REPLACE WITH EPO CABLE ROUTED TO IAU.
- (e) REMOVE AND RETAIN JUMPER PLUG FROM EPO-J3 ON DISK CONTROLLER. REPLACE WITH EPO CABLE ROUTED TO IAU.
- (f) REFER TO FIPS CHANNEL ADAPTER OPTION WFIPS84B, INSTALLATION KIT, 58082976, AND INSTALLATION INSTRUCTION, 58082977. THIS OPTION IS LOCATED IN OPTIONS MANUALS, 58009915 AND 58010032.
- (g) BUS AND TAG CABLES GOING TO TAPE OR DISK CONTROLLERS MUST BE INSTALLED WITH "LIGHT GRAY CONNECTOR" END OF CABLE GOING AWAY FROM CHANNEL. (LIGHT GRAY BUS AND TAG CABLE CONNECTORS ARE ALWAYS INSTALLED ON TAPE AND DISK CONTROLLERS.)

TASK 9 INSTALL I/O CABLES

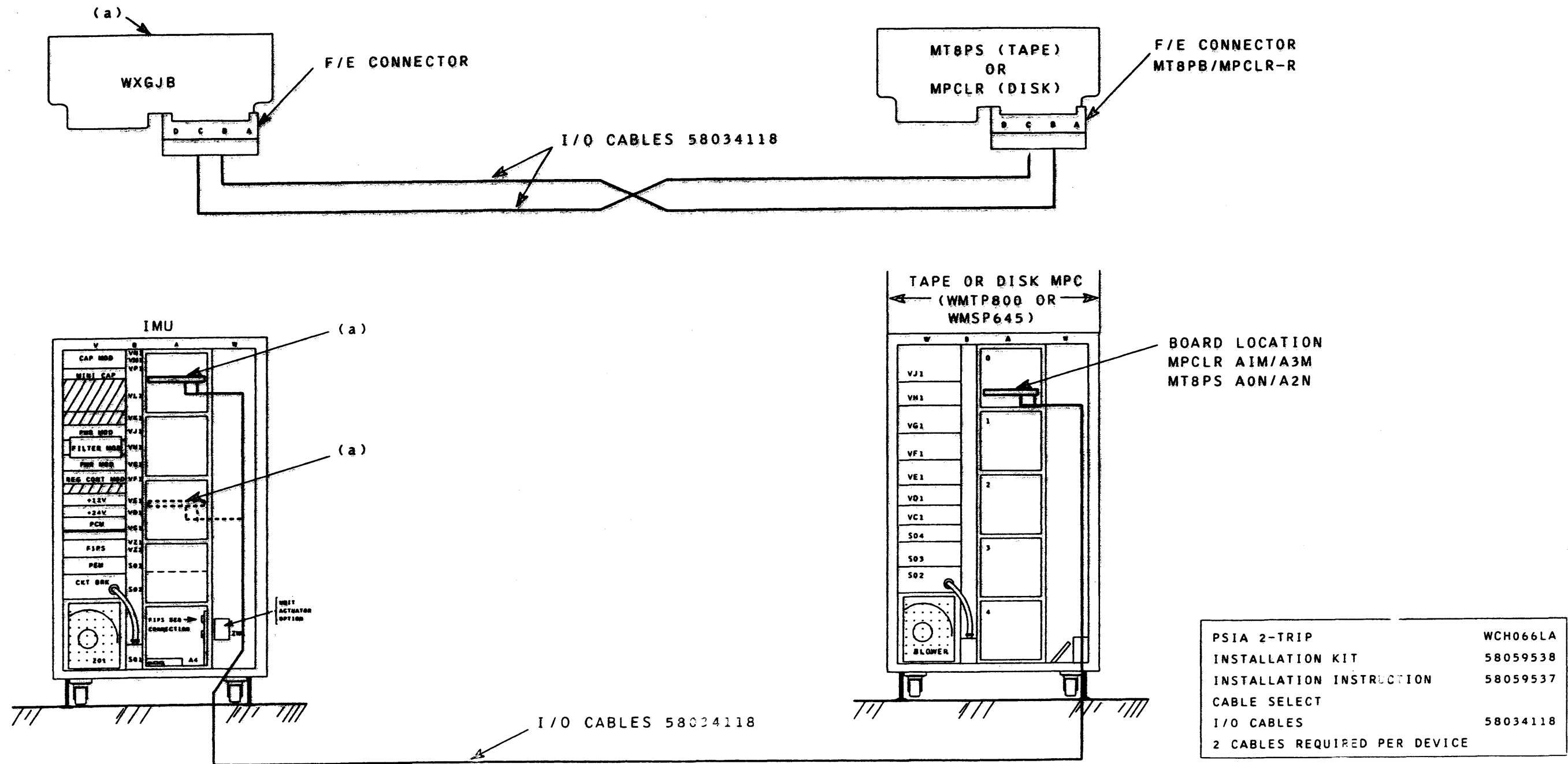
INSTALL CABLES IN ACCORDANCE WITH TABLES 4.7-3, 4.7-4, AND FIGURES 4.7-26 THROUGH 4.7-47.

NOTE: SYSTEM CONSOLE IS INSTALLED IN ACCORDANCE WITH SYSTEM CONSOLE INSTALLATION MANUAL (WIPC66LD), 58010048.



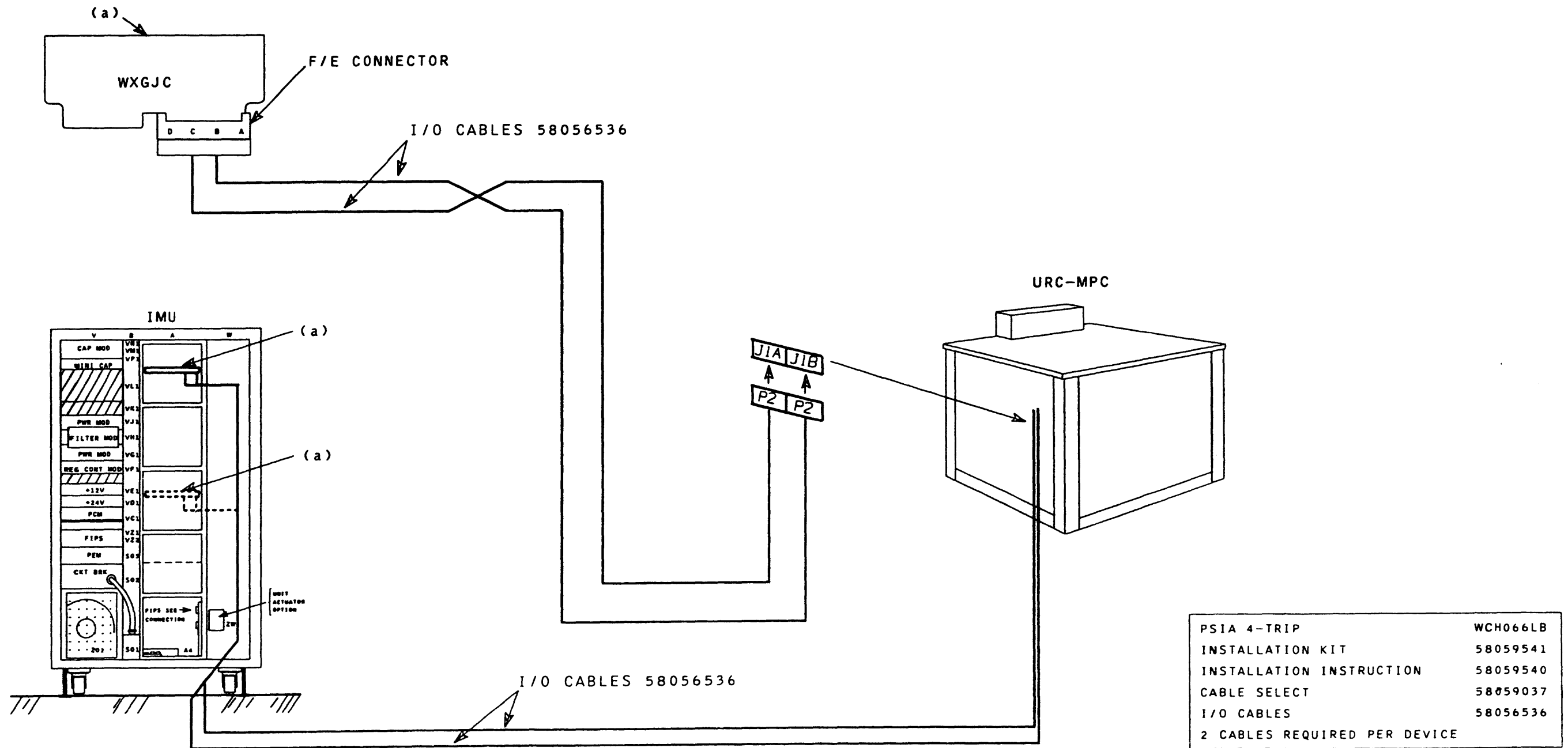
(a) INSTALL WXGJB BOARD DIRECTLY BELOW WXGJA BOARD IN A0 OR A2.

FIGURE 4.7-26. PSIA 2-TRIP CABLING (SHEET 1 OF 2)



(a) INSTALL WXGJB BOARD DIRECTLY BELOW WXGJA BOARD IN A0 OR A2.

FIGURE 4.7-26. PSIA 2-TRIP CABLING (SHEET 2 OF 2)



(a) INSTALL WXGJC BOARD DIRECTLY BELOW WXGJA BOARD IN A0 OR A2.

FIGURE 4.7-27. PSIA 4-TRIP CABLING

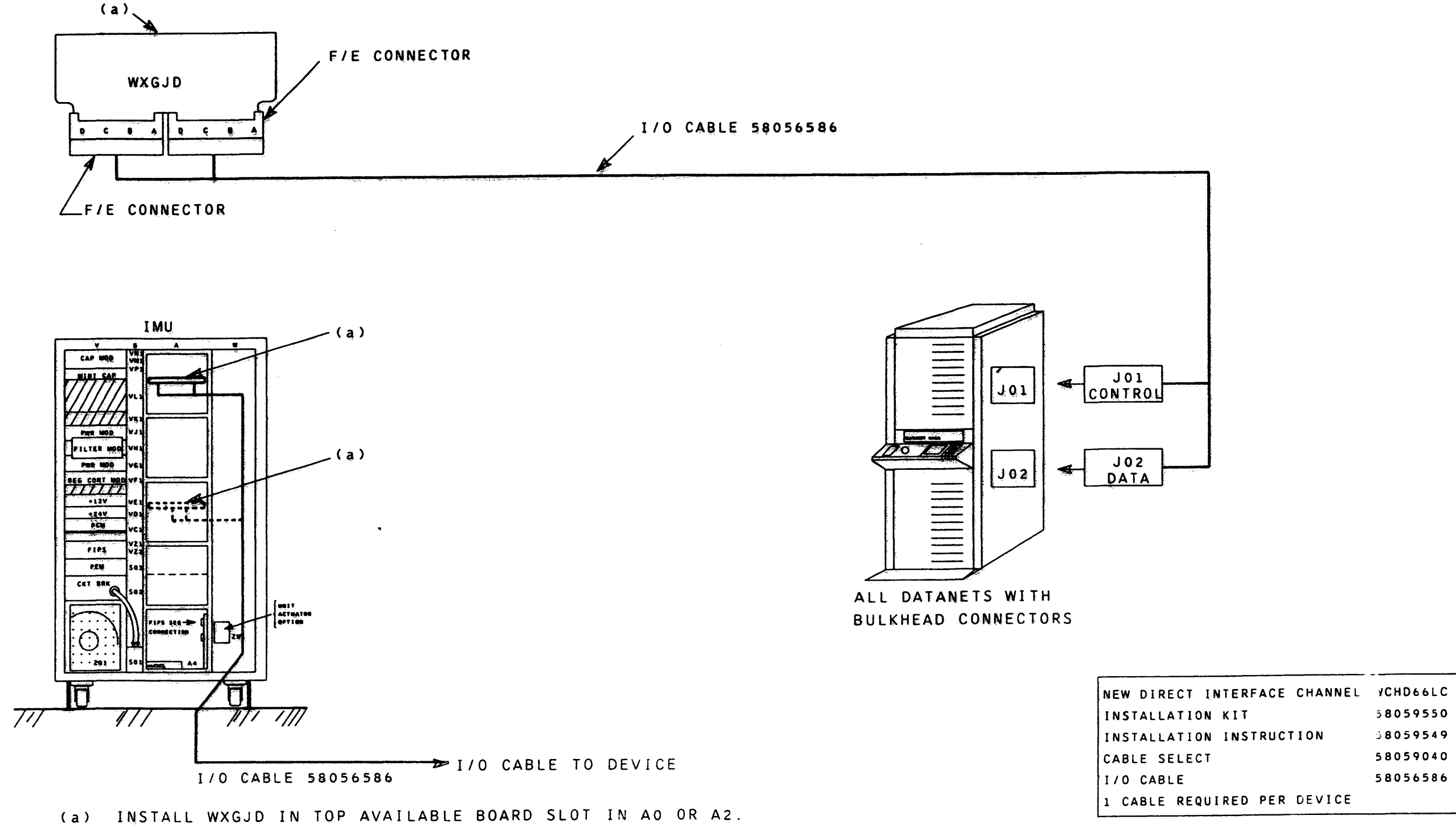


FIGURE 4.7-28. NEW DIRECT INTERFACE CHANNEL CABLING (SHEET 1 OF 2)

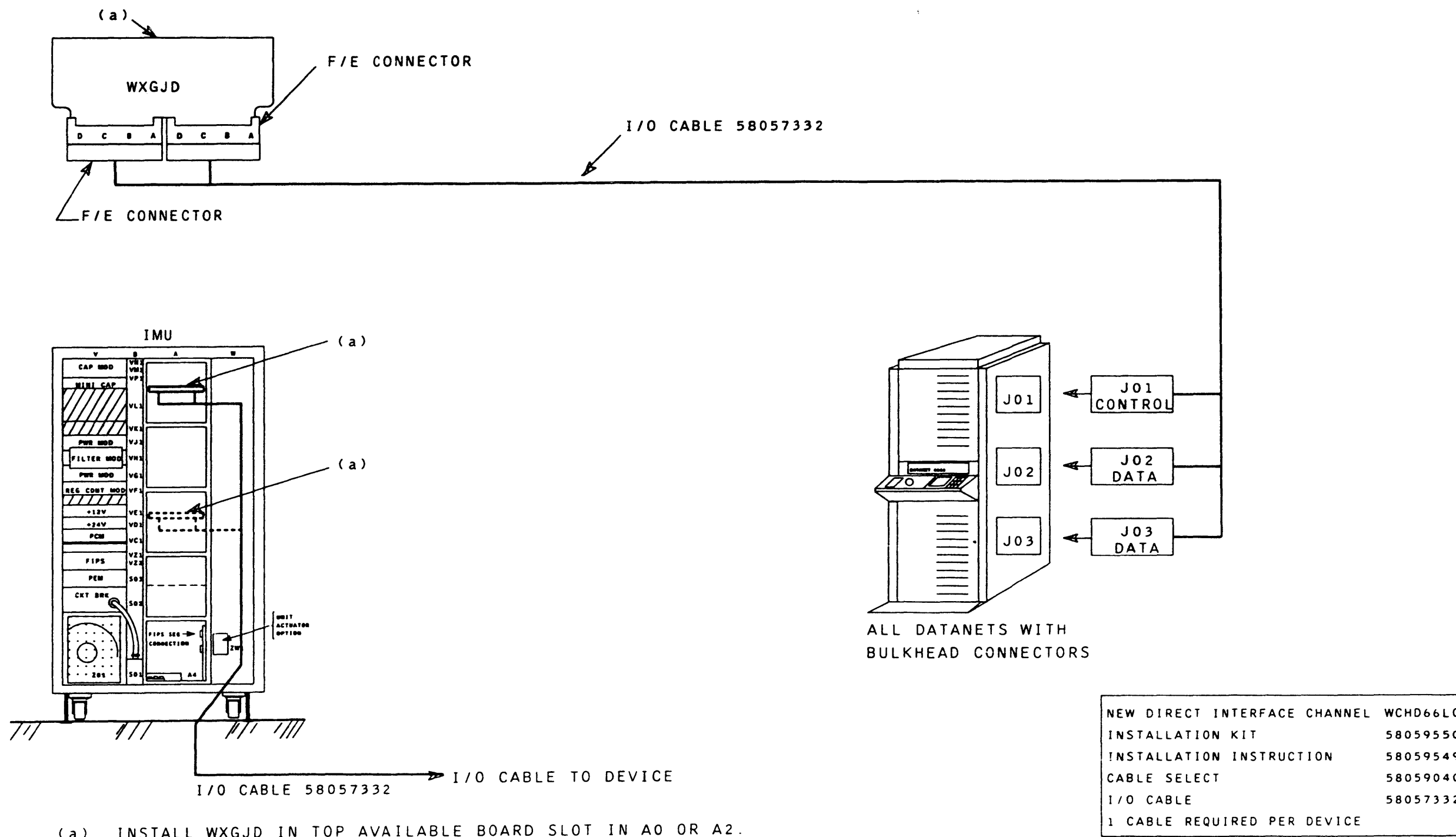


FIGURE 4.7-28. NEW DIRECT INTERFACE CHANNEL CABLING (SHEET 2 OF 2)

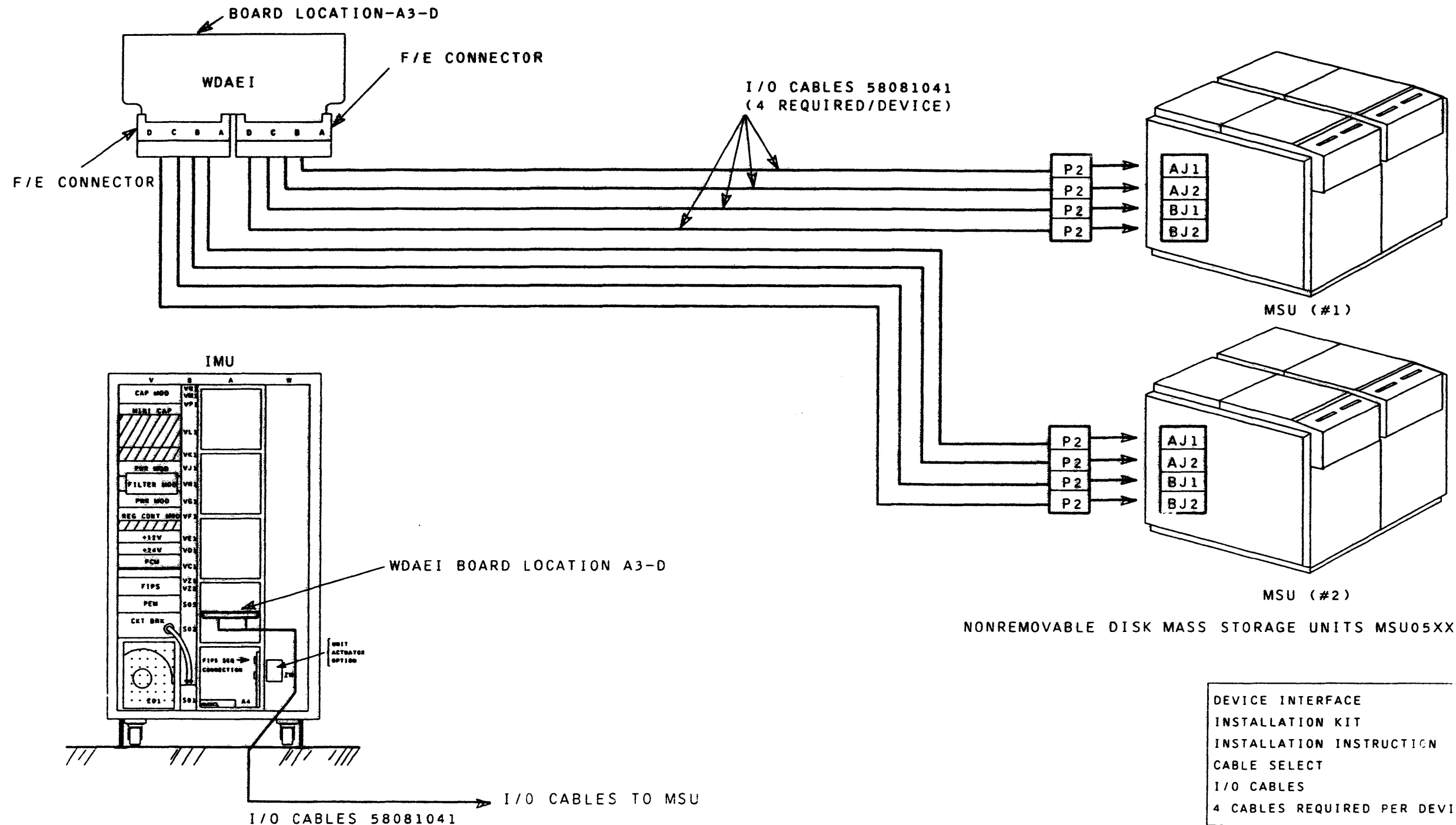


FIGURE 4.7-29. DISK DAU DEVICE ADAPTER CABLING (SHEET 1 OF 2)

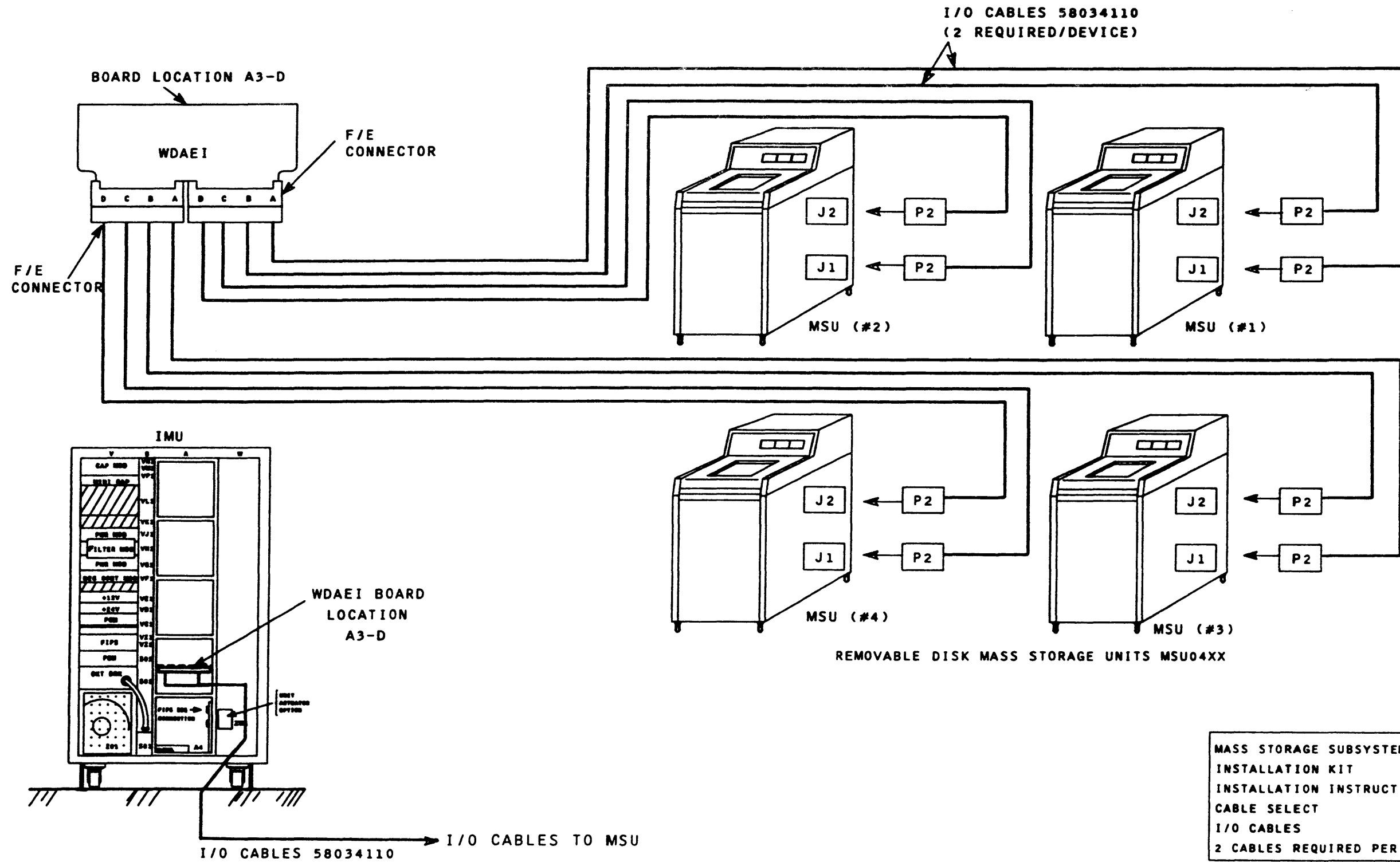


FIGURE 4.7-29. DISK DAU DEVICE ADAPTER CABLING (SHEET 2 OF 2)

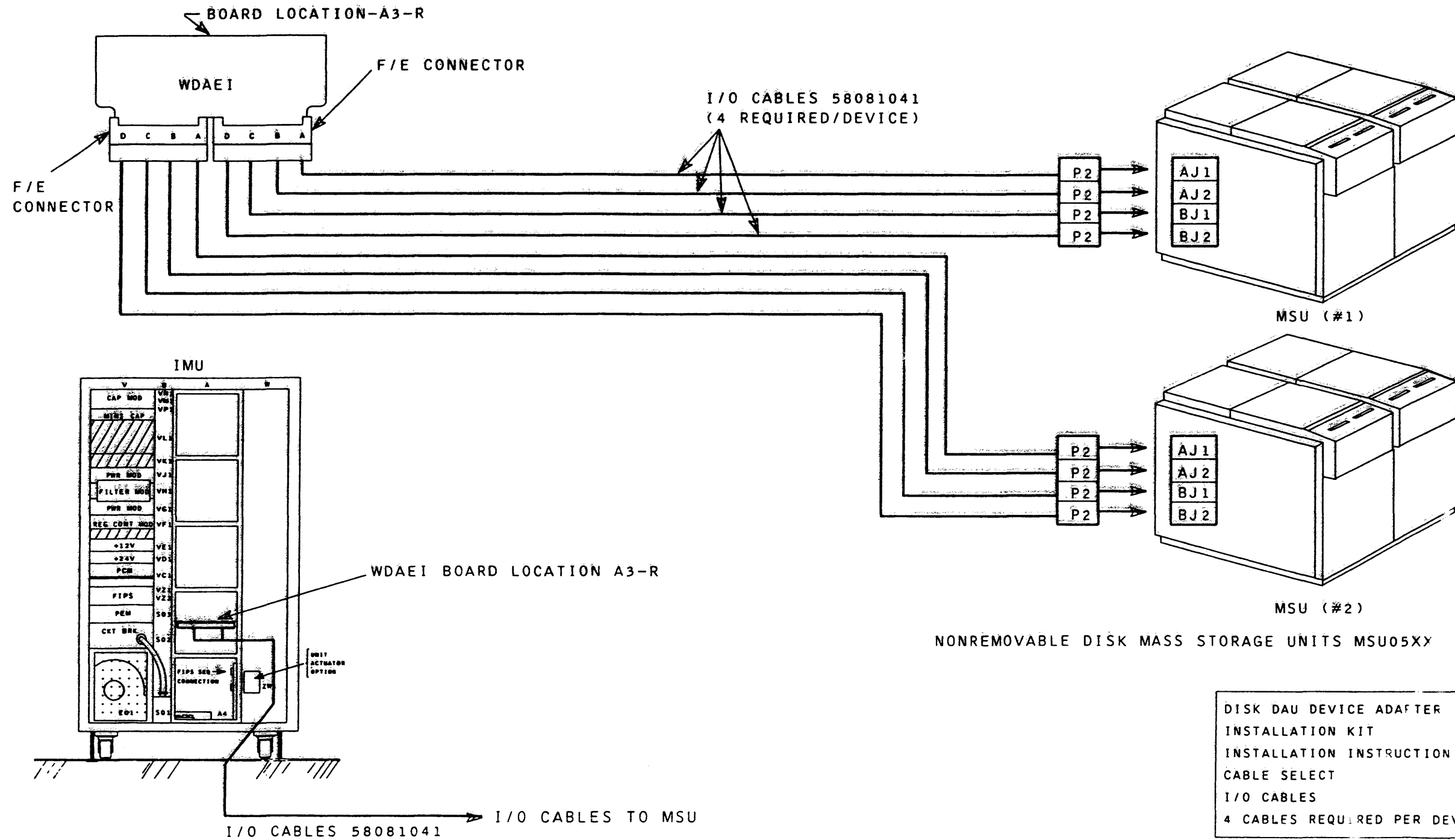


FIGURE 4.7-30. DISK DAU DEVICE ADAPTER CABLING (SHEET 1 OF 2)

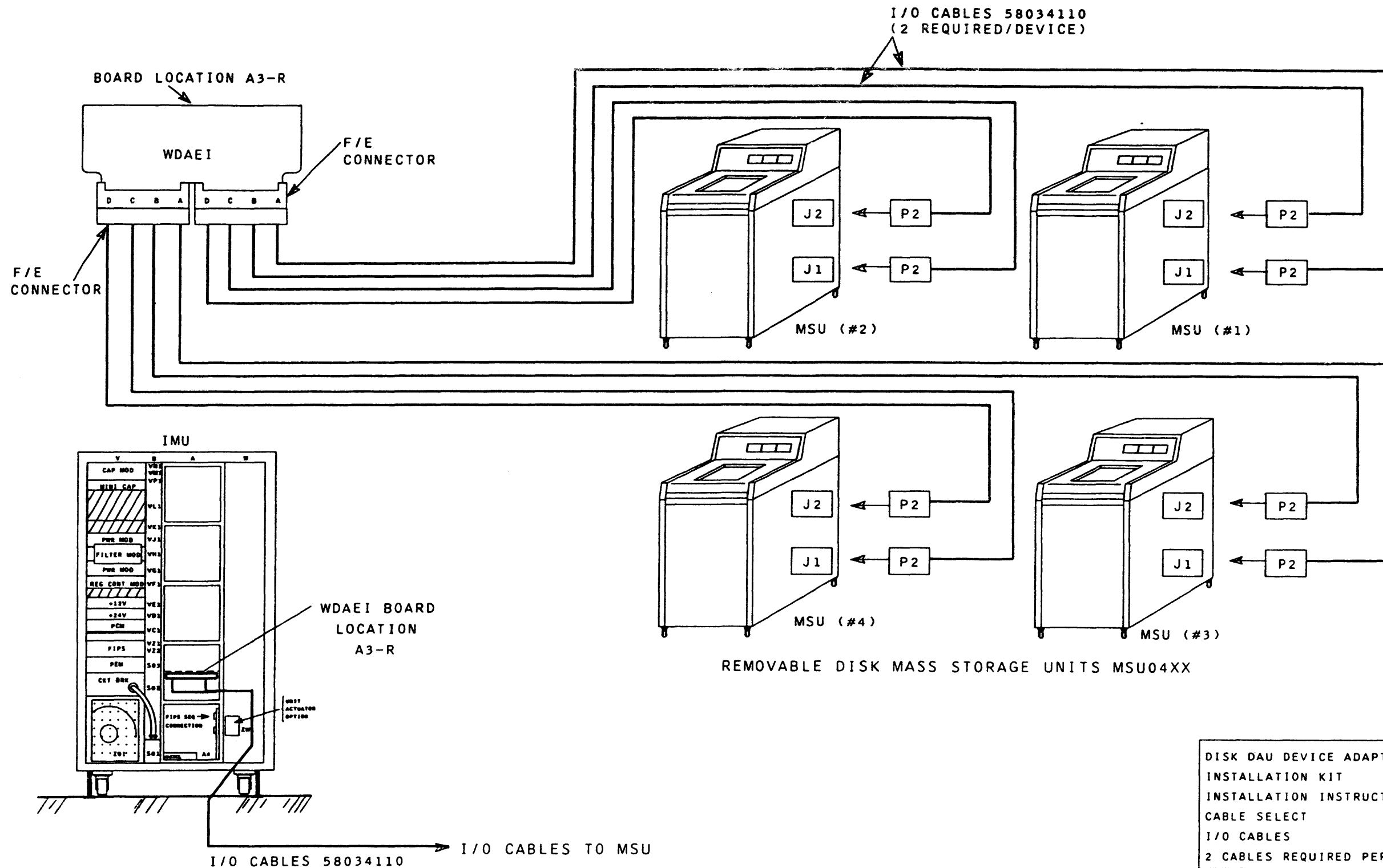


FIGURE 4.7-30. DISK DAU DEVICE ADAPTER CABLING (SHEET 2 OF 2)

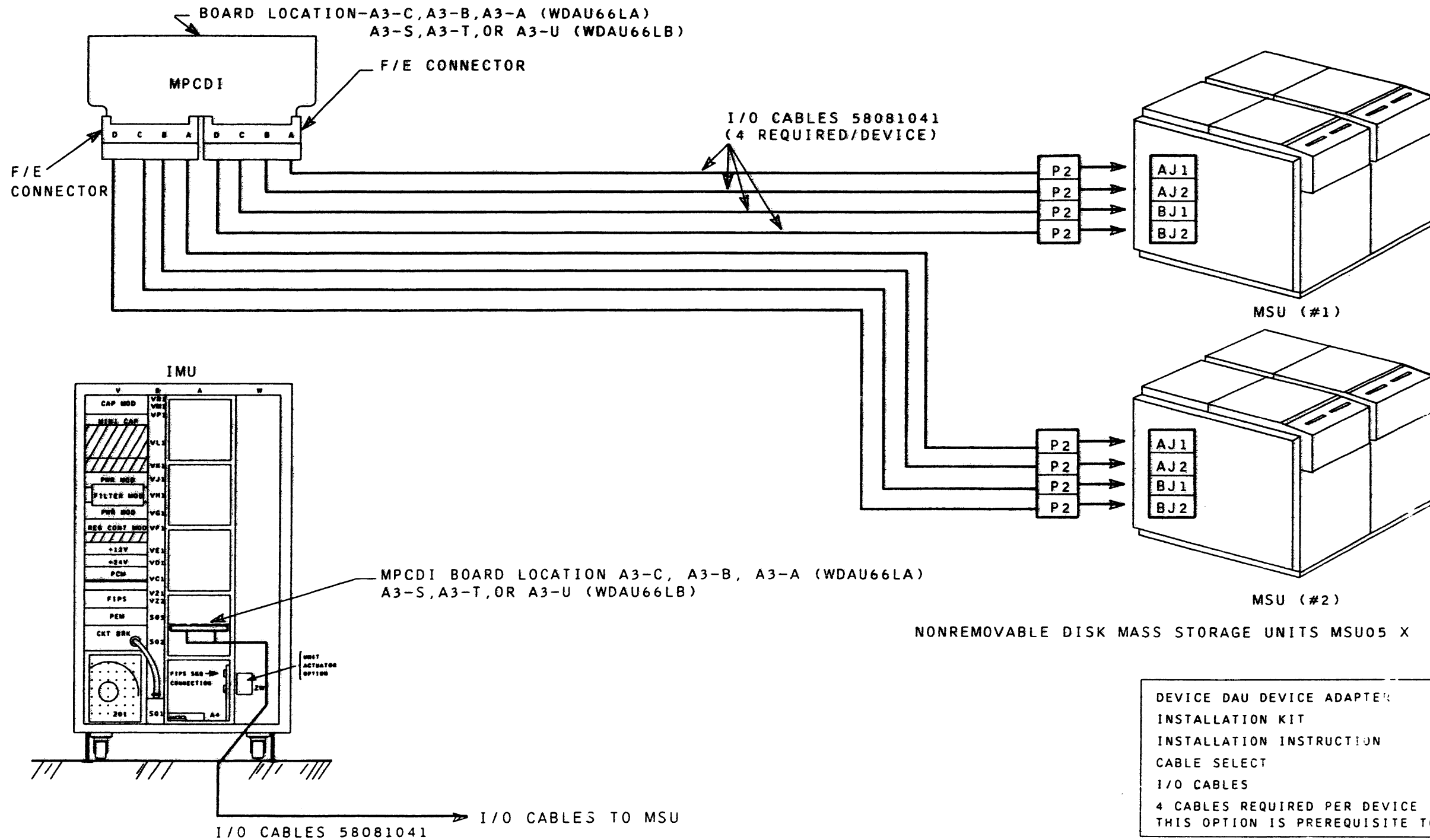


FIGURE 4.7-31. DISK DAU DEVICE INTERFACE CABLING (SHEET 1 OF 2)

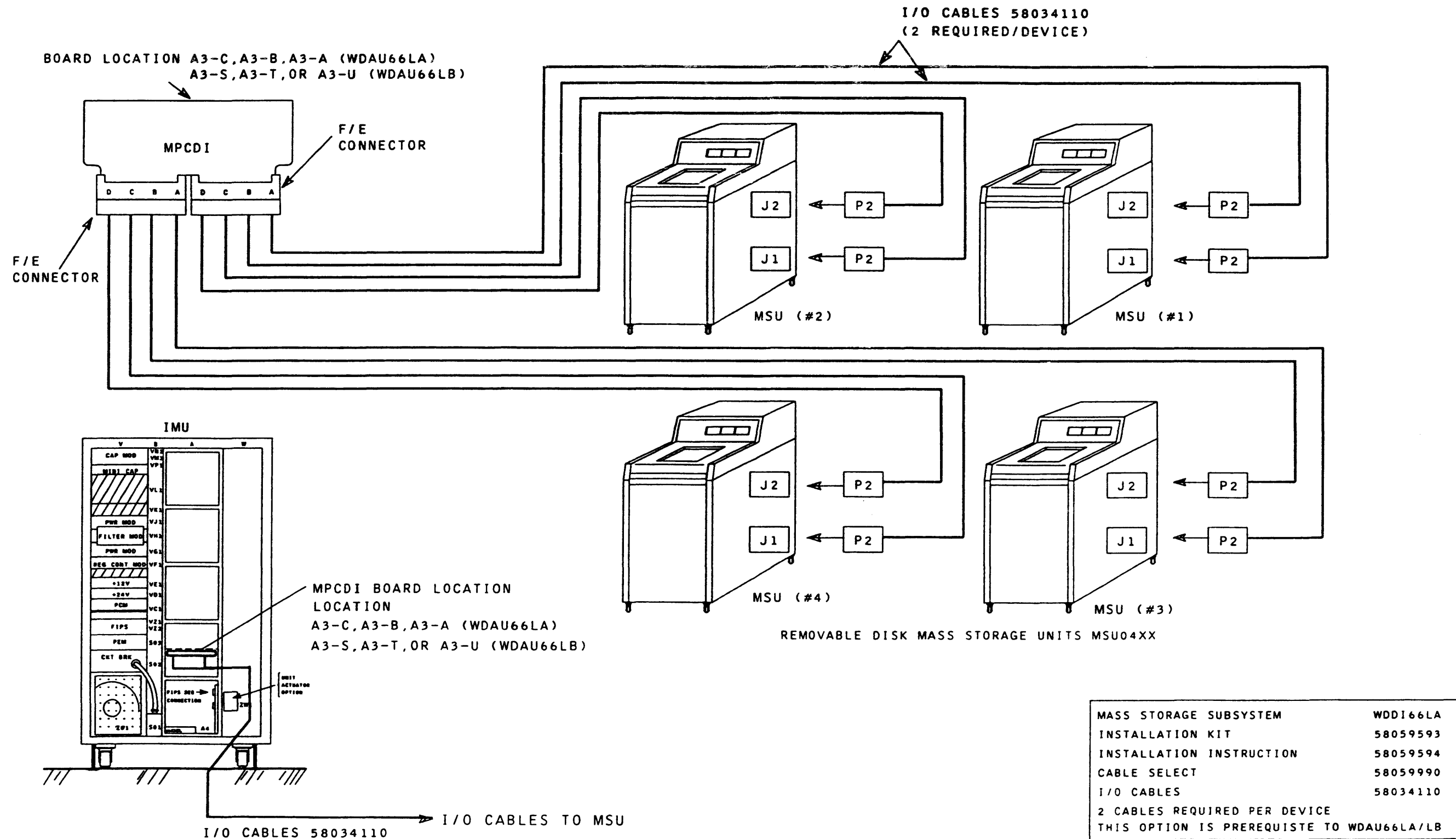


FIGURE 4.7-31. DISK DAU DEVICE INTERFACE CABLING (SHEET 2 OF 2)

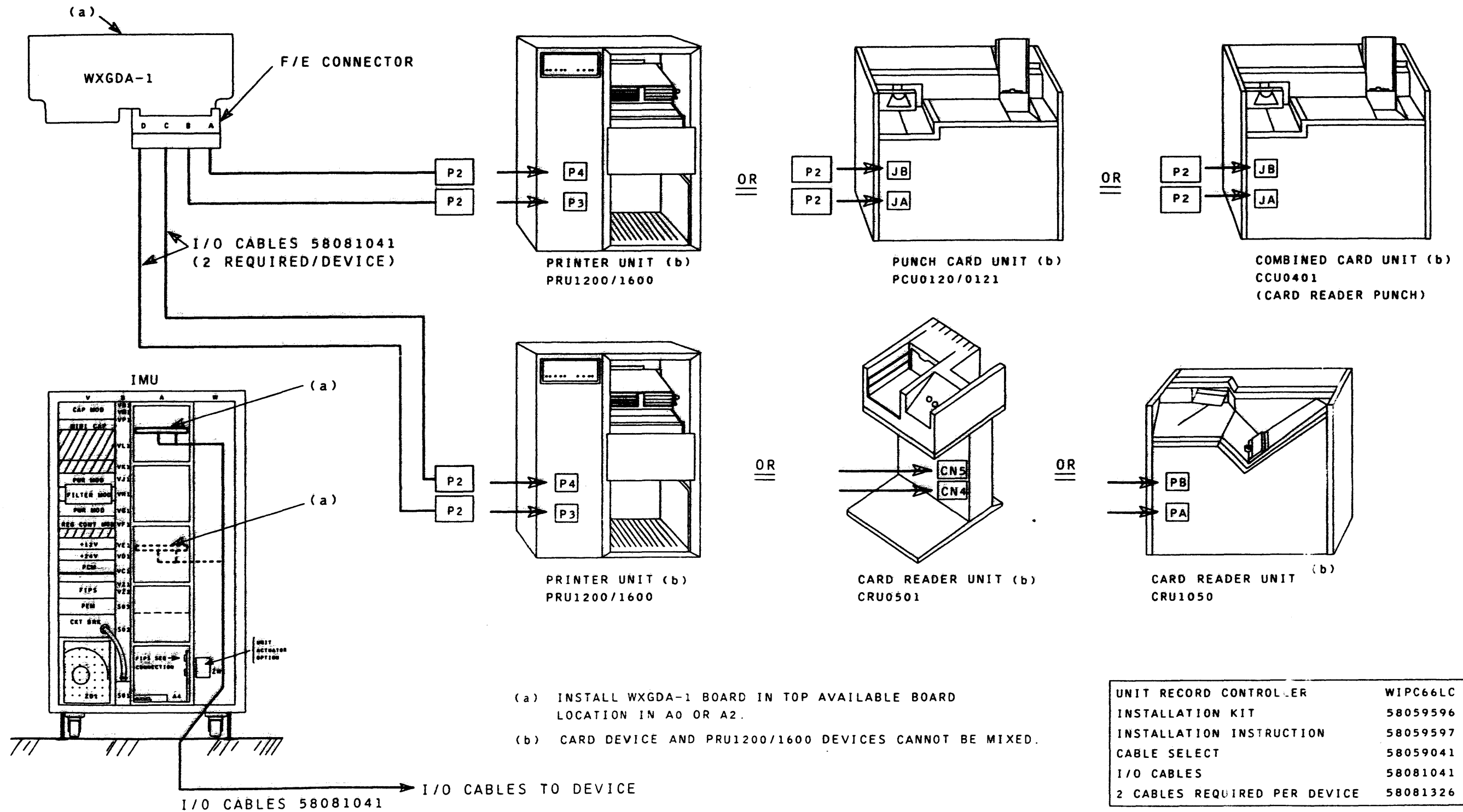
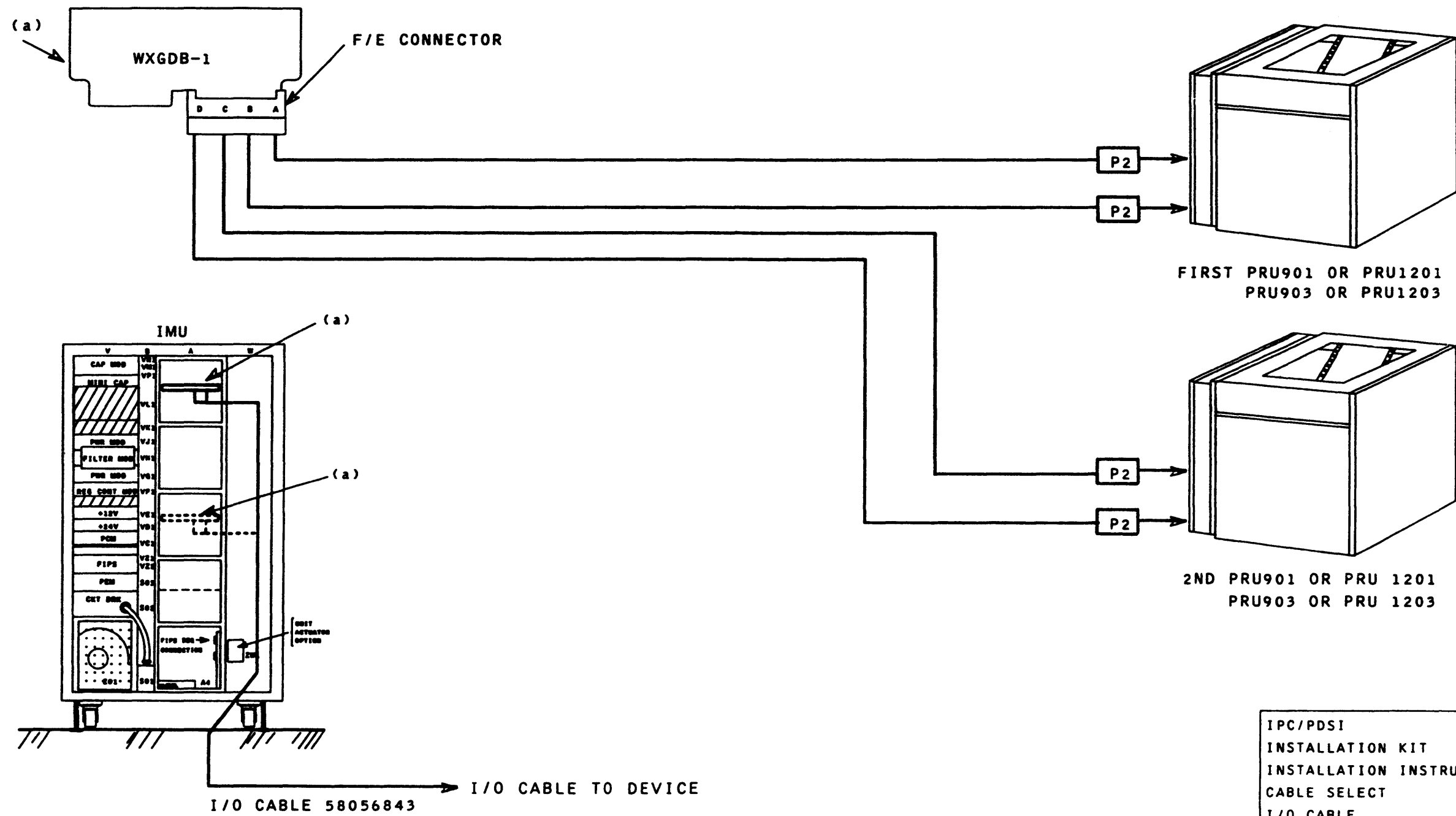


FIGURE 4.7-32. DEVICE ADAPTER INTERFACE CABLING



(a) WXGDB-1 BOARD LOCATION IS TOP AVAILABLE BOARD SLOT IN A0 OR A2.

IPC/PDS1	WIPC66LB
INSTALLATION KIT	58059581
INSTALLATION INSTRUCTION	58059582
CABLE SELECT	58059038
I/O CABLE	58056843
2 CABLES REQUIRED PER DEVICE	

FIGURE 4.7-33. PERIPHERAL DEVICE SERIAL INTERFACE CABLING

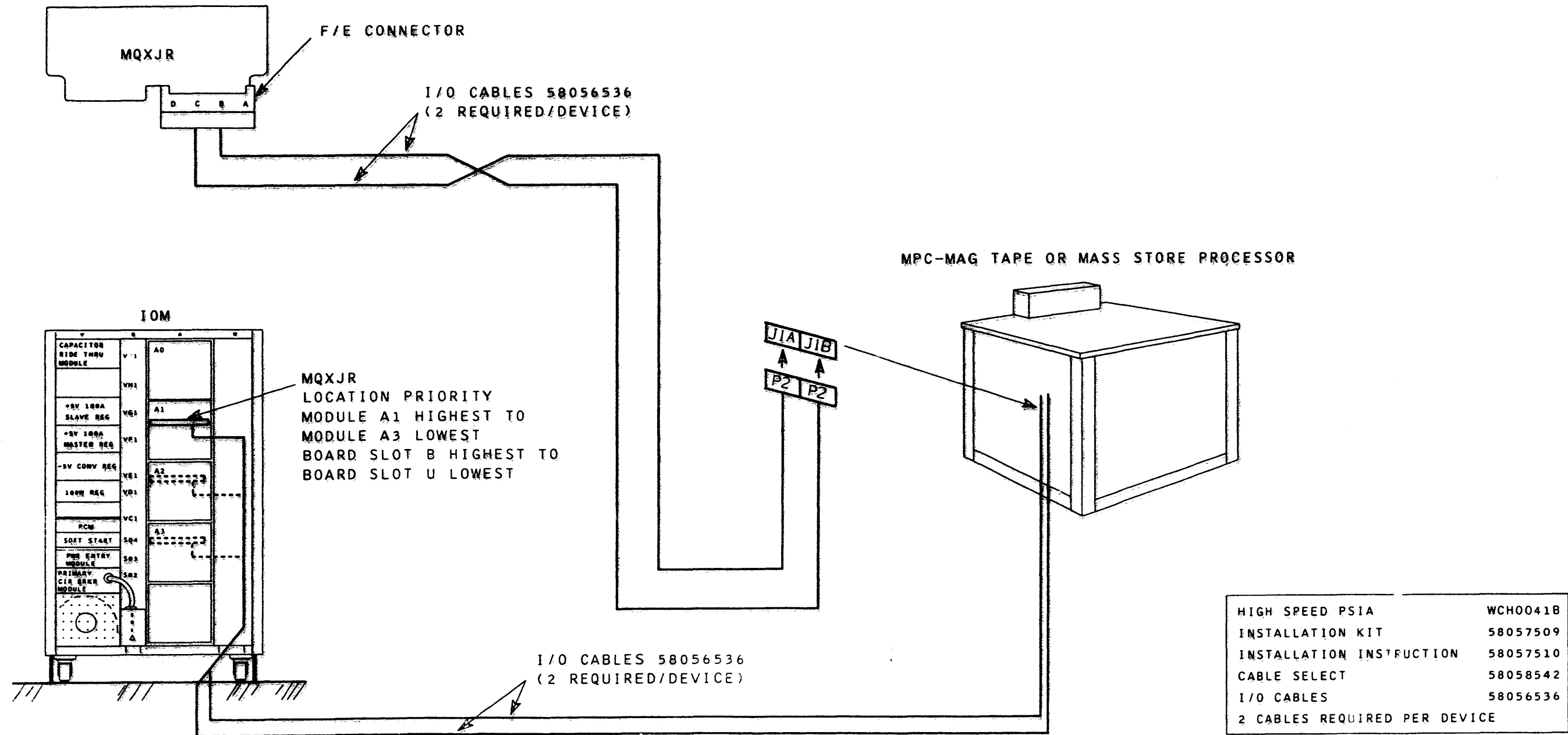


FIGURE 4.7-34. HIGH SPEED PSIA CABLING (SHEET 1 OF 2)

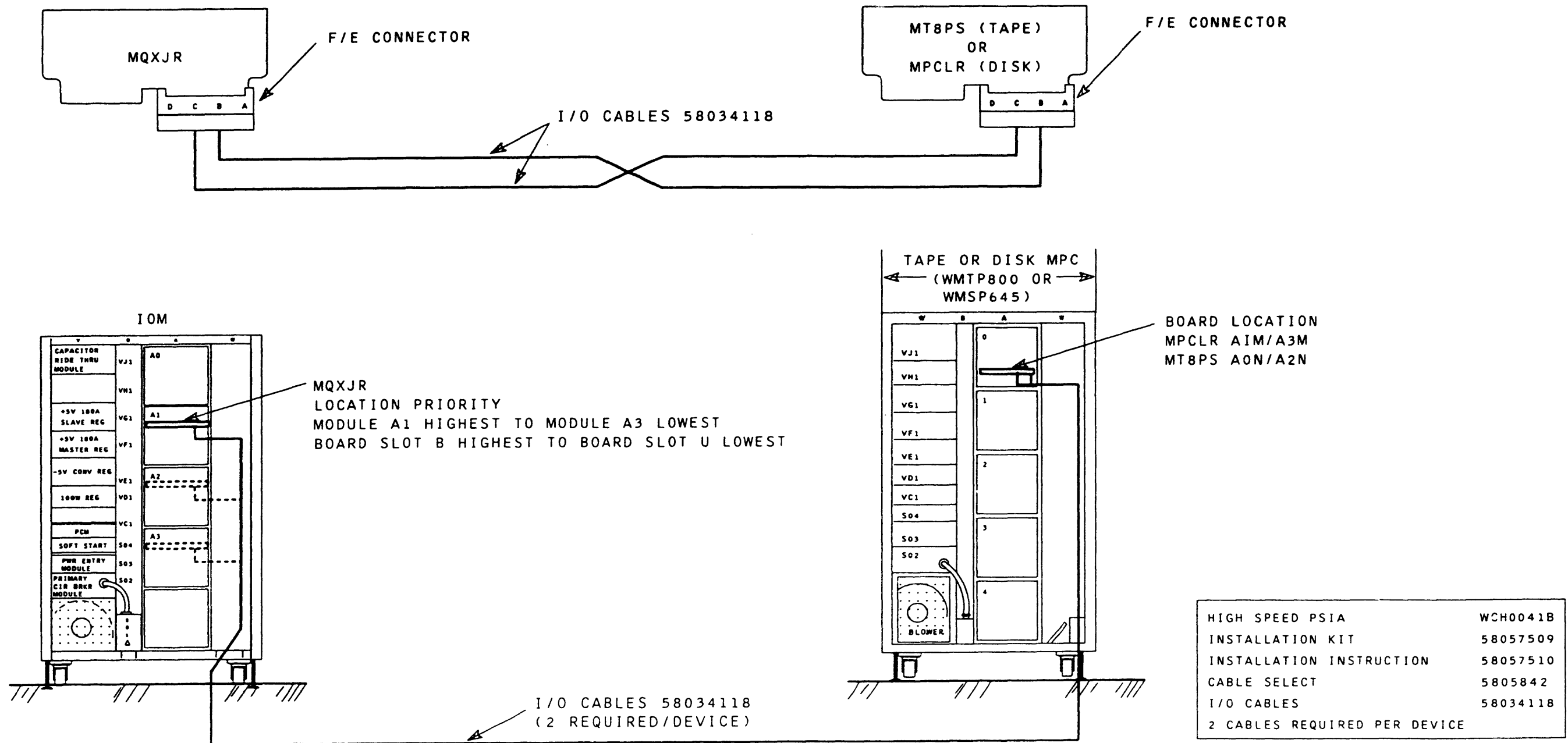


FIGURE 4.7-34. HIGH SPEED PSIA CABLING (SHEET 2 OF 2)

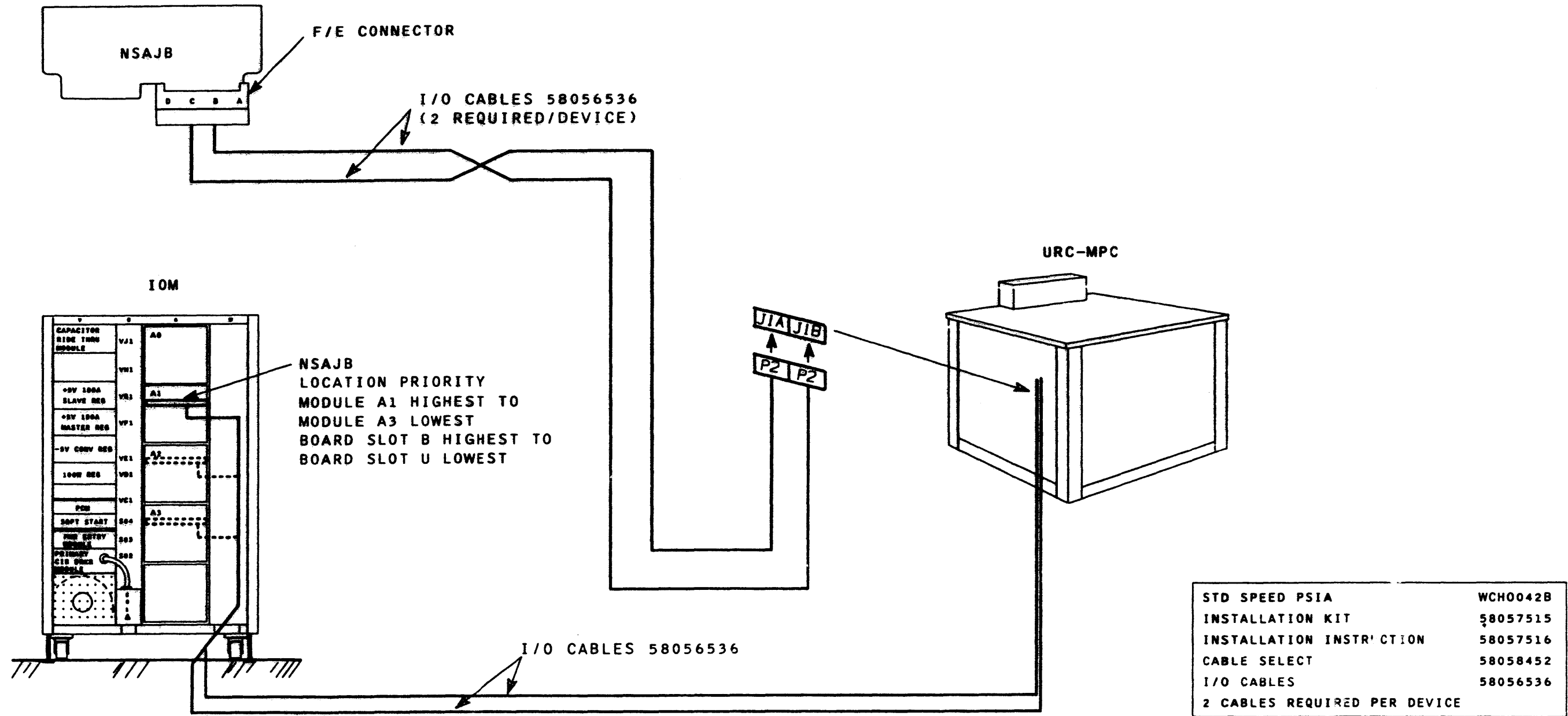
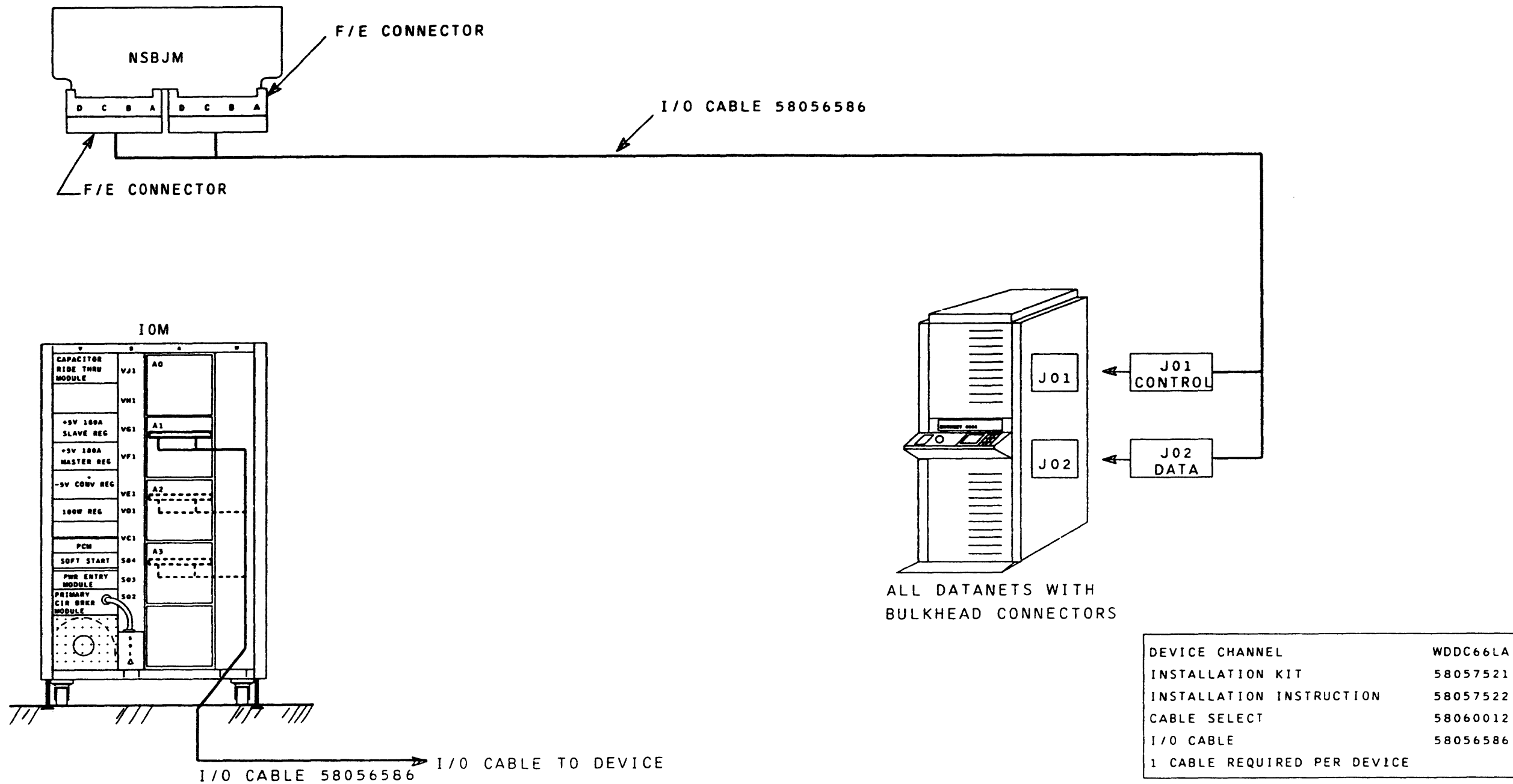


FIGURE 4.7-35. STANDARD SPEED PSIA CABLING



DEVICE CHANNEL	WDDC66LA
INSTALLATION KIT	58057521
INSTALLATION INSTRUCTION	58057522
CABLE SELECT	58060012
I/O CABLE	58056586
1 CABLE REQUIRED PER DEVICE	

FIGURE 4.7-36. DIRECT CHANNEL CABLING (SHEET 1 OF 2)

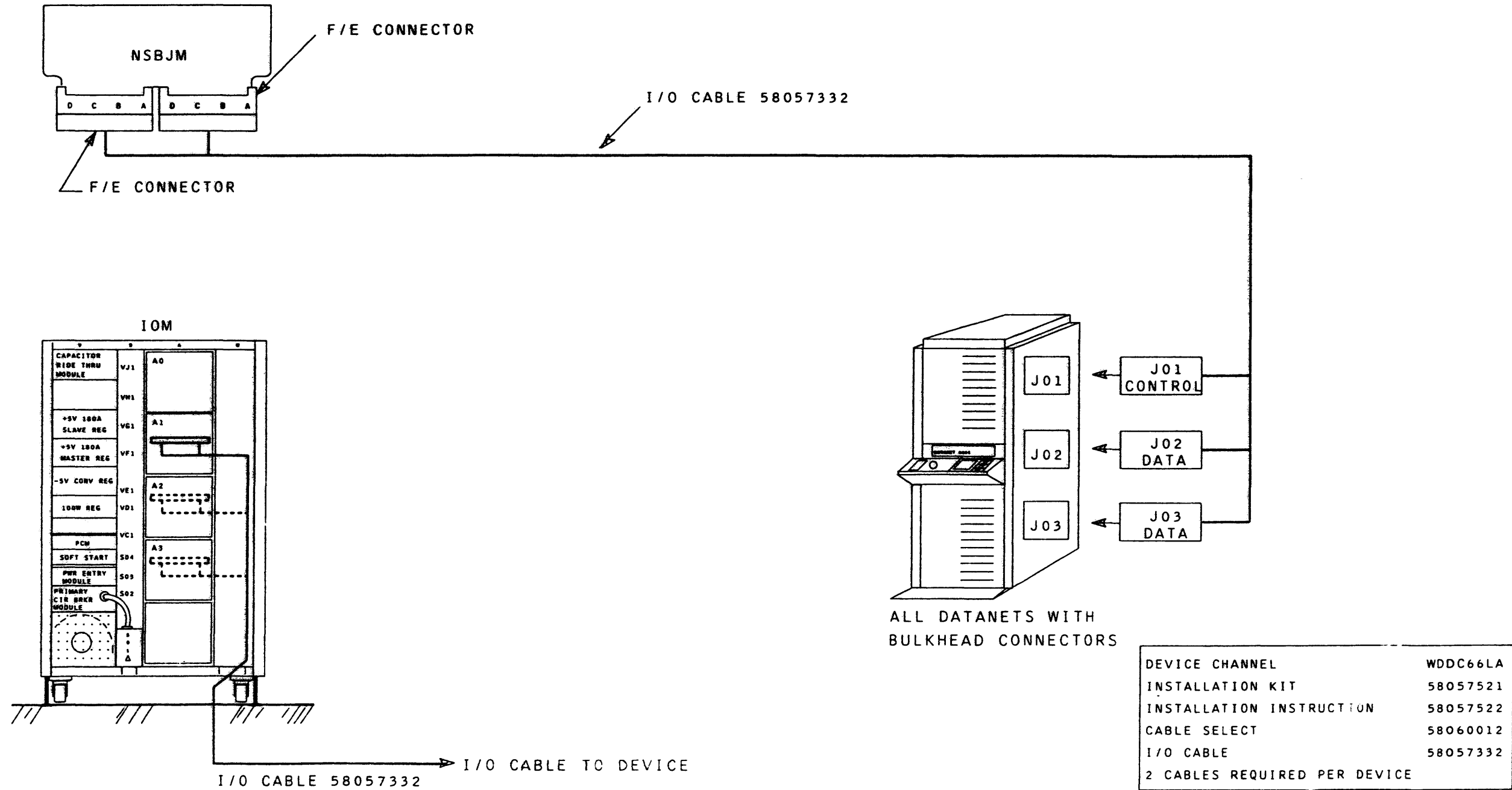


FIGURE 4.7-36. DIRECT CHANNEL CABLING (SHEET 2 OF 2)

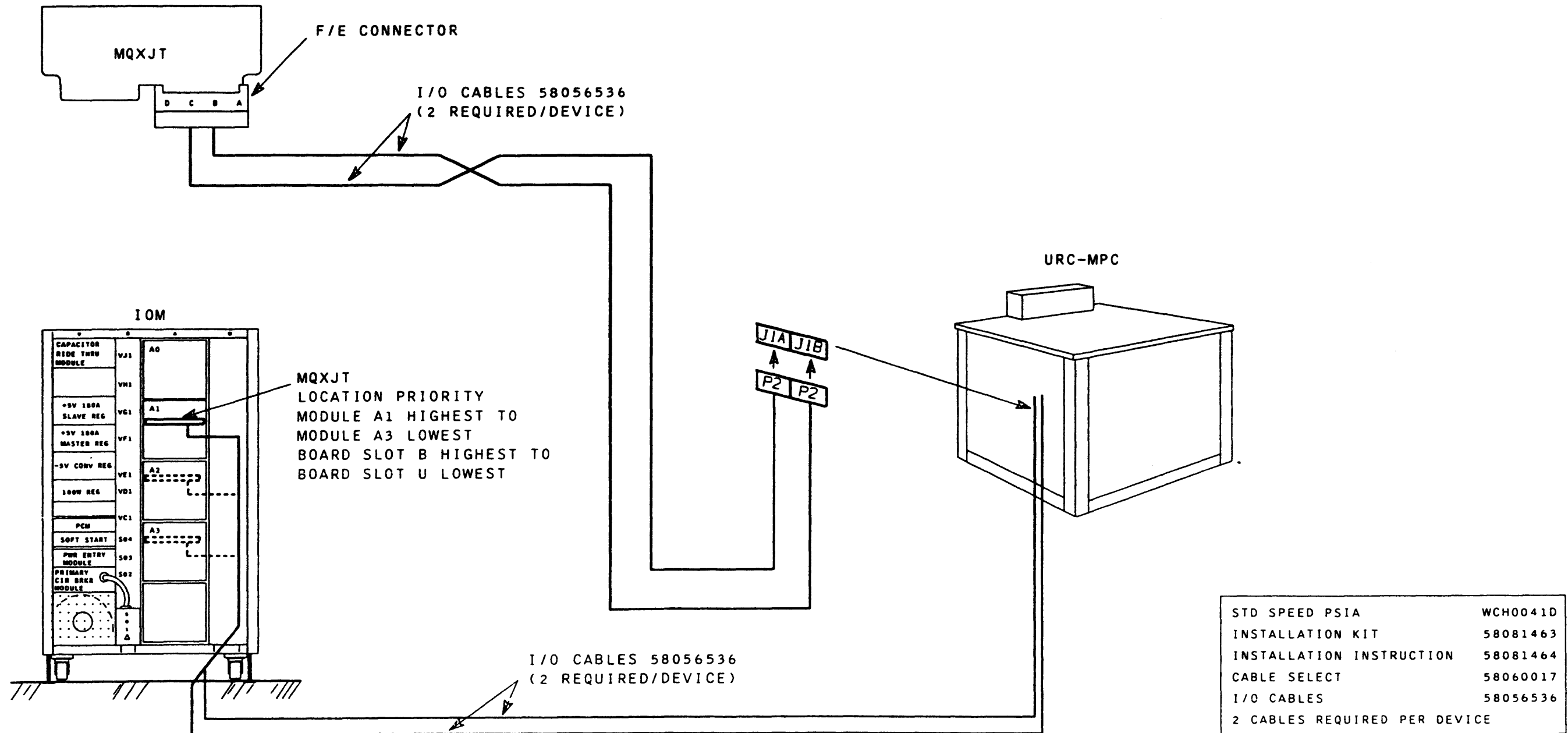


FIGURE 4.7-37. HIGH SPEED PSIA CABLING (SHEET 1 OF 2)

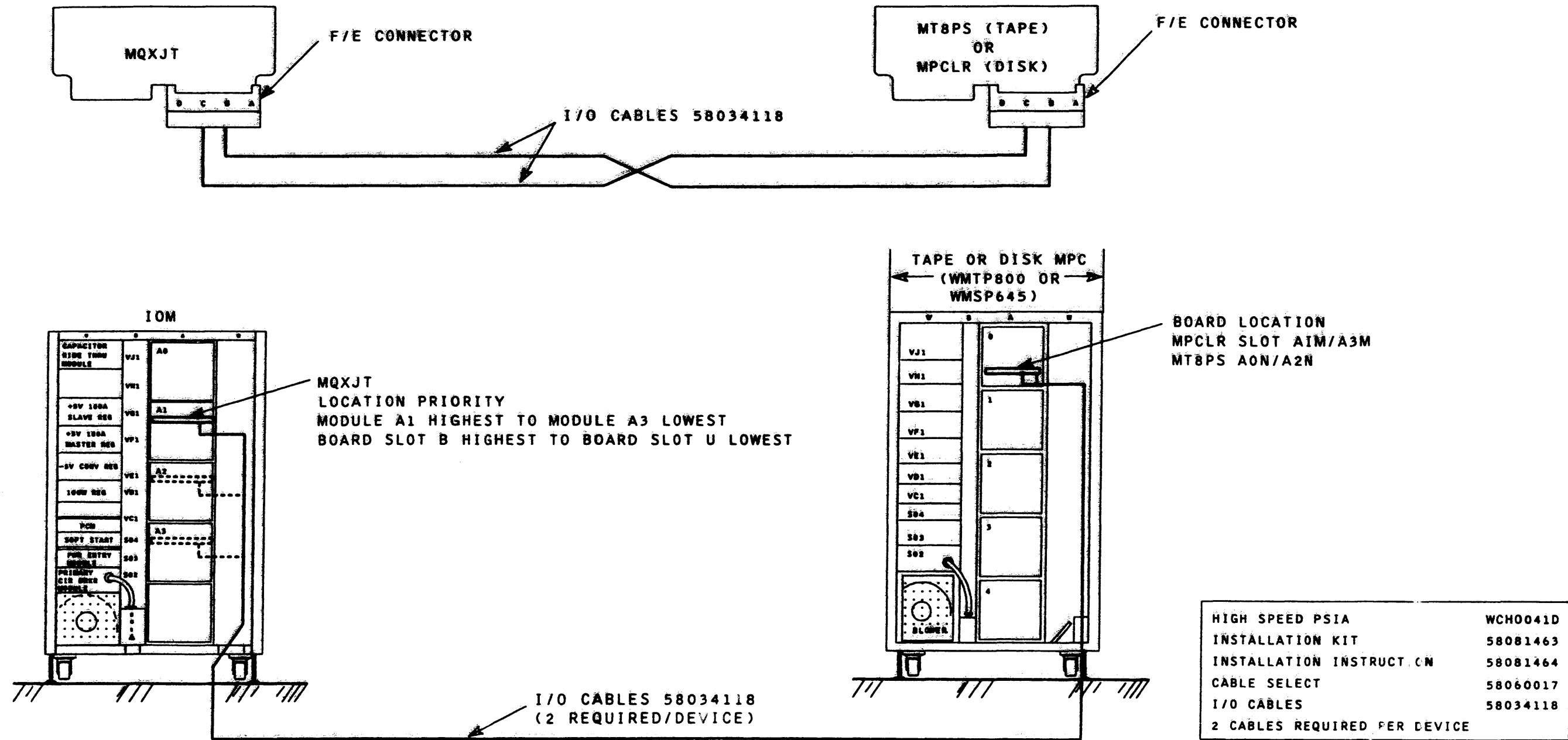


FIGURE 4.7-37. HIGH SPEED PSIA CABLING (SHEET 2 OF 2)

Unit Record Devices Options:

- WEUR001A
- WEUR002A
- WEUR005A
- WEUR006A
- WEUR007A

Programmable read only memories (PROMs) containing unit record device application firmware are installed on the EURCB board to provide the option of operating with specific unit record devices as follows:

WEUR001A PROM A Options (card readers and card punches on the Device Adapter Interface (DAI) and PR54 printers on the Peripheral Device Serial Interface (PDSI) under GCOS).

Installation Kit	58081720
Installation Instruction	58058443
IPL Cable Select	58060011

WEUR002A PROM B Option (PR71 printers on the DAI under GCOS).

Installation Kit	58081721
Installation Instruction	58058443
IPL Cable Select	58060011

WEUR006A PROM C Option (same as PROM A except under CP6).

Installation Kit	58081722
Installation Instruction	58058443
IPL Cable Select	58060011

WEUR007A PROM D Option (same as PROM A except WWMCCS/Air Force Card Option).

Installation Kit	58082265
Installation Instruction	58058443
IPL Cable Select	58060011

WEUR005A Initialize Option (provides a local pushbutton switch to initialize the URC).

Installation Kit	58059797
Installation Instruction	58059798

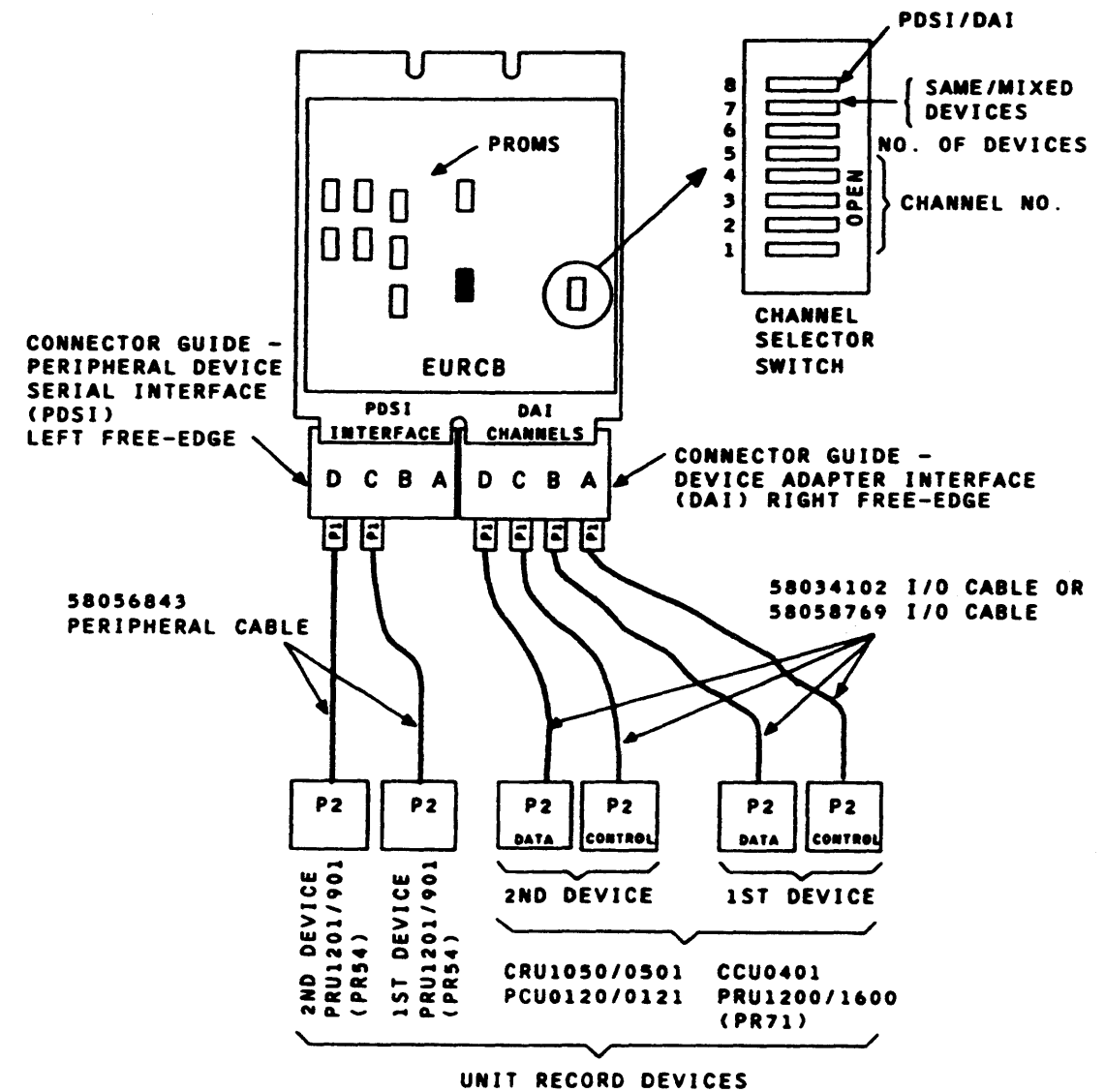
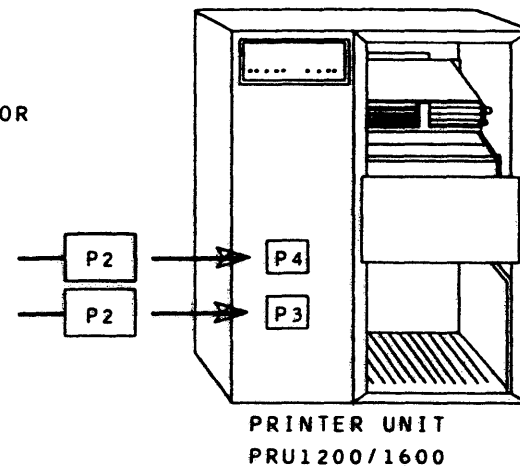
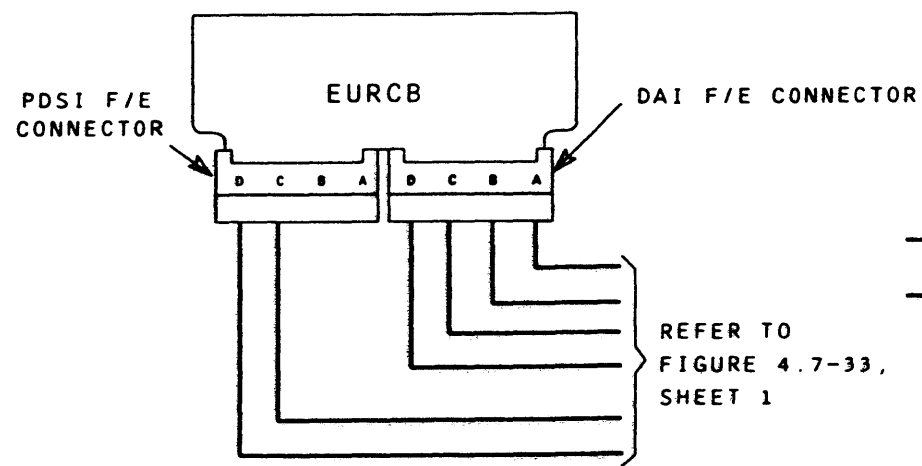
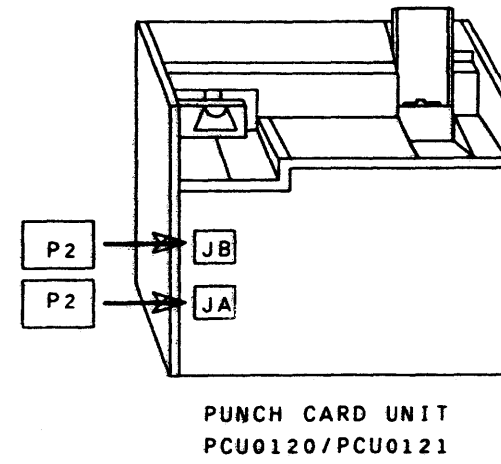


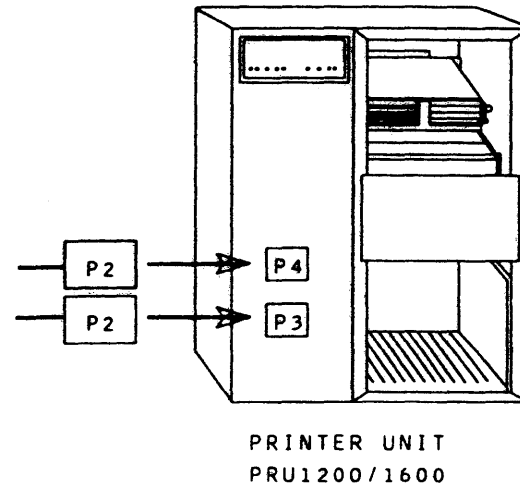
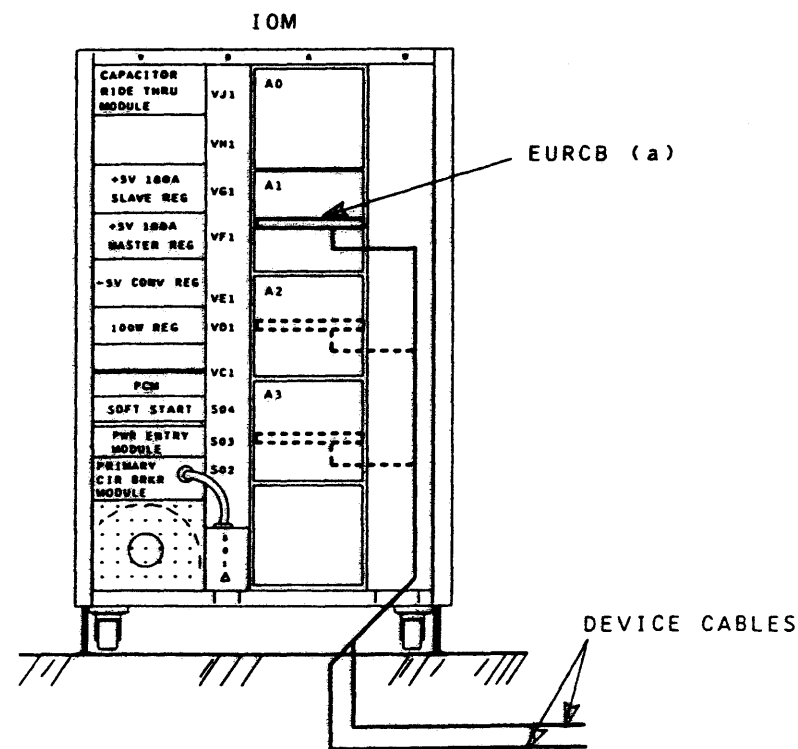
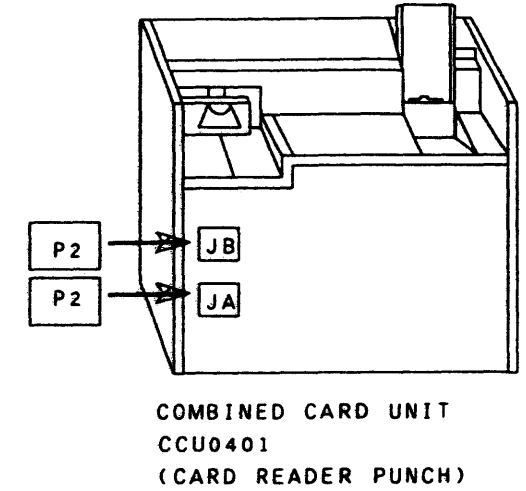
FIGURE 4.7-38. EURCB BOARD OPTIONS (SHEET 1 OF 2)



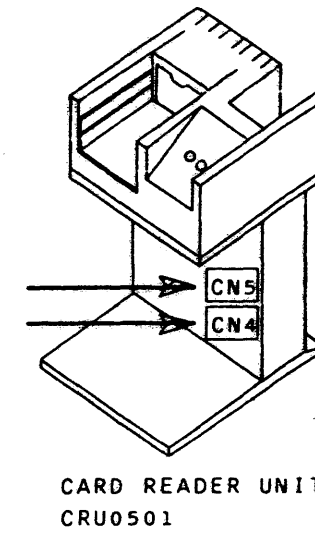
OR



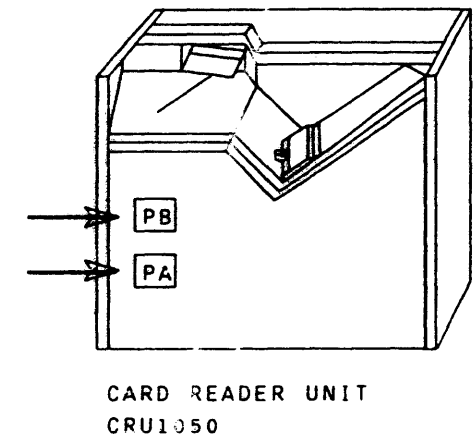
OR



OR



OR



(a) EURCB BOARD IS INSTALLED IN IOM BOARD MODULE "A1", "A2", AND/OR "A3" ON A PRIORITY BASIS. USUAL PRIORITIES ARE AS FOLLOWS:

1. INTERFACE PRIORITIES:
 - HIGHEST = MAG TAPE
 - NEXT = DISK
 - NEXT = EURC
 - NEXT = CONSOLE
2. PRIORITIES BETWEEN BOARD MODULES START WITH "A1" (HIGHEST) AND END WITH "A3" (LOWEST).
3. PRIORITIES WITHIN BOARD MODULES START WITH SLOT "B" (HIGHEST) AND END WITH "U" (LOWEST).

FIGURE 4.7-38. EURCB BOARD OPTIONS (SHEET 2 OF 2)

TABLE 4.7-3. UNSHIELDED I/O CABLING (SHEET 1 OF 2)

ITEM NO.	OPTION				I/O UNSHIELDED CABLE (a)		I/O UNSHIELDED CABLE ROUTING				
	IDENT NO	DESCRIPTION	INSTL KIT	INSTL INSTR	IDENT NO.	QTY/ DEVICE	FROM IMU CABINET			TO DEVICE	
							LOGIC BOARD	LOCATION	FE CONNECTOR(S)	DEVICE	CONN/BOARD
1	WIPC66LB	PERIPHERAL DEVICE SERIAL INTERFACE	58059581	58059582	58056643	1	WXGDB-1	TOP AVAILABLE BOARD SLOT - MODULE A0 OR A2	RIGHT "C" OR "D"	PRU901/1201 PRU903/1203	INTERFACE CONNECTION AT W3C
2	WIPC66LC	DEVICE ADAPTER INTERFACE	58059596	58059597	58081041 OR 58081326	2	WXGDA-1	TOP AVAILABLE BOARD SLOT - MODULE A0 OR A2	RIGHT "A & B" OR RIGHT "C & D"	CRU0501/1050 CCU0401 PCU0120/0121 PRU1200/1600	CM4, CN5/PA, PB JA, JB JA, JB PA, PB/P3, P4
3	WCH066LA	PERIPHERAL SUBSYSTEM INTERFACE ADAPTER (PSIA) 2-TRIP	58059538	58059537	58034118	2	WXGJB	MODULE A0 OR A2	RIGHT "B & C"	LP DISK MPC	MPCLR RIGHT "B" & "C"
					58034118	2				LP TAPE MPC	MT8PS RIGHT "B" & "C"
					58056536	2				DISK MPC TAPE MPC	J1A & J1B
4	WCH066LB	PSIA 4-TRIP	58059541	58059540	58056536	2	WXGJC	MODULE A0 OR A2	RIGHT "B & C"	DESK STYLE MPC -URC DISK & TAPE	J1A & J1B
5	WCHD66LC	NEW DIRECT INTERFACE CHANNEL (NDIC)	58059550	58059549	58056586	1	WXGJD	TOP AVAILABLE BOARD SLOT - MODULE A0 OR A2	RIGHT LEFT	DN66	J01 & J02
					58057332	1				DN-8	J01, J02 & J03
6	WDAU66LA	DEVICE ADAPTER	58059584	58059585	58034110	2	WDAEI	MODULE A3 SLOT D	(b)	MSU04XX	J1 & J2
					58081041	4			(c)	MSU050X	AJ1, AJ2, BJ1 & BJ2
7	WDAU66LB	DEVICE ADAPTER	58059590	58059591	58034110	2	WDAEI	MODULE A3 SLOT R	(b)	MSU04XX	J1 & J2
					58081041	4			(c)	MSU050X	AJ1, AJ2, BJ1 & BJ2
8	WDDI66LA	DEVICE INTERFACE	58059593	58059594	58034110	2	MPCDI	MODULE A3 SLOT C, B, A, S, T OR U	(b)	MSU04XX	J1 & J2
					58081041	4			(c)	MSU050X	AJ1, AJ2, BJ1 & BJ2
9	WIPC66LE	FEDERAL INTERFACE PERIPHERAL STANDARD (FIPS)	58059578	58059579	SEE FIGURE 4.7-15 FOR CABLING ROUTING						
10	WADE66LA (d)	TAPE UNIT INTERFACE	58081072	58081073	58081041	2	MT8MT	MODULE A3 OR A4 SLOT T OR U/9	(e)	MTU04XX/05XX/ MTU06XX	J01 & J02

(a) REFERENCE MAY BE MADE TO CABLE CONFIGURATOR DRAWINGS 58059885 AND 58059979.

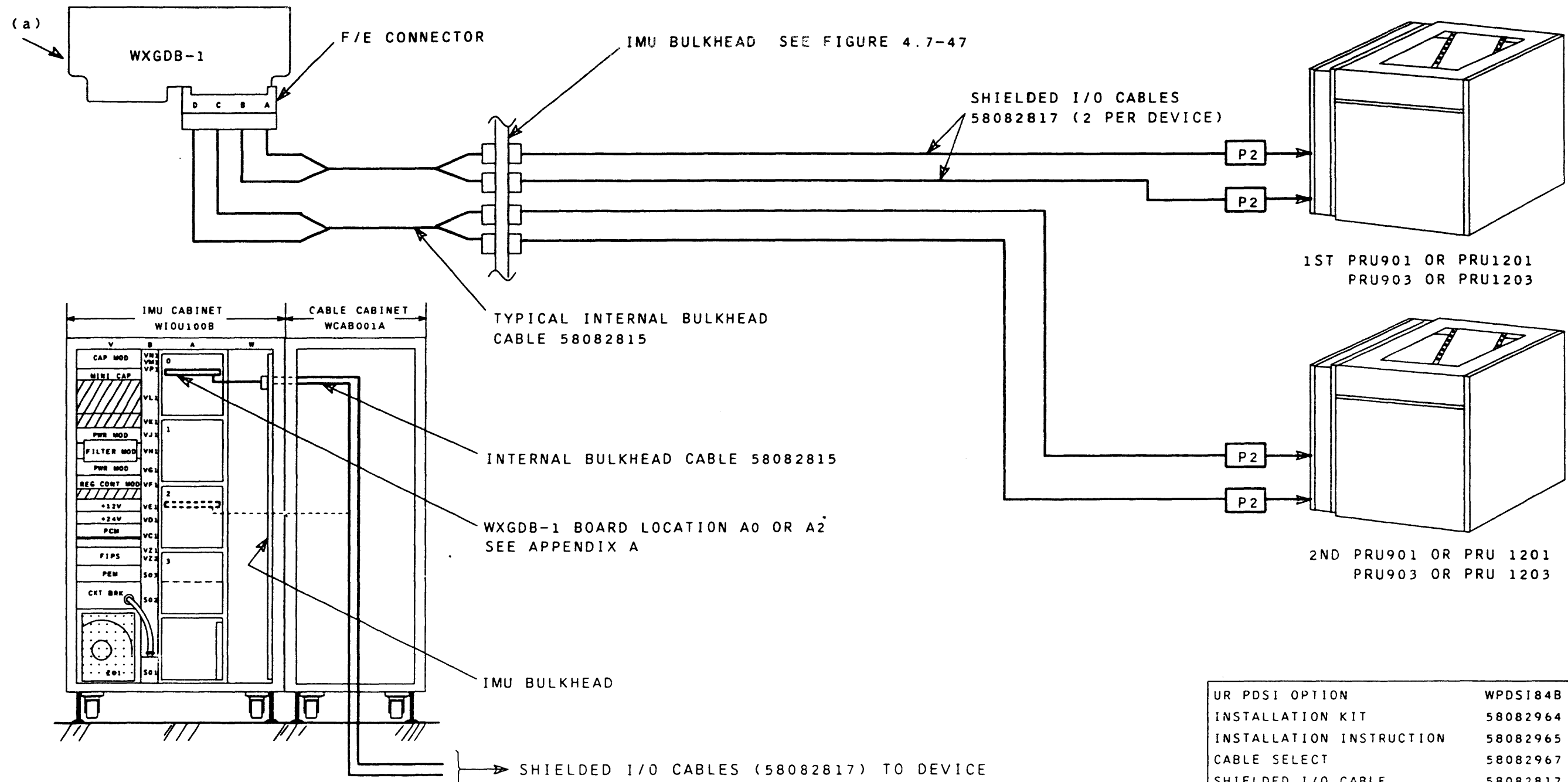
(b) 1ST DEVICE - RIGHT FE CONNECTOR PLUGS A & B.
2ND DEVICE - RIGHT FE CONNECTOR PLUGS C & D.
3RD DEVICE - LEFT FE CONNECTOR PLUGS A & B.
4TH DEVICE - LEFT FE CONNECTOR PLUGS C & D.(c) 1ST DEVICE - RIGHT FE CONNECTOR PLUGS A, B, C & D.
2ND DEVICE - LEFT FE CONNECTOR PLUGS A, B, C & D.

(d) MMU CABINET OPTION

(e) 1ST PAIR OF IPL CABLES - RIGHT FE CONNECTOR PLUGS A & B.
2ND PAIR OF IPL CABLES - RIGHT FE CONNECTOR PLUGS C & D.
3RD PAIR OF IPL CABLES - LEFT FE CONNECTOR PLUGS A & B.
4TH PAIR OF IPL CABLES - LEFT FE CONNECTOR PLUGS C & D.

TABLE 4.7-3. UNSHIELDED I/O CABLING (SHEET 2 OF 2)

ITEM NO.	OPTION				I/O UNSHIELDED CABLE (a)		I/O UNSHIELDED CABLE ROUTING				
	IDENT NO	DESCRIPTION	INSTL KIT	INSTL INSTR	IDENT NO.	QTY/ DEVICE	FROM IOM CABINET			TO DEVICE	
							LOGIC BOARD	LOCATION	FE CONNECTOR(S)	DEVICE	CONN/BOARD
11	WCH0041B	HIGH SPEED PSIA	58057509	58057510	58034118(b)	2	MQXJR	MODULE A1,A2,OR A3 SLOT B (HIGHEST) SLOT U (LOWEST)	RIGHT "B & C"	LP DISK MPC	MPCLR RIGHT "B & C"
					58034118(b)	2				LP TAPE MPC	MT8PS RIGHT "B & C"
					58056536(b)	2				DESK STYLE MPC DISK & TAPE	J1A & J1B
12	WCH0042B	STANDARD SPEED PSIA	58057515	58057516	58056536(b)	2	NSAJB	MODULE A1,A2,OR A3 SLOT B (HIGHEST) SLOT U (LOWEST)	RIGHT "B & C"	DESK STYLE MPC-URC DISK & TAPE	J1A & J1B
13	WDDC66LA	DIRECT CHANNEL	58057521	58057522	58056586(b)	1	NSBJM	MODULE A1,A2,OR A3 SLOT B THRU U	RIGHT & LEFT	DN66	J01 & J02
					58057332(b)	1				DN8	J01, J02, & J03
14	WCH0041D	HIGH SPEED PSIA	58081463	58081464	58034118(b)	2	MQXJT	MODULE A1,A2,OR A3 SLOT B (HIGHEST) SLOT U (LOWEST)	RIGHT "B & C"	LP DISK MPC	MPCLR RIGHT "B & C"
					58034118(b)	2				LP TAPE MPC	MT8PS RIGHT "B & C"
					58056536(b)	2				DESK STYLE MPC DISK & TAPE	J1A & J1B
15	WEUR001A	PROM A	58081720	58058443	58034102 OR 58058769	2	EURCB	MODULE A1,A2,OR A3 SLOT B (HIGHEST) SLOT U (LOWEST)	RIGHT "A & B" OR "C & D"	CARD READERS AND/OR PUNCHES	JA & JB
					58056843	2			LEFT "C & D"	PRINTERS	P3 & P4
16	WEUR002A	PROM B	58081721	58058443	58034102 OR 58058769	2	EURCB	MODULE A1,A2,OR A3 SLOT B (HIGHEST) SLOT U (LOWEST)	RIGHT "A & B" OR RIGHT "C & D"	PRINTERS	P3 & P4
17	WEUR006A	PROM C	58081722	58058443	58034102 OR 58058769	2	EURCB	MODULE A1,A2,OR A3 SLOT B (HIGHEST) SLOT U (LOWEST)	RIGHT "A & B" OR "C & D"	CARD READERS AND/OR PUNCHES	JA & JB
					58056843	2			LEFT "C & D"	PRINTERS	P3 & P4
18	WEUR007A	PROM D	58082265	58058443	58034102 OR 58058769	2	EURCB	MODULE A1,A2,OR A3 SLOT B (HIGHEST) SLOT U (LOWEST)	RIGHT "A & B" OR "C & D"	CARD READERS AND/OR PUNCHES	JA & JB
					58056843	2			LEFT "C & D"	PRINTERS	P3 & P4



(a) WXGDB-1 BOARD LOCATION IS TOP AVAILABLE BOARD SLOT IN A0 OR A2. SEE APPENDIX A.

UR PDS1 OPTION	WPDS184B
INSTALLATION KIT	58082964
INSTALLATION INSTRUCTION	58082965
CABLE SELECT	58082967
SHIELDED I/O CABLE	58082817
2 CABLES REQUIRED PER DEVICE	

FIGURE 4.7-39. UR PERIPHERAL DEVICE SERIAL INTERFACE SHIELDED CABLING

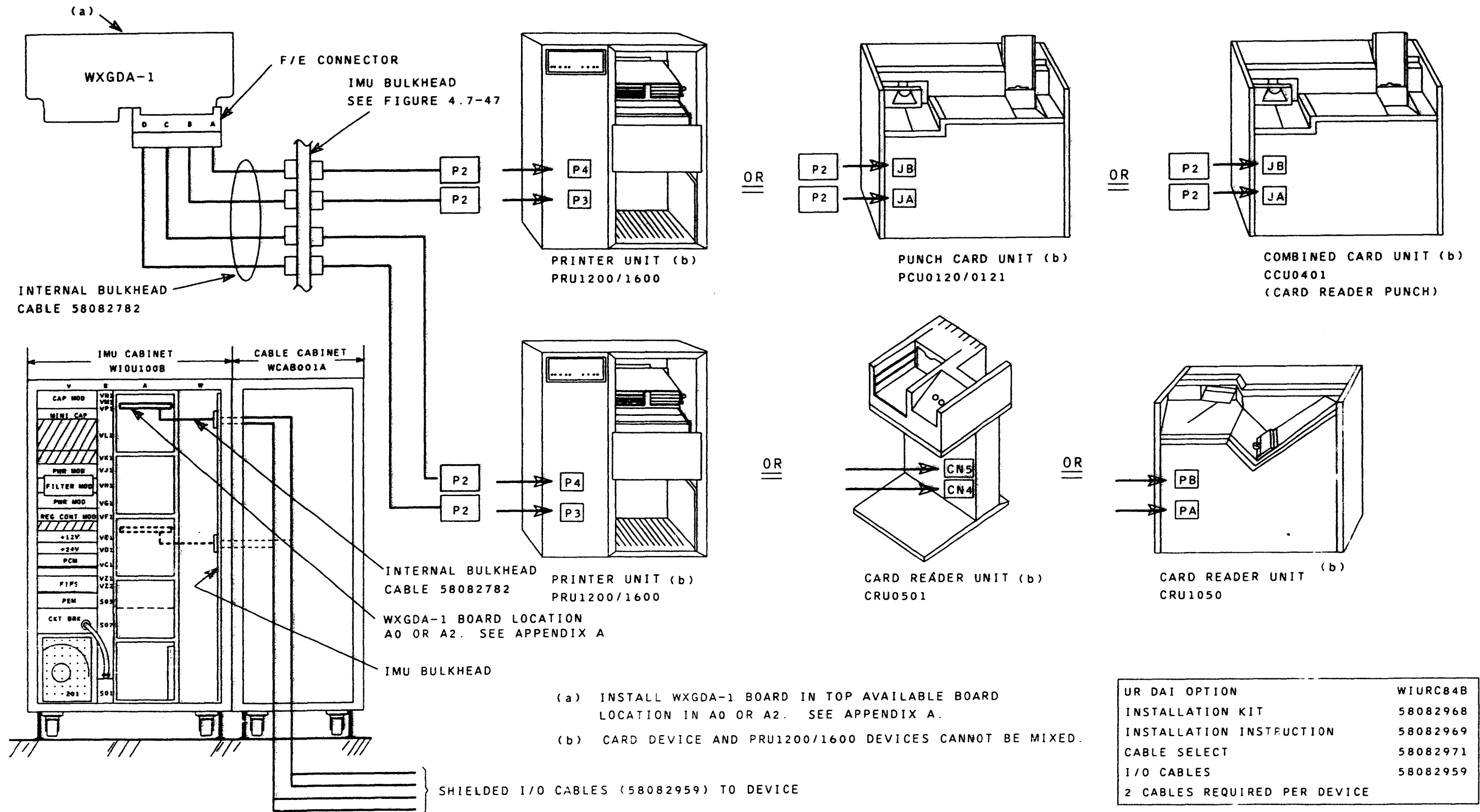
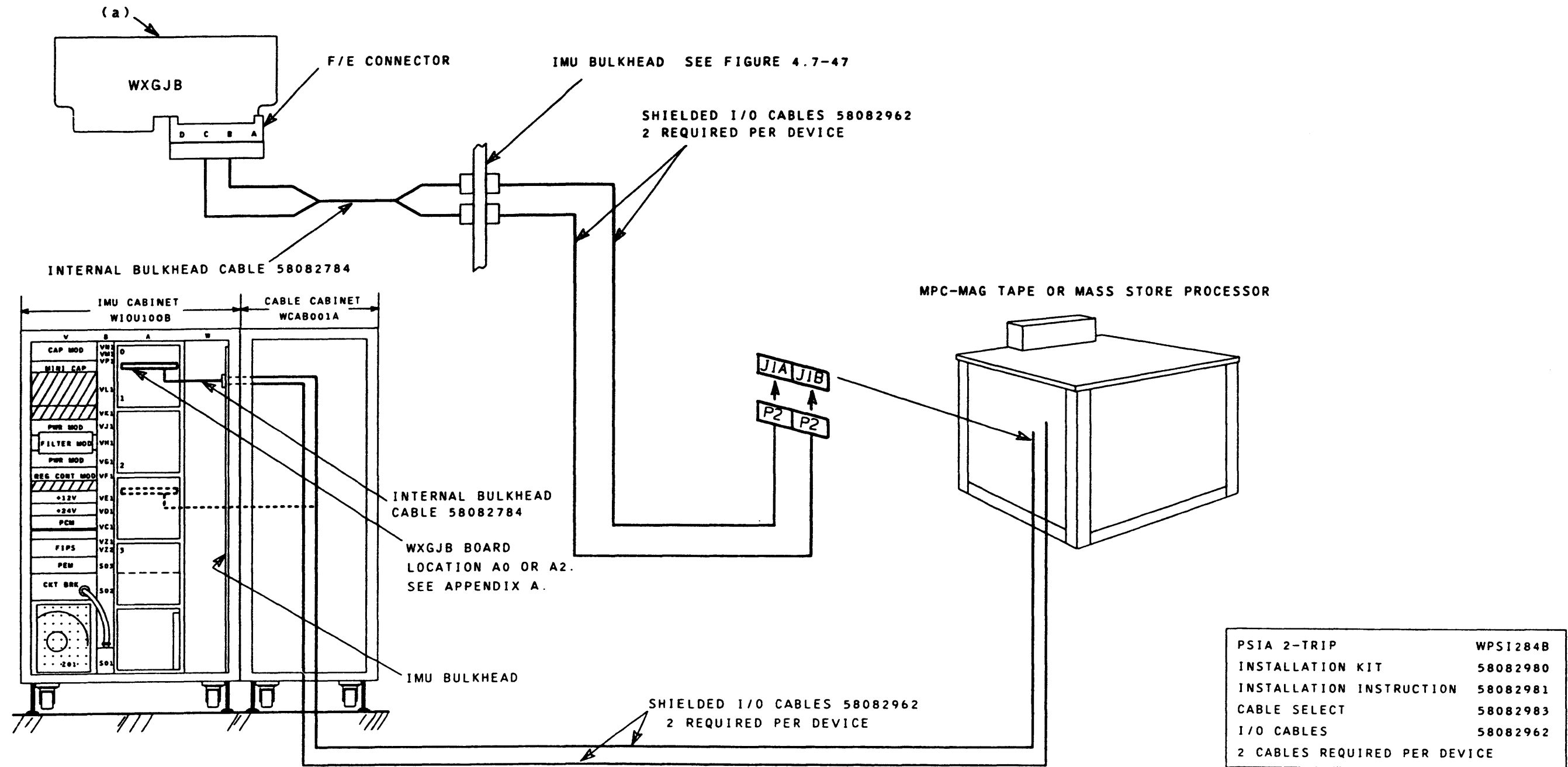
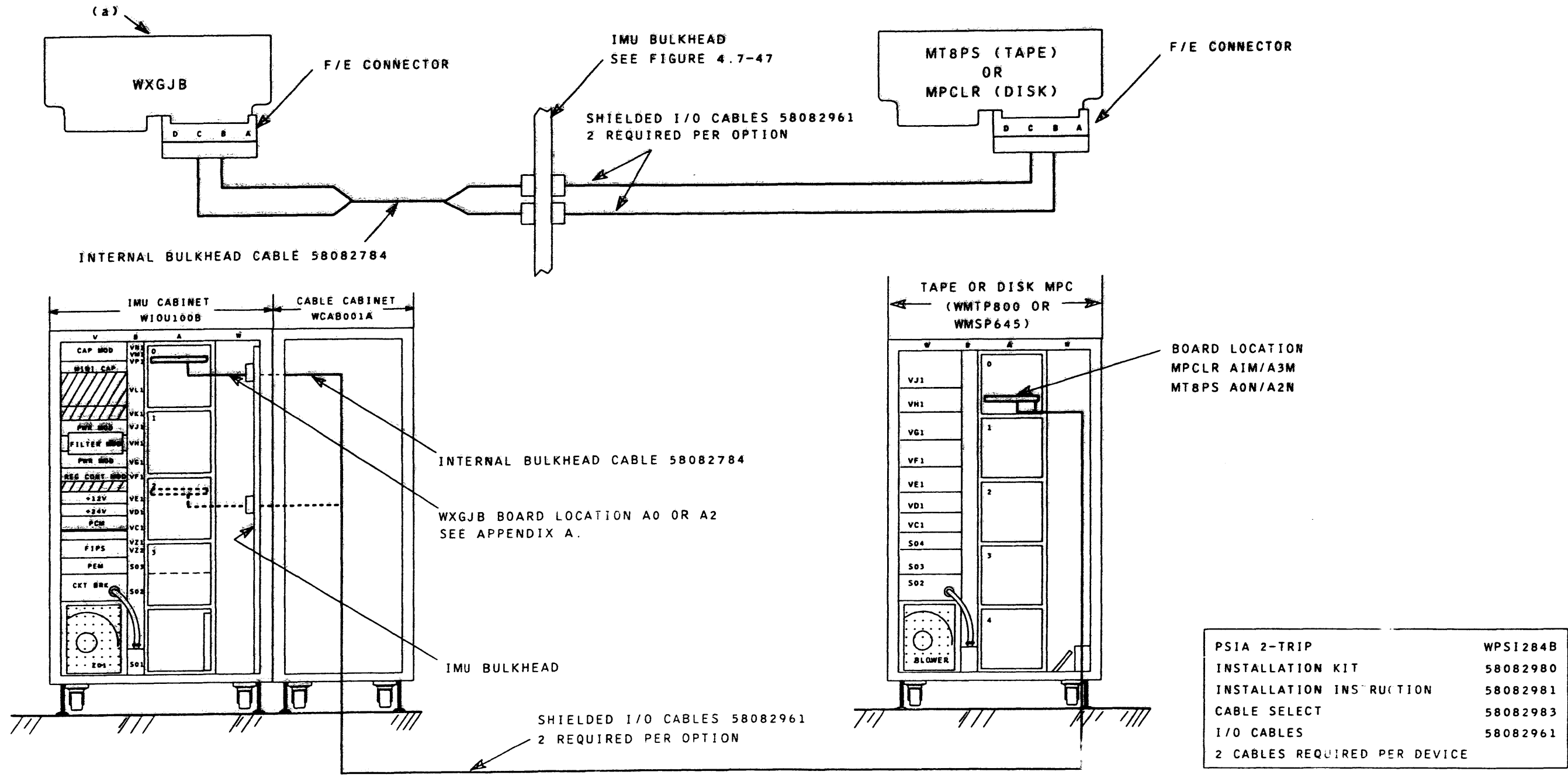


FIGURE 4.7-40. UR DAI SHIELDED CABLING



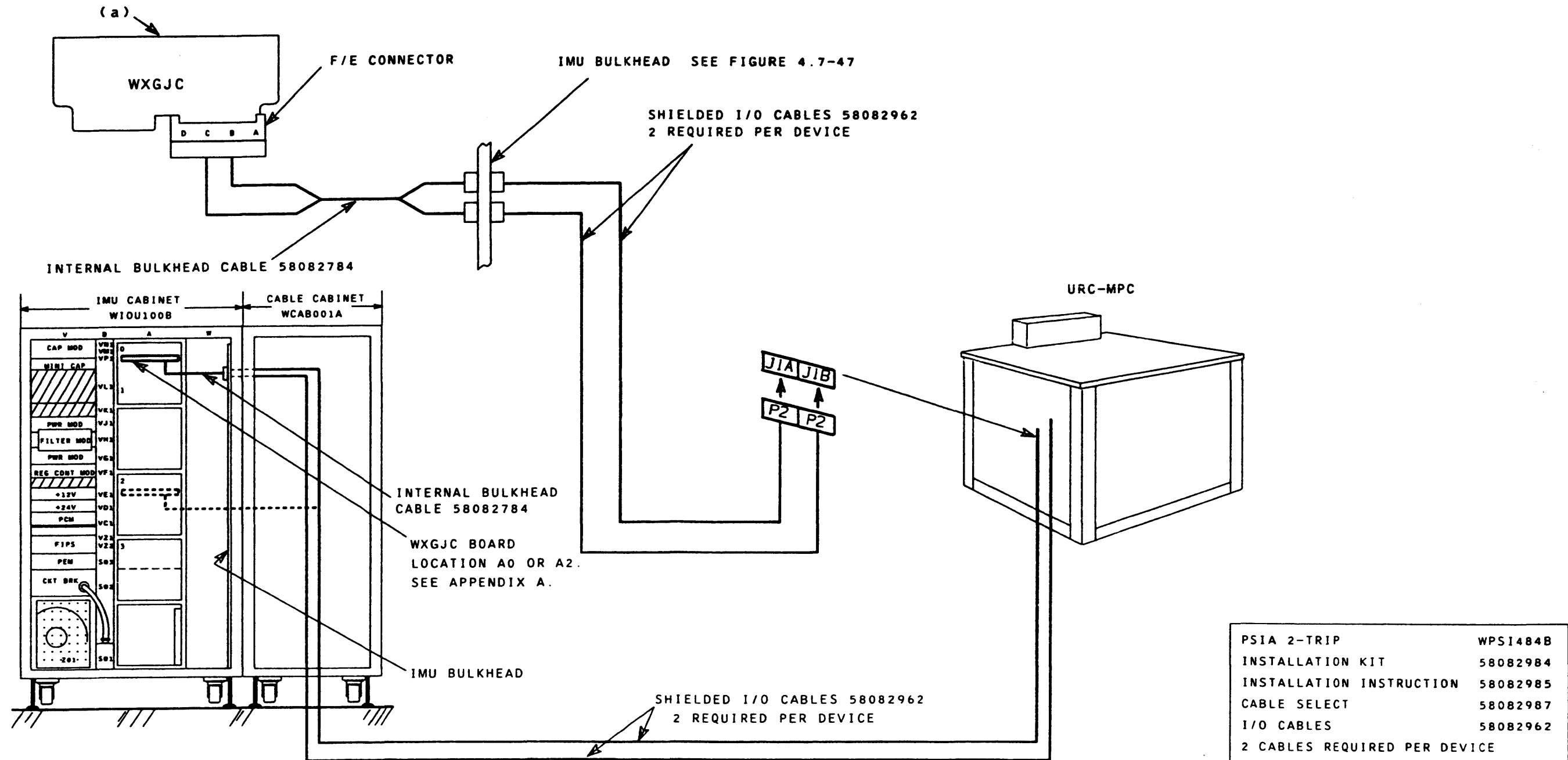
(a) INSTALL WXGJB BOARD DIRECTLY BELOW WXGJA BOARD IN A0 OR A2. SEE APPENDIX A.

FIGURE 4.7-41. PSIA 2-TRIP SHIELDED CABLING (SHEET 1 OF 2)



(a) INSTALL WXGJB BOARD DIRECTLY BELOW WXGJA BOARD IN A0 OR A2. SEE APPENDIX A.

FIGURE 4.7-41. PSIA 2-TRIP SHIELDED CABLING (SHEET 2 OF 2)



(a) INSTALL WXGJC BOARD DIRECTLY BELOW WXGJA BOARD IN A0 OR A2. SEE APPENDIX A.

FIGURE 4.7-42. PSIA 4-TRIP SHIELDED CABLING

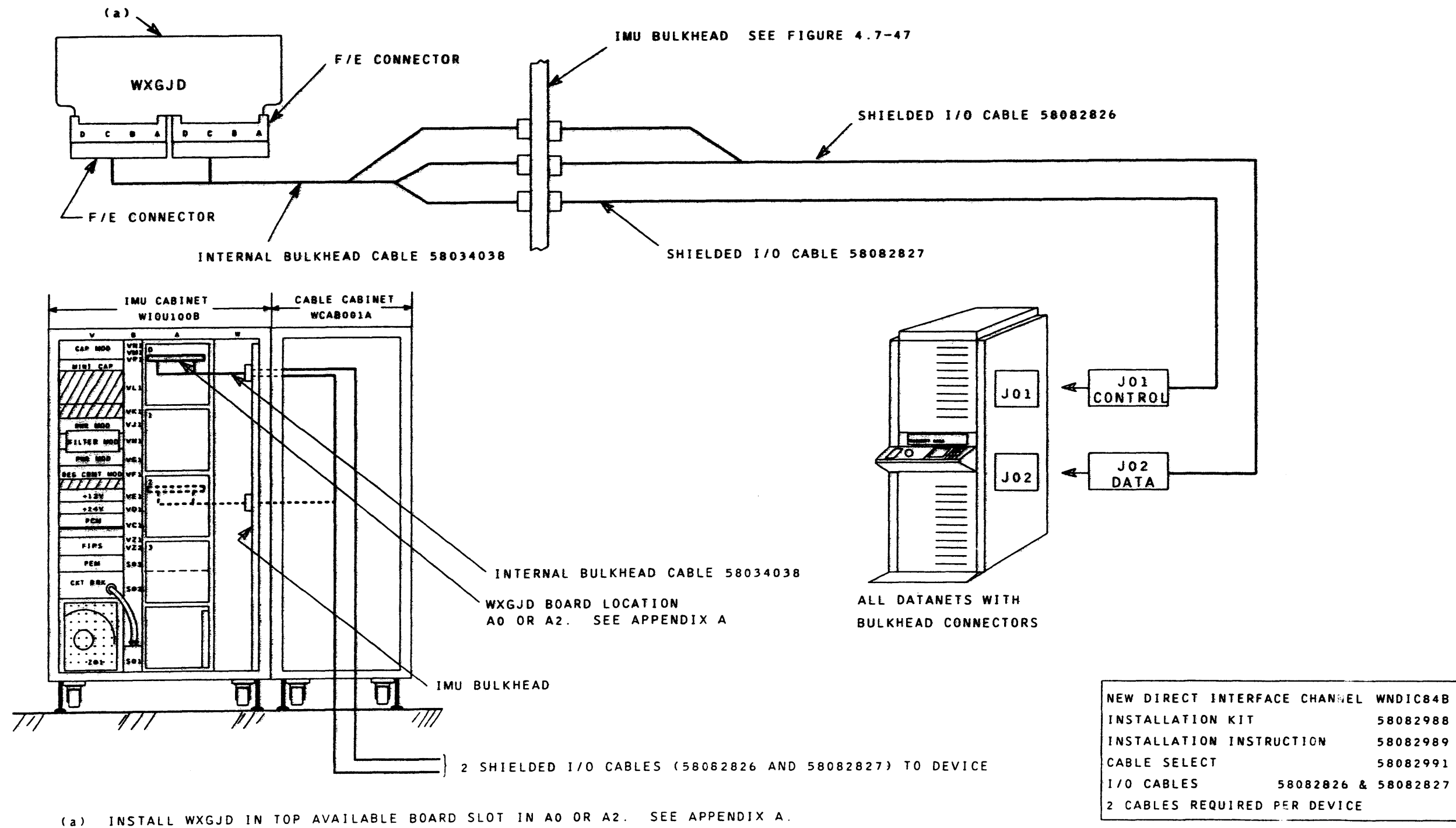


FIGURE 4.7-43. NEW DIRECT INTERFACE CHANNEL SHIELDED CABLING (SHEET 1 OF 2)

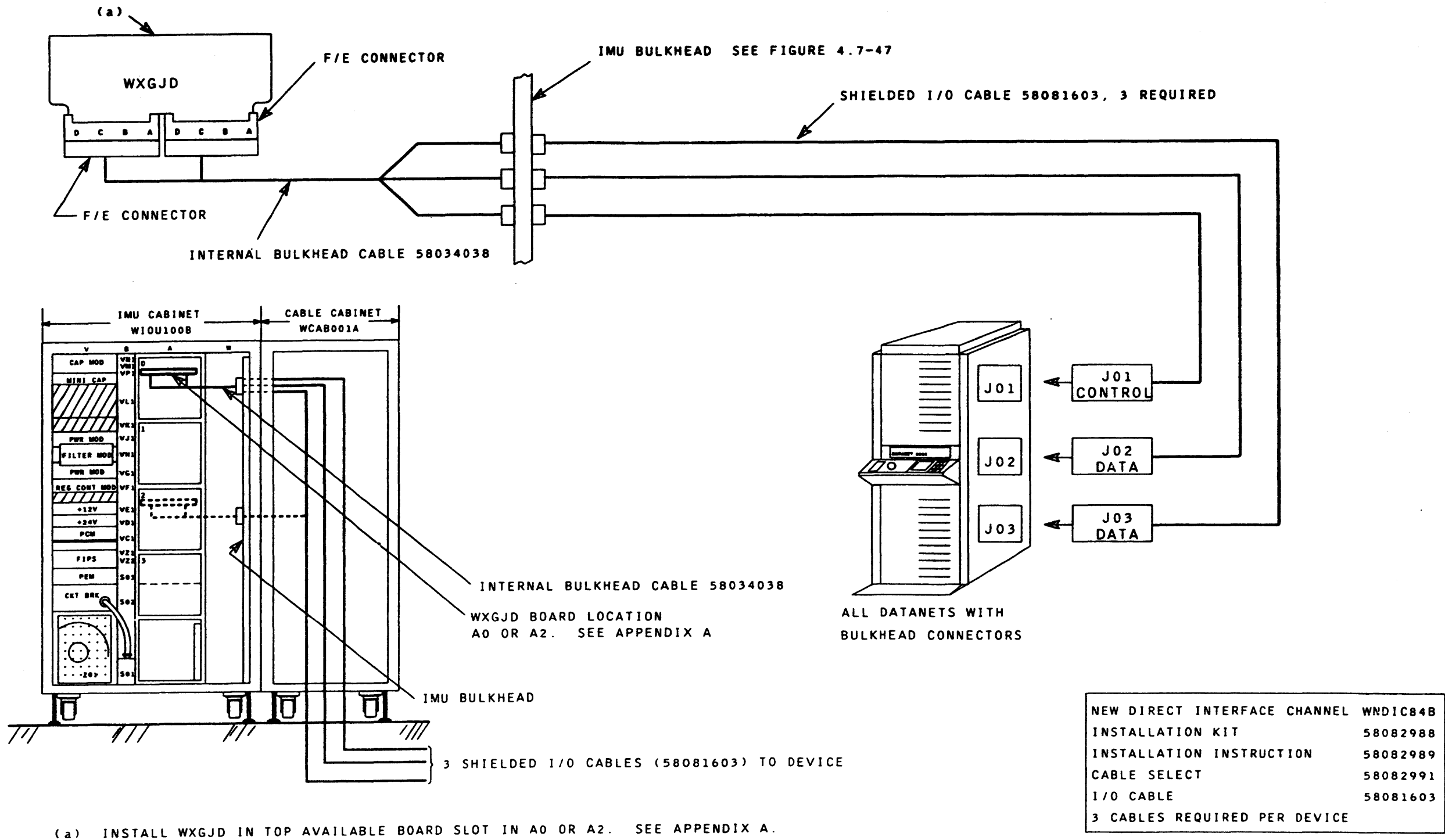


FIGURE 4.7-43. NEW DIRECT INTERFACE CHANNEL SHIELDED CABLING (SHEET 2 OF 2)

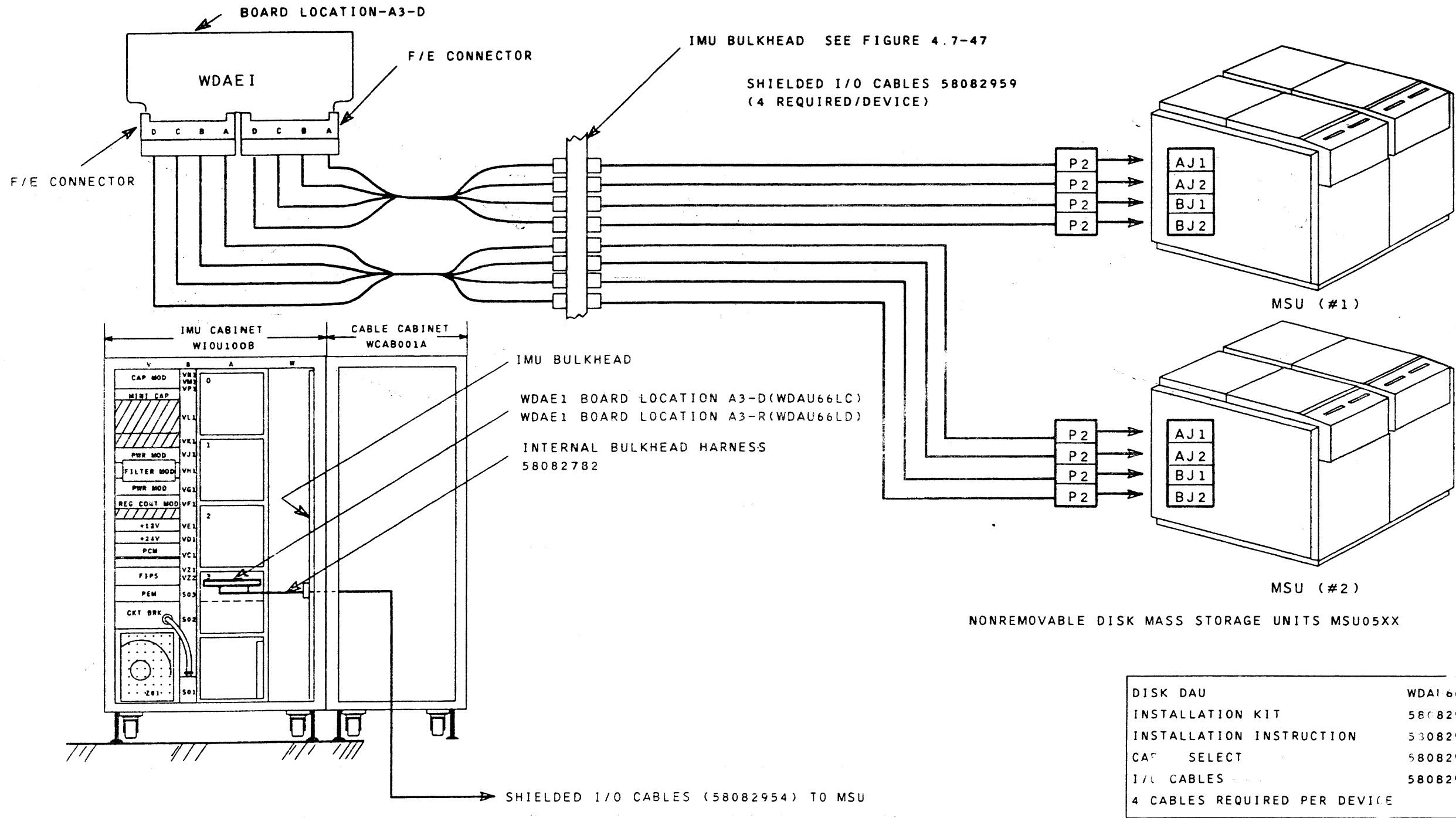


FIGURE 4.7-44. DISK DAU SHIELDED CABLING (SHEET 1 OF 2)

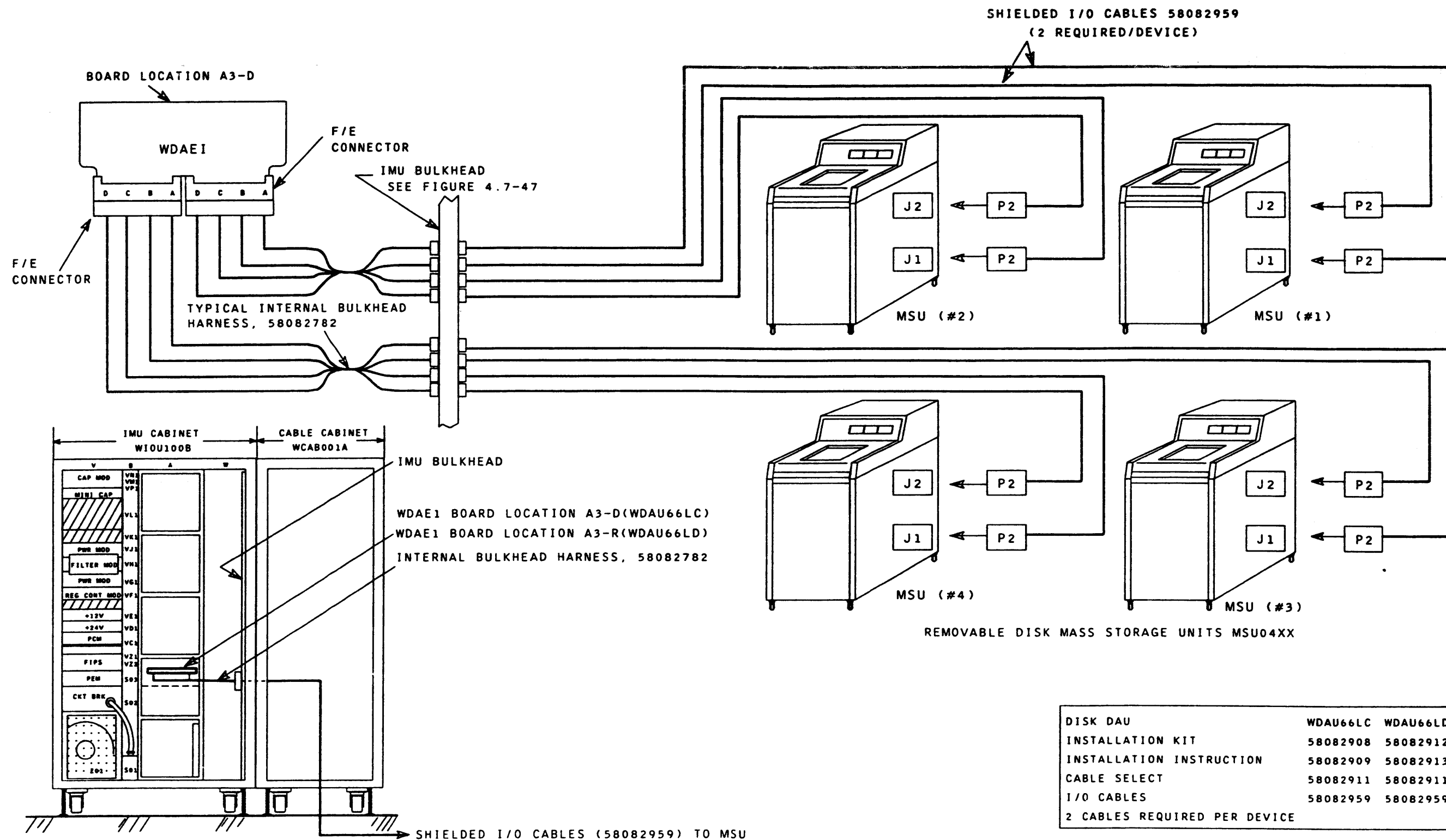


FIGURE 4.7-44. DISK DAU SHIELDED CABLING (SHEET 2 OF 2)

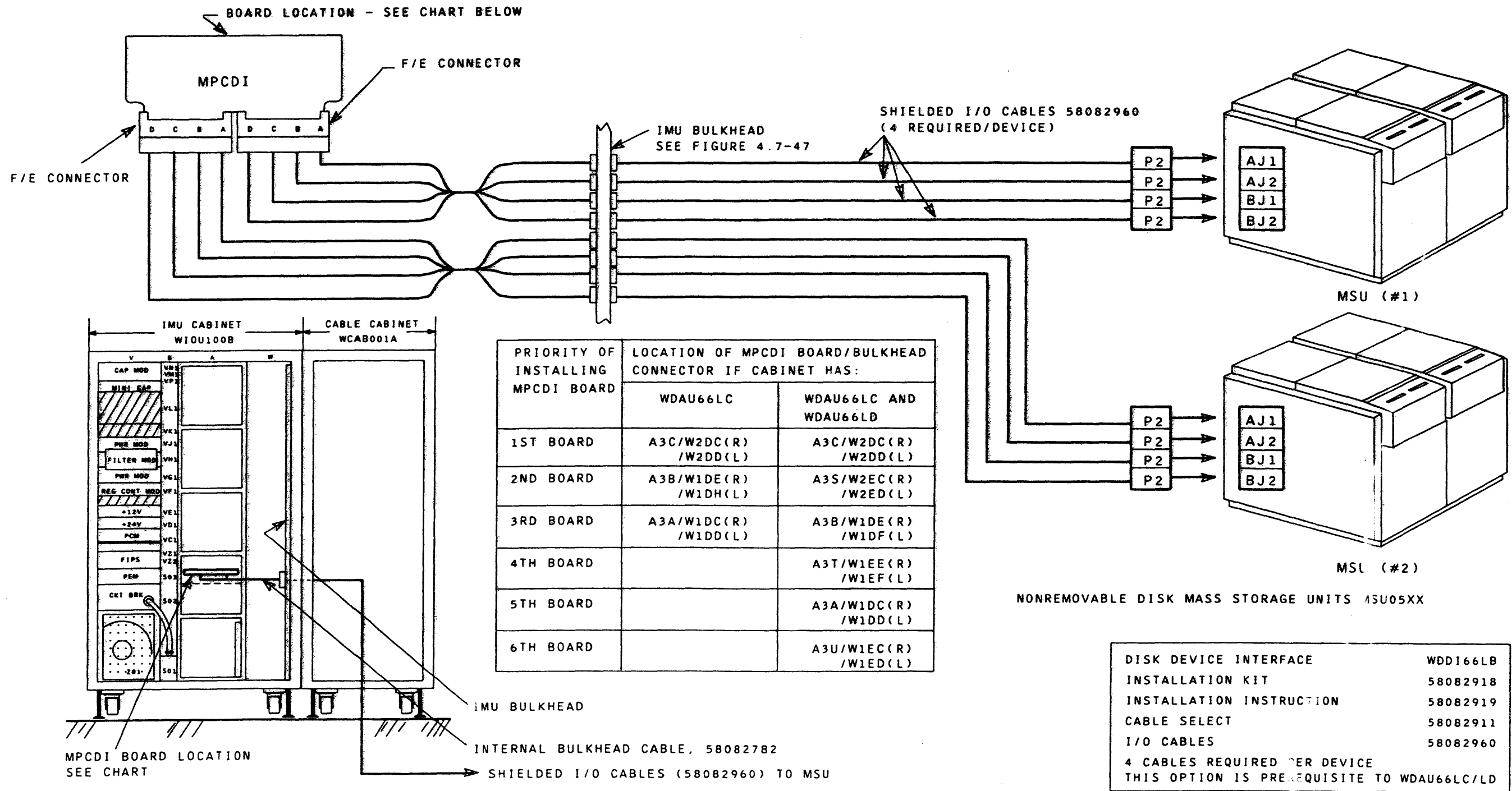


FIGURE 4.7-45. DISK DAU DEVICE ADAPTER SHIELDED CABLING (SHEET 1 OF 2)

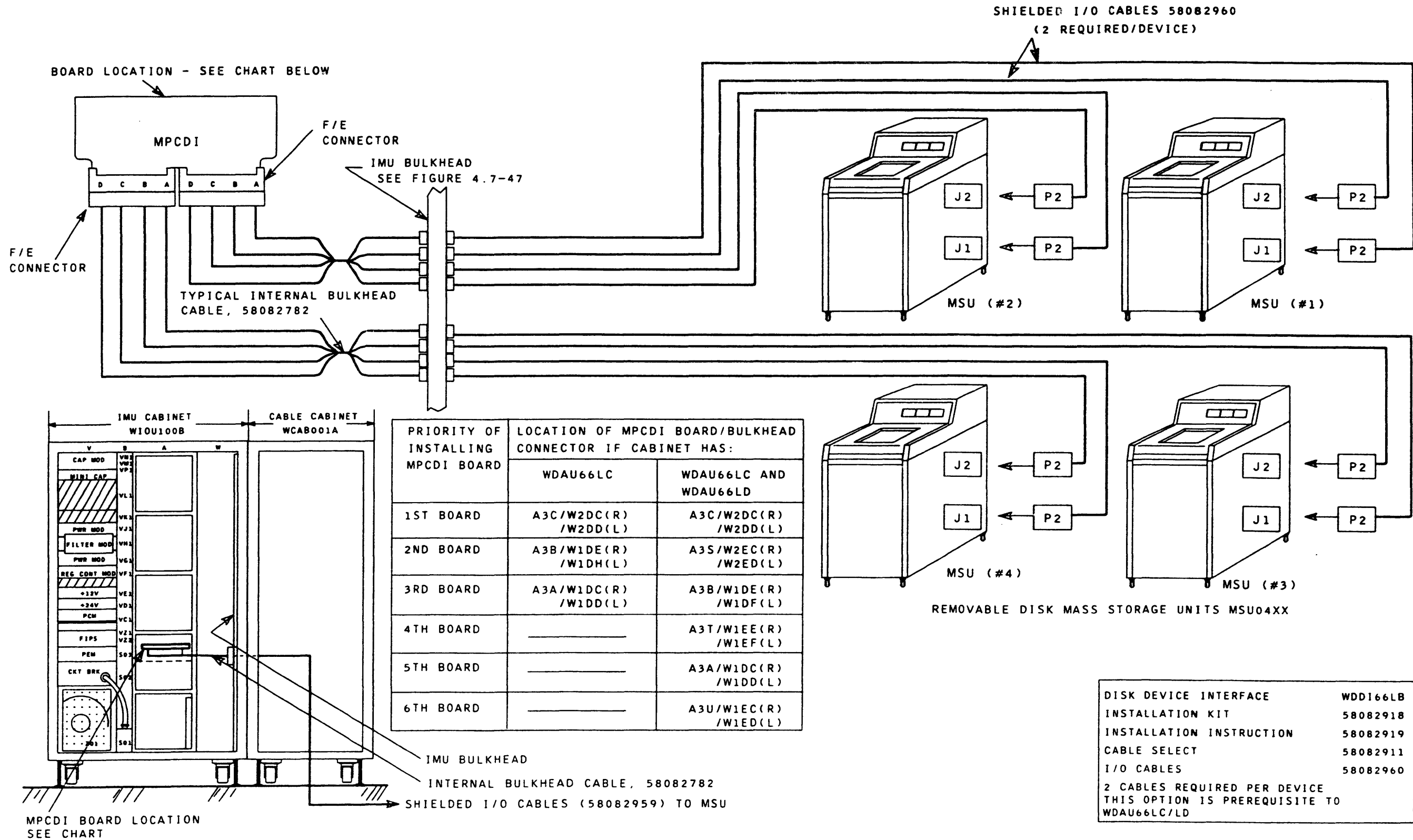
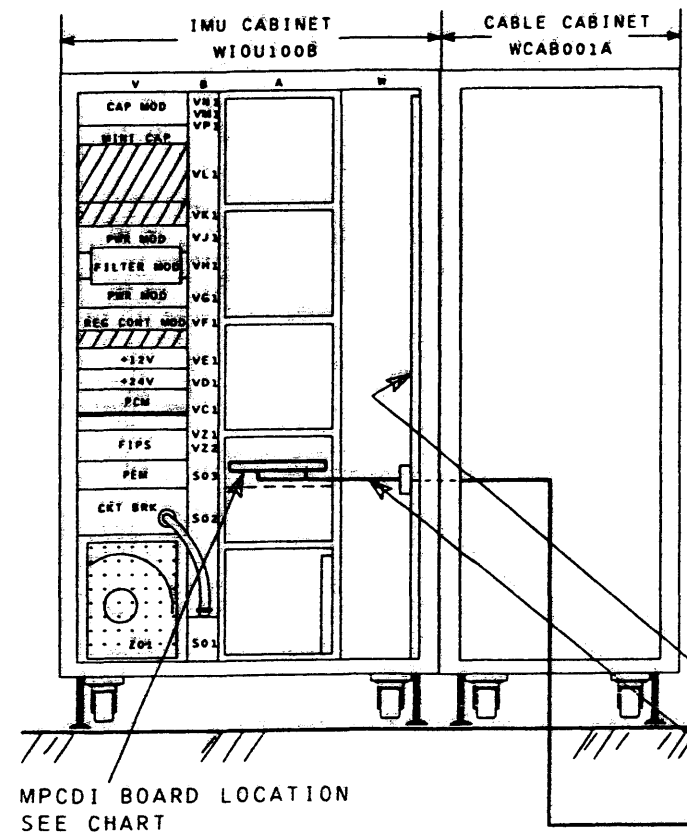
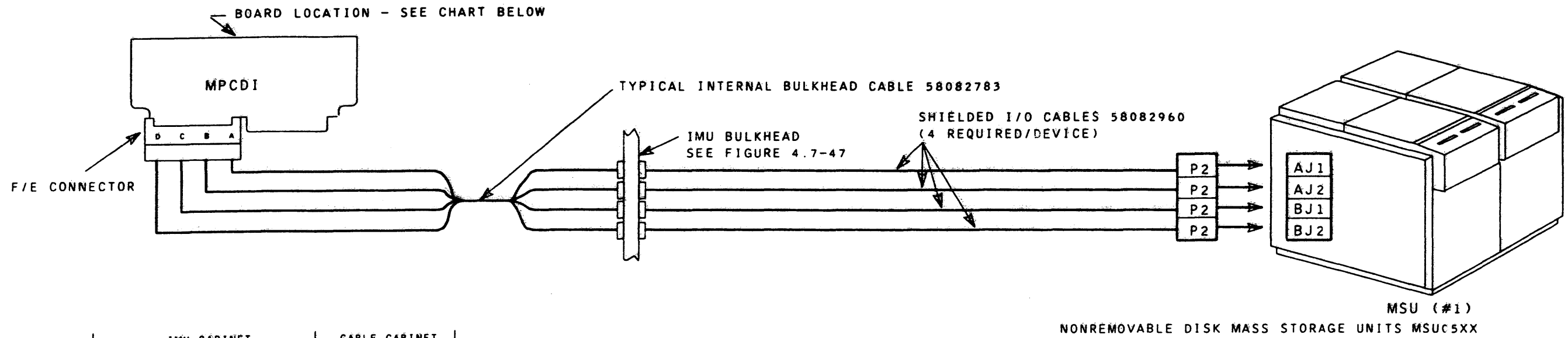


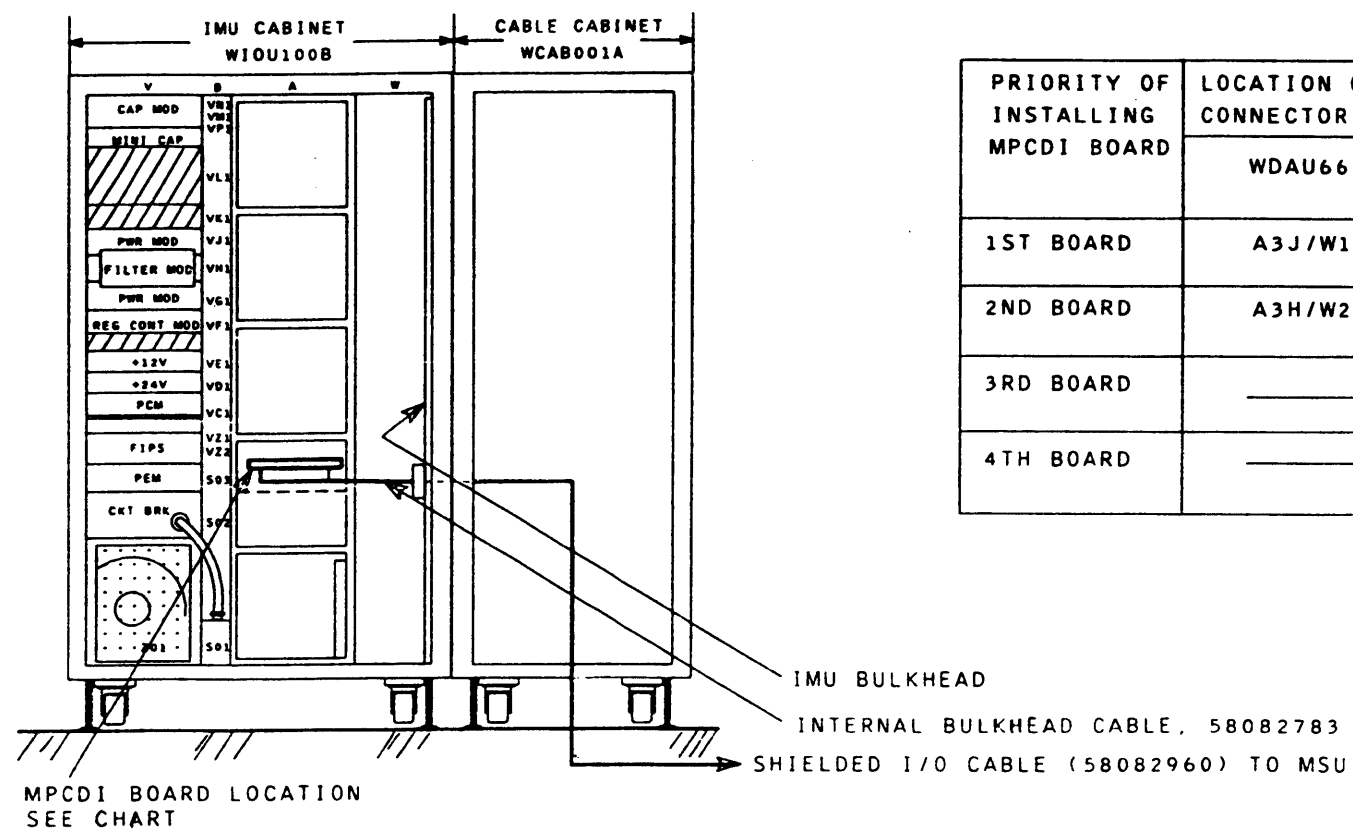
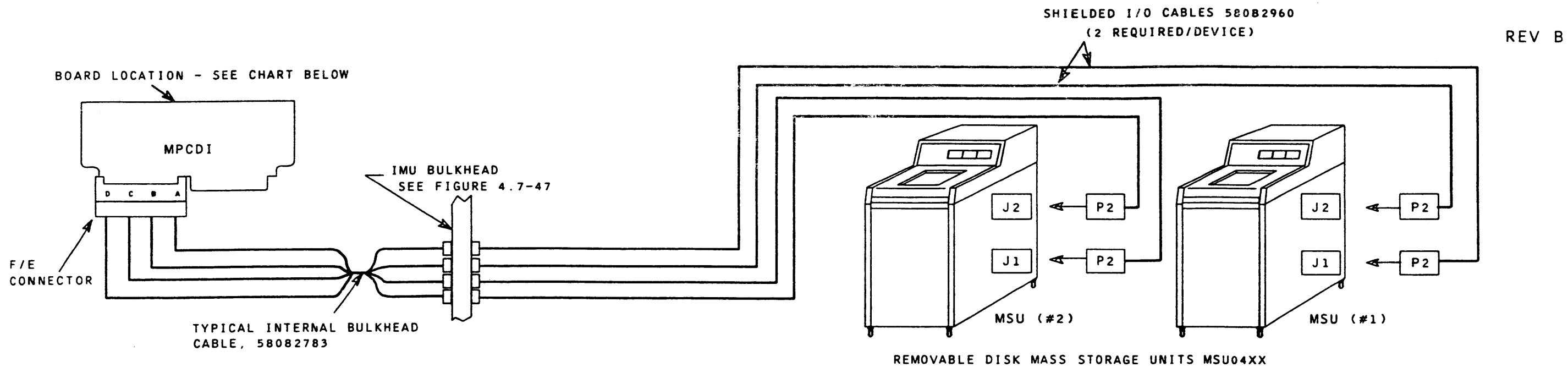
FIGURE 4.7-45. DISK DAU DEVICE ADAPTER SHIELDED CABLING (SHEET 2 OF 2)



PRIORITY OF INSTALLING MPCDI BOARD	LOCATION OF MPCDI BOARD/BULKHEAD CONNECTOR IF CABINET HAS:	
	WDAU66LC	WDAU66LC AND WDAU66LD
1ST BOARD	A3J/W1DB	A3J/W1DB
2ND BOARD	A3H/W2DB	A3L/W2EB
3RD BOARD	_____	A3H/W2DB
4TH BOARD	_____	A3M/W1EB

ADDITIONAL DATA CHANNEL	WADC66LD
INSTALLATION KIT	58082922
INSTALLATION INSTRUCTION	58082923
I/O CABLES	58082960
4 CABLES REQUIRED PER DEVICE	
THIS OPTION IS PREREQUISITE TO WDAU66LC/LD	

FIGURE 4.7-46. ADDITIONAL DATA CHANNEL SHIELDED CABLING (SHEET 1 OF 2)

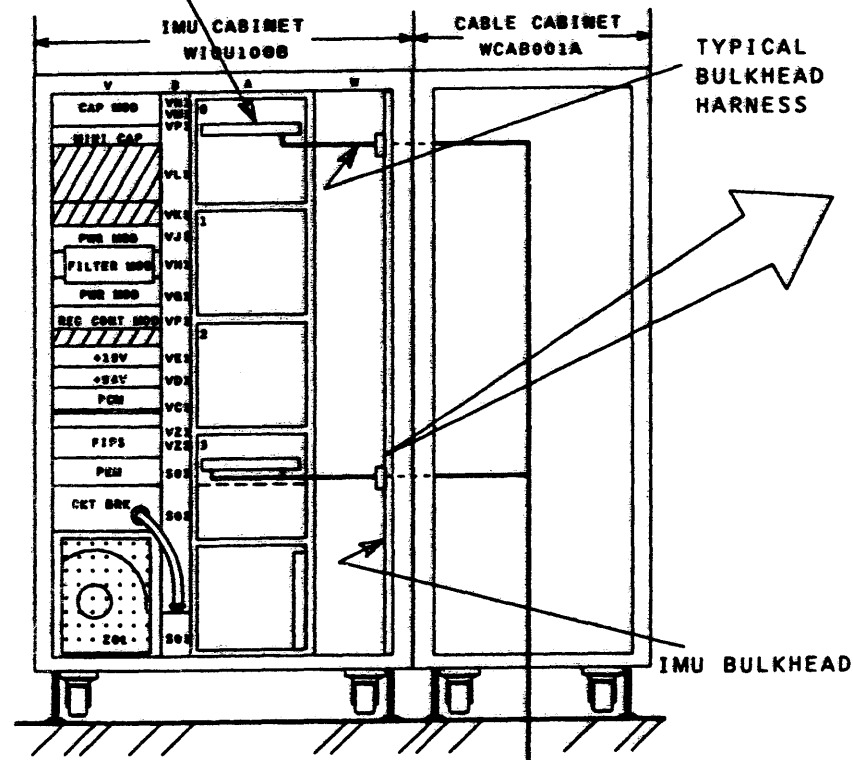


PRIORITY OF INSTALLING MPCDI BOARD	LOCATION OF MPCDI BOARD/BULKHEAD CONNECTOR IF CABINET HAS:	
	WDAU66LC	WDAU66LC AND WDAU66LD
1ST BOARD	A3J/W1DB	A3J/W1DB
2ND BOARD	A3H/W2DB	A3L/W2EB
3RD BOARD	_____	A3H/W2DB
4TH BOARD	_____	A3M/W1EB

ADDITIONAL DATA CHANNEL	WADC66LD
INSTALLATION KIT	58082922
INSTALLATION INSTRUCTION	58082923
I/O CABLES	58082960
2 CABLES REQUIRED PER DEVICE THIS OPTION IS PREREQUISITE TO WDAU66LC/LD	

FIGURE 4.7-46. ADDITIONAL DATA CHANNEL SHIELDED CABLING (SHEET 2 OF 2)

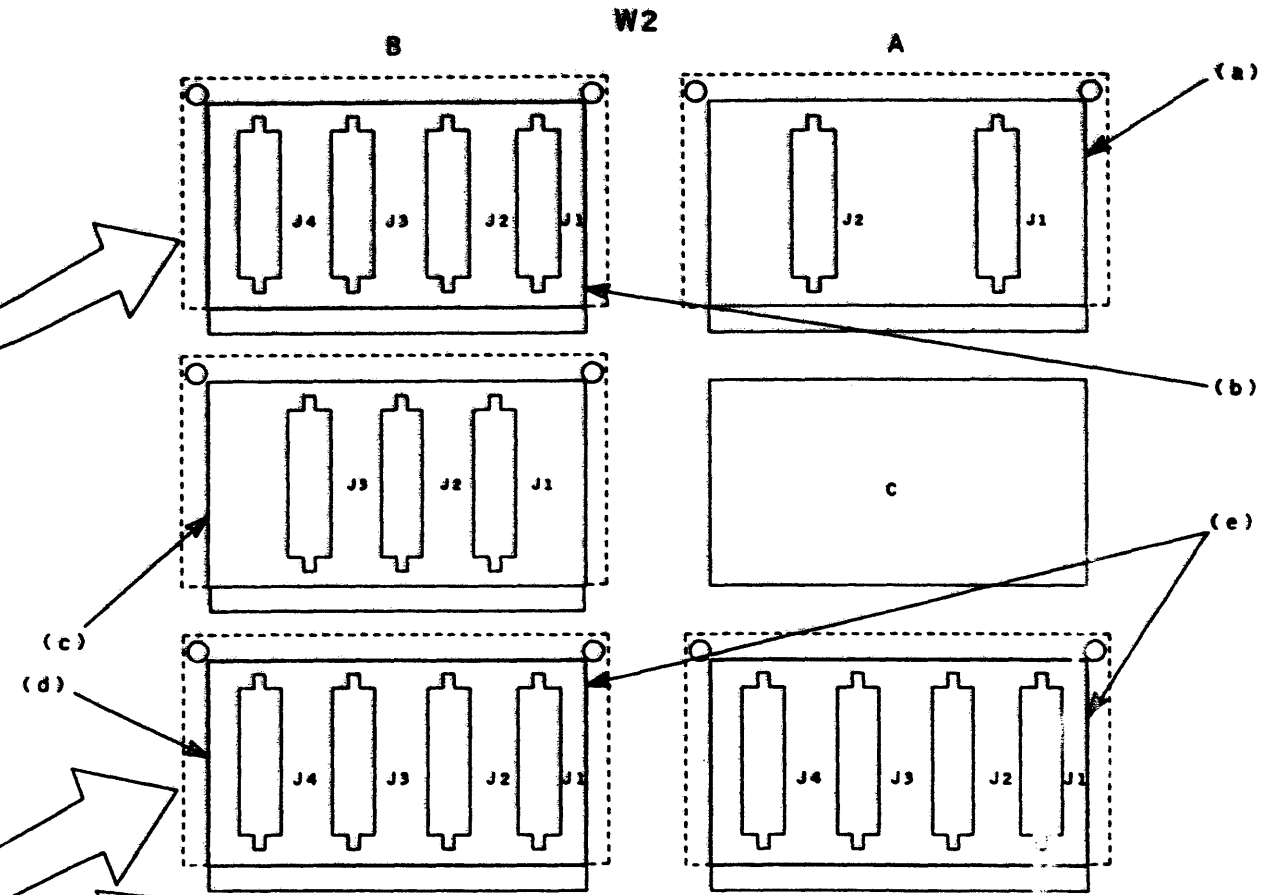
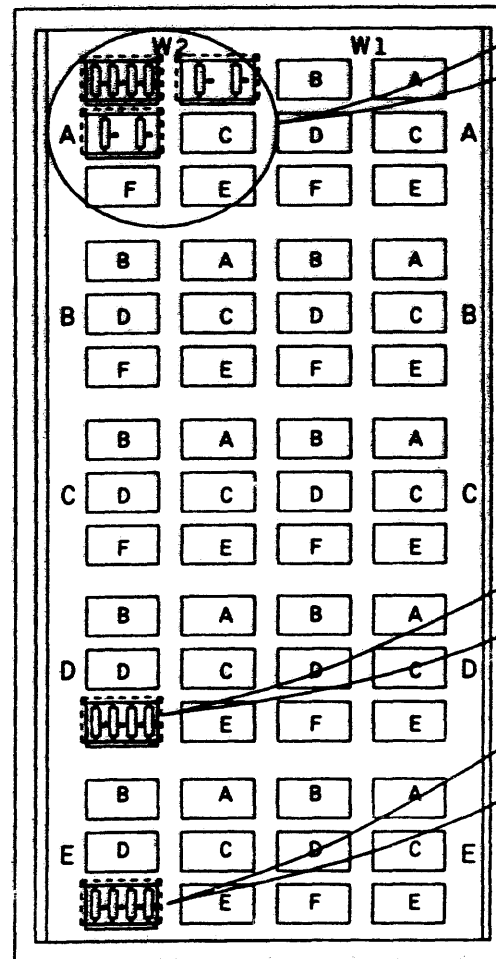
WXGJD (WNDIC84B) SEE FIGURE 4.7-43 AND TABLE 4.7-4.
 WXGJC (WPSI484B) SEE FIGURE 4.7-42 AND TABLE 4.7-4.
 WXGJB (WPSI284B) SEE FIGURE 4.7-41 AND TABLE 4.7-4.
 WXGDA-1 (WIURC84B) SEE FIGURE 4.7-40 AND TABLE 4.7-4.
 WXGDB-1 (WPDSI84B) SEE FIGURE 4.7-39 AND TABLE 4.7-4.



WDAEI (WDAU66LC/LD) SEE FIGURE 4.7-44 AND TABLE 4.7-4.
 MPCDI (WDDI66LB) SEE FIGURE 4.7-45 AND TABLE 4.7-4.

SHIELDED CABLES SEE TABLE 4.7-4

IMU BULKHEAD CONNECTORS LOCATIONS



TYPICAL BULKHEAD CONNECTOR PLATES WITH 2 DB 37 CONNECTORS AND 4 DB 37 CONNECTORS

- (a) TYPICAL CONNECTOR PLATE LOCATION FOR WPDSI84B, WPSI284B, WPSI484B, AND WDDI66LB
- (b) TYPICAL CONNECTOR PLATE LOCATION FOR WIURC84B
- (c) TYPICAL CONNECTOR PLATE LOCATION FOR WNDIC84B
- (d) CONNECTOR PLATE LOCATION FOR WDAU66LC IS W2DF. CONNECTOR PLATE LOCATION FOR WDAU66LD IS W2EF.
- (e) TYPICAL CONNECTOR PLATE LOCATION FOR WDKI66LB

FIGURE 4.7-47. IMU BULKHEAD CONNECTORS

TABLE 4.7-4. SHIELDED I/O CABLING

ITEM NO.	OPTION				I/O SHIELDED CABLE		I/O SHIELDED CABLE ROUTING				
	IDENT NO.	DESCRIPTION	INSTL KIT	INSTL INSTR	IDENT NO.	QTY/ DEVICE	FROM IMU CABLE CABINET			TO DEVICE	
							LOGIC BOARD	LOGIC BOARD LOCATION	INTERNAL HARNESS	DEVICE	CONN/BOARD
1	WPDSI84B	UR PERIPHERAL DEVICE SERIAL INTERFACE	58082964	58082965	58082817	2	WXGDB-1	A0 OR A2 TOP AVAILABLE BOARD SLOT	58082815	PRU 901/1201 PRU 903/1203	INTERFACE CONNECTION AT W3C
2	WIURC84B	DEVICE ADAPTER INTERFACE	58082968	58082969	58082959	2	WXGDA-1	A1 OR A3 TOP AVAILABLE BOARD SLOT	58082782	CRU0501/1050	CN4, CN5/PA, PB
					58082959	2			58082782	CCU0401	JA, JB
					58082959	2			58082782	PCU0120/0121	JA, JB
								58082782	PRU1200/1600	PA, PB/P3, P4	
3	WPSI284B	PERIPHERAL SUBSYSTEM INTERFACE ADAPTER PSIA 2-TRIP	58082980	58082981	58082961	2	WXGJB	A0 OR A2 SEE APPENDIX A	58082784	LP DISK MPC	MPCLR RIGHT B&C
					58082961	2			58082784	LP TAPE MPC	MT8PS RIGHT B & C
					58082962	2			58082784	DISK/TAPE MPC	J1A & J1B
4	WPSI484B	PSIA 4-TRIP	58082984	58082985	58082962	2	WXGJC	A0 OR A2 SEE APPENDIX A	58082784	DESK-STYLE MPC - URC DISK & TAPE	J1A & J1B
5	WNDIC84B	NEW DIRECT INTERFACE CHANNEL (NDIC)	58082988	58082989	58081603	2	WXGJD	A0 OR A2 SEE APPENDIX A	58034038	DN66	J01 & J02
					58082826	1			58034038	DN8	J01, J02 & J03
					58082827	EACH					
6	WDAU66LC	DEVICE ADAPTER	58082908	58082909	58082960	2	WDAEI	A3 - SLOT D	58082782	MSU04XX	J1 & J2
					58082959	4			58082782	MSU050X	AJ1, AJ2, BJ1 & BJ2
7	WDAU66LD	DEVICE ADAPTER	58082912	58082913	58082960	2	WDAEI	A3 - SLOT R	58082782	MSU04XX	J1 & J2
					58082959	4			58082782	MSU050X	AJ1, AJ2, BJ1 & BJ2
8	WDDI66LB	DEVICE INTERFACE	58082918	58082919	58082960	2	MPCDI	A3 - SLOT C, B OR A OR A3 - SLOT C, S, B, T, A, OR U	58082782	MSU04XX	J1 & J2
					58082959	4			58082782	MSU050X	AJ1, AJ2, BJ1 & BJ2
9	WFIPS84B	FEDERAL INTERFACE PERIPHERAL STANDARD (FIPS)	58082976	58082977	SEE FIGURE 4.7-21 FOR CABLING ROUTING						
10	WADC66LD	ADDITIONAL DATA CHANNEL	58082922	58082923	58082960	2	WDACI	A1-SLOT H, J, L, OR M OR A3-SLOT H, J, L, OR M	58082783	MSU04XX	J1 & J2
					58082960	4				MSU050X	AJ1, AJ2, BJ1, & BJ2

TASK 10 INSTALL AC POWER CABLES

WARNING

ENSURE THAT MOTOR GENERATOR OR MOTOR GENERATOR CONTROL UNIT POWER ON/OFF SWITCH AND SITE POWER DISTRIBUTION PANEL MAIN CIRCUIT BREAKER ARE IN OFF POSITION PRIOR TO CONNECTING ANY POWER CABLES TO EQUIPMENT. HAZARDOUS VOLTAGES EXIST WHICH COULD CAUSE INJURY OR DEATH.

NOTE

THE CUSTOMER'S ELECTRICIAN WILL CONNECT AC POWER FROM THE SITE DISTRIBUTION PANEL TO EQUIPMENT IN ACCORDANCE WITH LOCAL CODES AND THIS INSTRUCTION.

1. BEFORE CHECKING CABINET VOLTAGE, VERIFY THE FOLLOWING CONDITIONS:
 - A. EQUIPMENT MAIN CIRCUIT BREAKER AT S02 IS IN OFF POSITION.
 - B. NEUTRAL (WHITE) LEAD IS NOT FED INTO EQUIPMENT.
 - C. AC POWER CABLE IS PROPERLY CONNECTED TO TB1 TERMINAL STRIP.
 - D. TB1 TERMINAL STRIP SCREWS ARE TIGHTENED TO TORQUE VALUE OF 44 IN/LBS.
2. VERIFY CORRECT CABINET VOLTAGE AT FIELD WIRING TERMINALS (TB1) IN ACCORDANCE WITH THE FOLLOWING STEPS:
 - A. SET MOTOR GENERATOR OR MOTOR GENERATOR CONTROL UNIT POWER ON SWITCH TO ON.
 - B. SET SITE POWER DISTRIBUTION PANEL EQUIPMENT CIRCUIT BREAKER(S) TO ON.
 - C. IF SYSTEM CONSOLE POD OPTION IS INSTALLED, SET EMERGENCY POWER OFF SWITCH BUTTON TO OUT POSITION. THIS SWITCH IS AN ALTERNATE ACTION SWITCH.
 - D. REFER TO FIGURE 4.7-48 FOR PROPER VOLTAGE RATING.
3. IF VOLTAGE CHECKS CORRECTLY, SET CUSTOMERS DISTRIBUTION PANEL CIRCUIT BREAKERS TO OFF, SET EQUIPMENT PRIMARY CIRCUIT BREAKERS AT S02 TO OFF, AND REPLACE TB ACCESS PLATE ON S01 MODULE.
4. INSTALL POWER CABLE TO DPU IN ACCORDANCE WITH DPU INSTALLATION MANUAL, 58009848, SECTION 1.4.

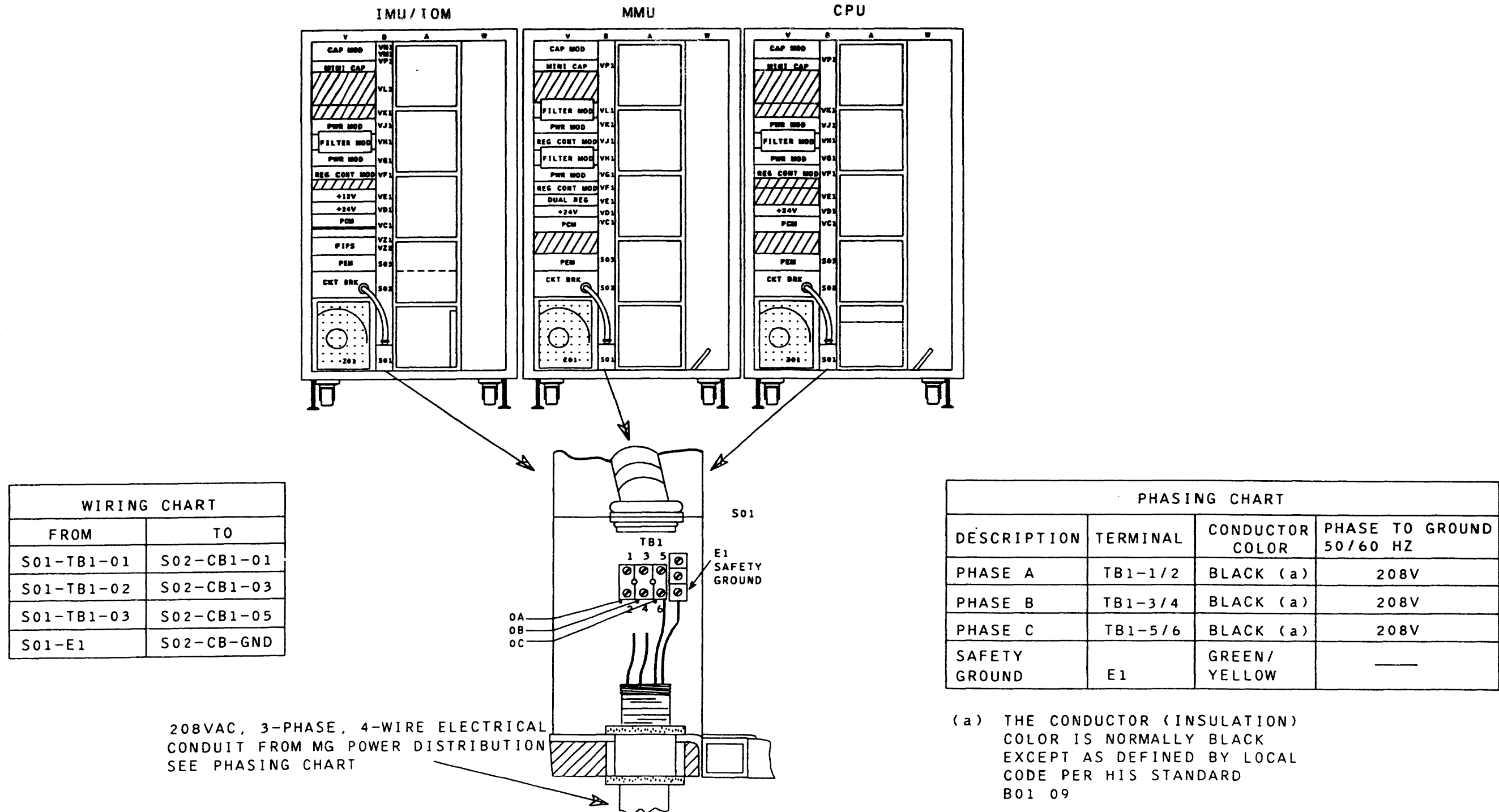


FIGURE 4.7-48. AC POWER ENTRY

TASK 11 ACTIVATE AND CHECK POWER SYSTEM

1. IF USED, VERIFY THAT MOTOR GENERATOR IS POWERED ON.
2. VERIFY THAT SITE POWER DISTRIBUTION PANEL MAIN CIRCUIT BREAKER IS IN ON POSITION.
3. IF USED, VERIFY THAT THE EMERGENCY POWER OFF SWITCH BUTTON LOCATED ON THE SYSTEM CONTROL POD AT THE SYSTEM CONSOLE, IS SET TO OUT POSITION. REFER TO FIGURE 4.7-49. THIS SWITCH IS AN ALTERNATE ACTION SWITCH.
5. IN REMOTE MODE, THE ON SWITCH LOCATED ON POWER CONTROL MODULE AT VC1 IS DISABLED.
6. VERIFY CABINET SHUTDOWN SWITCH ON OPERATOR CONTROL PANEL IS SET TO OUT POSITION.

NOTE

PRESS AND RELEASE CABINET SHUTDOWN SWITCH, IF NECESSARY.

THE FOLLOWING INSTRUCTIONS APPLY TO EACH MMU, CPU, IOM, AND IMU CABINET. SEE FIGURES 4.7-50 THROUGH 4.7-53.

1. SET PRIMARY CIRCUIT BREAKER AT S02 TO ON POSITION.
2. SET REGULATORS AND FANS CIRCUIT BREAKERS AT S03 TO ON.
3. SET REGULATOR CONTROL MODULE ON/OFF SWITCH AT VF1 TO ON.
- 4A. SET LOCAL-REMOTE SWITCH ON POWER CONTROL MODULE AT VC1 TO REMOTE.
- 4B. SET OFF-REMOTE SWITCH ON IOM +5 MASTER REGULATOR AT VF1, VG1, OR VH1 TO REMOTE.

VERIFY THE FOLLOWING CONDITIONS ON OPERATOR CONTROL PANEL:

1. VERIFY AC PRESENT AND POWER OFF INDICATORS ARE ILLUMINATED.
2. PRESS AND RELEASE POWER ON SWITCH.
3. VERIFY POWER ON INDICATOR IS ILLUMINATED.
4. VERIFY POWER OFF AND OVERTEMP INDICATORS ARE EXTINGUISHED.
5. VERIFY REG FAULT DISPLAY IS EXTINGUISHED.

VERIFY THE FOLLOWING CONDITIONS ON MMU, CPU, IOM,
AND IMU CABINET POWER MODULES:

MMU AND CPU CABINETS

1. AC ON INDICATOR AT VC1 IS ILLUMINATED .
2. CONF 1 INDICATOR AT VC1 IS ILLUMINATED .
3. OVERTEMP AND LOSS OF AIR INDICATORS AT VC1 ARE EXTINGUISHED.
4. AIR BLOWERS ARE OPERATING.

IMU AND IOM CABINETS

- 1A. AC ON AND DC ON (OR DC CONF) INDICATORS AT VC1 ARE ILLUMINATED.
- 1B. RUN INDICATOR ON +5V REGULATOR IN IOM LOCATION VE1 IS ILLUMINATED.
2. OVER TEMPERATURE (OVER TEMP SHUT DOWN, O.T. REG - IOM ONLY) AND COOLING ALARM INDICATORS AT VC1 ARE EXTINGUISHED.
3. ALL FAULT INDICATORS AT VC1 ARE EXTINGUISHED.
4. AIR BLOWERS ARE OPERATING.

IMU CABINET

1. LOCATE IMU VOLTAGE MONITOR BOARD AT ZM3 (REAR OF CABINET DIRECTLY UNDER TOP HORIZONTAL FRAME MEMBER). THE TWO LEFTMOST LEDs ARE EXTINGUISHED WHEN TWO +5V PLANAR REGULATORS ARE USED. THE LEFTMOST LED IS EXTINGUISHED WHEN ONE +5V PLANAR REGULATOR IS USED. THE REMAINING LEDs SHOULD BE ILLUMINATED .
2. VERIFY THAT SECTOR VOLTAGE CONTROL SWITCH "A" IS IN THE UP POSITION. THIS SWITCH, LOCATED ON POWER CONTROL MODULE AT VC1, PROVIDES 12V TO THE DISKETTE READER.

APPLY POWER TO DPU CABINET:

1. APPLY POWER TO DPU CABINET IN ACCORDANCE WITH DPU INSTALLATION MANUAL, 58009848, SECTION 1.5.

NOTE

FAILURE ON ANY PROCEDURAL STEP REQUIRES CAREFUL NOTING OF FAULT SYMPTOMS. REFER TO TEST AND REPAIR MANUAL, 58010012, POWER AND COOLING MANUAL, 58009911 (IOM), AND/OR POWER AND COOLING SUBSYSTEM MANUAL, 58010065. IF ASSISTANCE IS NEEDED TO CORRECT THE PROBLEM, CONTACT THE RESPONSE CENTER.

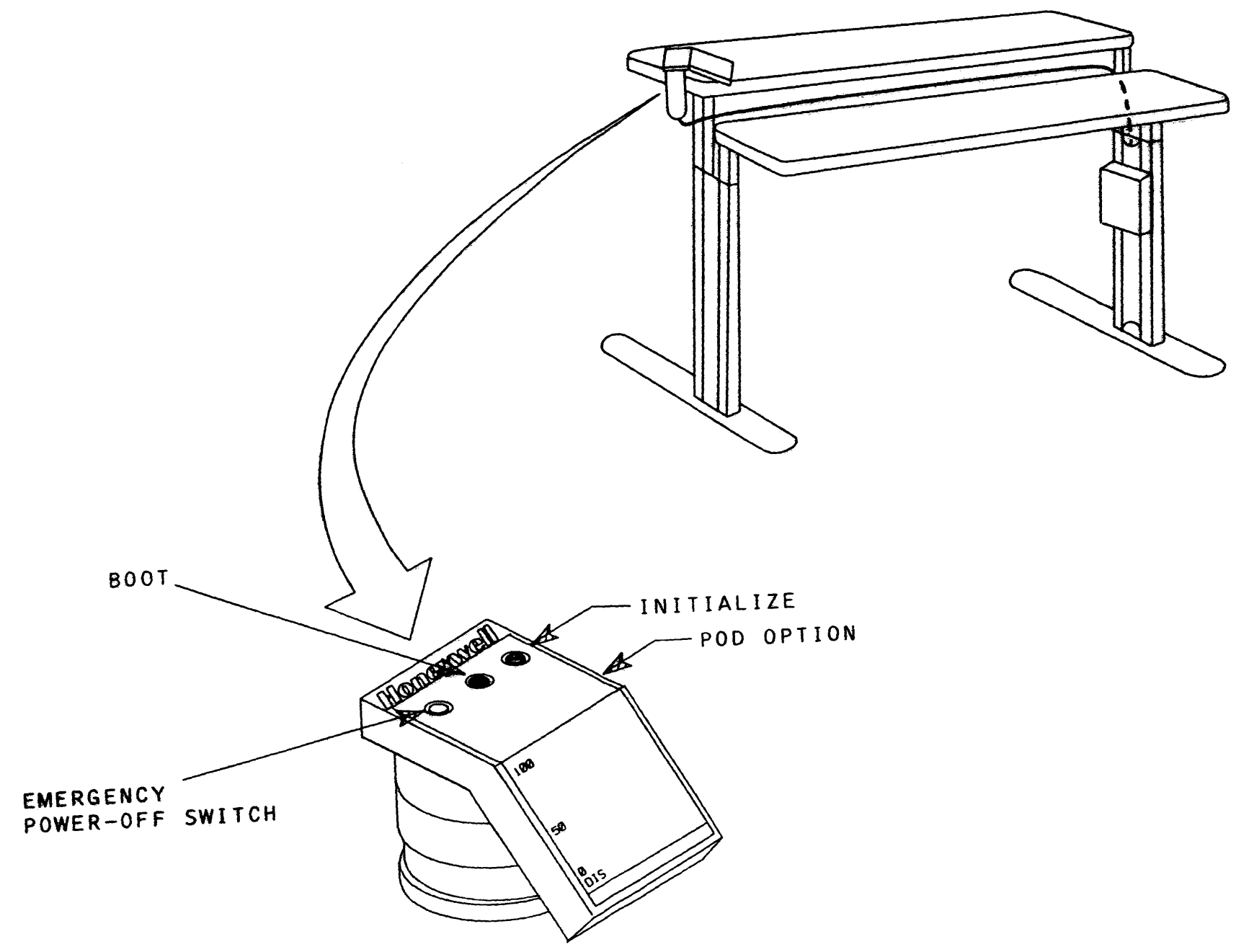
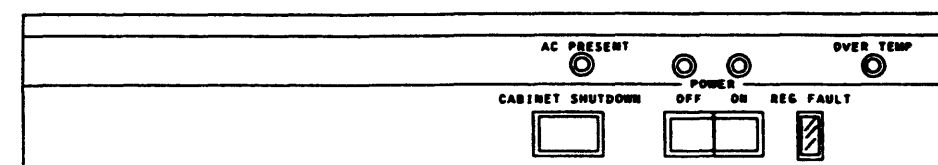
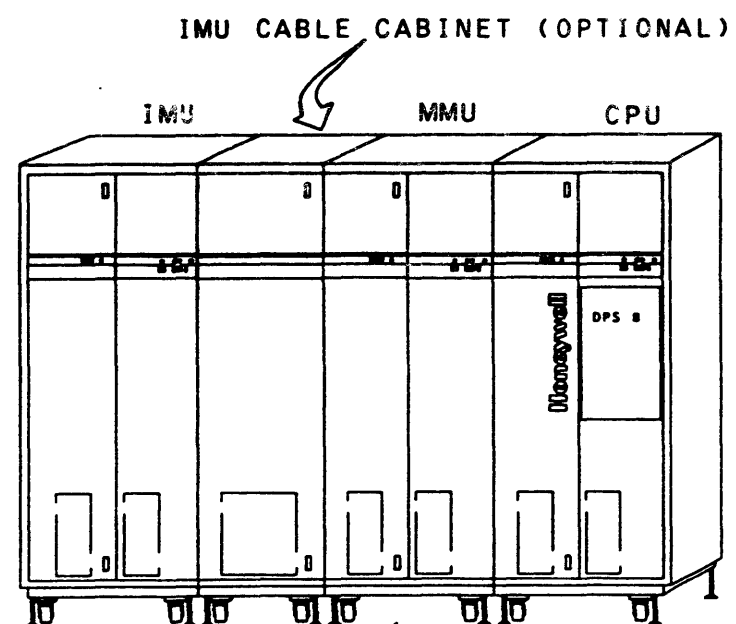
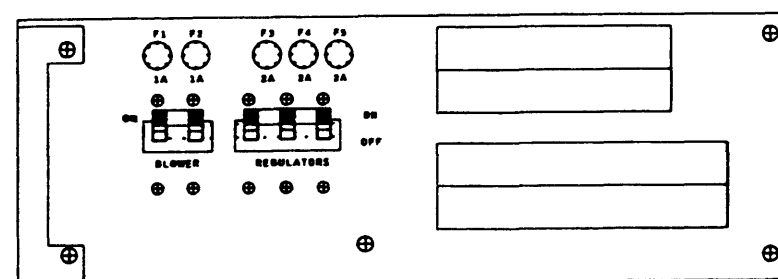


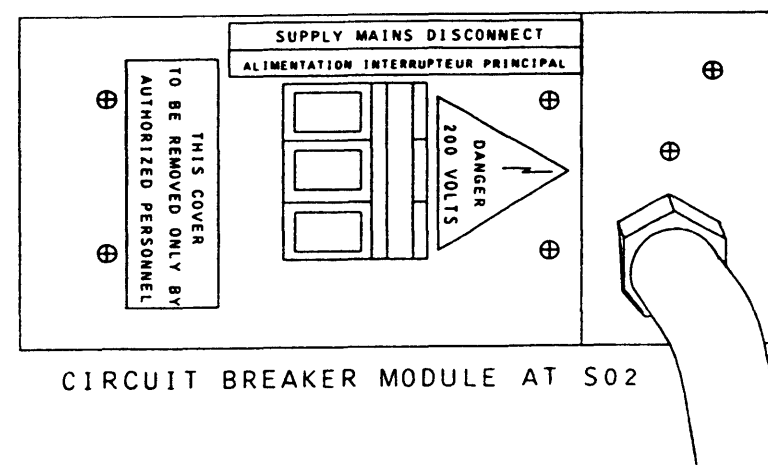
FIGURE 4.7-49. CONSOLE - EMERGENCY OFF SWITCH



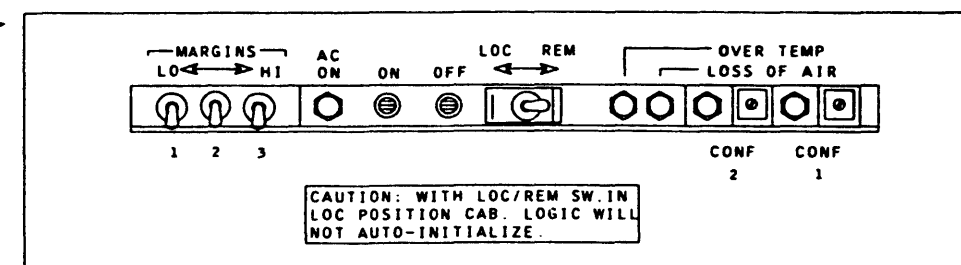
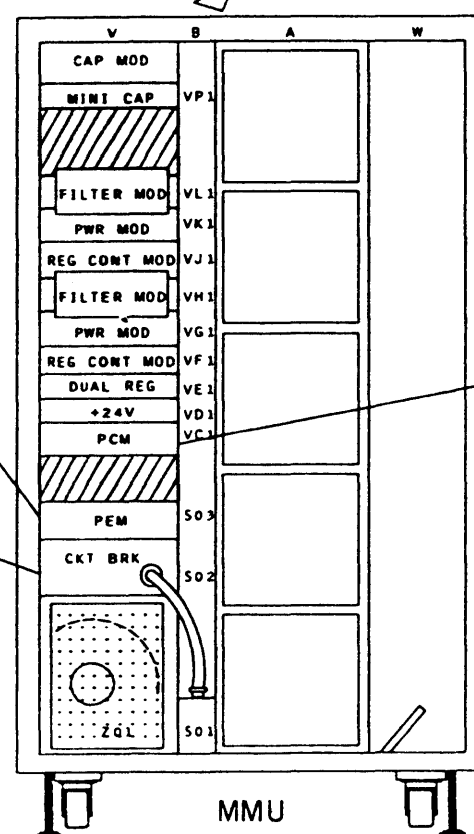
OPERATOR CONTROL PANEL LOCATED ON FRONT DOOR



POWER ENTRY MODULE AT S03



CIRCUIT BREAKER MODULE AT S02



POWER CONTROL MODULE AT VC1

FIGURE 4.7-50. MMU CABINET - POWER PANELS

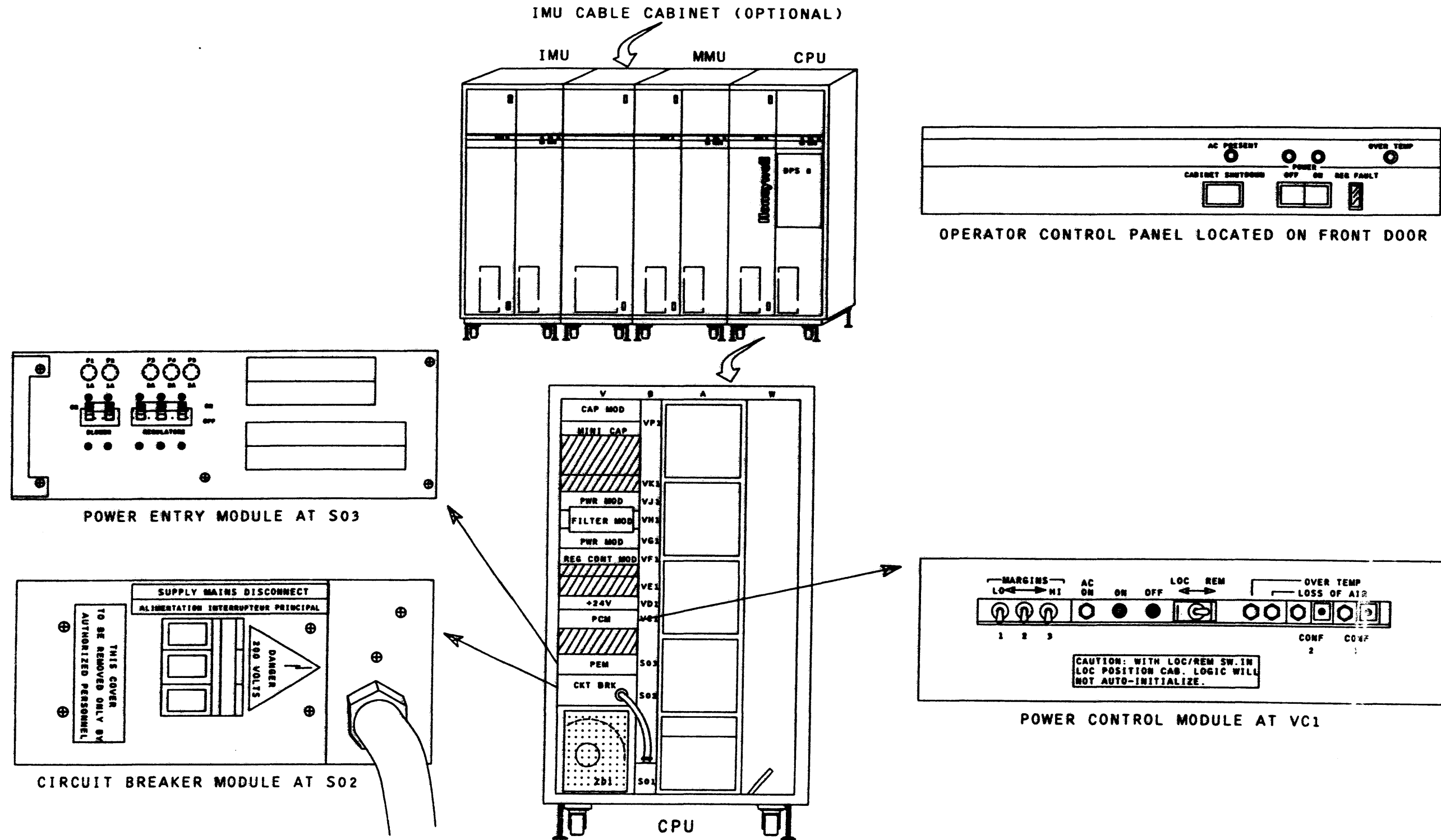


FIGURE 4.7-51. CPU - CABINET POWER PANELS

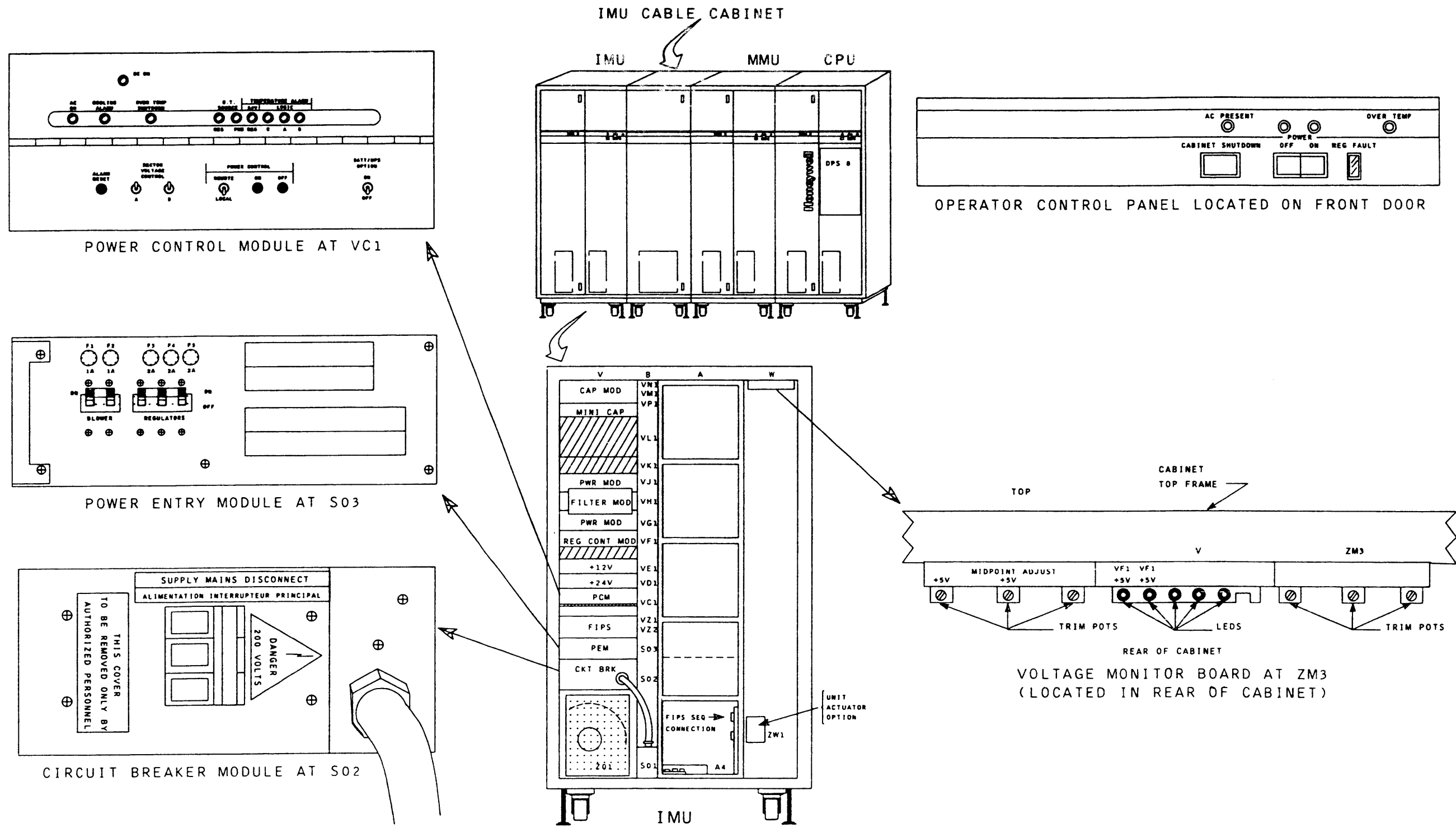


FIGURE 4.7-52. IMU CABINET - POWER PANELS

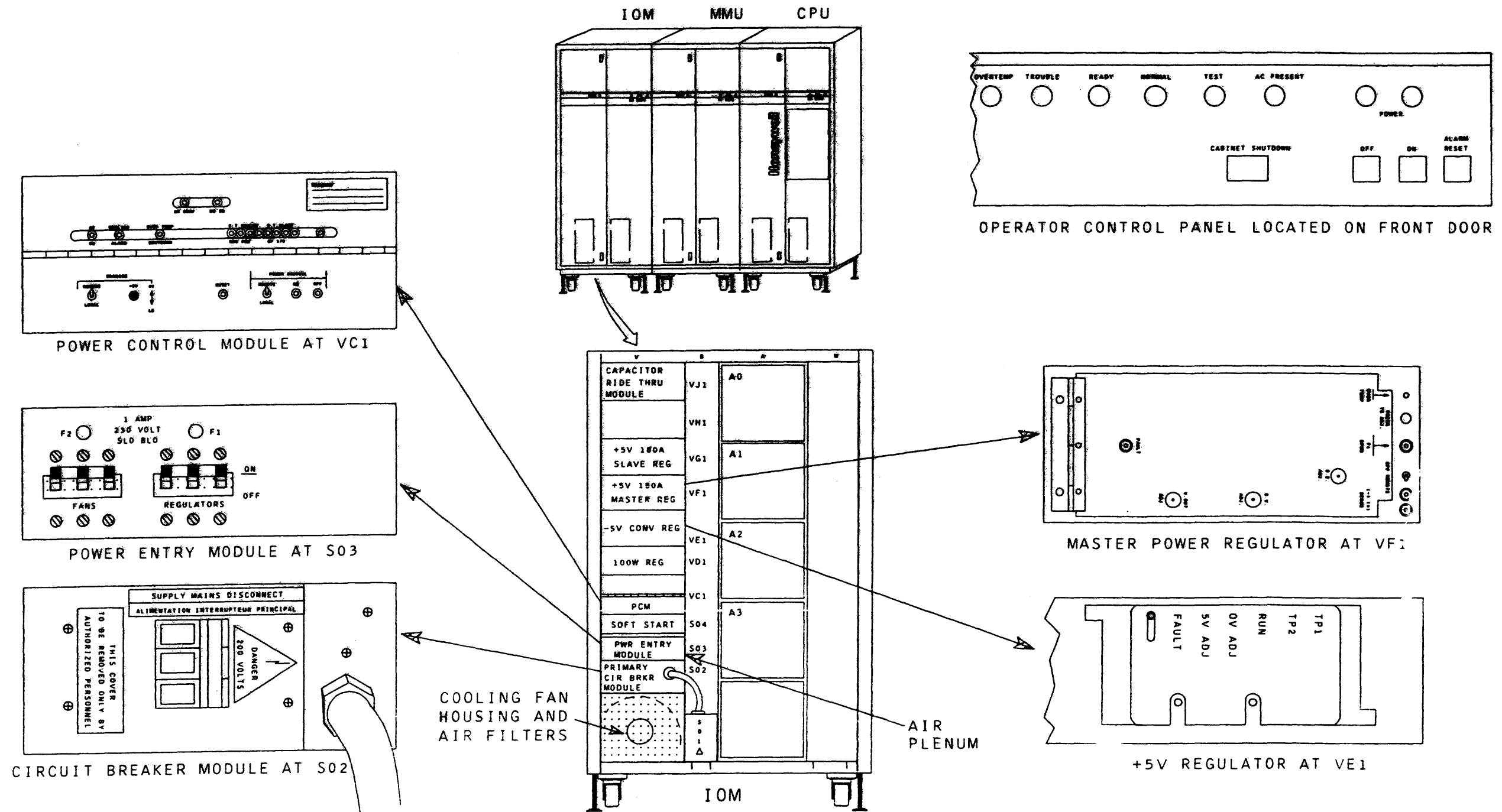


FIGURE 4.7-53. IOM CABINET - POWER PANELS

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TASK 12

INSTALL LOWER TRIM STRIPS

REV B

INSTALL FRONT AND REAR LOWER TRIM STRIPS IN ACCORDANCE WITH
FIGURE 4.7-54.

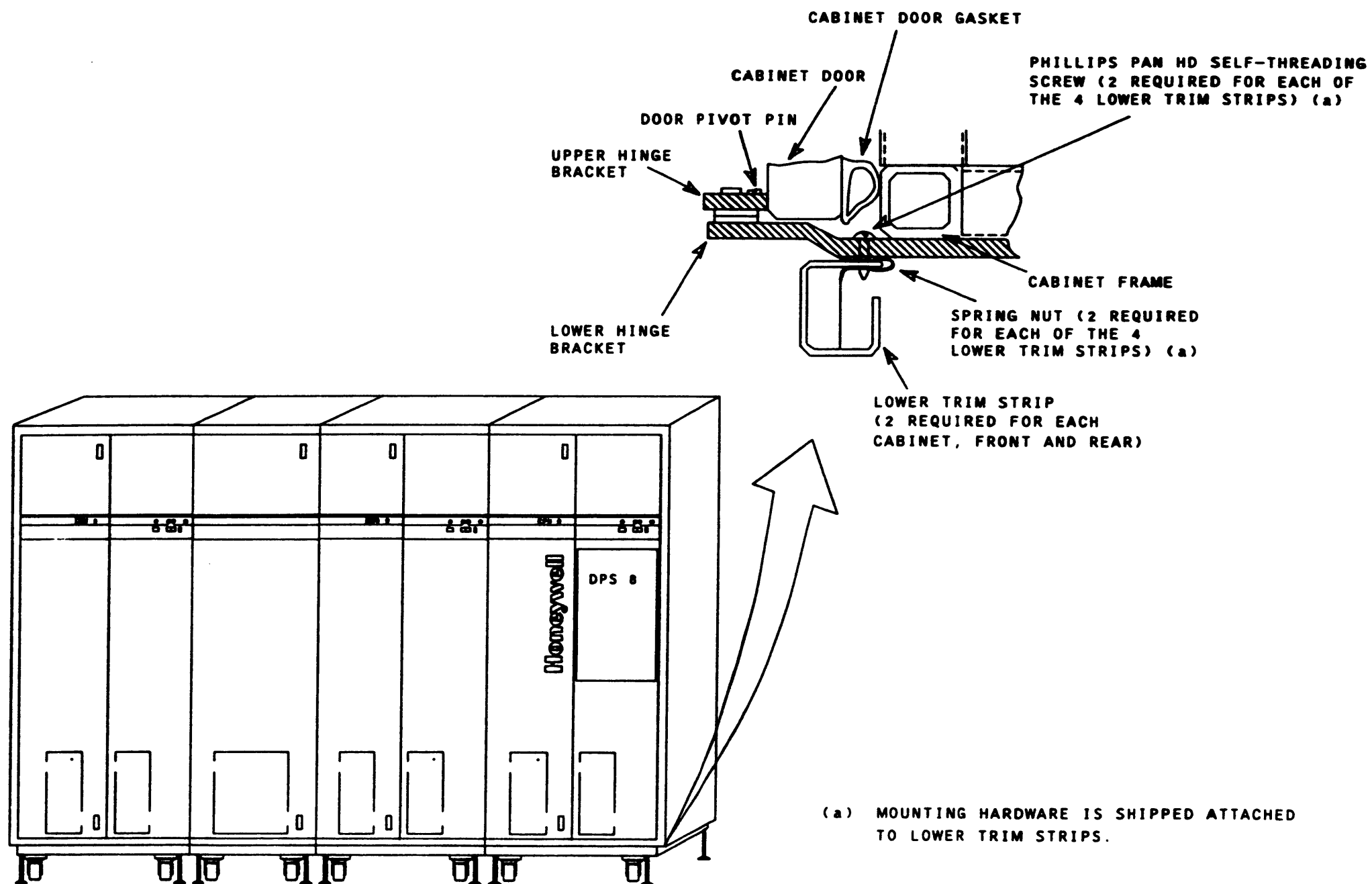


FIGURE 4.7-54. INSTALL LOWER TRIM STRIPS

TASK 13 CONFIGURE CENTRAL SYSTEM

REFER TO APPENDIX A, IMU CONFIGURATOR.

COMPLETE CONFIGURATION TABLE 4.7-5 WITH SITE ADMINISTRATOR. THE INFORMATION IN THE COMPLETED CHART MAY THEN BE TRANSFERRED TO THE CONFIGURATION CHART LOCATED IN THE IMU HARDWARE OPERATION MANUAL, 58010010.

TASK 14 TEST TAC REMOTE CONNECTIONS

TEST TAC REMOTE MAINTENANCE INTERFACE (RMI) AS FOLLOWS:

1. TELEPHONE LARGE SYSTEMS TECHNICAL ASSISTANCE CENTER (INSTALLATION CONTROL CENTER) LOCATED IN PHOENIX, ARIZONA AND REQUEST A DPS 8 RMI CHECKOUT.
2. THE TAC CENTER WILL CALL THE SITE BACK AND A REMOTE CONNECTION WILL BE EXECUTED.
3. WHEN THE CONNECTION IS MADE, TAC PERSONNEL WILL WORK WITH LOCAL SITE TO SOLVE ANY PROBLEMS.
4. REFERENCE MAY BE MADE TO HARDWARE OPERATION MANUAL, 58010011, SECTION 6.

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TASK 15 FUNCTIONAL VERIFICATION TESTS

AFTER THE SYSTEM IS PROPERLY INSTALLED, REFER TO TEST AND REPAIR MANUAL, 58010012, AND SEQUENTIALLY RUN THE FOLLOWING FUNCTIONAL VERIFICATION AND NFT'S AS NECESSARY.

1. RUN IMU NFT'S SELF TEST. REFER TO IMU T&D USER GUIDE, 58014355.
2. RUN ONE PASS OF PROCESSOR AND STORE TEST, PAS2.
3. RUN INSTRUCTION SEQUENCE TEST WITHOUT FAULTS FOR 30 MINUTES.

RUN THE FOLLOWING FUNCTIONAL VERIFICATION TESTS TO VERIFY SYSTEM INTEGRITY (INCLUDING IMU, INTEGRATED PERIPHERAL CONTROLLERS (IPCs) AND ADAPTERS) AS FOLLOWS:

3. RUN ALL NATIVE FAULT TESTS (NFTs) - NOMINAL VOLTAGE & TIMING.
4. RUN ALL NFTs - VOLTAGE MARGINS.
5. RUN ALL AVAILABLE DIAGNOSTIC PROCEDURE MODULES (DPM) - NOMINAL.
6. RUN ALL AVAILABLE DPMs - VOLTAGE MARGINS.
7. RUN QUERY TEST ON APPLICABLE IPCs.
8. RUN FTS - NEW SYSTEM ARCHITECTURE (NSA) SEQUENCE TEST - NOMINAL AND VOLTAGE MARGINS.
9. RUN OFF-LINE PERIPHERAL DIAGNOSTICS THROUGH PHYSICAL CHANNELS.
10. RUN ON-LINE TESTS AS REQUIRED.

RETURN THE SYSTEM CHECKOFF LIST TO THE MANUAL AFTER SUCCESSFULLY COMPLETING THE FUNCTIONAL VERIFICATION TESTS.

5.0 DEINSTALLATION

This section provides procedures for deinstalling and returning the DPS 8 System to Honeywell.

WARNING

OBSERVE ALL CAUTIONS AND WARNINGS, AS HAZARDOUS VOLTAGES EXIST WHICH COULD CAUSE INJURY OR DEATH. REMOVE ALL POWER TO EQUIPMENT BEFORE DEINSTALLATION.

CAUTION

DO NOT TOUCH ANY LOGIC BOARDS OR OTHER STATIC-SENSITIVE COMPONENTS DUE TO THE HIGH POTENTIAL OF STATIC ELECTRICITY WHICH MAY CAUSE EQUIPMENT DAMAGE.

Perform the following steps:

1. Depress cabinet shutdown switch located on operator control panel of each cabinet.
2. Set individual cabinet's blowers and regulators circuit breakers, located on power entry panel at S03, to OFF position.
3. Set individual cabinet's primary circuit breakers at S02 to OFF position.
4. The customer's electrician should remove site power cables from equipment.
5. Carefully disconnect one end of intercabinet free-edge cables. Coil, label, and secure cables to cabinet frame.
6. Carefully disconnect, coil, tie, label, and package remaining cables.
7. Remove, label, and package site (earth) ground strap(s) from MMU.

8. Remove, label, and package system intercabinet ground straps from MMU, if provided with equipment.
9. Inventory circuit boards and ensure that they are securely seated in backpanel connectors.
10. Remove and package lower front and rear trim strips.
11. Fully raise leveling pads on each cabinet so that cabinet castors completely support cabinet weight.

CAUTION

DO NOT MOVE CABINETS WHEN LEVELING PADS ARE TOUCHING FLOOR, AS EQUIPMENT DAMAGE COULD OCCUR.

12. Carefully move cabinets to customer's packing/shipping area.
13. Inventory equipment.
14. Pack and package equipment in accordance with Honeywell Packaging Specification, 58067223, and/or contact Honeywell Packaging/Shipping Department at:

Honeywell Information Systems
P. O. BOX 8000, M/S C38
Phoenix, Arizona 85066
15. Inform carrier of any special instructions, and obtain signed equipment receipt.
16. Return equipment to:

Honeywell Information Systems
Large Computer Products Division
4001 West Indian School Road
Phoenix, Arizona 85009

c/o Manager, LCPD Warehouse
Mail Station J2

APPENDIX A - IMU CONFIGURATOR

A1.0 PURPOSE

The IMU is configured with DPS-E type central systems the DPS 8/52, 62, 70.

This appendix provides general information and guidelines for configuring peripheral subsystems for the IMU on GCOS 8-based DPS 8 systems. These IMU guidelines are designed to allow maximum peripheral channel configurations without overloading or exceeding the capabilities of the IMU.

Sections A2 through A4 provide IMU throughput, priority, and channel assignment guidelines. Section A5 provides guidelines describing maximum IMU connectability within the limits imposed by the IMU's DC Power Supply constraints.

For IMU control-type configuration information, refer to the MCA Operator's Guide, 58096613. Control information contained therein covers topics such as: Channel type and characteristics, Boot Channel location, Main Memory Addressing, etc.

A2.0 IMU PHYSICAL STRUCTURE

A2.0.1 SCU PORTS

The IMU can connect to up to four SCUs via four ports called Ports A, B, C, or D. The IMU is designed with a primary SCU interface. This primary interface is IMU Port A. The circuit boards for the IMU's Port A connection to the SCU always must be plugged into their board slots in order for the IMU to communicate with any other SCU, regardless of the number of other IMU ports configured. Note that with the circuit boards plugged in, the interface can be masked off to the SCU connected to Port A, and the IMU retains the ability to communicate with the other configured (active) SCUs on IMU Ports B, C, and/or D.

Each SCU Port Adapter in the IMU consists of two HDU type circuit boards, which provide access to both internal Channel Adapter/IPC buses (described later). These two boards are located in the same card cage as the IMU Central logic; i.e., they do NOT subtract from the board slot space allocated to peripheral subsystem Channel Adapters/IPC's. These two IMU Port boards provide the interface to the Port board option located in one SCU; i.e., the SCUMX Port board residing in the "high profile" SCU, and the SCAMX Port board residing in the "low profile" SCU.

A2.0.2 PERIPHERAL SUBSYSTEM CHANNEL ADAPTERS/IPC's

Each IMU can contain (up to) 16 physical Channel Adapters/IPC's, which provide (up to) 64 Logical Channels (LCs) consisting of (up to) 56 payload channels; see Paragraph A2.1.

Each IMU contains two internal Channel Adapter/IPC buses called Bus 0 and Bus 1. Each internal bus can be configured with (up to) 8 physical channels. Each bus physically accommodates (up to) 19 TTL Channel Adapter and/or IPC circuit boards in its card cage/backpanel, for a collective capacity of 38 boards. Multiboard Channel Adapters and/or IPCs cannot be configured to cross a backpanel boundary. The number of card cage board slots required for each type of Channel Adapter/IPC is described in Table A2.0-1.

An assigned physical adapter number determines the bus priority for service on each bus. Physical adapter number is assigned by connecting hardware designated bus select and clock cables to the Channel Adapter/IPC when it is installed. Internal Bus 0 contains physical adapter numbers 0 through 7; internal Bus 1 contains 8 through 15. On either internal bus, there is no physical relationship between physical adapter number and the board slot(s) in which the adapter is located.

In order to minimize cable congestion and also balance the load on each internal bus, the four FIPS IPC boards should be physically inserted in card cage 0 or 2 starting from the bottom of the card cage. Alternating between card cages, additional FIPS IPCs are added (physically) from the bottom up in each card cage. For example:

- o 1st - FIPS IPC = card cage 2 (Bus 1), board slots R,S,T,U
- o 2nd - FIPS IPC = card cage 0 (Bus 0), board slots R,S,T,U
- o 3rd - FIPS IPC = card cage 2, board slots M,N,P,Q
- o 4th - FIPS IPC = card cage 0, board slots M,N,P,Q
- o etc.

TABLE A2.0-1. CHANNEL BOARD SLOT REQUIREMENTS

<u>CHANNEL TYPE</u>	<u># OF FULL SIZE (HDU) CIRCUIT BOARDS</u>	<u>BOARD TYPES</u>
IPC/FIPS	4	WXGSA, WXGSB, WXGSC, WXGSD*
PSIA 2-Trip (TTL)	2	WXGJA, WXGJB
PSIA 2-Trip (CMOS)	1	WXGJE
PSIA 4-Trip	2	WXGJA, WXGJC
IPC-UR/DAI	1	WXGDA
IPC-UR/PDSI	1	WXGDB
IPC-Console	1	WXGKA
NDIC	1	WXGJD

* Plus backpanel clock distributor 58060810-001 for each FIPS Channel Adapter/IPC (does not occupy a channel board slot).

FIGURE A2.0-2. IMU CARD CAGES 0 (CHANNEL ADAPTERS/IPC's) AND 1 (IMU CENTRAL)

CARD CAGE 0 (BUS 0):
 A0 Channel Adapters/IPC's
 B " " "
 C " " "
 D " " "
 E " " "
 F " " "
 G " " "
 H " " "
 J " " "
 K " " "
 L " " "
 M " " "
 N " " "
 P " " "
 Q " " "
 R " " "
 S " " "
 T " " "
 U " " "

CARD CAGE 1 (IMU Central):
 A1 WXGGA Clock Board
 B WXCMB MCA
 C WXCMB MCA
 D spare
 E WXCDA Data Director
 F WXCPD Control Supervisor
 G WXCPD " "
 H WXCPB " "
 J WXCPE " "
 K WXCAA Bus Arbitrator
 L WXCCD SCU Port A
 M WXCCE " "
 N WXCCD SCU Port B
 P WXCCE " "
 Q WXCCD SCU Port C
 R WXCCE " "
 S WXCCD SCU Port D
 T WXCCE " "
 U WXCCA Port Select

FIGURE A2.0-3. IMU CARD CAGES 2 (CHANNEL ADAPTERS/IPC's) AND 3 (DAUs)

CARD CAGE 2 (BUS 1):
 A2 Channel Adapters/IPC's
 B " " "
 C " " "
 D " " "
 E " " "
 F " " "
 G " " "
 H " " "
 J " " "
 K " " "
 L " " "
 M " " "
 N " " "
 P " " "
 Q " " "
 R " " "
 S " " "
 T " " "
 U " " "

CARD CAGE 3 (DAUs):
 A3 MPCDI Device Interface
 B MPCDI " "
 C MPCDI " "
 D WDAEI DAU
 E WDAEI " "
 F WDAMP " "
 G WDASB " "
 H WDACI PSI Interface
 J WDACI PSI Interface
 K spare
 L WDACI PSI Interface
 M WDACI PSI Interface
 N WDASB DAU
 P WDAMP " "
 Q WDAEI " "
 R WDAEI " "
 S WPCDI Device Interface
 T WPCDI Device Interface
 U WPCDI Device Interface

A2.1 LOGICAL CHANNEL (LC) NUMBERS

Consistent with GCOS 8 software, each IMU supports (up to) 64 Logical Channels (LCs) consisting of (up to) 56 payload LCs numbered 8 through 63. Like the IOM, LCs 0 through 7 are overhead channels. LCs 0 (unused), 1 (System Faults), 2 (Connect), 5 (Bootload), and 6 (Special Interrupt) are the same as the IOM. Unlike the IOM, LC 3 is the MCA channel; LC 4 (Wraparound) and LC 7 (Scratchpad Access) are T&D channels and are not applicable to the IMU (unused).

For the purposes of this discussion, the above are all referred to as "Software LC" numbers.

The 56 payload Software LCs can be assigned across (up to) 16 physical Channel Adapters/IPC's. IMU Central converts the Software LC number into a different form which is understood by the Channel Adapter/IPC, hereafter called the "Adapter LC" number. Depending on GCOS 8 software and the design of each type of Channel Adapter/IPC, from 1 to 8 Adapter LC numbers can be assigned to each one. Physically, the Adapter LC number has a value ranging from 0 to "n", where "n" is 7 or less. When IMU Central receives a Software LC number from GCOS, it converts the number into a physical Channel Adapter/IPC location on the IMU's internal buses and a corresponding Adapter LC number (from 0 to "n").

The IMU hardware allows the base Software LC number, assigned to a physical Channel Adapter/IPC, to be any number from 8 thru 63; that is, both odd and even base numbers are accepted by the IMU. However, consistent with the IOM, GCOS software restricts the base Software LC number to a modulo-"n" number, where "n" = 0, 2, 4, or 8; see Table A2.1-1. Like the IOM, multiple Software LC numbers assigned to a physical channel must be a series of consecutive numbers.

Multiple Logical Channels (LC) assigned to a physical channel provide a mechanism whereby a physical channel can accept and queue multiple I/Os, thereby tending to increase channel utilization by imposing a more constant load on a peripheral subsystem.

From a hardware standpoint, all of the IMU Channel Adapters/IPC's can be configured with multiple logical channels. GCOS Software conventions do not take advantage of this capability with some IMU channels (discussed later).

There is no "wired-in" physical relationship between LC number and physical adapter number or board slot on the internal buses. The LC numbers assigned to each physical adapter are input configuration parameters provided to IMU central control via the MCA. LC numbers may be assigned to physical channels on either bus, with no direct effect on priority or service rate.

A2.1.1 RULES & GUIDELINES FOR LOGICAL CHANNELS

1. On the boot IMU, GCOS software requires that the System Console be configured as LC 30. If the Remote Console connection exists, it is configured as LC 31. Additional console channels may be assigned any other remaining unused numbers within the range of 8 thru 63, including LC 31 if there is no Remote Console connection.
2. Each physical FIPS or MPC/PSI channel connected to a DISK Subsystem can be configured with 1, 2, 4, or 8 LCs, with 4 LCs being the most preferred.
3. Each physical FIPS channel connected to a TAPE Subsystem can be configured with 1, 2, or 4 LCs, with 2 LCs being the most preferred.
4. Each physical PSI channel connected to an MPC type TAPE Subsystem can be configured with 1 or 2 LCs, with 2 LCs being the most preferred; this is an MPC limitation and not an IMU limitation.
5. Each physical PSI channel connected to an MPC-UR Subsystem must be configured with 1 LC for each device connected to the URP. A GCOS software convention requires that the first LC number assigned to each IPC-UR must be an even number; the hardware does not care.
6. Each IPC-UR/PDSI or IPC-UR/DAI must be configured with 1 LC for each device connected to it. A GCOS software convention requires that the first LC number assigned to each IPC-UR must be an even number; the hardware does not care.
7. The hardware allows the NDIC (Direct Channel) to be configured with 2 LCs, but GCOS software is constrained to 1 LC per NDIC.
8. Due to GCOS software constraints, LC number assignments for each FIPS or PSI channel are as shown in Table A2.1-1.
9. Without exception in the field, the HYPERchannel(tm) is configured with one LC per physical channel. The "Massnet" software is designed to execute only one I/O operation at a time and, therefore, constrains the configuration to one LC per physical channel. Nonetheless, the HYPERchannel hardware in the IMU and GCOS software is designed to accommodate up to 8 LCs per physical channel.

However, it is possible to configure additional channels on the same physical HYPERchannel Adapter by lying on the configuration cards; i.e., by configuring the other LCs as crossbarred channels even though they exist on the same physical channel. In an experiment, up to four were configured this way, but you will need the help of experts in this area if this capability is considered.

TABLE A2.1-1. VALID SETS OF LC NUMBERS

# OF LCs PER FIPS OR PSI CHANNEL	LOGICAL CHANNEL ASSIGNMENTS PERMITTED**
1	8 through 63
2	8/9, 10/11, 12/13, 14/15, 16/17, 18/19, 20/21, 22/23, 24/25, 26/27, 28/29, 30/31*, 32/33, 34/35, 36/37, 38/39, 40/41, 42/43, 44/45, 46/47, 48/49, 50/51, 52/53, 54/55, 56/57, 58/59, 60/61, 62/63
3	8/9/10, 12/13/14, 16/17/18, 20/21/22, 24/25/26, 28/29/30*, 32/33/34, 36/37/38, 40/41/42, 44/45/46, 48/49/50, 52/53/54, 56/57/58, 60/61/62
4	8/9/10/11, 12/13/14/15, 16/17/18/19, 20/21/22/23, 24/25/26/27, 28/29/30/31*, 32/33/34/35, 36/37/38/39, 40/41/42/43, 44/45/46/47, 48/49/50/51, 52/53/54/55, 56/57/58/59, 60/61/62/63
5	8/9/10/11/12, 16/17/18/19/20, 24/25/26/27/28, 32/33/34/35/36, 40/41/42/43/44, 48/49/50/51/52, 56/57/58/59/60
6	8/9/10/11/12/13, 16/17/18/19/20/21, 24/25/26/27/28/29, 32/33/34/35/36/37, 40/41/42/43/44/45, 48/49/50/51/52/53, 56/57/58/59/60/61
7	8/9/10/11/12/13/14, 16/17/18/19/20/21/22, 24/25/26/27/28/29/30*, 32/33/34/35/36/37/38, 40/41/42/43/44/45/46, 48/49/50/51/52/53/54, 56/57/58/59/60/61/62
8	8/9/10/11/12/13/14/15, 16/17/18/19/20/21/22/23, 24/25/26/27/28/29/30/31*, 32/33/34/35/36/37/38/39, 40/41/42/43/44/45/46/47, 48/49/50/51/52/53/54/55, 56/57/58/59/60/61/62/63

* See Boot IMU constraints, Paragraph A2.1.1(1).

** See Tape constraints, Paragraph A2.1.1(3,4).

2.1.2 GENERIC LC ASSIGNMENT SCHEME

If nothing is known about the activity rate for each physical Channel Adapter/IPC, the following generic procedure provides a reasonable way to assign LCs until more is known about the site characteristics and workload; i.e., a reasonable first approximation. The result must be consistent with the rules specified in Paragraph A2.1.1.

1. For all devices except disk, assign one LC to each physical Channel Adapter/IPC or Device that needs one.
2. Distribute the remaining LCs across the disk Channel Adapters/IPC's up to the recommended number of 4 each.
3. If unused LC numbers remain, assign one more to each tape Channel Adapter/IPC.
4. If any more LC numbers are left, assign them to the disk Channel Adapters/IPC's up to the point where there is one LC per Device or the maximum of 8 LCs per Channel Adapter/IPC is reached.
5. For dual access controllers, the LCs should be evenly divided between the physical paths.

A2.2 BACKGROUND CONFIGURATION LIMITS

Maximum configuration limits for EACH TYPE of peripheral subsystem are imposed by a variety of different sources; such as, the PFS (58053248), Marketing strategy, rules specified by this TDM, GCOS Operating System software, and other Software Subsystems (like TSS, etc.). Many software related limits are generic and not confined solely to the IMU. These limiting parameters are summarized in the following table:

TABLE A2.2-1. BACKGROUND CONFIGURATION LIMITS

IPC/CHANNEL ADAPTER TYPE	MAX. QUANTITY PER IMU (a)	SOFTWARE; MAX. QUANTITY PER SYSTEM (b)
PSIA Disc	6 (TDM)	For each IMU: 16 disc controllers 4 physical channels/controller 8 LCs/physical channel 64 devices/LC 64 devices/subsystem
FIPS Disc	4 (TDM) >>	
PSIA Tape	8 (TDM)	For each IMU: 16 tape controllers 4 PSIA channels/controller, or 2 FIPS channels/controller (c) 2 LCs/physical channel 64 devices/LC 64 devices/subsystem
FIPS Tape	4 (PFS) >>	
MPC-UR	4 (MKT)	For each IMU: 16 MPC-UR controllers 4 physical channels/controller 8 LCs/physical channel 1 device/LC
HYPERchannel(tm)	4 (MKT)	For four IMUs: 8 HYPERchannels maximum 1 LC/physical; see Paragraph A2.1.1(9)
Total PSIA	12 (PFS)	See rules, Paragraph A3.2.1
Total FIPS	8 (PFS)	See rules, Paragraph A3.2.1
IPC-Console	4 (PFS)	For four IMUs: 4 maximum*, without Console Mgr S/W. 8 maximum*, provided Console Mgr S/W is installed. If DSA console are desired: 16 consoles maximum, consisting of 1 to 8 IPC-Console channels*, with the balance being DSA consoles. *In addition, 1 remote console (RMI port) and 1 Large Screen Monitor (TYS) are permitted on a system.

IPC/CHANNEL ADAPTER TYPE

MAX. QUANTITY PER IMU (a)

SOFTWARE; MAX. QUANTITY PER SYSTEM (b)

IPC-UR/PDSI & IPC-UR/DAI

4 (PFS)

For each IMU:
16 controllers (IPCs)
2 LC/IPC
1 device/LC

NDIC (FEP & Page Printer)

8 (PFS)

For four IMUs:
16 NDIC channels maximum, consisting of 0 to 8 assigned to DNET, and/or 0 to 8 assigned to CXI. The Page Printer is treated as an FNP by DNET.

NOTES:

(a) Maximum quantity of EACH TYPE allowed individually.

(b) Maximum quantity of EACH TYPE that software allows (individually) on a System (GCOS8, TSS, Massnet, etc.).

(c) Two more are allowed with FIPS but they must be connected to a differant host (GCOS8 O.S.).

(MKT) Marketing strategy limitation.

(PFS) Limits in PFS 58053248.

(TDM) Limits imposed by this appendix; see rules, Paragraph A3.2.1.

A3.0 GENERAL PERFORMANCE GUIDELINES

The actual I/O workloads, experienced by the IMU, are application sensitive and will vary from one customer site to another.

The buffer provided in a buffered Channel/Peripheral Subsystem allows the physical channel to have low priority (a higher physical adapter number) and also significantly reduces the probability of a timing overrun event in environments with normal I/O load characteristics. Should a timing overrun occur anyway, it is masked by the Channel/Peripheral Subsystem combination. The only indication is an increase in I/O time caused by (for example) disc device latencies resulting from Channel/Peripheral controlled automatic recovery/retry procedures. These recovery actions have the effect of decreasing the effective data transfer rate of I/O programs.

The construction of the channel program (DCW list) is very critical for I/O performance. The best case is to use a single DCW for the entire data transfer, or multiple DCWs with "large word" tallies which wash out the effects of the added DCW fetches. Furthermore, the data transfer should be optimized for data transfer tallies which are multiples of 4-word blocks starting with 0-modulo-4 addresses, and using the minimum number of PTWs for both data and list services.

An opposite extreme is to have multiple DCWs with "small" tally fields physically interspersed with TDCWs pointing to different areas of memory (i.e., excessive PTW fetches). Practices similar to these are discouraged because they can severely limit throughput.

The negative effect on performance of these various channel program features is summarized as follows:

- o Excessive # of Transfer DCWs (worst).
- o Sequential series of "short" DCWs, non-mod.-4 address (very bad).
- o Sequential series of "short" DCWs, 0-mod.-4 address (just as bad).
- o Multiple "long" DCWs or a single "long" DCW, initial address irrelevant (recommended).

Paragraph A3.1.2 discusses recommended minimum DCW tallies for the various high speed peripheral subsystems.

Subsequent throughput and priority guidelines recognize that some or all of the above negative conditions do exist within the set of programs which constitute the customer's workload but that they DO NOT OCCUR CONSISTENTLY OR TO AN EXCESSIVE DEGREE.

A3.1 I/O CHARACTERISTICS

A3.1.1 BUFFERED CHANNEL CHARACTERISTICS

Timing Overruns on buffered channels are a function of the following:

- o Buffer size as it relates to the length of the data transfer.
- o The characteristics of the DCW list created for the I/O operation; for example, individual DCW tally values and the distribution of these values within the DCW list.
- o Effective data transfer rate (as compared to the higher "burst" or peak rate).
- o The characteristics of the devices; i.e., disk, tape, etc.
- o For a given configuration, the effective buffer size also is a function of the I/O load imposed by other higher priority channel adapters on the IMU.
- o SCU/Main Memory loading effects.

From a simplistic buffer viewpoint only (and disregarding DCW list characteristics), timing overruns cannot occur if the data transfer length is less than or equal to the nominal buffer size provided by the Channel Adapter or Peripheral Subsystem. However, the effective buffer size is of more importance and is significantly greater.

The several buffer management schemes outlined in Table A3.1-1, allow the channel adapter or peripheral subsystem to attempt to fill (or empty) a buffer concurrent with data transfers to (or from) Main Memory using an alternate buffer (or the same circular buffer). Furthermore, the gaps between the physical sectors (of a disc device) offer the buffer control logic a respite during which it attempts to empty (or fill) buffer space by transferring data to (or from) Main Memory. These characteristics create an effective buffer size significantly greater than the nominal size. Effective buffer size is not definable in a general sense because it is a direct function of the I/O load imposed by each User environment and the priority of the channel adapter of interest.

Nominal buffer sizes for the various buffered Channel Adapters/Peripherals are described in the following table.

TABLE A3.1-1. TAPE AND DISK DATA BUFFERING

CHANNEL/PERIPHERAL	BUFFER SIZE
FIPS Disc	1K words for devices with 512-word sectors. 128 words for devices with 64-word sectors. The buffer is managed as a double buffer; i.e., on a 2 x "n" basis, where "n" = sector size.
FIPS Tape	2K words. The buffer is managed as a modulo-64-word block circular buffer.
Disk DAU Buffer	2K words, regardless of sector size. The buffer is managed on a 4 x 512 word basis.
Disk MPC/MSU050x buffer	1K words, regardless of sector size. The buffer is managed on a 2 x 512 word basis.
Tape MPC/PSI-Channel buffer.	16K (8-bit) bytes. The buffer is managed as a circular buffer.

A3.1.2 MINIMUM DCW TALLYS, DISK AND TAPE

The processing of long sequences of consecutive DCWs with short tallys by an I/O Channel/Peripheral Subsystem can cause timing overruns despite the buffering discussed in Paragraphs A3.0 and A3.1.1. For example, with a 3380 FIPS Disk subsystem, more than 16 DCWs in a 512-word block will cause timing overruns and, as a result of the automatic retry, add extra latency time (16.7 millisecs. each) to the total I/O time.

The potential impact can be described as a function of DCW overhead processing and total I/O load, and their interaction with the data transfer rate of the Disk or Tape subsystem:

$$f(\text{DCW}) = (C * T_x) / 4.5$$

WHERE:

- o $f(\text{DCW})$ = Minimum DCW length (tally) in words.
- o C = A system constant. A C value of 48 is recommended for all DPS-E type systems (DPS8/52, 62, 70) executing normal I/O loads. Note that DPS-E Systems are offered with interlaced Main Memory only.
- o T_x = The peak disc or tape data transfer rate in (8-bit) megabytes/sec.
- o Note that dividing by 4.5 converts bytes to words.

Two values of C are useful to have for a System, one for a low probability of timing overruns and the other for a high probability.

Minimum DCW lengths (tallys) for DPS8/70 Systems with an IMU and different types of buffered Disk and Tape subsystems are described in the following paragraphs.

a. Low Probability of Timing Overrun; $C = 48$.

DAU/MSU045x	DCW length = $(48 * 0.81) / 4.5 = 8.6$ ---> 9 words or more.
DAU/MSU050x	DCW length = $(48 * 1.2) / 4.5 = 12.8$ ---> 13 words or more.
MPC/MSU050x	DCW length = $(48 * 1.2) / 4.5 = 12.8$ ---> 13 words or more.
FIPS/MSU3380	DCW length = $(48 * 3.0) / 4.5 = 32$ ---> 32 words or more.
PSI/200IPS/6250 Tape	DCW length = $(48 * 1.25) / 4.5 = 13.3$ ---> 14 words or more.
PSI/125IPS/6250 Tape	DCW length = $(48 * 0.78) / 4.5 = 8.3$ ---> 9 words or more.
FIPS/200IPS/6250 Tape	DCW length = $(48 * 1.25) / 4.5 = 13.3$ ---> 14 words or more.
FIPS/125IPS/6250 Tape	DCW length = $(48 * 0.78) / 4.5 = 8.3$ ---> 9 words or more.

b. High Probability of Timing Overrun, $C = 24$.

DAU/MSU045x	DCW length = $(24 * 0.81) / 4.5 = 4.3$ words.
DAU/MSU050x	DCW length = $(24 * 1.2) / 4.5 = 6.4$ words.
MPC/MSU050x	DCW length = $(24 * 1.2) / 4.5 = 6.4$ words.
FIPS/MSU3380	DCW length = $(24 * 3.0) / 4.5 = 16$ words.
PSI/200IPS/6250 Tape	DCW length = $(24 * 1.25) / 4.5 = 6.7$ wds.
PSI/125IPS/6250 Tape	DCW length = $(24 * 0.78) / 4.5 = 4.2$ wds.
FIPS/200IPS/6250 Tape	DCW length = $(24 * 1.25) / 4.5 = 6.7$ wds.
FIPS/125IPS/6250 Tape	DCW length = $(24 * 0.78) / 4.5 = 4.2$ wds.

A3.2 THROUGHPUT LOADING GUIDELINES FOR EACH IMU

The following guidelines must be adhered to when determining whether or not an IMU can be overloaded by the quantity and types of Peripheral Subsystems/Channel Adapters or IPCs to be connected to it. To evaluate the load imposed by a customer configuration, a calculation is made based on a load factor parameter which is assigned to each peripheral; see Table A4.1-1. The constraints and guidelines described in Paragraphs A3.0, A3.1.1, A3.1.2, and A3.2.1 are implicit in the load factor value. This procedure also allows channel priority to be determined separately, which is discussed in Paragraphs A4.0, A4.1, and A4.2.

A3.2.1 RULES AND GUIDELINES FOR DPS-E TYPE CENTRAL SYSTEMS

DPS-E type systems are the DPS8/52, 62, 70 product line. The Main Memory attached to each SCU is interlaced on these systems.

1. For operation with timing overrun events limited to few or none, the sum of the load factors for all configured peripheral subsystems should be less than or equal to 1400; see Table 4.1-1 for the load factors. A sum in excess of 1600 can be expected to result in an unacceptable number of timing overrun events. Intermediate values describe a band which may be acceptable, but these values are more sensitive to the characteristics of the customer workload. These values assume that the Main Memory attached to each SCU is interlaced.

Within this context, the following list of items imposes additional configuration constraints.

2. Up to four (buffered) FIPS physical channel adapters for DISK subsystems are permitted; i.e., 3380 Disk subsystems.
3. Up to four (buffered) FIPS physical channel adapters for high speed TAPE subsystems are permitted; e.g., the MTS8208/200IPS/6250BPI GCR Tape.
4. No more than six DISK channel adapters of all kinds (FIPS and PSI) in any combination consistent with the above guidelines.
5. No more than eight DISK and TAPE channel adapters of all kinds (FIPS and PSI) in any combination consistent with the above guidelines.
6. The following TAPE subsystem and/or GCOS software constraint also applies (the IMU hardware doesn't care):
 - o For MPC based TAPE subsystems, up to four physical channels (two simultaneous, two switched) are permitted to the same tape subsystem from the same host (GCOS Operating System).
 - o For FIPS TAPE subsystems, no more than two physical channels to the same tape subsystem are permitted from the same host (GCOS Operating System); i.e., the combined total for all the IMUs configured to the same host. Two additional "switched" physical channels can be configured to the same FIPS tape subsystem but they must be configured with a different host (different GCOS Operating System).

7. Also the following:
 - o Up to 4 Console Adapters.
 - o Up to 4 IPC-UR Subsystems and/or MPC/PSI-UR Subsystems (combined total).
 - o Up to 8 NDIC channels for Datanet and/or Page Printing Subsystems (combined total).
 - o Up to 4 HYPERchannels (A161; Network Systems Corp.)

8. No more than 12 PSIA Channel Adapters per IMU.

To illustrate the context of the Loading Guidelines, the following table describes a sample set of maximum disk and tape configuration combinations.

TABLE A3.2-1. DISK AND TAPE LOADING COMBINATIONS, DPS-E SYSTEMS

CHANNEL	XFER RATE	LOAD FR	CONFIGURATIONS							
			A	B	C	D	E	F	G	H
PSI Disk	1.2 MB/sec.	111	4	0	2	4	2	6	3	1
PSI Tape or FIPS Tape*	1.25 MB/sec.	125	4	4	2	2	4	2	2	3
FIPS Disk	3.0 MB/sec.	235	0	4	4	2	2	0	3	4
Sum of Load Factors		--->	0944	1440	1412	1164	1220	0916	1288	1426

* FIPS and PSI Tape combinations, 4 FIPS Tape maximum.

A4.0 IMU PRIORITY STRUCTURE

IMU Central (the Bus Arbitrator logic) provides the priority management function for the two internal buses of the IMU. For background information, the following describes the total IMU priority structure. However, item 6 is the only variable of interest or concern; i.e., the only item relevant to properly configuring channel priorities.

1. Functional Control logic "high priority request" (highest).
2. SCU Port Adapter A.
3. SCU Port Adapter B.
4. SCU Port Adapter C.
5. SCU Port Adapter D.
6. Peripheral subsystem adapters; 16 physical (channel) adapters, 8 on each of the two internal buses. Bus 0 (physical channels 0-7) and Bus 1 (physical channels 8-15) have equal priority. Channel Adapter priority alternates between buses.**

Physical adapter 0 on Bus 0, or 8 on Bus 1 = highest priority.**
Physical adapter 7 on Bus 0, or 15 on Bus 1 = lowest priority.**
7. After all the above adapters are serviced, a Functional Control logic low priority request is next.
8. MCA (lowest).

** IMU Central (the Bus Arbitrator logic) services priorities by alternating (ping ponging) between the two EQUAL PRIORITY internal buses and servicing the highest priority request on the bus it is currently sensing. As mentioned earlier, the hardware is designed such that Bus 0 contains physical channel numbers 0-7 and Bus 1 contains physical channel numbers 8-15. The following simplistic cases are intended only to illustrate this idea.

For example, if every physical adapter had one service request outstanding at the same time, they might be serviced in the following order; i.e., alternating between Bus 0 and Bus 1:

0, 8; 1, 9; 2, 10; 3, 11; 4, 12; 5, 13; 6, 14; 7, 15.

Another example; if 0, 4, 10, 11, and 15 all request service at the same time, they would be serviced in the following order. Note that after the hardware finishes a request on one of the buses, it will process a request waiting on the other bus next.

0, 10, 4, 11, 15.

With the bus alternation aspect of the priority algorithm, a higher numbered physical adapter/IPC on Bus 1 could be serviced before a lower numbered physical adapter/IPC on Bus 0 if both requested service simultaneously.

However, the IMU design recognizes the critical nature of PTW and DCW fetches (i.e., Tally Run-Out conditions) for nonbuffered physical channel adapters and services them differently. The design assumes that nonbuffered channels are configured as high priority channels; i.e., within the set of numbers 0, 1, 2, 3, 8, 9, 10, 11. PTW and DCW fetch requests for these channels are accumulated in a queue and are serviced (in a FIFO manner), before any other accumulated PTW or DCW requests are serviced for the remaining lower priority channel numbers 4-7 and 12-15 (accumulated in a separate FIFO queue).

A4.1 PRIORITY GUIDELINES

Table A4.1-1 lists the peripheral subsystems in a recommended priority sequence for normal I/O loads. Note that buffered channels are assigned to the lower priority channel numbers, particularly those subsystems with a high data transfer rate like 3380 disc subsystems. CAUTION: The priority sequence shown is not to be confused with the numerical sequence used by the IMU's internal buses; see Paragraph A4.0, item 6. Furthermore, users with unique I/O workloads, or users who are unable to alter programs which contain I/O channel programming practices which have a deleterious effect on inherent IMU throughput, may have to adjust or tune the priority sequence if timing overruns occur at an unacceptable frequency; refer to the Performance Guidelines in Paragraphs A3.0, A3.1.1, and A3.1.2.

TABLE A4.1-1. PRIORITY SEQUENCE AND LOAD FACTORS

DEVICE TYPE	CONTROLLER TYPE	CHAN TYPE	LOAD FACTOR	BURST
				MB/SEC (8-BIT)
		HIGHEST PRIORITY...		
System Console (TR1, TY1, 2, 3, 4, 5)	CSU8400/8402	IPC	1	N/A
200IPS/6250 GCR Tape	MTP0610/0611 (nb)(1)	PSIA	125	125
MSU04xx Discs	MSP06xx, (nb)(2)	PSIA	69	0.8
MSU04xx/050x (mixed)	MSP06xx, (nb)(2)	PSIA	111	1.2
125IPS/6250 GCR Tape	MTP06xx (nb)(1)	PSIA	78	0.78
200IPS/1600 PE Tape	MTP06xx (nb)(1)	PSIA	32	0.32
125IPS/1600 PE Tape	MTP06xx (nb)(1)	PSIA	20	0.20
200IPS/800 NRZI Tape	MTP06xx (nb)(1)	PSIA	16	0.16
125IPS/800 NRZI Tape	MTP06xx (nb)(1)	PSIA	10	0.10
Card/Printer Devices (MPC type)	URP060x (3)	PSIA	56	??
Communications FNP	DCU66xx/8010, DCP66xx (Datamet 8, 18X)	NDIC	50	??
Document Handler??	DHP0700/0701	NDIC	50	??
Page Printer	PPS1032/68/78	NDIC	50	??
200IPS/6250 GCR Tape	MTP8021/8022/8023/8411 (b)	PSIA	125	1.25
125IPS/6250 GCR Tape	MTP8021/8022/8023/8411 (b)	PSIA	78	0.78
200IPS/1600 PE Tape	MTP8021/8022/8023/8411 (b)	PSIA	32	0.32
125IPS/1600 PE Tape	MTP8021/8022/8023/8411 (b)	PSIA	20	0.20
200IPS/800 NRZI Tape	MTP8021/8022/8023/8411 (b)	PSIA	16	0.16
125IPS/800 NRZI Tape	MTP8021/8022/8023/8411 (b)	PSIA	10	0.10
Card/Printer Devices	URP8400/8401/8402	IPC	56	0.094
MSU0500/0501 Discs	MSP06xx (b)(2)	PSIA	111	1.2
MSU04xx Discs	MSP8011/8021/8022/8023 (b)	PSIA	69	0.8
MSU050x Discs	MSP8011/8021/8022/8023 (b)	PSIA	111	1.2
MSU04xx/050x (mixed)	MSP8011/8021/8022/8023 (b)	PSIA	111	1.2
MTU8208 (STC4600)	MTS8208 (b)	FIPS	125	1.25
200IPS/1600PE/6250GCR				
MTU8206 (STC4600)	MTS8206 (b)	FIPS	78	0.78
125IPS/1600PE/6250GCR				
MTU8205 (STC4600)	MTS8205 (b)	FIPS	20	0.20
125IPS/800NRZI/1600PE				
MSU3380/3382	MSP3880, MSP3884 (b)	FIPS	235	3.0
Non-Honeywell System	Network Systems Corp; A161 HYPERchannel(tm)	PSIA	75	??
		LOWEST PRIORITY...		

NOTES:

- (b) Heavily buffered peripheral or associated host channel.
- (nb) Nonbuffered; little or no buffering in peripheral or associated host channel.
- (1) If any of the Tape Controllers have been upgraded (via RPQ) with a buffer unit, it can be configured using the bus priority positions specified for the corresponding MTP8021.
- (2) Disk Controllers buffered for MSU050x only.

- (3) Interface timing FCO PHA0BB136 must be installed in all Unit Record MPCs to correlate with this relative priority position.
- (4) For the Datamet 8 and Page Printer: Prefer at least Rev. 12 firmware and coupler boards BFEP005A-002 and BFEP003A-004; corresponding PROM chips are marked B482xx05, where xx is chip location. From DI Interface viewpoint, OK to use Rev. 11 firmware and coupler boards BFEP005A-002 and BFEP003A-003; corresponding PROM chips are marked B482xx04.
- (4) For the Datamet 66 (18X): Port boards BHDA001B-001 Rev. C (daughter) and BHDA002A-004 Rev. J (mother). These boards include FCOs BLCOE1414 and BLCOE1413, which extend the transaction timer runout interfal and send a pulse on the DPL line when a TTRO occurs.

A4.2 SAMPLE CONFIGURATION; DPS-E SYSTEMS

This configuration is intended to illustrate the application of load factors, priority sequence and number relationships, and that there can be holes in the configured sequence of physical channels. Note that the Load Factor sum of 1403 does exceed the target of 1400 but is at the low end of the intermediate band discussed earlier for DPS-E Systems; this configuration presents no appreciable risk in a normal I/O load environment.

TABLE A4.2-1. SAMPLE CONFIGURATION, DPS-E SYSTEM

PERIPHERAL SUBSYSTEM	LOAD FACTOR	PHYSICAL CHANNEL NUMBER	RELATIVE PRIORITY
System Console	1	0	0
2nd System Console	1	8	0
Unbuffered Tape/200IPS/6250 GCR	125	1	1
Unbuffered Disc/MSU0450	80	9	1
MPC-UR	56	2	2
Datanet	50	3	3
Datanet	50	10	2
Datanet	50	4	4
Datanet	50	11	3
Buffered 3380 Disc	235	6	5
Buffered 3380 Disc	235	14	4
Buffered 3380 Disc	235	7	6
Buffered 3380 Disc	235	15	5
-----	-----	-----	-----
Sum of Load Factors	1403		

A5.0 CONNECTABILITY AND POWER AND COOLING CONSTRAINTS

The guidelines in this section are designed to allow maximum peripheral channel connectability WITHOUT REGARD TO THE CUSTOMER'S I/O LOAD OR THE THROUGHPUT CAPACITY OF THE IMU.

In this section, the primary concerns are board slot capacity, the number of physical channels allowed on each internal IMU bus, and D.C. Power constraints. After using this criteria, the tentative configuration for the selected peripheral complement must be validated or adjusted using the guidelines described in the previous sections 2 through 4.

Table A5.0-1 describes the board slot capacity of one 19-card cage in terms of 1-, 2-, and 4-board channels. It is included here to illustrate some of the pluggability anomalies that occur when both card cages are considered together in Paragraphs A5.1, A5.2, and A5.3. Using the matrix of Table A5.0-1 as an example, the total number of channels configurable is the sum of the number of PSI channels on the Y axis plus the number of 1-board channels on the X axis plus the number of FIPS channels shown at the intersection of the two coordinates (X,Y).

For example, if 2 FIPS channels are desired, 4 PSIA's and two 1-board channels also can be configured in this one card cage. Other choices are possible, such as 2 FIPS and 2 PSIA's and four 1-board channels.

Table A5.0-2 describes the 5 volt DC Power needs of all of the IMU options currently available. These values are the result of a computer analysis of the circuit boards, and the measured values for the Diskette and FIPS Power Sequencer.

The total 5 volt DC Power available in the IMU (at nominal voltage) is 3000 watts. Table A5.0-3 describes the power consumed by IMU central. It assumes all four SCU ports are configured in order to avoid awkward power problems in add-on port situations in the future (as a customer site matures).

For the same reason, Table A5.0-4 describes a standard DAU with all possible options.

TABLE A5.0-1a. BOARD CAPACITY OF ONE 19-CARD CAGE USING THE 2-BOARD TTL PSIA-2

	8	7	6	5	4	3	2	1	0	
# of	7	6	5	4	3	2	1	0		
2-bd.	5	4	3	2	1	0				(x,y) = # of 4-board channels (FIPS)
chans.	4	3	2	1	0					
(PSIA)	3	2	1	0						
	2	1	0							
	1	0								
	0									

										0 1 2 3 4 5 6 7 8
										# of 1-board channels (NDIC, IPC-UR, IPC-Console)

TABLE A5.0-1b. BOARD CAPACITY OF ONE 19-CARD CAGE USING THE 1-BOARD TTL PSIA-2

	8	7	6	5	4	3	2	1	0	
# of	7	6	5	4	3	2	1	0		
1-bd.	5	4	3	2	1	0				(x,y) = # of 4-board channels (FIPS)
chans.	4	3	2	1	0					
(PSIA)	3	2	1	0						
	2	1	0							
	1	0								
	0									

										0 1 2 3 4 5 6 7 8
										# of 1-board channels (NDIC, IPC-UR, IPC-Console)

TABLE A5.0-2. TYPICAL POWER CONSUMPTION BY OPTION

<u>UNSHIELDED CABINET; IMU OPTION</u>	<u>SHIELDED CABINET; IMU OPTION</u>	<u>CALCULATED TYPICAL WATTS</u>
DAU Central; WDAU66LA or WDAU66LB	WDAU66LC or WDAU66LD	154
DAU's DEVICE Interface; WDDI66LA	WDDI66LB	25
DAU's IMU Interface; WDDA66LC*	WDDA66LD	37
DAU's Switched Interface; WADC66LB	WADC66LD	0
IPC-Console; WIPC66LD (TTL)	W00N284B (TTL)	38
IPC-UR/PDSI; WIPC66LB (TTL)	WPDSI84B (TTL)	38
IPC-UR/DAI; WIPC66LC (TTL)	WIURC84B (TTL)	40
PSI 2-Trip; WCHC66LA (TTL)*	WPSIC84B (TTL)	20
PSI 2-Trip; WCH066LA*	WPSI0848B (CMOS)	90
PSI 4-Trip; WCH066LB (TTL)	WPSI484B (TTL)	89
FIPS; WIPC66LE (TTL)	WFIPS84B (TTL)	192
NDIC; WCHD66LC (TTL)	WNDIC84B (TTL)	47
IMU Central; WII066MA	WII084MA	410
Port Sel./Bus 1; WPSD66LA	WPSD66LA	47
SCU Port/2 Buses; WIPO66LH and WIPO66LC	WIPO84LH and WIPO66LC	149
FIPS Sequencer; WFIP400A	WFIP400A	5
Diskette; WFDD66LA	WFDD66LA	4

* Also used for internal connection in shielded cabinet.

TABLE A5.0-3. POWER NEEDED BY STANDARD IMU CENTRAL

<u>STANDARD IMU CENTRAL</u>	<u>QUANTITY</u>	<u>CALCULATED TYPICAL WATTS</u>
IMU Central (410W); WII066MA or WII084MA (Boards only)	1	410
Port Sel./Bus 1 (47W); WPSD66LA	1	47
SCU Port/2 Buses (149W); (WIPO66LH or WIPO84LH) and WIPO66LC	4	596
FIPS Sequencer (5W); WFIP400A or WFIP400B	1	5
Diskette (4W); WFDD66LA	2	8

Total Watts		1066

TABLE A5.0-4. POWER NEEDED BY STANDARD DAU

<u>STANDARD DAU</u>	<u>QUANTITY</u>	<u>CALCULATED TYPICAL WATTS</u>
DAU Central (154W); (WDAU66LA or WDAU66LC) or (WDAU66LB or WDAU66LD)	1	154
DAU's DEVICE Interface (25W); WDDI66LA or WDDI66LB	3	75
DAU's IMU Interface (37W); WDDA66LB or WDDA66LD	2	74*
DAU's Switched Interface (0W); WADC66LB or WADC66LD	2	0*

Total Watts		303

* Does not include power needed by the corresponding PSI Adapters in the IMU.

